Clinical Chemistry

Commentary on the 2009 Canadian Guidelines for the Diagnosis and Treatment of Dyslipidemia and Prevention of Cardiovascular Disease in Adults

Host: This is the podcast from *Clinical Chemistry*. I am Bob Barrett. Coronary heart disease, or CHD, remains a leading cause of death and disability in both Canada and the United States, and guidelines for calculating the risk of heart disease are constantly being revised.

The next iteration of the U.S. guidelines will be released in 2010. However, Canada recently released the third iteration of its guideline for the Diagnosis and Treatment of Dyslipidemia and Prevention of Cardiovascular Disease.

The guidelines include both the Framingham Heart Study and the Reynolds Risk Score risk prediction systems, and in part incorporate family history or premature heart disease as well as increased serum concentrations of high-sensitivity CRP.

The April issue of *Clinical Chemistry* published a prospective on the topic by Dr. Ernst Schaefer, Senior Scientist and Director of the Lipid Metabolism Laboratory at Tufts University. He is our guest in this podcast.

Tell us, Dr. Schaefer, there are many markers of cardiovascular risk. Is CRP an independent predictor of coronary heart disease, or just one that provides confirmatory information?

Dr. Ernst Schaefer: Well, the data indicates that CRP, measured as high-sensitivity C-reactive protein, is an independent predictor of coronary heart disease in a large number of prospective studies.

Host: Do serum concentrations of CRP predict might who benefit most from statin therapy?

Dr. Ernst Schaefer: Yes, they do. There had been a large number of analyses done, largely by Dr. Paul Ridker's group, which indicate that in the statin trials if you have a CRP level of over two milligrams per liter, or over three milligrams per liter, you are at higher risk, and you'll get greater risk reduction from statin therapy than if you had a low CRP level.

Host: So what reliable strategies are there for individuals to lower their serum concentrations of CRP?

Dr. Ernst Schaefer: Well, if you can lose a lot of weight, if you are obese or overweight and you lose weight, diet and exercise and weight loss, you can reduce your CRP levels. We recently did a study looking at gastric bypass patients who lost more than 40% of their body

weight, and their CRP levels went on average median from 7 to 1, of course that is a very reliable, but an extreme form of weight loss.

Of course, the easiest way is if somebody is placed on a statin they can get a 30 to 40% reduction in their CRP with aggressive statin therapy such as therapy with Rosuvastatin or Atorvastatin.

Host: From your experience, what CRP level is associated with increased CHD risk?

Dr. Ernst Schaefer: A CRP level of over two milligrams per liter.

Host: And with that in mind, what do you believe is an optimal CRP level?

Dr. Ernst Schaefer: An optimal level is less than one milligram per liter.

Host: So are CRP levels a part of the Cardiovascular Risk Assessment Guidelines in the U.S. now?

Dr. Ernst Schaefer: No, they are not, but the last set of guidelines were formulated in 2001 by the National Cholesterol Education Program, and at that time the data on CRP had not been firmed up as it has now.

So, there are two risk algorithms that are available to doctors. One is the Framingham Point System or the Framingham Risk Score. It's available on the web; it is available through the National Heart Lung and Blood Institute. The other is the Reynolds Risk Score, and both of them incorporate the standard risk factors, age, blood pressure, total cholesterol, HDL cholesterol, systolic blood pressure. But the Reynolds Risk Score adds family history of less than 60 and CRP, which I do believe sharpens things up a bit. Now having diabetes automatically puts you at increased risk.

Some of the risk engines on the web for Framingham Risk Score include diabetes; other ones don't. But the National Cholesterol Education Program Guidelines did not include diabetes because they automatically put diabetics at heart disease risk equivalent. So, they didn't include diabetes in there, they just said, if you have heart diseases or diabetes, then your goal, your LDL goal is less than a 100, but they did not incorporate CRP.

Host: Aren't CRP levels part of other lipid guidelines elsewhere in the world?

Dr. Ernst Schaefer: Yeah, the Canadian Guidelines were recently released, and I actually published a commentary on those guidelines recently in *Clinical Chemistry*. In the Canadian Guidelines they do indicate that if somebody has information about family history, and they have measured CRP then they should go ahead and use the Reynolds Risk Score. Because it's their view, and it's actually my view, that the Reynolds Risk Score provides more precise information about risk than the Framingham Score.

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I must add something else that the Reynolds Risk Score is based on a larger number of new heart disease cases than the Framingham Score, which is surprising because Framingham has been around for such a long time. But the original population that it was based on is a fairly small population, whereas the Reynolds Risk Score, especially in women, have many, many more new cases, so that also adds strength or data to the validity of that risk score.

That's available on the web at reynoldsriskscore.org. Both of those risk scores can be found on the web, you can just Google them, and people will find them.

Host: Dr. Ernst Schaefer is the Senior Scientist and Director of the Lipid Metabolism Laboratory at Tufts University, and he has been our guest in this podcast from *Clinical Chemistry*. I am Bob Barrett. Thanks for listening.

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