

ADA: Ask the Experts Access Live Event
February 14th, 2023

Carla Cox:

Hello and thanks for joining us. Welcome to the 2023 American Diabetes Association Living With Diabetes Ask The Expert Series. Today's topic is prevention and treatment of heart disease and stroke. My name is Carla Cox, diabetes care and education specialist, registered dietician nutritionist, and your host for today's program. Our Ask The Expert Series is all about answering questions from our listeners, so start getting your questions ready. For those of you on the phone, press star three. That's star three on your keypad and an operator will collect your question and place you in a queue so that you may have the opportunity to ask your question live. To participate online, type in your name and question in the fields below the streaming player. Press the submit question button and your question will come directly to us. Stay with us through the hour and you will learn useful tips to help you live well on your journey with diabetes. In addition, we invite you to provide us with your feedback in a survey at the end of the event, so please stay with us.

Okay. Now a little bit about why we're here today. Because of the link between diabetes and heart health, the American Diabetes Association in collaboration with the American Heart Association has launched Know Diabetes By Heart with support from founding sponsors, Novo Nordisk, as well as national sponsor, Bayer. The Know Diabetes by Heart Initiative provides tools and resources for people living with type two diabetes to learn how to reduce their risk of cardiovascular disease.

As part of the initiative, the ADA is holding this free educational Q&A once a month. We'll cover information and tips to help you take charge of your health. And now I am delighted to introduce our guest speaker for today. His name is Dr. Chiadi Ndumele. Dr. Ndumele is an associate professor of medicine, the director of obesity and cardio metabolic research, and director of the Heart Failure Prevention Program in the division of cardiology at Johns Hopkins. He is a preventative cardiologist with a doctorate level training in epidemiology and a co-investigator in the atherosclerosis risk in communities study. He leads a research program related to identifying and characterizing risk factors for the development of heart disease and refining strategies for cardiovascular prevention with a particular focus on obesity and associated cardio metabolic risk factors. Would you like to add any extra words?

Dr. Chiadi Ndumele:

No. I appreciate the introduction and it's really wonderful to be here today, Carla. Thank you.

Carla Cox:

Thank you. Thank you so much for joining us. As we're waiting for our callers and online listeners to chime in, I'm going to go ahead and kick off with the first question. Why don't you set the stage for this high blood pressure and reduction of stroke and heart disease for us.

Dr. Chiadi Ndumele:

I think that's a really generally important question. Diabetes is a pretty powerful risk factor as you described for the development of heart disease, but I really love the slide that you just showed that says that's not inevitable. Even though it's the leading cause of mortality among people with diabetes, the things that we do can make a really dramatic impact on our future life course, our quality of life and then our quantity of life as well. So I work at Johns Hopkins as you mentioned, and I'm part of a group called the Ciccarone Center for the prevention of cardiovascular disease. And I tend to take a broad view to thinking about how we prevent heart disease in individuals with diabetes and I use an approach that we call the ABC approach.

And I'm happy to enumerate that really quickly and we can go into more details. But the A focuses on thinking about aspirin and antiplatelets, which can reduce in the right individual the risk of heart disease

and stroke. B, which is a focus on blood pressure and trying to find the best blood pressure control that's safe, but that also reduces the risk of bad cardiovascular outcomes. The C is a focus on cholesterol and cholesterol lowering is a powerful way to reduce risk. And the other C stands for cigarette smoking, which particularly when combined with diabetes is a tinder box for future heart disease risk. D is a focus on diet and finding a healthy dietary approach that minimizes the risk of diabetes related complications. And also in D for diabetes, there's some specific agents these days that we're thinking of that further reduce risk for heart disease among people with diabetes. And then the E stands for exercise, which is a really important aspect of healthy lifestyle that shouldn't be forgotten. But taking that holistic, that broad approach, that ABC approach to thinking about prevention I think is a really powerful way. If we do well with those things, then we can make a really big impact on the life course of people with diabetes.

Carla Cox:

Thank you. That's great. Good introduction. If you're just joining us, welcome to today's Ask the Experts Q&A, self advocacy and watching your risk factors for stroke and heart disease. As a reminder, for those of you on the phone, press star three, that's star three on your keypad, and an operator will collect your question and place you in a queue so that you may have the opportunity to ask your question live. To participate online, type in your name and question the fields below the streaming player. Press the submit question button and the question will come directly to us. So remember, today's topic is prevention and treatment of heart disease and stroke. So let's remember to focus on that topic for today's event.

Okay. Let's take the first question and I'm going to call on Terry. And Terry is from Pennsylvania. Terry, you are live.

Terry:

Hi. My question is if you're diagnosed with diabetes in your 50s, is having a blood sugar when you get up in the morning 120, 130 and generally throughout the day it never really gets lower than that, is that a heart problem? Is that an issue for your heart disease or is that low enough?

Dr. Chiadi Ndumele:

That's a very helpful question. You're actually raising two different very important pieces. One is the importance of self-monitoring and knowing your numbers. We want to be doing regular monitoring of our blood sugar after we're diagnosed with diabetes and having a blood sugar that's closer to that range, not super low, so not in the low double digits, but in the range of around 100 or 120 in the morning is not a bad starting point. I think that blood sugar day-to-day can vary quite a bit and it's important to keep track of. The other important metric to keep track of is your hemoglobin A1C, which is a measure of your long-term blood sugar control. It basically gives you the average for your blood sugar control over the last three months.

Looking at those two things together, we like to have that hemoglobin A1C ... Our target for that is to be less than 7% for most individuals. We certainly want to make sure that we're avoiding having lots of high blood sugars because that can have a bad impact on the heart. We also want to make sure we're having blood sugars that are not too low because that can also have some danger associated with as well. But I think that having that regular monitoring of your blood sugars and the morning blood sugar range you described is I think not a bad starting point, but also the hemoglobin A1C number is helpful. I will also say that you raised the question of age and the earlier your onset of diabetes then by definition there's also a longer time you have with diabetes or duration with diabetes and that does actually further

increase heart disease risk. So the longer you have diabetes, what we do know is that the better controlled your diabetes is, the lower the risk is. So keeping an eye on those sugars when that starts is going to be really helpful and important.

Carla Cox:

Thank you. You have another question coming in from Jane and Jane is from Georgia. Jane, you're on the line.

Jane:

Yes. Hello. Thank you for taking my question. I know symptoms for heart care for women is different than men. Also for stroke and heart attack. What are some of the things we need to look for? Because I'm a type two diabetic, my A1C is real good, but I am concerned because I do have heart stuff in the family.

Dr. Chiadi Ndumele:

That's a very important question. And understanding the symptoms that you should be looking out for heart disease are important. Now we've been saying heart disease and I'm happy you brought up stroke and heart disease. It's important for people to understand that there are different types of heart disease. There's not just one type. The three major ones that we think about are heart attacks and coronary artery disease. So that's when we don't have enough blood flow to the brain. That's the kind of thing that can cause a few different symptoms. Sorry, blood flow to the heart. Excuse me. So that can cause a few symptoms. That can cause chest discomfort. That can cause some sudden shortness of breath and sweating and nausea. Those symptoms can all come together. The one thing that does sometimes happen in people with diabetes, and particularly if they have had diabetes that's associated with neuropathy where some of the nerves aren't working as well, is sometimes some of those classical symptoms of chest pain may not always be as a present in people with diabetes so they may, for example, have some shortness of breath and fatigue as the sign of poor blood flow to the heart without some of those symptoms. So it's good to have that extra vigilance there.

There's another kind of heart disease called heart failure and heart failure is when the heart is not functioning well enough to adequately supply blood flow to the body. It could either be because the heart's a little too stiff and there's some other challenges going on or it's not pumping well enough. But some of the symptoms with that include more shortness of breath, being more tired, some difficulty lying down flat at night because of your fluid buildup in the lungs that make it hard for you to breathe when you lie flat as well as fluid build up in the legs and sometimes in the abdomen as well. And then stroke is a different one where you could have sudden brain dysfunction from poor blood flow to parts of the brain that can be associated with difficulty speaking and difficulty suddenly with vision or difficulty with moving an arm or a leg or feeling. So things that reflect brain functions suddenly going down. So there's different kinds of symptoms to be aware of and the big special thing for individuals with diabetes is, particularly for the heart attack symptoms, to have a little bit more vigilance or a little bit more caution because you may not always get the classical chest pain if you have neuropathy.

Carla Cox:

Thank you. We have a question coming in from Leora Peterson from Portland, Oregon. Leora, you're on the line?

Leora Peterson :

Oh yes. I have been diagnosed with diabetes since I think 2015. But I feel like I'm a type one because I had all my pancreas removed except for the head and I'm on an insulin pump. And I just got diagnosed with coronary artery disease and they said that it's 40, 50%, but it's not occluded. Watch my diet. Can coronary artery disease be reversed with diet? The damage that's there?

Dr. Chiadi Ndumele:

A lot of helpful questions there. First of all, let's make sure we're all understanding the difference between type one and type two diabetes. Although there can be some overlap, type one diabetes is more about not producing enough insulin to handle glucose in the body. Type two is more about your body not having the right sensitivity to insulin. Not responding to insulin. You becoming more insulin resistant. So those are a little bit different and you do, with the pancreas removed and the need for the insulin pump, there are some things there that sound like some components of type one. Both type one and type two diabetes can increase risk for cardiovascular disease. What you described is the blockages in the arteries. So in the arteries, you can have different levels of blockage. It can start with a smaller blockage that's blocking a small amount. 10% or 20% of the blood flow in that artery. It can progress further to what you've described, a 40 to 50% blockage. For most of the major arteries the blockage needs to get to about 70% blocked before it starts causing symptoms. Symptoms like the chest discomfort, shortness of breath and other symptoms. And at that stage, that's where we can think about using something like a stent procedure to open up a blockage or if there are multiple blockages, thinking about bypass surgeries.

When we have heart attacks, that's when sometimes that artery can get suddenly almost 100% blocked or close to 100% blocked and that's a little bit more of an emergency because we want to open that up as soon as possible to prevent permanent heart damage or to limit permanent heart damage. Your question about diet is a very important one. A healthy diet is very important for improving some of the vascular changes, some of the changes in the blood vessels that are going on, and the inflammation and some of the things that are being produced by the cells in the heart arteries. It's not been shown to reverse the blockages that are there, and I could talk a little bit more about that in a second, but it does have some beneficial effect on heart outcomes.

It definitely improves all the things that go along like blood pressure, your diabetes control and other things. And in some studies a healthy dietary approach has been shown to reduce bad cardiovascular outcomes as well. The one thing that has been shown to reverse some of the blockages, the severity of blockages, has been a very high intensity cholesterol lowering therapy. In some individuals that has been shown to be associated with some reversal of some of the severity of heart blockage in those individuals with coronary artery disease.

Carla Cox:

I have a question for you. When you say a really aggressive way of dealing with this, do you mean diet alone? Are you talking diet and statins or what?

Dr. Chiadi Ndumele:

Yeah. There's two different things there, Carla. From a dietary standpoint, I would say the dietary approach to be thinking about is one that is fruits and vegetables, whole grains. We prefer dietary approaches that have a good amount of healthy fats, so omega-3 fats that come from things like fatty fish or from a moderate amount of nuts. So things along those lines and less refined carbohydrates, less saturated fat, definitely less fried food and very, very limited red meat. So those approaches. There's a couple of different approaches one can take. There's not just one that fits for everybody. The one that

has some of the best outcomes data associated with it is an approach called the Mediterranean diet approach that includes most of what I just described.

In terms of the aggression for reversing the cholesterol plaques ... So the plaques in the heart arteries are made of cholesterol. When I talk about the aggressive reversal of that, the only thing that I'm aware of that's been shown to really reverse in studies the degree of cholesterol plaque blockage has been adding high intensity cholesterol therapy, statin therapy to a healthy dietary approach. So the healthy dietary approach is very important and is the cornerstone of a lot of what we think about from a prevention standpoint. Adding the statin could have some additional impact on the actual plaques in the arteries.

Carla Cox:

Thank you. That's great. We have a question coming in online from Diane. Her comment is, "I have recently gone from pre-diabetes to diabetes and started Metformin. What baseline tests should I have done? For example, kidney, heart, et cetera?"

Dr. Chiadi Ndumele:

That's a great question. And it's hard because I don't have all the data there in terms of the age and other things that will be important for assessing that. But what I'll say generally is that when you're progressing the diabetes, there's a few things that are going to be important. In order for us to address the various risk factors that we talked about, like your blood pressure and your blood cholesterol for example, we need to be measuring those. So that's going to be generally recommended for individuals with diabetes. And we want to be focusing on getting those well controlled and sometimes there's specific agents that we'll recommend for bettering your blood pressure and cholesterol control that have some additional benefit for people with diabetes. Additionally, if you don't have a high bleeding risk, that's when we sometimes think about aspirin in the right individuals. And then we've talked about diet, exercise, and then there's sometimes special new medication ... Well, newer medications for diabetes have some additional heart protection effects as well.

In terms of additional tests, the one thing that's I think a helpful piece of advice is getting what's called a risk estimation. So what we have is an equation that your doctor can do that can estimate what's your risk of developing a heart attack or a stroke over the next 10 years. And that puts in all these risk factors that we're talking about. It puts in your age and some other characteristics. Based on that risk estimation, that can tell you a little bit more about what are the best approaches and what level of aggression of our approach do we need to prevent your heart disease risk. If you're in the high risk category, then there's certain things that we're going to definitely recommend very high intensity statin therapy, aspirin therapy if you don't have high bleeding risk for example, and thinking about the aggression of your blood pressure control. If you're in a low risk category, then there may be some things that are less urgent. In the intermediate risk category, we sometimes have a bit of a gray zone where we may need a little bit more information to refine our approach.

That's where the additional test that we sometimes think about is a coronary artery calcium score. That's a measure of the calcium buildup in plaques within your blood vessels that strongly links to future risk of heart attacks and strokes. If you have that in somebody who's intermediate risk, it makes you a little bit more likely to want to intensify the therapy you're doing to prevent heart disease. If on the other hand that's not present, then that's actually somewhat reassuring, at least for that individual's short term risk for developing a heart attack or stroke. And then other tests are really individualized based on your examination and your symptoms with your doctor.

Carla Cox:

Great. Thank you. You have a question coming in from Linda. Linda, you're on the line.

Linda:

Hi.

Dr. Chiadi Ndumele:

Hi Linda.

Linda:

Yeah. Hi. I was calling because sometimes I get a pain in my chest, by the breast area. And I got a mammogram and everything's okay. I am a diabetic over like 34 years. I take Metformin twice a day. I did lose weight, now I've gained it back through a lot of stress that I have. I went through all the heart tests and the doc said it's good. My cholesterol is 140 over 80 or something. They said it's excellent. But I sometimes worry, is that the heart over there or just gas? Because it does go away.

Dr. Chiadi Ndumele:

Thank you for that, Linda. It's a common question. And because heart attacks have potential to be such a debilitating outcome, I think most people get concerned when they feel something on the left side of their chest or in their left arm, which are some of the places that we commonly feel things. The good thing is that not everything that happens there is because of the heart. So the heart is there, we also have the esophagus or our feeding tube there where we can sometimes get symptoms of either reflux or spasms in that area that are very hard to distinguish sometimes from heart related discomfort. There's also the lungs there. There's also some muscles and some cartilage there. A lot of things that can cause symptoms that are not just the heart.

I don't know the specifics of your case of course, but you mentioned that your doctors did heart tests. So let me tell you about the one kind of heart test that often happens for individuals where there's a concern about heart related pain or chest pain. If the doctor has at least more than a low suspicion, sometimes people may get referred for a stress test. And a stress test is a test where essentially you either exercise or you get a medication that mimics what happens with exercise. And then what happens is you get a sense of are there changes ... Well, let me put it this way. When you exercise or when you do something that mimics exercise, your heart needs more blood flow in order to function and to meet the demands of the body. So the question is when that's happening and it needs more blood flow, is the heart able to get that blood flow? If there are blockages in the heart, then the blood flow challenges become more apparent when the heart is under stress. And there may be an area that that's 70% or more blocked as I was just describing, where you may see that the heart is not functioning as well or looking like it's not getting as good blood flow.

If you have a stress test that is normal, then that can be somewhat reassuring. They're not 100% foolproof, but it can be reassuring. What's even more reassuring on top of that is if you're able to function in a really good way on a test like that. So if you're able to exercise for a good amount of time while getting your heart rate up in a way that shows that your heart's really working hard and needs energy and you can get a good functional status test, then that tells you a lot of information above and beyond just whether there's poor blood flow or not poor blood flow. If you have good functional status, that is a very, very powerful prognostic marker for how you're going to do even if you do have some issues with blood flow to the heart. So that's the kind of test that if you have a very good stress test can

give you some reassurance and then you can continue to talk with your doctor if you're having symptoms that are concerning.

Carla Cox:

Thank you. We have a question now coming in from Rich. Rich is from Buffalo, New York. Rich, you're on the line?

Rich:

Yes. I have a three part thing, but it's going to be very quick. So someone that has a diabetes type two for decades, maybe a little peripheral neuropathy. First of all, it sounds like a CT calcium score and a stress test is okay even if you don't have a history of heart disease. So the two really questions are in terms of meds, if you're pretty much maxed out on Metformin and Glipizide but are averse to medications and have a history of a pancreatitis, there are very few oral options and if you don't want to go on insulin, do you recommend anything? And last question is the ... Yes. If Fenofibrate can control your cholesterol, given the profile I've given you, is it necessary to go on a statin and is Rosuvastatin... I don't know if you want to recommend one over the other, but that seems to have a lower side effect profile. So I think that covers everything.

Dr. Chiadi Ndumele:

All right. You fit in three and one. Okay. Let me try to go through all three quickly. So I want to first clarify that I'm not saying everybody should be getting stress tests and CT coronary calcium scores. Stress tests can sometimes happen for people who have certain symptoms that are concerning for heart disease and give you some more information. And then CT coronary calcium scores are sometimes used for individuals who are in initial risk estimation that says they're an intermediate risk and you're trying to decide how much you want to intensify their preventive therapy with things like statins.

So there's select groups and it's really not something that should be just done for general screening but for very specific reasons for certain patients. So that's number one. Then I remember the fibrate question, so I'll go to that and Carla, maybe you'll remind me of the other one. But I'll say the fibrate question is a very important one. So fibrate therapy is ... Oh, and the other type of diabetes medication. So fibrate medication is ... When we talk about cholesterol, there's different aspects of what we want to control. The most important aspect of cholesterol to control well is something called your LDL cholesterol. That's your "bad cholesterol" as we've often described it as. Particularly in individuals in general, lowering your LDL reduces your heart disease risk. It's a powerful way of reducing heart disease risk in people with diabetes because they're starting with a higher risk of heart disease.

The statin therapies like Atorvastatin or Rosuvastatin are very nice agents for lowering the LDL cholesterol in persons with diabetes. They have a little bit of effect on another class called the triglycerides that also reduce risk. But the effect on triglycerides is modest, so they really have a powerful effect on the LDL cholesterol, which is the biggest driver of risk for heart attacks and coronary heart disease in the cholesterol realm.

The triglycerides also are associated with some risk and they tend to be higher among people who have insulin resistance in diabetes. So type two diabetes. So the triglycerides are an important thing to address as well. If your triglycerides are very high, like greater than 500, then there's a need to bring those down because they actually carry some risk for pancreas inflammation or pancreatitis. And fibrates are the best way to do that. Sometimes you can also use what's called the omega-3 fatty acids to do that as well. For individuals who have what we call more moderate high triglycerides or hypertriglyceridemia, so in the 150 range or greater than in a few hundred range, then the question is

what's the best approach there? The fibrate trials have not been consistently effective in terms of showing benefits. There was actually one that just came out recently that was also negative for reducing heart risk.

So there are some other agents that could be considered, particularly in people with diabetes who have high triglycerides, and the one that stands out to me these days is one called EPA or Eicosapentaenoic. It's a special kind of fatty acid supplement or omega-3 supplement. Excuse me. That was tried in the trial that had a lot of people with diabetes in it with high triglycerides and seems to be effective for further reducing heart disease risk by about 30%. I should focus on saying those people in that study also are already on statin therapy. So this is not as an alternative. This is something that could be added on top of that if you still have high triglycerides with diabetes and it makes sense after your doctor estimates your overall risk.

To your question about additional agents, that's complicated. There's a lot of different things to think about there. And I'm not an endocrinologist, I'm more of a cardiologist. But what I will say is that you mentioned I think something about pancreas issues. There are these newer therapies. The GLP-1 receptor agonist, like Liraglutide was one that was ... Been well used in diabetes. A newer one that has a bigger impact on weight is Semaglutide. And those are ... At least liraglutide had some additional impact above and beyond its diabetes effect on also cardiovascular disease rates. So that's really powerful. Particularly atherosclerotic cardiovascular disease. The kind that causes heart attacks. There's another class of agents that has less impact than an A1C, but they're called the SGLT2 inhibitors like Empagliflozin or Dapagliflozin. Those agents have not so much of a glycemic effect, but they have a really also powerful effect on reducing rates of cardiovascular mortality and outcomes and their effect is more on heart failure. There's two new classes of agents that have some particularly beneficial effects for their heart that can be considered if individuals don't have any contraindications to those.

Carla Cox:

The only thing I want to add to that is you said you didn't really want to go on insulin. I mean remember, insulin works. If your glucose is high, it is one line of therapy that people are fearful sometimes of going on, but it's a very effective therapy. These other orals are awesome for lots of reasons, but insulin works. So don't cross it off your list if your endocrinologist feels like that's the best choice for you. It has the most powerful impact on glucose if your glucose is running high.

Dr. Chiadi Ndumele:

Yeah. And I just want to add to that Carla and just say I fully agree and thankfully you're a helpful diabetes educator as well. And I think that my approach generally when I'm talking to folks is maximizing the agents that improve insulin sensitivity as much as we can and then maximizing what we can do with lifestyle. But then just as you said, if still on top of that, we need insulin, it does work. It does help with diabetes control. So I think if you need it, then certainly don't shy away from it.

Carla Cox:

Right. So a question coming in. What makes diabetes a risk factor for heart disease and stroke? What's the mechanism?

Dr. Chiadi Ndumele:

What is the mechanism? Well, that is a big question. And there's a lot of things that we know and there's still some things that we don't know. First of all, diabetes increases risk for most kinds of heart disease, including heart attacks, strokes, peripheral vascular disease. So that's blockages in the arteries that go to

the legs or the arms or even in the neck area. Then it also increases heart failure risk like we talked about. And then sometimes risk for things like arrhythmias, like atrial fibrillation. The mechanisms for those can be different. But I'll tell you some of the key mechanisms that are going on that we know about so far. So one is that in diabetes, the insulin resistance that we see is associated with a lot of different changes in the body and the cardiovascular system.

We have changes in our cholesterol. So our cholesterol tends to get more inflamed. So the LDL cholesterol we mentioned, instead of being in larger globules, they tend to get into small dense globules that are more likely to get stuck in the vessel walls and cause plaque buildup. We have what we call oxidative stress. The way we use the energy in the body can become a little bit impaired. We can get dysfunction of these little things in our cells called mitochondria that can lead to a bunch of inflammatory changes that can further increase inflammation in the heart and heart disease risk. Sometimes the buildup of excess fatty acids that we see can actually cause direct deposits of fatty acids in tissues. So it can cause it in ... Many of you have heard of non-alcoholic fatty liver disease where we get buildup in those tissues that can cause inflammation and even further liver disease over time like cirrhosis. We can get some similar buildup of fatty acids within the heart muscle that can cause worsening heart dysfunction over time.

And then diabetes often affects not only the big blood vessels but also the small blood vessels, which is called microvascular dysfunction that can actually further compromise how well organs function. There's a few other ... Not a few. There's a bunch of other things. Diabetes could also increase thrombotic risks. So because of all the inflammation, it can make it more likely that blood clots happen that can block things in the brain or block things in the heart. So because of all these various issues and challenges that are occurring, and there's still some things that we don't fully understand about the diabetes and heart disease mechanism, which is an active area of research for folks like myself, we do know that yes, treating diabetes and getting it better controlled is helpful, but then also just dealing with the underlying insulin resistance and the things that often can lead to diabetes, particularly from a lifestyle standpoint and a weight loss standpoint and regular exercise and diet can have a powerful impact on some of the things that we directly measure every day, like some of the cholesterol markers and other things, but also the things that we don't measure regularly that are going on to affect our system.

So that's why we have such a heavy emphasis on the lifestyle standpoint because that's at the root cause of so much of what we see. But there's a lot that we know and still a lot that we don't know about how diabetes affects the cardiovascular system.

Carla Cox:

Thank you. We have a question coming in from Tabitha. Tabitha is from Louisiana.

Tabitha:

Hello. I have a question about aspirin. How do you know when you should take it or shouldn't take it based upon the latest information that is out there? And also what's a excellent A1C reading?

Dr. Chiadi Ndumele:

Those are both great questions. The second one I would say we're often trying to get the hemoglobin A1C less than 7%. We don't want the A1C to get very low in the context of being treated with things that lower your sugars. So less than 6% is concerning. And generally we're going to be backing off on some therapies there because hypoglycemia, as I'm sure many people here know, can be a very big risk as well. But less than 7% is often a goal. In terms of aspirin. Aspirin is a medicine that it prevents heart attacks and strokes because it basically prevents clotting. It prevents clumping of platelets in the body

that can prevent clotting and keep arteries clear of those blood clots that can block flow. However, aspirin, because it prevents clotting can also be associated with some increased risk of bleeding. And in some individuals the risk of bleeding outweighs the benefit that we get from a cardiac protection standpoint.

So I will say that the people who have the highest risk of clotting issues where aspirin has the greatest benefit are generally going to be those individuals who have existing coronary artery disease. Particularly those individuals who've had a prior heart attack, prior stent, prior bypass surgery, prior stroke. That's where we know that there's a lot of benefit for those individuals being on ongoing aspirin therapy. That's what we call secondary prevention because we're trying to prevent a future, a recurrent heart attack or a recurrent stroke or recurrent need for opening up arteries. Then we are also interested obviously in primary prevention. Preventing these heart attacks and strokes from happening in the first place. So for those purposes, aspirin can be beneficial, but the discussion needs to be with your physician about whether or not you have things that are high risk features that would make bleeding more of a concern.

One of the big dividing lines for people who don't yet have heart disease and we're thinking about aspirin therapy for primary prevention is age. So it tends to be the case that if you're getting up in age, so age greater than 75, again, without having known heart disease, then if we're using aspirin for primary prevention, we often have a little bit more pause there because then we get a little bit more concerned that the bleeding risk may start to outweigh some of the benefits we get from aspirin therapy. In younger populations, if there's not a bunch of high risk indicators, you haven't had an ulcer before, you don't have other pathology with your gastrointestinal system, your stomach and intestine system, then we'll have maybe less concerns there and be more likely to administer that. So aspirin is a very useful agent in the right population. And again, particularly people who have existing heart disease. But if we're doing it for preventing heart disease, it should be a careful discussion with your doctor about whether or not the benefits are outweighing the risks.

Carla Cox:

Thank you. As a reminder, for those of you on the phone, press star three, that's star three on your keypad, and an operator will collect your question and place you in a queue so that you can have the opportunity to ask your question live. To participate online, type in your name and question the fields below the string player. Press the submit question button and your question will come directly to us. Okay. Now on to more questions. So we have Dorothy. Dorothy is from Baltimore. And Dorothy, you are on the line.

Dorothy:

Thank you. I have a question. Is there any relationship between diabetes and AFib?

Dr. Chiadi Ndumele:

Thank you Dorothy for that question and welcome from a neighbor from Baltimore. So diabetes and atrial fibrillation, yes. There are two important aspects of the relationship between diabetes and atrial fibrillation. So first of all, diabetes does increase risk for atrial fibrillation. That's probably through some of the changes that happen in the heart, some of which I was just discussing as an inflammation and changes in the fatty acids in the heart. But various changes and also some of the blood pressure issues that go along often with diabetes but it does increase risk for atrial fibrillation. That's the first part. The second part that's important is that if you do develop atrial fibrillation, one of the biggest things that we worry about from atrial fibrillation is the development of stroke. So the reason is because in atrial

fibrillation, the top part of the heart is fibrillating. It's not really moving very well and because things are staying static in that area, you can get blood clots that form in that top part of their heart and they can get dislodged and go to other areas and commonly can go to the brain and cause strokes.

So when we're thinking about atrial fibrillation, the question is do you have other things at the time of your atrial fibrillation that increase your risk for strokes? Stroke risk factors. And diabetes as well as high blood pressure and advanced age are some of those key stroke risk factors. So diabetes both increases your risk for developing atrial fibrillation and it increases your likelihood of stroke after having atrial fibrillation. However, the good thing about that is that you can do a good job with preventing stroke by being on blood thinning agents. They have a dramatic impact on whether or not you develop stroke, but the likelihood of needing those blood thinners like Coumadin or Apixaban, which is known or Rivaroxaban or dabigatran, the likelihood of those kind of agents increases if you have diabetes in addition to atrial fibrillation.

Carla Cox:

Thank you. I have a question coming in online from Anthony. "I have not eaten processed sugar in 25 years. I am thin and in good physical shape. Why would I develop type two diabetes?"

Dr. Chiadi Ndumele:

It's a good question. And I think there's some unfairness in life that goes into that, but this is one of the questions that, Anthony, we are actually interested in examining. We're examining this in some of the research that we do, which is that in any given weight category we see a lot of differences, what we call heterogeneity, in the level of what we call metabolic risk and diabetes. So there's some individuals who have not that much in the way of excess weight but are still developing a lot of these factors like high blood pressure and abnormal cholesterol and diabetes, and then some individuals who have a bit more weight but are not developing those factors. So trying to understand the processes underlying that is something that I think several of us are actively examining both so we can better understand that, but also so we can have better targets to prevent the development of diabetes as many places that we can.

I would say that even though I think the lack of processed foods and processed sugar, I think that's really important, I would say make sure that you're still following generally a balanced diet. Although from the tenor of your question, I suspect that you are actively thinking very hard about your diet and working hard at that. And then exercise really matters on top of that as well. So being more sedentary increases insulin resistance, increases your glucose numbers. At the same time, the more exercise you do regularly and the less sedentary time you have, has a positive impact on lowering blood sugar and improving insulin resistance. So I would encourage that as well. But unfortunately it's the case that some individuals, even with everything that they do from a healthy standpoint ... And I have some patients who work very hard at being healthy and it works for most people, but still even with a really healthy lifestyle, some people still develop diabetes. We sometimes have to consider some additional pharmacologic agents or other approaches to reduce the likelihood of developing diabetes. So don't take heart. What you're doing from a lifestyle standpoint still matters. And the way I tell my patients is imagine if you weren't doing those things, how much more maybe severe the diabetes would be and how much faster would it progress. So I suspect what you're doing is still making a big difference.

Carla Cox:

Thank you. It's encouraging. So another question coming in. Should everyone with diabetes take a statin to prevent heart disease?

Dr. Chiadi Ndumele:

Yeah. It's a good question. I had the privilege of actually participating in the process for the last cholesterol guidelines for American Heart Association. And as we're thinking about ... When you have heart disease, then we already know that being on a statin therapy is going to be very beneficial for lowering your risk and that's going to be recommended for everybody. When you don't yet have heart disease, then the question is which individuals would benefit most from being on statins or cholesterol lowering therapy and statins having the most evidence behind them. Individuals with diabetes, what we often do is what we call a risk estimation, as I mentioned earlier where we say, looking at your overall profile, what's your risk of developing a heart attack or stroke? Diabetes, because it's associated with such profound risk for heart disease, is actually by itself enough to raise your risk to the point where we should strongly be considering statin therapy. It takes you out of the low risk category for the risk calculator and makes you somebody who we would generally say you should be considering the possibility if you have diabetes, of being on either a moderate intensity or a high intensity statin therapy for lowering your LDL cholesterol in particular and lowering your future heart disease risk.

That's the general recommendation. The statin therapies. I know there's lots of discussions about them in the public. The reality is they actually have a fairly low side effect profile and are very well tolerated with very little ... But have a known often up to 30% reduction in future risk for heart attack or stroke. That being said, there's sometimes where people are still very unsure and really want to know that they're really, really going to benefit from statin therapy and are resistant to the idea of taking a medication or an additional medication like a statin therapy. So occasionally in those situations, if those individuals need a little bit more guidance about their approach, I will consider that coronary calcium score that I talked about earlier. And if that coronary calcium score, if somebody has well controlled and mild diabetes and that coronary calcium score is zero and shows there's no plaque buildup going on, then that may be a discussion where we'll say your short term risk of developing a heart attack or stroke is relatively low and together if this is not something that you want right now, maybe we can revisit that in the future.

On the other hand, if that coronary calcium score is high, then that would generally cause me to further advocate the need for a more aggressive cholesterol lowering therapy. So that's not necessarily part of the guideline approach, but for individuals who are still really concerned, that's something that we sometimes consider in the right person.

Carla Cox:

Perfect. Thank you so much. So we have quite a few questions remaining, but we only have time for one left. So let's go to Karen Mann. Karen is from Ohio. Karen, you're on the line.

Karen Mann:

Yes. Hi. I wanted to know how do you know if you have blocked arteries and what are the symptoms? And my other question while I was thinking is what should your heartbeat be when you're sitting? I got an alert on my phone or my watch phone that said it was high and it was 120.

Dr. Chiadi Ndumele:

Okay. Thank you for both questions. The first question is what are the symptoms when you have blockages in your heart arteries? And that's a really important question because blockages in your heart arteries can be very serious. They can limit your ability to do things and they can also cause mortality in individuals as well. Or death. So blockages in the heart arteries ... Some of the key symptoms that you can get when the heart is not getting enough blood flow, and usually that means the blockage has to be

70% or more, is that when you're trying to do certain activities, it can bring about things like chest discomfort. When you're trying to do activities, it brings about excessive shortness of breath. And then sometimes accompanying that can be symptoms in your left arm or symptoms in your jaw. You can also get some sweatiness and nausea.

Those are types of things that can sometimes go along with that. If you have a sudden heart attack, then those symptoms can all come on at once or very rapidly and even when you're not doing anything cause you quite a bit of concerning symptoms like those. So I think those are important. I think the piece that I want to emphasize, which is what I said earlier, is that in diabetes there's sometimes because of the neuropathy, the nerve damage that goes with diabetes that you may not have the classic chest pain symptoms or the chest tightness or chest discomfort and you may just have some shortness of breath and fatigue and some other symptoms. So that's something to keep an eye on and have a little bit more vigilance for as well.

In terms of your heart rate, a normal heart rate is considered between 60 and 100 beats per minute. Tachycardia or a fast heart rate is when your heart rate's above 100. So particularly if you're sitting and not doing anything, it's not considered in the normal range for your heart rate to be going more than 100 beats per minute.

And some people who have fast heart rates have symptoms called palpitations. So they can feel their heart racing or fluttering or beating hard. And if you're having that symptom, that's something I would investigate further with your doctor to understand why that fast heart rate is happening. If the heart rate is consistently high in that 120 range, then that's something I would also actually get addressed as well. A good heart rate ... It's hard to say exactly what a good heart rate is. There's some people who exercise a lot and have what we call a high vagal tone. They're very fit and their heart rate may hang out in the 50s and that's totally normal for them. I think in general a heart rate in the 60s and 70s is a pretty rock solid heart rate, but I wouldn't say I'm terribly concerned by a heart rate in the 50s or in the 80s.

Carla Cox:

Great. Thank you. Dr. Ndumele, could you give us three key takeaway points you want to make sure everyone takes home from today's discussion?

Dr. Chiadi Ndumele:

Yes. I'm happy to do that. I would say the first key takeaway point is the one that I actually saw at the slide early on is that heart disease is not at all inevitable for individuals with diabetes. It's certainly major, it's a big challenge, but it's one that there's a lot of approaches in place that can help prevent the development of heart disease in individual with diabetes. I think that's really important and something that's key. The second piece that I would say is that I described in the very beginning the holistic approach that I take when I'm thinking about the prevention of heart disease among individuals with diabetes and that's that ABC approach. So A standing for aspirin in the right individual. B, thinking about blood pressure control. C, thinking about cholesterol management and lowering it often with statin therapy. Sometimes with that EPA fish oil I described for people with high triglycerides. And then also cigarette smoking being one of the most powerful things you can also do to reduce your risk if you're smoking currently and have diabetes. D, being for diet. A healthy diet. And then D also reflecting some of the diabetes medications that have some additional benefits. And then E with a focus on exercise as well.

And all of those things I tend to with folks work together and say, how are we addressing all those various aspects of risk to reduce the likelihood of developing heart disease and diabetes? And then I just want to finally emphasize the underlying point. There's some nice fancy new medications that are

helpful in diabetes. We talked about the statins a lot. There's these newer medications like the GLP-1 receptor agonists like Liraglutide and Semaglutide and the SGLT-2 inhibitors like Empagliflozin and Dapagliflozin. But I just also want to emphasize that lifestyle is at the core of a lot of diabetes and it's at the core of the successful management of diabetes and it really addresses a lot of those changes in the body that go along with diabetes. So I would really want to emphasize healthy diet, regular exercise. And that should be about 150 minutes a week is the really recommended exercise for moderate or vigorous intensity exercise. So walking for 30 minutes, five days a week is amazing and really well recommended. And then just thinking about that in addition to working with your doctor on all the medications or risk factors. But it's not inevitable to develop heart disease and diabetes and you can make a big difference in what you do.

Carla Cox:

Oh, that's great. Thanks. To help you feel confident about your ability to manage your diabetes and heart health, we encourage you and your loved ones to talk to your doctor and dietician about your risk for heart disease, stroke and kidney disease, go to knowdiabetesbyheart.org and learn more, register for our next event at diabetes.org/experts, sign up for a diabetes education program near you, and sign up for ADA's free living with type two diabetes program. Links to these resources can be found on our registration webpage, diabetes.org/experts.

Thank you for all your great questions you called in with and wrote in with. We are sorry we were unable to get to all of those questions during this live Q&A event. If you have questions about the event, you're welcome to contact us at askada@diabetes.org or by calling 1-800-342-2383. Please stay on the line for our survey to help us with future planning for our events.

Thriving with Diabetes takes a team and we are here to support you. A very special thank you to our expert Dr. Ndumele. I am Carla Cox and on behalf of the ADA team, we want to thank you for joining us today and we look forward to connecting with you at our next event, March 14, how to prevent and treat kidney disease, and April 11, labs, scans and more. Please visit our website for more information at diabetes.org/experts and register today. If you have any questions about this event, please email askada@diabetes.org and include, Ask the Experts Q&A in your subject line and thank you for joining us today. And now please stay online for our post event survey.

Thank you for participating in the American Diabetes Association Ask the Experts event. We hope you can stay online for the next five to seven minutes to share your honest and valuable feedback to help us improve upcoming events. All responses will remain confidential. Please let us know your level of agreement with the follow up with these statements. Satisfaction. Question one, this event met my expectation today. For yes, press one, for no press two, and for unsure, press three. Once again, question number one, this event met my expectation today. For yes, press one, for no, press two, and for unsure, press three. If you feel you could use some support for managing your diabetes, check out the Living with Diabetes program where you can receive information through email and e-booklets with tips on eating, physical fitness, and emotional health. Check out our registration page, diabetes.org/experts.

Question number two, I will attend another Ask the Experts event. For yes, press one, for no, press two, and for unsure, press three. Once again, question number two, I will attend another Ask the Experts event. For yes, press one, for no, press two, and for unsure, press three. If you can find delicious and healthy recipes and menus to enhance your eating, check out the website, www.diabetesfoodhub.org.

Question on knowledge. Question number three. This event improved my knowledge of heart disease and stroke prevention. For yes, press one, for no, press two, and for unsure, press three. Once again, question number three. This event improved my knowledge of heart disease and stroke prevention. For

yes, press one, for no, press two, and for unsure, press three. Did you know that there are approximately 37 million people with diabetes? You are certainly not alone.

Okay. Under intent to use your knowledge. Question four. I intend to use the knowledge I gained in my and my loved one's next appointment with a healthcare professional. For yes, press one, for no, press two, and for unsure, press three. Once again, question number four. I intend to use the knowledge I gained in my and my loved one's next appointment with a healthcare professional. For yes, press one, for no, press two, and for unsure, press three. Keep your glucose within target range of 71, 80 milligrams per deciliter 70% or more of the time is the international recommendation for diabetes management. Consider asking your provider about getting a continuous glucose monitor to help you manage your glucose.

Okay. On confidence, pre and post. Question five. Before this event, I felt confident talking to a healthcare professional about my and my loved one's, increased risk of heart disease and stroke. For yes, press one, for no, press two and for unsure, press three. Again, question number five. Before this event, I felt confident talking to a healthcare professional about my and my loved one's increased risk of heart disease and stroke. For yes, press one, for no, press two, and for unsure, press three. Check out the heart disease risk calculator at <https://www.cvriskcalculator.com> and discover if you are at risk for heart disease.

Okay, our final question, number six. After this event I feel confident talking to a healthcare professional about my and my loved one's increased risk of heart disease and stroke. For yes, press one, for no, press two, and for unsure, press three. And again, our final question. Question six. After this event, I feel confident talking to a healthcare professional about my and my loved one's increased risk of heart disease and stroke. For yes, press one, for no, press two, and for unsure, press three.

We sincerely appreciate your time and look forward to engaging with you on a future Ask the Experts event. Please visit diabetes.org/experts to learn about upcoming events. Thank you.