

Typhoid Fever v1

Definition Factsheet & Technical Brief

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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: April 2026

Definition Description: Designed to capture emergency department visits with a diagnostic code or textual indicator of possible typhoid fever infection.

Use-Cases for Definition:

Case-finding: Primary

Trend monitoring: Not Intended as Use Case

Early outbreak detection: Secondary

Emergent Condition: Not Intended as Use Case

Justification: No query definition exists for typhoid fever infections. 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 typhoid fever 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 by 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 typhoid fever chief complaint free text terms:
 - The visit is included if it contains:
 1. A chief complaint related to alternative names – (“enteric fever”) **OR**
 2. A chief complaint related to disease agent – (“salmonella” and “typhi”) **OR**
 3. A chief complaint related to typhoid fever – (“typhoid”) **ANDNOT**
 - The visit is excluded if it contains:
 1. A chief complaint related to immunization – (“vac” or “vax” or “shot” or “immunization” or “injection”) **OR**
 - Inclusion based on ICD-10 discharge diagnosis codes related to typhoid fever:
 - The visit is included if it contains:
 1. A discharge diagnosis code for typhoid fever – (A01.0) **OR**
 - Inclusion based on ICD-9 discharge diagnosis codes related to typhoid fever:
 - The visit is included if it contains:
 1. A discharge diagnosis code for typhoid fever – (002.0) **OR**
 - Inclusion based on SNOMED discharge diagnosis codes related to typhoid fever:
 - The visit is included if it contains:
 1. A discharge diagnosis code for typhoid fever – (4834000) **OR**
 2. A discharge diagnosis code for suspected typhoid fever – (772154007) **OR**
 3. A discharge diagnosis code for conditions caused by typhoid fever – (192648008 or 1084791000119106) **ANDNOT**
 - All the above must exclude:
 - An ICD-10 discharge diagnosis code for Adverse reaction of other bacterial vaccines – (T50.A95) **OR**
 - An ICD-10 Code for Encounter for immunization – (Z23) **OR**
 - An ICD-10 discharge diagnosis code for Encounter for other specified prophylactic measures – (Z29.8)
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Detailed Definition Components

Table 1. Inclusion and exclusion terms.

Terms	Description
<i>Inclusion</i>	
International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM)	
A01.0	Typhoid fever
A01.00	Typhoid fever, unspecified
A01.01	Typhoid meningitis
A01.02	Typhoid fever with heart involvement
A01.03	Typhoid pneumonia
A01.04	Typhoid arthritis
A01.05	Typhoid osteomyelitis
A01.09	Typhoid fever with other complications
International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)	
002.0	Typhoid fever
SNOMED Concepts	
4834000	Typhoid fever (disorder)
772154007	Typhoid fever suspected (situation)
192648008	Meningitis due to typhoid fever (disorder)
1084791000119106	Cardiac disorder due to typhoid fever (disorder)
Chief Complaint	
“typhoid”	
“enteric fever”	
“salmonella” AND “typhi”	
<i>Exclusion</i>	
International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM)	
T50.A95	Adverse reaction of other bacterial vaccines
Z23	Encounter for immunization
Z29.8	Encounter for other specified prophylactic measures
Chief Complaint – Nested together with Chief Complaint for Typhoid with ANDNOT	
“vac” or “vax”	
“shot”	
“immunization”	
“injection”	

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

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(,!typhoid!,ANDNOT,(^va[cx]^,OR,^shot^,OR,^immunization^,OR,^injection^,),OR,^enteric fever^,OR,(,^salmonella^,AND,!typhi!,),OR,^;A010[0-59]^,OR,^;0020;,^,OR,^;4834000;,^,OR,^;772154007;,^,OR,^;192648008;,^,OR,^;1084791000119106;,^),ANDNOT,(,^;T50A95^,OR,^;Z23^,OR,^;Z298^,)
```

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=nodetector&CCDDParsedFreeText=\(,!typhoid!,ANDNOT,\(,%5Eva%5Bcx%5D%5E,OR,%5Eshot%5E,OR,%5Eimmunization%5E,OR,%5Einjection%5E,\),OR,%5Eenteric%20fever%5E,OR,\(,%5Esalmonella%5E,AND,!typhi!,\),OR,%5E;A010%5B0-59%5D%5E,OR,%5E;0020;%5E,OR,%5E;4834000;%5E,OR,%5E;772154007;%5E,OR,%5E;192648008;%5E,OR,%5E;1084791000119106;%5E,\),ANDNOT,\(,%5E;T50A95%5E,OR,%5E;Z23%5E,OR,%5E;Z298%5E,\)&timeResolution=weekly](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=nodetector&CCDDParsedFreeText=(,!typhoid!,ANDNOT,(,%5Eva%5Bcx%5D%5E,OR,%5Eshot%5E,OR,%5Eimmunization%5E,OR,%5Einjection%5E,),OR,%5Eenteric%20fever%5E,OR,(,%5Esalmonella%5E,AND,!typhi!,),OR,%5E;A010%5B0-59%5D%5E,OR,%5E;0020;%5E,OR,%5E;4834000;%5E,OR,%5E;772154007;%5E,OR,%5E;192648008;%5E,OR,%5E;1084791000119106;%5E,),ANDNOT,(,%5E;T50A95%5E,OR,%5E;Z23%5E,OR,%5E;Z298%5E,)&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-9-CM, ICD-10-CM, SNOMED diagnostic codes), or by the disease name listed in the chief complaint text. The typhoid fever syndromic surveillance definition includes direct mentions of typhoid fever using “typhoid” or “enteric fever” in chief complaint text and mentions of the pathogen using combined terms for “salmonella” and “typhi”. To ensure that only acute typhoid fever infections were captured, diagnostic codes were excluded if there were diagnostic codes or chief complaint indicating vaccination.