



# Infectious Disease Epidemiology Report

## Invasive *Streptococcus pneumoniae*, 2016



### Background

*Streptococcus pneumoniae* is a gram-positive diplococcus with a well formed capsule that is commonly found in the nose and throat. The bacteria can sometimes cause severe illness in children, the elderly, and other people with weakened immune systems. *Streptococcus pneumoniae* is the most common cause of middle ear infections, sepsis in children, and pneumonia in immunocompromised individuals and the elderly.

The Infectious Disease Program of Maine Center for Disease Control and Prevention (Maine CDC) monitors the incidence of invasive pneumococcal disease through mandatory reporting by health care providers, clinical laboratories, and other public health partners. This report summarizes 2016 surveillance data on cases of invasive pneumococcal disease.

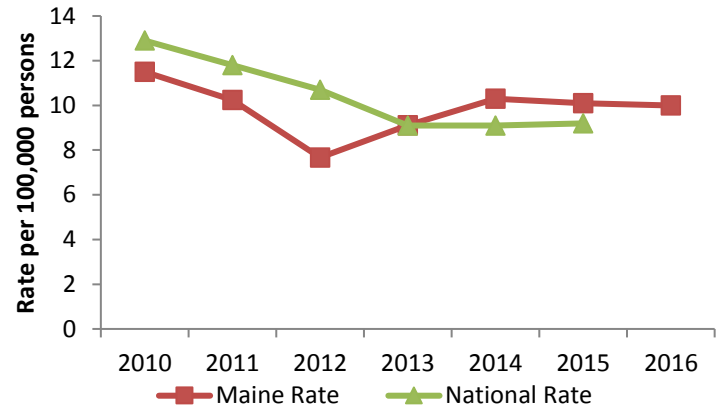
### Methods

Invasive pneumococcal disease is defined as isolation of *Streptococcus pneumoniae* from a normally sterile site (e.g., blood or cerebrospinal fluid [CSF] or, less commonly, joint, pleural, or pericardial fluid). Antibiotic-resistant invasive pneumococcal disease is defined as: meets the invasive definition and is resistant to at least one antibiotic. Standardized case reports are completed at Maine CDC for all invasive cases.

### Results

A total of 133 cases of invasive pneumococcal disease were reported in Maine during 2016, for a rate of 10.0 cases per 100,000 persons. This is a very slight decline from 2015. (Figure 1).

Figure 1. Invasive Pneumococcal Disease Rates, Maine and the US – 2010-2016



Overall, of the 133 reported cases, 102 (76.7%) were sensitive to all antibiotics tested; 29 (21.8%) were resistant to at least one antibiotic. Eight cases occurred in children less than five years old, two (25%) of which were antibiotic-resistant (Table 1).

Table 1: Antibiotic-resistant cases of invasive pneumococcal disease by age – Maine, 2016

| Age   | Count | Antibiotic-Resistant |      |
|-------|-------|----------------------|------|
|       |       | #                    | %    |
| Years | #     | #                    | %    |
| <4    | 8     | 2                    | 25.0 |
| 5-9   | 5     | 2                    | 40.0 |
| 10-19 | 1     | 0                    | 0.0  |
| 20-29 | 2     | 0                    | 0.0  |
| 30-39 | 6     | 1                    | 16.6 |
| 40-49 | 14    | 2                    | 14.3 |
| 50-64 | 36    | 8                    | 19.4 |
| >=65  | 61    | 15                   | 24.6 |
| Total | 133   | 29                   | 21.8 |

Of the eight cases in children less than five years old, five (60%) had received the pneumococcal conjugate vaccine. Of the 61 adults aged 65 years and older, 38 (62%) had received a polysaccharide pneumococcal vaccine (PPV23). Overall, 59 of the 133 cases (44%) had previously received a pneumococcal vaccine.

## Streptococcus pneumoniae – Maine, 2015

The majority of cases n = 122 (91.7%) were hospitalized, and eight patients were confirmed dead during the investigation (6.0%) however the true mortality rate is unknown.

The majority of cases of invasive pneumococcal disease were clinically diagnosed with pneumonia (Table 2).

**Table 2: Invasive pneumococcal disease by site of infection\* – Maine, 2016, n=133**

| Site of infection        | #  | %    |
|--------------------------|----|------|
| Bacteremia without focus | 25 | 18.8 |
| Otitis Media             | 2  | 1.5  |
| Meningitis               | 6  | 4.5  |
| Pneumonia                | 99 | 69.9 |
| Peritonitis              | 2  | 1.5  |
| Cellulitis               | 3  | 2.2  |

\* Cases may have had more than one site of infection

Invasive pneumococcal disease was identified among residents in all 16 Maine counties in 2016 (Table 3).

**Table 3 : Invasive pneumococcal disease cases by county- Maine, 2016**

| County       | Count      | Rate (per 100,000 persons) |
|--------------|------------|----------------------------|
| Androscoggin | 15         | 14.0                       |
| Aroostook    | 4          | 5.9                        |
| Cumberland   | 42         | 14.4                       |
| Franklin     | 1          | 3.3                        |
| Hancock      | 14         | 25.7                       |
| Kennebec     | 19         | 15.8                       |
| Knox         | 8          | 20.1                       |
| Lincoln      | 6          | 17.5                       |
| Oxford       | 11         | 19.2                       |
| Penobscot    | 47         | 31.0                       |
| Piscataquis  | 8          | 47.5                       |
| Sagadahoc    | 4          | 11.3                       |
| Somerset     | 10         | 19.6                       |
| Waldo        | 4          | 10.2                       |
| Washington   | 5          | 15.9                       |
| York         | 30         | 14.8                       |
| <b>Maine</b> | <b>228</b> | <b>17.1</b>                |

## Discussion

Rates of pneumococcal disease have remained relatively steady in Maine over the last five years. Almost half (45%) of reported cases occurred in mature adults over the age of 65 years, making them eligible for pneumococcal vaccination but only 62% were vaccinated.

Health care providers are encouraged to promote the use of pneumococcal vaccines.

Pneumococcal conjugate vaccine (PCV13) is recommended for: all babies and children under the age of 2, all adults  $\geq$  65 years and people 2 through 64 years old with certain medical conditions. It protects against the 13 types of pneumococcal bacteria most likely to cause disease in infants and young children.

Pneumococcal polysaccharide vaccine (PPV23) is recommended for all adults 65 years or older, people 2 through 64 years old with certain medical conditions, and smokers older than 19 and people who live in congregate settings such as nursing homes or long term care facilities.

All adults 65 years and older as well as persons with certain health conditions are encouraged to receive both the pneumococcal conjugate vaccine (PCV13) and one dose of the polysaccharide pneumococcal vaccine (PPV23). Together, these vaccines provide protection against 23 serotypes of pneumococcal infection.

Invasive pneumococcal disease should be reported to Maine CDC by calling 1-800-821-5821 or faxing to 1-800-293-7534. For more information contact your healthcare provider or local health center.

Additional information about invasive pneumococcal disease can be found at:

- Maine CDC pneumococcal website: <http://www.maine.gov/dhhs/mecdc>
- Federal CDC pneumococcal website: <http://www.cdc.gov/pneumococcal/index.html>