I. Statement of the Problem

Currently, case confirmation for Salmonellosis is dependent on isolation of \textit{Salmonella} from a clinical specimen using culture-based methods. However, there has been an increase in the use of non-culture based methods to clinically diagnosis Salmonellosis. According to the 2010 case definition for Salmonellosis, if \textit{Salmonella} is diagnosed by non-culture methods it is classified as “Not a Case”.

At least one laboratory specializing in non-culture based methods for testing infectious agents is being used by physicians in several states for the diagnosis of enteric infections, even though the positive predictive value for these methods are unknown. This particular method can be performed on a stool swab, which is not suitable for further characterization (i.e., serotype and PFGE) if not immediately added to an appropriate preservative.

The increasing use of non-culture based diagnostic methods is concerning for a couple of reasons. One, infections diagnosed in this manner do not meet the current laboratory criteria for case classification. Additionally, national-level efforts to monitor pathogenic enteric infections in order to identify and respond to multi-state outbreaks will be handicapped. A change to the case classification categories for Salmonellosis is needed to prevent an increase in underreporting of Salmonellosis cases.

II. Background and Justification

\textit{Background}

An estimated 1.2 million cases of \textit{Salmonella} infection occur annually in the United States. About 450 people die each year from \textit{Salmonella}, with infants, the elderly and the immune compromised being at greatest risk. \textit{Salmonella} is a leading cause of foodborne disease with multiple outbreaks detected each year.

\textit{Justification}

Ongoing surveillance of \textit{Salmonella} infections is needed to detect and control outbreaks as well as evaluate strategies to prevent \textit{Salmonella} infections.
III. Statement of the desired action(s) to be taken

CSTE requests that CDC adopt this new case definition category for Salmonellosis in order to accommodate cases diagnosed by non-culture based methods. By adding a “Suspect” category, Public Health will be able to track and assess *Salmonella* cases diagnosed by non-culture based methods.

IV. Goals of Surveillance

To provide information on the temporal, geographic, and demographic occurrence of Salmonellosis to facilitate its prevention and control.

V. Methods for Surveillance

Surveillance for Salmonellosis should use the sources of data and the extent of coverage listed in Table V.

**Table V. Recommended sources of data and extent of coverage for ascertaining cases of Salmonellosis.**

<table>
<thead>
<tr>
<th>Source of data for case ascertainment</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>clinician reporting</td>
<td>X</td>
</tr>
<tr>
<td>laboratory reporting</td>
<td>X</td>
</tr>
<tr>
<td>reporting by other entities (e.g., hospitals, veterinarians, pharmacies)</td>
<td>X</td>
</tr>
<tr>
<td>death certificates</td>
<td>X</td>
</tr>
<tr>
<td>hospital discharge or outpatient records</td>
<td>X</td>
</tr>
<tr>
<td>extracts from electronic medical records</td>
<td>X</td>
</tr>
<tr>
<td>telephone survey</td>
<td></td>
</tr>
<tr>
<td>school-based survey</td>
<td></td>
</tr>
<tr>
<td>other ___________________________</td>
<td></td>
</tr>
</tbody>
</table>

VI. Criteria for Reporting

Reporting refers to the process of healthcare providers or institutions (e.g., clinicians, clinical laboratories, hospitals) submitting basic information to governmental public health agencies about cases of illness that meet certain reporting requirements or criteria. Cases of illness may also be ascertained by the secondary analysis of administrative health data or clinical data. The purpose of this section is to provide those criteria to determine whether a specific illness should be reported.
A. Narrative description of criteria to determine whether a case should be reported to public health authorities

Report any illness to public health authorities that meets any of the following criteria:

1. Any person with *Salmonella* sp. isolated from a clinical specimen.
2. Any person with *Salmonella* sp. detected using non-culture based methods.
3. Any person with diarrhea who is a contact of a confirmed case of *Salmonella* infection or a member of a risk group defined by the public health authorities during an outbreak.
4. A person whose healthcare record contains a diagnosis of Salmonellosis.
5. A person whose death certificate lists Salmonellosis as a cause of death or a significant condition contributing to death.

*Other recommended reporting procedures*

- All cases of Salmonellosis should be reported.
  Reporting should be on-going and routine.
- Frequency of reporting should follow the state health department’s routine schedule.

B. Table of criteria to determine whether a case should be reported to public health authorities

*Table VI-B.* Table of criteria to determine whether a case should be reported to public health authorities. Requirements for reporting are established under State and Territorial laws and/or regulations and may differ from jurisdiction to jurisdiction. These criteria are suggested as a standard approach to identifying cases of this condition for purposes of reporting, but reporting should follow State and Territorial law/regulation if any conflicts occur between these criteria and those laws/regulations.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clinical Evidence</strong></td>
<td></td>
</tr>
<tr>
<td>Diarrhea</td>
<td>N</td>
</tr>
<tr>
<td>Healthcare record contains a diagnosis of disease due to salmonella</td>
<td>S</td>
</tr>
<tr>
<td>Death certificate lists disease due to <em>Salmonella</em> as a cause of death or a significant condition contributing to death</td>
<td>S</td>
</tr>
<tr>
<td><strong>Laboratory Evidence</strong></td>
<td></td>
</tr>
<tr>
<td>Isolation of <em>Salmonella</em> sp. from a clinical specimen</td>
<td>S</td>
</tr>
<tr>
<td>Detection of <em>Salmonella</em> sp. from a clinical specimen using a non-culture based method</td>
<td>S</td>
</tr>
<tr>
<td><strong>Epidemiological risk factors</strong></td>
<td></td>
</tr>
<tr>
<td>Contact of a confirmed case of <em>Salmonella</em> infection</td>
<td>O</td>
</tr>
<tr>
<td>Member of a risk group as defined by public health authorities</td>
<td>O</td>
</tr>
</tbody>
</table>
Notes:
S = This criterion alone is Sufficient to identify a case for reporting.
N = All “N” criteria in the same column are Necessary to identify a case for reporting.
O = At least one of these “O” (Optional) criteria in each category (i.e., clinical evidence and laboratory evidence) in the same column—in conjunction with all “N” criteria in the same column—is required to identify a case for reporting.

C. Disease Specific Data Elements:

Disease-specific data elements to be included in the initial report are listed below.

*Epidemiological Risk Factors*

International travel in past 7 days
Food handler
Day care center attendee or worker
Nursing home resident or worker
Contact of a confirmed case of *Salmonella* infection

**VII. Case Definition**

**A. Narrative description of criteria to determine whether a case should be classified as confirmed, probable, or suspect.**

**Clinical description**

An illness of variable severity commonly manifested by diarrhea, abdominal pain, nausea, and sometimes vomiting. Asymptomatic infections may occur, and the organism may cause extraintestinal infections.

**Laboratory criteria for diagnosis**

*Suspect:* Detection of *Salmonella* from a clinical specimen using a non-culture based method

*Confirmed:* Isolation of *Salmonella* from a clinical specimen

**Case classification**

*Suspect:* a case that meets the suspect laboratory criteria for diagnosis

*Probable:* a clinically compatible case that is epidemiologically linked to a confirmed case, i.e., a contact of a confirmed case or member of a risk group as defined by public health authorities during an outbreak.
Confirmed: a case that meets the confirmed laboratory criteria for diagnosis. When available, serotype characterization should be reported.

Comment

Both asymptomatic infections and infections at sites other than the gastrointestinal tract, if laboratory confirmed, are considered confirmed cases that should be reported.

B. Classification Tables

Table VII-B lists the criteria that must be met for a case to be classified as confirmed, probable, or suspect.

Table VII-B. Table of criteria to determine whether a case is classified.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Case Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Confirmed</td>
</tr>
<tr>
<td>Clinical Evidence</td>
<td></td>
</tr>
<tr>
<td>Diarrhea</td>
<td></td>
</tr>
<tr>
<td>Laboratory Evidence</td>
<td></td>
</tr>
<tr>
<td>Isolation of Salmonella sp. from a clinical specimen</td>
<td>S</td>
</tr>
<tr>
<td>Detection of Salmonella sp. from a clinical specimen using a non-culture based method</td>
<td>N</td>
</tr>
<tr>
<td>Epidemiologic Evidence</td>
<td></td>
</tr>
<tr>
<td>Contact of a confirmed case of Salmonella infection</td>
<td></td>
</tr>
<tr>
<td>Member of a risk group as defined by public health authorities during an outbreak</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
S = This criterion alone is Sufficient to classify a case.
N = All “N” criteria in the same column are Necessary to classify a case.
O = At least one of these “O” (Optional) criteria in each category (i.e., clinical evidence and laboratory evidence) in the same column—in conjunction with all “N” criteria in the same column—is required to classify a case.

VIII. Period of Surveillance

Surveillance should be on-going.

IX. Data sharing/release and print criteria
Notification to CDC for confirmed and probable cases of Salmonellosis is recommended.

- Data will be used to determine the burden of illness due to *Salmonella*, assess the effectiveness over time of control programs, and assess the progress toward Salmonellosis control. Data may also be used to compare case numbers with information from other foodborne disease surveillance systems. Electronic reports of Salmonellosis cases in NNDSS are also summarized weekly in the MMWR Tables. Annual case data on Salmonellosis is summarized in the yearly Summary of Notifiable Diseases.
- State-specific compiled data will continue to be published in the weekly and annual MMWR. All cases are verified with the states before publication.
- The frequency of reports/feedback to the states and territories will be dependent on the current epidemiologic situation in the country. Frequency of cases, epidemiologic distribution, importation status transmission risk, and other factors will influence communications.
X. References


XI. Coordination:

Agencies for Response:
(1) Thomas R Frieden, MD, MPH
    Director
    Centers for Disease Control and Prevention
    1600 Clifton Road, NE
    Atlanta GA 30333
    (404) 639-7000
    txf2@cdc.gov

XII. Submitting Author:
(1) Sherri L. Davidson, MPH
    Analysis & Reporting Branch Manager
    Epidemiology Division
    Alabama Department of Public Health
    201 Monroe Street, Suite 1452
    Montgomery, AL 36104
    334-206-2050
    Sherri.Davidson@ADPH.state.AL.US

Co-Authors:
(1) Associate Member
    Ana L. Oliveira, DrPH, MSPH, MS
    Research Associate
    University of Alabama at Birmingham
    510 20th Street South, FOT 805A
    Birmingham, AL 35294
    205-975-2405
    AnaLuna@uab.edu