



LONDON'S
AIR AMBULANCE
roadside intensive care



Pre-hospital Care Standard Operating Procedure

Spinal Injury

REVIEW:	May 2010	
APPROVAL/ ADOPTED:	PHC Policy Board	
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Aims:

- Describe indications for spinal precautions.
- Describe the types of spinal precaution.
- Describe the treatment of cord injury.

Background:

Spinal precautions are a group of devices and a system of patient handling that attempts to minimise spinal cord damage in a patient with spinal column injury and instability. The dispatch policy of the operation is aimed at the seriously injured. The vast majority of the patients seen by the Pre-hospital Care team will have high levels of circulating catecholamine and endogenous opiates, both of which conspire to hide fractures of the axial skeleton. A low threshold for undertaking spinal precautions should always prevail.

Policy:

1. Spinal Precautions

- Indications: Any trauma patient who has / is:
 - GCS <15
 - complaining of neck or back pain.
 - signs or symptoms of spinal cord injury.
 - under the influence of drugs.
 - intoxicated
 - a mechanism of injury consistent with spinal injury.

- Types of precaution:
 - manual in line stabilisation
 - stiffneck rigid cervical collar applied to skin.
 - orthopaedic scoop stretcher
 - controlled spinal roll.
 - head restraints and tape when on scoop.

2. Treatment of Spinal Cord Injury

- **Oxygenation.** The spinal cord is neurological tissue and may suffer secondary injury in the same manner as the brain. Titrate oxygen flow to maintain a SpO₂ of 100%.
- **Ventilation.** Ask the patient if their breathing feels normal or whether they feel short of breath. Observe for diaphragmatic breathing as this may indicate a high cervical lesion. In a high cervical spine injury e.g. C4-5, or if there is concomitant major injury e.g. chest injury, have a low threshold for intubation. Respiratory difficulty can ensue quickly. In the non-intubated patient, an approximation can be made of the end-tidal carbon dioxide production by inserting the tubing from the side-stream sensor beneath the Hudson mask. An abnormally high or increasing end-tidal carbon dioxide may indicate impending ventilatory failure and therefore a lowering of the threshold for intubation and ventilation.
- **Hypotension.** Hypotension (BP < 100 mmHg) should be corrected. In isolated cord injury BP should be raised with intravenous adrenaline (100mcg aliquots titrated to effect in an adult). In the polytrauma patient, causes of hypotension should be sought in the usual manner eg hypovolaemia, tension pneumothorax etc. Treatment for these problems should follow standard procedures. Where all other causes have been excluded and / or treated and the patient is thought to be euvolaemic it is appropriate to initiate inotropic support.
- **Temperature considerations.** Remember that the spinally injured patient may become cold – they will lose the ability to thermo regulate and so due consideration must be given to keeping the patient warm, especially in the autumn or winter months.
- **Spinal board.** The spinal board is **not** a method of spinal immobilisation used for transportation. The sole role in the HEMS operation is the extrication of patients from vehicles, either by placing it at an angle down the back of a vehicle driver or through the door of a goods vehicle with solid sides.
- **Short extrication devices [RED, KED].** These are no longer carried by HEMS but are carried by land crews. Under most circumstances they confer little in the way of spinal immobilisation and add to release time, compromise ventilation, and potentially compromise the spinal cord, as the spine is moved when applying the device. The occasional time where the device may contribute to care is the potential spine injury that is otherwise well but removal from a building is best achieved using a carry chair. Even in these circumstances it must be firmly established that extrication cannot take place in a Chrysalis stretcher.
- **Triage:** It may be possible to undertake direct primary transfer to a regional spinal injuries centre. However, remember that spinal injury patients may have concomitant major injury in other body compartments. Therefore it is usually desirable that such patients are triaged to a tertiary level Emergency Department where they will receive timely assessment and management. If in doubt, discuss with the regional centre and / or the duty consultant in pre-hospital care prior to undertaking primary transfer.
- **Neurological examination & documentation.** A thorough examination must be completed including formal assessment of limb movement, sensory level, deformity, cardiovascular findings and priapism. Ensure this is done prior to delivery of anaesthesia or sedation. All findings must be clearly documented on the patient run

sheet. If you have not formally assessed any component you must state this – do not guess or ask if anyone saw the patient move their legs! Your documentation may be essential for legal purposes at a later date. Spinal injuries have high compensation costs. You should also document a repeated neurological assessment when you handover to another team whether this is to an ambulance crew or to a trauma team.