सत्यमेव जयते

Updated Guideline for Management of Crimean Congo Hemorrhagic Fever 2019

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History

The disease was first characterized in the Crimea in 1944 and given the name Crimean hemorrhagic fever. Later on, it was recognized as the cause of illness in Congo in 1969, thus resulting in the current name of the disease. Crimean-Congo hemorrhagic fever is found in Eastern Europe, particularly in the former Soviet Union. It is also distributed throughout the Mediterranean, in northwestern China, central Asia, southern Europe, Africa, the Middle East, and the Indian subcontinent.

1. Epidemiology

Crimean-Congo Hemorrhagic fever (CCHF) is a viral hemorrhagic fever caused by Nairovirus. The disease is endemic in many countries in Africa, Europe and Middle East. In India's neighborhood, Pakistan reports 50-60 cases annually. [1]

CCHF outbreaks constitute a threat to public health because of its epidemic potential, its high case fatality ratio (10-40%), its potential for nosocomial (hospital acquired) infection outbreaks and the difficulties in treatment and prevention [2].

1.1. Agent

The causative organism is a Nairovirus, a RNA virus belonging to Nairoviridae family [3]. *It is one among the four viral families known to cause Viral Hemorrhagic Fever (VHF) disease in humans, the other four being Bunyaviridae (SFTS) Arenaviridae (Lassa fever), Filoviridae (Marburg and Ebola) and Flaviviridae (Yellow Fever, Dengue). The most severe hemorrhagic manifestation from VHF follows infection with the Crimean Congo hemorrhagic fever virus. Further this virus can be used as a bio terrorism agent* [4].

1.2. Host factors, Vectors and Reservoirs

Human beings are the only known host of CCHF virus in which disease is manifested [5]. *The CCHF virus may infect a wide range of domestic and wild animals. Animals become infected with CCHF virus from the bite of infected ticks. Domestic ruminant animals, such as cattle, sheep and goats, who act as amplifying host, will be viremic (virus circulating in the bloodstream) for around one week after becoming infected. It does not cause disease in ruminants. Some migratory birds and ostriches are susceptible to infection.* [6]

A number of ticks are capable of becoming infected with CCHF virus, but the most efficient and common vectors for CCHF appear to be members of the Hyalomma genus (argasid or ixodid ticks). Once infected, the tick remains infected through its developmental stages, and the mature tick may transmit the infection to large vertebrates, such as livestock. [2,4]

1.3. Environmental factors

Ecological changes, poverty, social instability, poor health services, and absence of standard infection control practices have contributed to increased transmission of the CCHF virus.

2. Mode of Transmission

Humans who become infected may acquire the infection from tick bites or from direct contact with blood or other infected body fluids and tissues from infected animals or humans [5]. *Intrauterine or perinatal transmission is also been reported in CCHF* [7].

3. Population at Risk

In endemic countries, majority of cases have occurred in those involved with the livestock industry, such as agricultural workers, slaughterhouse workers and veterinarians [6]. Health care workers attending on suspect/ probable/ confirmed CCHF cases and not following contact precautions are at high risk of getting infection.

Hospital acquired infection outbreaks (nosocomial spread) has been reported in many countries [2, 9, 8]

4. Incubation Period

The incubation period is 2-7 days. The length of the incubation period for the illness appears to depend on the mode of acquisition of the virus. Following infection via tick bite, the incubation period is usually 1 to 3 days, with a maximum of 14 days. The incubation period following contact with infected blood or tissues is usually 5 to 6 days, with a documented maximum of 14 days [2, 5].

5. Clinical features

The pre hemorrhagic period is characterized by the

- *Sudden onset of fever (39–41°C) (On an average, fever persists for 4–5 days)*
- *Headache*
- *Myalgia*
- *Giddiness*
- *Nausea, vomiting, diarrhea*
- *Abdominal pain*
- *Neck pain*
- *Prostration*
- *Photophobia*
- *Hyperemia of the face, neck, and chest*
- *Congested sclera*
- *Conjunctivitis*

The pre hemorrhagic period lasts an average of 3 days (range: 1–7 days).

*The **hemorrhagic period** is short (usually 2–3 days). It develops rapidly, and usually begins between the third to fifth days of disease. There is no relation between the temperature of the feverish patient and onset of hemorrhage.*

Hemorrhagic manifestations:

It ranges from petechiae to large hematomas appearing on the mucous membranes and skin. The most common bleeding sites are the nose, gastrointestinal system (hemetemesis, melena, and intra-abdominal bleed), uterus (menometrorrhagia) and urinary tract (haematuria) [5]. Bleeding from other sites, including the vagina, gingival bleeding, and cerebral hemorrhage have been reported.

The severely ill may develop disseminated intravascular coagulation (DIC), hepatorenal and pulmonary failure. The mortality rate from CCHF is approximately 30-80%, with death occurring in the second week of illness. In those patients who recover, improvement generally begins on the ninth or tenth day after the onset of illness [2, 5, 10,and 11].

***The convalescence period** begins in survivors about 10–20 days after the onset of illness.*

In the convalescent period

- *Labile pulse*

- *Tachycardia*
- *Temporary or complete loss of hair*
- *Polyneuritis*
- *Difficulty in breathing*
- *Xerostomia*
- *Poor vision*
- *Loss of hearing*
- *Loss of memory*

6. High risk groups

- *Shepherds*
- *Farmers*
- *Other agricultural workers*
- *Veterinarians*
- *Abattoir workers*
- *Health care and laboratory workers- Noscocomial infection*

7. Differential diagnosis

The following diseases are to be considered in differential diagnosis, pending lab confirmation: Malaria, Leptospirosis, Rickettesial diseases, Meningococcemia, Dengue Hemorrhagic Fever, Haemolytic Uremic Syndrome, and Thrombocytopenic Purpura.

8. Laboratory Diagnosis

Samples: *Serum, plasma or tissue sample (liver, spleen, bone marrow, kidney, lungs and brain). For sample collection protocol refer to* ***Annexure-I.***

Bio-safety Requirements

Diagnosis of suspected CCHF is to be performed in specially-equipped, high bio safety level laboratories (BSL 3 + or 4)

Serology

- *Anti-CCHF human IgM and IgG antibodies may be detected in serum by enzyme-linked immunoassay (the "ELISA" or "EIA" methods) from about day four to six of illness. IgM remains detectable for up to four months, and IgG levels decline with time but remain detectable for up to five years.*
- *Patients with fatal disease do not usually develop a measurable antibody response and in these individuals, as well as in patients in the first few days of illness, diagnosis is achieved by virus detection in blood or tissue samples.*

Antigen Detection

Viral antigens may sometimes be shown in tissue samples using immunofluorescence or EIA.

Molecular Technique

In the first few days of illness (Day 1 to Day 10), the real time reverse transcriptase polymerase chain reaction (qRT-PCR), is used for detecting the viral genome.

Virus Isolation

The virus can be isolated from blood or tissue specimens in the first five days of illness, and grown in cell culture. It should always be carried out in maximum bio containment laboratory i.e. BSL -4

Biochemical Findings

Thrombocytopenia appears to be a consistent feature of CCHF infection. Patients may have leucopenia and raised levels of aspartate aminotransferase, alanine aminotransferase, lactate dehydrogenase, and creatinine phosphokinase. Coagulation tests such as prothrombin time and activated partial thromboplastin time are prolonged. The level of fibrinogen might be decreased, and fibrin degradation products could be increased. Laboratory tests, including complete blood count, and biochemical tests returns to normal levels within approximately 5–9 days among surviving patients [5]

9. Case Definition:

9.1. Suspect case

- *A patient with abrupt onset of high fever >38.5°C and one of the following symptoms: severe headache, myalgia, nausea, vomiting, and/or diarrhoea*

AND

- *History of tick bite within 14 days prior to the onset of symptoms*

OR

- *History of contact with tissues, blood, or other biological fluids from a possibly infected animal (e.g., abattoir workers, livestock owners, veterinarians) within 14 days prior tothe onset of symptoms*

OR

- *Healthcare workers in healthcare facilities, with a history of exposure to a suspect, probable, or laboratory-confirmed CCHF case, within 14 days prior to the onset of symptoms*

9.2. Probable case

A probable CCHF case is defined as a suspected CCHF case fulfilling in addition the following criteria:

- *Thrombocytopenia < 50,000/cu.mm*

AND

- *Two of the following hemorrhagic manifestations: hematoma at an injection site, petechiae, purpuric rash, rhinorrhagia, hematemesis, hemoptysis, gastrointestinal hemorrhage, gingival hemorrhage, or any other hemorrhagic manifestation in the absence of any known precipitating factor for hemorrhagic manifestation*

9.3. Confirmed case

A confirmed CCHF case is defined as a case that fulfils the criteria for probable CCHF and in addition is laboratory-confirmed with one of the following assays:

Detection by ELISA or IFA of specific IgM antibodies against CCHF virus or a 4-fold increase in specific IgG antibodies against CCHF virus in two specimens collected in the acute and convalescent phase.

- *Detection of CCHF virus genome by RT-PCR in a clinical specimen confirmed by sequencing of the PCR product*
- *CCHF virus isolation*

10. Triage

Patients are divided into 3 categories:

Category-A

Those who have relatively mild disease (fever < 38.5°C, no systemic bleeding, Alanine Transaminase (SGPT) levels < 150 IU, Platelet count > 50,000). These patients improve spontaneously by about day 10 of illness. The patient can be managed with supportive therapy and regular monitoring for worsening of symptoms. These patients do not require Ribavirin.

Category-B

Those who are in the first 5 days of illness and are severely ill with high grade fever (> 38.5°C), local and systemic bleeding manifestations, having Alanine Transaminase (SGPT) levels of 150 IU or more, aspartate aminotransferase (SGOT) of 200 IU or more, platelets (< 50,000) or Activated Partial Thromboplastin Time (APTT) of 60 seconds or more. Even if the patients still look comparatively well at this stage these clinical path values are markers of poor prognosis if recorded during the first 5 days of illness and persons in this group should be treated as soon as possible with Ribavirin. Those who are recognized and treated early enough respond remarkably well to ribavirin [11].

Category C

Patients first seen/recognized as CCHF after day 5 and are in comatose/terminal state with DIC and multi organ failure. Treatment with ribavirin is indicated but the prognosis is very poor.

Category B & C patients, even if they subsequently test negative, should receive the full course of ribavirin.

Flow Chart for triage is at ***Annexure-II***

11. Pre-hospital Care

Supportive care is based on the patient's physiologic condition. Because most patients requiring pre-hospital evaluation and transport are in the early stages of the disease, universal precautions should be adequate. In patients with respiratory symptoms (e.g., cough, rhinitis), use face shields and N-95 masks [2]*. The ambulance should be disinfected after patient transportation with bleach/ sodium hypochlorite solution.*

12. Care in Hospital Settings

12.1. Supportive therapy

Team of dedicated trained staff should treat the patients. General supportive therapy is the mainstay of patient management in CCHF. Intensive monitoring to guide volume and blood component replacement is required.

Supportive care includes fluid management by intravenous crystalloids, oxygen, cardiac monitoring and administration of blood and blood products as clinically indicated.

Avoid intramuscular injections and the use of aspirin or other anticoagulants. Minimize invasive procedures because of the risk associated with viral transmission from sharp objects. [2,5]

12.2. Pharmaceutical Interventions

Antiviral

There is currently no specific antiviral therapy for CCHF. However, ribavirin has been shown to inhibit in-vitro *viral replication in Vero cells and increased the mean time to death in a suckling mouse model of*

CCHF. Additionally, several case reports have been published that suggest oral or intravenous ribavirin effective for treating CCHF infections.

Ribavirin

Ribavirin is a member of the nucleoside anti metabolite drugs that interfere with duplication of viral genetic material. This is the only antiviral known to have some effect on the viruses causing VHF.

Dosage regimen (for adults) [12]

Administration	*Loading dose*	*d1-4*	*d5-10*
IV	*17 mg/kg * (max 1000 mg/ dose)*	*17 mg/kg (max 1000 / per dose) q 6h*	*8 mg/kg (max 500 mg/dose) q 8h*
Oral	*2000 mg*	*1000 mg q 6h*	*500 mg q 6h*

** If there appears to be a delay in beginning the treatment a loading dose of 30 mg / kg [IV] (max 2 gms) might be necessary as the loading dose.*

Box-1: Treatment Protocol for adults with CCHF Disease

- *2 gm loading dose*
- *4 gm/ day in 4 divided doses (6 hourly) for 4 days*
- *2gm/day in 4 divided doses for 6 days*

Dosage recommended for children

Administration	*Loading dose*	*d1-4*	*d5-10*
IV	*17 mg/kg*	*17 mg/kg q 6h*	*8 mg/kg q 8h*
Oral	*30 mg/kg*	*15 mg/kg q 6h*	*7 mg/kg q 6h*

The optimal route of administration of ribavirin is oral. During the course, if CCHF patients have nausea, vomiting, gut bleeding, haematemesis and melena, parenteral drug administration is advisable. An IV formulation of Ribavarin is also available. The oral preparation is preferably taken with food. Blood count need to be monitored at least weekly. The safety of oral ribavirin has been examined in approximately 5,000-10,000 patients with VHFs in controlled and uncontrolled clinical trials. Ribavirin was generally well tolerated.

12.3. Adverse effects

The most common side effect of Ribavirin is mild to moderate Haemolytic anaemia which is reversible. Anaemia associated with ribavirin therapy is often asymptomatic and can be managed by monitoring blood count and serum biochemistry. Ribavirin administered as an intravenous bolus has been reported to induce rigors; consequently, it is recommended that the drug be administered as an infusion over 10-15 minutes. There have been reports of pancytopenia and pancreatitis associated with use of intravenous ribavirin.

12.4. Contra-indications and precautions

Ribavirin is contraindicated for treatment in pregnant women. Ribavirin has demonstrated significant teratogenic and embryocidal potential in all animal species in which adequate studies have been conducted. It can be given to pregnant women only if the benefit of ribavirin therapy appears to outweigh any fetal risk. Given the high risk of CCHF-related mortality both for pregnant women and foetuses, ribavirin still may be recommended.

Ribavirin is contraindicated in patients with chronic anaemia and haemoglobin levels below 8 g/dl, and in patients with severe renal impairment (creatinine clearance <30 ml/min). The drug may accumulate in patients with impaired renal function. These patients should be carefully monitored during therapy with ribavirin for signs and symptoms of toxicity, such as anaemia.

Ribavirin is also contraindicated in individuals who show hypersensitivity to the drug or its components.

12.5. Other drugs / Critical care support

- *In case of hypotension and hemodynamic instability patient should be managed on standard guidelines for the treatment of shock which includes resuscitation, fluid supplements (crystalloids/ colloids) and inotropic support.*
- *In suspected secondary bacterial infection patient should be treated on standard guidelines / practice for community acquired/ nosocomial infections.*
- *Proton pump inhibitors can be considered on case to case basis.*
- *There is no definite role of steroids for managing this illness per se.*
- *Correction of coagulation abnormalities (only if present) with the use of PRP/SDP; FFP, cryoprecipitate, as per indications.*
- *Platelet transfusion may be considered if there is significant bleeding with thrombocytopenia.*
- *Paracetamol for fever, avoid other NSAID*
- *Ventilator/ renal support may be provided as per standard guidelines.*

13. Chemoprophylaxis

*Prophylactic administration of oral Ribavirin to contacts (refer to **Annexure-III**) of CCHF patients is NOT recommended. Symptomatic contacts can be given therapeutic dose as mentioned above. Consider full therapeutic dose of Ribavirin for Health Care Workers with severe exposure (Needle stick injury, direct contact with blood /body fluids). For person with mild exposure observe and closely monitor HCW for any symptoms.*

14. Non Pharmaceutical Interventions

When patients with CCHF are admitted to hospital, there is a risk of nosocomial spread of infection. In the past, serious outbreaks have occurred in this way and it is imperative that adequate infection control measures be observed.

- *Place patients in an isolation room.*
- *A negative pressure room is not necessary during early stages of the disease but may be necessary if patients have prominent cough, vomiting, diarrhoea, or haemorrhage.*
- *Prevent nonessential staff and visitors from entering the room.*
- *All staff entering the room should wear personal protective equipments.*
- *Hand washing / Hand sanitization before and after clinical examination/conducting procedures on the patient.*
- *Persons coming within 3 feet of the patient should wear face shields or surgical masks with eye protection (including side shields). Use HEPA filter masks if patients have prominent respiratory, GI, or hemorrhagic symptoms.*
- *Specimens of blood or tissues taken for diagnostic purposes should be collected and handled using universal precautions. Sharps (needles and other penetrating surgical instruments) and body wastes should be safely disposed of using appropriate decontamination procedures.*
- *If large amounts of blood or other body fluids are present in the environment, use leg and shoe coverings.*
- *Before exiting the room, disinfect all used protective barriers and clean shoes with a hospital disinfectant or solution of household bleach. If possible, use an anteroom for putting on and removing protective barriers and for storing supplies*
- *Hospital clothing, bed sheets and other linen used in patient care should be treated as infectious and autoclaved and incinerated.*
- *All used materials such as syringes, gloves, cannula, tubing etc used for patient care should be collected in autoclavable bag, autoclaved and incinerated.*
- *All instruments, equipments etc should be decontaminated/ autoclaved before re use.*
- *Surfaces should be decontaminated with liquid bleach.*
- *CCHFV can be inactivated by disinfectant including 1% hypochlorite and 2% gluteraldehyde.*
- *Avoid spills, needle pricks, injury and accidents during case management.*
- *Dispose excreta after 30 minutes contact time with sodium hypochlorite solution.*
- *Healthcare workers who have had contact with tissue or blood from patients with suspected, probable or confirmed CCHF should be followed up with daily temperature and symptom monitoring for at least 14 days after the putative exposure.*
- *Hospital waste management practices should be as per standard guidelines.*
- *Infection control practice is to be supervised by Hospital infection control committee*
- *The patient and attendants need to be examined for ticks using universal precautions.*
- *Application of acaricidal agents is recommended if there is evidence of tick infestation.*

➢ ***Dead body disposal :***

- *Use rubber gloves or double surgical gloves for handling dead body. The persons handling the dead body in hospitals should also wear maskand complete coverall PPE. Never hand over the*

dead bodies to the relatives. It's the responsibility of hospital and health officials for proper and safe disposal of dead bodies

- *Spray dead body with 1:10 liquid bleach. Wrap with a winding sheet. Spray the winding sheet with bleach solution.*
- *Place the wrapped and bleached body in air impermeable plastic bag with already available zip locks and then transport in the defined ambulance/ transport vehicle*
- *Disinfect ambulance / transport vehicle.*

➢ ***Risk Communication***

- *Hospital setting provides an enabling environment for risk communication. OPD may be used as a venue for educating patients on animal-human-vector interface and simple measures for disease prevention such as personal hygiene, hand washing, daily bath, keeping domestic animals clean and free from ticks, general health and sanitation measures in house and within the surroundings and self-reporting of symptomatic cases.*

15. Prevention and Control of CCHF

1. *Intensive tick control measures have to be taken by spraying acaricide drug on all animals in affected and neighbourhood villages.*
2. *All animals should be covered under effective supervision of Animal Husbandry department.*
3. *Insecticide has to be sprayed intensively in all breaks on floor and walls in cattle sheds*
4. *Treatment and spraying with drug has to be repeated after One month.*
5. *To contain the spread of the disease the admission of the patients should be in identified hospitals only.*
6. *Health care staff in the hospitals should be educated with emphasis on protective measures.*
7. *Surveillance among hospital contacts should be strengthened at hospital setting.*
8. *Biomedical waste management at the hospitals should be strengthened.*
9. *Strengthening of health education about causation, transmission and prevention of disease.*
10. *State wide sero-surveillance in animals to identify prevalence of disease in Gujarat.*

16. *References*

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Information about sending the samples for suspected hemorrhagic fever to ICMR-NIV Pune

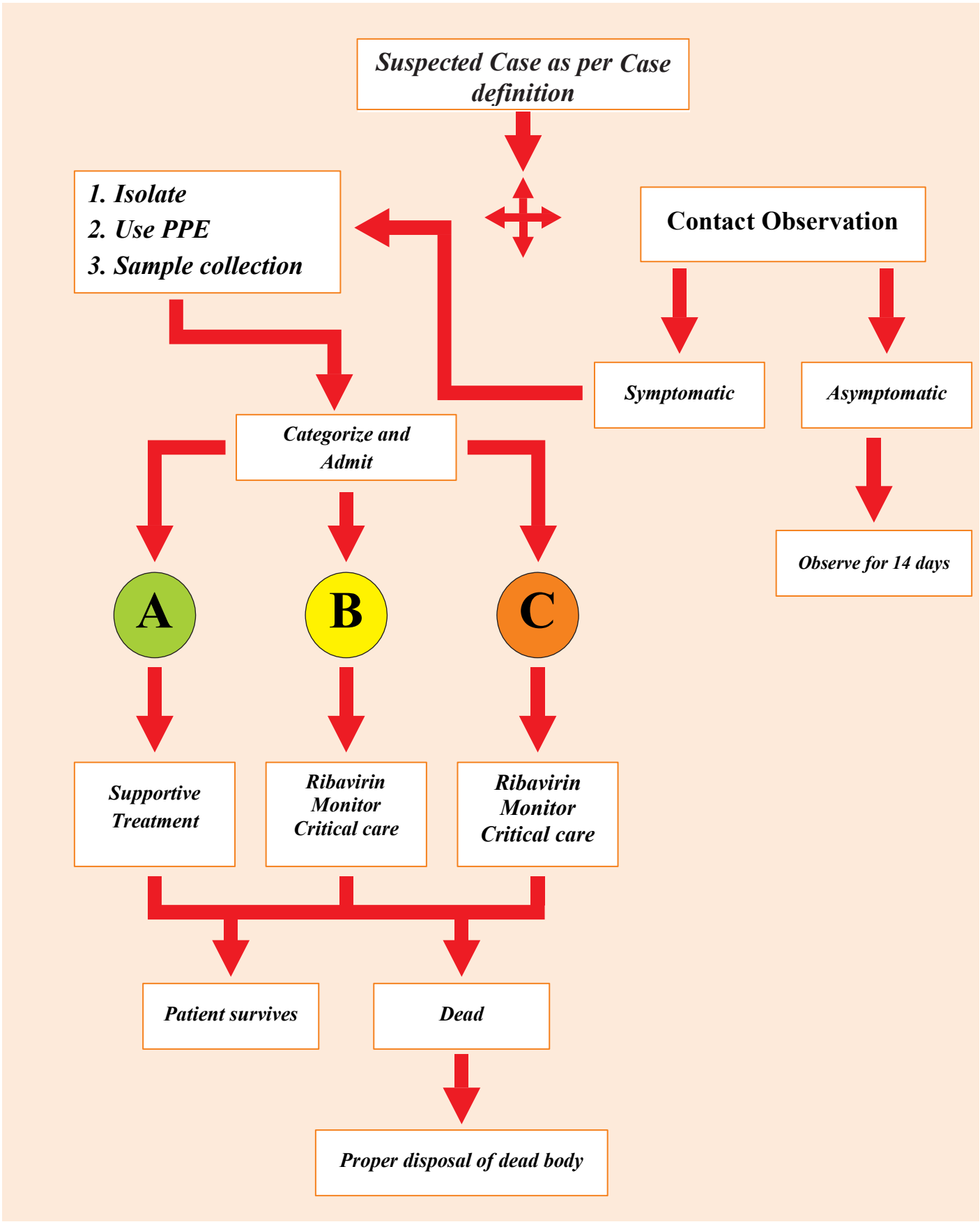
Please read the precautions carefully before contact with the suspected patient and sampling. Universal precautions and use of coverall PPEs need to be followed in all patient care/management activities. The safest method of transporting samples is using standard triple layer packaging (guidelines available from www.niv.co.in). However, in the areas where obtaining such container is difficult the samples can be sent as follows:

1. *The case sheets with complete information about the samples should be completely filled in Case report Form (separate sheet) and provided along with the samples.*
2. *The blood samples [Serum or plasma and blood in EDTA] and urine sample (in sterile container) collected should be sealed using parafilm, with proper label. Disinfect the outer surface of the vial/sample container using 1:100 dilution of bleach or 5% Lysol solution.*
3. *The sample containing vials should be kept in good quality plastic bags/bigger container (secondary layer) which should either be sealed or tied with rubber bands and adsorbent material like tissue papers/cotton should be placed, so that infectious body fluids, if leaks, should not come out of the bag. Disinfect the secondary container using 1:100 dilution of bleach or 5% Lysol solution should be used to clean the outer surfaces of the container.*
4. *The case sheets with complete information should be placed in a plastic bag and be pasted on the inner side of the box on the lid of the thermocol or vaccine container (tertiary/outer container). Disinfect the tertiary container using 5% lyzol.*
5. *Persons handling the samples should wear desired PPEs, to avoid direct contact with the infectious material. After completing the packing of samples, person should thoroughly wash hand with soap and water.*
6. *Before dispatching or sending the samples, please inform ICMR-NIV Pune on the following numbers: Telephone: 02026006390, 02026006111, Fax: 020-25870640.*
7. *Any query related to clinical and epidemiological aspects can be communicated on email: director.niv@icmr.gov.in*

NB: Cold chain should be maintained during transportation of the samples.

For more details on current international regulations for the transport of infectious substances and patient specimens by all modes of transport, both nationally and internationally, please refer "Guidance on regulations for the Transport of Infectious Substances"; Communicable Disease Surveillance and Response, WHO/CDS/CSR/LYO/ 2005.22, September 2005.

Triage for CCHF



Definition, monitoring of contacts and Laboratory testing for contacts of CCHF cases

Definition of "contact"	*Contacts include: family, neighbourhood and health care facility contact*
Monitoring contacts	• *All contacts should be self-monitored for twice daily for any clinical symptoms (such as fever, muscular pain or bleeding) 14 days (maximum) from the day of last contact with the patient or other source of infection.* • *In case of onset of any symptom, he/ she should immediately report to the nearest health facility.*
Testing blood for CCHF	*Appropriate laboratory testing is recommended in persons meeting the case definition.*

SOP for CCHF Case Management in Tertiary Care Center

Specific points to be asked in history:

1. ***Occupation:***
   a. *Farmer/ Shepherds/ Involved In Animal Care/Butcher/Abattoir worker*
   b. *Health Care Workers:*
      i. *Doctor General Practitioner/Consultant/Intensivist/Laboratory/Blood bank/Physician/ Paediatrician / Anaesthetist / Pathologist / Microbiologist / Biochemist / Community Medicine / Forensic Medicine*
      ii. *Nurse/MPHW/ laboratory Technician*
      iii. *Servant/Sweeper/Driver*
   c. *Animal Husbandry Department: Veterinary Doctor/ Livestock Inspector/ Servant / Sweeper/MPHW/Driver*

2. ***H/o tick bite / playing with / handled tick within last 14 days of onset of symptoms***

3. ***H/o drinking raw, un-boiled/ unpasteurized milk***

4. ***H/o contact with meat/blood of animal***

Designated area in casualty/Trauma center:

1. *Primary call to be attended by CMO/ Resident on duty*
2. *Patient may be shifted directly to ISOLATION WARD if patient is confirmed, probable or strongly suspected case.*
3. *Isolate the patient.*
4. *Look for any tick bite mark and remove tick if it is found on body with universal precaution.*
5. *Don't give intramuscular injections*
6. *Oral & IV fluids and correction of electrolyte imbalance*
7. *Send routine & special investigations as per clinical condition, if needed:*
   a) *CBC, ESR,RBS, CT, BT, PT, aPTT, LFT, RFT, blood grouping and cross matching*
   b) *Blood examination for Malria, Dengue, Chikungunya, Zika and Leptospirosis- PCR/ Leptocheck / MAT/ELISA (particularly in endemic areas like south Gujarat), if patient is negative for CCHF*
   c) *S. LDH, CPK Total , CPK – MM, S. Ferritin, D-Dimer*
   d) *HBsAg, anti HAV antibody, anti HEV antibody*
   e) *Urine examination (Routine, microscopic & for Haemoglobinuria/Myoglobinuria)*
   f) *Stool for Occult blood*
   g) *Arterial Blood Gas Analysis*
   h) *Tests to confirm Pregnancy if indicated i. X-ray Chest*
   i) *USG examination of Abdomen, Chest, pericardium*
   j) *Bone marrow aspiration and biopsy*
   k) *FNAC of Lymph node*
   l) *Interlukin (IL)-6, IL-10 and Tumour Necrosis Factor-Alpha*
8. *Rule out common differential diagnosis & shift the patient to Isolation ward.*

9. *Even if Dengue Report is positive & clinically patient is likely to be CCHF, then shift, investigate & manage the patient in Isolation Ward*

Care of Cases in Isolation Ward:

1. *On admission in Isolation ward - collect sample for CCHFV & send it to ICMR-NIV, Pune through Microbiology Department of Medical college – classify into Category A/B/C & Start Ribavirin if not contraindicated (Confirm that sample for CCHF & loading dose of Ribavirin is not started previously)*
    i. *Routine care of cases:*
    ii. *Treatment of haemorrhage / shock – Inotropic drugs/ PCV/ FFP/ CRYO PRECIPITATES/ PRP/SDP/ whole blood*
    iii. *Ventilatory care or dialysis as per indication*
    iv. *Treatment of associated conditions*
2. *Dedicated Staff – (Resident & Faculty of 1st admitted unit will look after the patients admitted in other unit subsequently also. Dedicated staff will be rotated every week.*
3. *Inform Nodal Officer Medicine/ Community Medicine & Higher Authority*
4. *Course of Ribavirin is to be completed even if CCHF reports turn out to be i. Negative.*
5. *Universal precaution & hospital waste management as per standard (to be supervised by INFECTION CONTROL COMMITTEE of the hospital)*
6. *Dead body disposal as per GOI guidelines.*

Department wise Responsibilities:

1. *Anatomy: special care of dead body received in donation if deceased is a case of suspected Hemorrhagic fever*

2. *Biochemistry, Pathology, Microbiology:*
    a) *To provide 24X7 laboratory facility*
    b) *Training of all cadres for PPE (including face shield, plastic aprons, industrial gloves for shifting body, respirators etc.) Universal precaution, waste management, pathological post mortem examination etc*

3. *Microbiology:*
    a) *Collection, packaging & transport of CCHF related sample to ICMR-NIV, Pune*
    b) *To communicate ICMR-NIV, Pune report to treating hospital*
    c) *Infection control practice observed in isolation ward*
    d) *To SMS patient details of every sample send to ICMR-NIV, Pune to Epidemic branch, Medical Superintendent & State RRT physician.*
4. *Blood bank: To manage for blood & blood products*

5. *Community Medicine:*
    a) *To prepare contact list & monitor health for 14 days from last day of contact*
    b) *Line listing*
    c) *Verbal autopsy*

6. *Forensic Medicine: Post Mortem examination, if needed (ideally should be avoided)*

7. *Clinical departments:*
   a) *Medicine, Pediatrics, Anesthesiology, ICU to treat cases.*
   b) *Likely source of suspected cases: MICU, general OPD, fever clinics, Endoscopy units, Dentistry, Gynecology, Skin or Ophthalmology OPD etc.*
   c) *Active search for suspected Cases & Management of Cases*

8. *RMO:*
   a) *Dead body disposal in liaison with Municipal Corporation/ competent authority*
   b) *Training of dedicated class IV servants & sweepers*

9. *Matron:*
   a) *Posting of nursing staff in 7 days rotation*
   b) *Training of dedicated nursing staff*
   c) *Fumigation of patient cabin*

10. *Sanitary inspector: posting of dedicated class IV servants & sweepers in 7 days rotation*

11. *Medical superintendent: Overall management*
   d) *Training of various cadres*
   e) *Procurement of Ribavirin, drugs, PPE & other logistics for isolation ward*
   f) *Communication with higher authorities*
   g) *Media briefing*

CCHF Case & Death Audit Format

Personal History

1. *Name-*
2. *Age-*
3. *Sex-*
4. *Education status-*
5. *Profession-*
6. *Status of House- Kachha / Pakka*
7. *Flooring- Mud Plastered / Pakka*
8. *Inhabitation of ticks in House- Yes /Not*
   a) *If yes - On floor / Wall / Cot*
   - *Triage for CCHF Daily found / infrequently found*
9. *Cattle- Kept inside the resident/separate Cattle shed*
   a) *If kept in Cattle Shed, distance from residence (In meters)*
10. *Tick Bite & handling of animal tissue in last 15 days (with Date)*
    a) *Tick bite-*
    b) *Bare handed crushing of ticks-*
    c) *Bare handed handling of embryonic tissue/Placenta/New borne*
    d) *Bare handed treatment of animal wound-*
    e) *Contact of blood / Secretion of animal*
    f) *Taking unpasteurized milk*
11. *Contact of suspected or confirm case of CCHF (with Date)*
    a) *Contact of blood /secretion-*
    b) *Contact of vomits / stool material*
    c) *Close contact during caring (If yes, mention contact period)*
    d) *Travel History*

Past Medical History:

(Please mention any chronic recognized illness or any diagnosed short lived illness in last one year)

Clinical History

a) *Date of onset of symptoms: Time:*
b) *Presenting symptoms- (fever, headache, myalgia, nausea, vomiting, diarrhea, abdominal pain, altered sensorium, rash, if bleeding tendency mention with site & other symptom (Please mention symptoms in chronology with date of onset)*

Treatment taken

A. *Date & Time of first Treatment:*
   a) *Type -OPD base/indoor*
   b) *Brief of treatment & investigation- (in investigation please mention CBC, Hb%, PT, aPTT, Platelet Count if done)*
   c) *Presumptive Diagnosis :*

B. *Date & Time of second Treatment-*
   a) *Referred from-*
   b) *Type -OPD base /indoor*
   c) *Treatment & investigation in brief- (in investigation please mention CBC, Hb%, PT, APTT, PT if done)*
   d) *Diagnosis Done, if any:*
      - *Next referral treatment, if any - in same Chronology*

Present status of the patient:

- *Death/ discharge with date-*
- *Final diagnosis/ Cause of Death by Physician-*

Date:

Name & Designation of Investigator:

Qualification:

Communication Protocol for Information sharing of VHF

1. ***Communication by Paramedics & ASHA.***
   If any suspected VHF case comes to notice of MPHW (M & F) or ASHA during their field visit, these should immediately be intimated to concern MOPHC through phone & as per guidance of MO PHC, the patient is referred to PHC & CHC.

2. ***Communication by PHC & CHC***
   Any suspected case of VHF come for treatment at PHC or CHC. If patient is required to be referred to DH or Medical College attached hospital for advanced treatment in such instance
   - *Patient should be referred in dedicated government vehicle with detailed referral slip mentioning ODP of sign & symptoms, investigation done & treatment given.*
   - *MO PHC or Supdt of CHC has to inform authority of concern hospital where patient is referred as well as CDHO of Concerned district.*
   - *CDHO will keep close contact with authority of concern hospital where patient is referred regarding health status of patient.*

3. ***Communication by DH or Medical College Hospital***
   Any suspected case of VHF comes for treatment at DH or Medical College attached hospital either directly or with referral slip in such instance
   - *Medical unit in which patient is admitted will inform RMO or Medical Supdt.*
   - *RMO or Medical Supdt will intimate concerned CDHO.*
   - *Nodal officer for isolation ward is to be designated by RMO or Medical Supdt.*
   - *Contact Number of Nodal officer should be share with CDHO.*
   - *Nodal Officer will provide health status report to CDHO at 9.00 am & 5.00 pm through E-mail.*
   - *If sample is sent to ICMR-NIV Pune, Microbiology Dept will intimate same to CDHO as well as its result.*
   - *If patient is required to be referred to more advanced tertiary care centre. Patient should be referred in government vehicle with detail refer slip mentioning ODP of sign & symptoms, investigation done & treatment given. Nodal Officer has to inform authority of concern hospital where patient is referred as well as CDHO of Concerned district.*

4. ***Communication & Role of CDHO***
   - *Inform AD (PH) & DD (Epidemic) & RDD.*
   - *Daily reporting*
   - *Convene Intersectoral co-ordination committee meeting.*
   - *Keep close contact with health facility where patient kept in door.*
   - *Active fever surveillance in affected village.*
   - *Contact tracing and temperature recording for 14 days*
   - *Immediate Referral of contact that develop symptoms to tertiary care centre.*
   - *All high risk contacts kept under close supervision*

CCHF Patient Contact Tracing Report

Village :					***Taluka :***					***District :***			
Sr. Np.	*Pt. Name*	*Name of Contact*	*AGE*	*Address / Village*	*Taluka*	*Contact Number*	*Relation with Pt.*	*Date of First contact with Pt*	*Type of Contact (Close or distance)*	*Contact period (In Hrs or Day)*	*Temperature of Contact Person*		*Remarks*
											At 9:00 am	*At 3:00 pm*	
1													
2													
3													
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23													
Total:													

Note: *Prepare flow chart of patient movement from home to general practitioners to 1st - 2nd - 3rd consultant to tertiary care hospital & ICU. Relative & HCWs came in contacts including laboratory workers at all stages.*

Intersectoral Co-ordination at District level for CCHF containment measures

✓ *When any CCHF case reported in District, the immediate "Sanchari Rog Meeting" is to be held under chairmanship of District Collector. In this meeting the following officers must be invited.*

1. *District Development Officer*
2. *Chief District Health Officer*
3. *Medical Superintendent, Civil Hospital*
4. *Chief District Medical Officer*
5. *Deputy Director Animal Husbandry*
6. *Assistant Director Animal Disease Investigation Officer*
7. *District Information Officer*
8. *Epidemic Medical Officer*
9. *District Malaria Officer*

✓ ***Tentative Agenda of this meeting would be as follows***

1. *Review of current situation*
2. *Treatment facility*
   - *Isolation Ward and specialist doctor*
   - *Ribavirin Availability*
   - *Barrier Practices*
   - *Availability of equipment*
3. *Preventive Measures by Health Department*
   - *Active Surveillance*
   - *Contact Tracing*
   - *Entomological Surveillance*
   - *Vector Control Measure*
   - *IEC with help of Information department*
4. *Preventive Measures by Animal Husbandry Department*
   - *Anti-Tick Measures*
   - *Sample Collection*
   - *IEC/BCC among livestock handlers*

5. *Role of Information Department*
   - *Convey Scientific information to media and public regarding disease and prevent the havoc*

6. *Rural Development Department*
   - *Cleanliness campaign in Village*
   - *Solid Waste Management*

List of contributors

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