

Fractures (complex): assessment and management

Complex fractures: assessment and management of
complex fractures

NICE Guideline NG37

Appendices A - F

February 2016

Final

*Commissioned by the National Institute for
Health and Care Excellence*

Disclaimer

Healthcare professionals are expected to take NICE clinical guidelines fully into account when exercising their clinical judgement. However, the guidance does not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of each patient, in consultation with the patient and/or their guardian or carer.

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Funding

National Institute for Health and Care Excellence

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Appendices

Appendix A: Scope

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

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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

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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)

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- 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).

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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](#).

Appendix B: Declarations of interest

B.1 Complex fractures

Table 1: Brown, Lynda

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 17 January 2014	No change in declaration	
Third GDG meeting 10 April 2014	No change in declaration	
Fourth GDG meeting 3 September 2014	No change in declaration	
Fifth GDG meeting 4 September 2014	No change in declaration	
Sixth GDG meeting 22 October 2014	No change in declaration	
Seventh GDG meeting 23 October 2014	No change in declaration	
Eighth GDG meeting 4 December 2014	No change in declaration	
Ninth GDG meeting 26 January 2015	No change in declaration	
Tenth GDG meeting 27 January 2015	No change in declaration	
Eleventh GDG meeting 11 March 2015	No change in declaration	
Twelfth GDG meeting 29 April 2015	No change in declaration	
Thirteenth GDG	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
meeting 30 April 2015		
Fourteenth GDG meeting 19 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 2: Camps, Cherylene

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 17 January 2014	Did not attend	
Third GDG meeting 10 April 2014	Did not attend	
Fourth GDG meeting 3 September 2014	No change in declaration	
Fifth GDG meeting 4 September 2014	No change in declaration	
Sixth GDG meeting 22 October 2014	No change in declaration	
Seventh GDG meeting 23 October 2014	Did not attend	
Eighth GDG meeting 4 December 2014	Did not attend	
Ninth GDG meeting 26 January 2015	No change in declaration	
Tenth GDG meeting 27 January 2015	No change in declaration	
Eleventh GDG meeting	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
11 March 2015		
Twelfth GDG meeting 29 April 2015	No change in declaration	
Thirteenth GDG meeting 30 April 2015	No change in declaration	
Fourteenth GDG meeting 19 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 3: Christmas, David

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 17 January 2014	Did not attend	
Third GDG meeting 10 April 2014	Did not attend	
Fourth GDG meeting 3 September 2014	Did not attend	
Fifth GDG meeting 4 September 2014	Did not attend	
Sixth GDG meeting 22 October 2014	Did not attend	
Seventh GDG meeting 23 October 2014	Did not attend	
Eighth GDG meeting 4 December 2014	No change in declaration	
Ninth GDG meeting 26 January 2015	Did not attend	

GDG meeting	Declaration of Interests	Action taken
Tenth GDG meeting 27 January 2015	Did not attend	
Eleventh GDG meeting 11 March 2015	Did not attend	
Twelfth GDG meeting 29 April 2015	Did not attend	
Thirteenth GDG meeting 30 April 2015	Did not attend	
Fourteenth GDG meeting 19 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 4: Costa, Matthew

GDG meeting	Declaration of Interests	Action taken
On application	Non-personal pecuniary interest: <ul style="list-style-type: none"> MC is an investigator on University of Warwick held research grants from NIHR, ARUK and x-Bolr Orthopaedics 	No action taken
Second GDG meeting 17 January 2014	No change in declaration	
Third GDG meeting 10 April 2014	Did not attend	
Fourth GDG meeting 3 September 2014	No change in declaration	
Fifth GDG meeting 4 September 2014	No change in declaration	
Sixth GDG meeting 22 October 2014	Did not attend	
Seventh GDG meeting 23 October 2014	Did not attend	

GDG meeting	Declaration of Interests	Action taken
Eighth GDG meeting 4 December 2014	No change in declaration	
Ninth GDG meeting 26 January 2015	No change in declaration	
Tenth GDG meeting 27 January 2015	No change in declaration	
Eleventh GDG meeting 11 March 2015	No change in declaration	
Twelfth GDG meeting 29 April 2015	No change in declaration	
Thirteenth GDG meeting 30 April 2015	No change in declaration	
Fourteenth GDG meeting 19 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 5: Foster, Judith

GDG meeting	Declaration of Interests	Action taken
On application	Personal non-pecuniary interest: <ul style="list-style-type: none"> JF is the chair of the intercollegiate working party drafting standards for imaging in severely injured children, commissioned by the RCR and the SXPR and including members from APEM, BAPS and RCPCH. The standards are due for publication in 2014. 	No action taken
Second GDG meeting 17 January 2014	Did not attend	
Third GDG meeting 10 April 2014	Did not attend	
Fourth GDG meeting 3 September 2014	Did not attend	
Fifth GDG	Did not attend	

GDG meeting	Declaration of Interests	Action taken
meeting 4 September 2014		
Sixth GDG meeting 22 October 2014	Did not attend	
Seventh GDG meeting 23 October 2014	Did not attend	
Eighth GDG meeting 4 December 2014	No change in declaration	
Ninth GDG meeting 26 January 2015	Did not attend	
Tenth GDG meeting 27 January 2015	Did not attend	
Eleventh GDG meeting 11 March 2015	Did not attend	
Twelfth GDG meeting 29 April 2015	Did not attend	
Thirteenth GDG meeting 30 April 2015	Did not attend	
Fourteenth GDG meeting 19 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 6: Handley, Bob (co-chair)

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 17 January 2014	No change in declaration	
Third GDG meeting 10 April 2014	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
Fourth GDG meeting 3 September 2014	No change in declaration	
Fifth GDG meeting 4 September 2014	No change in declaration	
Sixth GDG meeting 22 October 2014	No change in declaration	
Seventh GDG meeting 23 October 2014	No change in declaration	
Eighth GDG meeting 4 December 2014	No change in declaration	
Ninth GDG meeting 26 January 2015	No change in declaration	
Tenth GDG meeting 27 January 2015	No change in declaration	
Eleventh GDG meeting 11 March 2015	No change in declaration	
Twelfth GDG meeting 29 April 2015	No change in declaration	
Thirteenth GDG meeting 30 April 2015	No change in declaration	
Fourteenth GDG meeting 19 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 7: Harrison, Simon

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting	Did not attend	

GDG meeting	Declaration of Interests	Action taken
17 January 2014		
Third GDG meeting 10 April 2014	Did not attend	
Fourth GDG meeting 3 September 2014	Did not attend	
Fifth GDG meeting 4 September 2014	Did not attend	
Sixth GDG meeting 22 October 2014	Did not attend	
Seventh GDG meeting 23 October 2014	Did not attend	
Eighth GDG meeting 4 December 2014	Did not attend	
Ninth GDG meeting 26 January 2015	Did not attend	
Tenth GDG meeting 27 January 2015	Did not attend	
Eleventh GDG meeting 11 March 2015	Did not attend	
Twelfth GDG meeting 29 April 2015	Did not attend	
Thirteenth GDG meeting 30 April 2015	Did not attend	
Fourteenth GDG meeting 19 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 8: Henman, Philip

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 17 January 2014	No change in declaration	
Third GDG meeting 10 April 2014	No change in declaration	
Fourth GDG meeting 3 September 2014	No change in declaration	
Fifth GDG meeting 4 September 2014	No change in declaration	
Sixth GDG meeting 22 October 2014	No change in declaration	
Seventh GDG meeting 23 October 2014	No change in declaration	
Eighth GDG meeting 4 December 2014	No change in declaration	
Ninth GDG meeting 26 January 2015	No change in declaration	
Tenth GDG meeting 27 January 2015	No change in declaration	
Eleventh GDG meeting 11 March 2015	No change in declaration	
Twelfth GDG meeting 29 April 2015	Did not attend	
Thirteenth GDG meeting 30 April 2015	No change in declaration	
Fourteenth GDG meeting 19 May 2015	No change in declaration	
Final GDG	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
meeting 5-6 October 2015		

Table 9: Hough, Jennifer

GDG meeting	Declaration of Interests	Action taken
On application	<p>Personal family interest:</p> <ul style="list-style-type: none"> • My father is a registered practising pharmacist working for Bayer Medical Affairs with pharmaceutical industry. He also holds shares in AstraZeneca. <p>Personal non-pecuniary interest:</p> <ul style="list-style-type: none"> • JF has helped in developing a new major protocol - but this has included more organisation of our department. 	No action taken
Second GDG meeting 17 January 2014	Did not attend	
Third GDG meeting 10 April 2014	Did not attend	
Fourth GDG meeting 3 September 2014	Did not attend	
Fifth GDG meeting 4 September 2014	Did not attend	
Sixth GDG meeting 22 October 2014	Did not attend	
Seventh GDG meeting 23 October 2014	Did not attend	
Eighth GDG meeting 4 December 2014	<p>Personal non-pecuniary interest:</p> <ul style="list-style-type: none"> • JH submitted a research protocol on ankle fractures and the ability to hop as a means of assessing for presence of fracture. 	No action taken
Ninth GDG meeting 26 January 2015	Did not attend	
Tenth GDG meeting 27 January	Did not attend	

GDG meeting	Declaration of Interests	Action taken
2015		
Eleventh GDG meeting 11 March 2015	Did not attend	
Twelfth GDG meeting 29 April 2015	Did not attend	
Thirteenth GDG meeting 30 April 2015	No change in declaration	
Fourteenth GDG meeting 19 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 10: Ingram, Mike

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 17 January 2014	Did not attend	
Third GDG meeting 10 April 2014	Did not attend	
Fourth GDG meeting 3 September 2014	Did not attend	
Fifth GDG meeting 4 September 2014	Did not attend	
Sixth GDG meeting 22 October 2014	Did not attend	
Seventh GDG meeting 23 October 2014	Did not attend	
Eighth GDG meeting 4 December 2014	Did not attend	
Ninth GDG meeting	Did not attend	

GDG meeting	Declaration of Interests	Action taken
26 January 2015		
Tenth GDG meeting 27 January 2015	Did not attend	
Eleventh GDG meeting 11 March 2015	Did not attend	
Twelfth GDG meeting 29 April 2015	Did not attend	
Thirteenth GDG meeting 30 April 2015	Did not attend	
Fourteenth GDG meeting 19 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 11: Lecky, Fiona

GDG meeting	Declaration of Interests	Action taken
On application	Non-personal pecuniary interest: <ul style="list-style-type: none"> FL is chief investigator of Head Injury Transportation straight to Neurosurgery study (HTA funded to previous employer) until 2013. Likely to suggest and bid for NIHR funded study into trauma triage. 	No action taken
Second GDG meeting 17 January 2014	Did not attend	
Third GDG meeting 10 April 2014	No change in declaration	
Fourth GDG meeting 3 September 2014	Did not attend	
Fifth GDG meeting 4 September 2014	Did not attend	
Sixth GDG meeting 22 October 2014	Did not attend	

GDG meeting	Declaration of Interests	Action taken
Seventh GDG meeting 23 October 2014	No change in declaration	
Eighth GDG meeting 4 December 2014	Did not attend	
Ninth GDG meeting 26 January 2015	Did not attend	
Tenth GDG meeting 27 January 2015	Did not attend	
Eleventh GDG meeting 11 March 2015	Did not attend	
Twelfth GDG meeting 29 April 2015	Did not attend	
Thirteenth GDG meeting 30 April 2015	Did not attend	
Fourteenth GDG meeting 19 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 12: McFadyen, Iain (co-chair)

GDG meeting	Declaration of Interests	Action taken
On application	Personal non-pecuniary interest: <ul style="list-style-type: none"> IM is a member of the Department of Health Clinical reference group for trauma. 	No action taken
Second GDG meeting 17 January 2014	No change in declaration	
Third GDG meeting 10 April 2014	No change in declaration	
Fourth GDG meeting 3 September 2014	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
Fifth GDG meeting 4 September 2014	No change in declaration	
Sixth GDG meeting 22 October 2014	No change in declaration	
Seventh GDG meeting 23 October 2014	No change in declaration	
Eighth GDG meeting 4 December 2014	No change in declaration	
Ninth GDG meeting 26 January 2015	Did not attend	
Tenth GDG meeting 27 January 2015	No change in declaration	
Eleventh GDG meeting 11 March 2015	No change in declaration	
Twelfth GDG meeting 29 April 2015	No change in declaration	
Thirteenth GDG meeting 30 April 2015	No change in declaration	
Fourteenth GDG meeting 19 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 13: McPherson, Simon

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 17 January 2014	Did not attend	
Third GDG meeting	Did not attend	

GDG meeting	Declaration of Interests	Action taken
10 April 2014		
Fourth GDG meeting 3 September 2014	Did not attend	
Fifth GDG meeting 4 September 2014	Did not attend	
Sixth GDG meeting 22 October 2014	Did not attend	
Seventh GDG meeting 23 October 2014	Did not attend	
Eighth GDG meeting 4 December 2014	Did not attend	
Ninth GDG meeting 26 January 2015	Did not attend	
Tenth GDG meeting 27 January 2015	Did not attend	
Eleventh GDG meeting 11 March 2015	Did not attend	
Twelfth GDG meeting 29 April 2015	Did not attend	
Thirteenth GDG meeting 30 April 2015	Did not attend	
Fourteenth GDG meeting 19 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 14: Morris, Craig

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken

GDG meeting	Declaration of Interests	Action taken
Second GDG meeting 17 January 2014	Did not attend	
Third GDG meeting 10 April 2014	Did not attend	
Fourth GDG meeting 3 September 2014	Did not attend	
Fifth GDG meeting 4 September 2014	Did not attend	
Sixth GDG meeting 22 October 2014	Did not attend	
Seventh GDG meeting 23 October 2014	Did not attend	
Eighth GDG meeting 4 December 2014	No change in declaration	
Ninth GDG meeting 26 January 2015	Did not attend	
Tenth GDG meeting 27 January 2015	Did not attend	
Eleventh GDG meeting 11 March 2015	Did not attend	
Twelfth GDG meeting 29 April 2015	Did not attend	
Thirteenth GDG meeting 30 April 2015	Did not attend	
Fourteenth GDG meeting 19 May 2015	Did not attend	
Final GDG meeting 5-6 October	Did not attend	

GDG meeting	Declaration of Interests	Action taken
2015		

Table 15: Morris, Kevin

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 17 January 2014	Did not attend	
Third GDG meeting 10 April 2014	No change in declaration	
Fourth GDG meeting 3 September 2014	Did not attend	
Fifth GDG meeting 4 September 2014	Did not attend	
Sixth GDG meeting 22 October 2014	Did not attend	
Seventh GDG meeting 23 October 2014	Did not attend	
Eighth GDG meeting 4 December 2014	Did not attend	
Ninth GDG meeting 26 January 2015	Did not attend	
Tenth GDG meeting 27 January 2015	Did not attend	
Eleventh GDG meeting 11 March 2015	Did not attend	
Twelfth GDG meeting 29 April 2015	Did not attend	
Thirteenth GDG meeting 30 April 2015	Did not attend	
Fourteenth	Did not attend	

GDG meeting	Declaration of Interests	Action taken
GDG meeting 19 May 2015		
Final GDG meeting 5-6 October 2015	Did not attend	

Table 16: Nanchahal, Jagdeep

GDG meeting	Declaration of Interests	Action taken
On application	Personal pecuniary interest: <ul style="list-style-type: none"> JN undertakes consultancy work for Orthofix and Smith & Nephew, these are educational courses. He also chaired the group on behalf of the British Orthopaedic and Plastic Surgery Association that wrote the 'standards for the management of open fractures of the lower limb' published in 2009. 	No action taken
Second GDG meeting 17 January 2014	Did not attend	
Third GDG meeting 10 April 2014	No change in declaration	
Fourth GDG meeting 3 September 2014	Personal pecuniary interest: <ul style="list-style-type: none"> JN teaches on courses (soft tissue reconstruction) sponsored by companies that sell orthopaedic implants 	Conflict of interest: Withdrew from recommendation making discussions on combined orthoplastic approach to open fractures.
Fifth GDG meeting 4 September 2014	No change in declaration	
Sixth GDG meeting 22 October 2014	No change in declaration	
Seventh GDG meeting 23 October 2014	No change in declaration	
Eighth GDG meeting 4 December 2014	No change in declaration	
Ninth GDG meeting 26 January 2015	No change in declaration	
Tenth GDG meeting	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
27 January 2015		
Eleventh GDG meeting 11 March 2015	No change in declaration	
Twelfth GDG meeting 29 April 2015	No change in declaration	
Thirteenth GDG meeting 30 April 2015	No change in declaration	
Fourteenth GDG meeting 19 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 17: Nayagam, Selvadurai

GDG meeting	Declaration of Interests	Action taken
On application	<p>Personal pecuniary interest:</p> <ul style="list-style-type: none"> SD is a consultant for Orthofix SRL (medical device and Implant Company), Verona, Italy, who provides medical devices that are used in fracture care. <p>Non-personal pecuniary interest:</p> <ul style="list-style-type: none"> SD holds a fellowship in limb reconstruction supported by Smith and Nephew UK at Royal Liverpool and Broadgreen University Hospital. 	No action taken
Second GDG meeting 17 January 2014	Did not attend	
Third GDG meeting 10 April 2014	Did not attend	
Fourth GDG meeting 3 September 2014	No change in declaration	
Fifth GDG meeting 4 September 2014	No change in declaration	
Sixth GDG meeting 22 October	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
2014		
Seventh GDG meeting 23 October 2014	No change in declaration	
Eighth GDG meeting 4 December 2014	Did not attend	
Ninth GDG meeting 26 January 2015	Did not attend	
Tenth GDG meeting 27 January 2015	Did not attend	
Eleventh GDG meeting 11 March 2015	Did not attend	
Twelfth GDG meeting 29 April 2015	No change in declaration	
Thirteenth GDG meeting 30 April 2015	No change in declaration	
Fourteenth GDG meeting 19 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 18: Sampson, Madeleine

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 17 January 2014	Did not attend	
Third GDG meeting 10 April 2014	No change in declaration	
Fourth GDG meeting 3 September 2014	Did not attend	
Fifth GDG meeting	Did not attend	

GDG meeting	Declaration of Interests	Action taken
4 September 2014		
Sixth GDG meeting 22 October 2014	Did not attend	
Seventh GDG meeting 23 October 2014	No change in declaration	
Eighth GDG meeting 4 December 2014	Did not attend	
Ninth GDG meeting 26 January 2015	Did not attend	
Tenth GDG meeting 27 January 2015	No change in declaration	
Eleventh GDG meeting 11 March 2015	Did not attend	
Twelfth GDG meeting 29 April 2015	Did not attend	
Thirteenth GDG meeting 30 April 2015	Did not attend	
Fourteenth GDG meeting 19 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 19: Silvester, Lucy

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 17 January 2014	No change in declaration	
Third GDG meeting 10 April 2014	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
Fourth GDG meeting 3 September 2014	No change in declaration	
Fifth GDG meeting 4 September 2014	No change in declaration	
Sixth GDG meeting 22 October 2014	No change in declaration	
Seventh GDG meeting 23 October 2014	No change in declaration	
Eighth GDG meeting 4 December 2014	No change in declaration	
Ninth GDG meeting 26 January 2015	Did not attend	
Tenth GDG meeting 27 January 2015	Did not attend	
Eleventh GDG meeting 11 March 2015	Did not attend	
Twelfth GDG meeting 29 April 2015	Did not attend	
Thirteenth GDG meeting 30 April 2015	Did not attend	
Fourteenth GDG meeting 19 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 20: Skinner, David

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
17 January 2014		
Third GDG meeting 10 April 2014	Did not attend	
Fourth GDG meeting 3 September 2014	No change in declaration	
Fifth GDG meeting 4 September 2014	No change in declaration	
Sixth GDG meeting 22 October 2014	Did not attend	
Seventh GDG meeting 23 October 2014	No change in declaration	
Eighth GDG meeting 4 December 2014	Did not attend	
Ninth GDG meeting 26 January 2015	Did not attend	
Tenth GDG meeting 27 January 2015	No change in declaration	
Eleventh GDG meeting 11 March 2015	No change in declaration	
Twelfth GDG meeting 29 April 2015	No change in declaration	
Thirteenth GDG meeting 30 April 2015	No change in declaration	
Fourteenth GDG meeting 19 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 21: Slowie, Aidan

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 17 January 2014	No change in declaration	
Third GDG meeting 10 April 2014	Did not attend	
Fourth GDG meeting 3 September 2014	No change in declaration	
Fifth GDG meeting 4 September 2014	No change in declaration	
Sixth GDG meeting 22 October 2014	No change in declaration	
Seventh GDG meeting 23 October 2014	No change in declaration	
Eighth GDG meeting 4 December 2014	Did not attend	
Ninth GDG meeting 26 January 2015	No change in declaration	
Tenth GDG meeting 27 January 2015	No change in declaration	
Eleventh GDG meeting 11 March 2015	No change in declaration	
Twelfth GDG meeting 29 April 2015	Did not attend	
Thirteenth GDG meeting 30 April 2015	No change in declaration	
Fourteenth GDG meeting 19 May 2015	Did not attend	
Final GDG	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
meeting 5-6 October 2015		

Table 22: Snaith, Beverly

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 17 January 2014	Did not attend	
Third GDG meeting 10 April 2014	Did not attend	
Fourth GDG meeting 3 September 2014	No change in declaration	
Fifth GDG meeting 4 September 2014	No change in declaration	
Sixth GDG meeting 22 October 2014	Did not attend	
Seventh GDG meeting 23 October 2014	Did not attend	
Eighth GDG meeting 4 December 2014	Did not attend	
Ninth GDG meeting 26 January 2015	No change in declaration	
Tenth GDG meeting 27 January 2015	No change in declaration	
Eleventh GDG meeting 11 March 2015	No change in declaration	
Twelfth GDG meeting 29 April 2015	No change in declaration	
Thirteenth GDG meeting	Did not attend	

GDG meeting	Declaration of Interests	Action taken
30 April 2015		
Fourteenth GDG meeting 19 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 23: Stacey, Julia

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 17 January 2014	Did not attend	
Third GDG meeting 10 April 2014	Did not attend	
Fourth GDG meeting 3 September 2014	Did not attend	
Fifth GDG meeting 4 September 2014	Did not attend	
Sixth GDG meeting 22 October 2014	Did not attend	
Seventh GDG meeting 23 October 2014	Did not attend	
Eighth GDG meeting 4 December 2014	Did not attend	
Ninth GDG meeting 26 January 2015	Did not attend	
Tenth GDG meeting 27 January 2015	Did not attend	
Eleventh GDG meeting 11 March 2015	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
Twelfth GDG meeting 29 April 2015	Did not attend	
Thirteenth GDG meeting 30 April 2015	Did not attend	
Fourteenth GDG meeting 19 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 24: Swann, Garry

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 17 January 2014	Did not attend	
Third GDG meeting 10 April 2014	No change in declaration	
Fourth GDG meeting 3 September 2014	Did not attend	
Fifth GDG meeting 4 September 2014	Did not attend	
Sixth GDG meeting 22 October 2014	Did not attend	
Seventh GDG meeting 23 October 2014	Did not attend	
Eighth GDG meeting 4 December 2014	Did not attend	
Ninth GDG meeting 26 January 2015	Did not attend	
Tenth GDG meeting	Did not attend	

GDG meeting	Declaration of Interests	Action taken
27 January 2015		
Eleventh GDG meeting 11 March 2015	Did not attend	
Twelfth GDG meeting 29 April 2015	Did not attend	
Thirteenth GDG meeting 30 April 2015	Did not attend	
Fourteenth GDG meeting 19 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 25: Thornhill, Angela

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 17 January 2014	No change in declaration	
Third GDG meeting 10 April 2014	No change in declaration	
Fourth GDG meeting 3 September 2014	No change in declaration	
Fifth GDG meeting 4 September 2014	No change in declaration	
Sixth GDG meeting 22 October 2014	No change in declaration	
Seventh GDG meeting 23 October 2014	No change in declaration	
Eighth GDG meeting 4 December 2014	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
Ninth GDG meeting 26 January 2015	No change in declaration	
Tenth GDG meeting 27 January 2015	No change in declaration	
Eleventh GDG meeting 11 March 2015	No change in declaration	
Twelfth GDG meeting 29 April 2015	No change in declaration	
Thirteenth GDG meeting 30 April 2015	No change in declaration	
Fourteenth GDG meeting 19 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 26: Toplis, Laura

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 17 January 2014	Did not attend	
Third GDG meeting 10 April 2014	Did not attend	
Fourth GDG meeting 3 September 2014	Did not attend	
Fifth GDG meeting 4 September 2014	Did not attend	
Sixth GDG meeting 22 October 2014	Did not attend	
Seventh GDG meeting 23 October	Did not attend	

GDG meeting	Declaration of Interests	Action taken
2014		
Eighth GDG meeting 4 December 2014	Did not attend	
Ninth GDG meeting 26 January 2015	Did not attend	
Tenth GDG meeting 27 January 2015	Did not attend	
Eleventh GDG meeting 11 March 2015	Did not attend	
Twelfth GDG meeting 29 April 2015	Did not attend	
Thirteenth GDG meeting 30 April 2015	Did not attend	
Fourteenth GDG meeting 19 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 27: Wallman, Paul

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 17 January 2014	Did not attend	
Third GDG meeting 10 April 2014	Did not attend	
Fourth GDG meeting 3 September 2014	Did not attend	
Fifth GDG meeting 4 September 2014	Did not attend	
Sixth GDG meeting	Did not attend	

GDG meeting	Declaration of Interests	Action taken
22 October 2014		
Seventh GDG meeting 23 October 2014	Did not attend	
Eighth GDG meeting 4 December 2014	No change in declaration	
Ninth GDG meeting 26 January 2015	Did not attend	
Tenth GDG meeting 27 January 2015	No change in declaration	
Eleventh GDG meeting 11 March 2015	Did not attend	
Twelfth GDG meeting 29 April 2015	No change in declaration	
Thirteenth GDG meeting 30 April 2015	No change in declaration	
Fourteenth GDG meeting 19 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

B.2 Major trauma

Table 28: Brohi, Karim (Chair)

GDG meeting	Declaration of Interests	Action taken
On application	<p>Personal pecuniary interest:</p> <ul style="list-style-type: none"> • Sangart Inc (ongoing)- consultancy on early phase clinical trials of oxygen therapeutic • CSL Behring (ongoing)- consultancy on future of bleeding management and coagulation research • Haemonetics (ongoing)- consultancy on coagulation and device development. <p>Non-personal pecuniary interest:</p>	No action taken

GDG meeting	Declaration of Interests	Action taken
	<ul style="list-style-type: none"> • Astra-Zeneca- unrestricted grant for coagulation/haemorrhage research • Haemonetics- unrestricted grant for coagulation/haemorrhage research TEM International- support for research devices and consumables (unrestricted).	
Second GDG meeting 21 November 2013	No change in declaration	
Third GDG meeting 7 January 2014	No change in declaration	
Fourth GDG meeting 12 March 2014	No change in declaration	
Fifth GDG meeting 13 March 2014	No change in declaration	
Sixth GDG meeting 14 May 2014	No change in declaration	
Seventh GDG meeting 15 May 2014	Did not attend	
Eighth GDG meeting 30 July 2014	No change in declaration	
Ninth GDG meeting 31 July 2014	Personal pecuniary interest: <ul style="list-style-type: none"> • Paid consultancy for Haemonetics Inc (TEG manufacturers) in 2012 Non personal pecuniary interest: <ul style="list-style-type: none"> • Research funding from Haemonetics Inc (TEG 2013) and TEM International (ROTEM 2008) 	Conflict of interest: Withdrew from recommendation making discussions on coagulation testing.
Tenth GDG meeting 13 October 2014	No change in declaration	
Eleventh GDG meeting 14 October 2014	No change in declaration	
Twelfth GDG meeting 12 January 2015	No change in declaration	
Thirteenth GDG meeting	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
13 January 2015		
Fourteenth GDG meeting 25 March 2015	No change in declaration	
Fifteenth GDG meeting 26 March 2015	No change in declaration	
Sixteenth GDG meeting 7 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 29: Christmas, David

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 21 November 2013	Did not attend	
Third GDG meeting 7 January 2014	Did not attend	
Fourth GDG meeting 12 March 2014	Did not attend	
Fifth GDG meeting 13 March 2014	Did not attend	
Sixth GDG meeting 14 May 2014	Did not attend	
Seventh GDG meeting 15 May 2014	Did not attend	
Eighth GDG meeting 30 July 2014	Did not attend	
Ninth GDG meeting 31 July 2014	Did not attend	
Tenth GDG meeting 13 October 2014	No change in declaration	
Eleventh GDG	Did not attend	

GDG meeting	Declaration of Interests	Action taken
meeting 14 October 2014		
Twelfth GDG meeting 12 January 2015	Did not attend	
Thirteenth GDG meeting 13 January 2015	Did not attend	
Fourteenth GDG meeting 25 March 2015	Did not attend	
Fifteenth GDG meeting 26 March 2015	Did not attend	
Sixteenth GDG meeting 7 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 30: Fitzsimmons, Chris

GDG meeting	Declaration of Interests	Action taken
On application	Personal pecuniary interest: <ul style="list-style-type: none"> CF works on a group under the Royal College of Radiologists and the British Society of Paediatric radiologists to help develop national standards for the radiological imaging of children with major trauma. 	No action taken
Second GDG meeting 21 November 2013	Personal pecuniary interest: <ul style="list-style-type: none"> CF is applying for the post of Clinical lead of the ODN for Major trauma in South Yorkshire region. 	No action taken.
Third GDG meeting 7 January 2014	No change in declaration	
Fourth GDG meeting 12 March 2014	Personal pecuniary interest: <ul style="list-style-type: none"> CF has accepted the post of Clinical lead for South Yorkshire Trauma Operational Delivery network, paid at the rate of one programmed activity (PA) per month. 	No action taken.
Fifth GDG meeting 13 March 2014	No change in declaration	
Sixth GDG meeting	Personal non-pecuniary interest: <ul style="list-style-type: none"> Appointed to the board of the TARNLet 	No action taken

GDG meeting	Declaration of Interests	Action taken
14 May 2014	committee.	
Seventh GDG meeting 15 May 2014	No change in declaration	
Eighth GDG meeting 30 July 2014	Personal non-pecuniary interest: <ul style="list-style-type: none"> Named as co-author on review article that has been accepted in peer-reviewed radiology journal on the subject of 'radiological imaging in the child with major trauma'. 	No action taken
Ninth GDG meeting 31 July 2014	Did not attend	
Tenth GDG meeting 13 October 2014	No change in declaration	
Eleventh GDG meeting 14 October 2014	No change in declaration	
Twelfth GDG meeting 12 January 2015	Did not attend	
Thirteenth GDG meeting 13 January 2015	No change in declaration	
Fourteenth GDG meeting 25 March 2015	Did not attend	
Fifteenth GDG meeting 26 March 2015	Did not attend	
Sixteenth GDG meeting 7 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 31: Foster, Judith

GDG meeting	Declaration of Interests	Action taken
On application	Personal non-pecuniary interest: <ul style="list-style-type: none"> JF is the chair of the intercollegiate working party drafting standards for imaging in severely injured children, commissioned by 	No action taken

GDG meeting	Declaration of Interests	Action taken
	the RCR and the SXPR and including members from APEM, BAPS and RCPCH. The standards are due for publication in 2014.	
Second GDG meeting 21 November 2013	No change in declaration	
Third GDG meeting 7 January 2014	Did not attend	
Fourth GDG meeting 12 March 2014	Did not attend	
Fifth GDG meeting 13 March 2014	Did not attend	
Sixth GDG meeting 14 May 2014	Did not attend	
Seventh GDG meeting 15 May 2014	Did not attend	
Eighth GDG meeting 30 July 2014	Personal non-pecuniary interest: <ul style="list-style-type: none"> • Co-author of paper reviewing imaging guidelines in the severely injured child. 	No action taken
Ninth GDG meeting 31 July 2014	Did not attend	
Tenth GDG meeting 13 October 2014	Did not attend	
Eleventh GDG meeting 14 October 2014	Did not attend	
Twelfth GDG meeting 12 January 2015	Did not attend	
Thirteenth GDG meeting 13 January 2015	Personal non-pecuniary interest: <ul style="list-style-type: none"> • JF is chair of the intercollegiate working party drafting standards for imaging of the severely injured child – these were published in September 2014. 	No action taken.
Fourteenth GDG meeting 25 March 2015	No change in declaration	
Fifteenth GDG meeting	Did not attend	

GDG meeting	Declaration of Interests	Action taken
26 March 2015		
Sixteenth GDG meeting 7 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 32: Griffiths, Nathan

GDG meeting	Declaration of Interests	Action taken
On application	<p>Personal pecuniary interest:</p> <ul style="list-style-type: none"> Freelance clinical educator – deliver training and education including relevant guidelines on behalf of a third party private training company. This has previously included consultancy on guideline development for two organisations; although not recent. 	No action taken
Second GDG meeting 21 November 2013	Did not attend	
Third GDG meeting 7 January 2014	Did not attend	
Fourth GDG meeting 12 March 2014	Did not attend	
Fifth GDG meeting 13 March 2014	Did not attend	
Sixth GDG meeting 14 May 2014	Did not attend	
Seventh GDG meeting 15 May 2014	Did not attend	
Eighth GDG meeting 30 July 2014	Did not attend	
Ninth GDG meeting 31 July 2014	Did not attend	
Tenth GDG meeting 13 October 2014	Did not attend	
Eleventh GDG meeting 14 October	Did not attend	

GDG meeting	Declaration of Interests	Action taken
2014		
Twelfth GDG meeting 12 January 2015	Did not attend	
Thirteenth GDG meeting 13 January 2015	No change in declaration	
Fourteenth GDG meeting 25 March 2015	No change in declaration	
Fifteenth GDG meeting 26 March 2015	No change in declaration	
Sixteenth GDG meeting 7 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 33: Hough, Jennifer

GDG meeting	Declaration of Interests	Action taken
On application	<p>Personal family interest:</p> <ul style="list-style-type: none"> My father is a registered practising pharmacist working for Bayer Medical Affairs with pharmaceutical industry. He also holds shares in AstraZeneca. <p>Personal non-pecuniary interest:</p> <ul style="list-style-type: none"> JF has helped in developing a new major protocol - but this has included more organisation of our department. 	No action taken
Second GDG meeting 21 November 2013	Did not attend	
Third GDG meeting 7 January 2014	Did not attend	
Fourth GDG meeting 12 March 2014	Did not attend	
Fifth GDG meeting 13 March 2014	Did not attend	
Sixth GDG meeting 14 May 2014	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
Seventh GDG meeting 15 May 2014	No change in declaration	
Eighth GDG meeting 30 July 2014	Did not attend	
Ninth GDG meeting 31 July 2014	Did not attend	
Tenth GDG meeting 13 October 2014	Did not attend	
Eleventh GDG meeting 14 October 2014	Did not attend	
Twelfth GDG meeting 12 January 2015	Did not attend	
Thirteenth GDG meeting 13 January 2015	Did not attend	
Fourteenth GDG meeting 25 March 2015	Did not attend	
Fifteenth GDG meeting 26 March 2015	Did not attend	
Sixteenth GDG meeting 7 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 34: Hughes, Simon

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 21 November 2013	No change in declaration	
Third GDG meeting 7 January 2014	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
Fourth GDG meeting 12 March 2014	No change in declaration	
Fifth GDG meeting 13 March 2014	No change in declaration	
Sixth GDG meeting 14 May 2014	Did not attend	
Seventh GDG meeting 15 May 2014	No change in declaration	
Eighth GDG meeting 30 July 2014	Did not attend	
Ninth GDG meeting 31 July 2014	Did not attend	
Tenth GDG meeting 13 October 2014	Did not attend	
Eleventh GDG meeting 14 October 2014	No change in declaration	
Twelfth GDG meeting 12 January 2015	Did not attend	
Thirteenth GDG meeting 13 January 2015	No change in declaration	
Fourteenth GDG meeting 25 March 2015	No change in declaration	
Fifteenth GDG meeting 26 March 2015	Did not attend	
Sixteenth GDG meeting 7 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 35: Ingram, Mike

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 21 November 2013	Did not attend	
Third GDG meeting 7 January 2014	Did not attend	
Fourth GDG meeting 12 March 2014	Did not attend	
Fifth GDG meeting 13 March 2014	Did not attend	
Sixth GDG meeting 14 May 2014	Did not attend	
Seventh GDG meeting 15 May 2014	Did not attend	
Eighth GDG meeting 30 July 2014	Did not attend	
Ninth GDG meeting 31 July 2014	Did not attend	
Tenth GDG meeting 13 October 2014	Did not attend	
Eleventh GDG meeting 14 October 2014	Did not attend	
Twelfth GDG meeting 12 January 2015	Did not attend	
Thirteenth GDG meeting 13 January 2015	Did not attend	
Fourteenth GDG meeting 25 March 2015	Did not attend	
Fifteenth GDG meeting 26 March 2015	Did not attend	

GDG meeting	Declaration of Interests	Action taken
Sixteenth GDG meeting 7 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 36: Jarman, Heather

GDG meeting	Declaration of Interests	Action taken
On application	Personal non-pecuniary interest: <ul style="list-style-type: none"> HJ is a member of the Department of Health Clinical reference group for major trauma. 	No action taken
Second GDG meeting 21 November 2013	No change in declaration	
Third GDG meeting 7 January 2014	No change in declaration	
Fourth GDG meeting 12 March 2014	No change in declaration	
Fifth GDG meeting 13 March 2014	No change in declaration	
Sixth GDG meeting 14 May 2014	No change in declaration	
Seventh GDG meeting 15 May 2014	No change in declaration	
Eighth GDG meeting 30 July 2014	No change in declaration	
Ninth GDG meeting 31 July 2014	No change in declaration	
Tenth GDG meeting 13 October 2014	No change in declaration	
Eleventh GDG meeting 14 October 2014	No change in declaration	
Twelfth GDG meeting 12 January	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
2015		
Thirteenth GDG meeting 13 January 2015	No change in declaration	
Fourteenth GDG meeting 25 March 2015	No change in declaration	
Fifteenth GDG meeting 26 March 2015	Did not attend	
Sixteenth GDG meeting 7 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 37: Kumar, Suresh

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 21 November 2013	Did not attend	
Third GDG meeting 7 January 2014	Did not attend	
Fourth GDG meeting 12 March 2014	Did not attend	
Fifth GDG meeting 13 March 2014	Did not attend	
Sixth GDG meeting 14 May 2014	Did not attend	
Seventh GDG meeting 15 May 2014	Did not attend	
Eighth GDG meeting 30 July 2014	Did not attend	
Ninth GDG meeting 31 July 2014	Did not attend	
Tenth GDG meeting	Did not attend	

GDG meeting	Declaration of Interests	Action taken
13 October 2014		
Eleventh GDG meeting 14 October 2014	Did not attend	
Twelfth GDG meeting 12 January 2015	No change in declaration	
Thirteenth GDG meeting 13 January 2015	No change in declaration	
Fourteenth GDG meeting 25 March 2015	Did not attend	
Fifteenth GDG meeting 26 March 2015	Did not attend	
Sixteenth GDG meeting 7 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 38: Lee, Richard

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 21 November 2013	No change in declaration	
Third GDG meeting 7 January 2014	Did not attend	
Fourth GDG meeting 12 March 2014	No change in declaration	
Fifth GDG meeting 13 March 2014	No change in declaration	
Sixth GDG meeting 14 May 2014	No change in declaration	
Seventh GDG meeting	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
15 May 2014		
Eighth GDG meeting 30 July 2014	No change in declaration	
Ninth GDG meeting 31 July 2014	No change in declaration	
Tenth GDG meeting 13 October 2014	Did not attend	
Eleventh GDG meeting 14 October 2014	Did not attend	
Twelfth GDG meeting 12 January 2015	No change in declaration	
Thirteenth GDG meeting 13 January 2015	Did not attend	
Fourteenth GDG meeting 25 March 2015	Did not attend	
Fifteenth GDG meeting 26 March 2015	No change in declaration	
Sixteenth GDG meeting 7 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 39: Lomas, Gabrielle

GDG meeting	Declaration of Interests	Action taken
On application	Personal pecuniary interest: <ul style="list-style-type: none"> • Director of Trauma Nursing Ltd. 	No action taken
Second GDG meeting 21 November 2013	Did not attend	
Third GDG meeting 7 January 2014	Did not attend	
Fourth GDG	Did not attend	

GDG meeting	Declaration of Interests	Action taken
meeting 12 March 2014		
Fifth GDG meeting 13 March 2014	Did not attend	
Sixth GDG meeting 14 May 2014	Did not attend	
Seventh GDG meeting 15 May 2014	Did not attend	
Eighth GDG meeting 30 July 2014	Did not attend	
Ninth GDG meeting 31 July 2014	Did not attend	
Tenth GDG meeting 13 October 2014	Did not attend	
Eleventh GDG meeting 14 October 2014	Did not attend	
Twelfth GDG meeting 12 January 2015	No change in declaration	
Thirteenth GDG meeting 13 January 2015	No change in declaration	
Fourteenth GDG meeting 25 March 2015	No change in declaration	
Fifteenth GDG meeting 26 March 2015	Did not attend	
Sixteenth GDG meeting 7 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 40: McPherson, Simon

GDG meeting	Declaration of Interests	Action taken
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GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 21 November 2013	No change in declaration	
Third GDG meeting 7 January 2014	No change in declaration	
Fourth GDG meeting 12 March 2014	No change in declaration	
Fifth GDG meeting 13 March 2014	No change in declaration	
Sixth GDG meeting 14 May 2014	No change in declaration	
Seventh GDG meeting 15 May 2014	No change in declaration	
Eighth GDG meeting 30 July 2014	No change in declaration	
Ninth GDG meeting 31 July 2014	No change in declaration	
Tenth GDG meeting 13 October 2014	No change in declaration	
Eleventh GDG meeting 14 October 2014	No change in declaration	
Twelfth GDG meeting 12 January 2015	No change in declaration	
Thirteenth GDG meeting 13 January 2015	No change in declaration	
Fourteenth GDG meeting 25 March 2015	No change in declaration	
Fifteenth GDG meeting 26 March 2015	No change in declaration	
Final GDG	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
meeting 5-6 October 2015		

Table 41: Morris, Kevin

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 21 November 2013	Did not attend	
Third GDG meeting 7 January 2014	Did not attend	
Fourth GDG meeting 12 March 2014	No change in declaration	
Fifth GDG meeting 13 March 2014	Did not attend	
Sixth GDG meeting 14 May 2014	Did not attend	
Seventh GDG meeting 15 May 2014	Did not attend	
Eighth GDG meeting 30 July 2014	Did not attend	
Ninth GDG meeting 31 July 2014	No change in declaration	
Tenth GDG meeting 13 October 2014	Did not attend	
Eleventh GDG meeting 14 October 2014	Did not attend	
Twelfth GDG meeting 12 January 2015	No change in declaration	
Thirteenth GDG meeting 13 January 2015	Did not attend	
Fourteenth	Did not attend	

GDG meeting	Declaration of Interests	Action taken
GDG meeting 25 March 2015		
Fifteenth GDG meeting 26 March 2015	Did not attend	
Sixteenth GDG meeting 7 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 42: Piercy, James

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 21 November 2013	Did not attend	
Third GDG meeting 7 January 2014	No change in declaration	
Fourth GDG meeting 12 March 2014	No change in declaration	
Fifth GDG meeting 13 March 2014	No change in declaration	
Sixth GDG meeting 14 May 2014	No change in declaration	
Seventh GDG meeting 15 May 2014	Did not attend	
Eighth GDG meeting 30 July 2014	No change in declaration	
Ninth GDG meeting 31 July 2014	No change in declaration	
Tenth GDG meeting 13 October 2014	No change in declaration	
Eleventh GDG meeting 14 October 2014	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
Twelfth GDG meeting 12 January 2015	No change in declaration	
Thirteenth GDG meeting 13 January 2015	No change in declaration	
Fourteenth GDG meeting 25 March 2015	Did not attend	
Fifteenth GDG meeting 26 March 2015	Did not attend	
Sixteenth GDG meeting 7 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 43: Sampson, Madeleine

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 21 November 2013	No change in declaration	
Third GDG meeting 7 January 2014	Did not attend	
Fourth GDG meeting 12 March 2014	Did not attend	
Fifth GDG meeting 13 March 2014	Did not attend	
Sixth GDG meeting 14 May 2014	Did not attend	
Seventh GDG meeting 15 May 2014	Did not attend	
Eighth GDG meeting 30 July 2014	Did not attend	
Ninth GDG meeting	Did not attend	

GDG meeting	Declaration of Interests	Action taken
31 July 2014		
Tenth GDG meeting 13 October 2014	No change in declaration	
Eleventh GDG meeting 14 October 2014	No change in declaration	
Twelfth GDG meeting 12 January 2015	Did not attend	
Thirteenth GDG meeting 13 January 2015	Did not attend	
Fourteenth GDG meeting 25 March 2015	Did not attend	
Fifteenth GDG meeting 26 March 2015	Personal non-pecuniary interest: <ul style="list-style-type: none"> MS is a panel member of the Royal College of Radiologists guideline group currently reviewing MBUR 8 trauma section (making best use of radiology). 	No action taken
Sixteenth GDG meeting 7 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 44: Skinner, David

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 21 November 2013	Did not attend	
Third GDG meeting 7 January 2014	No change in declaration	
Fourth GDG meeting 12 March 2014	Did not attend	
Fifth GDG meeting 13 March 2014	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
Sixth GDG meeting 14 May 2014	Did not attend	
Seventh GDG meeting 15 May 2014	Personal pecuniary interest: <ul style="list-style-type: none"> • DS has been commissioned to conduct a review (under 3 weeks) of major trauma systems in Manchester. 	No action taken
Eighth GDG meeting 30 July 2014	No change in declaration	
Ninth GDG meeting 31 July 2014	No change in declaration	
Tenth GDG meeting 13 October 2014	Did not attend	
Eleventh GDG meeting 14 October 2014	Did not attend	
Twelfth GDG meeting 12 January 2015	No change in declaration	
Thirteenth GDG meeting 13 January 2015	No change in declaration	
Fourteenth GDG meeting 25 March 2015	Did not attend	
Fifteenth GDG meeting 26 March 2015	Did not attend	
Sixteenth GDG meeting 7 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 45: Snaith, Beverly

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 21 November	Did not attend	

GDG meeting	Declaration of Interests	Action taken
2013		
Third GDG meeting 7 January 2014	Did not attend	
Fourth GDG meeting 12 March 2014	Did not attend	
Fifth GDG meeting 13 March 2014	Did not attend	
Sixth GDG meeting 14 May 2014	Did not attend	
Seventh GDG meeting 15 May 2014	Did not attend	
Eighth GDG meeting 30 July 2014	Did not attend	
Ninth GDG meeting 31 July 2014	Did not attend	
Tenth GDG meeting 13 October 2014	Did not attend	
Eleventh GDG meeting 14 October 2014	Did not attend	
Twelfth GDG meeting 12 January 2015	Did not attend	
Thirteenth GDG meeting 13 January 2015	Did not attend	
Fourteenth GDG meeting 25 March 2015	No change in declaration	
Fifteenth GDG meeting 26 March 2015	Did not attend	
Sixteenth GDG meeting 7 May 2015	Did not attend	
Final GDG meeting 5-6 October	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
2015		

Table 46: Stiff, Graham

GDG meeting	Declaration of Interests	Action taken
On application	Personal pecuniary interest: <ul style="list-style-type: none"> GS has an honorary contract with South Central Ambulance NHS Foundation Trust Service that enables me to claim expenses for attending and providing support at accident scenes. 	No action taken
Second GDG meeting 21 November 2013	No change in declaration	
Third GDG meeting 7 January 2014	Did not attend	
Fourth GDG meeting 12 March 2014	No change in declaration	
Fifth GDG meeting 13 March 2014	No change in declaration	
Sixth GDG meeting 14 May 2014	No change in declaration	
Seventh GDG meeting 15 May 2014	No change in declaration	
Eighth GDG meeting 30 July 2014	Did not attend	
Ninth GDG meeting 31 July 2014	Did not attend	
Tenth GDG meeting 13 October 2014	No change in declaration	
Eleventh GDG meeting 14 October 2014	No change in declaration	
Twelfth GDG meeting 12 January 2015	No change in declaration	
Thirteenth GDG meeting 13 January	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
2015		
Fourteenth GDG meeting 25 March 2015	Did not attend	
Fifteenth GDG meeting 26 March 2015	Did not attend	
Sixteenth GDG meeting 7 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 47: Toplis, Laura

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 21 November 2013	Did not attend	
Third GDG meeting 7 January 2014	Did not attend	
Fourth GDG meeting 12 March 2014	Did not attend	
Fifth GDG meeting 13 March 2014	Did not attend	
Sixth GDG meeting 14 May 2014	Did not attend	
Seventh GDG meeting 15 May 2014	Did not attend	
Eighth GDG meeting 30 July 2014	Did not attend	
Ninth GDG meeting 31 July 2014	Did not attend	
Tenth GDG meeting 13 October 2014	Did not attend	
Eleventh GDG meeting	Did not attend	

GDG meeting	Declaration of Interests	Action taken
14 October 2014		
Twelfth GDG meeting 12 January 2015	Did not attend	
Thirteenth GDG meeting 13 January 2015	No change in declaration	
Fourteenth GDG meeting 25 March 2015	Did not attend	
Fifteenth GDG meeting 26 March 2015	Did not attend	
Sixteenth GDG meeting 7 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 48: Wallman, Paul

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 21 November 2013	No change in declaration	
Third GDG meeting 7 January 2014	No change in declaration	
Fourth GDG meeting 12 March 2014	No change in declaration	
Fifth GDG meeting 13 March 2014	No change in declaration	
Sixth GDG meeting 14 May 2014	No change in declaration	
Seventh GDG meeting 15 May 2014	Did not attend	
Eighth GDG meeting 30 July 2014	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
Ninth GDG meeting 31 July 2014	No change in declaration	
Tenth GDG meeting 13 October 2014	No change in declaration	
Eleventh GDG meeting 14 October 2014	No change in declaration	
Twelfth GDG meeting 12 January 2015	Did not attend	
Thirteenth GDG meeting 13 January 2015	No change in declaration	
Fourteenth GDG meeting 25 March 2015	No change in declaration	
Fifteenth GDG meeting 26 March 2015	No change in declaration	
Sixteenth GDG meeting 7 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 49: Welch, Nick

GDG meeting	Declaration of Interests	Action taken
On application	Personal non-pecuniary interest: <ul style="list-style-type: none"> • Member of the British orthopaedic Association's patient liaison group. 	No action taken
Second GDG meeting 21 November 2013	No change in declaration	
Third GDG meeting 7 January 2014	No change in declaration	
Fourth GDG meeting 12 March 2014	No change in declaration	
Fifth GDG	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
meeting 13 March 2014		
Sixth GDG meeting 14 May 2014	No change in declaration	
Seventh GDG meeting 15 May 2014	No change in declaration	
Eighth GDG meeting 30 July 2014	Did not attend	
Ninth GDG meeting 31 July 2014	Did not attend	
Tenth GDG meeting 13 October 2014	Did not attend	
Eleventh GDG meeting 14 October 2014	Did not attend	
Twelfth GDG meeting 12 January 2015	No change in declaration	
Thirteenth GDG meeting 13 January 2015	No change in declaration	
Fourteenth GDG meeting 25 March 2015	Did not attend	
Fifteenth GDG meeting 26 March 2015	Did not attend	
Sixteenth GDG meeting 7 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 50: Wiltshire, Steve

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting	Did not attend	

GDG meeting	Declaration of Interests	Action taken
21 November 2013		
Third GDG meeting 7 January 2014	Did not attend	
Fourth GDG meeting 12 March 2014	Did not attend	
Fifth GDG meeting 13 March 2014	Did not attend	
Sixth GDG meeting 14 May 2014	Did not attend	
Seventh GDG meeting 15 May 2014	Did not attend	
Eighth GDG meeting 30 July 2014	No change in declaration	
Ninth GDG meeting 31 July 2014	No change in declaration	
Tenth GDG meeting 13 October 2014	No change in declaration	
Eleventh GDG meeting 14 October 2014	No change in declaration	
Twelfth GDG meeting 12 January 2015	No change in declaration	
Thirteenth GDG meeting 13 January 2015	No change in declaration	
Fourteenth GDG meeting 25 March 2015	No change in declaration	
Fifteenth GDG meeting 26 March 2015	No change in declaration	
Sixteenth GDG meeting 7 May 2015	No change in declaration	
Final GDG meeting	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
5-6 October 2015		

B.3 Non complex fractures

Table 51: Berry, Kathleen

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 January 2014	No change in declaration	
Third GDG meeting 9 April 2014	No change in declaration	
Fourth GDG meeting 21 May 2014	No change in declaration	
Fifth GDG meeting 22 May 2014	No change in declaration	
Sixth GDG meeting 2 July 2014	Did not attend	
Seventh GDG meeting 3 July 2014	Did not attend	
Eighth GDG meeting 13 August 2014	Did not attend	
Ninth GDG meeting 14 August 2014	Did not attend	
Tenth GDG meeting 29 October 2014	No change in declaration	
Eleventh GDG meeting 30 October 2014	No change in declaration	
Twelfth GDG meeting 12 March 2015	No change in declaration	
Thirteenth GDG meeting 13 May 2015	No change in declaration	
Fourteenth GDG meeting	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
14 May 2015		
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 52: Camps, Cherylene

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 January 2014	Did not attend	
Third GDG meeting 9 April 2014	Did not attend	
Fourth GDG meeting 21 May 2014	Did not attend	
Fifth GDG meeting 22 May 2014	Did not attend	
Sixth GDG meeting 2 July 2014	No change in declaration	
Seventh GDG meeting 3 July 2014	Did not attend	
Eighth GDG meeting 13 August 2014	No change in declaration	
Ninth GDG meeting 14 August 2014	No change in declaration	
Tenth GDG meeting 29 October 2014	Did not attend	
Eleventh GDG meeting 30 October 2014	No change in declaration	
Twelfth GDG meeting 12 March 2015	Did not attend	
Thirteenth GDG meeting 13 May 2015	Did not attend	
Fourteenth	Did not attend	

GDG meeting	Declaration of Interests	Action taken
GDG meeting 14 May 2015		
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 53: Christmas, David

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 January 2014	Did not attend	
Third GDG meeting 9 April 2014	Did not attend	
Fourth GDG meeting 21 May 2014	Did not attend	
Fifth GDG meeting 22 May 2014	Did not attend	
Sixth GDG meeting 2 July 2014	Did not attend	
Seventh GDG meeting 3 July 2014	Did not attend	
Eighth GDG meeting 13 August 2014	No change in declaration	
Ninth GDG meeting 14 August 2014	No change in declaration	
Tenth GDG meeting 29 October 2014	Did not attend	
Eleventh GDG meeting 30 October 2014	Did not attend	
Twelfth GDG meeting 12 March 2015	Did not attend	
Thirteenth GDG meeting 13 May 2015	Did not attend	

GDG meeting	Declaration of Interests	Action taken
Fourteenth GDG meeting 14 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 54: Costa, Matt

GDG meeting	Declaration of Interests	Action taken
On application	Non-personal pecuniary interest: <ul style="list-style-type: none"> MC is an investigator on University of Warwick held research grants from NIHR, ARUK and x-Bolr Orthopaedics. 	No action taken
Second GDG meeting 16 January 2014	No change in declaration	
Third GDG meeting 9 April 2014	No change in declaration	
Fourth GDG meeting 21 May 2014	No change in declaration	
Fifth GDG meeting 22 May 2014	No change in declaration	
Sixth GDG meeting 2 July 2014	No change in declaration	
Seventh GDG meeting 3 July 2014	No change in declaration	
Eighth GDG meeting 13 August 2014	No change in declaration	
Ninth GDG meeting 14 August 2014	Personal non-pecuniary interest: <ul style="list-style-type: none"> MC is a potential co-applicant on a grant application looking at the use of 3D imaging in suspected scaphoid fractures 	No action taken
Tenth GDG meeting 29 October 2014	Did not attend	
Eleventh GDG meeting 30 October 2014	Did not attend	
Twelfth GDG	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
meeting 12 March 2015		
Thirteenth GDG meeting 13 May 2015	Non-personal pecuniary interest: <ul style="list-style-type: none"> MC employers received a NIHR research grant for the Distal Radius Acute Fracture Fixation Trial 	Conflict of interest: Withdrew from recommendation making discussions on distal radius fractures.
Fourteenth GDG meeting 14 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 55: Foster, Judith

GDG meeting	Declaration of Interests	Action taken
On application	Personal non-pecuniary interest: <ul style="list-style-type: none"> JF is the chair of the intercollegiate working party drafting standards for imaging in severely injured children, commissioned by the RCR and the SXPR and including members from APEM, BAPS and RCPCH. The standards are due for publication in 2014. 	No action taken
Second GDG meeting 16 January 2014	Did not attend	
Third GDG meeting 9 April 2014	Did not attend	
Fourth GDG meeting 21 May 2014	Did not attend	
Fifth GDG meeting 22 May 2014	Did not attend	
Sixth GDG meeting 2 July 2014	Did not attend	
Seventh GDG meeting 3 July 2014	Did not attend	
Eighth GDG meeting 13 August 2014	Did not attend	
Ninth GDG meeting 14 August 2014	Personal non-pecuniary interest: <ul style="list-style-type: none"> JF is chair of the intercollegiate working party drafting standards for imaging of the severely injured child, to be published 	No action taken

GDG meeting	Declaration of Interests	Action taken
	September 2014.	
Tenth GDG meeting 29 October 2014	Did not attend	
Eleventh GDG meeting 30 October 2014	Did not attend	
Twelfth GDG meeting 12 March 2015	Did not attend	
Thirteenth GDG meeting 13 May 2015	Did not attend	
Fourteenth GDG meeting 14 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 56: Handley, Bob (co-chair)

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 January 2014	No change in declaration	
Third GDG meeting 9 April 2014	No change in declaration	
Fourth GDG meeting 21 May 2014	No change in declaration	
Fifth GDG meeting 22 May 2014	No change in declaration	
Sixth GDG meeting 2 July 2014	Did not attend	
Seventh GDG meeting 3 July 2014	Did not attend	
Eighth GDG meeting 13 August 2014	No change in declaration	
Ninth GDG	Did not attend	

GDG meeting	Declaration of Interests	Action taken
meeting 14 August 2014		
Tenth GDG meeting 29 October 2014	No change in declaration	
Eleventh GDG meeting 30 October 2014	No change in declaration	
Twelfth GDG meeting 12 March 2015	No change in declaration	
Thirteenth GDG meeting 13 May 2015	No change in declaration	
Fourteenth GDG meeting 14 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 57: Hayter, Gillian

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 January 2014	No change in declaration	
Third GDG meeting 9 April 2014	No change in declaration	
Fourth GDG meeting 21 May 2014	No change in declaration	
Fifth GDG meeting 22 May 2014	No change in declaration	
Sixth GDG meeting 2 July 2014	No change in declaration	
Seventh GDG meeting 3 July 2014	No change in declaration	
Eighth GDG meeting 13 August 2014	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
Ninth GDG meeting 14 August 2014	No change in declaration	
Tenth GDG meeting 29 October 2014	No change in declaration	
Eleventh GDG meeting 30 October 2014	No change in declaration	
Twelfth GDG meeting 12 March 2015	No change in declaration	
Thirteenth GDG meeting 13 May 2015	No change in declaration	
Fourteenth GDG meeting 14 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 58: Henman, Philip

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 January 2014	Did not attend	
Third GDG meeting 9 April 2014	No change in declaration	
Fourth GDG meeting 21 May 2014	No change in declaration	
Fifth GDG meeting 22 May 2014	No change in declaration	
Sixth GDG meeting 2 July 2014	No change in declaration	
Seventh GDG meeting 3 July 2014	No change in declaration	
Eighth GDG meeting	Did not attend	

GDG meeting	Declaration of Interests	Action taken
13 August 2014		
Ninth GDG meeting 14 August 2014	Did not attend	
Tenth GDG meeting 29 October 2014	Did not attend	
Eleventh GDG meeting 30 October 2014	Did not attend	
Twelfth GDG meeting 12 March 2015	No change in declaration	
Thirteenth GDG meeting 13 May 2015	Did not attend	
Fourteenth GDG meeting 14 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 59: Hough, Jennifer

GDG meeting	Declaration of Interests	Action taken
On application	<p>Personal family interest:</p> <ul style="list-style-type: none"> My father is a registered practising pharmacist working for Bayer Medical Affairs with pharmaceutical industry. He also holds shares in AstraZeneca. <p>Personal non-pecuniary interest:</p> <ul style="list-style-type: none"> JF has helped in developing a new major protocol - but this has included more organisation of our department. 	No action taken
Second GDG meeting 16 January 2014	Did not attend	
Third GDG meeting 9 April 2014	Did not attend	
Fourth GDG meeting 21 May 2014	Did not attend	
Fifth GDG meeting	Did not attend	

GDG meeting	Declaration of Interests	Action taken
22 May 2014		
Sixth GDG meeting 2 July 2014	Did not attend	
Seventh GDG meeting 3 July 2014	No change in declaration	
Eighth GDG meeting 13 August 2014	Did not attend	
Ninth GDG meeting 14 August 2014	Did not attend	
Tenth GDG meeting 29 October 2014	Did not attend	
Eleventh GDG meeting 30 October 2014	No change in declaration	
Twelfth GDG meeting 12 March 2015	Did not attend	
Thirteenth GDG meeting 13 May 2015	No change in declaration	
Fourteenth GDG meeting 14 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 60: Houghton, Elizabeth

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 January 2014	No change in declaration	
Third GDG meeting 9 April 2014	No change in declaration	
Fourth GDG meeting 21 May 2014	No change in declaration	
Fifth GDG	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
meeting 22 May 2014		
Sixth GDG meeting 2 July 2014	No change in declaration	
Seventh GDG meeting 3 July 2014	No change in declaration	
Eighth GDG meeting 13 August 2014	No change in declaration	
Ninth GDG meeting 14 August 2014	No change in declaration	
Tenth GDG meeting 29 October 2014	No change in declaration	
Eleventh GDG meeting 30 October 2014	No change in declaration	
Twelfth GDG meeting 12 March 2015	No change in declaration	
Thirteenth GDG meeting 13 May 2015	No change in declaration	
Fourteenth GDG meeting 14 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 61: Ingram, Mike

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 January 2014	Did not attend	
Third GDG meeting 9 April 2014	Did not attend	
Fourth GDG meeting 21 May 2014	Did not attend	

GDG meeting	Declaration of Interests	Action taken
Fifth GDG meeting 22 May 2014	Did not attend	
Sixth GDG meeting 2 July 2014	Did not attend	
Seventh GDG meeting 3 July 2014	Did not attend	
Eighth GDG meeting 13 August 2014	Did not attend	
Ninth GDG meeting 14 August 2014	Did not attend	
Tenth GDG meeting 29 October 2014	Did not attend	
Eleventh GDG meeting 30 October 2014	Did not attend	
Twelfth GDG meeting 12 March 2015	Did not attend	
Thirteenth GDG meeting 13 May 2015	Did not attend	
Fourteenth GDG meeting 14 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 62: Jackson, Michael

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 January 2014	No change in declaration	
Third GDG meeting 9 April 2014	Did not attend	
Fourth GDG meeting	Did not attend	

GDG meeting	Declaration of Interests	Action taken
21 May 2014		
Fifth GDG meeting 22 May 2014	Did not attend	
Sixth GDG meeting 2 July 2014	Did not attend	
Seventh GDG meeting 3 July 2014	Did not attend	
Eighth GDG meeting 13 August 2014	Did not attend	
Ninth GDG meeting 14 August 2014	Did not attend	
Tenth GDG meeting 29 October 2014	Did not attend	
Eleventh GDG meeting 30 October 2014	Did not attend	
Twelfth GDG meeting 12 March 2015	Did not attend	
Thirteenth GDG meeting 13 May 2015	Did not attend	
Fourteenth GDG meeting 14 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 63: Lecky, Fiona

GDG meeting	Declaration of Interests	Action taken
On application	Non-personal pecuniary interest: <ul style="list-style-type: none"> FL is chief investigator of Head Injury Transportation straight to Neurosurgery study (HTA funded to previous employer) until 2013. Likely to suggest and bid for NIHR funded study into trauma triage. 	No action taken
Second GDG meeting 16 January 2014	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
Third GDG meeting 9 April 2014	No change in declaration	
Fourth GDG meeting 21 May 2014	Did not attend	
Fifth GDG meeting 22 May 2014	No change in declaration	
Sixth GDG meeting 2 July 2014	Did not attend	
Seventh GDG meeting 3 July 2014	No change in declaration	
Eighth GDG meeting 13 August 2014	No change in declaration	
Ninth GDG meeting 14 August 2014	No change in declaration	
Tenth GDG meeting 29 October 2014	Did not attend	
Eleventh GDG meeting 30 October 2014	Did not attend	
Twelfth GDG meeting 12 March 2015	Non-personal pecuniary interest: <ul style="list-style-type: none"> Grant from NHS England to University of Sheffield part pays FL's salary. Grant is to evaluate the cost effectiveness of the new NHS England Regional Trauma networks. 	No action taken
Thirteenth GDG meeting 13 May 2015	No change in declaration	
Fourteenth GDG meeting 14 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 64: McFadyen, Iain (co-chair)

GDG meeting	Declaration of Interests	Action taken
On application	Personal non-pecuniary interest: <ul style="list-style-type: none"> IM is a member of the Department of Health 	No action taken

GDG meeting	Declaration of Interests	Action taken
	Clinical reference group for trauma.	
Second GDG meeting 16 January 2014	No change in declaration	
Third GDG meeting 9 April 2014	No change in declaration	
Fourth GDG meeting 21 May 2014	Did not attend	
Fifth GDG meeting 22 May 2014	Did not attend	
Sixth GDG meeting 2 July 2014	No change in declaration	
Seventh GDG meeting 3 July 2014	No change in declaration	
Eighth GDG meeting 13 August 2014	No change in declaration	
Ninth GDG meeting 14 August 2014	No change in declaration	
Tenth GDG meeting 29 October 2014	No change in declaration	
Eleventh GDG meeting 30 October 2014	No change in declaration	
Twelfth GDG meeting 12 March 2015	No change in declaration	
Thirteenth GDG meeting 13 May 2015	Personal non-pecuniary interest: <ul style="list-style-type: none"> IM published a paper on the management of distal radius fractures. No funding or grant was received for this study. 	Conflict of interest: Withdrew from recommendation making discussions on distal radius fractures.
Fourteenth GDG meeting 14 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 65: Nanchahal, Jagdeep

GDG meeting	Declaration of Interests	Action taken
On application	<p>Personal pecuniary interest:</p> <ul style="list-style-type: none"> JN undertakes consultancy work for Orthofix and Smith & Nephew, these are educational courses. He also chaired the group on behalf of the British Orthopaedic and Plastic Surgery Association that wrote the 'standards for the management of open fractures of the lower limb' published in 2009. 	No action taken
Second GDG meeting 16 January 2014	Did not attend	
Third GDG meeting 9 April 2014	Did not attend	
Fourth GDG meeting 21 May 2014	Did not attend	
Fifth GDG meeting 22 May 2014	Did not attend	
Sixth GDG meeting 2 July 2014	No change in declaration	
Seventh GDG meeting 3 July 2014	No change in declaration	
Eighth GDG meeting 13 August 2014	No change in declaration	
Ninth GDG meeting 14 August 2014	Did not attend	
Tenth GDG meeting 29 October 2014	Did not attend	
Eleventh GDG meeting 30 October 2014	Did not attend	
Twelfth GDG meeting 12 March 2015	No change in declaration	
Thirteenth GDG meeting 13 May 2015	No change in declaration	
Fourteenth	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
GDG meeting 14 May 2015		
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 66: Sampson, Madeleine

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 January 2014	Did not attend	
Third GDG meeting 9 April 2014	Did not attend	
Fourth GDG meeting 21 May 2014	Did not attend	
Fifth GDG meeting 22 May 2014	Did not attend	
Sixth GDG meeting 2 July 2014	Did not attend	
Seventh GDG meeting 3 July 2014	No change in declaration	
Eighth GDG meeting 13 August 2014	Did not attend	
Ninth GDG meeting 14 August 2014	Did not attend	
Tenth GDG meeting 29 October 2014	Did not attend	
Eleventh GDG meeting 30 October 2014	Did not attend	
Twelfth GDG meeting 12 March 2015	Did not attend	
Thirteenth GDG meeting 13 May 2015	Did not attend	

GDG meeting	Declaration of Interests	Action taken
Fourteenth GDG meeting 14 May 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 67: Silvester, Lucy

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 January 2014	Did not attend	
Third GDG meeting 9 April 2014	No change in declaration	
Fourth GDG meeting 21 May 2014	No change in declaration	
Fifth GDG meeting 22 May 2014	No change in declaration	
Sixth GDG meeting 2 July 2014	Did not attend	
Seventh GDG meeting 3 July 2014	No change in declaration	
Eighth GDG meeting 13 August 2014	No change in declaration	
Ninth GDG meeting 14 August 2014	No change in declaration	
Tenth GDG meeting 29 October 2014	No change in declaration	
Eleventh GDG meeting 30 October 2014	No change in declaration	
Twelfth GDG meeting 12 March 2015	Did not attend	
Thirteenth GDG meeting	Did not attend	

GDG meeting	Declaration of Interests	Action taken
13 May 2015		
Fourteenth GDG meeting 14 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 68: Skinner, David

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 January 2014	No change in declaration	
Third GDG meeting 9 April 2014	Personal non-pecuniary interest: <ul style="list-style-type: none"> • DS has been appointed to work on the TARN database. 	No action taken
Fourth GDG meeting 21 May 2014	Did not attend	
Fifth GDG meeting 22 May 2014	Did not attend	
Sixth GDG meeting 2 July 2014	No change in declaration	
Seventh GDG meeting 3 July 2014	No change in declaration	
Eighth GDG meeting 13 August 2014	Did not attend	
Ninth GDG meeting 14 August 2014	Did not attend	
Tenth GDG meeting 29 October 2014	Did not attend	
Eleventh GDG meeting 30 October 2014	Did not attend	
Twelfth GDG meeting 12 March 2015	Did not attend	
Thirteenth GDG	Did not attend	

GDG meeting	Declaration of Interests	Action taken
meeting 13 May 2015		
Fourteenth GDG meeting 14 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 69: Slowie, Aidan

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 January 2014	No change in declaration	
Third GDG meeting 9 April 2014	No change in declaration	
Fourth GDG meeting 21 May 2014	Did not attend	
Fifth GDG meeting 22 May 2014	No change in declaration	
Sixth GDG meeting 2 July 2014	No change in declaration	
Seventh GDG meeting 3 July 2014	No change in declaration	
Eighth GDG meeting 13 August 2014	No change in declaration	
Ninth GDG meeting 14 August 2014	Did not attend	
Tenth GDG meeting 29 October 2014	No change in declaration	
Eleventh GDG meeting 30 October 2014	No change in declaration	
Twelfth GDG meeting 12 March 2015	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
Thirteenth GDG meeting 13 May 2015	Did not attend	
Fourteenth GDG meeting 14 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 70: Snaith, Beverly

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 January 2014	Did not attend	
Third GDG meeting 9 April 2014	Did not attend	
Fourth GDG meeting 21 May 2014	Did not attend	
Fifth GDG meeting 22 May 2014	Did not attend	
Sixth GDG meeting 2 July 2014	Personal pecuniary interes: <ul style="list-style-type: none"> • BS was a co-investigator on 'hot reporting' study (Hardy et al 2013) 	Conflict of interest: Withdrew from recommendation making discussions on hot reporting.
Seventh GDG meeting 3 July 2014	No change in declaration	
Eighth GDG meeting 13 August 2014	No change in declaration	
Ninth GDG meeting 14 August 2014	No change in declaration	
Tenth GDG meeting 29 October 2014	No change in declaration	
Eleventh GDG meeting 30 October 2014	No change in declaration	
Twelfth GDG meeting	No change in declaration	Conflict of interest: Withdrew from recommendation

GDG meeting	Declaration of Interests	Action taken
12 March 2015		making discussions on hot reporting.
Thirteenth GDG meeting 13 May 2015	No change in declaration	
Fourteenth GDG meeting 14 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 71: Swann, Garry

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 January 2014	Did not attend	
Third GDG meeting 9 April 2014	No change in declaration	
Fourth GDG meeting 21 May 2014	Did not attend	
Fifth GDG meeting 22 May 2014	Did not attend	
Sixth GDG meeting 2 July 2014	Did not attend	
Seventh GDG meeting 3 July 2014	Did not attend	
Eighth GDG meeting 13 August 2014	Did not attend	
Ninth GDG meeting 14 August 2014	Did not attend	
Tenth GDG meeting 29 October 2014	Did not attend	
Eleventh GDG meeting 30 October 2014	Did not attend	
Twelfth GDG	Did not attend	

GDG meeting	Declaration of Interests	Action taken
meeting 12 March 2015		
Thirteenth GDG meeting 13 May 2015	Did not attend	
Fourteenth GDG meeting 14 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 72: Toplis, Laura

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 January 2014	Did not attend	
Third GDG meeting 9 April 2014	Did not attend	
Fourth GDG meeting 21 May 2014	Did not attend	
Fifth GDG meeting 22 May 2014	Did not attend	
Sixth GDG meeting 2 July 2014	No change in declaration	
Seventh GDG meeting 3 July 2014	No change in declaration	
Eighth GDG meeting 13 August 2014	No change in declaration	
Ninth GDG meeting 14 August 2014	No change in declaration	
Tenth GDG meeting 29 October 2014	Did not attend	
Eleventh GDG meeting 30 October 2014	Did not attend	

GDG meeting	Declaration of Interests	Action taken
Twelfth GDG meeting 12 March 2015	Did not attend	
Thirteenth GDG meeting 13 May 2015	Did not attend	
Fourteenth GDG meeting 14 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 73: Wallman, Paul

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 January 2014	Did not attend	
Third GDG meeting 9 April 2014	Did not attend	
Fourth GDG meeting 21 May 2014	Did not attend	
Fifth GDG meeting 22 May 2014	Did not attend	
Sixth GDG meeting 2 July 2014	Did not attend	
Seventh GDG meeting 3 July 2014	Did not attend	
Eighth GDG meeting 13 August 2014	Did not attend	
Ninth GDG meeting 14 August 2014	Did not attend	
Tenth GDG meeting 29 October 2014	Did not attend	
Eleventh GDG meeting 30 October	Did not attend	

GDG meeting	Declaration of Interests	Action taken
2014		
Twelfth GDG meeting 12 March 2015	Did not attend	
Thirteenth GDG meeting 13 May 2015	Did not attend	
Fourteenth GDG meeting 14 May 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

B.4 PET

Table 74: Borthwick, John

PET meeting	Declaration of Interests	Action taken
On application	<p>Non-personal pecuniary interest:</p> <ul style="list-style-type: none"> • JB participated in 3 1 day workshops run by Hollister pharmaceutical company in 2011 on continence products, bowel irrigation systems and intermittent catheterisation products. Fee and travel expenses paid. <p>Personal non-pecuniary interest:</p> <ul style="list-style-type: none"> • JB is a trustee of Spinal Injuries Association 	No action taken
05 Feb 2013	Did not attend	
08 Apr 2013	No change in declaration	
09 May 2013	No change in declaration	
05 Sep 2013	No change in declaration	
05 Mar 2014	No change in declaration	
17 Jul 2014	Did not attend	
20 Nov 2014	<p>Personal non-pecuniary interest:</p> <ul style="list-style-type: none"> • JB is a member of the NICE Pressure Ulcers Management quality standard group 	No action taken
05 Feb 2015	No change in declaration	
17 Apr 2015	Did not attend	
Final PET meeting 7 October 2015	No change in declaration	

Table 75: Brohi, Karim

PET meeting	Declaration of Interests	Action taken
On application	<p>Personal pecuniary interest:</p> <ul style="list-style-type: none"> • Sangart Inc (ongoing)- consultancy on early 	No action taken

PET meeting	Declaration of Interests	Action taken
	<p>phase clinical trials of oxygen therapeutic</p> <ul style="list-style-type: none"> • CSL Behring (ongoing)- consultancy on future of bleeding management and coagulation research • Haemonetics (ongoing)- consultancy on coagulation and device development. <p>Non-personal pecuniary interest:</p> <ul style="list-style-type: none"> • Astra-Zeneca- unrestricted grant for coagulation/haemorrhage research • Haemonetics- unrestricted grant for coagulation/haemorrhage research • TEM International- support for research devices and consumables (unrestricted). 	
05 Feb 2013	No change in declaration	
08 Apr 2013	No change in declaration	
09 May 2013	No change in declaration	
05 Sep 2013	Did not attend	
05 Mar 2014	No change in declaration	
17 Jul 2014	No change in declaration	
20 Nov 2014	Did not attend	
05 Feb 2015	No change in declaration	
17 Apr 2015	No change in declaration	
Final PET meeting 7 October 2015	No change in declaration	

Table 76: Brown, Lynda

PET meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
05 Feb 2013	No change in declaration	
08 Apr 2013	No change in declaration	
09 May 2013	No change in declaration	
05 Sep 2013	No change in declaration	
05 Mar 2014	No change in declaration	
17 Jul 2014	No change in declaration	
20 Nov 2014	No change in declaration	
05 Feb 2015	No change in declaration	
17 Apr 2015	No change in declaration	
Final PET meeting 7 October 2015	No change in declaration	

Table 77: Fitzsimmons, Chris

PET meeting	Declaration of Interests	Action taken
On application	<p>Personal pecuniary interest:</p> <ul style="list-style-type: none"> • CF works on a group under the Royal College 	No action taken

PET meeting	Declaration of Interests	Action taken
	of Radiologists and the British Society of Paediatric radiologists to help develop national standards for the radiological imaging of children with major trauma.	
05 Feb 2013	Did not attend	
08 Apr 2013	Did not attend	
09 May 2013	Did not attend	
05 Sep 2013	No change in declaration	
05 Mar 2014	No change in declaration	
17 Jul 2014	Did not attend	
20 Nov 2014	No change in declaration	
05 Feb 2015	No change in declaration	
17 Apr 2015	No change in declaration	
Final PET meeting 7 October 2015	No change in declaration	

Table 78: Handley, Bob

PET meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
05 Feb 2013	Personal non-pecuniary interest: <ul style="list-style-type: none"> • AOUK Trustee – charitable educational group with orthopaedic trauma. 	No action taken
08 Apr 2013	No change in declaration	
09 May 2013	No change in declaration	
05 Sep 2013	No change in declaration	
05 Mar 2014	Did not attend	
17 Jul 2014	Did not attend	
20 Nov 2014	No change in declaration	
05 Feb 2015	No change in declaration	
17 Apr 2015	No change in declaration	
Final PET meeting 7 October 2015	No change in declaration	

Table 79: Hughes, Simon

PET meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
05 Feb 2013	Did not attend	
08 Apr 2013	No change in declaration	
09 May 2013	No change in declaration	
05 Sep 2013	Did not attend	
05 Mar 2014	Did not attend	
17 Jul 2014	Did not attend	
20 Nov 2014	Did not attend	

PET meeting	Declaration of Interests	Action taken
05 Feb 2015	Did not attend	
17 Apr 2015	Did not attend	
Final PET meeting 7 October 2015	No change in declaration	

Table 80: Jarman, Heather

PET meeting	Declaration of Interests	Action taken
On application	Personal non-pecuniary interest: <ul style="list-style-type: none"> HJ is a member of the Department of Health Clinical reference group for major trauma. 	No action taken
05 Feb 2013	No change in declaration	
08 Apr 2013	No change in declaration	
09 May 2013	No change in declaration	
05 Sep 2013	No change in declaration	
05 Mar 2014	Did not attend	
17 Jul 2014	No change in declaration	
20 Nov 2014	No change in declaration	
05 Feb 2015	No change in declaration	
17 Apr 2015	No change in declaration	
Final PET meeting 7 October 2015	No change in declaration	

Table 81: Lecky, Fiona

PET meeting	Declaration of Interests	Action taken
On application	Non-personal pecuniary interest: <ul style="list-style-type: none"> FL is chief investigator of Head Injury Transportation straight to Neurosurgery study (HTA funded to previous employer) until 2013. Likely to suggest and bid for NIHR funded study into trauma triage. 	No action taken
05 Feb 2013	No change in declaration	
08 Apr 2013	No change in declaration	
09 May 2013	No change in declaration	
05 Sep 2013	No change in declaration	
05 Mar 2014	No change in declaration	
17 Jul 2014	Did not attend	
20 Nov 2014	Did not attend	
05 Feb 2015	Non-personal pecuniary interest: <ul style="list-style-type: none"> Grant from NHS England to University of Sheffield part pays FL's salary. Grant is to evaluate the cost effectiveness of the new NHS England Regional Trauma networks. 	No action taken
17 Apr 2015	Did not attend	
Final PET meeting	No change in declaration	

PET meeting	Declaration of Interests	Action taken
7 October 2015		

Table 82: Lee, Richard

PET meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
05 Feb 2013	No change in declaration	
08 Apr 2013	No change in declaration	
09 May 2013	Did not attend	
05 Sep 2013	Did not attend	
05 Mar 2014	Did not attend	
17 Jul 2014	No change in declaration	
20 Nov 2014	No change in declaration	
05 Feb 2015	Did not attend	
17 Apr 2015	Did not attend	
Final PET meeting 7 October 2015	No change in declaration	

Table 83: McFadyen, Iain

PET meeting	Declaration of Interests	Action taken
On application	Personal non-pecuniary interest: <ul style="list-style-type: none"> IM is a member of the Department of Health Clinical reference group for trauma. 	No action taken
05 Feb 2013	No change in declaration	
08 Apr 2013	Did not attend	
09 May 2013	No change in declaration	
05 Sep 2013	Non-personal pecuniary interest: <ul style="list-style-type: none"> IM has been appointed as co-director of Clinical audit for the Trauma Audit and Research Network (TARN) on a 2 PA/week consultant contract. 	No action taken
05 Mar 2014	No change in declaration	
17 Jul 2014	Did not attend	
20 Nov 2014	Did not attend	
05 Feb 2015	Did not attend	
17 Apr 2015	Did not attend	
Final PET meeting 7 October 2015	No change in declaration	

Table 84: Skinner, David (Chair)

PET meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
05 Feb 2013	No change in declaration	
08 Apr 2013	No change in declaration	
09 May 2013	No change in declaration	

PET meeting	Declaration of Interests	Action taken
05 Sep 2013	Did not attend	
05 Mar 2014	No change in declaration	
17 Jul 2014	No change in declaration	
20 Nov 2014	No change in declaration	
05 Feb 2015	No change in declaration	
17 Apr 2015	No change in declaration	
Final PET meeting 7 October 2015	No change in declaration	

Table 85: Stiff, Graham

PET meeting	Declaration of Interests	Action taken
On application	Personal pecuniary interest: <ul style="list-style-type: none"> GS has an honorary contract with South Central Ambulance NHS Foundation Trust Service that enables me to claim expenses for attending and providing support at accident scenes. 	No action taken
05 Feb 2013	No change in declaration	
08 Apr 2013	No change in declaration	
09 May 2013	No change in declaration	
05 Sep 2013	No change in declaration	
05 Mar 2014	No change in declaration	
17 Jul 2014	No change in declaration	
20 Nov 2014	No change in declaration	
05 Feb 2015	No change in declaration	
17 Apr 2015	Did not attend	
Final PET meeting 7 October 2015	No change in declaration	

Table 86: Todd, Nick

PET meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
05 Feb 2013	Did not attend	
08 Apr 2013	No change in declaration	
09 May 2013	No change in declaration	
05 Sep 2013	No change in declaration	
05 Mar 2014	Did not attend	
17 Jul 2014	Personal pecuniary interest: <ul style="list-style-type: none"> NT has been approached by a journal editor to write an editorial once the SIA guideline is published. 	No action taken
20 Nov 2014	Did not attend	
05 Feb 2015	Did not attend	
17 Apr 2015	No change in declaration	

PET meeting	Declaration of Interests	Action taken
Final PET meeting 7 October 2015	No change in declaration	

B.5 Service Delivery

Table 87: Basu, Bhaskar

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2014	No change in declaration	
Third GDG meeting 25 September 2014	No change in declaration	
Fourth GDG meeting 26 September 2014	No change in declaration	
Fifth GDG meeting 5 November 2014	No change in declaration	
Sixth GDG meeting 7 January 2015	Did not attend	
Seventh GDG meeting 8 January 2015	No change in declaration	
Eighth GDG meeting 25 February 2015	No change in declaration	
Ninth GDG meeting 26 February 2015	No change in declaration	
Tenth GDG meeting 8 April 2015	Did not attend	
Eleventh GDG meeting 9 April 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 88: Bennett, Stephen

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2014	Personal non-pecuniary interest: <ul style="list-style-type: none"> • SB is a lay advisor to College of Emergency Medicine and a public reviewer for NIHR. 	No action taken
Third GDG meeting 25 September 2014	Did not attend	
Fourth GDG meeting 26 September 2014	Did not attend	
Fifth GDG meeting 5 November 2014	No change in declaration	
Sixth GDG meeting 7 January 2015	No change in declaration	
Seventh GDG meeting 8 January 2015	No change in declaration	
Eighth GDG meeting 25 February 2015	No change in declaration	
Ninth GDG meeting 26 February 2015	No change in declaration	
Tenth GDG meeting 8 April 2015	No change in declaration	
Eleventh GDG meeting 9 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 89: Brohi, Karim

GDG meeting	Declaration of Interests	Action taken
On application	Personal pecuniary interest: <ul style="list-style-type: none"> • Sangart Inc (ongoing)- consultancy on early phase clinical trials of oxygen therapeutic • CSL Behring (ongoing)- consultancy on future of bleeding management and coagulation research • Haemonetics (ongoing)- consultancy on 	No action taken

GDG meeting	Declaration of Interests	Action taken
	<p>coagulation and device development.</p> <p>Non-personal pecuniary interest:</p> <ul style="list-style-type: none"> • Astra-Zeneca- unrestricted grant for coagulation/haemorrhage research • Haemonetics- unrestricted grant for coagulation/haemorrhage research • TEM International- support for research devices and consumables (unrestricted) 	
Second GDG meeting 16 July 2014	No change in declaration	
Third GDG meeting 25 September 2014	Did not attend	
Fourth GDG meeting 26 September 2014	No change in declaration	
Fifth GDG meeting 5 November 2014	Did not attend	
Sixth GDG meeting 7 January 2015	No change in declaration	
Seventh GDG meeting 8 January 2015	No change in declaration	
Eighth GDG meeting 25 February 2015	No change in declaration	
Ninth GDG meeting 26 February 2015	No change in declaration	
Tenth GDG meeting 8 April 2015	No change in declaration	
Eleventh GDG meeting 9 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 90: Charters, Alan

GDG meeting	Declaration of Interests	Action taken
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GDG meeting	Declaration of Interests	Action taken
On application	<p>Personal pecuniary interest:</p> <ul style="list-style-type: none"> AC is co-editor for the Oxford handbook of emergency nursing. <p>Non-personal pecuniary interest:</p> <ul style="list-style-type: none"> AC is co-editor for the APLS and PHPLS manual and is a trustee of ALSG. 	No action taken
Second GDG meeting 16 July 2014	Did not attend	
Third GDG meeting 25 September 2014	Did not attend	
Fourth GDG meeting 26 September 2014	Did not attend	
Fifth GDG meeting 5 November 2014	Did not attend	
Sixth GDG meeting 7 January 2015	Did not attend	
Seventh GDG meeting 8 January 2015	Did not attend	
Eighth GDG meeting 25 February 2015	Did not attend	
Ninth GDG meeting 26 February 2015	Did not attend	
Tenth GDG meeting 8 April 2015	No change in declaration	
Eleventh GDG meeting 9 April 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 91: Christmas, David

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken

GDG meeting	Declaration of Interests	Action taken
Second GDG meeting 16 July 2014	Did not attend	
Third GDG meeting 25 September 2014	Did not attend	
Fourth GDG meeting 26 September 2014	Did not attend	
Fifth GDG meeting 5 November 2014	Did not attend	
Sixth GDG meeting 7 January 2015	Did not attend	
Seventh GDG meeting 8 January 2015	Did not attend	
Eighth GDG meeting 25 February 2015	Did not attend	
Ninth GDG meeting 26 February 2015	Did not attend	
Tenth GDG meeting 8 April 2015	Did not attend	
Eleventh GDG meeting 9 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 92: Fitzsimmons, Chris

GDG meeting	Declaration of Interests	Action taken
On application	Personal pecuniary interest: <ul style="list-style-type: none"> CF works on a group under the Royal College of Radiologists and the British Society of Paediatric radiologists to help develop national standards for the radiological imaging of children with major trauma. 	No action taken
Second GDG meeting 16 July 2014	Did not attend	

GDG meeting	Declaration of Interests	Action taken
Third GDG meeting 25 September 2014	No change in declaration	
Fourth GDG meeting 26 September 2014	Did not attend	
Fifth GDG meeting 5 November 2014	Did not attend	
Sixth GDG meeting 7 January 2015	Did not attend	
Seventh GDG meeting 8 January 2015	No change in declaration	
Eighth GDG meeting 25 February 2015	No change in declaration	
Ninth GDG meeting 26 February 2015	Did not attend	
Tenth GDG meeting 8 April 2015	Did not attend	
Eleventh GDG meeting 9 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 93: Gupta, Pawan

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2014	Did not attend	
Third GDG meeting 25 September 2014	Did not attend	
Fourth GDG meeting 26 September 2014	Did not attend	

GDG meeting	Declaration of Interests	Action taken
Fifth GDG meeting 5 November 2014	Did not attend	
Sixth GDG meeting 7 January 2015	Did not attend	
Seventh GDG meeting 8 January 2015	Did not attend	
Eighth GDG meeting 25 February 2015	No change in declaration	
Ninth GDG meeting 26 February 2015	No change in declaration	
Tenth GDG meeting 8 April 2015	Did not attend	
Eleventh GDG meeting 9 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 94: Handley, Bob

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2014	Did not attend	
Third GDG meeting 25 September 2014	Did not attend	
Fourth GDG meeting 26 September 2014	Did not attend	
Fifth GDG meeting 5 November 2014	No change in declaration	
Sixth GDG meeting 7 January 2015	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
Seventh GDG meeting 8 January 2015	No change in declaration	
Eighth GDG meeting 25 February 2015	Did not attend	
Ninth GDG meeting 26 February 2015	No change in declaration	
Tenth GDG meeting 8 April 2015	Did not attend	
Eleventh GDG meeting 9 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 95: Hoffman, Karen

GDG meeting	Declaration of Interests	Action taken
On application	Personal non-pecuniary interest: <ul style="list-style-type: none"> • KH is completing a PhD in rehabilitation of people with traumatic injuries. 	No action taken
Second GDG meeting 16 July 2014	No change in declaration	
Third GDG meeting 25 September 2014	No change in declaration	
Fourth GDG meeting 26 September 2014	No change in declaration	
Fifth GDG meeting 5 November 2014	No change in declaration	
Sixth GDG meeting 7 January 2015	No change in declaration	
Seventh GDG meeting 8 January 2015	No change in declaration	
Eighth GDG meeting 25 February	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
2015		
Ninth GDG meeting 26 February 2015	Did not attend	
Tenth GDG meeting 8 April 2015	No change in declaration	
Eleventh GDG meeting 9 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 96: Ingram, Mike

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2014	Did not attend	
Third GDG meeting 25 September 2014	Did not attend	
Fourth GDG meeting 26 September 2014	Did not attend	
Fifth GDG meeting 5 November 2014	Did not attend	
Sixth GDG meeting 7 January 2015	Did not attend	
Seventh GDG meeting 8 January 2015	Did not attend	
Eighth GDG meeting 25 February 2015	Did not attend	
Ninth GDG meeting 26 February 2015	Did not attend	
Tenth GDG meeting 8 April 2015	Did not attend	

GDG meeting	Declaration of Interests	Action taken
Eleventh GDG meeting 9 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 97: Jarman, Heather

GDG meeting	Declaration of Interests	Action taken
On application	Personal non-pecuniary interest: <ul style="list-style-type: none"> HJ is a member of the Department of Health Clinical reference group for major trauma. 	No action taken
Second GDG meeting 16 July 2014	No change in declaration	
Third GDG meeting 25 September 2014	Did not attend	
Fourth GDG meeting 26 September 2014	Did not attend	
Fifth GDG meeting 5 November 2014	No change in declaration	
Sixth GDG meeting 7 January 2015	No change in declaration	
Seventh GDG meeting 8 January 2015	No change in declaration	
Eighth GDG meeting 25 February 2015	No change in declaration	
Ninth GDG meeting 26 February 2015	No change in declaration	
Tenth GDG meeting 8 April 2015	No change in declaration	
Eleventh GDG meeting 9 April 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 98: Lecky, Fiona

GDG meeting	Declaration of Interests	Action taken
On application	Non-personal pecuniary interest: <ul style="list-style-type: none"> FL is chief investigator of Head Injury Transportation straight to Neurosurgery study (HTA funded to previous employer) until 2013. Likely to suggest and bid for NIHR funded study into trauma triage. 	No action taken
Second GDG meeting 16 July 2014	Personal pecuniary interest: <ul style="list-style-type: none"> TARN NHS trusts reimburse FL's employer 20% of her salary FP7 center BI grant reimburses FL's employer 5% of her salary NIHR CRN reimburses FL's employer 10% of her salary 	No action taken
Third GDG meeting 25 September 2014	No change in declaration	
Fourth GDG meeting 26 September 2014	Did not attend	
Fifth GDG meeting 5 November 2014	No change in declaration	
Sixth GDG meeting 7 January 2015	No change in declaration	
Seventh GDG meeting 8 January 2015	Did not attend	
Eighth GDG meeting 25 February 2015	Did not attend	
Ninth GDG meeting 26 February 2015	Did not attend	
Tenth GDG meeting 8 April 2015	Non personal-pecuniary interest: <ul style="list-style-type: none"> Grant from NHS England to University of Sheffield part pays FL's salary – grant is to evaluate cost effectiveness of the new NHS England regional trauma networks 	Conflict of interest: Withdrew from recommendation making discussions on audit.
Eleventh GDG meeting 9 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 99: Lee, Richard

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2014	Did not attend	
Third GDG meeting 25 September 2014	Did not attend	
Fourth GDG meeting 26 September 2014	Did not attend	
Fifth GDG meeting 5 November 2014	Did not attend	
Sixth GDG meeting 7 January 2015	No change in declaration	
Seventh GDG meeting 8 January 2015	No change in declaration	
Eighth GDG meeting 25 February 2015	Did not attend	
Ninth GDG meeting 26 February 2015	Did not attend	
Tenth GDG meeting 8 April 2015	No change in declaration	
Eleventh GDG meeting 9 April 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 100: McFadyen, Iain

GDG meeting	Declaration of Interests	Action taken
On application	Personal non-pecuniary interest: <ul style="list-style-type: none"> IM is a member of the Department of Health Clinical reference group for trauma 	No action taken
Second GDG meeting 16 July 2014	Did not attend	

GDG meeting	Declaration of Interests	Action taken
Third GDG meeting 25 September 2014	No change in declaration	
Fourth GDG meeting 26 September 2014	Did not attend	
Fifth GDG meeting 5 November 2014	No change in declaration	
Sixth GDG meeting 7 January 2015	No change in declaration	
Seventh GDG meeting 8 January 2015	No change in declaration	
Eighth GDG meeting 25 February 2015	No change in declaration	
Ninth GDG meeting 26 February 2015	No change in declaration	
Tenth GDG meeting 8 April 2015	No change in declaration	Conflict of interest: Withdrew from recommendation making discussions on audit.
Eleventh GDG meeting 9 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 101: Skinner, David (Chair)

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2014	No change in declaration	
Third GDG meeting 25 September 2014	No change in declaration	
Fourth GDG meeting 26 September 2014	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
Fifth GDG meeting 5 November 2014	No change in declaration	
Sixth GDG meeting 7 January 2015	Did not attend	
Seventh GDG meeting 8 January 2015	Did not attend	
Eighth GDG meeting 25 February 2015	No change in declaration	
Ninth GDG meeting 26 February 2015	No change in declaration	
Tenth GDG meeting 8 April 2015	No change in declaration	
Eleventh GDG meeting 9 April 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 102: Stiff, Graham

GDG meeting	Declaration of Interests	Action taken
On application	Personal pecuniary interest: <ul style="list-style-type: none"> GS has an honorary contract with South Central Ambulance NHS Foundation Trust Service that enables me to claim expenses for attending and providing support at accident scenes. 	No action taken
Second GDG meeting 16 July 2014	Did not attend	
Third GDG meeting 25 September 2014	Did not attend	
Fourth GDG meeting 26 September 2014	Did not attend	
Fifth GDG meeting 5 November	Did not attend	

GDG meeting	Declaration of Interests	Action taken
2014		
Sixth GDG meeting 7 January 2015	Did not attend	
Seventh GDG meeting 8 January 2015	Did not attend	
Eighth GDG meeting 25 February 2015	Did not attend	
Ninth GDG meeting 26 February 2015	Did not attend	
Tenth GDG meeting 8 April 2015	Did not attend	
Eleventh GDG meeting 9 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 103: Toplis, Laura

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2014	Did not attend	
Third GDG meeting 25 September 2014	Did not attend	
Fourth GDG meeting 26 September 2014	Did not attend	
Fifth GDG meeting 5 November 2014	Did not attend	
Sixth GDG meeting 7 January 2015	Did not attend	
Seventh GDG meeting 8 January 2015	Did not attend	

GDG meeting	Declaration of Interests	Action taken
Eighth GDG meeting 25 February 2015	Did not attend	
Ninth GDG meeting 26 February 2015	Did not attend	
Tenth GDG meeting 8 April 2015	Did not attend	
Eleventh GDG meeting 9 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 104: Weaver, Anne

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2014	No change in declaration	
Third GDG meeting 25 September 2014	Did not attend	
Fourth GDG meeting 26 September 2014	No change in declaration	
Fifth GDG meeting 5 November 2014	No change in declaration	
Sixth GDG meeting 7 January 2015	No change in declaration	
Seventh GDG meeting 8 January 2015	No change in declaration	
Eighth GDG meeting 25 February 2015	No change in declaration	
Ninth GDG meeting 26 February 2015	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
Tenth GDG meeting 8 April 2015	No change in declaration	
Eleventh GDG meeting 9 April 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 105: Whitehead, John

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2014	Did not attend	
Third GDG meeting 25 September 2014	Did not attend	
Fourth GDG meeting 26 September 2014	Did not attend	
Fifth GDG meeting 5 November 2014	Did not attend	
Sixth GDG meeting 7 January 2015	No change in declaration	
Seventh GDG meeting 8 January 2015	No change in declaration	
Eighth GDG meeting 25 February 2015	No change in declaration	
Ninth GDG meeting 26 February 2015	No change in declaration	
Tenth GDG meeting 8 April 2015	No change in declaration	
Eleventh GDG meeting 9 April 2015	No change in declaration	
Final GDG	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
meeting 5-6 October 2015		

Table 106: Young, Keith

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2014	No change in declaration	
Third GDG meeting 25 September 2014	No change in declaration	
Fourth GDG meeting 26 September 2014	No change in declaration	
Fifth GDG meeting 5 November 2014	No change in declaration	
Sixth GDG meeting 7 January 2015	No change in declaration	
Seventh GDG meeting 8 January 2015	No change in declaration	
Eighth GDG meeting 25 February 2015	No change in declaration	
Ninth GDG meeting 26 February 2015	No change in declaration	
Tenth GDG meeting 8 April 2015	No change in declaration	
Eleventh GDG meeting 9 April 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

B.6 Spinal injuries

Table 107: Berry, Kathleen

GDG meeting	Declaration of Interests	Action taken
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GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2013	Did not attend	
Third GDG meeting 19 August 2013	Did not attend	
Fourth GDG meeting 20 August 2013	Did not attend	
Fifth GDG meeting 16 October 2013	Did not attend	
Sixth GDG meeting 17 October 2013	Did not attend	
Seventh GDG meeting 2 December 2013	No change in declaration	
Eighth GDG meeting 3 December 2013	No change in declaration	
Ninth GDG meeting 5 March 2014	No change in declaration	
Tenth GDG meeting 3 Feb 2015	Did not attend	
Eleventh GDG meeting 4 Feb 2015	Did not attend	
Twelfth GDG meeting 16 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 108: Bostock, Jennifer

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2013	No change in declaration	
Third GDG meeting 19 August 2013	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
Fourth GDG meeting 20 August 2013	No change in declaration	
Fifth GDG meeting 16 October 2013	No change in declaration	
Sixth GDG meeting 17 October 2013	No change in declaration	
Seventh GDG meeting 2 December 2013	No change in declaration	
Eighth GDG meeting 3 December 2013	No change in declaration	
Ninth GDG meeting 5 March 2014	No change in declaration	
Tenth GDG meeting 3 Feb 2015	No change in declaration	
Eleventh GDG meeting 4 Feb 2015	No change in declaration	
Twelfth GDG meeting 16 April 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 109: Buckley, Julie

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2013	<p>Personal non-pecuniary interest:</p> <ul style="list-style-type: none"> The unit where JB works has recently updated their guidelines. They are available on the website ('Wessex Neuro ICU Guidelines 2013 www.neuroicu.org.uk/). She fed back comments for the spinal sections that were incorporated into the document; she is also in the process of writing a review of the literature and a case study using non-invasive ventilation for acute spinal injury management. 	No action taken
Third GDG meeting 19 August 2013	Did not attend	

GDG meeting	Declaration of Interests	Action taken
Fourth GDG meeting 20 August 2013	Did not attend	
Fifth GDG meeting 16 October 2013	No change in declaration	
Sixth GDG meeting 17 October 2013	No change in declaration	
Seventh GDG meeting 2 December 2013	Did not attend	
Eighth GDG meeting 3 December 2013	Did not attend	
Ninth GDG meeting 5 March 2014	Did not attend	
Tenth GDG meeting 3 Feb 2015	No change in declaration	
Eleventh GDG meeting 4 Feb 2015	No change in declaration	
Twelfth GDG meeting 16 April 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 110: Burden, Daniel

GDG meeting	Declaration of Interests	Action taken
On application	Personal non-pecuniary interest: <ul style="list-style-type: none"> • DB is an employee of SIA. 	No action taken
Second GDG meeting 16 July 2013	No change in declaration	
Third GDG meeting 19 August 2013	No change in declaration	
Fourth GDG meeting 20 August 2013	No change in declaration	
Fifth GDG meeting 16 October	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
2013		
Sixth GDG meeting 17 October 2013	No change in declaration	
Seventh GDG meeting 2 December 2013	No change in declaration	
Eighth GDG meeting 3 December 2013	No change in declaration	
Ninth GDG meeting 5 March 2014	No change in declaration	
Tenth GDG meeting 3 Feb 2015	No change in declaration	
Eleventh GDG meeting 4 Feb 2015	No change in declaration	
Twelfth GDG meeting 16 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 111: Camps, Cherylene

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2013	No change in declaration	
Third GDG meeting 19 August 2013	No change in declaration	
Fourth GDG meeting 20 August 2013	No change in declaration	
Fifth GDG meeting 16 October 2013	<p>Personal pecuniary interest:</p> <ul style="list-style-type: none"> CC was one of the guest speakers at the N Spine Conference in Nottingham on 7 September 2013 and gave a presentation on her role pre-hospital 'from roadside to final destination via ED', no payment was received. 	No action taken
Sixth GDG meeting 17 October 2013	No change in declaration	
Seventh GDG	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
meeting 2 December 2013		
Eighth GDG meeting 3 December 2013	No change in declaration	
Ninth GDG meeting 5 March 2014	No change in declaration	
Tenth GDG meeting 3 Feb 2015	No change in declaration	
Eleventh GDG meeting 4 Feb 2015	No change in declaration	
Twelfth GDG meeting 16 April 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 112: Chiverton, Neil

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2013	No change in declaration	
Third GDG meeting 19 August 2013	Did not attend	
Fourth GDG meeting 20 August 2013	Did not attend	
Fifth GDG meeting 16 October 2013	No change in declaration	
Sixth GDG meeting 17 October 2013	No change in declaration	
Seventh GDG meeting 2 December 2013	No change in declaration	
Eighth GDG meeting 3 December 2013	No change in declaration	
Ninth GDG meeting	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
5 March 2014		
Tenth GDG meeting 3 Feb 2015	No change in declaration	
Eleventh GDG meeting 4 Feb 2015	No change in declaration	
Twelfth GDG meeting 16 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 113: Christmas, David

GDG meeting	Declaration of Interests	Action taken
On application	Did not attend	No action taken
Second GDG meeting 16 July 2013	Did not attend	
Third GDG meeting 19 August 2013	Did not attend	
Fourth GDG meeting 20 August 2013	Did not attend	
Fifth GDG meeting 16 October 2013	Did not attend	
Sixth GDG meeting 17 October 2013	Did not attend	
Seventh GDG meeting 2 December 2013	Did not attend	
Eighth GDG meeting 3 December 2013	Did not attend	
Ninth GDG meeting 5 March 2014	Did not attend	
Tenth GDG meeting 3 Feb 2015	Did not attend	
Eleventh GDG meeting 4 Feb 2015	Did not attend	

GDG meeting	Declaration of Interests	Action taken
Twelfth GDG meeting 16 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 114: El Masri(y), Wagih

GDG meeting	Declaration of Interests	Action taken
On application	Personal pecuniary interest: <ul style="list-style-type: none"> • WEM is one of the global advisors to Hollister urinary appliances firm. 	No action taken
Second GDG meeting 16 July 2013	Did not attend	
Third GDG meeting 19 August 2013	Did not attend	
Fourth GDG meeting 20 August 2013	No change in declaration	
Fifth GDG meeting 16 October 2013	No change in declaration	
Sixth GDG meeting 17 October 2013	No change in declaration	
Seventh GDG meeting 2 December 2013	No change in declaration	
Eighth GDG meeting 3 December 2013	No change in declaration	
Ninth GDG meeting 5 March 2014	No change in declaration	
Tenth GDG meeting 3 Feb 2015	No change in declaration	
Eleventh GDG meeting 4 Feb 2015	No change in declaration	
Twelfth GDG meeting 16 April 2015	No change in declaration	
Final GDG meeting 5-6	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
October 2015		

Table 115: Foster, Judith

GDG meeting	Declaration of Interests	Action taken
On application	<p>Personal non-pecuniary interest:</p> <ul style="list-style-type: none"> JF is the chair of the intercollegiate working party drafting standards for imaging in severely injured children, commissioned by the RCR and the SXPR and including members from APEM, BAPS and RCPCH. The standards are due for publication in 2014. 	No action taken
Second GDG meeting 16 July 2013	No change in declaration	
Third GDG meeting 19 August 2013	No change in declaration	
Fourth GDG meeting 20 August 2013	Did not attend	
Fifth GDG meeting 16 October 2013	Did not attend	
Sixth GDG meeting 17 October 2013	No change in declaration	
Seventh GDG meeting 2 December 2013	Did not attend	
Eighth GDG meeting 3 December 2013	No change in declaration	
Ninth GDG meeting 5 March 2014	Did not attend	
Tenth GDG meeting 3 Feb 2015	<p>Personal non-pecuniary interest:</p> <ul style="list-style-type: none"> The intercollegiate working party draft standards for imaging of the severely injured child were published in September 2014. 	No action taken
Eleventh GDG meeting 4 Feb 2015	Did not attend	
Twelfth GDG meeting 16 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 116: Gardner, Brian

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2013	Personal non-pecuniary interest: <ul style="list-style-type: none"> • BG retired from the NHS in June 2011, but remains registered to treat spinal cord injured patients. He is still in an honorary contract with Stoke Mandeville and attends research meetings and clinical audit meetings in the Spinal Unit. 	No action taken
Third GDG meeting 19 August 2013	No change in declaration	
Fourth GDG meeting 20 August 2013	No change in declaration	
Fifth GDG meeting 16 October 2013	Non-personal pecuniary interest: <ul style="list-style-type: none"> • BG is the co-author of a study on early relocation of dislocated spines. 	Conflict of interest: Withdrew from recommendation making discussions.
Sixth GDG meeting 17 October 2013	No change in declaration	
Seventh GDG meeting 2 December 2013	No change in declaration	
Eighth GDG meeting 3 December 2013	No change in declaration	
Ninth GDG meeting 5 March 2014	No change in declaration	
Tenth GDG meeting 3 Feb 2015	No change in declaration	
Eleventh GDG meeting 4 Feb 2015	No change in declaration	
Twelfth GDG meeting 16 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 117: Harrison, Paul

GDG meeting	Declaration of Interests	Action taken
On application	Personal pecuniary interest: <ul style="list-style-type: none"> • PH is clinical consultant to Nexus DMS Ltd, manufacturer of 'Legacy' complex care 	No action taken

GDG meeting	Declaration of Interests	Action taken
	<p>mechanical turning bed.</p> <ul style="list-style-type: none"> PH is a committee member of Multidisciplinary Association of Spinal Cord Injury Professionals (MASCIP) and honorary vice president of Spinal Injuries Association (2012-2015). 	
<p>Second GDG meeting 16 July 2013</p>	<p>Personal non-pecuniary interest:</p> <ul style="list-style-type: none"> PH is an advisor in a group led by Matthew Cooke (Warwick University, NHS Emergency Care Leader) evaluating new design formats for head and neck immobiliser. So far involvement is videoconference to view prototype for trialling. 	No action taken.
<p>Third GDG meeting 19 August 2013</p>	No change in declaration	
<p>Fourth GDG meeting 20 August 2013</p>	No change in declaration	
<p>Fifth GDG meeting 16 October 2013</p>	No change in declaration	
<p>Sixth GDG meeting 17 October 2013</p>	No change in declaration	
<p>Seventh GDG meeting 2 December 2013</p>	No change in declaration	
<p>Eighth GDG meeting 3 December 2013</p>	No change in declaration	
<p>Ninth GDG meeting 5 March 2014</p>	No change in declaration	
<p>Tenth GDG meeting 3 Feb 2015</p>	Did not attend	
<p>Eleventh GDG meeting 4 Feb 2015</p>	Did not attend	
<p>Twelfth GDG meeting 16 April 2015</p>	No change in declaration	
<p>Final GDG meeting 5-6 October 2015</p>	No change in declaration	

Table 118: Hill, Debbie

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2013	No change in declaration	
Third GDG meeting 19 August 2013	Did not attend	
Fourth GDG meeting 20 August 2013	Did not attend	
Fifth GDG meeting 16 October 2013	Did not attend	
Sixth GDG meeting 17 October 2013	Did not attend	
Seventh GDG meeting 2 December 2013	No change in declaration	
Eighth GDG meeting 3 December 2013	No change in declaration	
Ninth GDG meeting 5 March 2014	No change in declaration	
Tenth GDG meeting 3 Feb 2015	Did not attend	
Eleventh GDG meeting 4 Feb 2015	Did not attend	
Twelfth GDG meeting 16 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 119: Hudson, Anthony

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2013	No change in declaration	
Third GDG meeting	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
19 August 2013		
Fourth GDG meeting 20 August 2013	Did not attend	
Fifth GDG meeting 16 October 2013	No change in declaration	
Sixth GDG meeting 17 October 2013	No change in declaration	
Seventh GDG meeting 2 December 2013	No change in declaration	
Eighth GDG meeting 3 December 2013	No change in declaration	
Ninth GDG meeting 5 March 2014	No change in declaration	
Tenth GDG meeting 3 Feb 2015	No change in declaration	
Eleventh GDG meeting 4 Feb 2015	No change in declaration	
Twelfth GDG meeting 16 Apr 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 120: Ingram, Michael

GDG meeting	Declaration of Interests	Action taken
On application	Did not attend	No action taken
Second GDG meeting 16 July 2013	Did not attend	
Third GDG meeting 19 August 2013	Did not attend	
Fourth GDG meeting 20 August 2013	Did not attend	
Fifth GDG meeting 16 October	Did not attend	

GDG meeting	Declaration of Interests	Action taken
2013		
Sixth GDG meeting 17 October 2013	Did not attend	
Seventh GDG meeting 2 December 2013	Did not attend	
Eighth GDG meeting 3 December 2013	Did not attend	
Ninth GDG meeting 5 March 2014	Did not attend	
Tenth GDG meeting 3 Feb 2015	Did not attend	
Eleventh GDG meeting 4 Feb 2015	Did not attend	
Twelfth GDG meeting 16 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 121: Morris, Craig

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2013	<p>Personal non-pecuniary interest:</p> <ul style="list-style-type: none"> • CM has undertaken 2 reviews of the imaging modalities for screening unconscious ICU patients including direct comparisons of radiography, CT, MRI and dynamic fluoroscopy. He has published on the use of spinal precaution and immobilisation on ICU including a call to abandon collar use on ICU. • CM has also co-authored the Intensive care society guidelines on spinal injuries and is currently liaising with Chris Moran to look at intergrating BOAST and ICS guidance. 	No action taken
Third GDG meeting 19 August 2013	Did not attend	
Fourth GDG meeting 20 August 2013	Did not attend	
Fifth GDG meeting	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
16 October 2013		
Sixth GDG meeting 17 October 2013	No change in declaration	
Seventh GDG meeting 2 December 2013	No change in declaration	
Eighth GDG meeting 3 December 2013	No change in declaration	
Ninth GDG meeting 5 March 2014	No change in declaration	
Tenth GDG meeting 3 Feb 2015	Did not attend	
Eleventh GDG meeting 4 Feb 2015	Did not attend	
Twelfth GDG meeting 16 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 122: Morris, Kevin

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2013	Did not attend.	
Third GDG meeting 19 August 2013	No change in declaration	
Fourth GDG meeting 20 August 2013	Did not attend	
Fifth GDG meeting 16 October 2013	No change in declaration	
Sixth GDG meeting 17 October 2013	No change in declaration	
Seventh GDG meeting 2 December 2013	Did not attend	

GDG meeting	Declaration of Interests	Action taken
Eighth GDG meeting 3 December 2013	Did not attend	
Ninth GDG meeting 5 March 2014	Did not attend	
Tenth GDG meeting 3 Feb 2015	Did not attend	
Eleventh GDG meeting 4 Feb 2015	Did not attend	
Twelfth GDG meeting 16 April 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 123: Sampson, Madeleine

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2013	Did not attend.	
Third GDG meeting 19 August 2013	No change in declaration	
Fourth GDG meeting 20 August 2013	Did not attend	
Fifth GDG meeting 16 October 2013	No change in declaration	
Sixth GDG meeting 17 October 2013	No change in declaration	
Seventh GDG meeting 2 December 2013	No change in declaration	
Eighth GDG meeting 3 December 2013	No change in declaration	
Ninth GDG meeting 5 March 2014	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
Tenth GDG meeting 3 Feb 2015	No change in declaration	
Eleventh GDG meeting 4 Feb 2015	Did not attend	
Twelfth GDG meeting 16 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 124: Skinner, David (Chair)

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2013	No change in declaration	
Third GDG meeting 19 August 2013	No change in declaration	
Fourth GDG meeting 20 August 2013	No change in declaration	
Fifth GDG meeting 16 October 2013	No change in declaration	
Sixth GDG meeting 17 October 2013	No change in declaration	
Seventh GDG meeting 2 December 2013	Did not attend	
Eighth GDG meeting 3 December 2013	Did not attend	
Ninth GDG meeting 5 March 2014	No change in declaration	
Tenth GDG meeting 3 Feb 2015	No change in declaration	
Eleventh GDG meeting 4 Feb 2015	No change in declaration	
Twelfth GDG	No change in declaration	

GDG meeting	Declaration of Interests	Action taken
meeting 16 April 2015		
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 125: Smallwood, Steve

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2013	No change in declaration	
Third GDG meeting 19 August 2013	Did not attend	
Fourth GDG meeting 20 August 2013	No change in declaration	
Fifth GDG meeting 16 October 2013	No change in declaration	
Sixth GDG meeting 17 October 2013	No change in declaration	
Seventh GDG meeting 2 December 2013	No change in declaration	
Eighth GDG meeting 3 December 2013	No change in declaration	
Ninth GDG meeting 5 March 2014	Did not attend	
Tenth GDG meeting 3 Feb 2015	No change in declaration	
Eleventh GDG meeting 4 Feb 2015	No change in declaration	
Twelfth GDG meeting 16 April 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	Did not attend	

Table 126: Todd, Nick

GDG meeting	Declaration of Interests	Action taken
On application	Nothing to declare	No action taken
Second GDG meeting 16 July 2013	Did not attend	
Third GDG meeting 19 August 2013	Did not attend	
Fourth GDG meeting 20 August 2013	Did not attend	
Fifth GDG meeting 16 October 2013	No change in declaration	
Sixth GDG meeting 17 October 2013	No change in declaration	
Seventh GDG meeting 2 December 2013	Did not attend	
Eighth GDG meeting 3 December 2013	Did not attend	
Ninth GDG meeting 5 March 2014	Did not attend	
Tenth GDG meeting 3 Feb 2015	Did not attend	
Eleventh GDG meeting 4 Feb 2015	Did not attend	
Twelfth GDG meeting 16 April 2015	No change in declaration	
Final GDG meeting 5-6 October 2015	No change in declaration	

Table 127: Toplis, Laura

GDG meeting	Declaration of Interests	Action taken
On application	Did not attend	No action taken
Second GDG meeting 16 July 2013	Did not attend	
Third GDG meeting	Did not attend	

GDG meeting	Declaration of Interests	Action taken
19 August 2013		
Fourth GDG meeting 20 August 2013	Did not attend	
Fifth GDG meeting 16 October 2013	Did not attend	
Sixth GDG meeting 17 October 2013	Did not attend	
Seventh GDG meeting 2 December 2013	Did not attend	
Eighth GDG meeting 3 December 2013	Did not attend	
Ninth GDG meeting 5 March 2014	Did not attend	
Tenth GDG meeting 3 Feb 2015	Did not attend	
Eleventh GDG meeting 4 Feb 2015	Did not attend	
Twelfth GDG meeting 16 April 2015	Did not attend	
Final GDG meeting 5-6 October 2015	Did not attend	

Appendix C: Review protocols

C.1 Open fractures

C.1.1 Transport

Table 128: Review protocol for transport

Review question: Is it clinically and cost effective for suspected open limb fractures to be directly transported to a Major Trauma Centre?	
Objective: To determine the optimal place of care for people with open fractures.	
Population	Children, young people and adults with open fractures.
Intervention	Direct transfer to a major Trauma Centre / specialist centre for orthoplastic care
Comparison	Direct transfer to the nearest Hospital (non MTC)
Outcomes	<p>Critical:</p> <p>Mortality up to 12 months</p> <p>Health related quality of life</p> <p>Limb loss</p> <p>Deep infection</p> <p>Time to definitive soft tissue closure</p> <p>Joint orthoplastic debridement</p> <p>Multiple procedures</p> <p>Further transfer for plastics</p> <p>Functional outcome measures</p> <p>Pain/discomfort</p> <p>Return to normal activities</p> <p>Psychological wellbeing</p> <p>Important:</p> <p>Total hospital length of stay</p> <p>Population size and directness:</p> <p>No limitations on sample size</p> <p>Studies with indirect populations will not be considered.</p>
Exclusion	<p>hand and toe #s</p> <p>If no plastics specifically stated</p>
Search strategy	<p>Databases: Medline, Embase, the Cochrane Library</p> <p>Date: All years</p> <p>Language: Restrict to English only</p> <p>Study designs: RCTs or Systematic reviews of RCTs; cohorts if no RCTs retrieved</p>
The review strategy	<p>Stratification from outset</p> <p>None</p> <p>Sub-groups if between-study heterogeneity exists</p> <p>Age: children (0-17 years); adults (18 and over)</p> <p>Fracture classification: Gustillo Anderson grade</p> <p>Within-study confounders to consider (if cohorts used)</p>

Review question: Is it clinically and cost effective for suspected open limb fractures to be directly transported to a Major Trauma Centre?	
	Age, fracture classification, polytrauma

C.1.2 Limb salvage

Table 129: Prediction tools question

Review question: Which are the best risk prediction tools* to predict likelihood of successful limb salvage in people with mangled limbs who are given limb salvage treatment?	
*These are tools that involve the measurement and inputting of variables into an algorithm that predicts the probability of an outcome for a single patient. The variables included in the algorithm, and their weights, are found by prior regression analyses. These tools should have been validated on a sample that is distinct from the sample used for the developmental regression analysis.	
Objective: To identify prognostic factors that indicate poor outcome of successful limb salvage and eventual need for late amputation, to avoid costly and painful limb salvage on those with no chance of success	
Population	Children, young people and adults with mangled extremity who are given limb salvage treatment
Prognostic Risk tools	Any tools used in the literature [There are no confounders with risk prediction tools, as they are a composite of most key variables thought to affect an outcome]
Outcomes	Sensitivity and specificity of the risk tool for predicting successful salvage/need for amputation
Exclusion	None stated
Search strategy	Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: cohort studies

Table 130: Prognostic factors question

Review question: What are the indicators for the need for early (</=5 days after injury) amputation?	
Objective: To identify prognostic factors that indicate poor outcome of limb salvage and eventual need for late amputation, to avoid costly and painful limb salvage on those with no chance of success	
Population	Children, young people and adults with mangled extremity undergoing limb salvage treatments
Prognostic Factors	Extent/severity of vascular injury [i.e.number vessels irrevocably injured / key vessels (posterior tibial art.) injured] Nerve injury Pattern of injury to foot (crush injury, loss of plantar aspect) Severity of bone/ soft tissue destruction / contamination (Gustillo grading) Duration of ischaemia co-morbidities (diabetes, smoking, vascular disease, connective tissue diseases, dementia) - Charlson comorbidity index and Elixhauser are useful scales of co-morbidity Concomitant organ injuries/presence of polytrauma
Confounders	See above
Outcomes	Critical: Mortality (within 1 yr) quality of life function

Review question: What are the indicators for the need for early (</=5 days after injury) amputation?	
	<p>deep infection failed reconstruction (and therefore need for amputation)</p> <p>Important: chronic pain conditions unplanned surgery</p> <p>Important:</p> <p>Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.</p>
Exclusion	None stated
Search strategy	<p>Databases: Medline, Embase, the Cochrane Library</p> <p>Date: All years</p> <p>Language: Restrict to English only</p> <p>Study designs: cohort studies</p>

C.1.3 Antibiotics

Table 131: Review protocol for antibiotics

Review question: What is the optimum time to administer prophylactic antibiotics for suspected open fractures?	
Objective: To identify the optimum time to administer prophylactic antibiotics for suspected open fractures.	
Population	Children, young people and adults with a suspected open fracture, following a traumatic incident.
Intervention	Prophylactic antibiotics delivered within the first 1 hour post-injury (ie pre-hospital)
Comparison	The above compared to any other time-points occurring after the intervention (as reported by studies) (If drop down to cohorts, may also use time-points as continuous variable)
Outcomes	<p>Critical: Function Health related quality of life deep infection allergy / anaphylaxis Re-operation (unplanned) / Amputation Wound healing by 6 weeks</p> <p>Important: Return to normal activities superficial infection</p> <p>Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.</p>
Exclusion	None stated
Search strategy	Databases: Medline, Embase, the Cochrane Library

Review question: What is the optimum time to administer prophylactic antibiotics for suspected open fractures?	
	Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs; cohorts if no RCTs retrieved.
The review strategy	Stratification from outset None Sub-groups if between-study heterogeneity exists Age children (0-17 years); adults (18 and over): Grade of fracture: Gustilo Anderson grade Within-study confounders to consider (if cohorts used) Age, grade of open fracture

C.1.4 Dressings before debridement

Table 132: Review protocol for dressings before debridement

Review question: What is the most clinically and cost effective-dressing type prior to surgical debridement for use in open fractures, pre-hospital and in hospital?	
Objective: To find the optimum primary dressing type prior to surgical debridement and excision to use in open fractures, pre-hospital and in hospital.	
Population	Children, young people and adults experiencing a traumatic incident.
Intervention	Antiseptic vs saline Occlusive vs non occlusive Irrigation vs no irrigation
Comparison	To each other
Outcomes	Critical: Function – ie Disability rating index Health related quality of life Adverse event: deep infection (bone) wound infection tissue necrosis – extent of Re-operation (unplanned) / Amputation Wound healing by 6 weeks Important: Return to normal activities Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.
Exclusion	None stated Hand and toe #
Search strategy	Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs; cohorts if no RCTs

Review question: What is the most clinically and cost effective-dressing type prior to surgical debridement for use in open fractures, pre-hospital and in hospital?	
	retrieved.
The review strategy	Stratification from outset None Sub-groups if between-study heterogeneity exists Age (children and adults): child (0-15 years); young people (16-17 years); adults (18-65 years; > 65 years) Pre/acute: pre-hospital; acute care Grade of open fracture: Gustilo and Anderson Within-study confounders to consider (if cohorts used) Age, grade of open fracture,

C.1.5 Arterial shunts

Table 133: Review protocol for arterial shunts

Review question: Are arterial shunts followed by later repair more clinically and cost effective compared to definitive repair of arterial injuries associated with open fractures?	
Objective: To determine optimal surgical strategy for vascular injuries in open fractures	
Population	Children, young people and adults experiencing a traumatic incident.
Intervention	Question is about the order of procedures: A – D – B C – B – D D – B B - D A = temporary restoration of circulation B = definitive restoration of circulation C = temporary mechanical/skeletal stabilisation D = definitive mechanical/skeletal stabilisation
Comparison	Comparison of 1 to 4 above
Outcomes	Critical: Mortality within 1 yr Health related quality of life Amputation / limb salvage Deep infection compartment decompression Re-operation (unplanned) Important: Return to normal activities Length of hospital stay Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.
Exclusion	None
Search strategy	Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only

Review question: Are arterial shunts followed by later repair more clinically and cost effective compared to definitive repair of arterial injuries associated with open fractures?	
	Study designs: RCTs or Systematic reviews of RCTs; cohorts if no RCTs retrieved, SR of cohorts
The review strategy	Stratification from outset None Sub-groups if between-study heterogeneity exists Time from injury to initial vascular repair (<4, 4-6, >6 hrs from injury) Within-study confounders to consider (if cohorts used) time from injury to initial vascular repair

C.1.6 MDT

Table 134: Review protocol for for MDT

Review question: Is the presence of an orthopaedic surgeon AND plastic surgeon at the initial surgical excision and stabilisation of an open fracture clinically and cost effective?	
Objective: To find the value of combined ortho-plastic surgery teams in the management of open fractures	
Population	Children, young people and adults experiencing a traumatic incident.
Intervention	Combined orthopaedic and plastic surgery teams at initial procedure Orthopaedic surgeon present and plastic surgeon available via phone No plastic surgeon input at initial procedure
Comparison	Each compared to each other
Outcomes	Critical: Mortality at 1, 12 months? Health related quality of life Deep surgical site infection (infection involving the bone) amputation, Flap failure Time to definitive cover Important: Unplanned complexity of soft tissue cover Length of hospital stay further unplanned surgery (change for debridement protocol) return to normal activities, Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.
Exclusion	None
Search strategy	Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs; cohorts (subgroup) if no RCTs retrieved.
The review strategy	Stratification: none

Review question: Is the presence of an orthopaedic surgeon AND plastic surgeon at the initial surgical excision and stabilisation of an open fracture clinically and cost effective?	
	Sub-grouping (if between-study heterogeneity exists in meta-analysis): Grade of surgeon, grade of injury Gustillo Anderson Grade Contamination at presentation Expertise of team/surgeon Age skeletal maturity, (0-17 yrs), adults (18-65) (>65) Isolated injury or polytrauma Within-study confounding to consider (if cohort study) None

C.1.7 Optimal timing of debridement

Table 135: Review protocol for optimal timing of debridement

Review question: What is the optimal timing of initial debridement of open fractures?	
Objective: To determine the optimal timing of performing an initial debridement (also known as wound excision) of open fractures	
Population	Children, young people and adults who have experienced an open fracture following a traumatic incident.
Intervention	Surgical treatment (time from injury <6, 6-12, 12-24 hours)
Comparison	Comparison of the above and later than 24 hours
Outcomes	Critical: Mortality up to 12 months Health related quality of life Return to normal activities deep surgical site infection Re-operation (unplanned) Amputation Functional outcomes Important: Length of hospital stay Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.
Exclusion	Hand and toe open fractures Pathological fractures Vascular compromise
Search strategy	Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs; cohorts if no RCTs retrieved.
The review strategy	Quality of life data: Collect all data for the stated QoL measure, for meta-analysis and GRADE report only overall scores Appraisal of methodological quality: The methodological quality of each study will be assessed using NICE checklists and GRADE.

Review question: What is the optimal timing of initial debridement of open fractures?	
Analysis	<p>Stratification from outset</p> <p>None</p> <p>Sub-groups if between-study heterogeneity exists</p> <p>Age (children and adults): child (0-15 years); young people (16-17 years); adults (18-65 years; > 65 years)</p> <p>Presence of a plastic surgeon</p> <p>Grade of open fracture: Gustilo and Anderson</p> <p>Upper vs lower limb</p> <p>MTC/TU</p> <p>Within-study confounders to consider (if cohorts used)</p> <p>Age, grade of open fracture,</p>

C.1.8 Fixation

Table 136: Review protocol for fixation

Review question: Is the use of initial definitive fixation more clinically and cost effective in the management of open fractures compared to staged fixation?	
Objective: To find the optimum method of definitive treatment for open fractures.	
Population	Children, young people and adults with open fractures
Intervention	<p>Definitive fixation (internal or external) and immediate cover</p> <p>Definitive fixation (internal or external) and staged cover</p> <p>Staged fixation (external initially and then internal or external) and staged cover</p>
Comparison	Compared to each other
Outcomes	<p>Critical:</p> <p>Mortality at 1, 12 months</p> <p>Health related quality of life</p> <p>Deep surgical site infection (infection involving the bone)</p> <p>amputation,</p> <p>Flap failure (total or partial)</p> <p>Important:</p> <p>Length of hospital stay</p> <p>further unplanned surgery</p> <p>return to normal activities,</p> <p>Population size and directness:</p> <p>No limitations on sample size</p> <p>Studies with indirect populations will not be considered.</p>
Exclusion	Pathological fractures
Search strategy	<p>Databases: Medline, Embase, the Cochrane Library</p> <p>Date: All years</p> <p>Language: Restrict to English only</p> <p>Study designs: RCTs or Systematic reviews of RCTs; cohorts if no RCTs retrieved.</p>
The review strategy	<p>Stratification from outset</p> <p>vascular compromise: vascular compromise; without vascular compromise</p>

Review question: Is the use of initial definitive fixation more clinically and cost effective in the management of open fractures compared to staged fixation?	
	<p>Sub-groups if between-study heterogeneity exists Age: children (0-17 years); adults 18 and over Location of open fracture: pelvis; femur; lower leg; humerus; forearm; scapula Contamination of open fracture: appropriate grading system, such as Gustillo Anderson Grade. Articular involvement: Yes; No</p> <p>Isolation of injury: isolated; polytrauma</p> <p>Type of fixation: internal; external</p> <p>Within-study confounders to consider (if cohorts used) articular involvement; contamination; single vs multiple trauma; grade; definitive internal vs definitive external;</p>

C.1.9 Cover

Table 137: Review protocol for time to achieve cover

Review question: What is the most clinical and cost effective time to achieve definitive soft tissue cover in open fractures?	
Objective: To provide guidance on the optimal amount of time to achieve cover after debridement	
Population	Children, young people and adults experiencing a traumatic incident.
Intervention	Immediate (time of debridement)
Comparison	Later times (1,3,7 and >7 days)
Outcomes	<p>Critical:</p> <p>Mortality up to 12 months Health related quality of life Deep surgical site infection Re-operation Amputation Functional outcomes Partial Flap failure Complete flap failure</p> <p>Important:</p> <p>Length of hospital stay Superficial wound infection Return to normal activities</p> <p>Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.</p>
Exclusion	Hand and toe #s
Search strategy	<p>Databases: Medline, Embase, the Cochrane Library Date: All years</p>

Review question: What is the most clinical and cost effective time to achieve definitive soft tissue cover in open fractures?	
	Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs; cohorts if no RCTs retrieved.
The review strategy	Stratification from outset None Sub-groups if between-study heterogeneity exists Age: neonate (<28 days); infant (to 1 year); child (1-15 years); young people(16-17 years); 18-65 years; > 65 years Grade of fracture (all 4 main groups) Within-study confounders to consider (if cohorts used) Age, grade of fracture

C.1.10 Definitive dressings after debridement

Table 138: Review protocol for dressings post debridement

Review question: What is the most clinically and cost effective temporary dressing or wound therapy in open fractures after wound excision or surgical debridement?	
Objective: To determine the optimum technique for dressing wounds (that have not been closed) after wound excision/debridement.	
Population	Children, young people and adults with an open fracture
Intervention	Negative pressure dressing/ wound therapy Bead pouch (antibiotics, impregnated beads)/ occlusive antibiotic dressing Other standard dressings (as in previous question)
Comparison	Comparison of the 3 main groups above, alone or in combination.
Outcomes	Critical: Disability rating index Health related quality of life Adverse event: deep infection Re-operation / Amputation Wound healing by 6 weeks Important: Return to normal activities Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.
Exclusion	None stated Dressings as a form of wound closure therapy Non-open #s
Search strategy	Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs; cohorts if no RCTs retrieved
The review strategy	Stratification from outset None

Review question: What is the most clinically and cost effective temporary dressing or wound therapy in open fractures after wound excision or surgical debridement?	
	<p>Sub-groups if between-study heterogeneity exists</p> <p>Age (children and adults): child (0-15 years); young people (16-17 years); adults (18-65 years; > 65 years)</p> <p>Grade of open fracture: Gustilo and Anderson</p> <p>Time to wound closure</p> <p>Within-study confounders to consider (if cohorts used)</p> <p>Age, grade of open fracture, time to wound closure</p>

C.2 Pelvic fractures

C.2.1 Transfer to MTC

Table 139: Review protocol for transfer to MTC

Review question: Is it clinically and cost effective for patients with suspected high energy pelvi or /acetabular fractures to be transferred directly to a Major Trauma Centre?	
Objective: To determine the optimal place of care for people with pelvic/acetabular fractures.	
Population	Children, young people and adults with suspected high energy (>fall from standing height) pelvic fractures.
Intervention	Direct transfer to a major Trauma Centre/specialist centre
Comparison	Direct transfer to the nearest Hospital (followed by definitive diagnosis of pelvic fracture and then delayed transfer to MTC if necessary)
Outcomes	<p>Critical:</p> <p>Mortality up to 12 months</p> <p>Health related quality of life</p> <p>Adverse effects (surgical complications)</p> <p>Further transfer for specialist surgery</p> <p>Functional outcome measures</p> <p>Pain/discomfort</p> <p>Return to normal activities</p> <p>Psychological wellbeing</p> <p>Time to definitive surgery</p> <p>Important:</p> <p>Total hospital bed days</p> <p>Blood loss</p> <p>Population size and directness:</p> <p>No limitations on sample size</p> <p>Studies with indirect populations will not be considered.</p>
Exclusion	None stated
Search strategy	<p>Databases: Medline, Embase, the Cochrane Library</p> <p>Date: All years</p> <p>Language: Restrict to English only</p> <p>Study designs: RCTs or Systematic reviews of RCTs; cohorts if no RCTs retrieved.</p>

Review question: Is it clinically and cost effective for patients with suspected high energy pelvi or /acetabular fractures to be transferred directly to a Major Trauma Centre?	
The review strategy	Stratification from outset None Sub-groups if between-study heterogeneity exists Age children (0-12 years); children (13-17); adults (18 -65); adults (>65) Polytrauma Within-study confounders to consider (if cohorts used) Age, polytrauma

C.2.2 Timing of transfer for patients with pelvic fractures

Table 140: Review protocol for timing of transfer for pelvic fractures

Review question: What is the most clinically and cost effective timing for transferring patients with pelvic fractures (including acetabular fractures) to tertiary or specialist services?	
Objective: To find the optimum timing for referral to tertiary services	
Population	Children, young people and adults with a pelvic or acetabular fracture following a traumatic incident
Intervention	Early transfer to tertiary services (< 6 hours) Transfer to tertiary services between 6- and 48-hours following injury Transfer tertiary services between 2-7 days following injury Transfer to tertiary services > 1 week following injury
Comparison	No transfer to tertiary services Comparison to each other
Outcomes	Critical: Mortality at 1 and 12 months Health related quality of life Hip replacement Need for further surgery Nerve injury Sexual function (erectile dysfunction in men; pain during intercourse in women) Important: Patient-reported outcomes (return to normal activities). Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.
Exclusion	None stated
Search strategy	Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs; cohorts if no RCTs retrieved.
The review strategy	Stratification from outset Location and displacement: pelvic displaced; acetabular displaced; pelvic and acetabular displaced; pelvic undisplaced; acetabular undisplaced; pelvic and

Review question: What is the most clinically and cost effective timing for transferring patients with pelvic fractures (including acetabular fractures) to tertiary or specialist services?	
	acetabular undisplaced;
	Sub-groups if between-study heterogeneity exists Age: skeletal immaturity (or children 0-17 years); skeletal maturity (or adults 18 and over)
	Within-study confounders to consider (if cohorts used) Age, location of fracture, contamination of fracture

C.2.3 Decision for pelvic binders

Table 141: Diagnostic risk tools question

Review question: Which are the best diagnostic risk tools* to predict the presence of a pelvic fracture at the pre-hospital stage?	
*These are tools that involve the measurement and inputting of variables into an algorithm that predicts the probability of a future outcome or (as in this case, where the condition is already present) current diagnosis for a single patient. The variables included in the algorithm, and their weights, are found by prior regression analyses. These tools should have been validated on a sample that is distinct from the sample used for the developmental regression analysis. In this case	
Objective: To identify the optimum prediction tools for evaluating who has a pelvic fracture at the pre-hospital stage to know whether they need a pelvic binder or need to be transported directly to specialist care.	
Population	Children, young people and adults with a pelvic binder
Prognostic Risk tools	Any diagnostic prediction tools* identified in the literature *prediction tools are being sought as these are designed to inform a decision. These incorporate all competing predictors in their design, and are the result of studies conducting multivariable analyses to evaluate these predictors and the weighting given to each.
Outcomes	Sensitivity and specificity AUC Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.
Exclusion	None stated
Search strategy	Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: Rcts Diagnostic accuracy studies

Table 142: Diagnostic accuracy question

Review question: What factors are the most accurate at identifying people with pelvic fracture at the pre-hospital stage in people experiencing trauma?	
Objective: To identify the diagnostic factors for evaluating who has a pelvic fracture at the pre-hospital stage	

Review question: What factors are the most accurate at identifying people with pelvic fracture at the pre-hospital stage in people experiencing trauma?	
to know whether they need a pelvic binder or need to be transported directly to specialist care.	
Population	Children, young people and adults with a pelvic binder
Index tests	Any single diagnostic factors identified in the literature that can be measured at the pre-hospital stage (None specified by the GDG, but likely to include mechanism of injury, age, vital signs, existence of pelvic pain)
Reference test	Later clinical findings Imaging findings in hospital
Outcomes	Sensitivity and specificity of each factor in terms of pelvic fracture Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.
Exclusion	None stated
Search strategy	Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: Cross-sectional studies
The review strategy	Stratification from outset Age: children (0-17 years); adults (18 and over)

C.2.4 Pelvic binder duration

Table 143: Review protocol for pelvic binder duration

Review question: What is the most clinically and cost effective duration for pelvic binder use?	
Objective: To determine the optimum duration for pelvic binders to remain in situ	
Population	Children, young people and adults for a confirmed pelvic fracture following a traumatic incident.
Intervention	In-situ \leq 4 hours In-situ >4-12 hours In situ >12-24 hours In situ >24 hrs
Comparison	Comparison of the above
Outcomes	Critical: Mortality to 1 year Health related quality of life skin necrosis, breakdown, blistering Nerve injury Functional outcome measures Pain/discomfort Return to normal activities Psychological wellbeing Blood loss (bloodcomponents)

Review question: What is the most clinically and cost effective duration for pelvic binder use?	
	Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.
Exclusion	None stated
Search strategy	Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs; cohorts if no RCTs retrieved.
The review strategy	Stratification from outset Age: children (1-12 years); young people and adults (13 and over) Sub-groups if between-study heterogeneity exists Age (children): child (1-12 years); young people(13-17 years) Age (adults): 18-65 years; > 65 years Type of binder: improvised, T pod, Sam splint Injury classification Within-study confounders to consider (if cohorts used) Age, type of binder, class injury

C.2.5 Timing of log roll

Table 144: Review protocol for timing of log roll

Review question: What is the safest strategy and timing for logrolling patients with suspected or known pelvic fracture?	
Objective: To identify the safest timing of logroll in patients with suspected pelvic fracture	
Population	Children, young people and adults experiencing a traumatic incident.
Intervention	Log roll before imaging
Comparison	Log roll after assessment of imaging
Outcomes	Critical: Mortality Health related quality of life Volume of blood lost/Number of transfusions required Time to definitive control of haemorrhage Important: Patient-reported outcomes Pain/discomfort Return to normal activities, Length of stay
Exclusion	None stated
Search strategy	Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs; cohorts or case-controls if

Review question: What is the safest strategy and timing for logrolling patients with suspected or known pelvic fracture?	
	no RCTs retrieved.
The review strategy	Stratification from outset Age: children (0-17 years); adults (18 and over) Sub-groups if between-study heterogeneity exists None Existence of polytrauma/severity/associated injuries Within-study confounders to consider (if cohorts used) Age, polytrauma/severity/associated injuries

C.2.6 Pelvic imaging

Table 145: Review protocol for pelvic imaging

Review question: What is the most clinically and cost effective imaging modality for assessment of high energy suspected pelvic or acetabular fractures at the initial presentation?	
Objective: To find the optimum modality for imaging of suspected pelvic/acetabular fractures at initial presentation	
Population	Children, young people and adults experiencing a high-energy suspected pelvic fracture following a traumatic incident.
Intervention	CT CT with contrast Plain X ray Plain film X-ray + CT Plain film x ray + CT with contrast
Comparison	Each other
Outcomes	Critical: Mortality up to 12 months Health related quality of life Missed injury Need for further diagnostic imaging Time to whole body CT (for other injuries) Radiation Delayed treatment Functional outcomes Pain/discomfort Return to normal activities Psychological wellbeing Important: Time in hospital Misdiagnosis Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.
Exclusion	None stated

Review question: What is the most clinically and cost effective imaging modality for assessment of high energy suspected pelvic or acetabular fractures at the initial presentation?	
Search strategy	Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs
The review strategy	Stratification from outset Age: children (0-12 years); young people and adults (13 and over) Sub-groups if between-study heterogeneity exists Age (children): neonate (<28 days); infant (to 1 year); child (1-15 years); young people(16-17 years) Age (adults): 18-65 years; > 65 years

Table 146: If no RCTs

Review question: What is the diagnostic accuracy of CT, CT+X ray or X ray for assessment of high energy pelvic/acetabular fractures for 1) existence of fractures, 2) classification of fracture?	
Objective: To find the diagnostic accuracy of different methods of imaging pelvic/acetabular fractures	
Population	Children, young people and adults experiencing a traumatic incident.
Index tests	CT Plain X ray Plain film X-ray + CT (with or without contrast)
Reference test	Later clinical findings including further imaging
Outcomes	Sensitivity and specificity Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.
Exclusion	None stated
Search strategy	Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: Diagnostic accuracy studies
Analysis	Separate analyses will be undertaken for: Accuracy of diagnosing the existence of the fracture in people suspected of the fracture Accuracy of diagnosing the classification of the fracture in people who have a pelvic fracture

C.2.7 Pelvic cystourethrogram

Table 147: Review protocol for pelvic cystourethrogram

Review question: Does a cystourethrogram lead to better outcomes than CT in patients with confirmed or suspected pelvic fracture and suspected bladder and urethral injuries?	
Objective: To find the optimum modality for imaging of pelvic visceral damage in pelvic fractures	
Population	Children, young people and adults with suspected or confirmed pelvic fracture after experiencing a traumatic incident.

Review question: Does a cystourethrogram lead to better outcomes than CT in patients with confirmed or suspected pelvic fracture and suspected bladder and urethral injuries?	
Intervention	X-ray cystourethrogram Fluoroscopic cystourethrogram CT cystourethrogram CT (with contrast) CT (without contrast) CT (with contrast) followed by x-ray cystourethrogram CT (with contrast) followed by fluoroscopic cystourethrogram CT (with contrast) followed by CT cystourethrogram CT (without contrast) followed by x-ray cystourethrogram CT (without contrast) followed by fluoroscopic cystourethrogram CT (without contrast) followed by CT cystourethrogram
Comparison	To each other
Outcomes	Critical: Mortality up to 12 months Health related quality of life Missed bladder injury Missed urethral injury Impotence Incontinence Infection of fracture site Time to definitive diagnosis Functional outcomes pain/discomfort return to normal activities psychological wellbeing Important: Length of stay Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.
Exclusion	None stated
Search strategy	Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs
The review strategy	Stratification from outset Gender: men/women Sub-groups if between-study heterogeneity exists None

Table 148: If no RCTs

Review question: What is the diagnostic accuracy of cystourethrogram and CT for assessment of bladder injury in patients with confirmed or suspected pelvic fracture?
Objective: To find the diagnostic accuracy of different methods of imaging bladder injury secondary pelvic

Review question: What is the diagnostic accuracy of cystourethrogram and CT for assessment of bladder injury in patients with confirmed or suspected pelvic fracture?	
fractures	
Population	Children, young people and adults with suspected or confirmed pelvic fracture after experiencing a traumatic incident.
Index tests	X-ray cystourethrogram Fluoroscopic cystourethrogram CT cystourethrogram CT (with contrast) CT (without contrast) CT (with contrast) followed by x-ray cystourethrogram CT (with contrast) followed by fluoroscopic cystourethrogram CT (with contrast) followed by CT cystourethrogram CT (without contrast) followed by x-ray cystourethrogram CT (without contrast) followed by fluoroscopic cystourethrogram CT (without contrast) followed by CT cystourethrogram
Reference test	Surgical findings and clinical follow-up
Outcomes	Sensitivity and specificity Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.
Exclusion	None stated
Search strategy	Databases: Medline, Embase, The Cochrane Library Date: All years Language: Restrict to English only Study designs: Diagnostic accuracy studies
Analysis	Standard diagnostic accuracy approach

C.2.8 Pelvic haemorrhage control

Table 149: Review protocol for pelvic haemorrhage control

Review question: What is the most clinically and cost effective invasive technique for control of bleeding in pelvic ring fractures?	
Objective: To evaluate the optimal invasive method to control bleeding after pelvic haemorrhage	
Population	Children, young people and adults experiencing a traumatic incident.
Intervention	Arterial embolization (interventional radiology) Anterior external fixation Pelvic C-clamps Open pelvic packing
Comparison	Any other intervention
Outcomes	Critical: Mortality Health related quality of life Re-bleeding rates Need for further intervention Volume of blood lost/Number of transfusions required Time to definitive control of haemorrhage

Review question: What is the most clinically and cost effective invasive technique for control of bleeding in pelvic ring fractures?	
	<p>Need for rescanning Adverse effects Tissue necrosis / muscle infarction Deep infection</p> <p>Important: Pain/discomfort Return to normal activities Length of stay</p> <p>Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.</p>
Exclusion	None stated
Search strategy	<p>Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs; cohorts if no RCTs retrieved.</p>
The review strategy	<p>Stratification from outset Age: children (0-17 years); adults (18 and over) Source: Venous/arterial/don't know</p> <p>Sub-groups if between-study heterogeneity exists Age (children): none required Age (adults): 18-65 years; > 65 years Within-study confounders to consider (if cohorts used) Age, source of bleeding, fracture type,</p>

C.3 Pilon fractures

C.3.1 Pilon transfer

Table 150: Review protocol for pilon transfer

Review question: Is it clinically and cost effective to transfer people with a pilon fracture (equivalent in children: McFarlane fracture) to a specialist centre prior to first surgical procedure?	
Objective: To determine the optimal place of care (and timing of transfer) for patients with pilon fractures	
Population	Children, young people and adults with pilon fractures following a traumatic incident
Intervention	Transfer to specialist centre (as designated by a major trauma network) prior to first surgical procedure Delayed transfer following initial stabilisation surgery
Comparison	Compared to each other No transfer
Outcomes	Critical: Health related quality of life

Review question: Is it clinically and cost effective to transfer people with a pilon fracture (equivalent in children: McFarlane fracture) to a specialist centre prior to first surgical procedure?	
	<p>Surgical site infection Ankle fusion Unplanned further surgery (any surgery including for infection, re-intervention, or to correct fusion)</p> <p>Important: Patient-reported outcomes (return to normal activities).</p> <p>Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.</p>
Exclusion	Patients with poly trauma
Search strategy	<p>Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs; cohorts if no RCTs retrieved.</p>
The review strategy	<p>Stratification from outset Age: children (0-17 years); adults (18 and over)</p> <p>Sub-groups if between-study heterogeneity exists Age (children): neonate (<28 days); infant (to 1 year); child (1-15 years); young people(16-17 years) Age (adults): 18-65 years; > 65 years Fracture classification: Use AO or OTA classes Surgeon grade: Within-study confounders to consider (if cohorts used) Age, location of fracture, contamination of fracture</p>

C.3.2 Pilon early fixation

Table 151: Review protocol for pilon early fixation

Review question: What is the most clinical and cost-effective strategy in the surgical management of pilon fractures?	
Incorporates:	
What is the optimal timing of definitive fixation	
What is the optimal temporary stabilisation technique	
Objective: To determine the benefit of early temporary fixation of pilon fractures	
Population	Children, young people and adults experiencing a traumatic incident.
Intervention	<p>Definitive (internal or external) fixation within 24 hours Stabilisation with temporary (usually external) fixation within 24 hours followed by definitive fixation within 2 to 7 days Stabilisation with plaster cast within 24 hours followed by definitive fixation within 2 to 7 days Stabilisation with temporary (usually external) fixation within 24 hours followed by definitive fixation after 7 days Stabilisation with plaster cast within 24 hours followed by definitive fixation after 7 days</p>

Review question: What is the most clinical and cost-effective strategy in the surgical management of pilon fractures? Incorporates: What is the optimal timing of definitive fixation What is the optimal temporary stabilisation technique	
Comparison	Compared to each other
Outcomes	<p>Critical:</p> <p>Mortality up to 12 months</p> <p>Health related quality of life</p> <p>Amputation</p> <p>Deep infection</p> <p>Unplanned surgery (inc. plastic)</p> <p>Functional scales</p> <p>Important:</p> <p>Pain/discomfort</p> <p>Return to normal activities</p> <p>Length of stay</p> <p>Population size and directness:</p> <p>No limitations on sample size</p> <p>Studies with indirect populations will not be considered.</p>
Exclusion	Children
Search strategy	<p>Databases: Medline, Embase, the Cochrane Library</p> <p>Date: All years</p> <p>Language: Restrict to English only</p> <p>Study designs: RCTs or Systematic reviews of RCTs; cohorts if no RCTs retrieved.</p>
The review strategy	<p>Stratification from outset</p> <p>Open/closed</p> <p>Sub-groups if between-study heterogeneity exists</p> <p>Age (adults): 18-65 years; > 65 years</p> <p>Within-study confounders to consider (if cohorts used)</p> <p>open/closed</p>

C.3.3 Pilon fixation

Table 152: Review protocol for pilon fixation

Review question: Are fine wire external fixators more clinically and cost effective for managing pilon fractures than internal fixation with plates and screws?	
Objective: To find the optimum method of definitive treatment for open and pilon fractures	
Population	Adults with a pilon fracture requiring fixation, following a traumatic incident.
Intervention	Fine wire external fixation (circular fixators or wire fixators)
Comparison	Open reduction internal fixation without a circular frame
Outcomes	<p>Critical:</p> <p>Health related quality of life</p> <p>Surgical site infection</p> <p>Ankle fusion</p>

Review question: Are fine wire external fixators more clinically and cost effective for managing pilon fractures than internal fixation with plates and screws?	
	<p>Unplanned further surgery Wound breakdown</p> <p>Important: Patient-reported outcomes Return to normal activities</p> <p>Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.</p>
Exclusion	None stated
Search strategy	<p>Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs; cohorts if no RCTs</p>
The review strategy	<p>Stratification from outset None</p> <p>Sub-groups if between-study heterogeneity exists Age (adults): 18-65 years; > 65 years AO classification: simple; wedge; complex Fracture type: open; closed</p> <p>Within-study confounders to consider (if cohorts used) Age, fracture type, AO classification</p>

C.4 Other

C.4.1 Identifying vascular compromise

Table 153: Review protocol for vascular compromise

Review question: What is the most effective method of identifying an arterial injury requiring intervention in people with upper and lower limb fractures?	
Objective: To determine the optimum method of identifying arterial injury requiring intervention	
Population	Children, young people and adults experiencing a traumatic limb incident. May use indirect evidence including non-fractures (because this will not affect accuracy of measurement) if there are no direct studies
Intervention	<p>Clinical assessment only Doppler (standard) ABPI (Doppler used in a specific way) Angiography with x-ray Angiography done with initial CT Combination of the above</p>
Comparison	Any comparison of the above
Outcomes	<p>Critical: Mortality up to 12 months</p>

Review question: What is the most effective method of identifying an arterial injury requiring intervention in people with upper and lower limb fractures?	
	<p>Health related quality of life Limb salvage Myoglobinuria / Renal failure Proportion requiring fasciotomy Limb ischaemia deep infection Functional outcome measures Pain/discomfort Return to normal activities Psychological wellbeing Time to revascularisation</p> <p>Important: Total hospital length of stay</p> <p>Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.</p>
Exclusion	None stated
Search strategy	<p>Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs</p>
The review strategy	<p>Stratification from outset None</p> <p>Sub-groups if between-study heterogeneity exists None</p>

Table 154: If not RCTs

Review question: What is the most accurate method for diagnosing an arterial injury in a person requiring intervention in people with upper and lower limb fractures?	
Objective: To determine the accuracy of different methods for identifying arterial injury (in people with open fractures?)	
Population	Children, young people and adults experiencing a traumatic incident.
Index tests	<p>Clinical assessment only Doppler (standard) ABPI (Doppler used in a specific way) Angiography with x-ray Angiography done with initial CT Combination of the above</p>
Reference test	Later clinical outcomes
Outcomes	<p>Sensitivity and specificity Studies with indirect populations will not be considered.</p>
Exclusion	None stated
Search strategy	<p>Databases: Medline, Embase, the Cochrane Library Date: All years</p>

Review question: What is the most accurate method for diagnosing an arterial injury in a person requiring intervention in people with upper and lower limb fractures?	
	Language: Restrict to English only Study designs: Diagnostic review studies
The review strategy	Stratification from outset Age: children (0-17 years); adults (18 and over)

C.4.2 Detecting compartment syndrome

Table 155: Review protocol for detecting compartment syndrome

Review question: What is the most clinically and cost effective method of identifying compartment syndrome in patients with limb fractures?	
Objective: To find the optimal method of diagnosing compartment syndrome	
Population	Children, young people and adults experiencing a traumatic incident.
Intervention	Intra-compartmental pressure measurement Intra-compartmental pressure measurement combined with clinical assessment Clinical assessment
Comparison	Compared to each other
Outcomes	Critical: Health related quality of life Neurological dysfunction muscle/joint contracture Amputation Functional outcome measures Pain/discomfort Return to normal activities Psychological wellbeing Deep infection Neuropathic ulcers Important: Unplanned surgery Missed compartment syndrome (not including foot compartment) Length of stay cosmesis Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.
Exclusion	No exclusions
Search strategy	Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs
The review strategy	Stratification from outset Upper limb/lower limb/foot/hand Conscious: yes/no (as affects clinical examination) Age: children (0-12); young people and adults (>12)

Review question: What is the most clinically and cost effective method of identifying compartment syndrome in patients with limb fractures?	
	Sub-groups if between-study heterogeneity exists
	None

Table 156: If no RCTs

Review question: What is the most accurate method of identifying compartment syndrome in patients with limb fractures?	
Objective: To determine the accuracy of different methods for identifying compartment syndrome	
Population	Children, young people and adults experiencing a traumatic incident.
Index tests	Clinical assessment Intra-compartmental pressure measurement Intra-compartmental pressure measurement with clinical assessment
Reference test	Later clinical outcomes
Outcomes	Sensitivity and specificity Studies with indirect populations will not be considered.
Exclusion	None stated
Search strategy	Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: Diagnostic review studies
The review strategy	Stratification from outset Upper limb/lower limb/foot/hand Conscious: yes/no (as affects clinical examination) Age: children (0-12); young people and adults (>12)

C.4.3 Splinting of lower limb long bone fractures

Table 157: Review protocol for splinting lower limb long bone fractures

Review question: What is the most clinically and cost effective strategy for splinting of lower limb long bone open fractures in the pre-hospital setting?	
Objective: To find the optimum method to splint lower limb long bone open fractures	
Population	Children, young people and adults experiencing a traumatic incident. May include closed fractures
Intervention	Box splint
Comparison	Vacuum splint (bean bag that air is removed from) Traction splint (Kendrick splint, Donway, traction with pneumatic, Thomas, Segar)
Outcomes	Critical: Mortality up to 12 months Health related quality of life Function Adverse effects Neurovascular damage Tissue necrosis Pain (various methods) Important:

Review question: What is the most clinically and cost effective strategy for splinting of lower limb long bone open fractures in the pre-hospital setting?	
	<p>Return to normal activities Blood pressure (various surrogates)</p> <p>Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.</p>
Exclusion	<p>None stated Hand #</p>
Search strategy	<p>Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs; cohorts if no RCTs retrieved.</p>
The review strategy	<p>Stratification from outset Age: children (0-17 years); adults (18 and over) Bone: tibia or femur Sub-groups if between-study heterogeneity exists Age (children): neonate (<28 days); infant (to 1 year); child (1-15 years); young people(16-17 years) Age (adults): 18-65 years; > 65 years Time splint left on Pain relief type Within-study confounders to consider (if cohorts used) Age, time splint left on (for outcomes where relevant – NV damage and tissue necrosis), pain relief type (for pain outcome)</p>

C.4.4 Hip reduction

Table 158: Review protocol for hip reduction

Review question: Does native* hip dislocation require immediate open reduction in the event of a failed closed reduction ?	
* ie not a dislocation when a total hip replacement was in situ	
Objective: To determine the optimal timing of open reduction of hip dislocation following failed closed reduction	
Population	Children, young people and adults experiencing a traumatic incident.
Intervention	<p>Open reduction within 4 hrs of injury Open reduction >4 and <12 hours after injury Open reduction >12 hours after injury</p>
Comparison	To each other
Outcomes	<p>Critical: Mortality Health related quality of life Avascular necrosis fem head Sciatic nerve injury</p> <p>Important: pain/discomfort,</p>

Review question: Does native* hip dislocation require immediate open reduction in the event of a failed closed reduction ?	
* ie not a dislocation when a total hip replacement was in situ	
	<p>return to normal activities, psychological wellbeing Functional scores for hip (Oxford, Harris)</p> <p>Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.</p>
Exclusion	Polytrauma
Search strategy	<p>Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs; cohorts or case-controls if no RCTs retrieved.</p>
The review strategy	<p>Stratification from outset Pre-op sciatic nerve palsy yes/no</p> <p>Sub-groups if between-study heterogeneity exists Age: children (0-17 years); adults (18 and over) No fracture or type of fracture Within-study confounders to consider (if cohorts used) Age sciatic nerve palsy (if there are papers that have a mixture of palsy and no palsy) fractures around area (acetabular, fem head, fem neck) Clinician skills: Specialist vs non-specialist (or surrogates such as hospital setting)</p>

C.4.5 Full-body CT

Review question: Is it clinically and cost effective to extend full-body CT to the feet in patients with polytrauma and suspected lower limb injury?	
Objective: To find the optimum modality for imaging in polytrauma	
Population	Children, young people and adults with polytrauma and suspected lower leg injury
Intervention	Full-body CT to feet for all poly-trauma patients with suspected lower limb injury
Comparison	Full body CT to pelvis for all poly-trauma patients, with imaging below pelvis to feet done separately as required.
Outcomes	<p>Critical: Mortality up to 12 months Health related quality of life Missed lower limb fracture or vascular injury Radiation exposure / radiation adverse effects Functional outcomes (pain/discomfort, return to normal activities, psychological wellbeing) Time to definitive diagnosis</p>

Review question: Is it clinically and cost effective to extend full-body CT to the feet in patients with polytrauma and suspected lower limb injury?	
	Important: length of stay Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.
Exclusion	None stated
Search strategy	Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs
The review strategy	Stratification from outset Age: children (0-17 years); adults (18 and over) Use of contrast: yes/No Sub-groups if between-study heterogeneity exists Age (children): neonate (<28 days); infant (to 1 year); child (1-15 years); young people(16-17 years) Age (adults): 18-65 years; > 65 years

C.4.6 Documentation of open fracture wound photographs

Table 159: Review protocol for documentation of open fracture wound photographs

Review question: For patients with open fractures, is documentation that includes wound photographs more clinically and cost effective than documentation without inclusion of wound photographs?	
Objective: To evaluate the necessary documentation for optimum management of open fractures	
Population	Children, young people and adults experiencing an open fracture from a traumatic incident.
Intervention	Documentation including photographs of the wound
Comparisons	Documentation not including photographs of the wound
Outcomes	Critical: Mortality at 1, 6 and 12 months Health related quality of life Deep infection Time to initial surgery Time to definitive closure Important: Patient-reported outcomes Pain/discomfort Return to normal activities Psychological wellbeing Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.
Exclusion	Not stated
Search strategy	Databases: Medline, Embase, the Cochrane Library

Review question: For patients with open fractures, is documentation that includes wound photographs more clinically and cost effective than documentation without inclusion of wound photographs?	
	Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs
The review strategy	Stratification from outset Sub-groups if between-study heterogeneity exists Within-study confounders to consider (if cohorts used) Age, grade of fracture

C.4.7 Documentation of neurovascular compromise

Table 160: Review protocol for documentation of neurovascular compromise

Review question: Does documentation recording assessment results of neurovascular status (including interpretations and conclusions) improve outcomes compared to limited recording of neurovascular status in people with complex fractures?	
Objective: To see if accurate and thorough documentation of neurovascular status improves outcomes through more appropriate treatment plans	
Population	Children, young people and adults with suspected complex fractures.
Intervention	Documentation recording neurovascular status, including which tests were done (before and after treatments)
Comparison	Limited documentation – yes/no (before and after treatments) No neurovascular documentation
Outcomes	Critical: Mortality up to 12 months Health related quality of life Pain/discomfort Amputation Neuromuscular function Important: Total hospital bed days Blood loss Return to normal activities Psychological wellbeing Litigation Population size and directness: No limitations on sample size Studies with indirect populations will not be considered.
Exclusion	None stated
Search strategy	Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: RCTs or Systematic reviews of RCTs; cohorts if no RCTs retrieved. Qualitative...
The review strategy	Stratification from outset None

Review question: Does documentation recording assessment results of neurovascular status (including interpretations and conclusions) improve outcomes compared to limited recording of neurovascular status in people with complex fractures?	
	Sub-groups if between-study heterogeneity exists none Within-study confounders to consider (if cohorts used) Age, polytrauma

C.4.8 Information and support

Table 161: Review protocol for information and support

Review question: What information and support do people with complex fractures and their families require?	
Objective: To determine what information and support should be provided to patients with complex fractures and their families	
Setting	Acute trauma settings
Population	Children, young people and adults experiencing a traumatic incident.
Intervention	Not applicable
Comparison	Not applicable
Evaluation	Thoughts and feelings of those regarding the information they require.
Exclusion	None stated
Search strategy	Databases: Medline, Embase, the Cochrane Library Date: All years Language: Restrict to English only Study designs: Qualitative studies
The review strategy	Thematic analysis

C.5 Health Economic review protocol

Table 162: Health economic review protocol

Review question	All questions – health economic evidence
Objectives	To identify economic evaluations relevant to the review questions set out above.
Criteria	<ul style="list-style-type: none"> • Populations, interventions and comparators must be as specified in the individual review protocols above. • Studies must be of a relevant economic study design (cost–utility analysis, cost–benefit analysis, cost-effectiveness analysis, cost–consequence analysis, comparative cost analysis). • Studies must not be an abstract only, a letter, editorial or commentary, or a review of economic evaluations.^(a) Unpublished reports will not be considered unless submitted as part of a call for evidence. • Studies must be in English. • Studies must not be published before 1999.
Search strategy	An economic study search will be undertaken using population-specific terms and an economic study filter – see Appendix F.
Review strategy	Each study fulfilling the criteria above will be assessed for applicability and methodological limitations using the NICE economic evaluation checklist which can be found in Appendix H of the NICE guidelines manual (2014). ²

<p>Inclusion and exclusion criteria</p> <ul style="list-style-type: none">• If a study is rated as both ‘Directly applicable’ and with ‘Minor limitations’ then it will be included in the guideline. An economic evidence table will be completed and it will be included in the economic evidence profile.• If a study is rated as either ‘Not applicable’ or with ‘Very serious limitations’ then it will usually be excluded from the guideline. If it is excluded then an economic evidence table will not be completed and it will not be included in the economic evidence profile.• If a study is rated as ‘Partially applicable’, with ‘Potentially serious limitations’ or both then there is discretion over whether it should be included. <p>Where there is discretion</p> <p>The health economist will make a decision based on the relative applicability and quality of the available evidence for that question, in discussion with the GDG if required. The ultimate aim is to include studies that are helpful for decision-making in the context of the guideline and the current NHS setting. If several studies are considered of sufficiently high applicability and methodological quality that they could all be included, then the health economist, in discussion with the GDG if required, may decide to include only the most applicable studies and to selectively exclude the remaining studies. All studies excluded on the basis of applicability or methodological limitations will be listed with explanation as excluded economic studies in Appendix K.</p> <p>The health economist will be guided by the following hierarchies.</p> <p><i>Setting:</i></p> <ul style="list-style-type: none">• UK NHS• OECD countries with predominantly public health insurance systems (for example, France, Germany, Sweden)• OECD countries with predominantly private health insurance systems (for example, USA, Switzerland)• non-OECD settings (always ‘Not applicable’). <p><i>Economic study type:</i></p> <ul style="list-style-type: none">• cost–utility analysis• other type of full economic evaluation (cost–benefit analysis, cost-effectiveness analysis, cost–consequence analysis)• comparative cost analysis• non-comparative cost analyses including cost-of-illness studies (always ‘Not applicable’). <p><i>Year of analysis:</i></p> <ul style="list-style-type: none">• The more recent the study, the more applicable it is. <p><i>Quality and relevance of effectiveness data used in the economic analysis:</i></p> <ul style="list-style-type: none">• The more closely the effectiveness data used in the economic analysis matches with the outcomes of the studies included in the clinical review the more useful the analysis will be for decision-making in the guideline.
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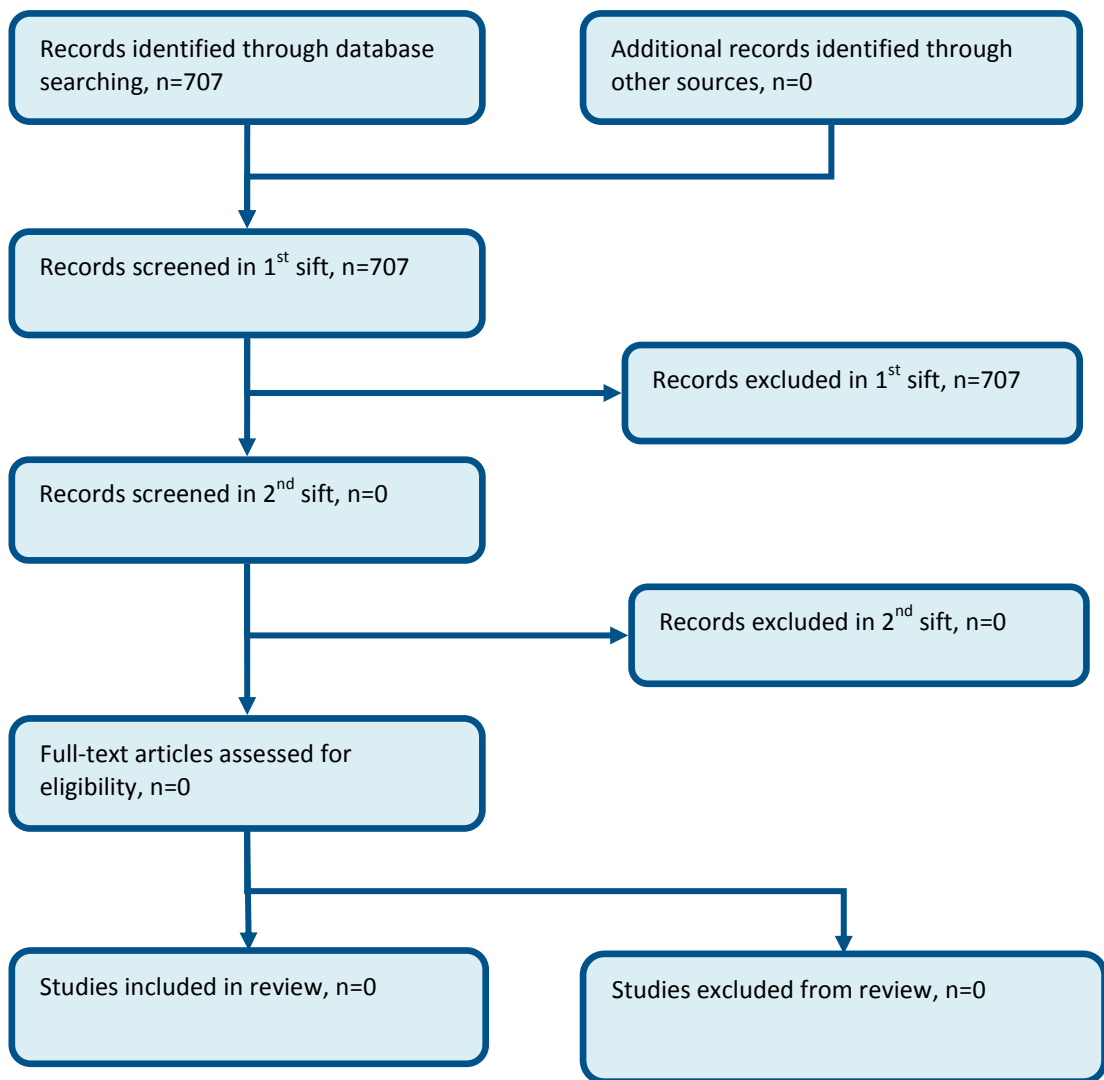
(a) Recent reviews will be ordered although not reviewed. The bibliographies will be checked for relevant studies, which will then be ordered.

Appendix D: Clinical article selection

D.1 Open fractures

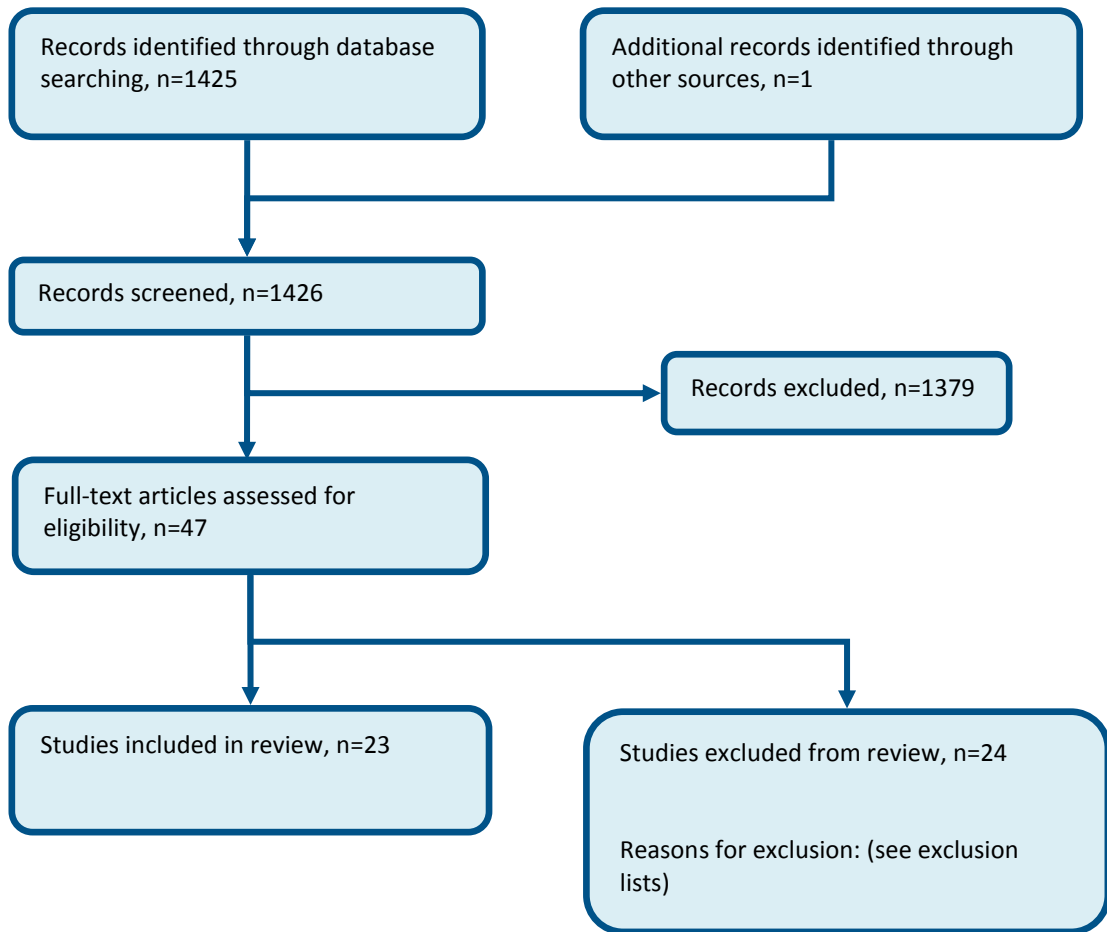
D.1.1 Transport

Figure 1: Flow chart of clinical article selection for the review of transport



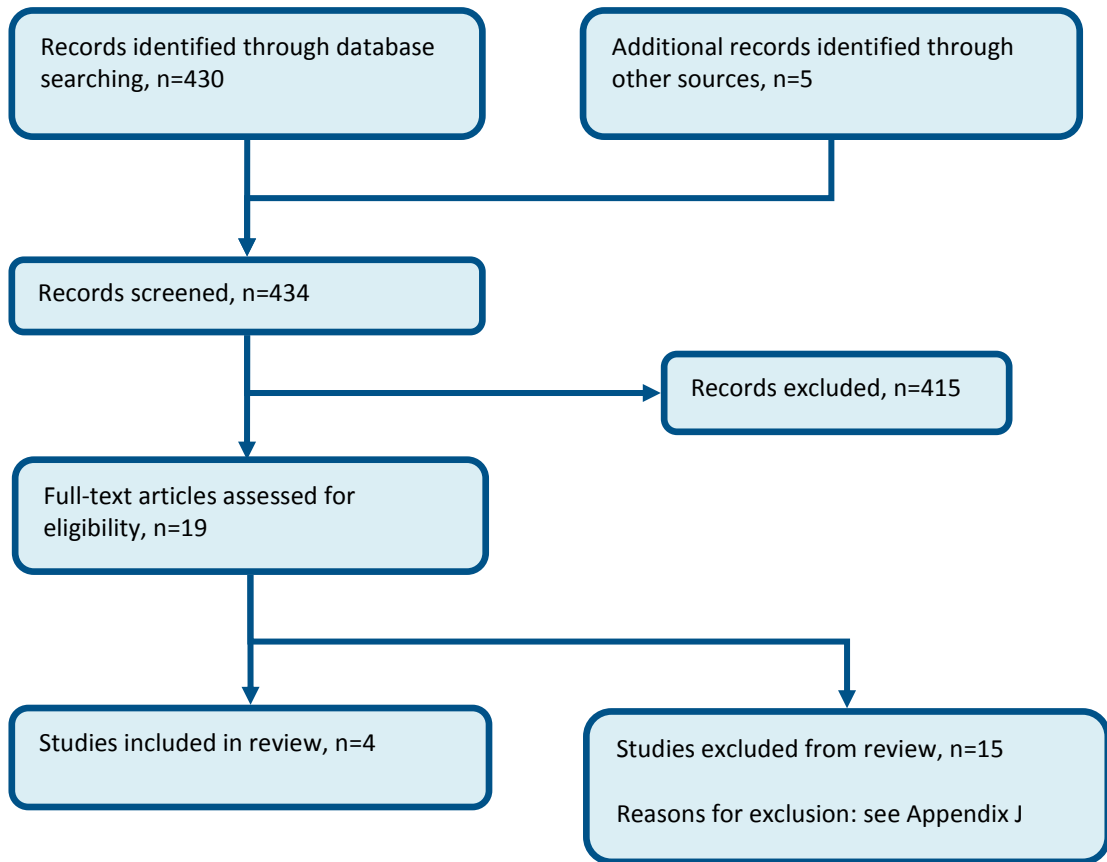
D.1.2 Limb salvage

Figure 2: Flow chart of clinical article selection for the review of limb salvage



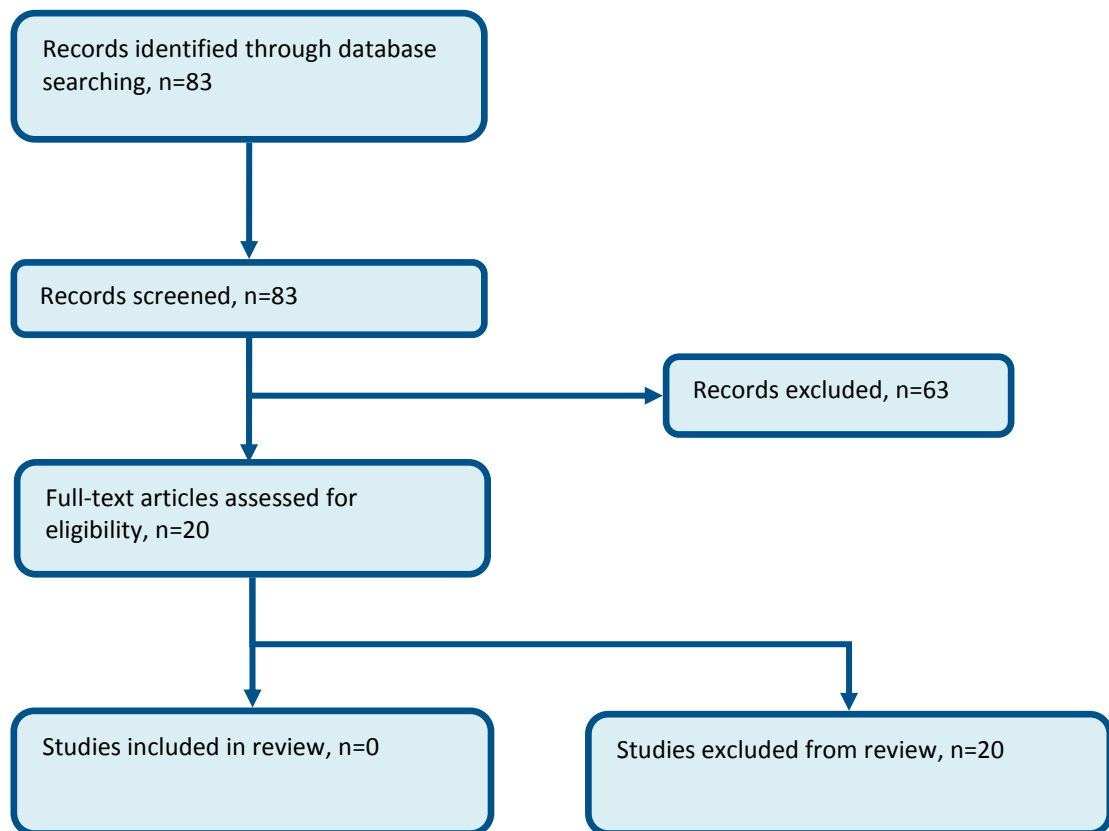
D.1.3 Antibiotics

Figure 3: Flow chart of clinical article selection for the review of the timing of prophylactic antibiotics in suspected open fractures



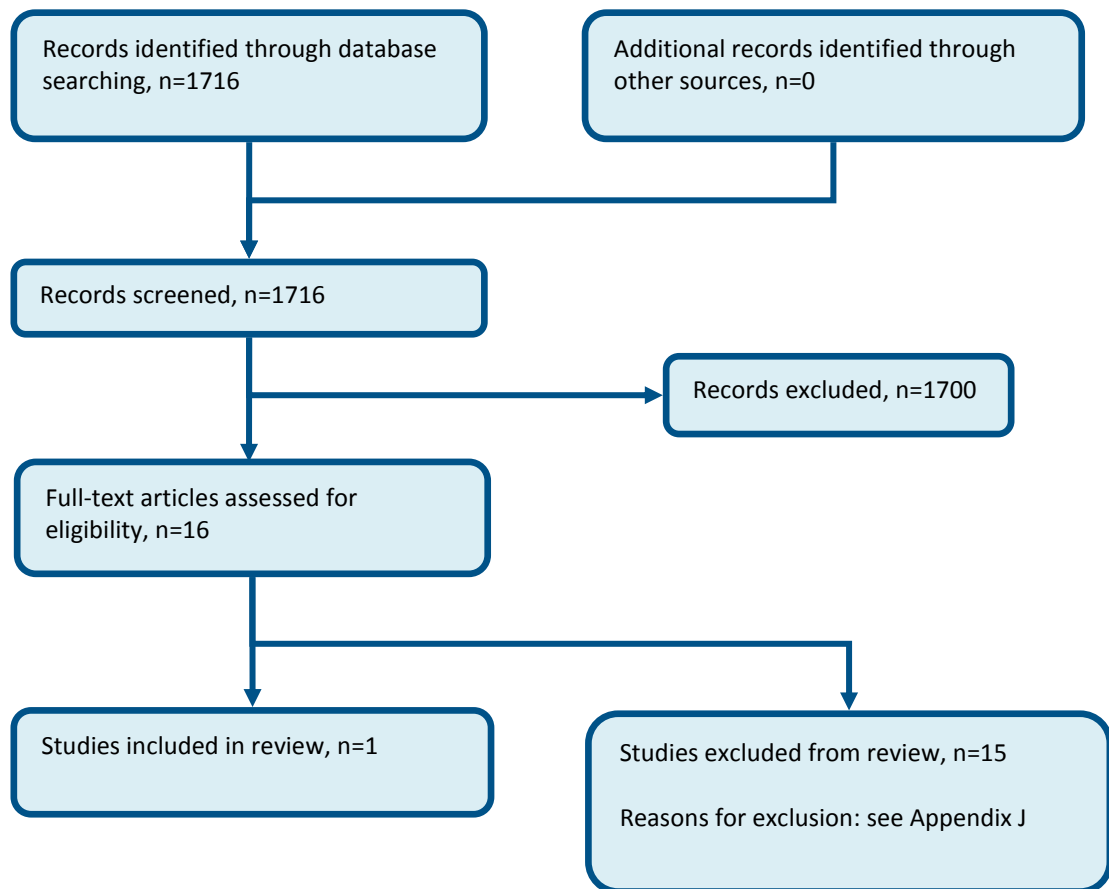
D.1.4 Dressings before debridement

Figure 4: Flow chart of clinical article selection for the review of dressings for open fractures prior to debridement



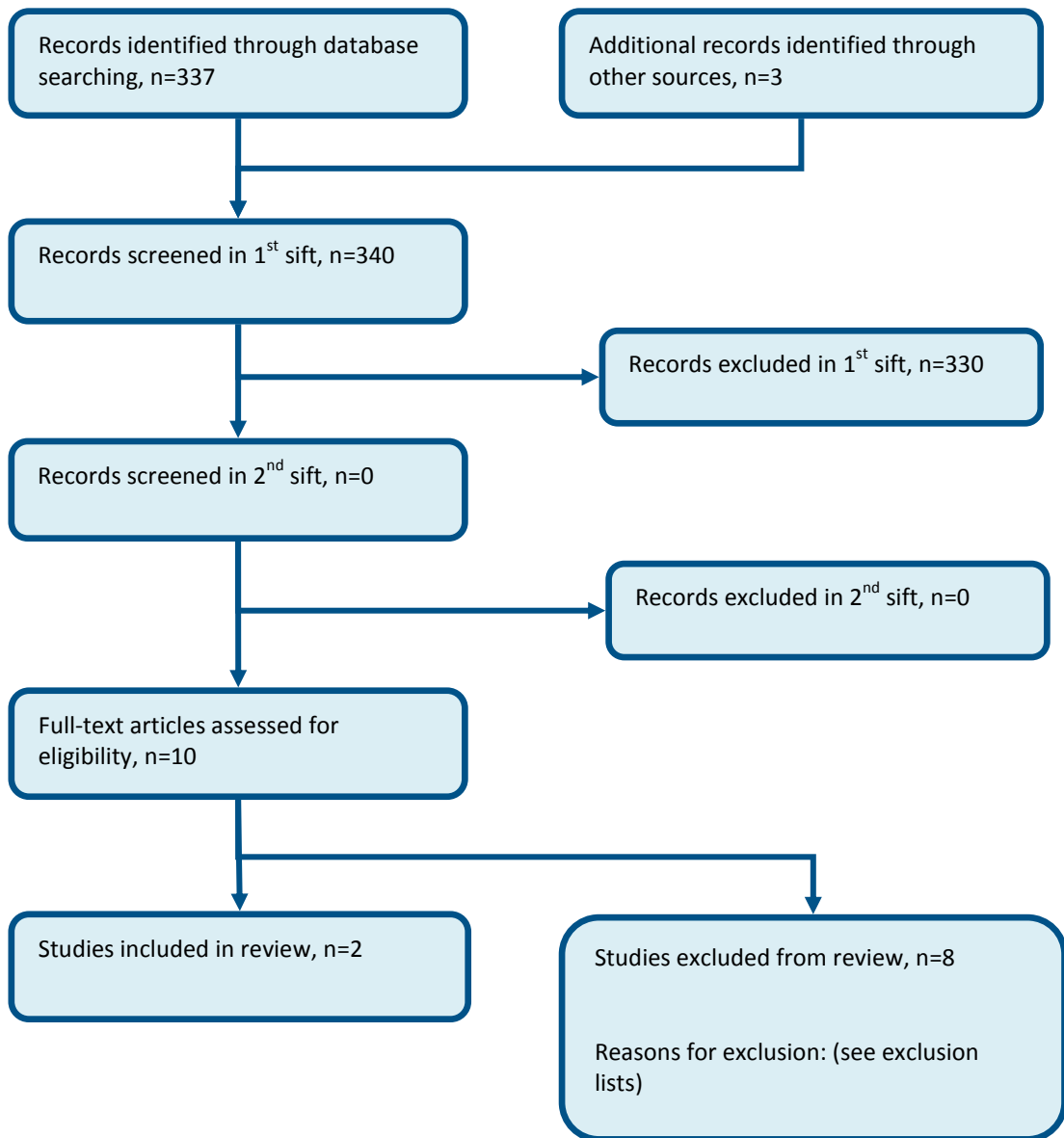
D.1.5 Arterial shunts

Figure 5: Flow chart of clinical article selection for the review of the preservation of limbs



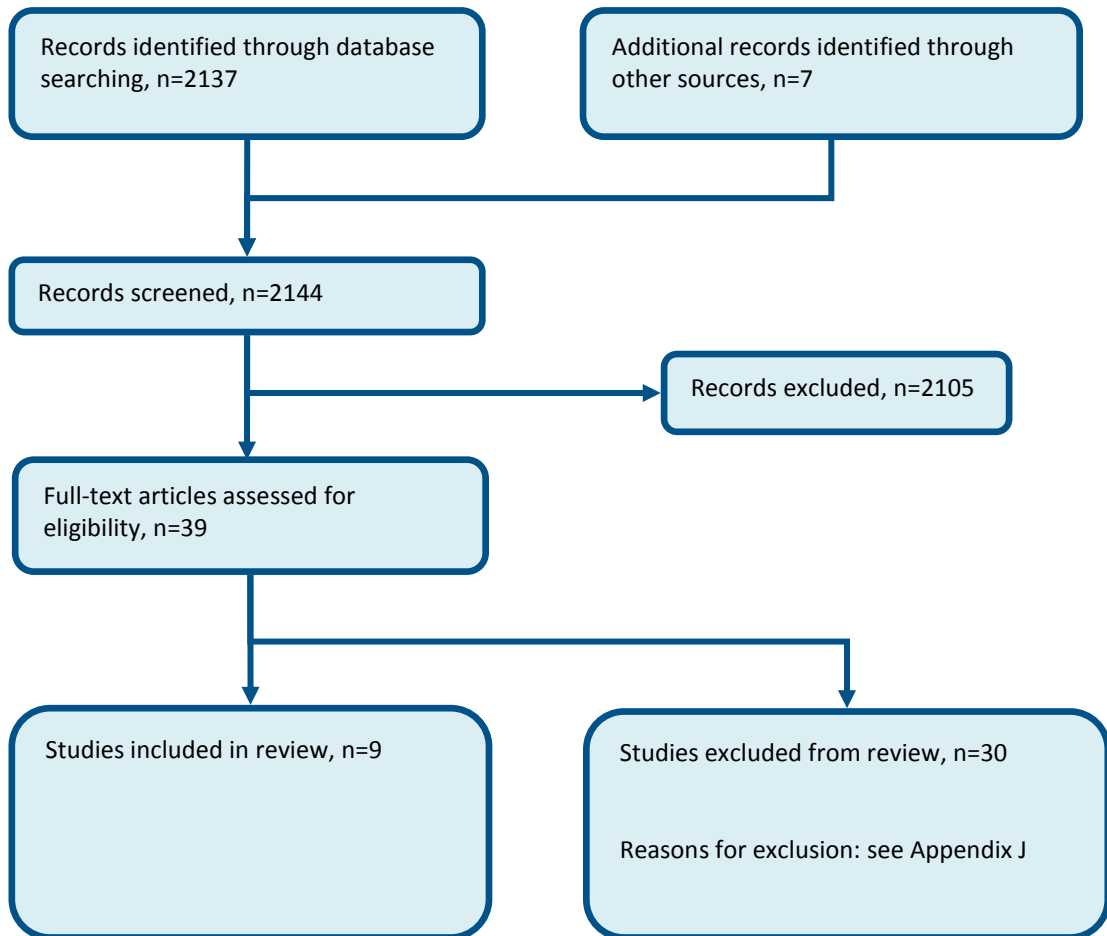
D.1.6 MDT

Figure 6: Flow chart of clinical article selection for the review of MDT



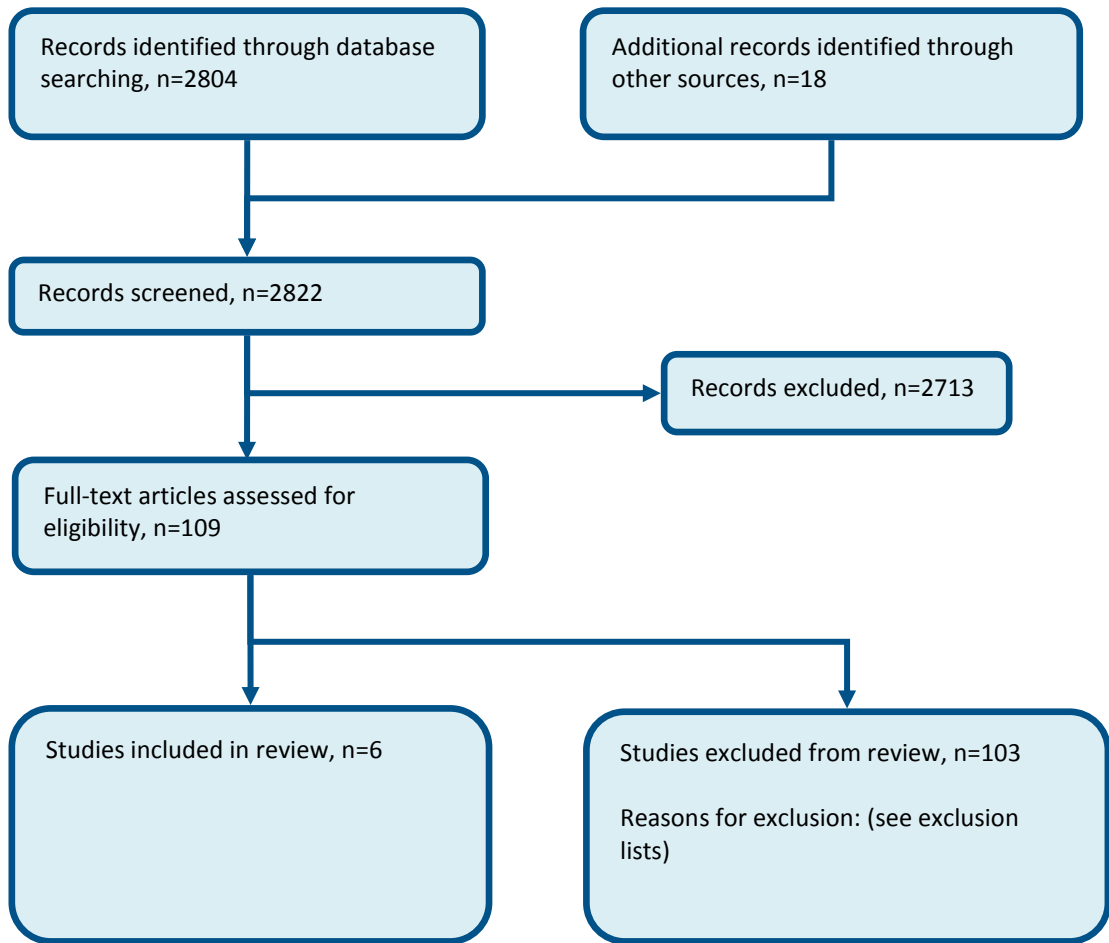
D.1.7 Optimal timing of debridement

Figure 7: Flow chart of clinical article selection for the review of Debridement timing of open fractures



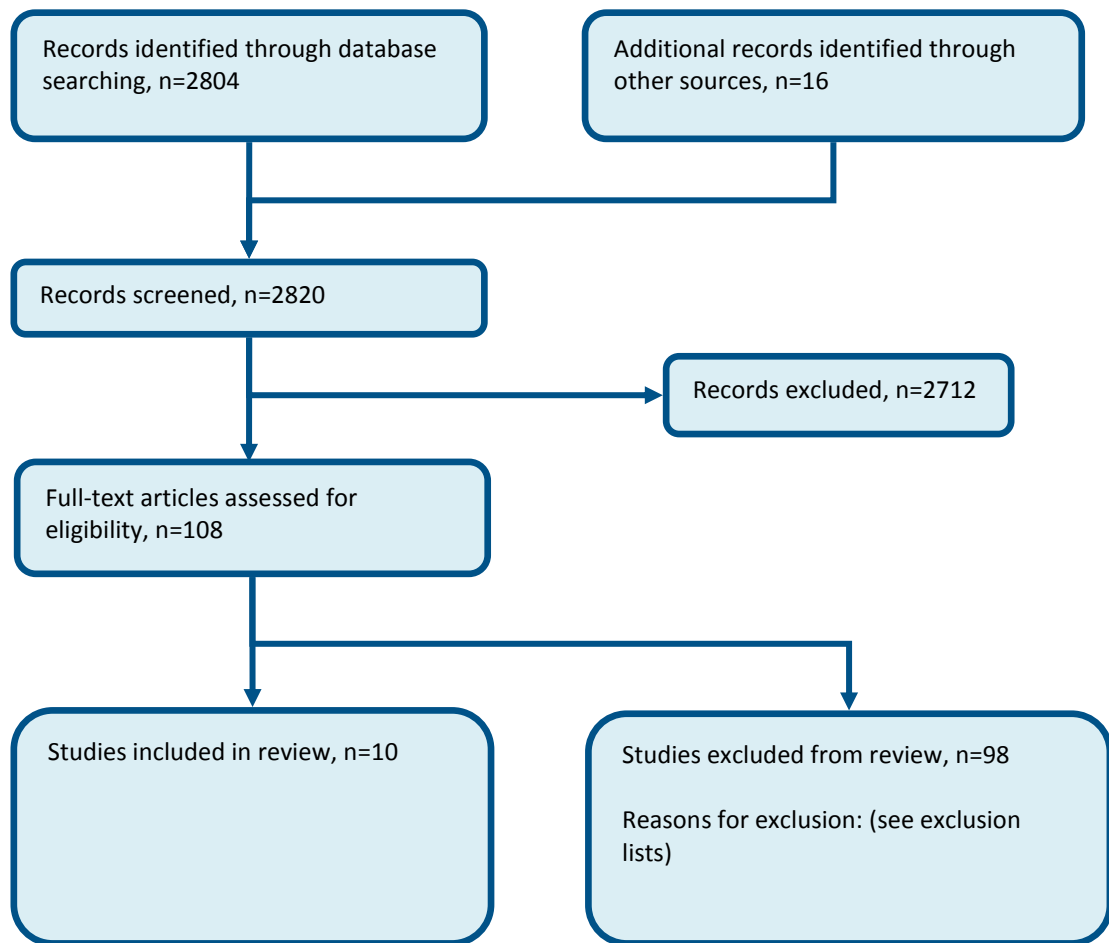
D.1.8 Fixation

Figure 8: Flow chart of clinical article selection for the review of open fracture cover



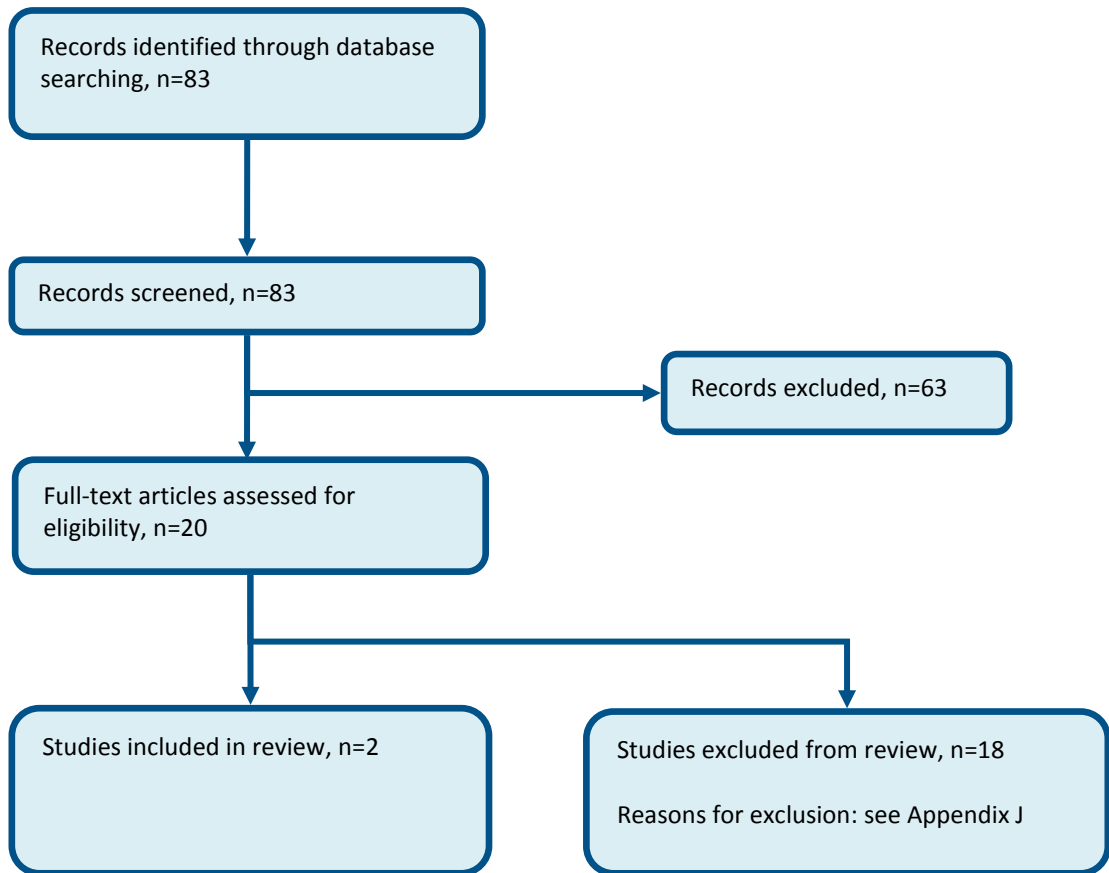
D.1.9 Cover

Figure 9: Flow chart of clinical article selection for the review of open fracture cover



D.1.10 Definitive dressings after debridement

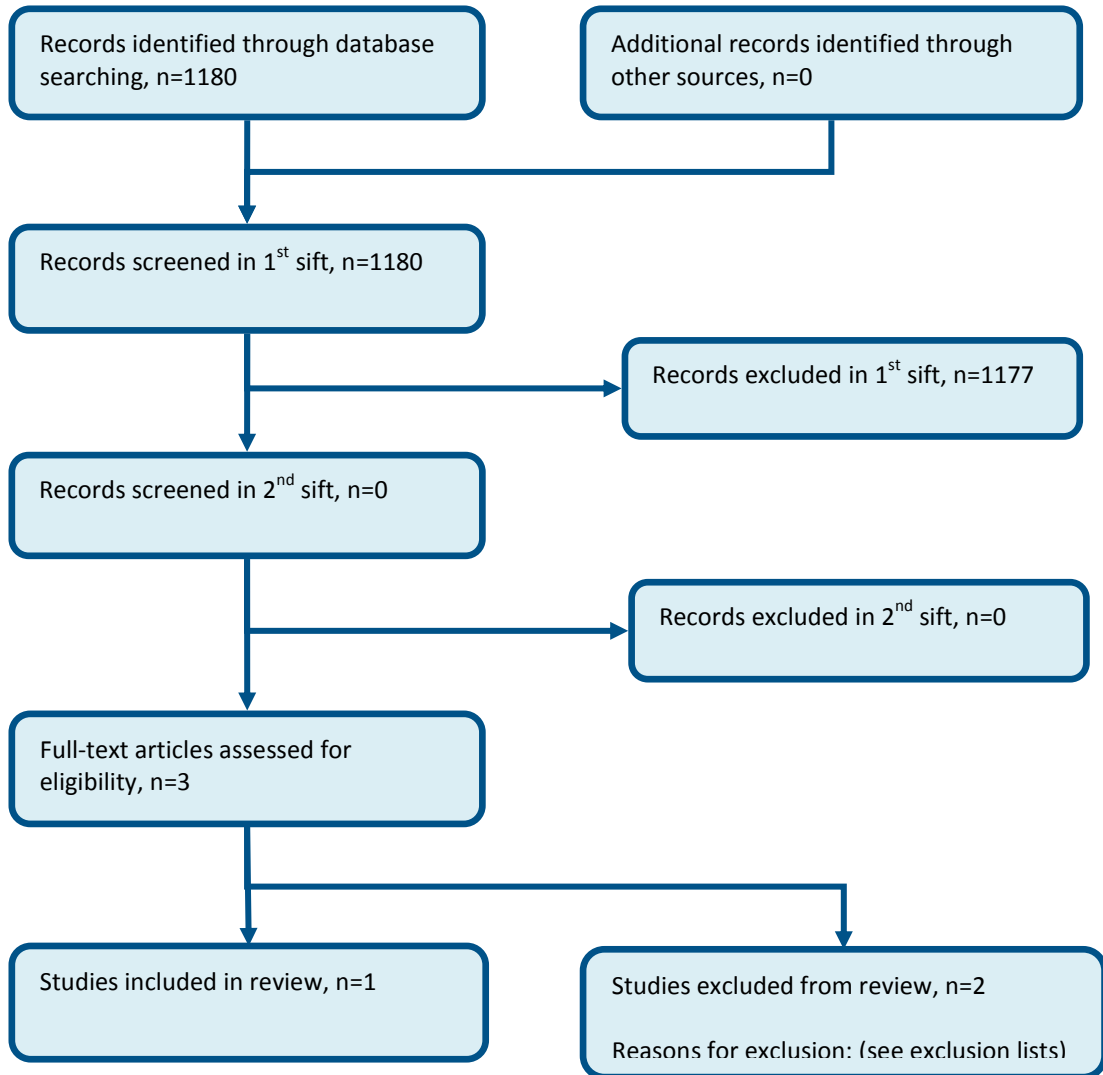
Figure 10: Flow chart of clinical article selection for the review of definitive dressings after debridement



D.2 Pelvic fractures

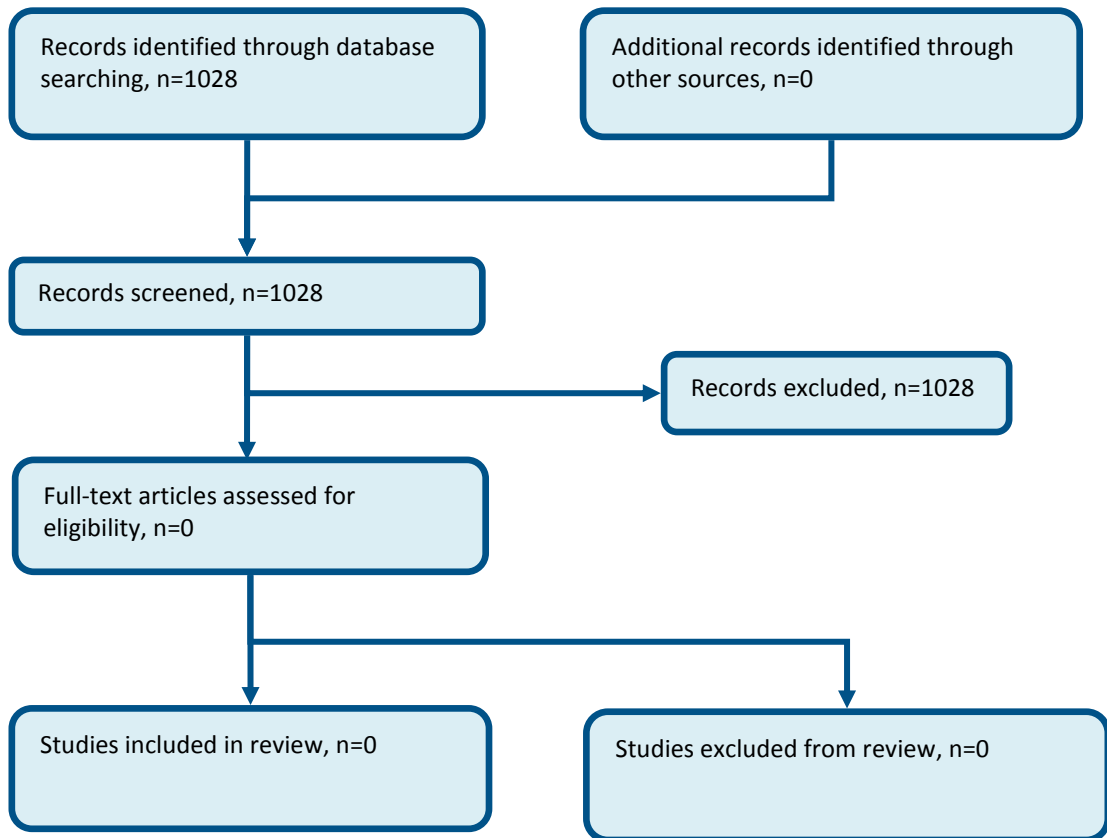
D.2.1 Transfer to MTC

Figure 11: Flow chart of clinical article selection for the review of transfer to MTC



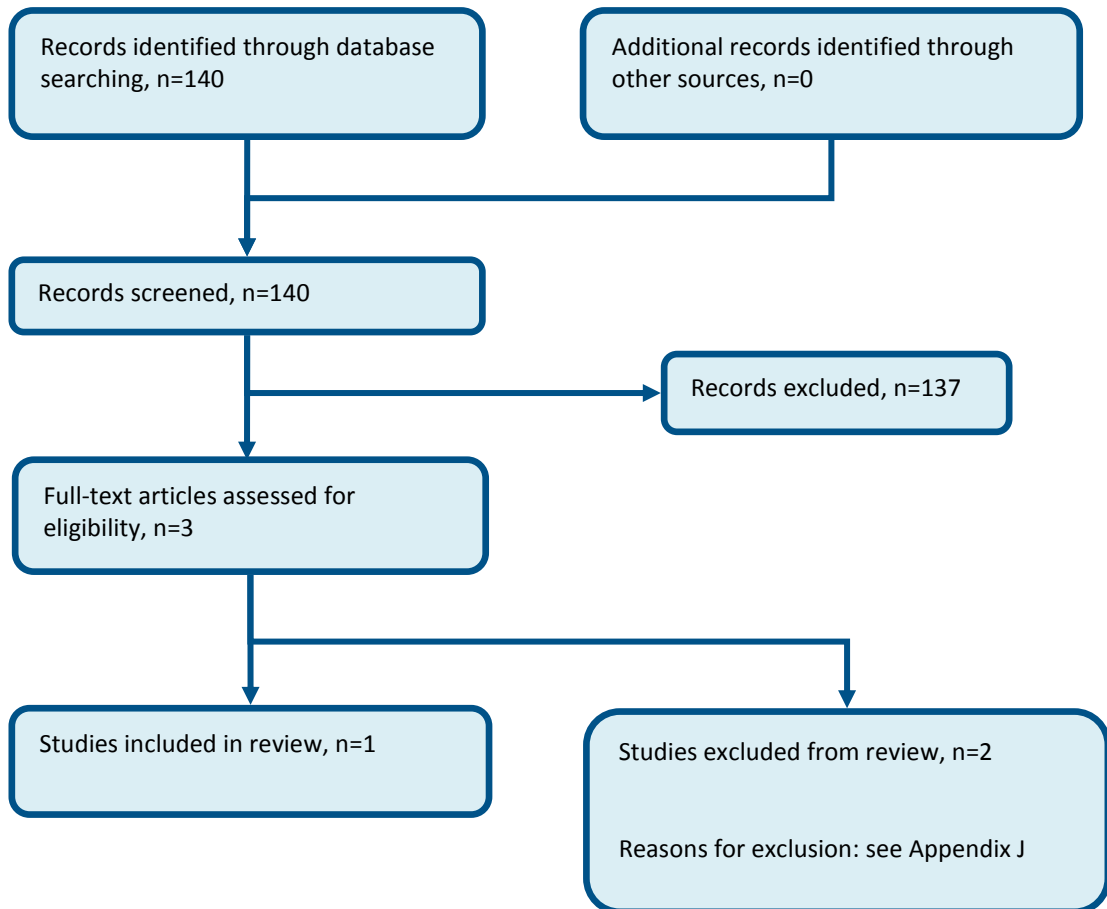
D.2.2 Timing of transfer for patients with pelvic fractures

Figure 12: Flow chart of clinical article selection for the review of Pelvic binder duration



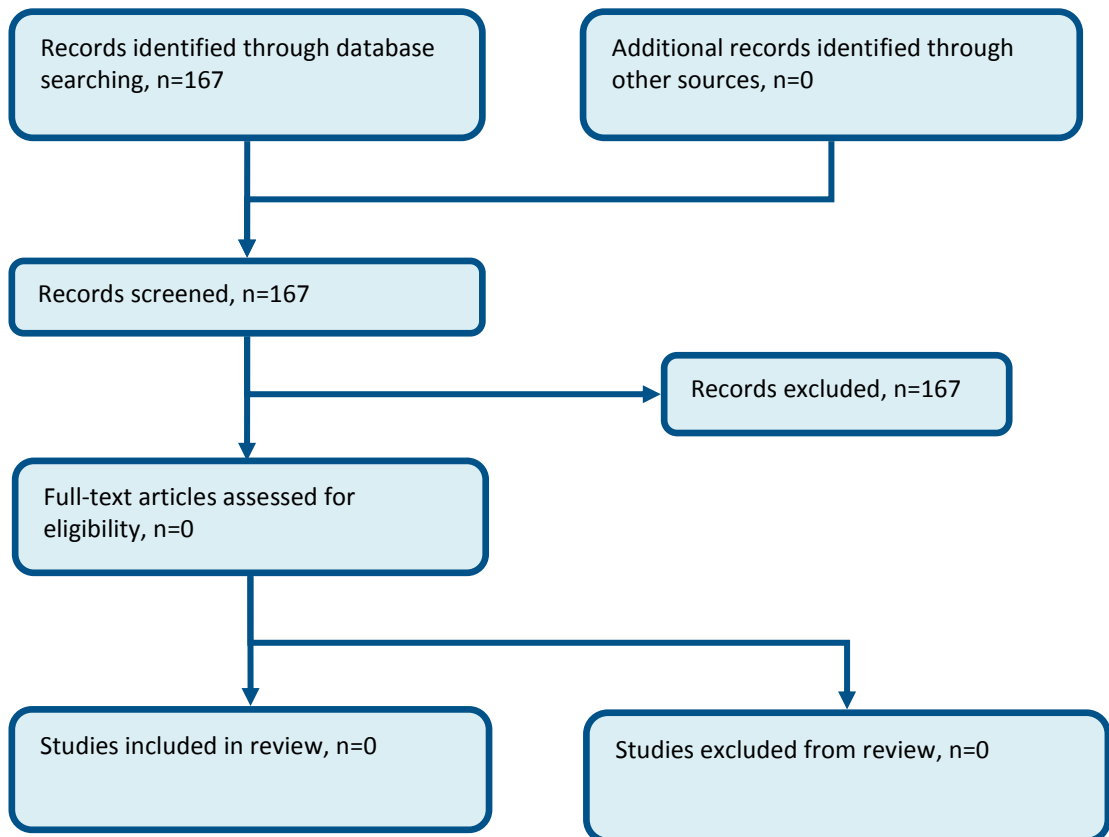
D.2.3 Decision for pelvic binders

Figure 13: Flow chart of clinical article selection for the review of pre-hospital prediction of pelvic fractures



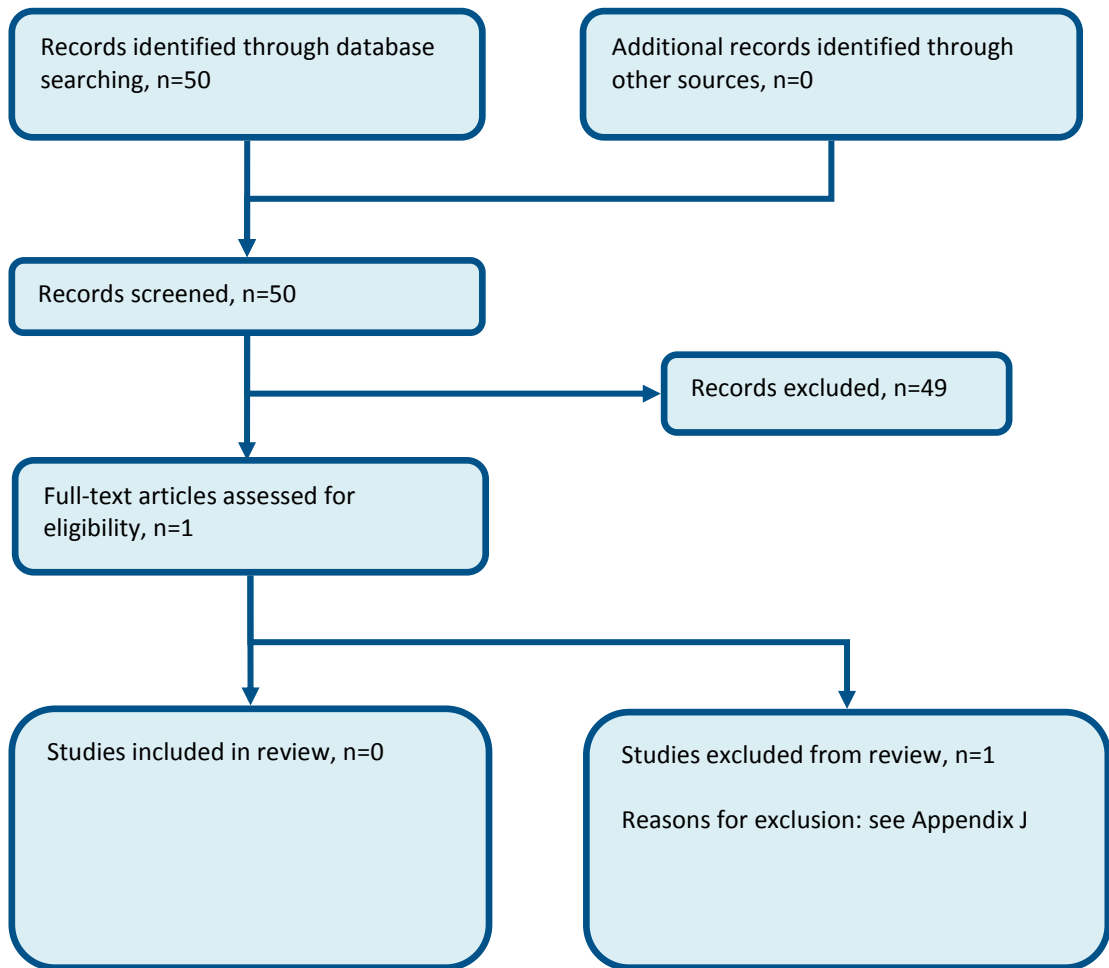
D.2.4 Pelvic binder duration

Figure 14: Flow chart of clinical article selection for the review of pelvic binder duration



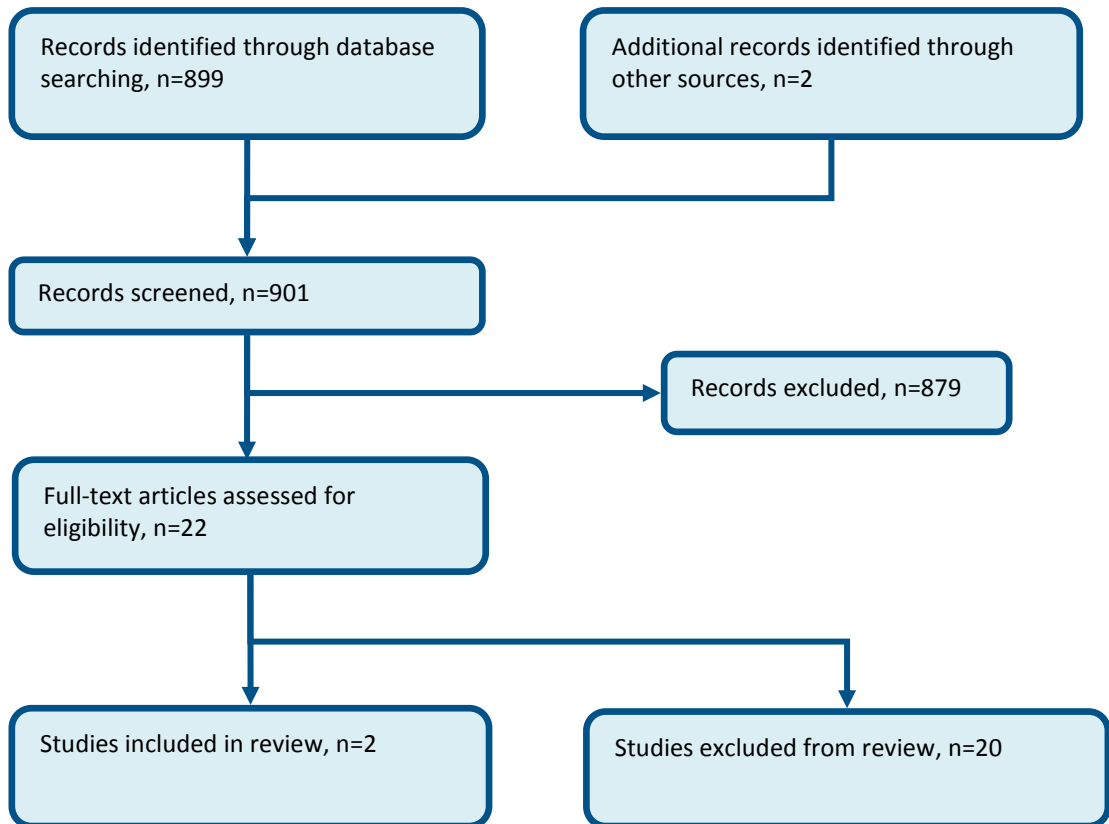
D.2.5 Timing of log roll

Figure 15: Flow chart of clinical article selection for the review of the timing of log roll



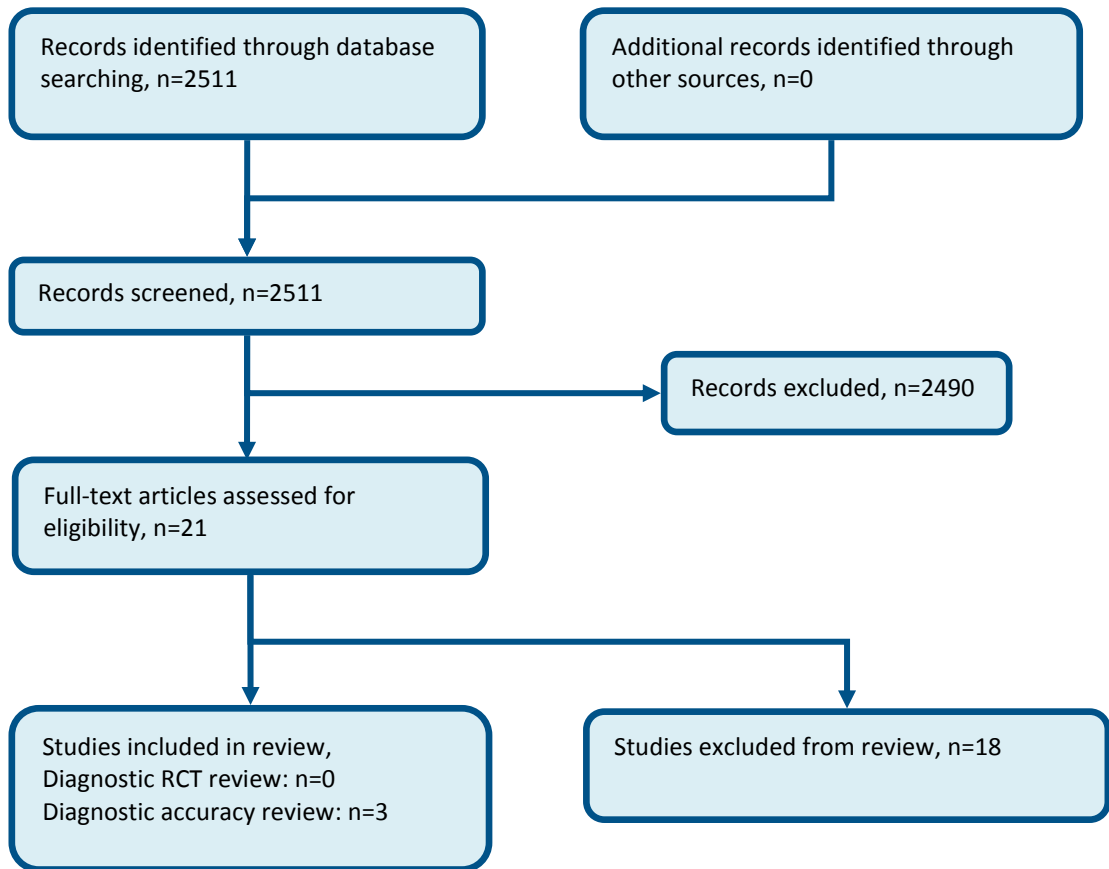
D.2.6 Pelvic imaging

Figure 16: Flow chart of clinical article selection for the review of imaging of pelvic fractures (diagnostic RCT and diagnostic accuracy studies)



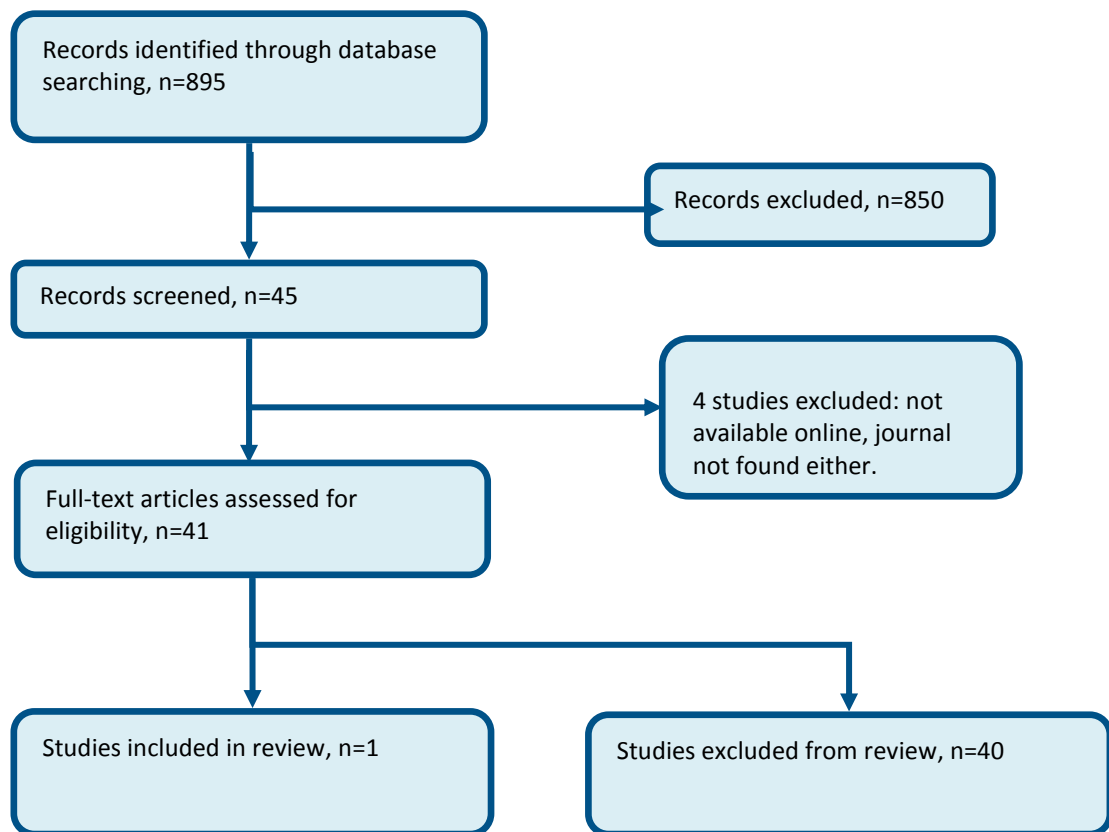
D.2.7 Pelvic cystourethrogram

Figure 17: Flow chart of clinical article selection for the review of cystourethrogram



D.2.8 Pelvic haemorrhage control

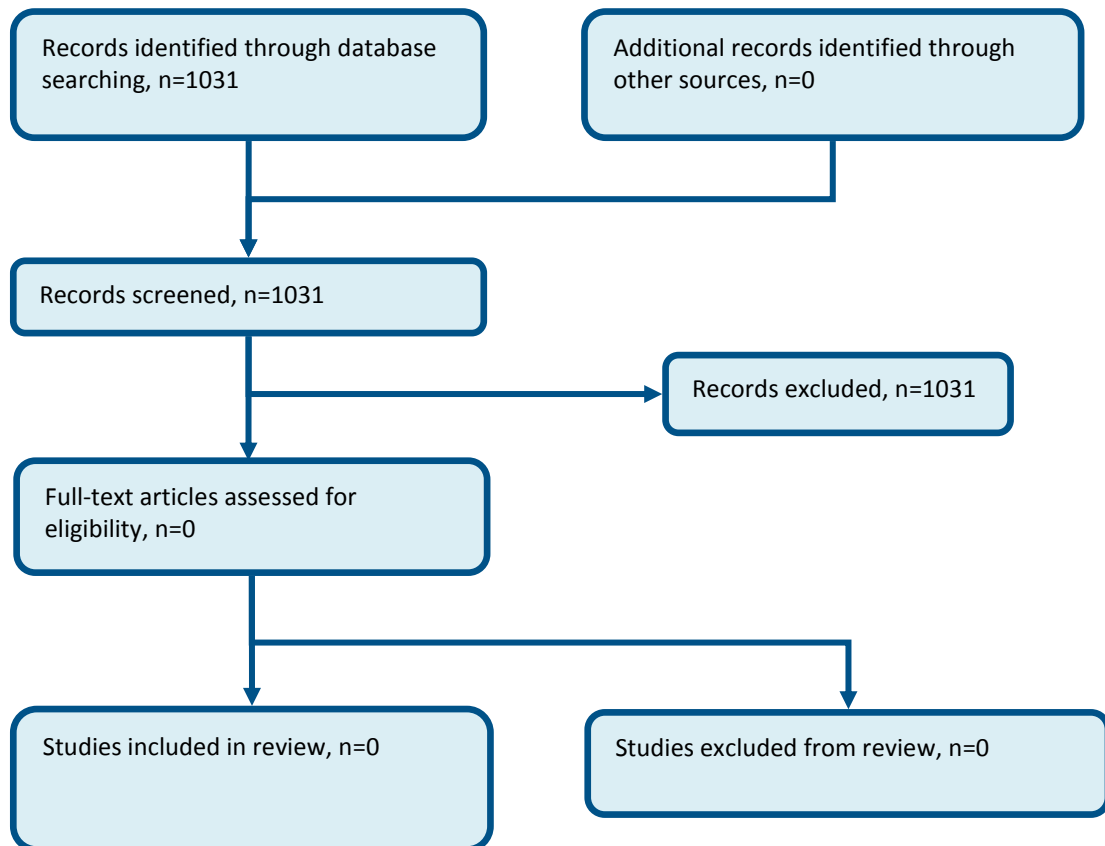
Figure 18: Flow chart of clinical article selection for the review of pelvic haemorrhage control



D.3 Pilon fractures

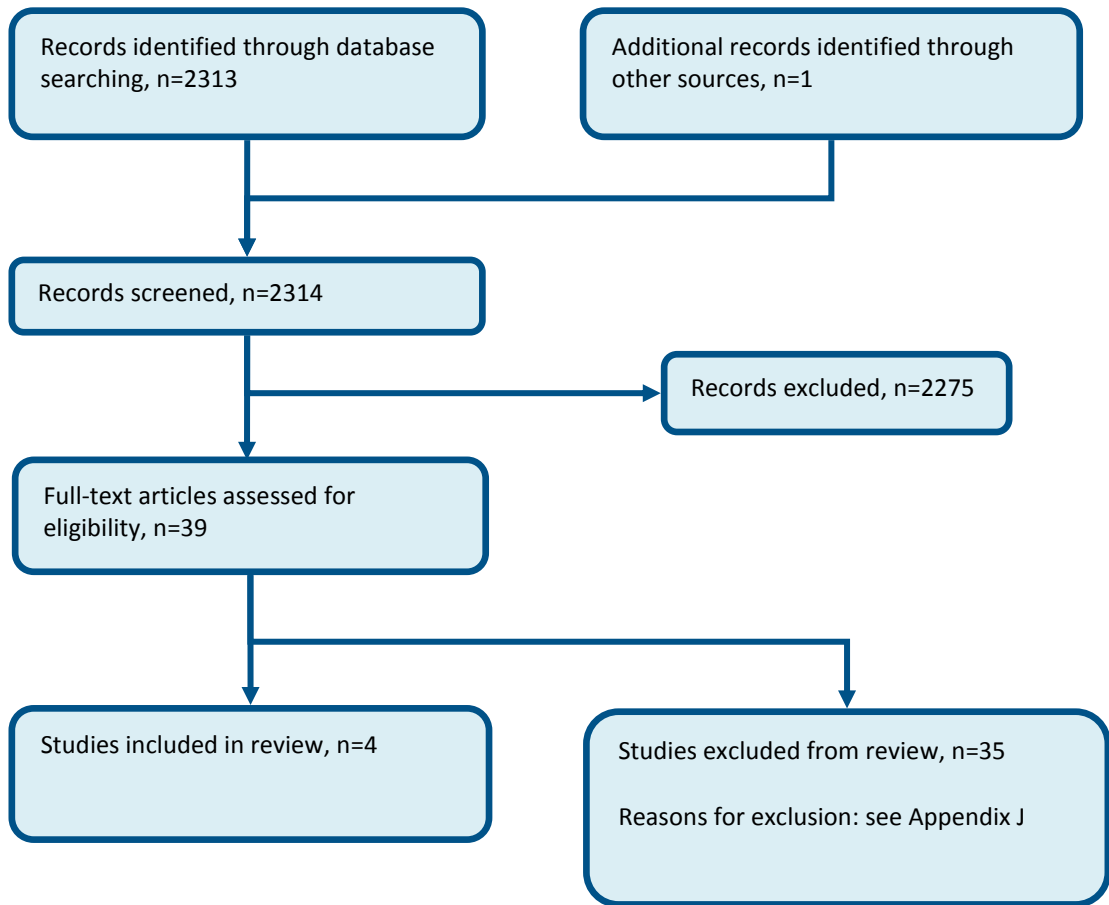
D.3.1 Pilon transfer

Figure 19: Flow chart of clinical article selection for the review of transfer of people with pilon or McFarlane fractures



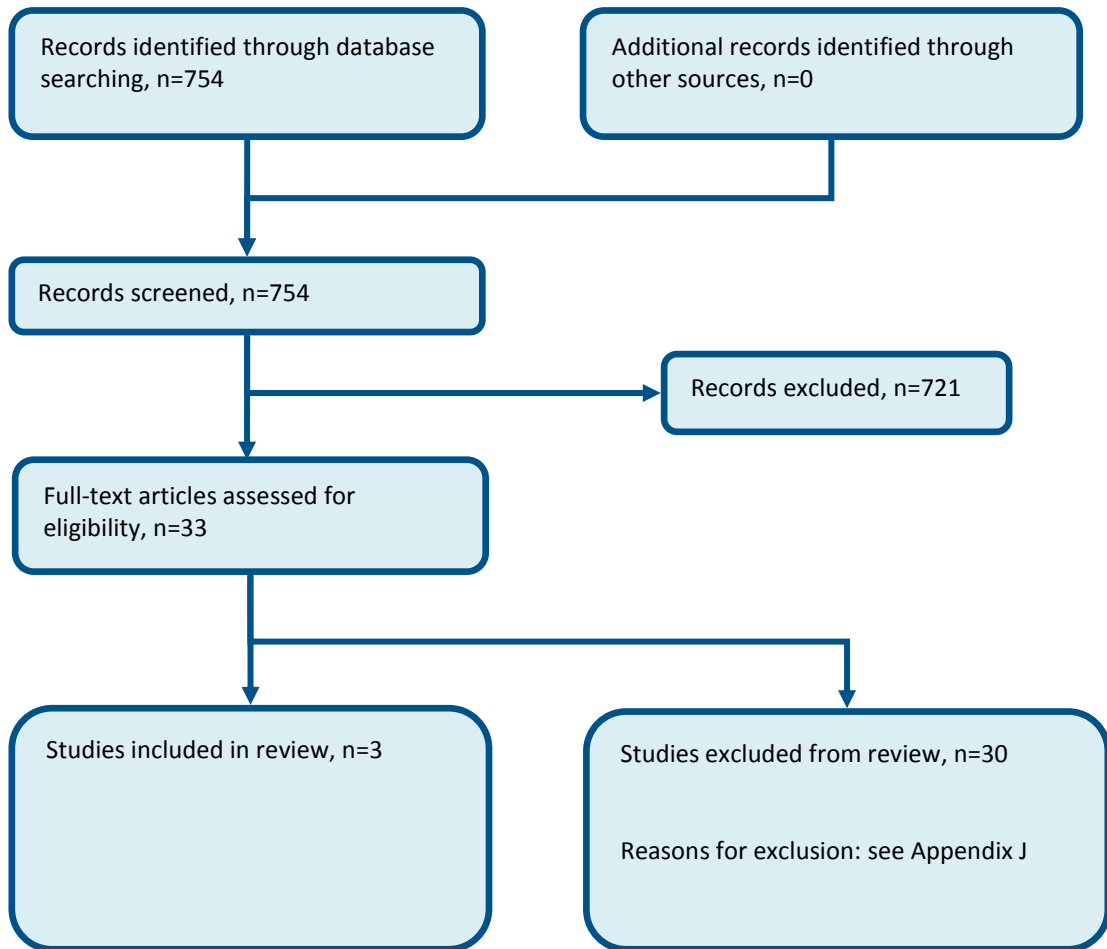
D.3.2 Pilon early fixation

Figure 20: Flow chart of clinical article selection for the review of Pilon stabilisation



D.3.3 Pilon fixation

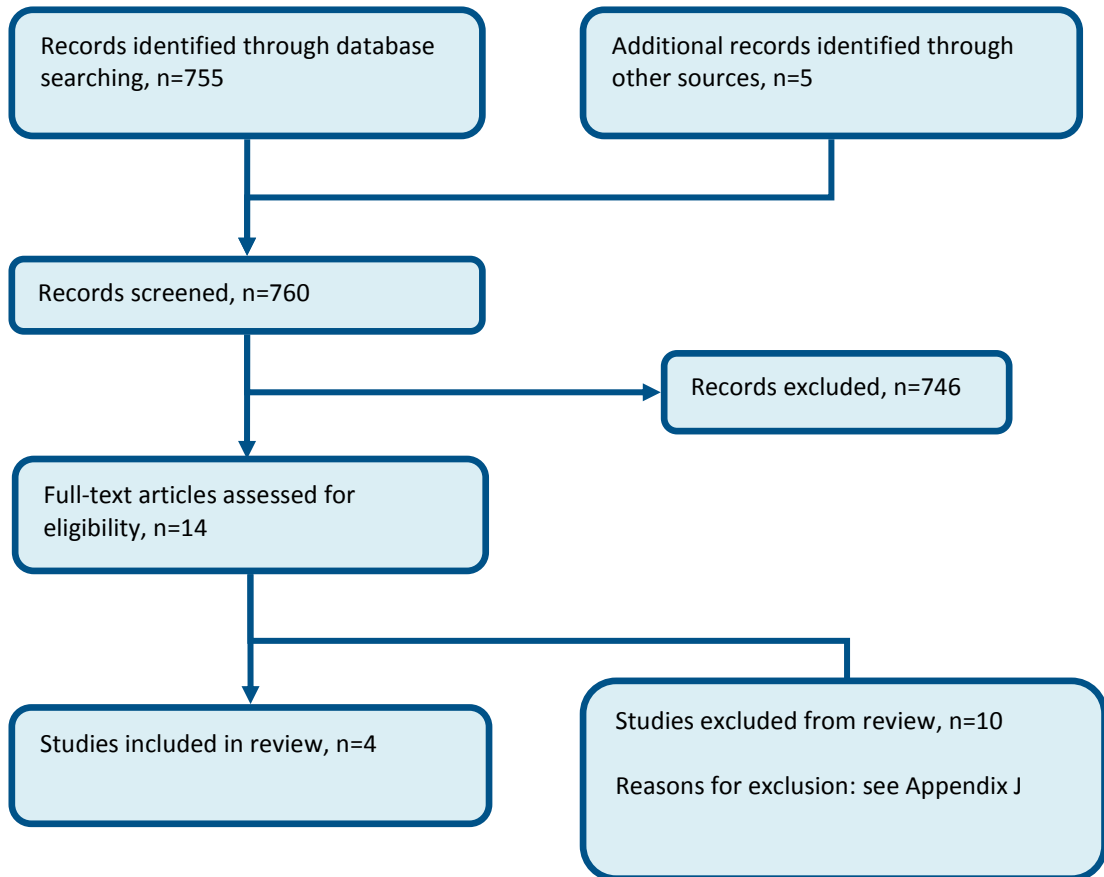
Figure 21: Flow chart of clinical article selection for the review of internal and external fixation of pilon fractures



D.4 Other

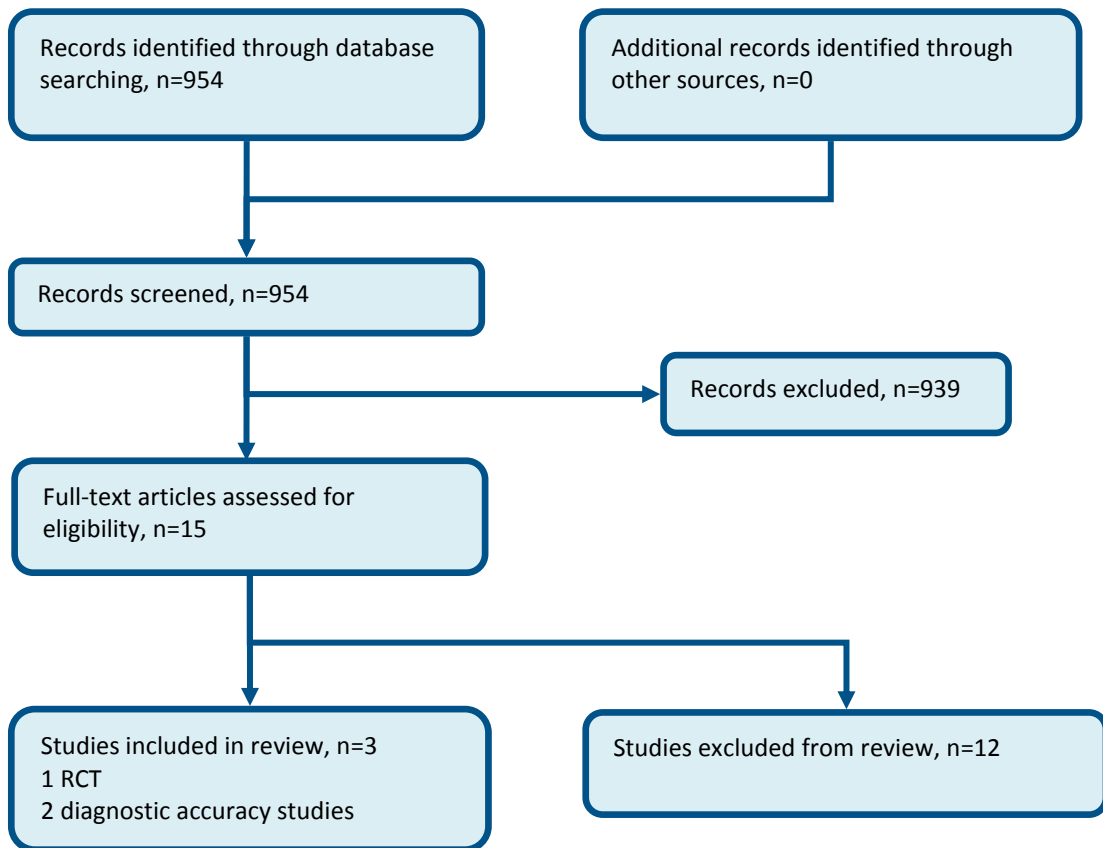
D.4.1 Identifying vascular compromise

Figure 22: Flow chart of clinical article selection for the review of identifying vascular compromise



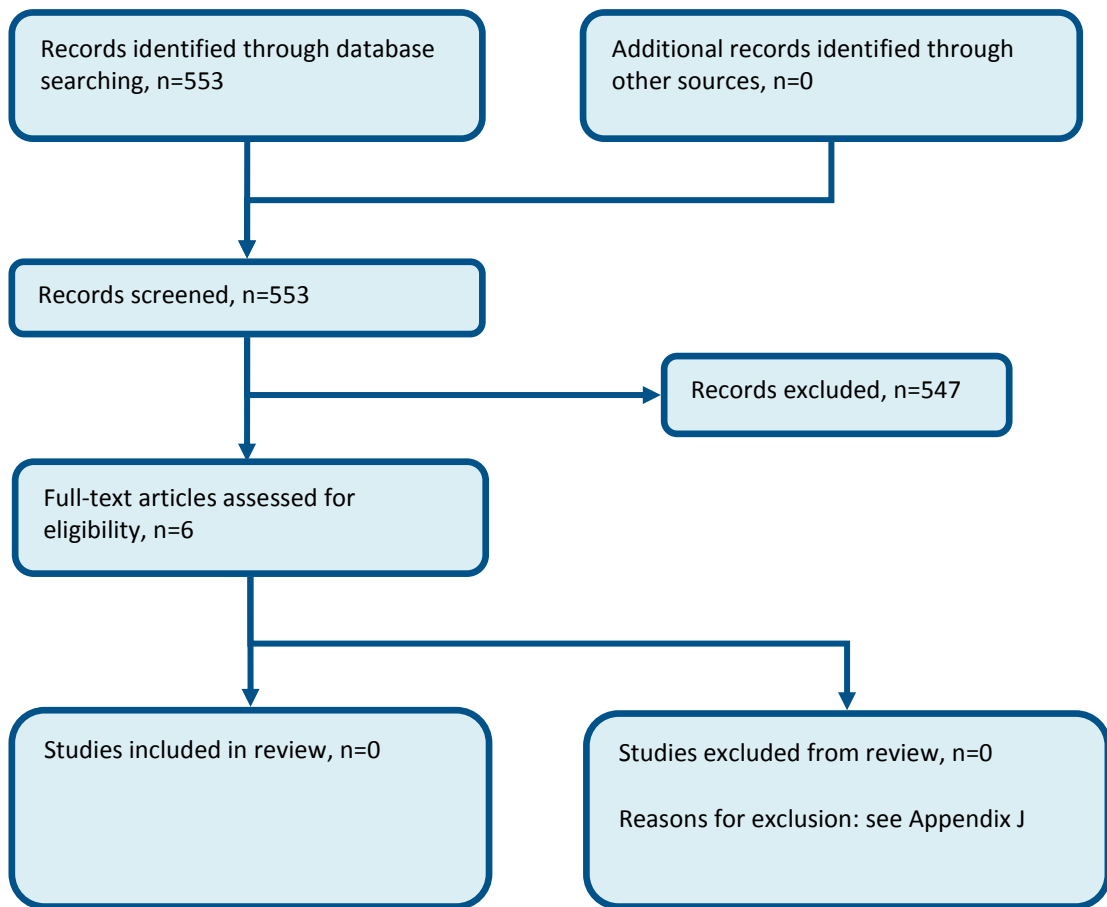
D.4.2 Detecting compartment syndrome

Figure 23: Flow chart of clinical article selection for the review of compartment syndrome



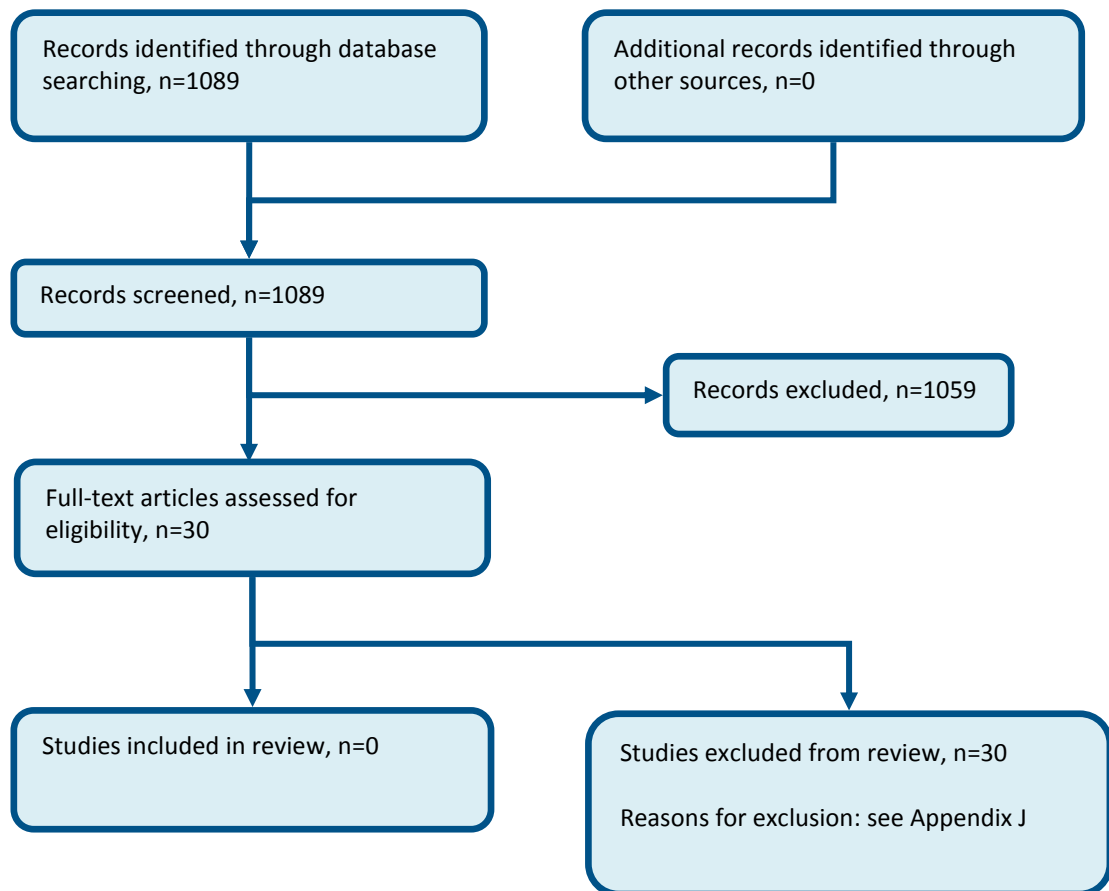
D.4.3 Splinting of lower limb long bone fractures

Figure 24: Flow chart of clinical article selection for the review of splinting of open long bone fractures



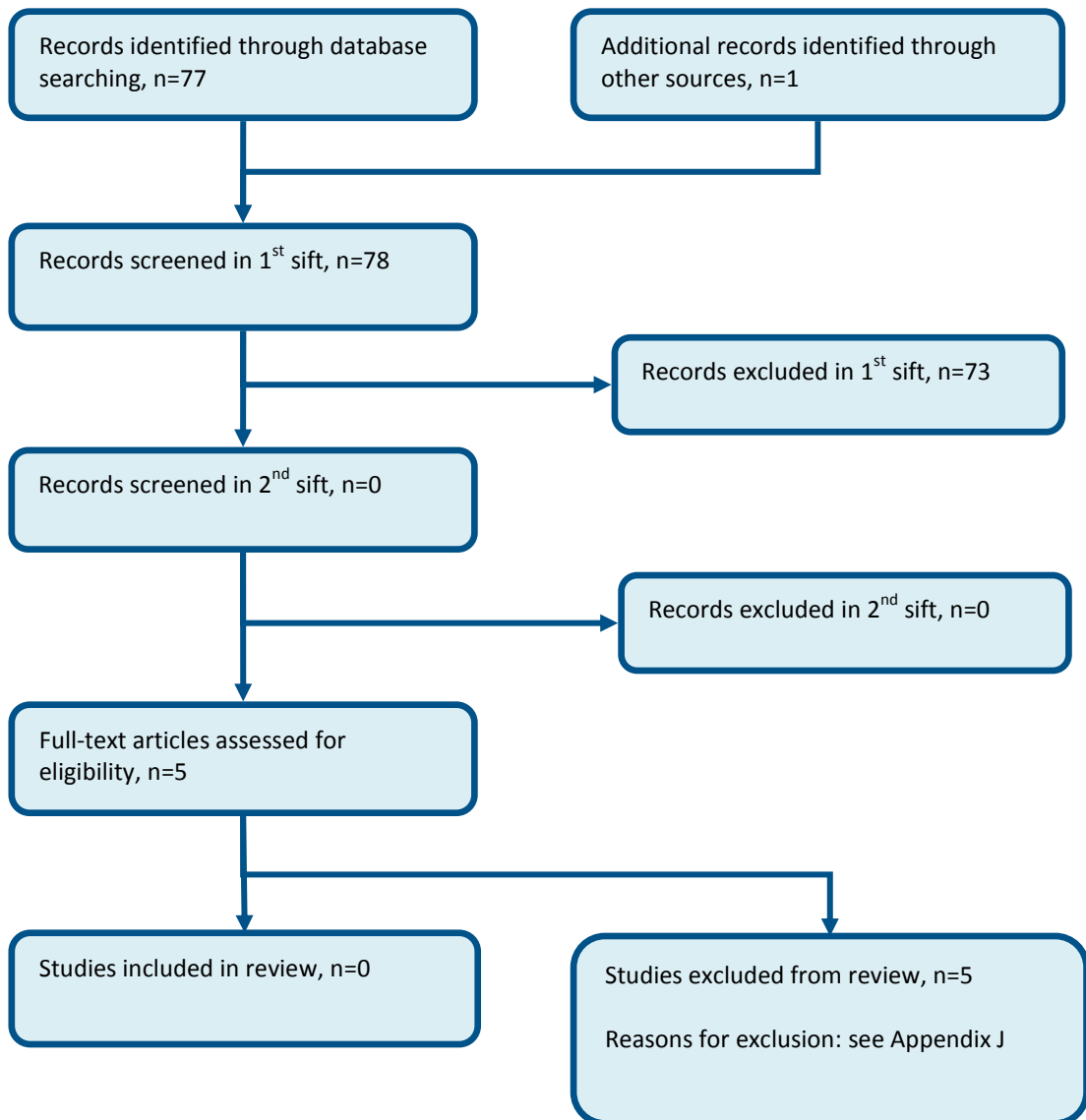
D.4.4 Hip reduction

Figure 25: Flow chart of clinical article selection for the review of pelvic reduction



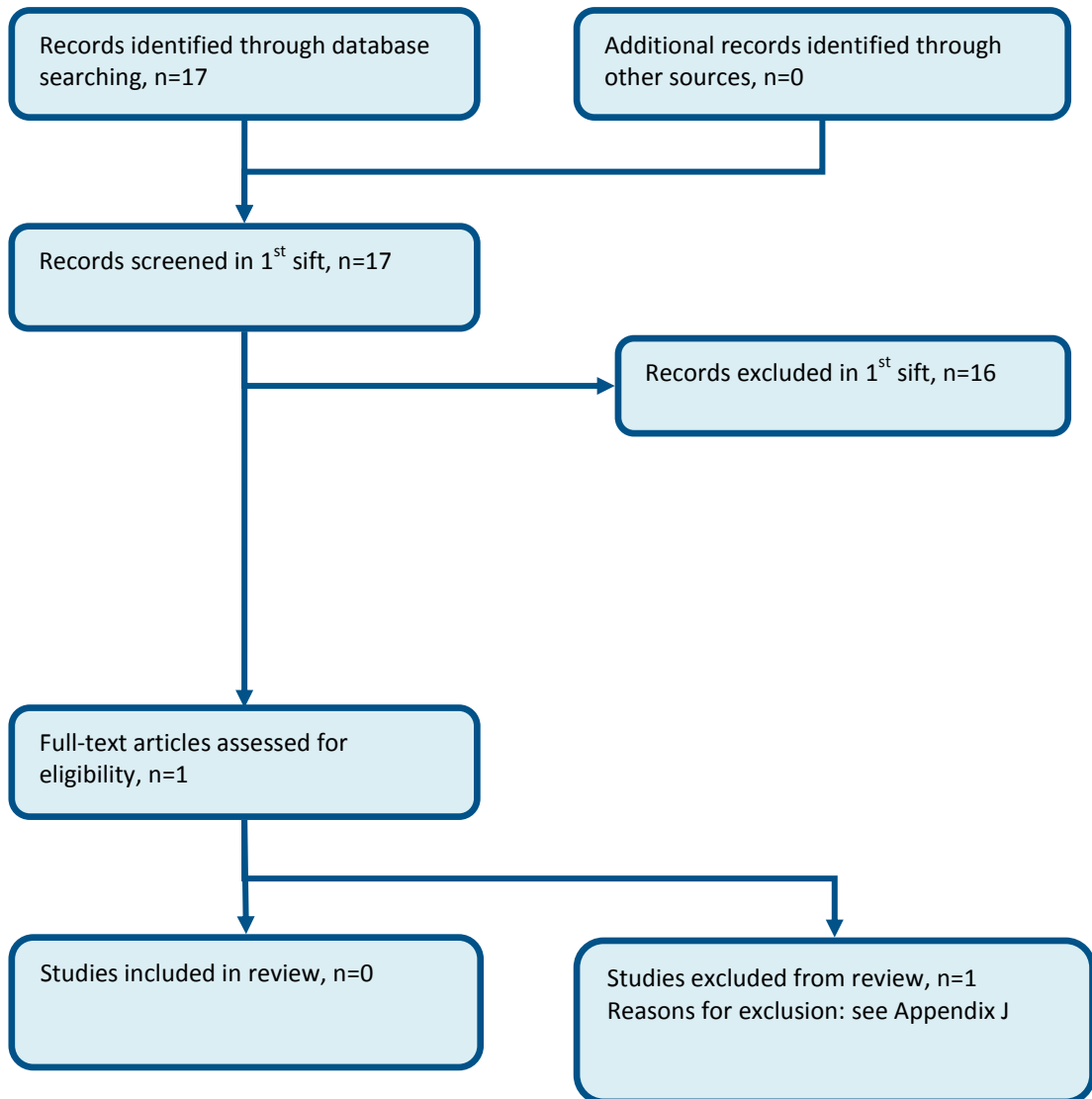
D.4.5 Full-body CT

Figure 26: Flow chart of clinical article selection for the review of full-body CT



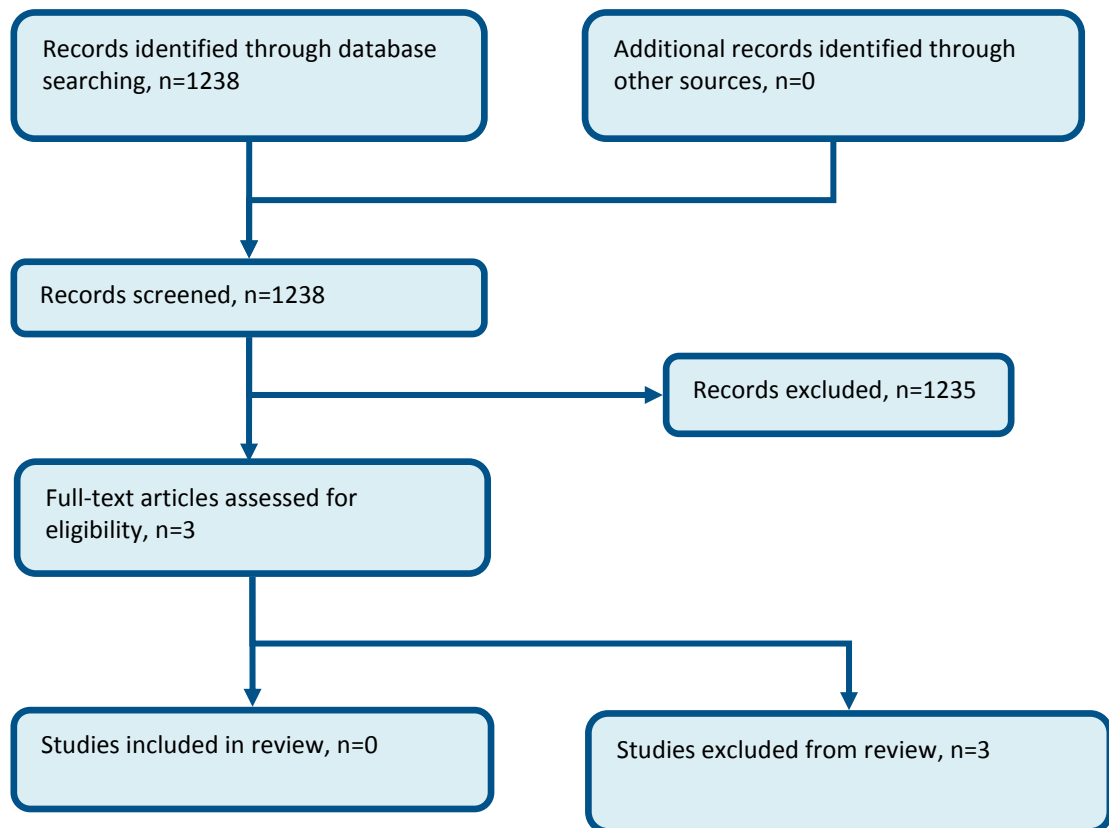
D.4.6 Documentation of open fracture wound photographs

Figure 27: Flow diagram of clinical article selection for the review of documentation that includes wound photographs



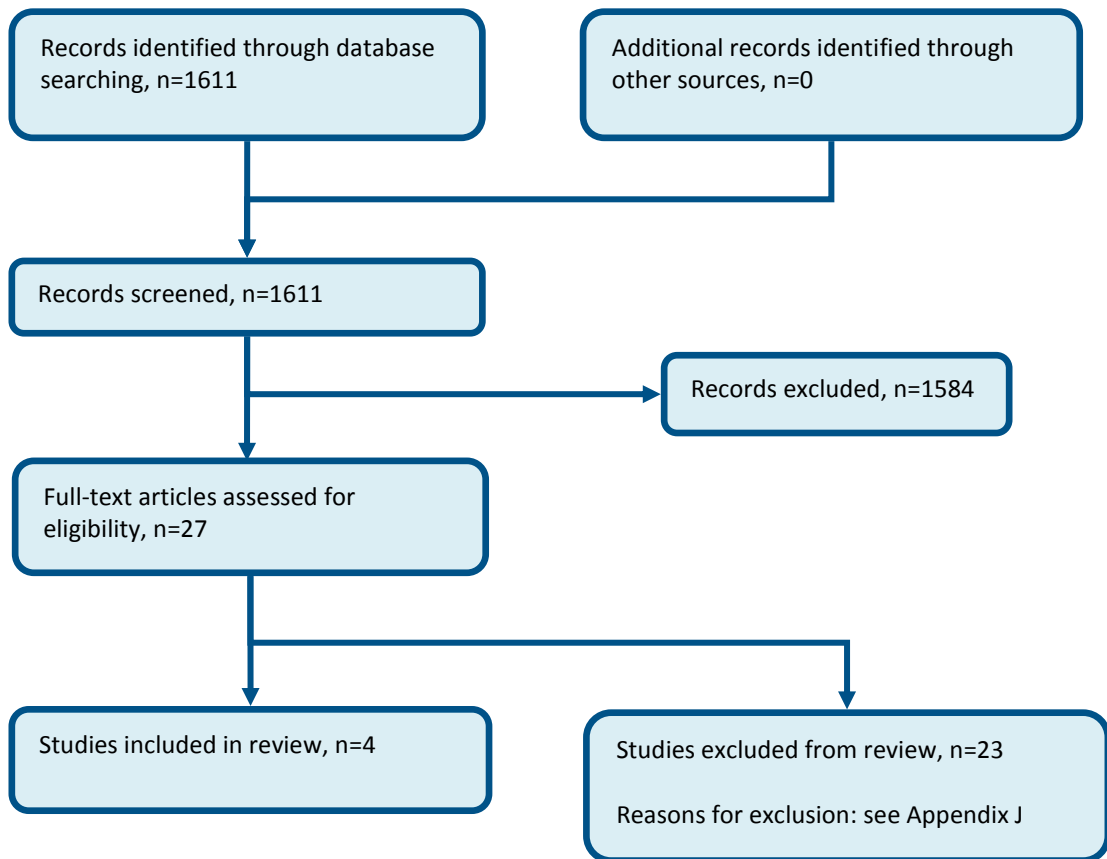
D.4.7 Documentation of neurovascular compromise

Figure 28: Flow chart of clinical article selection for the review of documentation of neurovascular compromise



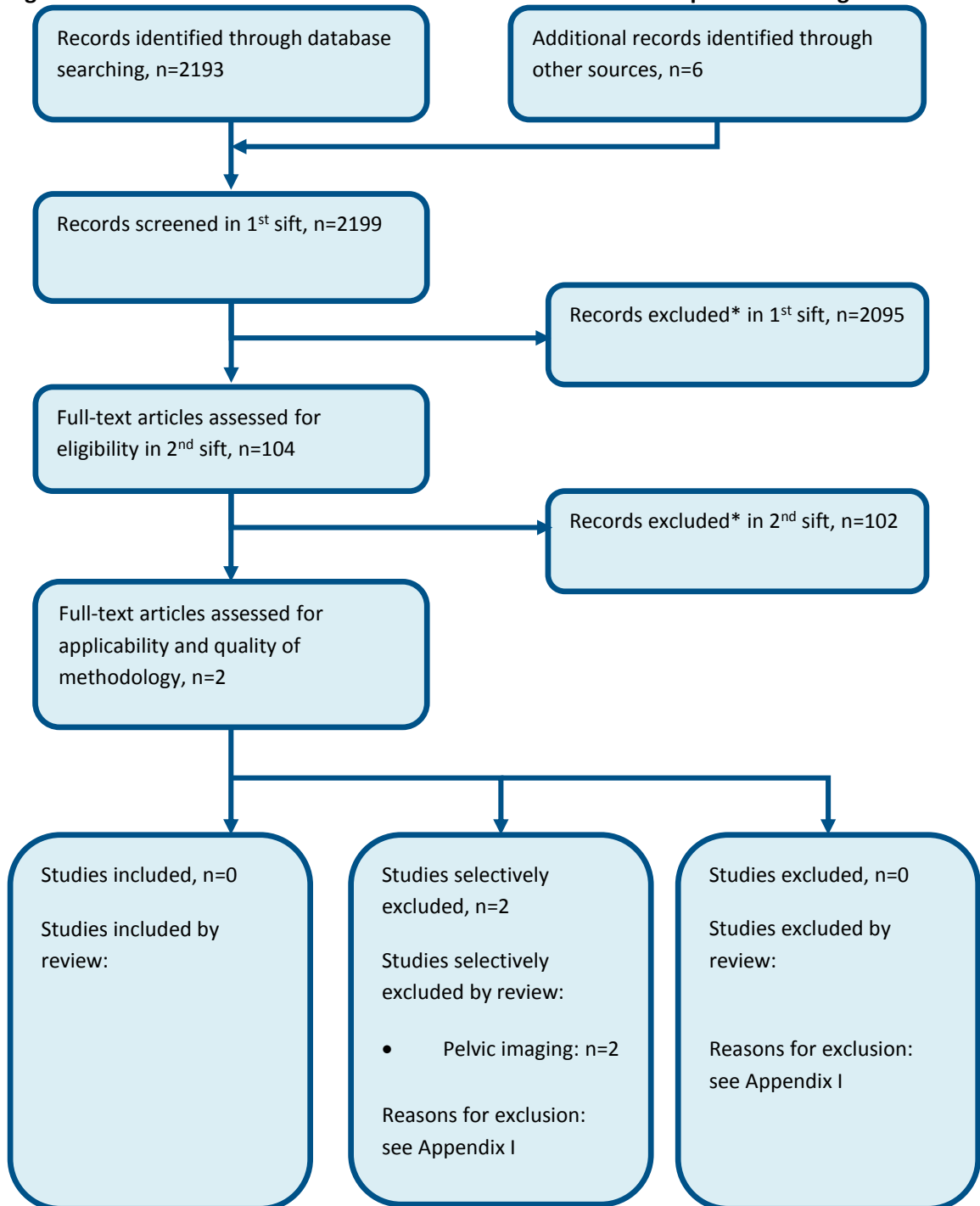
D.4.8 Information and support

Figure 29: Flow chart of clinical article selection for the review of information and support



Appendix E: Economic article selection

Figure 30: Flowchart of the economic article selection for the complex fractures guideline



* Non-relevant population, intervention, comparison, design or setting; non-English language

Appendix F: Literature search strategies

F.1 Contents

Introduction	Search methodology
Section F.2	Standard population search strategy
Section F.3	Study filter terms
F.3.1	Systematic reviews (SR)
F.3.2	Randomised controlled trials (RCT)
F.3.3	Observational studies (OBS)
F.3.4	Health economic studies (HE)
F.3.5	Quality of life studies (QoL)
F.3.6	Economic modelling (MOD)
F.3.7	Excluded study designs and publication types
Section F.4	Searches for specific questions with intervention
F.4.1	Open fractures - immediate destination
F.4.2	Open fractures - limb salvage
F.4.3	Open fractures - prophylactic antibiotics
F.4.4	Open fractures - dressings
F.4.5	Open fractures – preservation of limbs (arterial shunts)
F.4.6	Open fractures - orthoplastic approach
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F.4.8	Open fractures – staging of fixation and timing of cover
F.4.9	Pelvic fractures – immediate destintation
F.4.10	Pelvic fractures - transfer to specialist services
F.4.11	Pelvic fractures – pelvic binders
F.4.12	Pelvic fractures - log roll
F.4.13	Pelvic fractures - imaging
F.4.14	Pelvic fractures - control of pelvic haemorrhage
F.4.15	Pilon fractures – timing of transfer for specialist care
F.4.16	Pilon fractures – staging and fixation
F.4.17	Identifying vascular compromise
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Section F.5	Health economics searches
F.5.1	Health economic reviews

Introduction	Search methodology
F.5.2	Health economic reviews – supplementary search
F.5.3	Quality of life reviews
Section Error! eference source not found.	References

Search strategies used for the complex fracture guideline are outlined below and were run in accordance with the methodology in the NICE guidelines manual 2012.¹ Final searches were run up between **25th March and 16th April 2015** (see individual questions for exact date). Any studies added to the databases after this date (even if they were published prior to this date) were not included unless specifically stated in the text. We do not routinely search for electronic, ahead of print or 'online early' publications. Where possible searches were limited to retrieve material published in English.

Table 163: Database date parameters

Database	Dates searched
Medline	1946 to between 25/03 & 16/04/2015
Embase	1980 to between 25/03 & 16/04/2015
The Cochrane Library	Cochrane Reviews to 2015 either Issue 3 of 12 or 4 of 12 CENTRAL to 2015 either Issue 2 of 12 or 3 of 12 DARE, HTA and NHSEED to 2015 Issue 1 of 4

Searches for the **clinical reviews** were run in Medline (OVID), Embase (OVID) and the Cochrane Library (Wiley). Additional searches were run in Cinahl for two questions

Searches for **intervention and diagnostic studies** were usually constructed using a PICO format where population (P) terms were combined with Intervention (I) and sometimes Comparison (C) terms. An intervention can be a drug, a procedure or a diagnostic test. Outcomes (O) are rarely used in search strategies for interventions. Search filters were also added to the search where appropriate.

Searches for the health economic reviews were run in Medline (OVID), Embase (OVID), the NHS Economic Evaluations Database (NHS EED), the Health Technology Assessment (HTA) database and the Health Economic Evaluation Database (HEED). NHS EED and HTA databases were hosted by the Centre for Research and Dissemination (CRD). Searches in NHS EED and HEED were constructed using population terms only. The Health Economic Evaluation Database (HEED) ceased production in 2014 with access ceasing in January 2015. For the final dates of HEED searches, please see individual economic questions. For Medline and Embase an economic filter (instead of a study type filter) was added to the same clinical search strategy.

F.2 Population search strategies

There is no standard population search strategy for this guideline. Population search terms are included with the questions and intervention search terms in section F.4

F.3 Study filter search terms

F.3.1 Systematic review (SR) search terms

Medline search terms

1.	meta-analysis/
2.	meta-analysis as topic/
3.	(meta analy* or metanaly* or metaanaly*).ti,ab.
4.	((systematic* or evidence*) adj3 (review* or overview*)).ti,ab.
5.	(reference list* or bibliograph* or hand search* or manual search* or relevant journals).ab.
6.	(search strategy or search criteria or systematic search or study selection or data extraction).ab.
7.	(search* adj4 literature).ab.
8.	(medline or pubmed or cochrane or embase or psychlit or psyclit or psychinfo or psycinfo or cinahl or science citation index or bids or cancerlit).ab.
9.	cochrane.jw.
10.	((multiple treatment* or indirect or mixed) adj2 comparison*).ti,ab.
11.	or/1-10

Embase search terms

1.	systematic review/
2.	meta-analysis/
3.	(meta analy* or metanaly* or metaanaly*).ti,ab.
4.	((systematic or evidence) adj3 (review* or overview*)).ti,ab.
5.	(reference list* or bibliograph* or hand search* or manual search* or relevant journals).ab.
6.	(search strategy or search criteria or systematic search or study selection or data extraction).ab.
7.	(search* adj4 literature).ab.
8.	(medline or pubmed or cochrane or embase or psychlit or psyclit or psychinfo or psycinfo or cinahl or science citation index or bids or cancerlit).ab.
9.	((pool* or combined) adj2 (data or trials or studies or results)).ab.
10.	cochrane.jw.
11.	((multiple treatment* or indirect or mixed) adj2 comparison*).ti,ab.
12.	or/1-11

F.3.2 Randomised controlled trials (RCT) search terms

Medline search terms

1.	randomized controlled trial.pt.
2.	controlled clinical trial.pt.
3.	randomi#ed.ab.
4.	placebo.ab.
5.	randomly.ab.
6.	clinical trials as topic.sh.
7.	trial.ti.
8.	or/1-7

Embase search terms

1.	random*.ti,ab.
2.	factorial*.ti,ab.

3.	(crossover* or cross over*).ti,ab.
4.	((doubl* or singl*) adj blind*).ti,ab.
5.	(assign* or allocat* or volunteer* or placebo*).ti,ab.
6.	crossover procedure/
7.	double blind procedure/
8.	single blind procedure/
9.	randomized controlled trial/
10.	or/1-9

F.3.3 Observational studies (OBS) search terms

Medline search terms

1.	epidemiologic studies/
2.	exp case control studies/
3.	exp cohort studies/
4.	cross-sectional studies/
5.	case control.ti,ab.
6.	(cohort adj (study or studies or analys*)).ti,ab.
7.	((follow up or observational or uncontrolled or non randomi#ed or nonrandomi#ed or epidemiologic*) adj (study or studies)).ti,ab.
8.	((longitudinal or retrospective or prospective or cross sectional) and (study or studies or review or analys* or cohort*)).ti,ab.
9.	or/1-8

Embase search terms

1.	clinical study/
2.	exp case control study/
3.	family study/
4.	longitudinal study/
5.	retrospective study/
6.	prospective study/
7.	cross-sectional study/
8.	cohort analysis/
9.	follow-up/
10.	cohort*.ti,ab.
11.	9 and 10
12.	case control.ti,ab.
13.	(cohort adj (study or studies or analys*)).ti,ab.
14.	((follow up or observational or uncontrolled or non randomi#ed or nonrandomi#ed or epidemiologic*) adj (study or studies)).ti,ab.
15.	((longitudinal or retrospective or prospective or cross sectional) and (study or studies or review or analys* or cohort*)).ti,ab.
16.	or/1-8,11-15

F.3.4 Health economics (HE) search terms

Medline search terms

1.	economics/
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2.	value of life/
3.	exp "costs and cost analysis"/
4.	exp economics, hospital/
5.	exp economics, medical/
6.	economics, nursing/
7.	economics, pharmaceutical/
8.	exp "fees and charges"/
9.	exp budgets/
10.	budget*.ti,ab.
11.	cost*.ti.
12.	(economic* or pharmaco?economic*).ti.
13.	(price* or pricing*).ti,ab.
14.	(cost* adj2 (effective* or utilit* or benefit* or minimi* or unit* or estimat* or variable*)).ab.
15.	(financ* or fee or fees).ti,ab.
16.	(value adj2 (money or monetary)).ti,ab.
17.	or/1-16

Embase search terms

1.	health economics/
2.	exp economic evaluation/
3.	exp health care cost/
4.	exp fee/
5.	budget/
6.	funding/
7.	budget*.ti,ab.
8.	cost*.ti.
9.	(economic* or pharmaco?economic*).ti.
10.	(price* or pricing*).ti,ab.
11.	(cost* adj2 (effective* or utilit* or benefit* or minimi* or unit* or estimat* or variable*)).ab.
12.	(financ* or fee or fees).ti,ab.
13.	(value adj2 (money or monetary)).ti,ab.
14.	or/1-13

F.3.5 Quality of life (QOL) search terms

Medline search terms

1.	quality-adjusted life years/
2.	sickness impact profile/
3.	(quality adj2 (wellbeing or well-being)).ti,ab.
4.	sickness impact profile.ti,ab.
5.	disability adjusted life.ti,ab.
6.	(qal* or qtime* or qwb* or daly*).ti,ab.
7.	(euroqol* or eq5d* or eq 5d*).ti,ab.
8.	(qol* or hqol* or hqol* or h qol* or hrqol* or hr qol*).ti,ab.
9.	(health utility* or utility score* or disutilit*).ti,ab.
10.	(hui or hui1 or hui2 or hui3).ti,ab.

11.	health* year* equivalent*.ti,ab.
12.	(hye or hyes).ti,ab.
13.	rosser.ti,ab.
14.	(willingness to pay or time tradeoff or time trade off or tto or standard gamble*).ti,ab.
15.	(sf36 or sf 36 or short form 36 or shortform 36 or shortform36).ti,ab.
16.	(sf20 or sf 20 or short form 20 or shortform 20 or shortform20).ti,ab.
17.	(sf12 or sf 12 or short form 12 or shortform 12 or shortform12).ti,ab.
18.	(sf8 or sf 8 or short form 8 or shortform 8 or shortform8).ti,ab.
19.	(sf6 or sf 6 or short form 6 or shortform 6 or shortform6).ti,ab.
20.	or/1-19

Embase search terms

1.	quality adjusted life year/
2.	"quality of life index"/
3.	short form 12/ or short form 20/ or short form 36/ or short form 8/
4.	sickness impact profile/
5.	(quality adj2 (wellbeing or well-being)).ti,ab.
6.	sickness impact profile.ti,ab.
7.	disability adjusted life.ti,ab.
8.	(qal* or qtime* or qwb* or daly*).ti,ab.
9.	(euroqol* or eq5d* or eq 5d*).ti,ab.
10.	(qol* or hql* or hqol* or h qol* or hrqol* or hr qol*).ti,ab.
11.	(health utility* or utility score* or disutilit*).ti,ab.
12.	(hui or hui1 or hui2 or hui3).ti,ab.
13.	health* year* equivalent*.ti,ab.
14.	(hye or hyes).ti,ab.
15.	rosser.ti,ab.
16.	(willingness to pay or time tradeoff or time trade off or tto or standard gamble*).ti,ab.
17.	(sf36 or sf 36 or short form 36 or shortform 36 or shortform36).ti,ab.
18.	(sf20 or sf 20 or short form 20 or shortform 20 or shortform20).ti,ab.
19.	(sf12 or sf 12 or short form 12 or shortform 12 or shortform12).ti,ab.
20.	(sf8 or sf 8 or short form 8 or shortform 8 or shortform8).ti,ab.
21.	(sf6 or sf 6 or short form 6 or shortform 6 or shortform6).ti,ab.
22.	or/1-21

F.3.6 Health economic modelling (MOD) search terms

Medline search terms

1.	exp models, economic/
2.	*models, theoretical/
3.	*models, organizational/
4.	markov chains/
5.	monte carlo method/
6.	exp decision theory/
7.	(markov* or monte carlo).ti,ab.
8.	econom* model*.ti,ab.

9.	(decision* adj2 (tree* or analy* or model*)).ti,ab.
10.	or/1-9

Embase search terms

1.	statistical model/
2.	exp economic aspect/
3.	1 and 2
4.	*theoretical model/
5.	*nonbiological model/
6.	stochastic model/
7.	decision theory/
8.	decision tree/
9.	monte carlo method/
10.	(markov* or monte carlo).ti,ab.
11.	econom* model*.ti,ab.
12.	(decision* adj2 (tree* or analy* or model*)).ti,ab.
13.	or/3-12

F.3.7 Excluded study designs and publication types

The following study designs and publication types were removed from retrieved results using the NOT operator.

Medline search terms

1.	letter/
2.	editorial/
3.	news/
4.	exp historical article/
5.	anecdotes as topic/
6.	comment/
7.	case report/
8.	(letter or comment*).ti.
9.	or/1-8
10.	randomized controlled trial/ or random*.ti,ab.
11.	9 not 10
12.	animals/ not humans/
13.	exp animals, laboratory/
14.	exp animal experimentation/
15.	exp models, animal/
16.	exp rodentia/
17.	(rat or rats or mouse or mice).ti.
18.	or/11-17

Embase search terms

1.	letter.pt. or letter/
2.	note.pt.
3.	editorial.pt.

4.	case report/ or case study/
5.	(letter or comment*).ti.
6.	or/1-5
7.	randomized controlled trial/ or random*.ti,ab.
8.	6 not 7
9.	animal/ not human/
10.	nonhuman/
11.	exp animal experiment/
12.	exp experimental animal/
13.	animal model/
14.	exp rodent/
15.	(rat or rats or mouse or mice).ti.
16.	or/8-15

CINAHL search terms

S1.	PT anecdote or PT audiovisual or PT bibliography or PT biography or PT book or PT book review or PT brief item or PT cartoon or PT commentary or PT computer program or PT editorial or PT games or PT glossary or PT historical material or PT interview or PT letter or PT listservs or PT masters thesis or PT obituary or PT pamphlet or PT pamphlet chapter or PT pictorial or PT poetry or PT proceedings or PT "questions and answers" or PT response or PT software or PT teaching materials or PT website
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F.4 Searches for specific questions

F.4.1 Open fractures - immediate destination

1. Is it clinically and cost effective suspected open limb fractures to be directly transported to a Major Trauma Centre?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Open fractures.	Destination	n/a	n/a	See Table 163 Date of last search: 13/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	fractures, open/
2.	((open or compound) adj3 (fracture* or frx)).ti,ab.
3.	or/1-2
4.	exp emergency service, hospital/
5.	(emergency department or "accident and emergency" or "a and e" or "a & e" or a&e).ti,ab.
6.	(trauma adj (centre* or center* or unit*)).ti,ab.

7.	((speciali* or tertiary or regional or district general or fracture*) adj2 (cent* or unit* or hospital* or facilit*)):ti,ab.
8.	or/4-7
9.	transportation/ or air ambulances/ or ambulances/
10.	"transportation of patients"/
11.	ambulance diversion/
12.	or/9-11
13.	3 and (8 or 12)

Embase search terms

1.	open fracture/
2.	((open or compound) adj3 (fracture* or frx)):ti,ab.
3.	or/1-2
4.	emergency ward/
5.	emergency health service/
6.	(emergency department or "accident and emergency" or "a and e" or "a & e" or a&e):ti,ab.
7.	(trauma adj (centre* or center* or unit*)):ti,ab.
8.	((speciali* or tertiary or regional or district general or fracture*) adj2 (cent* or unit* or hospital* or facilit*)):ti,ab.
9.	or/4-8
10.	"traffic and transport"/
11.	air medical transport/
12.	exp ambulance/
13.	exp patient transport/
14.	or/10-13
15.	3 and (9 or 14)

Cochrane search terms

#1.	MeSH descriptor: [fractures, open] this term only
#2.	((open or compound) near/3 (fracture* or frx)):ti,ab
#3.	#1 or #2
#4.	MeSH descriptor: [emergency service, hospital] explode all trees
#5.	(emergency department or "accident and emergency" or "a and e" or "a & e" or a&e):ti,ab
#6.	(trauma next (centre* or center* or unit*)):ti,ab
#7.	((speciali* or tertiary or regional or district general or fracture*) near/2 (cent* or unit* or hospital* or facilit*)):ti,ab
#8.	{or #4-#7}
#9.	MeSH descriptor: [transportation] this term only
#10.	MeSH descriptor: [ambulances] explode all trees
#11.	MeSH descriptor: [transportation of patients] this term only
#12.	MeSH descriptor: [ambulance diversion] this term only
#13.	{or #9-#12}
#14.	#3 and (#8 or #13)

F.4.2 Open fractures - limb salvage

2. Which are the best risk prediction tools to predict likelihood of successful limb salvage in people with mangled limbs who are given limb salvage treatment?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Mangled limbs	Limb salvage	n/a	The following filters were used in Medline and Embase only: PROGNOSIS/PREDICTION RULE or known prediction rule terms All terms from this section included below with the search.	See Table 163 Date of last search: 16/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	((mangling or mangle* or crush* or avulsion or comminute*) adj5 (extremit* or limb* or arm* or leg* or hand* or foot or feet or ankle* or injur* or trauma*)).ti,ab.
2.	amputation, traumatic/
3.	fractures, comminuted/
4.	((mangling or mangle* or crush* or avulsion or comminute*) and (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
5.	crush syndrome/
6.	((crush* or bywaters*) adj syndrome*).ti,ab.
7.	rhabdomyolys*.ti,ab.
8.	fractures, open/
9.	((open or compound) adj3 (fracture* or frx)).ti,ab.
10.	fractures, bone/ or ankle fractures/ or humeral fractures/ or exp radius fractures/ or shoulder fractures/ or tibial fractures/ or exp ulna fractures/ or femoral fractures/
11.	((long bone* or longbone* or limb or limbs or arm or arms or forearm* or leg or legs) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
12.	((humerus or humeral or humeri or shoulder*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
13.	((radius or radii or ulnae or ulna or elbow* or forearm* or wrist* or colles or colles' or raikar*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
14.	((tibia or tibiae or tibias or shin* or shank*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
15.	((fibula or fibulae or calf*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
16.	((ankle* or tibiofibula* or malleolus or malleoli or pott* or trimalleolar* or bimalleolar* or maisonneuve* or dupuytren* or syndesmo*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
17.	((femur* or femora* or thigh*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
18.	hand injuries/ or *arm injuries/ or *ankle injuries/ or *foot injuries/ or *arm injuries/ or *leg injuries/
19.	*extremities/in or exp *lower extremity/in or exp *upper extremity/in
20.	((high energy or injur* or trauma* or wound*) adj6 (extremit* or limb or arm* or leg* or hand* or foot or feet or ankle)).ti,ab.
21.	exp fractures, bone/
22.	exp arteries/in [injuries]

23.	femur/ or fibula/ or tibia/ or humerus/ or radius/ or ulna/ or wrist/ or elbow/ or shoulder/ or forearm/ or ankle/ or knee/ or leg/
24.	21 and (22 or 23)
25.	or/1-20,24
26.	((salvag* or save* or saving or sparing or rescue* or preserv*) adj5 (extremit* or limb* or arm* or leg* or hand* or foot or feet or ankle* or injur* or trauma*)).ti,ab.
27.	limb salvage/
28.	replantation/
29.	replant*.ti,ab.
30.	(revascularis* or revasculariz*).ti,ab.
31.	amputation/
32.	amputat*.ti,ab.
33.	or/26-32
34.	predict.ti.
35.	(validat* or rule*).ti,ab.
36.	(predict* and (outcome* or risk* or model*)).ti,ab.
37.	((history or variable* or criteria or scor* or characteristic* or finding* or factor*) and (predict* or model* or decision* or identif* or prognos*)).ti,ab.
38.	decision*.ti,ab. and logistic models/
39.	(decision* and (model* or clinical*)).ti,ab.
40.	(prognostic and (history or variable* or criteria or scor* or characteristic* or finding* or factor* or model*)).ti,ab.
41.	(stratification or discrimination or discriminate or c statistic or "area under the curve" or auc or calibration or indices or algorithm or multivariable).ti,ab.
42.	roc curve/
43.	or/34-42
44.	(psi or mess or lsi or nissas or hfs-97 or tess).ti,ab.
45.	((mangl* or salvag* or extremit* or skeletal*) adj5 (score* or scale* or index* or indice* or tool*)).ti,ab.
46.	or/44 or 45
47.	25 and 33 and (43 or 46)

Embase search terms

1.	((mangling or mangle* or crush* or avulsion or comminute*) adj5 (extremit* or limb* or arm* or leg* or hand* or foot or feet or ankle* or injur* or trauma*)).ti,ab.
2.	traumatic amputation/
3.	comminuted fracture/
4.	((mangling or mangle* or crush* or avulsion or comminute*) and (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
5.	crush syndrome/
6.	((crush* or bywaters*) adj syndrome*).ti,ab.
7.	rhabdomyolys*.ti,ab.
8.	avulsion injury/ or avulsion fracture/
9.	open fracture/
10.	((open or compound) adj3 (fracture* or break* or crack* or frx or fx)).ti,ab.
11.	fracture/
12.	((long bone* or longbone* or limb or limbs or arm or arms or forearm* or leg or legs) adj4

	(fracture* or break or breaks or broken or crack* or frx or trauma or injur*).ti,ab.
13.	((humerus or humeral or humeri or shoulder*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*).ti,ab.
14.	((radius or radii or ulnae or ulna or elbow* or forearm* or wrist* or colles or colles' or raikar*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*).ti,ab.
15.	((tibia or tibiae or tibias or shin* or shank*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*).ti,ab.
16.	((fibula or fibulae or calf*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*).ti,ab.
17.	((ankle* or tibiofibula* or malleolus or malleoli or pott* or trimalleolar* or bimalleolar* or maisonneuve* or dupuytren* or syndesmo*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*).ti,ab.
18.	((femur* or femora* or thigh*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*).ti,ab.
19.	exp limb injury/
20.	((high energy or injur* or trauma* or wound*) adj6 (extremit* or limb or arm* or leg* or hand* or foot or feet or ankle)).ti,ab.
21.	exp fracture/
22.	exp artery injury/
23.	21 and 22
24.	or/1-20,23
25.	((salvag* or save* or saving or sparing or rescue* or preserv*) adj5 (extremit* or limb* or arm* or leg* or hand* or foot or feet or ankle* or injur* or trauma*).ti,ab.
26.	limb salvage/ or salvage therapy/
27.	limb replantation/
28.	replant*.ti,ab.
29.	(revascularis* or revasculariz*).ti,ab.
30.	exp amputation/
31.	amputat*.ti,ab.
32.	or/25-31
33.	predict.ti.
34.	(validat* or rule*).ti,ab.
35.	(predict* and (outcome* or risk* or model*).ti,ab.
36.	((history or variable* or criteria or scor* or characteristic* or finding* or factor*) and (predict* or model* or decision* or identif* or prognos*).ti,ab.
37.	decision*.ti,ab. and statistical model/
38.	(decision* and (model* or clinical*).ti,ab.
39.	(prognostic and (history or variable* or criteria or scor* or characteristic* or finding* or factor* or model*).ti,ab.
40.	(stratification or discrimination or discriminate or c statistic or "area under the curve" or auc or calibration or indices or algorithm or multivariable).ti,ab.
41.	receiver operating characteristic/
42.	or/33-41
43.	(psi or mess or lsi or nissas or hfs-97 or tess).ti,ab.
44.	((mangl* or salvag* or extremit* or skeletal*) adj5 (score* or scale* or index* or indice* or tool*).ti,ab.
45.	43 or 44
46.	24 and 32 and (42 or 45)

Cochrane search terms

#1.	((mangling or mangle* or crush* or avulsion or comminute*) near/5 (extremity* or limb* or arm* or leg* or hand* or foot or feet or ankle* or injur* or trauma*)):ti,ab
#2.	MeSH descriptor: [amputation, traumatic] this term only
#3.	MeSH descriptor: [fractures, comminuted] this term only
#4.	((mangling or mangle* or crush* or avulsion or comminute*) and (fracture* or break or breaks or broken or crack* or frx)):ti,ab
#5.	MeSH descriptor: [crush syndrome] this term only
#6.	((crush* or bywaters*) next syndrome*):ti,ab
#7.	rhabdomyolys*:ti,ab
#8.	{or #1-#7}
#9.	MeSH descriptor: [fractures, open] this term only
#10.	((open or compound) near/3 (fracture* or frx)):ti,ab
#11.	MeSH descriptor: [fractures, bone] this term only
#12.	MeSH descriptor: [ankle fractures] this term only
#13.	MeSH descriptor: [humeral fractures] this term only
#14.	MeSH descriptor: [radius fractures] explode all trees
#15.	MeSH descriptor: [shoulder fractures] this term only
#16.	MeSH descriptor: [tibial fractures] this term only
#17.	MeSH descriptor: [ulna fractures] explode all trees
#18.	MeSH descriptor: [femoral fractures] this term only
#19.	((long bone* or longbone* or limb or limbs or arm or arms or forearm* or leg or legs) near/4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)):ti,ab
#20.	((humerus or humeral or humeri or shoulder*) near/4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)):ti,ab
#21.	((radius or radii or ulnae or ulna or elbow* or forearm* or wrist* or colles or colles' or raikar*) near/4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)):ti,ab
#22.	((tibia or tibiae or tibias or shin* or shank*) near/4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)):ti,ab
#23.	((fibula or fibulae or calf*) near/4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)):ti,ab
#24.	((ankle* or tibiofibula* or malleolus or malleoli or pott* or trimalleolar* or bimalleolar* or maisonneuve* or dupuytren* or syndesmo*) near/4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)):ti,ab
#25.	((femur* or femora* or thigh*) near/4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)):ti,ab
#26.	MeSH descriptor: [hand injuries] this term only
#27.	MeSH descriptor: [arm injuries] this term only
#28.	MeSH descriptor: [ankle injuries] this term only
#29.	MeSH descriptor: [foot injuries] this term only
#30.	MeSH descriptor: [leg injuries] this term only
#31.	MeSH descriptor: [extremities] this term only and with qualifier(s): [injuries - in]
#32.	MeSH descriptor: [lower extremity] explode all trees and with qualifier(s): [injuries - in]
#33.	MeSH descriptor: [upper extremity] explode all trees and with qualifier(s): [injuries - in]
#34.	((high energy or injur* or trauma* or wound*) near/6 (extremity* or limb or arm* or leg* or hand* or foot or feet or ankle)):ti,ab
#35.	{or #9-#34}
#36.	MeSH descriptor: [fractures, bone] explode all trees

#37.	MeSH descriptor: [arteries] explode all trees and with qualifier(s): [injuries - in]
#38.	MeSH descriptor: [femur] this term only
#39.	MeSH descriptor: [fibula] explode all trees
#40.	MeSH descriptor: [tibia] this term only
#41.	MeSH descriptor: [humerus] this term only
#42.	MeSH descriptor: [radius] this term only
#43.	MeSH descriptor: [ulna] this term only
#44.	MeSH descriptor: [wrist] this term only
#45.	MeSH descriptor: [elbow] this term only
#46.	MeSH descriptor: [shoulder] this term only
#47.	MeSH descriptor: [forearm] this term only
#48.	MeSH descriptor: [ankle] this term only
#49.	MeSH descriptor: [knee] this term only
#50.	MeSH descriptor: [leg] this term only
#51.	{or #37-#50}
#52.	#36 and #51
#53.	#8 or #35 or #52
#54.	(psi or mess or lsi or nisssa or hfs-97 or tess):ti,ab
#55.	((mangl* or salvag* or extremit* or skeletal*) near/5 (score* or scale* or index* or indice* or tool*)):ti,ab
#56.	#54 or #55
#57.	((risk or predict*) near/2 (score* or scale* or index* or indice* or tool* or stratif*)):ti,ab
#58.	((predict* or decision) near/2 rule*):ti,ab
#59.	(predict* and (outcome* or risk* or model*)):ti,ab
#60.	#57 or #58 or #59
#61.	#56 or #60

F.4.3 Open fractures - prophylactic antibiotics

3. What is the optimum time to administer prophylactic antibiotics for suspected open fractures?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Open fractures	Antibiotics	n/a	The following filters were used in Medline and Embase only: OBS, RCT, SR	See Table 163 Date of last search: 13/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	fractures, open/
2.	((open or compound) adj3 (fracture* or fx)).ti,ab.
3.	1 or 2

4.	anti-bacterial agents/
5.	exp alamethicin/ or exp amdinocillin/ or exp amdinocillin pivoxil/ or exp amikacin/ or exp amoxicillin/ or exp amoxicillin-potassium clavulanate combination/ or exp amphotericin b/ or exp ampicillin/ or exp anisomycin/ or exp antimycin a/ or exp aurodox/ or exp azithromycin/ or exp azlocillin/ or exp aztreonam/ or exp bacitracin/ or exp bacteriocins/ or exp bambarmycins/ or exp bongkrelic acid/ or exp brefeldin a/ or exp butirosin sulfate/ or exp calcimycin/ or exp candidin/ or exp capreomycin/ or exp carbenicillin/ or exp carfecillin/ or exp cefaclor/ or exp cefadroxil/ or exp cefamandole/ or exp cefatrizine/ or exp cefazolin/ or exp cefixime/ or exp cefmenoxime/ or exp cefmetazole/ or exp cefonicid/ or exp cefoperazone/ or exp cefotaxime/ or exp cefotetan/ or exp cefotiam/ or exp cefoxitin/ or exp cefsulodin/ or exp ceftazidime/ or exp ceftizoxime/ or exp ceftriaxone/ or exp cefuroxime/ or exp cephaetrile/ or exp cephalixin/ or exp cephaloglycin/ or exp cephaloridine/ or exp cephalosporins/ or exp cephalothin/ or exp cephamycins/ or exp cephapirin/ or exp cephradine/ or exp chloramphenicol/ or exp chlortetracycline/ or exp ciprofloxacin/ or exp citrinin/ or exp clarithromycin/ or exp clavulanic acid/ or exp clavulanic acids/ or exp clindamycin/ or exp cloxacillin/ or exp colistin/ or exp cyclacillin/ or exp dactinomycin/ or exp daptomycin/ or exp demeclocycline/ or exp dibekacin/ or exp dicloxacillin/ or exp dihydrostreptomycin sulfate/ or exp diketopiperazines/ or exp distamycins/ or exp doxycycline/ or exp echinomycin/ or exp edeine/ or exp enoxacin/ or exp enviomycin/ or exp erythromycin/ or exp erythromycin estolate/ or exp erythromycin ethylsuccinate/ or exp filipin/ or exp floxacillin/ or exp fluoroquinolones/ or exp fosfomycin/ or exp framycetin/ or exp fusidic acid/ or exp gentamicins/ or exp gramicidin/ or exp hygromycin b/ or exp imipenem/ or exp josamycin/ or exp kanamycin/ or exp kitasamycin/ or exp lactams/ or exp lasalocid/ or exp leucomycins/ or exp levofloxacin/ or exp lincomycin/ or exp lincosamides/ or exp lucensomycin/ or exp lymecycline/ or exp mepartricin/ or exp methacycline/ or exp methicillin/ or exp mezlocillin/ or exp mikamycin/ or exp minocycline/ or exp miocamycin/ or exp moxalactam/ or exp mupirocin/ or exp mycobacillin/ or exp nafcillin/ or exp nalidixic acid/ or exp natamycin/ or exp nebramycin/ or exp neomycin/ or exp netilmicin/ or exp netropsin/ or exp nigericin/ or exp nisin/ or exp norfloxacin/ or exp novobiocin/ or exp nystatin/ or exp ofloxacin/ or exp oleandomycin/ or exp oligomycins/ or exp oxacillin/ or exp oxolinic acid/ or exp oxytetracycline/ or exp paromomycin/ or exp pefloxacin/ or exp penicillanic acid/ or exp penicillic acid/ or exp penicillin g/ or exp penicillin g benzathine/ or exp penicillin g procaine/ or exp penicillin v/ or exp pipemidic acid/ or exp piperacillin/ or exp pivampicillin/ or exp polymyxin b/ or exp polymyxins/ or exp pristinamycin/ or exp prodigiosin/ or exp ribostamycin/ or exp rifabutin/ or exp rifamycins/ or exp ristocetin/ or exp rolitetracycline/ or exp roxarsone/ or exp roxithromycin/ or exp rutamycin/ or exp sirolimus/ or exp sisomicin/ or exp spectinomycin/ or exp spiramycin/ or exp streptogramin a/ or exp streptogramin group a/ or exp streptogramin group b/ or exp streptogramins/ or exp streptomycin/ or exp streptovaricin/ or exp sulbactam/ or exp sulbenicillin/ or exp sulfamerazine/ or exp sulfamethoxypridazine/ or exp talampicillin/ or exp teicoplanin/ or exp tetracycline/ or exp thiamphenicol/ or exp thienamycins/ or exp thiostrepton/ or exp ticarcillin/ or exp tobramycin/ or exp troleandomycin/ or exp tunicamycin/ or exp tylosin/ or exp tyrocidine/ or exp tyrothricin/ or exp valinomycin/ or exp vancomycin/ or exp vernamycin b/ or exp viomycin/ or exp virginiamycin/ or exp beta-lactams/
6.	exp antifungal agents/
7.	antibiotic prophylaxis/
8.	(antibiotic* or antimicrobial*).ti,ab.
9.	or/4-8
10.	3 and 9

Embase search terms

1.	open fracture/
2.	((open or compound) adj3 (fracture* or fx)).ti,ab.
3.	1 or 2
4.	antiinfective agent/

5.	exp antibiotic agent/
6.	antifungal agent/
7.	antibiotic prophylaxis/
8.	(antibiotic* or antimicrobial*).ti,ab.
9.	or/4-8
10.	3 and 9

Cochrane search terms

#1.	MeSH descriptor: [fractures, open] explode all trees
#2.	((open or compound) near/3 (fracture* or break* or crack* or frx or fx)).ti,ab
#3.	{or #1-#2}
#4.	MeSH descriptor: [anti-bacterial agents] explode all trees
#5.	MeSH descriptor: [antifungal agents] explode all trees
#6.	MeSH descriptor: [antibiotic prophylaxis] this term only
#7.	{or #4-#6}
#8.	#3 and #7

F.4.4 Open fractures - dressings

Searches for the following two questions were run as one search:

4. What is the most clinically and cost effective dressing type prior to surgical debridement and excision for use in open fractures, pre-hospital and in hospital?
5. What is the most clinically and cost effective temporary dressing/wound therapy in open fractures after wound excision/surgical debridement?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Open fractures	Dressings	n/a	The following filters were used in Medline and Embase only: OBS, RCT, SR	See Table 163 Date of last search: 13/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	fractures, open/
2.	((open or compound) adj3 (fracture* or break* or crack* or frx or fx)).ti,ab.
3.	1 or 2
4.	exp bandages/
5.	(dressing* or gauze*).ti,ab.
6.	"vacuum assisted closure".ti,ab.
7.	vac.ti,ab.
8.	(vacuum adj2 (therapy or closure)).ti,ab.

9.	("wet-to-dry" or "dry-to-dry" or "wet-to-wet").ti,ab.
10.	((antibiotic or impregnated) adj2 bead*).ti,ab.
11.	negative-pressure wound therapy/
12.	npwt.ti,ab.
13.	(negative adj2 pressure).ti,ab.
14.	or/4-13
15.	3 and 14

Embase search terms

1.	fractures, open/
2.	((open or compound) adj3 (fracture* or frx)).ti,ab.
3.	1 or 2
4.	exp bandage/
5.	(dressing* or gauze*).ti,ab.
6.	"vacuum assisted closure".ti,ab.
7.	vac.ti,ab.
8.	(vacuum adj2 (therapy or closure)).ti,ab.
9.	("wet-to-dry" or "dry-to-dry" or "wet-to-wet").ti,ab.
10.	((antibiotic or impregnated) adj2 bead*).ti,ab.
11.	negative-pressure wound therapy/
12.	npwt.ti,ab.
13.	(negative adj2 pressure).ti,ab.
14.	or/4-13
15.	3 and 14

Cochrane search terms

#1.	MeSH descriptor: [fractures, open] explode all trees
#2.	((open or compound) near/3 (fracture* or fx)):ti,ab
#3.	{or #1-#2}
#4.	MeSH descriptor: [bandages] explode all trees
#5.	(dressing* or gauze*):ti,ab
#6.	vacuum assisted closure:ti,ab
#7.	vac:ti,ab
#8.	(vacuum near/2 (therapy or closure)):ti,ab
#9.	("wet-to-dry" or "dry-to-dry" or "wet-to-wet"):ti,ab
#10.	((antibiotic or impregnated) near/2 bead*):ti,ab
#11.	negative-pressure wound therapy
#12.	npwt:ti,ab
#13.	(negative near/2 pressure):ti,ab
#14.	{or #4-#13}
#15.	#3 and #14

F.4.5 Open fractures – preservation of limbs (arterial shunts)

6. Are arterial shunts followed by later repair more clinically and cost effective compared to definitive repair of arterial injuries associated with open fractures?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Mangled limbs	Arterial shunts	n/a	n/a	See Table 163 Date of last search: 15/04/2015 English only Exclusion filter applied in Medline and Embase
	Limb salvage (title only)	n/a	n/a	
	Limb salvage	n/a	The following filters were used in Medline and Embase only: OBS, RCT, SR	

Medline search terms

1.	((mangling or mangle* or crush* or avulsion or comminute*) adj5 (extremit* or limb* or arm* or leg* or hand* or foot or feet or ankle* or injur* or trauma*)).ti,ab.
2.	amputation, traumatic/
3.	fractures, comminuted/
4.	((mangling or mangle* or crush* or avulsion or comminute*) and (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
5.	crush syndrome/
6.	((crush* or bywaters*) adj syndrome*).ti,ab.
7.	rhabdomyolys*.ti,ab.
8.	fractures, open/
9.	((open or compound) adj3 (fracture* or frx)).ti,ab.
10.	fractures, bone/ or ankle fractures/ or humeral fractures/ or exp radius fractures/ or shoulder fractures/ or tibial fractures/ or exp ulna fractures/ or femoral fractures/
11.	((long bone* or longbone* or limb or limbs or arm or arms or forearm* or leg or legs) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
12.	((humerus or humeral or humeri or shoulder*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
13.	((radius or radii or ulnae or ulna or elbow* or forearm* or wrist* or colles or colles' or raikar*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
14.	((tibia or tibiae or tibias or shin* or shank*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
15.	((fibula or fibulae or calf*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
16.	((ankle* or tibiofibula* or malleolus or malleoli or pott* or trimalleolar* or bimalleolar* or maisonneuve* or dupuytren* or syndesmo*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
17.	((femur* or femora* or thigh*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
18.	hand injuries/ or *arm injuries/ or *ankle injuries/ or *foot injuries/ or *arm injuries/ or *leg injuries/
19.	*extremities/in or exp *lower extremity/in or exp *upper extremity/in
20.	((high energy or injur* or trauma* or wound*) adj6 (extremit* or limb or arm* or leg* or hand* or foot or feet or ankle)).ti,ab.
21.	or/1-20
22.	exp fractures, bone/

23.	exp arteries/in [injuries]
24.	femur/ or fibula/ or tibia/ or humerus/ or radius/ or ulna/ or wrist/ or elbow/ or shoulder/ or forearm/ or ankle/ or knee/ or leg/
25.	22 and (23 or 24)
26.	21 or 25
27.	(shunt* or tvs*).ti,ab.
28.	arteriovenous shunt, surgical/
29.	27 or 28
30.	26 and 29
31.	((salvag* or save* or saving or sparing or rescue* or preserv*) adj5 (extremit* or limb* or arm* or leg* or hand* or foot or feet or ankle* or injur* or trauma*)).ti.
32.	((vascular or circulat*) adj3 (control* or restor* or repair*)).ti.
33.	(revascularis* or revasculariz*).ti.
34.	(skeletal adj2 (stabilis* or stabiliz*)).ti.
35.	or/31-34
36.	26 and 35
37.	((salvag* or save* or saving or sparing or rescue* or preserv*) adj5 (extremit* or limb* or arm* or leg* or hand* or foot or feet or ankle* or injur* or trauma*)).ti,ab.
38.	((vascular or circulat*) adj3 (control* or restor* or repair*)).ti,ab.
39.	Limb Salvage/
40.	(Revascularis* or revasculariz*).ti,ab.
41.	(skeletal adj2 (stabilis* or stabiliz*)).ti,ab.
42.	or/37-41
43.	26 and 42
44.	<i>Study design filters (see table notes above)</i>
45.	43 and 44
46.	30 or 36 or 45

Embase search terms

1.	((mangling or mangle* or crush* or avulsion or comminute*) adj5 (extremit* or limb* or arm* or leg* or hand* or foot or feet or ankle* or injur* or trauma*)).ti,ab.
2.	traumatic amputation/
3.	comminuted fracture/
4.	((mangling or mangle* or crush* or avulsion or comminuted) and (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
5.	crush syndrome/
6.	((crush* or bywaters*) adj syndrome*).ti,ab.
7.	rhabdomyolys*.ti,ab.
8.	avulsion injury/ or avulsion fracture/
9.	open fracture/
10.	((open or compound) adj3 (fracture* or frx)).ti,ab.
11.	fracture/
12.	exp arm fracture/ or leg fracture/ or ankle fracture/ or distal tibia fracture/ or fibula fracture/ or knee fracture/ or patella fracture/ or proximal tibia fracture/ or tibia fracture/ or tibia shaft fracture/ or joint fracture/ or exp femur fracture/
13.	((long bone* or longbone* or limb or limbs or arm or arms or forearm* or leg or legs) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.

14.	((humerus or humeral or humeri or shoulder*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
15.	((radius or radii or ulnae or ulna or elbow* or forearm* or wrist* or colles or colles' or raikar*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
16.	((tibia or tibiae or tibias or shin* or shank*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
17.	((fibula or fibulae or calf*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
18.	((ankle* or tibiofibula* or malleolus or malleoli or pott* or trimalleolar* or bimalleolar* or maisonneuve* or dupuytren* or syndesmo*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
19.	((femur* or femora* or thigh*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
20.	exp *limb injury/
21.	((high energy or injur* or trauma* or wound*) adj6 (extremity* or limb or arm* or leg* or hand* or foot or feet or ankle)).ti,ab.
22.	or/1-21
23.	exp fracture/
24.	exp artery injury/
25.	femur/ or fibula/ or tibia/ or humerus/ or radius/ or ulna/ or limb/ or arm/ or forearm/ or elbow/ or wrist/ or leg/ or lower leg/ or knee/ or ankle/
26.	23 and (24 or 25)
27.	22 or 26
28.	arteriovenous shunt/
29.	(shunt* or tvs*).ti,ab.
30.	28 or 29
31.	27 and 30
32.	((salvag* or save* or saving or sparing or rescue* or preserv*) adj5 (extremity* or limb* or arm* or leg* or hand* or foot or feet or ankle* or injur* or trauma*)).ti.
33.	((vascular or circulat*) adj3 (control* or restor* or repair*)).ti.
34.	(skeletal adj2 (stabilis* or stabiliz*)).ti.
35.	(revascularis* or revasculariz*).ti.
36.	or/32-35
37.	27 and 36
38.	((salvag* or save* or saving or sparing or rescue* or preserv*) adj5 (extremity* or limb* or arm* or leg* or hand* or foot or feet or ankle* or injur* or trauma*)).ti,ab.
39.	((vascular or circulat*) adj3 (control* or restor* or repair*)).ti,ab.
40.	(skeletal adj2 (stabilis* or stabiliz*)).ti,ab.
41.	limb salvage/
42.	(revascularis* or revasculariz*).ti,ab.
43.	or/38-42
44.	<i>Study design filters (see table notes above)</i>
45.	43 and 44
46.	27 and 45
47.	31 or 37 or 46

Cochrane search terms

#1.	((mangling or mangle* or crush* or avulsion or comminute*) near/5 (extremity* or limb* or
-----	---

	arm* or leg* or hand* or foot or feet or ankle* or injur* or trauma*)):ti,ab
#2.	MeSH descriptor: [amputation, traumatic] this term only
#3.	MeSH descriptor: [fractures, comminuted] this term only
#4.	((mangling or mangle* or crush* or avulsion or comminute*) and (fracture* or break or breaks or broken or crack* or frx)):ti,ab
#5.	MeSH descriptor: [crush syndrome] this term only
#6.	((crush* or bywaters*) next syndrome*)):ti,ab
#7.	rhabdomyolys*:ti,ab
#8.	{or #1-#7}
#9.	MeSH descriptor: [fractures, open] this term only
#10.	((open or compound) near/3 (fracture* or frx)):ti,ab
#11.	MeSH descriptor: [fractures, bone] this term only
#12.	MeSH descriptor: [ankle fractures] this term only
#13.	MeSH descriptor: [humeral fractures] this term only
#14.	MeSH descriptor: [radius fractures] explode all trees
#15.	MeSH descriptor: [shoulder fractures] this term only
#16.	MeSH descriptor: [tibial fractures] this term only
#17.	MeSH descriptor: [ulna fractures] explode all trees
#18.	MeSH descriptor: [femoral fractures] this term only
#19.	((long bone* or longbone* or limb or limbs or arm or arms or forearm* or leg or legs) near/4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)):ti,ab
#20.	((humerus or humeral or humeri or shoulder*) near/4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)):ti,ab
#21.	((radius or radii or ulnae or ulna or elbow* or forearm* or wrist* or colles or colles' or raikar*) near/4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)):ti,ab
#22.	((tibia or tibiae or tibias or shin* or shank*) near/4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)):ti,ab
#23.	((fibula or fibulae or calf*) near/4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)):ti,ab
#24.	((ankle* or tibiofibula* or malleolus or malleoli or pott* or trimalleolar* or bimalleolar* or maisonneuve* or dupuytren* or syndesmo*) near/4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)):ti,ab
#25.	((femur* or femora* or thigh*) near/4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)):ti,ab
#26.	MeSH descriptor: [hand injuries] this term only
#27.	MeSH descriptor: [arm injuries] this term only
#28.	MeSH descriptor: [ankle injuries] this term only
#29.	MeSH descriptor: [foot injuries] this term only
#30.	MeSH descriptor: [leg injuries] this term only
#31.	MeSH descriptor: [extremities] this term only and with qualifier(s): [injuries - in]
#32.	MeSH descriptor: [lower extremity] explode all trees and with qualifier(s): [injuries - in]
#33.	MeSH descriptor: [upper extremity] explode all trees and with qualifier(s): [injuries - in]
#34.	((high energy or injur* or trauma* or wound*) near/6 (extremit* or limb or arm* or leg* or hand* or foot or feet or ankle)):ti,ab
#35.	{or #9-#34}
#36.	MeSH descriptor: [fractures, bone] explode all trees
#37.	MeSH descriptor: [arteries] explode all trees and with qualifier(s): [injuries - in]

#38.	MeSH descriptor: [femur] this term only
#39.	MeSH descriptor: [fibula] explode all trees
#40.	MeSH descriptor: [tibia] this term only
#41.	MeSH descriptor: [humerus] this term only
#42.	MeSH descriptor: [radius] this term only
#43.	MeSH descriptor: [ulna] this term only
#44.	MeSH descriptor: [wrist] this term only
#45.	MeSH descriptor: [elbow] this term only
#46.	MeSH descriptor: [shoulder] this term only
#47.	MeSH descriptor: [forearm] this term only
#48.	MeSH descriptor: [ankle] this term only
#49.	MeSH descriptor: [knee] this term only
#50.	MeSH descriptor: [leg] this term only
#51.	{or #37-#50}
#52.	#36 and #51
#53.	#8 or #35 or #52
#54.	(shunt* or tvs*):ti,ab
#55.	MeSH descriptor: [arteriovenous shunt, surgical] this term only
#56.	((salvag* or save* or saving or sparing or rescue* or preserv*) near/5 (extremit* or limb* or arm* or leg* or hand* or foot or feet or ankle* or injur* or trauma*)):ti,ab
#57.	((vascular or circulat*) near/3 (control* or restor* or repair*)):ti,ab
#58.	MeSH descriptor: [limb salvage] this term only
#59.	(revascularis* or revasculariz*):ti,ab
#60.	(skeletal near/2 (stabilis* or stabiliz*)):ti,ab
#61.	{or #54-#60}
#62.	#53 and #61

F.4.6 Open fractures - orthoplastic approach

7. Is the presence of both an orthopaedic surgeon and plastic surgeon at the initial surgical excision and stabilisation of an open fracture clinically and cost effective?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Open fracture	Multidisciplinary teams including a plastic surgeon	n/a	n/a	See Table 163 Date of last search: 13/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	fractures, open/
2.	((open or compound) adj3 (fracture* or frx)).ti,ab.

3.	or/1-2
4.	exp fractures, bone/
5.	(fracture* or frx).ti,ab.
6.	or/4-5
7.	exp surgery, plastic/
8.	((reconstruct* or plastic or aesthetic or esthetic) adj2 (surgery or surgeon* or specialist* or consultant*)).ti,ab.
9.	or/7-8
10.	exp patient care team/
11.	exp interprofessional relations/
12.	exp cooperative behavior/
13.	((interdisciplinary or multi-disciplinary or interprofessional or multi-professional) adj2 (team* or service* or approach*)).ti,ab.
14.	((health or care) adj2 team*).ti,ab.
15.	or/10-14
16.	3 and (9 or 15)
17.	6 and 9 and 15
18.	16 or 17

Embase search terms

1.	open fracture/
2.	((open or compound) adj3 (fracture* or frx)).ti,ab.
3.	1 or 2
4.	exp fracture/
5.	(fracture* or frx).ti,ab.
6.	or/4-5
7.	plastic surgery/
8.	plastic surgeon/
9.	((reconstruct* or plastic or aesthetic or esthetic) adj2 (surgery or surgeon* or specialist* or consultant*)).ti,ab.
10.	or/7-9
11.	patient care/
12.	exp cooperation/
13.	interpersonal communication/
14.	((interdisciplinary or multi-disciplinary or interprofessional or multi-professional) adj2 (team* or service* or approach*)).ti,ab.
15.	((health or care) adj2 team*).ti,ab.
16.	or/11-15
17.	3 and (10 or 16)
18.	6 and 10 and 16
19.	17 or 18

Cochrane search terms

#1.	MeSH descriptor: [fractures, open] explode all trees
#2.	((open or compound) near/3 (fracture* or frx or fx)).ti,ab
#3.	#1 or #2
#4.	MeSH descriptor: [fractures, bone] explode all trees

#5.	(fracture* or frx or fx):ti,ab
#6.	#4 or #5
#7.	MeSH descriptor: [surgery, plastic] explode all trees
#8.	((reconstruct* or plastic or aesthetic or esthetic) near/2 (surgery or surgeon* or specialist* or consultant*)):ti,ab
#9.	{or #7-#8}
#10.	MeSH descriptor: [patient care team] explode all trees
#11.	MeSH descriptor: [interprofessional relations] explode all trees
#12.	MeSH descriptor: [cooperative behavior] explode all trees
#13.	((interdisciplinary or multi-disciplinary or interprofessional or multi-professional) near/2 (team* or service* or approach*)):ti,ab
#14.	((health or care) near/2 team*):ti,ab
#15.	{or #10-#14}
#16.	#3 and (#9 or #15)
#17.	#6 and #9 and #15
#18.	#16 or #17

F.4.7 Open fractures - debridement

Searches for the following two questions were run as one search:

8. What is the optimal timing of initial debridement of open fractures?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Open fractures	Debridement	n/a	The following filters were used in Medline and Embase only: OBS, RCT, SR	See Table 163 Date of last search: 13/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	((open or compound) adj3 (fracture* or fx)).ti,ab.
2.	fractures, open/
3.	1 or 2
4.	exp time/
5.	("six-hour-rule" or time* or timing or frequen* or rate* or constant or delay* or primary or early or immediate* or staged or "fix and flap" or "golden hour" or "golden rule" or h or hour* or day* or min* or initial* or definitive or window or interval*).ti,ab.
6.	4 or 5
7.	3 and 6

Embase search terms

1.	((open or compound) adj3 (fracture* or break* or crack* or frx or fx)).ti,ab.
2.	open fracture/

3.	1 or 2
4.	exp time/
5.	("six-hour-rule" or time* or timing or frequen* or rate* or constant or delay* or primary or early or immediate* or staged or "fix and flap" or "golden hour" or "golden rule" or h or hour* or day* or min* or initial* or definitive or window or interval*).ti,ab.
6.	4 or 5
7.	3 and 6

Cochrane search terms

#1.	MeSH descriptor: [fractures, open] explode all trees
#2.	((open or compound) adj3 (fracture* or fx)) .ti,ab.
#3.	{or #1-#2}
#4.	MeSH descriptor: [time] explode all trees
#5.	("six-hour-rule" or time* or timing or frequen* or rate* or constant or delay* or primary or early or immediate* or staged or "fix and flap" or "golden hour" or "golden rule" or h or hour* or day* or min* or initial* or definitive or window or interval*):ti,ab
#6.	{or #4-#5}

F.4.8 Open fractures – staging of fixation and timing of cover

9. Is the use of initial definitive fixation and cover more clinically and cost effective in the management of open fractures compared with staged fixation and cover?
10. What is the most clinical and cost effective time to achieve definitive soft tissue cover in open fractures?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Open fractures	Fixation or Surgical cover	n/a	The following filters were used in Medline and Embase only: OBS, RCT, SR	See Table 163 Date of last search: 13/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	fractures, open/
2.	((open or compound) adj3 (fracture* or frx)).ti,ab.
3.	1 or 2
4.	exp fracture fixation/
5.	(osteosynthes?s adj2 fracture*).ti,ab.
6.	(ilizarov adj2 (method or technique or procedur*)).ti,ab.
7.	exp external fixators/
8.	exp internal fixators/
9.	exp orthopedic fixation devices/
10.	((kirchner or k) adj2 wire*).ti,ab.

11.	((internal or external) adj2 (fixat* or device*)).ti,ab.
12.	((fixat* or osteosynthes?s or stabili?ation or stabili?er) adj2 (skeletal or fracture* or bone* or nail* or plate* or screw* or wire* or anchor* or pin* or fram*)).ti,ab.
13.	(bone adj2 (nail* or plate* or screw* or wire* or anchor* or pin* or device* or fram*)).ti,ab.
14.	((definitive or staged) adj2 fixat*).ti,ab.
15.	(intramedullary adj2 (fracture* or fixation* or nail* or osteosynthes?s)).ti,ab.
16.	osteosynthes?s.ti,ab.
17.	or/4-16
18.	reconstructive surgical procedures/
19.	exp surgical flaps/
20.	flap*.ti,ab.
21.	((early or delay* or stag* or definitive or late) adj2 cover*).ti,ab.
22.	(tissue adj2 (reconstruction or reconstructive or cover*)).ti,ab.
23.	or/18-22
24.	3 and (17 or 23)
25.	(complex* adj3 (fracture* or trauma*)).ti,ab.
26.	exp fractures, bone/su [surgery]
27.	"wounds and injuries"/su [surgery]
28.	exp extremities/su [surgery]
29.	or/25-28
30.	23 and 29
31.	24 or 30

Embase search terms

1.	open fracture/
2.	((open or compound) adj3 (fracture* or frx)).ti,ab.
3.	1 or 2
4.	exp *fracture fixation/
5.	(osteosynthes?s adj2 fracture*).ti,ab.
6.	(ilizarov adj2 (method or technique or procedur*)).ti,ab.
7.	exp *external fixator/
8.	exp *internal fixator/
9.	exp *orthopedic fixation device/
10.	*osteosynthesis/
11.	exp *surgical wire/
12.	((kirchner or k) adj2 wire*).ti,ab.
13.	((internal or external) adj2 (fixat* or device*)).ti,ab.
14.	((fixat* or osteosynthes?s or stabili?ation or stabili?er) adj2 (skeletal or fracture* or bone* or nail* or plate* or screw* or wire* or anchor* or pin* or fram*)).ti,ab.
15.	(bone adj2 (nail* or plate* or screw* or wire* or anchor* or pin* or device* or fram*)).ti,ab.
16.	((definitive or staged) adj2 fixat*).ti,ab.
17.	(intramedullary adj2 (fracture* or fixation* or nail* or osteosynthes?s)).ti,ab.
18.	osteosynthes?s.ti,ab.
19.	or/4-18
20.	plastic surgery/
21.	exp surgical flaps/

22.	flap*.ti,ab.
23.	((early or delay* or stag* or definitive or late) adj2 cover*).ti,ab.
24.	(tissue adj2 (reconstruction or reconstructive or cover*)).ti,ab.
25.	or/20-24
26.	3 and (19 or 25)
27.	(complex* adj3 (fracture* or trauma*)).ti,ab.
28.	fracture/su [surgery]
29.	wound/su [surgery]
30.	injury/su [surgery]
31.	limb/su [surgery]
32.	exp arm/su [surgery]
33.	exp leg/su [surgery]
34.	or/27-33
35.	25 and 34
36.	26 or 35

Cochrane search terms

#1.	MeSH descriptor: [fractures, open] explode all trees
#2.	((open or compound) near/3 (fracture* or frx)):ti,ab
#3.	{or #1-#2}
#4.	MeSH descriptor: [fracture fixation] explode all trees
#5.	(osteosynthes?s near/2 fracture*):ti,ab
#6.	(ilizarov near/2 (method or technique or procedur*)):ti,ab
#7.	MeSH descriptor: [external fixators] explode all trees
#8.	MeSH descriptor: [internal fixators] explode all trees
#9.	MeSH descriptor: [orthopedic fixation devices] explode all trees
#10.	((kirchner or k) near/2 wire*):ti,ab
#11.	((internal or external) near/2 (fixat* or device*)):ti,ab
#12.	((fixat* or osteosynthes?s or stabili?ation or stabili?er) near/2 (skeletal or fracture* or bone* or nail* or plate* or screw* or wire* or anchor* or pin* or fram*)):ti,ab
#13.	(bone near/2 (nail* or plate* or screw* or wire* or anchor* or pin* or device* or fram*)):ti,ab
#14.	((definitive or staged) near/2 fixat*):ti,ab
#15.	(intramedullary near/2 (fracture* or fixation* or nail* or osteosynthes?s)):ti,ab
#16.	osteosynthes?s:ti,ab
#17.	{or #4-#16}
#18.	#3 and #17
#19.	MeSH descriptor: [reconstructive surgical procedures] this term only
#20.	MeSH descriptor: [surgical flaps] explode all trees
#21.	flap*.ti,ab
#22.	((early or delay* or stag* or definitive or late) near/2 cover*):ti,ab
#23.	(tissue near/2 (reconstruction or reconstructive or cover*)):ti,ab
#24.	{or #19-#23}
#25.	(complex* near/3 (fracture* or trauma*)):ti,ab
#26.	MeSH descriptor: [fractures, bone] explode all trees and with qualifier(s): [surgery - su]
#27.	MeSH descriptor: [wounds and injuries] this term only and with qualifier(s): [surgery - su]
#28.	MeSH descriptor: [extremities] explode all trees and with qualifier(s): [surgery - su]

#29.	{or #25-#28}
#30.	#3 and (#17 or #24)
#31.	#24 and #29
#32.	#30 or #31

F.4.9 Pelvic fractures – immediate destination

11. Is it clinically and cost effective for patients with suspected high energy pelvic/acetabular fractures to be transferred directly to a Major Trauma Centre (MTC)?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Pelvic fractures	Destination	n/a	n/a	See Table 163 Date of last search: 13/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	exp pelvic bones/
2.	fractures, bone/
3.	1 and 2
4.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) adj3 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
5.	3 or 4
6.	exp emergency service, hospital/
7.	(emergency department or "accident and emergency" or "a and e" or "a & e" or a&e).ti,ab.
8.	(trauma adj (centre* or center* or unit*)).ti,ab.
9.	((speciali* or tertiary or regional or district general or fracture*) adj2 (cent* or unit* or hospital* or facilit*)).ti,ab.
10.	transportation/ or air ambulances/ or ambulances/
11.	"transportation of patients"/
12.	ambulance diversion/
13.	or/6-12
14.	5 and 13

Embase search terms

1.	exp pelvis fracture/
2.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) adj3 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
3.	or/1-2
4.	emergency ward/
5.	emergency health service/

6.	(emergency department or "accident and emergency" or "a and e" or "a & e" or a&e).ti,ab.
7.	(trauma adj (centre* or center* or unit*)).ti,ab.
8.	((speciali* or tertiary or regional or district general or fracture*) adj2 (cent* or unit* or hospital* or facilit*)).ti,ab.
9.	"traffic and transport"/
10.	air medical transport/
11.	exp ambulance/
12.	exp patient transport/
13.	or/4-12
14.	3 and 13

Cochrane search terms

#1.	MeSH descriptor: [pelvic bones] explode all trees
#2.	MeSH descriptor: [fractures, bone] this term only
#3.	#1 and #2
#4.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) near/3 (fracture* or break or breaks or broken or crack* or frx)):ti,ab
#5.	#3 or #4
#6.	MeSH descriptor: [emergency service, hospital] explode all trees
#7.	(emergency department or "accident and emergency" or "a and e" or "a & e" or a&e):ti,ab
#8.	(trauma next (centre* or center* or unit*)):ti,ab
#9.	((speciali* or tertiary or regional or district general or fracture*) near/2 (cent* or unit* or hospital* or facilit*)):ti,ab
#10.	MeSH descriptor: [transportation] this term only
#11.	MeSH descriptor: [ambulances] explode all trees
#12.	MeSH descriptor: [transportation of patients] this term only
#13.	MeSH descriptor: [ambulance diversion] this term only
#14.	{or #6-#13}
#15.	#5 and #14

F.4.10 Pelvic fractures - transfer to specialist services

12. What is the most clinically and cost effective timing for transferring patients with pelvic fractures (including acetabular fractures) to tertiary/specialist services?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Pelvic fractures	Transfer or referral to specialist services	n/a	n/a	See Table 163 Date of last search: 14/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	exp pelvic bones/
2.	fractures, bone/
3.	1 and 2
4.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) adj3 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
5.	3 or 4
6.	patient transfer/
7.	exp transportation of patients/
8.	"referral and consultation"/
9.	(refer or refers or referral or referrals or referring).ti,ab.
10.	((mov* or transfer* or transport* or sent or send* or refer* or manag* or treat* or surg* or operat* or fix*) adj5 (unit* or center* or centre* or service* or specialist* or expert* or tertiary)).ti,ab.
11.	((prompt or hour* or day* or week* or rapid or within or early or earlier or late* or time* or timing or delay*) adj5 (mov* or transfer* or sent or send* or refer* or manag* or treat* or surg* or operat* or fix* or therap*)).ti,ab.
12.	or/6-11
13.	5 and 12

Embase search terms

1.	exp *pelvis fracture/
2.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) adj3 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
3.	or/1-2
4.	exp *patient transport/
5.	*patient referral/
6.	(refer or refers or referral or referrals or referring).ti,ab.
7.	((mov* or transfer* or transport* or sent or send* or refer* or manag* or treat* or surg* or operat* or fix*) adj5 (unit* or center* or centre* or service* or specialist* or expert* or tertiary)).ti,ab.
8.	((prompt or hour* or day* or week* or rapid or within or early or earlier or late* or time* or timing or delay*) adj5 (mov* or transfer* or sent or send* or refer* or manag* or treat* or surg* or operat* or fix* or therap*)).ti,ab.
9.	or/4-9
10.	3 and 9

Cochrane search terms

#1.	[mh "pelvic bones"]
#2.	[mh ^"fractures, bone"]
#3.	#1 and #2
#4.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) near/3 (fracture* or break or breaks or broken or crack* or frx)):ti,ab
#5.	#3 or #4
#6.	[mh "patient transfer"]
#7.	[mh "transportation of patients"]

#8.	[mh "referral and consultation"]
#9.	(refer or refers or referral or referrals or referring):ti,ab
#10.	((mov* or transfer* or sent or send* or refer* or manag* or treat* or surg* or operat* or fix*) near/5 (unit* or center* or centre* or service* or specialist* or expert*)):ti,ab
#11.	((prompt or hour* or rapid or within or early or earlier or late* or time* or timing or delay*) near/5 (mov* or transfer* or sent or send* or refer* or manag* or treat* or surg* or operat* or fix* or therap*)):ti,ab
#12.	{or #6-#11}
#13.	#5 and #12

F.4.11 Pelvic fractures – pelvic binders

Searches for the following two questions were run as one search:

13. What is the most clinically and cost effective duration for pelvic binder use?

14. Which are the best diagnostic risk tools to predict the presence of a pelvic fracture at the pre-hospital stage?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Pelvic fractures	Pelvic binders	n/a	n/a	See Table 163 Date of last search: 15/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	exp pelvic bones/
2.	fractures, bone/
3.	1 and 2
4.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) adj3 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
5.	3 or 4
6.	(binding* or binder* or pccd or inflatable garment* or niecs or sheet* or c clamp*).ti,ab.
7.	((circumferen* or external or compression) adj5 (device* or belt* or sling*)).ti,ab.
8.	(brim or pelvigrip or pelvicbinder or t pod or tpod).ti,ab.
9.	(mast or pasg or pneumatic anti-shock garment*).ti,ab.
10.	(sam adj3 sling*).ti,ab.
11.	or/6-10
12.	5 and 11

Embase search terms

1.	exp pelvis fracture/
2.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or

	coxal or duverney or iliac wing or acetabul* or cotyloid) adj3 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
3.	or/1-2
4.	(binding* or binder* or pccd or inflatable garment* or niecs or sheet* or c clamp*).ti,ab.
5.	((circumferen* or external or compression) adj5 (device* or belt* or sling*)).ti,ab.
6.	(brim or pelvigrip or pelvicbinder or t pod or tpod).ti,ab.
7.	(mast or pasg or pneumatic anti-shock garment*).ti,ab.
8.	(sam adj3 sling*).ti,ab.
9.	or/4-8
10.	3 and 9

Cochrane search terms

#1.	[mh "pelvic bones"]
#2.	[mh ^"fractures, bone"]
#3.	#1 and #2
#4.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) near/3 (fracture* or break or breaks or broken or crack* or frx)):ti,ab
#5.	#3 or #4
#6.	(binding* or binder* or pccd or inflatable garment* or niecs or sheet* or c clamp*):ti,ab
#7.	((circumferen* or external or compression) near/5 (device* or belt* or sling*)):ti,ab
#8.	(brim or pelvigrip or pelvicbinder or t pod or tpod):ti,ab
#9.	(mast or pasg or pneumatic anti-shock garment*):ti,ab
#10.	(sam near/3 sling*):ti,ab
#11.	{or #6-#10}
#12.	#5 and #11

F.4.12 Pelvic fractures - log roll

15. What is the safest strategy and timing for log rolling patients with suspected or known pelvic fracture?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Pelvic fractures	Log roll	n/a	n/a	See Table 163 Date of last search: 14/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	exp pelvic bones/
2.	fractures, bone/
3.	1 and 2

4.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) adj3 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
5.	3 or 4
6.	"moving and lifting patients"/
7.	patient positioning/
8.	"transportation of patients"/
9.	immobilization/
10.	(log roll* or logroll*).ti,ab.
11.	or/6-10
12.	5 and 11

Embase search terms

1.	exp pelvis fracture/
2.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) adj3 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
3.	or/1-2
4.	*patient positioning/
5.	*patient transport/
6.	*immobilization/
7.	(log roll* or logroll*).ti,ab.
8.	or/4-7
9.	3 and 8

Cochrane search terms

#1.	[mh "pelvic bones"]
#2.	[mh ^"fractures, bone"]
#3.	#1 and #2
#4.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) near/3 (fracture* or break or breaks or broken or crack* or frx)):ti,ab
#5.	#3 or #4
#6.	MeSH descriptor: [moving and lifting patients] this term only
#7.	MeSH descriptor: [patient positioning] this term only
#8.	MeSH descriptor: [transportation of patients] this term only
#9.	MeSH descriptor: [immobilization] this term only
#10.	log next roll*:ti,ab
#11.	logroll*:ti,ab
#12.	{or #6-#11}
#13.	#5 and #12

F.4.13 Pelvic fractures - imaging

Searches for the following four questions were run as one search:

16.Does a cystourethrogram lead to better outcomes than CT in patients with confirmed or suspected pelvic fracture and suspected bladder and urethral injuries?

17.What is the diagnostic accuracy of cystourethrograms and CT for assessment of bladder injury

18. What is the most clinically and cost effective imaging modality for assessment of high energy suspected pelvic/acetabular fractures at the initial presentation?

19. What is the diagnostic accuracy of CT, CT+X-ray or X-ray for assessment of high energy pelvic/acetabular fractures for (1) existence of fractures and (2) classification of fractures?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Pelvic fractures with urinary tract injuries	Imaging techniques	n/a	n/a	See Table 163 Date of last search: 13/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	exp pelvic bones/
2.	fractures, bone/
3.	1 and 2
4.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) adj3 (fracture* or break or breaks or broken or crack* or frx or injur* or trauma*)).ti,ab.
5.	3 or 4
6.	"wounds and injuries"/
7.	abdominal injuries/
8.	urinary tract/ or urethra/ or urinary bladder/
9.	(6 or 7) and 8
10.	urinary bladder/in [injuries]
11.	urethra/in [injuries]
12.	urinary tract/in [injuries]
13.	((urinary tract or bladder or urethra*) adj4 (injur* or wound* or trauma*)).ti,ab.
14.	or/9-13
15.	5 or 14
16.	radiography/ or radiography, abdominal/ or tomography, x-ray/ or tomography, x-ray computed/
17.	urography/
18.	(compute* adj2 tomograph*).ti,ab.
19.	((ct or cat) adj scan*).ti,ab.
20.	(urograph* or urethrogram* or cystourethrogram* or cysto-urethrogram* or pyelogra*).ti,ab.
21.	(x ray* or xray* or mdct* or ct or radiograph*).ti,ab.
22.	or/16-21
23.	15 and 22

Embase search terms

1.	exp pelvis fracture/
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2.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) adj3 (fracture* or break or breaks or broken or crack* or frx or injur* or trauma*)).ti,ab.
3.	1 or 2
4.	pelvis injury/
5.	urinary tract injury/ or bladder injury/ or bladder rupture/ or urethra injury/
6.	((urinary tract or bladder or urethra*) adj4 (injur* or wound* or trauma*)).ti,ab.
7.	or/4-6
8.	3 or 7
9.	exp *radiodiagnosis/
10.	(compute* adj2 tomograph*).ti,ab.
11.	((ct or cat) adj scan*).ti,ab.
12.	(urograph* or urethrogram* or cystourethrogram* or cysto-urethrogram* or pyelogra*).ti,ab.
13.	(x ray* or xray* or mdct* or ct or radiograph*).ti,ab.
14.	pelvis radiography/
15.	or/9-14
16.	8 and 15

Cochrane search terms

#1.	[mh "pelvic bones"]
#2.	[mh ^"fractures, bone"]
#3.	#1 and #2
#4.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) near/3 (fracture* or break or breaks or broken or crack* or frx or injur* or trauma*)).ti,ab
#5.	#3 or #4
#6.	MeSH descriptor: [wounds and injuries] this term only
#7.	MeSH descriptor: [abdominal injuries] this term only
#8.	#6 or #7
#9.	MeSH descriptor: [urinary tract] this term only
#10.	MeSH descriptor: [urethra] this term only
#11.	MeSH descriptor: [urinary bladder] this term only
#12.	#9 or #10 or #11
#13.	#8 and #12
#14.	((urinary tract or bladder or urethra*) near/4 (injur* or wound* or trauma*) .ti,ab
#15.	#5 or #13 or #14
#16.	[mh ^radiography]
#17.	[mh ^"radiography, abdominal"]
#18.	[mh ^"tomography, x-ray"]
#19.	[mh ^"tomography, x-ray computed"]
#20.	[mh ^urography]
#21.	(compute* near/2 tomograph*).ti,ab
#22.	((ct or cat) next scan*).ti,ab
#23.	(urograph* or urethrogram* or cystourethrogram* or cysto-urethrogram* or pyelogra*).ti,ab
#24.	(x ray* or xray* or mdct* or ct or radiograph*).ti,ab
#25.	{or #16-#24}

#26.	#15 and #25
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F.4.14 Pelvic fractures - control of pelvic haemorrhage

20. What is the most clinically and cost effective invasive technique for control of bleeding in pelvic ring fractures?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Pelvic fractures	Methods for controlling pelvic haemorrhage	n/a	n/a	See Table 163 Date of last search: 14/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	exp pelvic bones/
2.	fractures, bone/
3.	1 and 2
4.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) adj3 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
5.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) adj3 (bleed* or haemorrhag* or hemorrhag* or blood* or exsanguinat*)).ti,ab.
6.	or/3-5
7.	external fixators/
8.	surgical instruments/
9.	clamp*.ti,ab.
10.	external* fix*.ti,ab.
11.	pack*.ti,ab.
12.	embolization, therapeutic/
13.	(embolization or embolisation).ti,ab.
14.	radiology, interventional/
15.	radiography, interventional/
16.	((therapeutic* or vascular or surgical) adj3 radiolog*).ti,ab.
17.	(interventional adj3 (radiolog* or radiogra* or therap* or treatment*)).ti,ab.
18.	or/7-17
19.	6 and 18

Embase search terms

1.	exp pelvis fracture/
2.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) adj3 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.

3.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) adj3 (bleed* or haemorrhag* or hemorrhag* or blood* or exsanguinat*)):ti,ab.
4.	or/1-3
5.	clamp*.ti,ab.
6.	external* fix*.ti,ab.
7.	pack*.ti,ab.
8.	(embolization or embolisation).ti,ab.
9.	((therapeutic* or vascular or surgical) adj3 radiolog*).ti,ab.
10.	(interventional adj3 (radiolog* or radiogra* or therap* or treatment*)):ti,ab.
11.	exp clamp/
12.	surgical equipment/
13.	exp external fixator/
14.	fracture external fixation/
15.	exp artificial embolism/
16.	exp interventional radiology/
17.	or/5-16
18.	4 and 17

Cochrane search terms

#1.	[mh "pelvic bones"]
#2.	[mh ^"fractures, bone"]
#3.	#1 and #2
#4.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) near/3 (fracture* or break or breaks or broken or crack* or frx)):ti,ab
#5.	((pelvi* or ilium or ischium or pubis or pubic or hip bone or sacrum or coccyx or innominate or coxal or duverney or iliac wing or acetabul* or cotyloid) near/3 (bleed* or haemorrhag* or hemorrhag* or blood* or exsanguinat*)):ti,ab
#6.	#3 or #4 or #5
#7.	[mh "surgical instruments"]
#8.	clamp*:ti,ab,kw
#9.	external* fix*:ti,ab,kw
#10.	pack*:ti,ab,kw
#11.	(embolization or embolisation):ti,ab,kw
#12.	((therapeutic* or vascular or surgical) near/3 radiolog*):ti,ab,kw
#13.	(interventional near/3 (radiolog* or radiogra* or therap* or treatment*)):ti,ab,kw
#14.	{or #7-#13}
#15.	#6 and #14

F.4.15 Pilon fractures – timing of transfer for specialist care

21. Is it clinically and cost effective to transfer people with a pilon fracture (equivalent in children: McFarlane fracture) to a specialist centre prior to first surgical procedure?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
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Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
McFarlane or pilon fractures	Transfer or referral to specialist services	n/a	n/a	See Table 163 Date of last search: 14/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	tibial fractures/ and (distal or hammer or macfarland or mcfarland).ti,ab.
2.	ankle fractures/ and (distal or hammer or macfarland or mcfarland).ti,ab.
3.	ankle/ and (distal or hammer or macfarland or mcfarland).ti,ab.
4.	fibula/ and (distal or hammer or macfarland or mcfarland).ti,ab.
5.	tibia/ and (distal or hammer or macfarland or mcfarland).ti,ab.
6.	(p?lon or plafond).ti,ab.
7.	((hammer or macfarland or mcfarland or distal tibia* or distal tibula* or talus or distal femur or distal fibula* or distal femoral or triplane or tillaux or growth plate or physis) adj3 (fracture* or break* or broken or crack* or frx or fx)).ti,ab.
8.	or/1-7
9.	patient transfer/
10.	transfer*.ti,ab.
11.	exp transportation of patients/
12.	"referral and consultation"/
13.	(refer or refers or referral or referrals or referring).ti,ab.
14.	((mov* or transfer* or sent or send* or refer* or manag* or treat* or surg* or operat* or fix*) adj8 (unit* or center* or centre* or service* or specialist* or expert*)).ti,ab.
15.	((prompt or hour* or rapid or within or early or earlier or late* or time* or timing or delay*) adj8 (mov* or transfer* or sent or send* or refer* or manag* or treat* or surg* or operat* or fix* or therap*)).ti,ab.
16.	definitive.ti,ab.
17.	((stage* or staging) adj3 (approach* or manag* or treat* or surg* or operat* or fix* or therap*)).ti,ab.
18.	or/9-17
19.	8 and 18

Embase search terms

1.	*tibia fracture/
2.	exp *ankle fracture/
3.	*distal tibia fracture/
4.	exp *tibia/
5.	*fibula/
6.	*fibula fracture/
7.	*ankle/
8.	(distal or hammer or macfarland or mcfarland).ti,ab.
9.	or/1-7

10.	8 and 9
11.	(p?lon or plafond).ti,ab.
12.	((hammer or macfarland or mcfarland or distal tibia* or distal tibula* or talus or distal femur or distal fibula* or distal femoral or triplane or tillaux or growth plate or physis) adj3 (fracture* or break* or broken or crack* or FRX or fx)).ti,ab.
13.	or/10-12
14.	exp *patient transport/
15.	*patient referral/
16.	transfer*.ti,ab.
17.	(refer or refers or referral or referrals or referring).ti,ab.
18.	((mov* or transfer* or sent or send* or refer* or manag* or treat* or surg* or operat* or fix*) adj8 (unit* or center* or centre* or service* or specialist* or expert*)).ti,ab.
19.	((prompt or hour* or rapid or within or early or earlier or late* or time* or timing or delay*) adj8 (mov* or transfer* or sent or send* or refer* or manag* or treat* or surg* or operat* or fix* or therap*)).ti,ab.
20.	definitive.ti,ab.
21.	((stage* or staging) adj3 (approach* or manag* or treat* or surg* or operat* or fix* or therap*)).ti,ab.
22.	or/14-21
23.	13 and 22

Cochrane search terms

#1.	[mh "tibial fractures"] and (distal or hammer or macfarland or mcfarland):ti,ab
#2.	[mh "ankle fractures"] and (distal or hammer or macfarland or mcfarland):ti,ab
#3.	[mh ankle] and (distal or hammer or macfarland or mcfarland):ti,ab
#4.	[mh fibula] and (distal or hammer or macfarland or mcfarland):ti,ab
#5.	[mh tibia] and (distal or hammer or macfarland or mcfarland):ti,ab
#6.	(p?lon or plafond):ti,ab
#7.	((hammer or macfarland or mcfarland or distal tibia* or distal tibula* or talus or distal femur or distal fibula* or distal femoral or triplane or tillaux or growth plate or physis) near/3 (fracture* or break* or broken or crack* or frx or fx)):ti,ab
#8.	{or #1-#7}
#9.	[mh "patient transfer"]
#10.	transfer*:ti,ab
#11.	[mh "transportation of patients"]
#12.	[mh "referral and consultation"]
#13.	(refer or refers or referral or referrals or referring):ti,ab
#14.	((mov* or transfer* or sent or send* or refer* or manag* or treat* or surg* or operat* or fix*) near/8 (unit* or center* or centre* or service* or specialist* or expert*))):ti,ab
#15.	((prompt or hour* or rapid or within or early or earlier or late* or time* or timing or delay*) near/8 (mov* or transfer* or sent or send* or refer* or manag* or treat* or surg* or operat* or fix* or therap*))):ti,ab
#16.	definitive:ti,ab
#17.	((stage* or staging) near/3 (approach* or manag* or treat* or surg* or operat* or fix* or therap*))):ti,ab
#18.	{or #9-#17}
#19.	#8 and #18

F.4.16 Pilon fractures – staging and fixation

Searches for the following two questions were run as one search:

22. Are fine wire external fixators more clinically and cost effective for managing pilon fractures than internal fixation with plates and screws?

23. What is the most clinically and cost effective strategy in the surgical management of pilon fractures

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
McFarlane or pilon fractures	Fixation and stabilisation	n/a	n/a	See Table 163 Date of last search: 14/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	tibial fractures/ and (distal or hammer or macfarland or mcfarland).ti,ab.
2.	ankle fractures/ and (distal or hammer or macfarland or mcfarland).ti,ab.
3.	ankle/ and (distal or hammer or macfarland or mcfarland).ti,ab.
4.	fibula/ and (distal or hammer or macfarland or mcfarland).ti,ab.
5.	tibia/ and (distal or hammer or macfarland or mcfarland).ti,ab.
6.	(p?lon or plafond).ti,ab.
7.	((hammer or macfarland or mcfarland or distal tibia* or distal tibula* or talus or distal femur or distal fibula* or distal femoral or triplane or tillaux or growth plate or physis) adj3 (fracture* or break* or broken or crack* or frx)).ti,ab.
8.	or/1-7
9.	orthopedic fixation devices/ or bone nails/ or bone plates/ or bone screws/ or bone wires/ or casts, surgical/ or external fixators/ or internal fixators/
10.	ilizarov technique/
11.	((external or internal) adj3 (device* or frame* or scaffold*)).ti,ab.
12.	(screw* or plate* or plating or wire*).ti,ab.
13.	(ilizarov* or trulock or orthofix).ti,ab.
14.	((taylor or spatial) adj2 frame).ti,ab.
15.	fixat*.ti,ab.
16.	fracture fixation/
17.	(stabilis* or stabiliz* or definitiv* or cast*).ti,ab.
18.	or/9-17
19.	8 and 18

Embase search terms

1.	*tibia fracture/
2.	exp *ankle fracture/
3.	*distal tibia fracture/

4.	exp *tibia/
5.	*fibula/
6.	*fibula fracture/
7.	*ankle/
8.	or/1-7
9.	(distal or hammer or macfarland or mcfarland).ti,ab.
10.	8 and 9
11.	(p?lon or plafond).ti,ab.
12.	((hammer or macfarland or mcfarland or distal tibia* or distal tibula* or talus or distal femur or distal fibula* or distal femoral or triplane or tillaux or growth plate or physis) adj3 (fracture* or break* or broken or crack* or frx)).ti,ab.
13.	or/10-12
14.	*orthopedic fixation device/
15.	*bone nail/
16.	*bone plate/
17.	*bone wire/ or *kirschner wire/
18.	*bone screw/
19.	*plaster cast/
20.	*external fixator/ or *ilizarov external fixator/
21.	*internal fixator/
22.	*ilizarov technique/
23.	*fracture external fixation/
24.	*fracture fixation/
25.	((external or internal) adj3 (device* or frame* or scaffold*)).ti,ab.
26.	(screw* or plate* or plating or wire*).ti,ab.
27.	wire*.ti,ab.
28.	(ilizarov* or trulock or orthofix).ti,ab.
29.	((taylor or spatial) adj2 frame).ti,ab.
30.	(stabilis* or stabiliz* or definitiv* or cast*).ti,ab.
31.	fixat*.ti,ab.
32.	*fracture fixation/
33.	or/14-32
34.	13 and 33

Cochrane search terms

#1.	[mh "tibial fractures"] and (distal or hammer or macfarland or mcfarland):ti,ab
#2.	[mh "ankle fractures"] and (distal or hammer or macfarland or mcfarland):ti,ab
#3.	[mh ankle] and (distal or hammer or macfarland or mcfarland):ti,ab
#4.	[mh fibula] and (distal or hammer or macfarland or mcfarland):ti,ab
#5.	[mh tibia] and (distal or hammer or macfarland or mcfarland):ti,ab
#6.	(p?lon or plafond):ti,ab
#7.	((hammer or macfarland or mcfarland or distal tibia* or distal tibula* or talus or distal femur or distal fibula* or distal femoral or triplane or tillaux or growth plate or physis) near/3 (fracture* or break* or broken or crack* or frx)):ti,ab
#8.	{or #1-#7}
#9.	[mh "orthopedic fixation devices"]

#10.	[mh "bone nails"]
#11.	[mh "bone wires"]
#12.	[mh "bone screws"]
#13.	[mh "bone plates"]
#14.	[mh "casts, surgical"]
#15.	[mh "internal fixators"]
#16.	[mh "external fixators"]
#17.	[mh "fracture fixation"]
#18.	[mh "ilizarov technique"]
#19.	((external or internal) near/3 (device* or frame* or scaffold*)):ti,ab
#20.	(screw* or plate* or plating or wire*):ti,ab
#21.	(ilizarov* or trulock or orthofix):ti,ab
#22.	((taylor or spatial) near/2 frame):ti,ab
#23.	fixat*:ti,ab
#24.	(stabilis* or stabiliz* or definitiv* or cast*):ti,ab
#25.	{or #9-#24}
#26.	#8 and #25

F.4.17 Identifying vascular compromise

24. What is the most accurate method for diagnosing an arterial injury in a person requiring intervention in people with upper and lower limb fractures?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Fractures with vascular injury	Diagnostic technique	n/a	n/a	See Table 163 Date of last search: 13/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	vascular system injuries/
2.	((vascular* or arter*) adj2 (trauma* or compromis* or injur* or wound* or lacerat* or bleed* or haemorrhag* or hemorrhage* or puncture* or contusion* or crush*)):ti,ab.
3.	or/1-2
4.	fracture*.ti,ab.
5.	exp fractures, bone/
6.	4 or 5
7.	3 and 6
8.	limit 7 to english language
9.	exp angiography/
10.	exp ultrasonography, doppler/

11.	exp radiography/
12.	ra.fs.
13.	x-ray.ti,ab.
14.	exp tomography, x-ray computed/
15.	((ct or cat) adj2 (imag* or scan* or diagnos*)).ti,ab.
16.	(compute* adj3 tomogra*).ti,ab.
17.	ankle brachial index/
18.	(abpi or abi or ((ankle or toe) adj2 brachial)).ti,ab.
19.	((ankle or brachial or posterior or anterior or tibial) adj4 pressure*).ti,ab.
20.	(angiogra* or doppler* or imag* or ultrasound* or ultrasonogra* or radiogra*).ti,ab.
21.	exp physical examination/
22.	((clinical or physical or clinician* or physician*) adj (exam* or assess*)).ti,ab.
23.	or/9-22
24.	8 and 23

Embase search terms

1.	exp *blood vessel injury/
2.	((vascular* or arter*) adj2 (trauma* or compromis* or injur* or wound* or lacerat* or bleed* or haemorrhag* or hemorrhage* or puncture* or contusion* or crush*)).ti,ab.
3.	or/1-2
4.	fracture*.ti,ab.
5.	exp *fracture/
6.	or/4-5
7.	3 and 6
8.	limit 7 to english language
9.	exp *angiography/
10.	*doppler echography/
11.	exp *radiography/
12.	exp *computer assisted tomography/
13.	x-ray.ti,ab.
14.	((ct or cat) adj2 (imag* or scan* or diagnos*)).ti,ab.
15.	(compute* adj3 tomogra*).ti,ab.
16.	*ankle brachial index/
17.	(abpi or abi or ((ankle or toe) adj2 brachial)).ti,ab.
18.	((ankle or brachial or posterior or anterior or tibial) adj4 pressure*).ti,ab.
19.	(angiogra* or doppler* or imag* or ultrasound* or ultrasonogra* or radiogra*).ti,ab.
20.	physical examination/
21.	((clinical or physical or clinician* or physician*) adj (exam* or assess*)).ti,ab.
22.	or/9-21
23.	8 and 22

Cochrane search terms

#1.	((vascular* or arter*) near/2 (trauma* or compromis* or injur* or wound* or lacerat* or bleed* or haemorrhag* or hemorrhage* or puncture* or contusion* or crush*)).ti,ab,kw
#2.	MeSH descriptor: [vascular system injuries] this term only
#3.	#1 or #2

#4.	fracture*:ti,ab,kw
#5.	MeSH descriptor: [fractures, bone] explode all trees
#6.	#4 or #5
#7.	#3 and #6
#8.	x-ray:ti,ab,kw
#9.	(compute* near/3 tomogra*):ti,ab,kw
#10.	(abpi or abi or ((ankle or toe) near/2 brachial)):ti,ab,kw
#11.	((ankle or brachial or posterior or anterior or tibial) near/4 pressure*):ti,ab,kw
#12.	(angiogra* or doppler* or imag* or ultrasound* or ultrasonogra* or radiogra*):ti,ab,kw
#13.	((clinical or physical or clinician* or physician*) near (exam* or assess*)):ti,ab,kw
#14.	{or #8-#13}
#15.	#7 and #14

F.4.18 Compartment syndrome

25. What is the most clinically and cost effective method of identifying compartment syndrome in patients with limb fractures?

26. What is the most accurate method of identifying compartment syndrome in patients with limb fractures?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Compartment syndrome	n/a	n/a	n/a	See Table 163 Date of last search: 13/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	exp compartment syndromes/
2.	((intercompartment* or intracompartment* or compartment*) adj2 (syndrome* or pressure*)):ti,ab.
3.	or/1-2
4.	fracture*.ti,ab.
5.	exp fractures, bone/
6.	or/4-5
7.	3 and 6

Embase search terms

1.	*compartment syndrome/
2.	((intercompartment* or intracompartment* or compartment*) adj2 (syndrome* or pressure*)):ti,ab.
3.	or/1-2
4.	fracture*.ti,ab.

5.	exp fracture/
6.	or/4-5
7.	3 and 6

Cochrane search terms

#1.	((intercompartment* or intracompartment* or compartment*) near/2 (syndrome* or pressure*)):ti,ab,kw
#2.	fracture*:ti,ab,kw
#3.	#1 and #2

F.4.19 Splinting for lone bone fractures

27. What is the most clinically and cost effective strategy for splinting of lower limb long bone fractures in the pre-hospital setting?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Long bone fractures (open or closed)	Splints	n/a	n/a	See Table 163 Date of last search: 13/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	fractures, open/
2.	((open or compound or complex) adj3 (fracture* or frx)).ti,ab.
3.	or/1-2
4.	((long bone* or longbone* or lower limb* or leg*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
5.	tibial fractures/
6.	((tibia or tibiae or tibias or shin* or shank*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
7.	femoral fractures/ or femoral neck fractures/
8.	((femur* or femora* or thigh*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
9.	((fibula or fibulae or calf*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
10.	or/3-9
11.	femur/ or fibula/ or tibia/ or leg/ or lower extremity/
12.	fractures, bone/
13.	11 and 12
14.	10 or 13
15.	splints/
16.	splint*.ti,ab.
17.	or/15-16

18.	14 and 17
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Embase search terms

1.	*open fracture/
2.	((open or compound or complex) adj3 (fracture* or frx)).ti,ab.
3.	or/1-2
4.	((long bone* or longbone* or lower limb* or leg*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
5.	((tibia or tibiae or tibias or shin* or shank*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
6.	*tibia fracture/ or *tibia shaft fracture/ or *distal tibia fracture/ or *proximal tibia fracture/
7.	((fibula or fibulae or calf*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
8.	*fibula fracture/
9.	*femur fracture/ or exp *leg fracture/
10.	((femur* or femora* or thigh*) adj4 (fracture* or break or breaks or broken or crack* or frx or trauma or injur*)).ti,ab.
11.	or/3-10
12.	*femur/ or *fibula/ or *tibia/ or *leg/ or *lower leg/
13.	exp *fracture/
14.	12 and 13
15.	11 or 14
16.	exp *splint/
17.	splint*.ti,ab.
18.	or/16-17
19.	15 and 18

Cochrane search terms

#1.	MeSH descriptor: [fractures, open] this term only
#2.	((open or compound or complex) next/3 (fracture* or break* or crack* or frx or fx)):ti,ab
#3.	#1 or #2
#4.	((long bone* or longbone* or lower limb* or leg*) next/4 (fracture* or break or breaks or broken or crack* or frx or fx or trauma or injur*)):ti,ab
#5.	MeSH descriptor: [tibial fractures] this term only
#6.	((tibia or tibiae or tibias or shin* or shank*) next/4 (fracture* or break or breaks or broken or crack* or frx or fx or trauma or injur*)):ti,ab
#7.	MeSH descriptor: [femoral fractures] this term only
#8.	MeSH descriptor: [femoral neck fractures] this term only
#9.	((femur* or femora* or thigh*) next/4 (fracture* or break or breaks or broken or crack* or frx or fx or trauma or injur*)):ti,ab
#10.	((fibula or fibulae or calf*) next/4 (fracture* or break or breaks or broken or crack* or frx or fx or trauma or injur*)):ti,ab
#11.	{or #3-#10}
#12.	MeSH descriptor: [fibula] this term only
#13.	MeSH descriptor: [fractures, bone] this term only
#14.	#12 and #13
#15.	#11 or #14
#16.	MeSH descriptor: [splints] this term only

#17.	splint*.ti,ab
#18.	#16 or #17
#19.	#15 and #18

F.4.20 Hip dislocation

28.Does hip dislocation require immediate open reduction in the event of a failed closed reduction?

Search constructed by combining the columns in the following table using the AND Boolean operator.
Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Hip dislocation	n/a	n/a	n/a	See Table 163 Date of last search: 14/05/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	((hip* or femur* or femoral* or trochant* or pertrochant* or intertrochant* or acetabul*) adj4 (dislocat* or displace*)):ti,ab.
2.	hip dislocation/
3.	or/1-2
4.	(reduce* or reduction* or relocat*).ti,ab.
5.	(congenital or dysplasia).ti,ab.
6.	4 not 5
7.	3 and 6

Embase search terms

1.	((hip* or femur* or femoral* or trochant* or pertrochant* or intertrochant* or acetabul*) adj4 (dislocat* or displace*)):ti,ab.
2.	*hip dislocation/
3.	or/1-2
4.	(reduce* or reduction* or relocat*).ti,ab.
5.	(congenital or dysplasia).ti,ab.
6.	4 not 5
7.	3 and 6

Cochrane search terms

#1.	((hip* or femur* or femoral* or trochant* or pertrochant* or intertrochant* or acetabul*) near/4 (dislocat* or displace*)):ti,ab
#2.	MeSH descriptor: [hip dislocation] explode all trees
#3.	#1 or #2
#4.	(reduce* or reduction* or relocat*):ti,ab
#5.	(congenital or dysplasia):ti,ab
#6.	#4 not #5
#7.	#3 and #6

F.4.21 Full body imaging

29. Is it clinically and cost effective to extend full-body CT to the feet in patients with polytrauma and suspected lower limb injury?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Major trauma	Full body imaging techniques	n/a	n/a	See Table 163 Date of last search: 25/03/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	(trauma* or polytrauma*).ti,ab.
2.	((serious* or severe* or major or life threaten*) adj3 (accident* or injur* or fall*)).ti,ab.
3.	multiple trauma/
4.	wounds, gunshot/ or wounds, stab/ or accidents, traffic/ or accidental falls/ or blast injuries/ or accidents, aviation/
5.	((motor* or motorbike* or vehicle* or road or traffic or car or cars or cycling or bicycle* or automobile* or bike* or head on or pile up) adj3 (accident* or crash* or collision* or smash*)).ti,ab.
6.	(mvas or mva or rtas or rta).ti,ab.
7.	(stabbed or stabbing or stab or gunshot* or gun or gunfire or firearm* or bullet* or knife* or knives or dagger).ti,ab.
8.	or/1-7
9.	exp tomography, x-ray computed/
10.	(cat adj (scan* or imag*)).ti,ab.
11.	(compute* adj2 tomograph*).ti,ab.
12.	(mdct* or ct).ti,ab.
13.	or/9-12
14.	((full or whole or total or entire or complete or head to toe) adj2 (body or bodies or patient* or casual*)).ti,ab.
15.	pan.ti,ab.
16.	or/14-15
17.	13 and 16
18.	whole body imaging/
19.	fbct.ti,ab.
20.	((full or whole or total or pan or head to toe or entire or complete) adj6 (mdct* or ct or tomograph* or cat scan*)).ti,ab.
21.	or/18-20
22.	17 or 21
23.	8 and 22

Embase search terms

1.	(trauma* or polytrauma*).ti,ab.
2.	((serious* or severe* or major or life threaten*) adj3 (accident* or injur* or fall*)).ti,ab.
3.	multiple trauma/
4.	gunshot injury/ or stab wound/ or traffic accident/ or falling/ or blast injury/ or aircraft accident/
5.	((motor* or motorbike* or vehicle* or road or traffic or car or cars or cycling or bicycle* or automobile* or bike* or head on or pile up) adj3 (accident* or crash* or collision* or smash*)).ti,ab.
6.	(mvas or mva or rtas or rta).ti,ab.
7.	(stabbed or stabbing or stab or gunshot* or gun or gunfire or firearm* or bullet* or knife* or knives or dagger).ti,ab.
8.	or/1-7
9.	exp computer assisted tomography/
10.	(cat adj (scan* or imag*)).ti,ab.
11.	(compute* adj2 tomograph*).ti,ab.
12.	(mdct* or ct).ti,ab.
13.	or/9-12
14.	((full or whole or total or entire or complete or head to toe) adj2 (body or bodies or patient* or casual*)).ti,ab.
15.	pan.ti,ab.
16.	or/14-15
17.	13 and 16
18.	whole body imaging/
19.	fbct.ti,ab.
20.	((full or whole or total or pan or head to toe or entire or complete) adj6 (mdct* or ct or tomograph* or cat scan*)).ti,ab.
21.	or/18-20
22.	17 or 21
23.	8 and 22

Cochrane search terms

#1.	MeSH descriptor: [multiple trauma] this term only
#2.	(trauma* or polytrauma*).ti,ab
#3.	((serious* or severe* or major) near/3 (accident* or injur* or fall*)).ti,ab
#4.	MeSH descriptor: [wounds, gunshot] this term only
#5.	MeSH descriptor: [wounds, stab] this term only
#6.	MeSH descriptor: [accidents, traffic] this term only
#7.	MeSH descriptor: [accidental falls] this term only
#8.	MeSH descriptor: [blast injuries] this term only
#9.	MeSH descriptor: [accidents, aviation] this term only
#10.	((motor* or motorbike* or vehicle* or road or traffic or car or cars or cycling or bicycle* or automobile* or bike*) near/3 (accident* or crash* or collision* or smash*)).ti,ab
#11.	(mvas or mva or rtas or rta).ti,ab
#12.	(stabbed or stabbing or stab or gunshot or gun or gunfire or firearm* or bullet or knife* or knives or dagger or shot).ti,ab
#13.	{or #1-#12}
#14.	MeSH descriptor: [tomography, x-ray computed] explode all trees

#15.	(cat near/2 (scan* or imag*)):ti,ab
#16.	(compute* near/2 tomograph*):ti,ab
#17.	(mdct* or ct):ti,ab
#18.	{or #14-#17}
#19.	((full or whole or total or entire or complete) near/2 (body or bodies or patient* or casual*)):ti,ab
#20.	pan:ti,ab
#21.	{or #19-#20}
#22.	#18 and #21
#23.	MeSH descriptor: [whole body imaging] this term only
#24.	fbct:ti,ab
#25.	((full or whole or total or pan or entire or complete) near (mdct* or ct or tomograph* or cat scan*)):ti,ab
#26.	{or #23-#25}
#27.	#22 or #26
#28.	#13 and #27

F.4.22 Documentation – open wound fracture photographs

30. For patients with open fractures, is documentation that includes wound photographs more clinically and cost effective than documentation without inclusion of wound photographs?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Open fractures	Documentation of wound photographs	n/a	n/a	See Table 163 Date of last search: 13/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	(photo or photos or photograph* or polaroid*).ti,ab.
2.	photography/
3.	or/1-2
4.	fractures, open/
5.	((open or compound) adj3 (fracture* or frx)).ti,ab.
6.	or/4-5
7.	3 and 6

Embase search terms

1.	(photo or photos or photograph* or polaroid*).ti,ab.
2.	photography/
3.	medical photography/

4.	or/1-3
5.	open fracture/
6.	((open or compound) adj3 (fracture* or frx)).ti,ab.
7.	or/5-6
8.	4 and 7

Cochrane search terms

#1.	(photo or photos or photograph* or polaroid*):ti,ab
#2.	MeSH descriptor: [photography] this term only
#3.	{or #1-#2}
#4.	MeSH descriptor: [fractures, open] this term only
#5.	((open or compound) near/3 (fracture* or frx)):ti,ab
#6.	{or #4-#5}
#7.	#3 and #6

F.4.23 Documentation - neurovascular status

31. Does documentation recording assessment results of neurovascular status (including interpretations and conclusions) improve outcomes compared to limited recording of neurovascular status?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Fractures	Documentation AND Neurovascular status	n/a	n/a	See Table 163 Date of last search: 14/04/2015 English only Exclusion filter applied in Medline, Embase and CINAHL

Medline search terms

1.	fracture*.ti,ab.
2.	exp fractures, bone/
3.	or/1-2
4.	neurologic examination/
5.	((neurologic* or vascular* or neurovascular* or neuro-vascular* or circulation motor sensory or pulse motor sensory or nv or cms or pms or dnv) adj3 (status* or deficit* or damage* or function* or impair* or compromise* or complication* or injur* or problem*)).ti,ab.
6.	((neurologic* or vascular* or neurovascular* or neuro-vascular* or circulation motor sensory or pulse motor sensory or nv or cms or pms or dnv) adj3 (exam* or evaluat* or assess* or test or tests or testing or measure* or observation* or investigat* or check*)).ti,ab.
7.	(nerve* adj3 (status* or deficit* or damage* or function* or impair* or compromise* or complication* or injur* or problem*)).ti,ab.
8.	((arterial or blood) adj2 flow).ti,ab.
9.	((pulse* or capillar*) adj2 refill*).ti,ab.
10.	cr.ti,ab.

11.	*capillary resistance/
12.	(pulse* adj4 (access* or presence or present or absence or quality or strength or strong or weak or choppy or uneven or rough or irregular*)).ti,ab.
13.	((pallor or temperature or colour or color or warmth or swollen or swelling* or paralys* or movement* or paraesthesia or sensation* or position* or circulat* or pulse* or capillar*) adj4 (limb* or arm* or leg* or foot* or hand* or exam* or evaluat* or assess* or test or tests or testing or measure* or status* or observation* or investigat* or check*)).ti,ab.
14.	or/4-13
15.	"forms and records control"/
16.	documentation/
17.	exp medical records systems, computerized/
18.	medical records/
19.	medical audit/
20.	nursing records/
21.	databases factual/
22.	health information systems/
23.	hospital information systems/
24.	nursing records/
25.	(record* keep* or recordkeep* or form or forms or document* or audit* or database* or information system* or note or notes or notation* or log or logs or logging or paperwork).ti,ab.
26.	or/15-25
27.	3 and 14 and 26

Embase search terms

1.	fracture*.ti,ab.
2.	exp fracture/
3.	or/1-2
4.	*neurologic examination/
5.	((neurologic* or vascular* or neurovascular* or neuro-vascular* or circulation motor sensory or pulse motor sensory or nv or cms or pms or dnv) adj3 (status* or deficit* or damage* or function* or impair* or compromise* or complication* or injur* or problem*)).ti,ab.
6.	((neurologic* or vascular* or neurovascular* or neuro-vascular* or circulation motor sensory or pulse motor sensory or nv or cms or pms or dnv) adj3 (exam* or evaluat* or assess* or test or tests or testing or measure* or observation* or investigat* or check*)).ti,ab.
7.	(nerve* adj3 (status* or deficit* or damage* or function* or impair* or compromise* or complication* or injur* or problem*)).ti,ab.
8.	((arterial or blood) adj2 flow).ti,ab.
9.	((pulse* or capillar*) adj2 refill*).ti,ab.
10.	crt.ti,ab.
11.	exp *vascular resistance/
12.	(pulse* adj4 (access* or presence or present or absence or quality or strength or strong or weak or choppy or uneven or rough or irregular*)).ti,ab.
13.	((pallor or temperature or colour or color or warmth or swollen or swelling* or paralys* or movement* or paraesthesia or sensation* or position* or circulat* or pulse* or capillar*) adj4 (limb* or arm* or leg* or foot* or hand* or exam* or evaluat* or assess* or test or tests or testing or measure* or status* or observation* or investigat* or check*)).ti,ab.
14.	or/4-13
15.	exp *documentation/
16.	*factual database/

17.	*medical information system/
18.	*hospital information system/
19.	*medical audit/
20.	(record* keep* or recordkeep* or form or forms or document* or audit* or database* or information system* or note or notes or notation* or log or logs or logging or paperwork).ti,ab.
21.	or/15-20
22.	3 and 14 and 21

Cochrane search terms

#1.	fracture*:ti,ab,
#2.	MeSH descriptor: [fractures, bone] explode all trees
#3.	#1 or #2
#4.	MeSH descriptor: [neurologic examination] this term only
#5.	((neurologic* or vascular* or neurovascular* or neuro next vascular* or circulation next motor next sensory or pulse next motor next sensory or nv or cms or pms or dnv) near/3 (status* or deficit* or damage* or function* or impair* or compromise* or complication* or injur* or problem*)):ti,ab
#6.	((neurologic* or vascular* or neurovascular* or neuro next vascular* or circulation next motor next sensory or pulse next motor next sensory or nv or cms or pms or dnv) near/3 (exam* or evaluat* or assess* or test or tests or testing or measure* or observation* or investigat* or check*)):ti,ab
#7.	(nerve* near/3 (status* or deficit* or damage* or function* or impair* or compromise* or complication* or injur* or problem*)):ti,ab
#8.	((arterial or blood) near/2 flow):ti,ab
#9.	((pulse* or capillar*) near/2 refill*):ti,ab
#10.	crt:ti,ab
#11.	MeSH descriptor: [capillary resistance] this term only
#12.	(pulse* near/4 (access* or presence or present or absence or quality or strength or strong or weak or choppy or uneven or rough or irregular*)):ti,ab
#13.	((pallor or temperature or colour or color or warmth or swollen or swelling* or paraly* or movement* or paraesthesia or sensation* or position* or circulat* or pulse* or capillar*) near/4 (limb* or arm* or leg* or foot* or hand* or exam* or evaluat* or assess* or test or tests or testing or measure* or status* or observation* or investigat* or check*)):ti,ab
#14.	{or #4-#13}
#15.	MeSH descriptor: [forms and records control] this term only
#16.	MeSH descriptor: [documentation] this term only
#17.	MeSH descriptor: [medical records systems, computerized] explode all trees
#18.	MeSH descriptor: [medical records] this term only
#19.	MeSH descriptor: [medical audit] this term only
#20.	MeSH descriptor: [nursing records] this term only
#21.	MeSH descriptor: [databases, factual] this term only
#22.	MeSH descriptor: [health information systems] this term only
#23.	MeSH descriptor: [hospital information systems] this term only
#24.	MeSH descriptor: [nursing records] this term only
#25.	(record* next keep* or recordkeep* or form or forms or document* or audit* or database* or information system* or note or notes or notation* or log or logs or logging or paperwork):ti,ab
#26.	{or #15-#25}
#27.	#3 and #14 and #26

CINAHL search terms

S1.	fracture*
S2.	(MH "fractures+")
S3.	(S1 or S2)
S4.	MH neurologic examination
S5.	((neurologic* or vascular* or neurovascular* or neuro-vascular* or circulation motor sensory or pulse motor sensory or nv or cms or pms or dnv) n3 (status* or deficit* or damage* or function* or impair* or compromise* or complication* or injur* or problem*))
S6.	((neurologic* or vascular* or neurovascular* or neuro-vascular* or circulation motor sensory or pulse motor sensory or nv or cms or pms or dnv) n3 (exam* or evaluat* or assess* or test or tests or testing or measure* or observation* or investigat* or check*))
S7.	(nerve* n3 (status* or deficit* or damage* or function* or impair* or compromise* or complication* or injur* or problem*))
S8.	((arterial or blood) n2 flow)
S9.	(pulse* or capillar*) n2 refill*
S10.	crt
S11.	MH capillary resistance
S12.	pulse* n4 (access* or presence or present or absence or quality or strength or strong or weak or choppy or uneven or rough or irregular*)
S13.	((pallor or temperature or colour or color or warmth or swollen or swelling* or paralys* or movement* or paraesthesia or sensation* or position* or circulat* or pulse* or capillar*) n4 (limb* or arm* or leg* or foot* or hand* or exam* or evaluat* or assess* or test or tests or testing or measure* or status* or observation* or investigat* or check*))
S14.	S4 or S5 or S6 or S7 or S8 or S9 or S10 or S11 or S12 or S13
S15.	(MH "medical records") or (MH "computerized patient record") or (MH "nursing records") or (MH "patient record systems")
S16.	(MH "documentation")
S17.	(MH "clinical information systems") or (MH "health information systems")
S18.	(record* keep* or recordkeep* or form or forms or document* or audit* or database* or information system* or note or notes or notation* or log or logs or logging or paperwork)
S19.	(S15 or S16 or S17 or S18)
S20.	(S3 and S14 and S19)

F.4.24 Information and support

32. What information and support do people with fractures and their families and carers require?

Search constructed by combining the columns in the following table using the AND Boolean operator. Exclusion filter applied using NOT Boolean operator.

Population	Intervention or exposure	Comparison	Study design filter	Date parameters and other limits
Fractures	Information	n/a	The following filters were used in Medline, Embase and CINAHL only: QUAL	See Table 163 English only Exclusion filter applied in Medline, Embase and CINAHL

Medline search terms

1.	exp fractures, bone/
2.	fracture*.ti,ab.

3.	or/1-2
4.	patients/ or inpatients/ or outpatients/
5.	caregivers/ or exp family/ or exp parents/ or exp legal-guardians/
6.	(patient* or carer* or famil*).ti,ab.
7.	or/4-6
8.	popular-works-publication-type/ or exp information-services/ or publications/ or books/ or pamphlets/ or counseling/ or directive-counseling/
9.	7 and 8
10.	(patient* adj3 (education or educate or educating or literature or leaflet* or booklet* or pamphlet* or information)).ti,ab.
11.	patient education as topic/
12.	consumer health information/
13.	(information* adj3 (patient* or need* or requirement* or support* or seek* or access* or disseminat* or barrier*)).ti,ab.
14.	(discharge* adj3 (information* or advice)).ti,ab.
15.	((client* or patient* or user* or carer* or consumer* or customer* or famil* or parent* or father* or mother* or caregiver* or next of kin) adj2 (information* or educat* or learn* or train* or program* or advi?e* or instruct* or teach* or knowledge or understanding or misunderstanding or communicat* or involvement or support*)).ti,ab.
16.	((client* or patient* or user* or carer* or consumer* or customer* or famil* or parent* or father* or mother* or caregiver* or next of kin) adj2 (pamphlet* or leaflet* or booklet* or manual* or brochure* or publication* or handout* or website* or web site* or web page* or webpage* or video* or dvd*)).ti,ab.
17.	((information* or educat* or learn* or train* or program* or advi?e* or instruction* or teach* or knowledge or understanding or misunderstanding or communicat* or involvement or support*) adj2 (pamphlet* or leaflet* or booklet* or manual* or brochure* or publication* or handout* or website* or web site* or web page* or webpage* or video* or dvd*)).ti,ab.
18.	((information* or educat*) adj2 (model* or program* or need* or requirement* or support* or seek* or access* or disseminat*)).ti,ab.
19.	exp consumer-satisfaction/ or personal-satisfaction/ or exp patient-acceptance-of-health-care/
20.	((patient* or user* or carer* or famil* or parent* or father* or mother*) adj3 (attitud* or priorit* or perception* or preferen* or expectation* or choice* or perspective* or view* or satisfact* or inform*)).ti,ab.
21.	((patient* or user* or carer* or famil* or parent* or father* or mother*) adj3 (knowledge or awareness or misconception* or understanding or misunderstanding)).ti,ab.
22.	((patient* or user* or carer* or famil* or parent* or father* or mother*) adj3 (experience or experiences or opinion* or concern* or belief* or feeling* or idea* or satisfaction or anxiet* or fear* or acceptance or denial or stigma* or label* or behaviour* or behavior*)).ti,ab.
23.	((patient* or user* or carer* or famil* or parent* or father* or mother*) adj3 (need* or requirement* or support* or communication* or involvement)).ti,ab.
24.	or/9-23
25.	3 and 24

Embase search terms

1.	exp fracture/
2.	fracture*.ti,ab.
3.	or/1-2
4.	patient/ or hospital patient/ or outpatient/
5.	caregiver/ or exp family/ or exp parent/
6.	(patient* or carer* or famil*).ti,ab.

7.	or/4-6
8.	information service/ or information center/ or publication/ or book/ or counseling/ or directive counseling/
9.	7 and 8
10.	patient attitude/ or patient preference/ or patient satisfaction/ or consumer attitude/
11.	patient information/ or consumer health information/
12.	patient education/
13.	(patient* adj3 (education or educate or educating or information or literature or leaflet* or booklet* or pamphlet*)).ti,ab.
14.	(information* adj3 (need* or requirement* or support* or seek* or access* or disseminat* or barrier*)).ti,ab.
15.	(discharge* adj3 (information* or advice)).ti,ab.
16.	((patient* or user* or carer* or famil* or parent* or father* or mother*) adj3 (attitud* or priorit* or perception* or preferen* or expectation* or choice* or perspective* or view* or satisfact* or inform*)).ti,ab.
17.	((patient* or user* or carer* or famil* or parent* or father* or mother*) adj3 (knowledge or awareness or misconception* or understanding or misunderstanding)).ti,ab.
18.	((patient* or user* or carer* or famil* or parent* or father* or mother*) adj3 (experience or experiences or opinion* or concern* or belief* or feeling* or idea* or satisfaction or anxiet* or fear* or acceptance or denial or stigma* or label* or behaviour* or behavior*)).ti,ab.
19.	((patient* or user* or carer* or famil* or parent* or father* or mother*) adj3 (need* or requirement* or support* or communication* or involvement)).ti,ab.
20.	or/9-19
21.	((client* or patient* or user* or carer* or consumer* or customer* or famil* or parent* or father* or mother* or caregiver* or next of kin) adj2 (information* or educat* or learn* or train* or program* or advi?e* or instruct* or teach* or knowledge or understanding or misunderstanding or communicat* or involvement or support*)).ti,ab.
22.	((client* or patient* or user* or carer* or consumer* or customer* or famil* or parent* or father* or mother* or caregiver* or next of kin) adj2 (pamphlet* or leaflet* or booklet* or manual* or brochure* or publication* or handout* or website* or web site* or web page* or webpage* or video* or dvd*)).ti,ab.
23.	((information* or educat* or learn* or train* or program* or advi?e* or instruction* or teach* or knowledge or understanding or misunderstanding or communicat* or involvement or support*) adj2 (pamphlet* or leaflet* or booklet* or manual* or brochure* or publication* or handout* or website* or web site* or web page* or webpage* or video* or dvd*)).ti,ab.
24.	((information* or educat*) adj2 (model* or program* or need* or requirement* or support* or seek* or access* or disseminat*)).ti,ab.
25.	or/9-24
26.	3 or 25

CINAHL search terms

S1.	(MH "fractures+")
S2.	ti fracture* or ab fracture*
S3.	S1 or S2
S4.	(MM "patient education") or (MM "patient discharge education")
S5.	((client* or patient* or user* or carer* or consumer* or customer* or famil* or parent* or father* or mother* or caregiver* or next of kin*) n2 (information* or educat* or learn* or train* or program* or advi?e* or instruct* or teach* or knowledge or understanding or misunderstanding or communicat* or involvement or support*))
S6.	((client* or patient* or user* or carer* or consumer* or customer* or famil* or parent* or father* or mother* or caregiver* or next of kin) n2 (pamphlet* or leaflet* or booklet* or

	manual* or brochure* or publication* or handout* or website* or web site* or web page* or webpage* or video* or dvd*)
S7.	((information* or educat* or learn* or train* or program* or advice* or instruction* or teach* or knowledge or understanding or misunderstanding or communicat* or involvement or support*) n2 (pamphlet* or leaflet* or booklet* or manual* or brochure* or publication* or handout* or website* or web site* or web page* or webpage* or video* or dvd*))
S8.	((information* or educat*) n2 (model* or program* or need* or requirement* or support* or seek* or access* or disseminat*))
S9.	S4 or S5 or S6 or S7 or S8
S10.	MH patients or MH inpatients or MH outpatients or MH caregivers or MH family+ or MH parents+ or MH guardianship, legal
S11.	MH information services+ or MH books+ or MH pamphlets or MH counseling
S12.	S10 and S11
S13.	((patient* or user* or carer* or famil* or parent* or father* or mother*) n3 (attitud* or priorit* or perception* or preferen* or expectation* or choice* or perspective* or view* or satisfact* or inform or knowledge or awareness or misconception* or understanding or misunderstanding or experience or experiences or opinion* or concern* or belief* or feeling* or idea* or satisfaction or anxiet* or fear* or acceptance or denial or stigma* or label* or behaviour* or behavior* or need* or requirement* or support* or communication* or involvement))
S14.	MH consumer satisfaction+ or MH consumer attitudes or MH personal satisfaction
S15.	(MH "patient attitudes") or (MH "family attitudes+")
S16.	(information* n3 (need* or requirement* or support* or seek* or access* or disseminat* or barrier*))
S17.	(discharge* n3 (information* or advice))
S18.	S13 or S14 or S15 or S16 or S17
S19.	S9 or S12 or S18
S20.	S3 and S20

F.5 Health economics search

F.5.1 Health economic reviews

Economic searches were conducted in Medline, Embase, HEED and CRD for NHS EED and HTA.

Population	Intervention or exposure	Comparison	Study design filters	Date parameters and other limits
Fractures	n/a	n/a	The following filters were used in Medline and Embase only: HE, MOD	Medline and Embase 2011–16/04/2015 CRD EED and HTA Inception–16/04/2015 HEED Inception-13/01/2014 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	humeral fractures/
2.	((humerus or arm or arms or forelimb*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
3.	hill sachs lesion.ti,ab.
4.	exp radius fractures/ or exp ulna fractures/
5.	((radius or ulna* or forearm* or radial* or elbow* or intercondylar or condylar or capitellum or nightstick or night stick or monteggia or hume or olecranon or galeazzi or colles* or dinner fork or silver fork or bayonet or parry or smith* or barton*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
6.	femoral fractures/
7.	((femoral or femur* or thigh* or leg or legs or stieda*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
8.	exp pelvic bones/in
9.	((pelvic or pelvis or hip or innominate or duverney or coccyx or coxal or coxae or sacrum or ilium or ischium or pubis or acetabul* or cotyloid) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
10.	(hip adj2 (socket* or cavit*) adj3 (fracture* or break* or crack* or frx or fx)).ti,ab.
11.	tibial fractures/ or fibula/in
12.	((lower leg* or crus or gaiter* or tibia* or fibula* or bumper or segond or gosselin or toddler* or bosworth or shins or shin or shinbone* or pilon or distal tibia* or hammer or plafond) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
13.	(childhood adj2 accident* adj2 spiral adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
14.	talus/in
15.	((talus or ankle* or talocrural* or subtalar* or tibiofibular* or malleolus or malleoli or pott* or trimalleolar* or bimalleolar* or maisonneuve* or dupuytren*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
16.	(le fort adj2 (fracture* or break or breaks or broken or crack* or frx) adj2 ankle*).ti,ab.
17.	exp carpal bones/in
18.	((carpal* or wrist* or radiocarpal* or scaphoid* or lunate* or triquetral* or pisiform* or trapezium* or trapezoid* or capitata* or hamate* or ossa carpi or chauffeur* or quervain*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
19.	hand bones/in or metacarpal bones/in
20.	((metacarpal* or metacarpus or hand or hands or scaphoid* or rolando or bennett* or boxer*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
21.	(phalanx adj4 (hand* or foot or feet) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
22.	((phalangeal or phalange* or finger* or toe* or interphalange*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
23.	tarsal bones/in or calcaneus/in
24.	((tarsal* or calcaneus* or navicular* or lover* or don juan or calcaneal* or heel* or cuneiform* or intercuneiform* or cuboid* or foot or feet or lisfranc or tarsometatarsal* or midfoot or chopart*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
25.	metatarsal bones/in
26.	((metatarsal* or jone* or metatarsus* or metatarsophalangeal* or march) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
27.	patella/in
28.	((patella* or knee*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
29.	exp scapula/in or clavicle/in or shoulder fractures/

30.	((clavicular or clavicle* or collarbone* or scapular or scapula* or shoulder*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
31.	rib fractures/ or exp sternum/in
32.	((ribs or breastbone* or rib or sternal or sternum* or gladiolus or manubrium) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
33.	((hyoid or lingual or cornua) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
34.	or/1-33
35.	fractures, closed/ or fractures, comminuted/ or fractures, open/ or fractures, cartilage/ or intra-articular fractures/
36.	((greenstick or green stick or complex or open or closed or compound or simple) adj2 (fracture* or frx)).ti,ab.
37.	or/35-36
38.	exp facial bones/in
39.	((face or nose or nasal or maxillary or maxillofacial or mandibular or jaw or blowout or orbit) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
40.	(eye* adj3 (socket* or cavit*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
41.	(le fort adj3 skull).ti,ab.
42.	spinal fractures/
43.	((spine or spinal or vertebra* or neck or cervical or jefferson* or sagittal or hangman* or flexion or teardrop or clay shoveler* or burst or compression or holdsworth) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
44.	exp skull fractures/
45.	((skull* or basilar or basal or temporal or occipital or sphenoid* or ethmoid or head) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
46.	exp hip fractures/
47.	((hip or subtrochanteric or nof) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
48.	((femoral or femur) adj3 (head or neck) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
49.	or/38-48
50.	37 not 49
51.	34 or 50

Embase search terms

1.	exp arm fracture/
2.	((humerus or arm or arms or forelimb*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
3.	hill sachs lesion.ti,ab.
4.	((radius or ulna* or forearm* or radial* or elbow* or intercondylar or condylar or capitellum or nightstick or night stick or monteggia or hume or olecranon or galeazzi or colles* or dinner fork or silver fork or bayonet or parry or smith* or barton*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
5.	leg fracture/ or femur fracture/ or femur shaft fracture/
6.	((femoral or femur* or thigh* or leg or legs or stieda*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
7.	exp pelvis fracture/
8.	((pelvic or pelvis or hip or innominate or duverney or coccyx or coxal or coxae or sacrum or ilium or ischium or pubis or acetabul* or cotyloid) adj4 (fracture* or break or breaks or broken

	or crack* or frx)).ti,ab.
9.	(hip adj2 (socket* or cavit*) adj3 (fracture* or break* or crack* or frx or fx)).ti,ab.
10.	tibia fracture/ or distal tibia fracture/ or fibula fracture/ or proximal tibia fracture/ or tibia shaft fracture/
11.	((lower leg* or crus or gaiter* or tibia* or fibula* or bumper or segond or gosselin or toddler* or bosworth or shins or shin or shinbone* or pilon or distal tibia* or hammer or plafond) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
12.	(childhood adj2 accident* adj2 spiral adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
13.	exp ankle fracture/
14.	((talus or ankle* or talocrural* or subtalar* or tibiofibular* or malleolus or malleoli or pott* or trimalleolar* or bimalleolar* or maisonneuve* or dupuytren*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
15.	(le fort adj2 (fracture* or break or breaks or broken or crack* or frx) adj2 ankle*).ti,ab.
16.	((carpal* or wrist* or radiocarpal* or scaphoid* or lunate* or triquetral* or pisiform* or trapezium* or trapezoid* or capitata* or hamate* or ossa carpi or chauffeur* or quervain*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
17.	hand fracture/ or finger fracture/
18.	((metacarpal* or metacarpus or hand or hands or scaphoid* or rolando or bennett* or boxer*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
19.	(phalanx adj4 (hand* or foot or feet) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
20.	((phalangeal or phalange* or finger* or toe* or interphalange*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
21.	calcaneus fracture/ or foot fracture/
22.	((tarsal* or calcaneus* or navicular* or lover* or don juan or calcaneal* or heel* or cuneiform* or intercuneiform* or cuboid* or foot or feet or lisfranc or tarsometatarsal* or midfoot or chopart*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
23.	((metatarsal* or jone* or metatarsus* or metatarsophalangeal* or march) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
24.	knee fracture/ or patella fracture/
25.	((patella* or knee*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
26.	((clavicular or clavicle* or collarbone* or scapular or scapula* or shoulder*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
27.	exp rib fracture/
28.	((ribs or breastbone* or rib or sternal or sternum* or gladiolus or manubrium) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
29.	((hyoid or lingual or cornua) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
30.	or/1-29
31.	avulsion fracture/ or comminuted fracture/ or fracture dislocation/ or intraarticular fracture/ or joint fracture/ or limb fracture/ or open fracture/
32.	((greenstick or green stick or complex or open or closed or compound or simple) adj2 (fracture* or frx)).ti,ab.
33.	or/31-32
34.	exp face fracture/
35.	((face or nose or nasal or maxillary or maxillofacial or mandibular or jaw or blowout or orbit) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
36.	(eye* adj3 (socket* or cavit*) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.

37.	(le fort adj3 skull).ti,ab.
38.	exp spine fracture/
39.	((spine or spinal or vertebra* or neck or cervical or jefferson* or sagittal or hangman* or flexion or teardrop or clay shoveler* or burst or compression or holdsworth) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
40.	exp skull fracture/
41.	((skull* or basilar or basal or temporal or occipital or sphenoid* or ethmoid or head) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
42.	exp hip fracture/
43.	((hip or subtrochanteric or nof) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
44.	((femoral or femur) adj3 (head or neck) adj4 (fracture* or break or breaks or broken or crack* or frx)).ti,ab.
45.	or/34-44
46.	33 not 45
47.	30 or 46

CRD search terms

#1.	MeSH descriptor humeral fractures
#2.	((((humerus or arm or arms or forelimb*) adj4 (fracture* or break or breaks or broken or crack* or frx)))
#3.	(hill sachs lesion)
#4.	MeSH descriptor radius fractures explode all trees
#5.	MeSH descriptor ulna fractures explode all trees
#6.	((((radius or ulna* or forearm* or radial* or elbow* or intercondylar or condylar or capitellum or nightstick or night stick or monteggia or hume or olecranon or galeazzi or colles* or dinner fork or silver fork or bayonet or parry or smith* or barton*) adj4 (fracture* or break or breaks or broken or crack* or frx)))
#7.	MeSH descriptor femoral fractures
#8.	((((femoral or femur* or thigh* or leg or legs or stieda*) adj4 (fracture* or break or breaks or broken or crack* or frx)))
#9.	MeSH descriptor pelvic bones explode all trees with qualifier in
#10.	((((pelvic or pelvis or hip or innominate or duverney or coccyx or coxal or coxae or sacrum or ilium or ischium or pubis or acetabul* or cotyloid) adj4 (fracture* or break or breaks or broken or crack* or frx)))
#11.	((hip adj2 (socket* or cavit*) adj3 (fracture* or break* or crack* or frx or fx)))
#12.	MeSH descriptor tibial fractures
#13.	MeSH descriptor fibula with qualifier in
#14.	((((lower leg* or crus or gaiter* or tibia* or fibula* or bumper or segond or gosselin or toddler* or bosworth or shins or shin or shinbone* or pilon or distal tibia* or hammer or plafond) adj4 (fracture* or break or breaks or broken or crack* or frx)))
#15.	((childhood adj2 accident* adj2 spiral adj4 (fracture* or break or breaks or broken or crack* or frx)))
#16.	MeSH descriptor talus with qualifier in
#17.	((((talus or ankle* or talocrural* or subtalar* or tibiofibular* or malleolus or malleoli or pott* or trimalleolar* or bimalleolar* or maisonneuve* or dupuytren*) adj4 (fracture* or break or breaks or broken or crack* or frx)))
#18.	((le fort adj2 (fracture* or break or breaks or broken or crack* or frx) adj2 ankle*))
#19.	MeSH descriptor carpal bones explode all trees with qualifier in

#20.	(((carpal* or wrist* or radiocarpal* or scaphoid* or lunate* or triquetral* or pisiform* or trapezium* or trapezoid* or capitata* or hamate* or ossa carpi or chauffeur* or quervain*) adj4 (fracture* or break or breaks or broken or crack* or frx)))
#21.	MeSH descriptor hand bones with qualifier in
#22.	MeSH descriptor metacarpal bones with qualifier in
#23.	(((metacarpal* or metacarpus or hand or hands or scaphoid* or rolando or bennett* or boxer*) adj4 (fracture* or break or breaks or broken or crack* or frx)))
#24.	((phalanx adj4 (hand* or foot or feet) adj4 (fracture* or break or breaks or broken or crack* or frx)))
#25.	(((phalangeal or phalange* or finger* or toe* or interphalange*) adj4 (fracture* or break or breaks or broken or crack* or frx)))
#26.	MeSH descriptor tarsal bones with qualifier in
#27.	MeSH descriptor calcaneus with qualifier in
#28.	(((tarsal* or calcaneus* or navicular* or lover* or don juan or calcaneal* or heel* or cuneiform* or intercuneiform* or cuboid* or foot or feet or lisfranc or tarsometatarsal* or midfoot or chopart*) adj4 (fracture* or break or breaks or broken or crack* or frx)))
#29.	MeSH descriptor metatarsal bones with qualifier in
#30.	(((metatarsal* or jone* or metatarsus* or metatarsophalangeal* or march) adj4 (fracture* or break or breaks or broken or crack* or frx)))
#31.	MeSH descriptor patella with qualifier in
#32.	(((patella* or knee*) adj4 (fracture* or break or breaks or broken or crack* or frx)))
#33.	MeSH descriptor scapula explode all trees with qualifier in
#34.	MeSH descriptor clavicle with qualifier in
#35.	MeSH descriptor shoulder fractures
#36.	(((clavicular or clavicle* or collarbone* or scapular or scapula* or shoulder*) adj4 (fracture* or break or breaks or broken or crack* or frx)))
#37.	MeSH descriptor rib fractures
#38.	(((ribs or breastbone* or rib or sternal or sternum* or gladiolus or manubrium) adj4 (fracture* or break or breaks or broken or crack* or frx)))
#39.	(((hyoid or lingual or cornua) adj4 (fracture* or break or breaks or broken or crack* or frx)))
#40.	MeSH descriptor fractures, closed
#41.	MeSH descriptor fractures, comminuted
#42.	MeSH descriptor fractures, open
#43.	MeSH descriptor fractures, cartilage
#44.	MeSH descriptor intra-articular fractures
#45.	(((greenstick or green stick or complex or open or closed or compound or simple) adj2 (fracture* or frx)))
#46.	#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32 or #33 or #34 or #35 or #36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44 or #45

HEED search terms

1.	TI=humer* or arm or arms or forelimb* or radius or ulna* or forearm* or radial* or femoral or femur* or leg or legs or pelvic or pelvis or hip or fibular or tibia* or fibula* or talus or ankle or carpal* or wrist* or finger* or toe* or foot or feet or patella* or knee* or clavicular or clavicle* or collarbone* or scapular or scapula* or shoulder* or ribs or rib or pilon or acetabul* or plafond
2.	AB=humer* or arm or arms or forelimb* or radius or ulna* or forearm* or radial* or femoral or femur* or leg or legs or pelvic or pelvis or hip or fibular or tibia* or fibula* or talus or ankle

	or carpal* or wrist* or finger* or toe* or foot or feet or patella* or knee* or clavicular or clavicle* or collarbone* or scapular or scapula* or shoulder* or ribs or rib or pilon or acetabul* or plafond
3.	TI=fracture* or break or breaks or broken or crack* or frx
4.	AB=fracture* or break or breaks or broken or crack* or frx
5.	CS=1 or 2
6.	CS=3 or 4
7.	CS=5 and 6

F.5.2 Health economic reviews – supplementary search

Economic searches were conducted in Medline, Embase and CRD for NHS EED and HTA.

Population	Intervention or exposure	Comparison	Study design filters	Date parameters and other limits
Fractures.	n/a	n/a	The following filters were used in Medline and Embase only: HE, MOD	Medline and Embase 2014–17/04/2015 CRD EED and HTA Inception–17/04/2015 English only Exclusion filter applied in Medline and Embase

Medline search terms

1.	fracture*.ti,ab.
2.	exp fractures, bone/
3.	1 or 2

Embase search terms

1.	fracture*.ti,ab.
2.	exp fracture/
3.	1 or 2

CRD search terms

#1.	((fracture*))
#2.	MeSH descriptor fractures, bone explode all trees
#3.	#1 or #2

F.5.3 Quality of life reviews

Economic searches were conducted in Medline and Embase.

Population	Intervention or exposure	Comparison	Study design filters	Date parameters and other limits
Fractures See F.5.1. for search terms	n/a	n/a	The following filters were used in Medline and Embase only: QOL	Medline 1946 - 14/01/2014 Embase 1974–14/01/2014

Population	Intervention or exposure	Comparison	Study design filters	Date parameters and other limits
				English only Exclusion filter applied in Medline and Embase

References

- 1 National Institute for Health and Clinical Excellence. The guidelines manual. London: National Institute for Health and Clinical Excellence; 2012. Available from: <http://publications.nice.org.uk/the-guidelines-manual-pmg6/>
- 2 National Institute for Health and Clinical Excellence. Developing NICE guidelines: the manual. London: National Institute for Health and Clinical Excellence; 2014. Available from: <http://www.nice.org.uk/article/pmg20/>