

# 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* (*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 the first year of *S. aureus* surveillance between May 1, 2016 and April 30, 2017.

**Overview:**

*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 higher mortality. Historically, MRSA was most commonly acquired in healthcare settings, but now, many infections are being acquired in the community. Previous studies have found high rates of community-acquired MRSA infection among Native Americans.<sup>1</sup>

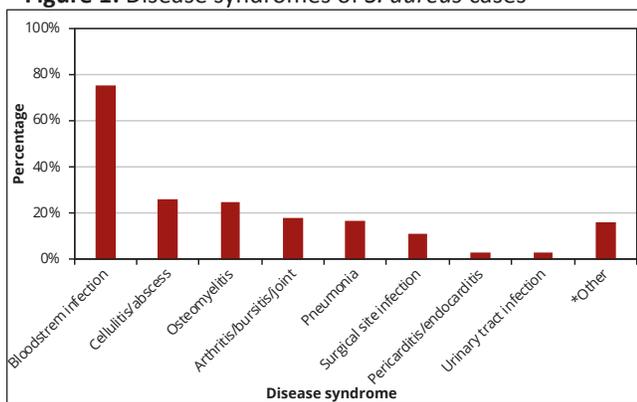
**Characteristics of invasive *S. aureus* infections:**

During the first year, 181 cases of invasive *S. aureus* disease were identified through surveillance. The majority were bloodstream infections (Figure 1) and 40% were MRSA. Thirty-five percent of cases had no recent contact with the healthcare system and were classified as having community-acquired infections. The majority of cases were older (61% were ≥50 years of age) and had at least one underlying medical condition (94%), with type-2 diabetes (59%), obesity (42%) or alcohol abuse (25%) being the most common.

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

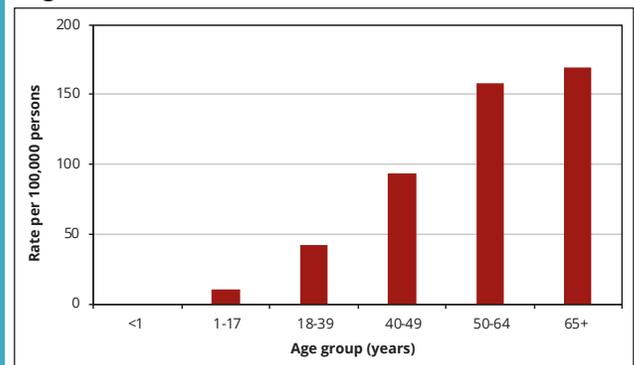
During the first year of *S. aureus* surveillance, the overall annual incidence of invasive disease was 69.1 per 100,000 persons. Incidence increased significantly with age (Figure 2). The age-adjusted incidence of MRSA was 30.6 per 100,000 persons, 1.6 times higher than what is reported for the general US population (18.8 per 100,000 persons).<sup>2</sup>

**Figure 1: Disease syndromes of *S. aureus* cases**



\*Most common: pyelonephritis, GI bleed, and septic pulmonary emboli  
Note: multiple syndromes possible per case

**Figure 2: Incidence of invasive *S. aureus* disease**



**Conclusions:**

These results suggest that there is a high burden of invasive *S. aureus* disease among Native Americans in the Southwest, 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.

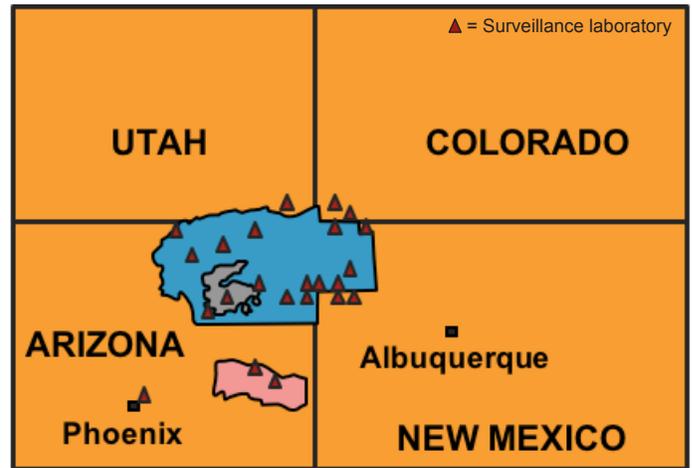
<sup>1</sup> Groom AV, Wolsey DH, Naimi TS, et al. Community-acquired methicillin-resistant *Staphylococcus aureus* in a rural American Indian community. JAMA 2001; 286:1201-5.

<sup>2</sup> Centers for Disease Control and Prevention. Active Bacterial Core Surveillance Report, Emerging Infections Program Network, Methicillin-Resistant *Staphylococcus aureus*, 2015.

# 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**