

# Epidemiology of Trauma in Ukraine: Lessons from a Trauma Registry in Eastern Europe

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## Setting<sup>1-2</sup>



- First trauma registry in Eastern European implemented at the KHEM (Kyiv, Ukraine).
- **KHEM Polytrauma Department** (65 beds) one of the two sites designated for trauma cases in Kyiv city.
- Expertise and guidance provided by the CGS team (Montreal, Canada).
- Collaboration since 2012 with several exchange trips for educational and research purposes.

## Data Collection



- Retrospective chart review.
- All polytrauma cases recorded at the KHEM.
- **25-item Adult Trauma Data Collection Form** (developed by CGS, translated into Ukrainian).
- Data collection between January and June of 2019.
- **Total of 719 cases.**

## Statistical Analysis



- Multivariate logistic regression model.
- Stata version 11.0 statistical software.
- **Predictors:** sex, age, number of body regions affected by trauma, trauma cause and setting, KTS, arrival delay, and weekend vs weekday of arrival to the hospital.
- **Outcomes:**
  - Admitted to the hospital ward.
  - Taken to the operating room.
  - Treated and discharged.

## Epidemiology

- 23% females. Median age 41 years (IQR: 32; 54).
- Top trauma cause: Falls (43%), Assaults (41%).
- Top trauma setting: Leisure/Sport (44%), Home (38%).
- Unintentional injuries (58%).

## Predicting Trauma Outcome\*

ODDS OF:	Factors predicting decreased odds	Factors predicting increased odds
<b>Admission</b>	Age 19-39 (OR 0.3, 95% CI 0.1-0.7)	2 injury sites (OR 2.9, 95% CI 1.1-7.9)
	Age 40-59 (OR 0.2, 95% CI 0.1-0.7)	3+ injury sites (OR 3.1, CI 1.0-9.0)
	Assault injury (OR 0.4, 95% CI 0.2-0.6)	
	Less severe KTS** (OR 0.1; 95% CI: 0.02-0.8)	
<b>Being operated</b>	Female (OR 0.5, 95% CI 0.3-0.7)	Assault injury (OR 1.8, 95% CI 1.2-2.8)
	Leisure/sport setting (OR 0.5, 95% CI 0.4-0.8)	
<b>Treated and sent home</b>	3+ injury sites (OR 0.3, 95% CI: 0.1-0.8)	Female (OR 3.1, 95% CI: 1.9-5.1)
		Assault injury (OR 1.8, 95% CI: 1.2-3.0)

\*Other predictors in the model were not significant at predicting trauma outcomes. \*\*Less severe KTS: scores of 9-13 vs more severe KTS scores of 14-16

## MVCs as Trauma Cause: 12%



- 6.70% of all MVC cases in Kyiv during same period.
- **MVC rate often lower in LMICs** as compared to HIC<sup>3-5</sup>.
- Possible explanations: high mortality at pre-hospital stage, variation in road safety policy and practice, presentation to other hospitals in closer proximity to the accident, lack of trauma center designation, or lack of a regionalized trauma center.

## Mortality: 3%



- **90% of trauma related mortality occurs in LMICs.**
- Mortality rates from other registries<sup>3-5</sup>.
- Possible explanation: high mortality and lack of resuscitation resources at pre-hospital stage.

## Future Direction



- Development of **trauma activation protocols** at KHEM.
- Implementation of **trauma registries** at other hospitals across the country.
- Analysis of prehospital data in Ukraine to compare mortality and MVC rates (ethics obtained, data collection in progress).
- Continued collaboration with CGS team.

**References:** (1) Meara et al, Surgery, 2015; (2) Nathens et al, Lancet, 2004; (3) Hamadani et al. World J Surg, 2019; (4). Moore et al. Ann Surg, 2017; (5) Moran et al., EClinicalMedicine, 2018.

*Abbreviations:* CGS, Center for Global Surgery; CI: confidence interval; QR: interquartile range; KHEM, Kyiv Hospital for Emergency Medicine; KTS: Kampala Trauma Score; MUHC, McGill University Health Center; MVC: motor vehicle collision; OR: odds ratio.

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