EDCD interim Guideline on Prevention and Control of Scrub Typhus September 2015 (Updated in August 2016)

Introduction:

Scrub typhus is an acute, febrile, infectious disease that is caused by *Orientia* (formerly *Rickettsia*) *tsutsugamushi*. It is also known as *tsutsugamushi disease*. It is an obligate intracellular gram-negative bacterium from the Rickettsiaceae family. Last year (2015) total of eighty two confirmed (IgM Elisa) cases were reported to EDCD from August to October. Among them, eight cases with fever, rash and with severe ARDS died in September 2015. Out of which 6 cases were from Eastern parts of Nepal and two cases were from Far Western region. This year, total of 92 cases were reported from April to mid-August and three died.

Clinical features:

- Fever is high grade (>104^{0}F) and usually lasts 14 days.
- Maculopapular rash is seen over trunk, which is transient, and is seen around day 7 of fever
- Severe headache
- Profuse sweating
- Conjunctival injection
- The site of insect bite is usually painless and a black eschar (scab) is seen in 40% of cases (see image)
- Lymphadenopathy

Figure 1: Typical Eschar

The most common signs are similar to a variety of other infectious diseases (typhoid fever, malaria, murine typhus, leptospirosis and dengue fever, meningococcal infection, etc.) which should be taken into consideration.

Complications:

- Interstitial pneumonia- X-ray evidence of pneumonitis are common and may progress to ARDS
- Pulmonary edema
- Congestive heart failure
- Circulatory collapse
- Diarrhea and features of acute gastroenteritis is also possible ,sometimes GI Bleeding can occur
- Neurological findings may suggest meningo-encephalitis.
- Multi-organ failure

Death may occur as a result of these complications

- Spontaneous abortion may occur during pregnancy if infected

Case Definition

Suspected/clinical case: Acute undifferentiated febrile illness (UFI) of 5 days or more with or without eschar should be suspected as a case of Rickettsial infection. (If eschar is present, fever of less than 5 days duration should be considered as scrub typhus.)

Probable case: A suspected clinical case with an IgM titer > 1:32 and/or a four-fold increase of titers between two sera confirm a recent infection.

Confirmed case: The one in which:

- Rickettsial DNA is detected in eschar samples or whole blood by PCR **OR,**

- Rising antibody titers on acute and convalescent sera detected by Indirect Immune Fluorescence Assay (IFA) or Indirect Immunoperoxidase Assay (IPA)

Supportive laboratory investigations:

- Total Leucocytes Count during early stages may be normal but may be elevated to more than 10,000/cu mm later in the course of disease.
- Thrombocytopenia (low platelet count), usually <1,50,000/cu mm is seen in majority of patients.
- Elevated liver transaminases (AST, ALT) is also seen in many patients.

Specimen for diagnosis:

- Heparinized blood: Conserve at -80°C and then ship in dry ice for culture.
- EDTA blood: Conserve at +4°C and then ship at room temperature for PCR.
- Serum: Conserve at +4°C, then ship at room temperature. Collect two serum specimens 10 days apart.
- Skin or lymph node biopsy can also give the diagnosis.

The sample collected at the site should be sent to National Public Health Laboratory (NPHL), Teku, and Kathmandu through courier / WHO surveillance mechanism following IATA guidelines (triple packing and biosafety). The information on the sample shipment should be intimated to NPHL (Focal point), EDCD (Focal point).
(Contact details of all three are available at the end of this document.)

Transmission/Reservoir:

Humans acquire the disease from the bite of an infected trombiculid mite (chigger). The mites are both the vector and reservoir of the disease. The mite is very small (0.2 – 0.4mm) and can only be seen through a microscope or magnifying glass. The larva is the only stage that can transmit the disease to humans and other vertebrates. **There is no human to human transmission.**

Chigger mite

Incubation period: About 5 to 20 days (mean, 10-12 days) after the initial bite

Risk groups: Agricultural workers, people living in houses with shrubs/ bush nearby, and travelers in areas with potential exposure to mice and mites, for e.g. camping, rafting, or trekking and people staying in the temporary shelter following earthquake where there is mouse infestation.

Treatment:

- Pediatric treatment: Azithromycin for less than 8 years: 10mg/kg orally single dose
For more than 8 years: Doxycycline 2.2mg/kg orally twice daily for 3 days after resolution of fever (usually 5-10 day course)

- Adult treatment: Azithromycin 500 mg orally single dose; **OR** Doxycycline 100 mg orally twice daily for 5 to 10 days.

- Pregnant women: Azithromycin 500 mg orally single dose

Alternatives:

- Ciprofloxacin 10 mg/kg twice daily for 5-10 days
- Chloramphenicol 25 mg/kg/dose 6 hourly for 5-10 days

Supportive treatment for management of complications.

Since diagnostic facilities for scrub typhus and other common Undifferentiated Febrile Illnesses (UFIs) like typhoid and leptospirosis are generally unavailable or have a poor yield (such as blood culture in typhoid fever), it may be best to use both doxycycline (for example for scrub typhus and leptospirosis) and azithromycin or ceftriaxone (for typhoid fever) in adequate dosage.

Timely reporting of any suspected or confirmed case should be done to EDCD ***(see contact details at the end of this document).***

Prophylaxis:

Single oral dose of chloramphenicol or tetracycline given every five days for a total of 35 days, with 5-day non-treatment intervals (for endemic regions). **No vaccine is available for scrub typhus.**

Prevention/Control/Precautions:

Early case detection by healthcare workers is needed.

Other strategies are to make public aware and give preventive information like:

- Wear protective clothing including boots
- Insect repellents containing benzyl benzoate can be applied to the skin and clothing to prevent chigger bites.
- Do not sit or lie on bare ground or grass; use a suitable ground sheet or other ground cover
- Clear vegetation spray insecticides on the soil to break up the cycle of transmission

Sources in information:

1. FAQ on Scrub Typhus. World Health Organization (WHO)
2. Guidelines for Diagnosis and Management of Rickettsial Diseases in India. Indian Council for Medical Research (ICMR), Feb 2015.
3. Scrub Typhus. Control of Communicable Diseases Manual (CCDM). APHA. 20 ed, 2015.
4. Antibiotics for treating scrub typhus. Cochrane collaboration review of treatment of Scrub Typhus, 2002.

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