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Flea-borne Typhus

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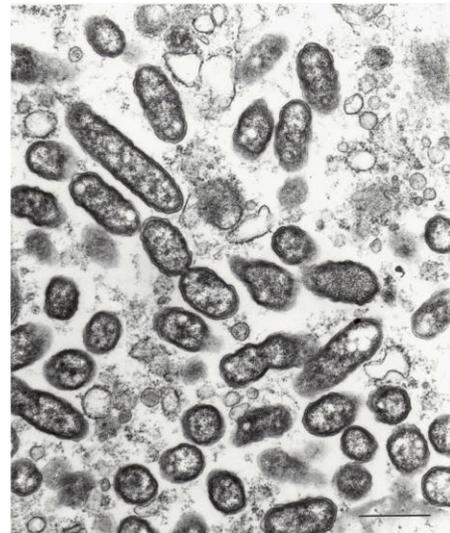
There is currently an outbreak of flea-borne typhus, a bacterial disease spread by fleas, in Los Angeles. Public health officials are sounding the alarm and reminding people to take precautions to prevent contracting the disease. The healthcare providers are encouraged to increase their clinical suspicion for patients presenting symptoms including headache, chills, prostration, fever, myalgia, anorexia, rash, nausea/vomiting, thrombocytopenia, or any hepatic transaminase elevation.

What is typhus fever?

Typhus fever is a potentially fatal, infectious disease caused by the *Rickettsia* bacteria.

There are three different types of typhus:

1. Epidemic typhus. This disease is caused by the bacterium *Rickettsia prowazekii*, and is transmitted to humans by body lice. Homeless populations are the major risk factors for this disease.
2. Endemic (murine) typhus. This disease is caused by the bacterium *Rickettsia typhi*, and is transmitted to humans by fleas (therefore also known as flea-borne typhus).
3. Scrub typhus. This disease is transmitted by trombiculid mites and is endemic to East and Southeast Asia and Northern Australia.



Rickettsia typhi, a small strictly intracellular bacterium

What are the symptoms of typhus fever?

Symptoms of typhus fever will usually appear within one to two weeks after exposure. Common symptoms include fever, headache, weakness, and muscle aches. Typhus

fever also causes a rash composed of both spots and bumps. The rash starts on the back, chest, and stomach, then spreads to the arms and legs. The worst types of complications involve infection in the heart muscle (myocarditis) or brain (encephalitis).

Is typhus fever fatal?

Most people do not die from typhus fever. Patients usually recover with early detection and treatment. However, if left untreated, the death rate can be as high as 10 to 40 percent.

How is typhus fever diagnosed?

Typhus fever is usually diagnosed through blood tests. The organism can also be identified in tissue samples.

Is there treatment for typhus fever?

Effective treatment is possible and physicians may administer antibiotics such as doxycycline, chloramphenicol, or ciprofloxacin.

More about flea-borne typhus fever.....

In the continental U.S., we generally have more cases of flea-borne (murine) typhus than the others. Flea-borne typhus doesn't spread from person to person (big phew!), and it's most commonly found in the southern U.S., particularly California and Texas, during the summer and fall.

Symptoms include fatigue, loss of appetite, nausea, abdominal pain, and rash. According to the Centers for Disease Control and Prevention (CDC), severe cases can lead to liver, kidney, heart, lung, or brain damage. The diagnosis of flea-borne typhus relies on a high index of clinical suspicion and on results of specific laboratory tests.

Flea-borne typhus most commonly occurs when infected flea frass (flea poop), infected with the bacterium *Rickettsia typhi* is scratched into a flea bite site or another skin abrasion, or is rubbed into the eye conjunctiva. Fleas acquire the pathogen when they bite infected animals, such as rats, opossums and cats, which can maintain the *Rickettsia* bacteria in their body.

Early symptoms of flea-borne typhus develop within 14 days of contact with infected fleas and include headache,



A flea walking on a human skin. Photo Courtesy of Jiri Prochazka. Shutterstock

fever, nausea and body aches. Five or six days after the initial symptoms, a rash that starts on the trunk of the body and spreads to the arms and legs may occur. People should consult with a healthcare provider as soon as possible to be appropriately tested and treated if they have symptoms of the disease. Flea-borne typhus is easily treated with certain antibiotics (such as doxycycline), and people will not get it again after they recover.

Typhus should not be confused with typhoid. Typhoid fever is a more serious disease travelers can pick up from contaminated food or water. Typhoid fever is caused by the *Salmonella typhi* bacterium and cases in the continental U.S. are usually travel related.

How to prevent flea-borne typhus?

There's no vaccine to protect against typhus. But you can reduce your chances of contracting flea-borne typhus.

1. Keep yards clean by removing any brush or trash, keeping the grass mowed and keeping firewood off the ground, so that rodents, opossums and stray cats can't live there.
2. Manage garbage responsibly so odors do not attract rodents and other foraging animals. Our garbage is a roof rat's gastric delight. Bag it, tie it, dump it, and shut it (close the trash can or dumpster lid).
3. Pick up fallen citrus that roof rats particularly enjoy.
4. Limit bird seeds in your yard to what the birds will eat today if rodents are in your area. By the way, rodents are in your area.
5. Stay away from wild or stray animals that may carry fleas. Discourage free-roaming cats from school and childcare facilities.
6. Do not leave pet food out at night as this attracts other animals.
7. Homeless encampments in cities leave human occupants especially vulnerable to flea and mosquito exposure and related vectored diseases. Pro-active rat surveillance inspections of homelessness encampments, and ongoing rodent control efforts would prevent illness. In the famous words of Dr. Will Mayo (of Mayo Clinic) "That which can be foreseen can be prevented."
8. Prevent rodents from living in or accessing home interiors, including attic and basement levels.
9. If you notice significant rat population in your neighborhood notify your local Department of Health Services.
10. Be wary of "One-shot Extermination Services" for rats. Only in the cases of a single rat needing to be trapped does a single service rat control effort make sense.
11. In the case of multiple rats (i.e., an infestation of rats), control requires an on-going partnership between a property owner (proper garbage practices and rat proofing of

structures) and a quality, trained and rodent-experienced pest management professional. Infestations require several weeks to eliminate, sometimes longer. Keep in mind you often get what you pay for and rodents are challenging pests, which impact human health.

12. Control fleas on pets promptly. Ask a veterinarian about flea control products that are safe to use on your pets.
13. Wear gloves and insect repellent if removing sick or dead animals.
14. See “Tick & Flea Collars, IPM and Your Safety” for information about pet collars https://cals.arizona.edu/crop/cotton/files/17Flea_Collar_short.pdf
15. Use insect repellent when hunting, camping or engaging in any other outdoor activities. See “What you should know about mosquito and tick repellents” at <https://cals.arizona.edu/apmc/docs/Repellents-IPMShort.pdf>
16. See the full document on “Mosquito and Tick Repellents” available at <https://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1761-2018.pdf>
17. See more information on pet treatment options at <https://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1769-2018.pdf>
18. See the document about “Roof Rats: Identification, Ecology, and Signs” at <https://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1775-2018.pdf>

Our thanks to Bobby Corrigan, Ph.D. Urban Rodentologist (RMC Pest Management Consulting) for comments and additions.

Disease Reporting

Typhus cases are required to be reported to the Arizona Department of Health Services. Contact information for Office of Infectious Disease Services is available at: <https://www.azdhs.gov/preparedness/epidemiology-disease-control/vector-borne-zoonotic-diseases/index.php#contact>

Arizona Department of Health Services, Typhus Fever fact sheet for Health Care Workers <https://azdhs.gov/documents/preparedness/emergency-preparedness/zebra-manual/zm-s5-typhus-fever.pdf>

For more information, read the health alert at: <http://www.dshs.texas.gov/news/releases/2017/HealthAlert-11302017.aspx>

Webinars and Events

Please join in for the [2018 All Bugs Good and Bad Webinar Series](#). This webinar series provides information about good and bad insects. Webinars are free and open to everyone. Webinars will be on the **first Friday of each month at 2 p.m. Eastern time.**

Upcoming webinars include:

1. Lice, Scabies, and Mites – November 2, 2018
<https://learn.extension.org/events/3263>
2. Pantry Pests – December 1, 2018
<https://learn.extension.org/events/3264>

For more information about upcoming and past School IPM webinars:

<http://articles.extension.org/pages/74590/2018-all-bugs-good-and-bad-webinar-series>

EPA Region 9 Tribal Indoor Air Quality (IAQ) & Health Network Webinars:

1. Tuesday, October 23, 2018. 11:00 am – 12:30 pm Pacific Time. Webinar - *Bed Bugs: Considerations for Healthcare Providers*. Register at <https://register.gotowebinar.com/register/8131468322959250946>
2. Monday, November 5, 2018. 10:00 am – 11:30 am Pacific Time. Webinar - *Addressing Mold and Moisture in Tribal Communities*. Register at <https://register.gotowebinar.com/register/1970293344778218498>

November 14, 2018. 1:00 – 2:30 pm Eastern, 12:00pm -1:30pm Central, 11:00am – 12:30pm Mountain, 10:00am – 11:30am Pacific. Webinar: [Integrated Pest Management – A Simple Solution to Problem Pests in Elderly and Disabled Public Housing](#)

Join this *free* webinar training to hear Drs. Gouge, Li, and Nair describe efforts to implement an IPM program in HUD subsidized multiunit properties that house low-income elderly and persons with disabilities. Results over 2.8 years, across 5 buildings, showed significant reduction of German cockroaches and bed bugs. Averaging reductions across all sites there was an 87% reduction in units with German cockroaches and a 93% reduction in units with bed bugs. Learn how the team accomplished this with available pest management tools, regular inspections and monitoring and adopting strategies appropriate for residents and staff. These tools can be applied to your housing site to achieve similar success. Managing pests is not out of reach in elderly and disabled housing. Pest management and housing professionals can tune in to find out how to duplicate this successful approach in their own buildings and developments.

Registration: https://cornell.zoom.us/webinar/register/WN_dy_hKHuxRymPX6VAPIQdew

Contact stoppests@cornell.edu for more information.

For more information about the EPA Schools program, visit:
<http://www.epa.gov/schools/>

For more information about Community IPM, visit:
<http://www.extension.org/pages/23359/urban-integrated-pest-management-community-page>



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To view all our previous newsletters, visit:

<https://cals.arizona.edu/apmc/public-health-IPM.html#newsletter>

<https://cals.arizona.edu/apmc/westernschoolIPM.html#newsletter>

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