A 15-year retrospective analysis of major trauma recidivism and alcohol use in Nova Scotia

Dr. Robert S. Green

Professor, Emergency Medicine and Critical Care
Dalhousie University
Medical Director, Trauma Nova Scotia
Halifax, Nova Scotia, Canada
greenrs@dal.ca

nova scotia health authority

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Disclosure

Nothing to disclose

Background

- Trauma patients who present with a history of prior hospital admission for trauma (**recidivists**) may be an opportunity to reduce the burden of traumatic disease.

- Alcohol use increases the risk of injury and is associated with trauma recidivism.
  - Between 27% and 77% of trauma recidivism is related to the use of alcohol.

- There is limited information available regarding the impact of alcohol use on the outcomes of trauma recidivists.

Background

- The primary objective of this study was to determine if mortality, hospital length of stay (LOS), or complications were increased in alcohol positive trauma recidivists.

- As a secondary objective, we sought to assess whether alcohol was predictive of being a trauma recidivist.

Methods

- Retrospective analysis of all adult (>17 years) major trauma patients in Nova Scotia between 2001 and 2015 using data collected from the Nova Scotia Trauma Registry.

- Patients were grouped by BAC level on admission:
  - Negative (≤1.9 mmol/L)
  - Low (2-10 mmol/L)
  - Moderate (10.1-17.3 mmol/L)
  - High (>17.3 mmol/L)

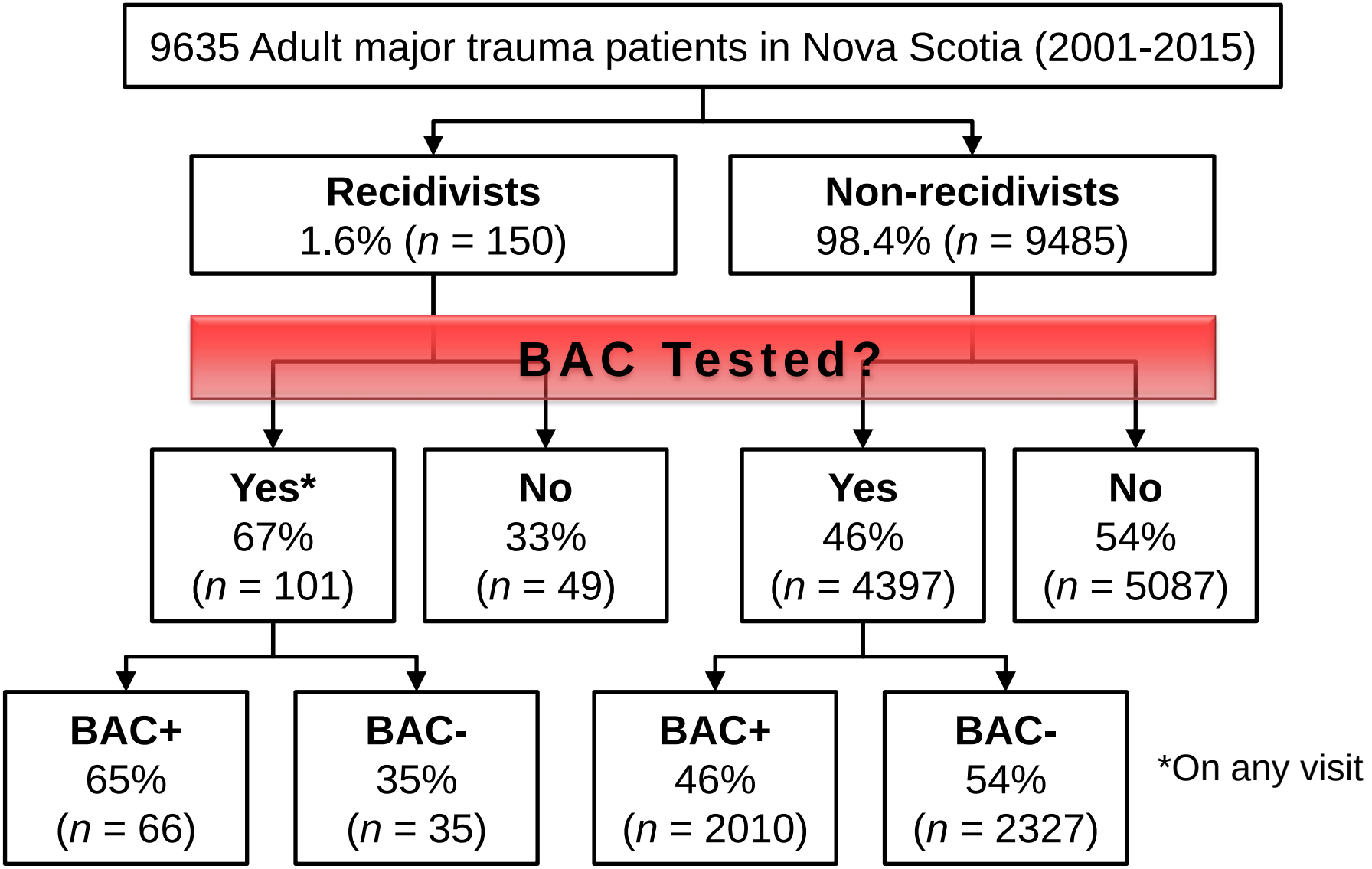
- We defined ***BAC positive trauma recidivists*** as patients with a BAC ≥2 mmol/L on any of their hospital admissions.

Methods

Data elements collected included:

- Demographics
- Injury type
- Injury severity and alcohol use on ED admission:
  - Abbreviated Injury Scale (AIS ‘90) Head score
  - Glasgow Coma Score
  - Injury Severity Score
  - BAC
- Level of ED assessment
- Length of stay (in-hospital, ICU, IMCU)
- Complications
- Discharge disposition

Results – Study Population



Recidivists vs. Non-recidivists

Characteristic	**Recidivists (n = 150)**	**Non-recidivists (n = 9485)**	***p***
Age – mean ± SD	49.5 ± 22.5	51.8 ± 21.5	0.20
Male – n (%)	124 (83)	6915 (73)	**0.008***
Type of injury – n (%)			0.41
Blunt	129 (87)	7918 (89)	
Penetrating	20 (13)	1006 (11)	
Severe TBI (AIS head ≥ 3) – n (%)	65 (76)	4233 (98)	0.12
ISS on arrival – mean ± SD	17.9 ± 7.7	21.9 ± 15.2	**0.002***
GCS on arrival – mean ± SD	13.6 ± 3.1	13.6 ± 3.1	0.80
BAC test performed – n (%)	65 (43)	4397 (46)	0.46

Recidivists: BAC+ vs. BAC-

Characteristic	**BAC+ (n = 66)**	**BAC- (n = 35)**	***p***
Age – mean ± SD	37.2 ± 16.0	47.3 ± 18.9	**0.006***
Male – n (%)	56 (86)	31 (89)	1.00
Type of injury – n (%)			0.17
Blunt	57 (88)	27 (77)	
Penetrating	8 (12)	8 (23)	
Severe TBI (AIS head ≥ 3) – n (%)	28 (76)	11 (61)	0.26
ISS on arrival – mean ± SD	18.9 ± 9.1	17.1 ± 7.5	0.31
GCS on arrival – mean ± SD	13.0 ± 3.9	14.3 ± 2.0	0.14

Outcomes: Recidivists vs. Non-recidivists

Outcome	**Recidivists (n = 150)**	**Non-recidivists (n = 9485)**	***p***
Complications – yes, n (%)	43 (29)	2464 (26)	0.45
Length of stay – mean days ± SD			
In-hospital	14.5 ± 21.9	16.5 ± 35.3	0.50
Intensive care unit	2.6 ± 4.3	4.3 ± 11.4	0.15
Intermediate care unit	2.5 ± 4.3	2.5 ± 4.3	0.99
In-hospital mortality – n (%)	46 (31)	2955 (31)	0.89

Recidivist Outcomes: BAC+ vs. BAC-

Outcome	**BAC+ (n = 66)**	**BAC- (n = 35)**	***p***
Complications – yes, n (%)	18 (28)	11 (31)	0.69
Length of stay – mean days ± SD			
In-hospital	13.0 ± 17.9	21.4 ± 34.2	0.18
Intensive care unit	2.6 ± 3.8	3.8 ± 6.5	0.47
Intermediate care unit	1.9 ± 3.1	4.0 ± 6.9	0.22
In-hospital mortality – n (%)	21 (32)	13 (37)	0.63

Alcohol Use & Recidivism

Outcome	**BAC+**	**BAC-**	***Total***
Recidivist	66 (65)	35 (35)	101
Non-recidivist	2010 (46)	2327 (54)	4337

Significant difference in the proportion of BAC+ vs. BAC- recidivists ($p<0.001$)

Odds ratio of recidivism for BAC+ vs. BAC-

2.18 (95% CI 1.4-3.3, $p<0.001$)

Discussion

- Recidivism was infrequent: 1.6% of trauma patients presented with injury on > 1 occasion.
- 65% of recidivists were BAC+ on at least one admission.
- Recidivists had similar mortality, length of stay, and complications compared to non-recidivists.
- Patients with a BAC+ on admission had over 2 times the odds of being a trauma recidivist.

Limitations

- Retrospective study design – cannot imply causality.
- Relatively small number of recidivists – difficult to assess for factors associated with recidivism.
- Data collection – information on BAC testing was missing in many cases.
- Generalizability – other settings are likely to differ by population, alcohol use, BAC testing, and interventions for reducing alcohol abuse and/or trauma recidivism.

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