income (AHI) were largest among Pneu < 65 (17.1%) and smallest among Pneu ≥ 65 (3.8%). In contrast, the largest proportion of subjects with ≥ $100k AHI was among Pneu ≥ 65 (25.3%) and the smallest among Pneu < 65 (15.8%).

Table 1. Sociodemographic characteristics of subjects in the All of Us research program based on vaccine receipt

	Influenza (N=15346)		Hepatitis B (N=6123)		Human papillomavirus (N=2125)		Pneumococcal (<65) (N=15217)		Pneumococcal (≥65) (N=15300)		All (N=152297)	
	N (%)	95% CI	N (%)	95% CI	N (%)	95% CI	N (%)	95% CI	N (%)	95% CI	N (%)	95% CI
Race												
White	10611 (69.1)	68.4-69.9	3907 (61.8)	60.6-63.0	1308 (61.6)	59.5-63.6	8404 (55.2)	54.4-56.0	12116 (80.2)	79.6-80.9	116917 (52.9)	52.8-53.1
Black or African American	2181 (14.2)	13.7-14.8	1092 (17.5)	16.4-18.2	371 (12.8)	11.4-14.3	3996 (26.9)	25.6-27.0	1321 (8.7)	8.3-9.2	68112 (21.6)	21.5-21.8
Asian	360 (2.3)	2.1-2.6	159 (2.5)	2.1-2.9	108 (5.1)	4.2-6.1	236 (1.6)	1.4-1.8	219 (1.5)	1.3-1.7	10562 (3.4)	3.3-3.4
Ethnicity												
Not Hispanic or Latino	13941 (86.9)	86.4-87.5	5218 (82.7)	81.7-83.6	1741 (81.9)	80.2-83.5	12782 (84.0)	83.4-84.6	13758 (91.1)	90.7-91.6	246940 (78.3)	78.2-78.5
Hispanic or Latino	1561 (10.3)	9.8-10.8	900 (14.2)	13.4-15.1	345 (16.2)	14.7-17.9	1950 (12.9)	12.3-13.4	865 (5.7)	5.4-6.1	59285 (18.8)	18.7-18.9
Highest education level												
No high school degree	948 (6.2)	5.8-6.6	498 (7.9)	7.2-8.6	80 (3.8)	3.0-4.7	1494 (9.8)	9.4-10.3	655 (4.3)	4.0-4.7	31984 (10.1)	10.0-10.3
High school graduate	2535 (16.5)	15.9-17.1	1081 (17.1)	16.2-18.1	360 (16.9)	15.4-18.6	3344 (22.0)	21.3-22.6	1891 (12.4)	12.0-13.1	64006 (20.3)	20.2-20.4
College One to Three	3763 (24.5)	23.9-25.2	1556 (24.6)	23.6-25.7	525 (24.7)	22.9-26.6	4476 (29.4)	28.7-30.2	3414 (22.6)	21.9-23.3	80110 (25.4)	25.3-25.6
College graduate or advanced degree	7814 (50.9)	50.1-51.7	3059 (48.3)	47.1-49.5	1150 (53.2)	51.0-55.3	5548 (36.5)	35.7-37.2	8907 (59.0)	58.2-59.8	131462 (41.7)	41.5-41.9
Annual household income												
Less than $10,000	1446 (9.4)	9.0-9.9	873 (13.8)	13.0-14.7	271 (12.8)	11.4-14.3	2597 (17.1)	16.5-17.7	571 (3.8)	3.5-4.1	49697 (15.8)	15.6-15.9
$10,000 - $49,999	4614 (30.1)	29.3-30.8	1874 (29.6)	28.5-30.8	676 (31.8)	29.8-33.8	4926 (32.4)	31.6-33.1	4250 (28.1)	27.2-28.7	85941 (27.2)	27.1-27.4
$50,000 - $99,999	3188 (20.8)	20.1-21.4	1156 (18.5)	17.3-19.3	416 (19.6)	17.9-21.3	2517 (16.5)	16.0-17.1	3768 (24.9)	24.1-25.5	55640 (17.6)	17.5-17.8
$100,000 or more	3572 (23.3)	22.6-24.0	1419 (22.4)	21.4-23.5	464 (21.8)	20.1-23.7	2405 (15.8)	15.2-16.4	3827 (25.3)	24.5-25.9	61287 (19.4)	19.3-19.6
Prefer not to answer, skipped, or missing	2526 (16.5)	15.9-17.1	1001 (15.8)	14.9-16.8	298 (14)	12.6-15.6	2772 (18.2)	17.6-18.8	2684 (17.8)	17.0-18.3	62832 (19.9)	19.8-20.1

Conclusion. Racial and ethnic disparities in vaccinations were apparent. Pneumococcal vaccination at age 65 years and above was more prevalent among white, non-Hispanic/Latino subjects who were also more educated and affluent. Conversely, those receiving pneumococcal vaccination before age 65 years were less educated and had lower AHI.

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

25. Relative Effectiveness of Adjuvanted Trivalent Influenza Vaccine Compared to Egg-Based Trivalent High-Dose Influenza Vaccine among U.S. Older Adults during 2019-20 Influenza Season

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Session: P-02. Adult Vaccines

Background. According to the Centers for Disease Control and Prevention (CDC), during the 2019-20 U.S. influenza season, influenza resulted in almost 180,000 hospitalizations and over 13,000 deaths in adults ≥ 65 years. The current study evaluated the relative vaccine effectiveness (rVE) of adjuvanted trivalent influenza vaccine (aTIV) compared to high-dose trivalent influenza vaccine (TIV-HD), against influenza-related hospitalizations/emergency room (ER) visits, all-cause hospitalizations and hospitalizations/ER visits for cardio-respiratory disease (CRD) among adults ≥65 years for the 2019-20 influenza season.

Methods. A retrospective cohort analysis of older adults (≥ 65 years) was conducted using IQVIA's professional fee, prescription claims and hospital charge master data in the U.S. Baseline characteristics included age, gender, payer type, geographic region, Charlson Comorbidity Index (CCI), comorbidities, indicators of frail health status, and pre-index hospitalization rates. To avoid any influenza outcome misclassification with COVID-19 infection, the study period ended March 7, 2020. 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 against influenza-related hospitalizations/ER visits, all-cause hospitalizations and any hospitalization/ER visit for CRD. An unrelated negative control outcome, urinary tract infection (UTI) hospitalization was included.

Results. During the 2019-20 influenza season, following IPTW, 798,987 recipients of aTIV and 1,655,979 recipients of TIV-HD were identified. After IPTW adjustment and Poisson regression, aTIV was statistically comparable to TIV-HD for prevention of influenza-related hospitalizations/ER visits (3.1%; 95% CI: -2.8%-8.6%) and all-cause hospitalizations (-0.7%; 95% CI: -1.6%-0.3%). Similar comparable outcomes were found for reduction of any hospitalization/ER visit for CRD (0.9%; 95% CI: 0.0%-1.7%). No treatment effect was identified for the negative control outcome.

Conclusion. aTIV and TIV-HD demonstrated comparable reductions in influenza-related hospitalizations/ER visits, all-cause hospitalizations and hospitalizations/ER visits for CRD.

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

26. Is There a Correlation Between Reactogenicity and Immune Responses of the Adjuvanted Recombinant Zoster Vaccine (RZV)? A Post-hoc Analysis

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Session: P-02. Adult Vaccines

Background. RZV (GSK) contains the varicella-zoster virus antigen glycoprotein E (gE) and the adjuvant system $AS01_B$ that enhances gE-specific immune responses through stimulating innate immunity. $AS01_B$ may contribute to the development of transient local or systemic post-vaccination reactions. A hypothesis that the magnitude of those reactions is predictive of immunogenicity and efficacy (i.e., "no pain, no gain") remains untested. To evaluate potential correlations between RZV's reactogenicity and immunogenicity in adults aged ≥ 50 years, a *post-hoc* analysis was conducted using data from 2 large phase 3 studies (NCT01165177, NCT01165229).

Methods. Reactogenicity was calculated as a single score per symptom (maximum grade recorded over 7 days post-vaccination). A global score obtained by adding each maximum severity for all reported symptoms (multivariate reactogenicity models) and a score for each reactogenicity symptom (univariate reactogenicity models) were estimated.

Results. The analysis included 904 and 147 RZV recipients with completed post-vaccination symptom diary cards and with anti-gE antibody results or cell-mediated immunity (CMI) results, respectively. The global score of reactogenicity post-dose 2 was significantly associated with anti-gE antibody response (p< 0.001, estimate 0.112) although the absolute antibody increase associated with reactogenicity was minimal (1.29-fold increase), while the association with CMI response was not statistically significant (p=0.073, estimate 0.230). There was a weak, but statistically significant association between gE-specific immune responses and the maximum pain post-dose 2 score (p=0.001, estimate 0.041), irrespective of post-vaccination time. Nevertheless, there are observations of immune responses in participants for whom pain was not reported.

Conclusion. A weak but statistically significant correlation was found between injection site pain intensity and immune responses in adult RZV recipients aged ≥ 50 years. However, participants reporting no pain were also able to mount a strong immune response, therefore pain cannot be a surrogate marker to inform on the level of immune response or on likelihood of being protected against herpes zoster.

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27. Immunologic Hyporesponsiveness with Subsequent Dosing of Meningococcal Vaccines: Re-Evaluating the Current Paradigm

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Session: P-02. Adult Vaccines

Background. Immunologic hyporesponsiveness (HyR) is considered as an inability to mount immune responses to vaccination of at least the same degree as earlier doses. For meningococcal vaccines, HyR has classically been associated with unconjugated but not conjugated polysaccharide (PS) vaccine dosing, but the clinical relevance is unclear.

Methods. To characterize meningococcal vaccine HyR, a PubMed search was conducted without date limits as follows: (hyporespons*) AND (meningococcal) AND (vaccine OR mechanism OR MOA OR causes). Papers from the authors' files, including HyR insights with other vaccines, were included.

Results. Classic HyR with repeat unconjugated PS vaccine (MPV) dosing is thought to be associated with memory B-cell (BC) depletion, causing reduced responses on redosing with the same PS. This lack of immunologic memory and interference is seen years after MPV dosing across age groups. As data is added, other examples seem to fit the HyR definition but differ from the classical mechanism and its implications. First, passively transferred maternal antibodies (Abs) may interfere with neonatal adaptive immune response and ultimately those of childhood vaccination

by binding to vaccine antigen (Ag) and inhibiting Ab production. Second, multiple dose schedules of meningococcal conjugate vaccines can show reduced responses to later doses in the series but memory is still established and amnestic booster response later achieved. Finally, carrier-induced epitopic suppression, occurring when PS Ag epitopes presented on a protein carrier are inhibited by prior/concurrent dosing with the same carrier, has also been reported. These 3 examples of alternative HyR mechanisms are not associated with memory BC depletion but are likely due to high circulatory Ab levels reducing responses, which is transient, reduces with Ab waning, immunologic memory remains intact, and is not clinically significant.

Conclusion. This literature review identified HyR mechanisms other than the classic mechanism associated with memory BC depletion that may account for decreased immune response to subsequent vaccination. Understanding the type of HyR observed with meningococcal vaccines is crucial, as these mechanisms vary in terms of potential clinical significance and the duration of their impact.

Disclosures. **Jamie Findlow, PhD**, **Pfizer** (Employee, Shareholder) **Paul Balmer, PhD**, **Pfizer** (Employee, Shareholder)

28. The Paradox of an Integrated MAT OPAT Program

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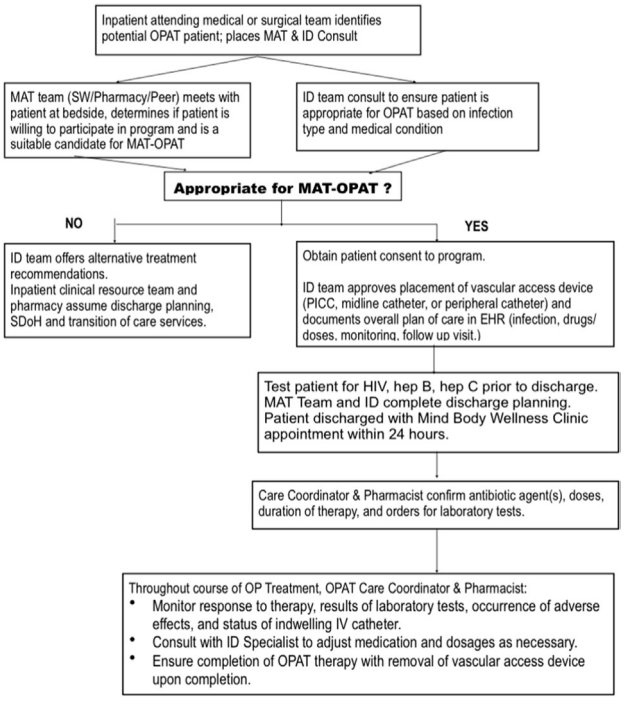
Session: P-03. Antibiotic Stewardship: Social determinants of health

Background. Patients with substance use disorders (SUD), specifically opioid use disorder (OUD) and injection drug use (IDU) utilize healthcare resources for prolonged inpatient treatment of serious infections stemming from their addictions. For a variety of reasons, physicians treating these patients refuse to send these patients home to receive outpatient parenteral antimicrobial therapy (OPAT), and instead keep the patient in the hospital for several weeks or longer to complete treatment for the injection-related infections. Patients who do not have history of IDU are sent home with a PICC line to receive OPAT once they are no longer acutely ill and therefore no longer meet criteria to remain inpatient, which is the established standard of care. Patients with OUD and IDU are not allowed the same standard of care, and furthermore do not receive adequate, if any, therapy for their primary problem and reason for their serious infection – the addiction.

Flow chart of the MAT-OPAT process



Methods. Medication-assisted treatment (MAT) with buprenorphine-naloxone has been approved for treating adults with opioid use disorder as part of a comprehensive treatment program that also includes counseling and behavioral therapy. Until now in our healthcare system there has been no comprehensive and integrated program to safely discharge patients with OUD and IDU to receive OPAT via a PICC line, while simultaneously treating their addiction. We describe the implementation of a MAT-OPAT program. Please refer to the chart included.

Results. We present a successful case of a 36-year-old male with a history of endocarditis associated with IV drug use and the intervention of the Healthcare System to link the patient to appropriate Infectious disease, behavioral health and medication adherence treatment for opioid abuse. The patient completed the IV antibiotic therapy and remained enrolled in the behavioral health program with a successful outcome.

Conclusion. MAT-OPAT implementation in large healthcare system with continuous outpatient support that includes Infectious Disease services, behavioral health and drug abuse rehabilitation therapy can be a successful strategy to minimize readmisión, cost and complications in patients with history of IV drug use and infections that require prolonged intravenous antibiotic therapy.

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

29. Impact of Antimicrobial Stewardship Intervention on Unrestricted Meropenem Use Upon Transitions of Care

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Session: P-04. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

Background. Broad-spectrum antimicrobials, like carbapenems, are often initiated empirically and can be continued for long periods of time, which may increase rates of multi-drug resistant organisms. Antimicrobial stewardship programs (ASP) have been shown to decrease the duration of antimicrobial therapy. Since July 2017 at UTMB Health, meropenem use has been restricted to infectious diseases and intensive care unit (ICU) providers. This study evaluated the impact of an electronic medical record (EMR)-based ASP intervention on meropenem days of therapy (DOT) in patients transitioning from the ICU to the general floors.

Methods. Patients aged at least 18 years with an active medication order for meropenem upon transition from an ICU to a medical/surgical unit were included. Once transitioned, the active meropenem order appeared in the "review" column of the pharmacists' queue. Pharmacists contacted the primary team, requested infectious diseases or ASP approval to continue therapy, and documented communication in the chart. Data for the pre- and post-intervention groups was collected retrospectively for the months of November 2017 to April 2018 and March 2020 to August 2020. The primary outcome of the study was meropenem DOT after transition from the ICU to the medical/surgical unit. Secondary outcomes of the study included meropenem total DOT, total number of meropenem doses after transfer to the medical unit, 30-day all-cause mortality, and 30-day readmission.

Results. A total of 163 patients were evaluated in both the pre-intervention (n = 87) and post-intervention groups (n = 76). Median meropenem DOT after transition of care (3 days vs. 2 days, P = 0.0004) and number of meropenem doses after transition (6 doses vs. 4 doses, P = 0.014) were significantly lower after TOC intervention implementation. However, total meropenem DOTs were not different at 5 days in both groups. Recommendations for de-escalation or discontinuation were accepted 60% of the time among providers.

Conclusion. An EMR-based ASP intervention did decrease meropenem DOT after patients were transitioned from the ICU to the medical/surgical floors. Results of the meropenem EMR-based ASP intervention may be used to expand to other broad-spectrum antimicrobials/antifungals in patients transitioning levels of care.

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

30. Implementation of the PEN-FAST Penicillin Allergy Screening Tool in the Emergency Department During Medication Reconciliation

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Session: P-04. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

Background. The purpose of this study is to implement the PEN-FAST Penicillin Allergy Screening Tool in the emergency department to identify low risk patients with inappropriate penicillin-related allergies to transition them to a beta-lactam. Newly published, validated, penicillin allergy clinician decision tool (PEN-FAST) allows healthcare providers to identify low risk penicillin allergies with a negative predictive value of 96%. This quick, five question clinical decision tool allows healthcare providers and antimicrobial stewardship programs to identify patients who would also test negative if a formal penicillin allergy test was performed, making the process to confidently identify inappropriately labeled penicillin-related allergies more efficient.

Methods. During routine medication reconciliations, pharmacists will identify patients who have a documented penicillin-related allergy in the EMR and use the PEN-FAST screening tool. Patients meeting inclusion criteria will have their penicillin-related allergy updated in the EMR based upon their assessed risk of very low, low, moderate, or high. The primary outcomes for this study are the percentage of patients screened that were classified as "very low and low risk" and percentage penicillin-related allergies updated. The secondary outcomes are the percentage of patients that required antibiotic therapy (post-allergy update) that were transitioned to a beta-lactam, inpatient broad-spectrum antibiotic usage before and after allergy update, and time spent interviewing each patient.

Results. A total of 59 patients were interviewed using the PEN-FAST Tool. The results for the primary outcomes indicate 92% (n=54) of patient allergies updated in the EMR, 24% (n=13) of patients classified as "very low risk" and 34% (n=18) of patients classified as "low risk". Results for the secondary outcome showed out of the 36 patients that were on non-beta lactams during allergy update, 72% (n=26) of those patients were transitioned to a beta-lactam. The average time to complete the PEN-FAST Tool was 4.2 minutes.

Conclusion. The results of this study support the use of the PEN-FAST Tool in efficiently updating patient's allergies in the EMR and identifying low risk patients who may be eligible for beta-lactam therapy.

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