Implementing a nurse-led fracture intervention service

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Osteoporosis affects three million people in the UK. The condition puts people at high risk of sustaining potentially debilitating fractures. The key to effective management is early intervention and disease management to reduce patients’ fracture risk. This article reports on the introduction of a nurse-led fracture intervention service that aims to selectively case-find those at highest risk of osteoporosis. An audit was undertaken to evaluate the service.

Osteoporosis is a major public health concern, affecting three million people in the UK. One in two women and one in five men over the age of 50 will sustain an osteoporotic fracture of the hip, wrist or spine (All Party Parliamentary Osteoporosis Group, 2004). These fractures are associated with high morbidity and mortality rates.

A proactive approach to osteoporosis was taken through the implementation of a nurse-led fracture intervention service to identify people at risk of the condition and to promote early intervention with the aim of reducing future fractures. The service was reviewed after a year.

**Background**

According to the World Health Organization (1994) osteoporosis is a disease characterised by low bone mass and micro-architectural deterioration of bone tissue. It leads to increased bone fragility and a consequent increase in the risk of fracture.

Every three minutes someone in the UK sustains a fracture due to osteoporosis. This results in 70,000 hip, 50,000 wrist and 120,000 spinal fractures a year. In addition to the human costs of increased morbidity and mortality, treatment of these fractures costs the NHS £1.7bn annually (National Osteoporosis Society, 2004).

The existence of a fracture increases substantially the likelihood of further fractures (Anderson, 2001). Hip fractures are common in frail elderly adults worldwide and are a major cause of disability, functional impairment and death (Kannus et al, 2000). Approximately 23 per cent of older people will die within one year after sustaining a hip fracture (Pfeifer and Minne, 1999). Among those who survive 50 per cent will have impaired mobility and 25–50 per cent will become more dependent on their carers. Many will require residential or nursing home care.

In a study by Salkeld et al (2000) up to 80 per cent of elderly women said they would rather be dead than undergo the independence, dignity and possessions losses they believe accompanies a move to a nursing home. The National Service Framework for Older People (Department of Health, 2001) sets new national standards of care for all older people. Standard six (falls) recommends prevention and management of osteoporosis to reduce the number and cost of fractures.

One of the key high-risk factors associated with osteoporosis is a fragility fracture. This is defined as ‘a fall from standing height or lower’ (Barclay, 2001). Anderson (2001) believes that early intervention at this stage using effective and fast-acting treatments makes clinical and economic sense.

Fracture of the wrist is a key sign of postmenopausal osteoporosis, particularly when it occurs in younger postmenopausal woman (Compston and Rosen, 1999). Evidence suggests this group is at an increased risk of sustaining a hip fracture, and wrist fractures can precede hip fractures by 15 years (Khan et al, 2001). According to Pfeifer and Minne (1999), identifying and treating those at high risk can reduce the risk of hip fracture by up to 50 per cent.

**FIG 1. EXPRESSED PREFERENCE FOR HOSPITAL APPOINTMENTS**

<table>
<thead>
<tr>
<th>Number of Respondents</th>
<th>Preferred hospital</th>
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<tr>
<td>30</td>
<td>LGI</td>
</tr>
<tr>
<td>25</td>
<td>Warfedale</td>
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<td>15</td>
<td>No answer</td>
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LGI: Warfedale: No preference: No answer
Barclay (2001) recommends that women who sustain a fragility fracture of the wrist should be investigated for reduced bone mineral density and offered preventive therapy (Barclay, 2001). The bone mineral density of a recently fractured wrist decreases substantially in the six months following fracture and this deficit is still evident at one year post fracture. The deficit can be prevented by giving a bone-protecting agent (Van Der Poest Clement et al, 2000). Fractures in postmenopausal women imply osteoporosis unless proven otherwise. However, recent evidence suggests that only one in five patients who had been seen with a minimal trauma fracture of the wrist, hip or spine had received treatment for osteoporosis (Siris et al, 2001). This is supported by Khan’s (2001) research, which concludes that only 50 per cent of people presenting with a wrist fracture had received follow-up for osteoporosis treatment or prevention.

As the risk of fracture increases with age and accelerates at the menopause it is essential to identify those at high risk of osteoporosis so they can receive appropriate evaluation and treatment to reduce their risk of sustaining future fractures (Black et al, 2001). It is therefore prudent to target postmenopausal women who present with a low trauma wrist fracture to receive screening for osteoporosis (Holmes, 1998).

Local service provision

Inspired by the fracture liaison model used at Glasgow Western and Royal Infirmary and attendance at the Glasgow nurse preceptorship course, a nurse-led fracture liaison service was introduced at the Leeds Teaching Hospitals NHS Trust in February 2003. This aimed to provide a proactive approach to the management of fracture risk within the Leeds area.

The service is a result of close collaboration between the orthopaedic, endocrinology and radiology departments within the trust and is led by a nurse specialist in osteoporosis.

Fracture intervention service overview

The aims of the fracture intervention service are to:
- Encourage diagnosis and disease management through early detection;
- Increase public awareness and raise the profile of osteoporosis;
- Promote a collaborative approach between primary, secondary, community and social care;
- Introduce a care management pathway to formulate a structured approach.

Patients are identified through a selective case-finding strategy. All women over 50 years of age who present with a wrist fracture are identified on a daily basis through the fracture/orthopaedic out-patient clinics. Each patient is sent a postal information pack that includes:
- A letter outlining the service and recommending osteoporosis screening by bone densitometry;
- A fracture intervention questionnaire that includes osteoporosis and falls assessment and lifestyle factors (diet, activity and smoking and alcohol intake);
- A patient information leaflet about osteoporosis, risk factors and good bone health;
- A prepaid envelope for return of questionnaire.

Patients are asked to complete the questionnaire and return if they consent to have a bone densitometry scan. Information from the completed questionnaires is entered on a fracture/osteoporosis database. This information can then be used for audit and research purposes.

Patients who return the questionnaire are given an appointment to have a bone densitometry scan and be seen immediately after by the nurse specialist. This provides a one-stop service.

They are given an explanation of the results of their bone densitometry scan and information about possible management plans and how to ensure good bone health. They are provided with both written and verbal health promotion information. Time is allowed for patients to discuss any concerns or ask questions.

The bone density results are reviewed at a later time by the consultant endocrinologist and nurse specialist and a decision is made regarding a management programme. An osteoporosis care management pathway has been designed depending on each individual patient’s bone density results to ensure a structured and consistent approach.

Normal

Patients who have normal bone density are advised about good bone health and the importance of maintaining a good bone density.

FIG 2. PROVISION OF TREATMENT

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For related articles on this subject and links to relevant websites see www.nursingtimes.net

REFERENCES


Osteopenia and osteoporosis
A letter is sent to the GPs of patients with osteopenia or osteoporosis giving their results. A management algorithm adapted from the Royal College of Physicians (2000) guidelines for the prevention and treatment of osteoporosis is also sent.

Severe osteoporosis
Patients assessed as having severe osteoporosis will be referred to the specialist osteoporosis clinic based in secondary care.

Service review method
A review was undertaken after the service had been operating for one year to evaluate the service and to gain information to allow for its improvement. The review method chosen was a patient survey using a questionnaire.

This was developed in two parts, the first aimed at gaining an insight into patients’ views and experience of their bone densitometry and nurse-led clinic appointment, the second at gauging treatment provision in primary care.

In particular, the survey was designed to explore two key areas.

Access
Bone density outpatient appointments for the fracture intervention service are currently held at a smaller peripheral hospital site (Wharfedale), approximately 12 miles from the city-centre hospital. There was some concern that this location may present access problems for some patients.

Treatment provision in primary care
Service failures may occur at the point of care transfer. As the fracture intervention service currently receives no feedback regarding the treatment outcomes of patients referred to primary care, it was considered important to gauge whether patients were started on treatment and the types of treatments prescribed.

Patients’ experience and views regarding their contact with the fracture intervention service were sought to establish areas for improvement. Three key areas were considered:

- Communication (verbal and written);
- Patient management (privacy, courtesy and the patient-practitioner relationship);
- Waiting environment.

Patients were also given the opportunity to give general comments about their appointment and to suggest how the service could be improved. Basic demographic data was also collected. The population evaluated consisted of 100 patients diagnosed with low bone density (osteopenia or osteoporosis) and requiring therapeutic intervention attending the service between February 2003 and March 2004. A total of 100 postal questionnaires were sent with a response rate of 70 per cent.

Results
Access
It was anticipated that patients would prefer to attend the city-centre hospital, at Leeds General Infirmary (LGI) rather than the peripheral hospital for their bone density scans. In fact the results revealed this not to be the case – almost half stated a preference for the peripheral site (Fig 1, p32).

Reasons given by respondents who indicated a preference for attending the large city-centre hospital included:

- Convenient location (the hospital was easy to access by public transport);
- Familiarity with the location of the hospital.

The reasons given by those who indicated a preference for attending the peripheral hospital site included:

- Convenient location (the hospital was near to their home);
- Easily available parking;
- Shorter waits for appointments;
- Smaller hospital preferred;
- Staff were perceived to be friendly (personal approach, kind).

Overall the peripheral hospital seemed to be favoured by those with access to their own transport, whereas those who relied on public transport favoured the city-centre hospital.

Satisfaction with communication
Respondents were asked to comment on areas relating to information they received from the nurse specialist regarding their bone density scan results and the educational material provided to them. They were also asked to comment on privacy, courtesy and the patient-practitioner relationship. Between 85 and 99 per cent of patients responded positively to the following:

- They understood the results of their scan;


RCP/Bone and Tooth Society of Great Britain.

What is Osteoporosis?
Trends in Endocrinology Medicine; 10: 10, 417–419.


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<table>
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<th>Year</th>
<th>Author(s)</th>
<th>Title</th>
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The nurse explained the scan results and their condition was discussed thoroughly; they had an opportunity to ask questions and these were answered to their satisfaction; the nurse was courteous and the patient felt comfortable with the nurse; they felt they had sufficient privacy during their appointment; written information was provided and its content was useful.

**Environment**

Some respondents expressed concerns about the waiting environment. These mainly related to poor signage, insufficient seating and the waiting area being cold. A new hospital was currently being built and the date of moving was imminent at the time of the study. It was envisaged that these concerns would then be alleviated.

**Gauging treatment in primary care**

After a patient has a bone density scan the results are reviewed by the consultant endocrinologist and the nurse specialist. A care management plan is then decided upon.

For patients who are to be managed in primary care a package is sent to their GP, including a standardised covering letter advising the GP that their patient has been assessed as being a high risk for osteoporosis due to low-trauma fracture. The letter includes information from the database such as demographic details, lifestyle including dietary calcium intake and activity/exercise, medications, past medical history, osteoporosis risk factors, falls history, fracture history and information regarding menarche, pregnancy and menopause.

The database automatically assesses osteoporosis and falls risk and this information is included in the letter. The assessment includes the bone densitometry results and diagnosis.

The letter advises the GP about lifestyle measures the patient can take to improve bone density and if necessary it advises treatment based on the Royal College of Physician guidelines for prevention and treatment of osteoporosis (2000).

Despite recommendations by the Fracture Intervention Service it appeared that 30 per cent of the patients who required bone protective treatment did not receive any (Fig 2, p33). Research recommends that calcium and vitamin D should be given concomitantly with, for example, a bisphosphonate. This is a non-hormonal therapy for the prevention and treatment of osteoporosis (Spector and Selby, 2004). However, this study appears to show that this was not always achieved in practice.

The types of treatment were recommended on the basis of either:
- Monotherapy with use of a bisphosphonate, selective oestrogen receptor modulator or calcium and/or vitamin;
- Combined therapy using a treatment adjunct with calcium and vitamin D.

All treatments prescribed collectively are demonstrated in Fig 3.

**Discussion**

The overall response from patients regarding their experience of the fracture intervention service was extremely positive. The majority felt they were well informed and that the service was professional and the staff courteous.

However, patients appeared to experience problems once they had been referred to their GP to begin treatment. If intervention is indicated the patient is advised to contact their GP to discuss therapy options.

The data demonstrated that 30 per cent of patients had not been prescribed any bone protective therapy treatment despite the fact that all those included in this survey had been diagnosed with low bone density and had sustained a fracture. These results indicated a further audit was necessary to assess the possible reasons why patients are not being started on therapy. It is recognised that women underestimate their personal risk of developing osteoporosis and that low level of awareness and ineffective management are all reasons why opportunities to identify and provide early treatment for those at high risk of developing osteoporosis are missed (Barclay, 2001).

This could explain why in this particular fracture intervention service of the 355 women identified with a wrist fracture only 64.5 per cent responded to the offer of a bone density scan.

The National Service Framework acknowledges that preventing osteoporosis in high-risk patients and treating existing cases has a significant effect on the number and severity of fractures (DoH, 2001). The Royal College of Physicians recommends that active prevention work would actually save more than it would cost. It is therefore vital that health care professionals are aware of the potential risk factors for osteoporosis and are proactive in identifying those at risk, as these are the first steps towards effective management of the condition (Drew, 2001).

The bone mineral density results demonstrated that a proactive approach through selective case-finding is an efficient and cost-effective method of managing people who are at the highest risk of osteoporosis. From those diagnosed with osteoporosis 41 per cent were assessed as being severely affected and were referred to a specialist osteoporosis clinic within secondary care. This promoted an appropriate referral system for secondary care management.

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**REFERENCES**


