Use of Influenza and Pneumococcal Vaccine in People with Diabetes

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DISCLOSURE STATEMENT

We have no financial disclosure to make.
This project is based on publicly available data from the Centers for Disease Control and Prevention
The purpose of our study is to examine disparities in the use of Influenza and Pneumococcal Vaccines among adult diabetic Americans. Further, through our analysis we identify systemic barriers to immunization for these two potentially life threatening conditions. In our conclusion, we offer several recommendations for improving immunization rates for influenza and pneumonia among diabetics.

Upon completion of this session, participants will be able to:

- Describe the potential risk of complications faced by diabetic patients who abstain from the influenza and pneumococcal vaccines
- Describe the benefits of immunization with influenza pneumococcal vaccines among diabetics
- Articulate possible strategies to uptake of the influenza and pneumococcal vaccines among diabetics
Infection with influenza or pneumococcal disease can result in serious complications for individuals with diabetes.

Current immunization guidelines for the influenza and pneumococcal vaccines identify diabetics as one of the major target groups.

The Advisory Committee on Immunization Practices (ACIP) has a national target immunization rate of 60% for both the influenza and pneumococcal vaccines among diabetic patients.

Type I and II diabetic patients have shown an increased risk for lower respiratory tract infection, skin and mucous membrane infection, and urinary tract infection.

Research has shown low immunization rates for the influenza/pneumococcal vaccines in the general US population.

Diabetic patients infected with the influenza virus face serious complications including pneumonia, dehydration, kidney failure, heart failure, and hospitalization.

Death rates among diabetic patients have been shown to increase 5-15% during influenza epidemics.

In diabetic patients who died between 25 - 64 years of age, the cause of death due to influenza infection was more likely to be listed on a death certificate than cause of death due to diabetes.
Background

- Influenza and pneumococcal vaccinations have been shown to decrease diabetic patients' risk for several diseases.

- Persons with diabetes that had received the influenza vaccination during the time immediately preceding an epidemic had seen a reduction in hospitalization time.

Methods

- We analyzed data for diabetic adult Americans (n=57,480) from the 2010 Behavioral Risk Factor Surveillance System using STATA 12 software package for Windows.

- Data were weighted and adjusted for the complex sampling strategy used in the BRFSS data collection.

- In addition to descriptive statistics, bivariate analysis was performed to determine associations between the covariates and uptake of influenza and pneumococcal vaccines.

- Multivariate logistic regression analysis was also performed to estimate the odds of influenza and pneumococcal vaccine uptake.
Results

- Descriptive Statistics
- Bivariate Statistics
- Logistic Regression Results

Table 1: Demographic Characteristics

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Table 2: Distribution of Vaccine Use by Gender

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<td>14627</td>
<td>28.3</td>
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<td>10330</td>
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</table>

** p < 0.001

Figure 1: Influenza and Pneumococcal Vaccine Uptake by race/ethnicity among Diabetics

![Bar charts showing vaccine uptake by race/ethnicity.](chart.png)

Influenza

- NH-White: 38.6%
- NH-AA: 7.43%
- Hispanic: 6.29%
- Other: 4.46%

- p < 0.001

Pneumococcal

- NH-White: 35.1%
- NH-AA: 6.68%
- Hispanic: 4.86%
- Other: 3.72%

- p < 0.001
### Distribution of Vaccine Use by Gender

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Significance Level:  * = not significant  *** p < 0.0001

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### Figure 1: Influenza and Pneumococcal Vaccine Use by General Health Status among Diabetics

**Figure 1a): Influenza Vaccine Use p < 0.001**

**Figure 1b): Pneumococcal Vaccine Use p < 0.001**

* Includes Very Good
Figure 3: Odds Ratio of Influenza and Pneumococcal Vaccine Uptake by Insurance Status

Significance level: * p < 0.05; ** p < 0.001; *** p < 0.0001

Figure 4: Odds Ratio of Influenza and Pneumococcal Vaccine Use by Income

Significance level: * p < 0.05; ** p < 0.001; *** p < 0.0001
Whereas the Advisory Committee on Immunization Practices (ACIP) recommends that all diabetic individuals receive at least one pneumococcal and influenza vaccination during their lifetime, our analysis show that disparities persist.

These results suggest that diabetics continue to experience systemic barriers to essential preventive services such as immunizations, that can be critical to avoiding major complications including death.

These disparities remain even after controlling for other variables such as income, educational level and gender, and insurance status.
Conclusion/Recommendations

- In order to achieve the Healthy People 2020 benchmarks for diabetes, efforts must be made to increase access to insurance coverage.

References


