What to do at the scene of a road crash

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Most doctors and nurses will at some time come across the scene of a road crash. This can be a very disorientating environment. Sights (flashing lights, wreckage, blood), sounds (engines, generators, screaming) and smells (blood, vomit, petrol) all combine to overload your senses. It may be dark, wet and cold. They may have little or no equipment of their own and ambulance equipment is often unfamiliar. They often have unrealistic expectations of themselves and try to do the sorts of things they would do in a well lit and well staffed medical centre or resuscitation room. All of these features may combine to make it a difficult and stressful experience. Provided that you follow a systematic approach it need not be so.

When we review pre-hospital jobs that have not gone well, the most common feature is that the scene has not been managed well as opposed to the clinical care of the patients not being performed well. In other words the key to successfully managing road crash is usually in managing the scene and not in managing the individual patients.

To stop or not

This is the first decision you need to make. It is always tempting to drive on past minor-looking incidents but these may contain patients with significant injuries. If it does turn out to be minor then you can always get back in your car and be on your way. Be extremely careful stopping at motorway incidents if traffic is continuing to move past the incident at high speed. In general there is little benefit from stopping at metropolitan incidents if emergency services are already on scene, unless you have specific pre-hospital skills to offer. If emergency services are not on scene, or the scene is a rural one then you may be able to help.

Remember SABC

S is for *safety*. Your safety and the safety of others is paramount. Park to protect the scene, leaving your hazard lights on. Leave your keys in the ignition if it is safe to do so (this facilitates emergency services subsequently moving your vehicle without having to find you). Wear protective and reflective clothing if it is available. Carry your cell phone. Pause as you approach the scene, look for and note all potential hazards. Do not approach if it is not safe. Delegate someone to control traffic.

A is for *assess the scene*. Assess the overall scene by walking from one end to the other, including a re-look for hazards. Turn off ignitions and put handbrakes on.

Figure 1

Figure 2

Note the total number of patients including the number trapped. Make a visual estimate of patient's triage category (severity of injury). If you have a triage system that you use every day, then use it. Remain hands off at this stage if at all possible. Utilise bystanders to provide initial care, providing these people with specific instructions, guidance and support. Do not let injured people wander away from the scene.

B is for *broadcast to ambulance*. Have the details written down if possible. Dial 111 and ask for ambulance. It won't feel like it at the time, but it is worth taking the time to do this yourself. If you delegate this task to someone else they invariably do not pass on the information that you ask them to. Give the exact details of the incident location, who you are and your assessment of the scene. Be prepared to answer a series of questions.

C is for *communication and campaign plan*. Triage and prioritise patients, sticking to primary survey only at this stage. Continue to remain hands off if at all possible. Liaise with emergency services as they arrive and work together as a team. Concentrate on providing good first aid unless specifically trained and experienced in prehospital care.

The keys to success

The keys to success are remarkably similar to those in managing a single badly injured patient. They are:

- A team approach.
- A team leader who ideally takes a hands off role and has a wider picture perspective.
- Clear, concise and explicit communication.
- Forward planning.
- Appropriate prioritisation and delegation.

The trapped patient

Dealing with trapped patients can be a challenge. Provided you are systematic it is actually relatively easy. The trapped patient can be thought of as a separate scene within the larger scene and the keys to success are the same as above.

- Be safe. Look for and note all hazards. Do not approach if it is not safe. Protect yourself and patients from glass, sharp vehicle edges and undeployed airbags.
- Assess primary survey only initially. Keep patient interventions to a minimum and utilise bystanders to provide initial care. Provide these people with specific instructions, guidance and support.
- Liaise with emergency services as they arrive. Work together as a team.
- It is usually the fire service who will coordinate extrication. In general there are four stages to extrication:
  1. Vehicle stabilisation.
  2. Gaining access to the patients.
  3. Disentanglement of the patients from the vehicle.
  4. Removal of the patients.
- Ask fire service to gain access to patients unless already done or you already have access. This often involves removing the roof or door. Maximising access to the patients may require winching the vehicle away from whatever it has crashed into; this is usually easy and quick.
- Ask fire service to pause once access is gained. Place a paramedic in the vehicle with the patient if possible. This officer needs to establish very quick rapport with the patient whilst providing ongoing patient clinical care.
- Reassess the primary survey. Continue to keep patient interventions to a minimum. Perform a very brief secondary survey looking for injuries that will alter the way in which you remove the patient.
- Keep equipment and personnel within the working area to a minimum. Only those involved in hands on care or extrication should be in the working area. Be ruthless about keeping this area uncluttered. Monitors should only be taken into the working area in exceptional circumstances. They get in the way,

Figure 3

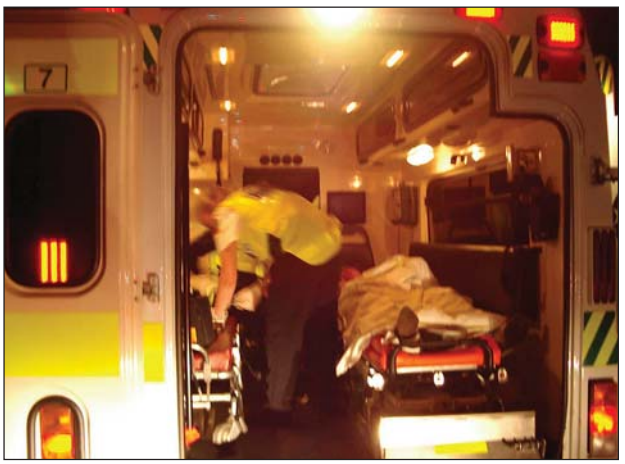

Figure 4

they are easily damaged and they rarely alter what is done to the patient during extrication.
- Use non-rebreather oxygen masks whenever possible. Try not to 'tie up' a pair of hands holding a bag/mask resuscitator unless absolutely necessary. Check oxygen cylinders frequently – it is common for them to run out and for no-one to notice. IV lines are commonly snagged and removed during all phases of extrication. Avoid attaching fluid to lines unless shock is present in the primary survey.
- Ask fire service to disentangle patients (if not already done) in preparation for removal and then to pause.
- Re-examine the patient to ensure there is nothing you have missed that will affect the way you remove them (commonly missed are dislocations of the hip and feet trapped under pedals). Ensure that all things that might snag (seat belts, clothing, oxygen tubing, IV lines etc.) are free and/or secured.
- Adequate pain relief, communication and coordinated removal are very important aspects of the extrication of patients with significant pain, particularly those with multiple limb fractures.
- Have stretcher positioned so that patient is removed in one smooth move. Ensure that everyone involved in removing the patient knows where the patient is going and what position you want the patient placed in.
- Except for exceptional circumstances most patients should be able to be extricated in under 20 minutes.
- Once removed repeat primary survey and perform secondary survey.

The Primary Survey

- **A**irway and consider cervical spine control.
- **B**reathing.
- **C**irculation, including stemming external bleeding.
- **D**isability.
- **E**xposure, examination and environmental control.

The primary survey is a rapid assessment of immediate threats to life. When an immediate threat to life is found it must be intervened on before moving on to the next aspect of the primary survey. The primary survey is important for all patients – not just those suffering from trauma. The primary survey should take less than 60 seconds.

- The **airway** check involves examining for and establishing an adequate airway. Look at and listen (without a stethoscope) to the airway. Intervene if required. It is appropriate to consider immobilising the cervical spine during the airway check of the primary survey. However, cervical spine injuries are rarely a threat to life and it is appropriate to leave immobilising the cervical spine until the beginning of the secondary survey if there are life threatening abnormalities within the primary survey.
- The **breathing** check involves examining for and establishing adequate breathing. Look at and feel chest movement. Intervene if required.
- The **circulation** check involves examining for and establishing an adequate circulation, including compressing external bleeding. Feel the pulse, look at and feel peripheral perfusion and visually 'sweep' the patient for external bleeding. Intervene if required.
- The **disability** check involves a very brief CNS examination looking for major abnormalities. Check the level of consciousness; use either AVPU (*Awake*, responds to *Voice*, responds to *Pain* or *Unresponsive*) or motor score of GCS. Ask patient to squeeze hands and wiggle toes.
- The **exposure**, **examination** and **environmental** control aspect is the transition zone between the primary and secondary survey. Appropriately expose and examine the patient. Keep them warm.

Any deterioration in the patient's condition should prompt a reassessment of the primary survey looking for a cause.

Helicopters

Be very cautious working around helicopters unless you are very familiar with doing so. A good rule is to stay away from them unless you must be involved. Never approach a helicopter with the rotors turning unless you are signalled to do so (usually a thumbs up sign) by helicopter staff. Always approach a helicopter from the side in full view of the pilot or crewman and never approach a helicopter from the rear.

Helicopters continue to be commonly used in circumstances where there appears to be little benefit for the patient. The lack of space in the back of a helicopter significantly restricts the clinical care that can be provided en route and this commonly compromises patient care. Thus a very significant time saving must be made in order for the benefit of a helicopter to outweigh the risks.

The Secondary Survey

The secondary survey follows the primary survey and is a head to toe systematic examination. The purpose of the secondary survey is to discover significant injuries in the setting of trauma or significant problems in the setting of illness. The secondary survey is just as important in the medical patient as it is in the trauma patient. If there are unresolved life-threatening problems within the primary survey it is appropriate to condense the secondary survey down to a visual 'sweep' of the patient.

The secondary survey should take one to two minutes to complete. It should be systematic though the exact order of its application is not vital.

Example of a secondary survey:

CENTRAL NERVOUS SYSTEM

- Record a GCS. Individually examine and record each component of the GCS. Do not estimate a GCS 'at a glance'.
- Check that the patient can move all four limbs. Check that gross sensation is intact.

NECK

- Look and feel. You are particularly looking for deformity and tenderness.
- Immobilise the cervical spine (if not already done) as appropriate.

HEAD and FACE

- Look and feel. You are particularly looking for deformity, tenderness and bleeding.
- Look at eyes for pupil asymmetry and reaction to light.

CHEST

- Look, feel and listen. You are particularly looking for symmetry of air entry, breath sounds, tenderness and subcutaneous air.
- Remember that the back is part of the chest.

BACK

- Look and feel. You are particularly looking for tenderness and deformity. The best time to examine the back is often when the patient is being rolled (in a controlled manner) to place a stretcher under the patient.

ABDOMEN and PELVIS

- Look and feel. You are particularly looking for tenderness.

EXTREMITIES

- Look and feel. You are particularly looking for wounds, fractures, pulses, colour, sensation and weakness.

Any deterioration in the patient's condition should prompt a reassessment of the primary survey looking for a cause.

Which hospital?

If the ambulance service has an established policy that dictates where patients are taken then this policy should be followed unless there are very strong reasons not to. In general, patients with major trauma should be taken, wherever reasonably possible, direct to a hospital capable of definitive care. There is increasing evidence from our trauma databases that this improves outcomes, even when going direct to the hospital of definitive care involves bypassing a closer hospital. In general there is no role for 'stopping to stabilise' at a small local hospital unless the time and distance to definitive care are extraordinarily long (more than several hours).

Afterwards

If the crash is a significant one it is very common for the events to be played over and over in your mind afterwards (unless attending road crash is an everyday part of your practice). You may be plagued by a range of emotions and this is normal. You are best to allow this process to occur and to allow it to 'play through your mind' whenever you find yourself thinking about it. In general, this results in a faster process (a shorter total time before you stop thinking about it) than trying to prevent yourself from thinking about it. Talk to your colleagues. Talk to the ambulance officers and consider attending their debrief. Ask to be notified of the outcomes of any debrief if you don't attend. Follow up patient outcomes. Think about what went well and what didn't go well. Learn from your (and others') mistakes – we all make them.

What equipment to carry in your car

It is tempting to carry all sorts of things that might be useful. In reality, unless you are spending a lot of time in very remote areas, you are better off to carry a very small amount of gear that is cheap, does not expire and is close at hand. I suggest the following:

- Some gloves.
- A small range of oropharyngeal airways.
- A couple of dressing pads and elasticised bandages.
- A high visibility vest.

This can be put together for very little cost, takes up little room, requires no checking for expiry dates and can fit in a small plastic bag under your seat. It will allow you to keep your hands clean, look after an airway, compress external bleeding and be visible.