Guideline for removing cervical immobilisation in patients in ICU

Background Information in Support of this Guideline

See: page 2- Management Algorithm for Suspected Cervical Spine Injury
page 3- Trauma Patients and Cervical Spine Imaging

Guideline

Patients who require cervical immobilisation in ICU should have:

- a properly sized and fitted cervical collar in place
- and padded bolsters applied to the sides of their head
- and be log rolled

until the cervical spine can be cleared.

In patients with significant head injury and who are deeply sedated and/or paralysed the cervical collar may be removed to prevent compression of cerebral venous drainage but padded bolsters must be applied to each side of the patient's head and log rolling must continue.

If a patient has a documented or suspected thoracic or lumbar spinal injury the patient should continue to be log rolled until senior orthopaedic or neurosurgical opinion has confirmed that this is not required.

All patients wearing a cervical collar when they arrive in ICU should have had a helical CT scan from occiput to T2 performed in the Emergency Department. This protocol has been agreed with the Emergency and Radiology Departments. Radiology have agreed that a Consultant will report these scans formally within 24 h. **See page 2 algorithm**

There may be very rare occasions **when a non-intubated patient is admitted to ICU with a cervical collar in place**. These patients should have had lateral, AP & odontoid cervical X-rays, or CT from occiput to T2 if the plain X-rays are abnormal or inadequate.

In intubated patients the cervical collar and padded bolsters can be safely removed when the formal CT report confirms no bony or acute structural abnormality.

In non-intubated patients the cervical collar can be safely removed if all of the following preconditions are satisfied and the X-rays have been reported as normal, or if the CT is reported as normal:

- **Patient is fully oriented and alert (GCS 15)**
- **No history of significant intoxicant ingestion**
- **No significant analgesia or sedation administration**
- **No distracting injury**
- **No neck signs/symptoms on examination**
- **No peripheral neurological deficit**

Once the cervical collar has been removed, subsequent weakness, paraesthesia or spinal pain may indicate a missed injury and may require reapplication of cervical immobilisation, further imaging and consultation with a senior ICU clinician and neurosurgeon.

Any abnormality identified on plain cervical X-rays or CT, or identified neurological deficit or detected injury, must be discussed with a senior neurosurgeon (or orthopaedic surgeon if appropriate) before any decision is possible about removal of cervical immobilisation.

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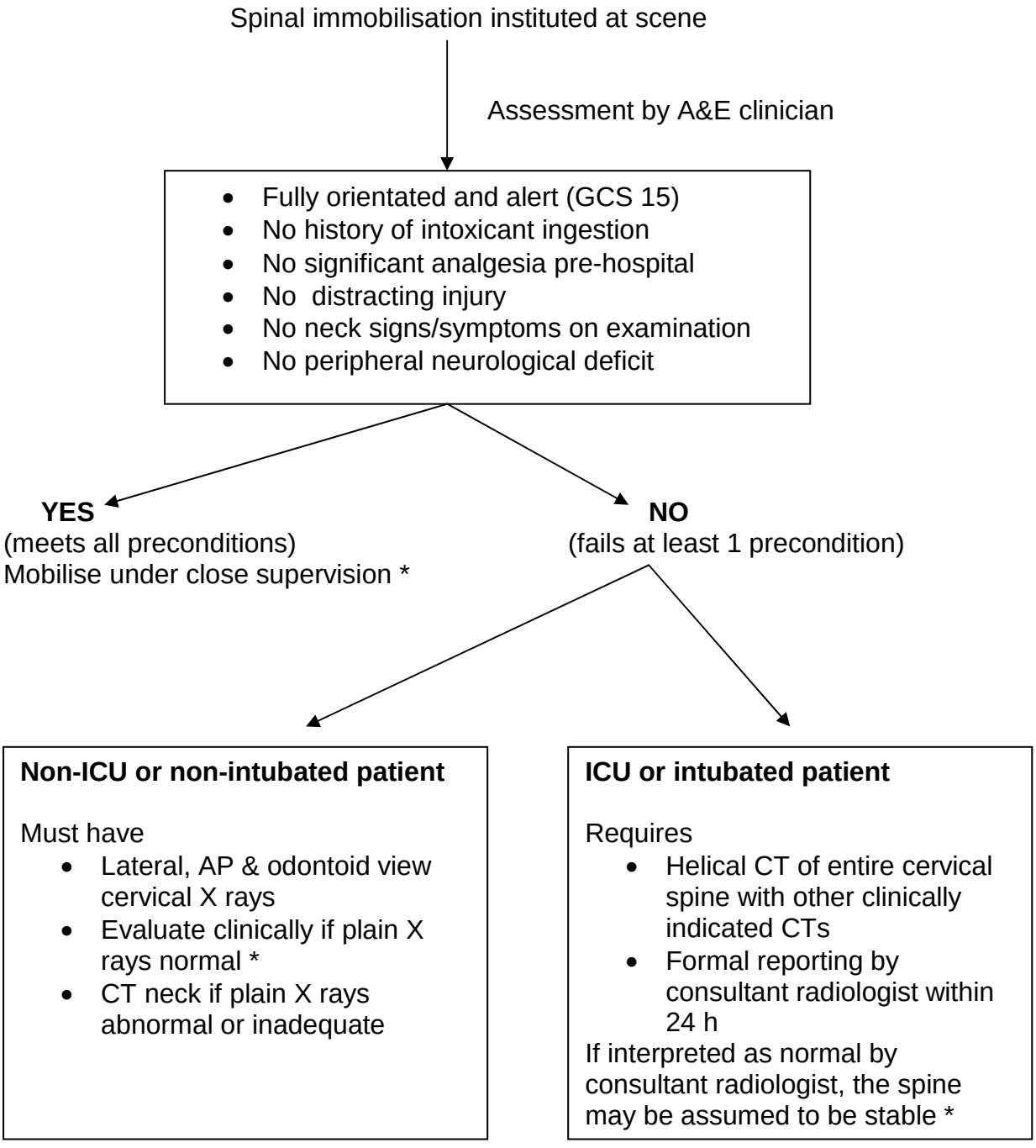
Management algorithm for suspected cervical spine injury in patients with polytrauma



NOTE

- Identified neurological deficit or detected injury must involve a senior A&E clinician

* subsequent weakness, paraesthesia or spinal pain may indicate a missed injury and may require reapplication of cervical immobilisation, further imaging and consultation with a senior A&E clinician when the patient is in the Emergency Department, or a senior ICU clinician when the patient is in a Critical Care unit

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Trauma patients and cervical spine imaging

There is good evidence that the exclusion of cervical injury on clinical grounds is reliable providing that the patient is fully conscious, has not consumed alcohol or other intoxicants, has no pain on palpation / movement of the neck, and has no neurological deficit or distracting injury. Unfortunately almost all patients who present with multiple trauma fail to meet these criteria. Such patients require cervical immobilisation and often admission to Intensive Care.

The majority (90-95%) of these patients will have no cervical spine injury and will not require ongoing immobilisation.

Prolonged cervical immobilisation is associated with significant morbidity, most complications occurring within 48-72 h. Specific problems include:

- development of pressure sores, which can act as a source of sepsis and may require skin grafting
- elevation of intracranial pressure secondary to obstructed CSF and venous flow
- increased risk of developing ventilator-associated pneumonia
- difficult tracheal intubation and central venous access
- delay in mobilisation can lead to more days on a ventilator, increased risks of thromboembolism, gastrostasis and failure of enteral nutrition

In addition patients with cervical immobilisation require to be log-rolled which requires at least five skilled staff.

Early imaging to exclude cervical injury is essential to allow safe removal of cervical immobilisation. Plain radiographs alone cannot do this reliably; helical CT of the whole cervical spine can (with the exception of isolated ligamentous injury which occurs in < 1% of evaluations, and possibly < 0.1%).

Following discussion it has been agreed that:

- any patient with a mechanism of injury suggestive of possible cervical spinal injury who fails to meet all of the preconditions for clearing the cervical spine on clinical grounds and who will be admitted to the Intensive Care Unit should have helical CT imaging of the entire cervical spine and any other CTs as clinically indicated. Plain cervical X rays are not required in these patients. Cervical immobilisation will not be removed from such patients until the reconstructed CT has been reported as showing no injury by a Consultant Radiologist. This should ideally occur within 24 h.
- Directed CT to sections of the cervical spine is not an alternative to helical CT of the entire cervical spine
- It is anticipated that this will total approximately 50-100 patients annually, most of whom will already be undergoing CT of head, and many of whom will also undergo CT of chest, abdomen and pelvis.

References

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