

High Stakes in Opioid Relapse: How Traumatic Injury Mechanism Affects Recovery

Samantha Watts¹, Hannah Bard¹, Gurkeerat Singh¹, Robert E Koegel¹, Sophia M Smith², Anne K Buck³, Lisa Allee^{1,2}

¹ Boston University Chobanian and Avedisian School of Medicine, ² Department of Surgery, Boston Medical Center. ³ Boston University School of Public Health

Introduction

Patients with opioid use disorder (OUD) are more susceptible to traumatic injuries, with OUD present in approximately 1% of operative trauma cases. Acute pain from traumatic injuries can complicate the balance between pain management and abstinence.

However, the role of specific traumatic injury mechanisms in predicting relapse remains unclear.

Objective

This study examines relapse rates one-year post-discharge in patients with OUD following a traumatic injury to identify injury mechanisms linked to higher relapse rates and guide interventions

Methods

- **Study Design:** Retrospective analysis of 209 trauma patients with OUD admitted to Boston Medical Center (2017–2022).
- **Categorization of Injury Mechanisms:** Injuries were classified as violent (assault, gunshot wounds, stab wounds) or nonviolent (falls, motor vehicle collisions).
- **Definition of Relapse:** Relapse was defined as any documented use of non-prescribed opioids within one year post-discharge, assessed through patient self-report or positive urine screening.
- **Statistical Analysis:** Chi-square analysis to assess the relationship between injury mechanism and one-year relapse outcomes.

Results

Significant variation was observed in relapse rates across different injury mechanisms ($\chi^2=15.92$, $p=0.014$). Additionally, violent intent of injury was identified as a significant predictor of relapse in unadjusted analysis ($\chi^2=6.34$, $p=0.016$).

Violent Mechanisms of Injury: Highest rates of relapse despite being the least common mechanism of injury (36% of the sample).

Notably, relapsed occurred in:

- 82% of all Stab Wounds
- 69% of all Assaults

Non-Violent Mechanisms of Injury: Lowest rates of relapse despite being the most common mechanism of injury (64% of the sample, including “Other”).

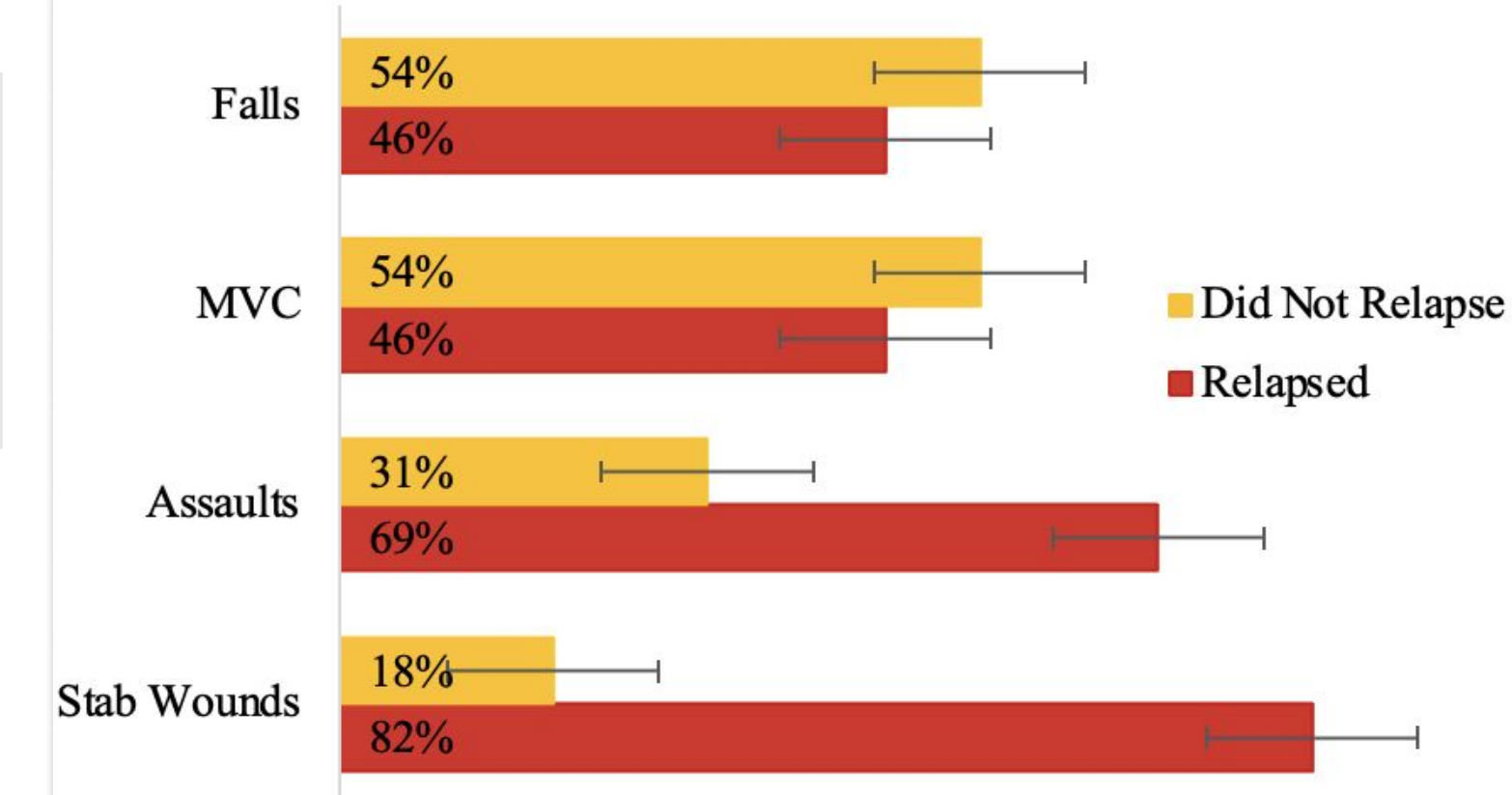
Notably, relapsed occurred in:

- 46% of all MVC
- 46% of all Falls

Mechanism of Injury, n=209	Did Relapse, n=126 (60%)		Did Not Relapse, n=83(40%)					
	n	Total %	n	% of MOI	% of All MOI	n	% of MOI	% of All MOI
Stab Wound	34	16%	28	82%	22%	6	18%	7%
Assault	29	14%	20	69%	16%	9	31%	11%
Pedestrian	25	12%	17	68%	13%	8	32%	10%
GSW	13	6%	8	61%	6%	5	38%	6%
MVC/MCC	28	13%	13	46%	10%	15	54%	18%
Fall	59	28%	27	46%	21%	32	54%	39%
Other	21	10%	13	62%	10%	8	38%	10%

Note: Traumatic mechanisms of injury (MOI) are presented by decreasing rates of OUD relapse at one-year post-discharge, where relapse refers to any non-prescribed opioid use. All percentages (%) were rounded to the nearest whole number.

OUD Relapse Rates One-Year Post-Discharge by Traumatic Injury Mechanism



Conclusions

Injury Mechanism as a Risk Stratification Tool: High relapse rates in patients with violent injuries, particularly stab wounds and assaults, highlight the need for specialized post-discharge care.

Clinical Implications: Recognizing injury mechanism as a risk factor for relapse may improve recovery outcomes for surgical trauma patients with OUD by targeting high-risk populations.

Future Work

Injury mechanism shows promise as a proxy for stratifying one-year post-discharge relapse risk. Future research should use regression and multivariate analyses to control for confounders and further establish its predictive value.