Why Cholesterol in Plaque Isnu2019t the Whole Story

Because when you look at the arteries, in an autopsy of a heart attack victim, you see a lot of cholesterol built up in the artery. Therefore, the cholesterol was the cause of the heart attacks.

That's like saying, hey, every time there's a fire in my neighborhood, I notice firefighters at this scene of crime. So they must be the causes of each fire.

That's a stupid thought, isn't it? The firefighter analogy doesn't work here. Our understanding of how cholesterol plays a role in cardiovascular disease is not based solely on the fact that there's cholesterol in plaque.

Evidence That LDL Cholesterol Drives Heart Disease

That was just one discovery in a long chain of discoveries that led to our current understanding. The determination that LDL cholesterol, which is a measure of much cholesterol is being carried by LDl particles through the blood, causes atherosclerotic cardiovascular disease was based on over 200 studies including prospective cohorts, genetic studies and randomized controlled trials with over 2 million participants and 20 million person years of data and those with low LDL cholesterol levels throughout their entire lives have very low risk of cardiovascular diseases and lowering LDl cholesterol by almost any means including diet and medication lowers risk to a predictable degree.

So that would be like reducing the number of firefighters in a certain area and then that's somehow leading to less fires.

ApoB, LDL, and the Best Way to Measure Risk

But that obviously isn't the case. And we further refined our understanding. We now know that it's the APO-B which is a sort of protein tag on LDL particles and other lipoproteins which acts as a magnet with compounds within the artery wall.

This is what holds it in the subendothelial space along the artery wall long enough to initiate the development of a plaque. So directly measuring ApoB is the most accurate way to predict risk because it accounts for all of the potential cholesterol-carrying compounds that can contribute to plaque development.

But LDL particles make up the majority of them, so measuring LDl cholesterol is also a pretty good way of assessing risk.