Public Health Forum
Summer 2019

Thursday August 15, 2019
Anschutz Medical Campus - Education 2 South and Education 2 North Buildings and the Education 2 South Lobby

11:30 AM – 12:00 PM  MPH Public Health Forum Opening Session
Education 2 North Room 1202

12:00 PM – 2:30 PM  MPH Oral Presentations - Education 2 North Buildings (see schedule)

2:30 PM – 3:30 PM  Poster Presentations and Reception
Education 2 South Lobby

The Capstone projects presented are the culminating experiences of students in the Master of Public Health program at the Colorado School of Public Health.

Please note, presentation times may vary slightly due to unforeseen scheduling changes.
The Colorado School of Public Health
MPH Capstone Experience

Goal:
The goal of the Capstone experience for Master of Public Health (MPH) students is to connect all aspects of the curriculum, including seminars, lectures, course work, independent studies, projects and direct experiences to establish an understanding, appreciation and working knowledge of public health practice and, specifically, how their chosen areas of concentration enhance public health practice in Colorado, the nation and the world.

Objectives:
1. To develop products that can be added to the student’s portfolio, documenting her/his reasoning, decision-making, analytical and authorship skills as they relate to linking important public health projects to the MPH learning objectives and competencies.

2. To provide a collaborative environment for students from all concentrations to review and discuss the core competencies of the MPH curriculum in relationship to their practice related experiences.

3. To provide an independent but guided opportunity for the student to practice and document the role that her/his specific concentration skills play in public health practice.

4. To develop awareness of personal strengths and competencies as a public health professional.

5. To improve skills related to presenting project results in oral and written formats.

Summer 2019 MPH Capstone Faculty

Dawn Comstock, PhD
Betsy Risendal, PhD
Kayla Williamson, MS

Teaching Assistant: Carl LoFaro, MSW
<table>
<thead>
<tr>
<th>TIME</th>
<th>Presentation</th>
</tr>
</thead>
</table>
| 12:00 PM   | Brennan Paige - LPH  
*Evaluating the Effectiveness of a Health Coaching Intervention*                                                                 |
| 12:15 PM   | Michelle Hewitt - LPH  
*Using Thematic Analysis and Key Informant Interviews to Develop a Survey Tool to Assess Homelessness in El Paso County* |
| 12:30 PM   | Kathryn Borre - LPH  
*Budgeting for an Educational Outreach in the Peruvian Amazon Using Thematic Analysis*                                                        |
| 12:45 PM   | Shannon Keel, MD - LPH  
*Initial Analysis of HopeWest PACE*                                                                                                           |
| 1:00 PM    | **Break**                                                                                                                                     |
| 1:15 PM    | Matthew Stotts, MD, MS - LPH  
*Modern Day Prohibition: The Effect of Alcohol Sales Restrictions on Hospitalizations for Acute Alcoholic Hepatitis Among Residents of Arkansas and Kentucky* |
| 1:30 PM    | Kristina Sandquist – MPH-MD  
*Elevating our Engagement: An Evaluation of Launching a Community Board at a Student-Run Free Clinic (SRFC)*                          |
| 1:45 PM    | Ashley Snyder - EPID  
*The Combined Roles of Environmental Exposure to Hormone Mediating Pesticides and Other Sources of Exogenous Hormone Exposure in Breast Cancer Risk* |
| 2:00 PM    | Josten Overall – MPH-MD  
*Using Parent Interviews and Peer-Reviewed Literature to Inform a Suicide Prevention Strategies Resource for Parents*                     |
| 2:15 PM    | Sirine Belaid, MD - MCH  
*Association Between Adherence to the 5-2-1-0 Recommendations and Measures of Adiposity of Children Ages 4-6 years old from the Healthy Start Study* |
| 2:30 – 3:30 PM | **Poster Session & Reception - Education 2 South Main Lobby**                                                                                      |

**BIOS**= Biostatistics, **CBHS**= Community & Behavioral Health, **CHE**= Community Health Education (UNC), **EHOH**= Environmental Health and Occupational Health, **EPID**= Epidemiology, **HSMP**= Health Systems Management & Policy, **LPH**=Leadership in Public Health, **MCH**=Maternal & Child Health

See next page for more presentations!
<table>
<thead>
<tr>
<th>TIME</th>
<th>Event</th>
</tr>
</thead>
</table>
| 12:00 PM | Elisabeth Phillips – EPID  
Laboratory Testing in Food Handler, Healthcare Workers, and Childcare Exclusion in Confirmed and Probable Shigella, Shiga Toxin-producing E. coli (STEC), and Salmonella Outbreak Cases in Colorado 2017-2018 |
| 12:15 PM | Melissa Tran – EPID  
Denver Health Refugee Clinic Blood Lead Level Analysis in Refugee Females of Reproductive Age and Children |
| 12:30 PM | Emily Beck – EPID  
HIV Critical Events Completion and Substance Abuse Disorders |
| 12:45 PM | Robert Bellamy – EPID  
Measuring the Impact of Caregiver Stigma on Viral Load Outcomes of Children Living with HIV in Kisumu County, Kenya: A Cross-sectional Study |
| 1:00 PM  | Break |
| 1:15 PM  | Break |
| 1:30 PM  | Joel Marrs, PharmD – EPID  
Impact of Self-Measured Blood Pressure Monitoring on Hypertension Control |
| 1:45 PM  | Heidi Yen – MPH-MD  
Cannabis Use Patterns in Colorado Adults |
| 2:00 PM  | Break |
| 2:15 PM  | Break |
| 2:30 – 3:30 PM | Poster Session & Reception - Education 2 South Main Lobby |

BIOS= Biostatistics, CBHS= Community & Behavioral Health, CHE= Community Health Education (UNC), EHOH= Environmental Health and Occupational Health, EPID= Epidemiology, HSMP= Health Systems Management & Policy, LPH=Leadership in Public Health, MCH=Maternal & Child Health

See next page for more presentations!
<table>
<thead>
<tr>
<th>TIME</th>
<th>Presentation Details</th>
</tr>
</thead>
</table>
| 12:00 PM  | Dawn Hovanec - HSMP  
*All Aboard: Examining Factors Related to Boarding of Emergency Department Patients* |
| 12:15 PM  | Mattie Curry - MCH  
*Adapting an HIV Prevention Program for LGBTQ+ Youth in Denver, Colorado* |
| 12:30 PM  | McKinzie Gales - MCH  
*Recommendations for Developing and Evaluating Meaningful Community Engagement* |
| 12:45 PM  | Break                                                                                 |
| 1:00 PM   | Break                                                                                 |
| 1:15 PM   | Michael Soto - CBH  
*The Effect of an EMR Prompt on Documentation of Firearm Screening in an Adolescent Primary Care Setting* |
| 1:30 PM   | Riley Stanton – CBH  
*Reducing Mental Health Stigma: A Role for Communities* |
| 1:45 PM   | Julie Zadel - CBH  
*Assessment of Syringes Discarded in Public Places in Boulder County* |
| 2:00 PM   | Veronica Parra - CBH  
*Impacts of Nicotine Dependency on Smoking-Related Cue Reactivity in Low-Income Smokers* |
| 2:15 PM   | Break                                                                                 |
| 2:30 – 3:30 PM | *Poster Session & Reception - Education 2 South Main Lobby*                          |

**BIOS**= Biostatistics, **CBHS**= Community & Behavioral Health, **CHE**= Community Health Education (UNC), **EHOH**= Environmental Health and Occupational Health, **EPID**= Epidemiology, **HSMP**= Health Systems Management & Policy, **LPH**=Leadership in Public Health, **MCH**=Maternal & Child Health
**HIV Critical Events Completion and Substance Abuse Disorders**

Emily Beck  
Preceptor: Erin Starzyk, PHD  
Contributor: Elaine Daniloff, MSPH  
Site: CDPHE, DCEED, STI/HIV/Viral Hepatitis Branch

**Background:** The Colorado Department of Public Health and Environment offers extensive therapeutic, psychosocial, and monetary intervention for individuals living with HIV experiencing critical events. Critical events include homelessness, complications due to Hepatitis C, severe alcohol and drug use disorder, and severe mental illness. The Colorado Critical Events Program is a six-month intensive intervention that is closely monitored. The effect of qualifying critical events on program completion may indicate areas for program improvement. The purpose of this study is to analyze the effect of substance abuse disorders on successful program completion for participants in the Critical Events Program.

**Methods:** In a retrospective cohort study, researchers collected program completion and risk factor data for critical event program participants from 2015-2018 (n=381). A multiple linear regression was then used to determine the effect of substance abuse disorder, and was adjusted for confounding due to homelessness, and for the covariates of mental health disorders, complications due to Hepatitis C, and sex work.

**Results:** Participants with substance abuse disorder were 0.4470 (p<0.0001) times less likely to complete the critical events program compared to other risk factors, when controlling for homelessness, mental health disorders, Hepatitis C complications, and sex work. Conversely, those with mental health disorders were 0.1586 (p=0.0345) times more likely to complete the Critical Events Program than those without mental health disorders.

**Conclusion:** Comorbidity of HIV and Severe Substance abuse disorder has an effect on the HIV care continuum, and further study is warranted.
Association Between Adherence to the 5-2-1-0 Recommendations and Measures of Adiposity of Children Ages 4-6 years old from the Healthy Start Study

Sirine Belaid, MD
Preceptor: Katherine Sauder, PhD
Site: LEAD Center

Background: Pediatric overweight and obesity has been increasing without any signs of a decline. Schools in the United States have implemented an evidence-based obesity prevention program (Let’s Go! “5-2-1-0”) and studies have shown evidence of children not meeting these recommendations for physical activity, nutrition and screen time. The purpose of this project is to assess adherence to the Let’s Go! 5-2-1-0 Program and evaluate the association between adherence and measures of adiposity in children ages 4-6 years old in the Healthy Start Study.

Methods: 740 Healthy Start participants with data on one or more of the “5-2-1-0” behaviors and adiposity measures were selected. Food intake and screen time were collected by recall, and physical activity was collected using accelerometers. Adiposity measures included BMI z-score, BMI category, waist circumference, waist-to-height ratio, % fat mass, subscapular-to-triceps skinfold thickness ratio. A cross-sectional analysis and general linear model were used to predict obesity outcomes, adjusting for sex, race/ethnicity, age, SES, daily kilocalories and parental education.

Results: Only 2% met all 4 goals, 13% met 3, 34% met 2 and 1 each and 17% met none of the recommendations. Children who met the physical activity recommendation had statistically significant lower % fat mass (p= 0.002) compared to the ones who did not. No other association was found between physical activity and other adiposity measures. No significant difference in any adiposity measures were observed for children who met the other recommendations.

Conclusion: Meeting the physical activity 5-2-1-0 goal was associated with lower adiposity in 4-6-year-old children.
Measuring the Impact of Caregiver Stigma on Viral Load Outcomes of Children Living with HIV in Kisumu County, Kenya: A Cross-sectional Study

Robert Belamy
Preceptor: Lisa Abuogi MD, MSc
Site: Center for Global Health

Background: The prevalence of HIV in Kisumu County, Kenya is 3.4 times the national average with children experiencing virologic failure (>1000 copies/ml) at a higher rate compared to adults. The objective of this study is to measure the impact of caregiver-stigma on virologic outcomes of children living with HIV.

Methods: Opt4Kids is a randomized controlled study at three public health clinics in Kisumu. Opt4Kids’ baseline data was utilized to conduct a cross-sectional study. Caregivers of children living with HIV aged 1-14 years enrolled in Opt4Kids were interviewed using standardized questionnaires. Virologic failure, the outcome of interest, was obtained from clinical records. The exposures, stigma and depression, were obtained by caregiver self-report. Descriptive statistics, Chi-square, students’ t-test, Wilcoxon Rank Sums, and logistic-regression analysis were performed.

Results: Of 165 caregiver-child dyads, median caregiver age was 25.2 (IQR 18.9-30.2) years, 61% were married and 84% were also living with HIV. Most caregivers, 82%, were the child’s parent. Mean child age was 8.4 (SD 2.5) years and median time on antiretroviral therapy was 60.7 (IQR 38-90) months. Virologic failure occurred in 7.9% of children and was associated with age p=0.018 and time on ART p=0.021. Self-reported caregiver-stigma was present in 19% of dyads. After adjusting for child age, caregiver-stigma was associated with increased odds of child virologic failure (AOR 3.6, 95% CI 1.02-12.3, p=0.046).

Conclusion: Caregiver-stigma is significantly associated with virologic failure among children living with HIV. This suggests the need to address caregiver stigma to improve HIV treatment outcomes in children with HIV.
Budgeting for an Educational Outreach in the Peruvian Amazon Using Thematic Analysis

Kathryn Borre
Preceptor: Anthony Moorehead
Site: Posner Center for International Development

Background: The nonprofit, CU Peru, hosts educational outreach for Community Health Workers (CHWs) in the Peruvian Amazon. Creating a budget and analyzing trips’ costs has been a retrospective process, putting financial strain on the organization. Using thematic analysis, a budget guide that includes a trip budget template was created.

Methods: An interview guide was drafted. Semi Structured Interviews (SSIs) were conducted with ten stakeholders. The SSIs were analyzed using thematic analysis with the use of inductive coding. Using the results of the thematic analysis, a final budget guide was created which includes the following sections: budget summary from 13 trips, stakeholder feedback, user guide, budget template, and partners/donations.

Results: The thematic analysis found that stakeholders wanted a budget guide that incorporates institutional knowledge to support advanced planning and communication/ transparency which will affect nonnegotiable spending, partnerships, resourcefulness, variable spending, and undocumented transactions. Stakeholders requested the use of an application that can be used on a phone or iPad that will support consistent data tracking. Tripcoin© is the recommended application. It meets the qualifications of the stakeholders’ requests: it functions on and offline, it shares data amongst individuals and Microsoft Excel, and it breaks down the trip’s costs into preferred categories.

Conclusions: The budget guide empowers members in financial planning and fundraising, decreases the risk of trip cancelations, and saves money. It serves as a tool to collect consistent data. Ultimately this will allow the organization to link money to educational outcomes which provides negotiation points when speaking to funders.
Adapting an HIV Prevention Program for LGBTQ+ Youth in Denver, Colorado

Mattie Curry
Preceptor: Justine Sunshine, MPH
Site: Colorado Health Network

**Background:** Over 21% of all new HIV diagnoses in the US occur in youth aged 13-24. Pre-Exposure Prophylaxis (PrEP) is a highly effective HIV prevention method, recently approved for teen use. The Colorado Health Network (CHN) is concerned with limited HIV prevention programs for LGBTQ+ youth to learn about prep. This needs assessment evaluated the CHN’s ability to adopt and implement the MPowerment program to include PrEP for the underserved LGBTQ+ youth population living in Denver, Colorado.

**Methods:** We conducted an assessment of the MPowerment program to identify the framework necessary to be implemented at CHN. A literature review of past and current PrEP programs in the US, identifying strengths and weaknesses, was completed. We talked with stakeholders to identify the organizational components necessary to implement youth PrEP programs at the CHN.

**Results:** MPowerment is an outdated program that will benefit from technology inputs (youth-friendly social media posts), adding to the diffusion of innovations theory used to develop MPowerment. The CHN is not youth-friendly and does not have youth-oriented programs. Collaborating with HeyDenver and Rainbow Alley will result in higher youth retention.

**Conclusions:** This needs assessment shows that, with the help of LGBTQ+ youth active in the community, the CHN is fully equipped to implement the adapted MPowerment program. This program will be most effective at LGBTQ+ youth centers that are already established in the community. Outreach to these organizations showed they are ready to implement this program, increasing PrEP use in youth and reducing HIV rates in Denver.
**Recommendations for Developing and Evaluating Meaningful Community Engagement**

McKinzie Gales  
Preceptors: Marais Pletsch, MA, CCLS  
Site: Tri-County Health Department

**Background:** The Maternal and Child Health (MCH) team at Tri-County Health Department (TCHD) is mandated by the Title V Block Grant to incorporate community engagement in their work. Yet, community engagement knowledge, practices and resources remain globally fragmented. This project aims to evaluate the MCH team’s current community engagement efforts and create evidence-informed recommendations for developing meaningful community engagement and evaluation. Secondarily, best practices for international community engagement and evaluation will be reviewed and summarized.

**Methods:** The Family Engagement in Systems Assessment Tool (FESAT) was piloted and used to assess the TCHD-MCH team’s community engagement efforts within the Arapahoe County Early Childhood Wellness Council (ACECWC). Evidence-informed recommendations for best practices and evaluation were determined by a literature review of community engagement efforts in national and international settings, and 11 semi-structured interviews.

**Results:** Results from the FESAT indicate that the ACECWC has strong commitment to community engagement but could improve its representation. A total of 10 themes emerged from the literature review, with all themes being observed nationally and internationally. The theme “Building Trust” was mentioned more (75%) in global literature when compared to national literature (17%). Most (71%) literature reported “Evaluation” as a best practice but did not provide a way to evaluate efforts. Lastly, four themes transpired from the semi-structured interviews including reason, facilitators and barriers, types of engagement, and best practices.

**Conclusions:** Implementing best practices for community engagement and evaluation that were identified in literature and semi-structured interviews is recommended to ensure meaningful, and effective community engagement.
Using Thematic Analysis and Key Informant Interviews to Develop a Survey to Assess Homelessness in El Paso County

Michelle Hewitt
Preceptor: Helen Harris, MBA
Site: El Paso County Public Health

Background: Homelessness is an increasing issue in El Paso County, as homeless counts continue to rise. Currently, the El Paso County Point-in-Time (PIT) Homeless Count is the most objective data available. Although the PIT provides robust secondary data, there is a lack of primary data. To fill this gap and provide qualitative context, the purpose of this project is to develop a survey to assess demographic information for the homeless population in El Paso County.

Methods: An inductive thematic analysis was used to code and analyze semi-structured interviews with 15 stakeholders from community agencies that interact with the homeless population. Afterward, a literature review was conducted to assess whether the themes identified in the interviews were supported in the literature. The key informant interviews, thematic analysis, and literature review informed the development of the survey questions.

Results: Themes extracted from interviews were mental health and substance use, systemic barriers, policy, and community coordination. The literature review confirmed these themes as critical issues affecting the homeless population. The survey questions link to the themes, in addition to demographic information. The readability score of the survey is 6th grade based on the Flesch-Kincaid Grade Level.

Conclusions: Next steps include pre-test and IRB approval. The survey will be administered in-person by qualified community experts. Survey results will provide robust primary data on El Paso County’s homeless population. This survey data will also be used to identify possible public health interventions to address homelessness.
**All Aboard: Examining Factors Related to Boarding of Emergency Department Patients**

Dawn Hovanec, BSN, RN, CEN  
Preceptor: Pam Assid, DNP, RN, CNS, CEN, CPEN, NEA-BC

**Background:** Patients that require further inpatient treatment following an emergency department (ED) evaluation can experience delays in the admission process. While studies exist on the negative impact to patients when such delays occur, there is not a set template for hospitals to address this problem. This project evaluated one hospital ED’s attempt to reduce delayed inpatient admissions.

**Methods:** A multidisciplinary hospital committee formed January 2019 to change the nurse hand off report process, room cleaning turnaround, and bed assignment management. Total hours and number of occurrences patients were delayed in the ED due to these three factors was compared after specific interventions using SPSS software and t-testing.

**Results:** Fourth quarter 2018 nursing report delays occurred 271 times with 390.7 hours, which decreased in the first quarter 2019 to 182 with 285.7 hours (P=0.140 and P=0.178). Bed assignment delays occurred 156 times with 283.6 hours in the fourth quarter with increases in the first quarter of 2019 of 196 times and 356.1 hours (P=0.113 and P=0.328). Bed cleaning turnaround occurred 404 times and 674.1 hours in the fourth quarter and decreased to 355 occurrences and increased 729 hours in the first quarter (P=0.753 and P=0.864).

**Conclusions:** Some improvement was made during the study period. Recommendations for continued focus and alternative interventions is suggested for more impact in regards to the patient admission process at this hospital.
Background: Western Colorado has many frail elderlies who face barriers to health including their medical complexity, and transportation and housing issues. To address these needs, HopeWest is starting a “Program of All-Inclusive Care for the Elderly” (PACE). PACEs collect Medicare/Medicaid money to provide wrap-around health services to nursing home eligible people, allowing them to age in place. Interdisciplinary teams (IDTs), a focus on participants’ goals of care, and flexibility in spending all contribute to this model’s success. We applied a systematic approach to program evaluation to determine measures of success for our PACE and will apply for funding to study its impact to help fine-tune the program’s direction and secure funding for continued operation.

Methods: We first constructed a logic model to guide the evaluation. Next, we conducted a literature search and reviewed existing data on PACE outcomes. We then interviewed key stakeholders to gather input on our measures. Finally, we researched potential funding sources for our evaluation.

Results: Based on research and input, we decided to evaluate the process of IDT implementation as well as the short-term output of hospital days for our PACE participants compared to citizens receiving traditional, fee-for-service Medicare/Medicaid. We wrote a grant proposal to the Rocky Mountain Health Foundation to solicit funds for this evaluation.

Conclusions: A systematic method of program evaluation guided us in our approach to gauging the success of HopeWest PACE and applying for funding to study it. The evaluation will provide valuable information for PACE’s long-term success.
**Impact of Self-Measured Blood Pressure Monitoring on Hypertension Control**

Joel C. Marrs, PharmD  
Preceptor: Emily Cohen, MPH  
Site: University of Colorado Anschutz Medical Campus/American Heart Association

**Background:** The AHA developed the Check, Change, Control (CCC) self-measured blood pressure (SMBP) program. The CCC program (2016-2017 cohort) demonstrated higher odds of BP control with checking SMBP more frequently. The purpose of this study was to evaluate the impact of patient factors related to utilization of SMBP and their association with BP control in the 2017-2018 cohort.

**Methods:** Retrospective cohort study of adults enrolled in the CCC program. The 2017-2018 cohort data was used to evaluate the hypertension (HTN) population and their SMBP values. The primary outcome measures differences between frequency of individual SMBP reporting: SMBP frequently (> 2 times a month) and less frequent SMBP (< 2 times a month) and BP control. Risk ratios (RR) for factors were calculated to determine association with reported SMBP and BP control.

**Results:** Overall, 37.3% uploaded > 2 BP values per month and 66% were female. The unadjusted RR for having BP < 140/90 mm Hg was higher for age ≥ 60 vs < 60 years (1.07; 95% CI 1.04-1.10), lower for Black vs nonblack adults (0.73; 95% CI 0.67-0.79), higher for females vs males (1.04; 95% CI 1.01-1.07), and lower for individual vs employer enrollment (0.60; 95% CI 0.58-0.63).

**Conclusion:**  
One-third of adults reported SMBP values greater than 2 times per month. Lower rates of BP control (< 140/90 mm Hg) were associated with age ≥ 60 years, Black race, male sex, and individual enrollment. An emphasis should be placed on the use of SMBP increase BP control rates.
**Using Parent Interviews and Peer-Reviewed Literature to Inform a Suicide Prevention Strategies Resource for Parents**

Josten Overall  
Preceptor: Meghan Haynes, MPH  
Site: El Paso County Public Health

**Background:** Suicide is a leading cause of death for youth aged 10-17 in Colorado. El Paso County, which recently experienced an increase in the prevalence of youth suicide, created an interdisciplinary group, the Youth Suicide Prevention Workgroup (YSPW), to address this issue. The Parent Education/Training subgroup of the YSPW established a goal of creating a one-page strategies document parents can utilize to prevent youth suicide.

**Methods:** To help stakeholders create a well-informed resource, El Paso County parents were recruited via self-selection and snowball sampling to participate in a 6-question structured interview. Participants were asked to describe ways parents can mitigate stressors impacting youth, improve connectedness with youth, and be involved in suicide prevention efforts. Interview findings were triangulated with a systematic literature review of specific strategies for parent-child connectedness in suicide prevention.

**Results:** Fourteen parents were interviewed, and highlighted strategies including not putting too much pressure on youth, accepting failure, and prioritizing family time. The parents also recommended including a suicide hotline number, signs to look for, and what to do in a crisis. The literature supported the aforementioned interview findings, with good communication as the most-cited strategy.

**Conclusion:** While the literature highlighted general concepts surrounding parent-child connectedness and suicide prevention, interviews with parents provided more concrete examples and suggestions on these measures. Taken together, these findings were successfully recommended to the Parent Education/Training subgroup and considered in their creation of the “Parent Strategies” handout.
Evaluating the Effectiveness of a Health Coaching Intervention

Brennan Paige  
Preceptor: Ann Kern, MBA, RN  
Site: Community Health Innovations

Background: The health of residents in Monterey County, California is worse than state average with a 57% prevalence of elevated blood glucose and a 76% prevalence of elevated body mass index (BMI). Health coaching is designed to help patients prevent and self-manage chronic diseases. Community Health Innovations’ health coaching program targets adults with chronic conditions, including obesity, diabetes, prediabetes, hypertension, and hyperlipidemia. The purpose of this project is to evaluate the intervention’s reach, productivity, and impact on biometric health indicators.

Methods: Process measures were analyzed using descriptive data to demonstrate reach and productivity. Biometric outcomes data was extracted from an electronic health record flowsheet that was used to capture a select group of pre and post measures (n=180). Mean percent change was calculated and paired t-tests (alpha 0.05) were completed for each matched pair. In some cases, outliers were removed to ensure normally distributed data for statistical analysis. The number of matched pairs varies by each biometric measure.

Results: The evaluation showed statistically significant (p-value < 0.05) mean biometric improvements in weight (-1.5%), BMI (-1.61%), A1c (-2.32%), blood pressure (systolic: -1.54%, diastolic: -1.66%), and total cholesterol (-7.47%). Fasting glucose and HDL did not show mean improvement. LDL (-3.86%) and triglycerides (-2.47%) showed improvement but results were not statistically significant.

Conclusions: This evaluation demonstrates that the health coaching intervention is associated with improved biometrics in patients with chronic disease. The results are promising, but larger sample sizes and additional analysis are needed to understand the cause and effect of these improvements.
Impacts of Nicotine Dependency on Smoking-Related Cue Reactivity in Low-Income Smokers

Veronica Parra
Preceptor: Shuo Zhou, PhD
Site: Department of Community and Behavioral Health, Anschutz Medical Campus

Background: The Center for Disease Control and Prevention determined that cigarette smoking causes 1 in 5 deaths each year. Individuals who have a low income, less education, and identify as non-white smoke more. Understanding what causes smoking behaviors in this population is crucial. Many studies suggest that nicotine dependency impacts behaviors of smoking after exposure to smoking related visual cues.

Methods: To assess whether nicotine dependency level has an impact on increased reactivity after exposure to smoking-related cues among low-income individuals, a survey was created on Qualtrics and distributed to 51 smokers via Amazon Mechanical Turk. Questions from a variety of measures including the Fagerstrom Test on Nicotine dependency (FTND) were used to measure cravings of smoking. Seven smoking related cues were shown randomly to participants for 5 seconds. Reactivity was measured at baseline, after each visual, and at the end of the survey. Statistical Software Analysis was used to analyze data.

Results: The average age of participants was 39 and the average FTND score was 4. Cravings increased after exposure to cue 2 and cue 6 for individuals who had high cravings at baseline.

Conclusions: Moderate nicotine dependency increased cravings after exposure to certain cues compared to low nicotine dependency. Cravings after certain cues were directly affected by both nicotine dependency and cravings present at baseline.
Laboratory testing of *Shigella*, *Salmonella*, and Shiga Toxin-Producing *E. coli* Cases Who Work in High Risk Occupations, Colorado, 2017-2018

Elisabeth Phillips  
Preceptor: Rachel Jervis, MPH  
Site: Colorado Department of Public Health and Environment

**Background:** Food handlers, healthcare workers, childcare workers, and families of childcare attendees are impacted by exclusion from work due to certain enteric diseases, especially in low socioeconomic households. To return to work/childcare, two negatives tests are required either by Polymerase Chain Reaction (PRC) or culture. PCR testing could detect dead pathogen increasing exclusion time. Examining PCR and culture negative testing in high-risk occupations could minimize exclusion time.

**Methods:** Surveillance data extracted retrospectively from Colorado Electronic Disease Reporting System: cases of *Shigella*, STEC, and outbreak-associated *Salmonella*. A Kaplan-Meier survival analysis was run to determine differences in each occupational and pathogen category with a reported p-value and mean ± SEM.

**Results:** For *Shigella* mean time from date specimen collected to second negative in food handlers was 19.3 days (±3.2, n=9), 26.0 days in childcare attendees (n=1), 8.0 days in childcare workers (n=1), and 9.5 days in healthcare workers (±2.5, n=2). STEC cases mean time from date specimen collected to second negative in food handlers was 15.8 days (±1.8, n=5), 34.0 days in childcare attendees (±14.0, n=4), and 15.7 days in healthcare workers (±6.9, n=3). The difference in probability of time to negative by occupations within pathogens, was not statistically significant.

**Conclusions:** Small numbers prevented assessing whether culture or PCR testing gets people back to work/childcare more quickly. To gather data to assess this, one could ask clinics to report negative testing results.
Elevating our Engagement: An Evaluation of Launching a Community Board at a Student-Run Free Clinic (SRFC)

Kristina Sandquist
Preceptor: Kari Mader, MD, MPH
Site: DAWN Clinic

Background: Meaningful engagement with the community can lead to significant benefits to patient health, clinic costs, and staff. There has been no literature describing feasibility or models of community board formation from a Student-Run Free Clinic (SRFC). The purpose of this project is to evaluate the process and short-term outcomes of the launch of a community board with the DAWN SRFC in Aurora, CO.

Methods: Process and short-term outcomes were assessed via pre-post surveys with community board members. Focus groups were conducted with community board members and community board planning committee members after each monthly meeting. Qualitative data analysis was conducted by two coders and emergent themes were identified using an inductive approach.

Results: Quantitative survey results showed decreases in some survey measures such as ability to share opinions, comfort talking with others about community needs, and identification as a leader in their community. Qualitative results indicate that keys for success have been flexibility, facilitation, leveraging technology, and building relationships.

Conclusions: There was an observed disconnect between some survey and qualitative findings. This disconnect may be due to: initial excitement of eight hour training kickoff day and subsequent shorter meetings; one member who missed the kickoff day and has only attended one meeting; insufficient time to see change; or the survey questions not representing phenomena occurring in the group. Next steps include continuing surveys and focus groups and conducting community board key-informant interviews and student planning committee online surveys.
The Combined Roles of Environmental Exposure to Hormone Mediating Pesticides and Other Sources of Exogenous Hormone Exposure in Breast Cancer Risk

Ashley Snyder
Preceptor: Myles Cockburn, PhD
Site: University of Colorado, Anschutz

Background: Hormone mediating pesticides have previously been associated with increased breast cancer risk. However, there are other sources of exogenous hormones that have also been associated with an increased breast cancer risk including oral contraceptives and hormone replacement therapy (HRT). This study assessed the potential effect modification of oral contraceptives and HRT on the association between hormone mediating pesticides and breast cancer risk.

Methods: All participants were from Fresno, Tulare, or Kern counties in California. 155 cases with breast cancer were identified from the Cancer Registry of Central California, and 150 controls were identified from a Parkinson’s disease study that had been conducted in the area. Geographic information was used to determine historic pesticide exposure. Data on demographics and medical history was obtained via telephone calls and mailed questionnaires. Logistic regression analyses producing odds ratios (ORs) with their associated confidence intervals (CIs) were calculated for crude, unconditional adjusted, and two conditional adjusted models.

Results: Results from the unconditional adjusted models show potential effect modification from oral contraceptives for diazinon and 1,3-dichloropropene; estrogen only HRT for organochlorines, diazinon, and 1,3-dichloropropene; combined HRT for all four pesticides; and any HRT for organochlorines and 1,3-dichloropropene. Progestin only HRT may potentially create effect modification with diazinon and 1,3-dichloropropene, but the numbers are too small to adequately assess this category of HRT. Conditional adjusted models showed further variation.

Conclusions: Effect modification may potentially affect the relationship between hormone mediating pesticides and breast cancer risk when hormone treatments are included in logistic regression analyses.
Background: In the fall of 2015, there was a systematic change to the physical exam EMR template that included the new question of whether or not there are firearms in the household. The purpose of this study is to examine whether including a prompt question about firearms in the household in the EMR template increases the screening of youth access to firearms.

Methods: 110 adolescents that visited the Adolescent Medicine Clinic for a routine physical after EMR template change were compared to previous cohort of 150 adolescents that received a routine physical prior to the change. Outcomes were compared between pre and post groups using independent t tests. In addition, a chi-square test determined whether there was an associated of healthcare provider type and firearm screening.

Results: After the addition of an EMR prompt, the proportion of providers screening adolescents for firearms increased significantly compared to the proportion of providers prior to the change (p<0.001). The relation between provider type and screening of firearms was not significant (p=0.057). There was no statistically significant relationship between presence of mental health or violent behavior and provider screening of firearms (p=0.551).

Conclusion: These results show that provider screening on firearms increases with the addition of an EMR prompt. These results also suggest that EMR prompts could improve provider diagnosis and treatment.
Reducing Mental Health Stigma: A Role for Communities

Riley S. Stanton
Preceptor: Kelly R. Kast, MSPH
Site: Jefferson County Public Health

**Background:** In 2018, Golden Community Partners (GCP) agreed to work to reduce mental health stigma and increase access to mental health services. To achieve these outcomes, GCP designed a campaign to run during 2019 to increase leaders’ perception of the value of mental health. The purpose of this project was to evaluate pre-campaign survey results and develop a logic model with objectives that demonstrate success.

**Methods:** Between February and March 2019, pre-campaign surveys were collected to determine baseline attitudes and beliefs, knowledge, and actions related to mental health and mental health resources of Golden leaders. The results were analyzed and written into a report for the GCP to guide decision making. GCP had an evaluation plan; however, they had not defined goals or a plan to produce those outcomes. Between April and July 2019, with input from committee members, a logic model was developed to determine and prioritize campaign concentration.

**Results:** The baseline assessment identified three key areas to address; personal role in promoting mental health, identification of resources, and individual concept of mental health. Targeting a single area of knowledge, attitudes, or beliefs would be unlikely to create change. The logic model incorporates a multi-faceted approach using activities to engage key leaders for the GCP campaign.

**Conclusions:** This project will supply Golden Community Partners with a logic model they can follow to direct program execution with clear goals that will measure success. Furthermore, it will be beneficial to other organizations wishing to replicate the mental health stigma reduction campaign.
Modern Day Prohibition: The Effect of Alcohol Sales Restrictions on Hospitalizations for Acute Alcoholic Hepatitis Among Residents of Arkansas and Kentucky

Matthew Stotts, MD, MSc
Preceptor: Dave Goldberg
Site: North Colorado Medical Center, Use of National Database Data

Introduction: Strategies to curtail the increasing burden of alcohol-related liver disease remain controversial. Multiple states permit local municipalities to restrict the sale of alcohol, although the health consequences of these restrictions have not been defined. We aim to examine the effect of alcohol sales restriction on hospitalizations for acute alcoholic hepatitis among residents of Arkansas and Kentucky between 2008 and 2014.

Methods: We performed an observational cohort study on residents in Arkansas and Kentucky 20 years and older using data from the US census, the Statewide Inpatient Databases of each state, and the CDC WONDER database. Individuals were analyzed according to the local laws of their county of residence. Multivariate regression was performed.

Results: From 2008 to 2014, 84 counties remained dry, 41 counties remained mixed, 37 remained wet, and 31 counties changed their alcohol sales status. When comparing wet versus dry counties, dry counties had lower median per capita incomes ($21,543 vs $25,435, p < 0.01), lower proportions of persons with high school (78% vs 86%, p < 0.01) and college (13% vs 18%, p < 0.01) degrees, and a higher proportion of Caucasian residents (94% vs 89%, p < 0.01). On crude analysis, residents of wet counties had a higher risk of alcoholic hepatitis than residents of dry counties (OR 1.51, 95% CI 1.43-1.59). On multivariate analysis, this risk persisted (OR 1.37, 95% CI 1.32-1.42).

Conclusions: Local policies restricting the sales of alcohol are associated with a reduced risk of hospitalization for acute alcoholic hepatitis.
Denver Health Refugee Clinic Blood Lead Level Analysis in Children and Females of Reproductive Age

Melissa Tran
Preceptor: Janine Young, MD
Site: Denver Health Refugee Clinic at Lowry Family Health Center

Background: On US entry, refugees have a high prevalence of elevated blood lead level (EBLL ≥ 5 mcg/dL) due to prior lead exposures in their birth country (BC) or lead-exposing practices that persist after immigration to the US. EBLL in females of reproductive age (FRA) and children can cause irreversible neurologic damage to developing fetuses and children. Current CDC guidelines recommend lead screening in children 6 months-16 years only. We examined BLLs among refugee FRA and children screened at Denver Health Refugee Clinic (DHRC) for potential differences by age, gender, and birth country.

Methods: This cross-sectional study examined data from two refugee groups during DHRC domestic screening exams in Denver (2014-2019): 310 FRA and 530 children (0-16 years). Descriptive statistics of EBLL in these two populations were conducted, and associations between EBLL and demographic factors were explored.

Results: Of refugees, 4.2% of FRA and 9.8% of children had EBLL. The BLL ranged from ≤2.0-26.2 mcg/dL in FRA and ≤2.0-35.1 in children. Of the BCs evaluated, only refugees from Afghanistan had significant results adjusting for age in FRA and adjusted for age and gender in children (FRA: OR 6.97 [2.71-17.93], p <0.0001; Children: OR 5.46 [3.39-8.80] p<0.0001).

Conclusions: Refugees screened at DHRC are 6.97 and 5.46 times as likely to be from Afghanistan compared to those refugees without an EBLL for FRA and children, respectively. Larger nationally representative studies need to be performed to determine if BLL screening should be expanded to refugee FRA, given significant damage of EBLL to the developing fetus.
Cannabis Use Patterns in Colorado Adults

Heidi Yen
Preceptor: Greg Kinney, PhD
Site: National Jewish Health, Colorado School of Public Health

Background: Cannabis laws, potency, and methods of use have evolved throughout the years and current data is not sufficient to understand cannabis use behavior. Prior studies have provided data on adolescents longitudinally, but little is known about behavior patterns in adults. The purpose of this study is to characterize the pattern of long-term cannabis use in Colorado adults.

Methods: Structured interviews were conducted with participants enrolled in the Colorado Cannabis Users Health Cohort study. Out of the 217 study participants enrolled, 58 phone interviews were completed with participants who were at least 6 months from initial enrollment. Interviews characterized reasons for use, methods of use, and use frequency. Analysis consisted of univariate comparisons of follow-up data against baseline data.

Results: In comparison to baseline data, increased endorsement of all reasons of use and methods of use were seen at follow-up. Anxiety and depression had the largest increase with Z=4.49 (p<0.001) and Z=4.36 (<0.001) respectively. Vaping and edible ingestion had the largest increase with Z=5.43 (p<0.001) and Z=5.13 (p<0.001) respectively. No statistically significant increase in frequency of use was identified, but T-test showed an increase in the number of methods of use reported at follow-up compared to baseline (p<0.001).

Conclusions: Cannabis-use patterns in Colorado adults change over time in comparison to behavior at baseline. This longitudinal study of cannabis users identified patterns of increased endorsement of reasons for use and consumption methods. Further longitudinal follow up for adults using cannabis is needed to inform future research, policy, and legislation.
Assessment of Syringes Discarded in Public Places in Boulder County

Julie Zadel
Preceptor: Jackie Blachman-Forsay, MPH
Site: Boulder County Public Health Department

**Background:** To reduce risk from infectious diseases, the Boulder County Public Health Department’s Works Program, a syringe exchange program, provides sterile syringes to people who inject drugs. While the Works Program educates clients about safe syringe disposal, reports of syringes unsafely discarded in public places are ongoing. Safe disposal of used syringes prevents reuse and community exposures to infectious diseases. The purpose of this assessment is to develop evidence-informed recommendations regarding safe syringe disposal.

**Methods:** A literature review was carried out to determine the scope of the issue. Key informant interviews with community partners were conducted to build a broader understanding of local responsiveness efforts. Visual inspection walkthroughs were performed by Works Program staff to examine the prevalence of unsafely discarded syringes.

**Results:** Themes identified from the literature included benefits to the community of a syringe exchange program (safe disposal option), potential barriers to safe disposal (fear of arrest/incarceration), and why alternative models of syringe dispensing are not preferred. The interviews and walkthroughs helped to establish a true picture of the extent of unsafely discarded syringes in Boulder County including recognized hotspots, vandalism of disposal bins, and observed seasonal increases in unsafely discarded syringes.

**Conclusions:** The Works Program provides a valuable service and is actively endeavoring to be respectful and responsive to community concerns through their disposal messaging and walkthrough efforts. Community partners are working independently to address syringe complaints. Teaming with community partners to share data is recommended for the effective management and reduction of unsafely discarded syringes.