Osteoporosis is a long-term condition that causes bones to become brittle and increases the risk of bone fracture. Almost three million people in the UK have osteoporosis and there are 300,000 fragility fractures each year (National Osteoporosis Society (NOS), 2014). The combined cost of hospital and social care for patients with a hip fracture alone amounts to more than £2.3bn per year in the UK – approximately £6m a day (NOS, 2014). In addition, 10% of patients with a hip fracture will die within a month and 30% will die within a year (National Institute for Health and Care Excellence, 2011). Death after hip fractures can be the result of frailty, co-morbidity, complications after surgery or immobility, and infections. People who have sustained a fracture at any site, including at the hip, are at greatest risk of further fracture (Van Staa et al, 2002).

A fracture may be the first signal that osteoporosis is present and should routinely prompt assessment for underlying osteoporosis. If osteoporosis is present, drug treatments have the potential to halve the risk of further fractures (Bone et al, 2008; Black et al, 2007, 1996; McClung et al, 2001; Neer et al, 2001).

The Department of Health (2009) has endorsed the importance of responding to the first fracture and preventing a second – this is termed "secondary fracture prevention". This is necessary after any fracture, including hip fracture. Secondary fracture prevention is regarded as an essential component of high-quality care offered after hip fracture (Sahota and Currie, 2008).

Our fracture liaison service

Before 1999, patients with fractures who were admitted to Western Infirmary in Glasgow were given little or no information about osteoporosis or fracture prevention by hospital staff. GPs had access to dual-energy X-ray densitometry (DXA) via a direct referral scheme but only 3% of patients with a wrist fracture and 12% of those with a hip fracture underwent bone density assessment; very few people started treatment to prevent secondary fractures. As a result, the secondary fracture prevention needs of patients with new fractures were being neglected. This failing was not unique to our service and subsequent reports suggest it might be

Using nurse-led liaison to prevent further fractures

Nurse-led fracture liaison services help patients who have had one fracture avoid another one but fewer than 40% of hospitals in England offer this service.

In this article...

- Definition of secondary fracture prevention
- How a nurse-led fracture liaison service works
- Advising patients who have had a fracture

In Glasgow, hip fracture rates have fallen over a decade since a fracture liaison service, was introduced while fracture rates have risen elsewhere. Nurses working in hospitals that do not have secondary prevention services should advise patients to seek these through their GP.

Keywords: Fracture/Osteoporosis/Fragility/Bone density/Falls

- This article has been double-blind peer reviewed
widespread. Hippisley-Cox et al (2007) identified that among older patients who had had a fragility fracture, only one in 10 women and one in 50 men had evidence of having been referred for a DXA in their primary care records.

In 1999, we pioneered the fracture liaison service. This service takes responsibility for three key steps in the pathway to fracture secondary prevention:

» **Identification** – identifying all patients aged over 50 years with new presentations of “low trauma” or fragility fractures. “Low trauma” fractures are those that occur with little trauma or force, from a standing position or lower, that is usually not great enough to cause broken bones.

» **Investigation** – patients are investigated for osteoporosis by DXA and for its underlying causes and their risk of further fractures is determined.

» **Intervention** – this includes drug treatments to prevent further fractures (where indicated) and strategies to lessen future risk of falls.

### Osteoporosis nurse specialist role

All three of above steps are the responsibility of the fracture liaison service osteoporosis nurse specialist, who acts as the link person between the orthopaedic department and the bone metabolism unit.

To identify those with new clinical fractures, the nurse specialist visits the orthopaedic wards daily, and attends fracture clinics or checks fracture clinic lists.

Identification of patients with new reports of vertebral fractures also requires access to radiology reporting systems, as patients with vertebral fractures seldom present acutely to our hospital wards or clinics.

Patients are given NOS information leaflets about osteoporosis and fragility fractures at this stage to make them aware that their fracture may be caused by osteoporosis.

Approximately six weeks after their fracture, patients attend the one-stop nurse-led fracture liaison service clinic for investigation (including DXA) and intervention. At this appointment, patients bring in a self-completed questionnaire that covers risk factors for osteoporosis and for falling (Box 1).

The nurse specialist interprets the results of the DXA, and determines the patient’s future fracture risk. If treatment for secondary fracture prevention is required, the nurse specialist uses local treatment protocols to decide on the most appropriate treatment, discusses its risks and benefits with the patient and sends a treatment recommendation letter to their GP.

Further written information is provided to support education given at the clinic, along with contact details for the NOS where patients can obtain more information if they wish. Patients are also advised on lifestyle change, including exercise classes at their local leisure centres. Those who have a degree of frailty are referred for physiotherapy assessment and a 12-week exercise programme. Patients are advised about the potential duration of treatment and when follow-up is recommended. Patients are also told that if they experience any side-effects from their medication, they should contact their GP or the nurse specialist to receive advice regarding an alternative.

Patients who are perceived to be at a higher risk of falling are referred to the community falls prevention service. Some patients require more complex treatment, such as parenteral drug therapy, and our service refers them to the consultant endocrinologist-run bone clinic.

Further education is offered to all those recommended treatment, in the form of afternoon sessions about osteoporosis and fracture prevention.

### The effectiveness of the fracture liaison services

A fracture liaison service transforms post-fracture care. Its primary role is to ensure that patients who will benefit from interventions, including medication, receive them to prevent secondary fractures.

The model of care works because it assumes responsibility for identification, investigation and for intervention – it does not rely on orthopaedic surgeons or GPs referring patients for assessment. It ensures that patients who are at the highest risk of fracture within any population can routinely access the treatment they require (McLellan and Fraser, 2007).

The British Orthopaedic Association identifies an integrated fracture liaison service as the most effective means of providing secondary fracture prevention (BOA and British Geriatrics Society, 2007).

The fracture liaison service offered assessment to 95% of wrist fractures and 97% of hip fractures compared with other service structures in Scotland, at 21% and 25% respectively (McLellan et al, 2004). In addition, the Royal College of Physicians (2007) has found compared with the >90% assessment rate reported in organisations with a fracture liaison service, sites with no such service achieved an assessment rate of only 35% for hip fracture patients and 19% following non-hip fracture.

An independent review of the impact of Greater Glasgow’s osteoporosis and falls strategy reported that, between 1998 and 2008, hip fracture rates reduced by 7.3%.

Over the same period of time, hip fracture rates increased by 17% in England (Skelton and Neil, 2009). Dell et al (2008) reported a study from southern California that showed a 37% reduction in the expected hip fracture rate over three years following the implementation of a systematic approach to secondary fracture prevention in 11 hospitals serving a population of 3.1 million patients.

Further details of the Glasgow service are available (McLellan et al, 2003); this model has been shown to be both cost-effective and cost-saving. Nurse leadership is crucial to its success in delivering high-quality care systematically to large numbers of patients with fractures in a cost-effective way.

Clunie and Stevenson (2008) implemented a similar fracture liaison service in Ipswich and describe in detail the resources required to set it up. In the UK, there are other models of service that achieve the same fundamental goals but reflect variations in local practice.

### The postcode lottery

The RCP (2009) audit of falls and bone health services highlighted that much of the NHS in England had failed to put adequate systems in place to ensure secondary prevention of osteoporotic fragility fractures. Figures released in 2011 showed that only 38% of hospitals in England, Wales and Northern Ireland had a fracture liaison service (RCP, 2011), compared with 66% of hospitals in Scotland.

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**Box 1. Risk factors for osteoporosis**

Risk factors for osteoporosis include:

- Family history of osteoporosis or parental hip fracture
- Previous fracture history
- Early menopause
- Steroid use
- Smoking
- Excess alcohol intake
- Lack of exercise

**Quick fact**

£2.3bn Combined annual cost of hospital and social care for patients with a hip fracture
Innovation

As a result of this, thousands of people who sustain fragility fractures are not assessed for osteoporosis and may not be offered treatment to prevent secondary fractures. If there is no fracture liaison service locally, evidence suggests that patients with fractures may not have the opportunity to access secondary fracture prevention. It is unclear if including osteoporosis in the GP Quality and Outcomes Framework has resulted in more patients undergoing post-fracture assessment.

If there is no service available to offer secondary fracture prevention, nurses working in orthopaedic wards and fracture clinics are in an excellent position to empower patients and advise them that they should go to their GP to discuss secondary fracture prevention, including the availability of assessment services locally.

In October 2013, NOS launched the Stop at One campaign to raise public awareness of fractures caused by osteoporosis. The campaign encourages people 50 years and over who have experienced a fragility fracture to “make their first break their last” by speaking to their GP about full assessment of their future fracture risk. It recommends that a fracture liaison service should be linked to every hospital receiving fragility fractures in the UK, to ensure that every fragility fracture patient gets the treatment and care they need.

Conclusion
 Provision of fracture liaison services in the UK is suboptimal and secondary fracture prevention is postcode driven. Large numbers of people in the UK are missing out an opportunity to reduce their future fracture risk following a fracture.

The NOS Stop at One campaign will help to raise public awareness and hopefully influence policymakers at national and regional levels to ensure that fracture liaison services become available everywhere in the UK.

Nurses will continue to play a vital role in leading fracture liaison services and raising awareness of secondary prevention.

References


BOX 2. OSTEOPOROSIS

- Reduction of bone density, which may be caused by osteoporosis, predisposes patients to bone fracture.
- Osteoporosis is most common in women who are post-menopausal; one in two women will experience a fragility fracture in the post-menopausal period.
- Hip fractures are a common consequence of falls in people with osteoporosis.
- A web-based tool, FRAX (www.shef.ac.uk/FRAX/tool.jsp), is available to help determine 10-year fracture probability by integrating clinical risk factors and bone mineral density.
- Anti-fracture drugs can reduce the risk of fracture but need to be taken consistently for many years.

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