

# Before an operation, low blood pressure rather than high is a risk factor for death

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New research presented at this year's Euroanaesthesia congress in Berlin, Germany, suggests that, before an operation, low blood pressure (hypotension) rather than high blood pressure (hypertension) is an independent risk factor for death. The study is by Assistant Professor Dr Robert Sanders, Anaesthesiology & Critical Care Trials & Interdisciplinary Outcomes Network (ACTION), Department of Anaesthesiology, University of Wisconsin, Madison, WI, USA, and Drs Puja Myles and Sudhir Venkatesan, University of Nottingham, UK, together with collaborators from the University of Southampton, Oxford University and University College London (all UK).

Despite numerous years of study, the influence of preoperative blood pressure (BP) on perioperative risk remains controversial. In this new research, the authors investigated the relationship between preoperative BP and thirty-day mortality following non-cardiac surgery.

They used data from 252,278 patients from the United Kingdom Clinical Practice Research Datalink to perform their analysis. A number of models of varying complexities were used to account for 29 perioperative risk factors including age, gender, race, comorbidities, medications, and surgical risk score. After risk factor adjustment, the effect of systolic and diastolic [hypertension](#) (high blood pressure) was no longer associated with increased odds of perioperative mortality.

However preoperative [hypotension](#) ([low blood pressure](#)) was associated with statistically significant increases in the odds of perioperative

mortality. For patients with a systolic BP of below 100 mmHg, the likelihood of death increased by 40%. For those with a diastolic BP of under 40mmHg, the likelihood of death increased by 2.5 times. While the risk from hypotension was present in patients with low systolic or low diastolic pressure, values below 100/40 were of greatest risk. Hence the likelihood of death further increased as either or both systolic or diastolic BP decreased further.

The authors say: "The effect of preoperative high blood pressure on perioperative risk disappeared after adjusting for confounders including end-organ vascular disease. Hence while high blood pressure control is important for long-term health, high blood pressure itself does not impose a significant risk of postoperative death. Rather the health consequences of uncontrolled [high blood pressure](#) convey other health risks—therefore we still recommend that patients' blood pressure should be as well controlled as possible prior to surgery. In contrast, even after adjustment for confounders, we demonstrated the increased perioperative risk associated with preoperative low blood pressure."

They add: "Preoperative low blood pressure is under-recognised as a risk factor for perioperative mortality. Future studies will need to identify how this risk can be modified to improve patient outcomes."

Provided by European Society of Anaesthesiology

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