

OPINION

Just a head knock? Emergency physicians need to get serious about concussion

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Abstract

Attention and awareness regarding concussion injury in Australia have significantly increased in the last decade. Although most of this increase is because of discussion regarding concussions from sporting endeavours, the majority of concussions are from non-sport environments including motor vehicle crashes, workplace incidents, falls, accidents, assault and intimate partner violence. In all cases, hospital EDs are the first point of contact, yet as argued in our Opinion here, there are concerns regarding the consistency of care protocols, because of a number of reasons, as well as management and follow-up clinical practices. Our Opinion is to provide a constructive discussion as well as calling for ACEM to support research to provide evidence-based data. Finally, we provide some recommendations that could be implemented immediately to improve clinical practice for presentations of concussion injuries in EDs.

Key words: *brain concussion, clinical decision-making, diagnosis, patient outcome assessment, research priorities.*

Traumatic brain injury (TBI) is one of the leading causes of death and disability worldwide. Although the

exact figures are not known, it is estimated from hospital data, that 80–90% of TBI cases presented to EDs are mild TBI (mTBI) and concussion.¹ Physicians in EDs are often the initial point of contact and, in the most part, the only clinical management provider for patients who have experienced a concussion.² ED clinicians are called on to diagnose concussion and make clinical recommendations including a greater demand on management and medical clearance for return to school, work and sport.³ Currently, it is acknowledged that concussion diagnosis, management and follow up are inconsistent across EDs throughout Australian hospitals. In this Opinion, we will contend that consistent clinical ED guidelines are required for concussion diagnosis, management and follow up.

Community awareness surrounding the short- and long-term effects of concussion has increased significantly in the last decade. This can generally be attributed to the associated increase in media attention concussion has received over the last decade. However, the majority of this focus has mostly centred around ‘sport-related concussion’. Despite ongoing media headlines, concussions in sport only account for approximately 20% of all injuries.¹ The majority of concussions stem from motor vehicle crashes, workplace incidents, falls, accidents, assault and intimate

partner violence. Moreover, while contributing to the majority of TBI injuries presented to EDs, the true incidence of concussion is not known as current data is representative of hospital admissions only.^{1,4} Most concussions remain unreported for reasons ranging from lack of awareness of the potential lasting harms of the injury to the stigma attached to what is perceived to be a minor injury (which it is anything but).⁵

Although the increased awareness around concussion is positive, the dominance of the so-called ‘sport-related concussion’ has likely underpinned the inconsistencies in diagnosis, management and follow up of concussion experienced in non-sport environments. International consensus guidelines^{6,7} outline the evaluation and management of sport concussion which suggest best practices to reduce morbidity associated with repeated or unidentified concussions during sporting events (e.g. where a player hides symptoms after a collision and therefore is not suspected of injury). However, it has been suggested that these guidelines for sports-related concussion, used as a default for all concussion injuries, may not be appropriate for a majority of patients with suspected concussion,² particularly when they present to hospital EDs. Concussion is much more than just a ‘sporting injury’.

Concussion can also be overlooked with prioritisation of concurrent injuries over concussion in multi-trauma patients, or when EDs prioritise other acute patients over concussed individuals. As a result, there is an increased risk of missed

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or misdiagnosis of concussion. International studies have reported that challenges faced by EDs result in ~56% of patients who met the criteria for a concussion did not receive a diagnosis.^{8,9} A more recent US study reported less than 50% of injured patients presenting to an ED from sport were concurrently evaluated for concussion. Of these, 37% were diagnosed with concussion, and discharge concussion education provided to only 15%.²

Disparities are also apparent in concussion care practices between various hospitals.³ Similar to sport concussion, where different sports have different protocols to assess, diagnose and manage concussion, it is not uncommon to hear that a concussed patient in one hospital will receive a completely different protocol of assessment and care to another similarly level hospital (e.g. tertiary). The recent Federal Parliament Senate Inquiry into sports-related concussion and repeated brain trauma highlighted many of these concerns from former concussion patients who continually expressed confusion following incongruent assessments, clinical perspectives and a lack of information following discharge.¹⁰

The disparities in care protocols between hospitals may reflect the wider concern regarding clinical training of medical and allied health practitioners (or lack thereof) for concussion. The most consistent concern that has been raised at presentations, seminars, and group meetings presented by us, has been the disclosure of a lack of formal training towards the recognition and management of concussion. Consequently, this lack of formal training has given rise to a number of concerns, such as an absence of awareness of the nature and risks of concussions experienced from contact sports, but also from accidents in the home or in an office ('head knock' is usually described which undermines the seriousness of the injury). As a result in EDs, concussion injury evaluation usually incorporates an over-reliance on clinical imaging which has shown to have little diagnostic efficacy,⁶ and is only concerned to rule out more serious brain injury.² However, if not

attended to or treated appropriately, the risk of persistent post-concussion symptoms is significantly increased and can have a devastating effect on an individual's daily activities of living.

A related concern is the range in medical seniority/experience in doctors and varied cultural backgrounds in a number of ED doctors that inhibit understanding of the seriousness of this injury. For example, a junior doctor diagnosing concussion in a patient could be overruled by a more senior doctor relying on outdated models of concussion diagnosis (e.g. loss of consciousness and GCS <13). Similarly, doctors from varied cultural backgrounds may not be aware of the seriousness of concussion, particularly in that concussion has dominated western society,⁶ but less so in non-western societies.

Finally, anecdotal concerns have been raised with regard to follow up and clinical decisions on when a patient has appropriately recovered to return to school, work or sport. Many patients return to EDs because of the obligation of doctors to see all patients who present to ED. However, there are currently no systematic ED guidelines on how to medically clear a patient in the follow up in the week after. Moreover, patients who may be unhappy with an ED doctor's decision, particularly if the doctor has not medically cleared a patient to return to sport, could easily 'doctor shop' by going to a general practitioner who is unaware of the injury history. It would be prudent for the ACEM and Royal Australian College of General Practitioners (RACGP) to communicate and work together on shared goals in this area.

In Australia, no research has been yet undertaken to quantify consistency in concussion care practices in evaluation, diagnosis and discharge education for those identified to be at risk of concussion who present to EDs. In our preliminary studies that have led us to this opinion, we have received many lived experiences of patients in EDs who have provided us with disparate accounts of concussion diagnosis (or lack thereof). Studies to date

have reported that missed diagnosis increases the risk of persistent post-concussion symptoms, or further complications requiring potentially preventable allied health and psychological care.³

Our Opinion here has raised current concerns facing ED doctors with regard to concussion. Further to undergraduate training on concussion more comprehensively in medical schools, we would like to propose the following recommendations:

1. ED doctors need to take prior concussion history. Although alcohol, smoking and recreational drug history is taken in the medical screening, no patient history is taken of concussion, or even if they played or currently play contact sports such as Australian football, soccer or rugby (other than in those who present following a sports concussion).
2. Hospital EDs need to incorporate a clinical pathway that allows for brain injury assessment in multiple trauma patients.
3. There is an urgent need to formulate a consistent guideline for assessment, management and follow up that can be used at all hospitals (at all levels).
4. ACEM support a formal post-graduate (PG) education program and professional development pathway that could lead to a formal PG qualification at universities. This PG program could be run in either a medical school or a school of allied health, with the objective to educate both medical and allied health professionals for a consistent approach to concussion management and follow up.
5. ACEM and RACGP work together on a clinical pathway from EDs to GP clinics.

In conclusion, with increased awareness of concussion generally, there is a need to support ED doctors to develop a deeper awareness of concussion and appreciation of the potential long-term consequences that include persistent symptoms, but also potential life-altering effects for those suffering multiple concussions such as risks of cognitive impairments and neurodegenerative

disease. Having improved and systematic guidelines will ensure better patient outcomes and overall health.

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