

# Bone loss after denosumab, only partial protection with zoledronate

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Denosumab is a monoclonal antibody which acts as a potent anti-resorptive agent and is now widely used in the treatment of osteoporosis.

However, when treatment is discontinued, [bone resorption](#) resumes rapidly and reaches twice baseline levels within 12 months after the last injection. As a result, over the first year off therapy, [bone mineral density](#) (BMD) declines significantly and fracture risk increases. To counter this effect, patients may be transitioned from [denosumab](#) to other anti-resorptives, primarily alendronate.

This report, a case series of patients involved in the FREEDOM study, addresses whether zoledronate might also be an effective option to prevent [bone loss](#) after discontinuation of long-term denosumab treatment.

The six women, who had received continuous denosumab for seven years, had substantial gains in bone mineral density (BMD) - increasing 18.5% in the spine and 6.9% in total hip. The patients were given a single infusion of zoledronate (5 mg) six months after the last dose of denosumab. Post-zoledronate BMDs were measured 18-23 months after treatment. The findings:

- There were significant BMD declines at each site ( $P_{\text{spine}} = 0.043$ ,  $P_{\text{hip}} = 0.005$ ).
- Spine BMD remained significantly above the pre-denosumab baseline (+9.3%,  $P = 0.003$ ), but hip BMD was not significantly

different from baseline (?2.9%).

- Serum P1NP levels were between 39 and 60  $\mu\text{g/L}$  (mean 52  $\mu\text{g/L}$ ), suggesting that the zoledronate treatment had insufficiently inhibited bone turnover.

The authors conclude that administration of a single infusion of zoledronate six months after the last dose of denosumab is not sufficient to preserve the BMD gains that result from long-term denosumab treatment.

**More information:** Ian R. Reid et al, Bone Loss After Denosumab: Only Partial Protection with Zoledronate, *Calcified Tissue International* (2017). [DOI: 10.1007/s00223-017-0288-x](https://doi.org/10.1007/s00223-017-0288-x)

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