

## **Anthrax 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:** February 2025

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

#### **Use-Cases for Definition:**

- ☒ Case-finding
- ☐ Trend monitoring
- ☒ Early outbreak detection

**Justification:** No query definition exists for anthrax 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 anthrax to identify diagnostic codes (International Classification of Diseases, 9th & 10th Revisions (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 anthrax chief complaint free text terms:
  - The visit is included if it contains:
    1. A chief complaint related to disease name – (“anthrax” or “anthracs” or “anthraks” or “anthracks”) **OR**
    2. A chief complaint related to disease agent – (“anthracis” or “anthrasis”) **OR**
- Inclusion based on ICD-10 discharge diagnosis codes related to anthrax:
  - The visit is included if it contains:
    1. A discharge diagnosis code for Anthrax – (A22) **OR**
    2. Discharge diagnosis codes nested together with **ANDNOT** - Contact with and (suspected) exposure to anthrax – (Z20.810); Contact with and (suspected) exposure to COVID-19 – (Z20.822)
- Inclusion based on ICD-9 discharge diagnosis codes related to anthrax:
  - The visit is included if it contains:
    1. A discharge diagnosis code for Anthrax – (484.5) **OR**
    2. A discharge diagnosis code for a positive Anthrax test – (795.31) **OR**
    3. A discharge diagnosis code for exposure to Anthrax – (V01.81 or V71.82) **OR**
- Inclusion based on SNOMED discharge diagnosis codes related to anthrax:
  - The visit is included if it contains:
    1. A discharge diagnosis code for Anthrax – (409498004) **OR**
    2. A discharge diagnosis code for other forms of Anthrax – (11389007 or 84980006 or 195902009 or 111800004 or 111798006) **OR**
    3. A discharge diagnosis code for suspected Anthrax – (170475009 or 772151004) **OR**
    4. A discharge diagnosis code for conditions caused by Anthrax – (720990007 or 448482003) **OR**
    5. A discharge diagnosis code for the presence of Anthrax – (21927003 or 442765006) **ANDNOT**
- All the above must exclude:
  - An ICD-10 discharge diagnosis code for negative suspected exposure to Anthrax – (Z03.810)

# Detailed Definition Components

**Table 1.** Inclusion and exclusion terms.

| Variable Type   | Terms                      | Description   |
|---|----------------------------|---|
| <b><i>Inclusions</i></b>  |                            |   |
| Discharge<br>Diagnosis:<br>ICD-10-CM  | A22                        | Anthrax   |
|   | Z20.810                    | Contact with and (suspected) exposure to anthrax                      |
|   |                            |   |
|   |                            |   |
|   |                            |   |
| Discharge<br>Diagnosis:<br>ICD-10-CM –<br>Nested Together<br>with <b>ANDNOT</b> | Z20.810                    | Contact with and (suspected) exposure to anthrax                      |
|   | Z20.822                    | Contact with and (suspected) exposure to COVID-19                     |
| Discharge<br>Diagnosis:<br>ICD-9-CM   | 484.5                      | Pneumonia in anthrax  |
|   | 795.31                     | Nonspecific positive findings for anthrax                             |
|   | V01.81                     | Contact with or exposure to anthrax                                   |
|   | V71.82                     | Observation and evaluation for suspected exposure to anthrax          |
|   |                            |   |
| Discharge<br>Diagnosis:<br>SNOMED concepts                                      | 409498004                  | Anthrax (disorder)  |
|   | 170475009                  | Exposure to <i>Bacillus anthracis</i> (event)                         |
|   | 21927003                   | <i>Bacillus anthracis</i> (organism)                                  |
|   | 11389007                   | Inhalational anthrax (disorder)                                       |
|   | 84980006                   | Cutaneous anthrax (disorder)  |
|   | 772151004                  | Anthrax suspected (situation)   |
|   | 195902009                  | Anthrax pneumonia (disorder)  |
|   | 720990007                  | Meningitis caused by <i>Bacillus anthracis</i> (disorder)             |
|   | 111800004                  | Anthrax manifestation (disorder)                                      |
|   | 111798006                  | Gastrointestinal anthrax (disorder)                                   |
|   | 448482003                  | Sepsis caused by <i>Bacillus anthracis</i> (disorder)                 |
|   | 442765006                  | <i>Bacillus anthracis</i> isolated by culture (finding)               |
|   |                            |   |
| Chief Complaint<br>Terms  | “anthrax”                  |   |
|   | “anthracis” or “anthraks”  |   |
|   | “anthracks”                |   |
|   | “anthracis” or “anthrasis” |   |
|   |                            |   |
| <b><i>Exclusions</i></b>  |                            |   |
| Discharge<br>Diagnosis:<br>ICD-10-CM  | Z03.810                    | Encounter for observation for suspected exposure to anthrax ruled out |
|   |                            |   |
|   |                            |   |
|   |                            |   |

**Table 2.** *ESSENCE* syntax

|   |
|---|
| (,^anthrax^,OR,^anthra[ck]s^,OR,^anthracks^,OR,^anthra[cs]is^,OR,^;A22^,OR,^;Z20810^,ANDNOT,^;Z20822^,OR,^;4845;^,OR,^;79531;^,OR,^;V0181;^,OR,^;V7182;^,OR,^;409498004;^,OR,^;170475009;^,OR,^;21927003;^,OR,^;11389007;^,OR,^;84980006;^,OR,^;772151004;^,OR,^;195902009;^,OR,^;720990007;^,OR,^;111800004;^,OR,^;111798006;^,OR,^;448482003;^,OR,^;442765006;^),ANDNOT,^;Z03810^ |
|---|