Toxic Shock Syndrome v1
Definition Factsheet & Technical Brief

Authors: Andzelika Rzucidlo, MPH[1,2], Patrick Rekieta[1,3], Anna Frick, MPH[4], Brittany Yarnell, MPH[5], Megan Montoya, MPH[6], Katharina L. van Santen, MSPH[1,3]

[1] CDC Office of Public Health Data, Surveillance, and Technology (OPHDST), Detect and Monitor Division (DMD), Integrated Monitoring Branch
[2] InductiveHealth
[3] ICF
[4] Alaska Division of Public Health
[5] Nebraska Department of Health and Human Services
[6] Florida Department of Health

Points of contact:
nssp@cdc.gov

Definition Purpose: Created by the CDC National Syndromic Surveillance Program (NSSP) for use with emergency department data to develop queries for all National Notifiable Diseases defined by the National Notifiable Diseases Surveillance System (NNDSS). Please note that while the disease queries are developed using the NNDSS case definition as the basis for identifying patient visits of interest, the queried patient visits themselves may or may not represent a case patient in NNDSS and further public health investigation will most often be required. This query is intended to be a version 1 and may be further improved upon by the NSSP community of practice in the future. This query is intended to be narrow and capture visits with specific terms to support greater monitoring and actionable public health data. More complex and/or broader queries may exist that more broadly capture symptoms or travel-based terms.

New or Revised Definition: New Definition

Date Added to ESSENCE: October 2025

Definition Description: Designed to capture emergency department visits with a diagnostic code or textual indicator of possible toxic shock syndrome.

Use-Cases for Definition:
Case-finding: Primary
Trend monitoring: Tertiary
Early outbreak detection: Secondary
Emergent Condition: Not Intended as Use Case

Justification: No query definition exists for toxic shock syndrome. CDC wants to use emergency department data to monitor trends.

Data Source During Development: Emergency Department Visits. Chief Complaint Query Validation dataset (CCQV) in ESSENCE.

Development Methods:
1. The CDC team used the NNDSS case definition of toxic shock syndrome (both streptococcal and other) to identify diagnostic codes (International Classification of Diseases, 9th & 10th Revision (ICD-9-CM, ICD-10-CM), SNOMED Clinical Terms (CT)) and chief complaint free-text for syndrome development.
2. The codes and free text were then categorized as inclusion or exclusion terms. These terms were formatted for querying in ESSENCE.

3. Text analysis was conducted on the initial query to find additional inclusion or exclusion terms.
4. The query was cross-checked internally as NSSP and by CDC subject matter experts as needed.

Validation Methods: This definition is part of the collection of definitions created by CDC NSSP for the rapid reportables project. The rapid reportables project is led by the CDC NSSP team to create definitions for all nationally reportable diseases. These definitions focus on chief complaint text and diagnostic codes of the disease or its causative agents with no mention of symptoms. Select members of the Community of Practice were then asked to review line-level results for their jurisdictions and provide feedback to ensure the intended results of the definitions were met.

Definition Fields and Structure:
The Chief Complaint Discharge Diagnosis (CCDD) parsed field is used to query both the discharge diagnosis codes and chief complaint free text, and exclusions are incorporated as necessary.
- Inclusion based on toxic shock syndrome complaint free text terms:
  - The visit is included if it contains:
    1. A chief complaint related to toxic shock syndrome ("toxic shock" or "TSS" andnot "ruleout" or "ruleout") **OR**
- Inclusion based on ICD-10 discharge diagnosis codes related to toxic shock syndrome:
  - The visit is included if it contains:
    1. A discharge diagnosis code for toxic shock syndrome (A48.3) **OR**
- Inclusion based on ICD-10 discharge diagnosis codes related to toxic shock syndrome:
  - The visit is included if it contains:
    - A discharge diagnosis code for toxic shock syndrome (040.82) **OR**
- Inclusion based on SNOMED discharge diagnosis codes related to toxic shock syndrome:
  - The visit is included if it contains:
    1. A discharge diagnosis code for toxic shock syndrome (18504008) **OR**
    2. A discharge diagnosis code related to Staphylococcal toxic shock syndrome (240450004 or 127411000119102 or 127421000119109) **OR**
    3. A discharge diagnosis code for Streptococcal toxic shock syndrome (240450004)
- There are no exclusions in this query.

Detailed Definition Components
Table 1. *Inclusion and exclusion terms.*

Terms	Description
Inclusion	
International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM)	
A48.3	Toxic shock syndrome
International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)	
040.82	Toxic shock syndrome
SNOMED Concepts	
18504008	Toxic shock syndrome (disorder)
240450004	Staphylococcal toxic shock syndrome (disorder)
240451000	Streptococcal toxic shock syndrome (disorder)
127411000119102	Toxic shock syndrome caused by methicillin susceptible *Staphylococcus aureus* (disorder)
127421000119109	Toxic shock syndrome caused by methicillin resistant *Staphylococcus aureus* infection (disorder)
Chief Complaint	
"toxic shock"	
Chief Complaint – Nested Together with *ANDNOT*	
"TSS"	"ruleout" or "rule out"

Table 2. *ESSENCE syntax for the CCDD parsed field*

```
^toxic shock^,OR,!TSS!,ANDNOT,(,^ruleout^,OR,^rule
out^,),OR,^;A483^,OR,^;04082;^,OR,^;18504008;^,OR,^;240450004;^,OR,^;240451000;^,OR,^;1274110
00119102;^,OR,^;127421000119109;^
```

Use the following URL and click Configuration Options to see the query setup:

https://essence2.syndromicsurveillance.org/nssp_essence/servlet/TemporalTimeSeriesViewer?datasource=va_hosp&startDate=29Dec2024&medicalGroupingSystem=essencesyndromes&userId=5024&endDate=29Mar2025&percentParam=noPercent&aqtTarget=TimeSeries&geographySystem=hospital&detector=nodetectordetector&CCDDParsedFreeText=%5Etoxic%20shock%5E,OR,!TSS!,ANDNOT,(,%5Eruleout%5E,OR,%5Erule%20out%5E,),OR,%5E;A483%5E,OR,%5E;04082;%5E,OR,%5E;18504008;%5E,OR,%5E;240450004;%5E,OR,%5E;240451000;%5E,OR,%5E;127411000119102;%5E,OR,%5E;127421000119109;%5E%20&timeResolution=weekly

Syntax Plain Language Description The definition uses discharge diagnosis codes and free-text chief complaint terms. The definition requires that an emergency department visit contains a reference to the disease by its discharge diagnosis code (in at least one of the following: ICD-10-CM, ICD-9-CM, SNOMED diagnostic codes), or by the disease or pathogen name listed in the chief complaint text. Therefore, the toxic shock syndrome syndromic surveillance definition includes ICD-10-CM, ICD-9-CM, and SNOMED diagnostic codes for toxic shock syndrome, along with direct mentions of toxic shock syndrome using "toxic shock" or "TSS" in chief complaint text.