



Legal consequences for alcohol-impaired drivers injured in motor vehicle collisions: A systematic review



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ABSTRACT

Background: The treatment of alcohol-impaired drivers injured in a motor vehicle collision (MVC) is a complex public health issue. We conducted a systematic review to describe the legal consequences for alcohol-impaired drivers injured in a MVC and taken to a hospital or trauma center. **Methods:** We searched MEDLINE, Embase, and CINAHL databases from inception until August 2014. We included studies that reported legal consequences including charges or convictions of injured drivers taken to a hospital or trauma center after a MVC with a blood alcohol concentration (BAC) exceeding the legal limit. **Results:** Twenty-six studies met inclusion criteria; twenty studies were conducted in the USA, five in Canada, and one in Sweden. All were cohort studies (23 retrospective, 3 prospective) and included 11,409 patients overall. A total of 5,127 drivers had a BAC exceeding the legal limit, with legal consequences reported in 4937 cases. The median overall DUI/DWI conviction rate was 13% (range 0–85%). The median percentage of drivers with a previous conviction on their record for driving under the influence (DUI) or driving while intoxicated (DWI) was 15.5% (range 6–40%). The median percentage of drivers convicted again for DUI/DWI during the study period was 3.5% (range 2–10%). Heterogeneity between study designs, legal jurisdictions, institutional procedures and policies for obtaining a legally admissible BAC measurement precluded a meta-analysis. **Conclusions:** The majority of intoxicated drivers injured in MVCs and seen in the emergency department are never charged or convicted. A substantial proportion of injured intoxicated drivers had more than one conviction for DUI/DWI on their police record.

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1. Introduction

Alcohol-related motor vehicle collisions (MVCs) are a leading cause of preventable trauma and mortality worldwide (Brady and Li, 2014; The Alcohol-Crash Problem in Canada, 2013; Hayman and Crandall, 2009; Hingson and Winter, 2003). Alcohol-impaired drivers involved in MVCs and seen in the emergency department (ED) generally stay longer, use more resources, require hospital admission, incur higher health care costs, and have poorer outcomes compared with non-impaired drivers (O’Keefe et al.,

2013; Lee et al., 2009; Martin et al., 2013; Hsieh et al., 2013), although some research suggests alcohol use may also have a protective effect in trauma patients (Hsieh et al., 2013; Cherry et al., 2010; Plurad et al., 2010). The risk of a MVC and fatal injury increases as blood alcohol concentration (BAC) levels increase, and rises rapidly after a driver’s BAC exceeds 50 mg/dL compared to unimpaired drivers (Blomberg et al., 2009; Fell and Voas, 2014; Taylor et al., 2010; Taylor and Rehm, 2012). Intoxicated drivers involved in a MVC are more likely to have prior convictions for driving under the influence (DUI) or driving while impaired (DWI), and more likely to be involved a subsequent alcohol-related MVC (Rauch et al., 2010; Marowitz, 1998; Traffic Safety Facts, 2012; LaBrie et al., 2007).

Implementing and enforcing legal BAC limits can reduce the incidence of serious injury and mortality due to alcohol-related MVCs (Chang et al., 2012; Yao et al., 2014; Lapham and Todd, 2012; Wagenaar et al., 2007; Brubacher et al., 2014; Callaghan et al.,

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2014). In Canada and the United States, the proportion of fatal traffic crashes involving alcohol peaked in the early 1980s and gradually declined until the mid-1990s, after which it has remained relatively the same (Fell and Voas, 2014; Vanlaar et al., 2012). While significant progress has been made, the societal burden associated with impaired driving continues to be a significant public health issue. Approximately 30–40% of fatal MVCs in North America involve alcohol, the victims disproportionately younger and middle-aged men (The Alcohol-Crash Problem in Canada, 2013; Perreault, 2013; Traffic Safety Facts, 2013). Intoxicated drivers not only place themselves at risk, but also directly cause substantial death, disability and suffering of innocent citizens.

Intoxicated drivers seen in the ED following injury in a MVC may potentially evade legal consequences (McCammon, 2001; Criddle et al., 2001). Possible explanations include difficulty identifying intoxication, unavailability of a legally usable BAC measurement, lack of resources by police, poor logistical coordination between police and the ED, sympathy for the injured driver, and sanctity of doctor–patient relationship (Fell et al., 2009, 2010; Mancino et al., 1996; Orsay et al., 1994; Lowenstein et al., 1990; Goldman et al., 1998). The scale of this issue across different legal jurisdictions nationally and internationally is not well described. The objective of this systematic review is to synthesize evidence from peer-reviewed primary studies from the scientific literature that investigated the legal consequences for intoxicated drivers who were injured in a MVC and required assessment in the ED of a hospital or trauma center.

2. Method

This systematic review was performed in accordance with PRISMA guidelines (Moher et al., 2009). The methods of analysis and eligibility criteria were pre-specified and documented in a protocol available upon request.

2.1. Data sources and search strategy

We searched three electronic databases (MEDLINE, Embase, and CINAHL) from inception until August 1, 2014 (last searched on August 7, 2014). The search strategy was developed in collaboration with an experienced librarian (see Appendix A) and modified for each database. We used a combination of medical subject headings (MeSH), Emtree headings, and variations of key words, including “trauma”; “injured”; “motor vehicle”; “automobile”; “car”; “alcohol”; “ethanol”; “intoxicated”; “impaired”; “police”; “charge”; “consequence”; “law”; “legal”; “prosecution”; “conviction” and “recidivism”. We restricted the search results to full-text articles published in English.

For this review, the terms “impaired” and “intoxicated” are used interchangeably and refer only to alcohol use. For each study in the review, we defined the “legal BAC limit” as the legal BAC cutoff in the jurisdiction at the time the study was performed. We defined “motor vehicles” to include automobiles, trucks, or motorcycles. No restrictions were placed on type or severity of injury suffered by the driver, or whether the injured driver was admitted to hospital or discharged from the ED.

2.2. Eligibility criteria

We included studies that met the following criteria: (a) design – any primary study involving human participants (randomized controlled trials, cohort studies, case control studies, case series, case reports); (b) population – drivers above the legal BAC limit (in the location and at the time of the study) who were injured in a MVC; (c) exposure – being seen for treatment in a hospital or

trauma center; and (d) outcome – any legal consequences (e.g., charges, convictions) that resulted from the case.

Our primary outcomes of interest were any legal charges or convictions for intoxicated drivers who were injured in a MVC and seen in the ED. Additional outcomes of interest were any prior or subsequent convictions reported for alcohol-impaired drivers, regardless of whether or not they were charged or convicted during the study.

2.3. Quality assessment

Two blinded investigators (N.K. and M.E.) independently assessed the quality of included studies using the risk of bias tool for nonrandomized studies (RoBANS) tool (Kim et al., 2013). RoBANS is a domain based evaluation tool that is compatible with the Cochrane risk of bias tool and can be applied to the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) approach. We assessed studies according to six domains: (a) selection of participants; (b) confounding variables; (c) measurement of exposure; (d) blinding of outcomes; (e) incomplete outcome data; and (f) selective outcome reporting. Studies were included regardless of their risk of bias. We used the kappa statistic to calculate inter-observer reliability for agreement on all six domains.

2.4. Data abstraction and analysis

Two reviewers (N.K. and M.E.) independently applied selection criteria to titles and abstracts and then full papers. We searched bibliographies of all articles that met selection criteria to identify additional relevant studies. Any disagreements between N.K. and M.E. regarding study eligibility or quality assessment were resolved through consensus. If consensus could not be reached, a third reviewer (R.G.) was consulted to resolve the disagreement.

From included studies, two reviewers (N.K. and M.E.) used a standardized data extraction form and independently extracted data on location, design, legal BAC limit, the total number of patients, the number of patients exceeding the legal BAC limit and how many of them had police records available. Data was extracted from each study on the level of the trauma center(s) involved, which are based on guidelines developed in the United States by the American College of Surgeons Committee on Trauma (Trauma System Accreditation Guidelines, 2011), and in Canada by the Trauma Association of Canada Accreditation Committee (Resources for Optimal Care of the Injured Patients, 2014). For patients above the legal BAC limit, we extracted the following data elements when available: age; gender; Injury Severity Score (ISS); length of stay (LOS); mortality; culpability; administrative sanctions (number and type), legal charges (number and type); legal convictions (number and type); and any previous or subsequent convictions reported (number and type).

We calculated descriptive statistics for each included study. We defined the overall DUI/DWI conviction rate as the ratio of drivers above the legal BAC limit and convicted of DUI and/or DWI to the total number of drivers above the legal BAC limit and for whom police records were available. We converted any data regarding BAC levels to mg/dL and performed all analyses using RevMan version 5.3 Review Manager (RevMan) (2014) (Cochrane Collaboration, Copenhagen, Denmark) and the R Statistical software package (V3.0.1; R Foundation for Statistical Computing, Vienna, Austria). Individual studies varied by design, geography, jurisdiction, legal BAC limit, and procedure for obtaining a legally admissible BAC measurement. This heterogeneity precluded the ability to perform a meta-analysis.

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