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**Toxic shock syndrome  
(Other than Streptococcal)  
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## Toxic shock syndrome (Other than Streptococcal)

### Overview<sup>1, 2, 3, 5, 6, 7</sup>

Toxic shock syndrome (TSS) is a severe life-threatening complication of certain types of bacterial infections. The following bacteria commonly cause TSS; *Staphylococcus aureus* (*S. aureus*), and *Clostridium sordellii*. A similar condition, called Streptococcal Toxic shock syndrome (STSS) can be caused by Streptococcal bacteria. These bacteria release toxins into the blood stream, which then spreads the toxins to body organs. Not all staph or strep infections cause toxic shock syndrome. **NOTE:** *This document will discuss TSS, for more on Streptococcal Toxic Shock Syndrome (STSS) visit the [following link](#).*

TSS is characterized by sudden onset of high fever, generalized erythroderma, rapid-onset hypotension, and signs of multisystem organ involvement, including profuse watery diarrhea, vomiting, conjunctival injection, and severe myalgia. There are two clinical forms of TSS; menstrual TSS which accounts for 55% of cases currently reported and nonmenstrual TSS. Menstrual TSS occurs in menstruating women, often in association with the use of high absorbency tampons. Nonmenstrual TSS can affect men, children and postmenopausal women, and has been associated with a variety of infections, including postoperative wounds, cutaneous wounds, burn wounds, postpartum complications, and *S. aureus* respiratory infections, often after viral influenza. A special feature of wound colonization is that the affected tissues often do not appear inflammatory. Nonmenstrual TSS has also been associated with the use of contraceptive diaphragms, vaginal contraceptive sponges, infection following childbirth or abortion and dialysis catheters. For a complete description of TSS, please refer to the following sources:

- *Control of Communicable Diseases Manual (CCDM)*. 20<sup>th</sup> ed. Washington, D.C.: American Public Health Association, 2015.
- American Academy of Pediatrics. *Red Book: 2015 Report of the Committee on Infectious Diseases*. 30th ed. Elk Grove Village, IL. American Academy of Pediatrics; 2015.
- *Mandell, Douglas, and Bennett's Principles and Practices of Infectious Diseases: Vol. 2*. 8<sup>th</sup> ed. 2015.

### **2011 Case Definition–Toxic Shock Syndrome (other than Streptococcal) (TSS)<sup>4</sup> (5/16)**

#### *Clinical Description*

An illness with the following clinical manifestations:

- Fever: temperature greater than or equal to 102°F (greater than or equal to 38.9°C).
- Rash: diffuse macular erythroderma.
- Desquamation: 1-2 weeks after onset of rash.
- Hypotension: systolic blood pressure less than or equal to 90 mm Hg for adults or less than fifth percentile by age for children aged less than 16 years.
- Multisystem involvement (three or more of the following organ systems):
  - Gastrointestinal: vomiting or diarrhea at onset of illness.



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- Muscular: severe myalgia or creatine phosphokinase level at least twice the upper limit of normal.
  - Mucous membrane: vaginal, oropharyngeal, or conjunctival hyperemia.
  - Renal: blood urea nitrogen or creatinine at least twice the upper limit of normal for laboratory or urinary sediment with pyuria (greater than or equal to 5 leukocytes per high-power field) in the absence of urinary tract infection.
  - Hepatic: total bilirubin, alanine aminotransferase enzyme, or aspartate aminotransferase enzyme levels at least twice the upper limit of normal for laboratory.
  - Hematologic: platelets less than 100,000/mm<sup>3</sup>.
  - Central nervous system: disorientation or alterations in consciousness without focal neurologic signs when fever and hypotension are absent.
- Laboratory Criteria for Diagnosis**  
Negative results on the following tests, if obtained:
- Blood or cerebrospinal fluid cultures (blood culture may be positive for *Staphylococcus aureus*).
  - Negative serologies for Rocky Mountain spotted fever, leptospirosis, or measles.
- Case Classification**
- Probable**  
A case which meets the laboratory criteria and in which four of the five clinical criteria described above are present.
- Confirmed**  
A case which meets the laboratory criteria and in which all five of the clinical criteria described above are present, including desquamation, unless the patient dies before desquamation occurs.
- NOTE:** [Streptococcal Toxic-Shock Syndrome](#) has a different surveillance case definition.

**Information Needed for Investigation**

**Verify the diagnosis.** What laboratory tests were conducted and what were the results? Verifying the diagnosis can be accomplished by referring to the Case Definition provided above. Complete the [Disease Case Report](#) (CD-1) by obtaining the information from the attending physician, hospital, laboratory, patient and/or a knowledgeable family member.


**Establish the extent of the illness.** Determine if household members, co-workers, or other close contacts are, or have been ill with a similar illness? If so, urge them to contact their health care provider for a medical evaluation.

**Determine the source of infection.** Obtain demographic, clinical and other epidemiological information necessary to complete the [Toxic Shock Syndrome Case Report](#). The information may be obtained from the patient, health care provider, or a knowledgeable family member.

**COMMENT:** *Sometimes the specific source of the infection will not be identified.*

**Provide TSS information to persons at risk of infection and the general public as needed.** Efforts should be made to promote TSS awareness, see [MedlinePlus](#) or [Johns Hopkins Medicine](#) for additional information.



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**TTS Surveillance.** Review WebSurv to determine whether there have been other TSS cases. When cases are related by person, place or time, efforts should be made to identify a common source. Information obtained through the public health investigation will be used to identify possible sources of infection and to characterize persons or areas in which additional efforts are needed to raise awareness and reduce disease incidence.

### **Notification**

Immediately contact the [District Communicable Disease Coordinator](#), or the [Senior Epidemiology Specialist for the District](#), or the Missouri Department of Health and Senior Services (MDHSS) – Bureau of Communicable Disease Control and Prevention (BCDCP), phone (573) 751-6113, Fax (573) 526-0235, or for afterhours notification contact the MDHSS/ERC at (800) 392-0272 (24/7) if an outbreak\* of TSS is suspected.

- If a case(s) is associated with a long-term care facility, BCDCP or the LPHA will contact the Section for Long Term Care Regulation, phone (573) 526-8524, Fax (573) 751-8493.
- If a case is associated with a hospital-based long-term care facility. BCDCP or the LPHA will contact the Bureau of Health Services Regulation phone (573) 751-6303, Fax (573) 526-3621.

\*An outbreak is defined as the occurrence in a community or region, illness(es) similar in nature, clearly in excess of normal expectancy and derived from a common or a propagated source.

### **Control Measures**<sup>1, 2, 3</sup>

Menstrual TSS can be prevented by avoiding the use of high absorbent vaginal tampons and the risk may also be reduced by using tampons intermittently (not all day and all night throughout the period) and using less absorbent tampons. Women who develop a high fever and vomiting or diarrhea during menstruation must discontinue tampon use immediately and consult their health care provider.

Nonmenstrual TSS prevention and control has focused on prevention of intraoperative contamination and on sterile insertion of intravascular and intraperitoneal catheters and other prosthetic devices. Instruction for vaginal sponge use, advising that these devices should not be left in place for more than 30 hours is important.


### **Laboratory Procedures**<sup>6</sup>

No single test can diagnose toxic shock syndrome. Ruling out similar illnesses (such as Rocky Mountain spotted fever, leptospirosis, or measles, among others) is critical in diagnosing TSS. Other diagnostic tests may include: blood cultures, blood tests, urine tests and lumbar puncture.

### **Reporting Requirements**

TSS is a Category III reportable disease and shall be reported to the [local public health agency](#) or to the MDHSS within three (3) days of first knowledge or suspicion, by telephone, facsimile, or other rapid communication.

As a Nationally Notifiable Condition, all confirmed and probable cases are a **STANDARD** report to CDC. MDHSS will submit these reports to the CDC by electronic case notification (WebSurv) within the next reporting cycle.

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1. For all reported cases of TSS complete a [Disease Case Report](#) (CD-1) and a [Toxic Shock Syndrome Case Report](#).
2. Entry of the completed CD-1 into WebSurv negates the need for the paper CD-1 to be forwarded to the District Health Office.
3. Send the completed Toxic Shock Syndrome Case Report to the District Health Office.
4. MDHSS will report to CDC following the above reporting criteria (see box).
5. All outbreaks or “suspected” outbreaks must be reported as soon as possible (by phone, fax or e-mail) to the District Communicable Disease Coordinator. This can be accomplished by completing the [Missouri Outbreak Surveillance Report](#) (CD-51).
6. Within 90 days from the conclusion of an outbreak, submit the final outbreak report to the District Communicable Disease Coordinator.

## **References**

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## **Acknowledgements**

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