Conclusion: The SPR from HBV-1SS in PWH appears comparable to the immunocompetent patients included in RCTs, especially when patients with significant non-HIV immunosuppression are excluded. The SPR demonstrated in this single-arm, retrospective study was higher than that of HBV-Eng in immunocompetent patients, and consideration should be given to establishing HBV-1SS as first-line HBV vaccination in PWH. Finally, SPR is significantly reduced in those with lower current and nadir CD4+ counts. Further research on the effectiveness of a repeat vaccination series or higher dosing in these subgroups is needed.

Disclosures: Jennifer Cocoboa, PharmD, AAHIVP; BCPS; Viv (Grant/Research Support)

22. Description of Hospitalized Patients with Influenza Vaccine Failure
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Session: P-2. Adult Vaccines

Background: Despite influenza vaccination, some patients develop illness and require hospitalization. Many factors contribute to vaccine failure, including mismatch of the vaccine and circulating strains, waning immunity, timing of influenza season, age and patient comorbidities such as immune function. This study compared vaccinated, hospitalized patients with and without influenza.

Methods: This study used 2015–2019 Tennessee data from the US Hospitalized Adult Influenza Vaccine Effectiveness Network database. Enrolled patients were ≥18 years vaccinated for the current influenza season and admitted with an acute respiratory illness. Patient or surrogate interviews and medical chart abstractions were performed, and influenza vaccinations were confirmed by vaccine providers. Influenza PCR was performed in a research lab. Statistical analyses were performed using STATA and R using Pearson’s chi-squared, Kruskal-Wallis and Wilcoxon rank-sum tests and multivariate logistic regression.

Results: 1236 patients met study criteria, and 235 (19%) tested positive for influenza. Demographics, vaccines and comorbidities were similar between the two groups (Table 1) except for morbid obesity, which was more common in influenza negative patients (13% vs 8%, p = 0.04), and immunossuppression, which was more common in the influenza positive (63% vs 54%, p = 0.01). Logistic regression analysis demonstrated older patients (OR 1.56, 95% CI 1.03–2.12) and immunosuppressed patients (OR 1.86, 95% CI 1.56–2.12) were at increased risk for influenza (Table 2 and Figure 1). Immunossuppression also increased the risk for influenza A/H3N2 (OR 1.86, 95% CI 1.56–2.12) were at increased risk for influenza (Table 2 and Figure 1). A sensitivity analysis was performed on patients who self-reported influenza.

Table 1: Demographics of influenza positive versus influenza negative patients in influenza vaccinated, hospitalized patients.

| N = 1236 | Influenza positive (N=235) | Influenza negative (N=1001) | p-value |
|----------|---------------------------|-----------------------------|---------|
| Gender – % (N) | Male 91 (61%) | 434 (64%) | 0.02 |
| Race – % (N) | African-American 57 (29%) | 218 (26%) | 0.42 |
| | Asian 0 (0%) | 7 (0% ) | |
| | White 182 (79%) | 767 (76%) | |
| | Other 4 (2%) | 40 (4%) | |
| Pregnant at time of enrollment | 0 (0%) | 9 (1% ) | 0.16 |
| Self-reported being vaccinated in current influenza season – % (N) | 144 (63%) | 576 (58%) | 0.19 |
| Vaccine type – % (N) | Standard (bivalent, quadrivalent, recombinant, cell culture) 135 (59%) | 625 (63%) | 0.21 |
| | High dose and adjuvanted 94 (41%) | 360 (36%) | |
| Median time between vaccine and symptom onset date – days | 120 (95, 140) | 114 (77, 150) | 0.36 |
| Any immunosuppression | 147 (63%) | 537 (54%) | 0.01 |
| Smoking (including vaping) in past 6 mo | 58 (25%) | 261 (26%) | 0.72 |

Table 2: Logistic regression analyses of vaccinated, hospitalized influenza positive patients; vaccinated, hospitalized patients with influenza A subtypes and self-reported vaccinated, hospitalized influenza positive patients.

Results: Analysis of ten independent community pharmacies revealed an increase in the total number of pneumococcal vaccines purchased in November in years a campaign took place compared to baseline. The total number of pneumococcal vaccines purchased in November increased 23% during the first campaign and another 23% during the second campaign (13 vs. 16 vs. 50 vaccines purchased in November 2017, 2018, and 2019, respectively).

Increased vaccine uptake was also observed in months subsequent to the in-pharmacy campaign. Analysis of ten independent community pharmacies revealed a 47% increase in the mean number of pneumococcal vaccines purchased per month by the banner (8.8 mean number of pneumococcal vaccines purchased per month twelve months pre-implemention vs. 12.9 twelve months post-implemention).

Conclusion: A comprehensive pneumococcal adult immunization campaign implemented across a banner of independent community pharmacies led to immediate and sustained increases in vaccine uptake. As pharmacists have a role in promoting adult pneumococcal immunizations, advocacy efforts should be undertaken to include pharmacists in publicly funded immunization programs.

Disclosures: Tiana Trill, PharmD, RPh, ACPR; Pfizer Canada Inc. (Grant/Research Support, Speaker’s Bureau)

23. Did You Pneu? Impact of an Adult Pneumococcal Immunization Campaign Across Independent Community Pharmacies
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Session: P-2. Adult Vaccines

Background: Canada’s pneumococcal immunization goal for adults 65 years and older aims to achieve 80% coverage, yet uptake is only 58% in this population. Barriers include lack of awareness and lack of recommendations by healthcare providers. A pneumococcal immunization campaign was designed to address barriers and increase vaccine uptake from independent community pharmacies.

Methods: A “Did You Pneu?” pneumococcal immunization campaign was developed by a pharmacist at the head of an independent community pharmacy banner. The campaign consisted of pharmacist educational materials, in-pharmacy marketing materials, and pharmacy operational supports (Figure 1). In November 2018, a month-long in-pharmacy campaign was carried out across the banner. Feedback collected from pharmacists via telephone interviews was used to inform updates to campaign materials for the November 2019 campaign. A convenience sample of ten independent community pharmacies located across Ontario was selected for a retrospective observational analysis of pneumococcal vaccine purchases from January 2017 to December 2019.

Figure 1. “Did You Pneu?” campaign toolkit showing pharmacist educational materials, in-pharmacy marketing materials, and pharmacy operational supports developed and distributed across a banner of independent community pharmacies as part of an adult pneumococcal immunization campaign.

Results: Analysis of ten independent community pharmacies revealed an increase in the total number of pneumococcal vaccines purchased in November in years a campaign took place compared to baseline. The total number of pneumococcal vaccines purchased in November increased 23% during the first campaign and another 23% during the second campaign (13 vs. 16 vs. 50 vaccines purchased in November 2017, 2018, and 2019, respectively).

Increased vaccine uptake was also observed in months subsequent to the in-pharmacy campaign. Analysis of ten independent community pharmacies revealed a 47% increase in the mean number of pneumococcal vaccines purchased per month by the banner (8.8 mean number of pneumococcal vaccines purchased per month twelve months pre-implemention vs. 12.9 twelve months post-implemention).

Conclusion: A comprehensive pneumococcal adult immunization campaign implemented across a banner of independent community pharmacies led to immediate and sustained increases in vaccine uptake. As pharmacists have a role in promoting adult pneumococcal immunizations, advocacy efforts should be undertaken to include pharmacists in publicly funded immunization programs.

Disclosures: Tiana Trill, PharmD, RPh, ACPR, Pfizer Canada Inc. (Grant Support, Speaker’s Bureau)

24. Economic Burden of Herpes Zoster Among Individuals with Chronic Obstructive Pulmonary Disease: A Retrospective Cohort Study
Patriz Ghaswala, PhD, ORCID: 0000-0002-5583-5501; Philippe Thompson-Leduc, MSc, ORCID: 0000-0001-9047-3942; Wendy Y. Cheng.
Background: Previous studies have evaluated the risk of developing herpes zoster (HZ) in patients with chronic obstructive pulmonary disease (COPD), but little is known about the impact of an acute HZ episode on healthcare resource utilization (HCRU) and costs among patients with COPD in the US.

Methods: A retrospective cohort study of individuals ≥50 years of age was conducted using administrative claims data from Optum Clinformatics for commercially insured and Medicare Advantage members (01/01/2013 – 12/31/2018). Two cohorts of patients with COPD, with (Cohort A) and without (Cohort B) HZ episodes, were identified (Fig.1). COPD and HZ were identified using ICD-9 and ICD-10 diagnosis codes.

Results: Among patients with COPD, 3,415 patients with HZ (mean age [standard deviation]=73.2 [9.0] years) and 35,360 without HZ (72.4 [9.4] years) were identified. Compared to patients with COPD but without HZ, patients with COPD and HZ had an increased rate of all-cause outpatient visits (adjusted IRR=1.28; 1.20–1.35; p< 0.001) as well as higher all-cause total costs (adjusted cost difference (AIC)≈313; 95% CI=$110–536; p< 0.004), in the first year of follow-up (Fig.2).

Conclusion: HCRU and cost burden is higher in patients ≥50 years old with COPD and HZ vs. without HZ. HZ vaccination may potentially reduce this burden among patients with COPD.

Disclosure: GlaxoSmithKline (Employee, Shareholder) Philippe Thompson-Leduc, MSc, ORCID: 0000-0001-9047-3941, Analysis Group, Inc (Employee) Wendy Y. Cheng, MPH, PhD, ORCID: 0000-0002-3881-2496, GlaxoSmithKline (Other Financial or Material Support) Min-Jung Wang, ScD, ORCID: 0000-0003-4432-3302, Analysis Group, Inc (Employee). Other Financial or Material Support, Analysis Group received grant/research support from GSK (Michael Bogart, PharmD, ORCID: 0000-0002-1681-9710, GlaxoSmithKline (Employee, Shareholder) Branden J. Patterson, PharmD, PhD, GSK (Employee, Shareholder) Mei-Sheng Duh, MPH, ScD, ORCID: 0000-0001-5035-6872, John Wojciechowski, BA, ORCID: 0000-0002-8696-5086;2 Suna Park, MS;3 Barbara P. Yawn, MD, MSC, ORCID: 0000-0001-7279-58104;4 GSK, Philadelphia, Pennsylvania;4 Analysis Group, Inc, Montreal, Quebec, Canada;3 Analysis Group, Boston, MA;3 University of Minnesota, Minneapolis, Minnesota.

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25. Effectiveness of High Dose Influenza Vaccine in HIV-positive Patients for the Winter 2017–2018 Season

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Background: Antibody response after high dose influenza vaccine (HDIV) approved for age ≥ 65 years, is superior to a standard-dose vaccine in HIV-infected persons. We report the effectiveness data of HDIV compared to the standard dose quadrivalent vaccine (SDIV) in our HIV clinic.

Methods: We conducted a retrospective cohort study at the University of Kansas Medical Center to evaluate the effectiveness of HDIV in HIV-infected patients during the 2017–2018 influenza season. A phone survey was utilized to verify vaccination status and interval development of influenza-like illness (ILI). A modified CDC definition of ILI = fever and cough, sore throat or shortness of breath (SOB) and a broader protocol defined ILI (PD ILI = sore throat, cough or SOB with either fever, chills, headache or myalgia) were utilized. The electronic medical record was reviewed to confirm vaccine type and influenza testing when available.

Results: Of 560 HIV-infected patients in the clinic, 219 (39.1%) were available and willing to participate (197 males, 21 females, 1 transgender female). The median age was 53 years and BMI 27.2 kg/m². Five percent had CD4 < 200 cells/μL, and 13.7% had an HIV viral load > 40 copies/mL. HDIV was given to 119 (54.3%), SDIV to 77 (35.2%) and 23 (10.5%) were not vaccinated (Table 1). A mCDC ILI occurred in 8 (10.4%) in the SDIV group compared to 6 (5.0%) in the HDIV group (p=0.16). A PD ILI was reported in 16 (20.8%) in the SDIV group compared to 12 (10.1%) in the HDIV group (p=0.04). There was no difference in confirmed influenza cases between the two groups (Table 2). On logistic regression only vaccine dose (SDIV OR 2.34 95% CI 1.04–5.37, p=0.04) and age in years (OR 0.97, 95% CI 0.94–1.0, p=0.045) were associated with PD ILI. HDIV remained protective after adjustment for age. Vaccine side effects were mild and occurred in 11/77 (14.3%) in the SDIV group compared to 13/119 (10.9%) in the HDIV group (p=0.5).

Table 1. HIV Patients characteristics and influenza vaccine status winter 2017-2018

| Characteristics | n=219 | n=219 | n=23 |
|-----------------|-------|-------|------|
| Age, mean years | 49.9  | 50.6  | 50.9 |
| Age < 18 years  | 32 (149%) | 27 (125%) | 6 (26%) |
| Age 18–49 years | 52 (23.7%) | 37 (17%) | 9 (39.1%) |
| Age > 50 years  | 47 (21.5%) | 46 (21.3%) | 12 (52.2%) |
| Male            | 116 (53.1%) | 71 (33.3%) | 20 (87.0%) |
| Female          | 103 (46.9%) | 78 (36.7%) | 3 (13.0%) |
| Trans female    | 1 (0.8%)  | 0 (0.0%) | 0 (0.0%) |

Table 2. Vaccine effectiveness by influenza status

| Vaccine Type | n=219 | n=219 | n=23 |
|--------------|-------|-------|------|
| SDIV          | 106 (60.8%) | 71 (33.3%) | 20 (87.0%) |
| HDIV          | 113 (52.1%) | 46 (21.3%) | 3 (13.0%) |

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