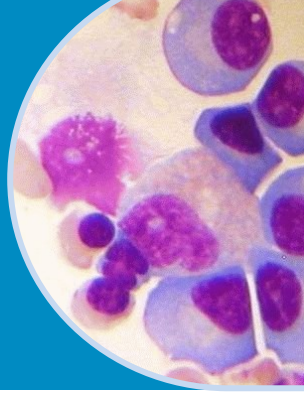
Leukaemia Foundation
VISION TO CURE
MISSION TO CARE

FACT SHEET

Bone Health in Myeloma



About us

The Leukaemia Foundation is Australia's peak body for blood cancer, funding research and providing free services to support people with leukaemia, lymphoma, myeloma and related blood disorders.

We invest millions of dollars in the work of Australia's leading researchers to develop better treatments and cures and provide free services to support patients and their families.

We receive no ongoing government funding and rely on the generosity of the community and corporate sector to further our Vision to Cure and Mission to Care.

We can help you

Our range of free services supports thousands of Australians, from diagnosis, through treatment and beyond. To learn more, please call 1800 620 420 to speak with one of our Support Services team.

You can help us

There are many ways that you can help us to improve the quality of life for people with blood cancer. From making a donation, to signing up for an event; from volunteering, or joining us as a corporate sponsor - please call 1800 500 088 or go to www.leukaemia.org.au to learn more.

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Myeloma bone disease is the most common symptom of myeloma. At the time of diagnosis, 70-80% of people have symptoms of bone disease and approximately 90% of people with myeloma will develop symptoms of bone disease at some point during the course of their illness.

Bone is constantly being remodelled to ensure it is healthy and optimally functional, with old or worn-out bone replaced by new bone. Usually, this happens in a balanced way, with cells called 'osteoclasts' clearing out old bone and cells called 'osteoblasts' rebuilding new bone.

In people with myeloma this balance is disrupted by the direct inhibition of normal bone-forming cells and osteoclast activating factors (OAFs). As a result, bone resorption (breakdown of bone) by osteoclasts exceeds bone reformation (building new bone) by osteoblasts. This, in turn, leads to osteoporosis (thinning of the bones), lytic lesions (holes in the bone caused by localised destruction of bone by myeloma), bone pain, hypercalcaemia (high levels of calcium in the blood) and pathological fractures (breakages of weakened bone following minor pressure or injury).

While the extent and severity of myeloma bone disease varies considerably from person to person, it occurs most often in the middle or lower back, the hips and rib cage. The long bones of the upper arm and leg, and the shoulder also may be involved, but the bones of the hands and feet are normally spared. Pathological fractures resulting from myeloma bone disease most often involve the spine. When spinal vertebrae fracture they tend to become compressed and can collapse on top of each other. This is known as a compression fracture. Compression fractures often result in loss of height and/or curvature of the spine, known as kyphosis, as well as pain.

Bisphosphonates

Bisphosphonates are drugs that are used to strengthen and protect the bones in various conditions, including myeloma. Studies have shown that regular treatment with bisphosphonates significantly reduces myeloma bone disease and the risk of spontaneous fractures in patients with myeloma, improving mobility and quality of life and reducing the incidence of pain. Bisphosphonates work by inhibiting and destroying osteoclasts, thereby reducing the breakdown of bone, increasing bone density and preventing factures and hypercalcaemia.

Several bisphosphonates are currently prescribed for myeloma in Australia:

- zoledronic acid (Zometa®) – given into the vein (IV) as a drip over 15 minutes;
- pamidronate (Aredia®) – given into the vein (IV) as a drip over 90 minutes; and
- sodium clodronate (Bonefos®) – given as tablets taken daily.

While these are all are beneficial in the prevention and treatment of myeloma bone disease, they differ in terms of their route of administration and potential adverse effects.

Your treating doctor will consider your health and health history when deciding your type and duration of bisphosphonate treatment, including:

- the amount of myeloma bone disease;
- how active your myeloma is;
- previous bisphosphonate treatment you have had;
- complications you may have, such as kidney function impairment;

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- personal preference; and
- the level of calcium in your blood. Intravenous bisphosphonates are usually preferred if calcium levels are high.

Bisphosphonates are recommended for people where there is evidence of myeloma-related bone disease. Most people with myeloma receive regular bisphosphonate therapy for at least a year. At 12 months there is generally a review where the treating team may then reassess your need for further bisphosphonate therapy.

Bisphosphonates are generally not recommended in people with monoclonal gammopathy of uncertain significance (MGUS) or asymptomatic (smouldering) myeloma.

Possible side-effects of bisphosphonates
Bisphosphonates are generally very well tolerated. Here are the most common side-effects.

Fever associated with bisphosphonates is typically mild, occurs for a few hours after the intravenous infusion, and lasts for a few hours at most.

Vein irritation (mild phlebitis) can occur at the infusion site. It is usually mild and people typically recover within 1 -2 days. Careful infusion is recommended to avoid any leakage of medication around the vein, and a short infusion of saline at the end of the bisphosphonate infusion can clear the drug from the area and reduce the chance of irritation.

Flu-like symptoms*,* general aches and pains around the body, and fever may occur in some people. This is temporary and improves with time.

Kidney dysfunction. The main additional concern relates to kidney side-effects. All bisphosphonate therapies can potentially cause damage to the kidneys. Since myeloma itself also can affect kidney function (through damage caused by myeloma protein or elevated blood calcium), the possibility of kidney-related side-effects is of particular concern and requires monitoring. For this reason kidney function is generally tested prior to each dose of intravenous bisphosphonate (pamidronate or zoledronic acid). Reassuringly, where kidney dysfunction does occur it usually recovers with adjustment to the dose or administration of the bisphosphonate or, if necessary, to discontinuing treatment.

Osteonecrosis of the Jaw (ONJ) is an uncommon but potentially serious complication of bisphosphonate therapy. It occurs in 0.5-3% of people who receive bisphosphonates, particularly those who receive treatment for extended periods of time (>2 years), who have poor dental health or who undergo invasive dental work (such as tooth extractions) while on treatment. While ONJ can be very mild, it can also cause pain, swelling and bone damage around tooth sockets; leading to loose teeth, sharp edges of exposed bone or dead bone. Treatment of ONJ, which is done in consultation with a dental surgeon, may involve regular mouth washes, antibiotics, dental guards and, if needed, dental surgery. Although ONJ is uncommon, steps can be taken for its prevention, including maintaining oral hygiene, regular dental care (at least annually), avoiding tooth extraction or jaw surgery where possible, and having any required dental care completed prior to beginning bisphosphonate therapy.

General measures to improve bone health
These can include:
- adequate pain control to allow for movement and exercise;
- radiation therapy and/or orthopaedic surgery to damaged bones, to restore structural integrity of bones and recovery of full mobility;
- exercise, especially walking, to enhance bone strength, flexibility, and endurance;
- avoiding risky activities (e.g., skiing, skating, climbing ladders) which can increase the likelihood of falls; and
- regular re-evaluation and follow-up testing of bone density.

The Leukaemia Foundation publishes the guides: *'Understanding Myeloma. A guide for patients and families'*; *Understanding Autologous Transplants'*; and *'Understanding Allogeneic Transplants'*.

It is not the intention of this fact sheet to recommend any particular form of treatment to you. You need to discuss your particular circumstances at all times with your treating doctor.

For more information, freecall 1800 620 420
email info@leukaemia.org.au or visit www.leukaemia.org.au