

Active Bacterial Surveillance Newsletter

What We Do: The Center for American Indian Health (CAIH) actively monitors serious diseases caused by the bacteria *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Neisseria meningitidis*, and *Staphylococcus aureus* in people living on and around the Navajo and White Mountain Apache (WMA) tribal lands. American Indians have higher rates of disease caused by these bacteria compared to the general US population. In this issue of the newsletter, we discuss invasive disease trends for *H. influenzae* type b (Hib) in American Indian children.

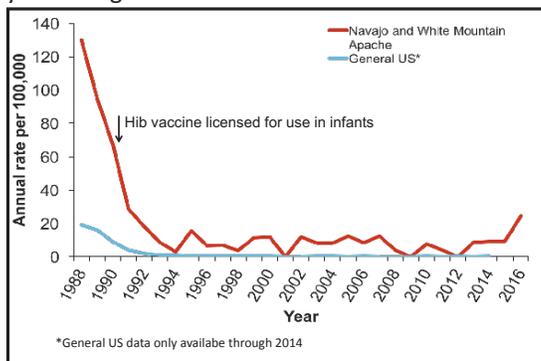
H. influenzae in American Indian children:

The bacterium, *H. influenzae* can cause mild ear infections and serious invasive diseases including pneumonia, meningitis and bacteremia, among others. Children and the elderly are most at risk for *H. influenzae* illness. Historically, American Indian children had higher rates of invasive *H. influenzae* disease and got the disease at a younger age than other children in the US (2-6 months vs. 6-11 months, respectively). The majority of *H. influenzae* disease was caused by serotype b (Hib). PedvaxHib vaccine was introduced in 1991 and is preferentially recommended for American Indian children because it provides protective antibody levels after one dose. Three doses are recommended for children to be given at 2, 4, and 12-15 months of age.



Center for American Indian Health Study Physician, Dr. Nina Ritchie with Arianna Belingachee, niece of CAIH staff, Marissa Begay.

Figure: Invasive *H. influenzae* type b disease among Navajo and White Mountain Apache children <5 years of age



Current trends in *H. influenzae* type b disease in American Indian children: After vaccine introduction, Hib disease decreased significantly for American Indian children (Figure). There were no reciprocal increases in invasive disease caused by the other *H. influenzae* types (a, c, d, e, f). The last case of pediatric Hib disease occurred in 2013 among White Mountain Apache children and in 2016 among Navajo children.

With the reduction in Hib disease, type a is now the leading cause of invasive *H. influenzae* in Navajo and White Mountain Apache children. While some populations have experienced an increase in non-b types of *H. influenzae*, there has been no such increase in Navajo and White Mountain Apache children. The rate of Hib disease among Navajo and White Mountain Apache children continues to be higher compared to the rate for children of other ethnicities. While the rate of Hib disease historically peaked in American Indian infants between 4 and 6 months of age, two-thirds of

cases in the past three years have occurred in children aged 1 to 5 years who had received at least 2 doses of PedvaxHib. Similar trends in Hib epidemiology have not been observed in other US children. These epidemiologic trends may be caused by a combination of factors, and we are working with Federal, State and Tribal officials to understand, monitor and address the persistent burden of disease.

H. influenzae disease surveillance: Although American Indians comprise less than 3% of the general population, it is estimated that 10% of the burden of invasive *H. influenzae* disease in the US occurs in this population. Continued surveillance of *H. influenzae* disease may provide explanations for the differential disease burden and recent trends in Hib epidemiology among Navajo and White Mountain Apache children and may inform whether modifications to the current prevention and control strategies are warranted.

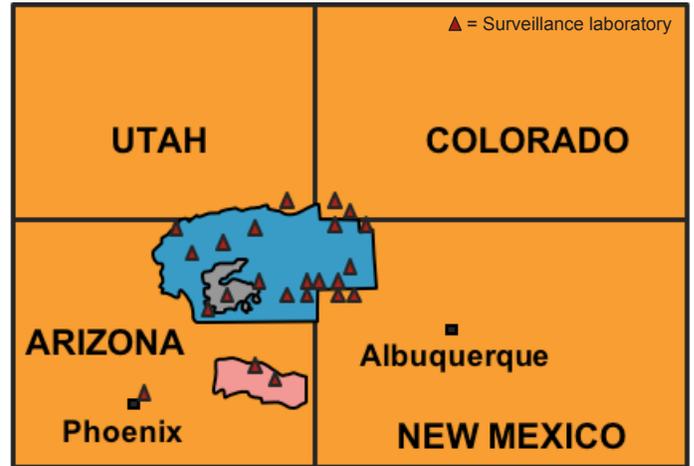
Many Thanks to our community partners

Navajo Nation

- Represented by 20+ laboratories
- Navajo Epidemiology Center
- Navajo Area Indian Health Service

White Mountain Apache

- Represented by 3 laboratories
- White Mountain Apache Tribal Council
- Phoenix Area Indian Health Service



What bacterial isolates do we look for?

Streptococcus pneumoniae
Haemophilus influenzae
Neisseria meningitidis
Staphylococcus aureus

Isolated from normally sterile body sites such as:

- Blood
- Cerebrospinal Fluid (CSF)
- Joint Fluid (Synovial Fluid)
- Middle Ear (*S. pneumo* only)
- Bone
- Pleural Fluid
- Peritoneal Fluid
- Pericardial Fluid

We request ONE slant of the *S. pneumoniae*, *H. influenzae*, *N. meningitidis*, or *S. aureus* isolate.

CAIH will provide the chocolate agar slants upon request. Isolates are sent to our reference labs for additional testing.

Please maintain the isolate in your lab until you receive confirmation from us that the isolate was viable.

If you have any questions about Active Bacterial Surveillance, please contact us

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Photos by Ed Cunicelli

The **mission** of Johns Hopkins Center for American Indian Health is:

to work in partnership with American Indian and Alaska Native communities to improve the health status, self-sufficiency, and health leadership of Native people. This mission is accomplished through three core activities:

Research

Training/Education

Service