



**Infectious Disease Epidemiology Section**  
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## **STAPHYLOCOCCAL TOXIC SHOCK SYNDROME (TSS)**

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The term toxic shock syndrome (TSS) was introduced in 1978 to describe an acute illness whose signs and symptoms include fever, rash, hypotension, involvement of various organ systems, and subsequent peeling of skin, especially on the palms and soles. A strong association has been shown between the occurrence of TSS and the presence of *Staphylococcus aureus*, a bacterial species known to cause various human illnesses.

This illness received national attention in 1980 when unexplained febrile illness associated with shock, multiorgan dysfunction, and high death rates was reported in healthy young women from several states

### **Epidemiology**

Menstrual TSS account for 75% of TSS cases. This proportion has been declining to reach 60% in 2000. Most (98%) patients with menstrual TSS cases for which the menstrual product is known report tampon use.

Nonmenstrual cases also occur mostly in women (73%). Of nonmenstrual cases, 20% are reported after surgical procedures, 10% after postpartum or postabortion, and 20% had nonsurgical cutaneous lesions.

### **Clinical Description**

See clinical case definition below

### **Surveillance**

Staphylococcal TSS is a condition reportable within 5 business days of diagnosis.

### **Case Definition**

Clinical case definition: An illness with the following clinical manifestations:

- Fever: temperature greater than or equal to 102.0°F (greater than or equal to 38.9°C)
- Rash: diffuse macular erythroderma
- Desquamation: 1-2 weeks after onset of illness, particularly on the palms and soles
- 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; orthostatic drop in diastolic blood pressure greater than or equal to 15 mm Hg from lying to sitting, orthostatic syncope, or orthostatic dizziness
- Multisystem involvement (three or more of the following):
  - Gastrointestinal: vomiting or diarrhea at onset of illness
  - 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

- Negative blood, throat, or cerebrospinal fluid cultures (blood culture may be positive for *Staphylococcus aureus*)
- No Rise in titer to 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 findings described above are present

Confirmed: a case which meets the laboratory criteria and in which all five of the clinical findings described above are present, including desquamation, unless the patient dies before desquamation occurs

#### **Investigation**

The purpose of investigation is to identify cases, to describe risk factors, and to enhance recognition of the syndrome and minimize its occurrence.

Upon receipt of a report of a case of toxic shock syndrome, contact the physician and/or hospital to confirm the diagnosis.

Attempt to identify the source of infection (i.e., use of tampons, nonsurgical cutaneous or subcutaneous lesions, childbirth or abortion, surgical infections, etc.).

Although antimicrobial agents do not necessarily affect the outcome of the acute illness, antistaphylococcal antibiotics are recommended to eradicate the focus of TSST-1 producing *S. aureus*, reduce the risk of a recurrent episode, and treat the occasional patient with staphylococcal bacteremia or bacteriuria.

Vaginal tampons (menstrual) or incision and wound packing (non-menstrual) should be removed if present; and infected wounds should be drained. Menstruating patients should not use tampons during subsequent menstrual periods to avoid recurrent episodes.

Additional types of therapy have been required in some patients to correct electrolyte and acid-base imbalance and to manage the complications of prolonged shock, acute renal failure, adult respiratory distress syndrome, myocardial irritability, and disseminated intravascular coagulation with thrombocytopenia.

**Hospital precaution and isolation:** Standard precautions.