



Guidelines for Crimean-Congo Hemorrhagic Fever (CCHF)

Developed with joint collaboration of
National Institute of Health (NIH), Islamabad,
World Health Organization (WHO)

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Introduction

Infectious Agent:

Crimean-Congo Haemorrhagic Fever (CCHF) Virus belonging to *Nairovirus* group of Bunyaviridae family

Mode of transmission:

Bite or handling infected *Hyalomma* tick; blood / tissue of infected domestic animals (slaughtering); or direct contact with blood / tissue of infected patients. Nosocomial infections are common.

Incubation period:

Incubation period is usually 1-3 days after a tick bite and 5–6 days after exposure to infected blood or tissues with a documented maximum of 13 days.

Seasonality:

Peak of cases occur during Fall and Spring seasons, associated with life-cycle of ticks, exposure of newborn animals, exposure of migrating animals, and human contact with viremic animals during slaughter and ticks during handling.

Alert threshold – Viral Haemorrhagic Fever:

One probable case is an alert and requires an immediate investigation.

Outbreak threshold:

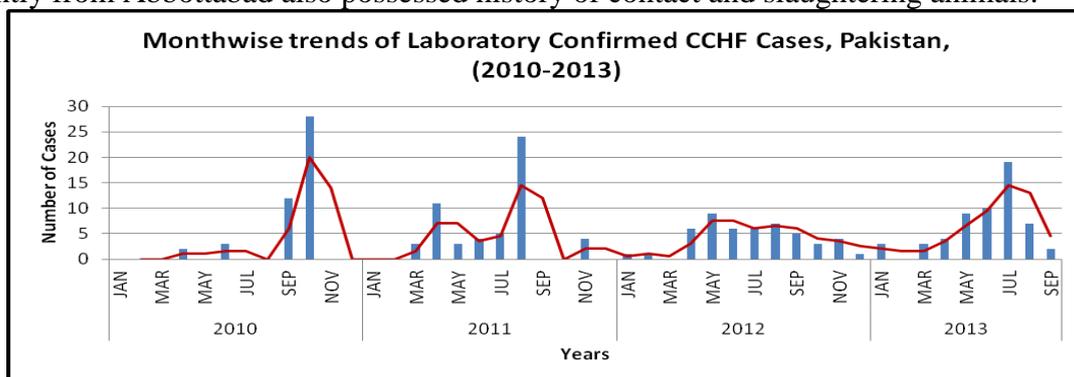
One confirmed case of CCHF is an outbreak.

The disease:

CCHF is a severe disease with a high case fatality rate ranging from 2% to 50%. The disease was first described in Crimea in 1944 and identified in 1956 in Congo and thus developed the current name for the disease and its causative virus.¹

Geographical distribution and trend of CCHF in Pakistan

CCHF was first reported in Pakistan in 1976 but the number of cases has shown a dramatic rise since 2000 with 50-60 cases being reported annually. The incidence of CCHF peaks in June and October but cases occur throughout the year. During 2012, DEWS received a total of 68 CCHF alert involving 141 suspected and 49 laboratory confirmed human cases resulting in 16 deaths (CFR: 33%), while during 2013 up till 30th September a total of 150 human samples have been received by the NIH for CCHF testing. Out of them 60 are positive while among them 12 patients had died (CFR 8%). On epidemiological analysis, the exposure of bulk of cases was traced back to animals in Quetta, Zhob, Killa Saifullah, Killa Abdullah, Pishin, Loralai and Musa Khel districts of Balochistan. Similarly a number of patients diagnosed in Karachi, Rawalpindi, Multan, D. I. Khan, Mansehra, Peshawar, Landi Kotal and recently from Abbottabad also possessed history of contact and slaughtering animals.



Reservoirs, hosts, transmission

Reservoir hosts are believed to be hares, birds and Hyalomma ticks. Domestic animals (sheep, goats and cattle) act as amplifying hosts. In Pakistan, CCHF is transmitted from the adult tick (Hyalomma genus), direct contact with the blood / tissue of infected domestic animals (e.g. butchering), or direct contact with the blood / tissue of infected people (e.g. nosocomial). Population migration with animals contributes to the higher probability of susceptible animals being bitten by infected ticks, thus increasing the risk of transmission to humans who handle the animals.³

Case definition

Suspected case- CCHF:

Patient with sudden onset of illness with high-grade fever over 38.5°C for more than 72 hrs and less than 10 days, especially in CCHF endemic area and among those in contact with sheep or other livestock (shepherds, butchers, and animal handlers). Note that fever does not respond to antibiotic or anti-malarial treatment.

Probable case

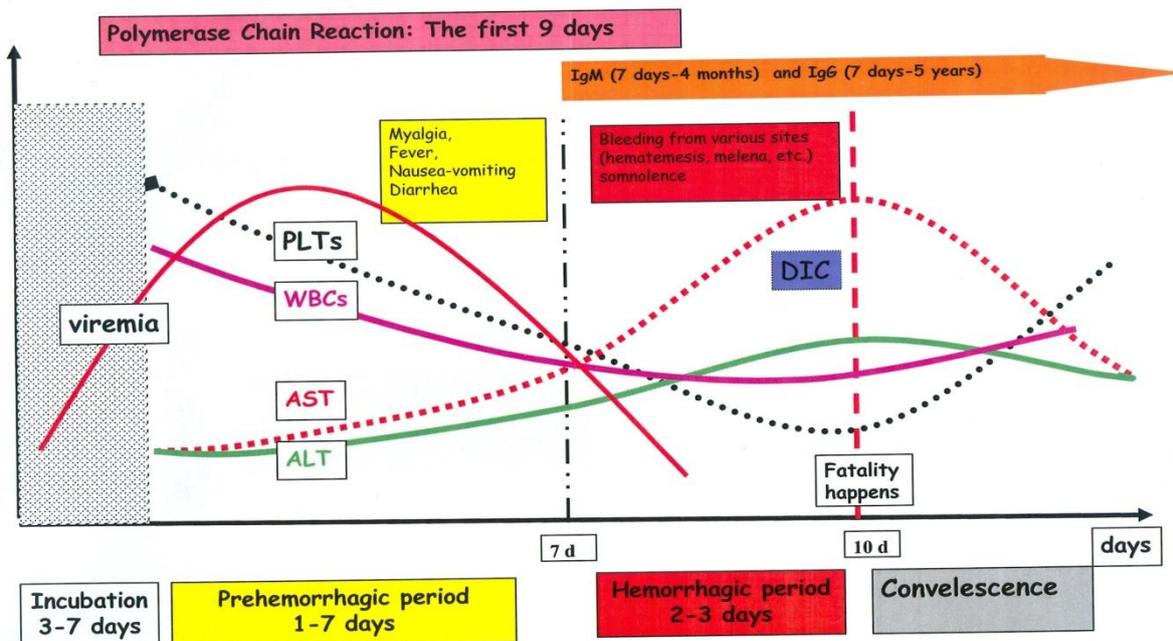
Suspected case with acute history of febrile illness 10 days or less, AND

- Thrombocytopenia less than 50,000/mm³ AND any two of the following:
- Petechial or purpuric rash, Epistaxis, Haematemesis, Haemoptysis, Blood in stools, Ecchymosis, Gum bleeding, Other haemorrhagic symptom AND
- No known predisposing host factors for haemorrhagic manifestations⁵

Confirmed case:

Probable case with positive diagnosis of CCHF in blood sample; (performed in specially equipped high bio-safety level laboratories.) positive diagnosis includes any of the following:

- Confirmation of presence of IgG or IgM antibodies in serum by ELISA (enzyme-linked immunoassay) or any similar method.
- Detection of viral nucleic acid by PCR in specimen or isolation of virus.



Treatment Protocol

General supportive therapy is the mainstay of patient management in CCHF. Intensive monitoring to guide volume and blood component replacement is recommended. If the patient meets the case definition for probable CCHF, oral ribavirin treatment protocol needs to be initiated immediately with the consent of the patient/ relatives and strictly in consultation with the attending physician.

- Oral Ribavirin: 2 gm loading dose
- 4 gm/day in 4 divided doses (8 hourly) for 6 days
- 2 gm/day in 4 divided doses for 6 days

Please note that pregnancy should be absolutely prevented (whether female or male partner is victim) within six months of completing a course of Ribavirin.

Management of the CCHF cases and biological materials

- Patients with probable or confirmed CCHF should be isolated and cared for using strict barrier-nursing techniques – masks, goggles, gloves, gowns and proper removal and disposal of contaminated articles.
- Only designated medical / para-medical staff and attendants should attend the patient.
- All medical and para-medical staff and attendants should wear disposable gloves, disposable masks and gowns on entering room, remove on exiting, and disposed articles completely incinerated.
- All secretions of the patient and hospital clothing in use of the patient and attendants should be treated as infectious and, where possible, should be autoclaved before incinerating.
- Every effort should be made to avoid spills, pricks, injury and accidents during the management of patients. Needles should not be re-capped but discarded in proper safety disposal box.
- All used material e.g. syringes, gloves, canulla, tubing etc, should be collected in autoclave-able bag and autoclaved before incinerating.
- All instruments should be de-contaminated and autoclaved before re-use.
- All surfaces should be decontaminated with liquid bleach.
- After the patient is discharged, room surfaces should be wiped down with liquid bleach to kill the virus, and the room should be fumigated if risk of tick infestation.

Prophylaxis Protocol

- In case of known direct contact with the blood or secretions of a probable or confirmed case such as needle stick injury or contact with mucous membranes such as eye or mouth, do baseline blood studies and then start the person on the ribavirin protocol above in consultation with physician.
- Household or other contacts of the case who may have had the same exposure to infected ticks or animals, or who recall indirect contact with case body fluids should be monitored for 14 days from the date of last contact with the patient or other source of infection by taking the temperature twice daily. If the patient develops a temperature of 38.5° C or greater, headache and muscle pains, he/she would be considered a probable case and should be admitted to hospital and started on ribavirin treatment as mentioned above.

Prevention and Control: Public^{1, 5, 6}

1. Educate public about the mode of transmission through tick bites, handling ticks, and handling and butchering animals, and the means for personal protection.

BOX-2: Safe Burial practices⁶

- Thick and long rubber gloves or double pair of surgical gloves should be used for washing the body for burial.
- The dead body should be sprayed with 1:10 liquid bleach solution and then wrapped in the winding sheet.
- The winding sheet should be sprayed with bleach solution.
- It should then be placed in a plastic bag, which should be sealed with adhesive tape. Disinfect the transport vehicle and burn all clothing of the deceased.

2. Tick control with acaricide (chemicals intended to kill ticks) is a realistic option for well-managed livestock production facilities. Animal dipping in an insecticide solution is recommended.
3. Public should avoid tick-infested areas when feasible especially when ticks are active (spring to fall). To minimize exposure, wear light clothing that covers legs and arms, tuck pants into socks, regularly examine clothing and skin for ticks, and apply tick repellent such as diethyltoluamide (Deet®, Autan®) to the skin or permethrin (a repellent and contact acaricide) to pant legs and sleeves.
4. Persons who work with livestock or other animals in the endemic areas should take practical measures to protect themselves. They include the use of repellents on the skin (e.g. DEET) and clothing (e.g. permethrin) and wearing gloves or other protective clothing to prevent skin contact with infected tissues or blood.
5. In case of death of CCHF patient, family should be informed to follow safe burial practices (Box-2).

Prevention and Control: Hospitals and Health Facilities

1. Hospitals should maintain stock of Ribavirin; in Pakistan it is available in the market as Ribazole®.
2. Bio-safety is the key to avoiding nosocomial infection. Patients with suspected or confirmed CCHF should be *isolated* and cared for using barrier-nursing techniques to prevent nosocomial spread of infection.
3. The patient should be treated in a separate room under strict barrier nursing.
4. Only designated medical / para-medical staff and attendants should attend the patient. Non-essential staff and attendants should not be allowed to enter the room.
5. All secretions of the patient and hospital clothing in use of the patient should be treated as infectious and should be autoclaved before incinerating.
6. All medical and para-medical staff and attendants should wear disposable gloves, disposable masks and gowns (gowns should be autoclaved before sending to the laundry or incineration). Use of disposable items should be ensured by supervisor.
7. Every effort should be made to avoid spills, pricks, injury and accidents during the management of patients. Needles should not be re-capped but discarded in proper safety disposal box.
8. All used material e.g. syringes, gloves, canulla, tubing etc, should be collected in autoclave-able bag and autoclaved before incinerating.
9. All instruments should be de-contaminated and autoclaved before re-use.
10. All surfaces should be decontaminated with liquid bleach.
11. The samples for laboratory testing should be properly collected, labelled, sealed, and decontaminated from outside with liquid bleach and packed in triple container packing.
12. The designated laboratory should be informed about the sample and it should be transported to the designated laboratory with great caution, ensuring there would be no breakage or spills.
13. After the patient is discharged, room surfaces should be wiped down with liquid bleach to kill the virus and the room should be fumigated.
14. Please see other instructions for contacts of a CCHF case, below.

Instructions for Monitoring and Laboratory Testing for Contacts of CCHF Cases⁴

<i>Definition of "contact"</i>	<ol style="list-style-type: none"> a. People who were exposed to the same animal(s) as the patient. b. Members of the patient's family or who were exposed to the patient. c. Health workers who were exposed to the sick patient, i.e. while physically examining or treating the patient.
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	d. Health workers who experienced accidental needle stick injury or other accident where blood or secretions of patient were in direct contact with open wound or mucous membrane.
Monitoring contacts	<p>a. All contacts, except #d. above, should simply be monitored for 14 days (maximum) from the day of last contact with the patient or other source of infection by taking temperature twice daily. They should have baseline blood tests and start ribavirin only if they become genuinely sick, i.e. (i) Temperature equal to or more than 38.5°C; (ii) Severe headache; (iii) Myalgia (muscle pains).</p> <p>b. Contacts who have had clear-cut exposure, see #d. above, should have baseline blood tests directly after the accident and then be placed on prophylactic oral ribavirin.</p> <p>Caution: A knowledgeable physician should be consulted about starting ribavirin and monitoring the patient during treatment, and the patient should be advised about the potential side effects of treatment and the necessity of absolutely preventing pregnancy (whether female or male partner) within six months of completing a course of Ribavirin.</p>
Testing blood for CCHF	<p>a. There is <u>no point</u> in testing the blood for CCHF confirmation during the first 14 days after contact unless they are genuinely sick.</p> <p>b. Obtain blood tests to confirm CCHF only when contact gets definitely sick during the monitoring period (14 days),</p> <ol style="list-style-type: none"> i. Increased body temperature equal to or >38.5°C ii. Headache and myalgia. <p>c. After the 14-day observation period, one may consider testing the blood of a contact for research purposes, to confirm whether they did or did not undergo sub-clinical infection.</p>

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