Changes to existing recommendations for older adults, however, could cement these disparities in adult PCV13 uptake in the very communities at increased risk for pneumococcal disease. These vulnerable communities may instead benefit from targeted and tailored interventions to increase pneumococcal vaccination.

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1502. The Impact of Patients’ Demographics, Insurance Payor and Comorbidities on Pneumococcal Vaccine Uptake in a Resident Community Internal Medicine Clinic

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**Session:** 166. Pneumococcal Immunization in Adults

**Friday, October 6, 2017: 12:30 PM**

**Background.** National pneumococcal vaccine uptake rates remain well below the Healthy people 2020 target goals. This study aims to assess uptake rates at a residents’ community clinic and to identify factors affecting the likelihood of receiving the vaccine.

**Methods.** A retrospective chart review was performed utilizing medical records of patients who visited the Internal Medicine clinic between March 1st and July 31st, 2016. Patients were divided into two age groups: age 65 years and above (≥ 65) and those between 19 and 65 years (<65) meeting at least one of ACIP Adult pneumococcal vaccine indications. Four categorical patient demographic variables were assessed: age, ethnicity, primary language, and gender. Indication-specific parameters included: alcoholism, diabetes, heart failure, liver disease, and lung disease. A patient’s insurance payor was considered a categorical variable. Logistic regression analysis was used to examine the univariable and independent multivariable associations of all available parameters.

**Results.** 1,992 patients were included in the study. Overall rate of vaccination in the <65 group was 5% and 16% for ≥ 65. Increasing age was positively associated with vaccination in the younger group, whereas it decreased the odds of vaccination in the older age group. A private insurance payer had a small positive effect on vaccination among the older age group (OR=1.71). A diabetes diagnosis increased the odds of vaccination significantly (11% of patients diagnosed with diabetes vs. 4% of the undiagnosed group were vaccinated). About 26% of those diagnosed with a lung disease were vaccinated, 14% of those not diagnosed with one were vaccinated.

**Conclusion.** Age, insurance coverage and specific indications appear to directly influence patient’s likelihood of receiving pneumococcal vaccines, whereas other factors like ethnicity, primary language, and gender had no significant impact. Interventions are actively in place to improve vaccination outcomes with these factors in mind.

**Adjusted Predictions with 95% CIs**

**Disclosures.** All authors: No reported disclosures.

1503. Implementing Pneumococcal Vaccination in Hospitalized Adults with COPD, Asthma, Current Smokers, and/or Over Age 65 Years. A Performance Improvement Project

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**Session:** 166. Pneumococcal Immunization in Adults

**Friday, October 6, 2017: 12:30 PM**

**Background.** Pneumonia is a common illness in COPD and asthma. Readmissions due to disease exacerbations have a substantial impact on resource utilization. Efforts to increase the awareness of recommended pneumonia prevention strategies are supported to minimize these exacerbations and eventually to decrease morbidity and mortality.

**Methods.** In March 2017, our team of medical residents initiated a quality improvement (QI) project to improve the vaccination status of hospitalized patients. The team provided education to inpatient care providers on medical floors regarding pneumonia vaccination guidelines. Questionnaire based data regarding pneumonia vaccination status was collected from the admitted patients with documented diagnoses of COPD, Asthma, current smokers and those ≥ 65 years from April to May, 2017. Based on the survey, Pneumococcal conjugate vaccine (PCV13) or Pneumococcal polysaccharide vaccine (PPSV23) was offered to the patients. Faculty from divisions of Pulmonary Medicine and Geriatrics supervised the team. The project is ongoing; expected goal of 400 patients to be targeted prior to presentation.

**Results.** Our study had 100 patients of which 45 confirmed they were not immunized. 21 of these were given PCV13 based on age (> 65 years) while 12 received PPSV23.

| Age in years prior to admission (n) | Patient aware of difference between PCV13 and PPSV23 vaccines (%) | Vaccination status at discharge (n) |
|-----------------------------------|-------------------------------------------------|-----------------------------------|
| <65/65 Up to 65 Not up to date    | Not aware or not able to assess                 | Not vaccinated due to refusal     |
|                                   | Unsure if vaccinated                           |                                   |
|                                   | Aware                                            | Vaccinated                        |
|                                   | Vaccinated but uncertain                       | Aware                              |
|                                   | Year of type of vaccination                    | Not asked or not able to assess   |
|                                   | Vaccine indication indicated                    | Vaccination indicated with certainty |
|                                   |                                            |                                  |
| 38 62 42 46 3 10 5 85 10 45 33 12 |                                  |                                  |

**Conclusion.** Optimization of vaccination in COPD and Asthma patients requires a multidisciplinary collaboration of primary care providers, patient awareness and willingness to accept vaccination.
Subgroup analysis showed a significantly less hospitalization, ICU admissions and mortality were observed in GOLD 3 and GOLD 4 who were not vaccinated. But this difference was not statistically significant.

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1506. Assessment of the In Vivo Efficacy of Plazomicin (PLZ) Alone or in Combination with Meropenem (MEM) or Tigecycline (TGC) against Enterobacteriaceae (EB) Isolates Exhibiting Various Resistance Mechanisms in an Immunocompetent (i+) Murine Septicemia Model
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Session: 167. Preclinical Study with New Antibiotics and Antifungals
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Background. PLZ is a next-generation aminoglycoside with potent in vitro activity against multidrug- and carbapenem-resistant EB. The objective of this study was to assess the efficacy of PLZ human-simulated exposure, alone and in combination with MEM or TGC, against EB in the i+ murine sepsis model.

Methods. ICR mice were inoculated intraperitoneally with bacterial suspensions of 105 CFU/mL. Eight EB isolates with PLZ, MEM and TGC MICs ranging from 2 to 16, ≤0.015 to >32, and ≤0.06 to 2 mg/L, respectively, were utilized to assess the efficacy of PLZ alone or in combination against isolates at the upper end of PLZ MIC distribution. PLZ, MEM and TGC doses in mice that mimic the human plasma exposures following the administration of the clinical doses summarized in the table were utilized.

| Drug | Human Dose |
|------|------------|
| PLZ  | 15 mg/kg Q24H, 0.5 h infusion |
| MEM  | 2 g Q24H, 3 hours infusion |
| TGC  | 50 mg Q12H |

Conclusion. Treatment mice were administered PLZ, MEM or TGC human-equivalent doses alone or in combinations of PLZ/MEM and PLZ/TGC, while control mice were administered vehicle. Treatments were initiated 1 hours post-infection and continued for 24 hours. Efficacy was assessed by survival through 96 hours. Survival was compared using Kaplan-Meier analysis and log-rank test.

Results. Compared with controls, human-simulated exposure of PLZ monotherapy produced significant improvement in survival for all isolates (P < 0.05) and resulted in overall survival percentages of 86 (n = 50) and 53.3 (n = 30) for isolates with MIC ≤4 and ≥8 mg/L, respectively (P > 0.05). Survival of MEM and TGC groups correlated well with their respective susceptibilities, with incremental increase in survival observed at lower MIC values. For isolate KP 561 (PLZ, MEM and TGC MICs of 8, >32 and 2 mg/L, respectively), PLZ/MEM and PLZ/TGC showed significant reduction in mortality compared with any of the single agents (P < 0.05) (Fig 1).

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This pilot QI project results indicate that many patients were not aware of the difference between the vaccines they received or when they received; this made successful vaccination difficult. Majority of patients agreed for vaccination once counseled regarding indications.

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1504. Sequential Administration of PCV13 Followed by PPSV23 Results in a More Effective Vascular Immunization in Adults
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Session: 166. Pneumococcal Immunization in Adults
Friday, October 6, 2017: 12:30 PM

Background. Recommendations for adult pneumococcal immunization generally specify the use of PCV13 first, followed by PPSV23, when administered sequentially, for prevention of pneumococcal disease. This is supported by observations of reduced functional opsonophagocytic assay (OPA) antibody titers in subjects who received PPSV23 first compared with PCV13 first.

Methods. In a previously-published phase 3 study of pneumococcal vaccine-naïve adults 60–64 years of age, participants received PCV13 followed by PPSV23 one year later (PCV13/PPSV23) or PPSV23 followed by PCV13 one year later (PPSV23/PCV13). Here we report the previously unpublished clinically relevant comparisons for the 2 sequential dosing groups by showing the antibody response curve analyses by serotype. We also highlight the reverse cumulative distribution curve (RCDC) analysis by serotype for the different sequential dosing groups.

Results. OPA titers for shared serotypes rose substantially from pre-vaccination to 1 month post-initial vaccination for both groups. For all serotypes, OPA titers declined over the year interval between vaccinations, but remained higher at the pre-vaccination 2 time point compared with baseline for both groups. When evaluating the antibody response curves, the OPA geometric mean titers (GMTs) were generally higher for all shared serotypes at all measured time points in the PCV13/PPSV23 group compared with the PPSV23/PCV13 group; example serotype 19F (Figure 1). RCDC analyses show that for the PCV13/PPSV23 group, OPA titers after vaccination 2 were generally higher across the full range of responses than for PPSV23/PCV13; example serotype 19F (Figure 2).

Conclusion. The observed immune responses, with the sequential administration of PCV13 followed by PPSV23 (PCV13/PPSV23), are higher compared with responses observed with PPSV23 followed by PCV13 one year later (PPSV23/PCV13). This supports the administration of PCV13 first when use of both pneumococcal vaccines is appropriate.

Limitations: this study was not designed to determine the optimal interval between PCV13 and PPSV23.

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1505. Efficacy of Influenza and Pneumococcal Vaccination in Preventing COPD Exacerbations
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Session: 166. Pneumococcal Immunization in Adults
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Background. Common causes of exacerbations in chronic obstructive airway disease (COPD) are due to infections by respiratory viruses and bacteria. Influenza vaccine and pneumococcal vaccine have demonstrated decrease in infective exacerbations in this population.

Methods. In this prospective study over 2 years, 146 COPD patients confirmed by GOLD criteria and infected with both influenza and pneumococcal polysaccharide vaccine were compared with 146 unvaccinated controls. Number of acute exacerbations, hospitalizations, ICU admissions, need for invasive mechanical ventilation, mortality difference for 1 year following vaccination were compared.

Results. In vaccinated group there was statistically significant reduction in number of exacerbations of COPD, requirement of hospitalization, ICU admissions and mortality which is depicted in the table. Requirement of mechanical ventilation was higher among cases compared with controls more so among GOLD 3 and 4, which is statistically significant.

| COPD | Vaccinated | Unvaccinated | P value |
|------|------------|--------------|---------|
| Number of exacerbations | 3.23 | 4.5 | <0.001 |
| Hospitalization requirement | 36.3% | 50% | 0.019 |
| ICU admissions | 17.8% | 30.1% | 0.014 |
| Requirement of mechanical ventilation | 14.2% | 6.2% | 0.021 |
| Mortality | 3 | 17 | 0.01 |

Subgroup analysis showed a significantly less hospitalization, ICU admission and mortality among vaccinated belonging to GOLD 1 and GOLD 2 as compared with matched controls. Also more exacerbations, hospitalizations, ICU admissions and mortality were observed in GOLD 3 and GOLD 4 who were not vaccinated. But this difference was not statistically significant.

Conclusion. Overall there was significantly lesser number of exacerbations, hospitalizations, ICU admissions, requirement of mechanical ventilation and mortality among vaccinated group as compared with controls. Subgroup analysis showed a significant benefit from vaccination in COPD GOLD 1 and 2.

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