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Adult Carotid Intima-Media Thickness, Dietary Fats, and Childhood Non-HDL Cholesterol Levels

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Predicting atherosclerotic risk during childhood could help us prevent cardiovascular disease in adulthood. How can we do that? To answer this, we present two studies being early released in our journal this week.

The first article, by Juonala et al (10.1542/peds.2019-2114), looked at non-high-density lipoprotein cholesterol (non-HDL-C) levels in children and its association with carotid artery intima-media thickness (cIMT) in adulthood using data from the National Heart, Lung, and Blood Institute (NHLBI). The authors followed four prospective cohorts with a mean follow-up of 26 years with more than 4,500 children ages 3-19 years at the time of enrollment. The authors discovered that children with elevated non-HDL-C levels had an increased risk of cardiovascular disease, with higher cIMT in adulthood. Over the years followed, children with increasing levels of non-HDL-C had the highest risk. However, if the lipid levels normalized over time, the risk also decreased.

The second study, by Laitinen et al (10.1542/peds.2019-2786), looked at whether dietary counseling, to limit the amount of unsaturated fats and decreasing saturated fats to less than 10% overall starting in infancy, would be associated with decreased intima-media thickness and greater distensibility of the abdominal aorta and carotid artery when measured every two years between ages 11 and 19. The authors performed a randomized controlled trial and noted that when the dietary distribution of fats met the recommended intake, there was a reduction in aortic intima-media thickness and greater aortic distensibility.

So, what can we take-away from these two studies looking at intima-media thickness? Should we be screening all school-age children for lipid levels based on the Juonala et al study? Not so fast, per an accompanying commentary by NIH investigators Drs. Arteaga and Gillman (10.1542/peds.2020-0159). They point out the importance of non-HDL lipids in predicting intima-media thickness, but think a better approach is to simply focus on promoting cardiovascular health and wellness starting as early as possible rather than just implementing universal lipid screening in early childhood going forward, based on some limitations to the Juonala study pointed out by these authors. What constitutes cardiovascular health per Drs. Arteaga and Gillman are seven metrics which the authors highlight: optimal total cholesterol, blood pressure, and fasting glucose, normal BMI, not smoking, getting adequate physical activity, and eating a healthy diet. Take heart-and check out both studies, the commentary, and then reassess which of the 7 metrics you might do more about in your practice to assure good cardiovascular health is established early and maintained through childhood, adolescence, and young adulthood.