

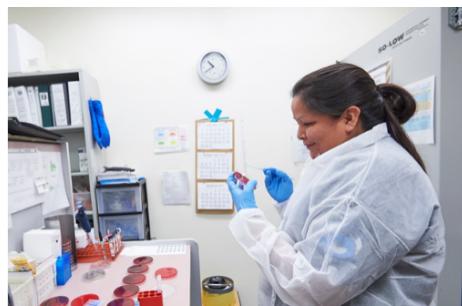
Active Bacterial Surveillance

February 2020 Newsletter



What we do

In collaboration with the Navajo Nation and White Mountain Apache Tribe, the Center for American Indian Health (CAIH) actively monitors serious diseases caused by the bacteria *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Neisseria meningitidis*, and *Staphylococcus aureus* (*S. aureus*) in people living on and around the Navajo and White Mountain Apache Tribal lands. Native Americans have higher rates of disease caused by these bacteria. In this issue of the newsletter, we provide results from three years of *S. aureus* surveillance between May 1, 2016 and April 30, 2019.



What is *S. aureus*?

S. aureus most often causes mild disease, such as skin and soft tissue infections, but it can also cause invasive disease, such as pneumonia, sepsis, osteomyelitis, and endocarditis. *S. aureus* that are resistant to first-line antibiotics are classified as methicillin-resistant (MRSA) and are associated with a higher mortality rate. Historically, MRSA was commonly acquired in healthcare settings, but, more recently, many infections are being acquired in the community. Previous studies have found high rates of community-acquired MRSA infection among Native Americans (Groom, 2001).

Results of *S. aureus* surveillance

Characteristics of invasive *S. aureus* infections:

During the three years of surveillance, 659 cases of invasive *S. aureus* disease were identified (Year 1: 183; Year 2: 234; Year 3: 242). Most cases had bloodstream infections (76%) and 34% were infected with MRSA. Thirty-eight percent of cases had no recent contact with the healthcare system and were classified as having community-acquired infections. Most cases were older (61% were ≥ 50 years of age) and had at least one underlying medical condition (94%), most commonly type-2 diabetes (62%), hypertension (47%) and obesity (37%). Eighty-six percent of cases required hospitalization and 12% of cases required an amputation as a result of the infection. Five percent of cases died within 30 days of initial culture.

Figure 1: Number of cases of invasive *S. aureus* disease by surveillance year and site

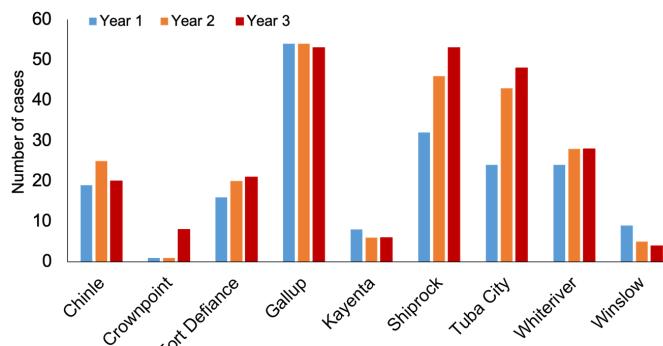
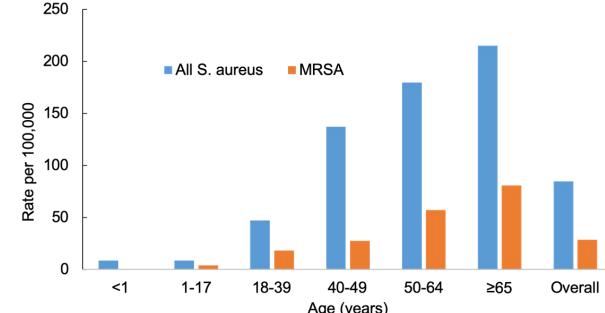


Figure 2: Incidence of invasive *S. aureus* disease overall and by age group



Burden of disease on Navajo and White Mountain Apache Tribal lands:

During the three years of surveillance, the overall incidence of invasive *S. aureus* disease was 84.4 per 100,000 persons. Incidence increased significantly with age. The age-adjusted incidence of MRSA was 28.4 per 100,000 persons, 1.4 times higher than what is reported for the general US population (20.2 per 100,000 persons in 2016; CDC).

Conclusions

These results suggest that there is a high burden of invasive *S. aureus* disease among Native Americans in this region, particularly among adults with other medical conditions. The high rate of MRSA infections, which can be more difficult to treat and therefore more dangerous, emphasizes the importance of appropriate antibiotic use. Developing and targeting prevention strategies to those most at risk may help to reduce invasive *S. aureus* disease.

What does this mean in your community?

Understanding the burden can help:

- **The public health community** bring attention to this problem and plan interventions (e.g. community & provider education)
- **Healthcare administration** plan resources
- **Healthcare providers** manage patients by promoting earlier detection and proper treatment

How can you protect yourself and your family from *S. aureus* infections?

- Know the signs of infection and contact your healthcare provider if you think you have an infection
- Keep cuts and scrapes clean and covered
- Encourage good hygiene such as cleaning hands regularly
- Discourage sharing of personal items, including towels and razors

Results of surveillance for invasive *S. aureus* disease on Navajo Nation and White Mountain Apache were recently published. Sutcliffe, CG, et al. (2019). *The burden of Staphylococcus aureus among Native Americans on the Navajo Nation*. PLOS ONE, 14(3). Read here: <https://doi.org/10.1371/journal.pone.0213207>
Sutcliffe, CG, et al. (2020) High burden of Staphylococcus aureus among Native American individuals on the White Mountain Apache Tribal lands. Open Forum Infectious Diseases. Read here: <https://doi.org/10.1093/ofid/ofaa061>

Thanks to our many community partners!

Navajo Nation	White Mountain Apache	UTAH	COLORADO
<ul style="list-style-type: none"> • Represented by 20+ laboratories • Navajo Epidemiology Center • Navajo Area Indian Health Service • Navajo Nation Human Research Review Board 	<ul style="list-style-type: none"> • Represented by 3 laboratories • White Mountain Apache Tribal Council • Phoenix Area Indian Health Service 	ARIZONA Phoenix	Albuquerque NEW MEXICO

What bacterial isolates do we look for?

- *Streptococcus pneumoniae*
- *Haemophilus influenzae*
- *Neisseria meningitidis*
- *Staphylococcus aureus*
- Group A Streptococcus (WMA only)

Isolate from sterile body sites:

- Blood
- Bone
- Cerebrospinal fluid
- Pericardial fluid
- Peritoneal fluid
- Pleural fluid
- Synovial fluid (joint fluid)
- Middle ear (*S. pneumo* only)

We request ONE slant of the *S. pneumoniae*, *H. influenzae*, *N. meningitidis*, *S. aureus*, or Group A *Streptococcus* 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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The mission of the Johns Hopkins Center for American Indian Health:

We 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