2019 Epidemiology Research Exchange

Describing, Decomposing, and Understanding the Causes of Health Disparities

County of San Diego HHSA Health Services Complex

Friday, April 26th, 2019

San Diego Epidemiology Research Exchange

Program Schedule

Conference Co-Chairs: Stephanie Brodine, MD
Richard Shaffer, PhD
Andrea LaCroix, PhD

Coordinators: Ben Schumacher, MPH
Mony Chau, MPH
Ruby Lopez, MPH
Hollie Ward, MPH

Sponsored by:

San Diego State University - School of Public Health

University of California, San Diego – Family Medicine & Public Health

Naval Health Research Center

County of San Diego Health and Human Services Agency

Abram S. Benenson Distinguished Lecture Series

The Benenson Distinguished Lecture series honors Abram Salmon Benenson, MD. Bud, as he was known since childhood, spent his life dedicated to two passions – his family and his medical career.

After graduation from Cornell Medical School in 1937 and completion of an internship, Bud worked in various settings fighting such disparate communicable diseases as smallpox, cholera, and AIDS. From 1970 to 1995, Bud was the editor of six editions of Control of Communicable Diseases in Man (CCDM), his "little handbook" that has been published by the American Public Health Association since 1915. He was most proud of the pirated editions of the book that found their way back to him – written in Chinese or Arabic, they showed him that the world valued his contribution and desperately needed the information he worked so diligently to provide.

In 1982, Dr. Benenson joined the faculty of the San Diego State University Graduate School of Public Health as Head, Division of Epidemiology and Biostatistics, a position he held until 1992, at which time he became Professor Emeritus and maintained a full schedule, including advising students with their theses. He also played a critical role in established the Public Health doctoral program with concentration in Epidemiology, offered jointly at San Diego State University and the University of California, San Diego.

Dr. Benenson received many awards in his lifetime, including the Legion of Merit; the Meritorious Civilian Award; the John Snow Award and the Award for Excellence, both from the American Public Health Association; and the K.F. Meyer Gold-Headed Cane Award from the American Veterinary Epidemiology Society. Bud was pleased with the awards he received, they validated his hard work and allowed his friends and family to share his honors.

He was the author or co-author of over 140 scholarly papers in the fields of preventative medicine, epidemiology, and communicable diseases. His early work focused on the diarrheal diseases and smallpox, while his later research dealt more the AIDS. Four children and seven grandchildren, and a great-grandchild survive Bud and his wife, Regina van Aalten Benenson: twins Mike and Tom, James, and Sonia, and their children.

The first Benenson lecture was delivered in 2007 in conjunction with the 25th anniversary of the SDSU GSPH. Subsequent lectures have been connected to the San Diego Epi Exchange. The Benenson Distinguished Lecture series highlights those areas most important to Bud – preventative medicine, military medicine, and "shoe-leather" epidemiology.

Abram S. “Bud” Benenson, MD

1914-2003

Science Olympiad Disease Detectives Event

In an effort to promote interest in the growing field of epidemiology, the high school winners of the Disease Detectives event of the Science Olympiad from Southern California will be honored at this year's Epidemiology Research Exchange Conference.

Science Olympiad competitions are like academic track meets, consisting of a series of 23 team events in each division (Division B is middle school; Division C is high school). Each year, a portion of the events are rotated to reflect the ever-changing nature of genetics, earth science, chemistry, anatomy, physics, geology, mechanical engineering, and technology. By combining events from all disciplines, Science Olympiad encourages a wide cross-section of students to get involved. Emphasis is placed on active, hands-on group participation. Through Science Olympiad, students, teachers, parents, principals, and business leaders bond together and work toward a shared goal.

Disease Detectives provides students an opportunity to hone their skills as science sleuths by learning the scientific method employed by epidemiologists – or disease detectives. The event requires students to apply principles of epidemiology to a published report of a real-life health situation or problem. The event is intended for teams of up to two people. Approximate time to completion is 50 minutes.

The competition requires students to use a systematic, scientific approach to investigating epidemics (e.g., finding and counting cases, comparative reasoning, hypotheses generation, hypothesis testing). Related task and knowledge areas of epidemiology and other biomedical sciences include:

- Basic definitions of epidemiological terms (e.g., epidemiology, epidemic, outbreak, incidence, rates, public health surveillance);
- Categories of disease-causing agents (e.g., bacteria, toxins, mechanical forces, behavior);
- Modes of disease spread (e.g., person-to-person, food borne, airborne, vector borne);
- The triads of elements of analysis of epidemiological data collected to investigate outbreaks and other problems (e.g., time/place/person, and agent/host/environment); and

- The basis for taking action to control and prevent the spread of disease.

For more information about Science Olympiad and the Disease Detectives event, please visit http://soinc.org

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8:30	**REGISTRATION & BREAKFAST**
9:00	**WELCOMING REMARKS** Eric McDonald, MD, MPH
	MODERATOR: Tarik Benmarnhia, PhD
9:10	**INVITED ADDRESS** *How Racial Equality in California Holds Back Progress toward Eliminating Racial Disparities in Mortality Nationwide* Jay Kaufman, PhD
10:00	**Social Determinants of Health Panel Discussion** Jay Kaufman, PhD (McGill University) Tarik Benmarhnia, PhD (UC San Diego) Eyal Oren, PhD (San Diego State University) Jo-Ann Julien, MEd (County of San Diego HHSA)
10:30	**BREAK**

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	MODERATOR: Stephanie Brodine, MD
10:50	**Invasive Meningococcal Disease Outbreak at SDSU** Eric McDonald, MD, MPH
11:10	**HealthDAT.org: Facilitating Research Partnerships, Building Capacity of Community Based Organizations, and Encouraging Community Engagement** Corinne McDaniels-Davidson, PhD
11:25	**Associations of accelerometer-measured physical activity and physical activity-related cancer incidence in older women: results from the OPACH Study** Humberto Parada, PhD
11:40	**Asylum-Seeker Health Screening Program: An Example of Successful Public Health Collaborations** Linda Hill, MD
11:55	**The Association of Tuberculosis and Tobacco Usage in India DHS 2015-2016** Patrick Montine
12:10	**LUNCH & POSTERS**

All abstracts can be found in alphabetical order by author's last name at the back your program.

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	MODERATOR: Andrea LaCroix, PhD
1:10	**Psychological Distress in Pregnancy and Postpartum** Chelsea Obrochta
1:25	**Modelling the Population Health Impact of Water, Sanitation, and Hygiene Interventions on Childhood Diarrheal Disease Among Children <5 Years in Peru** Rudy Patrick
1:40	**Association between Optimism and Cognitive Function in Older Men and Women** Yazmin San Miguel
2:05	**Time After a Peak-Pesticide Use Period and Neurobehavior Among Ecuadorian Children and Adolescents: the ESPINA Study** Cristina Espinosa da Silva
2:20	**Light Physical Activity Measured by Accelerometry and Maintaining Mobility Over 6 years of Follow-Up in the WHI Objective Physical Activity and Cardiovascular Health (OPACH) in Older Women Study** Nicole Glass
2:35	**The Association of Standing and Daily Life Movement Time and Risk of Mortality Over 6 years of Follow-Up: the WHI OPACH Study** Purva Jain
2:50	**BREAK**

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	MODERATOR: Richard Shaffer, PhD
3:05	**Sexually Transmitted Infection Opt-Out Testing in an Immigration Detention Setting: A Pilot Study** Andria Blackwell
3:20	**A Comparison of Vaccination and Hospitalization Among Pediatric Pertussis Cases in California By Language of Interview** Sandra Yun
3:35	**A Multi-level Geospatial Study of the Impact of Government-subsidized Cervical Cancer Screening Programs in California** Ben Schumacher
3:50	**The Association Between On-Time Initiation and Completion/Up-To-Date (UTD) of the Human Papillomavirus (HPV) Vaccination Series Among Adolescents aged 11-17 in San Diego County** Wendy Wang
4:05	**Human Immunodeficiency Virus (HIV) Seroprevalence and Behavioral Epidemiology Risk Survey (SABERS) among Active Duty Military Members of the Armed Forces of Libera** Osika Tripathi
4:20	**ABRAM S. "BUD" BENENSON AWARD** **EPI EXCHANGE STUDENT AWARDS** **SCIENCE OLYMIAD STUDENT AWARDS** **CLOSING REMARKS**

Administering Seroprevalence and Behavioral Epidemiology Risk Surveys (SABERS) in Foreign Military Populations

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Background: Military populations may be at higher risk for HIV infection compared to civilians as a result of mobility and engagement in high-risk behaviors. Furthermore, HIV prevalence and associated demographic and behavioral risk factors in military populations are often unknown. The purpose of the Seroprevalence and Behavioral Epidemiology Risk Survey (SABERS) is to determine baseline HIV prevalence, associated behavioral risk factors, and assess HIV attitudes and knowledge in partner militaries in order to develop targeted recommendations to improve military HIV prevention programs.

Methods: DHAPP and the partner military jointly decide to conduct a SABERS in order to better understand the HIV epidemic in the partner military. Planning discussions involve defining roles and responsibilities of involved organizations, setting a communication schedule, defining study objectives, developing a protocol, planning for the ethics board review, and defining a timeline for DHAPP in-country visits and study implementation. The completion of the SABERS from the planning phases through data collection typically takes 12 months. There can be 4-5 in-country visits from the initial needs assessment visit to the data dissemination workshop. DHAPP identifies an implementing partner to provide logistical and administrative support in-country, and the partner military assigns a principal investigator and identifies study team personnel from their military. The DHAPP Epidemiology Team (ET) works directly with the partner military study team to adapt the survey instrument and protocol to the local context and needs of the partner military. This includes biological specimen collection, handling guidelines, and quality control measures for all diagnostic tests included in the SABERS. The ET also works closely with the partner military to determine the sampling frame and calculate the sample size using robust sampling methods. The protocol is submitted for ethics board review and approval in the U.S. and the host country. The ET pilots the survey in-country with the partner military study team, and revisions to the survey language and flow are made as needed. A 1-week in-country training on the protocol and data collection techniques is conducted by ET staff for all partner military study personnel. Following training, the military commences data collection, with ET staff observing and providing assistance in country for 1-2 weeks. All data are collected anonymously using tablets, and monitored remotely by ET staff. Following data collection, ET staff analyze and interpret the data, and summarize findings in a written report with input from the partner military and DHAPP technical and program experts. Findings are communicated to partner military leadership in a data dissemination workshop and discussions ensue regarding what the data mean and what measures need to be taken to address identified issues. DHAPP program staff collaborate with the partner military to ensure that recommendations are implemented.

Results: DHAPP has conducted 33 SABERS in 27 countries across Africa, Asia, the Caribbean, and South America.

Conclusions: Data from the SABERS results in programmatic changes and improvements in existing HIV prevention programs, as well as capacity building in partner militaries to conduct other SABERS in the future. SABERS results also allow for the assessment of progress towards reaching epidemic control by 2020, defined by the UNAIDS 90-90-90* goals. In addition, the SABERS assists in identifying gaps to address the well-being of people living with HIV including establishing alcohol abuse and gender-based violence reduction trainings and incorporating stigma and discrimination prevention methods. Through continued collaboration and capacity building, partner militaries can ensure force health protection and meet the UNAIDS 90-90-90 goals.

*UNAIDS 90-90-90 goals by 2020 are: 90% of HIV positive people diagnosed, 90% of diagnosed on antiretroviral therapy (ART), and 90% of people on ARTs virally suppressed

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Chest radiograph findings as predictors of confirmed tuberculosis disease: implications for screening algorithms and empiric management for suspected tuberculosis in a congregate setting

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Background: Detainees in U.S. Immigration and Customs Enforcement (ICE) custody reside in congregate settings and often come from countries with a medium or high incidence of tuberculosis (TB). The chest radiograph (CXR) is a rapid, sensitive screening tool for suspected TB disease and a long-standing part of TB screening in detention facilities. CXR findings in TB disease may be subtle or dramatic. Determining which findings may be less predictive of TB disease will help determine which patients should be observed versus empirically treated.

Methods: ICE detainees who underwent CXR screening between July 1, 2017 through July 31,2018 and were identified as either having confirmed TB disease (Class 3) or an indeterminate classification (Class 5) were included in the analysis. Demographic, microbiologic, and clinical characteristics were abstracted from the electronic health record. Descriptive statistics, odds ratios, and Pearson's chi-square test were used to assess the association between microbiologically confirmed TB and radiographic findings.

Results: Twenty seven percent of CXRs had multiple findings while 73% had only one finding. Only those with single findings (N=419) were included in the final analysis. Thirty-seven detainees had Class 3, culture-negative TB disease whereas 34 had Class 3, microbiologically-confirmed TB disease; 348 detainees with negative microbiologic studies but without a follow up CXR at six to eight weeks remained permanent Class 5. When compared to individuals in the culture-negative categories (Class 3 and permanent Class 5), those with microbiologically-confirmed TB disease had significantly lower odds (OR=0.03, 95%CI: 0.017, 0.298; OR=0.07, 95% CI: 0.015, 0.277) of having costophrenic angle blunting/small pleural effusion or pulmonary nodules (either calcified or uncalcified).

Conclusions: Subtle, single findings are prevalent on screening CXRs and may be managed less vigorously even in a congregate setting, with minimal risk of missing microbiologically confirmed TB disease.

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Sexually Transmitted Infection Opt-Out Testing in an Immigration Detention Setting: A Pilot Study

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Background: Individuals entering a correctional setting are considered high-risk for having a sexually transmitted infection (STI) and may benefit from routine screening. The Centers for Disease Control and Prevention (CDC) recommends that opt-out HIV testing be offered in correctional settings. As the immigrant detainee population differs from other correctional populations, this pilot study was conducted to determine the feasibility of implementing an opt-out STI testing program.

Methods: A pilot program was conducted at two IHSC-staffed detention facilities. Detainees were individually educated and offered opt-out STI testing for HIV, syphilis, hepatitis B, gonorrhea, and chlamydia. Of the 1,041 adult detainees approached, 526 opted out and 515 did not. Multivariable analysis was performed to determine factors associated with opting out, and bivariate associations with STI results. A cost analysis and staff survey were conducted to explore feasibility and perceived benefits.

Results: Offering testing early in the custody stay was associated with opting out, and gender modified the relationship between gender discordance and opting out. Of detainees screened, 8.5% (n=42) were found to have any STI, and 95% of these were treated prior to custody release. No factors were associated with testing positive for an STI. The cost per patient for the pilot program ranged from $22-$42, including staff and laboratory costs. Staff viewed the program positively, but expressed concerns over sustainability.

Conclusions: This pilot program demonstrates that asymptomatic STIs are prevalent among immigrant detainees and screening can be carried out in a cost-efficient manner. Results support institution of an opt-out strategy in this setting due to lacking evidence of factors associated with STI findings. More detainees opted out of testing when approached early in custody stay. Further exploration is merited to optimize timing of screening and address barriers to detainee acceptance to maximize participation prior to implementation as standard IHSC policy.

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The association between work hours and type 2 diabetes among adult respondents in the California Health Interview Survey (CHIS), 2016

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Background: Research on the association of work hours and type 2 diabetes has been inconclusive, and previous results in primarily specific occupational populations has indicated both increased and decreased incidence of diabetes with increased work hours. We examined cross-sectional survey data representative of the state of California to determine if type 2 diabetes prevalence was higher among adults who reported working more hours per week.

Methods: The study utilized data from the California Health Interview Survey (CHIS), 2016, a statewide telephone survey that collected information on a wide variety of health indicators. Analyses were performed on 10,361 (49.2%) respondents after those who reported not working were excluded. A multivariable logistic regression model was constructed in a forward building, step-wise method to test for an association between increased work hours and type 2 diabetes prevalence.

Results: In 2016, 7.0% of California adults working at least one hour a week self-reported a type 2 diabetes diagnosis. Diabetes prevalence was highest among adults working 32-45 hours per week (7.5%), followed by those working less than 32 hours per week (7.2%) and those working 46 or more hours per week (5.9%). In the final model, adjusted odds ratios were lower for adults working 32-45 hours per week (AOR: 0.74, 95% CI: 0.41, 1.36) and those working 46 or more hours per week (AOR: 0.60, 95% CI: 0.29, 1.22) when compared to those working less than 32 hours per week.

Conclusions: Although a statistical association was not achieved, our results displayed a trend in lesser odds of type 2 diabetes prevalence among California adults as work hours increased. Due to the cross-sectional nature of our study design, we have attributed this result to a healthy worker effect, suggesting that healthier individuals may be more capable of working longer hours while those affected by chronic conditions such as type 2 diabetes may be hindered in workforce participation.

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Light physical activity measured by accelerometry and maintaining mobility over 6 years of follow-up in the WHI objective physical activity and cardiovascular health (OPACH) in older women study

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Background: Almost 1 in 4 women over 65 years is unable to walk 2-3 blocks, and loss of mobility is a key factor associated with loss of independence. Lack of physical activity is associated with increased risk of mobility disability, but the intensity of physical activity needed to maintain mobility is unknown. This is the first study to assess the association of objectively measured light physical activity (LPA) and incident mobility disability in older women.

Methods: Data on 5,735 post-menopausal women who participated in the Women's Health Initiative OPACH study were used to assess the association of accelerometer measured LPA (>1.5 and <3.0 METs) and incident mobility disability over 6-years of follow-up. Hazard ratios were determined using successively adjusted cox proportional hazard models by quartile of LPA for incident and persistent incident mobility disability.

Results: After adjustment for confounders, compared to women in the lowest quartile, women in the highest quartile of LPA were 40% (HR=0.60, 95%CI 0.51-0.71; p-trend<0.0001) less likely to experience incident mobility disability. This protective association was stronger for persistent mobility disability (HR=0.52, 95%CI 0.42-0.63; p-trend<0.0001). Inclusion of MVPA attenuated these associations, but they remained significant. Stratification by BMI showed the protective association was stronger in non-obese women.

Conclusions: Increasing LPA has a strong protective association with incident mobility disability. Preventing mobility disability in older women is important to maintaining independence and quality of life. These findings support the potential benefits of promoting increased LPA as a component of physical activity guidelines in older adults.

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THE ASSOCIATION OF PRE-DIABETES AND PSYCHOLOGICAL DISTRESS: THE CALIFORNIA HEALTH INTERVIEW SURVERY 2015-2016

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Background: The paradigm of diabetes and mental health have been examined for the past 40 years, but have not been studied among pre-diabetics in the California population. We aimed to explore whether pre-diabetics were associated with having serious psychological distress.

Methods: We included 35,825 participants from the California Health Interview Survey (CHIS) 2015 and 2016 interviews, a cross-sectional California population-based telephone survey. Pre-diabetics, excluding gestational, type 1, and type 2 diabetics, were defined as those that self-reported that they have ever been told by a physician that they were pre-diabetic. Psychological distress was assessed using the validated and widely-used Kessler-6 scale, where those that have serious psychological distress were defined with a score of 13 or greater. We used a DAG to identify confounders and adjusted for them in the multivariable logistic regression model based on a step-wise approach.

Results: Overall, 8.31% of participants (n=35,825) had serious psychological distress and 9.54% were pre-diabetic (non-gestational). The unadjusted OR of the association between pre-diabetics and psychological distress was 1.29 (95% confidence interval (CI), 0.94-1.79). Adjusted, multivariable analyses suggested a positive association between participant-reported pre-diabetics and psychological distress [OR, 1.58; 95% CI, 1.11-2.23], after adjusting for age, sugar intake, comorbidities, sex, ethnicity, marital status, education, insurance status, language proficiency, and smoking status.

Conclusions: In this study of California adults, those who were pre-diabetics were almost two times as likely to be inflicted with serious psychological distress as those who were not pre-diabetic, after adjusting for age, sugar intake, comorbidities, sex, ethnicity, marital status, education, insurance status, language proficiency, and smoking status.

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Medical Transport Times and Mental Health Outcomes Among US Service Members with Deployment-Related Injury

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Background: Survival rates among US service members injured in post-9/11 conflicts are higher relative to prior conflicts, largely due to improvements in protective equipment, advancements in medical technology, and rapid medical response times. The “golden hour” is a universal paradigm suggesting that trauma patients have lower morbidity and mortality when provided with medical care within 1 hour after injury. Service members injured on deployment are at risk for developing long-term mental health problems. To date, however, research has not examined whether transport times from deployment-related injury to a military treatment facility is associated with these long-term outcomes. Using data from the Wounded Warrior Recovery Project (WWRP), an ongoing longitudinal, web-based study of patient-reported outcomes, we examined whether arriving at a military treatment facility within 1 hour of injury was associated with adverse mental health outcomes, including posttraumatic stress disorder (PTSD), depression, and quality of life (QOL).

Methods: WWRP participants provided data through web questionnaires between January 2013 and November 2017. Participants reported on their QOL and recent PTSD and depression symptoms using standardized assessments. Standardized scoring procedures were used to determine whether each participant screened positive for PTSD or depression. Demographic and injury-related information were obtained from the Expeditionary Medical Encounter Database (EMED), a comprehensive, US Navy-maintained database containing information on medical encounters for service members with injuries that occurred during the post-9/11 conflicts. Multivariable logistic and linear regressions were used to assess the relationship between transport time (≤1 hour or >1 hour from injury to treatment facility) and positive screens for PTSD or depression, and QOL, respectively.

Results: On average, participants (n = 1,018) were injured 7.2 years (SD = 3.5) prior to completing their first WWRP survey. The average age of participants at survey was 33.6 years (SD = 6.6), 75.9% were White, 96.5% were male, and 52.4% served in the Marine Corps. Overall, 40.5% of participants arrived at a military treatment facility within 1 hour after injury. Participants with transport times greater than 1 hour were statistically younger at survey ($P = .01$) with less time between injury and survey ($P < .01$), were more often injured by an improvised explosive device ($P < .01$), and had less severe injuries ($P < .01$). Overall, 49.9% of participants screened positive for PTSD and 52.0% screened positive for depression. After adjusting for covariates, transport time was not significantly associated with PTSD (odds ratio [OR] = 1.1; 95% confidence interval [CI] = 0.8–1.4), depression (OR = 0.8, 95% CI = 0.6–1.1), or QOL ($P = .85$).

Conclusions: This study was performed to identify potential adverse mental health effects associated with extended transport time. In the present study, transport time within the golden hour was not associated with PTSD, depression, or diminished QOL among US service members with deployment-related injury. These findings are important as we seek to understand how casualties may be effected by extended MEDEVAC times anticipated in future expeditionary operations.

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The association of standing and daily life movement time and risk of mortality over 6 years of follow-up: the WHI OPACH Study

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Background: Previous studies have shown that self-reported time spent standing is associated with reduced risk of mortality. No previous studies have examined this association using objectively measured standing.

Methods: This was a prospective cohort study of 5,878 older (median age=80 years), racially diverse, community-dwelling women in the Objective Physical Activity and Cardiovascular Health Study. This study utilized a machine learning algorithm to categorize up to 7 days of ActiGraph GT3X+ accelerometer data into categories of standing and daily life movement. Cox proportional hazards models were used to estimate the risk of mortality across the distributions of these two standing variables.

Results: There were 691 deaths and 26,649 person-years of follow-up time through March 31, 2018. In the fully adjusted model, the risk of mortality was lower when comparing the highest quartile of daily life movement (HR=0.50; 95% CI:0.35-0.71, p-trend<0.001) and standing (HR=0.63; 95% CI:0.49-0.81, p-trend=0.003) to the lowest quartiles, respectively. Increased daily life movement time had a greater reduction in risk of mortality, for those with sedentary behavior greater than the median (HR=0.80; 95% CI:0.59-1.07) (558 mins/dy) compared to those below (HR=0.51; 95%CI: 0.38-0.68) (p-interaction=0.02).

Conclusions: In the first prospective study to examine an objective measures of standing and daily life movement in relation to mortality among older women, reductions in mortality were seen among women who spent more time in standing movement. Upon replication of results among other cohorts with diverse populations there will be additional evidence to support standing and daily life movement as a safe and feasible behavior to reduce risk of mortality among older individuals.

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Red Meat and Inflammation and A1c in Breast Cancer Women

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Background: C-Reactive Protein (CRP) and Hemoglobin A1c (HbA1c) are shown to be a predictor of diabetes, cardiovascular disease, and all-cause mortality. Red meat intake has been associated with inflammation among the general population, but disappear after adjusting for BMI. Furthermore, there is limited research on the association between red meat intake and inflammation and hyperglycemia among breast cancer women.

Methods: Using a cross-sectional design, we analyzed data collected from 3,088 breast cancer survivors who enrolled in the Women's Healthy Eating and Living (WHEL) Study and had provided four detailed 24-hour dietary recalls over a 3-week period along with a blood sample to validate dietary pattern and measure plasma CRP and HbA1c from washed red blood cells. Intakes of processed and unprocessed red meat were extracted from dietary recalls. CRP concentrations were measured using high-sensitivity electrochemiluminescence assay. HbA1C was measured using ion exchange high-performance liquid chromatography.

Results: We found significant positive associations for both unprocessed and processed red meat with plasma CRP and HbA1c. In multivariable adjusted models, compared to women with the lowest quintile intakes of unprocessed red meat, women with highest quintile had a 24% increase of CRP and had an 2% increase of HbA1c after adjustment for BMI. Further adjustment for total vegetable intake did not materially change these associations. We observed similar patterns for processed red meat. The magnitudes of the associations of processed red meat with CRP and HbA1c were similar to that of unprocessed meat with CRP and HbA1c after adjustment of BMI. P-values for trends were less than 0.002 for all of these associations.

Conclusions: CRP and HbA1c are strong predictors for breast cancer prognosis and development of comorbidities (e.g. diabetes). Although many studies examined the association of red meat with CRP and HbA1c in general healthy population, few studies were conducted among breast cancer survivors. Our results for the first time demonstrate that the positive associations between unprocessed and processed red meat consumption and inflammation and hyperglycemia are not fully mediated by BMI among breast cancer women.

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Sex Differences in the Relationship Between Poverty and Hypertension in California

Malek Guerbaoui, Dr. Caroline Thompson, Dr. Tianying Wu, Dr. John Alcaraz
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Background: Hypertension is one of the most common health problems worldwide. One third of adults in the United States (US) are living with hypertension, costing approximately 48.6 billion dollars annually. Previous studies have shown that socio-economic status (SES) is highly associated with hypertension in the US, however, there are many ways to measure SES. Few studies have used the national standardized Federal Poverty Level (FPL), which is used to qualify individuals for entitlement programs and public benefits, to assess the impact of poverty on Americans living with hypertension. If the association between FPL and hypertension is found to be significant, integrating hypertension prevention strategies into these public benefits programs could help reduce the burden of hypertension in Americans living below poverty thresholds.

Methods: This study examined cross-sectional, California representative data from the 2016 California Health Interview Survey. The study sample consisted of 21,055 surveys that were collected via random-digit dialing phone. Hypertension was self-reported and FPL was calculated based on respondents' income and number of dependents living in their household. FPL categories were: 0-99% FPL, 100-199% FPL, 200-299% FPL, and the referent group 300%+ FPL. Directed Acyclic graphing methods were used to assess suspected confounding pathways. Logistic regression was used to examine the odds of self-reporting hypertension among the three lowest poverty level groups compared to the referent "300+ FPL" group, before and after adjusting for suspected confounders.

Results: Results suggest that respondents in the lowest FPL group (0-99% FPL) had 33% greater odds of self-reported hypertension compared to individuals in the 300+% FPL group (C.I. 0.98-1.80), after adjusting for confounders. The relationship, however, changed significantly once the population was stratified by gender. There was a positive, relationship (AOR 2.05, C.I. 1.40-3.00) between FPL and hypertension among women in the lowest FPL category (0-99%FPL) compared to the referent group (300+%FPL), however, the same was not observed among men. Further analysis of subgroups suggests that women who were younger (AOR 2.56, C.I. 1.22-5.34), Hispanic (AOR 2.55, C.I. 1.21-5.35), living in rural geographic regions (AOR 4.73, C.I. 2.39-9.37), or part-time employed (AOR 5.47, C.I. 1.73-17.27) had a greater odds of self-reporting hypertension among the lowest FPL group compared to the reference populations.

Conclusions: In this study of CA adults, there were strong, positive relationships between FPL and hypertension among women in the 0-99% FPL group compared to referent (300+% FPL) women. Future research should examine whether gender differences in family caretaking, child rearing, and housework impact the relationship between poverty and hypertension in CA.

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What Factors Explain How Yoga Works for Chronic Low Back Pain?

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Background: Systematic reviews of yoga for back pain have demonstrated moderate benefit for those with chronic back pain. For military populations, there is a higher prevalence of back pain due to intensive training and combat requirements. There has been very little empiric research on the mechanisms of yoga which is complex and not well understood.

Methods: We analyzed data from a 2016 study on yoga for chronic low back pain in military veterans. The intervention group received 12 weeks of 2x weekly yoga classes. There was a 2.48 point improvement in Roland Morris Disability Questionnaire (RMDQ) scores at a 6 month follow up compared to the control group (p =0.003, 95% CI -4.08, -0.87). We hypothesized that the change in scores on the Fatigue Severity Scale (FSS) at 6 months would mediate the effect of yoga on disability at 6 months. Mediational analysis model using the lavaan package in R, which is based on the work of Hayes (2013). Started with group assignment to yoga and looked at six physical mediators, self-efficacy and fatigue for two outcomes at 12 weeks and 6 months: back pain disability (measured with RMDQ), and recent experience of pain (measured with BPI)

Results: Our mediational analysis using included group assignment, fatigue, and disability scores. With bootstrapping, 26.3% of the total effect from the yoga intervention to RMDQ scores can be accounted for by indirect effect through the mediator change in fatigue severity at 6 months (p = 0.027, 95% CI 0.013, 0.157). Analysis of the mediated effects of self-efficacy and physical measures produced no significant results on back pain disability or pain severity.

Conclusions: In this hatha yoga intervention for back pain in veterans, physical factors did not contribute significantly to the outcomes of disability and pain severity. Fatigue was a significant mediator of disability, but not with pain severity. Fatigue is a well-documented contributor to chronic pain. These results signal a need for further study of how yoga affects fatigue. Further work is indicated with different data sets to confirm the results under similar and different types of yoga interventions.

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HealthDAT.org: Facilitating Research Partnerships, Building Capacity of Community Based Organizations, and Encouraging Community Engagement

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Background: Often, the results of academic research do not reach the intended audience; local communities and the organizations within them may be unaware of and/or unable to effectively utilize research findings to promote health. The Dissemination, Implementation and Improvement (DII) Science movement grew out of a need to address this problem.

San Diego County is geographically and demographically unique, bordering the Pacific Ocean and Mexico. Across and within neighborhoods, the population varies greatly in SES, acculturation, and languages spoken. DII researchers must understand and embrace these unique neighborhood-level characteristics in order to effectively recruit from, collaborate with, and intervene in communities. This is possible only if researchers have access to local data, community-based organizations and leaders, and information about existing efforts to improve neighborhood health. Community organizers need this information and to identify local academics able to collaborate to implement relevant research.

HealthDAT San Diego is a free, user-friendly online platform that strives to address this need by providing 1) visual neighborhood-level health indicators, demographics, behaviors, and social determinants of health; 2) descriptions of best practices to address health issues; 3) neighborhood resources that address these issues; 4) links to community-engaged academics interested in collaborating; and 5) links to existing local collaboratives.

Methods: A multidisciplinary team from the University of California, San Diego and San Diego State University was formed to create the HealthDAT data platform. The Executive Team drove the overall vision by working with community partners to identify relevant indicators and data sources; define best practice criteria; define, locate and categorize community resources; and solicit academics willing to collaborate. Guided by the principles of human centered design, the platform was designed with iterative feedback from the end-users – the San Diego community.

Results: Preliminary evaluation results demonstrate strong utility, acceptance, and usability among key informants.

Conclusions: The ultimate goal of HealthDAT San Diego is to be a tool for the implementation of precision public health through facilitating research partnerships, building the capacity of community-based organizations, and encouraging community engagement.

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The Association of Tuberculosis and Tobacco Usage in India DHS 2015-2016

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Background: Tuberculosis and tobacco usage are twin epidemics in India causing massive loss of life and productivity. We aimed to determine if there is an association between the use of any tobacco product and the prevalence of Tuberculosis.

Methods: Data were from 112,122 men and 699,686 women who completed a cross-sectional study conducted by the Demographic Health Survey in India from 2015-2016. The study was a two-stage, the first stage divided country into 28,565 clusters which were chosen based on population density, second 22 household were randomly chosen from each cluster. I created a new exposure variable for different methods of tobacco usage such as smoking combustibles (pipes, cigarettes, cigars), smokeless tobacco (paan with tobacco, gutkha/paan masala with tobacco, chewing tobacco, snuff), bidis, hookahs and multi-tobacco usage (combination of multiple tobacco methods) with nonsmokers as the reference with a secondary exposure of each individual tobacco method (combustibles, smokeless, bidis, hookahs) as a dichotomous variables. The outcome was the answer to the dichotomous question, “Do you suffer from Tuberculosis?”. I used multivariable logistic regression models to analyze the association of covariates.

Results: The multivariable analysis shows that bidis users are 1.58 (95%CI .99-2.52) times more likely to suffer from tuberculosis compared to non-tobacco users. After stratifying by sex and urbanicity, men who use bidis were 1.75 (95% CI 1.06-2.87) time more likely to suffer from tuberculosis then non-tobacco users. Rural users were 2.85 (95%CI 1.15-7.02) times more likely to suffer from tuberculosis then non-tobacco users.

Conclusions: This study shows that there is a relationship between tobacco usage and tuberculosis especially among Indian men who live in rural areas and use bidis. Future studies should look at the length of tobacco use and better cessation methods.

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Association between depression and marijuana use among United States adults, 2015-2016

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Background: The recent trend of the legalization of marijuana has brought forth many questions regarding its effect on mental health outcomes, particularly depression, as the exposure to marijuana becomes more prevalent. In this study, I evaluate where depression was associated with marijuana use

Methods: Data were drawn from the 2015/2016 National Health and Nutrition Examination Survey (NHANES) and included 3,425 adults in the U.S. aged 18-59 who responded to the question about marijuana use and were included in the datafile for public release. Depression was assessed using the PHQ-9 scale with the dichotomous outcome no depression, defined as those who scored as minimally to mildly depressed, and current depression defined as those who scored as moderately to severely depressed. Participants were categorized as current marijuana users, those who used at least 30 days ago, past users, those who used more than 30 days ago, and never marijuana users. Multivariable logistic regression was used to analyze associations between depression and marijuana use overall and stratified by smoking status. A sub-analyses was performed to assess the association between depression and frequency of marijuana use, among current marijuana users.

Results: After covariates, current marijuana use was positively associated with depression, compared to those who had never smoked marijuana (OR: 1.87, 95% CI: 1.04, 3.36). Stratification by smoking status revealed a positive association in those who had never smoked cigarettes and depression and current marijuana users (OR: 3.15, 95% CI: 1.35, 7.32). Sub-analyses of frequency of marijuana use and depression revealed a positive association between heavy marijuana users and depression (OR: 1.58, 95% CI: 0.75, 3.31) compared to light users.

Conclusions: Current marijuana users were 87% more likely to have depression compared to those who have never smoked marijuana. The odds of depression were elevated 58% among heavy users vs light users. Future studies should combine more than 2 dataset years of the NHANES study and determine a universal method of determining frequency of marijuana use.

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Assessing the Association Between Adults Receiving Food Stamps Benefits in California and Type 2 Diabetes: California Health Interview Survey, 2016

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Background: Diabetes is a serious disease that affects over 30 million people in the United States. Type 2 diabetes is the most common form of diabetes and can be prevented through healthy eating, lowering body weight, and increasing physical activity. Eating healthy, however, can be a barrier to managing and treating type 2 diabetes. It can be especially difficult for people receiving food stamps to use their benefits towards healthy foods while ensuring that everyone in their household gets enough food. California offers four main supplemental food programs to aid families and individuals with little to no resources. It is important to understand how people who receive food stamps benefits and are food insecure are affected by type 2 diabetes.

Methods: The study included 21,055 adults who participated in the California Health Interview Survey (CHIS) in 2016. All missing data was accounted for by using imputation methods and were weighted for population-based statistics. The exposure variable was assessed by combining three questions into a dichotomous variable, asking if they receive benefits from at least one source. The outcome variable was dichotomized by self-reported type 2 diabetes versus no diabetes or type 1 diabetes. After utilizing a Directed Acyclic Graph (DAG) approach to finalize the model, logistic regression was computed by estimating an odds ratio and confidence intervals as the measure of association.

Results: The majority of the participants did not have type 2 diabetes (92%) and were not receiving food stamps benefits (87%) at the time of the interview. The results of the regression analysis show the odds of type 2 diabetes among those receiving food stamps benefits were 1.05 (95% CI=0.71, 1.55) times greater than those not receiving food stamps benefits, after adjustment for all covariates.

Conclusions: Overall, no association was shown between type 2 diabetes and those receiving food stamps benefits after adjusting for all confounders; however, this association should be investigated further with improved assessments of diabetes. By better understanding the relationship between type 2 diabetes and food stamps, we can improve food supplement programs that largely affect people without access to healthcare.

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Demographics, Clinical Characteristics, and Management of Detainees with Syphilis in US Immigration and Customs Enforcement Health Service Corps-Staffed Facilities, 2014 to 2018

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Background: The United States has experienced a steep incline in syphilis rates over the past two decades. Left untreated, serious health consequences may occur including infection of the central nervous system, blindness, and death in rare circumstances. Little information is published on rates of syphilis among those entering the US from abroad.

Methods: A retrospective chart review of all adult detainees with syphilis infection while detained at Immigration and Customs Enforcement Health Service Corps (IHSC)-staffed facilities nationwide between January 2014 to June 2018 was performed. Demographic, clinical, and management information was abstracted from the electronic health record. The percentages of detainees screened for syphilis and the rates of syphilis per year in IHSC-staffed facilities were calculated.

Results: There were 319 detainees with syphilis between January 2014 and June 2018. The majority were male (72.1%) and from Mexico (37.8%). The average age was 37 (range 18-72). Of detainees with active syphilis infection in custody for greater than 30 days following diagnosis, 93.6% were prescribed treatment and 91.3% of them completed treatment. The number of detainees screened for syphilis within IHSC-staffed facilities rose from 1.9% in 2014 to 3.0% in 2018. The rate of syphilis increased from 26.3 cases per 100,000 in 2014 to 95.2 cases per 100,000 in 2018.

Conclusions: Syphilis rates are increasing among detainees in IHSC-staffed facilities, similar to the trend seen nationwide. A broad screening strategy is warranted given that the vast majority (93%) have asymptomatic (latent) infections. Testing and treatment of syphilis in immigrant detention is an important strategy to help minimize syphilis infection in a population that may face barriers to healthcare access in the US.

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A multi-level geospatial study of the impact of government-subsidized cervical cancer screening programs in California

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Background: Despite the implementation and successes of cervical cancer screening programs, not all counties in California have comparable invasive cervical cancer incidence rates. Previous studies have shown that individuals in rural geographic areas have increased risk of late stage cervical cancer diagnosis. The purpose of this study was to determine the spatial distribution of government-subsidized programs for cervical cancer screening and to evaluate the impact of spatial proximity to such programs on the incidence of invasive cervical cancer, accounting for confounding by individual and community-level characteristics.

Methods: We accessed individual data from the California Cancer Registry including any histologically confirmed invasive cervical cancer cases diagnosed between 2010 and 2015 who were not diagnosed at autopsy (n = 7,688 cases). We classified screening programs by exact location using data from the Every Woman Counts website. Every Woman Counts (EWC) provides free breast and cervical cancer screening and diagnostic services to California's underserved populations. Data from the American Community Survey were used to assess contextual factors at the county and medical study service area (MSSA) level. We calculated 5-year age-adjusted rates of cervical cancer incidence at the county level and used Poisson regression to assess the county-level impact of EWC programs on cancer incidence. Hierarchical logistic regression models were used to assess individual-level proximity to EWC on stage at diagnosis (early vs. late). For all models, directed acyclic graphs (DAGs) were used to determine a minimally sufficient set of covariates needed to control for confounding.

Results: From 2011-2016, county incidence rates ranged from 4.89 diagnoses per 100,000 person-years in Santa Clara County to 10.25 diagnoses per 100,000 person-years in Tulare County. EWC programs were not evenly distributed and were more often located in regions that were highly populated. Adjusted, county-level ecologic results showed no associations between a county's number of EWC screening programs and age adjusted incidence rates of cervical cancer. Individual-level mixed models show that, after adjusting for patient age, patient insurance type, patient race/ethnicity, patient SES quintile, year of diagnosis, and neighborhood racial composition, the odds of being diagnosed with late stage invasive cervical cancer do not increase in MSSAs with no government-subsidized programs relative to those that have at least one program (AOR 1.01 95% CI 0.91 – 1.12). After stratifying these results by patient SES quintile, there was no change in the adjusted odds for any quintile.

Conclusions: Although the number of EWC programs in California do not seem to be associated with invasive stage cervical cancer, 42% of MSSAs do not currently have an EWC program. This project will fill a gap in the scientific body of literature by quantifying the effects of selected contextual factors on invasive cervical cancer incidence while updating the scientific literature regarding cervical cancer in California.

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Association between Dietary Acid Load and Inflammatory Biomarkers in Breast Cancer Patients

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Background: Women who had breast cancer are at an increased risk of cancer reoccurrence and other comorbidities such as: obesity, hypertension, diabetes, dyslipidemia and decreased bone mass, because of the late effects of cancer treatment and normal aging processes. The biomarker C-reactive protein (CRP) can be a marker of general health, longevity, frailty, and overall breast cancer survival. Elevated CRP levels at the time of diagnosis are associated with reduced overall and disease-free survival and with increased risk of death from breast cancer. Hemoglobin A1c (HbA1c), representing long-term blood glucose levels, is a significant predictor for incidence of diabetes, cardiovascular disease and all-cause mortality, as well as breast cancer survival. Breast cancer women have higher risk of diabetes and other comorbidities, studying dietary acid load in relation to CRP and HbA1c among breast cancer women will provide valuable information on the impact of dietary acid load on comorbidities and underlying biological mechanisms.

Methods: Using a cross-sectional design, we analyzed data collected from 3088 breast cancer survivors enrolled in the Women's Healthy Eating and Living (WHEL) Study who had provided detailed dietary intakes through 24-hr recalls and plasma measures of CRP and HbA1c.

Results: We found positive associations between dietary acid load and plasma CRP and HbA1c. In multivariable adjusted models, compared to women with the lowest quartile, women with the highest quartile intakes of dietary acid load had a 30% increase CRP and a 6-9% increase of HbA1c after adjustment of total calorie intake, age, body mass index, stage of breast cancer, hormone receptor status, type of chemotherapy and other covariates.

Conclusions: Our results for the first time demonstrate that positive associations between dietary acid load and CRP and HbA1c exist in breast cancer patients. Our study identifies a novel dietary factor that may lead to inflammation and hyperglycemia, both of which are strong risk factors for breast cancer recurrence and other comorbidities.

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Human Immunodeficiency Virus (HIV) Seroprevalence and Behavioral Epidemiology Risk Survey (SABERS) among Active Duty Military Members of the Armed Forces of Liberia

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Introduction: In 2016, the estimated HIV prevalence in the general population of Liberia was 1.6%. However, the prevalence among service members in the Armed Forces of Liberia (AFL) was unknown. Understanding the burden of HIV and identifying associated risk behaviors is important to develop appropriate programs and interventions. The purpose of the SABERS was to estimate the prevalence of HIV among military personnel and describe associated risk behaviors.

Methods: From April-May 2018, all active duty AFL personnel were invited to participate in this cross-sectional study. All consenting participants received pre- and post-test counseling and underwent rapid testing for HIV. Demographics, risk behaviors, and HIV knowledge (independent variables) were collected through a personal interview. Descriptive statistics were conducted. Bivariate associations of independent variables with a positive HIV status were performed. All statistical tests were two tailed with $p<0.05$ considered statistically significant.

Results: A total of 1583 participants consented to participate (n = 1477 men; n = 106 women) and were tested for HIV. Five participants who tested indeterminate for HIV were excluded from the analysis. Data for the remaining 1578 participants were analyzed. HIV prevalence was 1.8% (n = 29) and did not differ significantly by sex (p = 1.00).

While no statistically significant differences in risky sexual behaviors by HIV status were observed, there were high proportions of risky behaviors in general. Around 15% of participants (n = 242) reported having sex with ≥ 1 sex worker in the past 12 months and only 37.8% (n = 91) reported always using condoms with a sex worker. Condom use with casual partners was also low. Of 758 participants (48.1%) who reported having ≥ 1 casual partner, only 21.9% (n = 165) reported always using condoms with that partner in the past 12 months. A total of 14.4% of participants (n = 150) reported that alcohol consumption prevented correct condom use and 11.8% (n = 123) reported that alcohol consumption caused unintended sex. Additionally, 18.9% (n = 21) of those who indicated drug use (n = 111) reported that drug usage prevented correct condom use.

All participants who reported that they had previously tested for HIV were asked to self-report their HIV-status. Among the 29 participants who tested positive for HIV, 8 (27.6%) self-reported they already knew their HIV-positive status, 13 (44.8%) self-reported as HIV-negative, 7 (24.1%) didn't know their status, and 1 (3.5%) preferred not to answer. Of the 8 participants who knew their HIV-positive status, 7 (87.5%) reported they had known their status for more than 12 months and 1 (12.5%) reported they had known their status for 6-12 months. Six of the 8 participants reported currently taking anti-retrovirals (ARVs). Two were not on treatment.

Conclusion: Although no statistically significant differences in risky behaviors by HIV status were observed, an alarming proportion of risky behaviors were identified among this population. Risky behaviors include encounters with sex workers and casual partners and low condom usage with these partners. A high proportion of participants also reported that alcohol or drug use prevented correct condom usage. The use of a risk assessment tool to test, treat and educate military personnel at higher risk for HIV/STIs is recommended. It is also recommended to test and treat the sex worker population around military bases to prevent transmission through sex worker networks. Pre-exposure prophylaxis for HIV is also recommended for high risk HIV-negative personnel as well as the sex worker population. While most of the participants who self-reported as HIV-positive were on ARVs, providing treatment for newly diagnosed HIV-positives should remain a priority, in addition to preventative actions for high risk HIV-negative individuals.

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The association between unhealthy dietary habits and psychological distress among adults (18+ years old) in California

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Background: Dietary intake is closely related with people's overall health, including mental health, and people's mental status can also affect their food choices. The objective of this study was to examine the association between soda/fast food intake and psychological distress status among California adults.

Methods: I included 20,916 adults from the 2016 California Health Interview Survey (CHIS) data set. Dietary habits were assessed through the consumption of soda during the past month and fast food during the past week. I categorized the frequency of consumption into ever/never or either/both consumption of soda/ fast food. Psychological distress was assessed under the mental health section of the questionnaire, and severe psychological distress is determined by the Kessler scale with scores equal or higher than 13. We used bivariable and multivariable logistic regression to examine the association, analyzing the odds ratio of experiencing severe psychological distress with different soda/ fast food consuming habits.

Results: An estimated 3.95% of the participants reported experiencing severe psychological distress within the past 30 days. Bivariable analysis showed that soda or fast food consumption were associated with higher odds (soda: OR 1.69, 95% CI 1.47-1.95; fast food: OR 1.48, 95% CI 1.28-1.72) of having severe psychological distress as compared to no soda or fast food consumption. After adjusting for significant confounding factors, specifically, age and annual household income, the multivariable logistic regression showed that the odds of having severe psychological distress were highest (AOR 1.38, 95% CI 1.13-1.69, p-value 0.0017) for those who indicated both soda and fast food intake as compared to those who indicated neither soda or fast food intake.

Conclusions: Adults with consumption of fast food/ soda is significantly positively associated with experiencing severe psychological distress within the past 30 days. Unhealthy dietary choices, such as soda and fast food, can be a strong influencer to mental illness.

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The Association Between On-Time Initiation and Completion/Up-To-Date (UTD) of the Human Papillomavirus (HPV) Vaccination Series Among Adolescents aged 11-17 in San Diego County

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Background: The human papillomavirus is a widely spread disease that has over 150 different strains, 40 of which are cancerous, it is also the most widely spread sexually transmitted infection in the United States. With its approval by the U.S Food and Drug Administration (FDA) in 2006, the HPV vaccine has been available to individuals as early as 9 years old to protect against the most common strains of HPV. However, this effective preventative method has been underutilized. The vaccine is especially effective among younger adolescents who receive the vaccine before their sexual debut but is not being administered effectively among this age group. Nationally, younger age has been associated with completion of the vaccine series, but no information is present for the unique and diverse population in San Diego County. The purpose of this study is to examine the association between on-time (age <13) and completion of the series.

Methods: Data was collected using random-digit telephone dial survey by the County of San Diego Health and Human Services Immunization Branch in 2016 to 2017. A directed acyclic graph was used to guide in selecting covariates and a bivariate and multivariate logistic regression was conducted. The multivariate results were stratified by sex and race due to theoretical interaction.

Results: A total of 408 cases with at least one dose of the HPV vaccine were selected from 901 total respondents for the survey. There was a significant difference found among sex, race/ethnicity, mother's education level, up-to-date status of the Tdap vaccine, provider type, and Medi-Cal insurance coverage (each of these variables had a $p<0.05$) by uptake of at least 1 dose vs no dose. In a bivariate analysis on-time initiation was significantly associated with completion of the series (OR 1.861, 95% CI: 1.174, 2.950). There was significant interaction found therefore the final multivariate results were stratified by sex and race. On-time initiation of the HPV vaccine series was significantly associated with completion of the HPV vaccine series among boys (AOR 1.100 95% CI: 1.014, 1.193) and non-Hispanic adolescents (AOR 2.205 95% CI 1.089, 4.466) but was not found to be significantly associated with female or Hispanic adolescents.

Conclusion: On-time initiation of the HPV vaccine series is significantly associated with completion of the series especially among male and non-Hispanic adolescents. Early or on-time initiation is important not just for the completion of the HPV vaccine series but also to maximize protection from HPV-related infections and diseases.

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A Comparison of Vaccination and Hospitalization Among Pediatric Pertussis Cases in California By Language of Interview

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Background: During the 2014 outbreak in California, 72% of pertussis cases were among Hispanic infants under 4 months of age. Hispanic infants were not only more likely to be infected with pertussis but were also more likely to be hospitalized or die. Children born to foreign-born parents are at higher risk of adverse events due to the lack of healthcare utilization and knowledge. The purpose of this study was to investigate the rates of hospitalization and Tdap vaccination among pediatric pertussis cases by the mother's language.

Methods: Data from the California Department of Public Health on pediatric (0-17 years old) pertussis cases from 2011- 2015 was used for this study. The language of the interview was used as a proxy for foreign-born status. Chi-Square tests were conducted to determine the significant difference in the proportion of hospitalization and vaccination among those whose mothers spoke English or Spanish during the interview. These were further compared by specific age categories.

Results The sample included 8,443 cases that had complete data on language, 3,009 0-6-year-olds and 5,434 7-18-year-olds. Among the 0-6-year-olds, Spanish-speakers were significantly younger than the English-speakers ($p=0.001$). When stratified by age, Spanish-speakers had a higher proportion of vaccinated individuals except for in children under four months even though they had a higher proportion of hospitalization. When further analyzed among Hispanic children, those born to Spanish-speaking mothers were more likely to be hospitalized as well. Among 7-18-year-olds, children born to Spanish speakers were also significantly younger than English-speakers were. Vaccine coverage among Children 7-18 was very high overall (>90%) but Spanish-speakers had a significantly higher proportion of vaccinated children across all age categories than their English speaking counterparts ($p<0.0001$).

Conclusion: Except for children under 4 months, children born to Spanish speaking mothers were more likely to be vaccinated but were also more likely to be hospitalized. Greater efforts into increasing vaccination among foreign-born mothers during pregnancy and among children at the recommended 2 months would greatly decrease the risk of death and hospitalization.

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Banning Butts on Beaches: Does It Decrease Environmental Pollution?

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Background: Cigarette butts contribute to toxic beach pollution and account for approximately ⅓ of the trash collected from San Diego beaches. To combat the health and environmental hazards, San Diego County bans smoking on beaches. However, it remains legal to smoke on most California state beaches in the county. To evaluate the effects of the ban, we examined signage and waste bins, compared numbers of butts collected on beaches with and without smoking restrictions, and assessed enforcement attitudes of lifeguards and police.

Methods: We used ArcGIS to match three no-policy beaches (Torrey Pines, Silver Strand, and Cardiff) with three policy beaches (La Jolla Shores, Coronado, and Moonlight) based on proximity and community sociodemographic factors. Data collection forms were developed in Survey123 to geolocate and record the quality of signage at three San Diego beaches with smoking bans and to map and measure the average distance in meters of trash cans on all six beaches. Between January and April 2019, we performed three butt collections on a 500m2 standardized area for each beach closest to the access points. Analyses were stratified by beach utilization based on mean visitors/month (low: <126,000/mo; high: ≥126,000/mo). T-tests were used to analyze differences in mean distances between trash cans and mean butt counts on beaches with and without the smoking ban. Finally, we conducted in-depth interviews with police and lifeguards to assess their attitudes about the policy enforcement.

Results: For beaches with smoking bans, sign number varied from 5-33; 43.2% were unreadable. The average distance between trash cans was three times as high for beaches without the ban compared to beaches with the ban, but the difference was not statistically significant (63.6 meters versus 20.2 meters; p=0.2). Few butts (<5 per collection) were found on low-utilization beaches. The mean number of butts/collection on highly utilized beaches without the ban was significantly higher than on highly utilized beaches with the ban (34.7 versus 7.5/collection; p=0.01). In-depth interviews revealed that lifeguards and police mainly prioritize safety, but have no problems citing smokers. They also report that most people readily comply when informed of the ban.

Conclusion: Beachgoers may not be aware of policies due to poor quality and low quantity of signage, and police officers and lifeguards do not see smoking ban enforcement as a priority. We nonetheless observed a significant decrease in cigarette butt pollution on highly utilized beaches with the smoking ban policy in comparison to beaches with no smoking ban. Limitations included the small number of beaches in our sample and difficulty of identifying truly comparable beaches, the relatively low winter beach traffic, and frequent heavy rains, which may have washed away some butts. Additional systematic butt counts on more beaches over a longer period that includes summer months may yield important quantitative data on efficacy of smoking bans. Further efforts are needed to raise awareness and efficacy of the smoking ban.

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The Struggle is Wheel: Evaluation of UCSD's Electric Scooter Guidelines

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Background: Electric scooters (e-scooters), which first appeared at UCSD in September 2018, are an accessible and inexpensive form of transportation that nonetheless may cause severe injuries to passengers and pedestrians. UCSD's Police Department has developed guidelines for e-scooter use, but little is known about levels of compliance, student awareness of guidelines, enforcement of violations, and the number of e-scooter related injuries.

Methods: To assess compliance with campus guidelines, we conducted video surveillance using time-location sampling. We developed a sampling frame list that included location (nine high-risk campus sites indicated by the campus police), days (Monday-Friday), and peak transit times (7:30-9:30AM; 11:30-1:30PM, and 4:30-6:30PM), and randomly selected 24 time-location units. Between February and March 2019, we filmed 15-minute video recordings at the selected sites, days, and times; counted the number of pedestrians, e-scooters, bicycles, and skateboards; calculated the ratio of the three types of personal mobility devices (PMD) per 1000 pedestrians; and identified episodes of misuse for each based on UCSD Police guidelines. To assess student guideline awareness and e-scooter concerns, we conducted a student survey of on-campus residents at 3 randomly selected residence halls and of off-campus residents at 3 commuter lounges and 2 bus stops. Students accessed our Google Form survey on their cellphones through its built-in QR code reader. Data were analyzed using Epi Info 7 and RStudio. The UCSD Police Department provided data on PMD-related 911 and helpline calls from January 2018 to February 2019 and on all PMD-related citations for September 2018 through March 2019.

Results: Over the 24 sessions, we observed 5,099 pedestrians, 94 e-scooter riders, 417 cyclists, and 255 skateboard riders, yielding ratios of 18.4, 81.8, and 50.0 per 1000 pedestrians, respectively. A total of 93% of e-scooter riders violated guidelines, compared with 31% of bike riders and 37% of skateboard riders. Almost all (98%) of e-scooter violations were because the rider did not wear a helmet, a guideline that did not pertain to skateboard and bicycle riders. In the student survey, 85% of the 162 participants perceived that their fellow UCSD students were unaware of e-scooter guidelines. Leading e-scooter concerns were injuries (57%), haphazard parking (46%), and the areas where scooters are being ridden (38%). Based on our video surveillance, e-scooters accounted for 12% of all PMDs; according to campus 911 data, they accounted for a similar proportion (14%) of all PMD-related emergency 911 calls. Of the 50 citations given in the last two quarters, 18% were issued to e-scooter riders.
Conclusions: Awareness and compliance with campus e-scooter guidelines are poor. Further efforts and surveillance are needed to effectively disseminate and enforce guidelines that balance the benefits and perceived risks of e-scooters on campus.

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Sources of Health Information for the Busy UCSD Student: Assessing the Effectiveness of the Campus Health Promotion Services' Health Messaging Program

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Background: The goals of UCSD's Health Promotion Services' (HPS) Health Messaging Program are to (1) increase awareness and participation in HPS programs and activities, (2) improve knowledge of healthy behaviors through peer-educator tabling and (3) provide counseling and services that promote student health and well-being. At HPS' request, we conducted a mixed-methods evaluation of the effectiveness of HPS in achieving these goals.

Methods: We used time-location sampling to survey students at four on-campus residential areas (two times per location) about their sources of health information and their awareness of and participation in four HPS activities (peer-educator tabling, meet with a health educator, nutrition counseling, and health workshops). We also surveyed students after they participated in peer-educator tabling activities (primarily related to alcohol and other drugs) at three campus events to determine whether pre-established student learning outcomes (SLOs) were met. All surveys were created using Google Forms and administered via QR code or tinyurl links. We subsequently conducted two focus groups (3-4 students each) to further understand students' health-seeking behaviors and experience with HPS. Descriptive statistics were used to characterize students' sources of health information, awareness and participation in HPS activities, and whether they met tabling activity SLOs. Audiotapes of the focus groups were transcribed and coded.

Results: The 120 students surveyed reported that they "often" or "always" seek health information from family (54%), the internet (53%) and from friends (24%); <1% sought information from HPS. Of the 53% who cited the internet as a frequent source, 86% used search engines and 70% went to generic wellness sites; only 12% sought information on UCSD's student health websites (12%). Overall, 89% of students were aware and 40% had participated in ≥1 HPS activity. Awareness and participation was highest for peer-education tabling (81% and 35%, respectively); for the other three HPS activities, awareness ranged from 49% to 64% and participation from 10% to 12%. Among the 143 students surveyed after peer-educator tabling activities, 78% met ≥1 of the activity's SLOs. Focus group data suggested that incomplete information about program content may contribute to low participation in HPS activities.

Conclusions: Students relied on family and the internet for health information; few sought information from HPS or used its website. Despite moderately high awareness of HPS activities, participation was low. Publicizing the UCSD health information website and providing greater knowledge of HPS program content through more active student health advisor and HPS staff outreach could improve awareness and participation in prevention programs and promote healthy behaviors among students.

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What Makes a Good After-School Program? Evaluating Enrollment of a YMCA After-School Program in San Diego

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Background: After-school programs provide safe and enriching environments for high school students. The Copley-Price YMCA in City Heights provides two such programs: Y-Strong Girls, emphasizing female empowerment and Y-Teen Achievers (Y-TAP), emphasizing health. In 2018, Y-Strong Girls achieved full enrollment, while few enrolled in Y-TAP. The majority YMCA program participants attend the adjacent high school, Hoover High, which has its own highly popular after-school program, IMIN. To identify enrollment influences for Y-TAP and other after-school programs, examine student awareness and perceptions of the YMCA, and provide input to the YMCA on designing an after-school program that meets student needs, we conducted focus groups with participants from both YMCA programs and IMIN, and surveyed IMIN participants.

Methods: We conducted four focus groups: one with Y-TAP (n=8), two with Y-Strong Girls (n=11), and one with IMIN (n=7) to examine student interests, factors affecting program participation, perceptions of the YMCA, and suggestions for program improvement. We recorded, transcribed, and coded themes for focus groups. Using these coded themes, we designed a cross-sectional survey in Google Forms that enrolled a purposive sample of 85 IMIN students participating in selected after-school activities and classes. Descriptive analysis were performed using Excel and Epi Info 7.

Results: Focus groups revealed that Y-TAP and Y-Strong Girls participants were enthusiastic about their programs and wanted to be involved in bringing awareness to YMCA teen programs to their peers. When asked to describe an ideal program, IMIN students described a program similar to Y-TAP, though none had heard of it. The survey revealed that the IMIN students preferred fun after-school programs (74%) over those that were only academically enriching. The most desirable program characteristics included free food (71.8%), safe spaces (51.8%), schedule flexibility (43.5%), supportive and energetic staff (24.7%), and organized workshops and events that cater to their interests (22.4%). Most IMIN students were unaware of Y-TAP (71%) and believed the YMCA was only a gym (87%). Many (57%) indicated that YMCA membership is a good incentive to join a YMCA program, and 39% who learned about Y-TAP through the survey reported being “likely” or “very likely” to enroll.

Conclusion: Local high school students are unaware of teen services provided by the YMCA. Our evaluation suggests the YMCA should use teen-friendly marketing strategies, such as posting flyers around the high school and having teen ambassador programs, to change student perceptions of the YMCA and increase program awareness and enrollment. We recommend Y-TAP update its workshops and events, program requirements, and application process to better meet students’ interests and facilitate after-school program enrollment.

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