

Eschar-associated Rickettsioses



What is an eschar?

An eschar is a lesion that occurs at the site where rickettsial pathogens are inoculated by a feeding tick or mite. The eschar forms within a few days (median 5 days) after the bite and may take several weeks to heal completely. Early eschars can look like small vesicles or an erythematous plaque (figure A). Eventually, most eschars will develop into a central, 0.5–3.0 cm ulcer. This ulcer is covered by a brown-black crust and typically surrounded by an annular red halo (figure B). The healed lesion typically appears as a small, depressed scar (figure C).

Eschars are an early clinical feature of many rickettsial diseases.



Rickettsial diseases commonly associated with an eschar

In the United States:

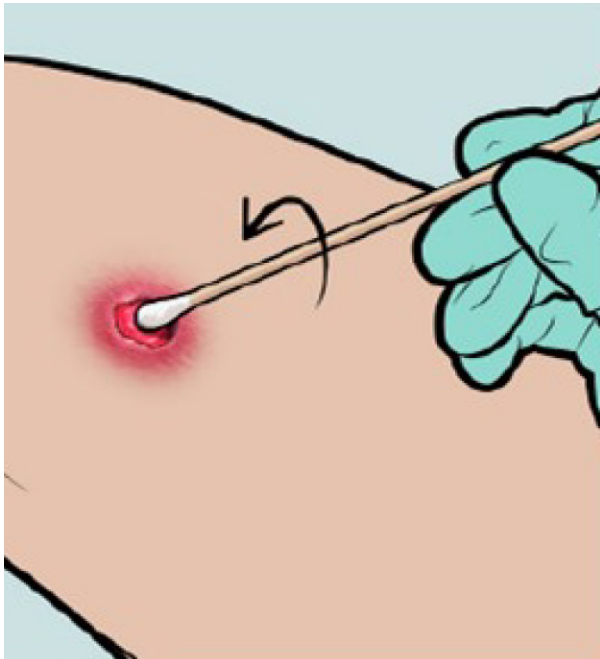
- *Rickettsia parkeri* rickettsiosis, caused by *Rickettsia parkeri*
- Pacific Coast tick fever, caused by *Rickettsia* species 364D
- Rickettsialpox, caused by *Rickettsia akari*

Imported rickettsial diseases:

- African tick bite fever, caused by *Rickettsia africae*
- Mediterranean spotted fever, caused by *Rickettsia conorii*
- Scrub typhus, caused by *Orientia tsutsugamushi*



Use eschars as a diagnostic sample:



- Eschars can contain large amounts of rickettsial DNA.
- PCR of eschar biopsies or vigorous swabs of eschar areas may provide confirmatory evidence in the early stages of the disease, often before seroconversion has occurred.
- The eschar swab procedure is generally preferred over eschar biopsy by clinicians and patients because it is easy and non-invasive.
- However, an eschar swab does not allow for immunohistochemical or cell culture evaluation.
- Obtain specimen before or within 72 hours of initiation of a tetracycline-class antibiotic, e.g., doxycycline or, if occurring outside of this established time frame, patients must be symptomatic at the time of collection.
- Antibiotic treatment should never be delayed to obtain an eschar specimen.

Clinicians interested in submitting eschar swabs or biopsy samples to CDC for diagnostic testing should contact their local or state public health department to coordinate specimen submission to CDC.

Sample Collection and Storage:

Swab specimen of eschar, using a dry, sterile cotton swab (include eschar swab when available). Place swab in sterile specimen container without any medium. Keep specimen at a refrigerated temperature (2-8°C) up to 7 days after draw. If storing over 7 days, freeze at -20°C or lower up to 2 months, or -70°C or lower up to 1 year.

For more information:

For more information on how to collect an eschar swab, visit:

https://www.cdc.gov/vector-borne-diseases/media/pdfs/2024/06/FS_Collection-Submission-Eschar-Swab-Specimens-Rickettsial-Disease-508.pdf

For more information on eschar-associated rickettsioses, visit:

<https://www.cdc.gov/other-spotted-fever/hcp/clinical-signs/index.html>

For more information on scrub typhus, visit:

https://www.cdc.gov/typhus/about/scrub.html?CDC_AAref_Val=https://www.cdc.gov/typhus/scrub/index.html

Visit [cdc.gov/other-spotted-fever/site.html](https://www.cdc.gov/other-spotted-fever/site.html) for more information.

For questions, contact CDC's Rickettsial Zoonoses Branch at rbrefdxlab@cdc.gov or rbepidiag@cdc.gov.