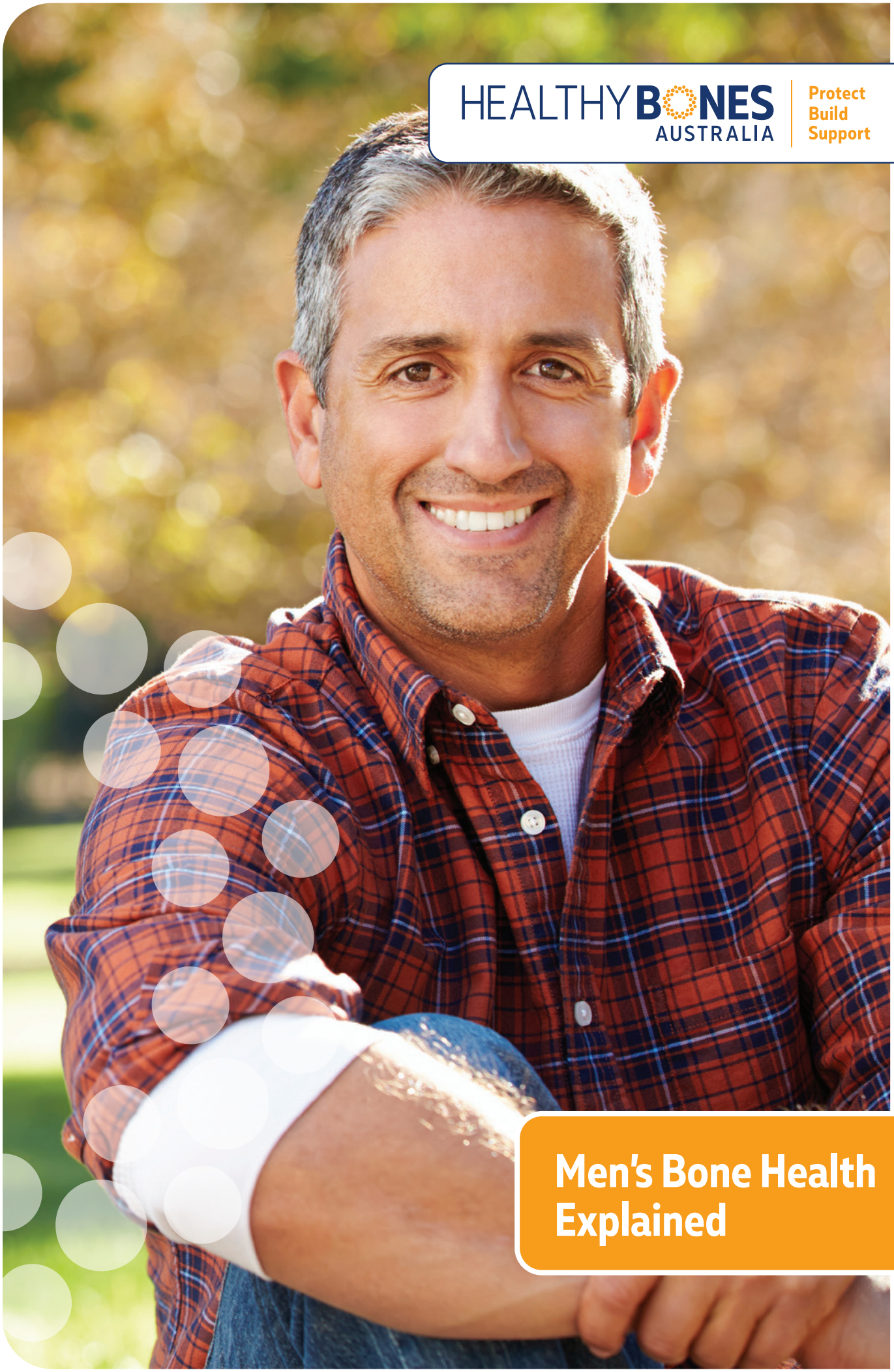
2nd Edition 08/24

HEALTHY BONES AUSTRALIA

Protect
Build
Support



Men's Bone Health Explained

Bone Health Explained

Bone health is an important part of general health. Poor bone health can lead to osteoporosis. When the structure of bone is compromised and becomes weaker and less dense the bone has an increased risk of breaking. This is osteoporosis. Any bone can be affected by osteoporosis. However osteoporosis tends to affect particular sites within the skeleton, not the whole skeleton. Research has shown the common sites where broken bones occur are the hip, wrist and spine. Other sites include the ankle, leg, forearm, upper arm and ribs. These fractures typically occur from a minor trip, fall or similar incident.

It is important to note broken bones can occur in patients with either osteoporosis or osteopenia (low bone density). Once a fracture occurs the person is considered to be at much higher risk of another fracture. Early diagnosis and treatment aims to prevent any initial fracture occurring or stop further fractures occurring. If a fracture does occur the main aim of treatment is to reduce the likelihood of more fractures.

Common Risk Factors

Personal History	Medical Conditions	Medications
Previous fracture (from minor bump or fall)	Coeliac disease	Certain treatment for prostate cancer
Family history of osteoporosis (parent/sibling)	Overactive thyroid or parathyroid	Glucocorticoids (steroids)
Loss of height (3 cm or more)	Rheumatoid arthritis	Anti-epilepsy treatment
Smoking/Excessive alcohol	Low testosterone	
Inadequate calcium, vitamin D or lack of exercise	Chronic kidney disease or liver disease	
Age 70 years and over	Diabetes	

If you have any risk factors for osteoporosis your doctor will refer you for a bone density test. This simple scan is widely available in Australia, and the results will indicate if you have low bone density (osteopenia) or osteoporosis.

If osteoporosis is diagnosed your doctor will take action to protect your bone health and this will typically include medication. If low bone density is found your bone health will be monitored and lifestyle changes will be recommended to support your bone health.

Calcium and Bone Health

Why is Calcium Important?

Calcium is essential for building and maintaining healthy bones throughout life. Calcium combines with other minerals to form hard crystals giving bones strength and structure. Almost 99% of the body's calcium is found in the bones. If there is not enough calcium in your diet the body will take what is needed from your bones for use in other parts of the body. If this happens your bone density (bone strength) will gradually decline and you may be at risk of developing osteoporosis.

How Much Calcium is Recommended?

Australian dietary calcium recommendations vary according to age.

Adults • 19 years +	1,000 mg per day	• Adequate calcium intake maintains bone strength
Older Adults • Men over 70 years	1,300 mg per day	• Daily recommendation increases as calcium is less effectively absorbed from the intestine and more can be lost through the kidneys

- Excessive calcium intake is not recommended
- If calcium supplementation is used it should only form part of daily requirements

Calcium and Food

The best way to achieve recommended calcium intake is to eat a diet rich in calcium. Calcium content in food varies so it is important to consume 'calcium rich' foods. Half of all Australian adults do not achieve their daily recommended intake of calcium. It is easy to add calcium to your diet by focusing on food groups which contain higher levels of calcium.

Food Type	Examples	Calcium Range (mg per serve)
Dairy	Milk, cheese, yogurt	150 – 305 mg per serve
Seafood	Trout, snapper, mussels, oysters, prawns, canned sardines or salmon	35 – 300 mg per serve
Vegetables	Cucumber, kale, silverbeat, chinese cabbage, broccoli, rocket, watercress, bok choy, leeks	59 – 250 mg per serve
Nuts and seeds	Almonds, brazil nuts, hazelnuts, walnuts, sesame seeds, tahini paste	28 – 75 mg per serve
Fruits	Orange, strawberries, figs, kiwi fruit, dates	16 - 95 mg per serve
Other	Eggs, calcium-set tofu, canned chickpeas or soybeans	21 – 105 mg per serve
Meat	Pork chop, chicken	21 – 105 mg per serve

Do We Absorb All the Calcium We Eat?

The simple answer is no, not all the calcium we consume is absorbed. A small amount of calcium will be lost and excreted from the body which is normal. This is factored into the recommended intake for your age. Other factors can also impact calcium absorption and should be discussed with your doctor, for example: low vitamin D levels, excessive caffeine and alcohol intake and certain medical conditions (for example coeliac disease or kidney disease).

Calcium Supplements

It is recommended calcium is obtained from your diet. However when adequate calcium intake is not possible a supplement may be required as directed by your doctor or pharmacist. Healthy Bones Australia recommends supplement doses in the range of 500-600 mg daily when required. This is considered safe and effective. Take supplements as directed and talk to your doctor or pharmacist if you have any queries.

Diagnosed Osteoporosis and Calcium

Calcium is essential for supporting your bone health. However for people with diagnosed osteoporosis, medication is generally required as prescribed by your doctor. It is common practice for doctors to prescribe calcium supplementation to accompany osteoporosis medication. Adequate calcium intake throughout life supports bone health but may not prevent osteoporosis as other risk factors can negatively impact your bone health.

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Vitamin D and Bone Health

Vitamin D is needed to absorb calcium from the intestine to support healthy bones. Vitamin D also plays a role in supporting growth and maintenance of the skeleton and regulating calcium levels in the blood.

Sunshine and Vitamin D

In Australia the main source of vitamin D is from exposure to sunlight. Vitamin D is produced when our skin is exposed to ultraviolet B (UVB) light from the sun. Limited sun exposure is needed to maintain adequate levels of vitamin D. Exposure times are based on the season, location within Australia, skin type and the amount of skin exposed. Sun exposure for vitamin D should be balanced with skin protection.* In line with Cancer Council Australia's recommendations, after limited sun exposure^ for vitamin D, skin protection* is required when UV Index is 3 or above.

Summer

Australia (except Tasmania)

Skin Exposed	Time of Day
35%	10am-3pm
Minutes	Up to 5 minutes
Frequency	4 times per week

After limited sun exposure use skin protection* when UV index is 3 or above

Australia

Skin Exposed	Time of Day
10%	10am-3pm
Minutes	10-20 minutes
Frequency	4 times per week

After limited sun exposure use skin protection* when UV index is 3 or above

For people with deeply pigmented brown to black skin, sun protection may not be required. Sunglasses are recommended to protect eyes.
For this group to maintain Vitamin D:

Location	Time of Day	Minutes	Frequency
Northern Latitudes (Darwin, Broome, Townsville)	10am-3pm	6-10 minutes	4 times per week
Brisbane	10am-3pm	6-20 minutes	4 times per week
Middle/Southern Latitudes (Perth, Sydney, further south)	10am-3pm	11-20 minutes	4 times per week

In Tasmania if 35% skin exposed up to 10 minutes closer to noon

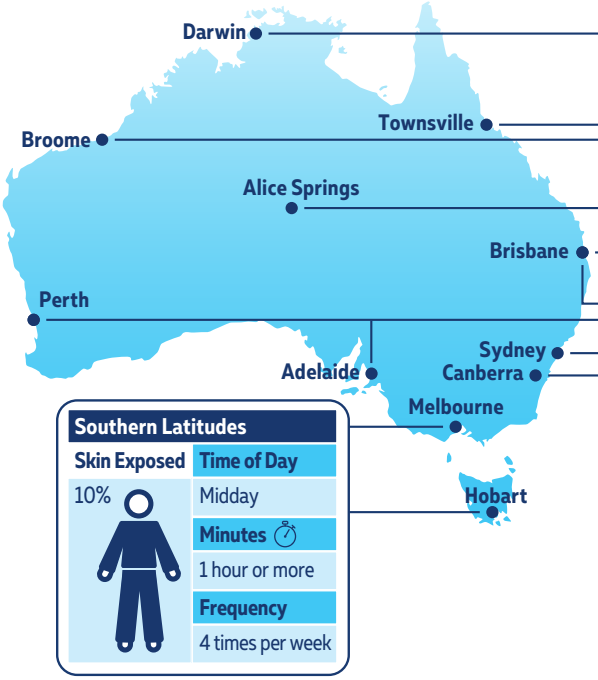
Winter

People with darker skin (deeply pigmented brown to black)

Northern latitudes with 35% skin exposed

Minutes	Frequency
20-40 mins	4 times per week

In Middle/Southern latitudes a vitamin D supplement may be required. Discuss with your doctor.



Northern Latitudes

Skin Exposed	Time of Day
35%	10am-3pm
Minutes	5-10 minutes
Frequency	4 times per week

Middle Latitudes

Skin Exposed	Time of Day
10%	Midday
Minutes	30-60 minutes
Frequency	4 times per week

Southern Latitudes

Skin Exposed	Time of Day
10%	Midday
Minutes	1 hour or more
Frequency	4 times per week

***Skin protection includes 5 ways** – Slip on clothing, Slop on sunscreen, Slap on a hat, Seek shade, Slide on sunglasses.

^**Exceptions:** for people with pale skin (which can burn easily) or for people with dark white, olive or brown skin with a personal or family history of melanoma or personal history of other skin cancers or lots of moles or uncommon moles on skin or who are taking immunosuppressant medication, then sun protection is recommended at all times when UV index is 3 or above. Discuss vitamin D needs with your doctor.

Vitamin D Levels

Vitamin D levels change throughout the year. Your levels are highest in late summer and lowest at the end of winter. Healthy Bones Australia recommends a vitamin D level of at least 50 nmol/L throughout the year.

Your doctor will only test your vitamin D level (with a blood test) if you are at risk of vitamin D deficiency. People at risk include:

- Adults mainly indoors due to health or work
- Naturally dark skinned (darker skin reduces the penetration of UV light)
- Sun avoiders due to skin protection or medical advice
- Covering body for cultural or religious reasons
- Medical conditions which can impact the ability to absorb / process vitamin D
- Elderly, housebound or in residential care

Vitamin D Deficiency

In Australia over 30% of adults have a mild, moderate or severe deficiency of vitamin D. Vitamin D deficiency can:

- Lead to osteoporosis
- Result in bone and joint pain
- Increase the risk of falls and related fracture in older people

Vitamin D Supplements

For people with low vitamin D levels a supplement may be required as advised by your doctor or pharmacist. Low vitamin D levels can be easily corrected but may take several months to improve. Vitamin D supplements are available as tablets, capsules, drops or liquid. Most vitamin D supplements are vitamin 'D3' and the standard dose is in International Units (IU). Your doctor will advise you on the appropriate dose required and your pharmacist can provide general advice on vitamin D supplements.

Healthy Bones Australia recommends the following doses of vitamin D as a general guide only:

People who obtain some sun exposure but not at the recommended level	• Adults at least 600IU per day • Over 70 years at least 800IU per day
Sun avoiders or people at risk of vitamin D deficiency	• 1,000 IU - 2,000 IU per day • Higher doses may be required
Moderate to severe vitamin D deficiency	• 3,000 – 4,000 IU per day for 6-12 weeks to raise the level of vitamin D quickly, followed by a maintenance dose of 1,000 - 2,000 mg per day • As advised by a doctor

Vitamin D and Food

Food does not provide an adequate amount of vitamin D. A limited number of foods contain small amounts of vitamin D such as egg yolks, liver, oily fish (salmon, tuna, mackerel, herring) and selected products fortified with vitamin D (eg: milk powder, margarine and cereal).

Exercise and Bone Health

Exercise plays an important role in maintaining bone health throughout life with particular focuses at certain stages:

- Maximising bone growth throughout childhood and adolescence, particularly the growth spurt during puberty
- Enhancing bone and muscle strength during adulthood, including old age
- Optimising muscle strength and maintaining mobility and balance to avoid falls in later life

Research has demonstrated that when it comes to our bones not all exercise is equal. Bones benefit from controlled impact and muscle loads, meaning specific types of exercise are required to benefit bones. Exercise is also important to retain mobility and prevent falls.

Specific Types of Exercise

A combination of weight-bearing, resistance and challenging balance exercises are recommended for bone health.

For adults with diagnosed osteoporosis (including adults recovered from a fracture) a supervised exercise program working with a physiotherapist or exercise physiologist is recommended. Exercise professionals will accommodate other medical or physical limitations (for example a knee, shoulder or back issue) when developing an exercise routine for your bone health.

Weight Bearing Impact Exercise
Exercise done on your feet while you bear your own weight and land rapidly and firmly. Examples: jumping, jogging, skipping, stair climbing, as well as specific sports (for example basketball, netball, dancing, impact aerobics).

Resistance Training
Requires the movement of weight, best achieved with gym equipment. This training should progress in intensity over time.

Balance Training
For older Australians balance training is very important to reduce falls (which can lead to fractures). To be effective, exercises should progress to high challenge (ie: be difficult to do while maintaining balance). Balance training can improve balance in older adults living at home or in residential care. Balance exercises typically include:

- Static exercises (standing on one leg, standing tall raising arms, standing heel-to-toe with one foot in front of other)
- Moving exercises (walking in small circles, walking with sudden change of direction, stepping over obstacles, walking on toes, walking with arms raised above the head)
- Dual task exercises (standing on one leg while throwing and catching a ball)

Tips for Exercise

Any exercise program should start at your level of capacity and build over time. This combination of exercises must be regular and ongoing to provide a benefit to bones. A lack of exercise or a sedentary lifestyle can have a negative impact on bone health. Age is not a barrier.

For more information see the Healthy Bones Australia Exercise Guide www.healthybonesaustralia.org.au

Treatment

Diagnosed osteoporosis requires prescribed treatment to protect bone health. Your medication will be prescribed by a GP or specialist. In Australia there are a range of treatment options available. You and your doctor will determine the best treatment for you, taking into consideration other medical conditions. Your doctor can also advise if your medication is subsidised by the Pharmaceutical Benefits Scheme (PBS).

How do Osteoporosis Treatments Work?

Most medications function by slowing or blocking the activity of bone removing cells (called osteoclasts) while leaving bone forming cells (osteoblasts) at work. This helps improve bone strength over time. Osteoporosis medications are commonly prescribed over many years and must be approved by the Federal Government for use in Australia. It is recommended you take your medication as directed to receive the full benefit. It is also recommended people with diagnosed osteoporosis complement medication use with the recommended calcium, vitamin D and exercise levels.

PBS subsidies apply to:

- People who had a fracture due to osteoporosis
- Anyone over 70 years with low bone density
- People with low bone density taking corticosteroids (eg: prednisone or cortisone) at a dose of 7.5 mg for at least 3 months

Types of Medications

The following medications are commonly prescribed in Australia to treat osteoporosis and have strong evidence for reducing risk of fracture.

Type of Medication	Dosage
Bisphosphonate This medication can slow bone loss, improve bone density and reduce the risk of fractures	Tablets (weekly or monthly) • Alendronate (brand name Fosamax or other generic brands) • Risedronate (brand name Actonel EC or other generic brands) Annual intravenous infusion • Zoledronate (brand name Aclasta)
Denosumab This medication can slow bone loss, improve bone density and reduce risk of fractures	6-monthly injection • Denosumab (brand name Prolia)

Other Medications

The following medication options can be prescribed based on individual patient needs.

Testosterone Replacement Therapy

Testosterone is important for bone health and low testosterone in men can be a risk factor for osteoporosis. Low testosterone in men can be related to various causes. If testosterone levels need to be investigated, GPs will refer at-risk consumers for a blood test. If appropriate testosterone replacement therapy may be prescribed. This should be discussed with a doctor or specialist.

Restricted use medications

Teriparatide (brand name Terrosa) self-administered daily injection for up to 24 months.
This medicine must be prescribed by a specialist and is initiated in people with severe osteoporosis when other osteoporosis medication has not worked. Once the course of the treatment is completed another type of osteoporosis medication will be commenced to ensure the new bone formed is maintained. The PBS subsidy is for 18 months for people with very low bone density who have experienced a minimum of two fractures (with one of the fractures occurring whilst on another type of osteoporosis medication).

Romosozumab (brand name Evenity) administered once a month by a doctor with 2 injections (during the same visit), for 12 months.
This medicine must be prescribed by a specialist and is initiated in people with severe osteoporosis when other osteoporosis medication has not worked. Once the course of treatment is completed another type of osteoporosis medication will be commenced to ensure the new bone formed is maintained. The PBS subsidy is for 12 months for people with very low bone density who have experienced minimum of two fractures, with one of the fractures occurring whilst on another type of osteoporosis medication.

Side Effects

Osteoporosis medication is commonly taken over many years. Side effects from osteoporosis medications are rare and it is recommended you speak to your doctor if you have any concerns or queries regarding your medication. Anyone experiencing a suspected side effect should consult their doctor. Your medication will come with a list of potential side effects if you experience any side effect you will need to inform your doctor.

For more information

Call our national toll-free number
1800 242 141

Visit our website
healthybonesaustralia.org.au

Talk to your doctor

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