

## BONE

## Nitroglycerin ointment boosts bone formation and reduces resorption

An inexpensive ointment might lead to a new approach to treating osteoporosis, according to results from a randomized trial in healthy postmenopausal women. “We found that, compared to women receiving placebo, women taking nitroglycerin ointment had a 7% increase in bone mineral density (BMD) at the hip and spine,” says Sophie Jamal, lead author of the report in *JAMA*, continuing, “we also found an increase in bone size and strength.”

Jamal and colleagues became interested in nitroglycerin, a nitric oxide (NO) donor, after cell studies showed that NO is important for bone-cell function, and treatment with nitroglycerin improved BMD in ovariectomized rats. In the trial, 126 women aged >50 years were given 15 mg nitroglycerin ointment daily for 24 months, applied to the skin at bedtime, and 117 received placebo ointment. Significant increases in BMD at the lumbar spine, total hip and femoral neck,

at 12 and 24 months were accompanied by improvements in indices of bone geometry and strength.

Furthermore, levels of a marker of bone resorption, urine *N*-telopeptide, decreased with treatment, and of bone-specific alkaline phosphatase, a marker of formation, increased. “The increase in bone formation together with the decrease in bone resorption is unique—not seen with other medications for osteoporosis—and might explain why we see an increase in bone size,” comments Jamal.

The study was not powered to assess fracture risk, and it excluded women with osteoporosis. Larger studies now planned will redress these shortcomings.

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**Original article** Jamal, S. A. *et al.* Effect of nitroglycerin ointment on bone density and strength in postmenopausal women: a randomized trial. *JAMA* 305, 800–807 (2011)