Injury Prevention
IP-7

Electronic Scooter Injury Surveillance: Translating Trend Recognition into Meaningful Action

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Purpose: Electric scooters (e-scooters) are emerging in major cities at a rapid pace. They are now available internationally and in over 99 US cities, targeting college campuses, tourist attractions, and urban entertainment hubs. Now recognized as a billion-dollar enterprise, startup e-scooter rental companies are aggressively targeting young people marketed as a highly accessible, cheap, eco-friendly alternative to other modes of transportation. Current e-scooter models are limited by motor size to 15 mph; however, emerging models boast additional power and speeds up to 20 mph. Nationwide, there have been numerous press reports discussing e-scooter collisions and injuries and attributing these to several potential causes, including brake malfunction. Yet, many companies maintain their fleets with a workforce with minimal expertise and training. Advances in transport technology and rising product demand is outpacing current regulations and safety standards. As new cities discuss restricting or allowing fleets of scooters in their areas, there is a need for high-quality information on the impact of e-scooters on hospitals and public safety. Trauma centers, as content experts, can advocate for public safety and evidenced-based injury prevention (IP) strategies by communicating experiences and data to outside agencies in a meaningful, effective way.

Resources: •Trauma registry data •Emergency Department records •Hospital financial / billing data

Description: After the introduction of e-scooter programs to our metroplex on July 1, 2018, several trauma clinicians, Emergency Department (ED) providers, and registry coders reported individual interactions with e-scooter injury visits. The true scope and volume of e-scooter injuries was not entirely realized until staff shared their experiences in an open forum, initiating collaborative efforts regarding this issue. E-scooter injury tracking was initiated by the Trauma Department leadership using the trauma registry, and an extensive retrospective search of e-scooter injuries in ED visit records was implemented by the IP Coordinator. Once a preliminary profile of the burden of these e-scooter injuries was formed, trauma, ED, and registry staff were asked to specifically note “e-scooter” as the etiology of injury in these patients to streamline injury tracking and facilitate more comprehensive prospective data collection. The trauma registry data initially reviewed only captured a small, high acuity group of patients (n=23), as these data were limited to patients treated by the trauma team and meeting registry criteria. Implementing the above collaboration and processes enabled our center to identify an additional 65 patients. Our combined retrospective analyses yielded 88 ED visits for e-scooter injuries from July 1, 2018 - January 7, 2019. None (0) wore a helmet, and 33% (29) reported alcohol use before riding or screened positive. These patients were between 13-60 years of age. Of the patients seen in the ED, 23 patients were admitted, 8 patients required ICU stay, and 1 patient expired. Of the injured patients, 58% had extremity injuries, 43% had facial injuries, and 35% had head injuries. Time of e-scooter use was identified as a potential factor contributing to injury as 57% of injuries chronicled occurred after 7 pm. Additionally, a financial breakdown of hospital costs was detailed to assess and describe the economic burden of these injuries on our trauma center: $1.4 million.

Effectiveness: The summary of findings from these retrospective data were shared with our city’s Department of Transportation officials. City officials met with us to discuss pursuing further injury prevention and public safety measures related to our experience, especially regarding potential factors contributing to our observed findings. Our initial meeting with city officials engendered a partnership between our teams to advance the development and implementation of e-scooter safety standards and regulations within the city. We are currently pursing data sharing agreements with the city and developing plans for future research on this topic.

Lessons Learned: Trauma centers are in a unique position to identify, collect, and translate findings into action. Front-line staff play a pivotal role in identifying and initiating real-time injury surveillance. Combined data from our trauma and ED registries illustrate more effectively the scope and need for action surrounding this issue. Incorporating injury surveillance triggers, metrics, and methods to initiate tracking into ED triage and flow coordinator orientation would prepare staff with little or no trauma training. It is clear that advances in technology have surpassed current trauma terminology definitions creating disparities in data registry findings at the local, state, and national level. Anticipating that multiple alternative transportation are inevitable, a process to identify, track, and communicate data in an efficient

time frame is relevant for addressing public safety concerns and preventing injury and death. Finally, when presenting to outside groups and agencies, summarizing these data in an infographic will effectively convey this important information in simple terms

Conclusions: Our case series likely represents the tip of the iceberg of the burden of injury related to e-scooters. The potential for serious injury with e-scooters merits further study and continued work with our community partners. We are evaluating the efficacy of this new injury surveillance program, pursuing further research on the topic, and providing content expertise to our community leaders. This process has fostered collaboration leading to expanded joint data-sharing and future IP strategies.

Benefit to Others: Many IP initiatives are outreach-driven to targeted community groups. Outcomes can feel less tangible as they are typically measured as trends over time. In contrast, trauma professionals thrive in a fast-paced and results-driven environment. Injury surveillance and initiating the collection of data is a means to engage bedside trauma staff in IP activities by utilizing their unique skill set. The translation of observations into a quantifiable data can be utilized to determine meaningful IP strategies. Our staff noted this process improved communication and smoothly bridged ED data collection with the information that comes to the attention of trauma clinicians and registry staff. Creating this process was relatively simple, utilizing already-available resources, and can be applied to all trauma program levels.

Implementation by Others: The implementation of this successful venture was facilitated by several key factors: First, being proactive and developing a flexible system to initiate “snapshot” tracking of a suspected trend. Second, creating a forum for open discussion of interesting cases between IP, trauma, ED, registry, triage, and EMS flow staff, with the goal of this forum to facilitate the translation of individual experiences to identify common themes. Additionally, collaboration within your own organization or department to identify trends in findings and potentially improve existing processes. Trauma surgeons and staff are familiar with trauma registry cases but may be unaware of similar, but less acute, ED visits that further reflect the burden of injury associated with e-scooters. IP specialists can span departments and assist in better capturing the magnitude of impact of the activity. Further, hospital-based IP strategies should include both inpatient and outpatient areas, so participation in these process improvements is beneficial to all departments involved. Accordingly, IP strategists, as well as trauma and ED staff, can further discuss trends, issues, and cases from these activities with colleagues at the regional, state, and national level. Finally, developing relationships and communicating findings from these initiatives in a short, succinct manner, such as through infographics, with outside stakeholders (e.g., city officials) is crucial. Maintaining communication with these entities by offering in-person meetings and giving regular updates on findings will foster a mutually beneficial relationship that will also benefit the community through public safety and IP strategies.