

#### 453. High Burden of Invasive and Severe Group A *Streptococcus* Disease Among Native Americans on the White Mountain Apache Tribal Lands

Catherine Sutcliffe, PhD, ScM<sup>1</sup>; Ryan M. Close, MD, MPH<sup>2</sup>; Anne M. Davidson, BS<sup>2</sup>; Angelina Reid, Lab Technician<sup>3</sup>; Dianna Quay<sup>1</sup>; Katherine Nicolet, MSN<sup>1</sup>; Laura B. Brown, MD, MD<sup>1</sup>; Lindsay Grant, PhD MPH<sup>1</sup>; Robert Weatherholtz, BS<sup>4</sup>; James McAuley, MD, MPH<sup>2</sup> and Laura Hammitt, MD<sup>3</sup>; <sup>1</sup>Johns Hopkins Bloomberg School of Public Health/Center for American Indian Health, Baltimore, Maryland; <sup>2</sup>Indian Health Service, Whiteriver, Arizona; <sup>3</sup>Johns Hopkins Center for American Indian Health, Whiteriver, Arizona; <sup>4</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland

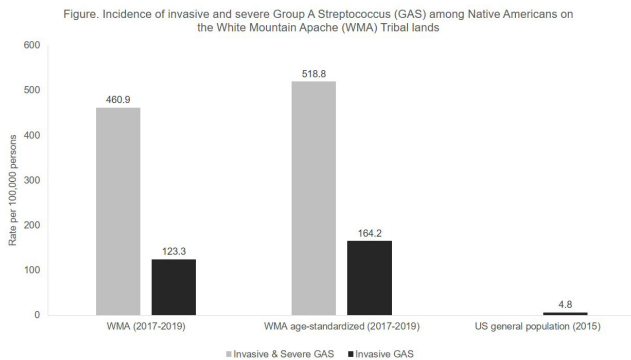
**Session:** 51. Soft Tissue and Skin Infections  
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**Background.** Native Americans are overrepresented in outbreaks of Group A *Streptococcus* (GAS) in the United States (US). In 2016, several invasive cases of GAS were detected at the Whiteriver Indian Health Service (IHS) Hospital in Arizona that primarily serves the White Mountain Apache (WMA) Tribe. The objective of this study was to determine the burden of invasive and severe GAS disease among Native Americans on the WMA Tribal lands.

**Methods.** Prospective population and laboratory-based surveillance for invasive and severe GAS infections was conducted for two years from March 2017 through February 2019. A case was defined as a Native American individual living on or around WMA Tribal lands with GAS isolated from a normally sterile body site (invasive) or from a non-sterile site (e.g., wound, throat, ear) requiring hospitalization (severe). Incidence rates were calculated using the IHS User Population as the denominators. Age-standardized incidence rates were calculated using US Census data from 2015 as the reference group.

**Results.** 157 cases were identified (Year 1: 85; Year 2: 72), including 42 (27%) invasive and 115 (73%) severe cases. Most cases were adults (88.5%; median age: 40.5 years) and had  $\geq 1$  underlying medical condition (99.4%), including alcoholism (57.1%), hypertension (37.2%), and diabetes (34.0%). 47.8% of cases had a trigger in the past two weeks, including penetrating trauma (31.8%) and blunt force trauma (14.0%). For 72.9% of cases, a co-infection was detected (most commonly *Staphylococcus aureus*: 96.8%). 4.5% of cases required amputation and 1.9% died within 30 days of initial culture. The incidence of invasive and severe GAS was 460.9 per 100,000 persons (95% confidence interval: 394.3, 538.8), with no significant difference by year. The incidence was highest among adults  $\geq 65$  and lowest among children 5–17 years of age. Age-standardized incidence rates of invasive and severe GAS and invasive only GAS are presented in the Figure.

**Conclusion.** The WMA community has experienced disproportionately high rates of invasive and severe GAS for over two years. Studies to determine the reservoirs for transmission are urgently needed, as are interventions to reduce the morbidity and mortality associated with these infections.



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#### 454. Perinatal Risk Factors Associated with Skin Infection Hospitalisation in Western Australian Aboriginal and Non-Aboriginal Children

Rosanne Barnes, PhD<sup>1</sup>; Asha C. Bowen, PhD<sup>1</sup>; Roz Walker, PhD<sup>1</sup>; Steven Y. C. Tong, PhD<sup>2</sup>; Jodie McVernon, PhD<sup>2</sup>; Patricia T. Campbell, PhD<sup>2</sup>; Parveen Fathima, MID, BDS<sup>1</sup>; Nicholas de Klerk, PhD<sup>1</sup>; Yue Wu, PhD<sup>1</sup>; Christopher C. Blyth, MBBS (Hons), DCH, FRACP, FRCPA, PhD<sup>3</sup>; Jonathan R. Carapetis, PhD<sup>1</sup> and Hannah C. Moore, PhD<sup>1</sup>; <sup>1</sup>Telethon Kids Institute, The University of Western Australia, Nedlands, Western Australia, Australia; <sup>2</sup>Doherty Department University of Melbourne, Peter Doherty Institute for Infection and Immunity, Melbourne, Victoria, Australia; <sup>3</sup>Perth Children's Hospital, Nedlands, Western Australia, Australia

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**Background.** Hospitalisation with skin infection in Western Australian (WA) Aboriginal children is common, with the highest rates in infants and children from remote WA. We aimed to quantify infant, maternal, and sociodemographic risk factors for skin infection hospitalization in WA children, focusing on Aboriginal children aged <17 years.

**Methods.** We conducted a retrospective population-based cohort study with linked perinatal and hospitalization data on WA-born children (1996–2012), of whom 31,348 (6.7%) were Aboriginal. We used Cox regression to calculate adjusted hazard ratios and associated population attributable fractions (PAFs) for perinatal factors attributed to the first hospitalization with skin infection. To identify specific risk factors for early-onset infection, we further restricted the cohort to infants aged <1 year.

**Results.** Overall, 5,439 (17.4%) Aboriginal and 6,750 (1.5%) non-Aboriginal children were hospitalized at least once with a skin infection. Aboriginal infants aged <1 year had the highest skin infection hospitalization rate (63.2/1,000 child-years). The strongest risk factors in Aboriginal children aged <17 years were socio-economic disadvantage, very remote location at birth and multi-parity ( $\geq 3$  previous pregnancies) accounting for 24%, 23% and 15% of skin infection hospitalizations, respectively. Other risk factors included maternal age <20 years, maternal smoking during pregnancy and low birthweight.

**Conclusion.** We have quantified the relative influence of perinatal risk factors associated with skin infection hospitalizations in WA children, providing measures indicating which factors have the potential to reduce the most hospitalizations. Our evidence supports existing calls for substantial government investment in addressing underlying social and environmental barriers to healthy skin in WA Aboriginal children but also identifies potential areas to target health promotion messaging at individuals/families on maternal smoking during pregnancy and skin hygiene for families.

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#### 455. Gender Differences in Clinical, Microbiological and Treatment Characteristics of Adult Hospitalized Patients with Cellulitis: A Large, Prospective Multicenter Study

Julio Collazos, MD, PhD<sup>1</sup>; Belén De la Fuente, MD, PhD<sup>2</sup>; Javier De la Fuente, MD, PhD<sup>3</sup>; Alicia García, MD<sup>4</sup>; Helena Gomez, MD<sup>4</sup>; Maria Rivas-Carmenado, MD<sup>4</sup>; Tomás Suárez-Zarracina, MD, PhD<sup>4</sup>; Hector Enriquez, MD<sup>5</sup>; Paula Sánchez, MD<sup>6</sup>; Maria Alonso, MD<sup>3</sup>; Ian López-Cruz, MD<sup>5</sup>; Manuel Martín-Regidor, MD<sup>5</sup>; Ana Martínez-Alonso, MD<sup>6</sup>; José Guerra, MD<sup>6</sup>; Arturo Artero, MD, PhD<sup>5</sup>; Marino Blanes, MD, PhD<sup>7</sup> and VICTOR ASEÑI, MD, PhD<sup>8</sup>; <sup>1</sup>Hospital De Galdacano, Vizcaya, Spain, Galdacano, Pais Vasco, Spain; <sup>2</sup>Hospital De Cabueñes, Gijón, Asturias, Spain; <sup>3</sup>Hospital Povisa, Vigo, Galicia, Spain; <sup>4</sup>Hospital Universitario Central De Asturias; Oviedo Uni. Sch. Medicine, Oviedo, Asturias, Spain; <sup>5</sup>Hospital Universitario Dr Peset, Valencia, Comunidad Valenciana, Spain; <sup>6</sup>Complejo Hospitalario De Leon, Leon, Castilla y Leon, Spain; <sup>7</sup>Hospital Universitario y Politécnico La Fe; Valencia, Comunidad Valenciana, Spain; <sup>8</sup>Hospital Universitario Central De Asturias, Oviedo Univ. Sch. Medicine, Oviedo, Asturias, Spain

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**Background.** Studies comparing gender differences between cellulitis features are lacking and might be useful for the knowledge, prevention and management of this infection.

**Methods.** Prospective, observational, multicenter study of 606 adult patients (314, 51.8% men) with cellulitis. Comorbidities, microbiological, clinical, lab, diagnostic, and treatment data were analyzed. Multiple logistic regression modeling was performed to determine the variables independently associated with gender.

**Results.** Women were older ( $P < 0.0001$ ), less likely to have prior wounds ( $P = 0.02$ ), and more likely to have venous insufficiency ( $P = 0.0002$ ), edema/lymphedema ( $P < 0.0003$ ) and prior cellulitis episodes than men ( $P = 0.07$ ). Cellulitis location also differed between genders ( $P = 0.02$ ). Regarding microbiology, male patients were more likely to have positive pus cultures than women ( $P = 0.0008$ ), mainly monomicrobial ( $P = 0.03$ ). There were differences in microorganisms isolated from pus ( $P = 0.002$ ), with higher *S.aureus* infection rates among men than women ( $P = 0.04$ ). Drawing of blood for culture was also more common in men ( $P = 0.03$ ). Overall, any microorganism ( $P = 0.006$ ) and the causative microorganism ( $P = 0.04$ ) were more commonly identified in male than in female patients, due exclusively to the pus culture results, because there were no differences in the positivity of blood cultures ( $P = 0.9$ ). Of the 61 *S.aureus* isolates 15 (24.6%) were methicillin-resistant, without significant differences between genders ( $P = 0.5$ ). Regarding therapy, men had longer treatments ( $P = 0.03$ ) and higher rates of antibiotic treatment after discharge ( $P = 0.04$ ). Factors independently associated with female gender in multivariate analysis were: older age ( $P < 0.0001$ ), prior episodes of cellulitis ( $P = 0.01$ ), presence of edema/lymphedema as predisposing factor ( $P = 0.004$ ), negative pus culture ( $P = 0.0002$ ) and location of cellulitis in thorax/abdomen ( $P = 0.035$ ) and head/neck ( $P = 0.0003$ ) as compared with lower extremities

**Conclusion.** Cellulitis in women as compared with men present at older ages, recur more frequently, are more commonly related to edema/lymphedema, affect more frequently other locations compared with lower extremities, and have less frequently positive pus cultures.

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#### 456. Dalbavancin, a Long-Acting Lipoglycopeptide Antimicrobial Agent, Reduces Length of Stay and Improves Patient Work Productivity in a Hospital Critical Pathway for Acute Bacterial Skin and Skin Structure Infections (ABSSSI)—the ENHANCE ABSSSI Trial

Matthew W. McCarthy, MD<sup>1</sup>; Katelyn R. Keyloun, Pharm D<sup>2</sup>; Patrick Gillard, PharmD<sup>2</sup>; Justin J. Choi, MD<sup>3</sup>; Ronald Copp, MPH<sup>1</sup> and Thomas J. Walsh, MD, PhD (hon)<sup>5</sup>; <sup>1</sup>Weill Cornell Medicine of Cornell University, New York Presbyterian Hospital, and Hospital for Special Surgery, New York, New