

VI.2 Elements for a Public Summary

VI.2.1 Overview of disease epidemiology

Osteoporosis

Osteoporosis is a disease that makes bones fragile. Osteoporosis happens when not enough new bone grows to replace the bone that is naturally broken down. Gradually, the bones become thin and fragile, and are more likely to break. Osteoporosis is possible in both men and women. In women,

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osteoporosis is more common after menopause, when the levels of the female hormone oestrogen become lower. Osteoporosis affects over 200 million people worldwide (Reginster and Burlet 2006). One in every 2 women and 1 in every 5 men aged over 50 years of age will have a fracture caused by osteoporosis in their lifetime (Kanis and Johnell 2005).

In the year 2000, osteoporotic fractures accounted for approximately 2.7 million fractures in men and women in Europe (Kanis et al. 2013).

Glucocorticoid-Induced Osteoporosis

Glucocorticoids are often given to patients with many different kinds of chronic diseases, such as rheumatoid arthritis, inflammatory bowel disease, and chronic obstructive pulmonary disease.

Osteoporosis can occur in both men and women as a side effect of taking glucocorticoids. Approximately 30% of patients who use glucocorticoids for greater than 6 months will develop osteoporosis (Gudbjornsson et al. 2002; Bultink et al. 2013).

In Europe, up to 2.7% of postmenopausal women are taking glucocorticoids (Diez-Perez et al. 2011).

VI.2.2 Summary of treatment benefits

Osteoporosis

There are a number of treatments for osteoporosis other than treatment with drugs. These treatments can include nutrition, exercise, lifestyle, fall prevention, hip protectors, and surgery. Sometimes doctors also recommend that patients with osteoporosis take calcium and vitamin D.

Teriparatide is used to treat osteoporosis in patients at an increased risk of fracture.

In a study in over 1,600 postmenopausal women with a high risk of fracture, patients using teriparatide had a significantly lowered risk of fractures and increased bone mineral density (BMD) in the spine and hip bone compared with the group of patients taking placebo (or dummy pill). A bone mineral density test can be used as a marker for the severity of osteoporosis. In another study in over 700 postmenopausal women who had an increased risk of fracture, women who took teriparatide had significantly less spinal fractures compared with women who took risedronate group (6.7% versus 11.1%). However, there was not a significant difference between the group taking teriparatide and the group taking placebo in reducing back pain.

In a study of 287 men, who had treatment with teriparatide, the results showed a significantly higher BMD in the lower spine and femoral neck bone compared with the results seen in the group taking a placebo.

The results from 3 large real-life studies where patients received teriparatide from their doctor were observed during their normal treatment period also showed that teriparatide helps to reduce the risk of fracture (both during and after treatment) in men and women with osteoporosis. Results from these studies also show that teriparatide helped to increase spine and hip BMD in postmenopausal women and men who had previously had a different treatment for their osteoporosis but had not improved as a result of that treatment.

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One way to lower the fracture risk for glucocorticoid-induced osteoporosis (GIOP) may be to stop using glucocorticoids or to use the lowest possible dose. However, any patient who has used glucocorticoids for an extended time period, or is still using them, has an increased risk of fracture (Kanis et al. 2011).

The benefits of using teriparatide to treat men and women with GIOP were shown in 2 studies. In 1 study in both men and women, teriparatide was compared with alendronate; in the other study which was done in men only, teriparatide was compared with risedronate. In both of these studies, patients who took teriparatide had greater increases in BMD in their lower spines. Results from the first study also showed that patients who took teriparatide had a more significant reduction in spinal fractures than patients who took alendronate following treatment for 18 and 36 months. In the second study, patients who took teriparatide had more of a reduction in new clinical fractures than patients who took risedronate after 18 months of treatment.

Overall, the results from these studies show that teriparatide helps to increase BMD and helps to reduce the risk of fracture in patients with osteoporosis.

VI.2.3 Unknowns relating to treatment benefits

Current studies are considered adequate for efficacy in approved labelling for teriparatide.

VI.2.4 Summary of safety concerns

Important identified risks

Risk	What is known	Preventability
High blood calcium levels (Hypercalcemia)	Teriparatide may cause an increase in the amount of calcium in blood.	Patients who suffer from high calcium levels (pre-existing hypercalcaemia) should not use teriparatide. Patients should consult their doctor or pharmacist before or while using teriparatide if they have continuing nausea, vomiting, constipation, low energy, or muscle weakness. These may be signs there is too much calcium in the blood.
Low blood pressure that happens when you stand up (Orthostatic Hypotension)	Some patients get dizzy or get a fast heartbeat after the first few doses. This is due to the changes in blood pressure and heart rate to allow the body to provide adequate blood supply to the brain when the body changes position. Cases of fainting have been reported in association with teriparatide use. Typically, an event begins within 4 hours of dosing and	For the first doses, patients should inject teriparatide where they can sit or lie down right away if they get dizzy. If they become dizzy (light-headed) after an injection, they should sit or lie down until they feel better. If they do not feel better, they should call a doctor before they continue treatment.

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Risk	What is known	Preventability
	spontaneously resolves within a few minutes to a few hours. It often happens within the first several doses and is relieved by lying down. These patients should refrain from driving or the use of machines until symptoms have passed.	

Important potential risks

Risk	What is known (Including reason why it is considered a potential risk)
Malignant bone tumour (Osteosarcoma)	Studies in rats indicate a risk of a type of bone cancer with long-term use of teriparatide. Until further clinical data become available, the recommended treatment time of 24 months should not be exceeded.
Hardening of blood vessels in the skin leading to skin ulceration (Non-uraemic calciphylaxis)	This effect has been noted in patients receiving teriparatide, although it is not completely understood how and why it occurs.

Missing information

None.

VI.2.5 Summary of risk minimisation measures by safety concern

All medicines have a Summary of Product Characteristics (SmPC) which provides physicians, pharmacists and other health care professionals with details on how to use the medicine, the risks and recommendations for minimising them. An abbreviated version of this in lay language is provided in the form of the package leaflet (PL). The measures in these documents are known as routine risk minimisation measures.

The Summary of Product Characteristics and the Package leaflet for teriparatide can be found on national competent authorities' websites of the countries where the medicinal product has been approved.

This medicine has no additional risk minimisation measures.

VI.2.6 Planned post authorisation development plan

Not applicable.

VI.2.7 Summary of changes to the risk management plan over time

Not applicable.

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