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PRACTICE DEVELOPMENT PAPER

Traumatic injury in Australia and New Zealand

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Summary Injury is a leading cause of mortality, hospitalised morbidity and disability in Australia and New Zealand. Of the many public health challenges facing clinicians on a daily basis, traumatic injury is one of the most significant. A large spectrum of injury severity may result, ranging from minor injuries which require little medical intervention through to severe multisystem trauma, requiring definitive management by an experienced multidisciplinary team. An improved understanding of the incidence and prevalence of trauma can empower clinicians of all levels of experience to contribute to improving the trauma system they work in at a local level. This paper provides an overview of the history and epidemiology of traumatic injury in Australia and New Zealand. The reading of this article and completion of revision questions is equivalent to 2 h of self-directed learning.

Introduction

Trauma as a cause of mortality and morbidity on a global scale is increasing, whether from large-scale disasters (both natural and man-made) or the day-to-day non-intentional injuries and intentional interpersonal violence. In 2000, injuries accounted for 11% of global mortality and 13% of all disability-adjusted life-years.[1] By 2030, road traffic injuries are expected to become the fifth leading cause of death and

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the third leading cause of disability worldwide, with about 90% of this burden occurring in low- and middle-income countries, costing US$ 518 billion globally.[1] In Australia and New Zealand injury is a leading cause of mortality and hospitalised morbidity.

In view of the magnitude of this problem, the role of trauma clinicians is pivotal. Trauma clinicians require not only an in-depth understanding of the mechanism of injury, physiological responses to trauma and structured approaches to trauma management; they also need to understand the determinants and extent of traumatic injury as a significant and burgeoning public health issue. As well as a working knowledge of trauma systems, their role within these systems and an understanding of how this role can optimize patient outcomes through the continuum of trauma care.

This article is intended to expand clinicians understanding of the impact traumatic injury has in Australia and New Zealand. Revision questions are provided to test the reader's knowledge. Completion of the article and revision questions is equivalent to 2 h of self-directed learning.

History

In Australia and New Zealand, death and disability resulting from trauma is embedded in the evolution of these societies. Death and injury resulting from falls or tribal conflict and as sequelae of nomadic life are an integral part of Indigenous Australian Aboriginal Dreamtime.[2] During European colonisation of Australia and New Zealand, traumatic injury was a common cause of death among convicts and settlers alike.[3] Indeed, trauma was once considered an inevitable part of life in terms of how often it occurred and how likely it was to result in death. However, present-day expectations of trauma management and injury outcomes have changed substantially.

Contemporary understanding of patterns of injury and physiological responses to trauma were accelerated through periods of military conflict. During World War II countless lives were saved through the simple actions of splinting and immobilisation of major fractures.[4] The Vietnam War saw a significant improvement in our understanding of the physiology of shock[4]—the importance of haemostasis and fluid resuscitation resulted in the emergence of surgical field hospitals. Consequently, soldiers were surviving long enough to return home to contend with permanent physical disabilities and post-traumatic stress that resulted from their injuries.

Despite this improved understanding, trauma remains the leading cause of death in women and men under the age of 45 years in both Australia and New Zealand.[5–7] In Australia, injury was first recognised as a national health priority in 1986.[8] Despite the acknowledged importance of injury as an issue, and injury prevention as a solution, progress towards a systematic response has been slow.

Epidemiology acts as an essential instrument in understanding trauma as both a clinical and a public health problem because of its implications for clinical practice, social policy, public policy, legislation, injury prevention programs and as a source of data for trauma research. Data elements such as incidence, prevalence, rates, risk, age, sex, ethnicity, geographical distribution, morbidity and mortality are rich sources of information for both clinicians and public health researchers alike. The establishment of a bi-national approach to data collection across the last decade took shape in the form of the National Trauma Registry Consortium (Australia and New Zealand) and contributed to a collaboration of national data collection and reporting on patients sustaining serious injury (ISS > 15).[9] At the time of publication, bi-national data collection and reporting was on hold due to a lack of sustained funding. However, in November 2010 the Alfred Hospital/National Trauma Research Institute in Melbourne and the National Critical Care and Trauma Response Centre in Darwin announced an agreement to jointly fund the further development of the Australian National Trauma Registry by contributing $A350,000 each over the next two years.[10] Efforts to obtain federal government support for this important program continue.

The burden of injury

The cost to society as a result of trauma is significant, impacting both economic expenditure and individual quality of life. In order to understand the scale of trauma as a public health problem, consideration of the prevalence and types of trauma alone is insufficient. The effect of injury on society must too be considered in order to monitor its impact on acute health and rehabilitation services, the workforce, and patient's families and significant others. Ongoing measurement of the impact of trauma in these areas is necessary to guide clinicians, from pre-hospital to rehabilitation; and inform public policy, legislation, funding, resource allocation and distribution.

Economic cost

The burden injury has on economic consumption is documented in different ways depending on mechanism of injury. Road injury costs include property damage, long-term disability costs and insurance administration costs in a full-cost model. Work-related-injury costing models include time off work, lost production, equipment damage cost, compensation costs and insurance administration costs. Traumatic injury accounts for a significant number of hospital admissions which accounts for a considerable portion of trauma related expenditure. Outside these areas, cost of injury data is limited, making comparisons difficult.

In 2004—05, injury accounted for $A3.4 billion of allocated health expenditure in Australia—an increase of 22% since 2001—the greatest proportion of which was spent during hospital admission.[11] In 2008—09, Australia-wide, trauma was responsible for 522,330 hospitalisations, the second highest cause of hospital admissions expenditure, following cardiovascular disease.[11] In 2007—2008, there were 902,000 separations (or admissions) which reported an external cause, and these separations accounted for 6.3 million patient days.[12] This represented 11.5% of all separations and 24.5% of all patient days. When removing separations by poisoning and complications of medical/surgical care, this number is reduced to 464,000 (5.8%) and 2,645,682 (10.3%). The majority of separations and patient days were reported for the public sector.