NSW HEALTH

2007 NSW Health Awards Entry

Entry Title

Prioritising Paediatric Care in Disasters

Abstract

In planning for the Operation Caduceus Emergo-train disaster exercise, it became apparent that no appropriate tool existed for triaging children in a disaster situation.

We reviewed our Emergency Department's (ED) policies and guidelines, other emergency departments' current practice and the published literature. An expert multidisciplinary panel was established to develop the triage tool.

The tool was developed using physiological criteria adjusted according to four weight groups (A to D). Where weight is not available, height/length is used as a correlation for weight. A 'triage pole' was designed and built in order to measure the height/length of casualties.

The triage tool was used during Operation Caduceus in February 2007 and performed well, producing a 92% correlation with the pre-allocated exercise triage.

Aim

To devise a novel paediatric disaster triage tool for patients attending the ED after a mass casualty incident in time to be trialled and evaluated as part of Operation Caduceus in February 2007.

Nature of the Problem

In an incident involving a large number of patients with limited resources, it is essential to prioritise patients carefully so that those with immediately life threatening injuries are seen first and those who can wait are seen later. An effective triage system is pivotal in defining this priority of care.

Unlike the Australian Triage Scale, for disaster triage we use three categories: Immediate (Red), Urgent (Yellow) and Delayed (Green). CHW had no guideline on how to allocate to these triage categories, which became apparent in our planning for the Operation Caduceus Emergo-train disaster exercise.

Extent of the problem

The normal triage process is inappropriate with mass casualties as it takes too long, is not good at differentiating those who need immediate versus urgent care, and those performing triage may become distracted by the age of the child or their injuries. If children are triaged using adult disaster tools, they are more likely to receive a higher priority (Wallis and Carley 2006). This means in an event involving all ages, children may be treated first to the detriment of sicker adults and in an event only involving children, there will be little variation in allocated triage categories. A triage tool for children based on physiological criteria must also take into account the variation in normal physiological variables with age (Wallis and Carley 2006).

Mass casualty disasters are a rare event which makes planning for them essential, illustrated by the support from NSW Health Counter Disaster Unit for the Emergo-train exercise. Quick, effective triage of casualties is the first step in our Hospital's response to such an event.

Strategic importance
CHW Emergency Department Disaster Triage Protocol has enhanced the system's capacity to respond strategically to unpredicted and unexpected situations. This will allow effective delivery of care in the face of external pressures. The triage protocol is an important component of CHW's disaster preparedness and is directly supporting NSW strategic direction relating to be ready for new risks and opportunities.

Planning and implementing solutions
An expert multidisciplinary panel was established, consisting of an ED Staff Specialist, Nurse Manager, Nurse Educator and Nurse Practitioner. The strategy was to analyse current practice and literature, develop a tool, test the tool during Operation Caduceus, evaluate the tool post exercise and then introduce it as accepted practice. The analysis of current CHW ED practice, other paediatric ED practices (including overseas) and a literature search were performed using a variety of methods including direct contact, email, internet list serves and searches of Medline. The tool was developed during workshop sessions by the panel in consultation with other specialists (eg trauma surgeons) and current triage nurses. Initial sessions focused on brainstorming and summarising the literature and later sessions focused on detailing the flowcharts (figure 1) and the final design of the tool.

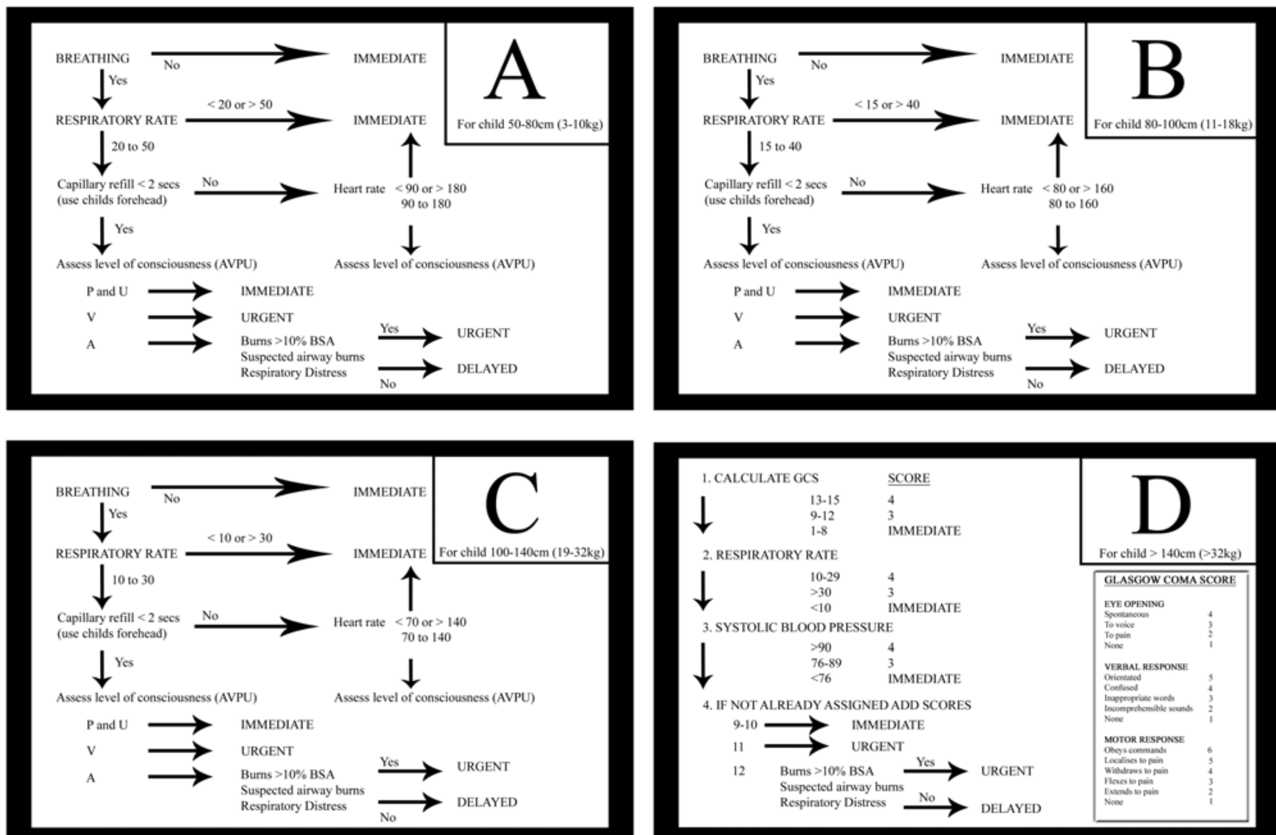

Figure 1: Flow charts for patient groups A - D

A small budget was identified to pay for the prototype triage pole to be manufactured ($600) and no other costs were envisaged.
For the purpose of evaluating the tool during Operation Caduceus, a form was produced documenting each casualty presenting to the ED and which triage category they were allocated during the exercise. This form was completed by independent assistant instructors from the exercise team. After the exercise, the allocated triage was then compared to the triage defined by the Emergo-train exercise. Patients who were mistriaged were then further analysed.
Prior to the exercise, all the staff involved were educated in the use of the tool and the nature of the exercise.
The panel reconvened after the exercise and made an adjustment to the tool based on feedback from the exercise and a further literature review.
An education package was produced to inform all ED staff of the new disaster triage tool and it will become part of the standard triage training package for RNs.

Figure 2:The triage pole

Outcomes and Evaluation

Looking at the literature, there is no consensus regarding the hospital triage of children in disasters. None of the hospitals contacted were able to identify a specific protocol for the triage of disaster casualties.
In developing the tool we have used a modified version of the Paediatric Triage Tape (PTT) (Hodgetts et al. 1998) for children up to 140cm or 32kg and a modified version of the Triage Revised Trauma Score (T-RTS) (Champion et al. 1989) for those over 140cm/32kg.
The paediatric triage tape has been validated in two recent papers by Wallis and Carley (2006). For identifying children with an ISS of over 15, the PTT had a sensitivity of 37.8%, specificity of 98.6%, over triage rate of 38.8%, and an under triage rate of 3.5%. The T-RTS has been adopted by The Major Incident Medical Management and Support (MIMMS) as the standard for triage ‘sort’ at the casualty clearing station and its score correlates well with mortality (Advanced Life Support Group 2005).

The triage protocol chosen will depend on the child's weight – if this is not available then the 'triage pole' will be used to measure their length and assign them into a weight group.
The panel produced the specifications for the 'triage pole': relatively light weight, waterproof lettering and must be able to be cleaned of body fluids. The prototype pole was then made by a local plastics manufacturer in two widths (5 and 10cm).
The triage tool was used during Operation Caduceus and performed well. There was a 92% correlation with the pre-allocated exercise triage.
After the exercise, the tool was adjusted to accommodate those patients who may have normal physiology but will go on to develop significant morbidity or mortality eg >10% total burns, airway burns and inhalation injuries, this is in line with a revision to the 'triage sieve' currently under development by Standards Australia (Standards Australia 2006).

Sustaining change

An education package has been produced and used to bring staff up to date with this new tool. In the future all RNs completing the ED Triage Package will have this training.
This tool will be published on the department intranet and will be available to all staff as a reminder. In the event of a real disaster, including a pandemic, the ED will use this triage system and it will also be used during the next Emergo-train exercise. We will continue to evaluate its performance after each use.

Future Scope

We would like this tool to be presented at educational meetings and published in a peer review journal so that other hospitals recognise the need to develop a disaster triage protocol and may consider adopting this tool for paediatric patients. This tool may be valuable for every ED that has the potential to see paediatric disaster casualties.

References

Advanced Life Support Group, 2005. Major Incident Medical Management and Support, the Practical Approach. Oxford: Blackwell Publishers.

Champion, HR. Sacco, WJ. Copes, WS. et al., 1989. A revision of the Trauma Score. *Journal of Trauma*, **29** (5) pp. 623–9

Hodgetts, TJ. Hall, J. Maconochie, I. et al., 1998. Paediatric Triage Tape. *Pre-Hospital Immediate Care,* **2** pp. 155–9.

Standards Australia, 2006. Mass Casualty Triage. Personal communication.

Wallis, LA. Carley, S., 2006. Comparison of paediatric major incident primary triage tools. *Emergency Medicine Journal,* **23** (6) pp. 475-478

Wallis, LA. Carley, S., 2006. Validation of the Paediatric Triage Tape. *Emergency Medicine Journal,.* **23** (1) pp. 47-50