

Odds of Pneumococcal Vaccination and Hospitalization Due to Pneumonia Among Medicaid Beneficiaries with CHF, COPD, and Diabetes

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Background

- Community-acquired pneumonia (CAP) is one of the leading causes of morbidity and mortality in U.S. adults.
- Individuals with at-risk conditions [diabetes mellitus (DM), chronic obstructive pulmonary disorder (COPD), and congestive heart failure (CHF)] who develop CAP typically have poorer prognoses and more costly inpatient and outpatient episodes than those without known risks.
- Due to these factors, pneumonia vaccination is recommended by the Advisory Committee on Immunization Practices (ACIP) for all adults at least 19 years of age with DM, COPD, or CHF.
- Evaluation of appropriate vaccination in at-risk individuals and likelihood of hospitalization due to pneumonia compared to other at-risk individuals could be valuable for resource allocation and payer-directed interventions.

Objectives

- To assess the association between the receipt of pneumococcal vaccination and DM, COPD, and CHF among at-risk Oklahoma Medicaid beneficiaries.
- To assess the association between hospitalization due to pneumonia and DM, COPD, and CHF among at-risk Oklahoma Medicaid beneficiaries.

Methods

- Study Design:** Cross-sectional, retrospective analysis of Oklahoma Medicaid paid prescription, medical, and hospital claims from January 1, 2016 to July 30, 2017.
- Population:** 23,639 adults with at least one diagnosis of CHF, diabetes (type 1 or 2), or COPD. Dual-eligible beneficiaries were excluded.
- Statistical Analysis:** Descriptive statistics were conducted to highlight present characteristics of the at-risk population. Multiple logistic regression models adjusting for age, sex, race, region, and comorbidities examined the association between each disease state and at least one pneumococcal vaccination as well as each disease state and pneumonia-related hospitalizations. All analyses were conducted using SAS version 9.4 (SAS Institute, Cary, NC).

Table 1: Summary of Demographic and Clinical Variables in Study Population

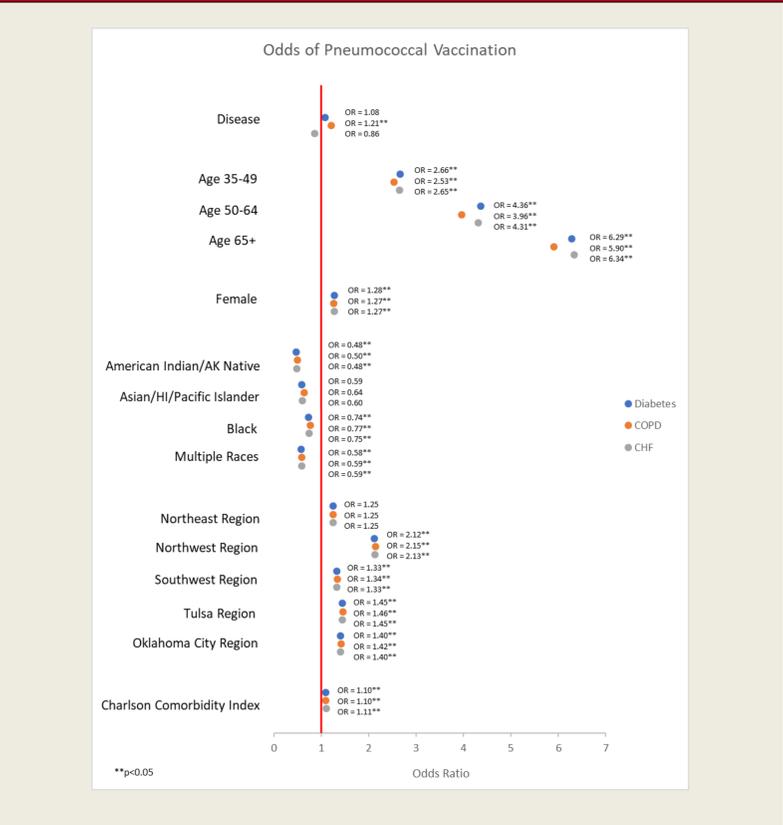
	Diabetes (n=16,018)	COPD (n=8,900)	CHF (n=4,206)	Overall* (n=23,639)
Age, 19-34 (%)	14.26	3.30	8.62	11.80
35-49	32.77	23.37	25.03	30.13
50-64	48.41	69.57	60.07	53.74
65+	4.56	3.76	6.28	4.32
Sex, Male (%)	36.02	37.00	44.86	37.81
Race, White (%)	67.90	80.08	68.50	71.23
American Indian/Alaskan Native	8.58	5.18	6.40	7.35
Asian/Hawaiian/Pacific Islander	2.26	0.49	1.35	1.80
Black	16.76	10.99	19.71	15.54
Multiple Races	4.49	3.27	4.04	4.08
Region, SE (%)	17.46	20.70	17.94	19.11
NE	15.32	17.89	15.79	16.48
NW	6.31	5.94	6.29	6.45
SW	10.13	9.75	8.96	9.85
Tulsa	20.93	18.91	21.47	19.04
OKC	29.84	26.82	29.55	29.07
Deyo Charlson Comorbidity Index (mean, SD) 0.80 (1.47) 0.96 (1.65) 1.53 (1.94) 0.77 (1.41)				

*Comorbidities exist among the three disease states. Therefore, overall number is not equal to the sum of the first three columns.

Results

- Compared to others in the at-risk population, a 21% higher odds of vaccination was associated with COPD (95% CI: 1.06 to 1.39).
- No significant association was observed for vaccination among those with DM or CHF (p>0.05).
- The DM cohort was associated with a lower adjusted odds of pneumonia-related hospitalization (adjusted OR=0.47, 95% CI: 0.44 to 0.51).
- Enrollees with CHF or COPD had a markedly higher adjusted odds of pneumonia-related hospitalization (OR=2.81, 95% CI: 2.59 to 3.05 and OR=3.44, 95% CI: 3.17 to 3.72, respectively).
- In all three hospitalization models, a 8-30% higher odds of vaccination was associated with pneumonia-related hospitalization.

Figure 1: Odds of Pneumococcal Vaccination Among Adult Beneficiaries with DM, COPD, and CHF



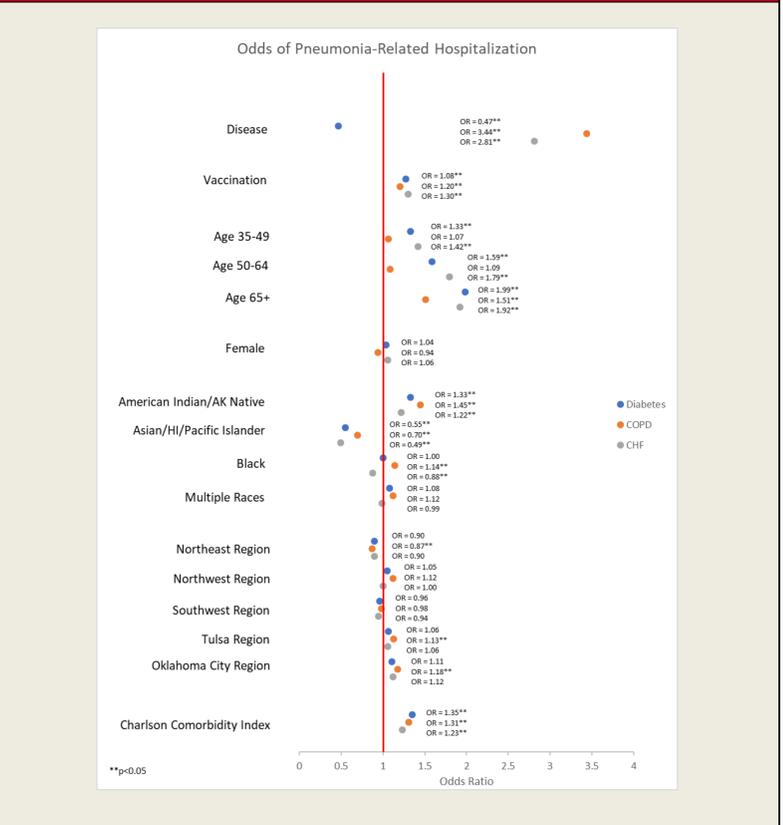
Discussion

- Despite vaccination, pneumonia-related hospitalization is a concern among at-risk Medicaid beneficiaries.
- Further research is needed to assess the association between the effect of pneumococcal vaccination recommendations on vaccination rates and health resource utilization in these at-risk individuals.

Disclosure Statements

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Figure 2: Odds of Pneumonia-Related Hospitalization Among Adult Beneficiaries with DM, COPD, and CHF



Limitations

- Use of administrative claims data is susceptible to potential coding errors or omissions.
- Some variables (such as race) are self-reported.
- The limited time horizon may not capture all pneumonia vaccinations in these patients.
- A cross-sectional study design does not allow researchers to understand the timing involved in the association between vaccination and hospitalization.
- Disease severity was not captured in this data.
- Caution should be taken in generalizing findings to other Medicaid programs.