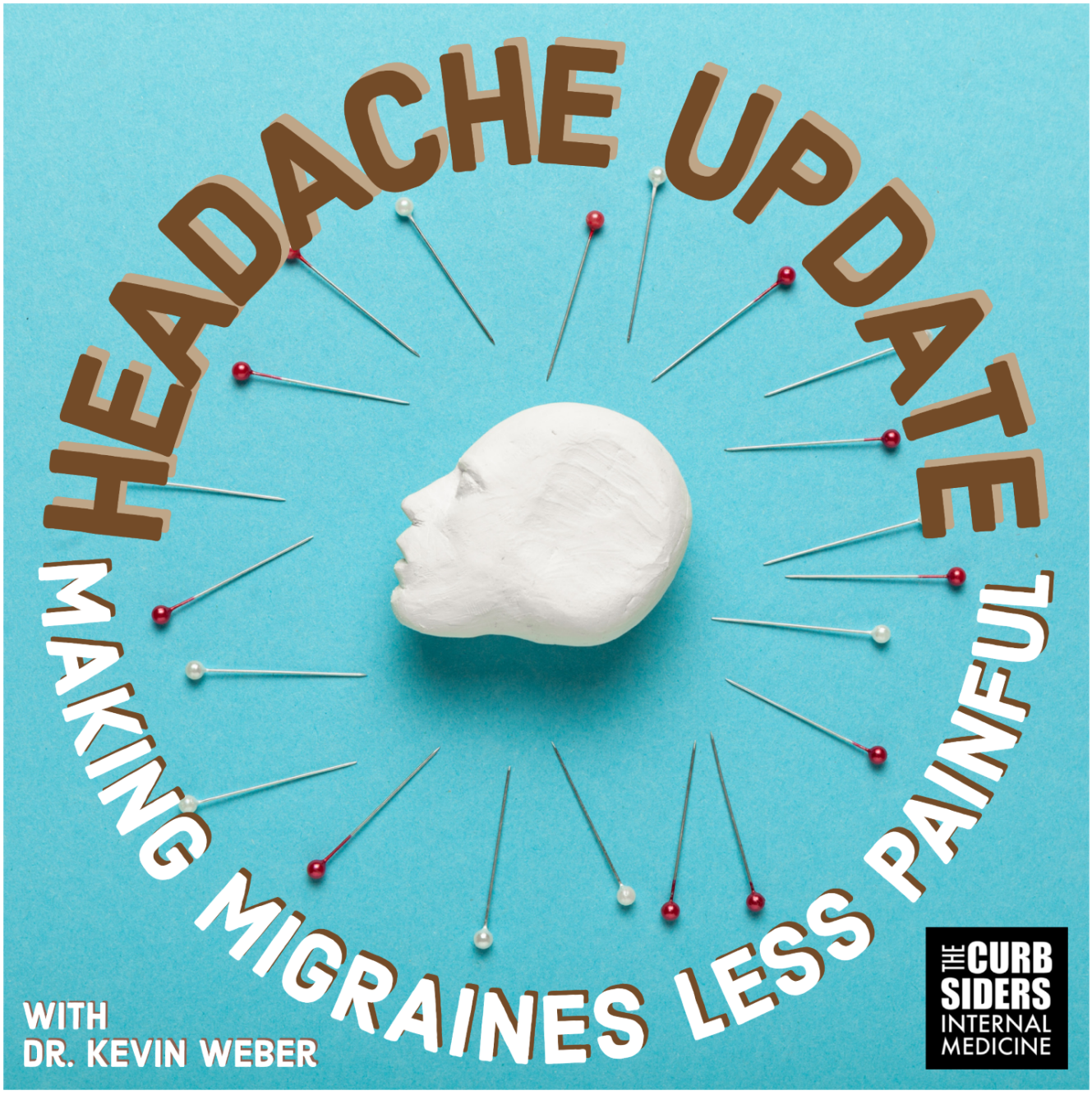
#341: Headache Update: Making Migraines Less Painful with Dr. Kevin Weber



[The Curbsiders Disclaimer]

[The Curbsiders Podcast theme]

Matthew: Welcome back to The Curbsiders. I'm Dr. Matthew Watto, here with my great friend, Dr. Paul Nelson Williams. And tonight, we're going to be talking about headaches with a great guest, Dr. Kevin Weber. Paul, how you doing?

Paul: I'm great, Matt. Thank you so much for asking. Good energy, by the way, if I give feedback in the moment.

Matthew: [laughs] Thank you, Paul, you know I always want your feedback. With us, we have a great cohost, but first, Paul, before you introduce our cohost, can you tell people what is it that we do on The Curbsiders?

Paul: I am thrilled to Matthew. We are The Internal Medicine Podcast. We use expert interviews to bring you clinical pearls and practice changing knowledge. Did you like the full name there? Did you like Matthew? I felt I was [crosstalk] my mouth, actually.

Matthew: I do like that. Thank you.

Paul: Yeah, I didn't like it.

Chris: [laughs]

Paul: I should mention-- You can hear him laughing in the background. We are, of course, joined by another cohost, Chris “The Chiu Man” Chiu. You know him, you love him. He helped produce and write this episode along with Isabel Valdez. Chris, how are you?

Chris: I'm doing great.

Paul: Why don't I desperately hand off the microphone, so that you can tell us about who we talked to and what we talked about.

Chris: We had a great conversation today with Dr. Kevin Weber, who is an Assistant Professor of Neurology and The Director of the Headache Division at The Ohio State University Neurological Institute, Department of Neurology. His clinical research interests include headaches and sports concussion. He completed his neurology training at The Ohio State University, and later was chief resident in his final year of residency training. He is board certified in neurology. Kevin later completed his fellowship in headache medicine at the Cleveland Clinic and is UCNS board certified in headache medicine with an award as an Emerging Leader in the American Headache Society in 2020. Kevin is the Associate Fellowship Director of the UCNS Headache Medicine Fellowship at The Ohio State, as well as Associate Residency Director at the ACGME Neurology Residency program.

He also runs a sports concussion clinic with sports medicine. Kevin also serves on the admissions committee at The Ohio State University. Today, he teaches us about when we should consider

neuroimaging, some of the new medications out there for acute treatments, such as gepants as well as therapies for prophylaxis such as neuromodulation.

Matthew: Before we get on to the episode, I'd like to try out a new bit.

Paul: I'm so happy right now. [laughs]

Matthew: This comes from a listener on Twitter, I asked the audience if they could help me out with some puns for some upcoming episodes. Rob Thomas was nice enough to give me this one. Paul, “It's weird when I eat a homemade bread, I get headaches. But when I'm munching a baguette over your place, I'm fine.” Paul, I think maybe it's migraines. Let me take that again. [laughs] I messed it up.

Chris: Oh, wow.

Paul: Nope, leave it as is. That's perfect.

Chris: That's perfect. No, Frank, keep this one in.

[laughter]

Matthew: A reminder that this and most episodes are available for free CME through VCU health at *curbsiders.vcuhealth.org.* Dr. Weber did disclose that he received fellowships support and research grants from AbbVie, Amgen, Lundbeck and Lilly. However, on the episode we discussed a balanced range of therapeutic options in our discussion and no specific products were endorsed.

Kevin, this has been a lot of set up, there's a lot of people on this call, I’m sure it’s disorienting, but now it's time to get to know the audience and for the audience to get to know you. So, can you tell them a little bit about yourself and throw in an interest or hobby that you have outside of medicine?

Kevin: I'm 38. I've lived in Ohio my whole life from Toledo. Very proud to be from that town, even though, it doesn't have a very good name in the world. But I did most of my training at OSU at Ohio State, and then went away for fellowship to Cleveland Clinic, then came back to Ohio State to practice neurology, headache medicine. I also do sports concussion, which is a topic for another night. For hobbies, well, I've got two twin boys that are 20 months old almost. They are a handful. I love following the sports world. I'm a big Detroit sports fan, because Toledo is not far from Detroit. They've not been very good for the last 10 years or so in really any sport.

[laughter]

Kevin: And the Lions are probably the worst franchise in the history of professional North American pro sports.

Matthew: You had Barry Sanders for a while there.

Kevin: [laughs] True.

Matthew: That have [crosstalk] times.

Kevin: For a while, the Cubs had us and then they won the World Series and now it's just thoughts. But anyway, it's been a sad last 10 or 15 years or so, but hopefully, they're on the rebound.

Matthew: This tells me you're a gritty resilient physician.

Chris: [chuckles] Yeah.

Matthew: For practicing headache medicine, I think it requires that because it's frustrating for patients and it can be hard as the doc treating them. So, I'm sure that serves you well. Your sports teams have prepared you for a tough road.

Kevin: I've been spoiled by Ohio State football though, on Saturdays. I've always said, “Thrilling Saturdays followed by humbling Sundays in the fall.”

Paul: Yeah, my brother, who will never hear this, by the way, when he was a kid he decided that he was going to be a Lions fan purely out of sympathy for the team. He's like, “Someone should probably like them.” I thought that was very sweet. He otherwise had no interest in football, but he just felt so bad for Detroit. That was his-- [crosstalk]

Chris: [laughs]

Kevin: Well, unless your brother is 80 years old, he has not tasted success yet.

[laughter]

Paul: He eventually got broken a football entirely. It may or may not be even the Lions fault. It's hard to know. Gosh, with new twins, I don't imagine you have a whole ton of time for any kind of culture. But a question we do like to ask is, any recent book, movie, TV show, album, any piece of culture that you've enjoyed or that you found soothing or distracting lately?

Kevin: Well, I do actually like to try to pay attention to music. Again, from Detroit, The White Stripes, Jack White, he has a new album out and it's very, very good. It's called *Fear of the Dawn*. He is solo now. His ex-wife, Meg, who was the drummer in White Stripes had pretty crippling anxiety and they had to stop making music a little over 10 years ago. He's been mostly with some other side projects and bands since then. But he has a few solo albums and his new one is really, really good. It's probably his best one since he was in The White Stripes, I think.

Paul: He's fascinating. Have you had a chance to see him play live ever?

Kevin: I have. I saw him with The White Stripes towards the end of their time, which I feel really blast at the-- Gosh, I can't remember the name of it now. It's not the Majestic. It's one of the famous theaters in Detroit and then I've seen him solo at two.

Paul: Oh, amazing.

Chris: Nice, nice. My question I'd like to ask often is, what is your favorite failure and what did you learn from it and it doesn't have to be related to medicine?

Kevin: Well, it is related to medicine. I'm an Associate Residency Program Director in neurology too. I have to review applications for residency. I get imposter syndrome basically every time that I review these applications, because I didn't fail, but I did not do well on step one as in barely passing. It's easy to blame it on, I was sick for a week during the preparation for it, but I didn't study enough and I went to a couple of weddings, and stuff when I should have just been focusing on studying. So, I really didn't do that well on step one, but I've somehow able to overcome that.

I always have a special place in my heart for people, so that I don't judge them based on one test in their whole career. I ended up doing pretty well after that. I consider myself fairly successful, but I definitely get imposter syndrome quite a bit in and I'm sure it seems that's a feeling that's common to a lot of physicians, at least at some point along the way they get imposter syndrome.

Paul: Oh, they are the good ones, anyway. Yeah.

[laughter]

Matthew: Wise words, Paul. Well, it's a big topic and thank you, Kevin for sharing that. I think we should really get on to a case from Kashlak now to make sure we have time to get to our questions, because there's been a lot of-- We've done shows on headache before, but there's been advancements we still-- and I think even despite the prior shows, Paul, I don't think we'd ever run out of questions about headache. It's just-- [crosstalk]

Paul: No. Listeners demanded constantly here.

Matthew: Yeah. So, Chris, would you like to start us off with a case from Kashlak?

Chris: Yeah. I'm going to read from this excellent script that Isabel wrote for us. Ada is a 31-year-old female with known history of migraine headaches, who presents with a persistent nontraumatic headache that started about two weeks ago. She presents to the clinic because the headache is different from her usual headaches, because it is worse, longer lasting, and debilitating enough that she missed work. Her headache is unilateral and characterized as intensely throbbing and associated with nausea. She has tried and naproxen, Fioricet, and sumatriptan, but nothing has helped her relieve the headache. She stopped taking propranolol after it made her tired and depressed and has now been on topiramate 100 milligrams bid.

She's here for treatment, also, wants to know if it's time for that MRI, her last menstrual period was about two days ago. And so, basically, what is your general approach to patients like this or patients who are in your clinic?

Kevin: That's a great question and this is a hot topic with internal medicine and anyone in primary care is when do I image these people on, what do I image? The one thing I'll say is that there's actually some guidelines out there. The American headache society put out a systematic review and evidence-based guideline. It was published just before the pandemic on headache. It's called neuroimaging for migraine, the American Headache Society Systematic Review and Evidence-Based Guideline. There has always been a tendency to somewhat over image in the past and they had made several recommendations. They said, “It's not necessary to do neuroimaging in patients with headaches, consistent with migraine who have a normal neurological examination.”

Then you can consider it for the following reasons which would be unusual, prolonged, or persistent, or increasing frequency, severity, or change in migraine, which is one that's a very broad, and that's very subjective definition. First or worst migraine, migraine with brainstem aura or confusional migraine, hemiplegic migraine, side-locked migraine and posttraumatic migraine. There's also if you look at the literature, there's a mnemonic called SNNOOP, and now, it's SNNOOP10. It's S-N-N-O-O-P 10 list.

Paul: [laughs]

Chris: I like it.

Kevin: There's a number of different secondary causes that this looks for including systemic symptoms like fever, neoplasm history, so, history of cancer, there's a focal neurological deficit, older age, just typically after 50 and above, positional headache, papilledema, and fundoscopic exam, pregnancy, headache with autonomic features, posttraumatic onset, and then anyone who's immunosuppressed like someone on immunosuppressive medications or someone with cancer, which I already mentioned.

Typically, especially, in a case like this we would recommend an MRI of the brain. That's because the CT has really limited use in imaging with a secondary headache. The CT scan is typically used. If there's the worst headache of your life and its abrupt onset like a thunderclap headache, you're concerned about subarachnoid hemorrhage with a ruptured aneurysm. We also use it if there's a suspicion for skull fracture after a trauma. Once you get outside of the very acute setting, MRI is the imaging modality of choice in evaluating for secondary headache. That's what I would recommend for a patient like this.

Now, this patient, it does sound it's a change in her headache pattern, which is a bit concerning. That's a very long headache that she's having and two-week long migraine. Typically, migraines are four to 72 hours. It'd be very unusual for headache to last that long and we would consider that status, migrainosus. This seems an abrupt change for her and I do think imaging with an MRI will be appropriate in her case.

Paul: Kevin, I think a question I want to ask and we'll get a bit more into the diagnostics, I think a little bit in what the workup might look like. But for me, I think one of the things I find daunting in thinking about headaches or any bad headaches is, they're these categories, and subcategories, and sub subcategories, and I'm reading about these new daily persistent headaches which sound haunting like migraines but are not. In my simplistic primary care mind, I classify chronic headaches is either tension type, migraine type, or something else that I personally probably have the patient see a neurologist for, which is probably maybe a little bit too simplistic, but can you maybe help me and just give me a general framework to think about these types of headaches? I really do think the sheer variety sometimes, I think makes them probably more intimidating than they need to be.

Kevin: I honestly think you're right on track with that categorization because most headaches are migraine or tension-type headache, and then the rest are much less common, almost all of those we would recommend imaging for. Including the other primary headache types, you're probably the most familiar with cluster headache and other trigeminal autonomic cephalgias as being other primary headaches, but there's some rare ones like cough headache, hypnic headache, primary thunderclap headache, which is really scary because that's the worst headache of your life, but having it over and over again.

Paul: Jeez.

Kevin: Those types of things, you guys are getting specialties involved in particularly like us and at least neurology. I think it's an actually a really easy way to think of things is migraine tension type or other.

Matthew: I like the framework that the SNNOOP10 that you were going through just to think about imaging. The purpose of the imaging is implied, I guess, by your response there that essentially, the pretest probability is going to be higher that you find something on the MRI with the older age immunosuppressed if it's posttraumatic, if they have a malignancy or you're suspecting malignancy, or if they have focal deficits. That's why that list is meant to say like, “Okay, these are people with higher pretest probability patients that just have a classic migraine or tension-type headache that's been chronic, you're unlikely to find something.” Is that how you think about it as well?

Kevin: Yes, and that's what the evidence shows.

Matthew: For someone like Ada, our case here, we're seeing her in primary care and she's had this headache for two weeks. Typically, it takes a little while to get the MRI as an outpatient. When you say, you would get this for her what's the turnaround time that you would expect that you'd feel comfortable with for someone like her?

Kevin: This is more of an outpatient case. Typically, at our institution, a routine MRI gets done within a month, which I think would be appropriate and okay. Like you said, you're looking for malignancy, neoplasm. If it's a case where they're getting worse, and worse, and worse, it's getting more and more severe, becoming unbearable, or if they're developing progressive neurological deficits, then obviously, you would want to expedite the image or just go ahead and send them to the emergency room for that.

Chris: Can I ask a quick question just because I'm not always bright with these things? Is this MRI with or without contrast or with and without? I always forget these types of things. What would you recommend and why?

Kevin: That's a great question because typically if it's just a change in pattern of their headache or worsening headaches, an MRI without contrast is okay. But there are instances where you would benefit from having contrast such as a positional headache, which is you're looking for. As in, it gets worse with standing up, you're looking for a spinal fluid leak in that case and that can show up with dural enhancement with the contrast, so, you'd want to have contrast for that. If they have a cancer history, it would be good to include contrast. But most cases, you can get by without contrast for the first image. At our institution also if the radiologist sees something, they will often go ahead and add contrast while the patient's still there and I've had that happen a couple of times.

Chris: In addition to getting this contrasted study, when we're looking at differentiating each of these types of headaches, because obviously that might affect the way we're doing treatment. Are there other things that besides history and imaging? Are there other labs that we want to get, do we want to check, do we see if they're thyroid's okay, make sure they are not anemic? Are there things that you routinely do within your headache clinic?

Kevin: Yes, although, those are lower yields, but they're also easier to justify and get with a simple blood draw. In a lot of cases, it's labs that you all check anyway such as CBC, CMP, we will check thyroid, B12 is a big one that we check along with the methylmalonic acid. In Ohio, almost all of our patients are vitamin D deficient. I typically check that as well if there's some evidence in headaches that low vitamin D levels can worsen migraine and in our state we have a lot of clouds.

[laughter]

Kevin: Almost everyone here is vitamin D deficient.

Matthew: Yeah, right.

Kevin: But I think the image is the most important thing. The labs are a nice thing to send along with someone who's having a worsening or change in their headache pattern just to make sure that you're not missing anything else because a lot of times, they have migraine. It's someone like this and I would suspect if this woman has a normal exam that it'll probably come back normal. MRI will come back normal. Something else is causing this worsening in her headache besides a brain tumor in her head. Now, you get the image to rule that out, but a lot of times, it comes back with normal and then the patient says, "My MRI is normal, but I'm still having this headache all the time. What do I do now?" Those labs are helpful to check also, but then you have to start thinking about other aspects of things going on like, "How's her cervical spine, has she had really bad neck pain, does she have occipital neuralgia, did she have a huge change in her stress levels recently or stress levels or mood, has there been a big change in her sleep pattern recently, is she a nurse and did she just switch from day to night shift?"

I tell my patients to think about migraine like it's an irritable old miser set in their ways and your brain is set in its ways, and doesn't like changes in routine. It doesn't like lack of sleep, it doesn't like being hungry, it doesn't like being thirsty, it doesn't like changes in the weather, which again we can't do anything about living in Ohio. But there are some things you can do. You can stay hydrated, you can eat regular meals, you can try to keep your sleep pattern consistent as possible. Sometimes, a change in those things can be the impetus for a long attack like this or just a worsening of their migraine.

Matthew: Can I ask about the cervicogenic headache? Maybe I'm not sure that's the right term or not. I saw Paul get also activated when you said that.

Paul: [laughs]

Matthew: I'm just curious. That's not something that I usually think to ask about, though, I have seen it on people's problem list like cervicogenic headache. Can you talk a little bit? Is it pretty convincing that they're tied together, if you had success, if you go after that with controlling the headaches?

Kevin: Yeah, so, that's a great question. Cervicogenic headache is its own secondary headache technically, according to the International Criteria of Headache Disorders. To get diagnosed with that by definition you have to respond to some sort of a cervical block. Now, I diagnose it all the time without going to that trouble. The cervicogenic headache by the ICHD-3 criteria implies that that's the headache type and not migraine related. It's just a headache coming from your neck. We're just getting into expert opinion here, but in my expert opinion, there's a lot of cervicogenic components to patients with migraine, especially chronic migraine. But even patients who have episodic migraine, there's a huge percentage of those patients who have a cervicogenic component to their headaches as a contributing factor.

There's limited data on physical therapy in migraine control just because there's different patterns of therapy, different techniques for physical therapy. But the evidence overall has been supportive so far. It's just not very robust. I'm just speaking from expert opinion here is that a great majority of my patients have a cervicogenic component to their pain, particularly, the refractory or chronic headache patients.

Matthew: Great. Thank you.

Kevin: I think that's also why Botox works so well for a lot of patients-- [crosstalk]

Chris: Oh, interesting.

Kevin: [crosstalk] for Botox for chronic migraine because a lot several the injections are in your neck and trapezius muscles.

Chris: So, you're saying that you find a lot of your patients may have a component of cervicogenic pain. How often do we see a mix headache picture? Because I always feel I have some of these patients who get a tension headache, but then it begets them a migraine or someone starts off with

migraine, obviously, might cause them to have tension. A lot of times when I get these histories, I see a mixed picture, which then obviously we're going to get to this a little bit later, but that sort of colors the way in which I approach their treatment and maybe if I see layers likes tension component, then I might try attacking that and more than just their migraine or the other way around.

Kevin: That's a great point, too. That's a little bit controversial in our field, but there are some headache specialists who think there are distinct tension and migraine headache. And then there are some like me, who think it's more of a continuum of pain. A lot of patients have a mix of both. For instance, one thing I ask every patient is, “How many headache days do you have per month and how many migraine days do you have per month?” Usually, but not always the headache days number is higher than the migraine days number, which means that there implies that there are some days where it's mild, but not involving other migrainous features like nausea, vomiting, photophobia, phonophobia. It's not as incapacitating. Maybe it's a three out of 10 instead of a seven out of 10 pain. They can go about most of their activities. It's just more annoying. I would say from experience that almost all of my chronic migraine patients have that mixed picture. There are some patients, they have either migraine or nothing, but that's less common.

Matthew: I think we should probably start to wrap up the first case because there's a lot of new therapies and I know that's where a lot of the questions are going to lie. Chris, do we have a resolution to this case and then maybe I can recap a little bit what we learned about from the first case?

Chris: Well, it sounds like Kevin wanted do imaging on this case. I guess, we do imaging on this case and it ends up being normal. We administer migraine headache cocktail and then she gets sent home for regular follow up. So, it sounds like things did okay with her.

Matthew: To recap what we talked about this first case, this was Ada. She was already on and had tried a lot of different therapies for migraine, but her migraines had changed in character and frequency. So, that's why we were getting the MRI in her case. Some things we talked about-- Who needs imaging? We’ve talked about the SNNOOP10 mnemonic and a lot of the things that that incorporates are like, who is likely to have a high pretest probability of us finding something, so that people with focal deficits or who are immunocompromised might have an infection. People that have recently had trauma and if we're suspecting malignancy, so those are some of them.

The other thing was, you might be able to get an MRI without contrast as a first study for a lot of patients, unless you're suspecting a low-pressure headache in which case we'd want to be looking for CSF leak or if we think someone might have malignancy, we would want with contrast in those cases. And then the lab workup, probably a lot of this will be done by the time they get to you Kevin, but it was like CBC, a comprehensive metabolic panel, TSH, B12, vitamin D. We ask about their cervical spine, how's that doing, maybe send them to therapy for that, and then we also make sure that their mood is controlled, mood disorders are addressed, and that they're sleeping well, and just eating regular meals, staying hydrated, and just like. So, good old fashioned, Paul, primary care. I'm sure you're very capable. [laughs]

Paul: It feels right.

Kevin: This is a good segue into discussing the treatment too because someone like this, let's say, she is the more common what I would expect and her MRI ends up being normal. What do you do to prevent this from happening again? Then you'd want to discuss with her, how often that she's having migraine attacks and whether she would meet criteria for prophylaxis medication? But even if she doesn't, someone like this clearly needs a better rescue option, so that she doesn't have a two-week long migraine again, so, you'd want to discuss with her what she's taking for rescue if anything, or if it's just over-the-counter meds, or whatever she's doing isn't didn't work for this one at least. So, you'd want to discuss rescue treatment with her too.

Chris: Do you want jump to talking about rescue treatments, then?

Matthew: Yeah, I think this case is really sets it up nicely. So, I think maybe before we go on to another case, we can stick with this one.

Chris: So, Kevin when are we talking about rescue treatments, I know we have a lot of classical things and we've talked about these in previous episodes. People can look at those. But can you help refresh our listeners memories on some of the classical treatments. These are what I normally do. I've done for a decade in clinic, triptans, NSAIDs. I know I've been to [unintelligible [00:28:05], you've talked about long stay or tapers. I think you talked to me about chlorzoxazone. Can you talk a little bit about some of those?

Kevin: Yeah. The classic migraine rescue treatments are aside from over-the-counter analgesics like ibuprofen, naproxen, and Excedrin, which is a combination analgesic of Tylenol or acetaminophen, caffeine, and aspirin. You have other NSAIDs. Ones that are prescription NSAIDs and then you have the group known as triptans, which are serotonin agonists. Those older treatments that are more out of favor now. Butalbital, acetaminophen, and caffeine which is known as Fioricet or Fiorinal. Still sometimes prescribed, but has a pretty high addictive potential. It is a controlled substance. We try to stay away from that one unless multiple other things don't work. The patient is reliable and compliant with your recommendations.

Then there's an old, old one called Midrin, the generic is very difficult to say, but I'll just say that that one is no longer on the market. It wasn't because of safety, but it has to do with FDA reasons. But if you have patients ask about that one, you can just cut it off and say it's not available anymore.

[laughter]

Kevin: Those are some of the classic treatments that we use. When you're talking about steroid tapers and chlorzoxazone, that was more for status migrainosus treatment. We use sometimes like oral prednisone taper for those, which we do 60 milligrams for five days and then we go down by 10 per day until they're off. We can use a dexamethasone taper, which is a little shorter like a three-day taper 12, eight, and four. Chlorzoxazone, you can schedule which is a muscle relaxer. Whatever their muscle relaxer is of choice if they have one that they like and use, you can schedule that for five days. In our center and not everywhere has this, we have infusion centers that they can come to and get that

cocktail of medications that they would get if they went to the emergency room without having to go to the emergency room, which would be ketorolac, some sort of anti-emetic, Benadryl and sometimes we add other medications like valproic acid, magnesium, methocarbamol, and Decadron, which is a steroid. We will sometimes add to that cocktail of medications. The infusion is typically after they failed some oral treatments like at home or if it's been extended like this for a couple of weeks. In a case like this, I would either offer this woman some oral steroid taper, or the muscle relaxers, or if she maybe had tried those things before and they didn't work, or if she had some contraindication to trying those things, then we would go right to the infusion.

Matthew: Yeah. You guys send people to the urgent care or you have an outpatient infusion center that can do that for you guys?

Kevin: Yeah, we're very blessed here at OSU. Not everywhere has that, but we have.

Matthew: Mm-hmm.

Kevin: Because we're a big academic center. We have-

Matthew: Yeah.

Kevin: -multiple infusion centers around Columbus that we can send. We try to keep our patients out of the ER as much as possible, but sometimes they have to go.

Chris: Now, Kevin, I'm on inpatient right now and I've recently had a patient with severe headaches that I had neurology help out with, and they did something that I'm not really familiar with. They started the patient on valproic acid. Can you explain that a little bit?

Kevin: Yes. Sometimes, we do a taper of valproic acid for a couple of weeks to break them out of a cycle like that. We'll do 1000 milligrams daily followed by 500 milligrams daily for a week and then stop, we do a couple of weeks. Now, these things are all pretty low on the evidence.

Paul: That is probably not something I'll be doing.

Chris: [laughs]

Paul: Can I ask you to talk me into the triptans a little bit? I know we've covered them in prior episodes, but I think every time you order one, there's about 74 warnings that pop up in your electronic health record about medications, you can't use them with, and SSRIs, and muscle relaxants, but can you just tell me what circumstances I should absolutely not be considering triptans and then also just your overall approach to them? I know it seems they all have a reasonably comparative efficacy but how do you use them and when do you not use them are the two questions, I would ask you.

Kevin: That's a great question because people have been terrified about them since they've been on the market. A lot of cases unjustified. They do can cause vasoconstriction so that freaks out a lot of

people about. There's also, since their serotonin agonists, people have been worried about serotonin syndrome. A lot of our patients are on multiple psychiatric medications. Sometimes, they're on bupropion, and sertraline, and buspirone, and they're on maybe a little trazodone at night too for sleep. And then you're throwing this sumatriptan on top of it and you're like, “Oh, my gosh, am I going to throw them into serotonin syndrome?” That has been studied pretty extensively and the answer is no. There have been in the last few years here large studies that have looked at that and the risk of serotonin syndrome appears to be theoretical rather than a real-life problem.

Now, I don't use triptans when a patient has a history of coronary artery disease or peripheral artery disease, typically not with ischemic stroke either, although the evidence that triptans cause intracerebral vasoconstriction doesn't exist. We don't actually think-- It is probably safe in ischemic stroke patients too, but I still avoid it in those patients just out of safety, especially with the newer therapies that we have on the market now which are super cool and don't cause vasoconstriction, which we'll get to in a little bit. But triptans are very effective rescue medications for migraine patients and they should be offered to almost all migraine patients especially if they haven't tried them before, if they don't have a good rescue option.

Chris: Now, is there a difference between each triptan? I feel there are a whole bunch and I usually just end up with whatever's on the insurance formulary that's covered by the patient.

Kevin: The safest one you can pick is rizatriptan, because that one is generic, and it's the fastest one of that group, and it's newer than sumatriptan, so it has less side effects. Naratriptan’s another generic one which is longer acting. That's one I use for myself and has less side effects, but takes a little bit longer to work. Sumatriptan’s the oldest one and comes in the most different forms, but tends to also have the most side effects. There are some other triptans as well like zolmitriptan, eletriptan, almotriptan, and I think I mentioned all of them. Oh, frovatriptan.

Paul: I'm sorry, elmo and frovo?

[laughter]

Paul: It's really [unintelligible [00:35:32] at the end.

Kevin: Yeah. I think from your perspective, it's just good to have one or two that you'd like to use. I would say riza and nara would be your safest because those are generic and every insurance that I'm aware of covers those.

Chris: Excellent.

Matthew: That's great. I feel slightly bad Paul, I don't know about you, but did you know a lot of patients were experiencing chest tightness when they were taking sumatriptan, apparently, that's common?

Paul: I was not as familiar with it as I am now. Why won’t we put it that way.

Kevin: I typically warn them about that ahead of time, because they do think that some patients get that and they think they're having a heart attack and reassure them that.

Matthew: Yeah, you're like, “Here's a medicine which may be unsafe for people with cardiovascular disease. It's going to cause chest tightness.”

Paul: Which will distract you from the headache. It's the mechanism of action.

[laughter]

Chris: That’s true.

Matthew: Yeah.

Paul: Kevin, I do want to ask-- I think it was almost a throwaway line in one of the papers that I was reading in preparation about co-prescribing naproxen and with the triptan. You take them both at the same time, I think a study showed that they're better in combination than either one is monotherapy. Is that something that you're doing in routine practice and that I've been missing?

Kevin: Yes. I tell patients not necessarily that specifically, although, there actually is one pill that's combined naproxen and sumatriptan. In practice, I typically tell patients that it's okay to take their other rescue medications with the triptans. If they like using the combination analgesics like acetaminophen, caffeine, and aspirin, or which is known as Excedrin, or ibuprofen, or naproxen, whatever their favorite other medication is of choice, I tell them they can experiment with it and they can either take it at the same time or they can overlap them throughout the headaches.

The triptans for the most part can be repeated once in two hours. The only exception is naratriptan, which is four hours. I tell patients, if you want you can take them both at the same time or as in the ibuprofen, and naratriptan, or sumatriptan, or whatever, you can take at the same time or you can space it out in between doses, so you're getting to take something every hour or two. I tell patients go ahead and experiment with it, play around with it, and see what your best rescue regimen is. They're safe to take together or you can space them out. The main thing that I want is for you to knock the headache out and not be miserable.

Matthew: To make sure we give a fair amount of time to these newer drugs. Ada, we gave you butalbital, naproxen, sumatriptan. She's on topiramate for prevention in the past. She's tried propranolol. What if she wanted a new agent for abortive therapy since we're talking abortive therapies here? I know there's some newer CGRP antagonists rather and then this other one called the Ditan, which I had never heard of before, which apparently you can't operate heavy machinery. Can we talk through those a little bit like I'm starting to see them in the wild?

Kevin: You said she's tried triptans before?

Matthew: She has, yes.

Kevin: Okay. Typically, for insurance perspective, most insurances will cover the new therapies if they've failed two triptans before. Which isn't too bad. I'm a bit biased because by the time they get to me, a lot of times they failed many therapies. I don't see that as that daunting, but for somebody in primary care, it might be a little more daunting. But typically, insurance is a failure of two triptans before, or a reason like coronary artery disease, or some reaction to triptans in the past that they cannot try two triptans.

There're two gepants medications, which is rimegepant and ubrogepant. Then there's the Lasmiditan, which is by itself in that class right now. That one, the Ditans are very similar to triptans, except they don't cause vasoconstriction. These three medications have been a revolution for my cardiac patients because for many years they had very limited options. They could take acetaminophen. As you know, NSAIDs aren't great for cardiac patients and patients with peripheral vascular disease either. A lot of times, they're on medications that NSAIDs might increase the risk of bleeding for. A lot of times, if they had CAD or PVD, they weren't eligible for triptans either. They had limited options at best. These two new meds have been a revolution for a lot of these patients.

They're also good for patients who have failed triptans or can't take triptans for other reasons. The Ditan like I said is similar to the triptans, except for it does not cause vasoconstriction. It's a bit more centrally acting, so, there're more side effects with it. But it's also many patients find it to be very effective. It just can cause a lot of dizziness and sedation. It comes with an eight-hour driving restriction after taking it. They did a driving test and they found that even in patients who felt fine, they still had limitations in their driving ability up to eight hours afterwards.

Matthew: It sounds like zolpidem that I think there's a similar thing like you tell people don't drive, if you're taking the Z drugs.

Kevin: There's only a subset of patients who I prescribe that for typically people who are retired or unemployed, because having a job that you drive to is challenging or if you're driving children around, that one can be challenging. But it's a good option for someone who maybe doesn't have those issues and wants an effective rescue treatment or something to try. The gepants have way less restrictions. There are a few drug interactions with that one, which nothing that's dangerous, but there are some medications that since they're in the CYP system that we avoid taking those with. I'm not going to list all those for you tonight and I don't think I can off the top of my head, but there are a few drug interactions with that class just to be aware of but side effect profile is great. There's no driving restriction, they don't cause medication overuse or rebound headache, which the triptans, and NSAIDs, and over-the-counter medications can which is really nice and they're well covered by insurance.

For instance, one of them is on our Medicaid Formulary in Ohio, which is in Ohio State at public hospitals, we have a lot of Medicaid patients. You're going to have some listeners who are thinking, “Oh, all these treatments sound great, but how many of my patients are going to be able to afford them? Typically, these newer treatments are actually fairly well covered, but even by Medicaid. Honestly, the population that I've had the most difficulty with is Medicare patients for all these newer treatments just because the part D, they have the doughnut and then there're so many different plans

that it's hard to keep track of what's covered on each plan or not. But as far as your Medicaid patients, they have actually pretty good options with the newer medications, which is nice.

Matthew: And Paul, I don't think we've talked about that on the show, but with the newer diabetes drugs and things now we're using for heart failure, I never was that aware of it because I was mostly prescribing these generic very low-cost medications. Just recently, this has just been the bane. The Medicare patients are some of the hardest to prescribe for. Is that your experience, too?

Paul: Yeah, I've gotten to be friends with a lot of online coupons is long and short. There's a lot of negotiating and trying to get things paid for while you're in that gap. Yeah, it's a challenge.

Matthew: Yeah, it's actually easier of patients around medical assistants, the medications in Pennsylvania are just very affordable which is fantastic for patients. I wish it was the same for other insurance providers. Okay, you've taught us about some exciting new, especially for patients who have either not done well with the older medications like the triptans or we can't take the triptans because of cardiovascular disease or something. These newer agents, they sound great. With the lasmiditan, we have to watch out for this eight-hour driving restriction, which-

Paul: [laughs]

Matthew: -maybe newer versions will not have such, maybe they'll be able to fix that with newer versions in the class, and then the gepants you said that they can be taken. You just have to watch out just run an interaction check before you're prescribing it just to see with what else the patient's on, because they're affected by the other things metabolized by the CIP system. It sounded almost like triptans, the gepant. You take it once and then you can take it again in two hours.

Kevin: Correct. Well, for ubrogepant, yes. For rimegepant, which is known as Nurtec, that is just a one time want once a day.

Matthew: Okay.

Kevin: Or, one time a day medication.

Matthew: Are they also used for prevention as well? I thought I was reading one of these could be prescribed as well for prevention. Was it the--?

Kevin: It's rimegepant and it's dosed every other day. Also, again, just with triptans, these are safe to take over-the-counter medications and other NSAIDs with them. Actually, it's safe to take triptans with them, too. I have a few patients who they have a lot of migraine attacks and they interchange them, so that way they have more coverage per month, because the nice thing again about the gepants is that they don't cause rebound or medication overuse headache. They can take their triptan maybe eight or nine days a month, and then they can use the gepant for another 10 days, and all of a sudden, they've got 20 days out of the month, where they can take something which is nice because some patients have a lot of migraine. Even though, I do lots of prophylaxis things and tinkering to make them better,

they still have a lot of migraine attacks and it's nice to have the option to take different classes, which is nice.

Chris: Since we have some gepants that can be used for prophylaxis, if you use that prophylacxic dosing, then I assume you can't use another gepant for rescue then?

Kevin: That's a good question and that's been a recent-- We're still studying that. As far as safety goes, some preliminary safety data shows that you could take two gepants in the same day and I'll explain how. One is atogepant is just for prophylaxis and that is the newest one. That is daily dosing. You might ask, “What would someone do who's on that who has a breakthrough migraine what do they do? What if they can't take triptans?” We're in the wild west with this territory because these meds are pretty new. But the early safety data seems to think to show that it's okay to take two in one day, but that's an area of study, that's an area actively under study.

Chris: Gotcha.

Kevin: Rimegepant’s easier. What I've been doing with that one is, that one is dosed every other day for prevention. What I tell patients is, “If you have a migraine attack on your off day, go ahead and take it again that day and just skip, reset the cycle.” If you were due to take it Monday, Wednesday, Friday, and you get a migraine attack on Thursday, go ahead and take your dose on Thursday again, and just skip Friday, and start again every other day on Saturday. With that one, they give you 16 per month. You have a little wiggle room with the pills, and another option is if they have another rescue treatment, they could use it on their off days too.

Chris: Excellent.

Kevin: But that one's a little bit easier to solve that problem with. There're two prophylaxis agents, the rimegepant and the atogepant, and then there's one that's rescue only which is you ubrogepant and rimegepant is both.

Chris: Now, these gepants, these are all in this CGRP area. I know that when we're talking about prophylaxis, we have all these monoclonal antibodies that are also within the CGRP system. I don't think I quite understand how the CGRP works to begin with. Can you talk a little bit about these new monoclonal antibodies that we can use?

Kevin: Sure. CGRP is a protein that circulates around your body. It's involved in vasodilation, but antagonizing it does not seem to cause vasoconstriction, which is nice because that would cause its own problems. It's known to be a factor in migraine in a lot of patients. I don't think it's every patient, because we clearly have patients who take these medications, and fail all of them, and it's not their driving factor of their migraine. But for a lot of patients it is and it's known to be a factor. Migraine has been studied for about 30 years and these medications have revolutionized our field. There're four monoclonal antibodies and those are all for prophylaxis only. Those are large molecule. The gepants are smaller molecule and those are antagonists. The monoclonal antibodies all end in MAB. There's

four of them. Three of them are subcutaneous injections and the other one is an IV infusion done every three months.

Matthew: The subcutaneous injections, how often are those?

Kevin: Typically monthly. One of them, fremanezumab also known as Ajovy can be either one every month or three every three months, three shots at once every three months. The data does not support much of a difference between the dosing. So, patients have their own preference.

Matthew: And are these like we talked about with trying to get the board of medications covered the newer ones, do they have to have been on two different medications for migraine prophylaxis before they're able to access these monoclonal antibodies?

Kevin: That's a great question because this is where you guys come in, you can help me out before they get to me. Typically, they do require step therapy and at least two, sometimes, even three classes of medications. Those three classes are your classic prevention medications. You have your antihypertensives which are the beta blockers, typically, propranolol, metoprolol, nadolol, atenolol, candesartan, which is an ARB. That one I think as well known about, but actually has some pretty strong evidence for it. Verapamil is sometimes used as well as a calcium channel blocker, typically more so in migraine with aura than without. Then you have your anti-seizure medications, which are topiramate and valproic acid, and you have your antidepressants, which are the tricyclic antidepressants like amitriptyline and nortriptyline, and then venlafaxine has some pretty decent migraine prophylaxis evidence, too. That's an SNRI.

Now, the trick with all these is I've learned to play the game with insurance companies but it's also for the benefit of the patient is that you can sometimes get around trying some of these medications based on the patient's medical history and clinical pictures. For instance, in the migraine world, we have a lot of young female patients. Migraine heavily skews towards women and it's typically starts at a young age. We have a lot of younger female patients and some of them just naturally have low blood pressure. I just have a number of patients that have either low or normal, low normal blood pressure, and I make the argument that wouldn't be medically safe for me to start an antihypertensive on these patients because they're going to pass out. Then they're going to hit their head and have an even worse headache.

Paul: [laughs]

Kevin: But anti-seizure drugs, I would never put a woman of childbearing age on valproate. Topiramates**,** harder to get around, but if they have a history of nephrolithiasis, you can get away with not prescribing that. If they're low weight, believe it or not, have some underweight patients and we can argue against using topiramate in those patients. The antidepressants are even easier. A lot of times if they're already on one or two of them. I can make your same serotonin argument that we talked about earlier. I can say, “Well, these patients, they're on sertraline and trazodone already. I don't think it would be smart to start an antidepressant on them or they've already failed one before.” But there's definitely

medical arguments for not using some of those older oral medications that you require for failure to get step therapy up to the newer treatments. It's not a daunting task.

If you notice that a patient hasn't tried one of those and they would be eligible for it medically, it can be helpful to us before they get to us to start one or two of those, so they can see if it'll work before they get to us.

Matthew: And realistically, Paul, I'm sure you treat a lot of migraine headaches in your practice and fortunately, not everyone needs to make it to a neurologist, right?

Paul: Yeah. No, I think that's exactly right. I was going to say, I'm not sure if it's worth saying out loud, but something I started to read about in terms of preparing for this, is one of the papers mentioned, I never heard them frame it exactly this way that all the first-line, FDA-approved preventive therapies for migraines were originally approved for other indications. No one was set out to make a migraine preventative medication, either blood pressure medication, anti-epileptic medication for depression, even Botox, or botulinum toxin does not qualify for that. So, it's just so amazing that all our primary treatments, we stumble upon by accident it seems, which is just indicative of maybe how challenging this is to treat.

Kevin: Yeah, that's very true.

Matthew: But in primary care, I do think and I'm sure our listeners know this that most of us have some comfort with these medications, because it's not easy to get someone in to see a specialist for their migraines. I have had decent success. The patients that it doesn't work we really need help with and that's why it's great to have these newer agents. In case the listeners haven't treated migraine yet, beta blockers, some of the blood pressure meds we mentioned, TCAs, SNRIs, I have had some success with a fair amount of patients. Then there're some of those patients, especially if they've had a long history and they haven't been doing well, it's harder, but if you catch someone early on and put them on a preventive medicine, I've had some good success.

Kevin: I take candesartan and it's been like a miracle for me. Now, it didn't do much for my blood pressure, but-

[laughter]

Kevin: -it killed the migraine. I have stayed on that and I went from having during bad months, which would be weather changing months here in Ohio, I was getting eight to 10 a month.

Matthew: Oh, my gosh.

Kevin: Now, I've down to one a year or something like that.

Paul: Well, that’s incredible.

Chris: [crosstalk] nice.

Kevin: Those meds can work and I've seen them work. Topiramate is a great, great antimigraine drug. It just has a lot of side effects. A woman planning pregnancy soon is not a good candidate for that one either. There're certain people who shouldn't be on that one. The beta-blockers are great options for people as well. Those are typically really well tolerated in patients and they really can help.

Matthew: I think the flipside of the coin of trying to talk the insurance companies into paying for medications is to actually think of the secondary indications for the migraine medications. I think where I see people get tripped up is, which one do I pick to start with? If you have someone who very rarely do see headaches in isolation or other diagnoses that they have high blood pressure, try a beta- blocker. If they have some anxiety, which many migraineurs do, maybe a TCA is the right medication. Candesartan, which I'm warning about tonight sounds like a great option, if you have something else with high blood pressure. So, there are secondary indications that sounds like they can guide you as to where to start in the primary care setting before you give up and refer right to the headache specialist.

Chris: Now, do you think that as primary care providers, we should be getting to the point where we're doing some of these monoclonal antibody CGRPs? If so, I know you've explained there's a little difference between each of those four types. In your personal experience, have you had better use with one or another, or is it based on insurance, or--?

Kevin: Sure. Ideally, yes, it would be great if you guys were comfortable with prescribing those. They're actually pretty low side effect profile with the monoclonals. One of the problems that you all will run into is that in some places, the insurance won't even take a prescription for those from a primary care provider. Now, in Ohio, I think I've seen PCPs prescribe those before, but in some states they say that it has to come from a neurologist or a headache specialist and there are some insurance plans that require that. It's just one more way that they want to make everybody's life harder, so they don't have to pay for them because those meds are expensive. They're about $8,000 a year. But I think in the perfect world, where insurance wasn't an issue and if tried them or comfortable with them, I think they're fine. They're certainly way less dangerous than the other monoclonal antibodies that you're familiar with like the ones that suppress your immune system, which are the majority of those.

The monoclonal antibodies really have very few side effects. You don't have to worry about the immune system. Most of them have injection site reaction on the label, which can be treated with a little bit of Benadryl, and some ice, and things like that, and creams. Aimovig, which is a erenumab is the oldest of them by about five months**.** It's not like it's much, much older, but that one has a slightly different mechanism of action than the other three. That antibody to the receptor for CGRP as opposed to the antigen and that one has some more side effects that have been added to the label including hypertension and constipation. We've had some patients get some pretty bad constipation from that one.

However, since it's been out the longest has the most long-term data and safety data. They all work really well. The Vyepti which is the eptinezumab is the IV form that's every three months. That one has slightly better efficacy data, but it is a little bit harder to get through insurance. Usually, they want you to

fail one or two of the other monoclonals first because it's a little bit more expensive. But erenumab, fremanezumab, and galcanezumab are the three most commonly prescribed and those are all subcutaneous injections. They all come in an autoinjector. You have the option of getting a pre-loaded syringe in fremanezumab and galcanezumab, a lot of my medical people and diabetics, and anyone experienced with injecting themselves actually, usually prefer the syringe versus the autoinjector, but that's a subset of patients. But most patients, your average patient would want the autoinjector and they're really easy to use. Just give themselves a shot once a month and that's it.

Paul: Kevin, other things that have come up in the reading that I probably don't have as much comfort with, well, when I clearly don't cover with and what I probably should have more comfort with is, is magnesium the one I should probably feel a little bit better about? Then there's also a lot of talk about the nervous stimulators, which I don't think any patients that have tried. I don't know a whole lot about, but it seems it comes up over and over again. I wonder if you wouldn't mind speaking to those two things that. It sounds I should know something about.

Kevin: Yeah, that's a great question, because there's a lot of patients. I always tell my residents, there's three groups of patients that I see. Group one, which is, they come to me and they want to make sure they're not dying, and they want an MRI, and neuro exam. Once I give them their MRI and their neuro exam, I never see them again. Then group two is, they prefer natural treatments are not pharmaceutical treatments. But they would prefer not to be on a daily prescription medication if they can avoid it. And then group three wants everything. The group two is a pretty large group of patients as I'm sure you've all experienced. I always joke with patients. Typically, patients who don't like to come go to the doctor and I just say that just makes you normal. Most people in the world don't want to go to the doctor, they don't want to go to the hospital, they don't want to be on a bunch of medications. You got to have something for those people what we call the nutraceuticals are good options. Those are the oral treatments. There's magnesium, which is great. It comes in a lot of different forms. The best studied would be oxide or citrate in the literature. Very, very safe medication. Maybe not so great for your patients who have diarrhea already, but if they have-- I think constipation is probably more common anyway and it can help with that. Very good migraine prophylaxis treatment, especially if they have aura or menstrual migraine. That's a really, really good natural treatment that they can take on a daily basis. Other ones in that group that have some pretty decent evidence include riboflavin, which is B2 and coenzyme Q10. Butterbur is one that comes up quite a bit. That is a herb like a route. That one has had some safety and contamination issues in the past. There's a very long term for the contaminant called Pyrrolizidine alkaloids, if I'm saying that right.

Paul: You know what I was about to check.

[laughter]

Kevin: That’s sad, because the butterbur has some pretty decent evidence in migraine prevention. Because of some contamination concerns, and the fact that these natural treatments aren't regulated by the FDA, we don't recommend that one is much. There's also been some other ones like feverfew that have a limited amount of evidence as well. Regarding the stimulators, so, the oldest one is Cefaly, which is a supraorbital nerve stimulator. It first looked like a tiara and I think they were afraid that they

were going to be, maybe seen as too feminine or something. Now, it's just like a sticker that goes in your forehead. It stimulates your super orbital nerve. It's used for both prevention, and rescue treatment, there's decent evidence for it.

The advantage of it is that there're no side effects. It's very safe to use in almost all patients. There's a little bit of an upfront cost. It's a few $100 and then after that it requires some maintenance electrode changes every once in a while, and that's $20 or $30. The bad thing about the stimulators is that they are typically, poorly covered by insurance. Tend to be my patients who are more well off or with the means to afford them, Cefaly is probably the most affordable out of all of them, which is the super work because it's been out the longest, but that's something to be aware of. At Ohio State. Dr. Chiu, I'm sure knows that we have a large number of Medicaid and underserved patients who you know don't have a lot of money to spend on treatments out of pocket. But stimulators can be good options for patients who have the means to afford them.

Some other treatments, they're coming out with one that's similar to Cefaly. It's not quite out on the market yet, but it's a combined supraorbital and occipital nerve stimulator. There's a vagal nerve stimulator, which is used for a lot of different purposes. It is used for cluster headache too, another, some of the other trigeminal autonomics cephalgias, but it has some limited data in migraine prevention and acute treatment. That one can be a little bit more on the pricey side and again is dicey with getting insurance coverage. There is a transcranial magnetic stimulation, which is used for other purposes, which you are may be familiar with. It's used in the psych world for depression, but there's a device called Spring TMS, which is just for migraine prevention, and it's also for acute treatment, and it's delivered as a couple of pulses 15 minutes apart twice a day. That one's expensive and it's been challenging to stay on the market. Some of the companies had some financial problems.

There's Nerivio, which is one of the newer ones, you may have heard of that. That's a stimulator that you wear on your arm, and that's a peripheral stimulator, and that's used for rescue treatment of migraine. That one's pretty cool, it connects to your smartphone, and you can just lay there, and it gives you a treatment on your arm, and it's supposed to use the neuromodulation pathways to trick your brain into coming out of a migraine. It's the best way I describe it to patients, and there's decent data on that one, too. That one can be a little bit pricey too for patients to afford long term to use, if they have a lot of migraines, especially. But all these devices have different coupon programs, and deals, and things like that that they're running from time to time that make them a little slightly more affordable.

Matthew: You mentioned that transcutaneous supraorbital nerve stimulator was over the counter. People could buy that on their own. Are these other ones also things patients can buy on their own or they need a prescription from you?

Kevin: They need a prescription for everything, but the Cefaly, which is the supraorbital nerve stimulator. Because it's that one has been out for at least 10 years. That one is now in the last year went over the counter.

Paul: If you google image search it, it's fascinating. It is just row upon row of serene high cheekbone women staring off into the middle of distance with this middle device in their forehead.

[laughter]

Paul: I've never seen that before.

Matthew: Yeah, I had never heard of it.

Kevin: I tried it once in a conference. It was pretty relaxing. It feels pretty good. It's like a tingling on your forehead. It feels nice.

Matthew: Well, this has been fascinating. I feel I know so much more about these newer medications and now when I see them in the wild, I'm going to know a lot more about what to do and I can't thank you enough for all this time. So, I think we need to get to take home points. If you could give us maybe two or three things you definitely want the audience to remember from this discussion.

Kevin: Regarding secondary headaches, I think, the most important takeaway is typical migraines do not need to be imaged but if there are concerning signs, worsening of their migraine, other systemic symptoms, history of cancer immunosuppression for advanced age, then you need to consider neuroimaging, usually with an MRI except for in very acute cases. As far as treatments go, I think from a primary care perspective, the best thing that you can do for us is to just try to get them started with their prevention and rescue treatment, like, get them started on some basic therapies that you're comfortable with like some of the older oral preventative agents that we've mentioned and rescue treatments like the triptans, if they're eligible can put your patient on the path to being eligible for more expensive treatments quicker.

Matthew: Well, thank you so much and we will feed this into the outro.

[music]

Paul: This has been another episode of the Curbsiders bringing you a little knowledge food for your brain hole.

Chris: Yummy.

Paul: I almost powered it through. Get your show notes at *thecurbsiders.com*. While you're there, sign up for our mailing list to get our weekly show notes in your inbox, plus twice each month you'll get our new Curbsiders Digest recapping the latest practice changing articles, guidelines, and news in Internal Medicine.

Matthew: And we're committed to high value practice changing knowledge and we want your feedback. So, please subscribe, rate, and review the show on Apple Podcasts or contact us at the *curbsiders@gmail.com*. Reminder that this and most episodes are available through VCU Health for CME at *curbsidersvcuhealth.org.* Wanted to give a special thanks to our writer and producer for this episode, Isabel Valdez, to Chris Chiu for cohosting, and to our whole team. The production and editing

is done by the team at Pod Paste. Elizabeth proto runs our social media, and Stuart Brigham composed our theme music, Paul. And until next time, I've been Dr. Matthew Frank Watto.

Chris: This has been Chris “The Chiu Man" Chiu.

Paul: And as always, our main Dr. Paul Nelson Williams. Thank you and goodbye.

[Transcript provided by SpeechDocs Podcast transcription]