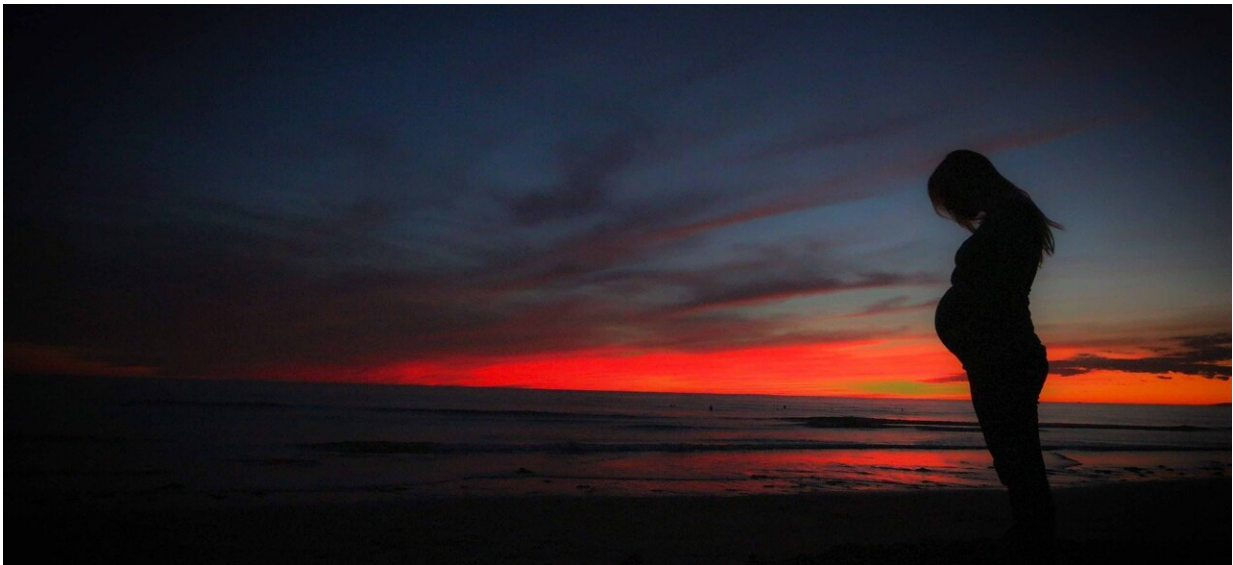


Stress during pregnancy may lead to heart disease, accelerated aging in next generation

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Prenatal stress can cause damage in the aorta in offspring, which may contribute to the development of atherosclerosis and accelerate aging, according to a new study in mice. The article is published ahead of print in the *American Journal of Physiology-Regulatory, Integrative and Comparative Physiology*.

Previous studies have shown that children who are born to women who experience [stress](#) during pregnancy have a higher risk of

atherosclerosis—the buildup of fatty plaque in the arteries—and heart disease in later life. Past research has also suggested that stress-associated genes may play a role in the shortening of telomeres. Telomeres are caps on the ends of the chromosomes and are involved in aging. Shorter telomeres are a marker of accelerated aging.

Researchers studied mice that experienced stress during pregnancy. Stress was produced by housing female mice alone instead of with cage mates and housing them in a small space for short periods during the pregnancy. The research team confirmed that these events were stressful for the female mice by noting they had higher-than-normal corticosterone (stress hormone) levels than a control group that were housed with littermates and were not isolated. After the mice gave birth, the research team examined the aortas—the largest artery in the body—of their offspring when the offspring became adults.

The mice born to stressed mothers had more severe atherosclerosis—shown by lesions on the aorta—by 25 weeks of age than those born to unstressed mothers. In addition, prenatal stress caused the telomeres in the aorta to be approximately 27% shorter than the mice born to the [control group](#) mice.

This study is only the beginning as scientists learn more about the consequences of a parent's [mental health](#) on their child's physical health. "The discovery that the [aorta](#) is vulnerable to prenatal stress by its loss of telomere length is a first step to understand how stress impacts telomere biology," the researchers wrote.

Other findings in the offspring of the stressed [female mice](#) included:

- Significantly higher body weight.
- Increased kidney weight.
- Higher levels of inflammation.

More information: Tomoaki Ito et al, Prenatal stress enhances atherosclerosis and telomere shortening in ApoE knockout mouse offspring, *American Journal of Physiology-Regulatory, Integrative and Comparative Physiology* (2022). [DOI: 10.1152/ajpregu.00201.2021](https://doi.org/10.1152/ajpregu.00201.2021)

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