

Effects of COVID-19 vaccines in outcomes among hospitalized COVID-19 patients

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Introduction

- COVID-19 breakthrough infections remain a concern. Our aim was to determine the differences in clinical outcomes among COVID-19 unvaccinated patients vs vaccinated patients who required hospitalization. We hypothesized that COVID-19 unvaccinated patients were more likely to have poor clinical outcomes when compared to their counterparts.
- COVID vaccines have been shown to be highly effective at preventing severe disease, hospitalization and death.
- Furthermore, initial data showed protection against symptomatic and asymptomatic infection. However, this protection seems to wane over time, causing concerns about the increased prevalence of breakthrough infections, specially 6 months after completion of the primary series.
- There is limited data regarding clinical effectiveness of COVID-19 vaccination in patients with breakthrough infections requiring hospital admission.
- Our aim was to determine the differences in clinical outcomes among COVID-19 unvaccinated vs vaccinated patients that required hospitalization.

Materials and Methods

- This was a retrospective cohort study of COVID-19 hospitalized patients between 7/25/21 and 9/6/2021 at the Audie L Murphy VA hospital, a reference 1a level facility with an active bone marrow transplant program, a spinal cord service and long-term care units.
- Adult patients admitted to acute care with a positive rt PCR with COVID-19 were included.
- The patients were classified as fully vaccinated (CDC guidelines) vs. unvaccinated.
- The primary outcome included the need for advance oxygen therapy (high flow nasal cannula, non-invasive ventilation, mechanical ventilation), ICU admission or 28-day all-cause mortality.
- We performed a subgroup analysis according to the immunocompetent status and older age (≥ 65 years).

Results

- We enrolled 207 patients, stratified as unvaccinated (n=147 [71%]) vs. fully vaccinated (n=60 [29%]).
- Unvaccinated patients were younger (median age 58 vs. 71 years old, $p < 0.001$) and more likely to require oxygen (n=105 [71%] vs n=35 [58%], $p = 0.07$), less likely to have incidental covid (defined as not the primary cause of admission, N=22 [15%] vs N=21, [35%], $p = 0.002$), compared to vaccinated patients.
- Unvaccinated patients were more likely to reach the primary outcome (n=59 [40%] vs n=16 [26%], $p = 0.08$) when compared to vaccinated patients.
- Subgroup analyses revealed that unvaccinated patients had higher rates of the primary outcome when ≥ 65 years old (n=27/46 [58.7%] vs n=13/37 [35.1%], $p = 0.047$), immunocompetent (n=57/139 [41%] vs. 13/53 [24.5%]) and both groups combined (n=22/39 [56%] vs. 11/38 [28.9%], $p = 0.021$), respectively

Conclusions

Unvaccinated patients represented the largest proportion of hospitalized patients.

Unvaccinated patients were younger and require advanced oxygen therapy.

Unvaccinated patients age ≥ 65 and immunocompetent patients have worse outcomes than vaccinated patients. Further studies are needed to identify unmeasured characteristics that may be associated with poor clinical outcomes.

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