

Angelica Ladd:

Great. Hi, and welcome to The Healthy Living Series. I'm Angelica Ladd, Community Relations Specialist here at Dartmouth-Hitchcock Health. This evening, we are joined by Dr. George Thomas to better understand epilepsy, but first, we have a few housekeeping items that I would like go through with you. If you would like to ask a question, please use the question and answer function. We should have plenty of time for questions at the end of the presentation. Tonight's event is being recorded and will be posted on our healthy living series webpage at [go.dh.org/hls](http://go.dh.org/hls), as well as YouTube, so you can watch it again, or you can share it with family, friends.

Angelica Ladd:

We also have close-captioning available this evening, so if you just click on that close-caption icon, you should have live captioning there for your needs. Then, at the end of the event, you will be sent a three-minute survey. We would be really grateful if you could fill out that survey as that helps us to plan programming for future events. Then, finally, on December 8th, we are hosting a Healthy Living Series on supporting a loved one in a mental health crisis. If you'd like to register, you can also do that at [go.dh.org/hls](http://go.dh.org/hls). Very important and timely subject matter.

Angelica Ladd:

Now, we can get things started. Again, we're joined tonight by Dr. George Thomas, and his work at DHMC focuses on patients with a variety of seizure disorders. He also serves as the Director of Critical Care Electroencephalography, EEG. He has practiced at DHMC since 2011 and earned his MD and PhD degrees at the University of Kansas Medical Scientist Training Program. Outside of his work, he enjoys antique airplanes and is a member of The Experimental Aircraft Association. Thank you, Dr. Thomas, for being with us tonight, and we are going to kick things off. I'm going to share the slides for you.

Dr. George Thomas:

All right.

Angelica Ladd:

You're all set.

Dr. George Thomas:

Okay. Oh, there we go. Perfect. All right. I'd like to thank Angelica for having me here. I really appreciate the opportunity. November is Epilepsy Awareness Month, so it's a great, great [inaudible 00:02:55] about this. I put this talk together mostly... It's just a lot of things that I try and tell people about epilepsy and seizure disorders. There's a lot of things that people don't realize and people don't know, and also a lot of things that we're learning. I hope that this is helpful. Let's... It's not advancing. Did you do that or did I? Uh-oh.

Angelica Ladd:

I can't tell if that was me or you [inaudible 00:03:35].

Dr. George Thomas:

Okay.

Angelica Ladd:

Let's try this again.

Dr. George Thomas:

Okay.

Angelica Ladd:

Sorry. Let's see, so we'll share it.

Angelica Ladd:

There you go, so should be able to...

Dr. George Thomas:

All right, there [crosstalk 00:04:00] and then... Okay, now it's working. Perfect. Thank you.

Angelica Ladd:

Perfect. Good.

Dr. George Thomas:

I'll start off with a question you should answer yourself, just to yourself rather, and now it's going forward to go back. There. Okay, we'll try this one more time. All right, so here's the question. Do you know someone with epilepsy? Most of you will probably say, "No, I've never really met anybody with epilepsy," but I'm going to show you how that's probably actually not true because epilepsy is more common than is generally recognized.

Dr. George Thomas:

I guess to start off with, we should talk about, what exactly is epilepsy? The international League Against Epilepsy, the ILAE, they define epilepsy as a condition characterized by at least two unprovoked seizures more than 24 hours apart. Somebody can have one seizure. In fact, about 10% of the population have one seizure in their lifetime, but that's not the same thing as epilepsy. About 1.5% of the population has recurrent unprovoked [inaudible 00:05:18] epilepsy. That means one out of every 65 people that you see in a day has a seizure disorder.

Dr. George Thomas:

I've seen more than 65 people just walking to the hospital a day and I'm sure a lot of us have just in the course of normal activities. The term epilepsy, it's a very broad term. It's not a single disease. It's a very general term. That includes a lot of very specific conditions, and it's sort of like headaches. Headaches are a really common condition and we all know people have headaches and some people have tension headaches, some people have migraine headaches, and there's other less common things like trigeminal neuralgia that are more specific diagnoses under the kind of broad umbrella term of headaches. All of these unique conditions have specific treatments, so it's important to understand what the real specific diagnosis is.

Dr. George Thomas:

This is a diagram that, again, comes from The International League Against Epilepsy and just showing that there are different seizure types. We talk about, you know, seizures that started [inaudible 00:06:30] those focal seizures, and then some seizures that start everywhere at once. Those are generalized, and then sometimes we don't know. Those are seizure types and there are epilepsy types. These are the specific kinds of your current seizure disorders. They can be focal or generalized or both or sometimes we don't know, and there's a whole list of potential causes for seizures. They can be structural, which means some sort of abnormality on MRI, for example. It could be an old like stroke that leaves a little bit of scar tissue. There are genetic causes for seizures. Some infections cause seizures. In fact, worldwide, the most common cause for epilepsy is actually infectious.

Dr. George Thomas:

It's not so much in the United States here, but worldwide it is. There's a whole other list of... whole other things in this list of causes for the a seizure disorder. Sometimes we can characterize the whole picture into an epilepsy syndrome. Some of these are... One of them is called Dravet syndrome. I got a little comment about that later. Lennox-Gastaut is another epilepsy syndrome. There are a lot of them, but oftentimes seizures don't really go to one of these syndromic sort of patterns, so just to give you an idea that when you say the word "epilepsy," it really doesn't quite capture all the little nuances of the disorder in an individual.

Dr. George Thomas:

It's very confusing. If anybody is trying to sort through all of the different terminology and phraseology and classes of seizures and seizure disorders, it's really confusing. I sort of like to think it's because we're getting better. We're understanding seizure disorders better and better every year. Our treatments are becoming better. The classifications that were used in the past just weren't detailed enough to really to really describe the seizure disorder in enough detail to be very helpful. In the past, like when I was a child, I remember the term grand mal and petit mal as types of epilepsy. These terms... Grand mal, I think, generally means a generalized convulsion and petit mal are sort of smaller seizures, maybe staring spells. While these terms are outdated, they're still in use and they still have some value in driving seizure types and we communicating from one person to another with is actually happening.

Dr. George Thomas:

Part of the problem is the terminology is redundant and a little bit vague. Just for an example, and I won't go into too much detail with it, but generalized seizures and generalized epilepsy, even though they sound an awful lot alike and they do overlap quite a bit in some people, but not necessarily in the same thing. If you've looked at the terminology to try and understand seizure disorders better and been confused, discouraged, it's just an unfortunate fact right now that the terminology is dynamic and sometimes hard to understand.

Dr. George Thomas:

There are a lot of tests that are involved with the diagnosis and treatment of epilepsy. One of the most common is an MRI. The reason we do MRIs is to look for basically structural abnormalities that can cause seizures, as I mentioned before. Strokes are a common cause of late onset seizures in adults. Infection sometimes can be the source of seizures. Sometimes birth abnormalities that cause electrical malfunctions, cortical abnormalities can cause seizures, and all of those things can often be seen on MRIs, so that helps explain why somebody's having seizures.

Dr. George Thomas:

EEG is another really common test that we do and it looks for electrical changes that are associated with seizures. There's certain electrical changes that we can see on EEG that we know are associated with seizures, but none of these tests, the MRI or the EEG, are really definitive and they're not required have to have an abnormal MRI or abnormal EEG to have a diagnosis of epilepsy. They just sort of help us understand the nature of what the disorder is.

Dr. George Thomas:

We have an epilepsy monitoring unit, or an EMU, here at Dartmouth, and this is a special area of the hospital that's designed specifically to be a safe environment to study seizures or seizure-like symptoms. We use this when we're not really sure exactly what a patient might be experiencing at home. Often in clinic, we talk to people and they describe some sort of transient event, and sometimes it's really clear what the [inaudible 00:11:39]. Nowadays, a lot of people will carry cell phones with them. They have cameras on them and so we have the advantage of that and we can see sort of firsthand what's going on, but oftentimes it's not clear even if somebody does have like video from a cell phone.

Dr. George Thomas:

To put a finer point on it, we bring people into our epilepsy monitoring unit and actually try and provoke the symptoms that they're having at home so that we understand them better. Sometimes we find they are, in fact, seizures, and other times we find out that they're seizures at all. They're something entirely different. The aim of all this is to help us understand what's the best treatment. Sometimes, the testing can suggest a specific medication that might be most helpful, and other times there are nonpharmacologic treatments that are helpful.

Dr. George Thomas:

Now, there are also a lot of different epilepsy medications, or anticonvulsants they used to be called, and all of them are probably about as effective as the next in terms of treating seizures. It's not really one that's the best, if you will, of all of them. They all are effective, but they all have wildly different side effects. That's often what we use to decide which is the best for a particular patient. I [inaudible 00:13:03] here that are common and you may have heard of them before. Depakote is a great antiseizure medicine. It works wonderfully. It has a couple of interesting side effects. It's very mood-stabilizing, so in people that happen to have mood disorders as well, Depakote can sometimes help that part of their care as well.

Dr. George Thomas:

Depakote can also cause weight gain, so in some people that would be something you would not want to do and other people it's okay. Keppra is another antiseizure medicine. It works great in contrast to Depakote and it can actually aggravate mood problems, so in somebody who has a preexisting mood problem like depression, for example, Keppra certainly can be useful, but it might not be the first choice because it could actually aggravate the [inaudible 00:14:01] mood condition.

Dr. George Thomas:

Lamictal is another great antiseizure medicine and just like Depakote, it's very mood-stabilizing. It's usually very well-tolerated so can use those two in the same kind of patient and help them overall. Topamax is another very broad spectrum antiseizure medicine and it has a couple of interesting side

effects. It sometimes can have a negative effect on memory and in some people if they have a preexisting memory problem, you would try and avoid that medicine, but actually a really good headache preventative medicine. A lot of people without seizure disorders take Topamax to keep their [inaudible 00:14:43] under control.

Dr. George Thomas:

In a patient with seizures who also has migraine headaches, for example, this is a potentially a great choice. Tegretol is another seizure medicine and it's the drug of choice to treat a condition called trigeminal neuralgia, and not related to, to [inaudible 00:15:05] but if somebody happens to have trigeminal neuralgia as well as seizures [inaudible 00:15:10] those some examples. Some great seizure medicines. There's not one of them that's superior together in terms of controlling seizures, but they all have wildly different side effects and sometimes those can be used to somebody's advantage.

Dr. George Thomas:

Seizure medicines control seizures in about three-fourths of patients, so most people that have seizures [inaudible 00:15:40] reasonable control with medications alone, and that's pretty good. That means if somebody develops a seizure disorder, they're able... If they state that they take the medicines as they're prescribed, they can work. They can usually drive and lead otherwise productive lives and go about their life like they'd like to. A minority of people with seizures have medical refractory epilepsy. I've got a couple comments about that a little bit later, but most people's seizures are... their medicines, rather, are sufficient to control their seizures.

Dr. George Thomas:

I think it's important to remember that epilepsy is just not about seizures. Seizures generally are sort of relatively rare, meaning they happen various from person to person, of course, but sometimes every few years, sometimes every few weeks, but relatively rare outward evidence of underlying brain dysfunction. Even between seizures, there are a lot of symptoms that patients with seizure disorders complain of.

Dr. George Thomas:

Depression is really very common. Thinking problems, cognitive impairment, memory problems. 40% of people have memory problems. The suicide rate of patients with seizure disorders is twice out of the general population. They also have a decreased life expectancy by 18 years compared to the general population. Even in patients who have well-controlled seizures, there's still underlying brain dysfunction that can really impact their quality of life.

Dr. George Thomas:

Now, this is a little cartoon that I made a few years ago and just shows what the different things can affect quality of life in patients with seizures. QOL, so this is shorthand for quality of life, and I already mentioned some of this. Depression, their depressed. Their quality of life goes down. If you have memory problems quality of life can be affected. There's still even at this date some stigma associated with this diagnosis.

Dr. George Thomas:

As I mentioned, one in 65 people that you meet have a seizure disorder, but I'm pretty sure that that they don't necessarily advertise it, so there's still a lot of stigma associated with this condition. Social isolation in part because of the stigma and in part maybe because of the depression can affect quality of life. Reproductive issues, many women with seizure disorders are under the wrong impression that if they're taking seizure medicines they can't have children, and that's not true.

Dr. George Thomas:

Most women with seizure disorders who take antiseizure medicines have perfectly normal children. As I mentioned, suicide. The lack of independence is a really significant factor that affects your quality of life and it's also something that a lot of people with epilepsy deal with. Poor self-esteem. Medical costs, some of these seizure medicines can be really expensive. Any medicine is usually an out-of-pocket expense and some of them can be really outrageous, unfortunately. Missed days from work or either underemployment, and so that can affect one's quality of life.

Dr. George Thomas:

Then, the medicines themselves, some of them make you feel crummy and often that's an individual affect. How it affects one person may be different to the next person, but we've all, I think, probably taken medicines that made us not feel a hundred percent or like we're our best. All of these things can affect quality of life in patients with epilepsy. To confound that, a lot of these things are interrelated. For example, lack of independence contributes to poor self-esteem and, and poor self-esteem might affect your compliance with medicines, your adherence to listen so their prescribed.

Dr. George Thomas:

Depression we know affects memory performance and cognitive performance, so you can see how everything is really interrelated and they all have a huge, huge impact on quality of life actually with seizures. It's really a very complex disease, and just to pick on one part of this, depression, depression is not trivial at all. It's a common symptom in the general population. It's more common in patients with epilepsy and it actually has some predictive value in terms of quality of life, QOL, which is not a surprise. We just saw the little diagram I made, but people who are depressed, often they don't respond to medicines as well as somebody who's not depressed.

Dr. George Thomas:

Some of our patients have seizures that aren't controlled with medicines and they have epilepsy surgery and they actually do worse in terms of seizure control than people with no depression. Depression is really a significant factor in determining quality of life and also just how people respond to treatment. Despite the fact that it's really common in the population more common in patients with epilepsy, it's grossly underrecognized, and that's honestly lack of training on the part of neurologists. We're trying to do better, but it's not something that for a long time was really emphasized. and patients tend to underreport it as well. It's really common, not just in patients with epilepsy, but in the general population. People don't like to say that they're depressed.

Dr. George Thomas:

I want to just take a moment to mention something while we're talking about quality of life, and this is kind of an uncomfortable subject, but there's this [inaudible 00:21:38] and this is an acronym, SUDEP, that stands for Sudden Unexplained Death and Epilepsy. The name is pretty descriptive, so the true incidents if this are really not known. We think maybe one in a thousand patients with epilepsy die for

reasons that we don't completely understand. Sometimes they stop [inaudible 00:21:59] sometimes their heart stops beating properly.

Dr. George Thomas:

It's not always the consequence of a seizure. Only about a third of them appear to have had a seizure, but that's not really sure. It's not really clear. It just emphasizes the importance of making sure that somebody with a suspected seizure diagnosis gets diagnosed and they get treated. That's something that I think is really important to keep in mind that with epilepsy is a serious and potentially a life-threatening condition.

Dr. George Thomas:

There are a lot of lifestyle modifications that can really improve the quality of life of patients with epilepsy. I don't know where I heard this saying, "The best medication is the one the patient will take," but it's really true and it doesn't just pertain to seizure medicines. It doesn't do any good to prescribe a medication to a patient and they can't take it for whatever reason, either side effects from it are horrible or maybe it's just financially impossible to take that particular medicine.

Dr. George Thomas:

Incorporating medicines in a daily routine [inaudible 00:23:11] you know, compliant and adherent to everything, and that is hard to do sometimes, but that's important. Poor sleep is actually a pretty strong trigger for seizures in some people. I always encourage patients with seizures to make sure they get enough sleep. Like a said, it's rather individual, and some people, they might stay up late studying for a test or something like that and consistently makes them have a seizure.

Dr. George Thomas:

See, some people have very specific triggers, too. Some of them are easy to maybe suspect. For example, flashing lights. Some women exhibit a pattern of seizures getting worse about the time that they have their menstrual cycles. It's actually the most common trigger for seizures that patients report, so controlling stress is always something really important to the science as well.

Dr. George Thomas:

Then, there are a lot of non-drug treatments or nontraditional drug [inaudible 00:24:22] for epilepsy that are worth talking about, too. Some of you may have heard about a ketogenic diet, epilepsy surgery, and there are various forms of nerve stimulation, neuronal [inaudible 00:24:36] that can be used. One is the vagus nerve stimulator. This has been around for quite a while. There's an, a relatively newer device called responsive neurostimulator or a NeuroPace is the brand name of a recently deep brain stimulation. Sometimes hormonal regulation, the form of oral contraceptives that are progesterone-based as opposed to estrogen-based, and then I think a lot of us has heard about... I've heard about cannabis as a treatment for not only epilepsy but a lot of things.

Dr. George Thomas:

The ketogenic diet, it depends on who you talk to when you say ketogenic diet. What kind of [inaudible 00:25:15] you're generating. Here's a classic ketogenic diet. This is usually a very high-fat, zero-carbohydrate diet that's given by a feeding tube. It's nothing that most people will be able to tolerate, but it really conduces a condition called ketosis. It's just a metabolic change, and that in some patients



can reduce seizures, but this is not something that usually requires a feeding tube. It's not anything that would be palpable. You couldn't eat this diet in a conventional way.

Dr. George Thomas:

When most people... when they're talking about a ketogenic diet, they're talking about a modified Atkins diet, which is, again, high fat and protein and low carb diet. Not no-carb, so this is bacon and meat kind of diet, and it's easily managed on most people. A lot of people have adopted this sort of diet for weight loss and other reasons and it's pretty easy to do. It might in some people give a little to their seizure control. It's not anything I think would be useful as the sole treatment for a seizure disorder, but it's something that a lot of people find helps enough that it's worth doing.

Dr. George Thomas:

As I mentioned, brain stimulation is an option that we have had for a long time in the form of a VNS vagus stimulator and some other recent developments. Vagus nervous stimulator, the Vagus nerve is a nerve in our neck and there's simply a little stimulating wire that's wrapped around it in and a little stimulation is delivered to the nerve. It goes sort of up and into the brain. That is probably about as effective as a conventional antiseizure medicine, but without the typical side effects of it.

Dr. George Thomas:

The RNS, or NeuroPace device, this is newer. This is implanted directly in the brain and is a little bit more involved, but it can also change and reduce seizures. More recently, we have something called a deep brain stimulator that's available and this is actually... It's a technique that has been available in Europe for decades, but only recently I think a couple of years ago was it approved by the FDA for use in the U.S. However, we've been using DBS for Parkinson's disease and other things for decades here in the U.S., and it's only recently been approved, I think, in Europe. We know how to do this. It's just simply putting the leads in a different structure and that, too, can be effective at controlling some kind of seizures that don't respond to medications.

Dr. George Thomas:

Then, I mentioned epilepsy surgery. Many people don't think of surgical treatments or therapies for a seizure disorder, but this has been around, been available for a long time. It can be very effective if we select the right patients, Essentially what it amounts to is just physically removing or surgically removing the source of the seizures when they start. It happens to be a little bit of scar tissue.

Dr. George Thomas:

Then, often that's very helpful at controlling the seizures. This, of course, isn't anything that is done without a lot of thought as to where the seizures start. Then, also, what are the potential risks of the surgery? There's a lot of testing involved to get to that point, and so one treatment that we have, but might actually be able to cure epilepsy. I say cure in contrast to everything else, which is a treatment. It doesn't really make the disease go away, but it's possible to actually cure epilepsy with epilepsy surgery.

Dr. George Thomas:

Then, cannabis, I think we've all we've all probably heard a lot on the news about cannabis, the health effects or health benefits of cannabis, not just for epilepsy, but for a lot of things. We really are just starting to learn about this. We think of there being two main parts to cannabis, CBD oil versus the THC



component of it, and what I think I know about this is the CBD oil seems to be effective for a couple specific conditions. One of them in particular is called Dravet syndrome. This is a childhood epilepsy that's generally not responsive to conventional anticonvulsants, but shows a pretty robust response to CBD oil.

Dr. George Thomas:

That, of course, is generated some interest in cannabis in general treating seizure disorders in general. There's not a lot of research yet to really make any really strong recommendations. There's actually some evidence that THC might make some seizure disorders worse, so it's really hard to tell when somebody says, "I'm having seizures. Do you think cannabis will help?" I'm not sure that there's a clear answer to that. All that being said, a lot of patients do find it helpful and worthwhile to use cannabis.

Dr. George Thomas:

Some things to watch out for is the dosing of this is not really clear. When I prescribe something like Depakote, I have a pretty good sense of how much to give somebody or at least calculate it based on their weight, for example. I also have a pretty reasonable understanding of how it might interact with other medications that they're on. Those things just have not been studied that well when it comes to cannabis product. To confound that, the actual product that somebody has can be variable. You know, it's an organic... or an agricultural product really. The concentration of CBD and THC they show between the two varies from species to species and I suspect probably from month to month and year to year just based on growing conditions.

Dr. George Thomas:

Many states, including New Hampshire and Vermont, have therapeutic cannabis patients with their qualifying diagnosis and epilepsy is one of those in both those states, and as far as I know, in most other states, if not all of them, they can have access to cannabis products. Over the few years that that they've [inaudible 00:31:46] it's been several years, actually, at this point they've been open, a lot of people have signed up for it and a lot of people have found that to be very helpful. I have noticed that the people who run the therapeutic cannabis programs at dispensaries are a great source of information and support because, as I said, I don't know what the proper dose for some of these things are. It's been a good relationship and, again, some people find that it's helpful and it's very individual.

Dr. George Thomas:

One other thing I mentioned earlier was depression is a major factor when it comes to a lot of like quality of [inaudible 00:32:29] and outcomes in seizure disorders. Access to mental health is a challenge, not just in this part of the country. I'll talk about that in a second, but all over the place. It's estimated that 70% of people with mental illness go untreated. That's really, really unfortunate. A lot of it has to do with avoidance of discrimination and the stigma associated with mental illness. It kind of skips over, but down at [inaudible 00:32:58] depression. 56.3% of people with depression are untreated, and it's over half of people who could benefit from treatment avoid treatment because of discrimination and stigma.

Dr. George Thomas:

Then, we live in a very rural area, and it's an acute issue in terms of mental health access. Part of that has to do with the rural culture generally dissuading people from seeking help. I'm not from New England, I'm from Missouri, and I know that New Englanders are sturdy people and they don't like to ask for help, perhaps just in general. Another really big problem is rural communities really lack any sort of

privacy or anonymity. I live in a small town and, and you know, the news travels really, really fast, so in rural areas, this mental health issue is even more acutely felt.

Dr. George Thomas:

Oops. Here's [inaudible 00:34:16] I'd thought of, access to transportation and healthcare utilization in a rural region. I forget where this is. Oh, North Carolina. I don't know where this study was done. what they found was that people who had a driver's license went to twice as many doctor's appointments, basically. I guess the flip side of that is people without a driver's license saw the doctor only half as much. In this particular area, our area we live right now know, there really is no public transportation. Everybody's dependent on their personal vehicles for transportation, and that one factor can have a huge impact on how often and how and how you access the healthcare system.

Dr. George Thomas:

That leads me into the next thing. I think everybody can understand why patients with seizures are maybe at risk for having accidents, for example, harming themselves, harming others while they're driving, so driving rules that have to be considered. New Hampshire, the rules are that you can obtain a driver's license if you've been seizure-free for 12 months, sooner if a doctor says it's okay.

Dr. George Thomas:

Physicians are not required to report patients to the DMV, so I typically don't report patients to the [inaudible 00:35:41] this patient's got a seizure disorder. Usually we just talk about it. The 12-month duration is sort of an outlier in the region. The other states [inaudible 00:35:53] put a number of like three to six months on this. This kind of, as I said, an outlier. All of the states have this caveat that if a physician says it's okay to drive, then it's probably.

Dr. George Thomas:

Vermont's similar. Your elderly driver's license after filling out some paperwork to the commissioner, and we're the ones that actually decided to go to Vermont. We're not required to report nor do we ever really report anybody for having a seizure disorder. They used to... It used to be six months was their timeframe several years ago. They renewed that and it just says basically, "The doctor says it's okay for you to drive. We'll consider it." Ultimately, it's up to the commissioner. People often think that their doctors have the power to restore their driving privileges. We can help support them if we think it's safe, but it's actually up to the DMV.

Dr. George Thomas:

Self-management for epilepsy, active involvement in care and sticking with your medications is really important. If somebody takes their medications inconsistently and they're having a lot of seizures, it's really difficult to try and control things. This is really important. This isn't so much of an issue with epilepsy directly or specifically, but healthcare in general, reliance on evidence-based treatment.

Dr. George Thomas:

A lot of questionable information on the internet, that lead people to try things that either are not effective or sometimes harmful, so at least trying to avoid things that are unproven. As I mentioned, some healthy lifestyle factors that can reduce your risk of seizures, getting good sleep, controlling stress,

perhaps diet. As I mentioned, the modified diet sometimes can be helpful, and then treatment of comorbid conditions. We said untreated depression can actually make your epilepsy worse.

Dr. George Thomas:

There are a lot of barriers to managing epilepsy. I've already alluded to untreated mental illness. It's confusing, particularly if you're new to the idea of the diagnosis of epilepsy, the terminology is... it's hard to get around sometimes and it's very confusing. There's still a stigma, as I mentioned, associated with epilepsy. You know a lot more people that have epilepsy than [inaudible 00:38:34] realize.

Transportation is a huge issue. People with epilepsy sometimes have trouble driving. They can't drive because they have uncontrolled seizures and that further impacts their ability to access healthcare.

Things that are helpful, stress reduction, education, and social support, too.

Dr. George Thomas:

Oh, more about medication adherence. It's a modifiable risk factor. It's estimated that about 30, maybe a little bit more, percent of adults are nonadherent to their medicines. They don't take them as prescribed. They're probably higher in like teenagers, adolescents. While seizures are bad, nobody enjoys having a seizure at all, there are some downstream consequences like fractures, other injuries, car accidents. Seizures lead to increased emergency department visits and admissions to hospitals, so certainly something to be avoided.

Dr. George Thomas:

Some of the things that influence medication adherence, personal belief or a need for medication. This is something that I've seen on one too many occasions where somebody has this order, they take a medicine as prescribed. They don't have seizures. Well, they take it and they erroneously conclude that they no longer have the seizure disorder. It seems hard to believe that somebody could come to that conclusion that, but it happens. I've seen it on more than one occasion.

Dr. George Thomas:

Concern about side effects, if you've ever looked at the differences of your medicines, you know exactly what I'm talking about here. There are common side effects. With the Depakote, for example, I mentioned the weight gain. It's common enough that it's worth mentioning to people. If you look at the list of side effects from not just antiseizure medicines, practically anything, it just goes on and on and on with just never-ending list of things nobody would want to experience. Some of those are really, really rare. I would, they're, they're common things. people are worried about the side effects and sometimes justifiably and sometimes, it's not, they're not common things.

Dr. George Thomas:

As mentioned, depression, anxiety affect medication adherence. The memory problems associated with with seizure disorders can make people forget to take medications. Then sometimes it's really complex when people are on multiple seizure medicines or they're on medicines for other medical conditions and, you know, taking a lot of a lot of pills and it's sometimes hard to manage. It's not easy taking medicines as prescribed.

Dr. George Thomas:

There are a lot of like online organization and groups that offer great support for people with seizure disorders. People with seizure disorders often feel isolated and alone, like nobody else around them nobody else around them understands what they're going through and sees that these are great resources. This is one of my favorites, The Purple Peace foundation. They usually play... I don't know if they're doing this with the COVID situation right now, but they have trips, you know, where they go to Disney world, Disneyland and things of that nature so that that DYS seizure disorders can meet other kids with seizure disorders and and do things that other kids do. This is my cousin's daughter, Amanda, so I guess I'll just type, "This is my cousin's website," so I'm kind of plugging her website for her.

Dr. George Thomas:

At Dartmouth, we have a couple of programs. One of them is HOBSCOTCH. This is an acronym. You can see it's Home Based Self-management and Cognitive Training Changes Lives. This is a program that's been on here for I think as long as I've been here, maybe been a little bit longer, and it's a program that teaches people tools to help improve their memory and compensate from some of the memory problems with epilepsy. As I mentioned, that's one of the most common things that people complain about, and this empowers people to kind of learn to work around it. It's been a very popular program here.

Dr. George Thomas:

This is another nationwide organization that we're associated with, The Managing Epilepsy Well Network, or MEW Network, M-E-W. Again, it's a support group basically, and this is multiple institutions across the country. All of these resources are available to anybody. There are even a lot of applications for your phone that can help with self-management of seizure disorders. It's really helpful as a physician if I know how often accurately people are having seizures. Sometimes people will a notebook and they have the date and the time and exactly what happened and what they did for it, and that's really helpful to see if there's been a change over time or to see if there's a pattern that emerges that can help us understand why they're having seizures.

Dr. George Thomas:

Other patients don't keep such detailed records as print. It's really frustrating to try and try and work through it. At the very least, most of [inaudible 00:44:03] have an alarm. You can set an alarm and there are even apps for medications, specific medication reminders. Some applications have specific information about epilepsy. All of these things help physical activity, sleep, stress level, life events, time management and social support are all things that can help improve quality of life in patients with epilepsy.

Dr. George Thomas:

I think this is my last slide. We tend to look at epilepsy as a condition of these episodes of seizures separated by long periods of being essentially normal, and we know that's not really true. Epilepsy is a chronic illness, much like diabetes or COPD, and it affects a lot of aspects of patients' lives. It can lead to depression, memory problems, loss of independence, and all of that just degrades people's quality of life. It really takes more than just a neurologist to help manage epilepsy. It really takes a lot of people, mental health resources, sometimes legal resources, not just in regards to driving, but in regards to workplace issues, social services, trying to navigate a complex healthcare system. With limited resources, a care manager is often very helpful.

Dr. George Thomas:

I calculated one time typically if I see somebody every three months, that's four times a year for 30 minutes. It comes out to like 0.02% of the time throughout an entire year, so my face-to-face time with with most patients is really not that much. All of these other resources are very important as well, and just helping people empower themselves to control and manage this condition is really helpful, not only in managing the condition, but also in their quality of life and wellbeing. There are still a lot of really substantial barriers that make this quite a challenge even today. It's getting better, but it's still not an easy condition to to live with or to manage. I believe that's... Yeah, that's it.

Angelica Ladd:

Hi there.

Dr. George Thomas:

Hi.

Angelica Ladd:

Thank you so much for that great [crosstalk 00:46:37]-

Dr. George Thomas:

Oh, my pleasure. Thank you.

Angelica Ladd:

We have a couple questions in our Q&A-

Dr. George Thomas:

Great, okay.

Angelica Ladd:

... So we'll get started on those. We have one question about, how should people go about treating depression and seizures? What would be the first steps?

Dr. George Thomas:

I think the first step is recognizing it and seeking out help for it. I think that's great. There are medications to help with depression and mood. They typically work best in conjunction with some sort of talk therapy as well. The typical medicines that are used to treat depression, SSRIs, Prozac is kind of the archetype old one. I think it's the oldest one of all of them, and some of them are better than others. Some of them... Wellbutrin is [inaudible 00:47:37] that a lot of people are on, but we have to be careful with that one, because it can lower one's seizure threshold.

Dr. George Thomas:

Picking the specific medication sometimes is important and having a good relationship with a mental health provider, it could be a psychiatrist, psychologist, counselor, just somebody that you connect with basically and have a consistent relationship with is really important. Again, we know that that improves

your quality of life. It improves your ability to, to kind of stay on track with your medications and your ability to manage everything. It's really... Really, I think it's very important with managing epilepsy.

Angelica Ladd:

Does gender matter when it comes to epilepsy? Do men get epilepsy more than women or vice versa? Or is it pretty evenly split?

Dr. George Thomas:

That's a great question. It's pretty evenly split, but sometimes it manifests a little bit differently. I alluded earlier to some hormonal influences and some women exhibit this pattern where their seizures are worse about the time that they have their menstrual periods and their menstrual cycles. That's a challenge in of itself and sometimes there's hormonal therapies that can be helpful in particular. Estrogen, for example, tends to lower one's seizure threshold, where progesterone seems to at least be neutral or maybe be a little protective against seizures. Sometimes oral contraceptives that are progesterone-based or even like the Depo-Provera, the shots [inaudible 00:49:20] in some people. We know that.

Dr. George Thomas:

We do see that seizures sometimes follow a cyclic pattern in men. I don't understand why. I'm not sure anybody really does. We assume that men's hormonal profile is sort of flat. We don't go through monthly changes in testosterone, for example, or at least not to the degree that the kind of changes that women see. Those cyclic patterns in men are not very well understood. Most people with seizure disorders have some sort of frequency to their seizures. Like it might be in, in women. for example, if it's every four weeks, then it's often tied to their menstrual cycle. Men, again, it's not so clear what's driving that. Sometimes there are some subtle differences between men and women. That's a great question.

Angelica Ladd:

Then, late onset epilepsy, is that typical for people to develop epilepsy later in life? Or-

Dr. George Thomas:

So [crosstalk 00:50:32]-

Angelica Ladd:

... has it always been linked into a person?

Dr. George Thomas:

... so if you look at the incidence of like new epilepsy diagnosis over like age, there's a lot of epilepsy diagnoses in childhood, and then it kind of drops off into adolescence. It becomes less and less common. It's not terribly uncommon for an infant or a child to be diagnosed with epilepsy. As they get older, it becomes a little less common, but then later in life, like 60, 70, that curve actually starts to go up again. The reasons for that are different. The seizure disorders that happen in kids tend to be genetic. That's why they show up early on because it's a inborn genetic trait. In the older group, the adults, it's usually accumulated injuries that underlie the seizures.

Dr. George Thomas:

It could be head traumas, playing sports, motorcycle accidents, car accidents, things like that. Strokes are a common cause of seizure disorders, and usually the seizure disorder, if it's going to happen, it's like two years after the stroke. It's sort of the underlying etiology or mechanism is different, but yeah, it's actually not that uncommon for epilepsy to develop in adults, and it's usually one of those sorts of factors.

Dr. George Thomas:

Dementia is another probably underrecognized association with seizure disorders. It's thought that maybe 10% of patients with Alzheimer's disease have very small, subtle seizures. They're not necessarily convulsions, but they nonetheless can cause a lot of problems with thinking and memory in people who already have trouble with their thinking and memory.

Angelica Ladd:

Then, I wanted to ask a little bit about the research on music therapy. Are you familiar with that? I think that was kind of like a big-

Dr. George Thomas:

Yeah.

Angelica Ladd:

... finding earlier this year.

Dr. George Thomas:

Right, so I wish I could tell you more about it, but there's this idea, this Mozart effect that certain Mozart pieces can basically reduce seizures. It seems kind of far out, but one of our researchers here, he actually kind of identified some changes in brain physiology by playing Mozart music that might affect seizures. I think that he ended up a TV show in New Zealand. I mean, it really was like people really caught onto this. It was a really interesting story.

Dr. George Thomas:

I don't know much more about it than that. I'm sorry. I don't, but it's fascinating that... Mozart gets blamed for a... well, not blamed, but lot of things get attributed to Mozart for not only was he a great composer, but seems to have improve our lives in a lot of other ways, too.

Angelica Ladd:

Yeah, and we can link that. We can link that study, I think, to our

Dr. George Thomas:

Yeah, yeah.

Angelica Ladd:

... to our Healthy Living page if anyone's interested in taking a look at that.

Dr. George Thomas:



Yeah.

Angelica Ladd:

We do have another question about alpha wave therapy. Is that something that can help with seizures?

Dr. George Thomas:

Alpha wave therapy, what I think I understand when you say that is using... Maybe if I've got this wrong, maybe I'm misunderstanding what it is, but using either light or sound to do the waves in one's EEG. That's an interesting idea. If anybody's had an EEG know that they flash the lights in your eyes. It's pretty typical and it's a way to sort of check normal reactivity of the part of the brain that's involved with vision. I think something... Although we don't see it on routine EEGs, auditory stimulation probably does the same thing. It's a little... The area of your brain's a bit smaller and it's harder to see, if you will, on EEG.

Dr. George Thomas:

I think the idea is that if you can induce good brain waves it might suppress bad brain waves. I think that's what I understand about that. I'm not aware that it's ever been like studied extensively and in a manner where I'd say, "This is definitely worth doing," but I've known a couple people who seem to feel like they benefit from it. It certainly is low-risk. In terms of side effects, there are frankly, practically none. If somebody finds out plans that helps them, I certainly wouldn't argue with them about it.

Angelica Ladd:

Thank you. I'll just give everyone kind of one more minute. I think that's all of the questions that we went through-

Dr. George Thomas:

Okay.

Angelica Ladd:

... but do you have any final words on epilepsy? When people should seek true treatment and how they can reach out to [crosstalk 00:56:16]-

Dr. George Thomas:

I think it's a scary think to have a seizure and, like I said, it's maybe 10% of people in the population at some point in life have a seizure. They never have another one. There's always the fear or the concern that maybe it'll happen again and sometimes it's hard to predict, but I think it's important to find out and be as aggressive and proactive in treating it and finding out if you have risk for further seizures, and if you are, what to do about it. It has a huge impact on your quality of life in so many different ways, and most of the time seizure disorders are manageable with medicines that are usually very well-tolerated, so...

Angelica Ladd:

It's good to know. We did-

Dr. George Thomas:

All right.

Angelica Ladd:

... oh, we just got one more question, actually, about-

Dr. George Thomas:

Okay.

Angelica Ladd:

... EMU monitoring.

Dr. George Thomas:

Sure.

Angelica Ladd:

Does that happen more than once?

Dr. George Thomas:

Depends. It's like any test. If it provides an answer that leads to a solution, then sometimes people just go through the testing one time. Other times, there may be no clear answer, or maybe the answers we thought we got from it were not enough, and so sometimes people will come back in and go through the testing again. It all depends.

Dr. George Thomas:

It's a great question, and sometimes people are there for a few days, sometimes they're there for more than a few days. It's all very individualized. It's one of the things I really liked about... What I like about epilepsy is that the... the treatment of epilepsy, rather. It's all very individualized and everybody is so unique and so different.

Angelica Ladd:

Well, I just want to thank everyone for tuning in tonight. Thank you so much, Dr. Thomas, for being with us, for sharing your time and your knowledge, and very grateful to have you with us. Thank you.

Dr. George Thomas:

Well, thanks for inviting me. I really appreciate it.

Angelica Ladd:

You're welcome, and so this, like I said, this is being recorded and we will have it posted on our YouTube page in the next couple of days, as well as-

Dr. George Thomas:

Okay.

Angelica Ladd:

This transcript was exported on Nov 26, 2021 - view latest version [here](#).

... on our Healthy Living Series web page, which is [go.dh.org/hls](http://go.dh.org/hls).

Dr. George Thomas:

Excellent.

Angelica Ladd:

Thank you all for coming tonight. Have a great night, be safe, take care.

Dr. George Thomas:

All right. Thank you. Bye-bye.

Angelica Ladd:

Bye.