

Clinical pathology selected abstracts

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Cardiovascular events and mortality in white coat hypertension

October 2019—Hypertension is the most common preventable cause of disability and premature mortality worldwide. It is often diagnosed using in-office blood pressure measurements. More recent guidelines encourage out-of-office blood pressure monitoring, such as at-home self-monitoring, for diagnosing and managing hypertension. But even with these guidelines, adoption of routine out-of-office blood pressure monitoring has been slow. This may be due to skepticism about the utility of screening for isolated in-office hypertension, either untreated white coat hypertension (WCH) or treated white coat effect (WCE), and its long-term cardiovascular risk. The authors conducted a meta-analysis to assess the association of untreated WCH (elevated in-office but normal out-of-office blood pressure in those who do not receive antihypertensive treatment) and treated WCE (elevated in-office but normal out-of-office blood pressure in those receiving antihypertensive treatment) with future cardiovascular events and all-cause mortality. They used PubMed and Embase as data sources and selected observational studies with at least three years of follow-up evaluating the cardiovascular risk of WCH or WCE compared with normotension. Two independent investigators extracted data and assessed study quality. The analysis included 27 studies comprising 25,786 participants who had untreated WCH or treated WCE and 38,487 with normal blood pressure followed for a mean of three to 19 years. Compared with normotension, untreated WCH was associated with an increased risk of cardiovascular events (hazard ratio [HR], 1.36), all-cause mortality (HR, 1.33), and cardiovascular mortality (HR, 2.09). The risk for WCH was further reduced in studies in which stroke was included in the definition of cardiovascular events (HR, 1.26). No significant association was found between treated WCE and cardiovascular events, all-cause mortality, or cardiovascular mortality. The authors concluded that untreated WCH, but not treated WCE, is associated with increased risk for cardiovascular events and all-cause mortality. Out-of-office blood pressure monitoring is critical for diagnosing and managing hypertension.

Cohen JB, Lotito MJ, Trivedi UK, et al. Cardiovascular events and mortality in white coat hypertension: A systematic review and meta-analysis. *Ann Intern Med*. 2019;170:853-862.

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Association between vitamin D supplementation and mortality

Vitamin D supplementation is used to maintain and improve musculoskeletal health. Observational studies have shown that low levels of vitamin D are associated with higher mortality from cancer and cardiovascular disease. Studies of the effect of vitamin D supplementation on mortality reduction are inconsistent. It is difficult to interpret these studies because some have included vitamin D administered with calcium, which has been associated with cardiovascular events. The authors conducted a systematic review and meta-analysis of randomized controlled trials to investigate whether vitamin D supplementation is associated with lower mortality in adults. They used Medline, Embase, and the Cochrane Central Register from their inception to Dec. 26, 2018 and looked at randomized controlled trials comparing vitamin D supplementation with a placebo or no treatment for mortality. Study quality was assessed. The meta-analysis used fixed effects and random effects models to calculate risk ratio of death in the group receiving vitamin D supplementation and the control group. Fifty-two trials comprising 75,454 participants were identified. The authors found that vitamin D supplementation was not associated with all-cause mortality, cardiovascular mortality, noncancer mortality, or noncardiovascular mortality. However, it was shown to statistically significantly reduce the risk of cancer death. In subgroup analyses, all-cause mortality was significantly lower in trials with vitamin D₃ supplementation than vitamin D₂. However, neither vitamin D₃ nor vitamin D₂ was associated with a statistically significant reduction in all-cause mortality. The authors concluded that additional large clinical studies are needed to determine if vitamin D₃ supplementation is associated with lower all-cause

mortality. They also noted that the length of follow-up could modify the effect of vitamin D supplementation on all-cause mortality.

Zhang Y, Fang F, Tang J, et al. Association between vitamin D supplementation and mortality: systematic review and meta-analysis. *BMJ*. 2019;366:14673. doi:10.1136/bmj.14673.

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