**INTRODUCTION**

- Streptococcus pneumoniae, or pneumococcus, is the leading cause of pneumonia.
- In the USA, +/- 39,750 cases of invasive pneumococcal disease and 4,000 death occurs annually. Despite the efforts having adequate antibiotic coverage in health care system the respiratory infections caused by pneumococci are still a major health problem.
- The effectiveness of pneumococcal vaccination is widely recognized. However, a few vaccine failure cases can be expected as vaccines are generally not 100% effective. This is due to the large number of pneumococcal serotypes. The ability of this organism to switch capsules has made the prevention of this disease through vaccination challenging.
- There are more than 90 serotypes of Streptococcus pneumoniae (Sp) able to cause CAP. Surveillance of the most common serotypes causing invasive and non-invasive disease is important to define optimal serotypes to include in vaccines. Sp isolated from blood cultures are considered invasive disease (IPD) and Sp isolated from sputum is considered non-invasive disease (NIPD). Data on current IPD and NIPD isolates is scarce.

The objective of this study was to describe the most common serotypes isolated from blood and sputum in hospitalized patients with CAP in Jefferson County, KY.

**MATERIALS AND METHODS**

- Secondary data analysis of the Hospitalized adults (>18 years old) with Pneumococcal Pneumonia Incidence (HAPI) Study.
- Sputum culture and blood culture were obtained on admission to the hospital ideally prior to antibiotic therapy.
- Identification of capsular serotypes Sp was performed using the Neufeld Quellung reaction test.
- Quellung reaction test is a biochemical reaction in which antiscapular antibodies bind to the capsule of a bacterium, resulting in the capsule to swell. Its antibodies become clearly demarcated and are more conspicuous, especially using microscopy.

**RESULTS**

- A total of 94 patients were enrolled in the study.
- Serotypes isolates in sputum and blood are outlined in Figure 1.
- The distribution of serotypes (blood + sputum) are described in Figure 2.
- Three of the most common serotypes found in the blood/sputum cultures are not part of the coverage of PVC-13 or PPV-23 vaccines. There is a representation of the serotypes coverage on Figure 3.

**CONCLUSIONS**

- This study indicates that Sp serotype 3 is a prevalent serotype causing IPD and NIPD in Jefferson County, KY. No particular serotype is substantially more frequent in hospitalized patients with CAP.
- Three of the isolated serotypes are not included in either of the current pneumococcal vaccines. This surveillance data is important to define serotypes to include in the next generation of Sp vaccines.
- It’s important to notice the distribution of the serotypes included in the bar chart (Figure 2). Two of the three serotypes not included in the vaccines are of the highest distribution. The three serotypes not included in any vaccine coverage are 6C, 16F and 35B.
- The results of this study support an important and stable role for serotype in determining the outcome of pneumonia and the adequate coverage for future vaccine products.

**REFERENCES**