Introduction and LDL Basics

Hello, hello, hello and welcome back to the Reversing Heart disease summit. I'm doctor Rita Marie La Scala, and I'm super, super excited. For our guest today, Doctor Matthew Nagra.

Hi there. So nice to have you here. Hi. Yeah, thanks for having me on. Here's a natural path. They practice up in Canada, and he's very active on YouTube.

I he's in my feet all the time. So seeing the videos on LDL and heart disease and diet and all this stuff. And I want us today to be exploring that aspect.

There's a lot of, there's a lot of people out there who are claiming that LDL don't matter. After all, it doesn't matter how high they get. There's even people publishing studies that say that people with the lower HDL have higher risk of heart disease.

So I want to start there. Like what is why is LDL so important? Yeah. Well, just to explain quickly what it is. So LDL low density lipoproteins, they carry cholesterol through the blood.

Now you have different types of lipoproteins. LDL is just the one that's most prevalent. So it's kind of the one that we focus on most. But there's the LDL is very low density lipoprotein.

There's idol's intermediate density HDL is high density. And, you know, they serve different functions. Now, these LDL particles, the reason that we're concerned with it are with them is that they have a protein on there called apob.

And to simplify that, protein sort of functions like a magnet with some of the compounds inside the artery wall. So if LDL slips into the line, the outer lining there of the artery wall, that magnetic sort of pull will hold it there.

And once it's held there, it eventually becomes oxidized and then develops into a plaque down the road. And, you know, many decades later, that's one of, you know, one of those can rupture off and cause a heart attack.

So we ultimately want to keep the LDL concentrations, or more specifically, apob levels lower to lower our risk of cardiovascular disease. But obviously there are other variables as well that we want to keep in check, like blood pressure, blood glucose, etc..

Great. Yeah. So I like I like where we're going with this, the ApoE, because that is another marker that someone can test. Most doctors don't test it.

So tell us a little about the importance of testing that. And if it's elevated what does that mean in terms of cardiovascular risk. Yeah. So like I mentioned, the Apob is ultimately what makes LDL problematic because it has that sort of magnetic pole, so to speak.

ApoB Testing and Risk Interpretation

Now LDL, in most cases makes up about 90% of the apob containing lipoproteins. So LDL is generally a good estimate, but there can be there can be incongruence between the LDL and Apob in certain cases, especially people with diabetes or metabolic syndrome, or if they have high triglycerides on a blood test.

And so if you want the most accurate measure, Apob, is that more accurate measure. And it's measured directly in the blood, whereas LDL is kind of calculated from other markers in most cases.

So, yeah, if possible, Apob is the better marker. I do recommend testing for that, but it is the case that a lot of especially like family doctors will always know about apob, whereas, I see it a lot more with cardiologists where maybe I'll get a patient who is working with a cardiologist and they will have tested Apob because they're more familiar with that.

Got it. So it sounds like it's something that more doctors should be aware of. And we should be testing. And so what if we have if we have a high LDL and a high Bobby, we know that there is an issue.

But what if we have a high LDL but a low able B or vice versa. What does that mean? So I don't see it really being possible to have a high LDL, but low will be because, because the LDL makes up one of the chunks of the apob.

So it wouldn't really make sense. On the flip side, though, it is possible to have a lower LDL, but a higher apob because you could have some of those other compounds that contain apob.

And in that case, you go with the Apob number. So if there's a significant difference between the two, the Apob is the more accurate number. And that's what I would focus on.

So if the able B is high that's problematic. Okay. So if the Apple B is good and the LDL is kind of, you know, borderline or a little bit on the high side, then you know, we we want to well you said that that's probably.

Yeah. Well so what you're describing like a you know, a Apple B that's quote unquote normal and LDL that's maybe borderline. That could be possible. But in that case I wouldn't be too worried if the Apob is looking good.

Now, is it possible to have a low like, say, optimal apob and a sky high LDL? No, I don't really see what situation that would be possible. Just to clarify a little bit there.

Right, right, right, right. Okay, so there's people out there claiming that LDL doesn't matter and they're putting out videos. And most of these are pushing the carnivore diet.

They're saying carnivore diet. And people are getting tested on the carnivore diet and finding sky high LDL. But they're claiming, oh, it's not the diet.

It's not a problem. Tell us more. Yeah. So look, we know with quite a high level of confidence at this point that having elevated Apob or LDL, if we're using that marker, although caveats apply, as we've mentioned, but high will be is a causal risk factor, meaning that, it, it can directly lead to a higher risk of cardiovascular disease, atherosclerotic cardiovascular disease.

So that plaque buildup in the arteries. And we know that for a number of reasons. For one, we see on a population level, as apob levels increase, you have higher risk of, of, cardiovascular disease.

We also see in randomized controlled trials that if you lower apob, you reduce your risk of cardiovascular disease to a pretty predictable degree. So if you lower it by X amount, you get a certain reduction in risk.

If you lower it even more, you get a larger reduction in risk. And it doesn't really matter how we lower it, whether that's through, obviously the medical route or nutritionally.

And we'll get to what sort of nutritional factors are important. And then beyond that we have what are called Mendelian randomization studies. So these are studies where you're looking at people with genetically higher or lower levels of apob.

And those with genetically lower levels have a lower risk.

Why High LDL Matters for Heart Disease

Those with genetically higher levels have a higher risk. And this is throughout their entire life. And it's essentially

random. Like these genetic variants are our, our, our unpredictable.

It's not something like, it or generally they don't correlate super strongly with certain other, you know, genetic variants or or lifestyle variables.

So it's kind of like a long term randomized controlled trial. And then finally getting to the maybe last point I'll make here is we also have a process called, LDL apheresis.

So you might be familiar with dialysis for kidneys, where essentially you hook up to a machine and it'll filter all the, the blood so that your kidneys don't have to deal with it.

If you have a kidney disease. While you do a similar process, but you're essentially removing the LDL particles, again, the main apob, particle from the blood.

And you can lower risk of cardiovascular disease that way as well. But that is reserved mostly for people with, familial hypercholesterolemia who haven't been able to lower their levels through other means.

Okay. So we have some evidence that when we quote unquote, artificially lower, I guess, through a process that's similar to dialysis, that we do see a reduced risk, right?

So, you know, the claims, like where are these claims founded? Like where's the evidence for these claims that LDL doesn't matter. Yeah. So there's a couple places or a couple sort of, avenues that I see people go.

So one is they'll say, well, I adopted a carnivore diet. You know, it's a sort of elimination diet. And I feel better. It can't be bad for me. There's just like at a base level that that's sort of the mentality.

If my LDL went up, who cares? Because I feel great. Problem is, you don't feel what's going on in your arteries most of the time until it's quite late.

And so that you're not going to notice that for 20, 30, 40 years. Yeah. Do you dropped out of a heart attack exactly. Yeah. And the other, the other thing you'll see is, is, they'll often look at, well, like, historically, we've eaten a lot more meat, and people didn't die of cardiovascular disease, for one.

You know, we don't have good evidence of causes of death a lot of the time for historical, figures like that. But we actually do have mummified remains.

So you can actually look at mummies of, of very old humans at this point. And they show virtually across the board in every population that atherosclerosis plaque in the arteries did exist.

Did they live long enough to actually die of a heart attack? Probably not, because they died quite young of other causes. But the disease was there and it was brewing.

And if they had lived to be know, 60, 70, whatever, they probably would have or they would have had a high chance of having a heart attack. So those are a couple, sort of arguments that do get brought up.

But, you know, if you've heard more, we need to address them here. Please let me know, because I know there are a number of arguments. It just depends on how sort of specific and into the nitty gritty we want to get.

Absolutely. I am going to just take a second and turn my light on because it's very dark here. No worries. Cut this out. All right, so there we go. That's quite the bookshelf.

Yes, I got a lot of books. You do too. All right, so we'll start again here. So those are good good pointers right. We we don't know that these people that a purely carnivore diets back in the day when that was what was available.

We don't know because they died of getting eaten by other animals back in the day. Right. So they never quite

made it to to the ages where we see it. But, you know, here's the thing.

You said something about the carnivore diet. People feel better and they think, oh, I feel better. Therefore I am better. And without looking at imaging and and specific advanced blood test markers, we don't know what's going on in there.

And I don't know that there is evidence or anybody that I'm seeing on YouTube or on the internet is actually talking about, well, I did this for five years, and here's what my imaging showed before.

Here's what my imaging shows now. Here's what my blood markers were. Have you seen any of that? Not really. Long term before and afters like that. At least where they have the good diagnostic, information.

Carnivore Diet Claims and Misleading Evidence

But I have seen some cases where you'll, you'll have people in say they're, you know, 40s, maybe, sharing coronary artery calcium scans, which is a way to look at some of the plaque that's been there for a very long time.

And it's hardened or calcified. Problem is, they're too young for it to have calcified. So you're generally not going to see much of that calcified plaque in people who aren't, you know, 60 plus.

Because it takes a long time to get to that point. So that's another problem. Now we do have some cases of people on the carnivore diet having strokes or, discovering, you know, coronary artery disease or other things.

But even, like, as much as I wouldn't look to hey, somebody done a carnivore diet for a while and they're feeling good, therefore they're fine. I wouldn't look to these individual anecdotes to say that.

Oh, that was 100% diet. I mean, we don't know if they're genetic factors or other things going on. You know, it's hard. You can't just diagnose this stuff over the internet, you know, essentially.

So, I would I would caution anyone with making strong claims based on, you know, some things that they read about a specific individual online. Also just going back to the LDL thing really quick, that that I realized I didn't mention is some of these people, in the space, they will cite, observational studies.

So like in a population, where actually the lowest LDL levels are, associated with a higher risk of death compared to, like a slightly elevated level.

Now, once you get to the really high levels, risk goes up again. But yeah, but you'll you'll see those associations. And it's actually turns out that those very low levels aren't causing the death.

It's actually the case that many illnesses lower our LDL. So if you develop cancer or certain infectious diseases, as you just become older, frail or eat less, your LDL can drop.

And that and it's not the LDL that ends up harming you, but it's these other things that are harming you and lowering your LDL at the same time. So there's sort of a skewed perception of what's going on there.

So I just wanted to make sure I mention that because I know it does come up. I, I like where you go with that one too, because what we see is some of those folks, you know, maybe they have cancer, maybe have other conditions, but a lot of them may already be on statins because we've seen evidence of cardiovascular disease.

And now they're put on statins. Now their cardiovascular their numbers are low, but they're not really at a better risk because they didn't do the lifestyle, diet, etc., etc. they just took the statin.

So that's one of the ways I look at that. Well, I would mention that, it would still lower risk of cardiovascular disease, but not necessarily other causes of death.

So it won't necessarily protect against all all potentially potential causes of death. But for cardiovascular specifically, there could still be benefit.

Actually there is still benefit there. So just to clarify, plus people who are put on statins, they've previously had, either a history of worse cardiovascular risk factors or a history of diagnosing coronary artery disease.

So they're starting point is really bad usually. And so so there's kind of again that skews your perception a little bit. Right. You're not really comparing things.

But you know we mentioned this earlier. Are there any long term studies of the carnivore diet. And you said when I said about I said five years and you said, oh, we don't have anything that long.

I don't think of five years as a long term study. Right. That's short term study. So are there any really longer term studies over the course of, you know, ten, 15, 30, 50 years?

There there aren't any like prospective studies that have followed people over time, for any amount of time, actually, as far as prospective cohort studies, with carnivores at this point, now, there might be individual carnivores who have done the diet longer than five years. I'm not doubting that.

But even from them on an individual basis, I haven't seen, like, you know, before and afters of of different types of diagnostics either. Not that that would give us a ton of information with like one person or two people.

But that being said, yeah, there just isn't any long term prospective data at this point. Yeah, yeah. So what do you think are optimal? We hear a lot of stuff in people who are promoting statins are saying, oh, I want to see it in the 50 to 75 range.

There is it's like below 100 is good. What do you think are what have you found to be optimal levels. So there's a the easiest answer is just kind of the lower the better.

But where you see the, the progression of plaque of outermost carotid arteries, chronic plaque, diminish or essentially stop is around 70mg per deciliter for LDL or about 80mg per deciliter for apob.

Right. So that like if you were to use a cutoff of like where do we not see any further progression, at least a meaningful amount of progression? That is about it in people with other risk factors, though, because that's in people without other significant risk factors.

If you have high blood pressure, if you have diabetes, you lower that target even more. So. So you have to consider other risk factors as well. You can't just look at the, the, apob on its own.

Yeah. Okay. And you were talking about B or LDL or both. So while you can use them almost interchangeably, again, with the caveat that there are cases where they don't line up, if possible, I would use the April be cut off of 80.

But if you don't have access to Apob test, then the LDL cutoff of 70. Got it. And just to reiterate, for people, Apob is a direct measure. And it's it's more accurate than LDL because LDL is typically not measured directly except in some of the more advanced tests.

They may be measuring it directly. Yeah, yeah. So what did somebody do. Right. How do we get to that ideal level? Yeah. So, if we're talking like nutritionally, to be clear, not everybody can some people genetically, unfortunately, are up against it.

Like some people will have genetically higher levels.

Optimal ApoB and LDL Targets

I have the odd patient who is eating like the pitch perfect cholesterol lowering diet, and they just can't get their numbers low enough. And they have a family history of high cholesterol and is probably passed out.

Unfortunately, that's the case for some, but for those who can do it with diet, what, the best approaches are are to one limit saturated fat intake. So saturated fat is found in large amounts in, meat, particularly fatty cuts of meat, fatty dairy products.

So things like cream, butter, the milks maybe not as much of a, probably yogurt. Not as much either, but, particularly the the creams and the butter. And then, as far as a plant based options like coconut oil is one of the, the common ones, it's a bit higher in saturated fat.

Now, it's not as bad as things like butter, but still, it can raise your your will be a bit, now, also, to a degree, dietary cholesterol can raise your numbers as well. So there's things like eggs.

Again, meat and dairy, but not as much as saturated fat. And there's a limit to how much it can raise your numbers. So that that's a really important distinction.

If you take a vegan who doesn't eat any cholesterol, because they don't eat any animal foods and you start giving them eggs, their LDL will likely go up or there will be if we want to talk about that will likely go up more than if you gave the eggs to a meat eater who's already eating a lot of cholesterol, because you can only absorb so much cholesterol.

So there's sort of a ceiling. So first and foremost, saturated fat and maybe to a degree, limiting cholesterol intake. On the flip side, though, we also want to look at what can you eat to lower your cholesterol.

So it's not just what you want to limit that would otherwise raise your numbers. So to lower it, there's a couple things that stick out. One is soluble fiber.

So this is sort of that like viscous, or particularly the viscous versions of the soluble fiber, which are like slimy and texture things like oats when you cooked, lentils, you know, when you cook them, they kind of have that texture.

Eggplant and okra are excellent examples, which unfortunately the texture is what turns and people off. But that's some of the viscous fiber there. Those can lower cholesterol.

Psyllium powder or psyllium husk is another great option from like a supplemental standpoint. Throw in a smoothie or something. Chia and flax. Chia could be a great option.

Flax seeds. Actually, ground flax seeds are excellent for cholesterol lowering as well. And that kind of gets to my next point. Another really powerful macronutrient for lowering LDL cholesterol are polyunsaturated fats.

So nuts and seeds are excellent options for that. And things like flax seeds in particular, rich animals, omega three is which is a type of polyunsaturated fat.

I would definitely recommend those. And as far as the nuts, again, you can't really go wrong. But I would say almonds do stand out a bit as being one of the best options.

And then finally, plant protein is an excellent excellent option as well. Okay. So that's right from almonds. And a lot of them are high in omega six.

Dietary Ways to Lower LDL

And it's hard to overshadow say the omega three and they're more inflammatory etc.. Do you want to speak on that a little bit. Yeah. So actually there's a couple things.

For one, some of them, like flax, are actually rich in omega threes. But but also the omega six fats, the linoleic acid

lowers LDL quite a bit and lowers cardiovascular risk.

So now there's this idea that they're inflammatory, but actually there are no human trials that have shown that out of all the trials that have been done, it's either neutral or lowers inflammatory markers.

It doesn't raise them. And this idea that they're inflammatory comes from, the fact that linoleic acid that omega six could theoretically be converted into arachidonic acid, another type of omega six, which is then inflammatory problem is that conversion doesn't happen in our body.

We we've tested it at nauseum. Arachidonic acid levels do not go up when when humans are fed linoleic acid. You might be able to do that in a rat study or something.

But we aren't rats. So we have to test it in humans. And when you do it in humans, we don't see rises in arachidonic acid, and we don't see rises in those inflammatory markers like CRP, for example.

So I actually would push back on the idea that that they're inflammatory. And if anything, their consumption is, strongly associated with lower risk of cardiovascular disease in both randomized trials and in, cohort studies.

Awesome. So what do you think I'll throw out this controversial topic oil versus food, plant based fats. Let's talk about that. Yeah. So, I think the biggest thing with oils and I disagree with many comments that are often made about them, but the one, position that I think is more reasonable is that they are calorie dense.

So for people who are struggling with, say, weight management, you know, being at least moderating if not limiting intake could be a good thing. Rather than dumping, you know, three tablespoons on whatever salad you're having that's, you know, what is that?

Three, 360 calories right there. Calories, something like that. And so, so, you know, moderating intake in that sense makes some sense. But when it comes to actual cardiovascular outcomes, because they are rich in these unsaturated fats, they tend to lower risk of cardiovascular disease to even a similar degree as whole foods.

So there was a substitution analysis done, looking at avocados in the nurses Health study and health professionals follow up study and substituting a quarter of avocado for an equivalent amount of, either vegetable oils or olive oil led to a similar outcome for cardiovascular health.

It wasn't significantly different one way or another. We also have studies comparing nuts with, with the oils, and you get about the similar outcome. So again, it's this idea that these I think they've been sort of unfairly demonized, in a lot of ways.

But nobody needs to consume them. That's the other thing. It's like, look, if you don't want consume, don't, you know, if you're looking to manage calorie intake, absolutely limit them.

That's fine. But I also don't want people to necessarily be afraid to have, like, a drop of oil, like I see with some individuals. Right, right, right.

Well, what about the oxidation? Right. When the when the oils are exposed to heat and air and light, as in the processing and the processing and of course heating and cooking.

Where do you stand on that. Yeah. So I've actually made a video looking at the data on that. So with regular cooking it's it's negligible. It's basically not now where you can see production of more, oxidative compounds or even potentially some inflammatory compounds is through extreme heating or repeated heated and cyclic, heated and cooling cycles.

So, you know, you could you could think of what may occur and I don't know the ins and outs of what happens in a McDonald's. I don't I've never worked there.

So I imagine that they might be using a single batch of oil to deep fry in for hours on end, potentially. Again, I don't know how often that switched out if there are certain parameters around that.

So so I'm a little bit ignorant to to exactly what the practices are. But in studies that have replicated that sort of cooking. Yeah, we see production of some compounds.

Now may that lead to more outcomes. And possibly we haven't really studied human outcomes with that level of or high consumption of that type of, product.

But but for regular, you know, sightings and stir frying at home, etc., it doesn't seem to be any sort of meaningful, you know, thing to worry about. And at the end of the day, when we look at, on a population level, people who consume more versus those who consume less, generally, those who consume them end up with better health outcomes compared to things like, you know, butter or or other, you know, saturated fat, rich foods in particular.

Right? So depending on what you're comparing things to, yeah, that's. Always important as well. It's what it comes out to be. Well so we've covered a lot of ground here.

Oils, Oxidation, and Cardiovascular Risk

Hopefully everybody is feeling a little bit more, understanding about LDL than it will be and how that plays into cardiovascular disease. Do you have any last words of any advice or any last parting words for our listeners?

Yeah. I mean, I think the big thing with especially this topic is, is to screen, especially if you have a family history early. So one of the really important things to know about APB or LDL, if that's what's being measured, is that it's cumulative.

So it's not about where levels are right now or will be tomorrow. It's about how long have they been, where they are and how long will they remain there.

So you think of it like with smoking we talk about pack years. So how many you know, the average it out. How many packs for how many years have you smoked with with these like Applebee.

It's it's similar where you're looking at what level has your APB been and for how long. How many of those little APB particles has your or have your arteries been exposed to over your lifetime?

And that is what matters. So the sooner you can intervene and bring them lower, the better. As if you've never screened. I definitely recommend it. Yeah, absolutely.

Everybody's had their LDL tested that the calculated LDL sits. Well I would say people who are, you know, 50 plus maybe. But for for a younger like they usually don't test earlier unless it's requested or something.

Oh, interesting. So so guidelines depending on on risk factors and whatnot are like usually earliest 40 but often around 50 that they start screening.

And I'm a little ignorant to the US. What what exactly. I'm Canadian, so I don't know exactly what the guidelines are, but I would assume it's similar.

So I, I'd be surprised if a lot of, if they're already, say, 30, 35 year olds watching this, if you've been screened and if not, maybe it's something to inquire about, especially if there's a family history.

Yeah, absolutely. Absolutely. And it's not an expensive test to get. Just to stand out in panel. I mean, it's really not dollars at labs here. I don't know what it is in Canada, but I know there are direct access labs here where you can get a complete, metabolic panel for $7.

And that includes the. Okay. Yes. And you can add on the, lipoprotein a little for another 15. So it's not an

expensive thing to do if your doctor's not willing to do it.

Obviously, in Canada and other countries, in New York and in the U. S., you have to get it recommended from a doctor. But I, I agree with you.

Screening Early and Final Advice

I, I talk about insulin a lot, and I think people should start getting their insulin tested when they're 20 and, you know, maybe every decade after that if it's normal.

But those are things that, you know, we screened for risks, especially, like you said, if there is a family history of cardiovascular disease, especially if there's a family history of sudden cardiovascular, sudden misfire or stroke, heart attack or stroke in a younger person, in a person under 60, which is my family history.

You've got to be aware and you've got to be testing. So I thank you so, so much for being here and for sharing and elucidating on LDL and Bobby, and for those of you listening, if you haven't already had those tested, highly recommend that you add those to your regime.

And we've been talking to Doctor Matthew Nagra. Look him up on YouTube. His his YouTube videos are great to watch, very informative and very well-researched, which is what I really like.

You're always showing studies of where this stuff comes from, right? So we know he's not just making it up. Yeah. Don't just take my word for it. Check it out.

No no no no. Look it up. Thank you. Thank you. And everybody welcome. You know, glad you're here and can't wait to see you on the next episode. Thank you.