Topic Overview: TRAUMA SKILLS

Module T3

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This handout is designed to complement the e-learning for trauma skills available on the EdWISE e-learning site www.edwise.moodle.com. Take the time to review the videos and check your understanding using the review questions. You can then download a certificate of achievement for your portfolio.

Objectives

- Reinforce eLearning modules
  - Cervical spine immobilisation
  - Application of a pelvic binder
- Perform a team based systematic approach to the trauma patient
- Practice trauma skills in a contextualised simulated environment

Stabilisation of the Spine in the Trauma Patient

This section will consider two spinal immobilisation techniques used in trauma; immobilisation of the cervical spine using a hard collar and the log roll. These techniques are used to:

- Prevent spinal cord injury
- Reduce secondary injury
- Prevent development of pressure sores
- Facilitate assessment of dorsal surface
- Minimise manual handling risks

Cervical Spine Collar

Cervical spine injury must be suspected in all trauma patients and precautions taken until spinal injury can be ruled out. It is particularly important to identify the need to immobilise C-spine in specific high-risk groups. Patients at a higher risk include:

- any unconscious patient
- any head injured patient
- patients older that 65
- patients experiencing paraesthesia following their injury

- patients with a high risk mechanism of injury including:
  - a fall from a height greater than 1 meter
  - axial load to the head
  - high speed motor vehicle crash
  - motor vehicle crash with ejection or rollover
  - bicycle crash

Criteria for clinically clearing a C-spine include the NEXUS and Canadian C Spine rules (the trauma module T4 will provide more detail on this).

When choosing the appropriate size of collar it is important to be familiar with the instructions for each type of collar. There are several different brands, each with

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their own individual characteristics, however the general principles are the same. Apply the collar following these steps:

1. Measure patient's neck – the trapezius to the angle of the mandible (where the collar will sit)
2. Measure hard part of the collar from the sizing stud to equal the measurement of the patient's neck; don't include the foam padding in this measurement
3. A 2 person technique should be used - one to hold head still (Manual In Line Stabilisation - MILS) and the other to fit the collar.
4. Fold back the Velcro tab, slide the back under neck and position the front so the chin snugly sits in bend anteriorly, not loose but not too tight. Check that the patient can poke out their tongue.

Tips for improved practise

- Communicate clearly to the patient, as fitting the collar can be anxiety provoking. There is also a limited view while staring at the ceiling.
- Remove all jewellery above the clavicle; look for earrings (and ear placement).
- Do not force the chin part of the collar into place, this can cause rotation of the patient's neck
- Keep a call button handy for patient and consider antiemetic early, keeping suction handy.
- If the patient is confused or combative consider need for intubation, sedation or analgesia with senior help.
- When the collar is off manual inline stabilisation should be used.
- In patients with high risk of C-Spine injury the entire spine should be immobilised, sandbags and taping should be considered

Log Roll

The log roll allows for examination of the patient's back and perineum, and removal of clothes, debris and sheets. There is always a risk associated with moving any trauma patient so clear leadership and co-ordination is essential. Conventionally the person at the head end is in charge of the move and explaining the procedure to the patient. They are required to give clear directions and ensure everybody is properly positioned and ready.

Generally 5 people are required to perform a log roll for examination of the back positioned as follows; one at the head, one at the shoulders, one at the pelvis and one at the lower legs and the fifth to perform the examination. If the patient is intubated a sixth team member will be required to manage the endotracheal tube as there is a high risk of accidental extubation.

Tips for improved practise

- Identify need to perform log roll quickly and efficiently and minimise number of times performed
- Consider pelvic binder placement prior to log roll
- Ask the patient which side hurts and log roll to the opposite side, have them cross their arms over their chest helping the team
- Consider analgesia.
- Remember the log rollers may have to stay in that position for a long time so get a comfortable grip

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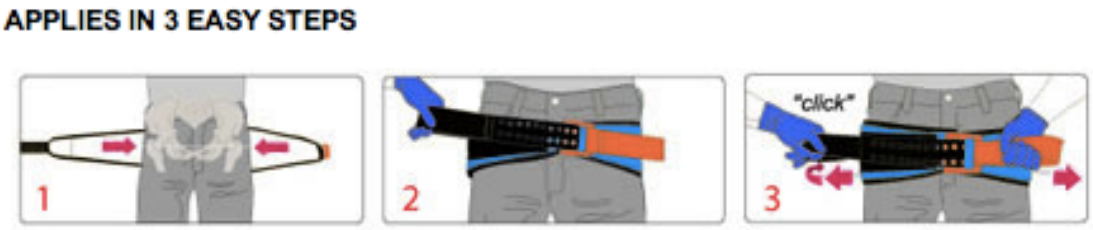
Pelvic Binding

Pelvic binders are instrumental in controlling bleeding from the pelvic vessels. Early identification of need for a pelvic binder will improve patient care so with every trauma patient consider the mechanism of the injury and actively look for bruising, deformation or tenderness of the pelvis. If there is suspicion of a pelvic injury application of pelvic binding using either a proprietary splint or wrapping with a sheet is recommended. In the haemodynamically unstable patient with no evidence of another source of bleeding it should be assumed that there is a pelvic injury.

The binder should be placed at the level of the greater trochanters, **not** the iliac crests. A correctly applied pelvic binder provides the following functions:

- Splints the bony pelvis to reduce haemorrhage from bone ends and venous disruption.
- Reduces pain and movement.
- Provides integrity to the pelvis during operative packing.
- Provides stabilisation of the pelvis
- Allows access to the femoral arteries for angiography and embolization.

If the patient is brought in by ambulance with a sheet as a binder, it should not be removed, but the position and security checked. A commercial device such as a SAM sling may be placed over the top of the device. It is always important to check the perineum on log roll to look for external signs of pelvic trauma.



Intraossessous Access

Rapid large bore intravenous access is often difficult in the shocked trauma patient. This may be due to the physiological processes of shock and hypothermia with result in vascular constriction. Intraossessous access provides rapid, safe and secure systemic access. The EZIO is a commercially available device that is commonly used in NSW. A manual device may also be available in your Emergency Department.

There are three colour coded sizes of EZIO needle– pink is paediatric, blue is adult and yellow is for large adults. Placement is recommended in the proximal tibia (2 finger breaths from the joint on the medial tibial surface), the distal tibia or the humerus (at the greater tuberosity). They can be left insitu up to 72-96 hours, though are preferentially removed as soon as alternate access is obtained.

Contraindications to insertion include:

- proximally fractured bone,
- same site previous attempt,
- overlying infection,
- osteogenesis imperfecta.

An initial flush is required and fluids will need to be pumped through with either a blood

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pump set or a mechanical pump set as gravity flow will not be effective. Extravasation can lead to compartment syndrome, so securing the device and checking that the fluids are entering the correct space are important.

Bloods can be taken from the IO, however it is important to tell the laboratory that this is a marrow sample so as not to affect their equipment. Some samples such as blood gases will not be tested, other results may be affected.

References

- http://www.vidacare.com/ez-io/index.aspx
- ITIM, Management of haemodynamically unstable patients with pelvic fracture guideline
- Pimentel P and Diegelmann L. Evaluation and management of acute cervical spine trauma. Emerg Med Clin N Am 2010; 28: 719-738.
- Stiell et al. Canadian C-spine rule vs NEXUS low risk Criteria in Patients with trauma. N Engl J Med 2003; 349:2510-2518

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