State of Alaska Epidemiology **Bulletin**

Department of Health and Social Services
Valerie J. Davidson, Commissioner

3601 C Street, Suite 540
Anchorage, Alaska 99503 http://dhss.alaska.gov/dph/Epi

Division of Public Health
Jay C. Butler, MD, Chief Medical Officer and Director

Local (907) 269-8000
24 Hour Emergency (800) 478-0084

Editors:
Joe McLaughlin, MD, MPH
Louisa Castrodale, DVM, MPH

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Update on *Haemophilus influenzae* Type a Invasive Disease — Alaska, 2014–2018

Background

Haemophilus influenzae (Hi) is a gram-negative bacteria that can cause meningitis and invasive infections such as bacteremia, pneumonia, epiglottitis, cellulitis, and septic arthritis. The high incidence of invasive disease caused by *Haemophilus influenzae* serotype a (Hia) in Alaska was previously reported in March 2014 by the Alaska Section of Epidemiology (SOE) and the Centers for Disease Control and Prevention's Arctic Investigation Program (AIP).[1] This *Bulletin* provides information on a rising number of Hia cases that have occurred since the 2014 report and updated chemoprophylaxis recommendations.

Methods

AIP has conducted statewide laboratory-based surveillance for invasive Hi since 1980. Invasive Hi disease is reportable to SOE and collaborative data reporting occurs between SOE and AIP. The Alaska Section of Public Health Nursing and SOE follow up on all incident cases. Invasive Hi disease is defined by the isolation or polymerase-chain reaction detection of Hi from a normally sterile site (e.g., blood and cerebrospinal, pleural, peritoneal, or joint fluid). Laboratories send Hi isolates to AIP for confirmation and serotyping. Demographic and illness-related data are collected for each confirmed case.

Results

During 2014 through June 2018, 107 Hi cases were reported; of the 105 cases with isolates available for typing, 48 had identifiable serotypes and 57 were nontypeable. The 48 identifiable serotypes were type a (n=32, 67%), type b (n=5, 10%), type e (n=2, 4%), and type f (n=9, 19%).

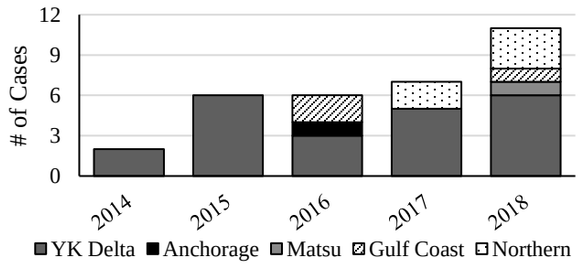
Of the 32 Hia cases identified, 29 (91%) were in Alaska Native persons, and 18 (56%) were in males. The median age of infected persons was 1.1 years (range 2 months to 77 years), and 24 (75%) were in children aged <2 years. Twenty-two (69%) occurred in the Yukon-Kuskokwim Delta (YK Delta) region (Figure). Overall, the most common clinical syndromes were meningitis (n=9, 29%), pneumonia with bacteremia (n=8, 26%), septic arthritis (n=6, 19%), and cellulitis with bacteremia (n=3, 10%). Thirty persons (94%) were hospitalized; 4 (13%) died. Of the 20 isolates tested for antimicrobial susceptibility, all were susceptible to ampicillin, chloramphenicol, and cefriaxone; 15 (50%) isolates showed either intermediate or full resistance to trimethoprim-sulfamethoxazole.

During 2014 through June 2018, the overall incidence of invasive Hia infection in Alaska was 1.1/100,000 per year. The annual incidence of invasive Hia infection was 30.5 per 100,000 persons for all Alaska children aged <2 years, 104.3 per 100,000 persons for all Alaska Native children aged <2 years, and 781 per 100,000 for Alaska Native children aged <2 years who were living in the YK Delta region.

Discussion

The high incidence of invasive Hia infection in Alaska Native children continues to be a public health concern. Alaska Native children aged <2 years in the YK Delta region had an annual incidence rate of Hia infection during 2014 through June 2018 similar to the incidence of invasive Hi serotype b (Hib) disease in all Alaska Native children aged <2 years prior to the introduction of the Hib vaccine in 1991 (714.5/100,000).[2,3] Considerable morbidity and mortality is associated with invasive Hia disease. A recent Alaska study reported that 25% of children aged <10 years with invasive Hia died or experienced severe neurologic outcomes.[4] Although there are no formal guidelines for control measures around Hia cases, the American Academy of Pediatrics Committee on Infectious Diseases now recommends that clinicians consider chemoprophylaxis for household contacts of a person with invasive Hia, as is recommended for Hib cases.[5]

Figure. Geographic Distribution of Invasive Hia Cases — Alaska, 2014 through June 2018



Recommendations

1. Report cases of invasive *H. influenzae* to SOE at 907-269-8000 (or 800-478-0084 after hours).
2. Send all invasive *H. influenzae* isolates to AIP for serotyping; call 907-729-3400 for shipping details.
3. Clinicians should strongly consider offering chemoprophylaxis to close contacts of patients with invasive Hia using the same criteria and dosage (rifampin 20 mg/kg, with maximum dose of 600 mg, orally, once daily for 4 days) as are recommended for invasive Hib (Table). Prophylaxis should be initiated as soon as possible; however, secondary cases can occur later, and therefore initiation of prophylaxis ≥7 days after hospitalization of the index patient may still be of benefit.

Table. Suggested Indications and Guidelines for Rifampin Chemoprophylaxis for Close Contacts* of Patients with Invasive Hia — Alaska

Chemoprophylaxis Should Be Considered
• For all household contacts when at least one member of the household is aged <4 years or is an immuno-compromised child • For preschool and child care center contacts when two or more cases of Hia invasive disease have occurred within 60 days • For the index patient, if aged <2 years or member of a household with a susceptible contact and treated with a regimen other than cefotaxime or ceftriaxone chemoprophylaxis at the end of therapy for invasive infection
Chemoprophylaxis Is Not Recommended
• For occupants of households with no children aged <4 years other than the index patient • For preschool and childcare contacts of index patient • For pregnant women

**Close contacts are people residing with the index patient or non-residents who spent at least 4 hours with the index patient for at least 5 of the 7 days preceding hospital admission of the index patient.*

References

1. Alaska Epidemiology *Bulletin*. "Update on *Haemophilus influenzae* type a Invasive Disease." No. 3, March 24, 2014. Available at: http://www.epi.alaska.gov/bulletins/docs/b2014_03.pdf
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3. Bruce M, Zulz T, et al. *Haemophilus influenzae* serotype a invasive disease, Alaska, USA, 1983-2011. *Emerg Inf Dis 2013:*19(6):932–37.
4. Plumb I, Lecy K, Singleton R, et al. Invasive *Haemophilus influenzae* serotype a infection in children: clinical description of an emerging pathogen-Alaska, 2002-2014. *Pediatr Infect Dis J* 2018;37:298–303.
5. American Academy of Pediatrics. *Red Book* 31st edition. 2018-2021.

(Contributed by: Tammy Zulz, MPH, Michael Bruce, MD, MPH, and Rosalyn Singleton, MD, MPH, CDC-AIP; and Stephanie Massay, MPH, MT(ASCP), and Amanda Tiffany, PhD, MPH, SOE.)