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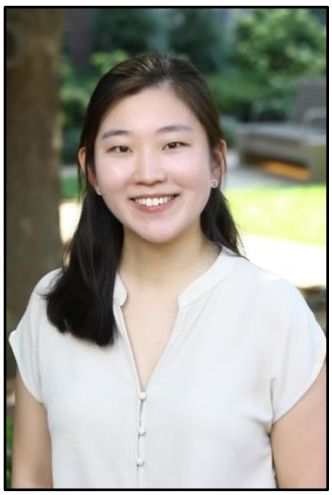

Practicum Site: Vanderbilt University Medical Center - Emerging Infections Program

Practicum Site Supervisor: Tiffanie Markus, Ph.D., C.C.R.P.

Comparing the frequency of SARS-CoV-2 variants of concern among vaccinated and unvaccinated COVID-19 cases

Keywords: COVID-19, vaccine, breakthrough infections

Introduction: All U.S. adults are eligible for the COVID-19 vaccinations, which is a sigh of relief for nearing herd immunity. However, it's worrisome to see certain vaccine breakthrough cases among those fully vaccinated even after the 2 weeks of full immunity. There are SARS-CoV-2 variant strains that originated from different regions, so it is crucial to analyze characteristics that are common among the breakthrough cases. This practicum examines vaccine breakthrough cases and describes certain demographics and several underlying medical conditions to determine if there is a trend or pattern among the different variants.

Methods: This practicum primarily focuses on adults aged 18 years and older reported at Vanderbilt University Medical Center who tested positive and detected SARS-CoV-2 through a respiratory specimen. This project is a descriptive study primarily used to describe the positive cases' demographics, medical history and relevant information pertaining to vaccine breakthrough cases.

Results: Of 1,446 total case patients, the mean age of patients who have tested positive is 43.2 years of age. Among this, 18.6% of women and 12.3% of men tested positive even after 2 weeks of full vaccination dosage. Among the 202 case patients with underlying chronic lung disease, and other respiratory conditions, approximately 41% were considered fully immune.

Conclusions: Despite highly effective COVID-19 vaccines, there are still elevated risks for the fully vaccinated, especially those with several underlying medical conditions. In 623 positive cases with underlying medical condition(s), nearly 43% were previously fully vaccinated – indicating a high vaccine breakthrough. Sanitary and preventative measures, such as wearing a mask, cleaning your hands and surfaces, avoiding large crowds and social distancing, and more still need to be maintained even after the vaccinations.