

Background and Objectives: Influenza is a common cause of pediatric emergency department (ED) visits. Annual influenza vaccination is recommended for children aged ≥ 6 months, but it remains unclear whether vaccination in the prior season provides protection in the subsequent season. We evaluated whether influenza vaccination during the 2023–2024 season protected against influenza-related outcomes during the 2024–2025 season.

Methods: We conducted a retrospective cohort study of patients aged between 6 months and 17 years as of October 1, 2023 who were continuous members of Kaiser Permanente Northern California from October 1, 2023 through April 30, 2025. Vaccination status, demographics, and medical history were obtained electronically. The primary outcome was medically attended influenza infection confirmed by polymerase chain reaction. Secondarily, we assessed influenza-associated ED visits. Patients were categorized into four groups: unvaccinated in both seasons, vaccinated only in 2023–2024, vaccinated only in 2024–2025, or vaccinated in both seasons. Groups were compared using unadjusted analyses and multivariable regression.

Results: Among 711,002 children, 56.5% were unvaccinated in both seasons, 22.6% were vaccinated in both seasons, 12.5% were vaccinated only in 2023–2024, and 8.3% were vaccinated only in 2024–2025. Medically attended influenza occurred in 4.2% of children unvaccinated in both seasons, 4.9% of those vaccinated only in 2023–2024, 2.1% of those vaccinated only in 2024–2025, and 3.0% of those vaccinated in both seasons. Compared with unvaccinated children, adjusted odds of influenza infection were lower among those vaccinated in both seasons (aOR 0.62; 95% CI 0.60–0.64) and higher among those vaccinated only in 2023–2024 (aOR 1.08; 95% CI 1.04–1.12). Influenza-associated ED visits occurred in 0.78% for the unvaccinated both seasons group, 0.71% for 2023–2024 vaccination only, 0.36% for 2024–2025 vaccination only, and 0.35% for vaccinated both seasons.

Conclusion: Vaccination during the 2024–2025 influenza season, with or without prior-season vaccination, was associated with reduced influenza infections and ED visits. Prior-season vaccination alone did not confer protection, reinforcing the importance of annual influenza vaccination.

314 | Mandatory Versus Optional Influenza Vaccination for University Students

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Background and Objectives: While most college students are not at high risk for severe influenza, the combination of close living quarters and tight classroom spaces can facilitate the rapid spread of influenza which can lead to significant morbidity and missed class time. Although some universities have implemented policies requiring influenza vaccination for all students, there have been no published clinical data about the effectiveness of these policies. Thus, we sought to determine if a mandatory influenza vaccination policy at a single university resulted in fewer positive influenza tests at the student health clinic.

Methods: We performed a retrospective quasi-experimental before–after study using data from the University of Miami comparing influenza-related outcomes for students from the

2022–2023 influenza season when influenza vaccination was mandatory to those from the 2023–2024 season when influenza vaccination was optional. We compared groups with regards to the number of influenza vaccines given by the student health clinic, the total number of influenza tests performed, and the number of positive Influenza tests. We used two-proportion z-tests to compare the percentage of the student body who received vaccines and who were diagnosed with influenza at the student health clinic.

Results: At the beginning of the 2022–2023 academic year (the mandatory vaccination season), there were 19,402 students enrolled as compared to 19,593 in the 2023–2024 season (the optional vaccination season). For the mandatory season, 8556 students (44.1% of the student body) were vaccinated by the student health clinic compared with 2187 (11.2%) during the optional season, an absolute difference of 32.9% (95% CI 32.1% to 33.8%, $p < 0.001$). During the mandatory season, 2,543 influenza tests were performed as compared to 4,148 during the optional season, a 63.1% increase. Lastly, during the mandatory year, 195 (1.0%) of 19,402 students had a positive influenza test at the student health clinic compared to 403 (2.1%) of 19,593 students during the optional year, an absolute difference of 1.1% (95% CI 0.8 to 1.3%), $p < 0.001$.

Conclusion: In this single-institution, before–after analysis, removal of a mandatory influenza vaccination policy at a university was associated with increases in influenza tests ordered and laboratory-confirmed influenza cases diagnosed at the student health clinic.

315 | Heart Rate Trajectory Phenotypes and Clinical Outcomes

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Background and Objectives: Early heart rate (HR) response to therapy for atrial fibrillation with rapid ventricular response (Afib-RVR) may provide prognostic information beyond static measurements. Identifying HR trajectory phenotypes could improve the prediction of treatment success and early adverse events, especially in heterogeneous populations presenting to the emergency department (ED).

Methods: We performed a retrospective cohort study of ED patients with Afib-RVR between 2019 and 2023. HR trajectories were classified into rapid responders (HR < 110 by 2 h), gradual responders (HR < 110 by 4 h), and non-responders (HR ≥ 110 through 4 h). Primary outcomes were 6-h rate control and composite adverse events. Multivariable logistic regression adjusted for age, baseline HR, and heart failure with reduced ejection fraction (HFrEF).

Results: Among 311 patients, 26.4% were rapid responders, 18.0% gradual responders, and 55.6% non-responders. Rate control was achieved in 80.5% of rapid responders, 82.1% of gradual responders, and 38.2% of non-responders. In adjusted models, non-response was strongly associated with failure to achieve control (adjusted odds ratio [aOR] 0.13; 95% CI, 0.06–0.27), whereas rapid and gradual responders had similar odds of