

Thyroid Conditions and Bone Health

Protecting Bone Health

Bone health is an important part of your general health. When the structure of bone becomes weaker and less dense there is an increased risk of breaking. This is osteoporosis. It can lead to a higher risk of a bone breaking from a minor incident (such as a bump, fall or trip). Early diagnosis and management of osteoporosis can help protect bone health and reduce the risk of breaking a bone.

Thyroid Gland and Bone Health

Bone is living tissue and in a process known as 'bone turnover' bone is broken down and replaced. This balanced process is essential for keeping bones healthy and in good repair. Bone turnover is controlled by many factors in the body including the hormone thyroxine (produced by the thyroid gland).

Disorders of the thyroid gland can affect the amount of thyroxine circulating in body, and this can have an impact on bone turnover. Over a long period this may affect bone strength leading to an increased risk of osteoporosis and breaking a bone.

Over-active thyroid (hyperthyroidism)

Hyperthyroidism is a condition where the thyroid gland produces too much thyroxine. Graves' disease is the most common form of hyperthyroidism, affecting more women than men. Too much thyroxine can speed up bone turnover. If the amount of new bone produced can't keep pace with the amount broken down, the bones gradually become weaker. If the cause of the hyperthyroidism is not treated and thyroxine levels stay high for a long time, the risk of developing osteoporosis increases.

Under-active thyroid (hypothyroidism)

People with hypothyroidism are unable to produce enough thyroid hormone. Women are more often affected than men. The most common cause of hypothyroidism is Hashimoto's disease. Iodine treatment or thyroid surgery, often used to treat hyperthyroidism, can also lead to hypothyroidism. On its own, hypothyroidism does not cause bone weakness. However, people with hypothyroidism often need to take medication (levothyroxine) to replace the thyroid hormones they are unable to produce themselves. If the dose of the medication is too high over a long period, thyroxine levels in your body will increase and bone loss can occur. This is why it's important to have your thyroxine levels checked regularly to make sure your medication is at the right dose for you.

Working closely with your doctor to keep your thyroid condition under control is the best way to reduce your risk of developing osteoporosis. This is especially important if your treatment involves taking medication over a long period.

Parathyroid Glands and Bone Health

Hyperparathyroidism

The four parathyroid glands are located in the neck behind the thyroid gland. They produce parathyroid hormone, which controls the amount of calcium and phosphorous in the body. When calcium levels drop too low, the parathyroid gland produces more parathyroid hormone. This increases the amount of calcium absorbed from food and reduces the amount of calcium leaving the body in the urine. Once calcium levels are restored to normal, parathyroid hormone production declines. In people with hyperparathyroidism too much parathyroid hormone is produced for too long. This can cause calcium to be dissolved from the bones. Over time, especially if the hyperparathyroidism is not treated, loss of calcium from the bones can lead to decreased bone density, weakening of the bones and osteoporosis. Your risk of developing osteoporosis depends on the type of hyperparathyroidism you have and how it is treated or controlled.

- **Primary hyperparathyroidism** is usually caused by enlargement of the parathyroid gland or by a growth (benign tumour) in the gland that produces too much parathyroid hormone. It is more common in women who have been through menopause than in men.

Thyroid Conditions and Bone Health cont.

It depends if your condition is mild or severe. If your blood calcium levels are not too high and both your general health and bone health are unaffected, you may not need treatment. Regular blood tests and other health checks will be needed. You may also need to have your bone strength checked regularly. If your condition is severe and your bones have become weaker as a result, surgery may be needed to remove the parathyroid tumour. Commonly surgery quickly reduces the body's calcium levels to normal. Over time, a gradual improvement in bone strength may be seen and the risk of osteoporosis is reduced.

Note: calcium supplements are not recommended for people with primary hyperparathyroidism as they may increase calcium levels in the blood.

- **Secondary hyperparathyroidism** is generally caused by conditions that affect the absorption of food such as kidney disease and coeliac disease as well as vitamin D deficiency. These are the most common causes and for most people the treatment of these underlying conditions will help to control the production of parathyroid hormone thereby reducing the risk of bone weakness and osteoporosis. If your parathyroid hormone and calcium levels remain too high after treating the underlying cause then a special diet or medication may be necessary.

Other Common Risk Factors

Review other common risk factors for osteoporosis. If any risk factors apply to you – discuss these with your doctor.

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

Calcium. Vitamin D. Exercise

Take simple steps to help support your bone health.

Focus On	Recommended
Calcium	<ul style="list-style-type: none"> • 1,000 mg per day from the diet • Increasing to 1,300 mg for women over 50 years and men over 70 years • If dietary intake is low a supplement may be required
Vitamin D	<ul style="list-style-type: none"> • Limited sun exposure – in summer a few minutes per day, in winter slightly longer • Avoid UV index above 3 • If vitamin D deficiency is confirmed by your doctor a supplement may be required
Exercise	<ul style="list-style-type: none"> • Specific mix of weight bearing, resistance training and balance exercises

For more information about thyroid conditions please visit **Australian Thyroid Foundation** www.thyroidfoundation.org.au

For more information
 Call our toll-free number
1800 242 141

Visit our website
healthybonesaustralia.org.au

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