

Blood pressure variability and mortality

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Increased blood pressure is an important risk factor for mortality, but blood pressure varies. Ambulatory blood pressure monitoring overcomes this problem with blood pressure variability, and therefore has the advantage of detecting 'white coat' and labile hypertension. It thereby appears to be a stronger predictor of all-cause and cardiovascular mortality compared to blood pressure measured in the doctor's office.¹ However, ambulatory blood pressure measurement is inconvenient and sometimes even painful for patients, and it is much easier to just measure blood pressure in our outpatient clinic.

Oscillation of blood pressure within a 24-hour period and over prolonged periods of time has been shown to be the result of complex interactions between extrinsic environmental and behavioural factors and intrinsic cardiovascular regulatory mechanisms.²

The extent to which blood pressure varies over time has been recognised as a potential risk factor in its own right, as it is a predictor of stroke, renal damage, coronary events, and mortality in high risk patients independent of mean systolic blood pressure.³⁻⁶

Post-hoc analyses of large intervention trials in hypertension show that within-patient visit-to-visit blood pressure variation is associated with increased cardiovascular morbidity and mortality. This has prompted discussion on whether antihypertensive treatment should be targeted not only towards reducing mean blood pressure

levels, but also towards stabilising blood pressure variation with the aim of achieving consistent blood pressure control over time, thereby favouring cardiovascular protection.²

It is still not completely understood why oscillation in blood pressure is a risk factor for cardiovascular disease, although some potential mechanisms have been identified. In this respect, Zhou et al. found that greater very short- to midterm blood pressure variation is associated with greater aortic stiffness and maladaptive carotid arterial remodelling, but not with carotid stiffness, which may explain the increased blood pressure variation-associated cardiovascular disease risk.⁷

In the current issue of the journal, Papaioannou et al. examined whether variation in blood pressure, measured three times during a single visit with an interval of five minutes, was associated with an increased risk of mortality. They saw a gradual decrease of both systolic and diastolic pressure. How bigger the difference (or variation), how higher the mortality. A gradual drop in blood pressure during consultation as risk factor for morbidity has been recognised earlier. It most likely represents a "white coat effect" which, in other studies, has been shown to be an independent risk factor for both cardiovascular and overall mortality.⁸

Nevertheless, in-office repeated blood pressure measurement can be informative regarding mortality risk. Another reason to limit the number of online consultations.

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