Staying Power: Closing The Adherence Gap In Osteoporosis

A report highlighting the impact of lack of adherence to osteoporosis treatment in real terms – the social, economic and financial impact to individuals, physicians, societies and healthcare systems.

There are many medically-proven treatments for osteoporosis. The International Osteoporosis Foundation (IOF) does not endorse or recommend any specific treatment. Such decisions must be made by the physician and patient.
In 2005, IOF launched an investigation into the worrying lack of adherence to osteoporosis treatment, publishing their findings in a report – *The Adherence Gap: Why Osteoporosis Patients Don’t Continue with Treatment*.

The report summarised the results of a survey among 500 physicians and 502 women with osteoporosis, conducted across five European countries (France, Germany, Italy, Spain and the UK). The research sought to understand the causes behind the disturbing lack of patient adherence to bisphosphonate treatments, and potential ways through which this problem can be addressed. It highlighted that there is a serious and widespread lack of communication between physicians and patients about the need to stay on long-term treatment in order to effectively treat osteoporosis and reduce the risk of fractures.

Having raised awareness of the problem, the campaign to improve adherence has evolved. This report, which follows a year later, shows that lack of adherence is not simply a European problem but a global issue. *Staying Power: Closing the Adherence Gap in Osteoporosis* takes physicians, patients and all those with an interest in osteoporosis on the next stage of the journey, highlighting the real cost of this crucial issue by emphasising the personal, social, economic and financial implications that occur when so many patients do not take their treatment for the long-term.
Foreword by the International Osteoporosis Foundation

We face a serious problem. Women and men who have been prescribed osteoporosis treatment often do not continue with their treatment long-term. As a result, they do not benefit from these medications, which have been proven to reduce the risk of fractures. This ‘adherence gap’ poses significant health problems for people at risk of osteoporosis, and also costs healthcare systems – both public and private – vast sums of money in wasted reimbursements.

In order to understand why the issues addressed in Staying Power are so important, we should review the dynamics of osteoporosis.

Osteoporosis – which literally means porous bones – is a serious global health issue affecting a third of women and one in five men over 50. Osteoporosis-related fractures can be fatal; in the UK, hip fractures cause as many deaths as breast cancer, and significantly more than gastric and pancreatic cancer. The statistics are staggering, and they are becoming increasingly serious.

It is predicted that in the year 2050, the annual number of hip fractures will reach over 6 million worldwide. Half of these fractures will occur in Asia where the incidence of osteoporosis is growing at an alarming rate. In Europe, vertebral fracture rates are set to escalate by 70% by 2020.

Since 1987, the International Osteoporosis Foundation (IOF) and its 172 member societies have worked tirelessly to raise public and medical awareness of the disease, so that more people with osteoporosis are identified and treated before they experience the devastating effects of fracture. As the only worldwide organisation dedicated to fighting osteoporosis, we work with patients, physicians and policy makers to raise the profile and priority accorded to osteoporosis within national healthcare systems throughout the world.

However, there can be no room for complacency and we have new frontiers to tackle. A significant challenge, faced by all involved in the management of osteoporosis, is the lack of adherence to a treatment regime. Failure to stay on therapy results in an increased fracture risk and, if an individual sustains a fracture, this can have a profound effect on quality of life. Some positive steps have already been taken. Patient societies, for example, play a significant role in helping keep patients on treatment, supported by the medical profession’s increasing acknowledgement of the importance of ensuring swift diagnosis and the initiation of appropriate treatment. However, this important recognition by healthcare professionals may become jeopardised as up to half of people with osteoporosis stop taking their treatment during the first year.

Osteoporosis is a treatable condition. Yet, we still live in a world where a third of women and one in five men over 50 suffer from osteoporosis, resulting in a significant personal, social and financial burden. Much of the advocacy work undertaken by IOF is aimed at encouraging healthcare systems to reimburse medications for people at risk of fracture, before they sustain their first break. However, although such reimbursement is essential, if people with osteoporosis do not stay on treatment, this initial outlay goes to waste. This situation should, and must, be addressed with a renewed sense of urgency.

It is critical that we identify people with osteoporosis and initiate their treatment quickly. However, our efforts must also focus on keeping patients on their treatment for the long-term. Staying Power: Closing the Adherence Gap in Osteoporosis highlights the impact of lack of adherence to osteoporosis treatment in real terms – the social, economic and financial impact to individuals, physicians, societies and healthcare systems.

The adherence challenge will not be resolved unless everyone involved in the management and treatment of osteoporosis works in unison, devising appropriate practical solutions that can be implemented globally.

Only then can we truly help people with osteoporosis to stay on their treatment.

Dr Daniel Navid
Chief Executive Officer,
International Osteoporosis Foundation

The lifetime risk of a woman dying from hip fracture complications is equal to her risk of dying from breast cancer.
I have had osteoporosis for ten years and am urging all women in my situation to seek advice from their physician and local patient group on how best to stay on their treatment. I am aware of the profound impact the disease can have on everyday activities and while I have been fortunate enough to continue leading an active life, many women are not so lucky.

Adhering to treatment could mean avoiding a life of decreased mobility, chronic pain and low self-esteem. I would like to emphasise to those people with osteoporosis who are finding staying on therapy a challenge, that support is available. If physicians, patients, families and support groups work together, we can help women to stay on treatment and reduce the burden of fractures.

Britt Ekland
International Film Star
Executive Summary

Lack of Adherence: “A worldwide problem of striking magnitude”

Osteoporosis has the potential to impact on all of our lives, whether as a patient, carer or taxpayer. Although taking regular treatment as prescribed (known as ‘adherence’) can reduce the risk of fracture, many patients are struggling to take their treatment over a sustained period. Osteoporosis is a generalised skeletal condition that requires sustained therapy over a number of years in order to strengthen bones and reduce risk of fractures. However, the reality is that for those women taking a weekly treatment, it is estimated that only half will still be taking treatment after 12 months.8,9

For example:

- In France, half of people with osteoporosis discontinue treatment after one year and only a small proportion of patients take their treatment correctly11
- In the Netherlands, half of the patients on a weekly treatment stop taking it within the first 12 months12

Lack of adherence to osteoporosis treatment has a major impact on costs to healthcare systems globally; over the course of a year, osteoporosis costs health services in the European Union over €4.8 billion.13

In 2005, the IOF report The Adherence Gap: Why Osteoporosis Patients Don’t Continue With Treatment explored this issue and concluded that physicians and patients have different perspectives on adherence:

- Most physicians acknowledged they wanted their patients to take their treatment long-term – between ‘one year’ and ‘indefinitely’
- However, it seems this message is not being communicated effectively - just over half of the patients could not recall being told how long their treatment should last14

The Implications of the Adherence Gap: The impact on the individual

Avoiding the fracture cascade

People who do not adhere to their treatment regime are at an increased risk of fracture and, after suffering one break, they face an increased possibility of additional fractures in a process referred to as the ‘fracture cascade’.

People who have suffered five or more fractures are 10 times more likely to experience another15

In the six months following a vertebral fracture, people aged 50-54 years have a 30- to 50-fold increased risk of suffering another16

Osteoporosis-related fractures can be fatal

Approximately 25-30% of patients who suffer a hip fracture die within a year.17 Given the worldwide incidence of hip fractures is projected to increase by 310% in men and 240% in women by 2050,4 this will have a significant impact on life expectancy, especially among the elderly. Vertebral fractures are also associated with an increase in mortality.18

Osteoporosis-related fractures seriously impair patient quality of life

- For those who survive a hip fracture, less than one third will regain their previous level of mobility and over a third will require constant care19
- Compared to healthy people, patients who have suffered two or three vertebral fractures are twice as likely to experience problems with three or more everyday activities, such as shopping, dressing or going to the toilet20

Beyond the initial physical disability of fracture, people with osteoporosis may also develop psychological problems, including a fear of falling and general lack of confidence in their mobility. This can lead to social isolation, depression and an increased dependency on family and friends.21
The Implications of the Adherence Gap: The impact on society and healthcare systems

The socioeconomic impact of osteoporosis reaches beyond the individual. The number of people with osteoporosis not adhering to their treatment directly correlates to an increasing and unnecessary burden on society and healthcare systems.

Direct costs associated with non-adherence are significant

The worldwide cost burden of osteoporosis is forecast to increase to a minimum of €106 billion (US$131.5 billion) by 2050 and, in women over 45, osteoporosis accounts for more days spent in hospital than many other diseases, including diabetes, heart attack and breast cancer.

Despite this, osteoporosis still does not receive a major financial focus from the governments of many countries and is not considered to be a major economic burden.

Beyond ‘direct’ healthcare costs, osteoporosis-related fractures have a huge societal impact

Those who have suffered a fracture may be unable to return to paid employment due to a reduction in mobility and independence, and family and friends may be required to give up jobs in order to provide ongoing care. In some cases, family members will also need to fund specialist care, significantly reducing their financial capacity to invest in broader societal activities including education.

Next Steps

Recognising that there is a problem with adherence is not enough. IOF is committed to making adherence to treatment a priority by continuing to raise awareness of the issue and working with patients and physicians to develop practical solutions.

- Encouraging patients to stay on therapy must become a focus for all those involved in osteoporosis management
- Healthcare professionals need to be armed with practical solutions to help patients stay on treatment
- Patients and physicians must be encouraged to communicate effectively so that patients understand the benefits of their treatment and are motivated to keep taking it for the long-term

"When I first found out I had osteoporosis, I found taking treatment difficult and, as a result, ended up not taking any medication at all. However, without the benefits of treatment, I suffered several vertebral fractures which have had a significant impact on my quality of life. Having experienced the painful effects of osteoporosis first-hand, I now take my treatment as prescribed. Other people should not go through the pain and inconvenience of fracture unnecessarily and I would therefore encourage them to learn from my experience. My advice is to take your treatment as instructed by your doctor or pharmacist."

Sophia Edlinger, osteoporosis patient, Austria

"In the UK, fractures cost the National Health Service over £1.7 billion (£2.5 billion) each year, which equates to £5 million (£7.2 million) a day. Something needs to be done to address this situation – it is simply not sustainable."

Rose McIver, Osteoporosis Specialist Nurse, UK

"The direct costs of hospitalisations due to osteoporotic fractures in Switzerland are somewhere in the region of 357 million Swiss francs (£228 million) annually. This level of financial outlay for a disease that is preventable must be tackled and rectified."

Professor Kurt Lippuner, Switzerland

Annual direct costs of treating osteoporosis (US dollars):

<table>
<thead>
<tr>
<th>Region</th>
<th>Annual Direct Cost</th>
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<tbody>
<tr>
<td>Europe</td>
<td>$17 billion (€13.7 billion)</td>
</tr>
<tr>
<td>USA</td>
<td>$30 billion (€24 billion)</td>
</tr>
<tr>
<td>Canada</td>
<td>$2 billion (€1.6 billion)</td>
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</table>

This amount is similar in scope to the estimated $53.7 billion (€43 billion) spent annually on global foreign development aid.
Lack of Adherence: The Current Situation

As is the case with many chronic diseases, the problem of adherence to therapy has emerged as a significant challenge to the successful management of osteoporosis. Indeed the World Health Organisation (WHO) has recognised the extent of the problem of adherence with the formation of an Adherence to Long-term Therapies Project. The 2003 WHO report exploring the topic highlighted the adherence challenge as a “worldwide problem of striking magnitude”. For people with osteoporosis, the silent nature of bone loss means that, before experiencing a fracture, the perceived risk amongst patients is often not sufficient to motivate them to comply with treatment guidelines. This difficulty is compounded further by the fact that, in asymptomatic conditions, the benefits of treatment are not immediately apparent or ‘visible’ and, as a result, patients do not consider themselves in need of medication.

Therefore, adherence to osteoporosis treatment is low, leading to an unnecessary burden on patients, physicians and society.

Bisphosphonates, the most commonly prescribed treatment for postmenopausal osteoporosis, are well established as an effective treatment option. However, the full benefits of these drugs can only be gained by long-term adherence to a prescribed treatment regime. Although it is generally recommended that patients stay on treatment for at least two years, research among women taking daily and weekly oral treatments has shown a worrying lack of adherence.

The Adherence Gap: Why Osteoporosis Patients Don’t Continue With Treatment - Key Findings

In 2005, the IOF Adherence Gap report shed new light on the extent of the problem. Among current and lapsed bisphosphonate users, the report found that the majority of patients experienced difficulties in taking their treatment. While women listed side effects and inconvenience-related reasons as the main barrier to staying on therapy, a large number of physicians had a different view, most often citing ‘lack of patient understanding’ as the reason for lack of adherence. Seventy percent of physicians acknowledged that they did not know why so many patients spontaneously stop taking their bisphosphonate treatment.
It is thought that one reason why so many women are not adhering to their treatment is that they do not realise the benefits that their treatment brings. While 90% of women viewed osteoporosis as a serious condition, over two thirds of patients were not aware of the benefits of their treatment, in some cases wrongly believing that there were no benefits at all. Coupled with the inconvenience of taking regular medication for an indefinite period of time, being unable to see and feel their treatment working does not encourage women to stay on treatment.

The majority of physicians acknowledged they wanted their patients to remain on therapy long-term – between ‘one year’ and ‘indefinitely’ – however, just over half (51%) of patients could not recall being told how long treatment would last. Women are more likely to be influenced to stay on treatment by positive motivating factors: 27% of patients said that ‘knowing they were doing something to help themselves’ was a primary factor in encouraging them to stay on treatment long-term.

The majority of physicians stated that improved treatment regimens were key in the management of osteoporosis, with 83% believing that treatment advances play an important role. The possibility of less frequent dosing options was welcomed by physicians and patients with 93% of physicians stating that a change in dosing frequency would have a positive effect upon adherence to therapy.

Recent research has revealed the magnitude of the adherence gap in Latin America. 91% of physicians in Brazil feel that osteoporosis should be viewed as a serious condition and 73% perceive that poor adherence to treatment is a severe problem in their country. Whilst the majority of physicians (89%) believe that patients should stay on therapy long-term (between one year and indefinitely), they estimate that only half of patients are likely to stay on treatment as prescribed for one year or longer.

Over 80% of physicians agreed that regular follow-up with patients, better information on treatment options and more convenient dosing options were needed in order to address the issue of poor adherence, and achieve progress in helping patients and their families living with osteoporosis.

"There are several key reasons why people with osteoporosis do not stay on their treatment. For example:

- Osteoporosis is an ‘invisible’ disease and there are no immediately obvious benefits from taking treatment
- Treatments for osteoporosis can sometimes be inconvenient: patients may have to fast before and after taking their treatment and stay upright afterwards for a specific length of time; intermittent therapies may be helpful in overcoming this inconvenience to a great extent
- There is no ‘quick fix’ – to strengthen bones effectively, osteoporosis treatment generally needs to be taken for at least two years
- Poor communication between patient and doctor is a critical problem, and we need more frequent and longer visits for improvement in this area"

Gülseren Akyüz, MD, Turkey

"Osteoporosis is a significant issue throughout Latin America. Despite this, it is estimated that only one third of patients with osteoporosis receive a diagnosis and, of those, only one in five receive any kind of treatment. We need to ensure that people are not leaving themselves open to fracture by discontinuing their treatment before they have received any benefit from it, in order to reduce fracture rates and reduce the osteoporosis burden."

SOBRAPCO, Brazilian Society of Osteoporosis
### Lack of Adherence: A Global Issue

<table>
<thead>
<tr>
<th>Country</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>After 6 months...</strong></td>
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<tr>
<td>More than a fifth of patients stop taking their treatment</td>
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<tr>
<td><strong>After one year...</strong></td>
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<tr>
<td>Less than half of patients taking a daily treatment are likely to continue on therapy</td>
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<tr>
<td>Approximately half of patients stop taking their weekly treatment by the end of the first year</td>
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<tr>
<td><strong>After two years...</strong></td>
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<tr>
<td>Over two thirds of patients on a daily treatment are likely to have stopped taking their therapy</td>
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</tbody>
</table>

1. **France**  
   Half of French patients discontinue osteoporosis treatment with bisphosphonates after a year  

2. **Canada**  
   After two years, up to a quarter of patients stop taking their treatment  

3. **Germany**  
   Nearly three-quarters of women on weekly treatment and just over half on daily stop taking their treatment after only a year  

4. **Argentina**  
   Only half of patients are still taking their daily treatment after one year and this drops to less than a third after two years  

5. **Spain**  
   For patients on daily treatment, up to a quarter stop taking their treatment after one year  

6. **Italy**  
   Even patients who have suffered a fracture stop taking treatment: after six months, up to three fifths of patients on a daily and one in ten on weekly treatment abandon treatment  

7. **United States**  
   Only a third of patients on daily treatment and just under half on weekly treatment manage to stay on therapy  

8. **Brazil**  
   Physicians estimate that only half of patients will stay on treatment after one year  

9. **Netherlands**  
   Nearly two-thirds of women on daily treatment and almost half on weekly treatment abandon their medication after one year  

10. **Philippines**  
    Recent research revealed that doctors believe only half of their patients adhere to their osteoporosis treatment  

11. **Bulgaria**  
    Only one in five patients on weekly and daily treatment continue with therapy after a year  

12. **UK**  
    Over three quarters of women on daily treatment and three fifths on weekly stop taking therapy after 12 months
Implications of Failing to Adhere to Osteoporosis Treatment

Discontinuing treatment, and the resulting increase in risk of fracture, has a huge impact on a person’s health, lifestyle and appearance, and also presents a substantial societal and economic burden.

Impact on the Individual

Failing to take any medicines as prescribed can lead to ill health and a poorer quality of life.

Those who do not adhere to osteoporosis treatment face a significantly greater risk of fractures.41,42,43,44 The most common osteoporosis-related fractures occur at the spine, hip and wrist.

*The fracture cascade:* following the first broken bone, the likelihood of sustaining another fracture increases dramatically. People who have suffered three or more fractures are 10 times more likely to experience another break45, and younger men and women (aged 50-54) who have suffered a fracture in their spine have a 30-50-fold increased risk of suffering another fracture in the next six months.16

Osteoporosis-related fractures can lead to fatality. Approximately 25-30% of patients who suffer a hip fracture die within a year17 and the lifetime risk of a woman dying from hip fracture complications is equal to her risk of dying from breast cancer.1 Vertebral fractures are also associated with excess mortality.18

Women who survive a fracture face ongoing challenges to their general health and wellbeing. After a hip fracture, over 95% of patients require reparative surgery and, of these, less than one-third will regain normal functioning. A further third will have to give up independent living and need constant care.19 Hip fractures are invariably associated with chronic pain, reduced mobility, disability, and an increasing degree of dependence.49

Vertebral compression fractures can lead to kyphosis – the so-called ‘dowager’s hump’ – resulting in loss of height, severe back pain, deformity and impairment of lung function. Compared to healthy people, those who have suffered two or three vertebral fractures are twice as likely to experience problems with three or more daily activities (such as bathing, dressing and using the toilet).20

In addition to the physical impact, kyphosis presents a number of practical problems. For example, finding well-fitting clothes, reaching high shelves and driving cars can all become difficult, if not impossible. When viewed alongside the associated pain, disfigurement and loss of independence, it is not surprising that kyphosis can have a major psychological impact and lead to an increased risk of depression.48

For people with osteoporosis, especially if they have broken a bone, experiencing a fall can generate an overwhelming fear of further falls and a loss of confidence in being able to move about safely. The resulting lack of mobility can lead to social isolation and loneliness, depression and an increased dependency on others.21

Reduced mobility and increased dependence may require alterations to the home to improve patient quality of life and ensure safety, which can be both costly and demoralising for the individual concerned. Those unable to live independently, may be forced to move to a care or nursing home – potentially at a much younger age than would otherwise have been necessary.

“It is predicted that the elderly population of Indonesia will increase significantly in the next 19 years and, as a result, osteoporosis will develop into an even greater burden. Osteoporosis-related fractures can lead to loss of confidence, independence and even life. Anything that can be done to reduce the chance of a fracture happening should be encouraged. Identifying women who are not staying on their therapy is one way in which we can help reduce the fracture burden.”

Professor DR. Ichramsyah A. Rachman, SpOG-K, Chairman of PEROSI – Indonesian Osteoporosis Society
Non-adherence to osteoporosis treatments: potential patient impact

Patients do not adhere to prescribed osteoporosis treatment

Lower gains in bone mineral density (BMD), smaller decreases in the rate of bone turnover and greater risk of fracture

Fracture may occur and higher risk of re-fracture

For example, compressed vertebral fracture

Surgery, chronic pain and disability, hospital costs

Dowager’s hump: ill-fitting clothes, unable to reach high places or drive, protruding abdomen, shortness of breath, loss of independence and working hours

Vertebral fractures increase the risk of mortality

For example, hip fracture

Surgery, chronic pain and disability, hospital costs

Loss of independence, constant care, reduced mobility

25-30% of hip fractures can lead to death

Fortunately, the prevalence and impact of fractures can be greatly reduced if patients take their treatment as prescribed and for the required length of time. Treatment reduces the risk of vertebral fractures by up to 65% and of non-vertebral fractures by up to 53%. Patients who are persistent on their bisphosphonate treatment reduce their risk of hospitalisation for osteoporosis fractures by 20 - 30%. The protective effect is highest (30%) in patients who use bisphosphonates consistently for more than one year. If adherence is improved, the negative impact on an individual’s health and lifestyle, as well as that of their friends, relatives and carers, can be reduced greatly.
Fractures are increased as a result of suboptimal adherence

- Consistent bisphosphonate users
- Inconsistent bisphosphonate users

33% greater fracture rate in inconsistent* users

Fracture rate (10 year)

<table>
<thead>
<tr>
<th>Number of previous fractures</th>
<th>Any</th>
<th>0</th>
<th>1</th>
<th>2+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fracture rate</td>
<td>0.5</td>
<td>1.0</td>
<td>1.5</td>
<td>2.0</td>
</tr>
</tbody>
</table>

* Inconsistent use defined as early discontinuation or self-reported taking of therapy <80% of the time over the follow-up interval
Reproduced from Sebaldt et al (2004)41

However, by improving adherence, the risk for all fractures can be reduced

26% decrease in fracture risk (p=0.047 vs non-persistent users)

Patients with fracture (%)

<table>
<thead>
<tr>
<th>Persistent*</th>
<th>Non-persistent</th>
</tr>
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<tbody>
<tr>
<td>4</td>
<td>6</td>
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</table>

* Persistent = <6 months on therapy (no gaps >30 days in medication supply) during the 24-month follow-up period
Reproduced from Gold et al (2005)50

Data from Siris et al (2005) suggests that if we could encourage our patients to comply with their bisphosphonate regimen at least 80% of the time then their fracture risk may be reduced by a quarter.51
Why Don’t Patients Stay on Treatment? (Adapted from Sambrook, 2006)52

Osteoporosis: the impact on my life

“I discovered I had osteoporosis at the age of 53, which finally gave me an answer to why I had endured a broken wrist and compressed fracture in my spine. Although my experience as a nurse made it easier to accept I have osteoporosis, it has still had a huge impact on my life. I have lost almost 13cm in height and I now find buses too difficult to use and have had to buy new clothes to fit my change in size and shape. My leisure activities have also been affected – I used to enjoy brisk walks and dancing but I am now afraid of suffering another spinal fracture. However, I recognise that this risk is reduced if I keep taking my medicine – this way, I know I am doing something to help myself.”

Freda Ross, osteoporosis patient, UK
### Impact on Society & Healthcare Systems

The economic impact of osteoporosis-related fractures includes both direct (impacting on healthcare systems and patients) and indirect (usually non-medical) costs.

In women over 45, osteoporosis accounts for more days spent in hospital than many other diseases, including diabetes, heart attack and breast cancer.23

Most countries (excluding the US) allocate less than 10% of their gross domestic product (GDP) to healthcare for all disease areas.53 As the consensus definition of osteoporosis was only established in 1994, it often does not receive a strong financial focus in many countries and is not regarded to be a major burden to society. However, the cost of osteoporosis-related fractures worldwide is extremely high, with the true cost thought to be higher than estimated calculations, as a large number of people with osteoporosis are not diagnosed.5 In 2000, Europeans suffered an estimated 3.79 million fractures amounting to direct costs in the region of €31.7 billion.22 The worldwide cost burden is forecast to increase to a minimum of US$131.5 billion (€106 billion) by 2050.22

#### Estimated economic impact of osteoporosis-related fractures

<table>
<thead>
<tr>
<th>Country</th>
<th>Estimated Economic Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. UK</td>
<td>Annual cost of osteoporotic fractures is between €2.2 - €2.6 billion (£1.5 - £1.8 billion)24</td>
</tr>
<tr>
<td>2. France</td>
<td>Median in-patient costs of €3,786 for humerus fractures, from €2,363 to €2,574 for radius fractures and from €8,048 to €8,727 for fractures to the hip52</td>
</tr>
<tr>
<td>3. Australia</td>
<td>Musculoskeletal disorders amount to an estimated total expenditure of €1.8 billion (AUS $3 billion)56</td>
</tr>
<tr>
<td>4. Sweden</td>
<td>The direct cost - care in hospitals, community, primary care - for osteoporosis-related fractures is €331.6 million (3.1 billion SEK)57</td>
</tr>
<tr>
<td>5. Spain</td>
<td>25,000 fractures occur each year, resulting in direct costs of more than €126 million and indirect costs of €420 million44</td>
</tr>
<tr>
<td>6. Switzerland</td>
<td>Annual direct medical cost of hospitalisation of patients with osteoporosis and/or related fractures is approximately €228 million (357 million Swiss francs)44</td>
</tr>
<tr>
<td>7. USA</td>
<td>During 2001-2003, an estimated 2.39 million osteoporosis fractures occurred, resulting in government health insurance costs of €10 billion (US$13 billion)29</td>
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<tr>
<td>8. Brazil</td>
<td>Over half of physicians questioned in recent market research estimated the annual cost of treating osteoporosis-related fractures to be in excess of €81 million (US$100 million)30</td>
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</table>
“Osteoporosis is a significant problem in Spain and, as is the case in many other countries, lack of adherence to treatment is a major challenge. Typically, patients receive treatment following a fracture but, even then, treatment is not always given as a matter of course. As physicians, we need to ensure that we identify patients, get them on a treatment and make sure they stay on it to ensure fractures (and the related costs) are kept to a minimum. We believe this may significantly relieve the burden on society and healthcare systems.”
Dr Jorge Cannata, Spain

The impact of osteoporosis-related fractures

<table>
<thead>
<tr>
<th>Direct</th>
<th>Indirect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prolonged hospital stays</td>
<td>Exposure to hospital-related illnesses/infections</td>
</tr>
<tr>
<td>Hospital treatment</td>
<td>Loss of productivity</td>
</tr>
<tr>
<td>Hospital staff and community care</td>
<td>Costs to train new staff</td>
</tr>
<tr>
<td>Transporting patients to and from hospitals</td>
<td>Loss of relatives’ and friends’ working days/productivity</td>
</tr>
<tr>
<td>Hip replacements</td>
<td>Long waiting lists to receive treatment</td>
</tr>
<tr>
<td></td>
<td>Loss of working days resulting in compensation and health claims</td>
</tr>
<tr>
<td></td>
<td>Costs of adapting lifestyle (for example, altering clothes to accommodate change in body-shape or adapting house-fittings to be safer and easier to use)</td>
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</tbody>
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Beyond ‘direct’ healthcare costs, those who have suffered a fracture (and have reduced independence and mobility) may be less able to undertake paid employment. They may also rely on friends and relatives to provide ongoing care and to assist with everyday tasks such as shopping and travelling. This places a further strain on society – families lose working days to care for loved ones, the emotional burden can be immense and the financial impact significant. Relatives may also need to find funds for care home costs – reducing the amount they can spend on, for example, education or housing.

The Patient’s Perspective

“Bones are taken for granted unless they break - we don’t think about them and just expect them to always be there. When you are given the news that your bones are fragile and their density is not as great as it should be, it can be very depressing. However, through the Melbourne Osteoporosis Support Group, help is available and we also encourage people to seek advice from their doctor if they feel they are at risk of osteoporosis.”
Beryl Logie, Osteoporosis patient and President of the Melbourne Osteoporosis Support Group

The Physician’s Perspective

“Osteoporosis is considered a major public health problem in Australia; someone is admitted to hospital with an osteoporosis-related fracture every eight minutes and this rate is projected to increase in the future.” In addition to this, it is recognised that adherence to a prescribed therapy is only moderate. Any way of improving adherence in the long-term will lead to a decrease in fractures and better outcomes.”
Professor Phil Sambrook, Australia
Effective osteoporosis treatments are available, offering real value to healthcare payers, providers and patients. However, medicine that is prescribed but never taken cannot be effective and will have no impact on the significant personal, social and economic burden presented by osteoporosis. Only if treatment is taken as it should be, and for a sufficient length of time, will we start to see real returns on drug-cost investment. Therefore, it is essential that healthcare professionals, policy makers, patients and the groups that represent them, work in alignment to improve adherence to osteoporosis treatments.

“The direct consequences of non-adherence, including medical and social complications, patient quality of life and the wasted cost of prescriptions that are never filled, impact the ability of healthcare systems to achieve disease and treatment goals. Optimising adherence to osteoporosis treatments will offer substantial economic benefits.”

Professor Dr. Heinrich Resch,
President of the German Society of Osteology

According to one model, if a 62 year old woman with osteoporosis is treated for five years with a medication that costs US$830/year and produces a 50% reduction in fracture rate, the cost per hip fracture avoided amounts to **US$48,600 (€39,000)**

The cost per life saved is **US$30,600 (€24,600)**

The cost per quality-adjusted life year is **US$14,900 (€12,000)**

“Current information demonstrates that lack of adherence to osteoporosis treatments is a worldwide problem and the financial costs associated with women not staying on their osteoporosis treatment are huge. However, there is still a wide variation in the data that are available in different countries and regions and adherence levels are still not being routinely measured and monitored. Until this happens, we will be unable to truly establish the magnitude of the adherence issue, assess the needless suffering among patients, and calculate the unnecessary financial burden to global economies. This further highlights the need for an increased focus on determining the extent of this issue and the means of addressing it.”

International Osteoporosis Foundation
New Frontiers: Osteoporosis Management Beyond Diagnosis

Much has been achieved in ensuring that women are being diagnosed and initiated on treatment for their condition earlier, more effectively and in greater numbers. However, the issue of lack of adherence remains. If patients stop treatment before they have acquired any real benefit, much of the work done in diagnosing them becomes redundant. The important efforts made by physicians, and the awareness-raising work carried out by patient organisations, are negated and the significant investment in drug costs is wasted.

All patients are at risk of stopping treatment. However, those experiencing the following situations may be at an increased risk:

- Patients taking multiple medicines for different diseases at the same time
- Patients who are treated with medicines that involve complex and frequent dosing schedules
- Patients who lead a busy life
- Elderly patients who are less able to self-medicate
- Patients who live alone or suffer a lack of social support
- Patients who are in denial about their condition
- Patients who suffer side-effects as a result of their treatment

The other short-term step towards addressing the adherence problem is to identify those who are not staying on their treatment in order to help them resume a regular regime. People with osteoporosis should be encouraged to come forward and feel able to discuss the difficulties they face in taking treatment for a long period. In addition, physicians, patient groups and carers can all offer support by discussing adherence with osteoporosis patients, by asking the right questions and by increasing their own understanding of what it means to take long-term treatment for a chronic condition.

IOF is committed to working with our affiliated national patient groups across the world to combat inadequate adherence to osteoporosis treatment. For example, we will continue to liaise with national patient groups to explore practical solutions to help patients stay on treatment for as long as required to reap the benefits. Depending on the local situation, solutions vary from country to country but the goal remains the same: to develop practical suggestions that can be implemented in a real-life setting.

Adherence to osteoporosis treatments is not only fundamental to the bone health and general wellbeing of those who have osteoporosis, it is vital in ensuring that healthcare costs are reduced and the economic burden on society alleviated. If the pattern of women stopping treatment continues, fracture rates and associated costs could increase exponentially throughout Europe and the rest of the world.

“There have been a number of significant advances in osteoporosis treatment in recent years. However, improving patient adherence to treatment has the potential to have a far greater impact in tackling this widespread and serious disease.”

Dr. Tito P. Torralba, Philippines

Finding the Solution: First Steps Towards Tackling the Adherence Problem

It is vital that women are not only prescribed treatment, but are also encouraged to keep taking it for as long as required in order to build bone strength and avoid future fractures. Improving adherence must be made a priority in the management of osteoporosis.

As a first, basic step patient groups, healthcare professionals and governments must commit to addressing this major issue, to ensure the problem is tackled as effectively as possible. In their 2003 report Adherence to long-term therapies: evidence for action, the WHO identified that healthcare professionals need to be trained in adherence and a coordinated, multi-disciplinary approach from medics, researchers, health planners and policy makers would also be needed to address the problem.10
There are many factors we need to consider in order to address the adherence challenge. For example, a recent IOF survey conducted in 2005 with 502 women with osteoporosis and 500 physicians revealed that women are motivated to stay on treatment by positive factors such as ‘knowing they are doing something to help themselves’. 70% of the physicians involved thought regular clinics and audits would be helpful to reduce the numbers of patients discontinuing treatment and 75% felt dosing frequency had a strong influence on a patient’s likelihood to stay on treatment.14

Evidence shows that accommodating patients’ preferences and beliefs when selecting treatment improves their adherence levels and, ultimately, their treatment outcomes.15 Experience also suggests that people with chronic diseases can work together to improve adherence to therapy19 and many IOF member societies run helpful support groups. For example, certain areas of Canada have established support groups run by volunteers who are also osteoporosis patients themselves and, therefore, understand the personal impact of diagnosis and treatment.41 Also, health professionals in varying disciplines, particularly nurses and pharmacists, play a major role in understanding patient needs and helping patients stay on treatment.

Some initial suggestions on how to tackle the adherence challenge, with advice for both patients and physicians can be found at: www.osteofound.org/stayingpower

More needs to be done to establish some definitive, relevant and meaningful methods of ensuring people with osteoporosis stay on their therapy. A range of approaches may be required – and, undoubtedly, different tactics will be adopted to suit the needs of different countries and across different world regions.

The scale and scope of the adherence challenge, and its genuine implications for people around the world, cannot be ignored. The weight of this information should not be seen as a burden – rather, it provides the ‘kick-start’ needed to develop practical and realistic solutions to the growing, yet to a great extent avoidable, impact of osteoporosis.

“Adherence is an important issue, not only in Europe but across the world. As the number of people with osteoporosis rises, the need to tackle this problem will become even more pressing. Action for Healthy Bones is committed to helping identify and provide support for people who find it difficult to stay on their osteoporosis treatment.”

Action for Healthy Bones, Austria

It is thought that “the development of drugs with few side effects and easy, or easier, administration routes or regimens would promote intentional adherence. It has been found, across a range of therapeutic areas, that adherence with medications is inversely related to frequency of dosing”.32

Professor Jean-Yves Reginster, Future Rheumatology 2006

“In Italy, lack of adherence to osteoporosis therapy is a serious problem. Osteoporosis is not considered as a chronic disease by our health system and therapy is reimbursed only in selected cases, typically after the patient has experienced their first fracture. Therefore, osteoporosis is often not perceived as a severe disease by those at risk, and even some physicians do not emphasise the need for strict adherence to long-term therapy. Lega Italiana Osteoporosi is committed to raising awareness that staying on treatment is important and encouraging healthcare professionals and patients to work together to find practical, long-term solutions to address this important problem.”

Lega Italiana Osteoporosi
There was a time when the medical world neglected to give osteoporosis the attention it deserved as a serious disease area. Thankfully, awareness has increased and we are continuing to make progress in this area. However, if we do not address the issue of lack of adherence then we may still be neglecting the welfare of millions of women around the world.

It is not enough to simply recognise lack of adherence as a problem. Although awareness is important, steps need to be taken to identify women who are not adhering to their osteoporosis treatment regime and putting themselves at increased risk of fracture, which, in the worst cases, can lead to long-term hospitalisation or death.

If women are finding adherence to treatment a challenge, they must be encouraged to understand the significance of discontinuing therapy and seek help, advice and support that will make it easier for them to do so. Physicians need to be even more vigilant in monitoring patients. Friends and family members also have a role to play in improving their awareness of the adherence problem and asking the right questions. If we can focus our collective efforts on finding solutions to the adherence issue, we can help women stay on treatment before their bones weaken further.

Incidence of osteoporosis is rising. If we are to ensure that fracture rates - and the associated personal and social effects and costs - do not increase in parallel, we need to be sure these women are not overlooked. Difficulties with staying on therapy can be addressed but only if we encourage women to speak out, seek assistance and expect to receive it.

Patients are more motivated to stay on treatment when they are given positive and clear messages from their physicians, focused on the benefits of treatment rather than the risk of fracture. People with osteoporosis also need the support of empathetic and well-trained healthcare professionals, as well as the social and psychological support of patient support groups. Less frequent dosing options may prove more convenient for patients. All told, the situation can be improved, and progress is being made. By working alongside people with osteoporosis, we can give them staying power and help make lack of adherence a challenge of the past.

**Professor Jean-Yves Reginster**
Professor of Epidemiology, Public Health and Health Economics, University of Liege, Belgium
General Secretary of the International Osteoporosis Foundation
## Appendix: National Perspectives on a Global Problem

This appendix provides an overview of osteoporosis, its prevalence and management in different countries. The information outlined below represents a collation of facts and statistics adopted from a variety of sources – principally clinical papers and national patient society websites – and is intended to illustrate the similarities and differences in national approaches to the global problem of osteoporosis. Further information can be found through the national patient organisations.

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| **Australia** | • In 2001, nearly 2 million Australians had osteoporosis-related conditions\(^{52}\)  
• Osteoporosis is extremely common, and is more prevalent than high cholesterol, allergies or the common cold\(^{58}\)  
• Osteoporosis poses a significant cost burden with musculoskeletal disorders ranked as the third leading cause of health system expenditures\(^{58}\)  
• The estimated total expenditure was AU$3.0 billion in 1993-94, behind circulatory and digestive diseases (each about AU$3.7 billion)\(^{58}\)  
• In 2001, musculoskeletal disorders represented 1.2% of gross domestic product (GDP) or AU$389 for every Australian\(^{58}\)  
• Despite being more expensive to manage than diabetes or asthma, osteoporosis is not ranked with these conditions as a national health priority\(^{58}\)  
• Osteoporosis poses a serious impairment to quality of life: in 2000-01, osteoporosis cost Australians 25,000 years of healthy life\(^{58}\)  
• Over half of these years were lost due to premature death, and the remainder from the disability burden of the disease\(^{58}\)  
• More years of healthy life are lost in Australia due to osteoporosis than to Parkinson’s disease, HIV/AIDS, rheumatoid arthritis or cervical cancer\(^{58}\)  
• By 2021, it is thought 3 million Australians will be affected by osteoporosis-related conditions, leading to a fracture every three and a half minutes\(^{58}\) | | | • Diagnosis is based on DEXA scanning to measure BMD levels. However, as BMD measurements are only reimbursed every other year, patients may suffer significant unchecked bone loss during this two year gap\(^{58}\)  
• Ultrasound techniques can also be used to measure bone stiffness, although more research is required in this area\(^{58}\)  
• Osteoporosis is not a health priority for Australian women. Of those who participated in a recent survey, only 15% were aware they were at risk prior to diagnosis of osteoporosis and only 12% regarded osteoporosis as their main health concern\(^{62}\) |
| **Brazil** | • In one study analysing the cost of hip fractures, there were 129,611 patients diagnosed with osteoporosis and the incidence of hip fracture was almost 5% in women.\(^{63}\) However, the true burden is likely to be much higher as these figures only account for the Brazilian private healthcare system  
• Despite this, just one in three are diagnosed as having osteoporosis and, of those, only one in five receive any kind of treatment\(^{31}\)  
• The mean length of hospital stay after a hip fracture is 9.21 days\(^{30}\)  
• The economic burden of osteoporosis hip fractures to private health plan companies in Brazil is estimated in the region of R$12 million\(^{30}\)  
• Despite the risks, almost three quarters of physicians believe lack of adherence is a severe problem in Brazil\(^{30}\)  
• Physicians estimate that only half of patients will stay on treatment after one year\(^{30}\)  
• However, almost 70% strongly agree that less frequent dosing and more convenient treatments could help patients to stay on therapy\(^{30}\) | | | |

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\(^{19}\) For more information, refer to the national patient organisations. \(^{30}\) Sources: Various clinical papers and national patient society websites.
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| France  | • Postmenopausal osteoporosis affects more than 3 million women in France\(^64\)  
• The fracture burden of osteoporosis is significant; it is estimated that over five years this group of women will collectively experience a total of 38,000 hip fractures, 186,000 vertebral fractures and 55,000 wrist fractures as a result of the disease\(^64\)  
• During 2001, 118,839 osteoporosis-related fractures were registered (61% hip, 28% distal radius and 11% proximal humerus)\(^55\)  
• In 2001, the median in-patient costs of osteoporosis-related fractures per patient were:  
  - Humerus: €3,786  
  - Radius: €2,363 to €2,574  
  - Hip: €8,048 to €8,727\(^55\)  
  Considering the number of fractures estimated to occur, these costs will amount to a significant cost burden  
• In 2004, the French government made osteoporosis one of the national health priorities, seeking a 10% decrease of femoral neck fractures by 2008 and a 25% decrease in falls in over 65s\(^65\) | • It is estimated that treating a hip fracture costs in the region of €6335\(^56\)  
• In a recent French study of osteoporosis patients, 97.3% were treated for the disease, among them 80.6% with bisphosphonates and 18.1% with SERMs\(^66\)  
• In terms of aiding diagnosis, personal and family history of osteoporosis-related fracture have been identified as common risk factors\(^66\)  
• Almost two thirds of women have a diagnosis of osteoporosis based on a previous fracture\(^67\) | |
| Finland | • Approximately 400,000 Finnish patients have been diagnosed as suffering from osteoporosis\(^68\)  
• Osteoporosis is one of the most expensive illnesses to treat and its cost is comparable to diabetes and heart disease\(^71\)  
• Despite its prevalence, osteoporosis prevention is not covered by health insurance\(^68\) and treatment is estimated to amount to at least €5.4 billion per year\(^71\)  
• Osteoporosis management is further compromised as reimbursement of the diagnostic test DEXA, is limited to patients with a history of fracture\(^68\)  
• The number of German people who suffer from osteoporosis is set to increase with experts predicting a doubling in the next 40 years\(^70\) | • It is estimated that treating a hip fracture costs in the region of €6335\(^56\)  
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| Germany | • Over 5 million people in Germany suffer from osteoporosis\(^79\)  
• For older women the disease is particularly prevalent: they are five times more likely to be affected than men and, after 75 years, over half of women are affected by osteoporosis\(^79\)  
• Only 30% of patients with osteoporosis receive treatment in Germany,\(^9\) contributing to an increased fracture risk  
• Osteoporosis is one of the most expensive illnesses to treat and its cost is comparable to diabetes and heart disease\(^71\)  
• Despite its prevalence, osteoporosis prevention is not covered by health insurance\(^68\) and treatment is estimated to amount to at least €5.4 billion per year\(^71\)  
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| India   | • A recent study among Indian women aged 30-60 from low income groups found almost a third (29%) had osteoporosis\(^73\)  
• BMD scores for these women were much lower than those found in developed countries, thought to be due to inadequate nutrition\(^73\)  
• It is predicted that India may experience the occurrence of hip fractures in endemic proportions, whilst also having to cope with additional problems such as malnutrition and infectious diseases\(^73\)  
• Research shows that osteoporosis-related hip fractures occur at a much earlier age among Indian men and women of low socio-economic standing compared to Western regions\(^73\)  
• It is thought that approximately 50% of women and 15% of men will develop osteoporosis\(^79\)  
• Approximately 1 in 4 women and 1 in 20 men will suffer a vertebral fracture\(^79\)  
• Physicians saw approximately 1.2 million patients with osteoporosis throughout 2004, 1.1 million of whom were given treatment\(^79\)  
• 90% of patients with osteoporosis are female\(^79\) | | | | |
| Italy   | • A recent study among Indian women aged 30-60 from low income groups found almost a third (29%) had osteoporosis\(^73\)  
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| Netherlands | - Over 800,000 people suffer from osteoporosis in the Netherlands, contributing to 15,000 hip fractures, 16,000 vertebral fractures and 40,000 other fractures per year<sup>76</sup>  
  - However, despite the prevalence, only one in three vertebral fractures receive clinical attention from a physician<sup>76</sup> |                                                                                               |                                                                                               | - As is the case in many countries, osteoporosis is under-diagnosed. 80% of people with osteoporosis do not realise they have the condition and are not given any treatment<sup>76</sup>  
  - Despite this, treating osteoporosis with appropriate treatment can decrease the chance of fracture by up to 50%<sup>76</sup>  
  - Lack of adherence is a challenge for successful treatment. After only one year, up to 65% of women on a daily treatment and almost half on a weekly treatment abandon their medication<sup>12</sup> |
| Philippines | - Recent research revealed that women at risk of osteoporosis need to be informed about the disease as many believe osteoporosis to be caused by bad posture or confuse it with rheumatism or osteoarthritis<sup>77</sup> | - Recent research revealed women with osteoporosis who suffered from concomitant conditions often prioritise taking medication for these other conditions over taking their osteoporosis treatment<sup>77</sup>  
  - Doctors interviewed in a parallel study concluded lack of awareness of the complications and seriousness of osteoporosis as the main reason for non-compliance<sup>38</sup> |                                                                                               |                                                                                       |
| Spain      | - 3 million people in Spain have osteoporosis<sup>78</sup>, affecting almost one in three of women over 50 and more than half of women over 70<sup>78</sup>  
  - Osteoporosis poses a significant economic burden for Spanish health authorities:  
    - The total cost of diagnosis and treatment is €600 million  
    - 25,000 fractures occur each year, resulting in direct costs of more than €126 million and indirect costs amounting to €620 million<sup>76</sup>  
  - Importantly, osteoporosis fractures can be fatal: after three months, 13% patients who have suffered a fracture die, this figure rises to 38% after 24 months<sup>12</sup>  
  - After experiencing a vertebral fracture, 45% of patients suffer from functional damage and half are afflicted by partial or total disability<sup>15</sup>, highlighting the true social burden of the disease | - Greater efforts need to be made to identify and treat those at risk; only 18% of the 3 million people living with osteoporosis have been diagnosed with the disease<sup>78</sup> |                                                                                               |
| Sweden     | - One in three women aged between 70-79 have osteoporosis<sup>77</sup>  
  - The annual incidence of osteoporosis-related fractures is approximately 75,000, of which 18,000 are hip fractures<sup>77</sup>  
  - The direct economic burden of osteoporosis-related fractures is as follows:  
    - Care in hospitals: 1.6 billion SEK  
    - Outpatient care: 177 million SEK  
    - Social services: 1 billion SEK<sup>77</sup>  
  - Indirect costs amount to 440 million SEK<sup>15</sup>  
  - Hip fractures are associated with increased mortality: one year after fracture, mortality is 10-15% higher in those who have suffered a fracture compared to those who haven’t<sup>17</sup> |                                                                                               |                                                                                               |
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| Switzerland | • Osteoporosis contributes to significant health costs. A recent study concluded that osteoporosis-related fractures in women consumed more healthcare resources than chronic pulmonary obstructive disease (COPD), stroke, breast cancer and heart attack25  
  • In 2000, there were 62,535 fracture-related hospitalisations in Switzerland (35,586 women and 26,949 men)25 | • In 2000, 24% of all fracture hospitalisations were considered related to osteoporosis, amounting to 87,100 hospital days with 13.5 days the average length of stay26  
  • The annual direct medical cost of hospitalisation of patients with osteoporosis and/or related fractures is approximately 357 million Swiss francs25  
  • In 2000, osteoporosis and its complications were the leading drivers of direct medical costs related to hospitalisation in women and were comparable to myocardial infarction in men25 | • In 2004, it was predicted that, if current prevention and treatment patterns are maintained, the incidence of osteoporosis-related hip, vertebral and forearm fractures will rise by 33%, 27%, and 19%, respectively, between 2000 and 202025 | • Lack of awareness of the disease and its consequences prevents widespread use of drugs with anti-fracture efficacy thereby limiting their potential to reduce costs25 |
| UK | • It is estimated that three million people in the UK have osteoporosis and that someone will suffer from a fracture due to osteoporosis every three minutes25  
  • One in two women and one in five men will suffer a fracture after the age of 5025  
  • Osteoporosis-related fractures pose a significant problem in the UK: every year, British patients suffer an estimated 41,000 wrist fractures, 25,000 symptomatic vertebral fractures and 70,000 hip fractures25 | • Fractures in the UK cost the NHS between £1.5 and £1.8 billion each year27  
  • The economic burden of osteoporosis-related fractures includes not only the primary acute hospital costs (radiography, surgery, physiotherapy, treatments etc.), but also post-acute social care costs and additional use of healthcare services27  
  • Osteoporosis-related fractures can also be fatal with hip fractures in the UK causing as many deaths as breast cancer, and significantly more than gastric and pancreatic cancer27 | • As a result, it has been estimated only 10-20% of UK women with osteoporosis receive treatment for the condition25  
  • Despite the social, personal and economic implications, in studies looking specifically at how long patients remain on treatment, approximately 50% of patients on a weekly bisphosphonate have stopped taking it by the end of the first year8,9 | • Biphosphonates are recommended as treatment for secondary prevention of fractures but only for:  
  - Women aged 75 or over  
  - Woman aged 65-74 who have been confirmed as having osteoporosis by DEXA scan  
  - In women under 65 who have low BMD or are identified as being at risk from osteoporosis, by an agreed list of risk factors24 |
| USA | • More than 1.5 million Americans experience osteoporotic fractures each year (700,000 vertebral, 250,000 forearm, 250,000 hip and 300,000 other fractures)83 | • In 2002, the direct cost of treating osteoporotic hip fractures (hospitals and nursing homes) was US$18 billion and this amount is predicted to rise83  
  • By 2010, approximately 12 million people over the age of 50 are expected to have osteoporosis and another 40 million to have low bone mass84 | • A recent study predicted that BMD testing of an additional 1 million US women would prevent 35,000 fractures over three years, producing insurance savings of US$77.9 million59 |
IOF Patient Societies

The IOF membership comprises 172 national osteoporosis societies in 85 countries. To contact an IOF member society in your country, please visit www.osteofound.org

As well as supporting medical research and undergoing lobbying activities, IOF member societies also provide a number of services specifically for patients. For example, many run help lines, provide patient support groups or publish magazines that offer information and support on all aspects of osteoporosis.
This report was supported by an unrestricted educational grant from Roche and GlaxoSmithKline (GSK)