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Differentiation of confirmed major trauma patients and potential major trauma patients using pre-hospital trauma triage criteria

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ABSTRACT

Background: There is a paucity of literature comparing trauma patients who meet pre-hospital trauma triage guidelines ('potential major trauma') with trauma patients who are identified as 'confirmed major trauma patients' at hospital discharge. This type of epidemiological surveillance is critical to continuous performance monitoring of mature trauma care systems. The current study aimed to determine if the current trauma triage criteria resulted in under/over-triage and whether the triage criteria were being adhered to.

Methods: For a 12-month time period there were 45,332 adult (≥16 years of age) trauma patients transported by ambulance to hospitals in metropolitan Melbourne. This retrospective study analysed data from 1166 patients identified at hospital discharge as 'confirmed major trauma patients' and 16,479 patients captured by the current pre-hospital trauma triage criteria, who did not go on to meet the definition of confirmed major trauma. These patients comprise the 'potential major trauma' group. Non-major trauma patients ($N = 27,687$) were excluded from the study. Pre-hospital data was sourced from the Victorian Ambulance Clinical Information System (VACIS) and hospital data was sourced from the Victorian State Trauma Registry (VSTR). Statistical analyses compared the characteristics of confirmed major trauma and potential major trauma patients according to the current trauma triage criteria.

Results: The leading causes of confirmed major trauma and potential major trauma were motor vehicle collisions (30.1% vs. 19.2%) and falls (30.0% vs. 48.7%). More than 80% of confirmed major trauma and 24.4% of potential major trauma patients were directly transported to a major trauma service. Overall, similar numbers of confirmed major trauma patients and potential major trauma patients had one or more aberrant vital signs (67.0% vs. 66.4%). Specific injuries meeting triage criteria were sustained by 69.2% of confirmed major trauma patients and 51.4% of potential major trauma patients, while 11.7% of confirmed major trauma patients and 4.6% of potential major trauma patients met the combined mechanism of injury criteria.

Conclusions: While the sensitivity of the current pre-hospital trauma triage criteria is high, if paramedics strictly followed the criteria there would be significant over-triage. Triage models using different mechanistic and physiologic criteria should be evaluated.

Introduction

The Victorian State Trauma System (VSTS) was introduced following the release of the government funded "Review of Trauma and Emergency Services–Victoria 1999" (ROTES) report,[23] which established an integrated framework for the treatment, care and triage of trauma patients in Victoria. The ROTES report recommended that major trauma be identified in the pre-hospital environment according to specified physiological, anatomical and mechanistic criteria, as well as time and distance from injury site to definitive care. These recommendations resulted in the development of the current Victorian pre-hospital trauma triage criteria. These criteria incorporate vital signs, specific injuries, mechanism of injury and logistic guidelines to facilitate paramedics' in-field triage decisions (Fig. 1) and are similar to previously published criteria from North America.[1]

There is a paucity of literature comparing trauma patients who meet pre-hospital trauma triage guidelines ('potential major trauma') with trauma patients who are identified as 'confirmed major trauma patients' at hospital discharge. Epidemiological studies have generally only described confirmed major trauma patients[9,14,21] and excluded the profile of

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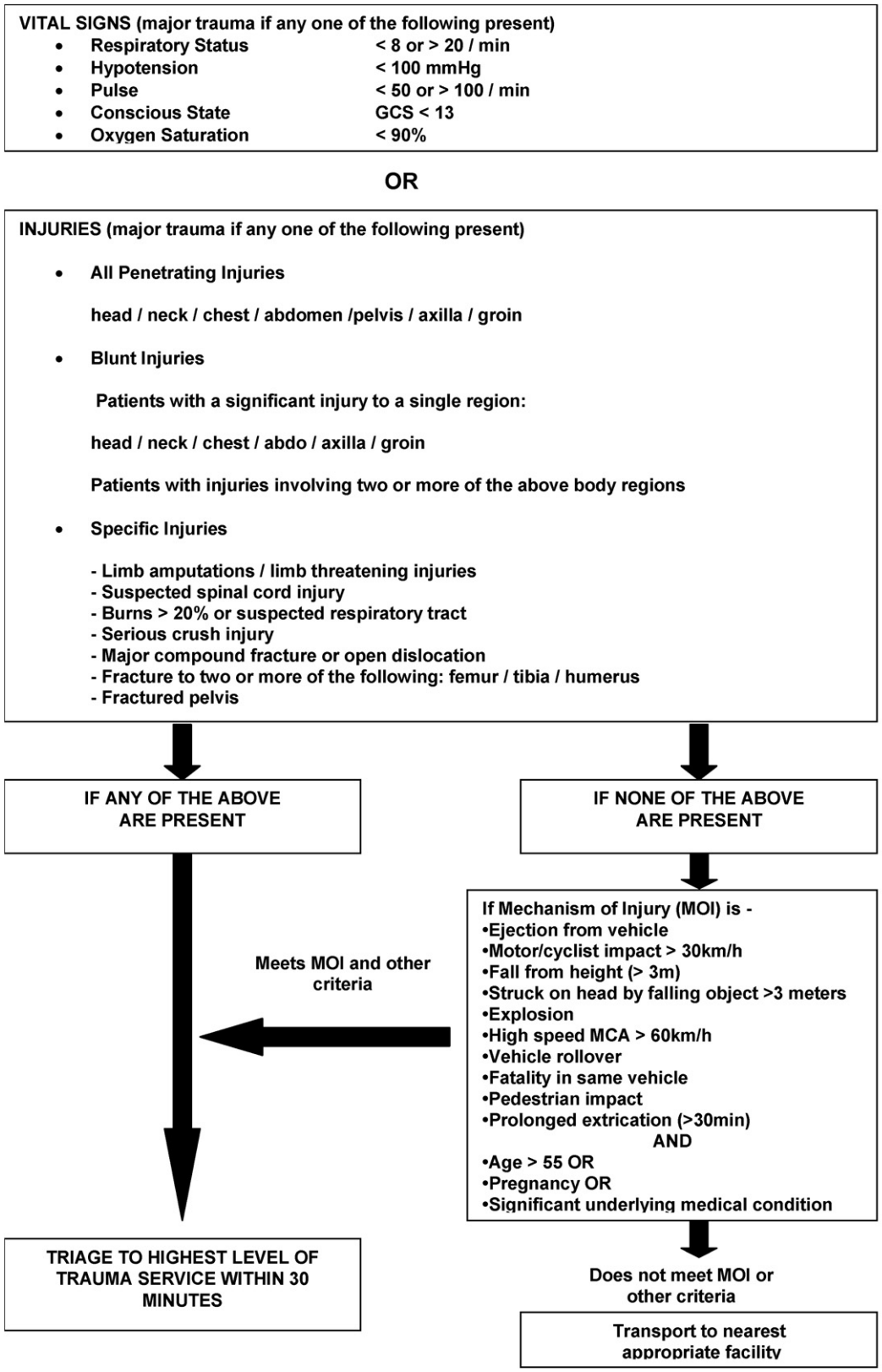

Fig. 1. Current Victorian adult pre-hospital trauma triage criteria.[11] The current adult pre-hospital trauma triage criteria consist of physiological, anatomical and mechanistic parameters, as well as time and distance from injury site to definitive care. If a patient meets one or more of these parameters they are to be transported to a major trauma service (MTS) if transport time is within 30 min.

over-triaged patients, or focussed on system compliance with pre-hospital trauma triage criteria, that is, getting the right patient to the right hospital in the least amount of time.[5,12] Epidemiological surveillance where the profile of confirmed major trauma patients is compared to over-triaged potential major trauma patients is critical to continuous performance monitoring of pre-hospital triage criteria and the successful functioning of mature trauma care systems.