



## Scrub Typhus: Prevention and Control

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The recent outbreaks and decreased effectiveness of antibiotic treatment suggest an urgent need of preventive measures especially in the absence of an effective vaccine (1). It can be controlled by applying interventions at four levels i.e. *primordial, primary, secondary & tertiary* (2).

**Primordial prevention** entails prevention of emergence of risk factors. The risk of developing scrub typhus is higher in fruit farmers, chestnut gatherers. Similarly scrub typhus cases are more likely to occur in those living close to bushes and wood piles, farmers, rodent observers and those rearing domestic animals. So, as far as primordial prevention is concerned the best measure would be to avoid going to such places like farms, areas abundant of bushes, rodents and domestic animals.

**Primary prevention** (2-5) includes health promotion and specific protection. Health promotion encompasses health education & environmental modification in the context of scrub typhus. Advocacy, awareness and education activities should be targeted at school children, teachers and women groups in endemic areas as well as to all those at risk along with general population as a health education measure. Habitat modification can be done by good sanitation in and around buildings by cutting down all the Kunai grass areas and by use of natural predators of rats. Rat population can also be controlled by measures like poisoning and rat trapping as an environmental measure (5).

Although there are no effective vaccines for scrub typhus due to enormous antigenic variation in *Orientia tsutsugamushi* strains and immunity to one strain does not confer immunity to another. But other specific protection measures that can be practiced are wearing protective clothes, using insect repellents containing 5% emulsion of dimethylphthalate (5), dibutylphthalate, benzyl benzoate diethyl toluamide, avoiding sitting or lying on bare ground or grass and clearing of vegetation and chemical treatment of grass (5). Chemoprophylaxis can be administered using chloramphenicol or tetracycline every 5 days for a total of 35 days, with 5 day non-treatment intervals which if given to people in endemic areas produces active immunity to scrub typhus as one more method of specific protection (3). It can prevent in Scrub typhus upto 89% subject (4).

Once the disease has occurred in an individual, then comes the role of **secondary prevention** which includes early diagnosis and treatment. The early diagnosis of acute scrub typhus can greatly reduce the chance of life

threatening complications and guide optimal therapy. It will be necessary to increase awareness of empirical therapy options for scrub typhus and to develop diagnostic assays that are affordable, require limited expertise and equipment, and are sensitive and specific such that can be used in endemic, resource poor countries. The geographical location of scrub typhus, the initial sore caused by the chigger bite, and the occurrence of specific proteins capable of destroying the organism (antibodies) in the blood, provide helpful clues and are useful in establishing the diagnosis. The diagnostic methods available are Weil-Felix test which is positive in only 50% patients during second week of illness, Complement Fixation test, Indirect Immunofluorescence antibody (IFA) which is gold standard, Indirect Immunoperoxidase (IIP) which is a modification of IFA and ELISA. Commercial Rapid Diagnostic Kits provide reliable and well accepted preliminary results but are costly (4). The first line treatment of scrub typhus is doxycycline 100 PO bid for 7-14 days for all those above 8 years of age and not recommended in children <8 years. Chloramphenicol is used in pregnant women and children with a dose of 500 mg PO qid for 7-14 days in adults. In a patients with mild-to-moderate scrub typhus, the efficacy and safety of a 5-day telithromycin regimen is established. A single 500-mg dose of azithromycin may also be a reasonable treatment regimen for pregnant women with scrub typhus without any congenital or neonatal complications of new borns. Paediatric dosage of chloramphenicol is 50-100 mg/kg/d PO/IV divided q6h; not to exceed 4 g/d with serum levels being monitored closely.

### References

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