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Hip fracture: management

NICE guideline: short version

Draft for consultation, January 2017

This guideline covers managing hip fracture in adults. It aims to improve care from the time people aged 18 and over are admitted to hospital through to when they return to the community. Recommendations emphasise the importance of early surgery and coordinating care through a multidisciplinary hip fracture programme to help people recover faster and regain their mobility.

Who is it for?

- Healthcare professionals
- Commissioners and providers
- Adults with hip fracture and their families and carers

This guideline will update NICE guideline CG124 (published June 2011).

We have updated recommendations on the surgical management of hip fracture.

You are invited to comment on the updated recommendations in this guideline.

These are marked as **[2017]** if the evidence has been reviewed and the recommendation has been updated.

We have not updated recommendations shaded in grey, and cannot accept comments on them.

See [Update information](#) for a full explanation of what is being updated.

This version of the guideline contains the draft recommendations, context and recommendations for research. Information about how the guideline was developed is on the [guideline's page](#) on the NICE website. The supporting

information and evidence for the 2017 recommendations is contained in the addendum.

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1 Recommendations

People have the right to be involved in discussions and make informed decisions about their care, as described in [your care](#).

[Making decisions using NICE guidelines](#) explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

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3 The following guidance is based on the best available evidence. The [full guideline](#)
4 gives details of the methods and the evidence used to develop the guidance.

5 Some aspects of hip fracture management are already covered by NICE guidance
6 and are therefore outside the scope of this guideline. To ensure comprehensive
7 management and continuity, the following NICE guidance should be referred to when
8 developing a complete programme of care for each patient: technology appraisals
9 guidance on osteoporotic fragility fracture prevention ([denosumab for the prevention](#)
10 [of osteoporotic fractures in postmenopausal women](#)); and the following medicines for
11 the [primary](#) and [secondary](#) prevention of osteoporotic fragility fractures in
12 postmenopausal women: alendronate, etidronate, risedronate, raloxifene and
13 strontium ranelate, and also teriparatide for secondary prevention); and clinical
14 guidelines on [falls](#), [pressure ulcers](#), [nutrition support](#), [dementia](#), [surgical site](#)
15 [infection](#), [venous thromboembolism](#), [delirium](#) and [osteoporosis \(assessing the risk of](#)
16 [fragility fracture\)](#).

17

1.1 *Imaging options in occult hip fracture*

1.1.1 Offer magnetic resonance imaging (MRI) if hip fracture is suspected despite negative X-rays of the hip of an adequate standard. If MRI is not available within 24 hours or is contraindicated, consider computed tomography (CT). **[2011, amended 2014]**

1.2 *Timing of surgery*

1.2.1 Perform surgery on the day of, or the day after, admission. **[2011]**

1.2.2 Identify and treat correctable comorbidities immediately so that surgery is not delayed by:

- anaemia
- anticoagulation
- volume depletion
- electrolyte imbalance
- uncontrolled diabetes
- uncontrolled heart failure
- correctable cardiac arrhythmia or ischaemia
- acute chest infection
- exacerbation of chronic chest conditions. **[2011]**

1.3 *Analgesia*

1.3.1 Assess the patient's pain:

- immediately upon presentation at hospital **and**
- within 30 minutes of administering initial analgesia **and**
- hourly until settled on the ward **and**
- regularly as part of routine nursing observations throughout admission. **[2011]**

1.3.2 Offer immediate analgesia to patients presenting at hospital with suspected hip fracture, including people with cognitive impairment. **[2011]**

- 1 1.3.3 Ensure analgesia is sufficient to allow movements necessary for
2 investigations (as indicated by the ability to tolerate passive external
3 rotation of the leg), and for nursing care and rehabilitation. **[2011]**
- 4 1.3.4 Offer paracetamol every 6 hours preoperatively unless contraindicated.
5 **[2011]**
- 6 1.3.5 Offer additional opioids if paracetamol alone does not provide sufficient
7 preoperative pain relief. **[2011]**
- 8 1.3.6 Consider adding nerve blocks if paracetamol and opioids do not provide
9 sufficient preoperative pain relief, or to limit opioid dosage. Nerve blocks
10 should be administered by trained personnel. Do not use nerve blocks as
11 a substitute for early surgery. **[2011]**
- 12 1.3.7 Offer paracetamol every 6 hours postoperatively unless contraindicated.
13 **[2011]**
- 14 1.3.8 Offer additional opioids if paracetamol alone does not provide sufficient
15 postoperative pain relief. **[2011]**
- 16 1.3.9 Non-steroidal anti-inflammatory drugs (NSAIDs) are not recommended.
17 **[2011]**
- 18 **1.4 Anaesthesia**
- 19 1.4.1 Offer patients a choice of spinal or general anaesthesia after discussing
20 the risks and benefits. **[2011]**
- 21 1.4.2 Consider intraoperative nerve blocks for all patients undergoing surgery.
22 **[2011]**
- 23 **1.5 Planning the theatre team**
- 24 1.5.1 Schedule hip fracture surgery on a planned trauma list.
- 25 1.5.2 Consultants or senior staff should supervise trainee and junior members
26 of the anaesthesia, surgical and theatre teams when they carry out hip
27 fracture procedures. **[2011]**

1 **1.6** ***Surgical procedures***

2 1.6.1 Operate on patients with the aim to allow them to fully weight bear
3 (without restriction) in the immediate postoperative period. **[2011]**

4 1.6.2 Offer replacement arthroplasty (total hip replacement or hemiarthroplasty)
5 to patients with a displaced intracapsular hip fracture. **[2017]**

6 1.6.3 Offer total hip replacement rather than hemiarthroplasty to patients with a
7 displaced intracapsular hip fracture who:

8 • were able to walk independently out of doors with no more than the use
9 of a stick **and**

10 • are not cognitively impaired **and**

11 • are medically fit for anaesthesia and the procedure. **[2017]**

12 1.6.4 Use a proven femoral stem design rather than Austin Moore or Thompson
13 stems for arthroplasties. Suitable designs include those with an
14 Orthopaedic Data Evaluation Panel rating of 10A, 10B, 10C, 7A, 7B, 5A,
15 5B, 3A or 3B. **[2011]**

16 1.6.5 Use cemented implants in patients undergoing surgery with arthroplasty.
17 **[2011]**

18 1.6.6 Consider an anterolateral approach in favour of a posterior approach
19 when inserting a hemiarthroplasty. **[2011]**

20 1.6.7 Use extramedullary implants such as a sliding hip screw in preference to
21 an intramedullary nail in patients with trochanteric fractures above and
22 including the lesser trochanter (AO classification types A1 and A2). **[2011]**

23 1.6.8 Use an intramedullary nail to treat patients with a subtrochanteric fracture.
24 **[2011]**

25 **1.7** ***Mobilisation strategies***

26 1.7.1 Offer patients a physiotherapy assessment and, unless medically or
27 surgically contraindicated, mobilisation on the day after surgery. **[2011]**

1 1.7.2 Offer patients mobilisation at least once a day and ensure regular
2 physiotherapy review. **[2011]**

3 **1.8 *Multidisciplinary management***

4 1.8.1 From admission, offer patients a formal, acute, orthogeriatric or
5 orthopaedic ward-based Hip Fracture Programme that includes all of the
6 following:

- 7 • orthogeriatric assessment
- 8 • rapid optimisation of fitness for surgery
- 9 • early identification of individual goals for multidisciplinary rehabilitation
10 to recover mobility and independence, and to facilitate return to pre-
11 fracture residence and long-term wellbeing
- 12 • continued, coordinated, orthogeriatric and multidisciplinary review
- 13 • liaison or integration with related services, particularly mental health,
14 falls prevention, bone health, primary care and social services
- 15 • clinical and service governance responsibility for all stages of the
16 pathway of care and rehabilitation, including those delivered in the
17 community. **[2011]**

18 1.8.2 If a hip fracture complicates or precipitates a terminal illness, the
19 multidisciplinary team should still consider the role of surgery as part of a
20 palliative care approach that:

- 21 • minimises pain and other symptoms **and**
- 22 • establishes patients' own priorities for rehabilitation **and**
- 23 • considers patients' wishes about their end-of-life care. **[2011]**

24 1.8.3 Healthcare professionals should deliver care that minimises the patient's
25 risk of delirium and maximises their independence, by:

- 26 • actively looking for cognitive impairment when patients first present with
27 hip fracture
- 28 • reassessing patients to identify delirium that may arise during their
29 admission

- 1 • offering individualised care in line with ‘Delirium’ (NICE clinical
2 guideline 103). **[2011]**

3 **1.8.4** Consider early supported discharge as part of the Hip Fracture
4 Programme, provided the Hip Fracture Programme multidisciplinary team
5 remains involved, and the patient:

- 6 • is medically stable **and**
7 • has the mental ability to participate in continued rehabilitation **and**
8 • is able to transfer and mobilise short distances **and**
9 • has not yet achieved their full rehabilitation potential, as discussed with
10 the patient, carer and family. **[2011]**

11 **1.8.5** Only consider intermediate care (continued rehabilitation in a community
12 hospital or residential care unit) if all of the following criteria are met:

- 13 • intermediate care is included in the Hip Fracture Programme **and**
14 • the Hip Fracture Programme team retains the clinical lead, including
15 patient selection, agreement of length of stay and ongoing objectives
16 for intermediate care **and**
17 • the Hip Fracture Programme team retains the managerial lead,
18 ensuring that intermediate care is not resourced as a substitute for an
19 effective acute hospital Programme. **[2011]**

20 **1.8.6** Patients admitted from care or nursing homes should not be excluded
21 from rehabilitation programmes in the community or hospital, or as part of
22 an early supported discharge programme. **[2011]**

23 **1.9** ***Patient and carer information***

24 **1.9.1** Offer patients (or, as appropriate, their carer and/or family) verbal and
25 printed information about treatment and care including:

- 26 • diagnosis
27 • choice of anaesthesia
28 • choice of analgesia and other medications
29 • surgical procedures

- 1 • possible complications
- 2 • postoperative care
- 3 • rehabilitation programme
- 4 • long-term outcomes
- 5 • healthcare professionals involved. [2011]

7 Putting this guideline into practice

8 [This section will be finalised after consultation]

9 NICE has produced [tools and resources](#) [link to tools and resources tab] to help you
10 put this guideline into practice.

11 Putting recommendations into practice can take time. How long may vary from
12 guideline to guideline, and depends on how much change in practice or services is
13 needed. Implementing change is most effective when aligned with local priorities.

14 Changes recommended for clinical practice that can be done quickly – like changes
15 in prescribing practice – should be shared quickly. This is because healthcare
16 professionals should use guidelines to guide their work – as is required by
17 professional regulating bodies such as the General Medical and Nursing and
18 Midwifery Councils.

19 Changes should be implemented as soon as possible, unless there is a good reason
20 for not doing so (for example, if it would be better value for money if a package of
21 recommendations were all implemented at once).

22 Different organisations may need different approaches to implementation, depending
23 on their size and function. Sometimes individual practitioners may be able to respond
24 to recommendations to improve their practice more quickly than large organisations.

25 Here are some pointers to help organisations put NICE guidelines into practice:

26 1. **Raise awareness** through routine communication channels, such as email or
27 newsletters, regular meetings, internal staff briefings and other communications with

1 all relevant partner organisations. Identify things staff can include in their own
2 practice straight away.

3 **2. Identify a lead** with an interest in the topic to champion the guideline and motivate
4 others to support its use and make service changes, and to find out any significant
5 issues locally.

6 **3. Carry out a baseline assessment** against the recommendations to find out
7 whether there are gaps in current service provision.

8 **4. Think about what data you need to measure improvement** and plan how you
9 will collect it. You may want to work with other health and social care organisations
10 and specialist groups to compare current practice with the recommendations. This
11 may also help identify local issues that will slow or prevent implementation.

12 **5. Develop an action plan**, with the steps needed to put the guideline into practice,
13 and make sure it is ready as soon as possible. Big, complex changes may take
14 longer to implement, but some may be quick and easy to do. An action plan will help
15 in both cases.

16 **6. For very big changes** include milestones and a business case, which will set out
17 additional costs, savings and possible areas for disinvestment. A small project group
18 could develop the action plan. The group might include the guideline champion, a
19 senior organisational sponsor, staff involved in the associated services, finance and
20 information professionals.

21 **7. Implement the action plan** with oversight from the lead and the project group.
22 Big projects may also need project management support.

23 **8. Review and monitor** how well the guideline is being implemented through the
24 project group. Share progress with those involved in making improvements, as well
25 as relevant boards and local partners.

26 NICE provides a comprehensive programme of support and resources to maximise
27 uptake and use of evidence and guidance. See our [into practice](#) pages for more
28 information.

1 Also see Leng G, Moore V, Abraham S, editors (2014) Achieving high quality care –
2 practical experience from NICE. Chichester: Wiley.

3 **Context**

4 Hip fracture refers to a fracture occurring in the area between the edge of the
5 femoral head and 5 centimetres below the lesser trochanter (see figure 1 in the 2011
6 [full guideline](#)). These fractures are generally divided into two main groups. Those
7 above the insertion of the capsule of the hip joint are termed intracapsular,
8 subcapital or femoral neck fractures. Those below the insertion are extracapsular.
9 The extracapsular group is split further into trochanteric (inter- or pertrochanteric and
10 reverse oblique) and subtrochanteric.

11 Hip fracture is a major public health issue due to an ever increasing ageing
12 population. About 65,000 hip fractures occur each year and the annual cost (not
13 including the considerable cost of social care) for all UK hip fracture cases is about
14 £1 billion. About 10% of people with a hip fracture die within 1 month and about one-
15 third within 12 months. Most of the deaths are due to associated conditions and not
16 to the fracture itself, reflecting the high prevalence of comorbidity. Because the
17 occurrence of fall and fracture often signals underlying ill health, a comprehensive
18 multidisciplinary approach is required from presentation to subsequent follow-up,
19 including the transition from hospital to community.

20 This guideline covers the management of hip fracture from admission to secondary
21 care through to final return to the community and discharge from specific follow-up. It
22 assumes that anyone clinically suspected of having a hip fracture will normally be
23 referred for immediate hospital assessment. It excludes (other than by cross-
24 reference) aspects covered by parallel NICE guidance, most notably primary and
25 secondary prevention of fragility fractures, but recognises the importance of effective
26 linkage to these closely related elements of comprehensive care. Although hip
27 fracture is predominantly a phenomenon of later life (the [National Hip Fracture](#)
28 [Database](#) reports the average age of a person with hip fracture as 84 years for men
29 and 83 for women, it may occur at any age in people with osteoporosis or
30 osteopenia, and this guidance is applicable to adults across the age spectrum.
31 Management of hip fracture has improved through the research and reporting of key

1 skills, especially by collaborative teams specialising in the care of older people
2 (using the general designation 'orthogeriatrics'). These skills are applicable in hip
3 fracture irrespective of age, and the guidance includes recommendations that cover
4 the needs of younger patients by drawing on such skills in an organised manner.

5 Although not a structured service delivery evaluation, the Guideline Development
6 Group was required to extend its remit to cover essential implications for service
7 organisation within the NHS where these are fundamental to hip fracture
8 management, and this has been done.

9 The NICE surveillance review identified new studies that were consistent with the
10 current recommendations. However, because of a low level of compliance (around
11 30% nationally) with the recommendation to offer total hip replacement to people
12 with displaced intracapsular hip fractures, we have updated this part of the guideline.
13 The 2017 update also covers interventions for undisplaced intracapsular hip
14 fractures, which were not covered in the original guideline.

15 The guideline will assume that prescribers will use a drug's summary of product
16 characteristics to inform decisions made with individual patients.

17 ***More information***

To find out what NICE has said on topics related to this guideline, see our web
page on [Trauma](#).

18

19 **Recommendations for research**

20 In 2011 the guideline committee made the following recommendations for research.
21 The committee's full set of research recommendations is detailed in the [full](#)
22 [guideline](#).

23 As part of the 2017 update, the standing committee removed the research
24 recommendation on displaced intracapsular hip fractures and made an additional
25 research recommendation on undisplaced intracapsular hip fractures. It is listed here
26 and full details can be found in the [addendum](#) **[insert hyperlink when preparing for**
27 **publication]**.

1 **1 *Imaging options in occult hip fracture***

2 In patients with a continuing suspicion of a hip fracture but whose radiographs are
3 normal, what is the clinical and cost effectiveness of computed tomography (CT)
4 compared to magnetic resonance imaging (MRI), in confirming or excluding the
5 fracture?

6 **Why this is important**

7 The GDG's consensus decision to recommend CT over a radionuclide bone scan as
8 an alternative to MRI to detect occult hip fractures reflects current NHS practice but
9 assumes that advances in technology have made the reliability of CT comparable
10 with that of MRI. If modern CT can be shown to have similar reliability and accuracy
11 to MRI, then this has considerable implications because of its widespread availability
12 out of hours and lower cost. It is therefore a high priority to confirm or refute this
13 assumption by direct randomised comparison. The study design would need to retain
14 MRI as the 'gold standard' for cases of uncertainty and to standardise the criteria,
15 expertise and procedures for radiological assessment. Numbers required would
16 depend on the degree of sensitivity and specificity (the key outcome criteria) set as
17 target requirement for comparability, but need not necessarily be very large. [2011]

18 **2 *Anaesthesia***

19 What is the clinical and cost effectiveness of regional versus general anaesthesia on
20 postoperative morbidity in patients with hip fracture?

21 **Why this is important**

22 No recent randomised controlled trials were identified that fully address this question.
23 The evidence is old and does not reflect current practice. In addition, in most of the
24 studies the patients are sedated before regional anaesthesia is administered, and
25 this is not taken into account when analysing the results. The study design for the
26 proposed research would be best addressed by a randomised controlled trial. This
27 would ideally be a multi-centre trial including 3000 participants in each arm. This is
28 achievable given that there are about 70,000 to 75,000 hip fractures a year in the
29 UK. The study should have three arms that look at spinal anaesthesia versus spinal
30 anaesthesia plus sedation versus general anaesthesia; this would separate those
31 with regional anaesthesia from those with regional anaesthesia plus sedation. The

1 study would also need to control for surgery, especially type of fracture, prosthesis
2 and grade of surgeon.

3 A qualitative research component would also be helpful to study patient preference
4 for type of anaesthesia. [2011]

5 ***3 Undisplaced intracapsular hip fractures***

6 For people with what was traditionally described as non-displaced intracapsular hip
7 fracture, what features should be used to characterise the injury and what are the
8 optimal clinical and cost-effective management strategies?

9 **Why this is important**

10 Between 5% and 15% of people with an intracapsular hip fracture will have an
11 undisplaced fracture. There is variation in the UK on how undisplaced intracapsular
12 hip fractures are recognised, resulting in some people not being offered the most
13 appropriate treatment. [2017]

14 ***4 Intensive rehabilitation therapies after hip fracture***

15 What is the clinical and cost effectiveness of additional intensive physiotherapy
16 and/or occupational therapy (for example progressive resistance training) after hip
17 fracture?

18 **Why this is important**

19 The rapid restoration of physical and self care functions is critical to recovery from
20 hip fracture, particularly where the goal is to return the patient to preoperative levels
21 of function and residence. Approaches that are worthy of future development and
22 investigation include progressive resistance training, progressive balance and gait
23 training, supported treadmill gait re-training, dual task training, and activities of daily
24 living training. The optimal time point at which these interventions should be started
25 requires clarification.

26 The ideal study design is a randomised controlled trial. Initial studies may have to
27 focus on proof of concept and be mindful of costs. A phase III randomised controlled
28 trial is required to determine clinical effectiveness and cost effectiveness. The ideal
29 sample size will be around 400 to 500 patients, and the primary outcome should be

1 physical function and health-related quality of life. Outcomes should also include
2 falls. A formal sample size calculation will need to be undertaken. Outcomes should
3 be followed over a minimum of 1 year, and compare if possible, either the recovery
4 curve for restoration of function or time to attainment of functional goals. [2011]

5 ***5 Early supported discharge in care home patients***

6 What is the clinical and cost effectiveness of early supported discharge on mortality,
7 quality of life and functional status in patients with hip fracture who are admitted from
8 a care home?

9 **Why this is important**

10 Residents of care and nursing homes account for about 30% of all patients with hip
11 fracture admitted to hospital. Two-thirds of these come from care homes and the
12 remainder from nursing homes. These patients are frailer, more functionally
13 dependent and have a higher prevalence of cognitive impairment than patients
14 admitted from their own homes. One-third of those admitted from a care home are
15 discharged to a nursing home and one-fifth are readmitted to hospital within 3
16 months. There are no clinical trials to define the optimal rehabilitation pathway
17 following hip fracture for these patients and therefore represent a discrete cohort
18 where the existing meta-analyses do not apply. As a consequence, many patients
19 are denied structured rehabilitation and are discharged back to their care home or
20 nursing home with very little or no rehabilitation input.

21 Given the patient frailty and comorbidities, rehabilitation may have no effect on
22 clinical outcomes for this group. However, the fact that they already live in a home
23 where they are supported by trained care staff clearly provides an opportunity for a
24 systematic approach to rehabilitation. Early multidisciplinary rehabilitation based in
25 care homes or nursing homes would take advantage of the day-to-day care
26 arrangements already in place and provide additional NHS support to deliver
27 naturalistic rehabilitation, where problems are tackled in the patient's residential
28 setting.

29 Early supported multidisciplinary rehabilitation could reduce hospital stay, improve
30 early return to function, and affect both readmission rates and the level of NHS-
31 funded nursing care required.

1 The research would follow a two-stage design: (1) an initial feasibility study to refine
2 the selection criteria and process for reliable identification and characterisation of
3 those considered most likely to benefit, together with the intervention package and
4 measures for collaboration between the Hip Fracture Programme team, care-home
5 staff and other community-based professionals, and (2) a cluster randomised
6 controlled comparison (for example, with two or more intervention units and matched
7 control units) set against agreed outcome criteria. The latter should include those
8 specified above, together with measures of the impact on care-home staff activity
9 and cost, as well as qualitative data from patients on relevant quality-of-life variables.
10 **[2011]**

11 **Update information**

12 **January 2017**

13 Recommendations have been updated on the surgical management of hip fracture.

14 These are marked as **[2017]** if the evidence has been reviewed and the
15 recommendation has been updated.

16 NICE proposes to delete some recommendations from the 2011 guideline because
17 the evidence has been reviewed and the recommendations have been updated.

18 [Recommendations that have been deleted or changed](#) sets out these
19 recommendations and includes details of replacement recommendations. Where
20 there is no replacement recommendation, an explanation for the proposed deletion is
21 given.

22 Where recommendations are shaded in grey and **end [2011] or [2011, amended**
23 **2014]**, the evidence has not been reviewed since the original guideline.

24 See also the [original NICE guideline and supporting documents](#).

25

1 ***Recommendations that have been deleted or changed***

2 **Recommendations to be deleted**

Recommendation in 2011 guideline	Comment
Perform replacement arthroplasty (hemiarthroplasty or total hip replacement) in patients with a displaced intracapsular fracture. (1.6.2)	Replaced by: 1.6.2 Offer replacement arthroplasty (total hip replacement or hemiarthroplasty) to patients with a displaced intracapsular hip fracture. [2017] .
Offer total hip replacements to patients with a displaced intracapsular fracture who: <ul style="list-style-type: none"> • were able to walk independently out of doors with no more than the use of a stick and • are not cognitively impaired and • are medically fit for anaesthesia and the procedure. (1.6.3) 	Replaced by: 1.6.3 Offer total hip replacement rather than hemiarthroplasty to patients with a displaced intracapsular hip fracture who: <ul style="list-style-type: none"> • were able to walk independently out of doors with no more than the use of a stick and • are not cognitively impaired and • are medically fit for anaesthesia and the procedure. [2017]

3

4 ***Changes after publication***

5 March 2014: The introduction to the full guideline and the wording of
 6 recommendation 1.1.1 have been amended to clarify how an occult fracture is
 7 identified and when an MRI scan should be done.

8 **ISBN:**