

Impact of High-Dose vs Standard-Dose Influenza Vaccine on Respiratory-Related Hospitalizations: A Fuzzy Regression Discontinuity Design

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PURPOSE: The high-dose (HD) influenza vaccine is approved for use in adults ages ≥ 65 with evidence for reducing influenza infections and hospitalizations. The objective of this study was to determine the impact of the HD vs standard-dose (SD) influenza vaccine on hospitalizations among adults ages 50-80.

METHODS: A fuzzy regression discontinuity design was used to estimate the causal effect of the HD vaccine on respiratory hospitalizations. This design takes advantage of the discontinuity in likelihood of receiving the HD vaccine at age 65 to compare the outcomes of adults immediately above and below age 65. Data was extracted from IQVIA claims database for adults with an insurance claim for a HD or SD vaccine during the 2012-2018 influenza seasons (September-April). Outcomes and covariates were identified using International Classification of Diseases codes. The primary outcome was respiratory-related hospitalization. Covariates included demographics, comorbidities, and history of receiving the HD vaccine.

RESULTS: The study included 384,180 individuals. The HD vaccine was used in 0.3% of adults 50-64 and 52% of adults 65 and older. Receipt of the HD vaccine decreased the probability of respiratory-related hospitalization by 0.5% points (95% CI -0.8%, -0.2%) compared to the SD vaccine ($p=0.002$) for adults who received HD because it was approved for their age group. Results were robust to various model specifications and sensitivity tests.

CONCLUSIONS: The results of this study show the HD vaccine reduced the rate of respiratory-related hospitalization compared to the SD vaccine among adults who received HD vaccine because of their age. The results suggest that extending approval to adults ages 50-64 would reduce respiratory-related hospitalizations among those who become newly eligible.