Major incident pre-hospital care

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Abstract
This article gives an overview of pre-hospital care in the context of a major incident, and how some standard operating procedures may be changed to reflect the particular challenges imposed by such an incident. With reference to recent major incidents within the UK, we aim to illustrate how patients may be managed differently and promote understanding of some of the difficulties associated with working in pre-hospital care in general, and in a major incident specifically.

Keywords BASICS; major incidents; PHEM; pre-hospital care; trauma networks; triage

Introduction

Pre-hospital care in the UK has evolved significantly over the last 30 years: from solo doctors with a predominantly general practice background providing an ad-hoc service, progressing through the creation of BASICS (the British Association of Immediate Care Schemes) and recently, pre-hospital care being recognized as the newest subspeciality Certificate of Completion of Training (CCT) by the General Medical Council. Since the creation of major trauma networks in the UK in 2012, the mortality from trauma has steadily declined by integrating all aspects of trauma care beginning with pre-hospital emergency medicine (PHEM), through initial damage control resuscitation, critical care and onwards to definitive care and rehabilitation. This is usually due to a large resource being invested in a small number of patients at any one time with good results. During day-to-day operations, the supply of healthcare delivery outstrips demand and there is a large amount of tolerance built into the trauma system. Clinical decision-making tools such as those in Figure 1 have been employed to determine which patients require transport to a specialist major trauma centre (MTC) or can be safely treated at a smaller trauma unit (TU). There are currently 26 designated MTCs in the UK and each region has at least one MTC designated to receive the sickest trauma patients. This is important in the day-to-day working as well as during major incidents because it may not be possible to move every patient to the MTC, nor would it be appropriate. The effect of saturating a single centre with multiple undifferentiated casualties would bring the entire system to an abrupt halt. We must, therefore, employ a system where patients with the greatest need for advanced medical care receive it and those who require assessment and less complex management are sent to appropriate locations to deal with their injuries. This relies on identifying those casualties who are 'time critical' (i.e. are at risk of death or serious deterioration without significant intervention in an MTC) as well as those who have conditions which can have delayed treatment. This is the principle behind triage as employed by many ambulance and pre-hospital services around the world.

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Major incidents

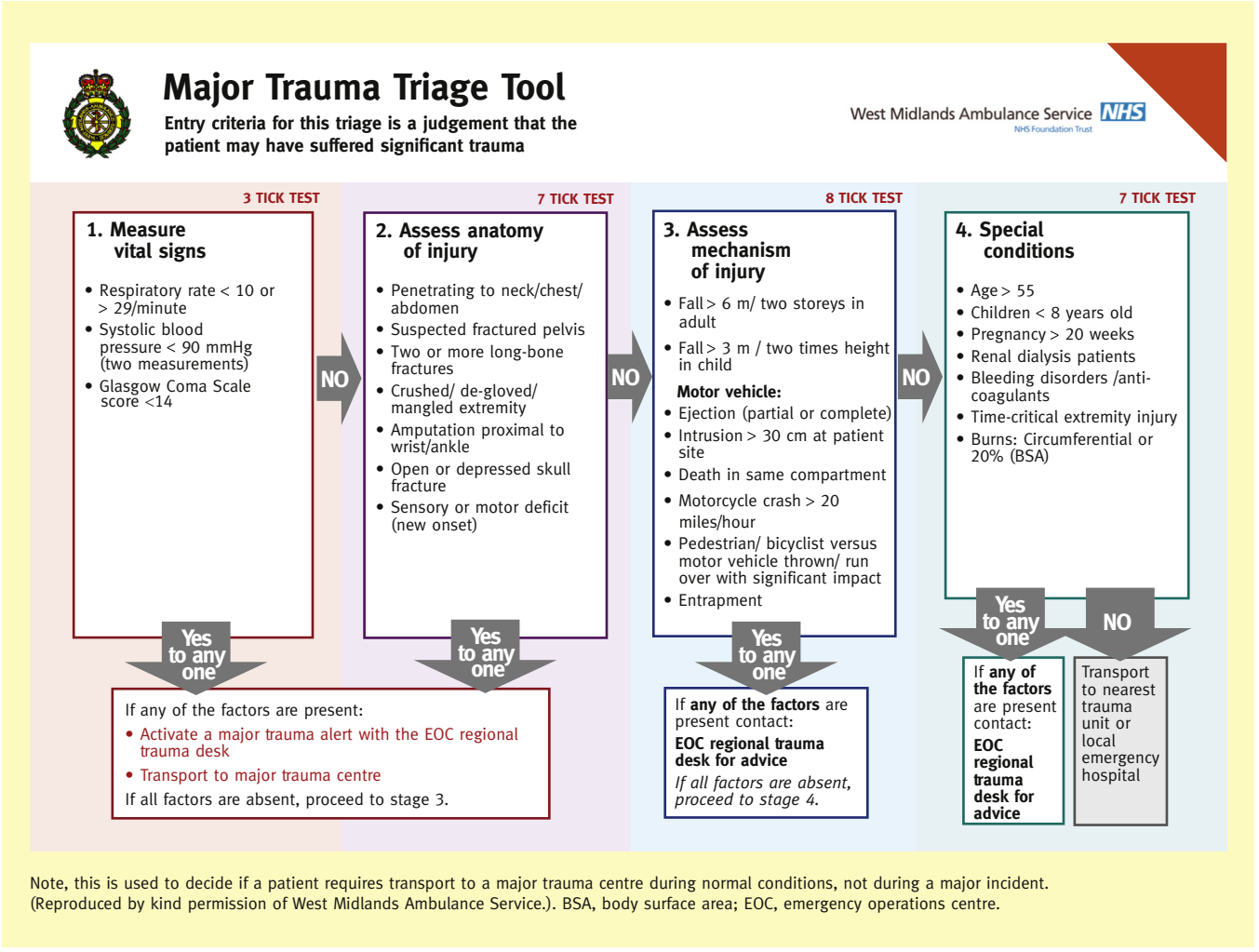
Major incidents by their very definition are rare situations which place an extraordinary burden on healthcare resources as a result of the number or type of casualties involved in an incident, which cannot be met by standard available resources. A classification of incidents is described in the overview article on pages 410–412 of this issue. It is important to reiterate that each major incident is only a major incident relative to its location and resources; i.e. a three car collision outside a remote hospital in the Outer Hebrides with only one ambulance is a major incident. The same collision in London or Birmingham is easily within the management capabilities of the existing resources locally.

This article focuses on major incidents such as the bombings in London in July 2005, where a well-resourced urban centre mobilized additional resources to cope with a large number of casualties during a man-made, simple, compensated major incident.

Triage

In the same way that trauma patients are triaged to either an MTC or a smaller TU during normal practice, the process of deciding which patient goes to which hospital and in what order is of paramount importance during a major incident.

The word 'triage' comes from the French verb 'trier' meaning to sift or sort, and was initially employed by Dominique Jean Larrey, Surgeon to Napoleon Bonaparte, during the Napoleonic Wars. In its initial form, triage was used to decide which of Napoleon's injured soldiers were fit for minor, immediate care and swift return to combat duties on the front line, and which required removal to the rear echelons for more extensive medical treatment. Modern implementation takes a contrary approach by prioritizing those who are sickest and require immediate extrication and treatment to preserve life. This is accomplished in a major incident by the use of triage *sieve* and triage *sort* tools (Figures 2 and 3). The sieve will take undifferentiated patients at the point of injury and prioritize them into patients who require treatment based on physiological scoring into five categories: immediate care (P1/T1/Red), soon (within 2 hours/P2/T2/Yellow), delayed (within 4 hours/P3/T3/Green), expectant (P4/T4/Blue) or those who have already died (P0/T0/Black). The use of the expectant category is controversial and, in the UK, requires approval at ministerial level; it implies that the patient is so severely injured that even if they were the only casualty and not in a major incident, that survival would be extremely unlikely even with maximal resources invested in them (e.g. >90% burns but still alive). It has never been employed in the UK, but has been used in major incidents abroad (e.g. the Ramstein Airshow Disaster).



Note, this is used to decide if a patient requires transport to a major trauma centre during normal conditions, not during a major incident. (Reproduced by kind permission of West Midlands Ambulance Service.). BSA, body surface area; EOC, emergency operations centre.

Figure 1 West Midlands Major Trauma Triage Tool.

The triage *sieve* (Figure 2) is a swift, reliable and reproducible tool that does not take into account likely clinical course, but gives a snapshot of a particular patient's clinical signs is at a particular time. Triage is a dynamic process because patients can change triage category as time progresses, but the key is to make early decisions, act accordingly and re-assess later on. Each patient should take no longer than 15 seconds to assess and, often, those with less medical training will make better triage decisions as they will follow guidance quickly and do not change a patient's category in line with their clinical impression (which usually results in over-triage). It is also important to note the person triaging must not become involved with delivering time consuming interventions to patients lest the triage process halt altogether. The three exceptions to this rule are applying a tourniquet, opening an airway to assess for presence of respiratory effort or rapidly repositioning a patient into the recovery position if unconscious to maintain a clear airway. Once a triage category has been assigned, the patient must be appropriately marked to ensure they are treated with the appropriate expediency and other personnel do not perform a needless duplication of initial triage. This initial decision will decide which patients are evacuated immediately and those who can wait or be treated/further assessed at a forward aid post. Marking can be achieved in several ways — writing the triage category in permanent marker on the patient, a tourniquet, opening a Cyalume or 'glow-stick' on the patient or using a bespoke kit such as a cruciform card (Figure 4) which can be attached to the patient. The latter option has the benefit of remaining with the patient until hospital arrival; it doubles as an aide-memoire, allows for recording of observations over time and has a unique identifiable number attached to each form to allow tracking of patients by multiple agencies from point of injury to hospital.

Triage *sort* takes patients who have been previously separated into immediate, soon and delayed and further quantifies the speed of their removal from the scene. This will usually take place in a forward aid post and relies on more advanced examination and clinical decision-making techniques (e.g. the patient's GCS). This must be performed by someone with a degree of medical training sufficient to be able to use the tool, though not necessarily a doctor (e.g. paramedic, nurse, military medic). Again these tools are blunt discriminators, but they can be used by clinically junior personnel with a high degree of accuracy and reproducibility. This is exactly what is needed in the major incident scenario because there is insufficient time for