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SESSION 1

Opioid and Overdose

1. Risk of Overdose Event among Incident and Prevalent Benzodiazepine Users
   Donovan T Maust, MD, MS1,2, Julie Strominger, MPH2, Jason Goldstick, PhD2, Amy Bohnert, PhD, MHS2,4
   1Department of Psychiatry, University of Michigan Medical School, 2VA Ann Arbor CCMR, 3Department of Emergency Medicine, University of Michigan Medical School, 4Department of Anesthesiology, University of Michigan Medical School

   Statement of Purpose: Benzodiazepines (BZDs) are associated with a number of safety concerns among older adults. While overdose (OD) receives less attention as a BZD-related adverse event, BZDs are the second-most common medication class involved in pharmaceutical overdose deaths, and overdose deaths involving BZDs increased more than six-fold from 1996 through 2014. BZD prescribing may be magnifying opioid-related morbidity and mortality among older adults.

   Methods/Approach: We conducted 2 separate retrospective cohort studies using a 20% random sample of Medicare beneficiaries from July of 2013 to September of 2015 to examine factors associated with OD with 30d of incident and prevalent benzodiazepine use. OD events were identified according to recommendations from the Injury Surveillance Workgroup using ICD-9 codes from emergency department or acute inpatient encounters. Our exposures of interest focused on the index BZD prescription and other prescription medications. Analyses were stratified by age (<65 and 65+) and adjusted for other clinical and demographic characteristics.

   Results/Conclusions: Among incident and prevalent BZD users, 0.74% and 0.50% had an OD event within 30d, respectively. Among both younger and older adults, current antipsychotic use was associated with increased risk of OD event among incident (1.7 [95% CI 1.5-2.0] and 1.7 [95% CI 1.5-1.9], respectively) and prevalent BZD users (1.3 [95% CI 1.2-1.5] and 1.4 [1.3-1.6]), as was opioid use among incident (1.5 [95% CI 1.3-1.7] and 1.8 [1.6-1.9]) and prevalent BZD users (1.5 [95% CI 1.3-1.7] and 1.7 [1.6-1.9]). Fewer days of medication prescribed was associated with higher risk of OD event (e.g., compared to 31+d, <14d among incident users 65+ associated had HR 2.4 [95% CI 2.0-2.9]).

   Innovation & Significance to the Field: The risk associated with BZD-antipsychotic co-prescribing is similar in magnitude to BZD-opioid prescribing, while prescribing fewer days of BZD is not associated with lower risk of OD events.

2. Implementing a Statewide Take Home Naloxone Kit Program in Michigan Emergency Departments
   Elizabeth G English, BS1, Joan Kellenberg, MS, MPH1, Gina Dahlem, PhD, FNP-C, FAANP2, Keith Kocher, MD, MPH3, Aaron Dora-Laskey, MD, MS4
   1Michigan OPEN, University of Michigan Department of Anesthesiology, 2University of Michigan School of Nursing, 3University of Michigan Department of Emergency Medicine, 4Michigan State University College of Human Medicine

   Statement of Purpose: The opioid epidemic has persisted and worsened during the COVID-19 pandemic. In 2020, over 93,000 people died from a drug overdose. The 2021 MDHHS Opioids Strategy includes naloxone distribution as a key intervention to reduce Michigan overdose deaths. Naloxone is an easily administered, life-saving strategy for patients with OUD or at risk for overdose. The emergency department (ED) is a critical access point for patients with opioid use disorder (OUD) and those who experience a nonfatal overdose. Our team implemented a take-home naloxone program with 21 EDs to increase access to naloxone and prevent future overdose deaths across Michigan.

   Methods/Approach: Michigan OPEN and MEDIC initially recruited 9 EDs in 6 geographically diverse counties. The team developed naloxone educational materials and county-specific cards listing naloxone standing order pharmacies. We assembled 6800 kits with the printed materials, gloves, a CPR face shield, and naloxone. Each kit was numbered with a label that included naloxone administration instructions. We conducted nurse trainings and facilitated protocol development for kit storage and distribution, and naloxone and kits were shipped to EDs. ED staff screened patients for those at risk for overdose, distributed kits, and submitted kit distribution data. In Year 2, we recruited 12 additional EDs in 8 different counties.

   Results/Conclusions: At the end of the Year 1 pilot funding, we had distributed 374 kits (March 2020 - September 2020) across 9 ED sites. During year 2, with the additional ED sites recruited, our program distributed 1719 kits by August 31, 2021.

   Innovation & Significance to the Field: To our knowledge, we are only the second state with a statewide ED take home naloxone program. We have demonstrated that the implementation of an ED-based take home naloxone program in Michigan is a feasible and sustainable harm reduction intervention.
3. Knowledge and Attitudes toward Naloxone Administration among Families Affected by Opioid Misuse
Emily Pasman, MSW1, Guijin Lee, PhD1, Danielle Hicks, MSW1, Sydney O'Shay, PhD2, Suzanne Brown, PhD1, Stella M. Resko, PhD1,3
1Wayne State University School of Social Work, 2Department of Communications Studies, Utah State University, 3Merrill Palmer Skillman Institute, Wayne State University

Statement of Purpose: Providing access to naloxone for families affected by opioid misuse is a practical and cost-effective way to reduce overdose deaths. However, research suggests community naloxone programs are not reaching affected family members. This study examines factors associated with knowledge and attitudes toward naloxone among family members of people who misused opioids.

Methods/Approach: Adults with a close family member who misused opioids (N=260) self-administered web-based surveys. Questions assessed their knowledge of naloxone administration and attitudes toward overdose response (i.e., self-efficacy, readiness). Other measures include demographics, completion of naloxone training, attitude toward medications for OUD, and whether their loved one had a history of overdose. Multiple regression was used to identify factors associated with naloxone knowledge (model 1) and attitudes toward overdose response (model 2).

Results/Conclusions: Family members whose loved ones experienced an overdose (B=0.305, p=.003) had greater knowledge of naloxone, while those that identified as a Person of Color (B=-0.369, p=.023) had lower levels of knowledge. Older age (B=0.12, p<.001), completion of naloxone training (B = 2.63, p < .001), and more positive attitudes toward medications for OUD (B=1.26, p=.017) were associated with more positive attitudes toward overdose response. Innovation & Significance to the Field: Findings provide direction for mobilizing affected family members in response to the overdose crisis. One-third of family members had received naloxone administration training; completion of naloxone training was associated with greater self-efficacy and readiness to respond to a drug overdose. Individuals aware that their loved one had experienced an overdose reported greater naloxone knowledge; however, naloxone education is important for family members regardless of overdose history. Findings related to demographics suggest a need for greater naloxone education among People of Color and younger family members (e.g., siblings). Public health approaches to educating family members and the broader populace about naloxone may help to reduce overdose fatalities further.

4. Risk Factors for Mixing Alcohol and Prescription Opioids among Young Adults in Michigan
Guijin Lee, PhD1, Emily Pasman, MSW1, Jennifer Ellis, PhD2, Danielle Hicks, MSW1, Rachel Kollin, MA1, Elizabeth Agius, Stella Resko, PhD1
1School of Social Work, Wayne State University 2Department of Psychiatry & Behavioral Sciences, Johns Hopkins University

Statement of Purpose: The mixing use of alcohol and prescription opioids is an emerging public health concern. Alcohol can have serious side effects by itself, and it can enhance the side effects of prescription opioids in unpredictable and dangerous ways. The purpose of this study is to identify risk factors for mixing alcohol and prescription opioids among young adults.

Methods/Approach: Young adults (aged 18-25) in Michigan were recruited to complete a brief online health survey in 2019 (N=1,751). Demographic measures included age (years), race (White/Black/Other), gender (male/female/non-binary), education (high school or less/over high school), and residence (urban/rural). Wellbeing level (14 items summed; Cronbach α=.946), prescribed opioid pain relievers in the past year, knowing someone who fatally overdosed, frequency of binge drinking (past month), perceived risk of prescription pain reliever misuse, and any past year mixing alcohol and prescription opioids (yes/no) were utilized. Logistic regression analysis was performed in Mplus with the full information maximum likelihood method.

Results/Conclusions: 31.5% of participants used mixing alcohol and prescription opioids in the past year. Logistic regression analysis indicates that lower wellbeing (b=-.001, p=.017), knowing someone who had a fatal overdose (b=.059, p<.001), more frequent binge drinking (b=.008, p=.001), past year opioid prescription (b=.084, p<.001), lower perceived risk of opioid misuse (b=-.104, p=.018), older age (b=.013, p<.001), and lower education (b=-.067, p<.001) were associated with a greater likelihood of mixing alcohol and prescription opioids. Innovation & Significance to the Field: Combining alcohol and prescription opioids is associated with an increased risk of overdose. This study identifies potential risk factors for mixing alcohol and prescription opioids among young adults. Given the negative association between perceived risk, education, and mixing alcohol and prescription opioids, harm reduction approaches explaining overdose risk may be needed for younger populations.
5. The ASAP Coalition’s Effective Partnerships in developing Prescription Opioid Overdose Prevention Approaches
Hala M Mallah, LLMSW1 and Mona Abdallah-Hijazi, MBA, MHA1
1ACCESS Substance Use Prevention Coalition

Statement of Purpose: The availability and social acceptability of prescription opioids contribute to youth opioid misuse in the community. Youth easily access prescription opioids and do not perceive them as harmful. Establishing effective partnerships in needed when developing new and collaborative opioid overdose prevention approaches.

Methods/Approach: CADCA’s Seven Strategies for Community Change guided our approach. We partnered with community sectors to broaden our reach. We partnered with local police departments to change the consequences of opioid overdose. This formed the SUD Advocate Program, where we connected people in substance use crises to the needed resources. We also partnered with Narcan trainers to train community members to recognize the signs of opioid overdose and administer Naloxone for overdose treatment. We joined the Southeast Michigan Alliance for Addiction-Free Communities (SEEMAC) and the Michigan Opioids Task Force to modify opioid misuse policies and to change the physical design of the environments contributing to overdose. We partnered with the local schools’ athletic departments, health care providers, and pharmacies to provide information on opioid misuse. We partnered with The Michigan Opioid Prescribing Engagement Network (Michigan OPEN) on a digital marketing campaign to prevent opioid-related harm by educating parents about the safe use of opioids for adolescents undergoing wisdom tooth extractions.

Results/Conclusions: We found effective partnerships to be crucial in developing new injury prevention approaches. Partnering with different organizations allowed for diverse viewpoints and contributions.

Innovation & Significance to the Field: This work utilized partnerships with community sectors to prevent opioid overdose from various angles. Cultural sensitivity guided this work and allowed us to respond to opioid overdose cases in empowering and appropriate ways. Partnering with the local police department changed the consequences of opioid overdose in the community.

6. Expansion of the Michigan System for Opioid Overdose Surveillance (SOS) to Inform Data-driven Community Response to Overdose
Holly Gurnik, Research Assistant1, Jason Goldstick, PhD2, Amanda Ballesteros, MPH2, Keara Sullivan, MPH2, Jessica Roche, MPH2, Patrick Carter, MD2, Rebecca Cunningham, MD2
1University of Michigan, School of Public Health, 2University of Michigan Injury Prevention Center

Statement of Purpose: Opioid overdose represents an urgent public health problem in the United States. A key barrier to addressing this problem is the lack of timely surveillance data, with data in many jurisdictions lagging by up to 18 months. In response to this need, the University of Michigan Injury Prevention Center partnered with the Michigan High Intensity Drug Trafficking Areas (HIDTA) to develop a near real-time opioid overdose surveillance system.

Methods/Approach: The System for Opioid Overdose Surveillance (SOS) collects and automatically cleans data daily from emergency medicine services (EMS) encounters where naloxone was administered, and from Medical Examiner (ME) records where overdoses are suspected (confirmation via toxicology reports are obtained 4 to 12 weeks later). Current coverage is 100% of the state through EMS, and MEs in counties totaling 80% of the state population. County-level summaries generated by SOS are viewable on a public web site. Authorized public health and public safety stakeholders have access to a dashboard that allows customizable demographic and spatio-temporal data summaries in near real-time. This dashboard was designed in part through an iterative process with stakeholders in two Michigan counties.

Results/Conclusions: Since its inception, SOS has released new features of the online dashboard based upon feedback gathered through qualitative work with community stakeholders. Work with these stakeholders suggests SOS can be used to improve planning, implementation, and response to opioid overdose in the community. Timely opioid overdose surveillance in Michigan can have broad implications for both public health and public safety, allowing for focused interventions and resource allocation in communities with the highest rates of opioid overdose.

Innovation & Significance to the Field: SOS’s multidisciplinary model can be replicated across the nation to inform data-driven opioid overdose prevention and response efforts with the ultimate goal of reducing overdose injuries and fatalities.
7. Enhancing Risk Perception may be Insufficient to Curtail Prescription Opioid Use and Misuse Among Youth
Rachel Lenko, BSN, RN, PhD Candidate1, Philip Veliz, PhD2, Justin Heinze, PhD3, John Grant, MD, PhD4, Shobha Malviya, MD5, Brian Zikmund-Fisher, PhD5, Harrison Bromberg6, Alyssa Kelly1, Alan Tait, PhD5, Terri Voepel-Lewis, PhD, RN7
1University of Michigan School of Nursing, 2University of Michigan School of Nursing, Department of Systems, Populations and Leadership, 3University of Michigan School of Public Health, Department of Health Behavior & Health Education, 4University of Michigan, Department of Orthopedic Surgery, 5University of Michigan, Department of Anesthesiology, 6University of Michigan College of Literature, Science, and the Arts, 7University of Michigan School of Nursing, Department of Health Behavior and Biological Sciences

Statement of Purpose: This randomized, controlled clinical trial evaluated the impact of an interactive, web-based risk education program on analgesic misuse risk perceptions and prescription opioid use and misuse among adolescents and young adults who were prescribed opioids to manage postoperative pain. Methods/Approach: With IRB approval and informed consent, 459 participants aged 15-24 years were randomized to routine education versus the Scenario-Tailored Opioid Messaging Program (STOMP) provided prior to receipt of a prescribed opioid for postoperative pain management. Participants completed up to 4 follow-up surveys through 3 months assessing their risk perceptions, analgesic trade-off preferences (i.e., the degree to which participants valued pain relief over analgesic risk), opioid use and misuse intentions/behaviors. Results/Conclusions: Compared to Controls, STOMP was associated with higher risk perceptions on day 14 (β=1.76 [95% CI 0.53, 2.99], p=.005) and month 3 (β=2.13 [1.41, 2.39], .001), but there was no effect of STOMP on risk perceptions on days of opioid use or subsequent misuse intentions/behavior. Instead, prolonged opioid use was associated with postoperative pain intensity (OR 1.84 [95% CI 1.41, 2.39], p=.001), analgesic trade-off preference (OR 1.22 [1.05, 1.41], .009), and higher substance use behaviors at baseline (OR 1.31 [1.08, 1.58], .005); while misuse intention/behavior was associated with pain interference at months 1-3 (OR 0.96 [0.93, 1.00], .044), analgesic trade-off preference (OR 1.09 [1.02, 1.17], .015), and prolonged opioid use (OR 3.31 [1.11, 9.87], .032). Innovation & Significance to the Field: Our interactive, web-based educational program did not decrease prescription opioid use or misuse behavior/intentions. Rather, our findings suggest that pain itself, and preferences around analgesic benefit, may be more important targets for intervention than risk perceptions in order to mitigate misuse behavior in this vulnerable group.

8. Correlates of Prior Substance-Related Overdose Experiences among Adolescents and Young Adults in the Emergency Department Reporting Recent Opioid Use
Tiffany D Wheeler, BA1, Linnea Bacon, BS, BA1, Meredith Kotov, MS, CCRP1, Carrie Bourque, MS, LLP1, Erin E Bonar, PhD2, Amy SB Bohnert, PhD, MHS2, Patrick M Carter, MD3, Eve D Losman, MD3, Maureen A Walton, PhD, MPH2
1Michigan Medicine Psychiatry Substance Abuse Department, 2Michigan Medicine Psychiatry Department, 3University of Michigan Department of Emergency Medicine,

Statement of Purpose: Prevention of opioid misuse and overdose is a public health priority. Herein we describe characteristics and overdose experiences (OEs) of young patients from the emergency department (ED) participating in a randomized controlled trial (RCT) of an opioid misuse and opioid use disorder prevention program. Methods/Approach: Adolescents and young adults (ages 16-30) in the ED complete a screening survey, and those reporting past-year opioid misuse or opioid use plus an additional risk factor (e.g., recent substance use, depression, suicidality) complete a baseline survey prior to RCT enrollment. RCT conditions include: a control group, a virtual health coach session, 30-day portal messaging, or both. Data herein were reported at baseline enrollment (January-September 2021). Results/Conclusions: N=277 participants (27.1% male; M_age= 24.0) completed the survey; 19.5% reported opioid misuse and 80.5% reported opioid use (plus a qualifying risk factor). Substance use (past 3 months) and mental health concerns were common: 61.7% had cannabis use, 76.2% reported alcohol use, 38.3% indicated other drug use, 49.5% had a positive depression screen, 11.9% reported recent suicide ideation, and 4.3% reported a past-year suicide attempt. Notably, 37.5% reported lifetime OEs. Regarding the most severe OE, intent was reported as: 68.3% accidental, 26.7% on purpose (didn’t care about risks) and 5.0% on purpose (wanted to die). OE symptoms included blackouts (58.6%), nausea/vomiting (36.4%), lost consciousness (20.1%), heart beating too fast/slow (15.5%), or other (13.2%; e.g., breathing problems, skin pale/blue, convulsions, heart attack). Substances used before OEs included cannabis (17.6%), alcohol (7.9%), opioids (8.2%), sedatives (5.4%), stimulants (3.5%) and other (5.3%); 43.7% involved multiple substances. Compared to those not reporting OEs, those with OEs had significantly more drinking, symptoms of depression and anxiety, and loneliness and stress related to COVID-19. Innovation & Significance to the Field: Findings support the need for opioid-related injury prevention efforts addressing poly-substance use, mental health concerns, and OEs.