09-ID-33

Committee: Infectious

Title: Public Health Reporting and National Notification for invasive *Haemophilus influenzae* type b (Hib) Infection

I. Statement of the Problem

CSTE position statement 07-EC-02 recognized the need to develop an official list of nationally notifiable conditions and a standardized reporting definition for each condition on the official list. The position statement also specified that each definition had to comply with American Health Information Community recommended standards to support "automated case reporting from electronic health records or other clinical care information systems." In July 2008, CSTE identified sixty-eight conditions warranting inclusion on the official list, each of which now requires a standardized reporting definition.

II. Background and Justification

Background[1]

Prior to implementation of conjugate vaccines, *Haemophilus influenzae* type b (Hib) was a leading cause of invasive bacterial disease in children under 5 years of age. Invasive disease may be manifest as pneumonia, bacteremia, meningitis, epiglottitis, septic arthritis, cellulitis, or purulent pericarditis; less common infections include endocarditis and osteomyelitis. Due to routine use of the Hib conjugate vaccine since 1990, the incidence of Hib disease in infants and young children has decreased by 99% to less than 1 case per 100,000 children under 5 years of age. In the United States, Hib disease occurs primarily in underimmunized children and among infants too young to have completed the primary immunization series. In order to assess the burden of Hib in children <5 years, it is important that invasive *Haemophilus influenzae* infection be routinely reported and isolates serotyped.

Justification

Invasive *Haemophilus influenzae* infection meets the following criteria for a nationally and **standard** notifiable condition, as specified in CSTE position statement 08-EC-02:

- A majority of state and territorial jurisdictions—or jurisdictions comprising a majority of the US population—have laws or regulations requiring **standard** reporting of invasive *Haemophilus influenzae* infections to public health authorities
- CDC requests **standard** notification of invasive *Haemophilus influenzae* infections to federal authorities
- CDC has condition-specific policies and practices concerning the agency's response to, and use of, notifications.

[1] Much of the material in the background is directly quoted from the CDC's *Haemophilus influenzae* website. See the references for further information on this source.

III. Statement of the desired action(s) to be taken

CSTE requests that its members adopt this standardized reporting definition and that CDC adopt the standardized notification criteria for invasive *Haemophilus influenzae* infection.

IV. Goals of Surveillance

To provide information on the temporal, geographic, and demographic occurrence of invasive *Haemophilus influenzae* infection to facilitate its prevention and control.

V. Methods for Surveillance

Surveillance for *Haemophilus influenzae* infection should use the sources of data and the extent of coverage listed in Table V below.

Table V. Recommended sources of data and extent of coverage for ascertaining cases of invasive *Haemophilus influenzae* infection.

	Coverage	
Source of data for case ascertainment	Population-wide	Sentinel sites
clinician reporting	X	
laboratory reporting	X	
reporting by other entities (e.g., hospitals, veterinarians, pharmacies)	X	
death certificates	X	
hospital discharge or outpatient records	X	
extracts from electronic medical records	X	
Telephone survey		
School-based survey		
other _____		

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 that should be used by humans and machines to determine whether a specific illness should be reported.[2]

[2] "Human-based" criteria (described below under "A. Narrative") can be applied by medical care providers and laboratory staff based on clinical judgment and clinical diagnosis. Machine-based criteria (described below under

A. Narrative description of criteria to determine whether a case should be reported to public health authorities

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

1. Isolation of *Haemophilus influenzae* (any type) from any normally sterile body site (e.g., cerebrospinal fluid [CSF], blood, joint fluid, pleural fluid, pericardial fluid).

2. Meningitis with *Haemophilus influenzae* type b (Hib) antigen detected in CSF.

3. Any case of epiglottitis.

4. The healthcare record indicates a diagnosis of disease caused by *Haemophilus influenzae*.

5. The death certificate indicates disease caused by *Haemophilus influenzae* as a cause of death or a significant condition contributing to death.

Other recommended reporting procedures

- All cases of invasive *Haemophilus influenzae* infection, regardless of serotype, should be reported.
- Reporting should be on-going and routine.
- Frequency of reporting should follow the state health department's routine schedule.

"B. Table") can be applied using computerized algorithms that operate in electronic health record systems, including computerized records of laboratory test orders and laboratory test results; other clinical data systems (e.g., hospital discharge data systems serving multiple hospitals); or administrative data (e.g., healthcare provider billing data, vital records, and EMS data).

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

Table VI-B. Proposed Table of criteria to determine whether a case should be reported to public health authorities. Note: The following criteria are proposed for evaluation before general implementation. For purposes of currently implementing reporting the narrative description in VI-A, should be used.

Criterion	Reporting				
Clinical Presentation					
Meningitis		N			
Epiglottitis			S		
Healthcare record indicates a diagnosis of disease due to *Haemophilus influenzae*				S	
Death certificate lists disease caused by *Haemophilus influenzae* as a cause of death or a contributing cause of death					S
Positive Laboratory Results					
Isolation of *H. influenzae* from a normally sterile body site	S				
Detection of *H. influenzae* type b antigen in CSF		N			

Notes:
S = This criterion alone is sufficient to report a case
N = This criterion in conjunction with all other "N" and any "O" criteria in the same column is required to report a case.
O = At least one of these "O" criteria in each category in the same column (e.g., clinical presentation and laboratory findings)—in conjunction with all other "N" criteria in the same column—is required to report a case. A number following an "O" indicates that this criterion is only required for a specific clinical presentation.

C. Disease Specific Data Elements:

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

Epidemiological risk factors
Number of doses of Hib-containing vaccine and type of vaccine (PRP-OMP vs OC) received
Date of last dose of Hib-containing vaccine
Daycare center attendance
Contact with a laboratory-confirmed case of *H. influenzae* disease.

VII. Case Definition for Case Classification

A. Narrative description of criteria to determine whether a case should be classified as confirmed, probable (presumptive), or suspected (possible) is provided:

Case classification

Probable: meningitis with detection of *Haemophilus influenzae* type b antigen in cerebrospinal fluid [CSF].

Confirmed: isolation of *Haemophilus influenzae* from a normally sterile body site (e.g., blood or CSF, or, less commonly, joint, pleural, or pericardial fluid).

Comment

Positive antigen test results from urine or serum samples are unreliable for diagnosis of *H. influenzae* disease.

B. Classification Tables

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

Table VII-B. Proposed table of criteria to determine whether a case is classified. Note: The following criteria are proposed for evaluation before general implementation. For purposes of current notification, the narrative description in VII-A, should be used.

	Case Definition	
Criterion	Confirmed	Probable
Positive Laboratory Results		
Isolation of *H. influenzae* from a normally sterile body site	S	
detection of *H. influenzae* type b antigen in cerebrospinal fluid		N
Clinical Presentation		
Meningitis		N

Notes:
S = This criterion alone is sufficient to classify a case
N = This criterion in conjunction with all other "N" and any "O" criteria in the same column is required to classify a case.
O = At least one of these "O" criteria in each category in the same column (e.g., clinical presentation and laboratory findings)—in conjunction with all other "N" criteria in the same column—is required to classify a case. A number following an "O" indicates that this criterion is only required for a specific clinical presentation.

VIII. Period of Surveillance

Surveillance should be on-going.

IX. Data sharing/release and print criteria

Notification to CDC of confirmed and probable cases and all cases prior to classification is recommended.

- Data on reported Hib cases in children <5 years are summarized monthly for NCIRD staff distributed internally via an NCIRD monthly surveillance report for vaccine preventable diseases. Cases of invasive Hi in all ages and in children <5 years reported electronically through NNDSS are summarized weekly in the MMWR Notifiable Diseases Tables and yearly in MMWR Surveillance Summaries. Aggregate data will be published in reports, the MMWR, and peer-reviewed journals as the public health need arises.

- State-specific compiled data will continue to be published in the weekly and annual MMWR. Twice-yearly reports of state-level case counts, incidence, and serotype testing are sent to state and territory partners from the NCIRD program. The frequency of additional feedback to the states and territories and of other published reports will be dependent on the current epidemiologic situation and the NCIRD program's evolving work to improve the quality of national Hi surveillance.

- State-specific compiled data will continue to be published in the weekly reports and annual MMWR Surveillance Summaries. Aggregate data are included in PAHO and WHO annual reports. The frequency of additional publication of this data, in the MMWR and peer-reviewed journals, will change with the epidemiology of disease and availability of Hib vaccine.

- Currently aggregate data on cases of invasive disease reported to NNDSS are summarized in yearly reports to PAHO. No personal identifying or state specific information is re-released to PAHO, WHO, or other parties.

X. References

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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) Paul Cieslak, MD
Manager, Acute and Communicable Disease Prevention
Oregon Department of Human Services
800 NE Oregon St./Suite 772
Portland, OR 97232
(971) 673-1111
paul.r.cieslak@state.or.us

Co-Authors:

(1) Associate Member
Harry F. Hull, Medical Epidemiologist
HF Hull & Associates, LLC
1140 St. Dennis Court
Saint Paul, MN 55116
(651) 695-8114
hullhf@msn.com

(2) Associate Member
Cecil Lynch, Medical Informaticist
OntoReason
7292 Shady Woods Circle
Midvale, UT 84047
(916) 412.5504
clynch@ontoreason.com

(3) Associate Member
R. Gibson Parrish, Medical Epidemiologist
P.O. Box 197
480 Bayley Hazen Road
Peacham, VT 05862
(802) 592-3357
gib.parrish@gmail.com