Assessing for head injury in alcohol‑intoxicated patients


Abstract
Each year, 1.4 million people with recent head injuries attend emergency departments in England and Wales. The incidence of head injury in acutely intoxicated patients is estimated to be as high as 65%. One of the challenges of assessing and managing patients who have consumed drugs or alcohol is that the signs and symptoms of this type of intoxication are also risk factors for intracranial complications and head injury, which makes differentiation between the two diagnoses difficult.

This article examines the literature on assessment and management of intoxicated patients with head injuries to identify the challenges faced by healthcare professionals undertaking neurological assessments. The article, which includes a case study to illustrate some of these challenges, also explores how staff perceptions can affect assessment and management, and the effects of alcohol on Glasgow Coma Scale scores.

Keywords
alcohol, brain injury, conscious level, emergency department, emergency nurse, Glasgow Coma Scale, head injury, intoxication, neurological assessment

Background
Head injuries are a common cause of admission to emergency departments (EDs) (Caton-Richards 2010) and in 2013-2014 head injury was recorded as a first diagnosis in 449,000 of total ED patient attendances in the UK (Baker 2015). Head injury is also the most common cause of death and disability in people aged 1-40 years in the UK (National Institute for Health and Care Excellence (NICE) 2014).

Alcohol plays a significant role in the incidence of head injuries (Rush 2006, Howland et al 2007, Shahin and Robertson 2012). Johnston and McGovern’s (2004) randomised controlled study compares the pattern and severity of injury in patients who were intoxicated when attending EDs with those who had ingested no alcohol. The intoxicated patient group had a 48% increased attendance for head injury, and more significant limb and craniofacial injuries, than those in the non-alcohol group.

Choi et al (2009) also found that the severity of head and facial injuries can be linked to increased alcohol consumption. In addition, the risk factors for developing an intracranial bleed are higher in alcohol-dependent patients because of the coagulopathy related to liver dysfunction (Peron et al 1998, Holbery and Newcombe 2016).

Management of patients with head injuries should focus primarily on assessing the risks of, and preventing or limiting, secondary brain injury (Sanders 2013). The main aim of assessing patients with head injuries in EDs is to identify the risk of clinically important brain injury, injury to the cervical spine and the potential need for imaging (NICE 2014).

Early detection and appropriate treatment can minimise, or help to avoid, long-term disability or death from head injury-related complications (NICE 2014). The high incidence of trauma in patients with alcohol intoxication requires ED staff to be vigilant for non-obvious physical injuries, including cervical spine and head injuries (Moulton and Yates 1999).

The assessment and management of patients with head injuries should be guided by adult and paediatric versions of the Glasgow Coma Scale (GCS) (Scottish Intercollegiate Guidelines Network (SIGN) 2009, NICE 2014).

Patients with head injuries and GCS scores of 15/15 should be assessed within 15 minutes of arrival at an ED by a trained member of staff (NICE 2014). However, any patient admitted with an altered level of consciousness should be assessed immediately (NICE 2014).
The GCS was designed by Teasdale and Pomeroy in 1974 to offer a detailed analysis of patients’ consciousness level (Pomeroy 2009). Involving observations of eye opening, verbal and motor responses, the GCS enables healthcare professionals to measure patients’ alertness, awareness and activity levels, and record pupil response and limb movement (Caton-Richards 2010).

Accurate use of the GCS can help prevent, or identify, secondary brain injury by revealing subtle changes in consciousness (Iankova 2006, Waterhouse 2008). Alterations in GCS scores can indicate neurological deterioration before changes in pupil size or vital signs are seen (Waterhouse 2005). Most fatal outcomes occur in moderate (GCS 9-12) or severe (GCS 8-3) head-injury patient groups (NICE 2014). Therefore nurses should be able to record GCS scores accurately to identify changes in patients’ neurological status (Waterhouse 2008).

The case study below is by the Victorian Managed Insurance Authority (2010). It provides risk advice and insurance services for the Victorian government, Australia. The information is based on an amalgamation of several clinical experiences and resolved claims. Information has been de-identified where possible to support these privacy considerations. Its purpose is to illustrate an observed trend in issues and support risk-management strategies to address these.

Neurological assessment of alcohol-intoxicated patients
Healthcare professionals can encounter various difficulties when carrying out neurological assessments of intoxicated patients (Holbery and Newcombe 2016). Communication can be problematic because of associated cognitive impairment, which can affect linguistic ability (Pernanen 1991), and intoxicated patients can be confused, experience difficulties speaking, use inappropriate words or make inappropriate sounds (Iankova 2006).

Kelly et al (2004) found that using the GCS to make neurological assessments of intoxicated patients can be challenging because such patients can be uncooperative or refuse to speak, or because their speech can be slurred or incoherent. Participants in Kelly et al’s (2004) study found it difficult to score the verbal part of the GCS and believed they had given inappropriately low GCS scores.

Assessing motor response in intoxicated patients can also be difficult. For example, they can have higher pain thresholds, loss of motor function, reduced response to stimuli and poor muscular coordination (RUP 2006).

To reduce variability in neurological assessment among staff, NICE (2014) recommends that, if one person notes deterioration in the neurological status of patients with head injuries, a second, further neurological assessment should be done by another clinician, preferably a neurologist (NICE 2014).

Case study
A 48-year-old woman with a laceration on the back of her head was brought by ambulance to an emergency department (ED). Her son had found her on the kitchen floor, which had been wet with what appeared to be spilled wine. He had been unable to get her to her feet and had noticed her speech was slurred.

The son advised ED staff that she had probably consumed four or five glasses of wine, but that he had been away for some parts of the night and she could have consumed more. He reported that his mother was a ‘regular drinker’, but he did not think her presentation was caused by intoxication.

On admission to the ED, the triage nurse assessed the patient as having a Glasgow Coma Scale (GCS) score of 15/15, the cubicle nurse assessed the GCS as 14/15 and the ED registrar assessed it as 14/15. According to the registrar’s assessment, the patient could follow commands, her central nervous system was considered grossly intact and she appeared intoxicated.

The patient’s son stated repeatedly that he believed his mother was not heavily intoxicated, that her behaviour was different from when she was normally intoxicated and her level of drowsiness was disproportionate to the amount of alcohol he thought she had consumed. The ED registrar documented the possibility of a closed head injury.

The patient was complaining of elbow pain and an X-ray was requested. She was sent for X-ray un accompanied and no observations were recorded during this time, but the X-ray could not be performed because radiology staff said the patient had been uncooperative. In the meantime, the registrar discussed the case with the ED consultant and ordered a computed tomography (CT) scan of the patient’s head.

A nurse reviewed the patient on her return from the radiology department to the cubicle and found her unresponsive. The nurse considered this was due to intoxication and did not inform a registrar for 35-45 minutes. When the registrar was informed, he reviewed the patient and transferred her to the resuscitation department, where she was intubated. The CT scan was performed three hours after the patient’s admission to the ED. It showed a large subdural bleed, subarachnoid haemorrhage and a midline shift. The patient was transferred to an intensive care unit (ITU) while waiting to go to theatre. While she was in ITU it was decided that surgery was not warranted due to the extent of deterioration. The patient subsequently died.

A coroner’s court found that the medical management provided by hospital staff was unsatisfactory and had contributed to her death. In summary, the coroner found:
- Staff appeared to discount the patient’s son’s eyewitness account because it did not match their assessment that the patient was intoxicated.
- The patient’s elbow complaints were investigated before her serious head injury.
- It is unacceptable practice to leave a patient who has sustained a head injury unaccompanied in the radiology department where GCS and other vital signs cannot be monitored.
- The nurse, on observing that the patient had become unresponsive, should have informed the medical team immediately and called for a medical emergency team to assist.
Implications for practice

» Patients with head injuries should be assessed by a trained member of staff within 15 minutes of arrival at an ED (NICE 2014).

» Patients with impaired consciousness who present to EDs (GCS score of less than 15) should be assessed immediately by a trained member of staff (NICE 2014).

» Altered levels of consciousness should be attributed to alcohol intoxication only when brain injury is excluded (SIGN 2009, NICE 2014).

» Signs and symptoms of neurological deterioration should result in urgent reappraisal by the supervising doctor (SIGN 2009, NICE 2014).

» Development of agitation or abnormal behaviour should prompt urgent reappraisal by a doctor (SIGN 2009, NICE 2014).

» If one member of staff records deterioration in a neurological assessment, a second trained staff member, who is competent to perform the assessment, should confirm the deterioration. If no second member of staff is available to do this immediately, the supervising doctor should be informed about the deterioration (NICE 2014).

Competent staff member should repeat the observation to confirm deterioration.

Identifying what may be inappropriate or abnormal behaviour in intoxicated patients can also be difficult because they can exhibit fluctuating reactions and perceptions, respond aggressively and display perceived poor judgement (Social Issues Research Centre 2006, Delaforce and Dolan 2013, Ward 2013). Therefore, ED staff should be able to decipher whether these behaviours and responses are solely alcohol related or potentially due to something more sinister. NICE (2014) recommends that the development of agitated or abnormal behaviours in patients with head injuries should result in urgent reappraisal by the supervising doctor.

Effects of alcohol on GCS scores

There is conflicting evidence about the effects of alcohol on GCS scores in patients with head injuries. For example, Lange et al (2010) examined the effects of blood alcohol levels on GCS scores following traumatic brain injury (TBI) in 475 patients who presented to a level 1 trauma centre after a motor vehicle accident. Results showed that, overall, acute alcohol intoxication did not significantly affect GCS scores, even in patients with high blood alcohol levels.

Similarly, a review of the National Trauma Data Bank of the American College of Surgeons (1993-2004) (Stuke et al 2007) found that alcohol did not result in a clinically significant reduction in GCS in young-to-middle-aged trauma patients. The only exceptions were in severely injured patients without TBI or in those with minor TBI identified by CT scan in whom alcohol intoxication was associated with a decrease in GCS score of slightly more than one point.

An earlier study by Sperry et al (2006) involved a ten-year retrospective analysis of all blunt-injured patients with TBI whose blood-alcohol levels had been measured in a level 1 trauma centre. The study found a less than one point difference in GCS between those who were intoxicated and those who were not, but a 1.4-point difference in patients with severe TBI. The researchers conclude that attributing low GCS scores to alcohol intoxication rather than neurological damage can result in lack of recognition of significant brain injury (Sperry et al 2006).

Turner et al (2006) also found that pre-injury alcohol consumption is not consistently related to post-traumatic brain injury cognitive assessments. Conversely, Shahin et al (2010) found that GCS scores could increase significantly over time in intoxicated patients. Their study involved 188 patients with head trauma who had been admitted to a neuro ICU and divided into two groups, intoxicated and non-intoxicated.

Pre-hospital GCS, ED GCS and highest GCS scores in the first 24 hours of admission were measured, and the results show that GCS scores increased significantly over time in intoxicated patients compared with non-intoxicated patients (Shahin et al 2010). Brickley and Shepherd (1995), who examined victims of night-time assault, found that GCS scores were altered by a maximum of two to three points in patients with high blood-alcohol levels. However, the sample did not include patients with head injuries (Brickley and Shepherd 1995).

NICE (2014) states that decreased levels of consciousness should be attributed to intoxication only when brain injury has been excluded, while the Manchester triage group highlights that an alteration in consciousness in patients who have consumed drugs or alcohol is as clinically important as alteration in consciousness due to other causes (Mockway-Jones et al 2006). Emergency nurses should adopt an objective approach to the assessment and management of acutely intoxicated patients to ensure optimal care is provided (Holberry and Newcombe 2016).

Staff attitudes and perceptions

Patient assessment should be undertaken in a fair, non-discriminative way to ensure that management is based on the best available evidence (Beretta 2003). Although all patients with altered consciousness should be allocated a high priority at triage (Mockway-Jones et al 2006), this may be at odds with what occurs in clinical practice, particularly with patients who are under the influence of alcohol or drugs (Mockway-Jones et al 2006). According to Holberry and Newcombe (2016), ‘frequent exposure to intoxicated patients can sometimes affect the objectivity of members of staff responsible for their care’.

Healthcare professionals can assume that reduced levels of consciousness in patients who smell of alcohol is a result of alcohol intoxication alone (Gordis 2006). Stuke et al (2007) believe that attributing low GCS to alcohol intoxication in TBI patients may lead trauma and emergency medicine physicians to withhold urgent diagnostic and therapeutic interventions inappropriately while they determine whether patients’ neurological status improves over a period of observation. Healthcare professionals can...
also end their care of intoxicated patients quickly and move onto those they perceive as more deserving (Gordis 2006). Malone and Friedman (2005) state ‘the temptation to minimise issues in pleasantly drunken patients, or rapidly discharge unruly ones, must be avoided’. Accurate medical evaluation of alcohol-intoxicated patients could reveal head injuries or other conditions, such as hypoglycaemia, meningitis, drug use and bacterial infection (Gordis 2006).

Conclusion
Alcohol-related head injuries are a common cause of admissions to EDs. However, despite the prevalence of such injuries, ED staff encounter challenges when undertaking neurological assessments of this patient group. Staff can find it difficult to differentiate between responses related to alcohol intoxication and potential signs and symptoms of brain injury. This could result in inaccurate GCS score recording and delayed reporting of deterioration. Best practice guidelines suggest that, if deterioration in neurological status is noted by one trained member of staff, a second who is competent to perform the assessment should confirm it (NICE 2014). Staff perceptions of intoxicated patients can act as a barrier to accurate assessment as altered consciousness levels may be attributed to alcohol consumption alone rather than an underlying head injury. These perceptions, combined with the contrasting research about the effect of alcohol intoxication on GCS scores in patients with head injuries, may lead ED staff to delay their assessments of intoxicated patients in the belief that the patients’ consciousness levels will alter after a period of observation. However, best practice guidelines indicate that patients with head injuries should be diagnosed as intoxicated only when brain injury has been excluded (NICE 2014).

Despite the challenges associated with undertaking neurological assessments of intoxicated patients, ED staff should therefore take GCS scores of this patient group at face value, report reduced levels of consciousness and inappropriate responses and behaviours to senior emergency staff, and manage patients’ care according to clinical guidelines.

References


