NATIONAL CENTER FOR IMMUNIZATION & RESPIRATORY DISEASES

Risk of Influenza-Associated Hospitalization Among Older Adults Living with Diabetes — United States, 2012–2017

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BACKGROUND

- Influenza-associated hospitalizations and severe outcomes are more common in older persons
- Diabetes mellitus (DM) prevalence is high in people aged ≥65 years and is also common among patients hospitalized with influenza
- DM may increase the risk for severe influenza
- A better understanding of the impact of DM on the risk for severe influenza in adults aged ≥65 years is needed to inform prevention and treatment strategies

OBJECTIVE

To estimate the rates and rate ratios of influenza-associated hospitalization among adults aged ≥65 years living with DM in the U.S.

METHODS

- **Numerator Data Source:** Influenza Hospitalization Surveillance Network (FluSurv-Net)
  - Collected from 2012–13 through 2016–17 influenza seasons
  - Data collected from select counties in 13 states in the U.S., covering about 9% of the U.S. population
- **Denominator Data Source:** Centers for Medicare & Medicaid Services (CMS) and National Center for Health Statistics (NCHS)
  - CMS prevalence estimates for DM were applied to NCHS population estimates to obtain denominators
- **Statistical Analysis**
  - Frequencies and percentages
  - Rates and rate ratios per state per influenza season
  - Pooled rates and rate ratios overall and per season, accounting for state

FINDINGS

- Among 31,934 adults aged ≥65 years hospitalized with influenza, 10,863 had DM and 21,071 did not have DM
- Influenza-associated hospitalization rate per 100,000 person years from 2012–13 through 2016–17 was 276 in those with DM and 181 in those without DM
- Hospitalization rates among those with DM were consistently greater for those with DM compared to those without DM (pooled rate ratio: 1.57; 95% CI: 1.43–1.72; P<.0001)

During the 2012–13 through 2016–17 influenza seasons, older adults with DM had 57% increased risk of influenza-associated hospitalization compared to older adults without DM (increased risk of hospitalization ranged from 49% in 2012–13 to 75% in 2015–16).

It is important for adults ≥65 years of age, particularly those with DM, to receive annual influenza vaccination.

RESULTS

Table 1: Characteristics of study participants

Variable	Adults living with DM (n=10,863)	Adults without DM (n=21,071)	Total (n=31934)
Sex			
Male	48.2	42.8	44.6
Female	51.8	57.2	55.4
Age in years			
65-74	38.5	28.4	31.9
75-84	37.2	33.6	34.8
≥85	24.3	38.0	33.4
Race/ethnicity			
White	61.1	72.6	68.7
Black	15.2	8.8	11.0
Other	14.8	8.9	10.9
Unknown	8.8	9.7	9.4
Vaccination in the current season			
No	30.4	31.1	30.9
Yes	58.4	56.1	56.9
Unknown	11.2	12.8	12.3

Figure 1: Rates of influenza-associated hospitalization among adults aged ≥65 years with or without diabetes mellitus

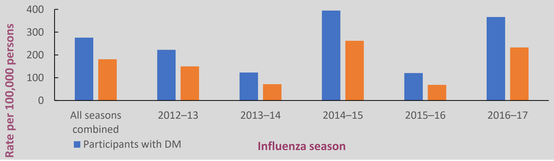
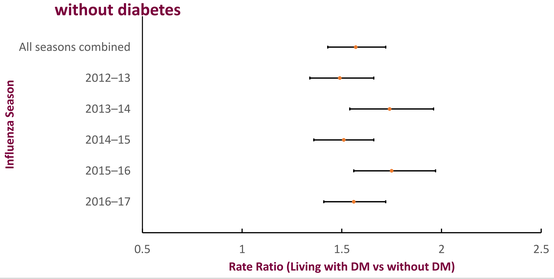


Figure 2: Rate ratios of influenza-associated hospitalization in adults aged ≥65 years with diabetes mellitus vs those without diabetes



LIMITATIONS

- Influenza testing was done at the discretion of participating physicians
- CMS diabetes data may not be representative
- FluSurv-Net data may not be generalizable
- This study did not account for other underlying conditions