

# E-scooter head injuries: Why are urban trauma centers seeing more?

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The rise of electric scooters and bikes as short-distance transport options in major cities has brought a predictable consequence: a surge in related injuries. Inner-city trauma centers are now routinely managing these incidents, often without the benefit of robust safety regulations or effective implementation. The current literature on these injury patterns remains limited, leaving clinicians to piece together the emerging clinical picture.

## KEY TAKEAWAYS

- **The Pivot:** E-scooter and e-bike injuries are increasingly presenting at inner-city trauma centers, with head injuries as a primary concern.
- **The Data:** Head injuries were the most common injury type, accounting for 32.8% of all e-scooter and e-bike related traumas.
- **The Action:** Clinicians should maintain a high index of suspicion for head trauma in patients presenting with e-scooter or e-bike related injuries.

Electric scooters and bikes have become ubiquitous in urban markets, offering convenient alternatives for short commutes. But this convenience carries a significant safety cost, particularly in dense metropolitan areas where regulations struggle to keep pace with adoption. Hospitals in these areas bear the brunt, managing a growing caseload of traumas directly attributable to these vehicles.<sup>1</sup>

Nabil Osti, a trauma surgeon at Harlem Hospital Center in New York, and colleagues investigated the injury patterns associated with e-scooter and e-bike use at an inner-city trauma center in upper Manhattan. They retrospectively reviewed data from all patients presenting with e-scooter or e-bike related injuries over a specific period, aiming to characterize the types and severity of trauma. The study included 125 patients, with a mean age of 34.6 years, and 80% were male.<sup>1</sup>

## The Dominance of Head Trauma

Head injuries emerged as the most frequent and concerning type of trauma in this cohort, representing 32.8% of all injuries. This figure highlights the significant need for protective measures, particularly helmet use, which remains inconsistently enforced. The high incidence of head trauma suggests a significant risk for severe neurological sequelae, a concern that should guide initial assessment and management in the emergency department.<sup>1</sup>

But head injuries were not the only concern. Extremity injuries also featured prominently, accounting for 28.8% of cases. These included fractures, dislocations, and soft tissue damage, often requiring orthopedic intervention. Facial injuries comprised 12.8% of presentations, frequently involving lacerations, fractures, and dental trauma. Torso injuries were less common but still present at 8.8%.<sup>1</sup>

The study also detailed the specific mechanisms of injury. Falls from the e-scooter or e-bike were the most common cause, accounting for 56.8% of incidents. Collisions with motor vehicles followed at 24.8%, while collisions with pedestrians or other objects made up 12.8%. These mechanisms highlight distinct risk factors, from rider instability to interactions with other traffic. Clinicians should consider these contexts when evaluating patients, as they can inform the likelihood of specific injury patterns. For instance, a patient involved in a high-speed collision with a motor vehicle may present with more severe, multi-system trauma than someone who simply fell. This is a key distinction, as traumatic subarachnoid hemorrhage can be missed if the initial assessment is not thorough.

The Harlem Hospital Center team noted that 36% of patients required hospital admission, indicating a substantial burden on inpatient resources. Of those admitted, 12% needed intensive care unit (ICU) admission, reflecting the severity of injuries sustained. The average length of hospital stay was 3.2 days. These numbers paint a clear picture of the clinical impact, extending beyond the immediate emergency visit to prolonged inpatient care and rehabilitation. The resource strain on inner-city trauma centers is considerable, a factor often overlooked in discussions about urban mobility solutions.<sup>1</sup>

## Where the Data Falls Short

The study provides a snapshot from a single inner-city trauma center, which limits the generalizability of its findings to other urban environments or broader populations. The retrospective nature also means reliance on existing medical records, which may not capture every detail relevant to injury prevention or helmet use. For example, the paper does not specify how many patients were wearing helmets, a vital piece of information for understanding the protective effect of such devices. Without this data, it is difficult to quantify the impact of helmet use on injury severity, a gap that future prospective studies should address. The study also did not differentiate between e-scooter and e-bike injuries in its primary analysis, grouping them together. While both are electric micro-mobility devices, their operational characteristics and typical usage patterns can differ, potentially leading to distinct injury profiles. This lack of granularity means the specific risks associated with each mode of transport remain somewhat obscured. A more detailed analysis of sports injuries often differentiates between specific sports and equipment, a level of detail that would benefit this field. Still, the data clearly indicates that e-scooter and e-bike injuries are not minor scrapes. They are significant traumas requiring substantial medical attention, with head injuries leading the charge. The absence of effective regulations for safe riding, as highlighted by the authors, means clinicians will continue to manage these preventable injuries. This situation places an ongoing burden on emergency services and inpatient units, a challenge that will only grow as these modes of transport become more prevalent. For a comprehensive understanding of patient care in such scenarios, a resource like the Oxford Handbook of Emergency Medicine can be invaluable.

### CLINICAL IMPLICATIONS

The prevalence of head injuries in e-scooter and e-bike trauma demands immediate attention from clinicians. Emergency physicians and general practitioners should assume head trauma until proven otherwise in any patient presenting after an e-scooter or e-bike incident, regardless of apparent injury severity. A thorough neurological examination and appropriate imaging, guided by established head injury protocols, are non-negotiable.

The high admission rates and ICU utilization highlight the systemic impact of these injuries. This is not merely a

public health issue for urban planners; it is a direct strain on hospital resources, particularly in already stretched inner-city trauma centers. Policymakers must move beyond rhetoric and implement enforceable regulations for helmet use and rider safety, or clinicians will continue to pick up the pieces.

For patients, the message is stark: e-scooters and e-bikes are not toys. The risk of severe head trauma is real and substantial. Public health campaigns need to communicate this risk clearly, emphasizing helmet use as a primary preventative measure. Without a shift in public perception and behavior, these injury patterns will persist, filling our emergency departments with preventable suffering.

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#### REFERENCES

1. Osti N, Aboud A, Gumbs S. E-scooter and E-bike injury pattern profile in an inner-city trauma center in upper Manhattan. Injury. 2023;54(5):110688. doi:10.1016/j.injury.2023.110688

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