Toxic Shock Syndrome

DISEASE REPORTABLE WITHIN 24 HOURS OF DIAGNOSIS

Per N.J.A.C. 8:57, healthcare providers and administrators shall report by mail or by electronic reporting within 24 hours of diagnosis, confirmed cases of Toxic Shock Syndrome to the health officer of the jurisdiction where the ill or infected person lives, or if unknown, wherein the diagnosis is made. A directory of local health departments in New Jersey is available at **http://localhealth.nj.gov**

If the health officer is unavailable, the healthcare provider or administrator shall make the report to the Department by telephone to 609.826.5964, between 8:00 A.M. and 5:00 P.M. on non-holiday weekdays or to 609.392.2020 during all other days and hours.

CDS Communicable Disease Service

NJ Health New Jersey Department of Health

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1 THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Toxic shock syndrome (TSS) is an acute but rare systemic complication associated with exotoxin-producing strains of *Staphylococcus aureus* (*S. aureus*). This chapter is specific to TSS caused by *S. aureus*.

B. Clinical Description

Toxic shock syndrome is a serious disease of unknown etiology. It affects primarily young women of child-bearing age who have been previously healthy, and it has a case-fatality ratio for reported cases of 10%-15%. It is a multisystem illness characterized by the sudden onset of high fever (usually temperature > 102˚F), vomiting, profuse watery diarrhea, and myalgia, followed by hypotension (systolic blood pressure < 90 mm Hg) and, potentially, shock. During the acute phase of the illness, a sunburn-like diffuse rash is present. One to two weeks after onset, desquamation of the skin occurs, especially on the soles and palms. In addition, other organ systems may be involved resulting in vaginal oropharyngeal or conjunctivae hyperemia, renal impairment (i.e., elevated blood urea nitrogen and creatinine levels or urinary sediment with pyuria), hepatic impairment (i.e., elevated bilirubin and aminotransferase levels), thrombocytopenia, and mental status changes. Isolation of *S. aureus* from blood, cerebrospinal fluid, or throat cultures in the absence of other pathogens is diagnostic; Rocky Mountain spotted fever, leptospirosis, and measles may resemble TSS and should be ruled out.

C. Reservoir

Humans are the primary reservoir for *S. aureus.*

D. Transmission

TSS, in and of itself, is not transmitted person to person, but the causative agent, *S. aureus*, can be transmitted through contact with draining or purulent lesions or contaminated respiratory secretions or through direct contact with persons who are carriers of the bacteria.

E. Incubation Period

The incubation period for *S. aureus* infection is variable; it is usually four to ten days.

F. Period of Communicability or Infectious Period

TSS is not communicable person to person.

G. Epidemiology

In 1980, TSS became widely recognized when an association between TSS and the use of vaginal tampons was established. Since that time, TSS associated with menstruation has decreased to 55% of reported cases. Cases of TSS are now associated with contraceptive devices such as the diaphragm and vaginal sponge and infections following childbirth, abortions, or other gynecologic procedures. There have been growing numbers of cases observed in men and women with *S. aureus* isolated from focal lesions of skin, bone, respiratory tract, surgical site infections, and cutaneous or subcutaneous lesions. The source of infection is unknown in up to one third of cases. The Centers for Disease Control and Prevention (CDC) estimates that 30% to 40% of the general population is colonized with *S. aureus* on the skin or mucous membranes including the nasal passages, anal area, groin, and/or vagina. Persons considered at risk for TSS include (a) menstruating women using tampons or other inserted vaginal devices (such as diaphragms or contraceptive sponges); (b) women who have had infections following childbirth or abortion and (c) persons with staphylococcal wound infections.

2 CASE DEFINITION

A. New Jersey Department of Health (NJDOH) Case Definition

1. Clinical Case Definition

An illness with the following clinical manifestations:

- **Fever:** temperature greater than or equal to 102.0°F (38.9°C)
- **Rash:** diffuse macular erythroderma
- **Desquamation:** one to two weeks after onset of rash, 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 less than 16 years of age

AND

- **Multisystem involvement including three or more of the following**:
    - **Gastrointestinal:** vomiting or diarrhea at onset of illness

- **Muscular:** severe myalgia or creatinine 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 five 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 per cubic mm
- **Central nervous system**: disorientation or alterations in consciousness without focal neurological signs when fever and hypotension are absent

2. Laboratory Criteria

Results on the following tests, if obtained:

- Negative blood or cerebrospinal fluid cultures (blood cultures may be positive for *S. aureus*)
- Negative serologies for Rocky Mountain spotted fever, leptospirosis, or measles

3. Case Classification

CONFIRMED
A case that meets the laboratory criteria (if obtained) and in which all five of the clinical findings described above are present, including desquamation (sloughing of skin), unless the patient dies before desquamation occurs in which case this criterion is not necessary.

PROBABLE
A case that meets the laboratory criteria (if obtained) and in which four of the five clinical findings described above are present.

POSSIBLE

Not used

B. Differences from CDC Case Definition

None

3 DISEASE REPORTING AND CASE INVESTIGATION

A. Laboratory and Healthcare Provider Reporting Requirements

The New Jersey Administrative Code (NJAC 8:57) stipulates that healthcare providers and laboratories report (by telephone, by confidential fax, or over the Internet using the Communicable Disease Reporting and Surveillance System [CDRSS]) all cases of TSS to the local health officer having jurisdiction over the locality in which the patient lives or, if unknown, to the health officer in whose jurisdiction the healthcare provider requesting the laboratory examination is located. The report shall contain, at a minimum, the reporting laboratory's name, address, and telephone number; the age, date of birth, gender, race, ethnicity, home address, and telephone number of the person tested; the date of testing; the test results; and the healthcare provider's name and address.

B. Local Board of Health Reporting and Follow-Up Responsibilities

NJAC 8:57 stipulates that the health officer report the occurrence of a confirmed case of toxic shock syndrome within 24 hours of diagnosis.

Case Investigation

- If a provider report is received by a local health department (LHD), the LHD should enter the report into CDRSS as instructed below.
- If the provider report is received by NJDOH and includes the patient's address, NJDOH will enter the report into CDRSS.
- If the provider report received by NJDOH does not include the patient's address, NJDOH will call the provider for the information. Once it is received, NJDOH will enter the report into CDRSS as PENDING.
- It is the local health department's responsibility to obtain the information required to appropriately classify the case. Most information should be available from the patient's healthcare provider or medical record, though interviewing the patient and/or a family member might also be useful.

C. CDRSS

The mandatory fields in CDRSS include: disease, last name, county, municipality, gender, race, ethnicity, case status, report status.

D. Other Reporting/Investigation Issues

1. It is not always possible to obtain all the information necessary to classify a case. A minimum of three attempts (not necessarily to the same person) should be made to obtain necessary information. If information can not be obtained after these three requests, the

case should be entered into CDRSS if it hasn't already been and the number of attempts, including dates and outcomes of the attempts documented in the comments section. The case status should be changed to "NOT A CASE" and the report status changed to "LHD CLOSED."

2. Once the case has been closed by the LHD, NJDOH will review the case. NDOH will approve the case by changing the report status to "DHSS Approved." At this time, the case will be locked for editing. If additional information is received after the case has been placed in "DHSS Approved," you will need to contact NJDOH to reopen the case. This should be done only if the additional information changes the case status of the report.

3. Every effort should be made to complete the investigation within three months of opening a case. Cases which remain open for three months or more and have no investigation or update notes will be closed by NJDOH and marked as "Not a Case."

4 CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements

None

B. Protection of Contacts of a Case

None

C. Managing Special Situations

The occurrence of two or more cases with an epidemiological association is sufficient to suspect an outbreak and to initiate an investigation. Contact the IZDP (609.826-5964) to obtain investigation assistance.

D. Preventive Measures

Advise individuals, as appropriate, to:

- Use the lowest absorbency tampon and change it frequently, at least four to eight hours
- Follow directions for use of diaphragms or contraceptive sponges and do not leave the device in place for more than 24 hours
- Discontinue tampon use immediately and call a healthcare provider if a high fever, vomiting, or diarrhea during menstruation develops
- Complete the full course of prescribed antibiotic therapy for staphylococcal infections

References

Heymann D, ed. *Control of Communicable Diseases Manual*. 20th ed. Washington, DC: American Public Health Association; 2014.

Centers for Disease Control and Prevention. Case definitions for infectious conditions under public health surveillance. *MMWR Morb Mortal Wkly Rep*. 1997;46:RR-10.