

Vitamin K and the prevention of fractures: systematic review and meta-analysis of randomized controlled trials.

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Abstract

BACKGROUND: Observational and some experimental data suggest that low intake of vitamin K may be associated with an increased risk of fracture.

OBJECTIVE: To assess whether oral vitamin K (phytonadione and menaquinone) supplementation can reduce bone loss and prevent fractures.

DATA SOURCES: The search included the following electronic databases: MEDLINE (1966 to June 2005), EMBASE (1980 to June 2005), the Cochrane Library (issue 2, 2005), the ISI Web of Science (1945 to June 2005), the National Research Register (inception to the present), Current Controlled Trials, and the Medical Research Council Research Register.

STUDY SELECTION: Randomized controlled trials that gave adult participants oral phytonadione and menaquinone supplements for longer than 6 months were included in this review.

DATA EXTRACTION: Four authors extracted data on changes in bone density and type of fracture. All articles were double screened and double data extracted.

DATA SYNTHESIS: Thirteen trials were identified with data on bone loss, and 7 reported fracture data. All studies but 1 showed an advantage of phytonadione and menaquinone in reducing bone loss. All 7 trials that reported fracture effects were Japanese and used menaquinone. Pooling the 7 trials with fracture data in a meta-analysis, we found an odds ratio (OR) favoring menaquinone of 0.40 (95% confidence interval [CI], 0.25-0.65) for vertebral fractures, an OR of 0.23 (95% CI, 0.12-0.47) for hip fractures, and an OR of 0.19 (95% CI, 0.11-0.35) for all nonvertebral fractures.

CONCLUSIONS: This systematic review suggests that supplementation with phytonadione and menaquinone-4 reduces bone loss. In the case of the latter, there is a strong effect on incident fractures among Japanese patients.

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