The Department of Epidemiology Internship provides an opportunity for master's students to apply the knowledge they have acquired in the classroom to professional work situations. Internships usually take place in state, county, federal, or international-level health departments, public health institutes/programs, hospitals, or within the University of Pittsburgh or international research groups.

Students are encouraged to choose an experience that will help them sharpen a skill set as well as explore a new area of research. Students develop their internship placement, goals, and responsibilities in collaboration with the students' faculty advisor and preceptor to individualize and maximize the learning experience.

Special thanks to the Internship Preceptors for fostering these enriching educational opportunities. An exciting result of some of these unique partnerships has been the establishment of new research collaborations.

Enjoy viewing and discussing our students' impressive work!  Thank you for joining us!

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# Epidemiology in Action!

## Master's Student Poster Presentations

## Abstract Book

## Thursday, September 28, 2023

**Presenter: Emily Yeager**
*Agency: University of Pittsburgh, School of Public Health, Department of Epidemiology, Study of Women's Health Across the Nation (SWAN) Coordinating Center*
*Preceptor: Maria Mori Brooks, PhD*

## Life Engagement in Midlife Women and the Associations with Everyday Discrimination, Physical Activity, and Depressive Symptoms

**Background/Objective:** Life engagement describes one's sense of purpose in life and feeling that one's everyday activities have value. Studies have shown that high life engagement is associated with positive health outcomes and behaviors such as better cognitive functioning and utilization of preventative care services. The Study of Women's Health Across the Nation (SWAN) is a multi-racial/ethnic longitudinal cohort study of menopause. Using the SWAN study, the goals of this internship were to 1) estimate the distribution of life engagement scores among late-midlife women, 2) evaluate the association of prior experiences of interpersonal discrimination, physical activity, and depressive symptoms on life engagement, and 3) explore the impact of retention bias on estimates of life engagement as 3,302 women were enrolled at baseline but fewer than 80% participated in Visit 12 when life engagement was measured.

**Methods:** The life engagement score is a questionnaire-based scale ranging from 6 to 30, with higher scores indicating greater life engagement. Basic descriptive statistics including means, medians, and visual representations of the distributions, such as boxplots and histograms, were computed for life engagement at SWAN Visit 12. Unadjusted and multivariable adjusted linear models were created for life engagement and each baseline predictor. Propensity scores with inverse probability weighting was used to generalize estimates to represent the entire SWAN baseline cohort and to compare these estimates to those obtained from women who participated in Visit 12.

**Results:** The mean (SD) life engagement score was a 25.3 (4.0). More experiences of discrimination and depressive symptoms at baseline were associated with lower life engagement scores at Visit 12. Higher rates of physical activity at baseline were associated with higher life engagement scores at Visit 12. These associations remained statistically significant ($p < 0.0001$) adjusting for potential confounders. After applying inverse probability weighting, descriptive estimates and association estimates were similar.

**Conclusion:** The life engagement scores were relatively high among SWAN midlife women, and life engagement was related to prior experiences of discrimination, depressive symptoms, and physical activity. Retention bias in SWAN did not appear to have a meaningful impact on life engagement estimates.

**Presenter: Ramatu Abdul Hamid Alhassan**
*Agency: University of Pittsburgh, School of Medicine, The Anto-Ocrah Lab*
*Preceptor: Martina Anto-Ocrah, PhD, MPH, MT(ASCP)*

## Ghana's Maternal and Child Health Landscape: An Internship Exploration

**Background/Objective:** Maternal mortality in Ghana, a low to middle-income country, is alarmingly high at 310 per 100,000 live births, compared to 3-8 per 100,000 live births in parts of Europe. This internship aimed to understand the Maternal and Child Health (MCH) landscape in Ghana and identify opportunities for improving maternal outcomes.

**Methods:** Participating in didactic endeavors in Kumasi, Ghana's urban communities, I assisted in sessions on exclusive breastfeeding, labor management, and clinical case report writing. I delivered educational classes to adolescent students on teenage pregnancy and its consequences.
I engaged in clinical and patient interactions, such as conducting home visits with Juaben Hospital staff to promote women's health and child welfare. Collaborating with Midwife Sally's team to provide essential care items and educate women on pregnancy danger signs.

**Results:** We identified the importance of involving men in midwifery to address workforce shortages in MCH, despite prevailing gender and cultural norms. We presented a framework at the Africa Interdisciplinary Health Conference in Kenya to promote gender inclusivity in midwifery, emphasizing cultural sensitivity training and community engagement. We also identified the need for comprehensive sex education for Ghanaian teenagers and young adults. And we delivered a well-received curriculum at a local school, addressing numerous questions on menstrual, sexual, and reproductive health.

**Conclusion:** During my internship, which encompassed various didactic and clinical experiences in both rural and urban contexts, two significant areas for improvement came to light. Firstly, the pivotal role of male midwives in addressing workforce shortages within maternal and child health (MCH) became evident, emphasizing the necessity of promoting gender inclusivity within the midwifery profession. Secondly, there emerged a clear need for comprehensive sexual education for Ghanaian adolescents, with a particular focus on topics such as menstrual health, sexual education, and reproductive health. Collaborating with local partners, our goal is to develop an age-appropriate and culturally sensitive curriculum on menstrual health that can be widely disseminated among this age group. These findings from my internship underscore the critical importance of gender inclusivity and comprehensive sexual education in addressing disparities in maternal and child health within Ghana's broader public health landscape.

**Presenter: Rachel Ayer**
*Agency: University of Pittsburgh, School of Public Health, Department of Biostatistics*
*Preceptor: Jeanine Buchanich, MEd, MPH, PhD*

## A Preliminary Assessment of the Association Between Perceived Health and Petrochemical Industry Expansion in Beaver County, PA

**Background/Objective:** Many view fossil fuel reliance and petrochemical industrialization as a public health concern while others view it as an economic necessity. However, these perceptions can change over time after industrial impacts have manifested. With the recent development of the Shell Petrochemical Plant in Beaver County, Pennsylvania, my internship project objective was to collect baseline data regarding residents' perceptions on health prior to and soon after full operational activities began at the plant.

**Methods:** A Qualtrics cross-sectional community health survey was distributed to adult residents of Beaver County from July 2022- August 2023. Participants were recruited both through Pitt Plus Me and through the dissemination of fliers by study staff and members of a community advisory board. The survey gathered information related to demographics, self-reported health habits, perceived community and personal health, and attitudes towards environmental health. To measure perceptions, participants responded to a series of statements using a 5-point Likert scale (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree). Overall demographic characteristics of the survey sample were compared to 2022 Beaver County census data to identify any major gaps in representativeness. Descriptive statistics were generated using Qualtrics XM and R version 4.2.3.

**Results:** The survey was distributed to 677 individuals via email, of which, 465 completed the survey. Out of those 465, 436 provided a valid Beaver County zip-code, and thus were used for analysis. Most responders indicated that they were concerned about their current exposure to both air pollution (76%) and unsafe drinking water (65%), and approximately 36% and 25% of survey takers indicated that their health had been harmed by air pollution or unsafe drinking water, respectively. Additionally, 74% of responders were concerned about pollution from future industries.

**Conclusion:** The baseline survey data illustrates that there is a high prevalence of concern about current and future exposure to pollution in Beaver County. These findings can assist community leaders with addressing and advocating for participant's expressed issues. A follow-up survey will be redistributed to participants a year after the initial survey completion date to determine if there are changes in perceptions since the Shell Petrochemical Plant began operations.

**Presenter: Joanna Yao**
*Agency: University of Pittsburgh, School of Public Health, Department of Human Genetics*
*Preceptor: Brenda Diergaarde, PhD*

## Biomarkers Used for Colorectal Cancer Screening and Surveillance: Literature Review and Preliminary Data Analysis

**Background/Objective:** Colorectal cancer (CRC) is the fourth most common cancer diagnosis and second leading cause of cancer-related deaths in adults in the United States. Regular screening is associated with a dramatic decline in incidence and mortality. However, in 2019, only 68% of eligible adults were up to date with screening, which is partially attributed to discomfort of screening methods and cost. To increase compliance, efforts to develop less invasive and costly screening methods have been proposed, including so-called liquid biopsies. The only blood-based biomarker that is currently clinically used for CRC is carcinoembryonic antigen (CEA). However, CEA is only recommended for disease management and not screening as it is linked to other gastrointestinal cancers. As part of my internship, I am conducting a literature review on the epidemiology and current screening efforts of CRC. Concurrently, I am using data from an existing study to evaluate the relationship between CEA levels and CRC recurrence. This preliminary data analysis is to show the applicability of this biomarker for CRC surveillance.

**Methods:** The literature review was primarily carried out with PubMed, using search terms that included 'Colorectal Cancer', 'Screening', and 'Biomarkers'. For analyses, existing data from a previous study involving stage III CRC patients treated at UPMC hospitals were used. CEA levels were measured in the study participants at regular intervals until either CRC recurrence or the study concluded. Statistical analyses are conducted using SAS.

**Results:** The literature review revealed that the overall incidence and mortality rates of CRC are decreasing; from 2000 to 2016, incidence was decreasing yearly by 2.8%. However, age-adjusted rates show a decline in adults older than 55 years, and an increase in adults younger than 55 years, leading to efforts in finding more effective screening methods. While data analyses are ongoing, our preliminary results suggest a positive correlation between CEA levels and CRC recurrence.

**Conclusion:** Conducting a literature review on an expansive topic has been an educative experience, where I discovered the exhaustive work required. Following the analysis with CEA levels and CRC, we will assess the efficacy of circulating tumor DNA as another biomarker that may lead to greater screening compliance.

**Presenter: Sade Tukuru**
*Agency: Dr. James A. Ferguson Emerging Infectious Diseases Research Initiatives for Student Enhancement (RISE) Fellowship Program*
*Preceptor: Kristy Hayes, DrPH, MA*

## Strengthening Capacity in Health Equity Globally: Developing a Health Equity Train-the-Trainer Course

**Background/Objective:** Having a shared understanding of health equity concepts is critical to address health inequities in the 60+ country and regional offices where the Centers for Disease Control and Prevention (CDC) has a presence. Thus, it is important for CDC's Global Health Center (GwHC) to systematically develop training materials that are based on the principles of sustainability and scalability. To effectively establish a cadre of health equity champions for CDC staff to meaningfully address health inequities within different country contexts, GHC developed a train-the-trainer course (ToT). As part of my internship, my objective was to determine a conceptual model to frame a ToT intended to strengthen knowledge of health equity concepts, gain facilitation skills, and tailor materials by country context.

**Methods:** I conducted an environmental scan of scientific literature and publicly available media to identify conceptual models for ToTs. ToT was defined as a means for experienced trainers to facilitate the learning of aspiring trainers, coaching them on both concept topics and facilitation skills. Resources were selected if content aligned with the definition of ToT. Resources with solely clinical focus were excluded. Best practices from selected articles and online resources were extracted and ToT models were compared.

**Results:** I found three articles, three online resources, and four models. Publicly available resources highlighted learning characteristics such as peer support, intentional design of hands-on training activities, and classroom management skills. Central to each scientific resource was emphasis on creating a cost-effective, sustainable training cascade to prevent de-skilling of trainers. I selected the TRAIN model because it aligned with the goals of the ToT. TRAIN considered multiple factors that affect ToT efficacy and is intended for use in global health settings.

**Conclusion:** I identified a suitable model to guide future iterations of the ToT, supporting CDC's efforts to provide health equity training in a global context. TRAIN describes five constitutive elements, which contribute to a successful TOT, and recommends using a multi-level approach to TOT development. This work builds the capacity of knowledgeable, ethical staff within CDC and encourages incorporating health equity into agency policies, programs, communication, science, and interventions.

**Presenter: Sarah Bacha**
*Agency: UPMC Infection Prevention*
*Preceptor: Graham Snyder, MD, MS*

## HD-CLIFF: Hemodialysis Catheter Luminal Fluid Forecasting Database Creation and Implementation

**Background/Objective:** Patients with tunneled catheters are at increased risk for bloodline infection, contributing to infection-related hospitalization and death. Limited knowledge exists on predicting a patient's susceptibility to infection based on lumen fluid cultures. The HD-CLIFF study is a Shadyside Foundation study that explores the prevention of bacteremia in patients undergoing chronic hemodialysis. This study aims to quantify the frequency of luminal fluid contamination to evaluate the relationship between fluid culture positivity and bacteremia outcomes. For my internship, I participated in the study start-up, including creating a database to capture enrollment information, laboratory results, background clinical information, and blood culture positivity outcomes, as well as protocol implementation, patient enrollment, and interim data analysis.

**Methods:** The database creation process includes four steps: variable encoding, database building, professional consultation, database implementation. During variable encoding, relevant variables were defined, and the variable type/qualities were assigned. Microsoft Access was used to build the database; the final data tables include patient enrollment, specimen collection, baseline/demographic, culture findings, outcome/censors, and subsequent culture findings. Upon patient consent, fluid culture results and medical history information are recorded into the database; positive bacteremia results are documented 180 days afterwards.

**Results:** An efficacious database was created over two months that successfully captured patient information. I also assisted in participants enrollment, obtaining consent, sample transportation, and updating the database with medical history, laboratory results, and health outcomes. As of September 8th, 2023, 9 patients were successfully enrolled through sample collection: 44.4% are male and 33.3% are 65+. Laboratory analysis found 100% of participants to have bacteria in the fluid samples taken at enrollment.

**Conclusion:** Through the creation and management of the HD-CLIFF study database, study data was accurately recorded to be used in analysis of bacteria in the catheter as a predictor of bloodstream infections. Preliminary findings of frequent fluid contamination suggest the potential for luminal fluid cultures to be a predictor of bloodstream infection and may be an indicator of contamination during hemodialysis catheter use. This study will be informative in preventing bacteremia in dialysis patients by informing infection prevention practices and clinical treatment, with potential significant impact on public health.

**Presenter**: **Colleen Ballantyne**
*Agency: Allegheny County Health Department, Pittsburgh Summer Institute*
*Preceptor: Margaret Kuzemchak, MS*

## Household Lead Exposures for Children with Elevated Blood Lead Levels in Allegheny County: Geographic and Social Vulnerability Trends

**Background/Objective:** Children that are exposed to lead can experience lifelong health effect so it is essential to find and eliminate sources of lead exposure. In 2021, nearly 2% of children tested in Allegheny County had a blood lead level above 5 µg/dL, making them eligible for a free home lead inspection. For this practicum all lead inspections conducted in Allegheny County from 1989 to early 2023 were compiled into a digital database. The database was then used to map household lead risk in Allegheny County and determine Social Vulnerability Index (SVI) variables associated with census tracts with high lead risk.

**Methods:** Information was extracted from paper files of lead inspections from 1989 to 2016 into an excel database and then combined with modern lead inspection data. The inspection data was mapped in ArcGIS and merged with SVI census tract data. R was used to run regression models to identify SVI variables associated with lead risk. Linear Regression, Logistic Regression, Negative Binomial Regression, and log-Transformed Linear regression were all used to conduct a sensitivity analysis of the most relevant SVI variables.

**Results:** Mapping the data showed that positive lead inspections were centralized around the City of Pittsburgh and the Mon Valley region. The primary source of lead was lead paint, with deteriorating lead paint being found in 98.9% of lead positive homes. Lead dust created from chipping lead paint was also common. Soil contaminated with lead was only found at 45.7% of lead positive homes. Lead in water was very rare. Census tracts with high lead risk were found to have higher percentages of the population that were an ethnic and racial minority. Several socio-economic variables were also shown to be associated with lead risk including the percent of the population living below 150% of the poverty level and the percent of the population that is unemployed.

**Conclusion:** In Allegheny County, household lead risk is highest in the City of Pittsburgh and the Mon Valley and specifically in areas with higher rates of poverty. Future interventions and lead testing should be focused in the geographic areas identified as high risk.

**Presenter: Tyler Staup**
*Agency: Marshfield Clinic Research Institute, Summer Research Internship Program*
*Preceptor: Josh Petrie, PhD, MPH*

## Use of Electronic Health Record Data to Produce Estimates of Influenza Vaccine Effectiveness

**Background/Objective:** Influenza causes substantial morbidity and mortality yearly. Annual evaluations are necessary to understand variability in influenza vaccine effectiveness (VE). The COVID-19 pandemic highlighted the potential of using electronic health records (EHRs) to estimate VE for SARS-CoV-2 vaccines, offering advantages over prospective studies such as cost-effectiveness, time efficiency, and large sample sizes. The goal of my internship project was to explore the feasibility of utilizing EHR data to estimate influenza VE.

**Methods:** Analyzed EHR data from patients hospitalized in the Marshfield Clinic Health System (MCHS) during the 2022-2023 influenza season. The completeness of vaccination records and important covariates were evaluated. The proportion of patients tested for influenza and characteristics associated with testing were assessed using multivariable logistic regression. VE was estimated among tested patients using a test-negative design with multivariable logistic regression, adjusted for age, sex, race, calendar-time, comorbidity status, and prior COVID-19 vaccination.

**Results:** The full study population included 8,884 inpatient admissions. All vaccination records contained vaccine name, record source, and administration date. Vaccine manufacturer, lot number, and route of administration were available in 93%, 94%, and 97% of records respectively. A patient's race, and comorbidity status was significantly associated with likelihood of receiving testing. Among 1,548 patients tested for influenza, VE was 40% (95% CI: 2%, 64%) overall, 69% (95% CI: 2%, 91%) for 18-64 years and 9% (95% CI: -65%, 50%) for individuals ≥65 years. Among children, all 10 influenza cases occurred in unvaccinated patients.

**Conclusion:** The likelihood of influenza testing varied by patient characteristics which raises concerns about selection bias in testing practices. However, the likelihood of testing was not influenced by influenza vaccination. Confidence intervals were wide, but the high VE estimated in younger adult and pediatric groups was consistent with prior studies reporting relatively high VE during the same influenza season. Our results suggest that the use of EHR data is a potentially promising approach to estimating annual VE, but larger studies are needed to understand potential sources of bias.

**Presenter: Zachary Spencer**
*Agency: National Institutes of Health Graduate Data Science Summer Program, National Heart, Lung, and Blood Institute*
*Preceptor: Zackary Jarin, PhD*

## Comparing Order and Fluidity of Omega-3 PUFA Membranes Using Molecular Dynamics Simulations

**Background/Objective:** Polyunsaturated fatty acids (PUFAs), specifically omega-3, must be consumed through diet for proper bodily function where they have comprehensive effects. PUFAs are associated with specific areas of cell membranes where they modify structure, fluidity, and interact with nearby molecules. The objective of this project is to use data science techniques to delineate membrane characteristics of several omega-3 PUFA, namely DHA, EPA, and very-long-chain (VLC), through molecular dynamics simulation analyses.

**Methods:** Molecular dynamics simulations were set up of each omega-3 PUFA species where each embodied two pure bilayer membrane systems with and without cholesterol, respectively. The temperature, pressure, and number of atoms were kept equal throughout each simulation that ran for 500 nanoseconds. After simulation, analyses were performed to characterize membrane fluidity and non-specific interaction between PUFAs and cholesterol.

**Results:** The average order parameter of acyl chain carbons on each tail of the PUFA species were calculated. EPA and DHA systems exhibited less ordering than the VLC system with the largest discrepancies shown on the chain between carbons 5 and 16 on the saturated sn1 tail. This pattern remained true on the unsaturated sn2 tail between carbons 2 and 9. Membrane thickness was calculated using electron density of phosphate atoms. VLC membrane was thickest, and EPA was thinnest. Interactions with cholesterol were calculated to show regions of greatest density for acyl chain carbons of PUFA species relative to central atoms on the cholesterol atom. These results are shown by darker rings or peaks on graphs at distances approximately 5, 10, and 15 angstroms away from the central atom in each x and y direction. Number density of cholesterol tail and head groups were calculated and showed the biological desire for nonpolar and polar regions of cholesterol to reside in similar polarity regions of the membrane.

**Conclusion:** DHA and EPA provide greater fluidity and less ordering in membrane systems in addition to interacting with nearby cholesterol molecules. This has large public health implications given that more fluid membranes may have enhanced membrane receptor and intracellular signaling function, ultimately improving cellular efficiency.

**Presenter: Nicholas Bober**
*Agency: The Tobacco Treatment Inpatient Service, UPMC Montefiore and UPMC Presbyterian*
*Preceptor: Cheryl Yates, MA, NCTTP, CTTSM*

## Navigating Smoking Cessation in a Changing Public Health Landscape

**Background/Objective:** Smoking cessation, or quitting, of cigarettes is seen as a public health success, but there are many that still cannot quit. With alternatives like chew and e-cigarettes being popularized and public health not focusing on addressing tobacco products like previous decades, significant amounts are hospitalized in Pittsburgh that continue to smoke without having access to resources to help quit. For my internship, I learned the basics of a therapeutic approach called Motivational Interviewing, which I applied in brief interventions at the bedside to discussing smoking cessation with admitted patients. I also created educational materials on smoking cessation resources to help teach hospital staff.

**Methods:** I was trained in the style of Motivational Interviewing through shadowing and reading materials and interacted with admitted patients that currently or formerly use tobacco products on their journey to understand the nuances of quitting. Patients described their experience with tobacco products while open-ended questions and reflexive listening helped the patients drive the conversation topic towards a direction on smoking cessation after discharge. Other activities included attending addiction groups, reading about Motivational Interviewing, distributing information on existing resources like Nicotine Replacement Therapy (NRT) to help support quit efforts, and producing an educational material for physicians on NRT at the hospital to help manage observed withdrawal symptoms.

**Results:** I recorded an interaction with a patient that I worked with about next steps regarding smoking cessation. Seven health coaches trained in Motivational Interviewing coded this recording on how faithful it was to the spirit of Motivational Interviewing and gave comments on how I could better use the technique regarding other health issues moving forward. The educational material is being digitally distributed to every hospital floor on UPMC Montefiore/Presbyterian for reference.

**Conclusion:** As tobacco products have become more complex, strategies must adapt in response. I observed many patients come to their own conclusion about quitting with Motivational Interviewing and leave more confident about their options than beforehand. Promoting the use of Motivational Interviewing and alternative options to smoking like NRT can help continue to lower overall smoking rates.

**Presenter: Robin Burke**
*Agency: Prevention Point Pittsburgh*
*Preceptor: Aaron Arnold, MPH*

**Syringe Service Distribution in Allegheny County: Prevention Point Pittsburgh**

**Background/Objective:** Syringe Service Programs (SSPs) are evidence-backed community health organizations that provide services to people who use drugs (PWUD), including distributions of needles and other sterile supplies, health education, drug testing supplies, and connection to substance use treatment. SSPs reduce accidental overdose fatalities and the transmission of HIV, Hepatitis B/C, and other bloodborne pathogens. In my practicum with Prevention Point Pittsburgh (PPP), I worked directly with program participants and analyzed program data from 2022.

**Methods:** Data were collected by PPP staff and volunteers at each participant visit at one of five PPP sites. Data collected on paper site slips included demographic information (age, gender, and race/ethnicity), which supplies were requested by participants, the total number of syringes each participant received or returned for disposal, and the number of people being reached by secondary distributions by participants. PPP staff entered data from the site slips into Microsoft Excel. Data analysis and visualization were completed in Microsoft Excel and Stata SE 16.

**Results:** In 2022, the average age of site participants was 42.44 years. The majority of participants were white (51%) and male (61%). Of returning participants, 39.8% received only supplies for inhalation, 16% received supplies only for injection, and 41.2% received both. Distribution of these supplies varied by program site. A total of 1,553,421 syringes were distributed by PPP throughout 9891 interactions with 4406 unique individuals, with 662 individuals participating for the first time. There were 4629 secondary distributions through program participants. An estimated 137, 802 syringes were returned for safe disposal. Average weekly syringe distributions increased from 2021 and at 3/5 sites.

**Conclusion:** As the only SSP in Western Pennsylvania, Prevention Point Pittsburgh continues to provide a valuable health prevention service to residents of Allegheny County and the surrounding counties. With an increase in syringe distributions of 49% since 2020, Allegheny County has a greater need for PPP's services than ever before. Allegheny County and the Allegheny County Health Department should continue to support PPP and their efforts to prevent harms associated with drug use.

**Presenter: Bhavini Sotaa**
*Agency: Allegheny County Health Department, Pittsburgh Summer Institute*
*Preceptor: Stephen Strotmeyer, PhD, MPH*

**Fall-Related Mortality and Hospitalizations: Assessing Rates Among Older Adults in Allegheny County, PA**

**Background/Objective:** Falls are one of the leading causes of unintentional injury and injury death among older adults (≥65 years) in the US. An average of 3% increase annually is noted in death rates due to falls, especially in those aged 85+ years. With the aging population projected to double in size in the next decade, controlling the rates of these preventable injuries is necessary. This internship aimed to assess the fall-related mortality and hospitalization rates in Allegheny County and identify high-risk populations.

**Methods:** Hospitalization data was obtained from the Pennsylvania Health Care Cost Containment Council and mortality data from the Pennsylvania Department of Health. Observations were filtered for fall-related data between 2016 and 2020. All analyses were performed using SAS 9.4 and data visualization using SAS 9.4, Microsoft Excel, and ArcGIS. The population was evaluated on demographics including, age, sex, race, and ZIP code.

**Results:** The 75+ years age group had the highest odds ratio (OR) for both mortality (3.03; 95% CI 1.82-5.06) and hospitalization (7.23; 95% CI 7.04-7.42) compared to those <55 years. For mortality, the OR for those who identified as Black was 1.63 times higher compared to those who identified as White. Incidence of fall-related mortality and hospitalizations was higher in women (51% & 57.8%), but after adjusting for other variables, the OR was higher in men. Age-adjusted rates (AAR) were calculated according to zip codes, and the highest AAR for mortality and hospitalization corresponded to the ZIP codes 15071 (0.32 per 10,000 residents) and 15014 (24.4 per 10,000 residents), respectively.

**Conclusion:** From this preliminary analysis, we found that race and age were significantly associated with fall-related mortality and hospitalization. Areas with older residents had higher corresponding AARs for fall-related outcomes. Results from this analysis along with findings from a literature review will be used to further investigate the distribution of fall-related outcomes among the population and create effective preventive strategies and awareness programs for high-risk groups.

**Presenter: Sarah Snook**
*Agency: UPMC Children's Hospital of Pittsburgh, Division of Adolescent and Young Adult Medicine*
*Preceptor: Alison Culyba, MD, PhD, MPH*

## Examining the Impacts of Community Violence on Mental Health Symptomology and Prevalence Among Black Youth in Pittsburgh

**Background/Objective:** Community violence is a public health issue disproportionately impacting Black youth in Pittsburgh. Youth who experience violence experience higher rates of stress, which increases risks for mental health symptoms. The Get Safe study examined experiences of stress, coping, and support among Black youth recently injured or impacted by community violence. The objectives of this analysis were to determine how witnessing, being victimized by, and perpetrating community violence relate to mental health symptoms.

**Methods:** Twenty-five Black youth aged 14-19 were enrolled in the study from November 2020-February 2021. Mean participant age was 16.4 years. Of the individuals enrolled, 60% were female and 40% were male. Participants completed surveys measuring past 30-day experiences of violence (operationalized as any/none by violence type), anxiety (GAD-7 Anxiety Assessment, 4-point Likert scale), depression (Center for Epidemiology Studies Depression Scale, 4-point Likert scale), and posttraumatic stress symptoms (Child PTS Symptom Scale, 5-point Likert scale). We ran separate logistic regression models to examine the associations of witnessing violence, violence victimization, and violence perpetration, and symptoms of anxiety, depression, and post-traumatic stress. Models were adjusted for parental education, participant age, and participant gender.

**Results:** Youth reported high rates of witnessing violence (n= 25, 100%), violence victimization (n= 23, 92%) and violence perpetration (n= 18, 72%) in the past 30 days. Many youth also reported anxiety, depression, and posttraumatic stress symptoms. One in three youth (9, 36%) reported moderate to severe posttraumatic stress symptoms, defined as CPSS score ≥ 21. We found no significant associations between witnessing, being victimized by, or perpetrating violence and the occurrence of mental health symptoms in adjusted models.

**Conclusion:** Experiences of violence are common and warrant healing-centered approaches to support young people exposed to and impacted by community violence. As future studies ensue, we plan to incorporate strengths-based interventions to support Black youth who experience community violence.

**Presenter: Beyonce Carrington**
*Agency: Westat*
*Preceptor: Margaret Dunne, MSc*

## The Use of Integrated Medical and Public Health Records to Investigate the Risk of COVID-19- Associated Outcomes and COVID-19 Vaccine Effectiveness

**Background/Objective:** In 2019, The VISION Vaccine Effectiveness (VE) Network was created to assess the effectiveness of the COVID-19 vaccines and seasonal influenza vaccines against severe outcomes. This network is a partnership between the Centers for Disease Control (CDC), Westat, and ten sites across the nation, to assess the effectiveness of these vaccines. The network collects data through electronic health records across four clinical settings to estimate vaccine effectiveness against severe diseases over time and in different populations. As a Clinical Research Intern, I had the opportunity to collaborate with the VISION team in the advancement of vaccine effectiveness research.

**Methods:** I applied my knowledge from my coursework to communicate efficiently and complete assigned tasks for Westat and CDC officials. This internship strengthened my interpersonal skills through my role in assisting with project management tasks and my technical skills through my exposure to data management and analysis.

**Results:** This network utilizes two observational study designs – the test-negative design and prospective person-time cohort data to evaluate vaccine effectiveness (VE). I was incorporated into four workgroups, Bivalent Booster VE, Maternal/Peds, Person-time Analysis, and Paxlovid, as they addressed data analysis concerns and spearheaded the manuscript submission process. I aided in the creation of a data request form that will be utilized for additional sub-analyses from our VISION site partners. Due to the interest in expanding extraction methods for VISION vaccination data, I aided in the development and implementation of a Natural Language Processing (NLP) pilot study on both the technical and project management side, including undertaking a literature review.

**Conclusion:** Based on the thirty-three manuscripts that have resulted from this network's research, the real-world effectiveness of the COVID-19 vaccines against severe outcomes is high for a variety of subgroups. Conducting vaccine effectiveness research and intricately working with a contract research organization has only propelled my interest in clinical research. I have gained insight into day-to-day management and analytical operations of a research project, in conjunction to developing a solid understanding of how data management companies collaborate with federal agencies on research that is utilized to inform public policy, resource allocation, and vaccination schedules.

**Presenter: Nathaniel Chen**
*Agency: Pennsylvania Department of Health*
*Preceptor: Lauren Orkis DrPH, MPH, CIC*

**Assessment of Viral Hepatitis County Jail Services in Pennsylvania**

**Background/Objective:** Incarcerated populations are especially vulnerable to viral hepatitis, a viral disease inflaming the liver leading to complications such as jaundice and possibly liver cancer. This vulnerability is primarily due to risk factors such as injection drug use and inconsistent access to care. Incarceration settings can play a major role in reducing transmission among inmates and the general population alike. Currently, jail and prison policies regarding on-site hepatitis services vary, and The Pennsylvania Department of Health conducted a survey of county jails to assess these services in Pennsylvania. I helped distribute the survey and analyzed the resulting data, leading to a written report and presentation.

**Methods:** An online survey was distributed to all county jails across Pennsylvania from June 26th to July 12th, 2023. It consisted of 58 questions assessing hepatitis testing, treatment, and vaccination practices. The survey was not anonymous. Further questions asked about technical assistance needs from the Department of Health. Survey responses were exported to an Excel spreadsheet for analysis.

**Results:** Out of 65 county jails in Pennsylvania, 53 responded to the survey (82%). Out of 53 respondents, 89% and 21% of jails provided on-site hepatitis C and hepatitis B testing, respectively. However, for hepatitis C, only 77% of the jails offered testing to all inmates. Jails reported barriers to testing regarding client buy-in, funding, lab equipment, and staff time. A total of 79% and 83% of jails provided on-site hepatitis C and B treatment, respectively. For hepatitis B or A vaccination services, 17% and 81% of jails offered them on-site. For jails lacking these services, referrals to other partners were not always offered. Overall, a majority of jails provided testing but some jails do not offer it to all inmates. Treatment services have been developed but vaccination services have not for hepatitis B.

**Conclusion:** In Pennsylvania, there are opportunities to bolster county jail hepatitis services. Future policies should look to develop these capacities and explore new funding options for them. Jails have a great opportunity to act as a provider and facilitator to hepatitis services with the potential to reduce viral hepatitis incidence statewide.

**Presenter: Julia Sherman**
*Agency: VA Pittsburgh Health Care System*
*Preceptor: Elise Martin, MD, MS*

**Improving Hand Hygiene and Personal Protective Equipment Compliance in a VA Hospital Setting through Improved Data Collection and Mandatory Staff Education to Prevent Pathogen Transmission for Patients under Isolation Precautions**

**Background/Objective:** Hospital-acquired infections (HAI), coupled with rise of antimicrobial resistant organisms (MDRO), pose a serious risk to hospitalized patients. Strategies to reduce pathogen transmission in hospitals include hand hygiene before and after entering a patient's room and using isolation precautions. The VA Pittsburgh Health Care System (VAHS) has a goal of 90% compliance with hand hygiene (HH) and personal protective equipment (PPE) for all units, but given lack of PPE compliance data and that the majority of HH observations are self-reported by units, true compliance is unknown. I developed a tool to collect HH and PPE compliance data at both Pittsburgh VAHS medical centers, identify staff and patient variables associated with noncompliance, and develop and implement an intervention to improve HH and PPE compliance.

**Methods:** I created a HH and PPE compliance tool with 15 variables for each patient observation. Variables included: unit, healthcare worker type, precaution type, pathogen, infection status, hand hygiene in, hand hygiene out, gloves, gown in, mask, N95/PAPR, eye protection, type of contact, patient age, patient race/ethnicity. I observed approximately 250 observations of hospital staff entering/exiting isolation patient rooms; patient specific variables were collected retrospectively from electronic health record. At midpoint, data was analyzed for overall compliance rates and to assess for specific variables associated with poorer compliance and findings were used to develop an educational tool. The tool was used for a mandatory re-education of all VAPHS staff who enter/exit patient rooms and included current compliance rates, common missed opportunities, and degree of room contamination with various pathogens.

**Results:** Pre-implementation data (n=115) revealed overall compliance 17% for HH in, 30% HH out, 60% glove use, and 25% gown use. Results revealed compliance far below goals, and unable to associate low compliance with specific healthcare worker types, resulting in an implementation of the educational tool for all hospital staff at VAPHS, totaling over 60 departments. Following implementation (n=96), overall compliance for HH in increased to 54%, 53% for HH out, 81% glove use, and 45% gown use.

**Conclusion:** The mandatory all staff educational intervention resulted in significant increases in compliance, though there remains room for improvement.

**Presenter: Amanda Schaeffer**
*Agency: UPMC, Department of Infectious Disease Innovation and Clinical Improvement*
*Preceptors: Kailey Kramer, PhD, MPH and Dawn Fischer, RN*

## Monoclonal Antibody Therapy: Perceived Psychological and Biological Effectiveness Against COVID-19

**Background/Objective:** At the onset of the SARS-CoV-2 outbreak health professionals deemed vaccination for the virus essential. Although highly effective among the general population, an inadequate response to vaccination against SARS-CoV-2 was noted among many immunocompromised individuals. To counteract this, Evusheld, a monoclonal-antibody combination therapy was developed and tested in clinical trials. Current research supports the basis that a single dose of Evusheld had high efficacy for the prevention of SARS-CoV-2 without any apparent safety issues in patients. The studies provided further understanding of Evusheld effectiveness through adverse clinical events post-injection and psychological safety perceptions. I was able to attend patient visits to obtain this information firsthand, while also working with historical data comparing SARS-CoV-2 vaccinated individuals who had and had not received the injection.

**Methods:** My data comes directly from UPMC'S PreP-C19, BIOVALOR, and VALOR prospective observational studies. The studies all concern SARS-CoV-2 vaccination and Evusheld among the patient population. Experimental methodology employed included SARS-CoV-2 vaccination information collection, Evusheld dose concentration documentation, and biological specimen collection through SARS-CoV-2 RSV and RVP tests and blood samples.

**Results:** From the VALOR and BIOVALOR observational studies I was able to discern that there is longevity of the serum concentration of Evusheld at six months and 12 months post injection. Patients overwhelmingly report increased perceptions of safety as concerned with disease risk after having received Evusheld. Data analyzation is still ongoing however current results indicate decreased adverse SARS-CoV-2 health events in Evusheld recipients compared to non-recipients.

**Conclusion:** Throughout the duration of my internship, I gained practical experience of the implementation of observational studies in a clinical setting. The three studies I was involved in were all in different parts of the research process allowing for a breadth of knowledge to be obtained. Considering current data, I would hypothesize that Evusheld produced a significant antibody response in those who received it and a newer formulation has the potential to do the same for new SARS-CoV-2 variants.

**Presenter: Erin Choby**
*Agency: University of Pittsburgh, Division of Infectious Diseases, MOSAIC HIV Drug Resistance Monitoring Program*
*Preceptors: Urvi Parikh, PhD and Lauren Kudrick, MEd, MA*

## HIV Drug Resistance Monitoring Among Seroconversions in Users of Pre-Exposure Prophylaxis (PrEP)

**Background/Objective:** The MOSAIC HIV drug resistance (HIVDR) monitoring program was developed to assess the frequency of HIV-1 drug resistance mutations among PrEP clients who test HIV-positive after initiating PrEP. The classes of drugs that are used for PrEP are also used in antiretroviral therapy (ART) regimens; therefore, monitoring for HIVDR helps to preserve the effectiveness of both PrEP and ART. The information from the study will help to gain a better understanding of HIV drug resistance and how to ensure the effectiveness of the antiretrovirals (ARV) used in both prevention and treatment. The purpose of this internship was to develop a database in REDCap to support the management of study data.

**Methods:** Using the software REDCap, an online international database was created to house data collected from the MOSAIC HIVDR monitoring program. The forms created in REDCap include a case report form (CRF), lab requisition form (LRF), viral load results form (VL), and HIVDR results form. A training session was hosted for country coordinators over Zoom providing details on the features in the REDCap forms and the protocol for entering data. A data quality control protocol was also created and presented on in the training session to help ensure good documentation practices.

**Results:** The international monitoring program is currently being implemented in Kenya and Eswatini, with hopes to expand to other countries in the near future. With the database created and the training session completed, data collection for the HIVDR monitoring program has begun in these countries. Entries are being monitored to support good documentation practices and ensure high data quality.

**Conclusion:** Using the REDCap database, the monitoring program will be initiated over three years to gain a better understanding of HIVDR among users of PrEP. Moving forward, stakeholder meetings will be held to discuss with and educate those who are interested in conducting work in the HIV prevention space on the importance of HIVDR monitoring programs and the public health significance these programs carry in protecting the effectiveness of both PrEP and ART.

**Presenter: Amaya Christie**
*Agency: University of Pittsburgh, School of Public Health, Department of Epidemiology*
*Preceptor: Ashley Hill, DrPH, MPH*

## Systemic Racism and Its Effect of Sexual Health Outcomes in Black Women: A Literature Review

**Background/Objective:** Sexual health disparities among Black women have been prevalent in the United States for decades, and most noted in those in the adolescent stage. Although many researchers have examined physical sexual health outcomes (SHO) such as sexually transmitted infections (STIs) or condom usage, few have considered how experiences of systemic racism and structural inequities interact to form such disparities. The objective of my internship was to help contribute background literature to supplement current research conducted by Dr. Hill as she examined how experiences of systemic racism shapes the sexual health behaviors (SHB) and consequentially the outcomes of Black women.

**Methods:** I performed a literature search between May and July of 2022 in databases such as CINHAL, PubMed and Web of Science, and reviewed relevant titles and abstracts for potential inclusion. Characteristics such as published year, measure of association, study type, and measure of racism were recorded and added to a matrix.

**Results:** Five studies were included for review. Papers were included if they met the following categories: (1) papers referenced menstruation, pregnancy, and condom usage (2) included a measure of structural racism, (3) examples of linking experiences with racism to sexual health outcomes (4) conducted within the United States. I concluded two major themes from the literature review. First, individuals that felt a lack of autonomy over their body were less likely to advocate for their own sexual health. This presents itself in many forms such as through lack of abortion services, feeling less sexual power in relationships, and experiencing race-based sexual stereotypes. Second, individual experiences with racism combined with mistrust of the healthcare system shapes one's SHB. Such behaviors can manifest in ways such as birth control mistrust, and not being able to find the care they need.

**Conclusion:** Understanding how systemic factors influence how Black women SHB can help researchers create effective interventions that promote positive SHO. From the literature review, I learned that experiencing discrimination and racism has profound psychosocial effects on Black women. Results from the literature review has been used to better inform focus-group research on young Black adolescents in Pittsburgh.

**Presenter: Mary Ross**
*Agency: Voices Against Violence and University of Pittsburgh, School of Public Health, Bridging the Gaps Program*
*Preceptors: Emmanuela Abraham, MSW, MPH and Thistle Elias DrPH, MPA*

## Building Blocks: Building Up Staff Resilience at Voices Against Violence

**Background/Objective:** Community violence remains a critical public health issue in the United States with communities of color being disproportionately impacted. Youth and young adults in racially segregated and higher poverty neighborhoods tend to experience community violence incidents at higher rates. This issue causes both physical injuries and mental health conditions including depression, anxiety, and post-traumatic stress disorder. The objective of my Bridging the Gaps internship became creating a program to educate and build up the resilience of the staff at Voices Against Violence, VAV, so they could provide the best care to their community.

**Methods:** Information about the community, the organization, and past projects from my community preceptor helped inform the development of my project. My preceptor raised concerns about the junior counseling staff's professionalism. At VAV, their mission is to reduce interpersonal violence conflicts through education and self-advocacy activities. Based on the mission and conversations with my preceptor, we decided that a "life skills" workshop would be developed for the junior counselors. Interviews with senior staff and counselors were conducted to tailor the workshop to the top issues encountered.

**Results:** After compiling the interviews and identifying common themes, the topics for the workshop were: self-care, professionalism/work ethic, communication, digital footprint, financial literacy, goal setting, and future educational paths. Presentations, activities and exit surveys were developed for each lesson. A comprehensive workshop guide which compiled all the lessons, tips for teaching and expanding lessons, activities, and possible future lesson plan suggestions was created and left with the organization. Aside from this main project, mental health programming for the campers, ages 3-14, was also developed and conducted weekly by my internship partner and myself.

**Conclusion:** Youth of color are less likely to have access to protective factors including educational and material resources to help them cope with violence and stressors. The goal of this workshop was to address professionalism issues while also equipping them with both hard and soft skills to serve them in their future careers and lives in general. This program was meant to encourage them to not only survive but thrive and plan for their futures.

**Presenter: Caroline Morawski**
*Agency: University of Pittsburgh, School of Public Health, Department of Epidemiology Epidemiology Data Center, COAST Trial*
*Preceptor: Vicky Palombizio, BA and Steve Wisniewski, PhD*

## COVID-19 Implications on Data and Safety Monitoring Committee Meeting Report Process

**Background/Objective:** The Clarifying the Optimal Application of SLT (Selective Laser Technology) Therapy (COAST) Trial is a clinical trial collaborating with clinical sites throughout the US, Canada, and the UK in determining the appropriate energy and frequency level of laser technology in treating glaucoma. An integral part of COAST, as well as any randomized clinical trial is the Data Safety Monitoring Committee (DSMC) meeting and report. For my internship, I helped ensure that preliminary requirements to join the study were completed by COAST members and participated in DSMC preparation.

**Methods:** The DSMC typically meets every six months, the board meets with coordinating staff for updated data. This ensures the participants in the trial are protected and the study is progressing. Feedback is then provided by the board on improvements that can be made to the study. Throughout the emergence of the COVID-19 pandemic, the DSMC reporting process was altered to account for the challenges of the pandemic.

**Results:** In preparation for the DSMC meeting, I reviewed data and SAS code to confirm validity. Additionally, I organized tables and SAS output for transparency. I communicated with the staff on the study to ensure the report had the necessary components to showcase the process of 2023. I reviewed the literature to compare how COAST DSMC process differed from those DSMC oversaw evaluating treatments related to COVID-19. One difference was the speed at which the data was collected, compiled, and analyzed.

**Conclusion:** Through my experience, I developed an understanding for the DSMC and the details that are required of a clinical trial. My participation facilitated a robust examination and introduced new ideas to COAST. The DSMC is an essential aspect of public health clinical trials. The tasks ensure the study is running smoothly. COAST uses the standard approach which is the most updated and acceptable protocols. COVID-19 revealed the importance of moving clinical trials - for the development of vaccines and treatment - at a quicker pace than the standard approach, requiring modifications to how DSMC monitoring is completed.

**Presenter: Cassandra Demarest**
*Agency: Allegheny County Health Department, Pittsburgh Summer Institute*
*Preceptor: Kristen Mertz, MD, MPH*

## Allegheny County, Pennsylvania, Animal Bite Report, 2022

**Background/Objective:** Rabies is a viral pathogen that is transmitted to humans from infected mammals. It is 100% preventable but is 99% lethal once symptoms appear. Treatment includes post exposure prophylaxis (PEP), a series of four vaccines and an injection of rabies immune globulin, which must be started before symptoms appear. In Pennsylvania, medical professionals must report animal bites to health departments. As part of my internship, I worked in the immunization clinic and contacted victims to ensure they received appropriate treatment and analyzed the 2022 animal bite data.

**Methods:** The Allegheny County Health Department (ACHD) received animal bite reports from hospitals, police departments, and the public via fax or web based. The data were entered into the Oracle database and exported into an Excel file. SAS was used to clean and analyze data. Incidents outside the county, duplicated reports, or reports without a mammal were deleted. Descriptive statistics were generated in SAS and used to create charts and graphs in Microsoft Word and Excel. Data from previous reports were used to show trends from 2013 through 2022.

**Results:** ACHD received 2,189 unique animal bite reports in 2022. Most bites were attributed to dogs (77.8%) or cats (17.5%). The most common wild animal bites came from bats (1.0%) and raccoons (0.4%). Treatment included cleansing the wound (63.3%), tetanus vaccine (31.8%), antibiotics (68.2%), and rabies PEP (5.2%). The most common antibiotic prescribed was amoxicillin/clavulanate. One hundred fourteen (5.2%) people began PEP and 37 (1.7%) completed PEP. Of those 37, 3 were exposed to rabid animals: 2 bats and 1 raccoon. Five people completed PEP unnecessarily because the animal didn't have rabies or could be tested or observed. Out of the 114 people who started PEP, 53 people stopped PEP when they should have completed the course. From 2013 to 2022 the number of animal bites increased 23%.

**Conclusion:** People who begin PEP should be contacted and monitored to ensure they complete the course appropriately. Mandatory reporting, surveillance, and PEP have kept human cases of rabies to a minimum, yet it remains a public health concern since animal bites are still very common.

**Presenter: Jennifer Falgione**
*Agency: UPMC Western Psychiatric Hospital*
*Preceptor: Janina-Marie Huss, EdD, MBA, CIC, LTC-CIP*

## Assessing COVID-19 Transmission Risk: Roommate and Unit Mate Exposures at UPMC Western Psychiatric Hospital

**Background/Objective:** The COVID-19 pandemic caused an upsurge in the need for inpatient mental healthcare due to distress from the pandemic, however, isolation practices typically block bed spaces and decrease the hospital's capacity to care for inpatients. Inpatient psychiatric facilities have an inherently increased risk of infection transmission and a heightened possibility of adverse outcomes among patients with psychiatric disorders if infected. The aim of this quality improvement study is to evaluate the impact of roommate and unit mate exposures on COVID-19 transmission by index cases to inform on best isolation practices at UPMC Western Psychiatric Hospital.

**Methods:** This retrospective study evaluated post-exposure COVID-19 test results for roommates and unit mates of patient index COVID-19 cases from July 2020 through March 2022. Electronic health records provided demographics, roommate assignments, unit locations, and testing results. Post-exposure testing occurred five days after the first exposure to the index and seven days after the last, and only test results recorded during this timeframe after exposure were included in this study. Units where no roommate exposures occurred during the study period and exposures with test refusals or discharges before testing were excluded from the analysis.

**Results:** During the 20-month study period, there were 81 COVID-19 index cases and 942 total exposures with 121,141 patient days. Contingency tables were created, stratified by unit location, to display post-exposure test results and relation to the index case, either roommate or unit mate. Fisher's exact tests were conducted for each eligible unit separately, and the p-values obtained are as follows: unit A (p=1), unit F (p=1), unit H (p=.216), unit K (p=1), and unit L (p=.001).

**Conclusion:** Roommate and unit mate status was associated with converting to COVID-19 positive during post-exposure testing in one unit of the hospital, a unit that primarily treats older adults. More exposure observations are required to see if this finding holds true in additional units but suggests that rooming assignments are associated with positivity in post-exposure testing and COVID-19 transmission for older adults even in psychiatric facilities.

**Presenter: Olivia Mitchell**
*Agency: UPMC Shadyside Hospital*
*Preceptor: Graham Snyder, MD, MS*

## Exploring the Link: Catheter Luminal Fluid Culture Positivity and Bacteremia Outcomes in Hemodialysis Patients

**Background/Objective:** Patients undergoing chronic hemodialysis are at significant risk for bloodstream infection (BSI) associated with vascular catheter use, despite evidence-based prevention measures. Prediction of BSIs could inform novel or enhanced interventions to prevent their development. The HD-CLIFF study aims to quantify the frequency of culturable bacteria from catheter luminal fluid, and if present, whether these bacteria predict subsequent BSI. If successful, this method could lead to targeted preventive measures, such as antimicrobial locks, catheter removal, or preemptive diagnostic testing. As a research assistant, I devised study design, managed data through an Access database, implemented on-unit study protocol, and recruited participants.

**Methods**: This study intends to enroll 96 patients from UPMC Shadyside, UPMC Mercy and UPMC Presbyterian. Inclusion criteria comprise the following: current inpatient encounter in study site acute-care facility; end stage renal disease undergoing chronic hemodialysis; undergoing at least one hemodialysis session while at the facility; hemodialysis access with a tunneled dual luminal catheter; age ≥18 years and capable of providing informed consent. After obtaining consent, a 1mL sample was taken from both arterial and venous catheter limbs prior to the patient's next hemodialysis session and then tested for bacterial growth and strain identification. Electronic health records are reviewed for the purpose of detecting risk factors linked to positive luminal fluid cultures and to identify any instances of bacteremia within six months of enrollment.

**Results:** Thus far, the HD-CLIFF study enrolled 9 patients, and tested 10 arterial and venous catheter luminal fluid samples. Among these, 8 (80%) of the arterial samples exhibited bacterial growth, while 9 (90%) of the venous samples displayed positive bacterial growth. 7 out of the 10 (70%) samples were positive in both arterial and venous limbs.

**Conclusion:** Preliminary findings of catheter bacterial colonization suggest increased risk for infection, prolonged hospitalization, and high financial costs. My involvement in the HD-CLIFF study has provided invaluable insight into research study development. I gained hands-on experience in database building, acquiring informed consent, and patient enrollment. By contributing to this groundbreaking study, I hope to assist in determining whether culturing hemodialysis catheter luminal fluid can be a reliable predictor for BSI's.

**Presenter: Prashanti Limbu**
*Agency: Center of Life and University of Pittsburgh, School of Public Health, Bridging the Gaps Program*
*Preceptor: Sarah Crawshaw, MEd*

## Hydroponics Project: Importance of Food Sustainability and Nutrition in a Food Desert

**Background/Objective**: Existing social inequities and racism affect the health of community members, creating hurdles to maintain health equity. The limited amount of resources significantly affect critical infrastructure such as healthcare and food services. Hazelwood is a neighborhood in Pittsburgh, PA located along the Monongahela River. With the decline in the Steel industry, it lost community resources including community food stores and became a food desert. The handful of grocery stores has led to a myriad of health conditions among the residents. Predominantly African American families reside there and they face disproportionate rates of adverse health conditions. Therefore, it is increasingly important to intervene by promoting the benefits of nutritious food in a sustainable way. For my internship through Bridging the Gaps, I worked as a Community Health Intern at Hazelwood Summer Camp organized by Center of Life, a non-profit organization.

**Methods:** I conducted an informal survey with kids from grade 4 to grade 8 and became an intermediary between the children and the organization to develop a lesson plan to promote healthy and sustainable eating habits. Through the "Hydroponics project", children grew celery plants in a child-friendly activity. I cut celery a few inches above the head, and the children dipped it in water and raised it. The remaining stalk was used for "ants on a log" activity and children ate it.

**Results:** The goal of the activity was to encourage children to feel ownership over their nutrition by growing vegetables sustainably at home. We gave children the used individual celery plants and they showed concern and cared for the plants. Discussion on including celery and vegetables in their diet often took place.

**Conclusion:** After the hydroponics project, it became easier to talk to the children about the importance of the green vegetables and fruits at the lunch table. Many of these conversations were informal, a pre and post survey would have been important to quantify the effectiveness of this work. It would have been helpful to include parents as well by sending them questionnaires about how they integrate green produce at home to understand household food habits.

**Presenter: Zainab Goawala**
*Agency: Cancer Prevention and Control Research Training Program, University of Puerto Rico Comprehensive Cancer Center*
*Preceptors: Ana Patricia Ortiz, PhD, MPH and Keimari Mendez, MD, MSc*

## Attitudes Toward Anal Cancer and Screening Among People Living with HIV in Puerto Rico and their Association with Educational Attainment

**Background/Objective:** Anal cancer is a critical public health issue since its prevalence has been rising in the past years. Lack of knowledge poses challenges in prevention, screening methods, and treatment, which warrants immediate intervention and early detection efforts. There is limited knowledge about anal cancer and its association with a positive HIV infection, as well as other infections such as HPV and sexually transmitted infections (STIs), especially in Hispanic populations. A lack of awareness with anal pap tests, an essential screening tool for the early detection of anal cancer, hinders screening efforts leading to a higher burden of disease in this high-risk population; a health disparity issue that needs further research. For my internship I examined data to evaluate the attitudes of people living with HIV (PLWH) in Puerto Rico towards anal cancer and screening methods.

**Methods:** Between November 2020 to December 2021, 212 PLWH living in Puerto Rico completed a telephone-based interview assessing medical, sexual history, socio-demographic, lifestyle variables, alongside attitudes and knowledge pertaining to anal cancer screening. I performed descriptive statistics and multivariate regression using SAS and STATA.

**Results:** Overall, 67.5% participants were male and aged ≥ 50 years. Concerning anal cancer, 81.3% expressed worry, 96.7% were willing to have an anal pap test in the future, and 97.2% wanted to learn more about the disease. Moreover, 75.9% had previously shown interest in getting an anal pap test, while 65.9% mentioned feeling nervous about their test results. After adjusting for age and sex, PLWH with a high school education or less were more likely to perceive anal cancer as a hopeless disease (OR: 2.3, 95% CI: 1.18-4.32), early detection methods as very uncomfortable (OR: 2.9, 95% CI: 1.46-5.70) and the impact of anal cancer on life as minimal (OR: 2.6, 95% CI: 1.18-5.50) as compared to individuals with higher education.

**Conclusion:** Participants with the most negative attitudes towards anal cancer and current screening methods were those in the lower education. Study findings highlight the urgent need for increased education and awareness about anal cancer screening in PLWH, where stigma is high, particularly among individuals from disadvantaged backgrounds.

**Presenter: Tony Jiang**
*Agency: University of Pittsburgh, School of Public Health, Department of Epidemiology*
*Preceptor: Akira Sekikawa, MD, MPH, PhD*

**ACE Trial: In-depth Study of Equol, and Its Impact on Cognitive Decline**

**Background/Objective:** Arterial stiffness and cognitive decline are common issues in older age. Studying their relationship can provide insights into interventions to maintain cognitive health. Understanding how arterial stiffness impacts blood flow to the brain and whether it contributes to cognitive decline can help identify ways to reduce these effects. The ACE (Arterial stiffness, Cognition, and Equol) trial is a multicenter RCT of Equol, a plant-based compound. The ACE trial investigates whether Equol reduces the progression of arterial stiffness/cognitive decline. In this study, I took on responsibilities to ensure its smooth progress. These included conducting urine tests and bio-screening, facilitating participants' appointments at the MRI unit, as well as organizing/cataloging the research data. I also cooperated with participants/informants to ensure the timely completion of documentation(s).

**Methods:** The ACE trial plans to enroll 400 African-American and Caucasian individuals aged 65-85 without dementia. Inclusion criteria include a willingness and ability to participate in seven face-to-face appointments spanning a two-year period. Exclusion criteria include contraindication of MRI. During my internship, I received training in a range of essential tasks, including conducting urine tests, performing blood pressure assessments, taking measurements of weight and height, overseeing participants' MRI appointments at the local hospital, managing data organization, as well as making phone calls to participants/informants.

**Results:** The ACE trial began recruitment in June 2023. As of today, I have conducted approximately ten urine tests, and accompanied about a dozen participants to the MRI department at UPMC. Furthermore, I have contributed to the data management and quality control of study paperwork.

**Conclusion:** Through my involvement in ACE, I've learned that participants in the study are more than just data points. They are vibrant human beings, each possessing unique personalities that transcend the dull statistics and figures we often associate with scientific studies. I found satisfaction in collaborating with the participants. The diversity among ACE participants has opened my eyes to the rich tapestry of human experience. From different backgrounds and walks of life, they bring a multitude of perspectives to the study.

**Presenter: Hannah Kwiecinski**
*Agency: University of Pittsburgh, School of Public Health, Department of Epidemiology*
*Preceptor: Kim Lucas, RN*

**The RIGHT Study: A New Approach to Reducing Inflammation Markers in Older Adults**

**Background/Objective:** Inflammageing is a chronic condition defined by high levels of pro-inflammatory blood markers such as free interleukin 6 (IL-6), affecting older adults. The primary purpose of the RIGHT study is to evaluate the effect clazakizumab (5mg/month), a type of monoclonal antibody drug, has on 400-meter gait speed in older adults with elevated baseline IL-6 levels. For my internship, I contributed to the startup of this study by creating calibration and cleaning protocols for multiple pieces of study equipment, performing telephone screening calls, completing screening visits, and processing blood samples.

**Methods:** Before the recruitment process began, I put together calibration and cleaning protocols for both the COSMED and spirometer; each piece of equipment requires weekly calibration and cleaning. I consulted with the University of Pittsburgh Department of Environmental Health & Safety regarding disposal of required high-level disinfectants. Eligible older adults are recruited through postcards (categorized by zip code), Pitt+Me, or the PEPPER Registry. To date, I have performed over 300 telephone screening calls. During screening visits, I have ensured participants understood the screening consent forms, performed physical study measures such as a timed 4-meter walk, and helped with blood processing following a blood draw. All completed study forms are entered into our study database. Biweekly edit reports are completed, and I verify all study documents to ensure accuracy and completeness.

**Results:** Throughout the recruitment process, our team has adjusted the study scripts and forms several times. Clarification of language and eligibility criteria has been made based on direct feedback received from both eligible and ineligible participants. Since these adjustments, we have observed responses and response rates comparable to similar previous studies. I will continue to perform telephone and in-person screening visits going forward.

**Conclusion:** Because of this internship, I have gained invaluable clinical experience while working on a drug trial. I have had the opportunity to work directly with participants, applying the nuances of randomized control trials that I have learned within the classroom to a real-world scenario. I now have experience working on all aspects of a clinical trial and look forward to continuing my work with this team.
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**Presenter: Hannah Kunsak**
*Agency: Allegheny County Health Department, Women, Infants, and Children, Pittsburgh Summer Institute*
*Preceptor: Leah Ruggiero, MPH*

## Allegheny County Women, Infants, and Children Call Center Consistency and Participant Experiences: A Qualitative and Quantitative Analysis

**Background/Objective:** The Pennsylvania Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) aims to improve the nutrition and health of families across the state. WIC provides nutrition services, breastfeeding support, and access to healthy foods to pregnant women, infants, and children who are at-risk. Allegheny County operates its own WIC program, and at the time of data collection it had nine offices. One call center exists within the county to service participants. With over one thousand participants calling into the call center weekly, it's necessary to focus on participant experiences as well as efficiency. The goal of my internship project was to decrease wait times, analyze call reports, and create consistency within the call center.

**Methods:** I observed calls using Cisco Finesse software from May 9 to June 2, 2023. I then analyzed WIC Agent Summary reports and WIC Wait times from April 10 to May 12, 2023. I used Microsoft Excel to calculate time and call averages and to generate graphs.

**Results:** Qualitatively, long calls tend to be related to Welcome to WIC, needs for translators, and questions regarding products. Short calls tend to be related to questions about upcoming appointments and rescheduling appointments. Quantitatively, the average time a participant waits in the queue is 14:24 (14 minutes, 24 seconds). The average time a participant talks to an employee is 01:48, and the average time a participant is put on hold is 00:17. Average queue, talk, and hold times are similar Mondays through Wednesdays and similar Thursdays and Fridays such that Mondays through Wednesdays have higher times in all categories. The number of participants calling in to the call center varies by hour of the day with 11am and 10am having the highest call volume. The average number of calls received each week is 1151.2 with Monday having the highest number of calls.

**Conclusion:** The results gave rise to five overarching observations and recommendations for changes in call center practices to call center streamline processes and enhance participant experiences.

**Presenter: Caitlyn Kline**
*Agency: University of Pittsburgh, School of Public Health, Department of Epidemiology*
*Preceptor: Allison L. Kuipers, PhD*

## Data Management and Field Work: The Long-Life Family Study

**Background/Objectives:** The Long-Life Family Study (LLFS) aims to understand the complexities of Exceptional Longevity (EL), a trait believed to be shaped by multiple interacting genes and lifelong exposures. This international multicenter study gathers a distinctive group of participants across 539 pedigrees, creating a unique sample far richer in longevity-related traits than the general population. The participants, who exhibit key Healthy Aging Phenotypes across various domains of the aging process, have been studied in-depth through three extensive in-person visits (one of which is currently ongoing). The LLFS research aims to generate insights into the biological underpinnings of EL and potential resistance to age-related diseases. My summer MPH internship objective was to support the LLFS team both in the field as a research assistant and in the office as the data manager.

**Methods:** The LLFS enhanced my proficiency in data management through the RedCap Data Entry Certification, ensuring accurate and efficient data entry. I also obtained clinical experience conducting physical measurements, evaluating performance metrics, and administering specialized tests. I received training in phlebotomy and ABI techniques, acquiring a comprehensive understanding of blood collection, specimen handling, and peripheral arterial disease assessment.

**Results:** At LLFS, my role was multifaceted, centralizing on both community engagement and data management. I entered and managed our study's RedCap Data, enhancing my proficiency in managing and organizing information in the long-life database. This role equipped me to safeguard the accuracy and consistency of our study's data, execute comprehensive quality checks, and promptly resolve any data discrepancies. I also learned several clinical skills, refining my skills in conducting accurate measurements and administering specialized tests with our participants

**Conclusion:** My internship at the LLFS enhanced my skills in data management and clinical research experience. In addition to being formally certified in RedCap Data Entry and several research measurements, I learned to safeguard data integrity and ensure accurate health measurements, which will benefit my future career public health. I will continue to work with the LLFS team throughout the next year as the data manager and other research assistant roles, such as participant outreach and sending mental health resources, as needed.

**Presenter: Elizabeth Klusman**
*Agency: Jewish Healthcare Foundation*
*Preceptor: Emma Seagle, MPH*

## Development of a Survey to Assess HIV Met and Unmet Care Needs among People Living with HIV in Southwestern Pennsylvania

**Background/Objective:** It is crucial that people living with HIV (PLWH) are linked to care, remain in care, and adhere to treatment, however, there are numerous factors that impact access to mental, social, and physical care. Barriers include living in a rural area (limited transportation and health facility access), having a low socioeconomic status, stigma and discrimination, and other health demands. For my internship, I developed, planned distribution, and analyzed a consumer survey for PLWH in southwestern Pennsylvania to better understand health needs and close care gaps.

**Methods:** Previous region and state consumer surveys were reviewed to guide survey development. Questions asked about HIV medical care and services, dental care, case management, housing and food, substance use, mental health, and aging with HIV. A combination of rating, select all that apply, select one of the following, and open-ended questions were utilized. The survey was offered to PLWH residing in the 11-county southwest region of Pennsylvania via an online (SurveyMonkey) or paper tool from July – October 2023. Surveys were distributed via flyers in clinics and support service agencies, email, online newsletters, in-person distribution at one-on-one case manager meetings and in group settings (e.g., dinners, events, and support groups), and mail (pre-stamped return envelopes included).

**Results:** To date (August 31, 2023), 82 responses have been received, of which 80% reside in Allegheny County and 53% identify as white (41% Black). Most (78%) identified as a man and 58% as gay. The top three most valued HIV-related services were help paying for utilities, case management, and dental care. Preliminary trends suggest that dental care, legal assistance, help paying for utilities, food, housing, transportation, and mental health care are unmet but needed services in the region. At the surveys conclusion, results will be analyzed.

**Conclusion:** Results will help to understand unmet needs and barriers to accessing medical and supportive service care for PLWH in the southwest region of Pennsylvania. Furthermore, the results will help inform regional Ryan White programming (e.g., types of services funded, locations services are offered, regional staff trainings offered) that works to remove barriers to accessing quality HIV care.

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## Infection Prevention in the Pediatric Healthcare Setting

**Background/Objective:** Infection prevention and control (IPC) works on preventing healthcare-associated infection (HAIs) through the delivery of quality healthcare practices and policies. HAI diagnoses may lead to delayed recovery, extended stay, or developing antibiotic resistance, morbidities, or mortality. At the conclusion of my internship, I gained valuable experience for the work of an IPC, and while reporting the initial progress on a Clostridium difficile (C. diff) order appropriateness project and Candida auris (C. auris) surveillance project.

**Methods:** Engagement with the IPC team to understand their roles built the foundation to understanding their impact at reducing HAI's. I participated in monthly unit rounds across departments to identify areas of improvement in practice for healthcare workers or unit support staff, in addition to environmental improvements for maintenance. Concurrently, I collected hand hygiene and PPE compliance audits to identify incompliant staff and units that may increase the risk of disease transmission with patients. To showcase HAI frequency, I reviewed daily micro and alerts, C. diff orders, and C. auris surveillance with the IPC team.

**Results:** I created and presented an informative PowerPoint presentation to 30 IPC specialists within the UPMC system on a study conducted that examined endoscopes after disinfection and sterilization to assess product cleanliness for patient safety. During unit rounding, I recorded 241 hand hygiene audits. Moreover, 50 C. auris orders were reviewed with 36 negative results, 18 cancelled orders, and no positive cases from May 1 – July 31, 2023. There were 8 positive C. diff infections reported from 47 reviewed orders (17.02%) from March 15 – July 31, 2023. Of the orders reviewed, only 5 or the 8 tests were deemed appropriate to order (62.5%).

**Conclusion:** Collected hand hygiene observations highlighted units that would benefit from additional education on the importance it plays for reducing HAI's. With limited knowledge about how C. auris impacts pediatric populations, continual surveillance and testing is recommended and encouraged across many UPMC facilities to understand community impact. Given the number of C. diff orders cancelled or deemed inappropriate, continuation of this review is pivotal for the reduction of C. diff HAIs and negative downstream effects.