

New results from a network meta-analysis make the case for reducing systolic blood pressure down to levels well below the currently recommended treatment targets.

In their study published May 30, 2017, in *JAMA: Cardiology*, investigators report that patients treated to 120 to 124 mm Hg had the lowest risk of cardiovascular events and all-cause mortality, a finding that supports lowering the systolic blood pressure treatment target in certain patients with hypertension.

“Based on our analysis, we would definitely recommend lower blood pressure targets for patients with hypertension, especially for patients with increased risk of cardiovascular disease,” lead investigator Jiang He, MD (Tulane University School of Public Health and Tropical Medicine, New Orleans, LA), told TCTMD. “Really, in our analysis, only very few studies achieved the 120 to 124 mm Hg goal. In this group, it was heavily dependent on the SPRINT trial.”

He noted that the landmark SPRINT trial, which was published in 2015 and showed that treating systolic blood pressure to a target of less than 120 mm Hg versus the standard target of less than 140 mm Hg reduced the risk of clinical outcomes, included patients with hypertension who were at a heightened risk for cardiovascular disease.

“So, I will say that among those type of patients, we should recommend more intensive blood-pressure reduction, maybe lower than 125 mm Hg and at least lower than 130 mm Hg,” said He. “That would be our recommendation.”

In an editorial accompanying the study, Clyde Yancy, MD, and Robert Bonow, MD (Feinberg School of Medicine Northwestern University, Chicago, IL), state the new data should “quell,” if not completely silence, the controversy surrounding optimal blood pressure-lowering targets. The reduction in cardiovascular events and all-cause mortality observed in the meta-analysis “are not trivial findings” and the “population health benefits of lower blood pressure targets, much lower than we previously recognized, are real,” they say.

Lots of Confusion in Hypertension Land

For practicing physicians treating patients with hypertension, an attempt to adhere to guideline-based care can be extremely confusing. At present, there is no shortage of professional recommendations for the management of high blood pressure and there's a lack of consensus on just how low physicians should be aiming for with antihypertensive medication.

In 2014, the Eighth Joint National Committee (JNC-8) took a controversial approach and relaxed their previous treatment targets of less than 140 mm Hg in patients 60 years and older. Now the JNC-8 experts recommended physicians treat to a systolic blood pressure target of less than 150 mm Hg.

The American College of Physicians/American Academy of Family Physicians (ACP/AAFP) followed along with those targets and earlier this year recommended a goal of less than 150 mm Hg, although they do suggest treating higher-risk patients, such as those with a prior stroke, to less than 140 mm Hg.

In contrast, the American Heart Association (AHA), American Society of Hypertension/International Society of Hypertension (ASH/ISH), and the International Society for Hypertension in Blacks (ISHIB) recommend a more stringent target, advising physicians to treat to 140/90 mm Hg or less.

SPRINT, published in late 2015, only added to the general sense of confusion, with the trial showing that intensive blood pressure-lowering could further reduce the risk of cardiovascular events compared with conventional targets. To TCTMD, He noted there is still resistance to adopting the more intensive target, despite the 25% reduction in cardiovascular outcomes with intensive blood-pressure lowering. For example, the ACP/AAFP recommendations emerged after the publication of the trial.

Given that backdrop, He and colleagues conducted a meta-analysis of 42 trials, including SPRINT, with 144,220 patients. Overall, they observed a linear association between mean achieved systolic blood pressure and the risk of cardiovascular disease and mortality, with the lowest risk at 120 to 124 mm Hg.

Compared with individuals with systolic blood pressure 160 mm Hg or greater, the risk of major cardiovascular disease events was reduced by 64% (HR 0.36; 95% CI 0.26- 0.51) and all-cause mortality by 53% (HR 0.47; 0.32-0.67) among patients with a systolic blood pressure of 120 to 124 mm Hg.

Even when compared with patients with lower blood pressures, individuals treated to 120 to 124 mm Hg had a significantly lower risk of cardiovascular events and all-cause mortality. For example, when compared with individuals with systolic blood pressure of 130-134 mm Hg, 140-144 mm Hg, and 150-154 mm Hg, the risk of major cardiovascular events was reduced 29%, 42%, and 54%, respectively, among those with systolic blood pressure of 120-124 mm Hg. The risk of all-cause mortality was reduced 27%, 41%, and 49%, respectively.

Maybe Lower Targets Shouldn't Be the Objective?

Brent Egan, MD (University of South Carolina, Greenville), who was not involved in the study, told TCTMD he is a proponent of lowering systolic blood pressure beyond the current target of 140 mm Hg but worries about what might occur on a population level if future guideline committees adopt a stricter treatment target than currently recommended.

“If you look at patients in the US who have their hypertension treated and controlled, the average blood pressure is 121 mm Hg, which is within the 120 to 124 mm Hg range,” said Egan. “My point is that if treating patients and achieving the goal of less than 140 mm Hg results in an achieved blood pressure of 121 mm Hg, why do we need to lower the goal? What we need to do is control more patients.”

In 2016, Egan and colleagues published a paper in *Hypertension* examining the achieved systolic blood pressures of treated hypertensive patients in the 2009 to 2012 National Health and Nutrition Examination Survey (NHANES). They studied multiple patient groups, including SPRINT-like individuals aged 50 years and older, a broader group of patients (individuals ≥ 18 years), and a group of SPRINT-like patients not at high cardiovascular risk. In the 3 groups, the mean systolic blood pressure among patients controlled to less than 140 mm Hg were 123.3, 120.9, and 118.9 mm Hg, respectively.

“The concern I have is that if a goal of less than 140 mm Hg leads to 121 mm Hg among controlled patients, lowering the goal might lead to a lower systolic blood pressure among

those with controlled blood pressure,” said Egan. “The pressure that might be achieved could be below 120 mm Hg, which may be associated with some adverse outcomes. It would also be a goal that has rarely been achieved and tested in the clinical trials.”

Based on their estimates, Egan said that if 90% of the hypertensive adults had their blood pressure controlled to a target of less than 140 mm Hg, the average treated systolic blood pressure would fall within the 120 to 124 mm Hg range observed in this meta-analysis.

“The issue is we have a lot treated patients that have uncontrolled blood pressure,” said Egan. “Their blood pressures are 140 [mm Hg] and higher, and that’s the group we should be bringing under control.”

Some Steps to Help Physicians

For their part, Yancy and Bonow provide some updated steps for practicing physicians given the new data. After a diagnosis of hypertension is made, the next task is to determine the patient’s overall risk of cardiovascular disease. In higher-risk patients, they advise treating to less than 130 mm Hg, a goal which is also applicable to diabetic patients. This would likely require two or three medications.

For the lower-risk patient, and those with trouble tolerating medication, a nonpharmacological approach is the first step, with the treatment goal of less than 150 mm Hg recommended, say the editorialists. In all patients, they advise doctors to remain aware of the risks of aggressive blood-pressure lowering and polypharmacy.

“Medicine is practiced on a patient-level basis, and individualized treatments based on a shared decision-making model should drive patient-level interventions,” they write. “This is especially the case for those at higher risk for CVD and for those who are most vulnerable.”

Later this year, the AHA is expected to update their recommendations for the treatment of hypertension.

Sources

- Bundy JD, Li C, Stuchlik P, et al. Systolic blood pressure reduction and risk of cardiovascular disease and mortality. JAMA Cardiol. 2017;Epub ahead of print.
- Yancy CW, Bonow RO. New blood pressure-lowering target—finding clarity. JAMA Cardiol. 2017;Epub ahead of print.
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Disclosures

- Authors and editorialists report no conflicts of interest.