accommodation, and complex tandem gait. Primary outcomes included self-reported lifetime concussions (1 vs. 2+), VVE subtests (normal/abnormal for each), and total VVE score (abnormal= 2+ abnormal subtests). A multivariable logistic regression was employed to determine if recurrent concussion was associated with abnormal VVE outcomes while controlling for age.

Results One thousand fifty-two patients were included in analysis (age=15.6±1.2 years). Five hundred and nineteen (49.3%) presented with a recurrent concussion (median lifetime concussions=3, IQR=2,3). When controlling for age, there were no significant associations between first vs. recurrent concussion and VVE outcome on any of the 9 subtests or total VVE score ($P>0.05$).

Conclusion First vs. recurrent concussion is not associated with abnormal VVE outcomes in high school-aged patients. Our findings suggest that patients with a concussion history present with similar visio-vestibular function to those with no concussion history at initial visit following injury.

Significance Recurrent concussions have been associated with cumulative clinical deficits and longer recovery in collegiate athletes. This study provides novel insight into the initial presentation of pediatric concussion patients with and without a previous concussion history. Additionally, our study adds formative data regarding cumulative clinical effects of concussion in younger athletes.

Alcohol and substance abuse

0049

WITHIN-PERSON PREDICTORS OF SAME DAY ALCOHOL AND PRESCRIPTION OPIOID USE AMONG YOUTH PRESENTING TO AN URBAN EMERGENCY DEPARTMENT

¹J Goldstick, ²E Bonar, ¹M Myers, ³A Bohnert, ²M Walton, R Cunningham ³. ¹University of Michigan Injury Prevention Center, Ann Arbor, USA; ²Department of Psychiatry, University of Michigan School of Medicine, Ann Arbor, USA; ³University of Michigan, Ann Arbor, USA

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Statement of purpose To use longitudinal data collected from youth presenting to an urban emergency department to determine predictors of within-person changes in alcohol and prescription opioid same day use frequency.

Methods/Approach Research assistants recruited youth age 14–24 reporting past-six-month substance use into the Flint Youth Injury study from 11/2009–9/2011 ($n=599$; 349 violently-injured at baseline). Participants self-administered validated measures of alcohol use severity, cannabis use severity, mental health symptoms, social support/influences, and violent injury at baseline and four biannual follow-ups. In addition, participants completed Time Line Follow Back calendars (baseline: 30-days; follow-ups: 90-days) which allowed ascertainment of same day use of alcohol and prescription opioids. We calculated the prevalence of same day alcohol and prescription opioid at each follow-up, and used negative binomial regression with person-level fixed effects to isolate within-person predictor effects on same-day use frequency.

Results Between 2.0% (baseline) and 5.7% (18-month follow-up) of youth reported same-day use of alcohol and prescription opioids across follow-ups, with 19.9% reporting same-day use in at least one follow-up. Within-person increases in alcohol use severity, cannabis use severity, and depression and

anxiety symptoms all corresponded to increases in same day alcohol and prescription opioid use frequency. Increased exposure to positive peer influences, and decreased exposure to delinquent peers, both coincided with lower same day alcohol and prescription opioid use frequency.

Conclusions Same day use of alcohol and prescription opioids is common in this population, and within-person changes are predictable. Interrupting worsening trajectories of substance use severity and mental health symptoms, and enhancing social support and reducing delinquent peer exposures, may reduce same day use frequency.

Significance Co-use of alcohol and prescription opioids dramatically increases acute risks (e.g., overdose) associated with each; understanding within-person predictors of same day use may point to catalysts for behavior change.

Alcohol and substance abuse

0050

DESCRIPTIVE NETWORK ANALYSIS OF CO-OCCURRING DRUG USE DISORDERS AND ASSOCIATED PREDICTORS AMONG ADOLESCENTS AND EMERGING ADULTS PRESENTING TO AN URBAN EMERGENCY DEPARTMENT

¹M Myers, ^{2,3}V Lyons, ^{1,4}M Walton, ^{1,5,6}J Heinze, ^{5,6,7,8,9}R Cunningham, ^{5,7,8}J Goldstick. ¹University of Michigan Injury Prevention Center, Ann Arbor, USA; ²Department of Epidemiology, School of Public Health, University of Washington, Seattle, USA; ³Harborview Injury Prevention and Research Center, University of Washington, Seattle, USA; ⁴Department of Psychiatry, University of Michigan School of Medicine, Ann Arbor, USA; ⁵Department of Health Behavior and Health Education, University of Michigan School of Public Health, Ann Arbor, USA; ⁶Youth Violence Prevention Center, University of Michigan School of Public Health, Ann Arbor, USA; ⁷Injury Prevention Center, University of Michigan, Ann Arbor, USA; ⁸Department of Emergency Medicine, University of Michigan, Ann Arbor, USA; ⁹Hurley Medical Center, Department of Emergency Medicine, Flint, USA

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Statement of purpose Estimate frequency of drug use disorder (DUD), multiple substance co-diagnosis network characteristics, and predictors of DUD among youth entering an urban emergency department (ED).

Methods/Approach Drug-using youth age 14–24 ($n=599$; 349 assault-injured) presenting to a Level-1 ED were recruited. Participants were contacted at baseline and at 6-, 12-, 18-, and 24- months post-baseline and administered validated measures of peer/parental behaviors, violence/crime exposure, drug use self-efficacy, and alcohol use. Participants were administered the MINI neuropsychiatric interview to diagnose use disorder (abuse/dependence) with nine substances. Dependencies between co-DUD diagnosis were estimated using Ising network models. Repeated measures logistic regression models were used to determine predictors of DUD.

Results Among 2,630 assessments, 1,128 (42.9%) were DUD diagnoses; 21.7% were co-diagnoses with multiple drugs. Cannabis use disorder was the most frequent diagnosis ($n=1,050$), with the cannabis/prescription sedative combination the most common co-diagnosis ($n=112$). The cocaine/prescription opioid combination showed the strongest partial correlation and was the most central element in the network. Regression models show positive peer behaviors and parental support to be protective factors for DUD diagnosis, while interpersonal violence exposure, community violence/crime exposure, alcohol use quantity, other mental health diagnoses, and drug use self-efficacy were DUD risk factors.

Conclusions DUD is prevalent in this population and associated with personal, social, and community exposures. Among those with DUD, diagnosis with multiple drug use disorders was common; network analyses showed several large partial correlations between substances, with cocaine and prescription opioid use disorder co-diagnosis being the most strongly associated.

Significance DUD is linked to a variety of injuries including suicide, partner violence, firearm violence, death by homicide, and violence/injury in general. Understanding the relationship between co-occurring DUDs and associated risk factors allow for targeted intervention strategies.

TBI/Concussion injuries

0051 OBJECTIVE MEASURES OF VISUAL AND AUTONOMIC SYSTEM DEFICITS FOLLOWING CONCUSSION IN ADOLESCENTS

^{1,2}D Jain, ^{2,3}CC McDonald, ²OE Podolak, ²F Mohammed, ^{2,4,5}CL Master, ^{2,4}KB Arbogast. ¹University of Pennsylvania, Philadelphia, USA; ²Center for Injury Research and Prevention, the Children's Hospital of Philadelphia, Philadelphia, USA; ³University of Pennsylvania, School of Nursing, Philadelphia, USA; ⁴Perelman School of Medicine, University of Pennsylvania, Philadelphia, USA; ⁵Sports Medicine and Performance Center, Children's Hospital of Philadelphia, Philadelphia, USA

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Statement of purpose Visual and autonomic system disturbances are common sequelae of concussion. Clinical concussion diagnosis currently relies on subjective assessments such as symptom questions such as the Post-Concussion Symptom Inventory (PCSI). Quantification of visual and autonomic dysfunction could provide an objective method of acute diagnosis and subacute identification of ongoing injury.

Methods/Approach We collected objective eye tracking data from three cohorts ages 12–17 years: healthy controls (n=105, mean age: 15.3, 56.2% female), concussed cases seen within 28 days of injury (acute, n=125, mean days since injury:12.5, mean age: 15.4, 46.4% female) and concussed cases seen within 29–90 days of injury (sub-acute, n=94, mean days since injury: 53.6, mean age: 15.4, 70.2% female). We compared self-reported symptoms and eye tracking metrics across groups using a series of chi-square analyses and one-way analysis of variance, with Tukey's range test for post-hoc testing. Bonferroni corrections were used to account for multiple comparisons.

Results Controls reported significantly lower PCSI scores (mean $\pm$ SD: 6.0 $\pm$ 9.1) than acute cases (31.2 $\pm$ 24.7, $p < 0.001$) and sub-acute cases (31.4 $\pm$ 27.8, $p < 0.001$). A significantly lower proportion of controls experienced symptoms after completing the assessment (10%) than acute cases (55%, $p < 0.001$) and sub-acute cases (38%, $p < 0.001$). Six eye tracking metrics related to pupil diameter (left and right pupil size mean and median values, mean and median differences in left and right pupil size), were significantly greater among acute and sub-acute cases compared to controls.

Conclusion Measures of pupil diameter were greater for acute and sub-acute cases compared to healthy controls, suggesting autonomic dysfunction post-injury. No other metrics related to eye movement were discriminatory in this cohort, likely due to the heterogeneity of concussion.

Significance These findings support the quantification of visual and autonomic dysfunction as objective markers of pediatric concussion.

Alcohol and substance abuse

0053 AN ANALYSIS OF DRUG OVERDOSE DEATHS BY INTENT IN OHIO FROM 2016–2018

D Saunders, A Hagemeyer, L Werhan. Ohio Department of Health, Columbus, USA

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Statement of purpose In 2018, unintentional drug overdose was the leading cause of injury-related deaths among Ohioans. In the same year, drug poisoning was the third leading mechanism of suicide deaths. This session will review the 'who, when, where, and how' of overdose deaths from the Ohio Violent Death Reporting System (OH-VDRS) to provide participants with an understanding of the sociodemographic characteristics and related circumstances (e.g., prior suicide attempts, prior mental health or substance use disorder treatment, co-occurring mental health conditions) surrounding overdose deaths.

Methods/Approach Descriptive statistics of 2016–2018 OH-VDRS data assessed sociodemographic characteristics of and circumstances preceding deaths by unintentional and intentional (i.e., suicide) drug overdose among Ohio residents who died in Ohio.

Results Regardless of intent, most drug overdose decedents were Caucasian (unintentional: 84.6% versus intentional: 95.3%) with a high school degree or less (unintentional: 77.4% versus intentional: 62.5%). While unintentional drug overdose decedents were more likely to be male (67.0%) and 25–34 years old (27.8%), most intentional drug overdose decedents were female (54.9%) and 45–54 years old (26.3%). Regarding circumstances, a larger proportion of unintentional drug overdose decedents had a substance abuse problem (86.2% versus 27.3%), while a larger proportion of intentional drug overdose decedents had a mental health condition (78.9% versus 43.3%). Toxicology differences were noted; antidepressants, anticonvulsants, antipsychotics, and benzodiazepines were identified as a cause of death in a higher proportion of intentional drug overdose deaths, while cocaine and opioids were identified in more unintentional drug overdose deaths.

Conclusion Examining drug overdose trajectories by intent can better inform interventions by targeting diverse prevention strategies to the appropriate populations.

Significance A better understanding of drug overdose trajectories by intent could provide evidence to guide the data-driven decision making surrounding the development and implementation of evidence-based policies, programs, and interventions.

Homicide/Assault

0054 SOCIAL AND PHYSICAL ENVIRONMENTAL DETERMINANTS OF VIOLENT HOMICIDE DEATH INCIDENCE: A SPATIAL ECOLOGICAL CASE-CONTROL STUDY OF US ZIP CODES

A Gobaud, C Mehranbod, C Morrison. Columbia University Mailman School of Public Health, New York, USA

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Statement of purpose Violent homicide is a major cause of death and a driver of health disparities in the US. It is not