

theory-informed activities can translate engagement principles into practice, maintaining meaningful and authentic collaboration beyond structured community meetings.

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Impact of a pharmacist-delivered peer educational intervention on buprenorphine dispensing behavior in Appalachian Kentucky

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OBJECTIVES/GOALS: This study evaluates the impact of a pharmacist-delivered peer educational intervention on buprenorphine dispensing behavior for opioid use disorder (OUD) in Appalachian Kentucky. **METHODS/STUDY POPULATION:** Based on themes from focus group analyses of our prior work, we developed a pharmacist-delivered peer educational intervention consisting of brief, on-site academic detailing sessions (i.e., mini visits) and live continuing pharmacy education webinars. Trained academic detailing pharmacists conducted mini-visits to 113 community pharmacies across 23 counties (20 lowest and 3 of the next 5 lowest buprenorphine dispensing rates per individual with OUD), providing materials while webinars reinforced confidence and addressed stigma. Changes in pharmacists' self-reported buprenorphine dispensing behaviors were evaluated using a validated pre-post survey offered to all pharmacists in each pharmacy. Analyses used unpaired t-tests for continuous scores variables and chi-square for categorical variables. **RESULTS/ANTICIPATED RESULTS:** A total of 128 of 131 participants (97.7%) completed the pre-survey and 95 of 131 (72.5%) completed the post-survey. Sex was similar between individuals in the pre- and post-surveys (50.0% vs 52.6% female, $P=0.7$). Most worked in independent pharmacies (64.8% pre, 67.4% post) and had ≥ 10 years in practice (63.3% pre, 68.4% post). Buprenorphine dispensing was reported by 85.9% pre and 88.3% post. After the intervention, participants showed greater willingness for telehealth prescriptions, with a mean change of +0.2 points (95% CI: 0.001–0.46, $P = 0.0038$) on a four-point scale. They also reported more welcoming environments toward individuals receiving buprenorphine treatment (five-point scale; mean change: +0.4, 95% CI: 0.05–0.8, $P = 0.027$). **DISCUSSION/SIGNIFICANCE OF IMPACT:** Our pharmacist-delivered peer intervention enhanced pharmacists' willingness to dispense buprenorphine via telehealth and fostered supportive pharmacy environments. Next, we will assess its effectiveness in expanding buprenorphine treatment access across Kentucky using county-level dispensing data.

Geographic patterns in anxiety diagnoses: A cross-sectional analysis

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OBJECTIVES/GOALS: This proposed study aims to explore whether geographic patterns exist in the prevalence of anxiety diagnoses among adult patients (ages 18–64 years) using EHR data from three counties in North Carolina. **METHODS/STUDY POPULATION:** This proposed study will employ a retrospective, cross-sectional analysis of de-identified EHR data, examining anxiety diagnoses across geographic locations. To analyze the data, a multi-step approach will be used, combining geospatial analysis, descriptive statistics, and inferential statistical tests. **RESULTS/ANTICIPATED RESULTS:** Findings may reveal geographic disparities in anxiety prevalence, highlighting potential social determinants of mental health and social risk factors. Identifying spatial patterns could inform targeted interventions to improve mental health equity and resource allocation in high-burden areas. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Understanding the geographic distribution of anxiety diagnoses can help guide policy and healthcare efforts to address mental health disparities. This study contributes to the growing body of research leveraging EHR data to examine population-level mental health trends.

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Factors associated with fatigue among ischemic stroke survivors in the All of Us Research Program

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OBJECTIVES/GOALS: Post-stroke fatigue (PSF), marked by early exhaustion and reduced activity tolerance, affects over half of stroke survivors. This novel study used All of Us Research Program data to explore factors linked to PSF, addressing gaps left by prior studies with methodological limitations. **METHODS/STUDY POPULATION:** We conducted a cross-sectional analysis of ischemic stroke survivors from the All of Us Research Program Controlled Tier dataset. Participants were identified using ICD-10 diagnosis I63 for cerebral infarction, with strokes occurring prior to survey completion. Self-reported fatigue was assessed using a 5-point Likert scale (none to very severe). Demographics, pre-stroke comorbidities, and health status factors were extracted from electronic health records and surveys. Proportional odds regression models identified factors associated with higher fatigue levels. **RESULTS/ANTICIPATED RESULTS:** 4,009 ischemic stroke survivors met inclusion criteria (mean age 64 ± 13 years, 53% female, median 2 years post-stroke). Fatigue was documented in 56% of

participants through electronic health records, while 84% reported some level of fatigue on surveys. In multivariable analysis, factors significantly associated with greater fatigue included younger age (OR: 0.98, 95% CI: 0.98–0.99, $p < 0.001$), female sex (OR: 1.38, 95% CI: 1.21–1.57, $p < 0.001$), current smoking (OR: 1.19, 95% CI: 1.05–1.36, $p = 0.008$), diabetes mellitus (OR: 1.34, 95% CI: 1.1–1.54, $p < 0.001$), chronic obstructive pulmonary disease (OR: 1.37, 95% CI: 1.16–1.62, $p < 0.001$), and mood disorders (OR: 1.96, 95% CI: 1.72–2.23, $p < 0.001$). **DISCUSSION/SIGNIFICANCE OF IMPACT:** This is among the first studies to examine PSF using large, representative datasets. With 84% reporting symptoms, findings reveal under recognition in clinical settings and identify modifiable risk factors to guide targeted, evidence-based interventions.

Immunopathogenesis of Avian Influenza in the mammalian mammary gland

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OBJECTIVES/GOALS: Our aim is to determine the pathogenesis of intramammary infection of H5N1. First, we must induce lactation, and our aim was to create a protocol to induce lactation without impregnating mice. We hypothesize that the immunological milieu of a lactating mammary gland is highly conducive for influenza viral infection. **METHODS/STUDY POPULATION:** Nine 10-week-old female mice of unidentified strain were placed in cohorts of lactating versus non-lactating versus control (undeveloped mammary glands) groups. Animals were co-housed within their group. Lactogenic hormones were used to induce mammary development and lactation, including estradiol, progesterone, oxytocin, and prolactin. Mice were inoculated with a comparative strain to H5N1, H1N1, due to its increased availability and safety standards. Immunopathology of mammary tissues and lungs will be assessed by histology, viral titration, and flow cytometry, and data analysis is pending. **RESULTS/ANTICIPATED RESULTS:** All seven mice that were chosen to be injected with lactogenic hormones developed mammary tissue beyond the pubertal stage and into the reproductive stage, as expected if they were pregnant. Of those seven mice, the three that were given prolactin and oxytocin for milk production and let down were able to lactate. Plaque assays of mammary and lung tissue revealed no viral titers. Flow cytometry of innate surface markers showed varying results and were deemed inconclusive. Based on the preliminary data, it is inconclusive whether the mammary tissue was able to support H1N1 virus replication. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Better understanding of the immunopathology of the mammary gland and how it contributes to disease and disease transmission of influenza in mammalian species will be essential for the development of measures to control disease outbreak and minimize economic loss, especially in species such as cattle and goats.

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Can we identify the ideal sexual violence prevention program for each student? Leveraging implementation science to reimagine how we deliver prevention programming

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OBJECTIVES/GOALS: Analyze risk factors among college students and their likelihood of experiencing or perpetrating sexual violence. Critique the process to develop a screening tool to match students to existing programming. Examine principles of implementation science in overcoming barriers to connect each student to the most appropriate prevention programming. **METHODS/STUDY POPULATION:** Research questions: What needs to be in a screening tool to gauge each incoming college student's risk factors and likelihood for future sexual violence victimization and perpetration? How can the tool be designed using principles of implementation science with end-user feasibility in mind? For this protocol, I will initiate a participatory research process to guide the development of a screening tool for incoming college students in a mid-western sample of the USA to assess risk factors for sexual violence victimization and perpetration. I will assemble a Technical Expert Panel to develop the screening tool using existing standardized measures. I aim to recruit a diverse panel of researchers and practitioners in sexual violence prevention, including sexual assault survivors and peer educators. **RESULTS/ANTICIPATED RESULTS:** The anticipated result will be a screening tool to predict the likelihood of victimization and perpetration for each incoming college student over one academic year. Next steps would be to pilot-test the screening tool to determine its effectiveness. The long-term goal would be to match each student to the most appropriate evidence-based prevention program based on individualized screening results. This could include existing evidence-based programs that prevent or decrease severity of victimization, revictimization, alcohol-facilitated victimization, perpetration, perpetration among high-risk students, and perpetration among fraternity members. Considering barriers and stakeholder engagement from the onset of the project aims to increase the feasibility of implementation in practice. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Quantifying an approximation of how many students would benefit from which types of programming can help colleges determine where to invest their time and resources to best prevent sexual violence. Guiding each incoming student to the most appropriate evidence-based prevention program could decrease rates of campus sexual violence.

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Implementing depression screening services in appointment-based pharmacies: A qualitative observational feasibility study

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