Table 1: Clinician Demographics

ID Fellowship	
Currently in ID fellowship	7 (10%)
Completed ID fellowship	50 (75%)
Post Graduate Year	
PGY1-5	10 (15%)
PGY 6-10	16 (24%)
PGY ≥ 11	36 (54%)
Number of patients living with HIV seen per month	
0	2 (3%)
1-10	16 (24%)
11-20	12 (18%)
>20	37 (55%)
Practice Type	
Academic	49 (73%)
Private Practice	6 (9%)
Federally Qualified Health Center	6 (9%)
Other	8 (12%)
Practice Location	
California	23 (34%)
New York	6 (9%)
Maryland	4 (6%)
Other	34 (51%)

Table 2: HBV Vaccination Practices of Physicians Caring for People Living with HIV

Preferred timing of HBV vaccination in a patient newly diagnosed with HIV starting ART	
Vaccinate immediately	53 (79%)
Postpone vaccination until HIV VL is suppressed	12 (18%)
Defer vaccination since the patient is on ART	1 (1%)
Other	1 (1%)
Preferred initial HBV vaccination series for susceptible individuals living with HIV	
Energix-B or Recombivax HB	18 (27%)
Heplisav-B	29 (44%)
Any of the above	19 (29%)
Preferred dose & schedule if using Engerix-B or Recombivax HB for initial vaccine series	
Standard dose at 0, 1, and 6 months	56 (90%)
Double dose at 0, 1, and 6 months	6 (10%)
Standard or double dose at 0, 1, 2, and 6 months	0 (0%)
Preferred intervention if patient does not seroconvert after first vaccination series	
No further intervention	3 (5%)
Repeat with Engerix-B or Recombivax-HB at standard dose at 0, 1, and 6 months	14 (23%)
Repeat with Engerix-B or Recombivax-HB at double dose at 0, 1, and 6 months	15 (24%)
Repeat with Engerix-B or Recombivax-HB at standard dose at 0, 1, 2, and 6 months	2 (3%)
Repeat with Engerix-B or Recombivax-HB at double dose at 0, 1, 2, and 6 months	0 (0%)
Repeat with Heplisav-B	28 (45%)
Preferred hepatitis B immunity monitoring after successful vaccination with seroconversion	
No further monitoring	52 (84%)
Check HBsAb yearly, and repeat series if titer drops below 10mIU/mL	10 (16%)
Preferred management of isolated positive hepatitis B core antibody	
No further intervention	16 (24%)
Initiate hepatitis B vaccination series	17 (25%)
Give a single dose of Engerix-B or Recombivax HB with HBsAb titer check 1 month later	6 (9%)
Check HBV DNA level	28 (42%)

Conclusion: This study provides insight into current HBV vaccination and monitoring practices of physicians who care for patients with HIV. The results revealed varied practice preferences and opportunities for improvement through standardization. Additional research is needed to elucidate the impact these various practices have on patient outcomes and healthcare expenditure.

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28. Immunogenicity of rVSVΔG-ZEBOV-GP Ebola Vaccine (ERVEBO™) in Participants by Age, Sex, and Baseline GP-ELISA Titer: A Post Hoc Analysis of Three Phase 2/3 Trials

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Session: P-2. Adult Vaccines

Background: The recent Ebola virus disease (EVD) outbreak in the Democratic Republic of the Congo highlights the sustained threat of EVD morbidity and mortality where healthcare and vaccine delivery are challenging. ERVEBO®, a live recombinant vesicular stomatitis virus (VSV) vaccine containing the *Zaire ebolavirus* glycoprotein (GP) in place of the VSV GP (rVSVΔG-ZEBOV-GP), was developed by Merck & Co., Inc., Kenilworth, NJ, USA in collaboration with multiple partners to prevent EVD and has been approved for human use in several countries.

Methods: We pooled data from three Phase 2/3 clinical trials conducted in Guinea (FLW), Sierra Leone (STRIVE), and Liberia (PREVAIL) during the 2013–2016 West African outbreak to assess immune responses using a validated assay in each of the three studies and performed a *post hoc* analysis by sex, age (18–50 yrs & >50 yrs) and baseline (BL) GP-enzyme-linked immunosorbent assay (ELISA) titer (< 200 & ≥200 EU/ml). The full analysis set (FAS) population included the primary immunogenicity populations (all vaccinated participants with serology data collected within an acceptable day range) from all three trials. The endpoints were total IgG antibody response (EU/mL) measured by the GP-ELISA and neutralizing antibody response measured by the plaque reduction neutralization test (PRNT) to rVSVΔG-ZEBOV-GP at Days 14, 28, 180, and 365 postvaccination.

Results: In the overall population and in all subgroups, GP-ELISA and PRNT geometric mean titers increased from BL, with most peaking at Day 28 and persisting through Day 365. There were differences between males and females and between participants with BL GP-ELISA < 200 & ≥200 EU/ml. There did not appear to be a difference between age groups.

Conclusion: These data demonstrate that rVSVΔG-ZEBOV-GP elicits a robust and durable immune response up to 12 months in participants regardless of age, sex, or BL GP-ELISA titer. The higher immune responses observed in females and participants with preexisting immunity are consistent with those described in published literature for other vaccines.

Disclosures: Jakub Simon, MD, MS, Merck Sharp & Dohme Corp, a subsidiary of Merck & Co., Inc., Kenilworth, NJ, USA (Employee, Shareholder) Stephen Kennedy, MD, Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc., Kenilworth, NJ, USA (Scientific Research Study Investigator) Barbara Mahon, MD, Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc., Kenilworth, NJ, USA (Employee, Shareholder) Sheri Dubey, MS, Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc., Kenilworth, NJ, USA (Employee, Shareholder) Rebecca Grant-Klein, PhD, Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc., Kenilworth, NJ, USA (Employee, Shareholder) Ken Liu, PhD, Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc., Kenilworth, NJ, USA (Employee, Shareholder) Jonathan Hartzel, PhD, Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc., Kenilworth, NJ, USA (Employee, Shareholder) Beth-Ann Coller, PhD, Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc., Kenilworth, NJ, USA (Employee, Shareholder) Carolee Welebob, PhD, Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc., Kenilworth, NJ, USA (Employee, Shareholder) Mary Hanson, PhD, Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc., Kenilworth, NJ, USA (Employee, Shareholder) Rebecca Grais, PhD, Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc., Kenilworth, NJ, USA (Scientific Research Study Investigator)

29. Impact of Enhanced Influenza Vaccines on Direct Healthcare Costs for the U.S. Elderly: A Comprehensive Real-World Evaluation of Adjuvanted Trivalent Influenza Vaccine Compared to Trivalent High-Dose Influenza Vaccine for the 2018–19 Influenza Season

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Session: P-2. Adult Vaccines

Background: Influenza generates a substantial economic burden ($3.2B in the U.S. annually) due to direct medical costs such as physician office visits or hospitalizations, especially among the elderly. Recent published literature for the 2018–19 influenza season has demonstrated similar clinical effectiveness between adjuvanted trivalent influenza vaccine (aTIV) and trivalent high dose influenza vaccine (TIV-HD). This research aimed to assess the annualized mean all-cause and influenza-related healthcare costs among subjects 65+ years vaccinated with aTIV or TIV-HD during the 2018–19 influenza season.

Methods: A retrospective cohort analysis was conducted using professional fee, prescription claims and hospital charge master data in the U.S. Baseline characteristics included age, gender, payer type, region, Charlson Comorbidity Index, comorbidities, indicators of frail health status, and pre-index hospitalization rates. Treatment selection bias was adjusted through 1:1 propensity score matching (PSM). Economic outcomes included annualized mean all-cause costs and influenza-related costs, which comprised influenza-related hospitalizations, emergency room (ER) visits, and physician office visits costs. Mean costs were compared using paired t-test. Adjusted analyses were conducted using generalized estimating equation (GEE) models, with two-part models for influenza-related costs. With the GEEs, adjustment for outliers

(99th percentile) were addressed and predicted healthcare costs were obtained through bootstrapping (500 replications).

Results: During the 2018–19 influenza season, the PSM sample comprised 561,243 recipients of aTIV and 561,243 recipients of TIV-HD. Following GEE adjustment, predicted mean annualized all-cause and influenza-related costs per patient were statistically similar between aTIV and TIV-HD (US$9,676 vs. US$9,625 and US$23.75 vs. US$21.79, respectively). Both aTIV and TIV-HD were comparable in terms of predicted mean annualized costs for influenza-related hospitalizations (US$20.28 vs. US$18.13) and influenza-related office visits (US$1.29 vs. US$1.34).

Conclusion: In adjusted analyses, total all-cause and influenza-related healthcare costs were comparable among elderly subjects vaccinated with either aTIV or TIV-HD.

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30. Impact of Pharmacist Assertiveness Training in Recommending Pneumococcal Vaccination among High-Risk Adults

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Session: P-2. Adult Vaccines

Background: Community pharmacies have become vital access points to provide a range of vaccines to adults, including pneumococcal; however, despite growth in vaccines given at these sites, the most recent rates of adults being immunized against pneumococcal disease remain below goals set by Health People 2020. A lack of patient awareness is a leading reason for low vaccination rates, suggesting that a need exists to improve provider communication in recommending pneumococcal vaccination in high-risk adults.

Methods: A multi-phase, pharmacy-based intervention was launched in west and middle Tennessee locations of a nationwide community pharmacy chain focusing on improving evidence-based, presumptive recommendations related to pneumococcal vaccination. All locations were randomized to one of three arms based on training intensity: 1) no training; 2) online training only; and 3) online and live simulation training. The program focused on providing assertive recommendations and managing potential hesitancy guided by multiple health communication theories and community-based hesitancy data provided to each pharmacy by the study team. Primary endpoints included changes in pneumococcal vaccinations (counts over 6-month periods [July-December] in 2018 and 2019) and provider vaccine-related self-efficacy and were evaluated by generalized linear models.

Results: A total of 100 pharmacies were enrolled and 50 pharmacists completed their assigned training element. Completing the full training program (i.e., online and live) led to improvements in pharmacist self-efficacy related to being influential in vaccine-related decisions and not being helpless in managing resistance (both $p< 0.05$). Overall counts of all pneumococcal vaccines were lower (-11.3%) across all stores in the period following training; however, a small increase (2.1%, P=0.084) was observed in the stores that underwent the full training, versus decreases of 22.0% and 9.4% in control and online-only training comparisons, respectively.

Conclusion: Results suggest that provider vaccine self-efficacy can be improved through an evidence-based communication training program but substantial improvements in specific vaccinations may need to leverage a more holistic focus on all recommended adult vaccines.

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31. Influenza Vaccination During Pregnancy: A Descriptive Cross-sectional Survey of the Knowledge, Beliefs, and Attitudes of Mexican Gynecologists and Family Physicians.

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Session: P-2. Adult Vaccines

Background: Influenza in pregnancy is associated with elevated morbidity and mortality. Influenza vaccines are both safe and effective in pregnancy, supporting routine use in this population. Even though influenza vaccination in Mexico is recommended for pregnant women, there are no publications of influenza vaccine coverage in pregnancy.

This is the first Latin American survey done only in physicians aiming to assess the knowledge, beliefs, and attitudes that Mexican Obstetrics-Gynecologists (OBG) and Family Physicians (FP) have towards influenza and influenza immunization during pregnancy.

Methods: A cross-sectional survey was conducted, both paper-based and online. The questionnaire was composed of 35 questions, which addressed general knowledge of influenza, recommendations for vaccination during pregnancy, and beliefs and attitudes concerning the acceptability of the vaccine in pregnant women.

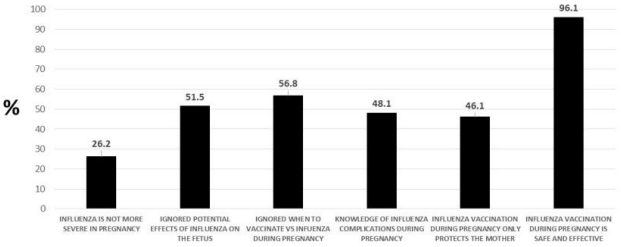
Results: A total of 206 completed surveys were available, 98 (47.6%) from OBG, 108 (52.4%) from FP. Regarding current practicing medical institutions, 76 (37%), 69 (34%), 31 (14.5%), 30 (14.5%) reported working for the Mexican Institute of Social Security, Private Sector, Secretariat of Health, or a combination of all respectively, *representing an estimated 2,472 daily pregnancy consultations.*

About a quarter (26.2%) reported not having a notion that influenza is more severe among pregnant women. More than half (51.5%) ignored the potential side effects of influenza infection on the fetus. The majority (56.8%) did not know when vaccination during pregnancy should occur.

Pregnancy as a risk factor for developing influenza complications was known only in 48.1%. Also, 46.1 % believed that vaccination only confers protection to the mother, but not to the fetus. Nevertheless, 96.1% considered that immunization against influenza during pregnancy is a safe and effective preventive intervention.

A results' summary is shown in Figure-1.

FIGURE – 1
SUMMARY OF SURVEY´S RESULTS (%) DONE IN 206 MEXICAN OBG's AND FP´s



Conclusion: Based on this survey, current knowledge of OBG and FP for influenza morbidity and mortality during pregnancy, and the importance of influenza vaccination in pregnant women, is poor.

Mandatory recommendations to educate medical providers regarding influenza vaccination during pregnancy in Mexico are necessary, even as imperative for CME credits.

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32. Influenza Vaccination Prevalence Among Adults with and without HIV by Race, Age, and Sex

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Session: P-2. Adult Vaccines

Background: People with HIV (PWH) may be more likely than people without HIV (HIV-) to receive influenza vaccinations. However, it is unknown if there are demographic differences in vaccination rates and whether this varies by HIV status.

Methods: We identified all adult PWH (≥18 years) and 20:1 race-, age- and sex-matched HIV- adults enrolled in Kaiser Permanente Northern California between 2013 - 2017. We evaluated prevalence of influenza vaccinations during the 2013 – 2016 flu seasons (September 1 to March 31). We used Poisson regression models with repeated measures (subjects contributed to multiple flu seasons) to estimate the relative risk [RR] of influenza vaccinations by race, age, and sex within HIV status strata. Multivariable models included terms for HIV status, race, age, sex, unhealthy alcohol use, smoking status, calendar year, alcohol use disorder, census-based education/income, depression, insurance type, and outpatient visits, and interaction terms for HIV*race, HIV*age group, and HIV*sex.

Results: The study sample included 7,422 PWH and 152,305 HIV-. 90% of PWH and 91% of HIV- were men; mean age at baseline was 49.4 (PWH) and 50.6 (HIV-) years; and 45% of PWH and 44% of HIV- were non-White. In adjusted models, PWH were more likely to receive the influenza vaccine compared with HIV- (RR 1.51; 95% CI 1.50–1.54). Among HIV-, Blacks were less likely to receive the vaccine compared with Whites (RR 0.77; 0.76–0.78); this effect was attenuated in PWH (RR 0.88; 0.84–0.92) (Figure, panel a). Among HIV-, older age groups were more likely to receive the vaccine compared with the 18 – 29 age group, with attenuated RRs among PWH (Figure, panel b). Among HIV-, females were more likely to receive the vaccine compared to males (RR 1.11; 1.09–1.13) while among PWH, females were less likely compared to males (RR 0.94; 0.89–1.00; p=0.04) (Figure, panel c).