

Stroke: Recognize, Respond, Prevent & Recover

Webinar Transcript

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Stroke: What you need to know

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Dr. Luciana Cantanese: First of all, I'm very grateful to be here. I'm very grateful for the invitation to share something I love, which is stroke. And to share with you the most important things that I think everyone should know in stroke care. So, let's get started. What we will cover by the end of this webinar is as follows.

First, I'm going to show you how to recognize the most common signs of stroke and some of the less common signs of stroke. Number two, how to respond to it. What to do when you see a loved one or yourself having some symptoms that could be resembling of a stroke. We're going to talk about prevention or, and how to reduce the stroke risk, and finally, how to recover and what are the, what are those key elements of rehabilitation and recovery.

Let's start with a case. Eleanor, she's 72 years old, and one morning at breakfast, she suddenly dropped her coffee mug. Her speech sounded a bit unusual, and one side of her face appeared to droop. She said to her partner I'm just probably tired. Don't worry about me." But what her... what should her partner actually do?

Understanding stroke and why it matters

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Dr. Luciana Cantanese: So, let's talk a little bit about the basics. And I think the elephant in the room is really why is it important at all to talk about stroke? It's actually more common than one, one may initially think. In Canada, one

stroke occurs in every five minutes. Stroke is actually the leading cause of disability in North America, and the third in the world.

And unfortunately, more than 40% of the patients that are left with disability have a moderate to severe impairment in the sense they are no longer able to care for themselves, go to the restroom on their own, dress or walk. So this is a significant issue. There is about almost 900,000 Canadian adults age 20 or more that have experienced a stroke, and this of course, is data from 2018.

This is likely higher at this point, but this is the best data that we have. And it's slightly... it's fairly well-balanced between men and women. Of course, women have an increased risk in certain times in life, such as pregnancy and menopause and post-menopause. Overall, one in four Canadians live with a stroke that are under the age of 65, and we know that the stroke risk rapidly increases after the age of 55. For women, in particular, it's important to know that they face a higher disability and a higher mortality after a stroke compared to men.

What is stroke? Ischemic vs. hemorrhagic stroke

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Dr. Luciana Cantanese: What is a stroke? So a stroke is essentially a sudden injury to the brain that can be caused by two different situations. Number one, the most common type of stroke, is a blocked blood vessel. A little clot, as is seen here in the picture, just gets lodged and clogs up one of the pipes in the brain, and it causes an area of the brain that it has no flow, no blood. The other type of stroke that is a less common type of stroke is called by the rupture of one of those blood vessels, and that generates a pool of blood inside the brain. The first type of stroke is called ischemic stroke. You may have heard about this term.

The second type of stroke is called hemorrhagic stroke. Importantly, both of them lead to decreased oxygen, and we know that we need a continuous supply of oxygen to live. The same thing for the brain. If you don't have oxygen, the brain starts dying almost immediately, and it will continue to do so unless treatments are implemented.

As I mentioned, the vast majority of strokes in our population here in Canada are the ischemic type of strokes and a small proportion of hemorrhagic strokes. But they look the same. A patient with either one of these stroke can look very much the same.

What is a TIA (mini-stroke)?

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Dr. Luciana Cantanese: A transient ischemic attack, you may have heard the, the acronym TIA, is also a medical emergency, not a false alarm. A TIA is actually one type of ischemic or blockage type of stroke to the brain, but the difference is that the blockage is not permanent. The blockage lodges in the brain and then the brain...our body removes the blockage, usually in less than an hour, so it does not leave permanent damage.

Now, when we say it doesn't leave permanent damage that's on imaging. That's on brain imaging, the pictures we take in the of the brain. We don't see clear image, clear damage there. But when we look at the microscopic level, we actually do see damage in these patients in the brain.

So careful. A TIA is not very different than a minor stroke, and it is a medical emergency and should be treated just like a stroke is treated.

Why do stroke symptoms vary?

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Dr. Luciana Cantanese: So why do different people have different symptoms? Because truly the effects of stroke depend on where it occurs, how much of the tissue, brain is affected, and how quickly the blood flow can be restored.

So of course, different parts of the brain have different tasks. I give you an example. The back of the brain is in charge of vision. So, if the stroke is localized or affecting the back of the brain, this purple area shown in the figure, then you'll have... the patient will experience vision loss.

If the stroke affects the yellow part of the brain, which is the temporal lobe, the patient will have an inability to speak or form sentences and will have what we call the word salad type of speech. If it affects the top of the brain, the frontal area, then it will have the most typical type of symptoms which most...they are more largely recognized, which is the weakness on one side of the body. So that's why we have different types of symptoms depending on what, where the stroke or where the area of the brain is affected. But some symptoms are more common, and that's why the FAST acronym came up, came about.

FAST and BEFAST: Signs and symptoms of stroke

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Dr. Luciana Cantanese: The FAST acronym, although it's a few symptoms, they actually represent almost two-thirds of all the stroke presentations, and that's why it's such a useful tool. Remember, one sudden sign is enough.

And what does FAST stand for? F is for face. Is there any drooping on one side of the face? Usually, the vast majority of cases remember that any of these symptoms come suddenly. The typical presentation of a stroke is you're... the, the patient is normal, and then a second after they have sudden onset of symptoms. Suddenly they have a droopy face.

A, for example, is arms. Is there arm weakness? So, ask the person to lift up the arms. If one droops, drifts down or it does not even move, then that's a positive sign.

And S is for speech. Is the speech, is the way people are talking are miss... Are they missing words in a sentence? Is it all jumbled or is it very slurred? Some of my patients call it like, "I sound like drunk." That's very much a sign of stroke.

And T is for time, because time is of essence. Time is the most valuable asset for the brain that is suffering from a blockage or a bleeding. And 911 should be called immediately.

Let me give you an idea of time, a little bit of a measurement of time. Around, this is an average 2 million neurons are destroyed every single minute that blood flow to the brain is blocked. In other words, in an hour that passes without treatment, the brain ages 3.6 years. So you can calculate that in ten hours, you lose...the brain ages thirty-six years. So add your age thirty-six years, and that's the type of brain you'll have. Imagine the cognitive impairment that brain is gonna have. So treatment and time is of essence. What are other sudden warning signs? So we talked a little bit about other symptoms like loss of vision or double vision.

Weakness or numbness, especially one side, okay? Not just usually a patchy area, but a side either of the face or face, arm, and leg. And a other one, quite common, is a loss of balance. Sudden or loss of balance or coordination of one arm. Someone trying to grab something and the arm is not doing what they want that arm to do. That can also be a sign of stroke.

Indeed there is a movement in the US supported by the American Heart Association, where they are transitioning from FAST to BEFAST for emergency services. And BEFAST includes those two other symptoms that are also found in strokes that can affect mostly the back of the brain, which is loss of balance and eyesight changes like vision loss or double vision.

So if you know FAST, you'll get two-thirds of the symptoms, and BEFAST probably about eighty percent of the symptoms of patients that come present with a stroke. Now, what do we do? How do we respond when something so alarming is happening?

What to do if you think someone is having a stroke?

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Dr. Luciana Cantanese: First of all, call 9-1-1 immediately. Don't wait to see if symptoms get better, if, don't go to sleep. Do not drive to the hospital. Oftentimes I see my patients driving to the wrong hospital, a hospital that does not have stroke care, and then they have to be transferred to the hospital that has stroke care, which delays matters. And remember, we don't, the time is critical. So call 9-1-1 and let the paramedics drive you to the hospital that is a stroke center.

And note when the symptoms begun. This is really important because the treatments are based on the time that has passed from the moment the symptoms started to the time you get to the emergency department. So, the first thing we're gonna ask is when did the symptoms begun. And we try to be very accurate with that because that's what determines whether we can give special treatments for stroke.

Another important thing to remember is do not give food, drink, or any medications unless instructed. Patients with stroke can have difficulty swallowing and can choke on medications, food, drink.

In addition, do not take aspirin because remember, a hemorrhagic stroke, the bleeding type of stroke, can look very much like an ischemic type of stroke. And at that time, without a CAT scan, without a picture of the brain to determine which one it is, we don't really know which one it is. So aspirin will be contraindicated for the type of stroke that causes bleeding in the brain. So we suggest never to take aspirin if you're having stroke symptoms until you get to an institution that can assess you and can determine the right treatment.

Again, remember, every minute matters. So we're gonna go back to Eleanor. And her partner quickly recognized the facial drooping and the altered speech, which are two of the components of the FAST scale. So immediately calls 911 and notes that Eleanor was last seen well at 8:10 in the morning. And that was 10 minutes only that had passed until the 911 call.

He does not wait to see whether the symptom improve, which is the right thing to do. And what happens is that the paramedics arrive and take Eleanor to the closest stroke center for evaluation.

What happens at the hospital when a stroke is suspected?

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Dr. Luciana Cantanese: So what truly happens in the hospital? One thing that happens is you do not wait. This is a emergency. It's a medical emergency, same as having a myocardial infarction, a heart attack, or a big trauma. You do not wait. The first thing we do is an expedited assessment. It's done in the emergency department.

The first question to answer is it a clot or a bleeding type of stroke? And for that, we need a CT scan. We are not good at determining just by a physical exam, even very trained personnel, whether it's a blockage or a bleeding. We need a CT scan. So that's the first type of imaging we do. And then the second one is because stroke is a problem with the piping system in the brain, we do an image that looks at all of the different blood vessels to see where the problem is. And based on that, we determine, we make a decision on what is the adequate treatment.

Ischemic stroke treatment: Clot-busting drugs and EVT

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Dr. Luciana Cantanese: So what are the treatments for stroke? For selected patients, particularly those that present early, there are two different types of treatments that we can offer. They can be offered separately, or they can be offered together, depending on the details of the case.

The first one you may have heard of is a clot-busting medication. It's essentially a, a medication we give in the veins that is going to go in, in the system and try to dissolve any blood clots that are there, including those that are in the brain. So this, this medication is also known as intravenous thrombolysis or TPA. So

some people may know it as TPA, and that's how we refer to it in the medical arena.

The other one is to do a procedure. So if with a CT scan that looks at all the piping in the brain, we see a clot that we can reach, we will go with a little wire inside the body. We navigate it all the way up to the brain pipes, and we pull the clot out mechanically. This is known as endovascular, inside the vessels, therapy, or EVT. You don't have to remember these, but just to have an idea, there is actually several things that we can do.

Now overall, we have about four and a half hours since the symptoms start, from the time the symptoms start to the time we administer this medication called TPA or the clot-busting medication. Four and a half hours. The sooner the better because obviously the more brain that is salvageable, right? And we have up to 24 hours in very selected cases that have a clot that is reachable. We can actually do endovascular therapy. So lots of options if the rapid hospital arrival occurs. That's really all that it...that needs to be done.

Hemorrhagic stroke treatment: Treating a brain bleed

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Dr. Luciana Cantanese: What about the hemorrhagic type of stroke? This is a, a little bit of a different animal. Indeed, when there is a brain bleeding, the first... one of the first things to be done is to control the blood pressure. The most common cause of bleeding in the brain is high blood pressure. At least the type of bleeding that, that happened inside the brain.

If the individual is on a blood thinner, we reverse them with medications, and we also have to be aware of the buildup of pressure inside the brain because the brain is in a closed cavity that is hard, and when there is an item or additional thing causing pressure, then other healthy structures can suffer.

So, we need to find ways to release the pressure, and that's what we focus on. We do that with our neurosurgical colleagues, and we admit these patients in higher levels of care, specialized units. Okay? Of course, a brain image must occur before treatment, and that's why taking aspirin without assessment can be harmful.

Again, the aspirin is only delivered after we have a CAT scan if we have the clot type of stroke, not this type of stroke, not the hemorrhagic stroke.

So Eleanor is admitted to the stroke unit where she's identified that she had a stroke, gets the acute treatment, and then we admit her in the stroke unit.

Stroke units: specialized care after a stroke

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Dr. Luciana Cantanese: And so what does this really mean? A stroke unit essentially is a geographical area in the hospital. It's a section of the hospital that specializes in stroke care only. And that means that the physios, the occupational therapists, the speech and language pathology, the social workers, the physicians themselves are trained to only care for patients with stroke, are specialty trained.

And why is that important? I'll show you next slide why that's important. But this is all the things that we do because we manage swallowing to prevent patients from aspirating, so putting the secretions in the wrong pipe and getting pneumonias after stroke. We monitor or prevent typical complications that happen in stroke patients, so the length of stay is no longer than what it needs to be.

We mobilize early when appropriate. We are very good at identifying the causes of the stroke and initiate preventative strategies that are addressing the cause of the stroke and begin early rehabilitation for patients with stroke.

Why are stroke units important? Because stroke unit care reduces the chances of dying and disability as much as thirty percent regardless of the sex or the age or the severity of the stroke. That important is to be admitted to a stroke unit for appropriate care. And this is evidence from multiple studies. It also decreases the chances of being in or being institutionalized, meaning being in a long-term care facility after a stroke, by twenty-five percent, okay? Which is substantial.

So, how to prevent them in the first place?

Stroke prevention: Risk factors you can change

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Dr. Luciana Cantanese: Many strokes can be prevented, and I'm really happy to say this. This is a highly treatable and this is a highly preventable disease. But a stroke risk is important to know that it's influenced by two different types of factors. Ones that we can't change and others that we can actually identify and manage.

Factors that we can't change, for example, is age or having family history of stroke or heart disease, diabetes, high blood pressure, prior stroke, sex, race, or ethnicity. Those are things we cannot change.

What are the things that we can change? So, the most impactful risk factor that leads to stroke in the world is blood pressure, high blood pressure. Others include atrial fibrillation, which is an irregular heart rhythm that is associated with a high risk of stroke. Having a high cholesterol, diabetes, smoking, sedentarism, moving very little, obesity or overweight, and using heavy alcohol or drugs. The list continues. These are the most common.

Now, statistically, this is the Heart and Stroke Foundation of Canada, reported that nine in ten Canadians have at least one risk factor for heart disease or stroke. So if you don't have any risk factors, you have to think about do you actually know if you have no risk factors, because it's quite common to have risk factors.

So also remember that prevention shifts risks in a healthier direction. It doesn't guarantee an outcome. Even when we say people that feel like they are doing everything right, you can still have a stroke, but it really diminishes the likelihood dramatically. Stroke is never anyone's fault, of course. It's a work in progress.

High blood pressure and stroke risk

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Dr. Luciana Cantanese: This is not easy. Blood pressure is the leading target. Remember, know your blood pressure. I think I talk about this every day with everybody I met, I meet, all of my patients. Know your blood pressure. Check your blood pressure at home. Because it often causes no symptoms, it damages slowly the blood vessels over time.

It's a major risk factor for both the first and recurrent stroke. Can be improved with lifestyle changes and medications if needed. And remember the target is less than 130 over 80 millimeters of mercury, regardless of chronological age, as per the last hypertension guidelines. It used to be one target for those aged sixty-five or less and a different target for those that were older. Now, that is no longer the case. The lower the blood pressure, the lower the risk for everyone. So check your blood pressure at home. Understand it, manage it.

Atrial fibrillation (AFib) and stroke risk

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Dr. Luciana Cantanese: Atrial fibrillation. This is an irregular rhythm. Atrial fibrillation may be something that is persistent, but it also may come and go, and this is why it's difficult to diagnose sometimes. May cause the feeling your heart is racing, especially at rest. But also there is patients that have no symptoms. Usually, often women, patients with diabetes may have less symptoms. Can allow clots to form in the heart, and they go upstream into the brain. These clots are formed in the heart. The heart is a big chamber compared to the blood vessels in the brain.

These strokes are, tend to be quite devastating, and it's often treated with anticoagulation to reduce the risk. There is a use of smartwatches that are wonderful. They may detect irregular rhythms, but it's not the same. It's not a diagnostic tool. A lot of times the irregular rhythms are not atrial fibrillation, are other types of irregular rhythms.

So it's always important to bring it into the family doctor's office or a specialist to look into that, not to ignore it. And anticoagulants, of course, are not the same as aspirin. Aspirin is very mild form of what we call antiplatelets, or anticoagulant. It's very mild form. Anticoagulants per se, when we're talking about anticoagulants, we're talking about heavy duty blood thinners.

Cholesterol, diabetes and lifestyle changes to prevent stroke

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Dr. Luciana Cantanese: What about cholesterol and diabetes? They go hand in hand because they actually, they damage the vessels throughout the lifespan. They are good at accumulating this very jelly-like material inside the blood vessels causing them to narrow and at one point, because it's so fragile it's truly fat content.

They, it breaks, creates a blood clot, and then a stroke occurs. So important to know what the targets are for these for these two markers and understand the targets for yourself. There are different targets based on whether you had a stroke or you never had a stroke or a heart attack. So important to know that.

What are the other things that matter? Being physically active. Usually, the recommendation is 150 minutes per week of moderate to vigorous exercise. However, that may not apply to everyone, and that has to be determined by the

physician the primary care doc or a specialist. Sitting less, standing up at least every 45 minutes.

Mediterranean diet. Reducing sodium. We do not need added sodium. Or checking the blood pressure at home, as I mentioned. Smoke-free, alcohol-free, prioritizing sleep, and taking prescribed medications consistently. These are mutually reinforcing behaviours, and it's a lot to do at once, so a way to achievable goals is to manage one at a time.

And remember, prevention is not just lifestyle. There is a lot of course, healthy behaviours, detection of risk factors, appropriate medications, but also ongoing follow-up. Those are all part of the stroke prevention plan. I always say that the best treated stroke is one that never happens. Because when it happens, it's highly likelihood that there will be some level of disability. I'll touch upon that when we talk about rehab.

Eleanor's stroke: Understanding causes and next steps

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Now, Elena's cause of stroke is finally identified in the stroke unit. She had intermittent atrial fibrillation, likely caused by high blood pressure sustained through a long period of time in her life, and elevated, she also had elevated cholesterol.

Now, her prevention plan is tailored to why her stroke occurred. She's started on blood thinners, and she's discharged to rehab. So how do we prevent other strokes? We talked about how we have to address the risk factors, but after a stroke secondary preventions include always the use of either an antiplatelet drug or an anticoagulant, and we're talking about the clot type of strokes.

Cholesterol-lowering medications, small and alcohol cessation, treatment of significant carotid disease. Those usually are blocked by cholesterol so those require special treatment. Targeting blood pressure, diabetes management, physical activity, and healthy eating, and follow-up in stroke prevention clinic and primary care to continue to address those risk factors.

And remember, the correct plan depends on the stroke mechanism. The prevention of bleeds usually, depending on what caused it, but largely is keeping a very tight control of the blood pressure. That is one of the most important things to prevent a bleeding type of stroke. Should everyone take aspirin?

No. It's very useful in selected situations, but if you have atrial fibrillation, then usually, not always, but usually anticoagulation is the treatment, and it should not be started for stroke symptoms. I think I mentioned this before emergency assessment because the bleeding risk can be higher than the benefit in certain patients. So it's important to run it by a, a physician.

Stroke recovery and rehabilitation: What to expect

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Dr. Luciana Cantanese: Now, how about recovery? So recovery begins very early. Recovery is usually a multidisciplinary, is approached in a multidisciplinary manner. The patient that has weakness can also have issues with walking, balance, speech and communication, vision and perception, daily activities and independence, arm and hand functioning.

We look at swallowing and thinking and memory. These are all the aspects of stroke recovery, and they all get assessed in every stroke patient. Because we know that there may be, there are less visible effects of stroke. Even though the visible deficit could be weakness, we know that about half of our patients will experience fatigue that interferes with their activities of daily living or hobbies, slower thinking, difficulty concentrating, anxiety or depression, as well as emotional changes, reduced confidence, fear of another stroke, and so on. And these effects are real and can be extremely disabling even when physical recovery looks good.

Recovery though is not a straight line. Recovery takes time. I hope this is not too confusing, but essentially the red line is showing that a normal person has a stroke and in, and the function goes down dramatically at the moment of the stroke and then the recovery looks really fast in in the first three months.

So we say, always say that the maximum pace of recovery will be achieved within the first three months. For bleeding type of stroke, it's about six months, even longer. But the, the block, the blood clot type of stroke is usually three to six months. And then the pace goes down, the pace of recovery, but still continues about to the one year to two year mark, sometimes three years, depending on the study.

But if then we do not keep good maintenance, what can happen is that there could be deconditioning and worsening of the symptoms of stroke. So it's really a lifelong task to maintain the motor... the function after a stroke.

So back to Eleanor. She begins rehabilitation. She learns to pace activity because of fatigue. She treats her blood pressure and her cholesterol, reaches the targets. She works on arm function and communication, starts her anticoagulation for atrial fibrillation, and gradually returns to her valued activities.

So, I want to leave you with five things. One, know FAST. Two, call 911 immediately. Three, treat a TIA as an emergency, and this is really important because sometimes the symptoms can last five minutes and go away. It's still an emergency. Know and manage your vascular risks. And lastly, recover. Recovery is a long-term commitment. Now, stroke, it is a medical emergency, but it's highly treatable, so there is a lot of hope in stroke care, in what I do. That's why I do what I do, actually. And when we act fast, we can really change the outcome.

So I want to share with you a story that was really close to my heart. It happened very early on in my career, and I still think about Rick, and he made a video for us at Hamilton Health Sciences after being treated, and I just want to share it with you

“My arm went dead, and that's when I said, "I think I'm having a stroke." And my wife looked at me with that 'are you being serious' look, and then she went over to call 911, came back and lowered me to the floor because my leg was starting to give out on my right side. I just felt like things were starting to shut down.

My, my toes on my right foot, I couldn't wiggle them anymore. And my eye was starting to get like I couldn't turn my head, I couldn't turn my head anymore, and I noticed that one of my eyes was actually fixed.

They got me loaded up, and then the paramedic just three, five minutes to Hamilton General. And right away I felt a lot better. I was celebrating even though I couldn't talk. I'm laying in there on the gurney and I couldn't talk, but every time I could move something else on the body, I was celebrating.

So, when I had my right arm, I'm a right-handed person and that came back, I felt like I can do anything right then and there. But, when my right leg came back, whoa. I wasn't gonna be in a wheelchair. I'm not one for miracles at all. But to pull through, I'm pretty lucky. I'm the luckiest guy on the planet. Being able to walk again and even come back to work seems like a dream to me. I have the benefit of knowing what the patient's going through next time, for sure.

There is a problem that happens with men usually, they deny that anything could be happening to them. I'm one of them. That is the biggest thing to overcome. And to say you need help is hard for a lot of men. So I would say treat things that are happening to you with importance that they are. And if you see the signs and symptoms, don't dismiss them. They saved my life. My wife did when she made the call, 'cause I could have been on my own, and I would have been in a lot of trouble. And I think that the hospital staff are second to none. They saved my life."

All right. Thank you very much for your attention, and I'll be happy to answer any questions. I'm going to pass it back to Dr. Levinson.

Dr. Anthony Levinson: Thank you so much Dr. Catanese. That was a fantastic overview of the various aspects of stroke, acute stroke, covering rehab and prevention as well. I do want to say apparently there was a small technical issue for some people accessing the webinar via YouTube.

Just a reminder and a shout-out that the presentation has been recorded, and you will get an email with a link to the recording in a few hours. So if you... you can watch any of the sections of the presentation if you missed some at the beginning. With that let's get to some of the questions.

Stroke Q&A: Living alone when stroke symptoms occur

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Dr. Anthony Levinson: And it's interesting, in that very inspirational video from Rick, he talks about the importance of, his wife calling 911, and same thing with Eleanor. But actually, many people asked, "What changes if no one is there?" So, what would you do if you were on your own, or could we apply Eleanor's story to someone living alone, maybe even in a rural setting or more isolated?

Dr. Luciana Catanese: That's a fantastic question. Yes, because usually, the stroke really incapacitates someone. So, the one thing that we recommend, this is a very common question from our patients, is to have a lifeline. Because at least that is reachable. Usually, it's like a collar and is reachable, and they can activate EMS, and many of our patients have come that way.

Are stroke symptoms different in women and younger adults?

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Dr. Anthony Levinson: Excellent. We have heard in some of the questions that came in that stroke can look different for women, and are there any signs or symptoms that women or their family should understand that sort of looks different or changes that the FAST or BEFAST acronym?

Dr. Luciana Cantanese: Yes. Yes. Thank you. So, we do have a lot of differences with men in terms of stroke recurrence and how we do after a stroke and so forth. But not... there, there is some subtle differences in symptoms, but not in the FAST score. So, remember those are meant to be the most common types of strokes or symptoms from stroke for men and women. What I can say is that it could be more subtle in the sense that women have less symptoms of, usually experience less headaches with stroke, although that's non-specific. And they tend to ask less for medical assistance than men.

Dr. Anthony Levinson: Ah, interesting one of the questions that came in was asking about the men and women, but also whether there was any difference in younger adults versus older. Are there any other symptom differences with young adults?

Dr. Luciana Cantanese: Not symptom differences. No, the thing with young adults is that they have different types of stroke. They have different etiologies. They usually have the the typical stroke. It will be a tear of blood vessels rather than a clot on the blood vessel. So we think about different etiologies of stroke in young patients.

Dizziness, vision changes and migraine: Could it be a stroke?

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Dr. Anthony Levinson: Excellent. Another series of questions talked about brief symptoms, visual changes, and migraine-like episodes, so some of these things that might be a little bit different or come and go. One of the other questions that came in was, balance symptoms. What amount of balance problems is concerning and what about if you have balance problems from sudden dizziness? So I think some of these other symptoms that may come and go are... people are trying to make sense of is it a stroke or not.

Dr. Luciana Cantanese: That's a really wonderful question. I also get asked this question a lot in my practice. So what I tell my patients is that when they

are having a symptom of a stroke, it's something so abnormal for their body. It's not going to be the dizziness or the imbalance that they've had on and off. And people know their bodies very well. It's gonna be a sudden onset imbalance that you cannot walk, and it would be obvious that 911 needs to be called.

It's unusual to have a very mild type of symptoms. Of course, that can happen. But think about something sudden, something out of the ordinary, and especially something that doesn't go away.

There are, in terms of the migraine question, there are migraine types that can cause symptoms that look like stroke. The problem is that we never know at the very beginning if it is a migraine or a stroke. So, the 911 call is there anyways. The best case scenario is that you come to the hospital, and then after a few days we get an MRI of the brain and we realize this wasn't a stroke, it's a migraine, and we put all the pieces together later. But at the moment we're not going to know usually it's always better to be safe than sorry.

TIA, minor stroke and silent stroke: What is the future risk?

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Dr. Anthony Levinson: Excellent. There were a few questions from people who have had either a TIA or diagnosed with kind of a silent stroke and they're wondering what that means for future risk. There was also somebody who said, oh, years ago they had a small stroke.

Does that put them at increased risk for the future? So could you explain a little bit about what the follow-up would typically be for people if they've had a TIA or a smaller stroke or a silent stroke?

Dr. Luciana Cantanese: Yeah, fantastic. So usually we divide these two. So silent stroke is one type of stroke, and then the others are the TIAs and the minor strokes are different type of strokes.

So the reason is that a stroke that causes obvious symptoms, okay? Like a TIA or a minor stroke or a big stroke, those have a higher risk of recurrence. That their risk depends on what caused the stroke. And that's why we spend a lot of time in the stroke unit trying to figure out why the person had a stroke, because the risk will be different and the treatment is different.

The silent strokes are the ones we call silent strokes to, not even silent stroke, we call them silent infarcts because they never cause symptoms. But we found that on MRIs that are done for routine purposes or sometimes we do them, but we find silent areas of damage. We know that they had damage, but they never have symptoms. Those also carry a slightly higher risk, but not as high as having a clear symptomatic stroke. And the prevention for those is a little bit different. Not always we start, for example, aspirin for those. They... We actually at the General, we're opening, they are so common, we're opening a clinic called a silent infarct clinic.

To see patients that have these strokes that these infarcts that are found on MRI, but they never had symptoms, because they are a little bit of a different, less well-understood type of entity. So, with the strokes itself, of course, first thing is once you get discharged from rehab, we follow them in the stroke in the stroke prevention clinic.

So, we have a multidisciplinary clinic with a nurse and a physician. We make sure we, first of all, understand completely what the, why the stroke was caused, and make sure that by the time we follow patients every three or three months usually, until all the risk factors are on target. Once that is achieved, then we can transition over to the family physicians who will keep those risk factors on target. If there is any questions, they can come back to the stroke clinic. But usually that's how the sort of the pathway it goes.

How is stroke prevention tailored to individual risk?

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Dr. Anthony Levinson: I think that really addresses like there were a number of questions about people wanting to understand how prevention might be tailored to age or test results or existing medicine, and it sounds, one was about blood pressure targets for people in their 80s or people who are already on blood thinners for another condition, but it sounds, or statins. It sounds like basically in, as part of the stroke assessment, figuring out the cause and a follow-up in the prevention clinic, each person's risk factors are analyzed and addressed to reduce risk. Is that kind of a fair summary?

Dr. Luciana Cantanese: Yeah, exactly. And everybody's different. So, some, there, there is all sorts of things that we have to consider.

Some patients may have an indication for anticoagulation, but they can't take it for another medical reason. So, it has to be tailored to the individual, and that's

why, it's important to look at all, all aspects of the person that's coming with a stroke.

Does managing high blood pressure and cholesterol reduce stroke risk?

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Dr. Anthony Levinson: One of the questions related to that said, "If you have high blood pressure and you have high cholesterol, but those are both being like well managed or controlled with medication, are you still at elevated risk for a stroke, or does, does that help to mitigate that risk?"

Dr. Luciana Cantanese: That's a great question. So usually when you have a risk factor, of course, your risk will be slightly higher than someone who never had that risk factor. However, you can mitigate the risk significantly, especially if it is maintained along the years. And I think that's where the challenge is. Not just after the stroke or when someone is feeling unwell, then, you then get very aware of your blood pressure targets and so forth, but across the lifespan, because maintaining those targets is what I think makes a difference in terms of risk in the long term.

Atrial fibrillation: How do you know if you have AFib?

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Dr. Anthony Levinson: One of the questions came in about atrial fibrillation and was saying, like how do you know if you're having an episode of atrial fib or atrial fibrillation, or simply an irregular heart rate, either of another kind or one that might come and go?

Dr. Luciana Cantanese: That is really, that's a great question also. That's very difficult to know. I think the important thing is to know that your heart rate should be regular. That's the normal. I Any irregular heartbeat needs to be looked at and understood. So we, the way we understand, the one way you know is there is a proportion of patients that have palpitations, feeling the heart races.

And that, not when they are running or stressed, it's when they are resting that they feel their heart is running. So that's not normal, right? They feel their heart runs even if it is sometimes seconds or a minute, and then it goes away. Just know that could be atrial fibrillation, and just talk to your doctor about it.

Usually what we do, even when I have patients coming with the Apple Watch showing irregular heart rhythms, we don't just assume they have atrial fibrillation. We have to actually do halters for long periods of time in order to pick it up. But we do it. We do it because if it is there, it carries such a high risk, and it's such a preventable condition to have a stroke from atrial fibrillation that it is very worth it. But just, yes, and remember there, there is unfortunately a lot of patients that don't have any symptoms.

Dr. Anthony Levinson: Yeah. And a halter, just for those who aren't aware, is basically 24-hour monitoring with an electrocardiogram to more reliably pick up if there are any heart rhythm changes rather than just a brief assessment.

So yeah, it's, it is one of, there are a lot of people with atrial fibrillation without symptoms, so that does present a challenge.

BEFAST vs. FAST: Recognizing more signs of stroke

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One of the questions that came in one, it said, "Excellent presentation," but also a person who had suffered a series of minor strokes that fell into the eye findings and the B of the BEFAST. And this person was very interested to, about this movement to change from FAST to BEFAST. Is there any plans that you know of to broaden the public information in Canada to potentially reach more strokes for people who might be having some of the other balance symptoms or eye symptoms?

Dr. Luciana Cantanese: Yes. Absolutely. There is a group of us who are trying to bring it in as particular to Ontario. We haven't been successful at that yet because you can imagine it's a very big undertake to just have a whole new campaign. But I think it's a matter of time, and I agree. I think it's important to know that there is some more symptoms that are quite common as well, and these patients can be helped.

Dr. Anthony Levinson: And I would agree, certainly in the hospital setting, many people describe having symptoms related to the back part of the brain, which may cause the balance or coordination or even nausea as well as the eye changes or double vision. And they don't think of those in the same way as, weakness or drooping of the face or the arms, so they may not report a worrisome potential stroke.

Dr. Luciana Cantanese: It's a really big thing because it's the most common type of strokes that are missed, the ones in the back of the brain.

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