Spring 2025 Public Health Innovations Conference

Student capstone presentation abstracts

Thursday, April 17th
Midtown Collaboration Center

<u>8:30am</u>

Presenter: Anne Morrison, BS, GSP

Assessing Risk Perception Determinants Following an Environmental Disaster: Insights from the East Palestine Train Derailment

<u>Abstract:</u>
Risk evaluation profoundly shapes human behavior as individuals weigh potential threats against personal circumstances and available information. This cognitive process becomes especially critical during emergencies that demand immediate judgment with limited information. The Norfolk Southern train derailment on February 3, 2023, in East Palestine, Ohio presented exactly such a scenario. Controlled burns of spilled hazardous materials created visible chemical plumes across the community, forcing residents to make consequential decisions amid uncertainty.

Through analysis of survey responses from affected individuals (n=287), this study investigates the determinants of risk perception following this event. A composite measure of risk perception was developed from survey response concerns about water, air, soil contamination, and health effects to examine how demographics, geographic proximity, and reported health symptoms influence risk assessment among residents of East Palestine and surrounding communities.

The findings reveal strong spatial patterns: proximity to the derailment site significantly predicted concern levels, with East Palestine residents exhibiting markedly higher risk perception than those in outlying areas. Additionally, individuals reporting new or worsened health symptoms following the incident consistently demonstrated elevated risk perception scores. Age-related patterns emerged as middle-aged adults perceived greater risk compared to both younger and older cohorts, while other demographic variables showed less consistent relationships.

These insights enhance understanding of how communities process and respond to acute environmental threats, offering insights for risk communication, disaster management, and public health interventions. The research ultimately contributes to developing more effective strategies for supporting affected communities and mitigating the psychological impacts of environmental emergencies in rural settings.

Presenter: Katherine Papahadjopoulos

Examining Cancer Trends and Disparities in Northeast Ohio: A Data-Driven Approach to Public Health Intervention

Abstract

Background: Cancer is the second leading cause of death in the U.S., making cancer registries like the Ohio Cancer Incidence Surveillance System (OCISS) essential for tracking incidence, disparities, and intervention effectiveness. Registries allow for targeted interventions to improve cancer prevention, early detection, and treatment outcomes. This study analyzed OCISS data to identify priority areas aligned with Healthy People 2030 objectives and inform targeted interventions.

Objectives:

- Examine cancer trends and disparities across eight Ohio counties (1996–2021).
- Identify priority areas based on surveillance data and Healthy People 2030 goals.
- Contextualize findings through a literature review of past interventions.
- Develop targeted, evidence-based strategies to improve cancer prevention, screening, and outcomes.

Methods: A retrospective, population-based analysis of OCISS data (1996–2021) was conducted. The publicly available dataset was restructured for case-level analysis. Descriptive statistics, chi-square tests, and logistic regression assessed disparities in cancer incidence and late-stage diagnoses. A literature review was conducted to compare trends and inform intervention strategies.

Results: Among 229,527 cases, two priority areas emerged: (1) rising colorectal cancer incidence in adults under 50, with frequent late-stage diagnoses, and (2) high rates of late-stage lung cancer diagnoses, compounded by substantial missing staging data. Logistic regression confirmed meaningful associations between age and late-stage diagnoses.

Conclusions: Findings highlight the need to lower colorectal cancer screening age for high-risk individuals, expand patient navigation services, enhance lung cancer awareness campaigns, and improve cancer registry data completeness. Addressing these disparities is essential for reducing cancer mortality and advancing public health equity in alignment with Healthy People 2030 goals.

9:30am

Presenter: AKeem Rollins

Bridging the Gap: Assessing Health Disparities, Social Needs, and Service Gaps of Recently Released SGMA in Cleveland, Ohio

Abstract

Sexual and gender minoritized adults (SGMA) face disproportionate rates of incarceration and significant challenges upon reentry into society, including stigma, discrimination, barriers to healthcare, and heightened vulnerability to infectious diseases such as HIV. Despite these challenges, tailored reentry resources for SGMA remain scarce, particularly in Ohio. This study builds upon Project CERCEI (Community Engaged Response to Carceral Experienced Individuals), a two-aim feasibility study exploring the acceptability of a mobile clinic model for post-incarcerated SGMA. During Aim 1 focus groups, a spontaneous conversation among participants revealed the critical need for centralized, community-informed resources to support SGMA during reentry. This insight led to the creation of an FAQ project designed to address immediate needs such as employment, healthcare access, record expungement, and population-specific resources. Using a generative and participatory focus group methodology, this study engaged six SGMA community members with lived carceral experiences to identify gaps in existing resources and collaboratively develop solutions. Data analysis utilized a framework of thematic and contact analysis, revealing key themes around employment barriers, economic opportunities, healthcare access, and institutional mistrust. Participants emphasized the inadequacy of current post-release resources and shared tangible solutions such as peer-led interventions to foster trust and community engagement. The FAQ project highlights the importance of community-driven approaches in addressing the unique challenges faced by SGMA during reentry and underscores the need for targeted interventions to improve health outcomes and reduce recidivism.

Presenter: Maggie Urban-Waala, BS

Using Geonarrative Research to Map Environmental Disparities and Community Experience Among Cleveland's Unsheltered Residents

Abstract

Background: Individuals experiencing unsheltered homelessness (IEH) face disproportionate exposure to environmental hazards and are the least able to protect themselves from resulting health impacts. As the IEH population grows and climate-related events intensify, delivering effective care presents numerous concerns for public health and clinical medicine. Traditional exposure assessments, which rely on patients' fixed home addresses, often exclude IEH and overlook their mobility, vulnerability, and lived experience. This project explored geonarratives, GPS-enabled interviews that capture what is seen and said, as a method to address this knowledge gap.

Methods: An in-depth geonarrative was conducted in Cleveland, Ohio with a community expert who shared ground-level insights based on extensive work with IEH. Locations frequently used by IEH were mapped in a Geographic Information System (GIS). Satellite-derived air quality and EPA Toxic Release Inventory (TRI) data were added to visualize environmental risks and proximity analysis was conducted to determine exposure.

Results: The geonarrative generated novel spatial insights on IEH daily movement, resource hubs, informal networks, and areas of safety and exposure. "Safe" areas were often near pollution sources including railways, TRI sites, construction zones, and high-traffic corridors. Early results provided new understanding of spatial and temporal patterns in respiratory health-place relationships.

Conclusions: Geonarratives can generate public health- and clinically-relevant spatial data for IEH who are often invisible in environmental exposure studies. These data offer a transformative approach to patient-centered respiratory care for IEH and contribute to the growing field of participatory spatial methods. These findings, along with the 2023 Canadian wildfires, highlight the need for more equitable, responsive strategies to address environmental health disparities. Geospatial data were generalized to protect geoprivacy.

10:45am

Presenter: Penelope Halkiadakis, BS

Total Hip Arthroplasty in Bundled Payments for Care Improvement Advanced Model: Who Will Bust the Bundle?

Abstract
Background: The Bundled Payment for Care Improvement Advanced Model (BPCI-A) welcomed physician group practice (PGP) and convener participants. This study aimed to identify patient and facility factors predictive of primary total hip arthroplasty (THA) episode costs exceeding target payment for PGP clients of a value-based convener.

Methods: A retrospective review of 4,178 THAs was performed at 29 PGPs across Model Years 3- 5 (2020-2022). Costs exceeded the target price for 901 patients (22%). Using claims data, a predictive multivariable logistic regression model was built from demographics, prior post-acute care use, comorbidities, total comorbidity burden, major teaching hospital status, urban/rural designation, safety net status, census regions and bed size. Model performance was calculated using the C-statistic, and the relative contribution of variables were assessed by Akaike information criterion.

Results: Significant predictors included model year (P = 0.001), MS-DRG (P < 0.001), prior post-acute care (P = 0.004), myasthenia gravis/myoneural disorders/inflammatory and toxic neuropathies (P = 0.049), coagulation defects and other hematologic disease (P = 0.011), metastatic cancer or acute leukemia (P = 0.029), and total HCC (P = 0.034). Compared to New England, six census regions had lower odds of exceeding target prices (P ≤ 0.003). When compared to small bed size, large and extra-large bed size had higher odds of exceeding target price (P = 0.014). The model's discriminative power was moderate (c-statistic = 0.678).

Conclusion: While several patient and facility factors were significantly associated with exceeding the target payment, they had limited discriminatory ability in predicting excess-costs after THA for PGP-convener partners. As bundled payment models evolve, refined predictive models are needed to empower PGPs and conveners to strategically redesign care to ensure high-quality THA for all patients.

Presenter: Sydney LeBlanc

Process Evaluation of the 2024 CWRU World AIDS Day: Centering Community and Women's Voices

Abstract
This project evaluates the planning, implementation, and community engagement outcomes of the 2024 CWRU World AIDS Day (WAD) event, with a focus on centering the voices and experiences of women affected by HIV/AIDS. Using a process evaluation framework, this capstone utilized qualitative data from pre- and post-event interviews with planners, participants, and community leaders, as well as observational data and survey responses from attendees and volunteers.

Key themes emerged around accessibility, representation, and meaningful engagement. While the event successfully elevated the visibility of women living with HIV, longstanding challenges such as transportation barriers, limited outreach beyond existing networks, and generational disconnects persisted. Participants praised the event's atmosphere, resource-sharing, and inclusivity but called for deeper community integration and more innovative approaches to reduce stigma and engage younger audiences.

Findings suggest that while WAD remains a valued annual tradition, its potential to act as a transformative tool for education and mobilization is hindered by structural limitations. Recommendations include expanding grassroots outreach, providing logistical support like transit access, and reframing HIV awareness events to better reflect and attract underserved groups, particularly youth, and people not already connected to the HIV care ecosystem.

This evaluation contributes to public health practice by identifying concrete, community-driven strategies to enhance HIV/AIDS awareness and equity through annual commemorative events like World AIDS Day.

Presenter: Shelby Cornelius, BS

Landscape Analysis of Integrating Culturally Relevant Foods Into Produce Prescriptions

Abstract
Introduction: Produce prescriptions are a type of Food is Medicine (FIM) intervention that targets patients who have diet related conditions and are also food insecure. These interventions have proven to be effective, but literature suggests that if the programs can be made more culturally relevant to treat the racial and ethnic minorities that largely suffer from these conditions and food insecurity, the interventions can be even more effective.

Methods: A qualitative analysis was done with 2 groups of participants, Black and Hispanic growers, educators, and makers, and produce prescription implementers. They underwent interviews which were transcribed and analyzed for overall themes that could identify how to integrate cultural relevance into produce prescription programs.

Results: Using a PRISM framework and equity lens, several themes emerged to identify perspectives, characteristics of implementers, their setting, and the patients, the external environment, and the implementations and sustainability infrastructure of produce prescription programs.

Conclusion: Several themes that were identified, including that the majority of participants believe motivation to build partnerships between implementers and Black and Hispanic food leaders is present since they want to see equitable health in their communities. Using the information about how to address concerns and barriers, the next steps will be to work with organizations to implement the needed changes.

3:30pm

Presenter: Rohan Patel, MD

A Cross-Sectional Survey of Global Patient Education Practices in Radiation Therapy Across Low- and Middle-Income Countries

<u>Abstract</u>:

Purpose: Effective patient education (PE) about radiation therapy (RT) is essential yet understudied in low- and middle-income countries (LMICs). We evaluated PE practices and regional differences among RT professionals in LMICs, focusing on timing, resources, content, and perceived impact.

Methods: An international cross-sectional survey of RT professionals from LMICs (World Bank) was distributed across Latin America (LATAM), Eastern Europe (EE), Africa, Middle East (ME), and Asia (n=2143, 9/2024–1/2025). The 26-item survey assessed roles, individual and institutional PE practices, including timing/methods of PE, content areas (rationale, logistics, side effects), and perceived patient understanding (Likert 1–5). Descriptive, thematic and statistical analyses evaluated regional and professional role-based differences.

Results: 398 respondents (19%) included physicians (35%), radiation therapists (32%), physicists (18%), nurses (6%), advanced practitioners (5%), and dosimetrists (4%), representing LATAM (45%), Africa (17%), Asia (14%), ME (12%), and EE (12%). Most (65%) spent ≤20 minutes on PE, and 38% spent ≤10 minutes. Verbal-only PE was most common in Africa (62%) and Asia (41%). Respondents viewed verbal (37%) and audiovisual (36%) methods as most effective. Patients most often asked about side effects (41%), logistics (19%), and RT safety (11%). PE delivery varied by topic, with rationale discussed during consultation (40%), logistics during simulation (79%), and long-term side effects lacking a consistent timepoint (32% reported no discussion). Limited educational understanding (score 1-2) was reported in Africa (47%), ME (42%) LATAM (42%), Asia (32%), and EE (27%) across all domains. Statistically significant differences were found across roles and regions.

Conclusion: Substantial variation in PE delivery exists across LMICs. Context-specific tools and strategies are needed to improve education quality and equity.