Does the UMDCare Resident Clinic Follow Appropriate Guidelines for the Pneumococcal-23 Vaccination for Patients Under 65 Years of Age Eligible per CDC Guidelines?

Anmol Mittal, MD, Alexander Kaye, MD/MBA, Zahra Aryan, MD/MPH, Mansi Patel, MD, Daniel Matassa, MD

Rutgers New Jersey Medical School

Background: The USPSTF suggests pneumococcal vaccination for individuals aged 18-64 with high-risk conditions. Pneumococcal vaccination reduces the risk of hospitalization and mortality from pneumococcal infections in susceptible individuals. Addressing vaccination adherence and possible barriers are a pivotal aspect of preventative care. We aim to evaluate the compliance of pneumococcal vaccinations in our population at the UMDCare clinic.

Methods: A retrospective chart review was performed on the UMDCare clinic from September 2020 to August 2021 for high-risk individuals. 200 patients were selected using a random number generator. Inclusion criteria included patients aged 18 to 64 with qualifying diagnosis (Table 1). Chi-squared GOF was used to test demographics for heterogeneity. The primary outcome was to assess if at least 70% of all patients were appropriately vaccinated. Secondary outcomes include sub-group analysis to determine inequalities in subgroup vaccinations and an additional analysis of patients offered the vaccine but subsequently declined. All outcomes were evaluated using a one-sided, one-sample t-test with an alpha of 0.05.

Results: Demographics including age and gender and appointment quarter were not significantly different in both groups (Table 2). Only 42.5% of all eligible patients were vaccinated. Chronic Liver Disease patients were the lowest in vaccination rate. Diabetic patients were vaccinated most often. No subset nor the entire sample met the target of 65% vaccination status (Table 3). Of those vaccinated or offered, diabetic patients and alcohol users were found to have a nonsignificant difference from our threshold of 70% (Table 4).

Conclusion: UMDcare successfully offered the vaccine at the targeted rate for diabetic and alcohol using patients, but not for any other population. These findings may be attributable to a knowledge gap in indications or incomplete patient education. Future research focusing on the effect of additional education to residents and patients about Pneumovax vaccination indications would be beneficial.

Table 1. ICD-10 Diagnostic codes used for the study

ICD-10 Diagnostic Code	Diagnosis
F10.XX	Alcohol Related Disorders
I25.XX, I20.XX, I42.XX, I50.XX	Chronic Heart Disease
J40.XX, J41.XX, J42.XX, J43.XX, J44.XX, J45.XX, J47.XX	Chronic Lung Disease
Z72.0	Tobacco Use
E08.XX, E09.XX, E10.XX, E11.XX, E13.XX	Diabetes mellitus
K70.XX, K72.1, K72.11, K73.XX, K74.XX	Chronic Liver Disease
G96.0X	Cerebrospinal Fluid Leak
N18.XX, D84.XX, Z90.81, D57.0X, D57.1X, D57.2X, D57.8X, D73.0, Q89.01, Z21, B20	Immunocompromising Diseases

Table 2. Patient Demographics (N=200)

Variable	Not Vaccinated	Vaccinated	P – Value
Age (Mean)	50	54	.451
Gender			.098
Males	43.5%	55.3%	
Females	56.5%	44.7%	
Appointment Quarter			.445
Jan – Mar	29.6%	22.4%	
Apr – Jun	21.7%	24.7%	
Jul – Sept	21.7%	17.6%	
Oct – Dec	27.0%	35.3%	

*significance level α <0.05

Table 3. Vaccinated Patient Test Statistics

Variable	P-Value	Mean	Mean Difference from targeted 70%
Any Eligibility Criteria			
Vaccinated	<.001*	42.50%	-27.50%
Chronic Lung Disease			
Vaccinated	<.001*	43.14%	-26.86%
Chronic Heart Disease			
Vaccinated	.003*	47.62%	-22.38%
Chronic Liver Disease			
Vaccinated	<.001*	36.36%	-33.64%
Diabetes			
Vaccinated	.002*	55.24%	-14.76%
Cigarette Smoking			
Vaccinated	<.001*	44.12%	-25.88%
Alcohol Use			
Vaccinated	<.001*	40.00%	-30.00%
CSF Leak History [a]			
Vaccinated		33.33%	
Immunocompromised			
Vaccinated	.006*	38.46%	-31a.54%

*significance level α <0.05

[a]not qualified for t-test due to insufficient sample size

Table 4. Vaccinated+Offered Patient Test Statistics

Variable	P-Value	Mean	Mean Difference from targeted 70%
Any Eligibility Criteria			
Vaccinated or Offered	<.001*	56.00%	-14.00%
Chronic Lung Disease			
Vaccinated or Offered	.010*	52.94%	-17.06%
Chronic Heart Disease			
Vaccinated or Offered	.028*	54.76%	-15.24%
Chronic Liver Disease			
Vaccinated or Offered	.044*	54.55%	-15.45%
Diabetes			
Vaccinated or Offered	.458	69.52%	-00.48%
Cigarette Smoking			
Vaccinated or Offered	.020*	57.35%	-12.65%
Alcohol Use			
Vaccinated or Offered	.121	60.00%	-10.00%
CSF Leak History[a]			
Vaccinated or Offered		33.33%	
Immunocompromised			
Vaccinated or Offered	.012	46.15%	-23.85%

*significance level $\alpha < 0.05$

[a]not qualified for t-test due to insufficient sample size