

Productivity Considerations for Service Design [Beta]

Hip fracture care

When designing hip fracture services, consider the following interventions as ways to achieve specific productivity improvements whilst maintaining the quality and safety of clinical care. This approach is being trialled as a beta product alongside the Map of Medicine Hip fracture, Osteoporosis, and Falls pathways, which cover all areas of a patient's care.

Primary prevention

Bone protection: Bisphosphonates

Prescribe alendronate as first line therapy for the primary prevention of osteoporotic fragility fractures in women with a confirmed diagnosis of osteoporosis.¹

Prescribe risedronate or etidronate as alternative therapy for the primary prevention of osteoporotic fragility fractures in women in whom alendronate is contraindicated or not tolerated.¹

Health economic modelling by the National Institute for Health and Clinical Excellence (NICE) demonstrated that alendronate is cost-effective as first-line therapy in women who are confirmed to have osteoporosis.¹ The least-costly preparation of alendronate should be prescribed. Once-weekly treatment with alendronate has been shown to be the most cost-effective compared to daily treatment. Risedronate and etidronate were shown to be cost-effective as alternative treatment options in women in whom alendronate was contraindicated or not tolerated.¹ Compared to no treatment, risedronate has been shown to be cost-effective in women age 65 years or older.²

Bone protection: Denosumab

Prescribe denosumab as alternative therapy for the primary prevention of osteoporotic fragility fractures in postmenopausal women at increased risk of fractures in whom alendronate and either risedronate or etidronate are contraindicated or not tolerated.³

Denosumab is a clinically effective alternative treatment option for the prevention of osteoporotic fragility fractures in postmenopausal women.³ Health economic modelling by NICE has demonstrated that denosumab is cost-effective as alternative therapy in postmenopausal women at increased risk of fractures.³

Bone protection: Strontium ranelate

Prescribe strontium ranelate as alternative therapy for the primary prevention of osteoporotic fragility fractures in postmenopausal women in whom alendronate and either risedronate or etidronate are contraindicated or not tolerated.³

Health economic modelling by NICE has demonstrated that strontium ranelate is cost-effective in postmenopausal women in whom alendronate and either risedronate or etidronate are contraindicated or not tolerated, and who have a combination of T-score, age, and number of independent clinical risk factors for fracture. Treatment with strontium ranelate resulted in an incremental cost-effectiveness ratio (ICER) of less than £20,000 per quality adjusted life year (QALY) gained without the consideration of identification costs.¹

Optimising inpatient care

Prompt admission to orthopaedic care

Assess and admit all patients with hip fracture to an acute orthopaedic ward within 4 hours of presentation.⁴

Any delay in transferring the patient to the ward is likely to harm the patient and add to the cost of care.⁴ Prompt admission to orthopaedic care minimises the risk of unnecessary delay and establishes the need for urgent care.⁵

Alternative radiological imaging in occult hip fracture

Offer MRI if hip fracture is suspected in the absence of X-ray findings. If MRI is not available, consider CT.⁴

Guidance on the care of patients with fragility fracture published in 2007 by the British Orthopaedic Association (BOA) recommends an MRI as the investigation of choice where there is clinical suspicion of a fracture in the

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absence of X-ray findings.⁴ Alternatives are CT or radionuclide bone scan (RNS). An MRI is cost saving compared to a RNS, as the latter may result in a longer length of hospital stay (and the possible consequences of delay to surgery) before the fracture is diagnosed.⁴

Admission under joint geriatric and orthopaedic care

Manage all patients presenting with a fragility fracture on an orthopaedic ward with routine access to acute orthogeriatric medical support from the time of admission.⁴

All patients should be assessed by a geriatrician in the perioperative period (defined as within 72 hours of admission).⁴

Guidance on the care of patients with fragility fracture published in 2007 by the BOA recommends that coordinated multidisciplinary fracture services for fragility fracture patients promote good quality of care and reduce the costs of that care.⁴ Optimal medical, anaesthetic, surgical, and nursing care will minimise pain and dependency, promote more rapid recovery and earlier rehabilitation, and facilitate progress towards home.⁴

Rapid time to surgery

All patients with hip fracture who are medically fit should have surgery within 36 hours of arrival in an emergency department, or time of diagnosis if an inpatient, to the start of anaesthesia.⁶

Delay from admission to surgery is associated with greater morbidity and mortality.⁴ Every eight-hour delay to surgery after the initial 48 hours equates to an extra day in hospital.^{7,8} If patients' fluid status and significant co-morbidities are optimised in a timely and appropriate way, more patients receive surgery within 24 hours, resulting in better health outcomes and reduced postoperative stay.^{7,8} The Best Practice Tariff for fragility hip fractures in 2010-11 set the time to surgery at 36 hours as this was considered a more appropriate level of best care than a time to surgery of 48 hours as recommended by the BOA guidance published in 2007.⁶

Reducing length of stay

Early mobilisation

Commence mobilisation within 24 hours postoperatively in patients whose overall condition allows.⁹

Early mobilisation may prevent complications such as pressure ulcers and deep vein thrombosis.⁹ Patients should be mobilised within 12 to 18 hours postoperatively.^{7,8} Early mobilisation by a physiotherapist or trained worker should be available 7 days a week, including weekends.⁸

Orthogeriatrician-led rehabilitation services

Provide early orthogeriatrician-led inpatient rehabilitative care following hip fracture surgery.¹⁰

Involving orthogeriatrician-led multidisciplinary rehabilitation at an early stage following hip surgery has been shown to significantly reduce mean overall length of stay (LOS).¹⁰ In England, with this reduction in LOS, savings of £75 million could be achieved when compared with standard care.¹⁰

Early supported discharge and ongoing community multidisciplinary rehabilitation

Provide supported discharge schemes to facilitate the safe discharge of older hip fracture patients and reduce acute hospital stay.⁹

Supported discharge and hospital at home schemes reduce length of acute stay and appear to free resources without transferring costs to community health and social services.⁹ Early rehabilitation in the acute setting, backed up by ready access to Early Supported Discharge schemes offering care and continuing rehabilitation at home, will promote shorter overall stay and also enable the majority of patients to return home as soon as possible.⁵ Direct transfer home with supported discharge teams has been demonstrated to be a high quality, cost-effective process.⁸

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Secondary prevention

Fracture prevention services

Assess for risk of osteoporosis and initiate treatment for secondary prevention in all patients age 50 years and older presenting with fragility fractures.¹¹

A fracture prevention service, such as a fracture liaison service (FLS), is aimed at patients age 50 years and older with fragility fracture as a result of a fall, slip, or trip.¹¹ The Department of Health (DH) in England published an economic evaluation on fracture prevention services that can be used to identify and treat osteoporosis in high-risk groups; particularly postmenopausal women.¹¹ The evaluation, published in 2009, showed a cost saving over a 5 year period of £290,708 for an annual patient cohort of 797 hip, humerus, spine, and forearm fractures.¹¹ At a national level, this equates to approximately an £8.5 million saving over 5 years.¹¹

Falls assessment

Offer multidisciplinary assessment and intervention to all patients presenting with a fragility fracture following a fall to prevent future falls.⁴

A FLS provides expertise in osteoporosis, secondary prevention of fracture and early identification of falls risk.⁴ The multidisciplinary team within a FLS focus on gait and balance disorders, optimising mobility, appropriate walking aids and footwear, home environment hazard modification, and assessment of vision, cognition and continence.⁴ Older people who have received treatment in hospital following a fall should be offered a home hazard assessment and safety intervention or home modifications by a suitably trained healthcare professional.¹² This should be part of discharge planning and carried out within a timescale agreed by the patient or carer, and appropriate members of the healthcare team.¹²

Bone protection: Bisphosphonates

Prescribe alendronate as first-line therapy for the secondary prevention of osteoporotic fragility fractures in postmenopausal women with a confirmed diagnosis of osteoporosis.¹³

Prescribe risedronate or etidronate as alternative therapy for the secondary prevention of osteoporotic fragility fractures in postmenopausal women in whom alendronate is contraindicated or not tolerated.¹³

Health economic modelling by NICE has demonstrated that alendronate is cost-effective as first-line therapy.¹³ The least-costly preparation of alendronate should be prescribed. Once-weekly treatment with alendronate has been shown to be the most cost-effective compared to daily treatment.¹³ Risedronate and etidronate have been shown to be cost-effective as alternative treatment options in women in whom alendronate was contraindicated or not tolerated.¹³ A cost-utility analysis published in 2010 demonstrated that, compared to no treatment, risedronate is cost-effective in women age 65 years or older.²

Bone protection: Raloxifene

Prescribe raloxifene as alternative therapy for the secondary prevention of osteoporotic fragility fractures in postmenopausal women in whom alendronate and either risedronate or etidronate are contraindicated or not tolerated.¹³

Health economic modelling by NICE has demonstrated that raloxifene is cost-effective as an alternative treatment in women in whom alendronate and either risedronate or etidronate are contraindicated or not tolerated.¹³

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Bone protection: Denosumab

Prescribe denosumab as alternative therapy for the secondary prevention of osteoporotic fragility fractures in postmenopausal women at increased risk of fractures in whom alendronate and either risedronate or etidronate are contraindicated or not tolerated.³

Denosumab has been shown to be clinically-effective in reducing the risk of fracture in postmenopausal women compared to placebo.³ Health economic modelling by NICE published in 2010 has demonstrated that denosumab is cost-effective as alternative therapy in postmenopausal women at increased risk of fractures.³

Bone protection: Strontium ranelate

Prescribe strontium ranelate as alternative therapy for the secondary prevention of osteoporotic fragility fractures in postmenopausal women in whom alendronate and either risedronate or etidronate are contraindicated or not tolerated.³

Health economic modelling by NICE demonstrated that strontium ranelate is cost-effective in postmenopausal women in whom alendronate and either risedronate or etidronate are contraindicated or not tolerated. Women should have a T-score of -2.5 SD or below, and a combination of age and independent clinical risk factors for fracture. Treatment with strontium ranelate resulted in an ICER less than £30,000 per QALY gained.¹³

Key dates

The Map of Medicine systematically monitors the medical literature for the latest productivity interventions and will update this document as new evidence emerges.

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Version: 1.0

Methodology

The productivity considerations presented in this document are relevant to the UK. They were identified by systematically searching for and appraising productivity evidence from multiple sources, including NICE guidance, health economic databases and Zynx Health (a sister company of Map of Medicine).

A productivity message explicitly states interventions that can reduce the cost of care, whilst maintaining or improving patient outcomes. Actions that are believed to lead to improved productivity, but lack unequivocal clinical or economic evidence, are not included.

Some productivity considerations are informed by more recent evidence than that included in relevant national guidelines.

The document has been peer reviewed by an independent group of experts.

Feedback

This approach to productivity guidance is being trialled as a beta product alongside the Map of Medicine Hip fracture, Falls, and Osteoporosis pathways. We welcome your feedback. If you know of additional resources that describe cost-effective interventions, please forward the reference information to us at productivity@mapofmedicine.com.

References

1. National Institute for Health and Clinical Excellence (NICE). [Alendronate, etidronate, risedronate, raloxifene, strontium ranelate and teriparatide for the primary prevention of osteoporotic fragility fractures in postmenopausal women \(amended\)](#). Technology Appraisal Guidance 160. London: NICE; 2010.
2. Borgstrom F, Strom O, Coelho J et al. [The cost-effectiveness of risedronate in the UK for the management of osteoporosis using the FRAX](#). Osteoporosis International 2010; 21: 495-505.
3. National Institute for Clinical Excellence (NICE). [Denosumab for the prevention of osteoporotic fractures in postmenopausal women](#). Technology Appraisal Guidance 204. London: NICE; 2010.
4. British Orthopaedic Association, British Geriatric Society. [The care of patients with fragility fractures \(Blue Book\)](#). London: British Orthopaedic Association; 2007.
5. The National Hip Fracture Database (NHFD). [National report – extended version](#). London: NHFD; 2010
6. Department of Health (DH). [Payment by Results Guidance 2010-11](#). Leeds: DH; 2010.
7. Department of Health (DH). [Falls and fractures – effective interventions in health and social care](#). Leeds: DH; 2009.
8. National Health Service (NHS) Institute for Innovation and Improvement. [Delivering Quality and Value; Focus on – fractured neck of femur](#). London; 2006.
9. Scottish Intercollegiate Guidelines Network (SIGN). [Management of hip fracture in older people. A national clinical guideline](#). SIGN Publication no. 111. Edinburgh: SIGN; 2009.
10. Department of Health (DH). [Fragility fractures – rehabilitation](#). London: DH; 2009.
11. Department of Health (DH). [Fracture prevention services: An economic evaluation](#). Leeds: DH; 2009.
12. National Institute for Clinical Excellence (NICE). [Falls: the assessment and prevention of falls in older people. Clinical guideline 21](#). London: NICE; 2004.
13. National Institute for Health and Clinical Excellence (NICE). [Alendronate, etidronate, risedronate, raloxifene, strontium ranelate and teriparatide for the secondary prevention of osteoporotic fragility fractures in postmenopausal women \(amended\)](#). Technology Appraisal Guidance 261. London: NICE; 2010.

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This document is not to be substituted for a healthcare professional's diagnosis or clinical decisions.