study. Study participants were linked by a geographic information system (GIS) to characteristics in their neighborhood in order to spatially model the factors that contribute to increased psychological symptom severity at 3 months post-injury. Factor analysis identified underlying constructs of 32 neighborhood predictors, which were entered in a generalized estimating equation (GEE) regression analysis. Covariates included measures of injury, severity of injury, age, and health insurance.

**Results** Neighborhood characteristics loaded onto 4 constructs: neighborhood disconnectedness; concentrated disadvantage; crime, violence, and vacancy; and race/ethnicity. Higher PTSD symptom severity was reported by 36.8% and associated with neighborhood crime, violence, and vacancy, and higher depressive symptom severity was reported by 30.4% and associated with neighborhood disconnectedness. Both PTSD and depressive symptoms were associated with intentional mechanisms of injury, such as gunshot wounds, stabbing, and assault; and with having Medicaid or no insurance. Higher severity of injury was associated with depressive symptoms.

**Conclusions** Findings suggest that neighborhood characteristics such as neighborhood disconnectedness and crime, violence, and vacancy have measurable associations with psychological symptoms after injury. The evidence supports the need for interventions to improve post-injury mental health by modifying the urban environment.

### Equity and methods

#### IMPLICATIONS FOR HEALTH EQUITY AND LESSONS LEARNED FROM A COMMUNITY-ENGAGED MODIFIED DELPHI PROCESS AND NOMINAL GROUP TECHNIQUE

1. **Statement of Purpose** Achieving injury-related health equity requires community-informed research and close collaboration among diverse (in lived experience, education, geography, etc.) stakeholders. Differing priorities, knowledge, and communication styles can inhibit participation in the consensus-building process, inhibiting the progress of research and development of successful interventions. Standardized, evidence-based procedures are needed to achieve consensus among diverse groups of stakeholders.

2. **Methods/Approach** We use a novel, rigorous process involving a combined Delphi process and Nominal Group Technique (NGT) to describe the development of recommendations for the pre-hospital care of the spine-injured athlete as a framework for achieving consensus among a group of stakeholders and community members. We outline our process and discuss lessons learned and implications for health equity.

3. **Results** We used an online modified Delphi process to achieve consensus on the research questions of priority to stakeholders. After conducting an independent systematic review, we presented our findings at an in-person meeting for twenty stakeholders. We used NGT to develop and agree upon protocol recommendations. Throughout this process, we learned several lessons. Most crucial to the success of the in-person NGT process is a reputable, experienced facilitator capable of managing complex group dynamics and adhering to agreed-upon rules of engagement. Clarification of research jargon and transparency throughout the research process engages stakeholders of all levels of experiences. Finally, innovative uses of technology may expedite the otherwise cumbersome process of providing opinions and voting to achieve consensus.

#### CONSCIOUS PREVENTION AWARENESS IN MIDDLE SCHOOL SPORTS

**Statement of Purpose** Limited research specific to middle school (MS) sports on concussion prevention exists. We examined general perceptions, knowledge, attitudes, and communication constructs related to concussion prevention among MS sports stakeholders.

**Methods/Approach** Semi-structured interviews with coaches/school staff (n=6), parents, (n=10) and athletes (n=10) were conducted as part of a larger study throughout the 2018–2019 academic year at four North Carolina MSs. Interviews were transcribed verbatim; data were analyzed using the consensual qualitative tradition where a codebook was created using four progressive stages.

**Results** Three major themes were identified. First, there was a general lack of infrastructure and context surrounding sport safety and concussion prevention. Participants reported that the emphasis is on athletes simply exploring the varied sport options offered at the MS level, good sportsmanship and sport enjoyment; sport safety and concussion prevention was not a high concern. Second, there was limited awareness by stakeholders at the MS level concerning the importance of concussion prevention. Participants noted that concussion prevention is rarely discussed at the MS level and does not resonate with stakeholders. Third, there was ineffective communication between stakeholders regarding several topics, including concussion prevention. Participants noted that communication between the Athletic Directors, coaches, parents, and athletes was focused mainly on logistics, e.g., schedule changes. In addition, participants reported varied modes of communication utilized by school, of which most reportedly posed challenges for key stakeholders.

**Conclusions** These findings suggest a need to develop a cohesive strategy specific to the MS setting to disseminate concussion prevention information. Researchers and other MS sport stakeholders should collaborate to develop methods for sharing concussion prevention information at this level.
Informing Policy Change: Reaching Policymakers with Iowa's Opioid Overdose Concerns

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Purpose: The opioid overdose epidemic continues to devastate the United States through dangerous variations and combinations of drugs. In Iowa's population of over 3 million people, there were 137 overdose deaths involving opioids in 2018. While Iowa's opioid-related overdose deaths remain lower than the national average, there is concern that the rurality of Iowa could contribute to increases in opioid involved deaths. In August 2019, the University of Iowa Injury Prevention Research Center (UI IPRC) began collaborative efforts with Iowa stakeholders to identify policy priorities to address rural opioid concerns and identify ways to reach policymakers with these priorities.

Methods: In September 2019, the UI IPRC convened over 30 stakeholders across Iowa representing more than a dozen fields including rural and farming interests. We reviewed evidenced-based strategies, identified what Iowa was doing to address rural overdose issues, proposed policy and program changes, and identified priorities. An online survey was sent to participants to vote on their top five priorities.

Results: The five stakeholder priorities included developing holistic treatment and recovery resources, improving communication strategies between stakeholders, considering polysubstance drug use during surveillance and prevention efforts, improving naloxone access and distribution, and combating stigma. The UI IPRC will disseminate a report describing the unique characteristics of Iowa's rural drug issues, including the rise in polysubstance overdose deaths, and the five stakeholder priorities to Iowa policy makers beginning in the 2020 legislative cycle. In addition, the UI IPRC will also publish an op-ed program changes, and identified priorities. An online survey was sent to participants to vote on their top five priorities.

Conclusions/Significance: Upon identifying the priorities, it is clear there are still gaps in surveillance, prevention, and treatment efforts with regards to licit and illicit drugs in Iowa. In order to prevent further drug related mortality in Iowa, it is crucial to continually identify policy priorities and actively disseminate recommendations to Iowa policy makers.

Policy efforts in substance use and abuse

Epidemiology of TBI

School-Level Determinants of Variability in Observed Concussion Incidence: A CARE Consortium Study

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Statement of Purpose: To investigate variability in observed concussion incidence between NCAA colleges participating in a multisite prospective study of concussion, and to quantify the effect of selected school-level factors on concussion risk.

Methods/Approach: Data on sport-related concussion (SRC) were provided by the CARE Consortium, a multisite study of 30 collegiate institutions. School-level factors included NCAA Division (DI, DII, DIII) and school type (military or civilian).