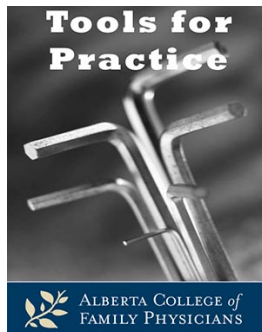


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Daily multivitamins to reduce mortality, cardiovascular disease and cancer

Clinical Question: Does daily multivitamin supplementation reduce mortality, cardiovascular disease (CVD) and/or cancer?

Bottom-line: Present evidence does not support the routine use of multivitamins to reduce mortality, cardiovascular disease or cancer for people in developed countries.

Evidence: A meta-analysis and 1 randomized controlled trial (RCT)

- Meta-analysis¹ of 21 RCTs (including RCT below) with 91,074 patients (54% males) randomized to multivitamins or placebo for 3.5 years. Most are primary prevention studies from Europe or North America.
 - No effect on overall mortality: Relative risk (RR) 0.98 (0.94-1.02)
 - No effect on cancer mortality: RR 0.96 (0.88-1.04)
 - No effect on CVD mortality: RR 1.01 (0.93-1.09)
 - Multiple subgroup testing found no differences
 - No evidence of publication bias or meaningful heterogeneity
- Physicians' Health Study II: Heavily publicized RCT^{2,3} of 14,641 men (mean age 64.3) randomized to Centrum Silver™ or placebo, followed 11.2 years.
 - No effect on overall mortality: Hazard Ratio (HR) 0.94 (0.88-1.02)
 - No effect on cancer mortality: HR 0.88 (0.77-1.01)
 - No effect on CVD mortality: HR 0.95 (0.83-1.09)
 - No effect on CVD events: HR 1.01 (0.91-1.10)
 - Reduced cancer incidence: HR 0.92 (0.86-0.998)
 - These were adjusted (for unclear reasons)
 - Unadjusted is not significant RR 0.94 (0.87-1.003)
 - Multiple Issues: lots of exclusion including run-in to remove non-compliant patients, adjustments (without clear reason) always in favor of multivitamins.

Context:

- Multiple cohort studies have found no mortality reduction with multivitamins.⁴⁻⁷
- Vitamin supplementation may help reduce overall mortality in undernourished populations (like rural China).⁸

- However, in this RCT⁸ of 4 different vitamin interventions, only one reduced mortality RR 0.91 (0.84-0.99)
- Meta-analyses of different vitamin components on mortality
 - B-Vitamins:⁹ No effect
 - Anti-oxidants:¹⁰ Increase mortality RR 1.04 (1.01-1.07)
 - Increase with vitamin E, beta-carotene and high-dose vitamin A
 - No effect from vitamin C and selenium
 - Vitamin D:¹¹ Decrease mortality RR 0.97 (0.94-1.00)
 - Increases and decreases are small (Numbers Needed to Harm (NNH) or treat around 200 over 5 years)

Authors:

Mayank Singal MD CCFP, G. Michael Allan MD CCFP

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Tools for Practice is a biweekly article summarizing medical evidence with a focus on topical issues and practice modifying information. It is coordinated by G. Michael Allan, MD, CCFP and the content is written by practising family physicians who are joined occasionally by a health professional from another medical specialty or health discipline. Each article is peer-reviewed, ensuring it maintains a high standard of quality, accuracy, and academic integrity.

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