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Large study of hypertension patients highlights key moments at which to intervene

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High blood pressure is the most common risk factor for heart disease and death worldwide, and yet the answers to some of the most basic questions about how to manage it - when to introduce new medications, intensify treatment or re-evaluate a patient - remain unclear. In a new study published this week in the *British Medical Journal*, researchers from Brigham and Women's Hospital (BWH) examined the outcomes of 88,000 adults with hypertension to pinpoint the precise high-blood-pressure level and critical time points at which intervening was tied to a decrease in the risk of death.

"Ours is the first study to look at these key metrics in a large database of primary care patients with hypertension," said senior author Alexander Turchin, MD, MS, a physician and researcher in the Division of Endocrinology at BWH. "Our findings could help guide clinicians as they think about how their patients should be treated in the clinic."

Current guidelines and recommendations for managing the care of patients in the earliest stage of hypertension differ substantially. Patients with systolic blood pressure levels between 140 and 159 mm Hg are considered "stage 1." Recommendations regarding the best treatment path for these individuals differ among national guidelines such as the JNC8 guidelines, mainly used in the United States, and NICE guidelines, mainly used in European countries. Such guidelines are based on a mix of expert opinion and clinical trial data (when data are available). Although some studies have examined how treating patients with a baseline systolic blood pressure between 150 and 159 influences

outcomes, no previous studies have examined the impact of treatment on outcomes for patients with blood pressure between 140 and 149.

Researchers identified three factors that were tied to greater risk of death or cardiovascular event (heart attack, stroke and others): a systolic blood level above 150, delays in intensification of treatment and delays in reassessment of patients.

"The outcomes that we measured are ones that matter: death and cardiovascular events," said Turchin who is also director of clinical informatics at the Harvard Clinical Research Institute. "We wanted to gather more evidence to better understand how delays in treatment of elevated blood pressure influenced these outcomes."

In patients with systolic blood pressures between 130 and 150, the research team did not detect an increase in risk, but above the 150 threshold, the team observed progressively greater risk of an acute cardiovascular event or death.

They also found that delaying the intensification of treatment (increasing dosage or adding in new medications when blood pressure levels rise) by more than 1.4 months was tied to increased risk of death or cardiovascular event. Current guidelines differ slightly, with some recommending intensifying treatment within two to four weeks and others recommending within one month. However, the majority of patients in the retrospective study did not receive medication intensification within 1.4 months.

In addition, the team found that when patients received a reassessment of blood pressure levels more than 2.7 months after medication intensification, risk of death increased. The majority of patients in the study did receive follow-up assessments within this window of time.

"Hypertension is treatable - the right medical treatment can mitigate a person's risk. But we need to know the optimal blood pressure, the optimal time to intensify treatment and the optimal time to reassess," said Turchin. "Our research supports the importance of avoiding delays in treatment and having follow-up appointments for patients with hypertension."

Provided by Brigham and Women's Hospital

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