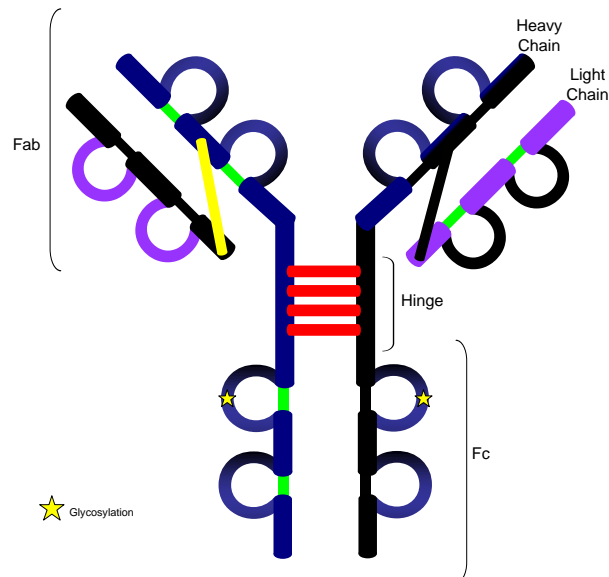


Prolia® (denosumab)

The medicine is not currently marketed in New Zealand

NAME OF THE MEDICINE

Prolia® is the Amgen Inc. trademark for denosumab (rch).



DESCRIPTION

Denosumab is a fully human IgG2 monoclonal antibody with high affinity and specificity for RANK ligand (RANKL). Denosumab has an approximate molecular weight of 147 kDa and is produced in genetically engineered mammalian (Chinese Hamster Ovary, CHO) cells.

CAS number: 615258-40-7

Prolia® is a sterile, preservative-free, clear, colourless to slightly yellow solution for injection. The solution may contain trace amounts of translucent to white proteinaceous particles. Each 1 mL single-use pre-filled syringe contains: 60 mg denosumab, 47 mg sorbitol, 1 mg acetate, 0.1 mg polysorbate 20, sodium hydroxide for adjusting to pH 5.2, in Water for Injection, (USP). Each 1 mL single-use vial contains 60 mg denosumab, 47 mg sorbitol, 1 mg acetate, sodium hydroxide for adjusting to pH 5.2, in Water for Injection, (USP).

PHARMACOLOGY

Mechanism of Action

RANKL exists as a transmembrane or soluble protein. RANKL is essential for the formation, function and survival of osteoclasts, the sole cell type responsible for bone resorption. Osteoclasts play an important role in bone loss associated with postmenopausal osteoporosis and hormone ablation. Denosumab binds with high affinity and specificity to RANKL, preventing RANKL from activating its only receptor, RANK, on the surface of osteoclasts and their precursors, independent of bone surface. Prevention of RANKL/RANK interaction inhibits osteoclast formation, function and survival, thereby decreasing bone resorption and increasing bone mass and strength in both cortical

and trabecular bone.

Pharmacodynamics

In clinical studies, treatment with 60 mg of Prolia® resulted in rapid reduction in the bone resorption marker serum type 1 C-telopeptides (CTX) within 6 hours of SC administration by approximately 70%, with reductions of approximately 85% occurring by 3 days. CTX reductions were maintained over the 6-month dosing interval. At the end of each dosing interval, CTX reductions were partially attenuated from maximal reduction of $\geq 87\%$ to $\geq 45\%$ (range 45% to 80%), reflecting the reversibility of the effects of Prolia® on bone remodelling once serum denosumab levels diminish. These effects were sustained with continued treatment. Consistent with the physiological coupling of bone formation and resorption in skeletal remodeling, subsequent reductions in bone formation markers (e.g. bone specific alkaline phosphatase [BSAP] and serum N-terminal propeptide of type 1 collagen [P1NP]) were observed beginning 1 month after the first dose of Prolia®.

Bone turnover markers (bone resorption and formation markers) generally reached pretreatment levels within 9 months after the last 60 mg subcutaneous dose. Upon re-initiation, the degree of inhibition of CTX by Prolia® was similar to those observed in patients initiating Prolia®.

In a clinical study of postmenopausal women with low bone mass (n = 504) who were previously treated with alendronate for a median of 3 years, those transitioning to receive Prolia® experienced additional reductions in serum CTX, compared with women who remained on alendronate. In this study, the changes in serum calcium were similar between the two groups.

Pharmacokinetics

Following a 60 mg subcutaneous dose of denosumab, bioavailability was 61% and maximum serum denosumab concentrations (C_{max}) of 6 µg/mL (range 1-17 µg/mL) occurred in 10 days (range 2-28 days). After C_{max} , serum levels declined with a half-life of 26 days (range 6-52 days) over a period of 3 months (range 1.5-4.5 months). Fifty-three percent of patients had no measurable amounts of denosumab detected at 6 months post-dose.

No accumulation or change in denosumab pharmacokinetics over time was observed upon subcutaneous multiple-dosing of 60 mg once every 6 months. Denosumab pharmacokinetics was not affected by the formation of binding antibodies to denosumab and was similar in men and women.

Pharmacokinetic analysis was performed to evaluate the effects of demographic characteristics. This analysis showed no notable difference in pharmacokinetics with age (28 to 87 years), race or body weight (36 to 140 kg)).

Denosumab is composed solely of amino acids and carbohydrates as native immunoglobulin and is unlikely to be eliminated via hepatic metabolic mechanisms. Based on nonclinical data, its metabolism and elimination are expected to follow the immunoglobulin clearance pathways, resulting in degradation to small peptides and individual amino acids.

Special populations

Elderly

The pharmacokinetics of denosumab was not affected by age (28 to 87 years).

Paediatric

The pharmacokinetic profile has not been assessed in those ≤ 18 years.

Impaired hepatic function

The pharmacokinetic profile has not been assessed in patients with impaired hepatic function.

Impaired renal function

In a study of 55 patients with varying degrees of renal function, including patients on dialysis, the degree of renal impairment had no effect on the pharmacokinetics of denosumab.

Immunogenicity

In clinical studies, no neutralising antibodies for denosumab have been observed. Using a sensitive immunoassay $< 1\%$ of patients treated with denosumab for up to 5 years tested positive for non neutralising binding antibodies with no evidence of altered pharmacokinetics, toxicity, or clinical response.

CLINICAL TRIALS**Treatment of osteoporosis in postmenopausal women**

Independent risk factors, for example, low bone mineral density (BMD), age, the existence of previous fracture, family history of hip fractures, high bone turnover and low body mass index (BMI) should be considered in order to identify women at increased risk of osteoporotic fractures who could benefit from treatment.

FRacture Reduction Evaluation of Denosumab in Osteoporosis Every 6 Months (FREEDOM):

The efficacy and safety of Prolia® in the treatment of postmenopausal osteoporosis was demonstrated in FREEDOM (Study 20030216), a 3-year, randomised, double-blind, placebo-controlled, multinational study of women with baseline BMD T-scores at the lumbar spine or total hip between -2.5 and -4.0. 7,808 women aged 60 to 91 years were enrolled of whom 23.6% had prevalent vertebral fractures. Women with other diseases or on therapies that may affect bone (e.g. rheumatoid arthritis, osteogenesis imperfecta and Paget's disease) were excluded from this study.

BMD and other individual risk factors were collected for women enrolled in the FREEDOM study. The mean absolute 10-year fracture probability for women enrolled was 18.60% (deciles: 7.9-32.4%) for major osteoporotic fracture and 7.22% (deciles: 1.4-14.9%) for hip fracture, as derived from FRAX®, the WHO Fracture Risk Assessment Tool algorithm.

Women were randomised to receive subcutaneous injections of either Prolia® 60 mg (n = 3,902) or placebo (n = 3,906) once every 6 months. Women received calcium (at least 1,000 mg) and vitamin D (at least 400 IU) supplementation daily. The primary efficacy variable was the incidence of new vertebral fractures. Secondary efficacy variables included the incidence of non-vertebral fractures and hip fractures, assessed at 3 years.

Effect on vertebral fractures

Prolia® significantly reduced the risk of new vertebral fractures at 1, 2 and 3 years ($p < 0.0001$) (see Table 1).

Table 1. The effect of Prolia® on the risk of new vertebral fractures

	Proportion of women with fracture (%)		Absolute risk reduction (%) (95% CI)	Relative risk reduction (%) (95% CI)
	Prolia® n = 3,902 (%)	Placebo n = 3,906 (%)		
0-1 Year	0.9	2.2	1.4 (0.8, 1.9)	61 (42, 74)*
0-2 Years	1.4	5.0	3.5 (2.7, 4.3)	71 (61,79)*
0-3 Years	2.3	7.2	4.8 (3.9, 5.8)	68 (59, 74)*

*p < 0.0001

The reductions in the risk of new vertebral fractures by Prolia® over 3 years were consistent and significant regardless of whether or not women had a prevalent vertebral fracture or history of a non-vertebral fracture, and regardless of baseline age, BMD, bone turnover level and prior use of a medicinal product for osteoporosis.

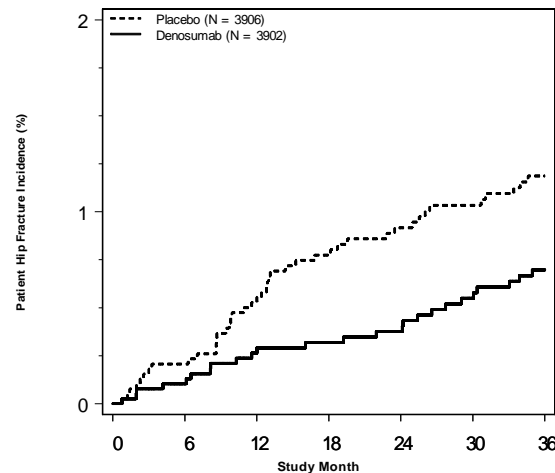
Prolia® also reduced the risk of new vertebral fracture by 65% (6.5% absolute risk reduction, p < 0.0001) in patients at high risk of fractures (defined as women who met ≥ 2 of the 3 following criteria at baseline: age ≥ 70 years, BMD T-score ≤ -3.0 [at lumbar spine, total hip, or femoral neck] or prevalent vertebral fracture).

Prolia® also reduced the risk of new and worsening vertebral fractures (67% relative risk, reduction, 4.8% absolute risk reduction) as well as multiple vertebral fractures (41% relative risk reduction, 1.0% absolute risk reduction) at 3 years, when compared to placebo (all p < 0.0001).

Effect on hip fractures

Prolia® demonstrated a 40% relative reduction (0.5% absolute risk reduction) in the risk of hip fracture over 3 years (p < 0.05) (see Figure 1). The incidence of hip fracture was 0.7% in the Prolia® group compared to 1.2% in the placebo group at 3 years.

Figure 1 Cumulative incidence of hip fractures over 3 years



In women with high fracture risk as defined above by baseline age, BMD and prevalent vertebral fracture, a 48% relative risk reduction was observed with Prolia® (1.1% absolute risk reduction, p < 0.05).

Effect on all clinical fractures

Prolia® demonstrated superiority to placebo in reducing the risk of any clinical fractures, clinical (symptomatic) vertebral fractures, non-vertebral fractures (including hip), major non-vertebral fractures and major osteoporotic fractures (see Table 2).

Table 2. The effect of Prolia® on the risk of clinical fractures over 3 years

	Proportion of women with fracture (%) ⁺		Absolute risk reduction (%) (95% CI)	Relative risk reduction (%) (95% CI)
	Prolia® n = 3,902 (%)	Placebo n = 3,906		
Any clinical fracture ¹	7.2	10.2	2.9 (1.6, 4.2)	30 (19, 41) ^{***}
Clinical vertebral fracture	0.8	2.6	1.8 (1.2, 2.4)	69 (53, 80) ^{***}
Non-vertebral fracture ²	6.5	8.0	1.5 (0.3, 2.7)	20 (5, 33) ^{**}
Major non-vertebral fracture ³	5.2	6.4	1.2 (0.1, 2.2)	20 (3, 34) [*]
Major osteoporotic fracture ⁴	5.3	8.0	2.7 (1.6, 3.9)	35 (22, 45) ^{***}

*p ≤ 0.05; **p = 0.0106, ***p ≤ 0.0001

+ Event rates based on Kaplan-Meier estimates at 3 years

(1) Includes clinical vertebral fractures and non-vertebral fractures

(2) Excludes those of the vertebrae (cervical, thoracic, and lumbar), skull, facial, mandible, metacarpus, and finger and toe phalanges

(3) Includes pelvis, distal femur (i.e. femur excluding hip), proximal tibia (i.e. tibia excluding ankle), ribs, proximal humerus (i.e. humerus excluding elbow), forearm, and hip

(4) Includes clinical vertebral, hip, forearm, and humerus fractures, as defined by the WHO

Women in the FREEDOM study had a mean baseline BMD T-score of -2.2 at the femoral neck.

In women with baseline femoral neck BMD ≤ -2.5 , Prolia® reduced the incidence of non-vertebral fracture (35% relative risk reduction, 4.1% absolute risk reduction, $p < 0.001$).

The reduction in the incidence of new vertebral fractures, hip fractures and non-vertebral fractures by Prolia® over 3 years were consistent regardless of the 10-year baseline fracture risk as assessed by FRAX.

Effect on bone mineral density

Prolia® significantly increased BMD at all clinical sites measured, relative to treatment with placebo at 1, 2 and 3 years in FREEDOM. Prolia® increased BMD by 9.2% at the lumbar spine, 6.0% at the total hip, 4.8% at the femoral neck, 7.9% at the hip trochanter, 3.5% at the distal 1/3 radius and 4.1% at the total body over 3 years (all $p < 0.0001$). Increases in BMD at lumbar spine, total hip and hip trochanter were observed as early as 1 month after the initial dose. Prolia® increased lumbar spine BMD from baseline in 95% of postmenopausal women at 3 years. Consistent effects on BMD were observed at the lumbar spine regardless of baseline age, race, weight/BMI, BMD and bone turnover level. The effects of Prolia® on bone architecture were evaluated using quantitative computed tomography (QCT) in postmenopausal women with BMD T-score below -2.5 at the lumbar spine or total hip. Treatment with Prolia® increased volumetric trabecular BMD at the lumbar spine, volumetric BMD at the total hip and the volumetric cortical BMD and cortical thickness at the distal radius.

Study of Transitioning from Alendronate to Denosumab (STAND, Study 20050234) was a double-blind, randomised, alendronate-controlled, study in postmenopausal women with low BMD (T-score between -2.0 and -4.0 at the lumbar spine or total hip) who had received alendronate (70 mg weekly [or equivalent] orally) for at least 6 months preceding study entry. Patients received either Prolia® 60 mg Q6M SC ($n = 253$) or alendronate orally 70 mg weekly for 12 months ($n = 251$).

Women who transitioned to receive Prolia® had greater increases in BMD at the total hip (1.9% versus 1.1%, $p < 0.001$; primary efficacy endpoint) after 1 year, compared to those who continued to receive alendronate therapy. Consistently greater increases in BMD were also seen at the lumbar spine, femoral neck, hip trochanter, and distal 1/3 radius in women treated with Prolia®, compared to those who continued to receive alendronate therapy (all $p < 0.05$).

In clinical studies examining the effects of discontinuation of Prolia®, BMD returned to approximately pre-treatment levels and remained above placebo within 18 months of the last dose. These data indicate that continued treatment with Prolia® is required to maintain the effect of the drug. Re-initiation of Prolia® resulted in gains in BMD similar to those when Prolia® was first administered.

Bone Histology

Fifty-three trans-iliac crest bone biopsy specimens were obtained at either 2 years and/or 3 years from 47 postmenopausal women with osteoporosis treated with Prolia®. Fifteen bone biopsy specimens were also obtained after 1 year of treatment with Prolia® from 15 postmenopausal women with low bone mass who had transitioned from previous alendronate therapy. Histology assessments in both studies showed bone of normal architecture and quality, as well as the expected decrease in bone turnover relative to placebo treatment. There was no evidence of mineralisation defects, woven bone or marrow fibrosis.

INDICATIONS

The treatment of osteoporosis in postmenopausal women. Prolia® significantly reduces the risk of

vertebral, non-vertebral and hip fractures.

CONTRAINDICATIONS

Hypocalcaemia (See **PRECAUTIONS**).

Hypersensitivity to the active substance, to CHO-derived proteins or to any of the excipients (see **DESCRIPTION**).

PRECAUTIONS

Hypocalcaemia

Hypocalcaemia must be corrected prior to initiating therapy with Prolia®. In patients predisposed to hypocalcaemia (e.g. history of hypoparathyroidism, thyroid surgery, parathyroid surgery, malabsorption syndromes, excision of small intestine, severe renal impairment [creatinine clearance < 30 mL/min] or receiving dialysis), clinical monitoring of calcium levels is recommended.

Adequate intake of calcium and vitamin D is important in all patients (see **DOSAGE AND ADMINISTRATION** and **ADVERSE EFFECTS**).

Skin Infections

Patients receiving Prolia® may develop skin infections (predominantly cellulitis) leading to hospitalisation (see **ADVERSE EFFECTS**). Patients should be advised to seek prompt medical attention if they develop signs or symptoms of cellulitis.

Osteonecrosis of the Jaw

Osteonecrosis of the jaw (ONJ) has been reported in patients treated with denosumab or bisphosphonates, another class of anti-resorptive agents. Most cases have been in cancer patients; however some have occurred in patients with osteoporosis.

ONJ has been reported rarely in clinical studies in patients receiving denosumab at a dose of 60 mg every 6 months for osteoporosis. There have been reports of ONJ in clinical studies in patients with advanced cancer treated with denosumab at the studied dose of 120 mg administered monthly.

Known risk factors for ONJ include a diagnosis of cancer with bone lesions, concomitant therapies (e.g. chemotherapy, antiangiogenic biologics, corticosteroids, radiotherapy to head and neck), poor oral hygiene, dental extractions, and co-morbid disorders (e.g. pre-existing dental disease, anaemia, coagulopathy, infection).

Good oral hygiene practices should be maintained during treatment with Prolia®. If ONJ occurs during treatment with Prolia®, use clinical judgment and guide the management plan of each patient based on individual benefit/risk evaluation.

Paediatric Use

The safety and efficacy of Prolia® in paediatric patients have not been established. Prolia® is not recommended for use in paediatric patients. Adolescent primates dosed with denosumab at 27 and 150 times (10 and 50 mg/kg dose) the clinical exposure based on AUC had abnormal growth plates. In neonatal rats, inhibition of RANKL (target of denosumab therapy) with a construct of osteoprotegerin bound to Fc (OPG-Fc) at high doses was associated with inhibition of bone growth

and tooth eruption. Therefore, treatment with denosumab may impair bone growth in children with open growth plates and may inhibit eruption of dentition.

Use in the Elderly

Of the total number of patients in clinical studies of Prolia®, 9,943 patients were ≥ 65 years, while 3,576 were ≥ 75 years. No overall differences in safety or efficacy were observed between these patients and younger patients.

Effects on fertility

No data are available on the effect of denosumab on human fertility. Denosumab had no effect on female fertility or male reproductive organs or sperm motility in cynomolgus monkeys at subcutaneous doses up to 12.5 mg/kg/week (females) or 50 mg/kg/month (males), yielding exposures that were approximately 150-fold higher than the human exposure at 60 mg subcutaneous administered once every 6 months.

Use in Pregnancy

Pregnancy Category: D

There are no adequate and well-controlled studies of Prolia® in pregnant women. Prolia® is not recommended for use during pregnancy.

Developmental toxicity studies have been performed with denosumab in cynomolgus monkeys at subcutaneous doses up to 12.5 mg/kg/week, yielding exposures up to 100-fold higher than the human exposure. No evidence of harm to the fetus was observed. Preclinical studies in RANK/RANKL-knockout mice suggest absence of RANKL could interfere with the development of lymph nodes in the fetus; the potential for adverse effects on lymph node development was not examined in studies with denosumab in monkeys. Knockout mice lacking RANK or RANKL also exhibited decreased body weight, reduced bone growth and a lack of tooth eruption. Similar phenotypic changes (inhibition of bone growth and tooth eruption) were observed in a study in neonatal rats using a surrogate for denosumab, the RANKL inhibitor osteoprotegerin bound to FC (OPG-Fc). Therefore, treatment with denosumab may impair bone growth in children with open growth plates and may inhibit eruption of dentition. The reversibility of the effects of OPG-Fc has not been examined.

Preclinical studies in RANK/RANKL-knockout mice suggest absence of RANKL during pregnancy may interfere with maturation of the mammary gland leading to impaired lactation post-partum.

Use in Lactation

It is unknown whether denosumab is excreted in human milk. A decision on whether to abstain from breast-feeding or to abstain from therapy with Prolia® should be made, taking into account the benefit of breast-feeding to the newborn/infant and the benefit of Prolia® therapy to the woman.

Use in Renal Impairment

No dose adjustment is necessary in patients with renal impairment.

In clinical studies, patients with severe renal impairment (creatinine clearance < 30 mL/min) or receiving dialysis were at greater risk of developing hypocalcaemia. Adequate intake of calcium and vitamin D is important in patients with severe renal impairment or receiving dialysis (see **PRECAUTIONS, Hypocalcaemia**).

Use in Hepatic Impairment

The safety and efficacy of Prolia® has not been studied in patients with hepatic impairment.

Carcinogenicity

The carcinogenic potential of denosumab has not been evaluated in long-term animal studies. In view of the mechanism of action of denosumab, it is unlikely that the molecule would be capable of inducing tumor development or proliferation.

Genotoxicity

The genotoxic potential of denosumab has not been evaluated. Denosumab is a recombinant protein comprised entirely of naturally occurring amino acids and contains no inorganic or synthetic organic linkers or other non-protein portions. Therefore, it is unlikely that denosumab or any of its derived fragments would react with DNA or other chromosomal material.

Interactions with Other Medicines

No drug-drug interaction studies have been conducted.

Effects on Laboratory Tests

No interactions with laboratory and diagnostic tests have been identified.

Effects on Ability to Drive and Use Machines

No studies on the effects on the ability to drive or use machinery have been performed.

ADVERSE EFFECTS

Treatment of Postmenopausal Osteoporosis

Prolia® has been studied in over 10,500 women with postmenopausal osteoporosis in clinical trials of up to 5 years duration.

The safety of Prolia® in the treatment of postmenopausal osteoporosis was assessed in FREEDOM, a large, 3-year, randomised, double-blind, placebo-controlled, multinational phase III study of 7,808 postmenopausal women aged 60 to 91 years with osteoporosis. A total of 3,886 women were exposed to Prolia® and 3,876 women were exposed to placebo administered once every 6 months as a single 60 mg subcutaneous dose.

The safety of Prolia® was also assessed in a second phase 3 study of similar design. A total of 322 postmenopausal women aged 43 to 83 years with low bone mass were enrolled in this 2-year study. A total of 164 women were exposed to Prolia® and 165 women were exposed to placebo administered once every 6 months as a single 60 mg subcutaneous dose.

In both studies, all women received at least 1000 mg of calcium and 400 IU of vitamin D supplementation per day.

Across the two phase III studies the incidence of all-cause mortality was 1.7% (n = 70) in the Prolia® group and 2.2% (n = 90) in the placebo group. The incidence of serious adverse events was 25.3% in the Prolia® group and 24.3% in the placebo group. The percentage of patients who withdrew from the studies due to adverse events was 2.3% and 2.1% for the Prolia® and placebo groups, respectively.

The most common adverse events reported in studies of women with postmenopausal osteoporosis

or low bone mass (n = 8,091), occurring in $\geq 10\%$ of patients either in the Prolia[®]-treated or placebo group, were back pain (34.1% Prolia[®], 34.0% placebo), arthralgia (20.4% in each group), hypertension (15.3% Prolia[®], 16.1% placebo), nasopharyngitis (14.8% Prolia[®], 15.6% placebo), pain in extremity (11.8% Prolia[®], 11.2% placebo) and osteoarthritis (10.9% Prolia[®], 11.1% placebo).

Adverse reactions defined as adverse events reported in at least 2% of postmenopausal women with osteoporosis or low bone mass (n = 8,091) and at least 1% more frequently in the Prolia[®]-treated women than in the placebo-treated women were: hypercholesterolemia (7.0% Prolia[®], 5.9% placebo) and eczema (includes dermatitis, allergic dermatitis, atopic dermatitis and contact dermatitis) (3.1% Prolia[®], 1.7% placebo).

In STAND, a double-blind, randomised, alendronate-controlled, study in postmenopausal women with low bone mass who had received alendronate for at least 6 months preceding study entry, patients received either Prolia[®] 60 mg Q6M SC (n = 253) or alendronate orally 70 mg weekly for 12 months (n = 249). The safety profile was similar for patients transitioning from alendronate to denosumab and those continuing on alendronate therapy, including the overall incidence of adverse events and serious adverse events. Eight patients (3.2%) in the Prolia[®] group and 4 patients (1.6%) in the alendronate group reported adverse events of fracture.

Hypocalcaemia

In two phase III placebo-controlled clinical trials in postmenopausal women with osteoporosis, approximately 0.05% (2 of 4,050) of patients had declines of serum calcium levels (less than 1.88 mmol/l) following Prolia[®] administration.

Skin Infections

In two phase III placebo-controlled clinical trials in postmenopausal women with osteoporosis, skin infections leading to hospitalisation were reported more frequently in the Prolia[®] (0.4%, 16 of 4,050) versus the placebo (0.1%, 3 of 4,041) groups, respectively. These cases were predominantly cellulitis. The overall incidence of skin infections was similar between the Prolia[®] (1.5%, 59 of 4,050) and placebo groups (1.2%, 50 of 4,041).

Pancreatitis

Pancreatitis was reported in 4 patients (0.1%) in the placebo and 8 patients (0.2%) in the Prolia[®] groups. Several patients had a prior history of pancreatitis or a confounding event (e.g. gallstones). The time from product administration to event occurrence was variable.

Osteonecrosis of the Jaw (ONJ)

In the osteoporosis clinical trial program, ONJ was reported rarely in patients treated with Prolia[®].

DOSAGE AND ADMINISTRATION

Administration should be performed by an individual who has been adequately trained in injection techniques.

The recommended dose of Prolia[®] is a single subcutaneous (SC) injection of 60 mg, once every 6 months.

To reduce the risk of hypocalcaemia, patients must be adequately supplemented with calcium and vitamin D (see **PRECAUTIONS, Hypocalcaemia**). In the major clinical trials of Prolia[®], daily supplementation with 1000 mg of calcium and at least 400 IU vitamin D was recommended.

No dose adjustment is necessary in elderly patients (see **PRECAUTIONS, Use in the Elderly**) or in patients with renal impairment (See **PRECAUTIONS, Renal Impairment**).

Prolia® is a sterile and preservative-free product. Before administration, the Prolia® solution should be inspected for particulate matter and discolouration. Do not use if the solution is cloudy or discoloured. Do not excessively shake the pre-filled syringe or vial. To avoid discomfort at the site of injection, allow the pre-filled syringe or vial to reach room temperature (up to 25°C) before injecting, and inject slowly. Inject the entire contents of the pre-filled syringe or vial.

Product is for single-use in one patient only. Dispose of any medicinal product remaining in the pre-filled syringe or vial.

OVERDOSAGE

There is no experience with overdosage with Prolia®. Prolia® has been administered in clinical studies using doses up to 180 mg every 4 weeks (cumulative doses up to 1080 mg over 6 months), and no additional adverse effects were observed.

PRESENTATION AND STORAGE CONDITIONS

Prolia® is supplied as a sterile, preservative-free, clear, colourless to slightly yellow solution for injection at pH 5.2. The solution should not be used if cloudy or discoloured. The solution may contain trace amounts of translucent to white proteinaceous particles.

Each 1 mL single-use pre-filled syringe or vial contains 60 mg of denosumab in 1 mL (60 mg/mL). Product is for single-use in one patient only. Dispose of any medicinal product remaining in the pre-filled syringe or vial.

It is recommended to store pre-filled syringes and vials in a refrigerator at 2° to 8°C in the original carton. Do not freeze. Protect from direct light. Do not excessively shake the pre-filled syringe or vial. Do not expose to temperatures above 25°C.

If removed from the refrigerator, Prolia® should be kept at room temperature (up to 25°C) in the original container and must be used within 30 days.

Pre-filled syringe:

Pack size of one, presented in blistered (pre-filled syringe with or without an automatic needle guard) or unblistered packaging (pre-filled syringe only).

The needle cover of the pre-filled syringe contains dry natural rubber (a derivative of latex), which may cause allergic reactions.

Vial:

Pack size of one.

A 27 gauge needle is recommended for the administration of Prolia®. Do not re-enter the vial.

NAME AND ADDRESS OF THE SPONSOR (AUSTRALIA)

Amgen Australia Pty Ltd

ABN 31 051 057 428
Level 7, 123 Epping Road
North Ryde NSW 2113

NAME AND ADDRESS OF THE SPONSOR (NEW ZEALAND)

Amgen (New Zealand) Limited
Level 20, Lumley Centre
88 Shortland Street
Auckland
New Zealand

POISON SCHEDULE OF THE MEDICINE (AUSTRALIA)

S4 Prescription Medicine

MEDICINE CLASSIFICATION (NEW ZEALAND)

Prescription Medicine

Date of preparation: April 2011

Prolia is a registered trademark of Amgen.
© 2011 Amgen Inc. All rights reserved.