

# Substance use disorder and delirium risk in critical multisystem trauma



## AUTHORS

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## INTRODUCTION

- Escalating prevalence of substance use disorder (SUD) nationwide has led to consideration of its implications within the realm of critical care medicine
- Prior studies have suggested a correlation between SUD and development of delirium<sup>1</sup>.
- Delirium is known to affect healthcare outcomes: hospital length of stay (LOS), survival rates, and overall healthcare expenditure<sup>2,3,4</sup>.



## OBJECTIVES

- Examine **whether pre-existing non-alcoholic substance use disorder (SUD) is significantly associated with an elevated risk of delirium** in critical multisystem trauma patients
- Investigate the influence of SUD on critical outcome measures, including hospital length of stay (LOS), intensive care unit (ICU) LOS, and mortality rates, as these are frequently influenced by the development of delirium in critically ill patients.

## METHOD

### Retrospective cohort study

- Adults admitted to the ICU from January 1, 2018 - December 31, 2022 were categorized: **those with pre-existing non-alcoholic substance use disorder (SUD) and those without (non-SUD)**.
- Data extracted from medical records and trauma and ICU registry databases:
  - Patient characteristics: Age, gender, injury severity score (ISS), traumatic injuries, Charlson Comorbidity Index (CCI)
  - Outcomes: Delirium, duration of hospitalization (hospital LOS), length of stay in the ICU (ICU LOS), and mortality
- Patient cohorts were compared & multivariable regression was implemented to control for potential confounding factors when assessing outcomes

## RESULTS

### Substance Use Disorder (SUD)

- 234 patients
- Younger** (mean age 40.9 +/- 13.3)
- Fewer comorbidities** (mean CCI 0.89 +/- 1.36)
- Higher incidence of delirium** (44.8%, p=0.01)
- Lower mortality** (12.8%, p=0.001)

### No Substance Use Disorder (non-SUD)

- 897 patients
- Older** (mean age 51.6 +/- 19.8)
- More comorbidities** (mean CCI 1.85 +/- 2.04)
- Lower incidence of delirium** (37.3%, p=0.01)
- Higher mortality** (21.1%, p=0.001)

**Multivariable analysis** demonstrated pre-existing SUD was independently correlated with:

- **Elevated the risk of delirium** (OR 1.44, 95% CI 1.05-1.97, p = 0.02)
- **Prolonged hospital stays** (IRR 1.17, 95% CI 1.02-1.35, p = 0.025)

even after adjustment for age, gender, injury severity score (ISS), flail chest or >5 rib fractures, and traumatic brain injury.

## CONCLUSION

- **Pre-existing non-alcoholic SUD is associated with an elevated risk of delirium and longer hospital stays in the critical multisystem trauma patient.**
- Implementing measures to mitigate delirium incidence within this patient cohort may be beneficial in expediting patient recovery and alleviating the financial burden associated with extended hospital stays.
- Further research into the spectrum of etiologies and mechanisms of delirium has the potential to inform the development of targeted interventions to address its many profound consequences.

## ACKNOWLEDGEMENTS

Vancouver General Hospital, Department of Trauma and Acute Care Surgery

Vancouver General Hospital, Department of Critical Care

Vancouver Coastal Health

University of British Columbia, Department of Surgery

\*We acknowledge that the land on which this research was conducted is the traditional and unceded territory of the Coast Salish Peoples, including the Musqueam, Squamish, and Tsleil-Waututh Nations.

## REFERENCES

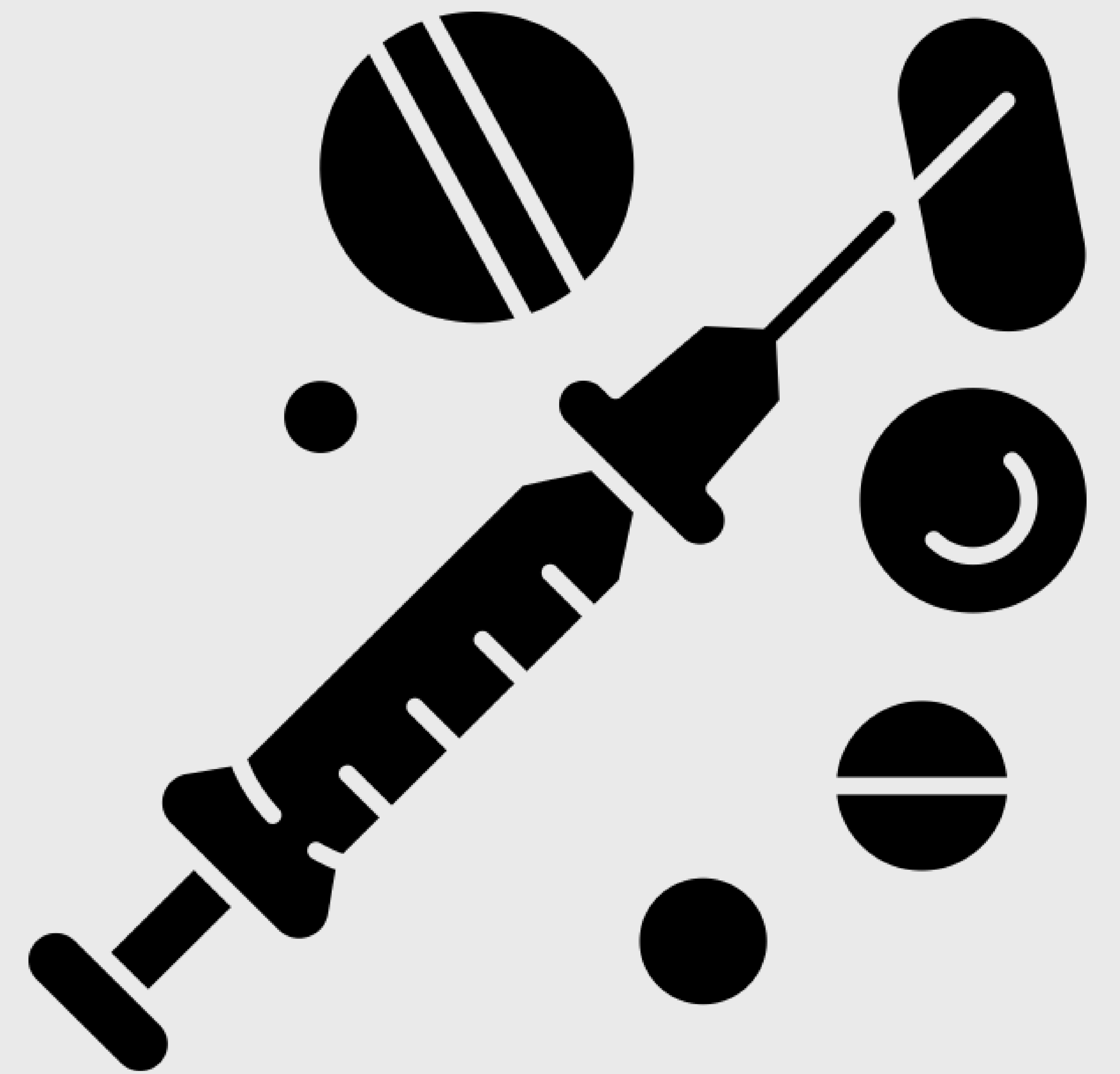
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