

Osteoporosis in children

Osteoporosis in children is called juvenile osteoporosis. This rare condition is usually caused by an underlying medical condition, some drugs used to treat a medical condition, or lifestyle factors such as poor diet and lack of exercise. Less commonly, osteoporosis will occur for an unknown reason. This is known as idiopathic juvenile osteoporosis.

Juvenile osteoporosis occurs between the ages of one and 13 years, with the average age of onset at seven years of age.

Osteoporosis means 'porous bones'. Osteoporosis occurs when bones lose minerals such as calcium more quickly than the body can replace them. They become less dense, lose strength and break more easily. While osteoporosis is more common in older people, especially in postmenopausal women, the condition may occur at any age.

Symptoms of juvenile osteoporosis

Juvenile osteoporosis may not cause any obvious problems to the child. However, signs and symptoms of osteoporosis can include:

- Pain in the lower back, hips or feet
- Spinal deformities such as hunching in the upper back (kyphosis)
- A chronic limp.

Causes of juvenile osteoporosis

In most cases, juvenile osteoporosis is caused by an underlying medical condition or by medications used to treat the condition, or a lifestyle factor, such as:

- **Medical conditions** – including juvenile idiopathic arthritis, osteogenesis imperfect, diabetes, kidney disease, hyperthyroidism, Cushing's syndrome, inflammatory bowel disease, cystic fibrosis.
- **Medications** – such as some types of cancer treatments, anticonvulsant medications (used to manage epilepsy) or corticosteroids, which are used to treat a wide range of diseases including arthritis and asthma.
- **Lifestyle** – eating disorders, such as anorexia nervosa, or excessive exercise that leads to disruption of the menstrual cycle. Children who are bedridden or have prolonged periods of immobility are at increased risk of juvenile osteoporosis, because weight-bearing activities encourage bone density. Inadequate dietary intake, smoking and alcohol may also lead to juvenile osteoporosis.

Diagnosis of juvenile osteoporosis

Diagnosis may include:

- Physical examination
- Medical history
- Medical histories of family members to find out if a genetic disorder is the cause
- A bone scan – dual energy x-ray absorptiometry (DXA), to test bone density
- Blood tests.

Idiopathic juvenile osteoporosis

Sometimes, no underlying cause can be found. In these rare cases, the disease is called idiopathic juvenile osteoporosis. A child with this disease tends to have symptoms such as pain and spinal deformities. Blood tests usually show that calcium and phosphorus levels are within the normal range. This diagnosis can only be made by excluding other causes of low bone density.

Generally, idiopathic juvenile osteoporosis tends to resolve by itself, and most children will experience a complete recovery of bone tissue. On the other hand, disability may extend into adulthood. The reason for this is unknown.

Long-term risks of juvenile osteoporosis

Throughout childhood, we are building up our peak bone mass, which is achieved before the age of 30. The more bone mass we have, the stronger our bones, and the lower the risk of osteoporosis later in life.

Without treatment, juvenile osteoporosis can affect bone integrity and increase the child's risk of osteoporosis and osteoporotic fractures in later adult life. Girls with juvenile osteoporosis caused by osteogenesis imperfecta are most at risk. Diagnosis and treatment is very important.

Females are at higher risk than males because they have:

- A smaller skeleton and lower peak bone mass
- Menopause and the associated drop in the female hormone oestrogen, which is a known risk in the development of osteoporosis

Treatment for juvenile osteoporosis

In most cases, juvenile osteoporosis can be treated. Treatment of any underlying medical condition is important, if it has not already been diagnosed and treated.

Treatment depends on the underlying cause, but may include:

- Changing medication if the underlying medical condition is already being treated. The doctor may lower the dose of some drugs (such as corticosteroids) or prescribe a different medication
- Encouraging the child to take part in an appropriate exercise program of weight-bearing activities prescribed by a health professional (like a physiotherapist or exercise physiologist) to encourage increased bone density. Review by a health professional is important to make sure the activities help to promote bone growth, are safe and do not cause a fracture
- Increasing calcium in the diet – including low-fat dairy products such as milk, cheese and yoghurt and other sources of calcium including leafy green vegetables and calcium fortified foods
- Adequate vitamin D – we obtain most of our vitamin D from the sun, so it is important to expose your hands, face and arms to the sun for 6–8 minutes every day in the warmer months (avoiding the hottest period of the day between 10 am–3 pm), and about 30 minutes in the cooler months. For most people, it is unlikely that adequate quantities of vitamin D will be obtained through diet alone.
- Taking calcium and vitamin D supplements if necessary – talk to your doctor
- Protecting the child against fractures – for example, by avoiding contact sports
- Avoiding caffeine (such as coffee, tea and soft drinks that contain caffeine)
- Medications – to help manage symptoms (such as pain) or medications that encourage bone strength (bisphosphonates) in the case of severe osteoporosis. Discuss medication options with your doctor.

Where to get help

- Your doctor
- Paediatrician
- Arthritis Victoria incorporating Osteoporosis Victoria Tel. (03) 8531 8000 or 1800 011 041
- Osteoporosis Australia Tel. (02) 9518 8140

Things to remember

- Juvenile osteoporosis is osteoporosis in children.
- The main causes of juvenile osteoporosis include osteogenesis imperfecta, certain medical conditions such as juvenile idiopathic arthritis, some medications and lifestyle factors including poor diet.
- Treatment depends on the underlying cause, but may include dietary adjustments, a supervised exercise program and treatment for any underlying medical condition.

This page has been produced in consultation with, and approved by:

Arthritis Victoria incorporating Osteoporosis Victoria

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