

Title: Clinical outcomes of laboratory-confirmed influenza among hospitalized adults

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Purpose: Influenza vaccination protects against infection but its effectiveness is lessened when there is a mismatch between circulating influenza and vaccine serotypes. During seasons of low vaccine effectiveness due to antigenic drift, vaccination may reduce influenza severity but data are limited. The objective of this study was to evaluate the association between the 2014-2015 seasonal influenza vaccine and influenza severity among hospitalized patients with laboratory-confirmed influenza infection (LCII).

Methods: A retrospective chart review of adult patients admitted to a Catholic Health Initiatives (CHI) hospital in the Omaha-Council Bluffs metropolitan area with LCII infection between 10/1/14 and 4/30/15 was performed. Patients were excluded if there was no documented vaccine history, administration of seasonal influenza vaccine less than 14 days prior to admission, transfer from a non-CHI Health hospital, neuraminidase inhibitor therapy prior to admission, or re-hospitalized during the study interval. The primary outcome, severe influenza, was defined by inpatient mortality, intensive care unit admission, and/or discharge with a higher level of care.

Findings: Of the 156 adults hospitalized with LCII, 111 (71%) received the seasonal influenza vaccine before admission. Unvaccinated patients were younger (64 ± 21 years vs. 77 ± 17 years; $P \leq 0.01$), had a lower rate of neurologic disease (13.3% vs. 32%; $P=0.02$) and a higher rate of alcohol abuse (11.1% vs. 2.7%; $P=0.045$). After controlling for covariates, vaccination was not associated with a reduction in severe influenza (OR 0.891, 95% CI 0.335 to 2.369; $P=0.817$), pneumonia (OR 0.303, 95% CI 0.085 to 1.077; $P=0.065$) or hospital readmission (OR 2.481, 95% CI 0.668 to 9.225; $P=0.175$). Vaccination was associated with lower odds of respiratory failure (OR 0.351, 95% CI 0.142 to 0.866; $P=.023$) and shorter hospital LOS (0.22 days; $P=0.003$).

Implications for Practice: The 2014-2015 seasonal influenza vaccine was not associated with lower odds of severe influenza but vaccinated patients had significantly reduced incidence of respiratory failure and a shorter hospital LOS.