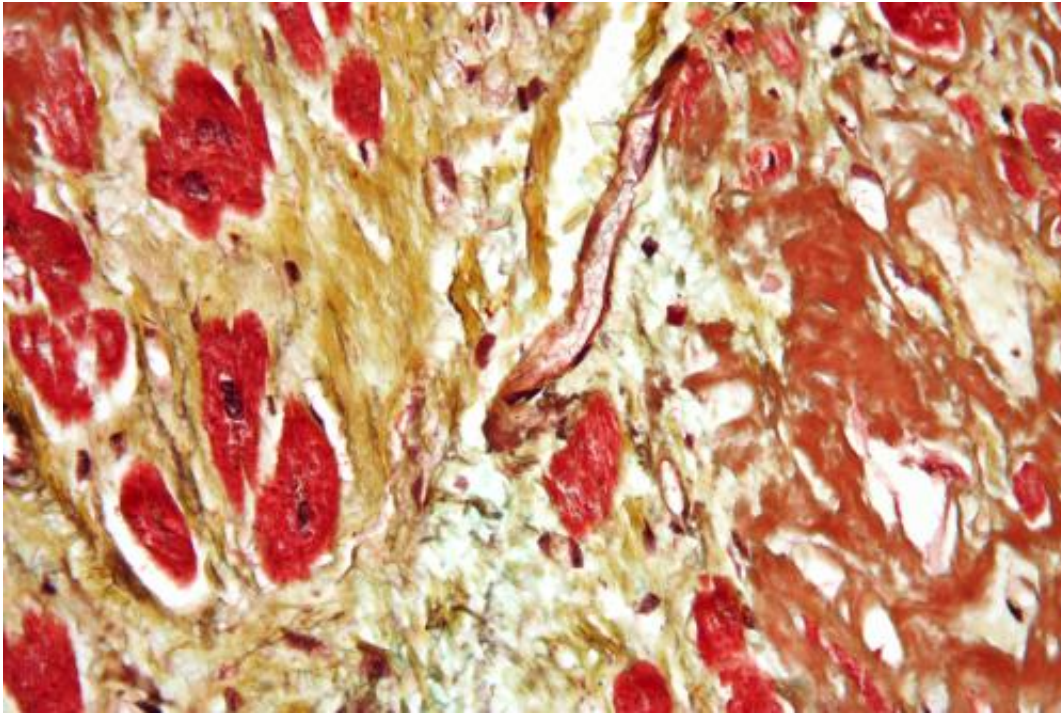


Heart disease warning at age 18

February 4 2014



Micrograph of a heart with fibrosis (yellow) and amyloidosis (brown). Movat's stain. Credit: Nephron/Wikipedia

Elevated blood pressure as young as age 18 is a warning sign of cardiovascular disease developing later in life and the time to begin prevention, according to a large national Northwestern Medicine study. That's decades earlier than clinicians and patients generally start thinking about heart disease risk.

The study also found distinct blood pressure patterns from ages 18 to 55

that reveal people at high risk for calcification of coronary arteries—a marker for heart disease—by middle age. Also known as hardening of the arteries, these calcium deposits can narrow coronary arteries and increase heart attack risk.

The 25-year study is the first to identify different long-term patterns of [blood pressure levels](#) and resulting cardiovascular risk.

"This shows that your blood pressure in [young adulthood](#) can impact your risk for heart disease later in life," said Norrina Allen, lead study author and assistant professor of preventive medicine at Northwestern University Feinberg School of Medicine. "We can't wait until middle age to address it. If we can prevent their blood pressure from increasing earlier in life we can reduce their risk of future heart attacks and stroke."

More than 33 percent of U.S. adults have hypertension. Currently, the clinical approach is to evaluate blood pressure risk in middle or older age and not consider how it may have changed or increased with age.

The paper will be published Feb. 4 in the *Journal of the American Medical Association*.

Tracking the long-term patterns in blood pressure starting in young adulthood will more accurately identify individuals at risk for heart disease. It also will enable earlier and more effective prevention, scientists said.

"If we see someone who is 25 or 30 and they fall into one of these patterns, we can predict where they'll be later in middle age," Allen said. "Then we can prescribe lifestyle changes such as increased physical activity or a better diet that can prevent them from developing hypertension and a higher risk of disease."

"In people with higher blood pressure, earlier intervention with lifestyle and with medication, when needed, is important," noted senior author Donald Lloyd-Jones, M.D., chair of preventive medicine at Feinberg and a cardiologist at Northwestern Memorial Hospital. "Although blood pressure can be quickly lowered with medication, the damage to the heart and blood vessels that is caused by time spent with elevated blood pressure tends to remain. We can't put the horse all the way back in the barn."

The study used data from 4,681 participants in the Coronary Artery Risk Development in Young Adults Study from baseline years 1985-1986 through 25 years of follow-up. The participants (black and white men and women) were 18 to 25 years old when the study began and from four urban sites including Chicago, Birmingham, Minneapolis, and Oakland.

The highest risk group had elevated blood pressure compared to their peers at age 18, but it was still within the range considered normal; this tended to develop into hypertension by middle age. They were four times more likely to have coronary artery calcification.

The study identified five patterns in blood pressure from young adulthood to middle age:

- 22 percent of participants maintained [low blood pressure](#) throughout follow-up (low-stable group)
- 42 percent had moderate levels (moderate-stable group)
- 12 percent started with moderate levels which increased at an average age of 35 years (moderate-increasing group)
- 19 percent had relatively elevated levels throughout (elevated-stable group)
- 5 percent started with elevated blood pressure, which increased during follow-up (elevated-increasing group).

Groups with elevated or increasing blood pressure were at the highest risk for developing calcification of coronary arteries. The study also found African Americans and smokers were more likely to experience rapid increases in [blood pressure](#) during [middle age](#), placing them at higher risk of [heart disease](#).

More information: Paper: [DOI: 10.1001/jama.2013.285122](https://doi.org/10.1001/jama.2013.285122)
Editorial: [DOI: 10.1001/jama.2013.285123](https://doi.org/10.1001/jama.2013.285123)

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