



Spring 2026 Public Health Innovations Conference

Student capstone presentation abstracts

Wednesday, April 15th
Midtown Collaboration Center

8:30am

Presenter: Ajay Mahenthiran

Multimorbidity Profiles Among Hospitalized Adults with Intellectual & Developmental Disabilities: A 2022 National Inpatient Sample Analysis

Abstract:

Background: Patients with intellectual and developmental disabilities (IDD) represent a small yet growing population that remains poorly characterized in national datasets, reflecting methodological barriers to inclusion and historical underrepresentation in research. Additionally, there is a dearth of studies describing the co-occurring psychiatric conditions in this patient population. This study fills these gaps in the literature.

Methods: We queried the 2022 National Inpatient Sample (NIS) to identify hospitalized adults with IDD aged 18–64. IDD was defined across 40 ICD-10 diagnosis fields using the Centers for Medicare & Medicaid Services Chronic Conditions Warehouse categories, including autism spectrum disorder, cerebral palsy, intellectual disability, and learning disabilities. A descriptive analysis of demographic variables, diagnosis, and procedure codes was conducted. Heatmaps helped visualize the co-occurrence of IDD and psychiatric comorbidity categories. Multivariable logistic regression models helped isolate independent predictors of in-hospital mortality and prolonged length of stay (dichotomized at the 75th percentile).

Results: After applying inclusion criteria, 233,415 IDD in-hospital admissions were identified. The most frequent co-occurring IDD pairs were unspecified ID & cerebral palsy (3.6%), unspecified ID & autism (3.2%), and autism & cerebral palsy (1.4%). The most frequent co-occurring psychiatric pairs were depressive episode & anxiety disorder (6.6%), bipolar disorder & anxiety disorder (4.5%), and ADHD & anxiety disorder (3.7%). Cerebral palsy co-occurring with autism increased mortality risk (odds ratio [OR]: 1.92, 95% confidence interval [CI]: 1.19–2.92). Schizophrenia co-occurring with anxiety was protective for mortality (OR: 0.23, 95% CI: 0.05-0.65) but predicted prolonged LOS (OR: 2.04, 95% CI: 1.74–2.38).

Conclusion: The hospitalized IDD in-patient population faces distinct comorbidity patterns warranting integrated psychiatric and medical care pathways.

9:00am

Presenter: Kelao Neumbo

HIV Disease Progression and Western Blot Antibody Patterns Among Women in the Women's Interagency HIV Study

Abstract

Background: Although Western blot (WB) assays are no longer routinely used in HIV diagnostics, they provide detailed information on antibody responses to specific viral proteins. The potential role of WB antibody patterns as indicators of HIV disease progression, particularly among women, remains underexplored.

Methods: This cross-sectional secondary analysis used data from the Women's Interagency HIV Study (WIHS). The analytic sample included 1,154 women with confirmed HIV-1 infection and available WB band data. Nine WB bands (gag, pol, and env proteins) were examined alongside pattern-based approaches, including latent class analysis (LCA). HIV disease progression was assessed using an ordinal outcome based on CDC staging guidelines. Ordinal logistic regression models were used to evaluate associations.

Results: Individual WB bands were highly prevalent and showed limited discriminatory value across disease stages. In contrast, pattern-based approaches provided greater insight. LCA identified three antibody reactivity profiles: a broad but variable profile (Class 1, reference), a high-reactivity profile (Class 2), and a low-reactivity profile (Class 3). Compared with Class 1, Class 2 (OR = 0.58, 90% CI: 0.44-0.75) and Class 3 (OR = 0.47, 90% CI: 0.29-0.73) were associated with lower odds of more advanced disease. Latent class membership remained independently associated with disease progression after adjustment for age and viral load.

Conclusions: HIV disease progression is better characterized by patterns of WB antibody reactivity rather than individual bands. WB-derived antibody profiles may provide complementary insight into immune response and disease staging, particularly in resource-limited settings.

9:30am

Presenter: Gabriella Malz

Continuity Matters: The Influence of Community Health Worker-Client Relationships on Engagement, Satisfaction and Psychosocial Well-Being in Nourishing Beginnings

Abstract

Background: Food insecurity among low-income, pregnant individuals is a significant public health issue. Community health workers (CHWs) are instrumental in addressing social needs and improving quality of care. However, limited research exists on how CHW continuity and CHW-client relationship quality influence engagement, study retention, psychosocial well-being, and the success of community-based food-is-medicine interventions.

Methods: A longitudinal observational cohort design was utilized to conduct a secondary analysis of data from the Nourishing Beginnings randomized clinical trial (n = 162) in Cuyahoga County, Ohio. CHW continuity (no change vs. any change) and CHW-client relationship quality (not at all - somewhat satisfied vs. very satisfied) were examined as predictors of intervention engagement, study retention, and psychosocial outcomes (social support, mastery, stress, depression). Analyses included descriptive statistics, factor analysis, independent samples t-tests, chi-square tests, ANOVAs, GLM repeated measures, and regression models.

Results: Most participants retained the same CHW (71%), and relationship quality was high (M = 4.34, SD = 0.59). Relationship quality demonstrated strong psychometric properties and was significantly higher among those with CHW continuity (p = .008). Psychosocial outcomes improved over time, but were not associated with CHW factors. However, CHW continuity predicted higher intervention dosage (p = .002), and relationship quality predicted greater contact effort for survey completion (p = .030). Study completion was high (78.4%), but was not driven by CHW factors.

Conclusions: Program structure appears to drive psychosocial improvements, while CHW continuity and relationship quality are critical for facilitating engagement and intervention delivery. These findings highlight the importance of CHW workforce stability in strengthening implementation of community-based interventions.

10:15am

Presenter: Jiya Vaidya

Assessing the Impact of Medical-Legal Partnership Services in UH Rainbow Ahuja Center for Women and Children

Abstract

Medical-Legal Partnerships (MLPs) integrate legal services into healthcare settings to address structural and social determinants of health, however, limited empirical evidence exists on how patient hardship aligns with perceived needs for these services. This study examines the impact of legal aid services when offered in an MLP context, as well as the reasoning that families obtaining care might have when accessing such services at the UH Rainbow Ahuja Center for Women and Children. Data were collected from the 2024 and 2025 Local Inventory of Needs and Knowledge (LINK) survey, incorporating both cross-sectional and longitudinal analyses. MLP need was measured based on awareness and utilization, and hardship indicators included housing instability, financial strain, food insecurity, child-related needs, other needs and adult healthcare access. Descriptive and bivariate analyses were conducted, along with longitudinal assessments of changes in hardship over time. Despite an indicated high burden of unmet needs, no statistically significant associations were observed between reported MLP need and any hardship domain. Longitudinal analysis revealed dynamic patterns of need, with substantial proportions of participants experiencing newly emerging and persistent needs over time. Public benefit participation was also not significantly associated with MLP need. These results suggest a critical disconnect between experienced hardship and identification of legal needs within healthcare settings, reflecting gaps in patient awareness, screening, and referral systems. Strengthening standardized screening and improving integration of legal services may enhance accessibility to MLP services and support efforts to advance health equity.

10:45am

Presenter: Jordan Spradlin

Emergency Department Utilization in Cleveland, OH: A Quality Improvement Project

Abstract

This quality improvement project examines patterns of emergency department (ED) utilization among high-need clients served by The Centers, a federally qualified health center in Greater Cleveland. During an initial internship experience, a high volume of ED follow-up care revealed significant opportunities to improve care coordination, particularly for individuals presenting with behavioral health concerns. In response, this project focuses on identifying trends and root causes associated with frequent ED use to inform targeted organizational interventions. Using data from 2025, a panel of the top 100 ED utilizers was constructed through the Azara Healthcare database and analyzed using Microsoft Excel. Data were de identified and examined to determine visit frequency, primary reasons for ED use (behavioral versus physical health), and hospital system utilization patterns. A literature review and client-level analysis further contextualize these findings. The Model for Improvement framework guides the project, incorporating root cause analysis and Plan-Do-Study-Act cycles to support sustainable change. Key research questions explore the conditions associated with high ED utilization, the relative contribution of behavioral health needs, and barriers to accessing appropriate outpatient care. Anticipated outcomes include identifying actionable strategies to reduce avoidable ED presentations and improve care engagement. Expected interventions may enhance follow-up processes, strengthen care coordination, and expand access to behavioral health services. This project holds significant public health implications, including reducing ED overcrowding, improving chronic disease management, and increasing service utilization within The Centers. Ultimately, these efforts aim to promote more efficient, equitable, and patient-centered care delivery for vulnerable populations.

1:30pm

Presenter: Maggie Lowden

Age-Stratified Mental Health Outcomes Following Prophylactic Mastectomy

Abstract

Prophylactic mastectomy (PM) is an effective risk-reduction strategy for women at high risk of breast cancer, particularly those with BRCA1/2 mutations or strong family history. While the physical benefits of PM are well established, less is known about the psychological effects, and their differences by age. This study evaluates age-stratified variances in new mental health diagnoses following PM using electronic health record (EHR) data.

Data was obtained from the TriNetX Research Network. Women with a history of PM and no prior breast cancer or mental health diagnosis were included. Patients were stratified into four age groups (30–39, 40–49, 50–59, 60–69), with the 40–49 cohort serving as the reference. Propensity score matching was used to control for demographic and clinical covariates. The

primary outcome was incidence of a new mental health diagnosis within 1 month to 5 years following PM.

Among the study cohorts, women aged 30–39 demonstrated a significantly higher risk of new mental health diagnoses compared to the reference group (17.2% vs. 9.8%; RR 1.75, 95% CI 1.24–2.48, $p=0.0013$). No significant differences were observed for older age groups. Findings were consistent in a 3-year sensitivity analysis.

These results suggest that younger women undergoing PM may face elevated mental health risks. Current care models do not routinely incorporate psychological consultation, highlighting an opportunity for age-specific interventions. Integrating targeted counseling into pre- and post-operative care may better support decision-making and long-term well-being among high-risk patients.

2:00pm

Presenter: Ethan P. Martin

Building Program Evaluation Capacity at the LGBT Community Center of Greater Cleveland

Abstract

In a policy context characterized by increased scrutiny of LGBTQ+ persons, community-based, LGBTQ+-serving organizations must still conduct program evaluation activities to hold themselves accountable to funders and community members. The LGBT Community Center of Greater Cleveland has increased its program evaluation activities with the ultimate goal of creating community-owned data and research products, a process that necessitates infrastructure improvements to support data collection, management, and analysis. The goal of this project is to expand the LGBT Center's program evaluation capacity to support continuous quality improvement and to enable community-owned research. Key activities included implementing a new data management system to increase data quality and facilitate outcome reporting; revising existing data collection tools, including a Health and Wellness Survey, to align with best practices in survey research; and both designing and supporting the administration of and analysis for the Health and Wellness Survey to pioneer organizational data collection procedures. These activities support continuous evaluation processes by providing program coordinators and managers with the process and outcome evaluation metrics that correspond to existing evaluation questions.

2:30pm

Presenter: Mashaal Qureshi

Community Mental Health & Environmental Burdens: Neighborhood-Level Associations Between PM_{2.5}, Mold, and Depression in Cleveland, Ohio

Abstract:

Poor air quality and housing environment have long shaped the health of urban communities, yet their impact on mental health remains poorly understood at the neighborhood level. In

Cleveland, Ohio, decades of disinvestment and residential segregation have left many census tracts exposed to elevated fine particulate matter (PM_{2.5}) and deteriorating housing conditions, including mold. This study examined whether these environmental burdens are associated with higher depression prevalence across Cleveland neighborhoods. Using a cross-sectional ecological design, satellite-derived PM_{2.5} concentrations from 2022–2023 and resident-reported mold complaints were linked to CDC PLACES depression prevalence estimates and American Community Survey sociodemographic data across Cleveland census tracts. Multivariable linear and logistic regression models were fit in R, adjusting for percent female, median age, and percent uninsured. Mean PM_{2.5} across tracts was 10.31 µg/m³, and mean depression prevalence was 24.49%. Each standard deviation increase in PM_{2.5} was associated with an elevated odds ratio for above-median depression burden (OR = 6.70, 95% CI: 3.95–12.43), one of the strongest associations observed in this analysis. Mold complaint burden showed an inverse adjusted association (OR = 0.49), likely reflecting underreporting in the most disinvested neighborhoods rather than a true protective effect. These findings suggest that air pollution is a meaningful upstream driver of mental health disparities in Cleveland. Integrating environmental monitoring with public health surveillance offers a powerful tool for identifying communities at greatest risk and targeting interventions where they are needed most.

3:15pm

Presenter: Kelly Bowen

Spatial Video Assessment of Environmental Conditions in Displacement Camps near Goma, Democratic Republic of the Congo

Abstract:

Background: Forced displacement in Democratic Republic of the Congo (DRC) has led to development of temporary camps. These settings are vulnerable to outbreaks of communicable diseases, including cholera, due to inadequate water and sanitation infrastructure, overcrowding, and other environmental hazards. Spatial video (SV), which combines ground-level video with GPS-enabled mapping, may help identify fine-scale risk factors that are difficult to capture through other methods.

Methods: We reviewed SV footage collected from 2022 to 2025 from three camp settings near Goma, DRC: Don Bosco, Bulengo, and Eastern Mass/Kanyarunchinya. We organized videos by camp, route, and time point and reviewed them for observable features under standardized domains: built environment and shelter density, population activity, water/drainage, sanitation/hygiene, and access/safety. We synthesized observations into annotated maps, route summaries, and cross-camp comparisons.

Results: Recurrent findings included dense tarp sheltering, communal water and sanitation infrastructure of variable condition, standing water, debris accumulation, and overcrowding. Don Bosco was more densely packed and residential, with standing water and shelters close to poor-quality latrines. Bulengo was more expansive and commercially active. Eastern Mass was integrated with existing roads and buildings but showed evidence of declining sanitation conditions. Temporal changes included expansion of informal markets, addition of communal features like schools and outdoor

lights, shelter upgrading, and decline or loss of sanitation infrastructure. By February 2025, all camps had been dismantled because of heightened armed conflict in the region.

Conclusions: SV identified environmental and cholera-related risk factors and allowed tracking changes over time. This approach may support public health monitoring in dynamic displacement settings.

3:45pm

Presenter: Faye Hashim

Integrating Hybrid Health Education into Disease Management and Understanding: An Analysis of Experiences from Adults Living with Sickle Cell Disease

Abstract:

Sickle cell disease (SCD) affects over 100,000 individuals in the United States and is characterized by severe pain, chronic anemia, and progressive organ damage. Adults living with long-standing SCD often develop extensive self-management expertise through lived experience. This study explores how adults with SCD engage with and integrate a hybrid health education (HybHE) program into their illness management practices.

This qualitative descriptive study analyzed semi-structured interviews and quantitative data from three adults who completed the HybHE arm of a larger mixed-methods feasibility trial. The intervention consisted of six sessions delivered in a hybrid format. Data were analyzed using thematic analysis to examine how participants incorporated the program into their existing knowledge and practices.

Findings revealed a central paradox: participants reported high satisfaction and full program completion despite minimal changes in traditional outcomes such as pain intensity and self-efficacy. Participants used the program primarily for validation of existing self-advocacy strategies, professional development, and distraction during pain episodes rather than for new skill acquisition. Seven themes highlighted the importance of structural accessibility, cognitive engagement, and the limited relevance of traditional evaluation metrics.

These findings suggest that for adults with long-standing SCD, the value of health education lies not in altering disease trajectories but in providing structured engagement that supports existing expertise. Future interventions should be tailored to the patient experience level and incorporate qualitative and functional outcome measures to better capture meaningful impact.