

## **NICE Technology Appraisal:**

**Strontium ranelate for the prevention  
of osteoporotic fractures in post-  
menopausal women with osteoporosis**

**Evidence submitted by the National  
Osteoporosis Society**

**January 2005**



## Executive Summary

1. Osteoporotic fractures can lead to severely reduced quality of life and morbidity burden, and in some cases to premature mortality. At least one half of adult women and 1 in 5 adult men over the age of 50, will sustain one or more vertebral, hip or other fractures. In England and Wales 180,000 osteoporotic fractures occur in women alone each year. The annual combined social care and acute costs for treating fractures amount to over £1.7 billion. This figure is expected to increase to an estimated £2.1 billion by 2010.
2. Vertebral fractures are typically under diagnosed and under treated, with only one third of those evident on x-ray brought to medical attention. They reduce quality of life, cause pain, physical limitations and can have a profound effect on a woman's self esteem. Women with severe kyphosis cannot find clothes that fit, are unable to sit comfortably and may also have problems breathing and digesting food. Some women, limited by their disability, are forced to give up employment and cope with the financial implications associated with this.
3. Hip fractures are particularly debilitating and can cause dependence, reduced quality of life and in some cases premature death. After hip fracture many women are not only fearful of falling but are also unable to walk independently and are restricted in their daily activities, with many requiring long term nursing care. The psychological consequences of coping with this loss in physical function and independence can be devastating; 80% of older women with fractures would rather be dead than admitted to a nursing home.
4. Irrespective of the type of fracture, women who sustain one fracture are 50-100% more likely to sustain a second fracture. The key to effective drug treatment is to prevent broken bones in those with osteoporosis at high risk of fracture, and to reduce the risk of further fractures in those who have already suffered them.
5. The publication of the NICE technology appraisals addressing use of the newer drugs for primary and secondary prevention of osteoporotic fractures in post-menopausal women, as well as the development of a clinical guideline addressing all individuals at high risk, will significantly advance current understanding in clinical practice about how to target treatments appropriately. The mandatory status of the technology appraisal guidance should ensure that if the recommendations are effectively implemented by PCT's, all post-menopausal women at high risk of osteoporotic fracture receive one of the appraised treatments.
6. Strontium ranelate has received a UK licence for use in post-menopausal women with osteoporosis to reduce the risk of fractures in both the spine and hip. Costing £25.60 for 28 sachets, its price is comparable to the bisphosphonates. Although little is yet known about how well strontium ranelate performs in clinical practice, the trial evidence to date suggests that it is a suitable alternative treatment for the primary and secondary prevention of fractures in post-menopausal women with osteoporosis. It may be particularly suitable for older women and those who suffer from GI problems, or who are intolerant to the bisphosphonates for other reasons.
7. For post-menopausal women living in fear of breaking bones and those already coping with the debilitating consequences of fracture, another effective treatment option that is easy to take and well tolerated, offers hope for a brighter future and a better quality of life.

## 1. Background

### 1.1 Osteoporosis leads to fractures

Osteoporosis is defined as a progressive, systemic skeletal disease characterised by low bone mass and micro-architectural deterioration of bone tissue, with a consequent increase in bone fragility and susceptibility to fracture<sup>1</sup>. Osteoporosis usually affects the whole skeleton, but it most commonly causes fractures of the wrist, vertebra and hip.

### 1.2 Fractures reduce quality of life

Osteoporosis is asymptomatic but the resulting fractures have a substantial impact on patients. Hip and vertebral fractures in particular, can lead to severely reduced quality of life and morbidity burden, and in a significant number of cases, to premature mortality. Irrespective of the type of fracture, women who sustain one fracture are 50-100% more likely to sustain a second fracture<sup>2,3</sup>.

### 1.3 Fractures cost the NHS billions

Osteoporotic fractures affect 1 in 2 women and 1 in 5 men over the age of 50<sup>4</sup>. Current estimates for England and Wales suggest that each year osteoporosis results in at least 180,000 fractures in women alone. Of these fractures, 70,000 are hip fractures, 41,000 are wrist fractures and 25,000 are vertebral fractures, although the number of vertebral fractures is believed to be grossly under reported with as many as 70% failing to come to clinical attention<sup>5,6</sup>. The combined social care and hospital costs for treating fractures amount to over £1.7 billion each year in the UK<sup>7</sup>. This figure is expected to increase to an estimated £2.1 billion by 2010<sup>8</sup>.

### 1.4 Treatments reduce fracture risk

The aim of drug treatment is to prevent first osteoporotic fractures in those with osteoporosis and to reduce the risk of further fractures in those who have already suffered them. A number of treatments are currently licensed for use in post-menopausal women including bisphosphonates (alendronate, etidronate and risedronate), calcitonin, calcitriol, calcium and vitamin D, hormone replacement therapy (HRT), teriparatide (PTH), raloxifene and strontium ranelate, the latest treatment to be licensed.

### 1.5 Clinical management guided by RCP guidelines

The management of post-menopausal women with osteoporosis in clinical practice is informed by guidelines produced by the Royal College of Physicians<sup>9,10</sup>. These advocate a selective case-finding approach based on the identification of clinical risk factors. Patients identified in this manner are referred for a DXA scan to measure bone mineral density (BMD) and confirm osteoporosis. Treatment is then prescribed if osteoporosis is diagnosed, that is if BMD falls below a given threshold (i.e. a T-score of -2.5 SD or less).

### 1.6 Recent changes in treatment advice

For many years HRT was considered the gold standard treatment for osteoporosis. However in 2003 the CSM advised that it should no longer be considered a first-line treatment for the long-term prevention of osteoporosis in women over 50 years of age<sup>11</sup>.

This change in advice, coupled with the development of several new therapies, has resulted in much confusion for patients about treatment options and also for many physicians who are unsure about which treatments to use and in whom.

### **1.7 NICE reviews osteoporosis**

NICE's decision to split the original proposed technology appraisal of the newer treatments into both primary and secondary prevention of osteoporotic fractures in post-menopausal women, as well as the decision to develop a clinical guideline covering all individuals at risk, was both timely and necessary. The publication of the clinical guideline will increase the value of the technology appraisals by creating an environment in which PCT's can implement the recommendations to best effect. By focusing on assessment of all risk factors for fracture, rather than just BMD alone, the guideline will significantly advance understanding about how to target treatment at those individuals deemed to be at highest risk of osteoporotic fracture.

### **1.8 Technology appraisal of strontium ranelate**

If the final recommendations of the technology appraisal of strontium ranelate are published on schedule, by early 2006 all the commonly used treatments currently licensed for osteoporosis will have undergone a thorough review of their cost and clinical effectiveness. The mandatory status of the technology appraisal guidance should ensure that if the recommendations are effectively implemented by PCT's, all post-menopausal at high risk of osteoporotic fracture receive one of the appraised treatments.

### **1.9 Importance of the patient perspective**

The National Osteoporosis Society (NOS) campaigns to ensure that all people with, or at risk of, osteoporosis receive appropriate advice and treatment to enable them to avoid fractures and enjoy a better quality of life. As the main patient-carer organisation registered as a consultee on the NICE work programmes, the NOS aims to ensure that NICE produces mutually agreed, evidence-based guidance that reflects the reality of clinical practice and acknowledges the needs of those individuals the Society represents.

This submission to the technology appraisal of strontium ranelate incorporates the words and experiences of post-menopausal women to highlight what it is like to live with osteoporotic fractures, and how important it is to those women that effective treatments, such as strontium ranelate, are made available to them.

## **2. Living with osteoporotic fractures**

*'I was diagnosed with osteoporosis over 20 years ago. I have suffered approximately 25 fractures including at least 13 vertebrae. Osteoporosis has affected my daily life drastically. I am unable to do many household chores, hoovering in particular, as well as lifting, cleaning windows and shopping. With the loss of height I cannot reach the shelves anymore. I have in fact had a new kitchen fitted with lower work surfaces, pull out drawers and a split-level cooker. One of the worst things for me was when the grandchildren were toddlers and they wanted to be picked up and cuddled and I was unable to do so. If they were put on my lap, they had to sit very still and be told that they might break Granny's bones, which I don't think they fully understood.'*

77-year-old woman with severe osteoporosis

- 2.1 Although many women often talk about the effects of 'their osteoporosis', low bone density itself does not cause painful symptoms. It is the resultant fractures that bring about pain and discomfort and affect quality of life. Even the relatively uncomplicated fractures of the forearm can restrict the performance of daily activities such as shopping and cooking, and bring about hand pain, weakness and limitations in movement. It is however fractures of the vertebrae and hip that affect quality of life and have the most significant physical, psychological and financial consequences for a woman, as well as for her family and carers. Some women, limited by their disability, are forced to change or give up employment and cope with the financial implications associated with this, as well the other costs involved with receiving continuous support and treatment.

## 2.2 Vertebral fractures: under diagnosed and under treated

*'My mother suffered from back pain for many years, which her doctor attributed to fibrositis. I can remember that she found it very difficult to lift saucepans. She became very stooped and one day collapsed fracturing her hip. I've also had back pain but when I went to see my doctor suggesting that I should have an x-ray, he ridiculed the idea and just gave me some cream. Eventually I persuaded him to send me for a scan, which showed that I had 3 partially collapsed vertebrae. Since then I have suffered three further fractures. I was in the ATS in the war and my army pay book shows my height as 5 feet 11 inches. It is now 5 feet 5 inches. I look very much like my mother.'*

Woman with vertebral fractures aged 82 years

- 2.2.1 Vertebral fractures, common in younger as well as older post-menopausal women, are often triggered by basic, everyday activities such as bending or lifting. The presence of one vertebral fracture all too often leads to further fractures, with resultant increases in morbidity and mortality<sup>12,13</sup>.
- 2.2.2 The majority of vertebral fractures that occur in women are not appropriately diagnosed. It is estimated that only a third of all vertebral fractures evident on x-rays come to medical attention and less than 10% necessitate admission to hospital<sup>5</sup>. Even when a vertebral fracture is evident on an x-ray, it is often not mentioned by the radiologist, rarely noted in a patient's medical records and infrequently leads to appropriate preventative treatment<sup>6</sup>.
- 2.2.3 The need to diagnose vertebral fractures appropriately and to intervene with an effective treatment is of paramount importance, as previous history of fracture is the strongest clinical predictor of future fractures<sup>2,3</sup>. A woman who has suffered a vertebral fracture is four times as likely to sustain a subsequent fracture at the same site or at a different region of the skeleton<sup>3,14,15</sup>, and the event is highly likely to occur within 12 months of the previous fracture<sup>16</sup>. A low-trauma vertebral fracture is often considered as primary evidence of the need of treatment for osteoporosis, as it indicates fragility in the bone that is independent of bone density and other risk factors.

## 2.3 Vertebral fractures: pain, disability and reduced quality of life

*"I had my first fracture when I was 49 and I've had three more since then, all of them still cause me a lot of discomfort. I'm much smaller nowadays than I used to be and my spine is already curving over quite a lot and I know that in a few years I'll be really humped. A friend of mine has to have special clothes made for her because she is so bent over and her tummy sticks out. Some days I get really frustrated as I can't do the things that I want to do. Things like putting on my shoes, carrying shopping bags and*

*even getting up and down from the sofa and in and out of bed. When I think of the future I can feel depressed if I let myself. I just wish I could turn back the clock and be young and healthy again like I used to be. I never would have thought that this would have happened to me.*

Letter to the NOS from a 64-year-old woman with vertebral fractures

- 2.3.1 Although vertebral fractures can be silent (painless), they often cause women severe pain and disability at the time of fracture<sup>17</sup>. For some women the pain and disability resolves within several months, but for others it lasts much longer and becomes even more debilitating as new fractures occur<sup>18,19</sup>.
- 2.3.2 Multiple vertebral fractures also result in significant height loss and the development of kyphosis (a 'dowager's hump'). This can cause the abdomen to protrude, affect breathing, the digestion of food, and often exacerbates incontinence problems. These bodily changes are often very distressing for women and can obviously have a profound impact on self-esteem and body image.
- 2.3.3 Vertebral fractures often restrict women from performing even the most basic day-to-day activities, such as bending, lifting, rising, dressing, climbing stairs, and may also lead to dependence on extra aids. In fact, it is believed that the adverse effect of vertebral fractures on most activities of daily living is almost as great as that seen for hip fracture<sup>20</sup>.
- 2.3.4 Vertebral fractures are associated with reduced health-related quality of life<sup>21,22,23</sup>. For every additional vertebral fracture, women typically experience a further deterioration in quality of life. Vertebral fractures also have an increased mortality rate that extends well beyond the first year after fracture<sup>13</sup>. This risk of death tends to be highest in women with greater numbers of vertebral fractures<sup>24</sup>.
- 2.3.5 Given the likelihood of experiencing subsequent fractures in the months that follow the first, it is imperative that women with or at risk of vertebral fractures are prescribed effective treatments with a rapid onset of effect.

## 2.4 Hip fractures: morbidity and mortality

*'I was out walking the dogs one morning when I slipped on the pavement and fell over; I was unable to move and was taken to hospital where I remained for three weeks having sustained another hip fracture. Once I was out of hospital I started to learn how to walk again but this was a very slow process, which I found very frustrating as I had to be very dependent on my husband. Although things have now improved, I have had to alter my life a great deal. I am now more involved with things that do not include physical activity and can mainly be undertaken at home.'*

Bristol NOS support group member with osteoporotic fractures

- 2.4.1 Hip fractures mostly affect frail, older women. Like vertebral fractures they lead to an increased risk of subsequent fracture and increased morbidity and mortality<sup>2,3</sup>. Around 20% of hip fracture patients die within the first year following the event, often as a result of immobilisation, risks associated with surgery and co-existing health problems<sup>13</sup>.
- 2.4.2 The increased risk of hip fracture seen in older women is in part due to the deterioration in BMD at the hip<sup>25</sup>, but also because of other factors associated with physical frailty, as well

as the increased risk of falling that is seen amongst older women<sup>26</sup>. Falls are responsible for at least 90% of all hip fractures,<sup>27</sup> although only 1% of falls result in a hip fracture<sup>28,29</sup>. Understandably, following a fall, many women develop an intense fear of falling and sustaining a further fracture, and as a result tend to restrict their day-to-day activities<sup>30,31</sup>.

## 2.5 Hip fractures: loss of independence

*'I have had six fractures in the spine, one in the hip and one in the pelvis. I am now dependent on two elbow crutches for walking and am restricted in the activities that I do. There is also coping with the considerable loss of independence, as my brother with whom I now have to share a house, understandably and perhaps wisely, always accompanies me whenever I go out.'*

Woman with osteoporotic fractures

- 2.5.1 For many women the most significant long-term physical impairment following hip fracture is a reduction in the ability to walk. Although around 20% of women are non-ambulatory before hip fracture, up to 50% are unable to walk independently afterwards<sup>32</sup>.
- 2.5.2 Hip fractures frequently lead to a loss of independence, with many women subsequently requiring some form of long term nursing care<sup>33</sup>. The psychological effects of this resulting dependence can be devastating. A survey suggested that 80% of older women would rather be dead than experience the loss of independence and quality of life that results from a bad hip fracture and subsequent admission to a nursing home<sup>34</sup>.
- 2.5.3 It is imperative that women at high risk are prescribed treatment to protect them from the detrimental effects of hip fracture. These treatments should have proven efficacy in frail, older women at high risk of hip fracture.

## 3. Strontium ranelate; the latest treatment option for post-menopausal women

*'.....Oh, my back does give me problems. I just wish my tablets would help the pain. I've tried most of them now. I'm on Fosamax at the moment. I haven't broken any bones for a while but it does give me terrible heartburn when I take it and I find it very difficult to remain upright for half an hour afterwards. I've been hoping for something that will be gentler on my stomach. I do hope that my doctor lets me try this new drug.'*

Call to the NOS helpline from a 76-year-old woman with multiple vertebral fractures

- 3.1 For post-menopausal women who live in fear of breaking bones, strontium ranelate (Protelos) is another potential treatment option. It has received its licence for use in post-menopausal women with osteoporosis to reduce the risk of fractures in both the spine and hip. Costing £25.60 for 28 sachets, its price is comparable to the bisphosphonates.
- 3.2 Strontium ranelate belongs to a new class of osteoporosis drug treatments DABAs, which function in a different manner to the other licensed treatments for osteoporosis. Although the mechanism is unclear, it appears that strontium ranelate disassociates bone remodelling by simultaneously increasing bone formation and reducing bone resorption, thus strengthening bones and reducing fracture risk.

### 3.3 An effective treatment for vertebral fractures

- 3.3.1 Although there have not yet been any head to head studies, clinical trials have shown that strontium ranelate offers post-menopausal women with osteoporosis similar protection against vertebral fractures as the bisphosphonates and raloxifene.
- 3.3.2 The SOTI (Spinal Osteoporosis Therapeutic Intervention) trial<sup>35</sup>, demonstrated in post-menopausal women with established osteoporosis (at least one vertebral fracture) that 2g / day of strontium ranelate resulted in a rapid onset of treatment effect, with a 49% reduction in risk of new vertebral fractures after one year of treatment, and a 41% reduction in risk during the three-year study period. Only nine women needed to be treated with strontium ranelate to prevent one fracture from occurring. The trial also demonstrated a 38% reduction in the risk of developing new symptomatic vertebral fractures as early as the first year of treatment, with the benefit continuing over three years<sup>35</sup>.
- 3.3.3 The 40-50% reduction in risk of vertebral fractures with strontium ranelate is comparable to the reduction seen with daily alendronate (47%)<sup>36</sup>, daily risedronate (49%)<sup>37,38</sup>, raloxifene (30-50%)<sup>39</sup> and teriparatide after 21 months' treatment (65%)<sup>40</sup>.
- 3.3.4 The effectiveness of strontium ranelate for preventing vertebral fractures in women without prevalent vertebral fractures was confirmed in the TROPOS (TRreatment Of Peripheral Osteoporosis) trial<sup>41</sup>. This demonstrated a reduction of 45% in new vertebral fractures over three years of treatment.
- 3.3.5 It has also been demonstrated that strontium ranelate significantly reduces the risk of vertebral fractures in women with osteopenia (T-score between -1 and -2.5) with or without prevalent vertebral fractures<sup>42</sup>.

### 3.4 Hip benefit evident in on-going trial

The on-going TROPOS study is evaluating the effectiveness of strontium ranelate in preventing non-vertebral fractures<sup>41</sup>. An analysis published in abstract form demonstrated that after three years, treatment with strontium ranelate resulted in a 16% reduction in the risk of a peripheral fracture. A group of patients that achieved circulating strontium levels above 40mol/l (i.e. evidence of adherence) were also shown to have a 41% reduction in the risk of hip fracture. A 36% reduction in hip fracture risk was also evident in 1,977 women aged 74 years and over at high risk of hip fracture. These data led to the EMEA approving strontium ranelate for the prevention of hip fracture as well as vertebral fracture in post-menopausal women with osteoporosis.

### 3.5 Effective in women over 80 years of age

Strontium ranelate has also demonstrated benefits to very frail, older women in both the SOTI and TROPOS trials, which included women over the age of 80 years. An unpublished analysis of this group of women found that over three years, strontium ranelate reduced the risk of a new peripheral or vertebral fracture by 31% and 32%, respectively<sup>42</sup>.

### 3.6 Good tolerability and few side effects

- 3.6.1 Strontium ranelate is relatively straightforward to take, with no special considerations such as remaining upright after swallowing. It comes as a tasteless powder that must be mixed in a glass of water. The recommended dose is 2g taken once daily. To ensure optimal

absorption from the bowel, it should be taken at bedtime at least two hours after eating, and at least two hours before any food or drink other than water. Those women who do not achieve an adequate dietary intake of calcium and vitamin D are advised to take calcium and vitamin D supplements, although at least two hours before taking strontium ranelate.

- 3.6.2 In clinical trials, strontium ranelate was well tolerated with a low incidence of major side effects. Those side effects reported were generally experienced at the beginning of treatment, the most common being nausea and diarrhoea. Use of strontium ranelate was associated with a slight increase in the risk of blood clots, although no greater than the increased risk previously observed with HRT or raloxifene.
- 3.6.3 Given that it appears to be well tolerated with few side effects, strontium ranelate may be a suitable treatment option for women experiencing upper GI symptoms or previous ulceration/oesophagitis. It may also be appropriate for those women who have problems taking bisphosphonates, or who are intolerant to them for other reasons.
- 3.6.4 To date the NOS helpline has received no negative comments about the drug. It should however be noted that few calls have been logged, probably because its use is not yet widespread, as it was only launched in November 2004.

### **3.7 Tangible benefits for women taking the drug**

- 3.7.1 For most women taking anti-fracture therapy the benefits are often not directly apparent, as the treatments rarely bring about reductions in pain and discomfort. However, the mere fact that a woman knows that a treatment is working rapidly to reduce her risk of fracture, can provide her with reassurance that she is doing something positive to prevent her situation from deteriorating.
- 3.7.2 Strontium ranelate is one of few anti-osteoporotic drugs that have demonstrated an improvement in quality of life measures in clinical trials. In the SOTI trial standardised questionnaires assessing health related quality of life (HRQOL) were given to 1,240 patients. Those treated with strontium ranelate demonstrated an improvement in global quality of life, compared with deterioration in the placebo group. This benefit was reflected in improvements in both the emotional and physical scores<sup>43</sup>.

### **3.8 An effective treatment option for post-menopausal women**

- 3.8.1 In conclusion, although little is yet known about how well strontium ranelate performs in clinical practice, the trial evidence to-date suggests that it is a suitable alternative treatment for the primary and secondary prevention of fractures in post-menopausal women with osteoporosis. It may be particularly suitable for older women and those who suffer from GI problems, or who are intolerant to the bisphosphonates for other reasons.
- 3.8.2 For post-menopausal women living in fear of breaking bones and those already coping with the debilitating consequences of fracture, another effective treatment option that is easy to take and well tolerated, offers hope for a brighter future and a better quality of life.

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## 5. Appendix

### 5.1 Advisors to the National Osteoporosis Society (NOS)

The NICE Taskforce provides scientific and medical advice to the Society and includes the following individuals:

Professor David Barlow, Executive Dean, Faculty of Medicine, University of Glasgow.

Professor Juliet Compston, Professor of Bone Medicine, University of Cambridge School of Clinical Medicine.

Professor Cyrus Cooper, Professor of Rheumatology and Director, MRC Epidemiology Resource Centre, and Associate Director of Research, University of Southampton School of Medicine, Southampton General Hospital.

Professor Richard Eastell, Professor of Bone Metabolism, Research Dean for the Medical School, R&D Director for the Sheffield Teaching Hospital Trust, University of Sheffield Clinical Sciences Centre, Northern General Hospital.

Professor David Reid, Professor of Rheumatology & Head of Department of Medicine & Therapeutics, University of Aberdeen Medical School.

Professor Graham Russell, Norman Collison Professor of Musculoskeletal Sciences. Institute Director and Head of Department, the Botnar Research Centre, Oxford University Institute of Musculoskeletal Sciences.

Dr Peter Selby, Consultant Endocrinologist, Department of Medicine, Manchester Royal Infirmary.

### 5.2 Declaration of interests

The NOS receives financial support from a variety of different sources. In the financial year July 2003 to June 2004 the Society received £755,970 from pharmaceutical companies equating to 22.79% of total income.

### 5.3 NOS patient information sheet on STRONTIUM RANELATE (Protelos)

Osteoporosis literally means porous bones. The bones in our skeleton are made of a thicker outer shell and a strong inner mesh filled with collagen (protein), calcium salts and other minerals. The inside looks like a honeycomb, with blood vessels and bone marrow in the spaces between struts of bone. Osteoporosis means some of these struts become thin or break and the bone becomes too porous. The bones then become fragile and break without too much force. It often remains undetected until the time of the first fracture. The wrist, hip and spine are the sites at which fractures most commonly occur.

Our chance of developing osteoporosis is partly genetically influenced but as we grow through childhood and adolescence, the bones are continually being broken down by cells called osteoclasts and new stronger, bigger bones are gradually formed by the bone building cells called osteoblasts. This is called bone turnover. This process maintains the strength of our bones and keeps our skeleton healthy throughout life.

#### **What is strontium ranelate?**

Strontium ranelate, which is called Protelos in the UK, is the first in a new class of osteoporosis drug treatments which aims to strengthen bones and reduce the risk of fractures (broken bones). Other drug treatments for osteoporosis work by suppressing the action of the osteoclasts which break down bone or by stimulating the action of the osteoblasts which build bone. Strontium ranelate is the first treatment which works by performing both these functions.

#### **Does this mean strontium ranelate is better than other treatments for osteoporosis?**

The aim of any treatment for osteoporosis is to reduce the risk of broken bones. There have not been any studies comparing the effectiveness of strontium ranelate in reducing the risk of such fractures with other treatments for osteoporosis. It appears however to be similar in reducing the risk of fractures in the spine but the results of trials reporting the effects on other fractures have not yet been published.

#### **Who can use strontium ranelate?**

Strontium ranelate is licensed for post menopausal women with osteoporosis to reduce the risk of fractures in the spine and hip.

#### **What about men?**

At present, the studies into the effectiveness of strontium ranelate have only been conducted on post menopausal women. Servier, the French drug company who manufacture strontium ranelate are planning to look at the effects in men so may increase the licence to include this group in the future.

#### **How is strontium ranelate taken?**

Strontium ranelate is a 2g sachet of tasteless powder to be mixed in a glass of water. It should be taken once daily preferably at bedtime, at least two hours after eating and at least two hours before any food or drink other than water. This is because the absorption of the drug may be affected if food or drink other than water is present in the stomach.

**Can I take any other tablets (such as painkillers and sleeping tablets) at the same time as strontium ranelate?**

There are a wide range of medications that will not affect the absorption of strontium ranelate. Most sleeping tablets and painkillers will fall into this category but if you are unsure about medication you are taking you may like to discuss this further with your doctor or pharmacist.

**Are there any side effects with strontium ranelate?**

Unlike bisphosphonates (Fosamax, Actonel and Didronel PMO), strontium ranelate causes very few digestive problems and there is also no need to remain upright after taking it. In the trials, strontium ranelate was well tolerated without any major side effects. Those side effects reported were mild and short lived, the most common being nausea and diarrhoea, which were generally reported at the beginning of treatment. There is a slight increase in the risk of blood clots associated with strontium ranelate. Although this side effect is rare, people who are already prone to blood clots may not be advised to use this treatment.

**How do I know that strontium ranelate is working?**

The aim of any treatment is to reduce the risk of broken bones so if fractures are not occurring this may indicate that a treatment is working. Sometimes, bone density scanning is used to assess the effectiveness of osteoporosis treatment. As the presence of strontium may cause bone to appear denser than it actually is, scan results will have to be adjusted to allow for this.

**Do I need to take calcium and vitamin D supplements with my strontium ranelate?**

It is recommended that you obtain an adequate calcium intake as part of a well balanced diet. (For details see the NOS *Calcium Rich Foods Information Sheet* and *Diet and Bone Health booklet* for details.) If you have difficulties obtaining adequate calcium from your diet, a calcium supplement may be prescribed by your doctor. (All patients participating in the strontium ranelate research trials had an adequate calcium intake). If you are using a calcium supplement, you must not take it in the two hours before or two hours after you have taken the strontium ranelate.