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BISPHOSPHONATES – WHEN TO STOP

In residential aged care 98% of residents have at least one medication-related problem and over half are exposed to at least one potentially inappropriate medicine, according to the Medicine Safety: Take Care report. Older people, those who are end-of-life and those with increasing frailty are frequently prescribed unnecessary or higher risk medicines. A review of the ongoing need, with consideration of the likely benefits and potential for harm should be performed regularly, in partnership with the resident and the family/carers. Deprescribing is the process of tapering, withdrawing, discontinuing or stopping medicines to reduce potentially problematic polypharmacy and adverse drug effects. The aim of deprescribing is to improve quality of life and reduce pill burden.

Osteoporosis

Osteoporosis is a common disease in Australia with 1.2 million people estimated to have osteoporosis and further 6.3 million with low bone density. This disease makes bones become brittle leading to a higher risk of fractures than in normal bone. Osteoporosis increases the risk of fracture, notably in the spine, forearm and hip. The risk of fractures in people with osteoporosis is 2 to 4 times greater than people of the same age without osteoporosis; and death is 2 to 3 times greater. Older people living in residential aged care facilities (RACFs) are at considerably higher risk of suffering fractures than older people living in the community. Vitamin D supplementation is recommended for all residents in RACFs. Dietary calcium intake should be optimised (1200–1500 mg per day is recommended) and supplementation offered to those with inadequate intake. Bisphosphonates are the first-choice pharmacological agents for fracture prevention in older persons at high risk. Bisphosphonates used in the prevention and treatment of osteoporosis include:

- Alendronate (Fosamax)
- Risedronate (Actonel)
- Zoledronic acid (Aclasta)

Other treatment options include denosumab (Prolia), raloxifene (Evista) and teriparatide (Forteo).

Bisphosphonates

Bisphosphonates reduce the risk of hip, vertebral and non-vertebral fractures in men and post-menopausal women with osteoporosis. In people who have had a fracture, these medicines reduce the risk of further fractures by about 50%, and some studies show a survival improvement. Bisphosphonates are poorly absorbed orally. Alendronate should be administered in the morning with a full glass of water at least 30 minutes before food or drink. After administration, residents must remain upright until after eating. Alendronate tablets must be swallowed whole and not crushed or chewed. Risedronate enteric-coated tablets (Actonel EC) may be taken with or without food; however, it is still critical to remain upright for 30 minutes after administration. Oesophageal adverse effects may be severe, hence the reason for remaining upright for 30 minutes after oral administration. Gastrointestinal irritation occurs in 20% to 30% of people taking bisphosphonates. Symptoms such as dysphagia, heartburn or pain on swallowing may indicate oesophagitis.

Other side effects that may occur with bisphosphonates include:

- Atypical femur fractures
- Osteonecrosis of the jaw
- Uveitis
- Severe allergic skin reactions

The risk of these rare but serious adverse effects increases with time, and the risk decreases quickly after discontinuation. Antacids, calcium, iron and mineral supplements cannot be administered within 2 hours of alendronate and risedronate. Whilst these medicines can be administered only once a month, they may still be a burden to the resident and nursing staff.

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Zolendronic acid has the advantage of once a year administration, albeit by IV infusion.

Long-term use of bisphosphonates

Most of the anti-fracture efficacy of all bisphosphonates reaches a peak within less than a year. Studies have shown that increases in bone mineral density (BMD) at the hip reach a plateau after about three years of treatment. If treatment is continued, these increases in hip BMD are maintained and there are ongoing increases in vertebral BMD.

There is limited evidence of additional protective effect after 5 years treatment with bisphosphonates in post-menopausal women with osteoporosis. No clinical trials have investigated use beyond 10 years. Fracture risk should be reassessed after 3 to 5 years treatment, and those who continue to be at high risk of fracture should continue treatment. For people at low-to-moderate fracture risk, a drug holiday or discontinuation (deprescribing) can be considered. It has been shown that the benefits of 5 years' continuous treatment persist for up to 5 years after stopping treatment. The risk of fracture after stopping treatment is very low, at least during the first 2 years, when bone density is above the osteoporosis threshold (T-score -2.5). Women who have a bisphosphonate holiday of 12 months or more duration after 3 years treatment do not appear to be at greater risk of an osteoporosis-related fragility fracture compared to ongoing users. The Royal Australian College of General Practitioners osteoporosis guidelines advise reconsidering bisphosphonate use every 5 to 10 years. People with high risk criteria after 5 years treatment should continue treatment for an additional 4 to 5 years, including those with a:

- femoral T-score ≤ - 2.5
- new or recurrent fracture during treatment

Deprescribing bisphosphonates

Residents at low risk of fracture and who have not experienced a new fracture during treatment, should be reviewed as a 'drug holiday' may be appropriate. When renal function declines below 30mL/min bisphosphonates should be avoided. Discontinuation of risedronate is associated with the quick loss of acquired benefits. A drug holiday from risedronate should not exceed 6 months, especially in patients at risk of fracture. Discontinuation of alendronate and zoledronic acid treatment is associated with long-term persistence of beneficial effects on BMD at the lumbar spine. A clinically meaningful difference in BMD is apparent after more than 2 years of drug holiday. Reassessment after 2-3 years is appropriate to determine if a bisphosphonate should be recommenced. Bisphosphonates can be stopped abruptly without the need for tapering. It should be noted that denosumab (Prolia) should be considered a long-term treatment. It is not appropriate to have a drug holiday nor cessation with denosumab, as multiple vertebral fractures have been reported after discontinuing denosumab.

Summary

Whilst the risk-benefit balance of bisphosphonates as an effective treatment for osteoporosis is clear, the benefit of continuation of therapy beyond 5 years is less clear. Rare adverse effects increase with prolonged treatment and can be severe and ruin a resident's quality of life. Bisphosphonates should no longer be considered life-long therapy for everyone with osteoporosis. The decision to temporarily cease or discontinue depends on current fracture risk, absence of recent fractures, bone density above the osteoporosis threshold and resident preferences.

References

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