Management of hip fracture in adults: summary of NICE guidance

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This is one of a series of BMJ summaries of new guidelines based on the best available evidence; they highlight important recommendations for clinical practice, especially where uncertainty or controversy exists.

Hip fracture resulting from a fall from standing height or lower in people with osteoporosis or osteopenia (fragility fracture) is a major, growing health problem associated with population ageing. It has an annual UK incidence of 70-75,000, with a medical and social care cost of about £2 bn (€2.3 bn; $3.3 bn),¹ and one month and one year mortality of about 10% and 30% respectively ² (usually resulting from comorbidity rather than from the fracture itself). A comprehensive multidisciplinary approach, avoidance of delay, and continuity of management are needed from presentation to follow-up, including after transition from hospital back into the community.

This article summarises the most recent recommendations from the National Institute for Health and Clinical Excellence (NICE) on the management of hip fracture. The recommendations are for all adults but are based on surgical, anaesthetic, and orthogeriatric evidence and expertise acquired among older patients (the group in whom hip fracture is most common). Prevention of hip fracture is covered by other NICE guidance (on falls¹ and osteoporosis ³).

Recommendations

NICE recommendations are based on systematic reviews of best available evidence and explicit consideration of cost effectiveness evidence, and the experience and opinion of the Guideline Development Group (GDG)

- Identify and treat correctable comorbidities immediately to avoid delaying surgery. Such comorbidities may include anaemia, anticoagulation, volume depletion, electrolyte imbalance, uncontrolled diabetes, uncontrolled heart failure, correctable cardiac arrhythmia or ischaemia, acute respiratory infection, and exacerbation of chronic respiratory disorders. [Based on the experience and opinion of the GDG]

Analgesia

- Assess the patient’s pain:
  - Immediately on 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.

[The above are based on the experience and opinion of the GDG]

- Offer immediate analgesia to patients presenting at hospital with suspected hip fracture. [Based on the experience and opinion of the GDG]

- Ensure analgesia is sufficient to allow movements necessary for investigations (as indicated by the ability to tolerate passive external rotation of the leg) and for nursing care and rehabilitation. [Based on the experience and opinion of the GDG]

- Offer paracetamol every six hours before and after surgery unless contraindicated. If paracetamol alone does not provide sufficient pain relief, offer additional opioids (before and after surgery). [Based on low to moderate quality evidence from randomised controlled trials, cost
effectiveness evidence, and the experience and opinion of the GDG)

- Consider adding nerve blocks (administered by trained staff) if paracetamol and opioids do not provide sufficient pain relief, or to limit opioid dosage. [Based on low to moderate quality evidence from randomised controlled trials, cost effectiveness evidence, and the experience and opinion of the GDG]

- Non-steroidal anti-inflammatory drugs are not recommended because of their poor risk to benefit ratio in this situation. [Based on cost effectiveness evidence and the experience and opinion of the GDG]

### Anaesthesia

- Offer patients a choice of spinal or general anaesthesia after discussing the risks and benefits. [Based on the experience and opinion of the GDG]

- Consider intraoperative nerve blocks in conjunction with spinal or general anaesthesia for all patients having surgery as a means of reducing the need for, and side effects of, opioids and other analgesia. [Based on low to moderate quality evidence from randomised controlled trials, cost effectiveness evidence, and the experience and opinion of the GDG]

### Planning the theatre team

- Schedule hip fracture surgery on a planned trauma list.
- For hip fracture procedures consultants or senior staff should supervise theatre and junior members of the anaesthesia, surgical, and theatre teams. [Both recommendations based on cost effectiveness evidence and the experience and opinion of the GDG]

### Surgical procedures

- All surgical procedures should have the objective of immediate, postoperative, unrestricted weightbearing. [Based on the experience and opinion of the GDG]
- For undisplaced intracapsular fractures, the use of internal fixation is accepted as normative practice and therefore excluded from the scope of this guidance.

### For displaced intracapsular fractures

- Perform replacement arthroplasty (hemiarthroplasty or total hip replacement). Use cemented implants and a proved femoral stem design rather than Austin Moore or Thompson stems. Suitable designs include those with an Orthopaedic Data Evaluation Panel rating of 10A, 10B, 10C, 7A, 7B, 5A, 5B, 3A, or 3B. [Based on low to moderate quality evidence from randomised controlled trials, cost effectiveness evidence, and the experience and opinion of the GDG]
- Consider an anterolateral approach rather than a posterior approach when inserting a hemiarthroplasty. [Based on low quality evidence from randomised controlled trials, cost effectiveness evidence, and the experience and opinion of the GDG]
- Offer total hip replacements to patients who:
  - Were able to walk independently before the fracture and
  - Are not cognitively impaired and
  - Are medically fit for anaesthesia and the procedure.

[The above are based on low to moderate quality evidence from randomised controlled trials, cost effectiveness evidence, and the experience and opinion of the GDG]

### For trochanteric fractures above and including the lesser trochanter

- Use extramedullary implants (such as a sliding hip screw) in preference to an intramedullary nail. [Based on low quality evidence from randomised controlled trials, cost effectiveness evidence, and the experience and opinion of the GDG]

### For subtrochanteric fractures

- Use an intramedullary nail. [Based on low quality evidence from randomised controlled trials, cost effectiveness evidence, and the experience and opinion of the GDG]

### Mobilisation strategies

- Offer patients a physiotherapy assessment and, unless medically or surgically contraindicated, mobilisation on the day after surgery. [Based on low quality evidence from a randomised controlled trial, and the experience and opinion of the GDG]
- Offer patients mobilisation at least once a day and ensure regular physiotherapy review. [Based on low quality evidence from randomised controlled trials, cost effectiveness evidence, and the experience and opinion of the GDG]

### Multidisciplinary management

- From admission, offer patients (including those admitted from nursing homes) a formal, defined hip fracture programme based in an acute orthogeriatric or orthopaedic ward. This programme is an operational strategy defined in the evidence literature that minimises unnecessary transfers between settings and includes all of the following:
  - Orthogeriatric, diagnostically rigorous assessment (including heightened awareness of both delirium and the possible need for palliative care)
  - Rapid optimisation of fitness for surgery
  - Early identification of individual goals for multidisciplinary rehabilitation to recover mobility and independence, and to facilitate the return of patients to their “pre-fracture” residence and to long term wellbeing
  - Continued, coordinated orthogeriatric, and multidisciplinary review
  - Liaison or integration with related services, particularly mental health, falls prevention, bone health, primary care, and social services
  - Clinical and service governance responsibility for all stages of the pathway of care and rehabilitation, including those delivered in the community.

[The above are based on low to high quality evidence from randomised controlled trials, cost effectiveness evidence, and the experience and opinion of the GDG]

- Consider early supported discharge as part of the defined hip fracture programme, provided that the programme’s multidisciplinary team remains involved, and the patient:
  - Is medically stable and
-Has the mental ability to participate in continued rehabilitation and
-Is able to transfer (for example, between bed and chair) and move short distances and
-Has not yet achieved their full rehabilitation potential, as discussed with the patient, carer, and family.

[The above are based on low to high quality evidence from randomised controlled trials, cost effectiveness evidence, and the experience and opinion of the GDG]

- Only consider intermediate care (continued rehabilitation in a community hospital or residential care unit) if all of the following criteria are met:
  - Intermediate care is included in the defined hip fracture programme and
  - The programme’s team retains the clinical lead, including patient selection, agreement of length of stay, and ongoing objectives for intermediate care and
  - The programme’s team retains the managerial lead, ensuring that intermediate care is not resourced as a substitute for an effective hip fracture programme for acute hospital care.

Overcoming barriers

The main barriers to effective and consistent hip fracture management across centres are preoperative delay and discontinuity of planned, individualised care. These barriers may reflect therapeutic pessimism, inadequate consideration of comorbidity, and/or local misperceptions of short term economic expediency, none of which is supportable from the available evidence. The evidence based economic analyses conducted for the guideline confirmed that both prompt surgery and the expediency, none of which is supportable from the available evidence. The evidence based economic analyses conducted for the guideline confirmed that both prompt surgery and the approch of the defined hip fracture programme to rehabilitation are cost effective. The latter particularly avoids the adverse consequences of inappropriate, premature, or numerous transfers between units, and inappropriate or premature hospital discharge.

This guidance, which will also inform a NICE “quality standard” (a set of derived quality indicators against which to develop and measure implementation), therefore provides an exceptional opportunity to improve hip fracture care, not least because it also coincides with a unique national audit capability (a national hip fracture database, to which most centres now contribute) and a “best practice tariff” initiative by the Department of Health (providing incentive finance to centres on the basis of performance recorded in the national hip fracture database). The members of the Guideline Development Group were Cameron Swift (chair), Tim Chesser, Anthony Field, Richard Handley, Karen Hertz, Sally Hope, Anthony Johansen, Sallie Lamb, Opinder Sahota, Tessa Somerville, Heather Towndrow, Martin Wiese, Sacussen Pouh, Joanna Ashe, Elisabetta Fenu, Jennifer Hill, Antonia Morga, Sarah Riley, and Carlos Sharpin.

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Further information on the guidance

Methods
The Guideline Development Group (GDG) followed standard NICE methodology in the development of this guideline, which included a remit to cover aspects of service delivery. The GDG consisted of two patient and carer representatives, a professor of healthcare of the elderly, two consultant trauma and orthopaedic surgeons, a general practitioner, a consultant anaesthetist, a consultant orthogeriatrician, a consultant physician, a professor of rehabilitation, an occupational therapist, an advanced nurse practitioner, and a consultant in emergency medicine. Systematic reviewers, information scientists, and health economists provided technical and methodological support.

Future research
Further research is needed to:

• Compare the clinical and cost effectiveness of computed tomography versus magnetic resonance imaging, in confirming or excluding a fracture in patients with a continuing suspicion of a hip fracture but whose radiographs are normal
• Compare the clinical effectiveness (including effects on postoperative morbidity) and cost effectiveness of regional versus general anaesthesia
• Compare the clinical effectiveness (including effects on functional status, repeat operations, and quality of life) and cost effectiveness of large-head, total hip replacement versus hemiarthroplasty in patients with displaced intracapsular hip fracture
• Evaluate the clinical and cost effectiveness of additional intensive physiotherapy and/or occupational therapy (for example, progressive resistance training) after hip fracture.
• Evaluate the clinical effectiveness (including effects on mortality, quality of life, and functional status) and cost effectiveness of early supported discharge in patients who are admitted from a care home.