Examining secondhand smoke and cardiovascular risks in children

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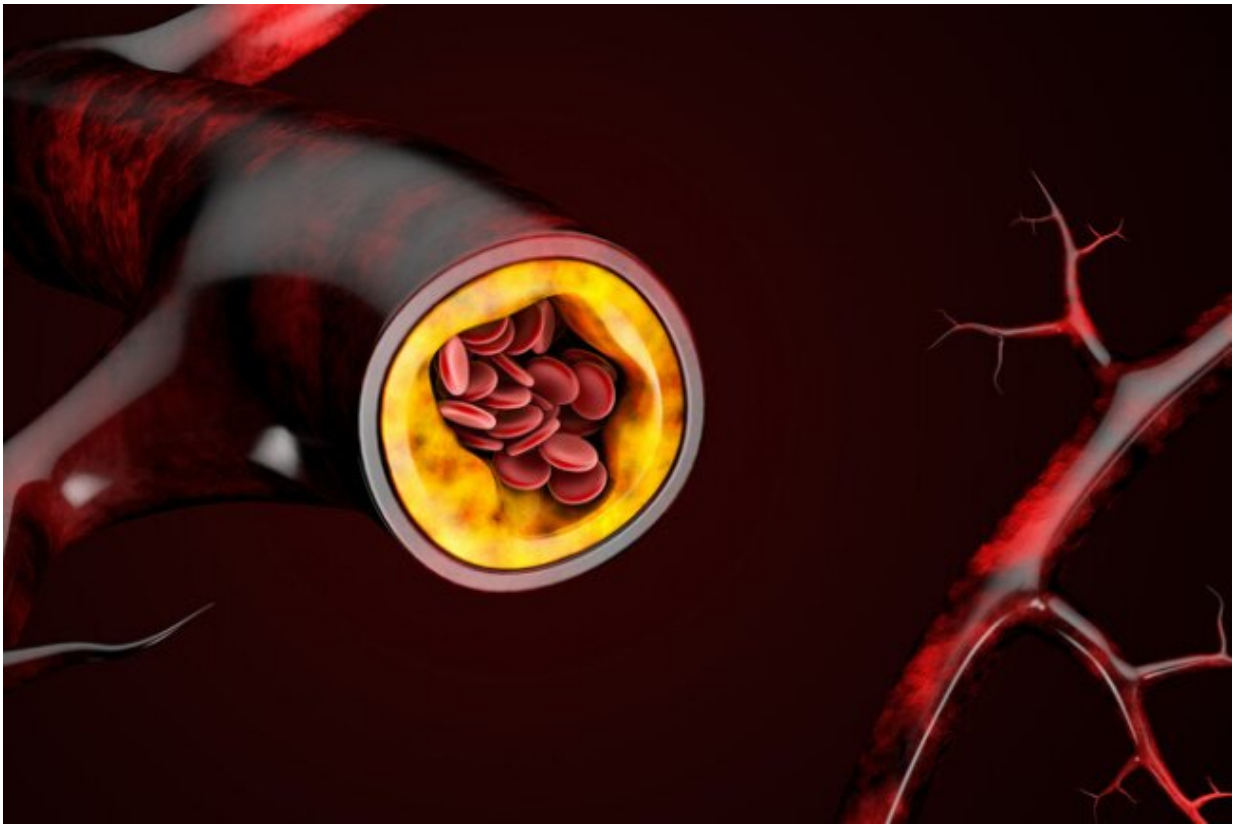

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New research from the University of Minnesota examines how secondhand smoke might impact children and adolescent cardiovascular health.

Published in *Pediatric Research*, researchers studied the carotid artery in the neck, brachial artery in the upper arm and abdominal aorta right above the belly button in 298 people. All were between the ages of eight and 18 and were nonsmokers. Some study participants reported being exposed to secondhand smoke, while others did not.

Researchers used ultrasound imaging to examine the arteries for plaque buildup. The study:

- found that the carotid and brachial artery were unaffected by exposure to secondhand smoke;
- observed increased stiffness in the abdominal aorta in children exposed to secondhand smoke;
- suggests the harmful effects of secondhand smoke can be seen in early markers of cardiovascular disease, but the majority of the damage has not been done which supports the idea that quitting smoking may prevent this damage from occurring.

"Our study also suggests children are—at least early in life—protected from smoke exposure because we know, from previous research, that secondhand smoke exposure in young adulthood is a significant cardiovascular risk factor," said Justin Ryder, Ph.D., assistant professor of Pediatrics in the Medical School and senior author on this paper.

"This paper provides insight that secondhand smoking may predispose young children and adolescents to increased abdominal aorta stiffness," said Michelle Harbin, the first author on this study and Ph.D. candidate in Exercise Physiology in the School of Kinesiology. "Stiffness in this particular artery has been previously reported to exhibit increased susceptibility to atherosclerosis, which is a buildup of plaques that can restrict blood flow."

Future research will need to be conducted to determine the effect that

vaping and e-cigarettes might have on cardiovascular disease risks in children and adolescents. According to the Centers for Disease Control and Prevention, 1 in 10 middle school students and 1 in 4 high school students reported using e-cigarettes in the past 30 days.

More information: Michelle M. Harbin et al. Relation of secondhand smoke exposure to vascular phenotypes in children and adolescents, *Pediatric Research* (2019). DOI: 10.1038/s41390-019-0627-x

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