

Osteoporosis in the UK at...

Breaking Point



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Foreword

Coronary heart disease, stroke and fragility fractures remain a huge part of the current health and social care expenditure. Implementation of national strategies for coronary heart disease and stroke has, however, transformed the quality of patient care. In comparison, the prevention of hip fracture does not attract the same level of political priority or clinical activity and the incidence of hip fractures continues to increase.

Osteoporosis affects over two million people in the UK; more than double the number of people affected by dementia. Every year 300,000 people suffer a fragility fracture (a broken bone resulting from a fall at standing height or less), including over 70,000 hip fractures. Fractures cause significant pain, disability and loss of independence for patients and in many cases can be fatal. Indeed 1,150 people die every month in the UK following a hip fracture. The UK has one of the highest rates of fracture in Europe – we risk being left behind.

Fractures and especially hip fractures, have a devastating impact on sufferers. Recent research shows eighty percent of older women would rather die than be forced to lose their independence following a hip fracture. Hip fracture also has a massive impact on healthcare budgets.

Current estimates suggest that this amounts to £5 million per day, or £2 billion per year; a figure that is only set to rise as the aging population increases. This will create a major burden on the economy.

The NHS has a strong directive to make efficiency savings of £15-20 billion by 2014. As osteoporosis is highly preventable, a focus on effective management offers an opportunity for substantial savings in the future. As the British Orthopaedic Association & British Geriatrics Society put it: “Looking after hip fracture patients well is a lot cheaper than looking after them badly”.

At the start of this new decade, a clarion call is issued by a group of professional organisations, clinicians, patient organisations and policymakers for the NHS to implement a systematic approach to fragility fracture care and prevention.

This report describes the current situation for women with postmenopausal osteoporosis in the UK and highlights the practical steps that must be taken by healthcare professionals, policy makers and commissioners, as well as the public, to prevent the UK from reaching Breaking Point.



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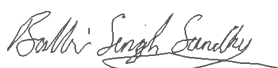
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A report on the current management of postmenopausal women with osteoporosis in the UK

Why is osteoporosis being overlooked?

Fragility fractures are a great cost to the patient and to the health economy. Fractures cause severe pain, disability and loss of independence; the annual cost of hip fractures alone is £2 billion per year.¹ Yet osteoporosis rarely hits the headlines and many would argue it is not treated as a health priority. So why is osteoporosis being overlooked?

Perhaps one reason is that osteoporosis is frequently referred to as a 'silent' or 'invisible' disease, as it rarely causes symptoms until a fracture occurs; suggesting a rather benign disease that has little impact. But the reality is very different:

- Osteoporosis makes bones fragile, which causes painful and disabling fractures¹
- Women aged over 45 years spend more days in hospital due to osteoporosis than diabetes, heart attack or breast cancer²
- Osteoporotic or fragility fractures can have a profound impact on everyday life, causing loss of independence, misery and death³

Like dementia, osteoporosis is a problem that will increase as the population ages. However, whereas treatments for dementia only delay the progression of the disease, fragility fractures can be prevented. Unfortunately, implementation of the national policies on falls and fractures has been patchy. Greater focus is required in order to realise the opportunities to close the care gaps.

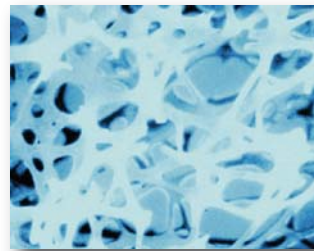
What is osteoporosis?

Osteoporosis is a progressive, systemic skeletal disorder that occurs in later life. It can affect both sexes, but women are at greater risk, particularly

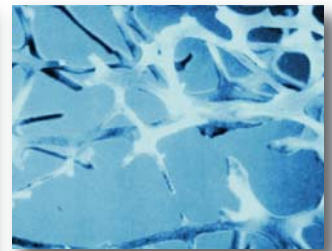
after the menopause when levels of the protective hormone oestrogen start to fall.⁴ Once it develops, osteoporosis is a chronic, lifelong condition.

Bone renewal – an ongoing process

Bones are living tissues and are constantly repairing areas of damage by a process of renewal called *bone remodelling*. As we age our bones start to become thinner and more fragile and are more prone to fracture.⁵



*Healthy Bone*⁶



*Osteoporotic Bone*⁶

A bolt out of the blue

Women are usually totally unaware that they are suffering from osteoporosis until they experience a painful fracture. This can occur following a fairly minor fall or injury. For many women, a diagnosis of osteoporosis can come as a bolt out of the blue.

Fractures can occur anywhere in the skeleton, but the most common sites are wrists (distal forearm), hips (proximal femur), spine (vertebral fracture) and upper arm (humerus).^{5,7}

If multiple fractures occur together in the spine, the curvature of the spine is increased, causing kyphosis, the distinctive 'Dowager's hump', which results in poor posture and back pain.

Fractures are not only painful and disabling but can also be fatal. Hip fractures are the most common cause of accident-related deaths in older people – 18% die within four months of a hip fracture; 30% within a year.⁸

The fracture cascade

Unfortunately, suffering one broken bone increases the risk of subsequent fractures. Within the first year following a vertebral fracture one in five women will experience another fracture, which is often referred to as the ‘fracture cascade’.⁹

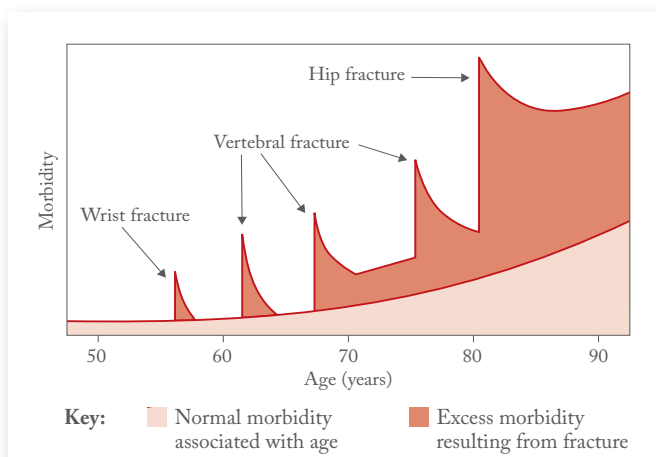


Figure 1: Fragility fractures as a long-term condition¹⁰

Figure 1 illustrates how, without intervention, patients may progress from a Colles’s (wrist) fracture during their 50s to a hip fracture during their 80s. A recent review of osteoporosis described this progression as follows:

“Hip fracture is all too often the final destination of a 30-year journey fuelled by decreasing bone strength and increasing falls risk”¹¹

This progression is not inevitable because intervention and treatment after the first fracture can reduce the risk of further events by half.¹²

The challenge is to make sure that systems are in place to take advantage of these opportunities to intervene.

Diagnosing a ‘silent’ disease

Diagnosing asymptomatic conditions such as osteoporosis can prove challenging. As a result osteoporosis is currently under-diagnosed and under-treated.^{1,13}

Reasons for this include poorly integrated services and a failure to regard osteoporosis as a priority.

One third of women with osteoporosis are undiagnosed¹⁴

How is osteoporosis diagnosed?

The World Health Organization (WHO) defines osteoporosis as bone mineral density (BMD) of less than 2.5 standard deviations (SD) below the young adult mean.¹⁵ The gold standard for assessing BMD is by dual energy x-ray absorptiometry (DXA).¹⁶

Shifting the emphasis from diagnosing osteoporosis to assessing fracture risk

DXA is only one part of the story, a major step forward has been the shift from looking at osteoporosis in isolation, to looking at an individual’s absolute risk of fracture.¹⁵ The WHO has developed a fracture risk assessment tool called FRAX™ to identify those most at risk of fracture.¹⁷

FRAX™ is a simple algorithm that allows clinicians or patients to input risk factors to provide the patient’s 10-year probability of osteoporotic fracture, but it cannot identify those at risk of falls. This approach is comparable to the ‘risk factor calculator’ used to determine cardiovascular health, which assesses a range of factors including age, sex, smoking habits, cholesterol levels and blood pressure.

FRAX™ has the potential to enable assessment of patients in the primary care setting for the need for fracture prevention treatment.

Osteoporosis: the impact

- More than 300,000 fragility fractures occur every year in the UK¹⁸
- Fragility fractures can have a serious affect on daily life¹⁹
- Women aged over 45 years spend more days in hospital because of osteoporosis than diabetes, heart attack or breast cancer²
- 1,150 people die every month in the UK as a result of hip fracture²⁰

A new epidemic

A postmenopausal woman has a 50% chance of sustaining an osteoporosis-related fracture in her lifetime.¹² Once a fragility fracture has occurred, the risk of future fractures at least doubles.¹⁸

In women over 50 years of age, the lifetime risk of a vertebral fracture is one in three and is one in five for a hip fracture⁴

The prevalence of osteoporosis increases sharply with age: from approximately 2% at 50 years to more than 25% at 80 years.⁴ Currently, around 20 million people in the UK are aged 50 years or over; 11 million of whom are women.²¹ By 2020 this will have increased to 25 million, comprising approximately 13.5 million women.³ Therefore, it is easy to understand why fragility fractures have been described as ‘a new epidemic’.¹⁸

Broken bones, shattered lives

There are more than 300,000 fragility fractures every year in the UK, including approximately 70,000 hip fractures.¹⁸ In fact, UK hip fracture rates are currently among the highest in the EU.¹ The impact of a hip fracture can be particularly devastating:

- Only half of patients who survive a hip fracture will walk unaided again³ and in many cases they will never regain their former degree of mobility²²
- 12 months after a hip fracture, 60% of patients require assistance with activities, such as feeding, dressing or toileting – basic aspects of daily life that are fundamental to retaining dignity and independence. 80% need help with activities, such as shopping or driving²³
- 10–20% of these patients are forced to live in care homes in the year following a hip fracture²⁴

Vertebral fractures also have a profound impact on morbidity and quality of life by causing back pain, loss of height and curvature of the spine (kyphosis),²⁵ which may cause problems with breathing, eating and digestion.²⁵

Non-vertebral fractures such as Colles’s (wrist) fractures can also make even the most basic activities, such as getting dressed or going to the toilet unaided, virtually impossible.

If Disability Adjusted Life Years (DALYs) are used to calculate the disability burden of different diseases, osteoporosis has a greater impact than most types of cancer, with the exception of lung cancer²⁶

Fractures can be fatal

Hip fractures are the most common cause of accident-related deaths in older people and are also associated with increased mortality.⁴

Vertebral fractures are also associated with increased mortality, with an estimated 4.4-fold increase.⁴

As the population ages and the number of people affected by osteoporosis rises, the number of deaths related to fractures is expected to increase significantly.

Living with osteoporosis – just getting through each day

Recent research among women with osteoporosis showed that it affects virtually every aspect of daily life.¹⁹

- 77% said osteoporosis had an impact on their life
- 43% said it had an impact on day-to-day tasks, such as housework and gardening
- 36% said their quality of life was adversely affected
- 65% said they suffer pain to some degree

In some cases, the pain associated with a fragility fracture can be excruciating. One patient who had fractured her spine was in such agony that she was convinced that she had bone cancer and was actually 'relieved' to be diagnosed with osteoporosis:

I couldn't stand, I couldn't sit, I couldn't eat, I couldn't turn in bed²⁷

Another patient gave a graphic description of the pain she suffers:

It is like a knife going in and turning slowly, a drawing pain²⁷

Pain and discomfort can lead to poor sleep resulting in fatigue and irritability. Some women resort to sleeping in a separate room to avoid disturbing their partner. Sexual activity can become painful, which can have an impact on intimacy and relationships.²⁷

Osteoporosis tends to affect older women and once it develops it is permanent. Many of those affected are widowed or living alone and 50% fear becoming dependent on others.¹⁹

Psychological impact

Osteoporosis can have a psychological as well as a physical impact: 42% of women with osteoporosis experience depression, 58% a reduced sense of well-being and 41% a reduced quality of life.²⁸ 39% of women feel that osteoporosis has affected their outlook on life.¹⁹

You feel like a prisoner within your own body and it is so unfair²⁷

Some women struggle to cope with changes in their appearance (loss of height, curved spine) and the need to alter the way they dress to accommodate their new shape.²⁹

Do you know what is so depressing? It's shopping for clothes. Have you ever tried to get a bra to fit? I went three weeks once without wearing a bra because it was so uncomfortable²⁷

The crippling costs of fractures

- Over 70,000 hip fractures occur every year in the UK and this figure is set to rise as the population ages³⁰
- Effective treatments are available but compliance is poor – in the UK 68% of patients are not taking their osteoporosis medication after 12 months³¹
- Many women are given little or no information about the importance of continuing treatment and physicians have a key role to play in helping to improve compliance¹⁹
- Treating hip fracture alone costs the UK £2 billion annually¹

A high price to pay

Fragility fractures are costly to treat. Overall, the burden of fragility fractures on healthcare budgets is significantly greater than heart attacks and more than twice as high as breast and prostate cancer combined.³²

The combined annual cost of hospital and social care for patients with a hip fracture in the UK is estimated to be £2 billion – more than £5 million per day.¹

A snapshot of the current UK situation

Newly commissioned research from Dr Foster, the UK's leading provider of comparative information on health and social care services, gives a snapshot of the current economic burden of fracture admissions in women aged 55 years and over.³³

dr foster[®]
intelligence

- Overall, the number, rate and cost of fractures among women of this age is rising
- The level of hospital stays has increased from approximately 78,000 in 2004/05 to 88,000 in 2008/09 – an increase of 13%
- Adjusting these figures for population size, the level of hospital admissions has increased from 10.4 per 1,000 population in 2004/05 to 11.4 per 1,000 population in 2008/09
- The tariff cost has risen from approximately £390 million in 2005/06 to over £430 million in 2008/09
- The total cost to the NHS of hospital stays alone is in excess of £400 million per year for women in this age group
- Nearly 10% of women aged over 55 years who go into hospital with a fracture die while they are an in-patient – this equates to around 6,000 deaths per year
- There is significant regional variation in levels of fracture admissions for women

Different fractures, different burdens

Treatment patterns and associated costs vary according to the type of fracture.

Hip fracture

- The average hospital stay in the UK after a hip fracture is 26 days³⁰
- Hip fractures account for more than 20% of orthopaedic bed occupancy in the UK³
- On average, the cost to treat a hip fracture is £13,000 in the first year and £7,000 for the subsequent year²⁵
- These costs are set to rise – conservative estimates suggest that there will be a 100% increase in the number of hip fractures in women over the next 35 years³⁴

Vertebral fracture

- The majority of costs are associated with outpatient care, nursing care and lost working days
- A significant proportion (34%) of patients require admission to hospital³⁵
- The average length of hospital stay following a vertebral fracture is 15 days in the UK¹³
- The estimated hospital and outpatient costs of each vertebral fracture are estimated to be £1,706³⁶

Non-vertebral fracture

Other types of fracture result in older patients being admitted to surgical care.¹⁸ 30% of patients with a fracture of the upper arm and 18% of patients who have fractured their forearm or wrist require admission to hospital.³⁵

A range of treatment options

Although there is no cure for osteoporosis, a wide range of treatments has been approved to treat or help prevent the fractures associated with the disease.

Major drug treatments include bisphosphonates, raloxifene, strontium ranelate and parathyroid hormone (teriparetide). All these interventions have been shown to reduce the risk of vertebral fractures when given with calcium and vitamin D supplements.³⁷

Oral bisphosphonates are cheap and are recommended as first-line treatment by the National Institute for Health and Clinical Excellence (NICE) and other guidelines.⁴ The high cost of teriparetide restricts its use to those at very high risk, particularly of vertebral fracture.³⁷

Other approved interventions for postmenopausal women include calcitonin, calcitriol and etidronate. Denosumab, a RANK Ligand inhibitor that reduces osteoclast activity, has recently been approved and NICE has published its final appraisal determination (FAD) recommending denosumab as a treatment option in patients unsuitable for oral bisphosphonates.^{38,39} Hormone replacement treatment (HRT) is no longer a first-line treatment for osteoporosis.⁵

A problem of compliance

Compliance to treatment is often poor in patients with chronic conditions and osteoporosis is no different.⁴⁰ Poor compliance has been described as the 'weakest link' and the 'Achilles' Heel' in the treatment of osteoporosis.^{41,42} Recent data show that in the UK 68% of patients are not taking their medication after one year.³¹

Patients may discontinue treatment for a variety of reasons, the most common being:^{40,43,44}

- **Lack of motivation:** since osteoporosis is often asymptomatic many patients experience no obvious improvement
- **Adverse effects** associated with some treatments
- **Safety concerns** about treatments (particularly common among patients taking HRT)
- **Inconvenient dosing**, such as daily dosing and/or the need for fasting
- Simply **forgetting** to take medication as directed

Recent research among postmenopausal women with osteoporosis revealed that almost half (44%) had stopped taking prescription-based medication for osteoporosis after they had been prescribed treatment.¹⁹ When asked why they had stopped their medication, 45% said they could not tolerate the side effects and 28% stated that there was no reduction of pain.¹⁹

Physicians have a key role to play

Physicians can influence compliance, either positively (by explaining that osteoporosis is a serious disease that requires treatment) or negatively (by failing to prepare patients for potential adverse effects).⁴³ Unfortunately, research suggests that almost half of postmenopausal women with osteoporosis receive no information on the importance of continuing their medication and/or have not even discussed treatment options with their healthcare physician.¹⁹

Use of oral bisphosphonates

Patients taking oral bisphosphonates must follow strict instructions to reduce the risk of side effects.

As a result, compliance to treatment with oral bisphosphonates is poor.⁴³ More than 40% of patients taking oral bisphosphonates discontinue treatment within 12 months^{44–48} and the median duration of treatment has been estimated to be as low as 1.2 years.⁴⁹

The cost of non-compliance

Effective treatment reduces the risk of fracture by up to 50%.^{50–52}

Low adherence increases risk of fracture by 17% and risk of hospitalisation by 37%⁵³

Newer treatments can be given intravenously or subcutaneously; offering alternative methods of administration has the potential to improve compliance.

Research has shown that compliance among patients taking oral bisphosphonates is improved with a Fracture Liaison Service (FLS). Nurses at the FLS make follow-up calls to patients on daily bisphosphonates six to eight weeks after their appointment. An audit found that 81% of patients with a FLS were still taking their oral bisphosphonates 18 months after treatment started.⁵⁴ Similar results have been seen in other centres with established FLS provision.

Compliance is an important part of the equation but this assumes that women are being diagnosed and prescribed treatment for osteoporosis and fracture prevention. Unfortunately this is not routinely the case, even for women at highest risk.

Osteoporosis and fragility fractures: are we winning the battle?

- In the UK, well-defined treatment pathways for the management of osteoporosis and secondary prevention of fragility fractures have been produced by the Department of Health, NHS Quality Improvement Scotland and the Welsh Assembly Government^{14,55,56}
- In reality, service provision is patchy and often poorly co-ordinated.⁵⁷ As a result, opportunities for secondary prevention of fracture are being wasted and patients are suffering needlessly
- Extensive auditing has shown that the Fracture Liaison Service (FLS) can deliver in terms of improving patient care in a cost-effective manner.⁵⁸ We know what good practice looks like, and with the right support and motivation, the solutions to current problems are both accessible and achievable

NICE Guidance

The National Institute for Health and Clinical Excellence (NICE) has produced two technology appraisals covering primary and secondary prevention of osteoporotic fragility fractures in postmenopausal women.^{4,59}

Key recommendations include:

- Using the bisphosphonate alendronate as first-line treatment for both primary and secondary prevention, followed by risedronate and etidronate as second-line treatment
- Strontium ranelate, raloxifene or teriparatide are recommended in specific circumstances

NOGG Guideline

The National Osteoporosis Guideline Group (NOGG) produced a guideline on the management of people at high fracture risk.³⁷ Key recommendations include:

- Women with a prior fragility fracture should be considered for treatment
- In other patients, clinical risk factors can be assessed using the FRAX™ tool

Blue Book

The British Orthopaedic Association and the British Geriatrics Society produced a revised edition of the *Blue Book*,¹⁸ which provides guidance on the care of patients with a fragility fracture and emphasises the need for co-ordinated services and standards for hip fracture care. Specifically this emphasises the importance of monitoring patients' adherence to treatment via the National Hip Fracture Database (NHFD); a web-based audit that aims to promote best practice in the care and secondary prevention of hip fractures.

A more co-ordinated approach to fragility fractures and falls

*National Service Framework for Older People in England*⁶⁰

- The English National Service Framework for Older People includes a Standard on falls, with one aim: to reduce injurious falls through the prevention and treatment of osteoporosis.⁶⁰

Department of Health's Prevention Package for Older People

The Prevention Package for Older People includes a section on falls and fractures.¹⁴

This has four key objectives:

- Improve hip fracture care
- Secondary prevention after a fragility fracture
- Restore independence through falls care pathways
- Prevent frailty, promote bone health and reduce accidents (Summarised in Figure 3)

Documents have also been developed in Scotland, Wales and Northern Ireland to provide a framework and guidance on the prevention and management of falls and fragility fractures.

These include:

- ‘Up and About: Pathways for the Prevention and Management of Falls and Fragility Fractures’ resource (Scotland)⁵⁵
- Scottish Government Falls Working Group’s directive on the prevention of falls in older people⁶¹
- National Service Framework for Older People in Wales: Falls and Fractures Standard⁵⁶
- ‘The Prevention and Management of Fragility Fractures in Northern Ireland’ report⁶²

The reality – a Bermuda triangle?

On the face of it, a wide range of tools and measures are in place to facilitate the effective management of osteoporosis and the secondary prevention of fractures. At present, the reality is very different. Recent audits reveal a patchy, uneven pattern of care provision and poor co-ordination. In fact, care of patients with fragility fractures has been likened to a ‘Bermuda Triangle’ comprising orthopaedists, primary care physicians and osteoporosis experts, into which the fracture patient disappears without trace.⁶³

Issues around the management of osteoporosis and fragility fractures can be grouped into four main areas:

- Under-treatment
- Failure to implement recommendations for secondary prevention
- Poor co-ordination between primary and secondary care
- Lack of public awareness about osteoporosis and fragility fractures

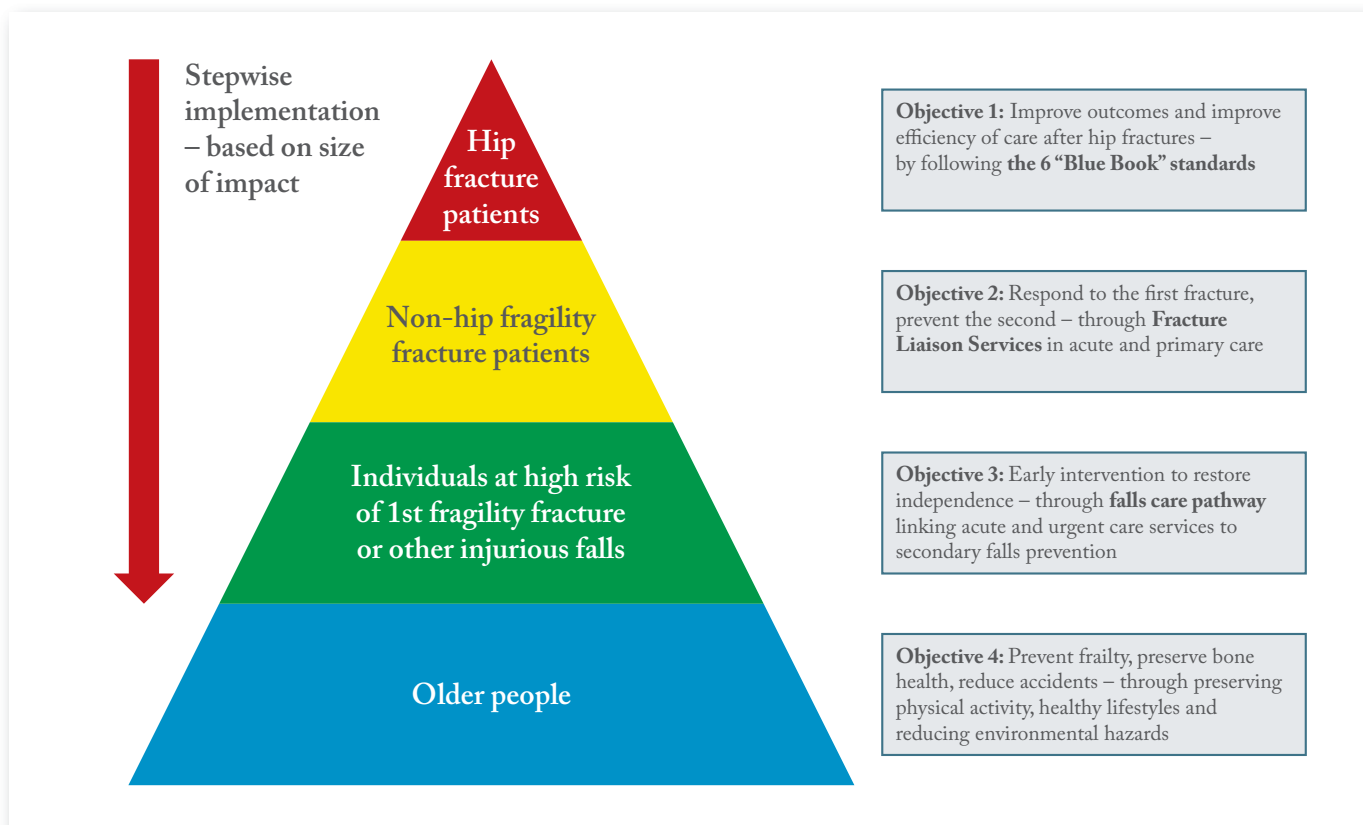


Figure 3: A systematic approach to falls and fracture prevention – Four key objectives

Under-treatment

Despite the fact that a variety of treatments have been approved for the management of osteoporosis, many examples of under-treatment have emerged in recent years:

- An audit of postmenopausal women presenting in one hospital showed surprisingly low rates of treatment. All the women had sustained a prior low trauma fracture and/or had a past history of fracture after the age of 45 years, but **only 28% were receiving bone-protective drugs**. Among those over 75 years of age, just 45% were taking bone-protective therapy despite NICE guidance specifically recommending treatment for this group⁶⁴
- The National Hip Fracture Database's 2010 report showed that **on admission, less than 10% of hip fracture patients were on treatment**. On a more encouraging note, almost two-thirds of hip fracture patients discharged from acute care had been prescribed anti-resorptive therapy or were having their bone health assessed³⁰

Failure to implement secondary prevention recommendations

It is well documented that **50% of future hip fractures will emanate from postmenopausal women with a prior fracture history**.¹ It is also widely recognised that treating osteoporosis in women with prior fractures can reduce the risk of future fractures by 50%¹

Poor co-ordination between primary and secondary care – a 'Catch 22' situation

The care of osteoporosis patients is shared between primary care and a number of different specialities in secondary care. Poor co-ordination between primary and secondary care means there is a strong possibility that women will slip through the net.

Missed opportunities

A recent National Audit of the Organisation of Services for Falls and Bone Health of Older People revealed that opportunities to prevent recurrent falls and fractures are being missed:⁵⁷

- Commissioning is patchy – only 39% of Trusts report being compliant with the NICE guidance on secondary prevention of osteoporotic fragility fractures
- High risk patients are not being identified – only 44% of Trusts carry out screening of older people admitted to hospital with a fracture

A recent survey of UK orthopaedic surgeons and GPs showed that the majority of orthopaedic surgeons would discharge a patient with a fragility fracture without initiating investigation, while the majority of GPs would only trigger an assessment if prompted to do so by the orthopaedic surgeon, creating a 'Catch 22' situation where neither side routinely initiates assessment. Clearly, opportunities to prevent further fractures are being missed.⁶⁵

There is also evidence to show that osteoporosis is not being treated as a priority:

- A recent review of standards of care for osteoporosis and falls in primary care revealed that only one in ten older women with a previous fragility fracture had a referral for bone density assessment in her electronic medical record⁶⁶
- Only 25% of women aged over 75 years with a recorded prior fragility fracture had evidence of treatment⁶⁶
- 44% of women see their healthcare physician less than once a year to discuss the management of their osteoporosis¹⁹
- 72% of women were not on medication at the time of fracture¹⁹

In addition, some GPs lack confidence in treating osteoporosis. Recent research⁶⁷ showed that:

- 1 in 3 are not familiar with NICE guidance in the management of osteoporosis
- 1 in 2 need greater information in this clinical area

Lack of public awareness about osteoporosis and treatment options

Research by the National Osteoporosis Society has revealed a worrying lack of awareness of bone health and of the risk factors for developing osteoporosis.⁶⁸ Many women do not realise that fragility fractures can be a sign of osteoporosis and could put them at risk of further fracture.^{69,70} Clearly, women are unlikely to initiate discussions with their physician about treatment options if they do not perceive themselves to be at risk of further fracture.

Potential solutions

There is no doubt that the current situation presents some serious shortcomings, but in many cases the solutions have been identified, audited and shown to be cost-effective, including fracture liaison services and increased patient education.

Fracture Liaison Service (FLS)

The FLS approach is already up and running in some parts of the UK. Many centres are run by a dedicated nurse specialist, working under the guidance of a specialist clinician. Every fracture patient over the age of 50 years receives a full osteoporosis assessment, including DXA scanning where appropriate. The FLS bridges the existing care gap between different areas of health and social care and provides improved patient care.

A FLS run by a dedicated nurse is a healthcare model developed within the NHS in Glasgow, Scotland.⁷¹ However, other models using a fracture liaison clerk or a primary care based service also exist. The FLS approach has been widely endorsed as an effective model of best practice for secondary fracture prevention, with treatment being targeted at those at highest risk.⁵⁷

The FLS approach is not only cost-effective, but can actually save money.⁵⁸ The Department of Health provided a cost-effective model showing that in a typical PCT (320,000 population) approximately **£57,000** could be saved in NHS acute and community services and local authority social care costs over a five year period. At a national level, this equates to approximately £8.5 million saving over five years.⁵⁸

The Glasgow experience⁷¹

The FLS began operating in November 1999 in West Glasgow and in November 2000 in South Glasgow. During the first 18 months of operation:

- More than 4,600 patients with fractures of the hip, wrist, upper arm, ankle, foot, hand and other sites were seen by osteoporosis specialist nurses
- Nearly three-quarters were considered for BMD testing and treatment was recommended for approximately 20% of patients without the need for BMD testing
- 82.3% of patients tested were found to be osteopenic or osteoporotic at the hip or spine
- This early diagnosis and intervention is likely to have decreased the risk of future fracture in these patients, helping to reduce the public health burden of osteoporosis
- An audit of the FLS at Western Infirmary in Glasgow showed that 83% of patients attending the service were more aware of the nature of osteoporosis⁷²

Despite this, service provision is currently patchy: **just 24% of hospitals in England, Wales and Northern Ireland have implemented an FLS.**¹ In Scotland, the figure is much higher, with around 78% of hospitals having implemented the model.⁷³

According to the Department of Health, adopting the FLS model in England could help to save more than £8 million over a 5-year period⁷⁴

A number of other hospitals have published their experiences of developing an FLS. These including The Ipswich Hospital NHS Trust,⁷ Musgrave Park Hospital in Belfast,⁷⁵ Addenbrooke's Hospital, Cambridge⁶⁴ and the Ceredigion and Mid Wales Trust.⁷⁶

Costs for establishing a universal FLS across Wales is £2.8 million – with savings attributed to averted fractures estimated to be £3 million, mostly achieved within the initial 3-year period⁷⁷

Patient education

It is vital to ensure that patients are aware of the importance of bone health when they are prescribed treatment and that they understand why they need to continue taking it. There are numerous opportunities to provide information to patients:

- At pharmacy level, the Medicines Use Review system could be used to emphasise the importance of continuing treatment for osteoporosis and to highlight issues that might affect compliance
- Through the National Osteoporosis Society in its aim improve public education about bone health
- By improving public awareness of the need for assessment and treatment following a fracture

New levers to change

There are encouraging signs that osteoporosis and fragility fractures are being given greater priority. Osteoporosis has recently been included as a new **Directed Enhanced Service** (DES). This will help to focus GPs' attention on the need for

effective management of osteoporosis in the primary care setting.

The recently published **Best Practice Tariff** for hip fracture includes secondary fracture prevention through osteoporosis and falls interventions, signalling a new emphasis on the area of fracture prevention.⁷⁸

Discussions around the potential inclusion of osteoporosis within the **Quality and Outcomes Framework** (QOF) have been less successful. QOF offers financial rewards to GPs for fulfilling a defined set of criteria, typically relating to the treatment of a specific condition. In 2007, the task group responsible for recommending conditions to be included in QOF proposed that osteoporosis be included. However, in mid-2010 the NICE QOF committee agreed to pilot osteoporosis indicators with a view to including them in the 2012/13 QOF.

It's not all doom and gloom

Despite the obvious shortcomings of the current situation there are reasons to be positive. In recent years, there have been major improvements in diagnostic technology and new treatment options have been approved so that fragility fractures are now preventable; the understanding of optimal osteoporosis management is improving all the time. Tools are also in place to monitor progress, share best practice and to use new levers, such as the DES and Best Practice Tariff, to effect change.

The NHS has publicly stated its goal of saving £20 billion by 2015 through improvements in quality and efficiency. There is plenty of evidence to show that effective management of fragility fractures can be cost-effective, suggesting that quality and cost-effectiveness can co-exist quite happily. As the British Orthopaedic Association & British Geriatrics Society put it: **“Looking after hip fracture patients well is a lot cheaper than looking after them badly”**.¹⁸

With the World Health Organization's Bone and Joint Decade drawing to a close it is time to take stock of what we have learnt and put it into action before this country reaches Breaking Point.

References

- Protecting fragile bones. A strategy to reduce the impact of osteoporosis and fragility fractures in England. National Osteoporosis Society
- Kanis JA. Guidelines for Diagnosis and Management of Osteoporosis. *OI* 1997; 390–406
- Osteoporosis Facts and Figures. National Osteoporosis Society. Downloaded from: <http://www.nos.org.uk/NetCommunity/admin/Document.Doc?id=47>. Downloaded 30.11.09
- NICE technology appraisal guidance 161, adjusted to take account of whole UK population
- About osteoporosis, National Osteoporosis Society website. Downloaded from: <http://www.nos.org.uk/NetCommunity/Page.aspx?pid=234&csrid=247>. Downloaded 26.11.09
- Source of photos: Amgen
- Clunie G, Stephenson S. Implementing and running a fracture liaison service: an integrated clinical service providing a comprehensive bone health assessment at the point of fracture management. *Journal of Orthopaedic Nursing* 2008; **12**: 156–162
- Roberts SE, Goldacre MJ. Time trends and demography of mortality after fractured neck of femur in an English population, 1968–98: database study. *BMJ* 2003; **327**: 771–775
- Lindsay R, Silverman SL, Cooper C *et al*. Risk of new vertebral fracture in the year following a fracture. *JAMA* 2001; **285**: 320
- Kanis JA & Johnell O. *J Endocrinol Invest* 1999; **30**: 583–588
- Mitchell PJ. *Osteoporosis Review* 2009; **17**(1): 14–16
- Edwards BJ *et al*. *Clin Orthop Rel Res* 2007; **461**: 226–230
- Osteoporosis in the European Union in 2008. Ten Years of Progress and Ongoing Challenges. International Osteoporosis Foundation
- DH Prevention Package for Older People: Falls and fractures - Effective interventions in health and social care, 2009
- Kanis JA. Diagnosis of osteoporosis and assessment of fracture risk. *Lancet* 2002; **359**: 1929
- DXA scan. NHS Choices. Downloaded from: NHS Choices <http://www.nhs.uk/Print/Pages/Preview.aspx?site=DEXA-scan&print=634001033101050521&JScript=1>. Downloaded 26.11.09
- WHO Scientific Group on the Assessment of Osteoporosis at Primary Health Care Level. Summary Meeting Report. Brussels, Belgium, 5–7 May 2004
- BOA-BGS 2007 Blue Book
- Online market research conducted by Opinion Health between November 20–December 9 2009 among 500 women aged 55 plus with postmenopausal osteoporosis
- Osteoporosis facts & figures, Dr Foster Health. Downloaded from: <http://www.drfoosterhealth.co.uk/medical-dictionary/conditions/osteoporosis/facts-and-figures.aspx>. Downloaded 26.11.09
- Office of National Statistics. Mid-2008 Population Estimates: UK
- Magaziner J *et al*. Predictors of functional recovery one year following hospital discharge for hip fracture: a prospective study. *Journal of Gerontology* 1990; **45**: M101–M107
- Cooper C. The crippling consequences of fractures and their impact on quality of life. *Am J Med* 1997; **103**(2A): 12S–17S
- <http://www.iofbonehealth.org/facts-and-statistics.html>
- Falling Short: Delivering Integrated Falls and Osteoporosis Services in England. All Party Parliamentary Osteoporosis Group, December 2004
- Johnell O, Kanis JA. An estimate of the worldwide prevalence and disability associated with osteoporotic fractures. *Osteoporosis Int* 2006; **17**: 1726–1733
- Focus groups conducted in London and Manchester by Opinion Health on 16–17 December 2009 among 12 women aged 61 plus with postmenopausal osteoporosis
- Bianchi ML *et al*. Quality of life in post-menopausal osteoporosis. *Health Qual Life Outcomes* 2005; **3**: 78
- Body image of people with osteoporosis. Healthtalkonline.org website. http://www.healthtalkonline.org/Bones_joints/osteoporosis/Topic/3622/
- The National Hip Fracture Database National Report 2010
- Li L *et al*. OP54 Non-persistence to anti-osteoporosis medications in the UK using the general practice research database (GPRD). *Rheumatology* 2010; **49**: Supplement 1
- Johnell O, Kanis JA. The Burden of Hospitalised Fractures in Sweden. *Osteoporosis Int* 2005; **16**: 222–228
- Amgen data on file. Dr Foster slide set; research commissioned by Amgen 2009
- Gullberg B *et al*. World-wide projections for hip fracture. *Osteoporosis Int* 1997; **7**: 407–413
- Johansen A *et al*. Trauma admissions in the elderly: how does a patient's age affect the likelihood of their being admitted to hospital after a fracture? *Injury* Vol 29, No 10: 779–784
- Stevenson MD *et al*. The hospitalisation costs and out-patient costs of fragility fractures. *Women's Health Medicine* 2006; **3**(4): 149–151
- Guideline for the diagnosis and management of osteoporosis in postmenopausal women and men from the age of 50 years in the UK, National Osteoporosis Guideline Group, 2009
- Prolia Summary of Product Characteristics. 2010, data on file.
- Denosumab for the prevention of osteoporotic fractures in postmenopausal women. Final appraisal determination. NICE September 2010
- Rossini M, *et al*. Determinants of adherence to osteoporosis treatment in clinical practice. *Osteoporosis Int* 2006; **17**: 914–921
- Compston JE and Seeman E. Compliance with osteoporosis therapy is the weakest link. *Lancet* 2006; **368**(9540): 973–974
- Seeman EJ *et al*. Non-compliance: the Achilles' heel of anti-fracture efficacy. *Osteoporosis Int* 2007; **18**(6): 711–719
- Payer J *et al*. Therapeutic adherence to bisphosphonates. *Biomed Pharmacother* 2007; **61**: 191–193
- Weycker D *et al*. Compliance with drug therapy for postmenopausal osteoporosis. *OI* 2006; **17**: 1645–1652
- Gallagher AM, Rietbrock S, Olson M, van Staa TP. Fracture outcomes related to persistence and compliance with oral bisphosphonates. *J Bone Miner Res* 2008 Oct; **23**(10): 1569–1575
- Blouin J, Dragomir A, Ste-Marie LG, Fernandes JC, Perreault S. Discontinuation of antiresorptive therapies: a comparison between 1998–2001 and 2002–2004 among osteoporotic women. *J Clin Endocrinol Metab* 2007 Mar; **92**(3): 887–894
- Cotté F-E, Mercier F, De Povourville G. Relationship between compliance and persistence with osteoporosis medications and fracture risk in primary health care in France: a retrospective case-control analysis. *Clin Ther* 2008 Dec; **30**(12): 2410–2422
- Berecki-Gisolf J, Hockey R, Dobson A. Adherence to bisphosphonate treatment by elderly women. *Menopause* 2008 Sep–Oct; **15**(5): 984–990
- Roughhead EE, Ramsay E, Priess K, Barratt J, Ryan P, Gilbert AL. Medication adherence, first episode duration, overall duration and time without therapy: the example of bisphosphonates. *Pharmacoepidemiology and Drug Safety* 2009; **18**(1): 69–75
- Delmas PD. Treatment of postmenopausal osteoporosis. *Lancet* 2002; **359**: 2018–2026
- Bouxsein ML, Kaufman J, Tosi L *et al*. Recommendations for optimal care of the fragility fracture patient to reduce the risk of future fractures. *J Am Acad Orthop Surg* 2004: in press.
- Woolf AD, Akesson K. Preventing fractures in elderly people. *BMJ* 2003; **327**: 89–95
- Huybrechts KF *et al*. Assessment of compliance with osteoporosis treatment and its consequences in a managed care population. *Bone* 2006; **38**: 922–928
- Nurse-led fracture liaison service significantly improves osteoporosis treatment. Nursing Times.net. Downloaded from: <http://www.nursingtimes.net/whats-new-in-nursing/nurse-led-fracture-liaison-service-significantly-improves-osteoporosis-treatment/1970210.article>. Downloaded 11.2.10
- Up and about: Pathways for the prevention and management of falls and fragility fractures. NHS: Quality Improvement Scotland. Downloaded from: http://www.nhshealthquality.org/nhsqis/files/up_and_about_finaljan10.pdf. Downloaded 11.2.10
- National Service Framework (NSF) for Older People in Wales: Falls and Fractures Standard. Welsh Assembly Government. Downloaded from: <http://www.wales.nhs.uk/sites3/documents/439/NSFforOlderPeopleInWalesEnglish.pdf>. Downloaded 11.2.10
- National Audit of the Organisation of Services for Falls and Bone Health of Older People. March 2009
- Fracture Prevention Service: an economic evaluation. Department of Health. November 2009
- NICE technology appraisal guidance 160
- National Service Framework for Older People. Department of Health. Downloaded from: http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4071283.pdf. Downloaded 11.2.10
- Delivery Framework for Adult Rehabilitation: Prevention of Falls in Older People. Scottish Executive Health Department. Downloaded from: http://www.sehd.scot.nhs.uk/mels/HDL2007_13.pdf. Downloaded 11.2.10
- The Prevention and Management of Fragility Fractures in Northern Ireland. Health and Social Care Public Agency. Downloaded from: <http://www.nos.org.uk/NetCommunity/Document.Doc?id=529>. Downloaded 11.2.10
- Harrington TJ. Dilemma in Providing Osteoporosis Care for Fragility Fracture Patients. *US Musculoskeletal Review* 2006.
- Premaor MO *et al*. Low rates of treatment in postmenopausal women with a history of low trauma fractures: results of audit in a Fracture Liaison Service. *Doi:10.1093/qjmed/hcp154*
- Chami G *et al*. Are osteoporotic fractures being adequately investigated?: A questionnaire of GP & orthopaedic surgeons. *BMC Family Practice* 2006; **7**: 7
- Hippisley-Cox J *et al*. Evaluation of Standards of Care for Osteoporosis and Falls in Primary Care. Final report to The Information Centre for Health and Social care, July 2007
- Falls and Fracture Prevention Audit 2007. Gloucestershire Primary and Community Care Group. Downloaded from: <http://www.glospcag.nhs.uk/userfiles/docstore/Falls/GPATitudinal/SummaryGPATitudinalReport.pdf>. Downloaded 13.12.09
- Your Bones and osteoporosis: what every man, woman and child should know. National Osteoporosis Society. Downloaded from: <http://www.nos.org.uk/NetCommunity/Page.aspx?pid=532>. Downloaded 27.1.10
- Gianguregorio L *et al*. Do patients perceive a link between a fragility fracture and osteoporosis? *BMC Musculoskeletal Disord* 2008; **9**: 38
- Global Study Shows That Majority of Women with Osteoporosis Do Not Consider Themselves at Higher Risk for Fractures. Press release from Global Longitudinal study of Osteoporosis in Women. Downloaded from: http://www.outcomes-umassmed.org/AccessDocument.cfm?document=GLOW_Press_Release.pdf. Downloaded 27.1.10
- McLellan AR *et al*. The fracture liaison service: success of a program for the evaluation and management of patients with osteoporotic fracture. *Osteoporosis Int* 2003; **14**: 1028–1034
- Fraser M. A fracture liaison service for patients with osteoporotic fractures. *Nursingtimes.net*. Downloaded from: <http://www.nursingtimes.net/nursing-practice-clinical-research/a-fracture-liaison-service-for-patients-with-osteoporotic-fractures/200141.article>
- A McLellan. Making Scotland Europe's first country to provide routine post-fracture assessment for secondary prevention of osteoporotic fractures: an achievable goal. Presented to MSPs; 2009.
- All-Party Parliamentary Osteoporosis Group fights for local falls and fracture services. Press release, 18.12.09, National Osteoporosis Society. Downloaded from: <http://www.nos.org.uk/NetCommunity/Page.aspx?pid=311#24082009anchor>. Downloaded 11.2.10
- Wright SA *et al*. Osteoporosis fracture liaison experience: the Belfast experience. *Rheumatol Int* 2001; **25**: 489–490
- New report highlights fracture care shortfalls. Joyce Watson AM. Downloaded from: <http://www.joycewatson.co.uk/2009/12/new-report-highlights-fracture-care.html>. Downloaded 23.2.10
- All-Wales Audit of Secondary Prevention of Osteoporotic Fractures. All Wales Osteoporosis Advisory Group. Downloaded from: <http://www.nos.org.uk/NetCommunity/Document.Doc?id=564>. Downloaded 11.2.10
- Best Practice Tariff 2009

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