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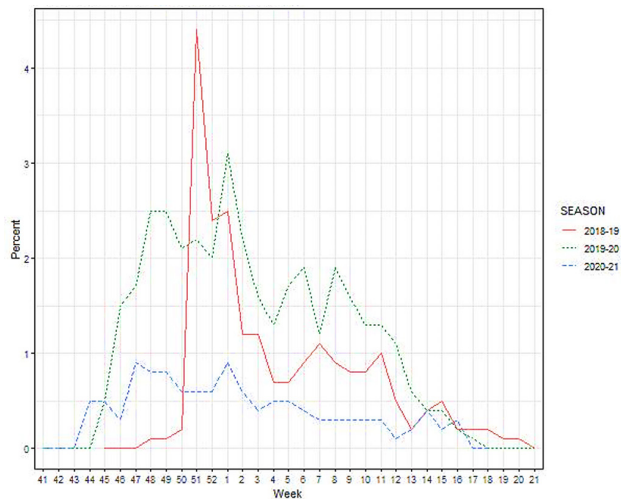
**Session:** P-74. Respiratory Infections - Viral

**Background.** The Pragmatic Assessment of Influenza Vaccine Effectiveness in the DoD (PAIVED) is a multicenter study assessing influenza vaccine effectiveness in active duty service members, retirees, and dependents. PAIVED recently completed its third year and offers a unique opportunity to examine influenza-like illness (ILI) trends prior to and during the COVID-19 pandemic in a prospective, well-defined cohort.

**Methods.** During the 2018-19, 2019-20, and 2020-21 influenza seasons, PAIVED enrolled DoD beneficiaries presenting for annual influenza vaccination. After collecting baseline demographic data, participants were randomized to receive egg-based, cell-based, or recombinant-derived influenza vaccine. Weekly throughout the influenza season of enrollment, participants were surveyed electronically for ILI, defined as (1) having cough or sore throat, plus (2) feeling feverish/having chills or having body aches/fatigue. Participants with ILI completed a daily symptom diary for seven days and submitted a nasal swab for pathogen detection.

**Results.** Over the three seasons, there were 10,656 PAIVED participants: 1514 (14.2%) in 2018-19, 5876 (55.1%) in 2019-20, and 3266 (30.6%) in 2020-21. The majority were male (68-73% per year) with a mean age of 34±14.8 years at enrollment. 2266 participants reported a total of 2673 unique ILIs. The highest percentage of participants with ILI was in 2019-20 (28.2%), versus 19.6% in 2018-19 and 9.6% in 2020-21. Figure 1 depicts the percent of individuals reporting ILI by week of the season for each of the PAIVED seasons. Notably, after March 21, 2020, the weekly incidence of participants reporting ILI never exceeded 1%.

Figure 1. Percent of PAIVED participants reporting ILI by week of season.



**Conclusion.** The low incidence of reported ILI in PAIVED participants during the COVID-19 pandemic is consistent with national influenza surveillance reports of influenza and outpatient ILI activity, suggesting that mitigation measures taken to reduce transmission of SARS-CoV-2 reduced the spread of other respiratory viruses.

**Disclaimer.**

Views expressed are those of the author(s) and do not reflect the official policy/position of USU, DHA, Henry M. Jackson Foundation; BAMC; MAMC; WRNMMC; US Army Medical Department; US Army Office of the Surgeon General; Department of the Army, Air Force, or Navy; DOD; or the USG. Investigators followed human subjects protection-45CFR46 policies.

**Disclosures.** Ryan C. Maves, MD, EMD Serono (Advisor or Review Panel member) **Heron Therapeutics** (Advisor or Review Panel member) **Jitu Modi, MD, GSK** (Speaker's Bureau)

**1339. Impact of COVID-19 Pandemic on Activity of Other Respiratory Viral Pathogen and Norovirus**

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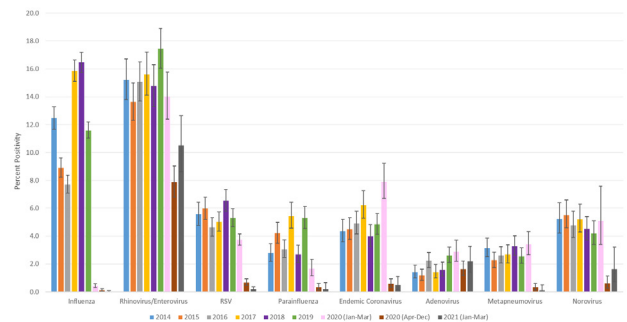
**Session:** P-74. Respiratory Infections - Viral

**Background.** The COVID-19 pandemic led to the implementation of several strategies (e.g., masking, physical distancing, daycare/school and business closures, hand hygiene, surface disinfection) intended to mitigate the spread of disease in the community. Our objective was to evaluate the impact of these strategies on the activity of respiratory viral pathogens (other than SARS-CoV-2) and norovirus.

**Methods.** At University of North Carolina (UNC) Hospitals, we compared the percent positivity for respiratory viral pathogens and norovirus by calendar year for 2014-2019 and the first three months of 2020 to the percent positivity in the subsequent months of 2020 and the first quarter of 2021. Patients were included in the study if they had a positive specimen obtained in a clinic, ED or as an inpatient. Three molecular tests were used to detect these viruses: adenoviruses, endemic coronaviruses (OC43, 229E, NL63, HKU1), influenza A (subtypes H3, H1, H1N1pdm), influenza B, metapneumovirus (MPV), parainfluenza viruses 1-4 (PIV), rhinovirus and/or enterovirus (RhV/EV), and respiratory syncytial virus (RSV). Two molecular tests were used to detect norovirus. We calculated point prevalence rates with 95% confidence intervals to assess statistical differences in percent positivity.

**Results.** There was a statistically significant decline in percent positivity for endemic coronaviruses, influenza, MPV, PIV, RSV and norovirus during the time-periods after March 2020 when compared to all other time-periods (Figure). RhV/EV, followed by adenovirus were the most prevalent types of respiratory viruses circulating during height of COVID-19. There was a statistically significant decline seen in RhV/ EV in April-Dec 2020, but activity increased in 2021. There was no difference seen in adenovirus activity across time-periods.

Percent Positivity of Respiratory Viral Pathogens and Norovirus by Time Period



**Conclusion.** Our study demonstrated statistically significant decreases in the percent positivity of several respiratory viral pathogens, as well as norovirus, during the time-period of high community prevalence of SARS-CoV-2. Strategies put in place to mitigate SARS-CoV-2 transmission likely contributed to these differences. Non-enveloped viruses like rhinovirus and adenoviruses may have been less impacted by these strategies since they are more resistant to disinfection.

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**1340. The Burden of Influenza and Rhinovirus Among Hospitalized Adults Post the COVID-19 Pandemic**

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**Session:** P-74. Respiratory Infections - Viral

**Background.** Acute respiratory tract infections (ARIs) are a significant cause of morbidity in adults. Influenza is associated with about 490,600 hospitalizations and

34,200 deaths in the US in the 2018-2019 season. The burden of rhinovirus among adults hospitalized with ARI is less well known. We compared the burden of influenza and rhinovirus from 2 consecutive winter respiratory viral seasons in hospitalized adults and healthy controls pre-COVID-19 and one season mid-COVID-19 to determine the impact of rhinovirus as a pathogen.

**Methods.** From Oct 2018 to Apr 2021, prospective surveillance of adults  $\geq 50$  years old admitted with ARI or COPD/CHF exacerbations at any age was conducted at two Atlanta hospitals. Adults were eligible if they lived within an eight-county region around Atlanta and if their symptom duration was  $< 14$  days. In the seasons from Oct 2018 to Mar 2020, asymptomatic adults  $\geq 50$  years old were enrolled as controls. Standard of care test results were included and those enrolled contributed nasopharyngeal swabs that were tested for respiratory pathogens using BioFire® FilmArray® Respiratory Viral Panel (RVP).

**Results.** During the first two seasons, 1566 hospitalized adults were enrolled. Rhinovirus was detected in 7.5% (118) and influenza was detected in 7.7% (121). Rhinovirus was also detected in 2.2% of 466 healthy adult controls while influenza was detected in 0%. During Season 3, the peak of the COVID-19 pandemic, influenza declined to 0% of ARI hospitalizations. Rhinovirus also declined ( $p=0.01$ ) but still accounted for 5.1% of all ARIs screened (Figure 1). Rhinovirus was detected at a greater rate in Season 3 than in asymptomatic controls in the first 2 seasons ( $p=0.008$ ). In the first two seasons, influenza was detected in 8.6% (24/276) of those admitted to the ICU. Rhinovirus was detected in 6.1% (17/276) of those admitted to the ICU but declined to 3.1% (8/258) in Season 3.

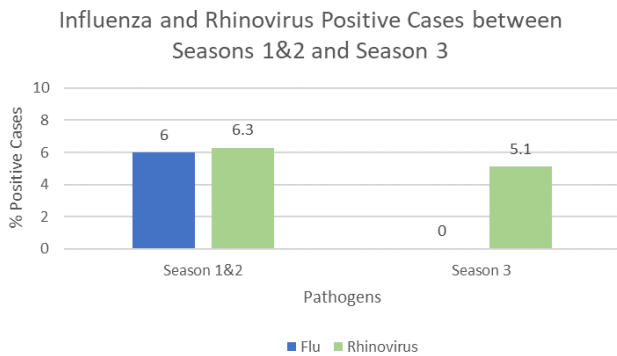


Figure 1. Percent Positive Cases of Influenza and Rhinovirus between Season 1&2 (hospitalized and healthy controls) vs Season 3 (hospitalized)

**Conclusion.** Dramatic declines occurred in influenza in adults hospitalized with ARI, CHF, or COPD in Atlanta during the COVID-19 pandemic and with enhanced public health measures. Although rhinovirus declined during the COVID-19 pandemic, it continued to be identified at a rate higher than in historical controls. Additional data are needed to understand the role of rhinovirus in adult ARI, CHF, and COPD exacerbations.

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#### 1341. Relative Vaccine Effectiveness Against Influenza-related Hospitalizations and Respiratory Events During the 2019/20 Influenza Season in U.S. Children and Adults. A Real-World Evidence Comparison Between Quadrivalent Cell-based and Egg-based Influenza Vaccines

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Session: P-74. Respiratory Infections - Viral

**Background.** Non-egg-based influenza vaccine manufacturing reduces egg adaptation and therefore has the potential to increase vaccine effectiveness. This study evaluated whether the cell-based quadrivalent influenza vaccine (QIVc) improved relative vaccine effectiveness (rVE) compared to standard-dose egg-based quadrivalent influenza vaccine (QIVe-SD) in the reduction of influenza-related and respiratory-related hospitalizations/emergency room (ER) visits among subjects 4-64 years old during the 2019/20 influenza season.

**Methods.** A retrospective analysis was conducted among subjects 4-64 years old vaccinated with QIVc or QIVe-SD using administrative claims data in the United States of America (U.S.) (IQVIA PharMetrics® Plus). Inverse probability of treatment weighting (IPTW) was used to adjust for baseline confounders. Post-IPTW, the number of events and rates (per 1,000 vaccinated subject-seasons) of influenza-related hospitalizations/ER visits, respiratory-related hospitalizations/ER visits and all-cause hospitalizations were assessed. Poisson regression was used to estimate adjusted rVE. To avoid any influenza outcome misclassification with COVID-19 infection, the study period ended March 7, 2020. A sub-analysis for a high-risk subgroup was conducted. Urinary tract infection (UTI) hospitalization was assessed as a negative control endpoint.

**Results.** During the 2019/20 influenza season, 1,150,134 QIVc and 3,924,819 QIVe-SD recipients were identified post-IPTW. Overall adjusted analyses (4-64 years old) found that QIVc was associated with a significantly higher rVE compared to QIVe-SD against influenza-related hospitalizations/ER visits (5.3% [95% CI: 0.5%-9.9%]), all-cause hospitalizations (14.5% [95% CI: 13.1%-15.8%]) and any respiratory-related hospitalization/ER visit (8.2% [95% CI: 6.5%-9.8%]). A similar trend was seen for the high-risk subgroup; for instance, rVE for QIVc compared to QIVe-SD against influenza-related hospitalizations/ER visits was 10.5% [95% CI: 2.9%-17.4%]. No effect was identified for the negative control outcome.

**Conclusion.** QIVc was significantly more effective in preventing influenza-related and respiratory-related hospitalizations/ER visits, as well as all-cause hospitalizations, compared to QIVe-SD.

**Disclosures.** Stephen I. Pelton, MD, Seqirus (Consultant) Maarten Postma, Dr., Seqirus (Consultant) Victoria Divino, PhD, Seqirus (Consultant) Joaquin F. Mould-Quevedo, PhD, Seqirus (Employee) Ruthwik Anupindi, PhD, Seqirus (Consultant) Mitchell DeKoven, PhD, Seqirus (Consultant) myron J. Levin, MD, GSK group of companies (Employee, Research Grant or Support)

#### 1342. TOSCANA: The Observational Seroepidemiologic Study of COVID-19 at the United States Naval Academy

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Session: P-74. Respiratory Infections - Viral

**Background.** University students, including those at military service academies, are at increased risk of acute respiratory infection (ARI), including SARS-CoV-2, due to crowded living conditions, frequent social interaction and other factors that facilitate pathogen transmission. Unlike many universities, the United States Naval Academy (USNA) continued in-person instruction in Fall 2020 in the midst of the COVID-19 pandemic. The Observational Seroepidemiologic Study of COVID-19 at the United States Naval Academy (TOSCANA), a longitudinal cohort characterizes the burden and risk factors of SARS-CoV-2 in USNA midshipmen.

**Methods.** Midshipmen were enrolled August-October 2020. Participants were queried about their ARI risk factors, COVID-19 history, and recent receipt of medical care for any ARI at enrollment, in December 2020 and again in May 2021. Subjects were also asked to provide blood and saliva samples to assess their SARS-CoV-2 serostatus at the same three timepoints. A saliva sample was collected by a subset of subjects in February 2021. Presence of anti-SARS-CoV-2 serum IgG in dried blood spots and saliva was measured by multiplex magnetic microparticle-based immunoassays.

**Results.** 181 midshipmen consented to the study and completed the baseline survey (Table 1). 17 (17.5%) of the 97 subjects who submitted baseline blood sample were SARS-CoV-2 seropositive. Only 4 (24%) positive individuals reported having been tested for or diagnosed with COVID-19 prior to arrival at USNA. 121 participants completed the midyear survey, of whom 61 (50%) submitted a blood sample. 16 (26%) of the midyear specimens were SARS-CoV-2 positive. Of these, 3 were new infections. 73 subjects completed the May survey, and 63 (100%) of the submitted blood samples were positive. 83 subjects provided baseline saliva samples, and ~55 submitted saliva at