

NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

SCOPE

1 Guideline title

Complex fractures: assessment and management of complex fractures

1.1 Short title

Complex fractures

2 The remit

The Department of Health has asked NICE: 'To produce guidance on the assessment and management of complex fractures (including pelvic fractures and open fractures of limbs).

NICE is developing 5 pieces of guidance relating to trauma, with expected publication dates in June and October 2015 (to be confirmed). Each piece of guidance will focus on a different aspect of trauma care.

- [Complex fractures: assessment and management of complex fractures \(including pelvic fractures and open fractures of limbs\)](#)
- [Fractures: diagnosis, management and follow up of fractures \(excluding head and hip, pelvis, open and spinal\)](#)
- [Major trauma: assessment and management of airway, breathing and ventilation, circulation, haemorrhage and temperature control.](#)
- [Spinal injury assessment: assessment and imaging of patients at high risk of spinal injury](#)
- [Trauma services: service delivery of trauma services](#)

NICE has commissioned the National Clinical Guideline Centre (NCGC) to develop the trauma guidance. The fractures, complex fractures, spinal injury assessment and major trauma guidelines will start development approximately

Complex fractures: assessment and management of complex fractures

6 months before the development of the trauma service delivery guideline.

3 Clinical need for guidance

3.1 *Epidemiology*

- a) It is difficult to estimate accurately the incidence of complex fractures because of the lack of a standard definition. According to the NHS accident and emergency experimental statistics for 2010/11, there were 757,122 emergency department attendances with dislocation, fracture, joint injury and/or amputation as the primary diagnosis. This figure does not differentiate between fracture types, and is therefore likely to be an overestimate of incident cases of complex fractures. In 2010/11, there were 677,239 referrals from emergency departments to fracture clinics. However, it is not possible to say how many of these fractures would be considered complex.

- b) Fractures are not recorded as the main causes of death but as secondary or associated causes of mortality in death certificates. In 2010 there were 4260 recorded deaths where fracture was an associated or secondary cause of death.

3.2 *Current practice*

- a) Many patients with complex fractures will initially be seen by paramedic staff before being transferred to emergency departments.

- b) The British Association of Plastic, Reconstructive and Aesthetic Surgeons (BAPRAS) and the British Orthopaedic Association (BOA) recommend that primary assessments are made in line with Advanced Trauma and Life Support (ATLS) principles, especially in the case of open fractures. BAPRAS/BOA further recommends that

if possible, primary treatment of open fractures in emergency departments should be confined to antibiotic and anti-tetanus prophylaxis as well as temporary fracture stabilisation.

BAPRAS/BOA also recommends that patients with open fractures be referred to multidisciplinary surgical teams, consisting of orthopaedic and plastic surgeons

- c) Assessment of complex fractures will typically involve X-ray and/or CT scan, with angiography for associated vascular injuries.
- d) Multiple treatment options exist for complex fractures, both surgical and non-surgical. The most appropriate treatment will depend on fracture location, type and severity, as well as associated soft tissue injury and patient characteristics and preference. In some cases, optimal treatment will vary depending on the osteoporotic or osteoarthritic status of patients, as well as their suitability for surgery.
- e) There may be a need for patients to help with their post-treatment wound care, especially in the instance of external fixators, as pin-site infection can be a complication.

4 The guideline

The guideline development process is described in detail on the NICE website (see section 6, 'Further information').

This scope defines what the guideline will (and will not) examine, and what the guideline developers will consider. The scope is based on the referral from the Department of Health.

The areas that will be addressed by the guideline are described in the following sections.

4.1 Population

4.1.1 Groups that will be covered

Adults, young people and children who present with a suspected complex fracture.

- People with open fractures.
- People with pilon fractures.
- People with pelvis fractures, including those with acetabular fractures.

4.1.2 Groups that will not be covered

Any person with a:

- non-complex fracture (this will be covered in another guideline)
- skull fracture
- hip fracture
- spinal injury (this will be covered in another guideline)

4.2 Healthcare setting

All settings in which NHS care is received or commissioned.

4.3 Clinical management

Key clinical issues that will be covered

- a) Initial triage by pre-hospital care provider:
 - immediate destination of patient
- b) Initial assessment and management by pre-hospital care provider:
 - pain relief (including opiates and non-opioid analgesics)
 - the need for and the timing of immediate action to:
 - preserve limbs (including splinting and binders)
 - control of haemorrhage (including pelvic binders)

Complex fractures: assessment and management of complex fractures

- c) Acute-stage clinical assessment:
- identifying complex fractures requiring immediate surgery
 - identifying vascular compromise
 - timing of log roll for assessment of perineum
- d) Acute stage imaging assessment (including choice and timing of imaging modality and imaging parameters), including:
- X-ray
 - CT or CT angiogram
 - vascular imaging
 - retrograde urethrogram.
- e) The timing of referral and criteria for acceptance by the specialist centre.
- f) Initial management and treatment plan, including:
- immobilisation, such as binding
 - stabilisation, such as fixation and relocation of hip dislocation
 - preservation of limbs, such as fracture reduction or revascularisation
 - control of haemorrhage, such as angiographic embolisation versus pelvic packing
 - wound management of open fractures, such as cleaning and dressing.
- g) Ongoing management (including evaluation, and treatment plan)
- internal and external fixations
- h) Skills to be present within the multidisciplinary team

- i) Documentation of clinical assessments and management for people with complex fractures (including pre hospital and hospital documentation)
- j) Information and support needs of patients and their families and carers when appropriate.

4.3.1 Clinical issues that will not be covered

- a) Prevention and follow-up of complex fractures.
- b) Management and follow-up of pathological conditions (such as osteoporosis and osteoarthritis).
- c) Management and follow-up of dislocations (with the exception of hip dislocations associated with acetabular fractures).

4.4 Main outcomes

- a) Adverse effects associated with assessment and management.
- b) Functional scales that quantify level of disability.
- c) Health-related quality of life.
- d) Return to normal activities
- e) Healthcare contacts: duration and continuity
- f) Morbidity.
- g) Mortality.
- h) Patient-reported outcomes.
- i) Place of residence at 90 days.
- j) Length of hospital stay.

4.5 Economic aspects

Developers will take into account both clinical and cost effectiveness when making recommendations involving a choice between alternative interventions. A review of the economic evidence will be conducted and analyses will be carried out as appropriate. The preferred unit of effectiveness is the quality-adjusted life year (QALY), and the costs considered will usually be only from an NHS and personal social services (PSS) perspective. Further detail on the methods can be found in 'The guidelines manual' (see 'Further information').

4.6 Status

4.6.1 Scope

This is the final scope.

4.6.2 Timing

The development of the guideline recommendations will begin in June 2013.

5 Related NICE guidance

5.1 Published guidance

- [EXOGEN ultrasound bone healing system for long bone fractures with non-union or delayed healing](#). NICE medical technologies guidance 12 (2013).
- [Patient experience in adult NHS services](#). NICE clinical guideline 138 (2012).
- [Osteoporosis](#). NICE clinical guideline 146 (2012).
- [CardioQ-ODM \(oesophageal Doppler monitor\)](#). NICE medical technologies guidance 3 (2011).
- [Hip fracture](#). NICE clinical guideline 124 (2011).
- [Low intensity pulse ultrasound fracture healing](#). NICE interventional procedure guidance 374 (2010).
- [Head injury](#). NICE clinical guideline 56 (2007).
- [Falls](#). NICE clinical guideline 21 (2004).

Complex fractures: assessment and management of complex fractures

5.2 *Guidance under development*

NICE is currently developing the following related guidance (details available from the [NICE website](#)):

- Head injury. NICE clinical guideline. Publication expected January 2014.
- Pressure ulcers. NICE clinical guideline. Publication expected May 2014.
- Spinal injury assessment. NICE clinical guideline. Publication expected TBC 2015
- Non-complex fractures. NICE clinical guideline. Publication expected TBC 2015.
- Major trauma. NICE clinical guideline. Publication expected TBC 2015.
- Trauma services. NICE clinical guideline. Publication expected TBC 2015.

6 *Further information*

Information on the guideline development process is provided in the following documents, available from the NICE website:

- [How NICE clinical guidelines are developed: an overview for stakeholders the public and the NHS](#)
- [The guidelines manual](#). 2012

Information on the progress of the guideline will also be available from the [NICE website](#).