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Victor Quach

Zaina Shahid MD

Nabila Zamir MD

Amy Slenker MD

James Ross MD, FACP

See next page for additional authors

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Authors

Victor Quach; Zaina Shahid MD; Nabila Zamir MD; Amy Slenker MD; James Ross MD, FACP; Rahul Mhaskar; and Marie S. O'Brien DO

Practice-Based Vaccine Initiative to Increase Vaccination Rates in Immunocompromised Patients

Victor Quach MS4, Zaina Shahid MD, Nabila Zamir MD, Amy Slenker MD, James Ross MD, Rahul Mhaskar PhD, Marie O'Brien DO

Lehigh Valley Health Network, Allentown, Pennsylvania

Background

- Immunotherapy is a significant component in treatment of autoimmune diseases, though they result in chronic immunosuppression
- Patients on such therapies have an increased risk of hospitalization and death from vaccine-preventable infections^{1,2}
- The American College of Rheumatology recommends influenza and pneumococcal vaccinations in immunosuppressed patients, but vaccination rates remain low³
- Lack of physician and patient awareness on vaccination guidelines, availability and cost of vaccines, and patient perception of vaccine safety may contribute to the low vaccination rates
- We implemented an education vaccination program and obtained an internal supply of influenza and pneumococcal vaccines at Lehigh Valley Physician Practice (LVPP) Rheumatology clinic to increase vaccination rates in the clinic

Methods

We conducted an IRB-exempt retrospective chart review analyzing vaccination rates before and after implementation of the vaccine initiative program at LVPP Rheumatology outpatient clinic, a clinic dedicated to serving the local underserved community

Study Design:

- We administered an education session regarding CDC vaccination guidelines to rheumatology fellows and fellows were trained to administer vaccines
- Flu vaccine administration (40 doses) started in September 2020 and pneumococcal vaccine administration (30 doses of each) started in November 2020 due to late shipment
- We used Webi to obtain deidentified patient vaccination data from Sept-Dec 2019 (pre-intervention) and Sept-Dec 2020 (post-intervention)
- Vaccination rates were determined by calculating the number of patients up to date with each vaccine and dividing it by the total number of unique patients, and a Chi-squared test was used to determine significance

Vaccine Criteria:

- Patients were considered up to date if they received an influenza vaccine between Sept-Dec of the respective year, a single dose of pneumococcal 13-conjugate, and a dose of pneumococcal polyvalent vaccine within past 5 years of encounter data either at LVPP Rheumatology or elsewhere

Results

Study Patients:

- From Sept-Dec 2019, there were 339 patient encounters with 208 unique patients (0% virtual visits)
- From Sept-Dec 2020, there were 280 patient encounters with 169 unique patients (15% virtual visits)

Study Outcomes:

- Influenza (95% CI, -8.98 to 10.45; P=0.87)
 - Pre-Intervention: 37.5% (n=78) of patients were up to date
 - Post-Intervention: 36.7% (n=62) of patients were up to date
- Pneumococcal 13-Valent Conjugate (95% CI, -4.73 to 14.16; P=0.33)
 - Pre-Intervention: 30.2% (n=63) of patients were up to date
 - Post-Intervention: 34.9% (n=59) of patients were up to date
- Pneumococcal Polyvalent (95% CI, -4.94 to 13.80; P=0.36)
 - Pre-Intervention: 29.3% (n=61) of patients were up to date
 - Post-Intervention: 33.7% (n=57) of patients were up to date

Discussion

- The implementation of an educational program and an in-house supply of vaccines did not result in a significant increase in any of the three vaccination rates at LVPP Rheumatology
- Other studies have found increases in vaccination rates with point-of-care vaccinations and education initiatives^{4,5}
- The discrepancy between this study and the previous studies is most likely due to the circumstances under which this study was conducted
 - Given the COVID-19 pandemic, there was an increase in virtual visits, a nationwide downward trend of vaccination rates per the CDC^{6,7}, increased fear of contracting COVID-19 and nationwide stay-at-home orders, and a delayed shipment in pneumococcal vaccine shipments
 - Number of influenza vaccines was also limited

Conclusions

The implementation of an educational program and an in-house supply of vaccines administered by rheumatology fellows did not result in a significant increase in vaccination rates. Despite the nationwide downward trend in vaccination rates during the pandemic and our limited supply of vaccines, LVPP Rheumatology was able to maintain similar vaccination rates as the previous year with the implementation of the vaccination initiative. It remains imperative that we continue to maintain and increase vaccination rates among our vulnerable patient population. Increasing vaccination rates improves patient access to and quality of care and reduces overall cost, which are the three pillars of the Iron Triangle. By obtaining a supply of vaccines in the clinic, we hoped to increase access and facilitate the process for patients so that they can adhere to CDC evidence-based vaccination guidelines, increasing their quality of care. Costs would be reduced by decreasing future hospitalizations from preventable infectious diseases. Expanding our supply of vaccines with the hopeful end of the pandemic may further improve vaccination rates at LVPP Rheumatology.

Problem Statement

The objective of this study was to determine if a vaccine initiative program will improve vaccination rates in rheumatology patients.

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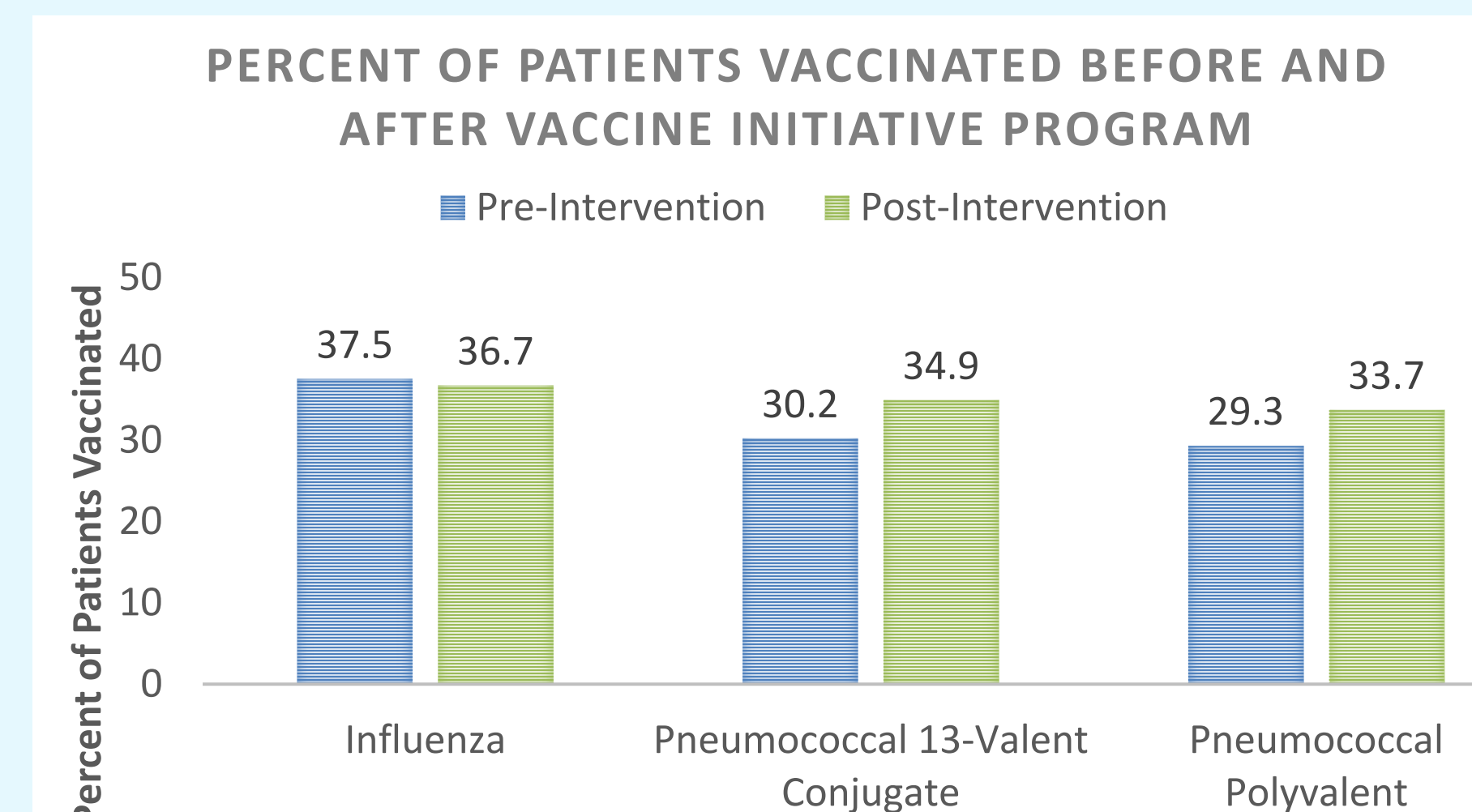


Figure 1. Percent of Patients Vaccinated Before and After Vaccine Initiative Program.