# Should We Change Target Blood Pressure?

## — Harlan Krumholz, MD, reviews cardiovascular studies and proposes ways to rethink patient outcomes

by Emily Hutto, Associate Video Producer
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*In this exclusive video, Harlan Krumholz, MD, SM, of the Yale School of Medicine and Yale New Haven Hospital in Connecticut, reviews the current research on intensive blood pressure (BP) treatments. He also offers advice on how to rethink patients' BP targets.*

*Krumholz is the director of the Center for Outcomes Research and Evaluation; the Harold H. Hines Jr. Professor of Medicine; and a professor in the Institute for Social and Policy Studies, Investigative Medicine and of Public Health.*

*The following is a transcript of his remarks:*

I think a lot of us still have questions about what the right blood pressure target ought to be.

Hi, I'm Harlan Krumholz from the Yale School of Medicine and the Yale School of Public Health. I'm a cardiologist and I've thought a lot about this issue around blood pressure. Hey, I grew up in a period where we were thinking about 140 over 90 being the target. Actually early on, maybe when I was in medical school, people were even saying that normal blood pressure was a 100 plus your age.

So then the SHEP trial came out -- this was actually before I was in medical school -- but the SHEP trial came out and sort of disabused us of the idea that people who are older could tolerate higher blood pressures, and said that we really need to be focusing on blood pressure control on everyone. But that level of 140 over 90 sort of always stood as our target.

Then there was a series of studies that have come out, the SPRINT trial in particular, that showed that more intensive treatment of blood pressure was actually beneficial. The SPRINT trial, just to remind you, studied almost 10,000 people and they randomized people to intensive treatment. That is, looking at a target of about 120 compared to a target of 140. They enrolled people who didn't have severe hypertension, but they wanted to see whether or not pushing people down lower would be better, recognizing

that there might be some untoward effects from the treatment, but maybe a net benefit from getting the blood pressure down. Certainly, epidemiologic studies had suggested this.

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What they found was a marked benefit associated with that intensive treatment. There was a benefit in terms of mortality, there was a benefit in terms of cardiovascular events, there was a slight uptick in complications associated with medications, but the net benefits seemed very clear.

The net benefit was sufficient to lead the guidelines to push down the recommended level from 140 to 130. They didn't go all the way to the recommendation from the SPRINT trial to 120 -- and there are several reasons for that, maybe even the way that the blood pressure was measured within the SPRINT trial led them to be a little more conservative -- but the target was pushed down further. But largely I think that these recommendations have been ignored. Most people are still thinking about 140 over 80; fewer people are focusing on 130.

By the way, another study that subsequently came out from China looking at older patients also tested this hypothesis that getting people down lower would be better, and again showed that lower was better.

Now, I want to move to a study that just came out in *JAMA Cardiology* that examined the question of: What about the long-term effects? What happened after the trial ended? What happened when people went back into the wild and were no longer under the protocol of the trial? In particular, the intensive group was no longer being treated according to strict protocols to get their blood pressure down. In SPRINT, they were very successful in creating a separation in blood pressure between the traditional group and the intensive group. Presumably after the trial, that pressure would no longer exist.

So what did they find? Well, with a median of about 9 years, with some people followed out to 10 years, there was no significant difference in the two groups in cardiovascular disease or in all-cause mortality. That is, the benefits seemed to disappear as the trial ended. So, this is actually very interesting and I think it also sort of validates the approach that they took in the trial: highly protocolized, trying to get people down to lower in the intensive group. As soon as that trial was over, the benefits seemed to go away.

So I think this speaks again to the importance of us rethinking these levels and going back to these studies that are showing us that lower does seem to be better. If people are monitored adequately, we can also be alert for any of the untoward effects of medications, but it does seem like we can help people to lower their risk. And then the importance of long-term vigilance of this strategy. Again, this needs to be done in partnership with patients; they need to understand the risks and the benefits of such an approach.

But when you're talking about lowering major cardiovascular events and all-cause mortality, there's a lot to be gained from it. But we have to be thinking about how we're going to implement systems in real-world practice that replicate what was achieved in the trial, and how we can stay with it for the long run, if we're going to achieve the benefits that were suggested to be achieved in this trial, and if we're to achieve them in the long run.

The major messaging I think is to get us to be thinking about this 'Lower is better;' the trials that are demonstrating and validating it, and then the importance of the persistence and vigilance if we want to continue that benefit for our patients, in partnership with them, as we seek to reduce their risk and get the best benefits from the evidence that's out there in the literature.

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