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Subject: **Advisory for Prevention and Control of Crimean Congo Hemorrhagic Fever (CCHF)**

In the wake of increased reports of Crimean Congo Hemorrhagic Fever (CCHF) cases in 2017 and especially in April-May, it is imperative to be vigilant about the situation and take certain steps to interrupt further transmission. The objective of this advisory is to sensitize human and animal health care authorities to further strengthen and improve the level of preparedness in prevention and control of CCHF.

Background:

- Crimean-Congo hemorrhagic fever (CCHF) is a widespread disease caused by a tick-borne virus (*Nairovirus*) of the Bunyaviridae family
- The virus causes severe viral hemorrhagic fever outbreaks, with a case fatality rate of 10–40%.
- The disease was first characterized in Crimea in 1944 and given the name Crimean hemorrhagic fever. It was then later recognized in 1969 as the cause of illness in Congo, thus resulting in the current name of the disease.
- Ticks, especially of the *Hyalomma* genus are both reservoir and vector for the CCHF virus.
- Numerous wild and domestic animals, such as cattle, goats, sheep and hares, serve as amplifying hosts for the virus.
- Since the diagnosis of first human case of CCHF in 1976; sporadic cases have continued to occur in various geographical regions of the country.
- Although Balochistan remains the most affected Province, yet cases have been reported from almost all geographical regions of the country.
- During 2016, out of total 552 samples from suspected cases submitted for laboratory confirmations, 101 were positive for CCHF Virus among the confirmed cases 33 persons died (CFR: 33%). Balochistan has reported 192 suspected cases, out of which 46 were positive and 10 deaths occurred.
- During 2017 till date, a total of 08 confirmed cases have been reported (04 cases each from Punjab and Balochistan).
- The presenting complaints, signs and symptoms of CCHF cases mimic Dengue Hemorrhagic Fever (DHF). Considering its transmission dynamics (human-to-human) and high mortality, it is imperative to exclude CCHF through a careful epidemiological history/ clinical examination of the patient while strictly observing the prescribed hospital infection control measures.

Mode of Transmission: The CCHF virus is transmitted to people either by tick bites or through contact with infected animal blood or tissues during and immediately after slaughter. The majority of cases have occurred in people involved in the livestock industry, such as agricultural workers, slaughterhouse workers and veterinarians. Transmission to humans occurs through contact with infected ticks or animal blood. CCHF can also be transmitted from one infected human to another by contact with infectious blood, secretions, organs or body fluids of infected person. Hospital-acquired CCHF infections can also occur due to improper sterilization of medical equipment, reuse of injection needles, contamination of medical supplies and during invasive procedures without standard contact precautions.

Incubation period: Following infection by a tick bite, the incubation period is usually 1-3 days, with a maximum of 9 days. The incubation period following contact with infected blood or tissues is usually 5-6 days, with a documented maximum of 13 days.

Risk Groups: Animal herders, livestock workers, and slaughterhouse workers in endemic areas are at risk of CCHF. Healthcare workers in endemic areas are at risk of infection through unprotected contact with infectious blood and body fluids.

Clinical presentation: The onset of CCHF is sudden, with initial signs and symptoms including headache, high-grade fever, back pain, joint pain, stomach pain, and vomiting. Red eyes, a flushed face, a red throat, and petechiae (red spots) on the palate are common. Symptoms may also include jaundice, and in severe cases, changes in mood and sensory perception.

As the illness progresses, large areas of severe bruising, severe nosebleeds, GI bleed; gums etc. and uncontrolled bleeding at injection sites can be seen, beginning on about the fourth day of illness and lasting for about two weeks. In severe cases, deaths usually occur in the second week of illness. In patients who recover, improvement generally begins on the ninth or tenth day after the onset of illness.

Treatment: General supportive care with treatment of symptoms is the main approach to managing CCHF in people. The antiviral drug ribavirin has been used to treat CCHF infection with apparent benefit. Both oral and intravenous formulations seem to be effective.

Case Definitions:

Suspected Case: Any person with sudden onset of fever over 38.5°C for more than 3 days and less than 10 days, especially in CCHF endemic area and among those in contact with livestock such as shepherds, butchers, and animal handlers.

Probable Case: Suspected case with history of febrile illness of 10 days or less with epidemiological link AND any two of the following: thrombocytopenia less than 50,000/mm³, petechial or purpuric rash, epistaxis, haematemesis, haemoptysis, blood in urine and/or stools, ecchymosis and gum bleeding.

Confirmed Case: Suspected/Probable case with laboratory diagnosis of CCHF i.e. PCR and/or serology.

Preventive measures:

Reducing the risk of infection in people:

- There is currently no safe and effective vaccine widely available for human use.
- In the absence of a vaccine, the only way to reduce infection in people is by raising awareness of risk factors and educating people about the measures taken to reduce exposure to the virus.
- Public health advice should focus on several aspects.
 - Reducing the risk of infection transmission from **tick-to-human**:
 - Wear protective clothing (long sleeves, long trousers);
 - Wear light colored clothing to allow easy detection of ticks on the clothes;
 - Regularly examine clothing and skin for ticks; if found, remove them safely;
 - Use approved acaricides on clothing;
 - Use approved repellent on the skin;
 - Avoid areas where ticks are abundant and seasons when they are most active.
 - Reducing the risk of infection transmission from **animal-to-human**:
 - Wear gloves and other protective clothing while handling animals or their tissues in endemic areas, notably during slaughtering, butchering and culling procedures in slaughterhouses or at home;
 - Quarantine animals before they enter slaughterhouses or routinely treat animals with acaricides prior to slaughter.
 - Inject Ivermectin to animals with ticks, 24-30 days before slaughtering.
 - Reducing the risk of infection transmission from **human-to-human** in community:
 - Avoid close physical contact with CCHF-infected people;
 - Wear gloves and protective equipment when taking care of ill people;
 - Wash hands regularly after caring for or visiting ill people.
 - Insect repellents are the most effective in warding off ticks in human populations.

Controlling infection in health-care settings:

- Health-care workers caring for patients with suspected/ confirmed CCHF or their specimens should practice standard infection control precautions. These include basic hand hygiene, use of personal protective equipment, safe injection practices and safe burial practices.
- Samples of suspected CCHF cases should be collected and handled by trained laboratory staff.
- Recommendations for infection control while providing care to patients with suspected or confirmed CCHF should follow those developed by WHO for Ebola fever. (http://www.who.int/csr/resources/publications/ebola/filovirus_infection_control/en)

Controlling CCHF in livestock:

- CCHF infections are usually asymptomatic in animals and no vaccines is available for animals
- Furthermore, tick vectors are numerous and widespread, so tick control with acaricides (chemicals intended to kill ticks) is an important option for well-managed livestock production facilities
- The bird Lalli/Mynah (important in picking and eating ticks from skin of animals is a natural method which could help control populations of ticks) must not be shot or killed and be put under endangered species
- Liquid formulation of acaricides should be sprayed to animal herds for prevention of tick infestation and can be injected in cracks and crevices of the area.
- Lime powder or acaricides can be applied on farm premises reduce the tick population and prevents to re-infect the animals.

Laboratory Diagnosis and NIH Support:

- Physicians should provide maximum clinical information especially dates of onset of symptoms and sample collection when requesting for lab testing.
- Lab tests for CCHF should be recommended to those who fulfill criteria of suspected case definition
- Tests on patient samples present an extreme biohazard risk and should only be conducted under maximum biological containment conditions. Safe disposal of lab waste should be followed strictly.
- Sample from suspected CCHF case should be collected by trained phlebotomist with full preventive measures using appropriate personal protective equipments (PPEs).
- Recommended samples for testing are 3-5 cc venous blood in vacutainer or serum separator tube.
- CCHF can be diagnosed by:
 - Reverse transcriptase polymerase chain reaction (RT-PCR) assay
 - Enzyme-linked immunosorbent assay (ELISA)
- Suspected human CCHF samples must be immediately transported to NIH as per guidelines to Department of Virology, Public Health Laboratories Division, NIH, Islamabad.
- For any further assistance in this context, the Field Epidemiology & Disease Surveillance Division (FE&DSD) (051 – 9255237 and Fax No. 051-9255575) and Virology Department of Public Health Laboratories Division (051-9255082), NIH may be contacted.

The above 'Advisory' may please be circulated widely to all concerned.


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