Introduction to Stroke Prevention

We hear so much about heart disease, its causes, and how to reduce our risk, but we don't hear as much about stroke and stroke prevention. Can we reduce our risk?

What specifically can we do? Let's see where the evidence takes us. Welcome, my dear listeners, to episode number 46, Can we reduce our risk of a stroke?

Now in prior episodes, we talked about reducing our risk of heart disease. Now that was episode 18. We also talked about how to reduce your risk of cognitive decline.

That was episode 13. Now let's look at stroke in the very same way. What we might be able to do to reduce that risk. Once again, we are joined by Dr. Anthony Pearson, who was with us on episode 37, Reducing Our Risk of Heart Disease.

And as I shared before, we are kindred spirits that focus on evidence, and we're both a bit skeptical until proven otherwise. So Dr. Pearson is a board certified cardiologist.

He's on faculty at several academic medical centers. He's published a hundred peer reviewed papers and he's been in private practice for 20 years. He takes a very holistic view, diet, lifestyle, exercise, and of course medications.

He's a columnist for MedPage Today and the author of The Skeptical Cardiologist, an excellent blog I recommend to you all, which is now a sub stack. Dr.

Pearson, welcome back once again. Good to be here, Bobby, and looking forward to a good discussion.

What a Stroke Is and Why It Matters

Excellent, and to give our listeners a preview. We are not always going to agree on everything today. And when Anthony raised this, like, I'm gonna have to push back on this.

I said, I love it, absolutely. Where we see the world differently, we'll talk about that and maybe we'll come to some middle ground or at least the listeners will have two different viewpoints they can try to decide amongst.

Okay, let's dive right on in. So part one, we're talking today about a stroke. Well, what is a stroke and how common are they? And we're gonna do a bit of point counterpoint.

I'm gonna raise some issues. Dr. Pearson will then chime in, I'll ask some questions, he'll answer, and we'll play ping pong back and forth. In a very simple way, a stroke is a blockage of blood flow to an area of the brain.

and it presents as a sudden loss typically of function. It could be your arm is weak or paralyzed or your leg or you can't speak all of a sudden. You might lose consciousness or you might have an altered sense of consciousness.

Typically, it's a sudden onset. Now, it can be silent, it can be fatal, and it can be everything in between. And as we'll talk about in just a couple of minutes, it often leaves the patient with a significant disability, again, weakness or difficulty with speaking or the like.

And that's a bit unlike a heart attack, whereas if you survive the heart attack, typically you feel reasonably good afterwards. Often, often with the stroke, you're going to have a residual problem, and that's why so many people fear it.

Now, there are an awful lot of strokes that happen. In fact, it's almost as many strokes as heart attacks. There's about 600 to 800,000 strokes a year, or if you do the math, about one every 40 seconds.

And every three minutes somebody dies of a stroke. Now in comparison, there's about 800,000 heart attacks a year. So it's in a similar ballpark. Strokes typically happen in people that are 65 and older, not always, but typically that's their age group.

It is the fourth leading cause of death in the United States after heart disease, after cancer, and after accidents. And as I mentioned earlier, about 50% of patients who had a stroke become chronically disabled in some fashion.

So there's neurologic deficits that sometimes go away fairly quickly, but oftentimes doesn't. Actually, it's not in our notes, but I'm going to ask you anyways, Dr.

Pearson, why do you think there's so much more attention on heart disease and heart attacks than stroke? That's a good question. I think We know that with heart attacks, the initial presentation can just be sudden death.

Types of Stroke and Major Causes

And obviously, if you've died, you don't get any second chances. So with strokes, you may become disabled, but you're not going to necessarily die right away with most strokes.

Well, we'll have to explore. I'll have to do a little more of a deep dive why the public health folks and why people tend to know about heart attacks.

They know of strokes, but they don't seem to worry about them as much as heart attacks. I'll have to dig into that. It's an interesting question. So, not all strokes are the same.

So, maybe walk us through the types of strokes and what can cause them, because that will naturally lead us into risk factors and what our listeners can do to prevent a stroke.

Sure. There's multiple ways of kind of breaking down the different kind of strokes. The first way that you and I had discussed was whether it's ischemic or hemorrhagic, which mostly comes from CT imaging of the head after a stroke.

With ischemic strokes, where there's a block in the blood flow in an artery to a certain area of the brain, there is not necessarily blood that pours out into the brain.

But with hemorrhagic strokes, when we look on a CT scan, we see blood. And that can have some important information to give us about the causes of the stroke and what the prognosis and what the best treatment is.

So the vast majority of strokes are the ischemic type where there isn't blood in the brain. Probably 90% of strokes in the United States are ischemic.

And of those ischemic strokes, the There's about 30% of them come from and are related to atherosclerosis in the large arteries supplying blood to the brain, the carotid arteries, the internal carotid in particular.

And that atherosclerosis, the plaque buildup is the same thing that happens in the coronary arteries. Generally, if it's happening in the coronary arteries, it's also going to be in the carotid arteries and vice versa.

Another group in the ischemic stroke are the strokes that are related to what we call cardioembolism, and cardio means it's coming from the heart essentially, but an embolism means that it left the heart, a clot, usually a clot comes out of the heart and then goes up the aorta and then branches off into one of the internal carotids or the arteries in the back of the head and blocks off a an artery and causes a stroke that way.

So, cardioembolism is about 20 to 30 percent of ischemic strokes, and of those cardioembolic things where a clot

comes out of the heart, maybe 50 percent are related to atrial fibrillation where the clot forms in the left atrium of the heart.

Back in the late 80s, We didn't know the cause of the majority of the strokes that we saw, unless they were clearly related to a blockage in the carotid arteries.

And I became interested back then in a new ultrasound technology called transesophageal echocardiography. We'd done the standard echo, which is done from the chest surface.

But that echo, the standard echo or echocardiogram could not identify, could did not see areas of the heart like the left atrial appendage where clots form, the atrial septum where you can have a hole and have clots going across that to cause a stroke and it didn't see the valves that well and on the valves clots can form.

So we used the transosophageal echo and it really was vastly superior at identifying these kinds of things that cause stroke that we weren't identifying before so that The number of cases that turn out to be cardioembolic has gone up because of that technology and it's still important today if you don't know the cause of your stroke to get a transesophageal echo.

Well, that's great. So a variety of different types of strokes and we'll come back to this because the risk factors and how you can avoid them will differ amongst the different causes of stroke.

But I know our listeners want us to dive in and say, okay, what puts me at risk? And please, please doctors tell me how I might be able to reduce that risk.

So there are many different risk factors and there's 10 and we're not going to walk through all of them, but I'll just give you the list now.

Key Risk Factors for Stroke

And we're going to then take a few of them and dive in a little bit in more depth. So in order of most importance, High blood pressure, that's number one.

Physical activity where Dr. Pearson and I may differ a little bit on this is number two. Your cholesterol lipids are number three. Diet and weight and being overweight are numbers four and five.

Psychosocial smoking, cardiac causes as we've alluded to, too much alcohol and diabetes. Now when you look at this long list, and it is a long list, You might say, OK, do I have to worry about all of these?

Well, there's something called population attributable risk. And then there's something called relative risk. And so I don't want to get too, too, too nerdy with folks.

But population attributable risk means of all the people in the population that get a stroke, how much of that number is due to hypertension. That's called population attributable risk.

And it turns out for high blood pressure, 50% of the strokes can tie back to high blood pressure. So if you have individually high blood pressure, it triples your risk of the stroke, but on a population level, it's the number one risk factor and number one thing we can try to focus on.

The next, and this is where we're gonna differ a little bit, is on physical activity. In a meta-analysis that looked at a whole bunch of different studies, they identified physical activity as having about a third of all strokes could be tied back to lack of physical activity.

So now the question is, Dr. Pearson, you feel that the data on physical activity and stroke are not as strong or convincing. Now, I think I'm a huge advocate of getting my patients moving, exercising, and I've written quite a bit about how to measure your cardio fitness and how you should be striving to improve it.

This, but the data that suggests that as you're, I think, quoting 36% of strokes are due to inadequate physical activity are highly suspect. It's all coming from observational studies and this looks at people who have These are associations that don't indicate causation.

And what you really would want to know to prove causation is that we did this trial and we did this amount of exercise on one group or did not give activity recommendations to the other group and we followed them for a long period of time.

And we found some effect on stroke or heart attack. And those studies, when they've been done, haven't really shown that, and we don't have any good long-term studies that I can say to a patient, you're going to reduce your risk of stroke by 36% if you double your activity level.

I'm still going to advise it for a lot of other reasons, but I'm not going to tell them specifically that their stroke or MI risk is reduced. So you're also not just questioning the relationship between physical activity and stroke, you're saying there isn't that type of randomized trial proof even for preventing heart attacks?

It's extremely weak to non-existence, I would say. Well, we can definitely agree on one thing, which is whether the data is strong or weak, we still believe exercise is a wonderful thing to do.

I totally agree. Yeah, well, and you're right. We may not get the ultimate study proof that we would like, but I'm sticking with my recommendation on exercise.

I would just add on what you said about hypertension. I think that is number one, and it may be 50%. I'm not really sure how they come up with this attributable risk and how accurate it is, especially given what they're saying about physical activity.

But the SPRINT study was a randomized trial of lowering blood pressure to 120 systolic versus 140. and that showed a significant risk in mortality, a 27% reduction in mortality and significant reductions in stroke, heart attack, heart failure.

So I do think that aggressive blood pressure control is something that can definitely reduce the risk of stroke. So we should all be trying to identify and treat adequately hypertension.

So Dr. Pearson has raised action item number one, which is make sure you know what your blood pressure is. And if it's elevated, see your doctor, get it under control.

And if you say to yourself, oh, well, I feel fine. Remember, hypertension is a very silent and progressive problem. Even if you feel good, please, please get it taken care of.

And action item number two, whether the date is perfect or not, please continue with your exercise. It's wonderful on so, so many levels. So please do.

Okay, so let's turn to the next one, which is cholesterol. We know that your lipid levels, your APOB levels, your LDL levels relate to your risk of heart attack.

In the studies, it would suggest that about one in four strokes has an important component related to cholesterol. What do you think about that? Does that ring true for you and your practice?

Yeah, I think that's a reasonable estimate of the effects of hypercholesterolemia. And that is only within a certain subset of patients. The patients, again, who have built up atherosclerotic plaque, either prematurely or more advanced than expected, both in the carotid, and they will have built it up in their carotid arteries and their coronary arteries.

Blood Pressure, Exercise, and Cholesterol

the high APO-B, the high LDL is going to put them at higher risk for stroke and getting it down, there is evidence that it reduces that risk. Okay, so we've got another action item.

Do make sure you know what your cholesterol levels are and if they are elevated, please talk with your doctor about addressing it. Well, let's let me just sort of ask this question a little bit differently.

So we've talked in prior episodes about reducing your risk of heart disease. And so many of these factors that we are already talking about here seem a whole lot like the ones we worried about to reduce your risk of heart attacks.

Is it, for our listeners to reduce the risk of stroke, isn't it just worrying about the same things for your heart or is there something above and beyond or different that the listeners need to pay attention to?

So the risk factors for atherosclerosis, I think, are the most important things that people should pay attention to who are trying to minimize their risk of stroke, which I assume is pretty much everybody.

Perhaps people with a family history are more interested in that than those without. There are some things that are relevant to the non atherosclerotic causes of stroke that don't fall under the standard risk factors.

And I would say that in the area of atrial fibrillation, which we know is associated with stroke and is a common cause of this cardioembolic stroke, alcohol consumption increases your risk of atrial fibrillation.

And so that's something you probably would want to play particular attention to. And then the other thing is obesity, which Both of these, alcohol and obesity, we know from randomized trials.

If we lower obesity, we lower the risk of atrial fibrillation. If we reduce alcohol or eliminate it, we lower the risk of atrial fibrillation. So those are a couple of things that might be a little bit more specific to stroke.

Sounds good. Well, before we leave this topic of risk factors, I want to throw out another one. Now, this is based on observational data. It's not the highest quality evidence, but there's a suggestion that loneliness is associated with an increased risk of stroke.

There's an observational study of about 12,000 folks who were 50 and above. And at baseline, meaning the beginning of the study, those people who were persistently feeling lonely, so it wasn't just an occasional one, they regularly felt lonely, had a 50% increased risk of stroke in the ensuing years.

Interesting finding, of course, they had to sort of explain now, how could loneliness lead to a stroke? And it may be in ways that we may not have anticipated.

It could be the people that are lonely or depressed. Maybe they don't take their medicines for high blood pressure as well as they should. They're lonely and so they end up smoking or drinking more, or they're under more personal stress, which could lead to inflammation or any number of things.

So this is all hypothesis. generating, meaning when you do an observational study and you find something of interest, this isn't the definitive answer.

But if you are focused on loneliness, and we have a whole episode on that, social connections, do take another listen if you're interested. The Harvard study of adult development really showed it was an extraordinarily important factor to live long and to be very functional as you get older.

Okay, let's turn to some other things that maybe listeners should do or not do. So you mentioned earlier that atherosclerosis in your carotid arteries, the vessels that go to your brain, is a really important cause of stroke.

Other Stroke-Specific Risks and Screening

And when you were on our episode together, we talked about the calcium scan of the heart and how that really

adds some important information and gives you a sense of whether you're at increased risk of a heart attack.

Should folks get their carotid arteries screened, just like we screen their coronary arteries at some level, should we look at the carotids? Yeah, it's a great question.

And you would think if I'm so passionate about screening the coronary arteries for plaque, I should be the same about the carotid arteries. And I used to be, I was trained in carotid ultrasound during my cardiology fellowship, and I have established vascular ultrasound labs in several of my practices.

The primary goal of the screening that I set up in these labs was identifying early plaque in the carotid arteries. I was looking for small plaque that would be kind of a warning that plaque was already building up in a young or middle-aged patient that shouldn't be there.

And we would also measure something called carotid IMT, intimal medial thickness. which is a measure that is strongly correlated with atherosclerosis.

And it was something else I was using in younger individuals, too young to use coronary calcium because that's generally not going to be helpful until you're 40 years or older.

But for the most part, coronary artery calcium and coronary artery CT angiography have replaced carotid in my evaluation for early atherosclerosis. That's one way of using carotid vascular ultrasound.

Now I'd say that there are some fly-by-night companies out there that like Lifeline, I don't want to finger them in particular, but I have definite experience and I've written about this on my blog with the kind of shoddy screening that they do where they're only looking for high-grade stenosis.

They're not trying to look for early plaque and they may tell you that your artery is normal even though it's got a plaque in it as long as it doesn't have evidence for a blockage over 50%. So there's a lot of of poorly done carotid screening in that manner.

So I recommend staying away from that. The second way to use carotid screening is to say we're looking for blockages that are severe enough that you would benefit from having a carotid surgical procedure like a carotid endarterectomy, which is done by vascular surgeons, or carotid stenting, which is sometimes done by cardiologists.

And the evidence for that kind of screening is non-existent and I would recommend against it, primarily because even if we identify a severe stenosis in somebody who has no symptoms, we have no idea that We don't know that operating on that is going to be better than treating that plaque aggressively with our standard lipid lowering therapy and our changes in lifestyle and diet.

And so you end up identifying disease that probably does not need to be operated on. You end up getting operations and procedures that you didn't need And the result of that can be really bad side effects like strokes caused by the surgery or the stenting and even death.

Thank you. That's helpful. So anyone who watches movies or television, you know, hears about this person. Sometimes it's even a young person who collapses and they have bleeding in their brain from an aneurysm.

Somebody has to, you know, this is television, of course, you know, they've got to put a needle in there and reduce the pressure and get rid of some of that blood.

As we mentioned earlier, hemorrhagic strokes, which are a bleed in the brain as opposed to blockage of the blood to the brain, are relatively uncommon.

It's about 30,000 a year. It's about three to 5% of all strokes. And these are often fatal. And a lot of people are walking around with an aneurysm that isn't ruptured and is likely never to rupture.

So for our listeners, should we have a brain aneurysm screened for, and if we find something, should we do something about it? Yeah, that isn't a question that comes up a lot, but after thinking about it, when you brought it up, it does seem like a very relevant question.

looking at the kind of guideline recommendations from various societies, even though intracranial aneurysms, which are basically little bulging areas in the arteries, can occur in two to six percent of the population, and they have no symptoms whatsoever, It is not recommended that we screen the general population because of the downsides of identifying of these, the anxiety that's created the downstream testing, and because the yield is so low that most of the ones that we identify are not going to go on to have a problem.

So the guidelines would recommend that if you have two or more first degree relatives with an aneurysm or a subarachnoid hemorrhage, which is the kind of bleed that you get from an aneurysm, that you should be offered screening.

So if your mother and one of your sisters had one, then they say that you should get it. If you have one, I think, Personally, I would want to get screening.

Even if I just had one first degree relative, I would want to know. And screening is going to involve a CTA or an MRI exam. But for most of us, even though a bleed into the head is an extremely serious kind of stroke and potentially life-threatening, the risk is so, so low that it's not recommended that we get screening.

Okay, good. Thank you for that reassurance. Okay, so we now know what are some of the causes of stroke, some of the things that we can do to reduce that risk.

So we now come to the segment about get yourself to the emergency room as fast as possible.

Recognizing Stroke Symptoms and Getting Emergency Care

Now, with heart attacks, folks are aware of sort of the classic symptoms of an elephant sitting on your chest, tightness in your chest, shortness of breath, pain in your left arm, sweating, nausea, various things like that.

And folks have encountered enough discussions around this that they know they need to get to the hospital where you can give clockbusters and open up the blood vessels.

And nowadays, people do a lot, lot better, both surviving the heart attack and being functional afterwards. But that concept of an absolute acute emergency has not been brought to bear to stroke until relatively recently, because historically there wasn't much we could do, or at least not much we could do acutely.

But now the same treatments that we use to make a heart attack get less severe, we can do the same things with the stroke. Not so much if it's a bleed, but definitely if it's a clot or something like that.

So you should rush to the emergency room just like if there was any evidence of a heart attack. And remember, what were those symptoms? It might be sudden onset of weakness.

When I say weakness, I'm not meaning you're generally tired, but your arm on one side doesn't work or your leg on the other side doesn't work or your loved one isn't able to talk or they're just acutely confused or a severe headache.

These are all things that you should get to the hospital quickly because there is a lot more that we can do and reduce that disability that so often happens.

Any other words of thought for getting folks aware of what to do? I think it was a great summary, Bobby. I would emphasize the speech abnormality, which can be quite subtle, but I've had a number of patients tell me that they really didn't know anything was wrong until their spouse told them they were kind of garbling their words or speaking strangely.

So that tends to be fairly specific for a TIA or a stroke, TIA being a smaller transient kind of stroke episode. And then, as you said, the early treatment is something that the neurologists and the neuroradiologists have kind of lagged behind cardiology by decades in terms of how aggressive their treating strokes, but we're now seeing early treatment and I think as you said, may have said like four hours, it has to be very early.

The problem is that if you're getting something like a clot busting drug and you've already set up a lot of damage in the brain artery and then you give a drug that dissolves clot, you can create a bleed.

So there's definitely a much harder cutoff for that than there is for people going in with a heart attack. Well, on this podcast, we talk about what works, and we have obviously talked about that for the last half hour or so, but we also talk about what doesn't work.

So what about supplements that people might take? Some people take aspirin for their heart, but does the aspirin prevent a stroke? What about supplements like folate or B12 or one of your favorites, fish oils?

Can any of these help or are they really not going to be of support to the patient? So the aspirin story is an interesting one. I think the decade ago, the current director of Medicare, Dr.

Mehmet Oz, came to St. Louis and he told 500 women that were at a luncheon that they should all be taking baby aspirin and fish oil. And these were middle-aged women who had not had a stroke or a heart attack.

He just thought they should be taking it for prevention. And so aspirin kind of had a heyday after that, just taking it, thinking that you were stopping strokes and heart attacks.

But it's become clear in the last 5 to 10 years based on some very good hard scale randomized trials that aspirin does not have a role in the primary prevention of stroke or heart attack in most people.

And the reason is that it increases this bleeding into the brain. And so when we look at the causes of Hemorrhagic stroke, which is again tends to be a more serious one and a more life-threatening one.

What Does Not Help: Aspirin, Fish Oil, and Supplements

Aspirin is at the top of the list. Also on that list and actually not taking aspirin is a good way to prevent that kind of stroke if you don't need the aspirin.

And at the top of that list is also paradoxically the drugs that we give for atrial fibrillation to prevent stroke. And these drugs are two-edged swords.

They stop clots from forming in the left atrium in atrial fibrillation and then going off to the brain. But they also make it more likely that you're going to bleed either in the GI tract or sometimes into the brain if there's a weakened artery there.

And if you bleed into the brain on one of these drugs, you're going to bleed much more rapidly and the consequences will be much more severe. So, Aspen is definitely something you don't want to just start.

You need to talk to your doctor about whether there's a reason to have it or not. How about fish oils? Yeah, fish oils, as I recently wrote about, mostly I was writing in the area of cardiovascular disease, but when we look at the large randomized studies in the last decade, multiple large randomized trials of EPA plus DHA, fish oil supplements, the kind that everybody's taking over the counter thinking that it's stopping heart attacks, there's no benefit.

There's no benefit on reducing heart attacks. And what they are looking at in those trials is a combined endpoint that includes stroke, and the stroke endpoint is not changed either.

So no on fish oils, no on aspirin. And there are multiple other supplements that are advocated for that, but they all

lack good evidence that they're useful.

Sounds good, thank you. Well, I think it's time to wrap up this episode. I'm sure Dr. Pearson will join us in future ones. So a few points to finish off with.

Please talk with your doctor about risk factors like cholesterol, high blood pressure, and doing all the things that will protect your heart like activity and such.

Talk with your doctor about any screening that might be appropriate for you. It sounds like the carotid ultrasound's not the way to go, but if you're concerned about atherosclerosis, the calcium scan may be something that's appropriate.

Again, talk to your doctor. Be aware of the stroke symptoms, and if any of them arise in you or in a loved one, get to the emergency room right away, your outcome will be a whole lot better.

And the good news is if you're focused on helping your heart, you're likely doing most of what's possible to reduce your risk of stroke as well. So Dr.

Pearson, thank you to all our listeners. I hope you live long and well. Thank you.