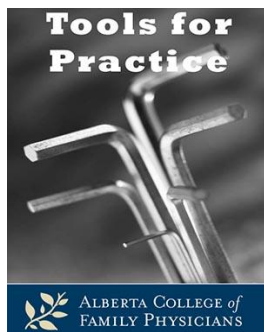


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Evidence Updated: None; context added
Bottom Line: Unchanged
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Bone Mineral Density – Too much of a good thing?

Clinical Question: Once we have initiated bisphosphonate therapy, how frequently should we check bone mineral density (BMD)?

Bottom-line: Repeating BMD in the first three years after starting treatment with a bisphosphonate is unnecessary and potentially confusing.¹ The vast majority of patients taking a bisphosphonate will get an adequate increase in BMD after three years and have a reduced fracture risk regardless of BMD changes.

Evidence:

- Secondary analysis of the Fracture Intervention Trial:
 - 6,459 patients randomized to alendronate or placebo with annual BMD testing for three years.¹
 - Mean increase in hip BMD of 0.030 g/cm² in the alendronate group. compared to a mean decrease of 0.012 g/cm² with placebo.
 - Individuals' BMD readings were more variable than readings between people.
 - Alendronate increased BMD 0.013 g/cm² per year but individuals' readings varied by a similar amount (0.012 g/cm², standard deviation).
 - Alendronate resulted in "sufficient" (≥ 0.019 g/cm²) increases in hip BMD for 97.5% of patients after three years.
 - Fracture Intervention Trial also demonstrated that women who took alendronate with decreased BMD² still had a reduction in fracture risk.

Context:

- Dual-energy x-ray absorptiometry BMD measurement precision has important limitations.
 - 535 patients scanned twice over 2-4 weeks demonstrated variability at the hip of 2.4% (trochanter) to 5% (Ward's triangle).³
 - Precision of measurements decline with decreasing BMD.⁴
- Canadian 2010 clinical practice guidelines recommend repeating BMD 1-3 years after initiating therapy⁵

- However, average rate of bone loss in postmenopausal women is 0.5-2% per year while most treatments increased BMD of 1-6% over three years.⁶
- Given these very small changes, only a very precise test will detect short-term changes.
- BMD readings are too imprecise to reliably discern annual small changes on therapy.
- Most follow-up BMD measurements while on bisphosphonate do not result in treatment changes, even when there is a significant decrease in BMD.⁷

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