

Session: P001 Epidemiology and surveillance of pathogenic streptococci

**Category: 3a. Resistance surveillance & epidemiology: MRSA, VRE & other Gram-positives**

22 April 2017, 15:30 - 16:30  
P0019

### Distribution of *Streptococcus pneumoniae* serotypes among global populations

Krystyna Kazmierczak<sup>1</sup>, Meredith Hackel<sup>1</sup>, Henry LI<sup>1</sup>, Jennifer Kalamatas<sup>1</sup>, Betsy Hilton<sup>\*2</sup>, Heather Sings<sup>3</sup>, Raul Isturiz<sup>2</sup>

<sup>1</sup>*International Health Management Associates, Inc.*

<sup>2</sup>*Pfizer; Vaccines*

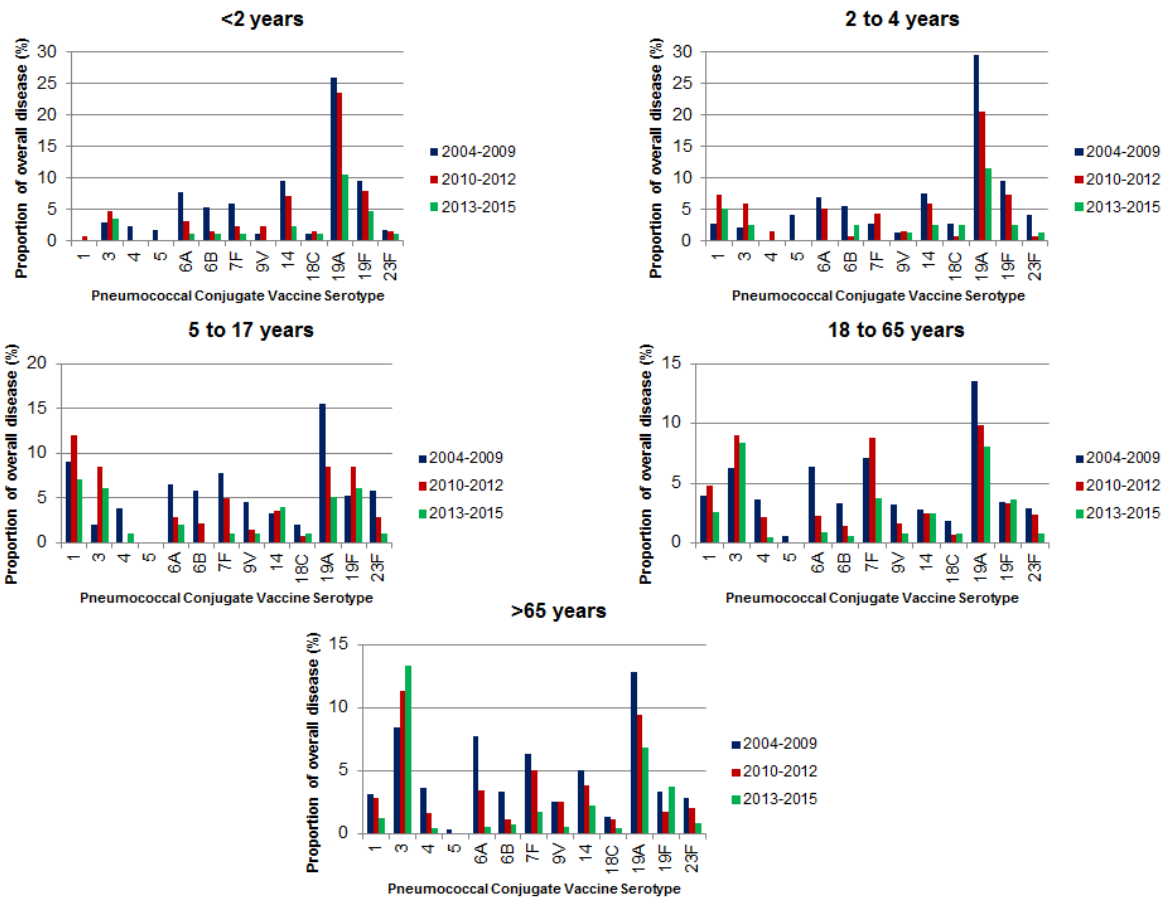
<sup>3</sup>*Pfizer Inc.*

**Background:** *Streptococcus pneumoniae* remains a leading cause of disease in children and adults. Serotypes differ in invasiveness, virulence and antibiotic resistance; therefore, serotype surveillance is necessary to monitor the burden of pneumococcal disease, especially in the setting of pneumococcal vaccination programs with the 10 and 13 valent pneumococcal conjugate vaccines (PCV10 and PCV13). The serotypes and antibiotic susceptibilities of 6170 *Streptococcus pneumoniae* isolates collected through the Tigecycline Evaluation Surveillance Trial, (TEST) 2004-2015, were evaluated.

**Material/methods:** Serotypes were determined by PCR; isolates non-typeable by PCR were serotyped by Quellung reactions. Minimum inhibitory concentrations were determined by broth microdilution and interpreted using CLSI guidelines.

**Results:** Worldwide, in the 2013-2015 time period serotypes 19A (10.6%), 35B (8.2%), 11A (5.9%), 15B (5.9%), 15A (4.7%), and 19F (4.7%) were the most common in children under 2y. In adults ≥65y, serotypes 3 (13.3%), 19A (6.9%), 22F (6.2%), 11A (6.0%) and 35B (4.3%) were most common. Overall, the proportion of disease caused by PCV13 serotypes globally declined when comparing the pre-PCV13 time period (2004-2009) to the post-PCV13 time periods (2010-2012 and 2013-2015) [Figure 1]. In the 2013-2015 time period serotypes 33F, 15A, 19A, 9V, and 6A exhibited higher levels of erythromycin resistance (MICs ≥1 mg/L), while 19A, 14, and 9V demonstrated higher rates of penicillin-intermediate (MIC 4 mg/L) isolates. Forty-two (2.2%) and ten (0.5%) isolates of varying serotypes were penicillin-resistant (MIC ≥0.12 mg/L, meningitis; MIC ≥8 mg/L, non-meningitis) and levofloxacin-resistant (MIC ≥8 mg/L), respectively.

**Figure 1**



**Conclusions:** This analysis of an existing isolate database found serotypes 3 (9.6%), 19A (7.7%), 11A (5.0%), 22F (5.0%), 35B (5.0%) and 8 (4.4%) to be the most common global serotypes in the most recent period (2013-2015). These data, although limited in numbers, add to the body of literature that demonstrates that the use of PCVs globally has resulted in significant reduction in invasive pneumococcal disease caused by the serotypes contained in the vaccine. Susceptibility of *Streptococcus pneumoniae* to antimicrobial agents commonly used as part of empiric therapy further documents the value of vaccination programs and the need for ongoing monitoring of the seroepidemiology of this important pathogen.