OPK titers (log2 scale) for serum samples on day 0 (pre), day 3, 7, 10, 14, 21, 28, and control for S. pneumoniae serotypes 14, 18C, 19A, 19F, and 23F. N=2.

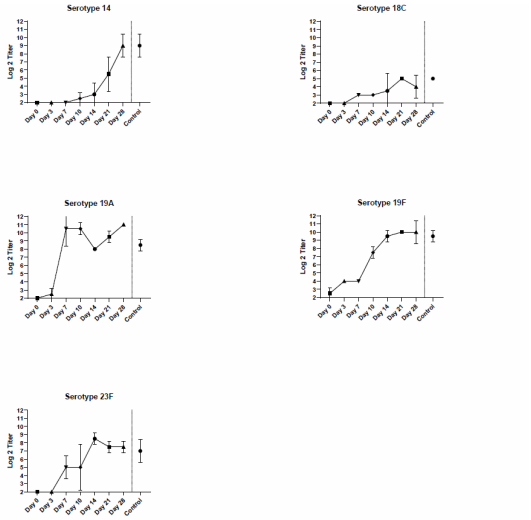


Figure 2. OPK titers (log_2 scale) for serum samples on day 0 (pre), day 3, 7, 10, 14, 21, 28, and control for *S. pneumoniae* serotypes 14, 18C, 19A, 19F, and 23F. N=2.

Conclusion: Patients with no prior history of vaccination (or inability to mount response) with Prevnar or pneumovax remain vulnerable to *S. pneumonia* infection even if vaccinated on entry, due to delayed kinetics in reaching protective titers. These patients may require prophylactic intervention of hyperimmune Ig with high opsonic titers to *S. pneumonia,* providing protection until vaccine response elicits protective antibodies.

Disclosures: **All Authors**: No reported disclosures

11. Missed Vaccine Opportunities During the COVID-19 Pandemic

Anita Shallal, MD[1]; Amit T. Vahia, MD MPH[1]; Rachel Kenney, PharmD[1]; Allison J. Weinmann, MD[2]; [1]Henry Ford Hospital, Detroit, Michigan; [2]Henry Ford Health System, Detroit, MI

Session: P-2. Adult Vaccines

Background: The 23-valent pneumococcal polysaccharide vaccine (PPSV23) is recommended for all adults over the age of 65 to reduce *S. pneumoniae* pneumonia. Our institution follows a standing order for nurses to vaccinate adults who meet the Advisory Committee on Immunization Practices (ACIP) criteria. During the COVID-19 pandemic surge, the pneumococcal vaccine and influenza vaccine nurse-driven protocol was determined to be non-essential on 3/23, and 4/2 respectively. Our study aims to characterize missed vaccine opportunities among patients hospitalized with COVID-19 during this surge.

Methods: A retrospective cross-sectional study of PCR-positive COVID-19 patients admitted to an inner-city hospital and discharged alive between the dates of 3/23 and 4/21/2020. Patients under the age of 65 were excluded. Data collected included patient age, gender, race, length of stay, co-morbidities that would indicate a vaccine opportunity, prior vaccinations, and whether there was a vaccine opportunity for PPSV23 and influenza defined by ACIP indications. Vaccine history was evaluated using the electronic medical record (EMR) and Michigan Care Improvement Registry. If there was a vaccine opportunity, we documented whether a vaccine was given before hospital discharge. Total numbers of vaccines given for time periods in 2019 and 2020 were collected from EMR for comparison.

Results: 100 patients over the age of 65 were included. The average age was 72.8 years, and most patients (66%) were of African American race. The mean length of stay was five days. 52 patients were identified as having an opportunity to receive PPSV23, and 0 patients received the vaccine. 67.3% had more than one indication for PPSV23. 37 patients were eligible to receive influenza vaccine, and 0 received the vaccine. Results are summarized in table 1. Figures 1 and 2 display the number of pneumococcal and influenza vaccines given per EMR, respectively.

Figure 1

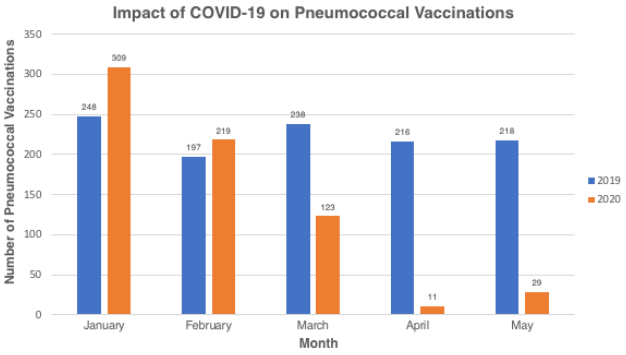


Figure 2

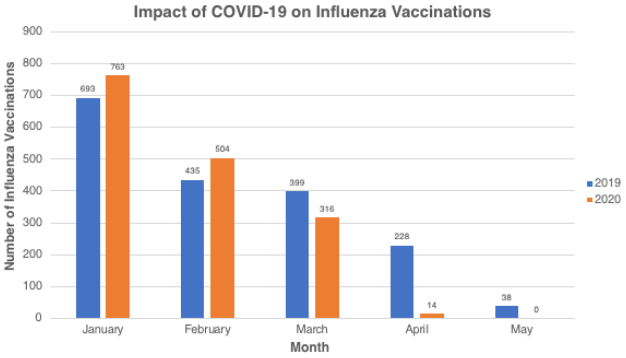


Table 1

Table 1. Summary of Results

Category	Number (%)
Age, years (mean)	72.84
Male gender, no. (%)	46 (46%)
Race, no. (%)	
- African American	66 (66%)
- Caucasian	6 (6%)
- Hispanic or Latino	1 (1%)
- Unknown	27 (27%)
Length of stay, days (mean)	4.99
Prior vaccination with PPSV23 or PCV13, no. (%)	57 (57%)
Received antibiotics while inpatient, no. (%)	87 (87%)
Readmission within 30 days, no. (%)	18 (18%)
Vaccine opportunity, no. (%)	
- *S. pneumoniae* (PPSV23)	52 (52%)
- Influenza vaccine	37 (37%)
Vaccine given, no. (%)	
- *S. pneumoniae* (PPSV23)	0 (0%)
- Influenza vaccine	0 (0%)
Number of indications for *S. pneumoniae* vaccine among those with missed vaccine opportunity (MVO)*:	
- One indication	17/52 (32%)
- Two indications	23/52 (44.2%)
- Three indications	8/52 (15.4%)
- Four or more indications	4/52 (7.7%)

[*Indications for vaccine were: age over 65 years old, chronic lung disease, chronic kidney disease, cardiomyopathy or heart failure, HIV, solid organ malignancy or multiple myeloma, immunosuppressed (on immunosuppressive drugs, long term steroids, or solid organ transplant recipient), and other (cochlear implant, CSF leak, post splenectomy, sickle cell disease, or alcohol use disorder)]

Conclusion: Due to prioritization of potential staffing shortages and clustering nursing care, an opportunity to vaccinate patients with pneumococcal and influenza vaccines was missed. It is important for health care providers to be aware of this

potential opportunity for vaccination of high-risk patients in order to promote primary prevention in future waves of pandemics.

Disclosures: **All Authors**: No reported disclosures

12. Randomized Studies of Two Clostridioides (Clostridium) difficile Vaccine Formulations

Jody Lawrence, MD[1]; Nicholas Kitchin, MD[1]; Annaliesa S. Anderson, PhD[2]; Michael W. Pride, PhD[2]; Kathrin U. Jansen, PhD[2]; William C. Gruber, MD[1]; Yahong Peng, PhD[1]; Kevin Yi, PhD[3]; Charles Knirsch, MD[3]; Chris Webber, MD[4]; [1]Pfizer Inc, Collegeville, Pennsylvania; [2]Pfizer, Pearl River, NY; [3]Pfizer, Inc, Collegeville, Pennsylvania; [4]Pfizer, Ltd. Hurley UK, Hurley, England, United Kingdom

Session: P-2. Adult Vaccines

Background: Two formulations of investigational bivalent *Clostridioides (Clostridium) difficile* vaccine (QS-21 adjuvanted toxoid and toxoid-alone) were assessed for safety and immunogenicity in randomized studies in healthy adults 50–85 years of age.

Methods: The Phase 1 study of QS-21 adjuvanted toxoid vaccine randomized subjects 3:1 to 100 µg QS-21-containing *C difficile* vaccine or placebo; 3 doses were given according to 2 different schedules: a shortened month (Months 0, 1, 3) or day (Days 1, 8, 30) regimen. The Phase 2 toxoid-alone vaccine study randomized subjects 3:3:1 to receive 100 or 200 µg unadjuvanted *C difficile* vaccine formulation or placebo in Stages 1 and 2 (sentinel cohorts of different age groups), and 3:1 to receive the selected dose of unadjuvanted *C difficile* vaccine formulation or placebo in Stage 3. Three doses were given on a day (Days 1, 8, 30) regimen. Safety was the primary outcome for both studies. Immunogenicity was determined by measuring serum toxin A– and B–specific neutralizing antibodies.

Results: In the day regimen, 10 reports across both studies of grade 3 injection site redness postdose 2 triggered predefined stopping rules. Local reactions in both studies were more common among vaccine versus placebo recipients. Injection site pain predominated and was generally mild in severity. Systemic events were infrequent and generally mild-to-moderate in severity. Adverse events were reported by 50.0%–75.0% and 16.7%–50.0% of subjects in the QS-21 and toxoid-alone studies, respectively. Immune responses peaked around Day 37 (shortened-month regimen) or between Day 15 and Month 2 (day regimen), and remained above baseline throughout follow-up.

Conclusion: Both formulations demonstrated robust immunogenicity. However, both studies stopped early due to grade 3 injection site redness postdose 2 of the day (Days 1, 8, 30) regimen; neither formulation progressed to later stage development. Instead, an aluminum hydroxide-containing formulation of the vaccine candidate administered at 0, 1, and 6 months, which was safe and immunogenic in phase 1 and 2 studies, advanced to phase 3 studies.

Disclosures: Jody Lawrence, MD, Pfizer, Inc (Employee) Nicholas Kitchin, MD, Pfizer, Inc (Employee) Annaliesa S. Anderson, PhD, Pfizer (Employee, Shareholder) Michael W. Pride, PhD, Pfizer (Employee, Shareholder) Kathrin U. Jansen, PhD, Pfizer (Employee, Shareholder) William C. Gruber, MD, Pfizer (Employee, Shareholder) Yahong Peng, PhD, Pfizer (Employee, Shareholder) Charles Knirsch, MD, Pfizer (Employee) Chris Webber, MD, Pfizer Inc (Employee, Shareholder)

13. Uncommon rash and neurological symptoms related to Shingrix

sanjay K. Yadava, MD[1]; Rahul Mahapatra, DO[2]; [1]SUNY upstate medical university, Syracuse, New York [2]SUNY Upstate Medical University, Syracuse, New York

Session: P-2. Adult Vaccines

Background: Shingrix is a non-live recombinant vaccine approved by the Food and Drug Administration (FDA) in 2017 to prevent shingles and postherpetic neuralgia in immunocompetent adults age 50 years and older. A myriads of local and systemic reactions due to the vaccine have been reported, but diffuse erythematous maculopapular rash and neurological symptoms have not yet been reported in English literature.

Methods: Using Google and PubMed, we searched for relevant case reports and journal articles describing adverse effects related to shingrix vaccination.

Results: A 54-year female without significant past medical history presented with diffuse erythematous maculopapular rash, itching and a feeling of weakness in both legs. Her symptoms started with itching and erythematous macular rash at the site of shingles shot followed by headache, myalgia, and malaise which did not improved much with Benadryl. Next day, she felt numbness and weakness in both legs. On the third day, she awoke with diffuse red rash on the face, trunk, lower extremities, fewer lesions on upper extremities. Her review of systems was negative except as mentioned. on examination, she was found to have diffuse erythematous maculopapular itchy rash as shown in Fig 1, but no sensory, motor, cranial never or cerebellar signs. Infectious disease was consulted who recommended IV acyclovir considering early varicella with given morphology. The morphology of lesions did not change over a period of times and VZV PCR of lesions came negative hence acyclovir was discontinued after three days. Her symptoms and rash improved over the hospital stay with supportive treatment and was discharged home on day fifth of admission.

Fig. 1A, Rash over face

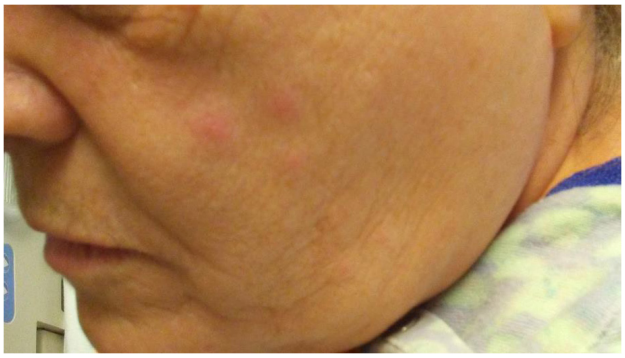
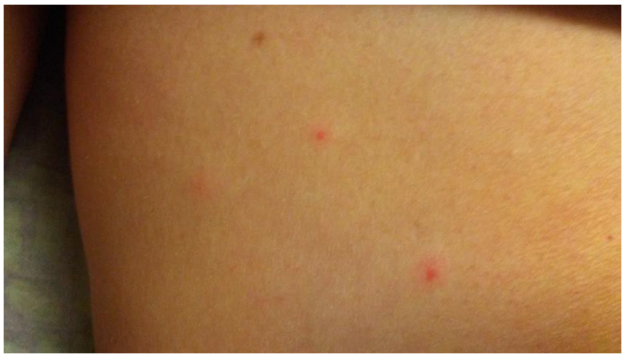


Fig. 1B, Rash over right thigh



Conclusion: The safety of shingrix was evaluated by the pool data from eight clinical trials of more than 10,000 participants. Among the study population, 9.4% had local injection-site reactions including pain, redness, and swelling and 10.8% had systemic events including myalgia, fatigue, headache, shivering, fever, and gastrointestinal symptoms. The nature and duration of rash described in our patient has not been reported in english literature including these clinical trials. Noticing new reactions with broad use of new vaccine is conceivable.

Disclosures: **All Authors**: No reported disclosures

14. A Comprehensive Real-World Analysis to Compare Adjuvanted Trivalent Influenza Vaccine and Trivalent High Dose Influenza Vaccine by Age and Period of High Influenza Activity for the 2018–19 Season among U.S. Elderly

Maarten Postma, Dr.[1]; Stephen I. Pelton, MD[2]; Victoria Divino, PhD[3]; Joaquin F. Mould-Quevedo, PhD[4]; Drishti Shah, PhD[3]; Mitchell DeKoven, PhD[3]; [1]University of Groningen, Groningen, Groningen, Netherlands; [2]Boston Medical Center, boston, Massachusetts; [3]IQVIA, Falls Church, Virginia; [4]Seqirus Vaccines Ltd., Summit, New Jersey

Session: P-2. Adult Vaccines

Background: Influenza vaccine effectiveness decreases with increasing age due to the senescence of immune function and a reduced immune response to antigens. There is also considerable vaccine effectiveness heterogeneity depending on the influenza activity time period, especially in seasons where two different circulating strains predominated, such as the 2018–19 season. This research aimed to assess the effect of age and high influenza activity period (HIAP) on the relative vaccine effectiveness (rVE) of adjuvanted trivalent influenza vaccine (aTIV) vs. trivalent high-dose influenza vaccine (HD-TIV) among elderly (≥65y) recipients in the U.S.

Methods: During the 2018–19 influenza season, a retrospective cohort analysis was conducted using professional fee, prescription claims and hospital charge master data in the U.S. The first sub-analysis evaluated rVE for different age groups (65–74 years, 75–84 years, ≥85 years). The second sub-analysis evaluated rVE overall, restricting the observation period from to HAIP: Dec 2018-Mar 2019 (August 2018-July 2019 in the main analysis). Adjusted analyses were conducted through inverse probability of treatment weighting (IPTW) to control for selection bias. Poisson regression was used to estimate the adjusted pairwise rVE for influenza-related hospitalizations/emergency room (ER) visits and office visits.

Results: Following IPTW, 561,315 recipients of aTIV and 1,672,779 of TIV-HD were identified. Following IPTW adjustment and Poisson regression, aTIV was more effective in reducing influenza-related office visits compared to TIV-HD (7.0%; 95% CI: 2.6%-11.2%) in the HIAP sub-analysis. In the age sub-analysis, the rVE favoring aTIV ranged from 5.1% (95% CI: -0.17%-10.1%) for the youngest group (65–74) up to 11.4% (95% CI: 0.6%-21.1%) for the eldest group (≥85y) for influenza-related office visits. No