

Osteoporosis and preventing fractures

One in two women and one in five men over 50 years suffer a fracture. These result in substantial mortality and morbidity, and utilise two million bed-days annually. Implementing current guidance could dramatically reduce this burden. In this article, **Dr Pam Brown** explains how inclusion of osteoporosis in the revised Quality and Outcome Framework could have motivated primary care teams to take action on osteoporosis and reduce fracture rates.

Osteoporosis and the fractures that it causes are extremely common. One in two women and one in five men over the age of 50 years will suffer a fracture¹, the majority of which will be osteoporotic, with resulting morbidity, mortality and loss of independence. Fractures in patients over 60 years account for more than two million hospital bed-days each year in England, which is more than cardiac ischaemia, diabetes or chronic obstructive pulmonary disease². The average stay is around 26 days² compared to around eight days for all conditions.

In addition, one in five orthopaedic beds are filled with hip fracture patients³, which impacts on waiting lists for elective orthopaedic surgery. The cost of acute hospital care and long term care of patients with hip fractures is estimated at more than £1.8 billion per year in the UK⁴. This is based on estimates for the acute hospital costs of £5,000 per fracture⁴ although others calculate acute costs at more than £12,000 per fracture⁵. The costs for a hip fracture requiring subsequent admission to a nursing care home are £30,360 in the first year and £21,163 in subsequent years⁶.

The groups at highest risk of osteoporosis and future fragility fracture are those who have had a previous fracture, those committed to oral glucocorticoid therapy for more than three months

and the frail elderly, particularly those in nursing and residential homes.

There is now clear evidence that people who have sustained a previous fragility fracture (defined as a fracture occurring after the age of 45 years in a fall from a standing height or lesser force) are at high risk of sustaining a further fracture^{7,8}. Without treatment, the risk of further fracture may be as much as four times higher⁹. It is also estimated that patients who have sustained a previous vertebral fracture have a 20 per cent risk of a further vertebral fracture within one year^{10,11}. In addition, oral glucocorticoids increase bone loss and reduce bone density but also make bones more fragile¹². Patients living in residential and nursing homes are at much higher risk of suffering a hip fracture than those in the community¹³ mainly due to their increased risk of falls and low bone density.

Osteoporosis – whose responsibility?

At present, most patients at high risk of first or subsequent fracture have not been identified and are not receiving any treatment. Yet drug therapies are effective and significantly reduce future fracture risk. Elderly patients are seen frequently in primary care, and the drugs used to treat most

patients with osteoporosis can be used effectively by primary care teams. Therefore, osteoporosis could be said to be mainly a primary care disease, with secondary care providing dual energy X-ray absorptiometry (DXA) and fracture liaison services where available as well as expert guidance on the investigation and management of men and difficult to treat women.

In most parts of the UK, however, both primary and secondary care would argue that they do not have the resources (either pounds or people) to tackle osteoporosis. Yet, some enterprising primary care organisations (PCOs) in Scotland, Wales and England have already implemented primary care-led services, while fracture liaison services have been set up in many centres to tackle secondary prevention in those with new fractures. Inclusion of osteoporosis in the Quality and Outcomes Framework (QOF) of the GMS contract would have been likely to encourage widespread primary care action on fracture prevention, but despite non inclusion, practices and PCOs can gradually improve the services they provide.

Tackling osteoporosis

The most difficult part of managing osteoporosis is deciding where to start. A summary of the highest risk patients, read codes, current guidance on management and the key steps required to manage these patients effectively in primary care are shown in *Table 1*.

The patients with previous fragility fracture are made up of two groups – those who have just sustained a fracture (incident fractures) and the larger prevalent fracture pool of those with previous fragility fracture. The first group are relatively easy to identify, and in some parts of the UK these patients will be managed through a fracture liaison service in the hospital that treats their fracture. In all other areas the primary care team need to identify, code and manage these patients when hospital letters flag up the fracture.

Identifying and managing those with prevalent fractures may be more challenging, since past fractures may not have been recorded in patient summaries. There are two methods for identifying these people. All those at risk (e.g. post-menopausal women, or men and women over the age of 65 years) can be surveyed by letter, or asked about previous fragility fractures when they attend the surgery for an annual influenza immunisation.

Table 1. Patients at high risk of future fracture

Patient group	Suggested read codes	Guidance	Methods of care delivery	Key steps
Previous fragility fracture	H/O fragility fracture 14G6 Fragility fracture due to unspecified osteoporosis N331M	NICE Technology Appraisal 87 ¹⁴ Men – RCP Osteoporosis Clinical guideline ¹⁵	Fracture liaison service Primary care identification and management	Create register of patients Code accurately DXA referral where appropriate Initiate drug treatment Follow up
Commitment to oral glucocorticoids for >3 months	Steroid therapy 8B62 Oral steroids started 663F Oral steroids stopped 663G	RCP Glucocorticoid-induced Osteoporosis Guideline ¹²	Primary care identification and management	Create register of patients Code accurately DXA referral where appropriate Initiate drug treatment Follow up
Frail elderly in nursing and residential homes	Nursing home 13F61 Residential home 13FK Old people's home 13F72	RCP Osteoporosis: Clinical guideline ¹⁵	PCO-wide initiative Practice initiative	Identify those with previous fractures – treat as above Identify those with previous hyperparathyroidism/hypercalcaemia and exclude Treat remaining patients.

Alternatively, information about previous fractures can be collected opportunistically when patients present in primary care with other conditions.

Once identified, it is important to code these patients carefully so they can be identified on future searches. As well as coding specific fractures, the universal codes listed in *Table 1* make future searches easier and should be used. It is estimated that the prevalence of previous fragility fractures is around 2,700 in every 100,000¹⁶. Therefore, a practice with 10,000 patients could expect to have around 270 patients with previous fracture, or 48 per general practitioner (GP) with an average list of 1,745 patients.

Although this may initially seem a daunting number of patients to identify, this is a one-off exercise, and many of these people will be well known to the practice, so identification and management can be carried out opportunistically when patients present with other conditions. In addition, a practice of 10,000 patients would expect to have only 36 new fragility fractures per year, all clearly identified by secondary care, making them highly visible and easy to manage. Ensuring continued compliance with therapy and managing the annual incident fracture patients is the only

ongoing workload.

Once patients have been identified and registers set up, it is useful to audit baseline care compared to the recommendations of the appropriate *National Institute for Health and Clinical Excellence* (NICE) guidance, or *Royal College of Physicians* (RCP) guidelines before making changes in management. Later, when the high risk groups have been managed appropriately, completion of the audit cycle will allow assessment of improvement in standards of care within the practice or PCO. This improved care will translate into improved fracture rates, with consequent reduced workload in primary care, and reduced hospital bed days resulting from fractures.

DXA scanning will be required for women aged under 75 years and all men with fragility fractures, and for men and women aged under 65 years with commitment to oral glucocorticoids for three months or more.

The RCP document *Osteoporosis: Guidelines for identification and treatment* contains guidance on other groups who have not yet had a fragility fracture and should be considered for DXA scanning. A PCO serving 100,000 people will need

Table 2. Drug treatment options for osteoporosis

Drug	Frequency	Previous fractures	Glucocorticoid	Frail elderly in nursing/residential homes	Guidance
High dose calcium/vitamin D	Twice daily	Adjuvant therapy	All unless known to be replete	All unless contra-indicated	NICE ¹⁴ , RCP treatment guidelines ¹⁵ , glucocorticoid guidelines ¹²
Bisphosphonates alendronate, risedronate	Weekly	Yes	Yes	If previous fracture	NICE ¹⁴ , RCP treatment guidelines ¹⁵ , glucocorticoid guidelines ¹²
Bisphosphonates ibandronate	Monthly	Yes	No	If previous fracture	None yet
Strontium ranelate	Daily	Yes	No	If previous fracture	None yet
Raloxifene	Daily	Vertebral only	No	No hip fracture protection	NICE ¹⁴ , RCP treatment guidelines ¹⁵
Teriparatide	Daily injectable	Restricted secondary care use in women >65 years	No	Restricted secondary care use in women >65 years	NICE ¹⁴

around 1,000 scans annually for initial assessment¹⁷ with additional availability for repeat drug monitoring scans.

Drug treatment

Once patients at risk of future fracture are identified, post-menopausal women with previous fractures should be managed as recommended by the NICE guidance on secondary prevention. Most men will require referral to secondary care for investigation and treatment initiation, but some can then be followed up in primary care.

Patients committed to oral glucocorticoid therapy for three months or more should be managed according to the RCP's 2002 *Guidelines for Glucocorticoid-induced Osteoporosis*¹². It is important that bone-sparing therapy is initiated as early as possible, as bone is lost most rapidly during the first few months of therapy, although bone loss continues at a higher rate throughout oral glucocorticoid therapy.

Patients aged less than 65 years will need a DXA scan, and bone-sparing therapy if their T-score is less than -1.5 rather than the T-score less

than -2.5 used as a treatment threshold in other patients, since fractures occur at higher bone density in those taking glucocorticoids. A summary of drug treatment options available is shown in *Table 2*.

Currently available therapies reduce future fracture risks, saving hospital bed days and surgery visits, as well as mortality and morbidity for patients. For example, in the randomised, placebo-controlled Fracture Intervention Trial the relative risk (RR) of future vertebral fracture in women with previous fractures was 0.53 (95 per cent CI 0.41–0.68) and RR for hip fracture was 0.49 (95 per cent CI 0.24–1.01)¹⁴. Likewise, data are available demonstrating reduced fracture risk with risedronate, with RR of vertebral fracture of 0.63 (95 per cent CI 0.51–0.71) and hip fracture of 0.60 (95 per cent CI 0.42–0.88)¹⁴ in those with osteoporosis and previous fracture.

Three years of treatment with strontium ranelate results in a vertebral fracture RR of 0.59 (95 per cent CI 0.48–0.73) in those with a previous vertebral fracture¹⁸. In addition to the evidence for prevention of vertebral fractures, the MORE study with raloxifene demonstrates RR of breast cancer after four years treatment of 0.38 (95 per cent CI

Key points

- > One in two women and one in five men over the age of 50 years will suffer an osteoporotic fracture.
- > Fractures in patients over 60 years account for more than two million bed-days per year.
- > Hip fractures cost more than £1.8 billion annually.
- > Highest risk groups are those with previous fragility fractures, those committed to >three months oral glucocorticoid therapy and the frail elderly in nursing and residential homes.
- > Those who have sustained one fragility fracture are more at risk of sustaining further fractures.
- > Drug therapies suitable for use in primary care are cost-effective and safe to use.

0.24–0.58).

Osteoporosis and the GMS contract

The new GMS contract and the QOF has resulted in improved standards of care in the targeted chronic disease areas, but primary care teams have had to shoulder an increased workload over the last two years. Since osteoporosis is not currently included in the QOF, it is not possible to give the disease the high priority that its impact and costs demand. As a result, patients in urgent need of treatment have not been identified, available guidance from bodies such as NICE has not yet been implemented, and the epidemic of fragility fractures continues unabated.

Conclusion

Fragility fractures due to osteoporosis are a major cause of mortality, morbidity, workload and hospital bed-day utilisation. Current treatments, targeted to those at highest risk, can cost-effectively reduce future fracture rates over a one to three year time-frame. However, this will require a structured approach to identifying and managing patients at highest risk of future fractures, and most of this workload will need to be carried out in primary care.

Inclusion of osteoporosis in the GMS contract QOF revision would have motivated primary care

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teams to take action on osteoporosis and make a significant impact on future fracture reduction. Failure to include osteoporosis in the 2006 revision is a missed opportunity to improve care.

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