

## SALMONELLA (NON-TYPHOIDAL)

*For Typhoidal Salmonella, See “Typhoid Fever” Case Definition.*

### Background

This case definition was developed by the Armed Forces Health Surveillance Center (AFHSC) for the purpose of epidemiological surveillance of a condition important to military-associated populations. Within members of the active component of the U.S. Armed Forces, *Salmonella* is a leading cause of acute gastrointestinal illness.<sup>1</sup>

### Clinical Description

*Salmonella* is a group of gram-negative bacteria that can infect both animal and human hosts. These bacteria cause several conditions in humans including gastroenteritis and enteric fever, also known as typhoid fever. The species most commonly associated with human disease is non-typhoidal *Salmonella enterica*. These bacteria are the leading cause of food-borne illness in the U.S. and the leading cause of bacterial diarrhea worldwide. The bacteria are primarily spread via the consumption of foods contaminated with animal feces; often poultry and eggs. Clinically, the condition presents with diarrhea, fever, and abdominal cramps with onset between 12 -72 hours after infection. The illness usually lasts 4 to 7 days and most individuals recover with supportive care such as replacement of fluid and electrolyte losses alone. Antibiotics are discouraged in uncomplicated cases. A stool culture or blood test is required to confirm the diagnosis.<sup>2,3</sup>

### Case Definition and Incidence Rules

For surveillance purposes, a case of non-typhoidal *Salmonella* is defined as:

- One record of a reportable medical event (RME) of a *confirmed* case of *Salmonella*; or
- *One hospitalization or outpatient medical encounter* with any of the defining diagnoses of *Salmonella* (see ICD9 and ICD10 code lists below) in *any* diagnostic position.

#### **Incidence rules:**

For individuals who meet the case definition:

- An individual is considered an incident case only *once every 180 days*.
- The incidence date is considered the date of onset documented in a reportable medical event report, or the first hospitalization or outpatient medical encounter that includes a defining diagnosis of *Salmonella*.

*(continued on next page)*

<sup>1</sup> Armed Forces Health Surveillance Center. Gastrointestinal infections, active component, U.S. Armed Forces, 2002–2012. *MSMR*. 2013;20(10): 7–11.

<sup>2</sup> Centers for Disease Control and Prevention. *Salmonella*. <http://www.cdc.gov/salmonella/index.html>

<sup>3</sup> Armed Forces Health Surveillance Center. Incidence of *Salmonella* Infections Among Service Members of the Active and Reserve Components of the U.S. Armed Forces and Among Other Beneficiaries of the Military Health System, 2000-2013. *Medical Surveillance Monthly Report (MSMR)*; 2015 January; Vol 22(1): 11-15.



### Case Definition and Incidence Rules *(continued)*

#### Exclusions:

- None

### Codes

The following ICD9 and ICD10 codes are included in the case definition:

Condition	ICD-10-CM Codes	ICD-9-CM Codes
<i>Salmonella</i> (Non-Typhoidal)	A02 (other <i>Salmonella</i> infections)	003 (other <i>Salmonella</i> infections)
	A02.0 ( <i>Salmonella</i> enteritis)	003.0 ( <i>Salmonella</i> gastroenteritis)
	A02.1 ( <i>Salmonella</i> sepsis)	003.1 ( <i>Salmonella</i> septicemia)
	A02.2 (localized <i>Salmonella</i> infections)	003.2 (localized <i>Salmonella</i> infections)
	- A02.20 (localized <i>Salmonella</i> infection, unspecified)	003.20 (localized <i>Salmonella</i> infections, unspecified)
	- A02.21 ( <i>Salmonella</i> meningitis)	003.21 ( <i>Salmonella</i> meningitis)
	- A02.22 ( <i>Salmonella</i> pneumonia)	003.22 ( <i>Salmonella</i> pneumonia)
	- A02.23 ( <i>Salmonella</i> arthritis)	003.23 ( <i>Salmonella</i> arthritis)
	- A02.24 ( <i>Salmonella</i> osteomyelitis)	003.24 ( <i>Salmonella</i> osteomyelitis)
	- A02.25 ( <i>Salmonella</i> pyelonephritis)	003.29 (below)
	- A02.29 ( <i>Salmonella</i> with other localized infection)	003.29 (localized <i>Salmonella</i> infections; other)
	A02.8 (other specified <i>Salmonella</i> infections)	003.8 (other specified <i>Salmonella</i> infections)
A02.9 ( <i>Salmonella</i> infection, unspecified)	003.9 ( <i>Salmonella</i> infection, unspecified)	

### Development and Revisions

- In May of 2015 the case definition was updated to include ICD10 codes.
- This case definition for *Salmonella* was developed in January 2015 by the Medical Surveillance Monthly Report (MSMR) staff for use in a MSMR article on *Salmonella* infections.<sup>3</sup> The case definition was developed based on reviews of the ICD9 codes, the scientific literature, and previous AFHSC analyses.



### Case Definition and Incidence Rule Rationale

- Case finding for this definition prioritizes reportable medical events over inpatient medical encounters over outpatient medical encounters.
- This case definition uses an absolute 180-day incidence rule in which an individual may be considered an incident case once every 180 days. Patients recovering from *Salmonella* infection may shed bacterium in the stool for several months after symptoms resolve. To allow for complete resolution of infection and to avoid counting current cases as newly incident, investigators may want to consider using a 180-day “gap in care” incidence rule, (e.g., an individual is considered a new incident case if *at least 180 days* have passed since the last medical encounter with a case defining diagnosis of *Salmonella* infection). Use of this methodology presumes that medical encounters for *Salmonella* that occur within 180 days of a previous such encounter constitute follow-up care of the previously diagnosed case.<sup>4</sup>
- The case finding criteria for this case definition use only one hospitalization or outpatient medical encounter with a case defining ICD9 or ICD10 code in any diagnostic position to define a case. As such, cases of *Salmonella* identified using this criterion may represent cases based upon presumptive or epidemiologic diagnosis that are never confirmed. Investigators may want to consider using more specific case finding criteria for outpatient visits.

### Reports

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AFHSC reports on *Salmonella* in the following reports:

- AFHSB Reportable Events Monthly Report. Available on the Defense Health Agency (DHA) website at: <https://health.mil/Military-Health-Topics/Health-Readiness/Armed-Forces-Health-Surveillance-Branch/Reports-and-Publications>.
- Weekly: DoD Communicable Disease Weekly Report; Summary of Communicable Reportable Events by Service; Available on the AFHSC website at: <http://www.afhsc.mil>; see “Reports and Publications”.

### Review

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Jun 2015	Case definition reviewed and adopted by the AFHSC Surveillance Methods and Standards (SMS) working group.
Jan 2015	Case definition developed by AFHSC MSMR staff.

### Comments

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*Armed Forces Reportable Events: Salmonella* is a reportable medical event in the Armed Forces Reportable Events surveillance system under “Gastrointestinal” disease.

*Centers for Disease Control and Prevention (CDC)* criteria for distinguishing a new case from an existing case: “A case should not be counted as a new case if laboratory results were reported within 365 days of a previously reported infection in the same individual” (i.e., gap incidence rule).

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<sup>4</sup> Mandell, G. (2010). Mandell, Douglas, and Bennett's principles and practice of infectious diseases (7th ed.). New York: Elsevier/Churchill Livingstone.

