Submission Id: 4067

Title

The association of COVID-19 vaccination with inpatient mortality and treatment course

Priority 1 (Research Category)

COVID-19

Presenters

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Abstract

Context: COVID-19 vaccination is associated with decreases in COVID infections, hospitalizations, and overall mortality. However, it is unknown if it confers specific inpatient benefits, such as inpatient mortality, length of stay, and treatment regimen needed in those admitted specifically for COVID-19. Objective: To study the inpatient courses of vaccinated vs unvaccinated COVID-19 inpatients. Study Design: Retrospective cohort study Setting: Data obtained from the EHR of a health system consisting of 5 acute-care hospitals. Population studied: All admissions for COVID-19 from March 1, 2021 to February 28, 2022 were included. Patients less than age 18 and those with unknown COVID vaccine status were excluded. Outcome Measures: The primary outcome measure was inpatient mortality. Inpatient length of stay and treatments used were secondary measures. Analysis: Continuous variables were summarized using means, categorical variables were summarized using proportions. Comparisons were made between vaccinated and unvaccinated groups. Means were analyzed using the 2-sample t-test, proportions were analyzed using chi square. To control for other factors, binary logistic regression was used to determine the odds of inpatient mortality and linear regression was used to determine the change in length of stay that can be attributed to COVID-19 vaccination. Analysis was conducted using STATA (Version 17, StataCorp). Results: 5,234 patients met inclusion and exclusion criteria, with 23.9% of these patients having completed a primary vaccination series against COVID-19. Vaccinated patients were older, more likely to be white, and more likely to have comorbid conditions (COPD, CHF, CKD, DM, CAD, and obesity). There was no difference between groups in treatment regimens (use of steroids, antivirals, immune modulators, high-flow oxygen, or intubation). Inpatient mortality was lower (5.8% vs 9.3%, $p<0.001$), and mean length of stay was shorter (7.0 vs 7.6 days, $p=0.01$) in the vaccinated group. When controlling for demographics, medical history, and treatments given, vaccinated patients had lower odds of inpatient mortality (OR=0.44, 95% CI 0.32-0.62, $p<0.001$) and vaccination accounted for a 0.74-day reduction in length of stay (95% 0.25-1.22 day reduction, $p=0.003$). Conclusions: In this study, COVID-19 vaccination was associated with decreased inpatient mortality and shorter hospital stays despite no difference in treatment regimens between those vaccinated and unvaccinated.