

# Getting Ahead of **MIGRAINE**

## Best Practices for Migraine Treatment and Prevention

**CME Available Until:**  
**March 31, 2023**

This activity has been  
approved for  
1.5 AAPA Category 1  
CME credits

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## ACTIVITY OVERVIEW

Migraine is a prevalent neurological disease, affecting 38 million adults in the U.S., or 13% of the population. This illness exacts a substantial toll on patients, compromising their ability to perform activities of daily living. More than 90% of individuals are unable to work or function normally during their migraine, and 53% have severe disability requiring restrictions in activity or bed rest. Migraine is a leading cause of both outpatient and emergency department visits and remains an important public health problem. Despite its prevalence and significant consequences, migraine remains underdiagnosed and undertreated. Lack of an accurate diagnosis can cause patients to become resigned to living with this condition, or can lead to inappropriate treatment due to mistaken diagnosis of another headache disorder. Therefore, it is incumbent on PAs to become skilled in the recognition of migraine to initiate treatment aimed at optimizing outcomes.

**AAPA TAKES RESPONSIBILITY FOR THE CONTENT, QUALITY, AND SCIENTIFIC INTEGRITY OF THIS CME ACTIVITY.**

## EDUCATIONAL OBJECTIVES

At the conclusion of this activity, the PA should be better able to:

- Use diagnostic criteria for diagnosing episodic and chronic migraine.
- Demonstrate appropriate utilization of pharmacologic treatment options for acute migraine.
- Compare the safety and efficacy data of newly approved acute migraine treatments.
- Demonstrate appropriate utilization of pharmacologic treatment options for migraine prevention.
- Compare the safety and efficacy data of newly approved migraine preventive treatments.
- Implement strategies to ensure optimal adherence to migraine therapies.

## ACCREDITATION STATEMENT



This activity has been reviewed by the AAPA Review Panel and is compliant with AAPA CME Criteria. The activity is designated for 1.5 AAPA Category 1 CME credits. PAs should only claim credit commensurate with the extent of their participation. Approval is valid through March 31, 2023.

Estimated time to complete this activity: 90 minutes.

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### Andrew Herber, PA-C

Assistant Professor of Medicine, Mayo College of Medicine  
Associate in Hospital Medicine, Mayo Clinic  
Rochester, MN  
No relevant financial relationships to disclose.

### Abigail Taylor, PA-C

Inpatient PA  
Neurology Department  
Mayo Clinic  
Scottsdale, AZ  
No relevant financial relationships to disclose.

### Karissa Secora, PA-C

Outpatient PA  
Barrow Neurological Institute  
Phoenix, AZ  
No relevant financial relationships to disclose.

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## OFF-LABEL/UNAPPROVED PRODUCT(S) DISCUSSION

This program discusses the off-label use of amitriptyline, candesartan, gabapentin, lisinopril, magnesium sulfate, metoclopramide, prochlorperazine, valproate, and venlafaxine.

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## CLINICAL DIALOGUE

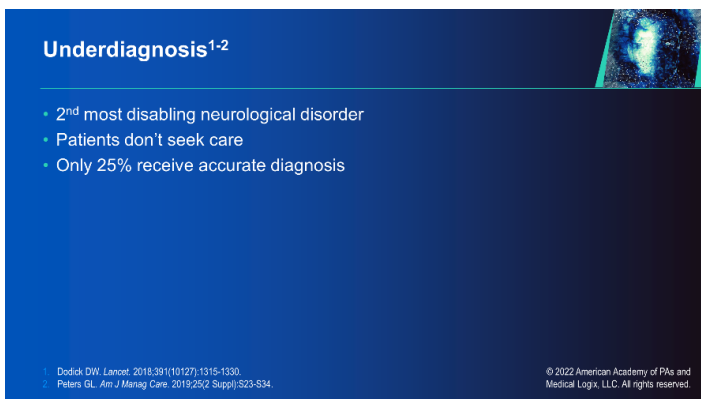
**Andrew Herber, PA-C:** Hello, and welcome to this *Clinical Dialogue* and *eCase Challenge* program, "Getting Ahead of Migraine: Best Practices for Migraine Treatment and Prevention." I'm Andy Herber. I'm a physician assistant in hospital medicine at the Mayo Clinic in freezing cold Rochester, Minnesota.

Joining me in this conversation are two expert clinicians from Arizona, PA Abigail Taylor and PA Karissa Secora. Karissa is an outpatient PA at Barrow Neurologic Institute in Phoenix, Arizona. Abigail is an inpatient PA in the Neurology Department at Mayo Clinic in Scottsdale, Arizona. My thanks to both of you for your involvement in this very important continuing medical education activity. So, let's get started.

First of all, you know, everyone that's going to be tuning into this are PAs. Why do they need to know about migraines?

**Karissa Secora, PA-C:** That's a great question, Andy. You know, there's a huge need for not only the recognition of migraine, but the crucial time of starting patients on the appropriate treatment. And now more than ever, we have so many options. But oftentimes, by the time they get to see Abigail or myself, their migraines have significantly progressed and, you know, they're quite refractory. So, in fact, the World Health Association ranks migraine as the second most disabling neurological condition in the world.

**Abigail Taylor, PA-C:** I couldn't agree more, Karissa. A lot of patients with chronic migraine don't even come in to see even their primary care provider, and then when they do, up to one-fourth of those patients don't get the correct diagnosis when they walk out the door.



### Underdiagnosis<sup>1-2</sup>

- 2<sup>nd</sup> most disabling neurological disorder
- Patients don't seek care
- Only 25% receive accurate diagnosis

<sup>1</sup> Dodick DW. *Lancet*. 2018;391(10127):1315-1330.  
<sup>2</sup> Peters GL. *Am J Manag Care*. 2019;25(2 Suppl):S23-S34.

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**Andrew Herber:** Awesome. So, Karissa, I work in the hospital. I take care of patients. If they have a headache and I'm taking care of them, it's either a general headache that's going to go away, or it's a migraine. But there's got to be a better way to classify these, right? And can you kind of enlighten me on the different types and classifications of migraines?

**Karissa Secora:** Yes, definitely, Andy. I think that's a great question. To answer that, I think it's helpful to really break it down and understand the phases of a migraine. Oftentimes, a migraine starts before the pain actually does. The first phase of a migraine is actually the prodrome. And that can include irritability, yawning, frequent urination, food cravings even, and difficulty concentrating.

The next phase is the aura, which only about one-third of patients get. And this can include either visual symptoms, which is probably the most common. Some patients describe it as this kind of kaleidoscope, the scintillating scotomas. But it can also be numbness, it can be tingling, which is usually unilateral.

The migraine then begins, and those are the common symptoms that we know, the nausea, the vomiting, the photophobia, phonophobia and the neck pain. The pains usually described as kind of a throbbing or pulsating in the head, and even after all three of these phases, the fourth and final phase is the postdrome, which many patients, many of my patients often refer to as kind of the hangover without the party.



### Migraine Phases

- Prodrome
- Aura
- Migraine
- Postdrome

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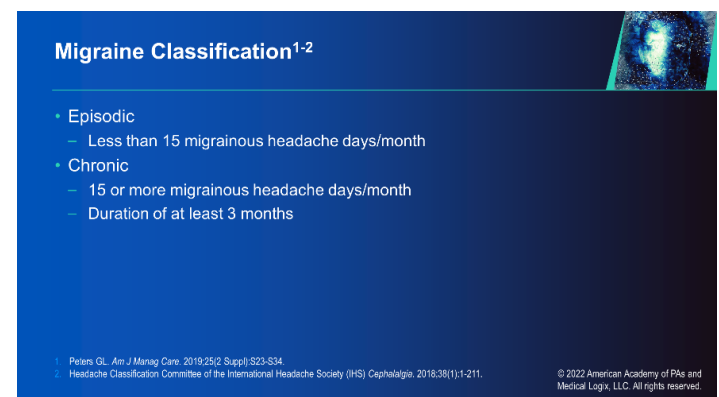
Essentially, patients are still fatigued. They can't concentrate. They're depressed, and this can even last for 24 to 48 hours. So, keep in mind, from start to finish, one single migraine attack can last anywhere from 4 to 7 days.

**Abigail Taylor:** One of the other ways we classify migraine, aside from migraine and then migraine with aura, as Karissa outlined, is kind of temporally, or how many days per month our patients have migraine. And so, when we think about that, we're thinking about episodic migraine versus chronic migraine.

One of the important things to think about here is the way we ask this question. So, a lot of times, when we ask our patients these questions, we say, "Well, how many migraines are you having a month?" And the patient may say, "Well, I'm having three migraines a month." But the truth is, is that each of those migraines, just like Karissa said, may last 4 to 7 days apiece.

And so what's really even more important than how many migraines per month they have is how many migraine days per month they have. And that's really what we use to determine if the patient has episodic or chronic migraine.

So, when we're talking about episodic migraine, these are patients who are having migraine headache occurring less than 15 days per month. And then when we're talking about our chronic migraine, these are patients who are having migraine more than or equal to 15 days per month.



### Migraine Classification<sup>1-2</sup>

- Episodic
  - Less than 15 migrainous headache days/month
- Chronic
  - 15 or more migrainous headache days/month
  - Duration of at least 3 months

<sup>1</sup> Peters GL. *Am J Manag Care*. 2019;25(2 Suppl):S23-S34.  
<sup>2</sup> Headache Classification Committee of the International Headache Society (IHS). *Cephalalgia*. 2018;38(1):1-211.

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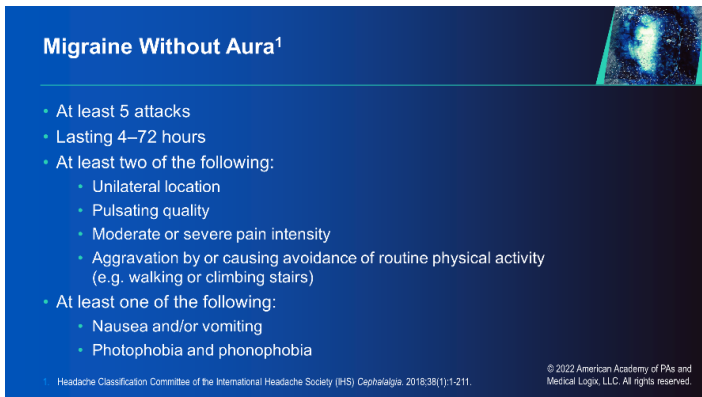
**Andrew Herber:** So, Karissa, can you tell me -- there's got to be ways we can classify these migraines. Are there things that you're using, or guidelines, or what are you looking at when you classify a migraine?

**Karissa Secora:** So, the diagnostic criteria for migraine includes at least five attacks, and they have to last anywhere from 4 to 72 hours. But the key feature here is that it's untreated or unsuccessfully treated. So that's a key question to ask.

And then following, patients only need to have two of the following four to qualify. So either unilateral, pulsating, moderate or severe, and that it is worse or that they avoid the routine daily activities.

So keep this in mind, because a lot of providers may rule out the diagnosis of migraine when patients say that it's bilateral or bifrontal. But if a patient described it as pulsating and moderate or severe, and they meet the rest of the criteria, that would fit the diagnosis of migraine.

The last part of the criteria is only having one of the following. So it's either having nausea and/or vomiting, or having photophobia and phonophobia. Now, I really like to ask this question carefully, because a lot of patients are not very forthcoming. But when you ask, "Do you prefer not to eat, or do you have to turn down your computer screen brightness?" this would certainly count as part of that.



**Migraine Without Aura<sup>1</sup>**

- At least 5 attacks
- Lasting 4–72 hours
- At least two of the following:
  - Unilateral location
  - Pulsating quality
  - Moderate or severe pain intensity
  - Aggravation by or causing avoidance of routine physical activity (e.g. walking or climbing stairs)
- At least one of the following:
  - Nausea and/or vomiting
  - Photophobia and phonophobia

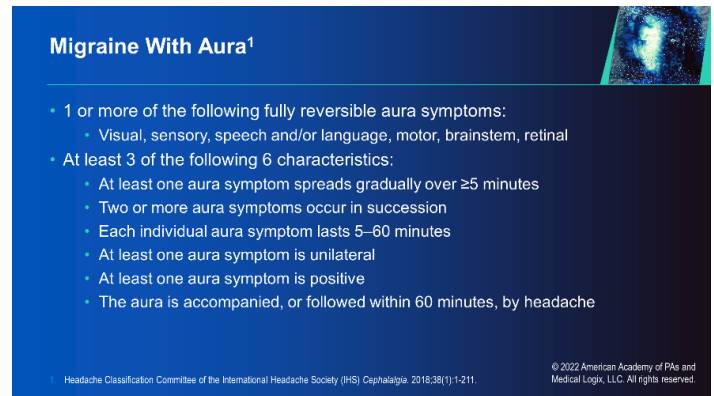
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In terms of the aura, patients only need two attacks, and they have to have fully reversible symptoms. We talked about this a little bit earlier, but they can include the visual. It could be sensory. It could be speech, which is often a reason that patients present to the ER, and they might be diagnosed initially as possible stroke or TIA, which could in fact be migraine aura.

They might have motor symptoms, brainstem aura, which could be dizziness or lack of coordination. Or it could even be retinal, which could be like flashing lights.

And then the last part of the diagnostic criteria for migraine with aura is three of the following six. So it has to have at least one of those aura symptoms that kind of spreads gradually over about 5 minutes, two or more of those aura symptoms that have to occur together or back to back, and then each individual aura symptom lasts about 5 to 60 minutes, which we talked about.

At least one of them has to be unilateral or positive, and that it has to be accompanied or followed within 60 minutes by the actual headache. So that's why that phases of the migraine is really helpful.

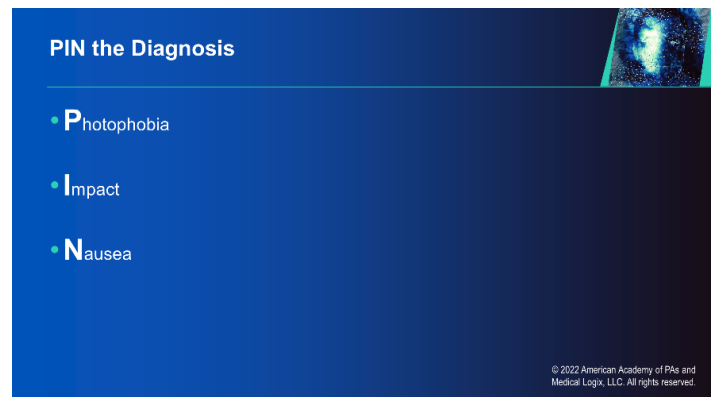


**Migraine With Aura<sup>1</sup>**

- 1 or more of the following fully reversible aura symptoms:
  - Visual, sensory, speech and/or language, motor, brainstem, retinal
- At least 3 of the following 6 characteristics:
  - At least one aura symptom spreads gradually over ≥5 minutes
  - Two or more aura symptoms occur in succession
  - Each individual aura symptom lasts 5–60 minutes
  - At least one aura symptom is unilateral
  - At least one aura symptom is positive
  - The aura is accompanied, or followed within 60 minutes, by headache

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**Abigail Taylor:** The other thing that I like to use in my practice that's kind of quick and dirty is this acronym, "PIN the diagnosis of migraine." And so the P is for photophobia or phonophobia. The I is, does it impact their activities of daily living or cause disability, like missed days at work, unable to do the things they normally like to do? And then the N is nausea.



**PIN the Diagnosis**

- **P**hotophobia
- **I**mpact
- **N**ausea

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So if a patient complains of two out of three of these things, there's pretty good sensitivity and specificity that you can diagnosis your patients with migraine, especially in the primary care setting. And again, just to highlight what you had mentioned about the unilaterality, that's not even in this little mnemonic we have. So, try to push yourself away from that if you can.

**Andrew Herber:** Thanks, guys. So, Abigail, you're down in sunny Arizona at Mayo Clinic, and I'm up here freezing, scraping the frost off my windshield every morning in Rochester Mayo. Most of the time, when patients come in the emergency room and they have a migraine, a lot of times will end up going to a general med team or come into a general practice team rather than a neurology team. How can I, you know, impress the neurology team? How do you treat the acute migraine? Can you give me some pearls on that?

**Abigail Taylor:** Absolutely. So, when we think about an acute migraine, the kind of verbiage we use is abortive therapy versus preventative therapy, which we'll talk about a bit later. So, abortive therapy is either a medication or a group of medications that you're going to use to try to treat a patient's migraine.

And so really, the goals of this type of treatment, as defined by the IHS, is freedom of pain within 2 hours and we'd like that to be rapid in onset and consistent. And then absence of any of their other bothersome symptoms. So, some patients will have migraine, and they'll have this headache, but really, the nausea is what brings them in to see us in the hospital. So, we also want to make sure we're treating those things. Less for you, Andy, but also in the outpatient setting, you want to consider cost to your patient, as well.

So, there's a couple different approaches that we take when we're treating migraine. One is like a stratified approach, and the other is a stepwise approach.

I tend to use more of a stratified approach, and I know Karissa uses more of a stepwise approach, so I'll talk a little bit about the stratified approach, and then Karissa can talk about the stepwise approach.

But the stratified approach really means that we instruct the patients to take different types of medications, depending on things like how severe their headache is, how disabling it is, and then what other types of symptoms they have as far as like nausea and vomiting, more targeted therapy toward the symptom type, as well.

**Abortive Therapy<sup>1-3</sup>**

- Goal: pain free in 2 hours
- Stratified
  - Severity
  - Disability
  - Additional symptoms

1 Ashina M, Buse DC, Ashina H, et al. *The Lancet*. 2021;397(10283):1505-1518.  
2 Peters GL. *Am J Manag Care*. 2019;25(2 Suppl):S23-S34.  
3 Pringsheim T, Davenport WJ, Marmura MJ, Schwedt TJ, Silberstein S. *Headache*. 2016;56(7):1194-1200.

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Karissa, do you want to chat about the stepwise approach?

**Karissa Secora:** Definitely. So, if a patient presents to a primary care office, and they're pretty naïve to medication, I usually start with a step therapy. And what I do is I grab a pad of paper, something to write on, and I write an at-home protocol for them.

So, oftentimes, we start with just an initial medication, usually an NSAID or something over the counter, readily available. And then 30 to 60 minutes later, if that's not effective, the next plan in the stepwise therapy would be to add on the triptan, because we want to get the triptan in within about an hour of the onset.

If the triptan doesn't work, most of the time you can repeat it about 2 hours later. So, I write that kind of down on that stepwise therapy. And ideally, this really helps to prevent patients from going to the urgent care, from going to the emergency department.

**Abortive Therapy<sup>1-2</sup>**

- Step-wise
  - OTC medication
  - Triptan
  - Repeat triptan

1 Peters GL. *Am J Manag Care*. 2019;25(2 Suppl):S23-S34.  
2 Pringsheim T, Davenport WJ, Marmura MJ, Schwedt TJ, Silberstein S. *Headache*. 2016;56(7):1194-1200.

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**Andrew Herber:** So, fascinating stuff. Thank you, guys, for sharing that. So, Abigail, I mean, there's a lot of medications you guys discussed. There's got to be some factors or something. So, you know, if I'm seeing a patient with a migraine, some of them I bet you I give ibuprofen. Some of them I use triptans. Are there some, you know, neurology PA hacks that you can give me so that I know the advantages and disadvantages of each of these medications?

**Abigail Taylor:** Absolutely. Like you said, there's a lot of options, and even more options more recently coming out, which is great for our patients. We can talk about some of the ones we kind of know and maybe love, and then talk about some of the new kids on the block.

The first thing we kind of think about, like you had mentioned, is over-the-counter medications, anti-inflammatory, acetaminophen and NSAIDs. Typically, before a patient has even seen one of us, they've tried this for these headaches. Despite that, when we use in combination therapy, like Karissa had mentioned, they can be quite effective. Ibuprofen results in 2-hour pain freedom -- which, remember, is that IHS goal -- in about 25% of patients, so that's not terrible.

**Analgesics<sup>1-3</sup>**

- Acetaminophen
  - Monotherapy not recommended
- NSAIDs
  - Ibuprofen, aspirin, diclofenac
  - Ibuprofen → 25% 2-hr freedom from pain

1 Ashina M, Buse DC, Ashina H, et al. *The Lancet*. 2021;397(10283):1505-1518.  
2 Becker WJ. *Headache*. 2015;55(6):776-783.  
3 Rabbee R, Derry S, Moore RA. *Cochrane Database Syst Rev*. 2013;2013(4):CD008039. Published 2013 Apr 30.

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Another thing that you mentioned, Andy, is triptan medications. These are great. These are migraine-specific medications. Fortunately, we have oral options, and we also have subcu formulations of many of the triptans.

Compared to the oral versions, the subcutaneous versions are going to have a bit better efficacy at that 2-hour mark, which is really, remember, our target goal there. But a lot of our patients aren't going to want to necessarily start with these subcu formulations. But if they're having some effect with the oral versions and not having a lot of side effects, that's something to consider as far as escalation of therapy, as well. Additionally, if they're having nausea and vomiting, that may be something that's helpful.

Like Karissa had mentioned, we really want to make sure the triptans, in particular, are taken as early as possible within the migraine attack. They're just going to be more effective. So, try to get those medications in within the first hour of symptom onset for your patients. A lot of patients kind of want to watch and wait, but we just really want to make sure we're educating them to take it as soon as possible.

**Triptans<sup>1-3</sup>**

- Migraine-specific
- Formulations
  - Oral
  - Subcutaneous
  - Intranasal
- Adverse Effects
- Contraindications

1 Ashina M, Buse DC, Ashina H, et al. *The Lancet*. 2021;397(10283):1505-1518.  
2 Becker WJ. *Headache*. 2015;55(6):776-783.  
3 Rabbee R, Derry S, Moore RA. *Cochrane Database Syst Rev*. 2013;2013(4):CD008039. Published 2013 Apr 30.

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Some of these can cause side effects as far as like palpitations. People get numbness and tingling, a little bit lightheaded. And these are definitely contraindicated in our patients who have coronary artery disease, uncontrolled hypertension or a history of a stroke.

Another option that we have are ergot alkaloids. We have a couple formulations of this, including DHE, which can actually be given IV or IM, and newly actually an intranasal version came out. And then we have ergotamine, which is an oral option, as well.

These medications often cause nausea and, when I give them IV around the clock in the hospital, require quite a bit of monitoring. And again, these medications are contraindicated in the same patient population as those triptans are. So, coronary artery disease, uncontrolled hypertension and cerebrovascular disease.



**Ergot Alkaloids<sup>1-2</sup>**

- Formulations
  - Oral
  - Subcutaneous
  - Intranasal
  - Intramuscular
- Adverse effects
- Contraindications

<sup>1</sup> Ashina M, Buse DC, Ashina H, et al. *The Lancet*. 2021;397(10283):1505-1518.  
<sup>2</sup> Becker WJ. *Headache*. 2015;55(6):776-793.

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Another thing to consider in combination with some of these other medications are antiemetics. So a lot of our patients have had nausea and vomiting. A lot of times, that's why they're presenting to us, Andy, in the emergency department, because they can't really even seem to keep their medications down at home, so considering an antiemetic is helpful, as well.

**Karissa Secora:** So, those are kind of the older medications, which are historic but still work extremely well. And this is such an exciting time for headache medicine, because we have so many options, and when sumatriptan came out in 1991, I mean, now we just have so many choices. It's almost overwhelming.

So, these are mainly for patients who have contraindications or ineffectiveness with the triptans or the NSAIDs. And there's kind of two new categories.

The first category is called gepants. So, the first one I'll talk about is called ubrogepant. And it's a small molecule calcitonin gene-related peptide receptor antagonist, and in the headache world, we kind of just abbreviate that CGRP. And this was first approved as an acute indication in 2019.

It comes in two different dosing options. It comes as a 50 mg and a 100 mg. There's a max dose of 200 mg in a 24-hour period. So, kind of similar to the triptans, patients can repeat their dose 2 hours later. And in their data, about 61% of patients had pain relief at the 2-hour mark with the 100 mg dose.

The second gepant was first approved for acute therapy in February 2020, which is called rimegepant. It has a single-dose option, which is an ODT route. And it's a 75 mg. And they had about very similar data, 59% of pain relief.

So the second category is the ditans. And the first so far that we have is lasmiditan. And that focuses on the 5-HT<sub>1F</sub> receptor. Around 30% had 2-hour pain freedom. There is a temporary driving restriction for 8 hours after the medication's taken.



**Ditans<sup>1</sup>**

- Lasmiditan
  - 30% 2-hr freedom from pain
  - 5-HT<sub>1F</sub> receptor
  - 30% 2-hr freedom from pain
  - 8 hour driving restriction

<sup>1</sup> Ashina M, Buse DC, Ashina H, et al. *The Lancet*. 2021;397(10283):1505-1518.

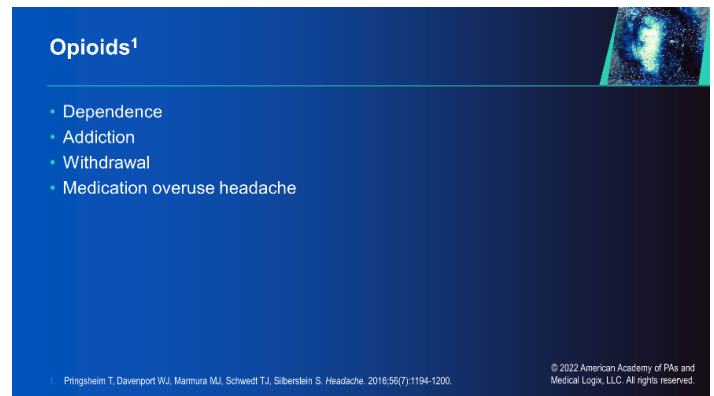
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**Andrew Herber:** So, Karissa and Abigail, that was fascinating stuff. Thanks for sharing that with us. My next question -- I'm sure both of you have had this patient. I know I've had a few of these patients here. But they come to you, and they say, "I've tried everything. I've tried NSAIDs. I've tried triptans. The only thing that works for me is hydromorphone and diazepam."

Do we give the patient those medications? Do we get into trouble if we use those medications with acute migraines? Can you guys help us out a little bit here?

**Abigail Taylor:** Absolutely. I would say that that patient's probably not tried everything. Like Karissa just mentioned, there are so many new kids on the block as far as medication. So, we just have so many options, combinations.

I personally don't prescribe any opioids for migraine, and I know Karissa doesn't, as well. Obviously, we've all heard so much about the dangers associated with opioids, ongoing over the past few years especially -- dependence, addiction, withdrawal. And also, opioids can cause medication overuse headache, which we'll talk a little bit about moving forward, as well.



**Opioids<sup>1</sup>**

- Dependence
- Addiction
- Withdrawal
- Medication overuse headache

<sup>1</sup> Feigstein T, Davenport WJ, Marmura MJ, Schwedt TJ, Silberstein S. *Headache*. 2016;56(7):1194-1200.

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I also don't prescribe any medications, butalbital-containing medications. We do use a little bit of benzodiazepines just for nausea if needed, but that's pretty few and far between. I would say there are so many other options, especially if you're in the outpatient setting. If you feel like you're coming to the end of your rope, and that's all you have left to offer a patient, I would recommend that that's maybe a point where you would consider referral to neurology for some alternative options.

Not only are there medications that we recommend avoiding altogether, like the opioids and the butalbital-containing medications, there's also medications, those medications in addition to medications that we actually recommend, some of the medications Karissa and I already outlined, that, if taken too often, can cause a lot of symptoms, as well. That's what we call medication overuse headache.

**Karissa Secora:** I think we kind of assume that patients have tried the natural lifestyle modifications. But it's really important to bring them up again. And there's kind of a really easy acronym, which is SEEDS.

And so it starts with sleep, you know, really identifying, are they having insomnia? Maybe they haven't been tested for obstructive sleep apnea. The E is "exercise." Even if it's some walking, maybe it's some yoga, some light stretching, especially if they have a cervicogenic migraine.

E is for "eat," keeping a journal. Maybe there's something triggering the migraines, and, you know, there's a lot of common foods. But once you write it down, you're able to identify maybe it was something subtle.

I had a patient who was chewing gum really frequently, and she didn't realize some of that artificial sweetener in there might have been triggering her migraine. But keeping a journal helped her to identify that.

And speaking of journal, the D is for "diary." There are several different ways. You can handwrite it, keep it in the notes section on your phone. There are many different apps on your phone for it. But that helps to understand, is there a pattern to the migraines? Are they happening on certain days of the week? Is it a certain time of the day? That really helps.

And the last S is for "stress," which sometimes we have control over, sometimes we don't. So, really identifying what are the root causes? And especially if it's kind of a cervicogenic headache, I really like to recommend physical therapy. I'm a huge advocate for meditation and mindfulness.

**Lifestyle Modifications**

- **S**leep
- **E**xercise
- **E**at
- **D**iary
- **S**tress

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**Andy Herber:** So it's no secret we live in a quick-fix type of society. And I can't help, when we're having this discussion, think of my dad and him grilling an entire grill worth of purines, and then complaining about his gout attack all the time. And he always wants treatment to fix that.

But I keep harping on him that there's, you know, why can't we do anything to prevent that? Does that come into play here with migraines, as well as there's some preventative therapy? We spent a lot of time on fixing the acute attack or the acute migraine. But are there ways we can prevent it? And what patients would qualify for preventative measures?

**Karissa Secora:** Yes, that's a great question. So, even looking at some of the updates and actually the American Headache Society put in a new consensus statement, helping us really identify, because if you ask ten different headache providers, they're going to give you a different answer as to when they start a preventative therapy. And I guess that's the art of medicine.

As we discussed, the phases of a migraine, it's really important to keep in mind, because, like I said, if patients only have maybe two or three attacks a month, but they're missing work, they're missing school, they're disabled, that's definitely someone that you want to talk about a preventative therapy with.

**Preventive Therapy<sup>1-3</sup>**

- Significant interference with daily function
- Number of headache days/month
- Contraindication to, failure, or overuse of acute treatments
- Adverse effects with acute treatment
- Patient preference

1. Allani J, Burch RC, Robbins MS; Board of Directors of the American Headache Society. *Headache*. 2021;61(7):1021-1039.  
2. Loder E, Rizzoli P. *Headache*. 2018;58 Suppl 3:218-229. doi:10.1111/head.13376  
3. Silberstein SD. *Continuum (Minneapolis)*. 2015;21(4 Headache):973-989. doi:10.1212/CON.0000000000000199

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**Andrew Herber:** All right. So, Abby, you work in neurology, and I work in hospital internal medicine. But a lot of PAs that are watching this program potentially work in the urgent care setting or even the emergency room. What would be your advice to someone who shows up in the urgent care or ER who says, "You know what? I've tried all my at-home pills. I need something that's going to help me right now. I'm in 10 out of 10, worst pain of my life?" How would you kind of walk her -- what would you recommend to an urgent care or ER PA?

**Abigail Taylor:** Absolutely. As you said, "Worst headache of my life," that made me feel like we have to touch a little bit on thunderclap headache or things that might make you think, "Oh, this patient needs additional imaging or something of that nature before I even get to treating them."

So, if you have a patient who comes in with some red-flag feature, you may want to do some additional investigation. Perhaps this isn't really their migraine. And one of the best tools that I think to use that is called SNOOP4 headache red flags. So, S-N-O-O-P, and then four P's at the end.

So, for your S, you have "systemic symptoms." So, if the patient's been having fever or weight loss. And then also think about their secondary risk factors, like if they have a history of HIV or cancer or an immune therapy.

For your N, we're going to think about neurologic symptoms. So, if they say, "I have this headache, but I also have new weakness on one side, or I have double vision," or if they seem a little bit confused, that should kind of make you a little bit worried about their headache.

"Onset," like you had mentioned, Andy, if it's sudden, if it's reaching its maximal intensity in less than a minute, if it's a thunderclap-type headache or it's much more abrupt in onset than their typical headache, that may warrant some additional evaluation.

The other thing to mention is onset, if they're greater than 50, and this is their first headache ever, or if they're less than 5 years old and this is their first headache, that may warrant additional evaluation, as well.

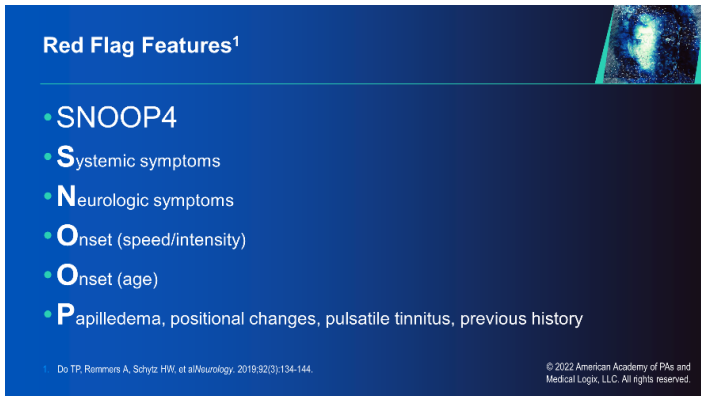
And then coming into our P's here.

So the first P, we want to think of papilledema. So when you do that fundoscopic exam, if it looks like they have swelling of their optic disk, that should be concerning for high pressure within the brain, which needs additional evaluation.

The other P that kind of goes along with that is, do they have positional changes? So, if when the patient lays down, the symptoms are so much worse, or it's waking them up from sleep at night, you may be thinking, "This patient has too much pressure in their brain or within their skull." If the pressure is low, maybe when they stand up, they have worsened headache, but when they lay down, the headache is completely normal, which might be present in something like a CSF leak.

The third P is "pulsatile tinnitus." So, ringing in their ears, feeling like they can feel that pulsation, different from just the pulsating features of the migraine, so with that ringing in the ear.

And then the fourth P is just that if this doesn't fit with their previous headache history, this is different in pattern in some way, that should also maybe trigger some concern.



**Red Flag Features<sup>1</sup>**

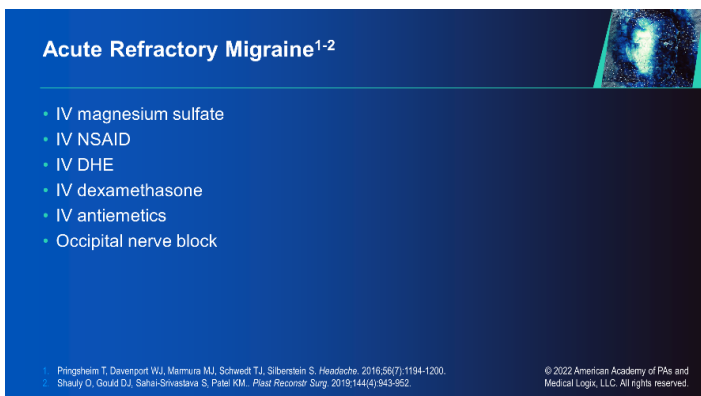
- **SNOOP4**
- **S**ystemic symptoms
- **N**eurologic symptoms
- **O**nset (speed/intensity)
- **O**nset (age)
- **P**apilledema, positional changes, pulsatile tinnitus, previous history

Do TP, Remmers A, Schytz HW, et al/Neurology. 2018;92(3):134-144. © 2022 American Academy of PAs and Medical Logic, LLC. All rights reserved.

Once you've kind of ruled those things out, there's definitely a lot of medication options that we can give to these patients. Like we had mentioned earlier, Karissa and I, when we talked about the abortive therapies, there are other medications that patients may not have at home, like subcutaneous or IM options. And so that's always an option of some of those medications we went over.

I'll often use a gram of magnesium sulfate IV. We can also use IV NSAIDs, IV DHE, again, remembering the contraindications, though, for DHE. We can use a dose of IV dexamethasone. Typically, we use a one-time dose of that in the emergency department. But sometimes providers will also give something like a dose pack or something to help keep that patient out of the emergency department, as well.

We talked a bit about antiemetics. Patients obviously can take these at home, like oral or ODT options. But we also use those with IV options, as well.



**Acute Refractory Migraine<sup>1-2</sup>**

- IV magnesium sulfate
- IV NSAID
- IV DHE
- IV dexamethasone
- IV antiemetics
- Occipital nerve block

1 Pringsheim T, Davenport WJ, Memura MJ, Schwedt TJ, Silberstein S. Headache. 2016;56(7):1194-1200. 2 Shauly O, Gould DJ, Sahai-Srivastava S, Patel KM. Plast Reconstr Surg. 2019;144(4):943-952. © 2022 American Academy of PAs and Medical Logic, LLC. All rights reserved.

I will also give patients IV fluids, especially if they've been having nausea and vomiting at home, just to kind of bolster up their system a bit. We use IV valproate, which can be quite helpful for

patients. Oftentimes, I'll even come to the emergency department to do occipital nerve blocks. They're actually quite easy to learn. So, if that's an option, for you to learn how to do those, those can be very effective for your patients, as well.

There is some evidence to support the use of IM opioids, but I will tell you that I don't use those. I don't use IV opioids. I find that a lot of times when patients take those medications, they will get some relief. But it's very short-lived. It's not long-lasting, and it's hard to mimic that with any other medication that we're going to give, so I just try to avoid that at all cost.

**Andrew Herber:** Thanks. And then just real quick here on this acute urgent care ER, how do you know who needs to stay in the hospital for overnight monitoring, and how do you know who can go home? I feel like if we give them all these meds and then they get better, can we send them home? Do we need to observe them a little bit longer? Like, where is the cutoff for admission versus discharge?

**Abigail Taylor:** I would say that if they have some red-flag features that you're concerned about that perhaps this isn't a migraine and they need additional evaluation, I would consider keeping them for observation and additional evaluation. I know some centers have MR capabilities in the emergency department. We admit patients for MRs where I work, so it kind of depends on how safe you feel about this patient leaving.

I also think some of our patients will have a lot of nausea and vomiting, and if we really feel like they can't keep things down, they may stay a bit longer with us, getting IV fluids and medications that perhaps they can't administer to themselves at home.

**Andrew Herber:** All right, so, Abigail, what's kind of a general approach, then, to preventative treatment? Can you kind of give me some pearls on that?

**Abigail Taylor:** Absolutely. So, the goals of the preventative therapy are really to reduce that attack frequency. So, trying to get our patients to have less attacks per month. We want them to have less severe attacks, as well. We're hoping that the duration of these attacks will be shorter, and also that the disability will be less.

We also want to avoid visits to the emergency room, if possible, because those can be really time and resource consuming for both the patient and the health care system.

The other thing we keep in mind when you are doing a preventative pharmacological treatment is giving an adequate trial. I had a patient recently who said, "Well, I tried your medication, and it didn't work." And I asked her how long she tried it for. And she said, "Three days." So, really understanding how long are you taking it?

And especially when someone's naïve, don't forget, like we all learned in PA school, start low and go slow. We have so many options but starting at a really low dose doesn't mean that it's not effective, and then you have room to grow.

So, keeping that in mind, and really understanding that preventative medications are considered successful if it reduces the attack frequency or days by 50% within that 3-month time frame. So, keeping that in mind, too.

The other thing to consider is, obviously, we ideally would like to have monotherapy, one preventative agent that reaches that goal that you mentioned, Karissa. But that's just really not always possible, especially for a lot of the patients we see, who are really complicated. One medication is really not going to do the job. So,



start on that first medication. Start low, go slow. Uptitrate. Give them time to see if that medication is effective.

### Preventive Therapy<sup>1-2</sup>

- Adequate trial?
- Adequate dose?
- ↓ frequency or days 50% in 3 months
- Monotherapy

1 Alani J, Burch RC, Robbins MS. Board of Directors of the American Headache Society. *Headache*. 2021;61(7):1021-1039.  
2 Silberstein SD. *Continuum (Mimnap Minn)*. 2015;21(4 Headache):973-989. © 2022 American Academy of PAs and Medical Logix, LLC. All rights reserved.

**Andrew Herber:** Wow. So there's a lot of options for preventative treatment here. So, Karissa, when a patient comes into your office, how do you figure out which ones you're going to use? I've got to believe there's some kind of algorithm or something that you're using to pick the perfect one for each patient.

**Karissa Secora:** Yes. That's a great question. I go back to what Abigail talked about at the beginning. So, understanding, are they in episodic migraine, which they have 14 or less migrainous days per month, or are they in that chronic migraine category, which is the 15 or more migrainous headache days per month?

And something that we do in our clinic, and maybe some of you have found someone in your area, the treatment of chronic migraine for someone who doesn't want pills, right? We always have those patients who are like, "I can't swallow pills. I don't want anything oral," there are a couple options.

And one of them historically has been designed for chronic migraine, and a couple other new ones that have come out in the last couple years.

So the first one is onabotulinumtoxinA, which is designed for chronic migraine, not episodic. It is injections that are done in the head, in the shoulders, sometimes the top of the neck, and typically done every 3 months. So that's a great option for patients. A couple adverse effects, which include muscle weakness, neck pain, injection site reaction, but very efficacious.

### OnabotulinumtoxinA<sup>1</sup>

- Chronic migraine
- Adverse effects
  - Muscle weakness
  - Neck pain
  - Injection site reaction

1 Ashina M, Buse DC, Ashina H, et al. *The Lancet*. 2021;397(10283):1505-1518. © 2022 American Academy of PAs and Medical Logix, LLC. All rights reserved.

Some of the other new medications, again, that I kind of alluded to, this is a fabulous time in headache medicine, so we have so many options. I alluded to CGRP. And so these are anti-CGRP monoclonal antibodies that have come out, and there's three of them that are subcutaneous.

So we have fremanezumab, which targets CGRP. We have galcanezumab, which also targets CGRP. And then we have erenumab, which was the first of the three to come out, which actually targets the receptor, so, slightly different mechanism of action. The first one was approved in 2018.

So, over time, we've kind of looked at the 5-year data, and it's now available, that shows long-term safety, as well, because it's a common question that patients ask.

We also now have an IV therapy. So, we have eptinezumab, which also targets CGRP.

We have an oral administration, which is also, and I want to clarify and point this out, atogepant. So this was just approved, this is like hot off the press, just approved in September 2021, and they had a large phase 3 advance study that showed 56 to 61% of patients had at least a 50% reduction in the monthly migraine days across the 12 weeks.

The most common adverse effect was constipation and nausea. And this is effective for both episodic and chronic migraine prevention. So, most common adverse events for some of those injections include injection site reaction, but overall there's an excellent safety profile, so that's something really to keep in mind, as well.

And another one that's new, which I talked about as an abortive treatment, is also a preventative treatment. So that's rimegepant, which is used every other day as preventative therapy. Also hot off the press. So much to keep up with.

### Anti-CGRP Monoclonal Antibodies<sup>1</sup>

- Subcutaneous
  - Fremanezumab
  - Galcanezumab
  - Erenumab
- Intravenous
  - Eptinezumab
- Oral
  - Atogepant
  - Rimegepant

1 Ashina M, Buse DC, Ashina H, et al. *The Lancet*. 2021;397(10283):1505-1518. © 2022 American Academy of PAs and Medical Logix, LLC. All rights reserved.

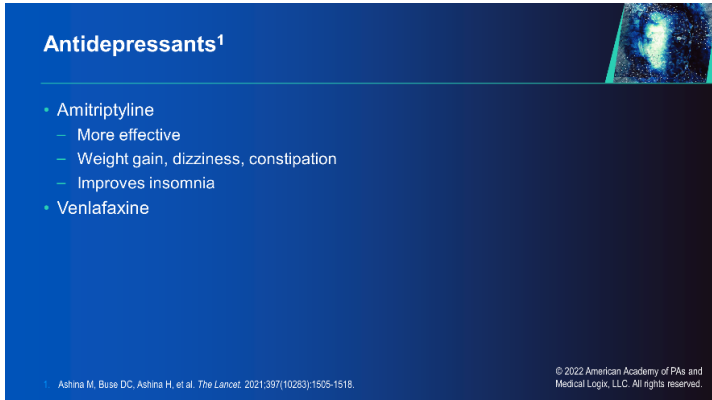
**Abigail Taylor:** Absolutely. Those are all great options. I think another thing, a lot of our patients will come in and, especially when they're leaving the hospital, they're like, "Well, I'm already on this whole list of medications. Is there any ones that I can use that may help with migraine?" Or, "I'm already taking pills morning and afternoon. Maybe I don't want to come in and, you know, have these monthly infusions," or something of that nature.

And so there's a lot of other medications that are pretty tried and true that we've been using, a little less exciting than what Karissa's talking about, but certainly great options, especially from an ease-of-use standpoint if you're not familiar with or don't have somewhere for these patients to go for some of those other medications or are having some trouble with approval and whatnot.

So, if a patient comes to you, and they have comorbid depression, some of the antidepressants are really helpful with migraine, especially amitriptyline, TCA, as well as one of the SNRIs, venlafaxine, has been reported to be helpful with migraine patients, as well.

Amitriptyline may have a little bit better profile as far as being effective, but it does have some adverse reactions or effects, such as weight gain and dizziness and constipation. And a lot of our patients are pretty turned off by the weight gain. So perhaps that may not be a good option.

One of the benefits of using amitriptyline, though, is that it is good for insomnia, as well. So, if you have a patient who's struggling with that, that can be a really great option.

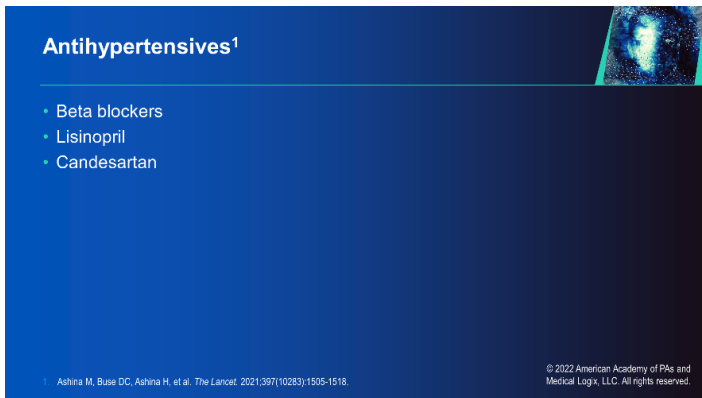


**Antidepressants<sup>1</sup>**

- Amitriptyline
  - More effective
  - Weight gain, dizziness, constipation
  - Improves insomnia
- Venlafaxine

1 Ashina M, Buse DC, Ashina H, et al. *The Lancet*. 2021;397(10283):1505-1518. © 2022 American Academy of PAs and Medical Logic, LLC. All rights reserved.

If you have patients who have hypertension, some of their antihypertensives may be helpful, specifically when we're looking at different beta blockers, as well as some of the ACE inhibitors and ARBs, specifically lisinopril and candesartan.



**Antihypertensives<sup>1</sup>**

- Beta blockers
- Lisinopril
- Candesartan

1 Ashina M, Buse DC, Ashina H, et al. *The Lancet*. 2021;397(10283):1505-1518. © 2022 American Academy of PAs and Medical Logic, LLC. All rights reserved.

I see a lot of patients who have seizures, and so we're always conscious of making sure we start something that's not going to worsen their seizures, but always a benefit if it may help their seizures or give them a little bit more protection should they need it.

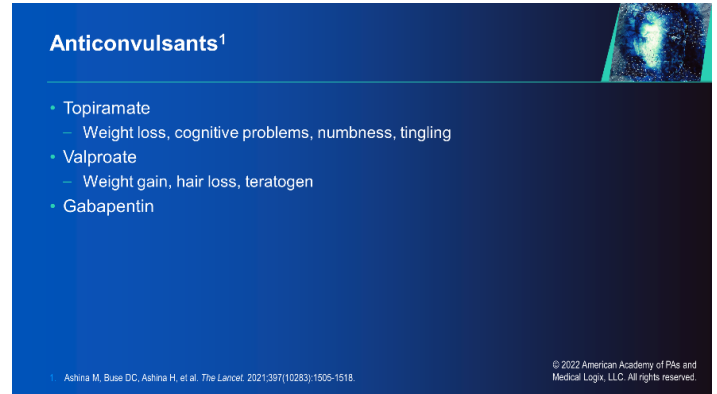
So, anticonvulsants, a few of those have been reported to work quite well for migraine patients, as well, specifically, topiramate, valproate and gabapentin. Valproate, like we had also mentioned, is also used IV for abortive therapy.

Topiramate may be the most effective of that bunch as far as the data. The adverse effects are actually weight loss, so if you have a patient who's overweight, maybe they have some headache related to their weight, like IHH or something of that nature, that may be helpful for them, as well.

This can, though, cause cognitive symptoms, like word-finding difficulties, which can be concerning, especially for our younger population, who's still working and wants to really be on the top of their game, as well as some numbness and tingling.

Valproate can be used, as well, like I mentioned. But when we're thinking about using it as a preventative therapy daily, it can cause weight gain and hair loss, among other things. It can also be

teratogenic. So really, we want to even avoid using this in women of childbearing age, or if you are going to use it, again, there are so many other options, so I don't personally use it in those patients. But if you're going to use it, making sure they're on contraception and making sure they know the risk associated with that.



**Anticonvulsants<sup>1</sup>**

- Topiramate
  - Weight loss, cognitive problems, numbness, tingling
- Valproate
  - Weight gain, hair loss, teratogen
- Gabapentin

1 Ashina M, Buse DC, Ashina H, et al. *The Lancet*. 2021;397(10283):1505-1518. © 2022 American Academy of PAs and Medical Logic, LLC. All rights reserved.

**Andrew Herber:** All right, great stuff, guys. So, I feel like we've all taken the board exam. I've taken it probably a few more times than you guys have. But I feel like question number 22, every time I've taken it, is a 30-year-old comes into your office with this rip-roaring migraine. What is the best treatment option? And oh, by the way, she's pregnant.

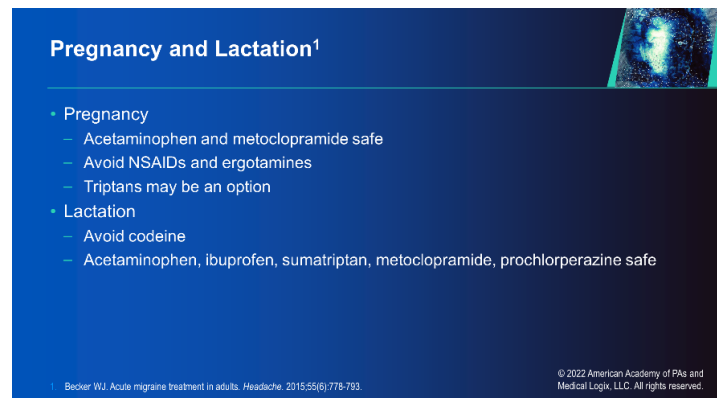
**Karissa Secora:** Yes, that's a really good question. And we get that question a lot, actually, Andy. So, I think the key thing to remember and Abigail pointed this out, is remembering the SNOOP4, because, as common as migraine is, there's other things that are uncommon that can certainly be a red flag.

So, making sure that you're ruling out other things that are much more serious than migraine, making sure they don't have, you know, a venous thrombosis or something else more concerning.

But overall, Abigail and I don't see many pregnant patients, and it's mainly because during pregnancy, migraines actually significantly improve.

But if you do have kind of some of those few handful of patients who do continue to have migraines, maybe not as frequently, but they're still kind of breaking through, keeping in mind acetaminophen, metoclopramide, those are considered safe. Really avoiding any of the NSAIDs and the ergotamines.

The triptans. I always recommend to my patients to talk to their OB/GYN about, because that can kind of go both ways, and it's really physician-dependent.



**Pregnancy and Lactation<sup>1</sup>**

- Pregnancy
  - Acetaminophen and metoclopramide safe
  - Avoid NSAIDs and ergotamines
  - Triptans may be an option
- Lactation
  - Avoid codeine
  - Acetaminophen, ibuprofen, sumatriptan, metoclopramide, prochlorperazine safe

1 Becker WJ. Acute migraine treatment in adults. *Headache*. 2015;55(6):778-793. © 2022 American Academy of PAs and Medical Logic, LLC. All rights reserved.

In terms of lactation, certainly, want to avoid codeine. But some of the other safer options, acetaminophen, ibuprofen, sumatriptan,

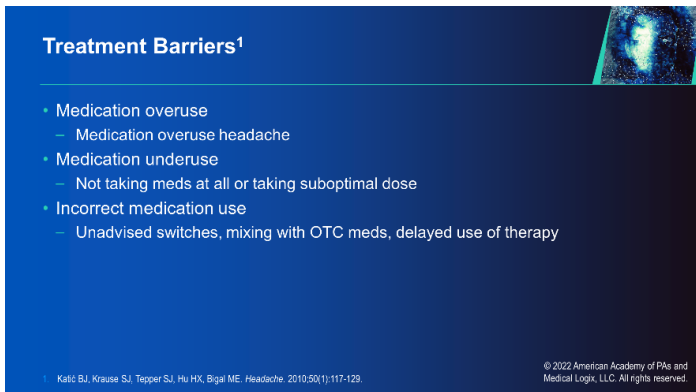
the metoclopramide, again, prochlorperazine, are really considered safe options.

**Andrew Herber:** So, Abigail, you and Karissa have discussed a ton of medications that we can use. Can you comment on some potential barriers out there with patients? For instance, financial barriers or maybe remembering to take a pill every day or other types of things that might interfere with their management of migraines? And then, how, as the PA, can you help them out, or how can you optimize their ability to care for themselves?

**Abigail Taylor:** Absolutely. There are certainly a lot of barriers, especially as the regimens become more and more complex. One of the things that we already chatted about a little bit is medication overuse headache. And I think that can be a barrier, just patients taking a little bit too much of their medication and actually worsening their symptoms. So, certainly, something as a PA you want to educate them about. If they know their headache is going to get worse if they take the medication too often, they're less likely to do so.

But as much as overuse of medications can be an issue, we also have a lot of patients who will underuse their medications. They either won't take it early enough, especially things like the triptans, that are really more effective early on, they kind of play this watch-and-wait game, and we want to educate them, certainly, about that.

Other patients kind of hoard their medications, and this may be because they're anxious that they're going to have another attack, and they don't want to overuse their medication, and so they're going to wait until it's really bad or they have a really bad attack, and then kind of suffer through this headache that they're having now, which is really not necessary. Like we said, we have so many options for these patients.



**Treatment Barriers<sup>1</sup>**

- Medication overuse
  - Medication overuse headache
- Medication underuse
  - Not taking meds at all or taking suboptimal dose
- Incorrect medication use
  - Unadvised switches, mixing with OTC meds, delayed use of therapy

Katic BJ, Krause SJ, Tepper SJ, Hu HX, Bigal ME. Headache. 2010;50(1):117-129. © 2022 American Academy of PAs and Medical Logic, LLC. All rights reserved.

**Karissa Secora:** And I think, like we brought up, starting them on a preventative therapy so they don't have to be scared when a migraine's going to come.

## References:

Ailani J, Burch RC, Robbins MS; Board of Directors of the American Headache Society. The American Headache Society consensus statement: update on integrating new migraine treatments into clinical practice. *Headache*. 2021;61(7):1021-1039. doi:10.1111/head.14153

Ailani J, Lipton R, Goadsby P, et al. Atogepant significantly reduces mean monthly migraine days in the phase 3 trial (ADVANCE) for the preventive treatment of migraine. *Neurology*. 2021;96(15 Supplement)

Ashina M, Buse DC, Ashina H, et al. Migraine: integrated approaches to clinical management and emerging treatments. *The Lancet*. 2021;397(10283):1505-1518. doi:http://dx.doi.org/10.1016/S0140-6736(20)32342-4

Ashina M, Goadsby PJ, Reuter U, et al. Long-term safety and tolerability of erenumab: three-plus year results from a five-year open-label extension study in episodic migraine. *Cephalalgia*. 2019;39(11):1455-1464. doi:10.1177/0333102419854082

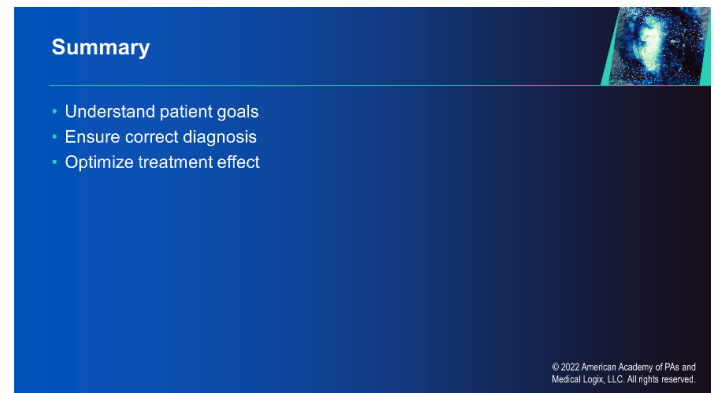
**Andrew Herber:** Thanks for enlightening us during this past 45 minutes or so. If you had to give me like five things that I need to know, give me your five need-to-know things.

**Karissa Secora:** Wow, Andy. I don't know if I can give you five, but the first one, and my primary one, is really understanding what the patient goal is. We have in our new patient intake form a little area where the patient can write what their goal is.

And I often assume that it's their head pain or their facial pain or to decrease their migraine. But really, understanding what their actual goal is. Maybe they don't want to keep missing birthday parties for their children, or maybe it's the tinnitus or the nausea that's bothering them. So, really understanding and having a thorough conversation.

**Abigail Taylor:** Yes. I would say, do your due diligence to make the right diagnosis. If you only have a couple minutes, stick to your PIN the diagnosis to see if we can get ourselves on the right track so we can get our patients on some type of either abortive and/or preventative therapy.

And as we mentioned and belabored, I'm sure, there are so many options for your patients. And it can definitely feel like, you know, maybe you're running out of options, or the things you're using aren't working. But just feel reassured that there are so many options. Migraine can be so disabling for your patients, and really affect their lives.



**Summary**

- Understand patient goals
- Ensure correct diagnosis
- Optimize treatment effect

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**Andrew Herber:** Great. Thanks, guys. I would like to thank both our expert faculty, PAs Karissa Secora and Abigail Taylor, for their great insights and discussion. And I would like to thank you, our outstanding virtual audience.

- Becker WJ. Acute migraine treatment in adults. *Headache*. 2015;55(6):778-793. doi:10.1111/head.12550
- CNBC. FDA approves new Amgen drug for prevention of migraines. <https://www.cnn.com/2018/05/17/fda-approves-new-amgen-drug-for-prevention-of-migraines.html>. Published May 17, 2018. Accessed October 29, 2021.
- Derry CJ, Derry S, Moore RA. Sumatriptan (all routes of administration) for acute migraine attacks in adults - overview of Cochrane reviews. *Cochrane Database Syst Rev*. 2014;2014(5):CD009108. Published 2014 May 28. doi:10.1002/14651858.CD009108.pub2
- Do TP, Remmers A, Schytz HW, et al. Red and orange flags for secondary headaches in clinical practice: SNNOOP10 list. *Neurology*. 2019;92(3):134-144. doi:10.1212/WNL.0000000000006697
- Dodick DW. Migraine. *Lancet*. 2018;391(10127):1315-1330. doi:10.1016/S0140-6736(18)30478-1
- Headache Classification Committee of the International Headache Society (IHS) The International Classification of Headache Disorders, 3rd edition. *Cephalalgia*. 2018;38(1):1-211. doi:10.1177/0333102417738202
- Katić BJ, Krause SJ, Tepper SJ, et al. Adherence to acute migraine medication: what does it mean, why does it matter? *Headache*. 2010;50(1):117-129. doi:10.1111/j.1526-4610.2009.01535.x
- Keown A. New relief for migraine sufferers as FDA approves AbbVie's Atogepant. <https://www.biospace.com/article/fda-approves-abbvie-s-atogepant-as-a-preventative-migraine-treatment/>. Published September 29, 2021. Accessed October 29, 2021.
- Loder E, Rizzoli P. Pharmacologic prevention of migraine: a narrative review of the state of the art in 2018. *Headache*. 2018;58 Suppl 3:218-229. doi:10.1111/head.13375
- Marmura MJ, Silberstein SD, Schwedt TJ. The acute treatment of migraine in adults: the American Headache Society evidence assessment of migraine pharmacotherapies. *Headache*. 2015;55(1):3-20. doi:10.1111/head.12499
- Peters GL. Migraine overview and summary of current and emerging treatment options. *Am J Manag Care*. 2019;25(2 Suppl):S23-S34.
- Pringsheim T, Davenport WJ, Marmura MJ, et al. How to apply the AHS evidence assessment of the acute treatment of migraine in adults to your patient with migraine. *Headache*. 2016;56(7):1194-1200. doi:10.1111/head.12870
- Rabbie R, Derry S, Moore RA. Ibuprofen with or without an antiemetic for acute migraine headaches in adults. *Cochrane Database Syst Rev*. 2013;2013(4):CD008039. Published 2013 Apr 30. doi:10.1002/14651858.CD008039.pub3
- Shauly O, Gould DJ, Sahai-Srivastava S, et al. Greater occipital nerve block for the treatment of chronic migraine headaches: a systematic review and meta-analysis. *Plast Reconstr Surg*. 2019;144(4):943-952. doi:10.1097/PRS.0000000000006059
- Silberstein SD, Holland S, Freitag F, et al. Evidence-based guideline update: pharmacologic treatment for episodic migraine prevention in adults: report of the Quality Standards Subcommittee of the American Academy of Neurology and the American Headache Society [published correction appears in *Neurology*. 2013 Feb 26;80(9):871]. *Neurology*. 2012;78(17):1337-1345. doi:10.1212/WNL.0b013e3182535d20
- Silberstein SD. Preventive migraine treatment. *Continuum (Minneap Minn)*. 2015;21(4 Headache):973-989. doi:10.1212/CON.0000000000000199

## eCASE CHALLENGE

### Case Presentation

Esther is a 32-year-old woman who presents to her primary care PA due to headaches. She reports that she has had headaches about 10 times a month since she was a teenager, which she has always treated with over-the-counter (OTC) medications. Esther has never sought medical treatment for her headaches before because she figured the OTC medications were doing a good enough job and she didn't have to take more than 2 sick days each month from work because of the headaches. However, she recently became self-employed and the inability to work when these headaches occur is now affecting her more significantly, which led her to seek further evaluation.

She states her headaches occur any time of the day, but do not wake her up from sleep. The pain is typically noted on the right side of her head and starts suddenly without any warning. She works from home as a financial planner and finds that when these headaches occur she has to go lay down in a room with no lights or noises and rest until the episode resolves. If she tries to do any other activity during the headache, like going for a walk to distract herself, this makes the pain much worse, especially if it is sunny or noisy outside. Esther has tried acetaminophen, ibuprofen and naproxen as soon as the headache starts, but finds this only sometimes lessens the duration of the headache, which is about 6 hours when she doesn't take any medications.

She reports there have been no changes to her medical status recently and she feels that she is overall healthy aside from the headaches. Specifically, Esther has not experienced any head trauma, started any new medications or had any changes in her diet. Her sleep patterns have remained unchanged and she generally gets 7 hours of sleep per night. She reports no new stressors in her life and no major life events recently.

#### Biometrics:

- Height: 5 feet 1 inches
- Weight: 115 lbs. (unchanged from prior visit)
- Current BMI: 21.7 kg/m<sup>2</sup>

#### Vital Signs:

- Heart rate: 65 bpm
- BP: 111/72 mmHg
- Respirations: 18/minute

#### Past Medical History:

- None

#### Family History:

- Mother with hypertension
- Sister with hypothyroidism

#### Social History:

- Non-smoker
- Alcohol use: social/on occasion (2 glasses of wine on weekends)
- Occupation: financial planner, self-employed

#### Current Medications:

- Acetaminophen 1000mg, ibuprofen 600mg, naproxen

500mg PRN

#### Known Allergies:

- None

Physical examination reveals a well-appearing woman in no acute distress. Her neurologic exam shows cranial nerves 2-12 intact with normal strength, sensation and reflexes in all extremities. She is able to complete the finger-to-nose exercise and heel-to-toe walking without difficulty. The remainder of her physical examination is normal.

#### Question #1

**Given Esther's history, which of the following is the best next step in management?**

- A. Increase ibuprofen dose to 800mg at headache onset
- B. Obtain MRI of the brain with and without contrast
- C. Prescribe sumatriptan to be taken at headache onset
- D. Refer to neurology for further evaluation

Esther's headache history is consistent with a diagnosis of episodic migraine without aura. According to the International Headache Society, migraine without aura can be diagnosed when a patient has headaches that meet 2 of 4 characteristics: unilateral location, pulsating quality, moderate or severe pain intensity, and aggravation by or causing avoidance of routine physical activity. In addition, attacks must last 4-72 hours (without successful treatment), be associated with nausea and/or vomiting or photophobia and phonophobia, and not fit better with an alternate headache diagnosis. Esther meets the criteria because her pain is unilateral, aggravated by walking, lasts for 6 hours, and she experiences photophobia and phonophobia during the episodes.<sup>1</sup>

Her migraines are also considered episodic because they occur on less than 15 days per month. Migraines that occur on 15 days or more per month for 3 months with at least 8 days having migraine features are considered chronic.<sup>2</sup> Importantly, a given patient may meet the criteria for episodic headache some months and chronic headache other months.<sup>3</sup>

Like Esther, nearly half of those with migraines use only OTC medications for treatment. Many feel that their migraine headaches are just something annoying they have to deal with, recognize that migraine is not dangerous, and are unaware of the availability of prescription medications options for treatment and their efficacy.<sup>4</sup>

NSAIDs are an appropriate first-line medication for migraine, as is acetaminophen, although acetaminophen should not be used as monotherapy.<sup>5</sup> In Esther's case, she has been taking recommended doses of both acetaminophen and NSAIDs without consistent relief from her migraine pain. In addition, it is important to note that she has been correctly taking her medication at headache onset, as it is not uncommon for patients to wait until headache intensity peaks to take medication, which can prolong symptoms and make medications seem less effective.<sup>6</sup>

Since OTC medications have been ineffective for Esther, a triptan medication is a good next choice for acute migraine treatment. Triptans are migraine-specific medications that are available in multiple forms and should be administered in the early phase of a migraine attack. For sumatriptan, studies have shown 32% of patients to be free from pain 2 hours after administration of the oral form and 59% to be free from pain 2 hours after administration of the subcutaneous form.<sup>5</sup>

In this case, an MRI of the brain would not be warranted. Neuroimaging in migraine can be considered in patients with an unusual, long, or persistent aura, increasing frequency or severity of attacks, first or worst migraine, brainstem aura, confusion, hemiplegia, side-locked migraine, post-traumatic migraine, or aura without migraine.<sup>7</sup> Referral to neurology is not necessary at this time, as first-line migraine treatment can be prescribed by the primary care clinician.

**Case Continues**

Esther returned for follow-up 1 month after being prescribed sumatriptan. She reports that she was taking sumatriptan along with ibuprofen at the onset of her migraines for the first 2 weeks after her last appointment, but she was experiencing flushing and heart racing that made her very uncomfortable, so she stopped taking sumatriptan. At that time, she was prescribed an alternate triptan and returns now 2 months later to report that she had the same side effects and has also discontinued this medication. Her migraines continue to occur 10 times per month.

This brings us to our next clinical question.

**Question #2**

**Which of the following medications would be most appropriate to prescribe for Esther for acute migraine management at this time?**

- A. Metoclopramide
- B. Oxycodone
- C. Propranolol
- D. Ubrogapant

It is not uncommon for patients with migraine to require trials of multiple medications before finding a regimen that is both effective and tolerable. Half of patients with migraine are not satisfied with their current medication regimen and 4 out of 5 would consider an alternate acute therapy.<sup>2</sup>

Because there are multiple factors that contribute to medical treatment decisions for patients with migraine, there is no treatment algorithm that can be followed for every patient. Instead, factors such as comorbid conditions, presence of nausea, contraindications to medications, past medication effects, and patient preference all play a role in treatment selection. In addition, it is important to address lifestyle considerations that can contribute to migraine such as nutrition, exercise, hydration, sleep, and stress management.<sup>8</sup>

**TABLE 2. Acute treatments with evidence of efficacy in migraine<sup>19, 34-41, 47</sup>**

Established efficacy <sup>a</sup>	Probably effective
Migraine-specific	
Triptans	Ergotamine
Ergotamine derivatives	Other forms of dihydroergotamine
Gepants	
Lasmiditan	
Nonspecific	
NSAIDs: aspirin, celecoxib oral solution, diclofenac, ibuprofen, naproxen	NSAIDs: flurbiprofen, ketoprofen, IV and IM ketorolac
Combination analgesic: acetaminophen + aspirin + caffeine	IV magnesium <sup>b</sup>
	Isometheptene-containing compounds
	Antiemetics: chlorpromazine, droperidol, metoclopramide, prochlorperazine, promethazine

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The effects Esther experienced with sumatriptan (flushing and palpitations) are some of the more common adverse effects associated with triptans, along with paresthesias. Less commonly, patients may experience neck or chest tightness. While there is little evidence of vascular events resulting from triptans, they are vasoconstrictors and as a theoretical risk exists, they should not be used by patients with coronary artery disease, cerebrovascular disease or uncontrolled hypertension.<sup>5</sup>

For patients like Esther who are unable to take a first-line medication such as a triptan due to contraindications or intolerance, newer classes of medications including gepants and ditans are a reasonable alternative option. Ubrogepant is a small-molecule calcitonin gene-related peptide receptor antagonist (gepant). The phase 3 randomized, placebo-controlled ACHIEVE II study found 20% patients who received ubrogepant to be pain free at 2 hours compared to 14% who received placebo.<sup>9</sup> These categories of medications are well tolerated but remain a second-line choice due to their modest efficacy.<sup>5</sup>

Metoclopramide is an antiemetic that is a useful first-line treatment for patients who have nausea or vomiting with their migraine attacks. As Esther has not reported any nausea or vomiting, this medication is unlikely to be a helpful addition to her treatment regimen. While narcotics like oxycodone are commonly prescribed for migraine treatment, they should not be used routinely due to the risk of overuse, dependence and withdrawal.<sup>6,10</sup> Propranolol can be used as a preventive medication for migraine treatment, but is not appropriate for acute migraine treatment.<sup>11</sup>

### Case Continues

Esther returns to the office for follow-up 6 months later and reports that ubrogepant in combination with an over-the-counter acetaminophen/aspirin/caffeine analgesic has been successful in resolving a majority of her migraine attacks within 2 hours. She is pleased to have found an effective regimen and has been doing well with initiating medication at the first sign of migraine symptoms. Otherwise, her only concern is that she is now having 18 headache days per month requiring abortive therapy.

This brings us to our next clinical question.

### Question #3

**Which of the following is the most likely reason for her increased number of headache days per month?**

- A. Adverse effect of ubrogepant
- B. Comorbid depression
- C. Declining efficacy of treatment regimen
- D. Medication-overuse headache

Esther has now progressed past the threshold of 15 headache days per month that differentiates episodic from chronic migraine. As she is frequently requiring acute migraine treatment, medication-overuse headache (MOH) is a likely cause of her increased frequency of symptoms.

The International Headache Society defines MOH as a headache that occurs on 15 or more days per month in a patient with a pre-existing headache disorder who has been regularly overusing one or more acute headache medications for greater than 3 months.<sup>1</sup> While certain medications are more often associated with MOH than others, this condition can be associated with many kinds of headache medication. However, the newer CGRP receptor antagonists do not appear to be associated with MOH.<sup>8</sup> Triptans, opioids, and combination analgesics can result in a faster evolution to MOH.<sup>12</sup> Thus, it seems that the acetaminophen/aspirin/caffeine analgesic Esther has been taking may be the cause of her MOH.

MOH can be associated with any type of primary headache and the presenting symptoms depend on the primary headache diagnosis. In some cases, the MOH may be similar in nature to the primary headache, while in others the medication may suppress the symptoms of the primary headache.<sup>12</sup>

As MOH is the most common cause of chronic migraine, it is important for primary care clinicians to discuss this entity with patients when initiating headache medications.<sup>2</sup> Patients should be made aware of the risk of developing MOH if headache medications are overused and also instructed to follow-up with their primary care clinician if an increase in headache frequency occurs.<sup>12</sup>

Three approaches are described in the literature to treating MOH. These include working with patients to reduce their use of acute headache medications, initiation of pharmacologic and nonpharmacologic preventive therapy, and abrupt withdrawal of acute headache medications with immediate or delayed initiation of preventive therapy.<sup>12</sup>

Increasing headache frequency is not a described adverse effect of ubrogepant. There is also no reason to suspect that the efficacy of the medication regimen is declining, as Esther is experiencing good relief of her migraines when she takes these medications. There is also no reason to suspect she has developed depression, as she is not reporting any new symptoms at this visit.

### Question #4

**Which of the following is a risk factor for medication-overuse headache?**

- A. Family history of MOH
- B. High level of physical activity
- C. Male sex
- D. Smoking

While predicting which patients will have MOH is not possible, there are some identified risk factors associated with the condition. It is also important to note that prevalence varies by country, which is likely related to the overall prevalence of medication overuse in some countries.<sup>12</sup>

MOH is more common in females than males. Those who smoke and are physically inactive also have double the risk compared with those without these risk factors. MOH is also seen more commonly in those with other comorbid pain conditions such as

gastrointestinal or neuromuscular pain. Family history of MOH is not an associated risk factor, but it is important to note that family history of migraine is a risk factor for migraine.<sup>12</sup>

Migraine is the underlying headache disorder in 80% of patients with MOH. Those who have more headaches at baseline are more likely to develop MOH than those with fewer headaches at baseline.

Comorbid psychiatric conditions such as depression and anxiety are associated with MOH. However, it is unclear whether these conditions are a consequence of MOH or a preexisting risk factor.

**Case Continues**

Based on her headache frequency and development of MOH, Esther is interested in starting a preventive migraine treatment.

This brings us to our final clinical question.

**Question #5**

**Which of the following would be appropriate choices for Esther for preventive migraine treatment?**

- A. Dihydroergotamine or onabotulinumtoxinA
- B. Erenumab or valproate
- C. OnabotulinumtoxinA or erenumab
- D. Valproate or dihydroergotamine

Preventive medications serve to reduce attack frequency, intensity, or duration in patients whose symptoms are not adequately treated with acute migraine medications. Factors to assess when considering whether a patient would benefit from preventive treatment include the interference of attacks with daily life, past medication use, tolerability, adverse effects and efficacy, medication overuse, and patient preference.<sup>11</sup> In general, patients with more than 6 headache days per month should be considered for preventive therapy.<sup>2</sup>

**TABLE 6. Medications with evidence of efficacy in migraine prevention<sup>a,20,85</sup>**

Established efficacy <sup>b</sup>		Probably effective <sup>c</sup>	
Oral	Parenteral	Oral	Parenteral
Candesartan	Eptinezumab	Amitriptyline	OnabotulinumtoxinA + CGRP mAb <sup>d,e, d,e</sup>
Divalproex sodium	Erenumab	Atenolol	
Frovatriptan <sup>f</sup>	Fremanezumab	Lisinopril	
Metoprolol	Galcanezumab	Memantine	
Propranolol	OnabotulinumtoxinA <sup>d</sup>	Nadolol	
Timolol		Venlafaxine	
Topiramate			
Valproate sodium			

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There are a number of treatment principles to keep in mind when approaching preventive care with a patient. First, it is important to involve patients in the selection of therapy. As with acute migraine treatment, if the process is not patient centered there is a substantial risk for treatment failure, as trials of multiple medications may be required before finding the ideal agent. In addition, it is generally best to start at a low medication dose and increase dose until there is a positive effect or an intolerable adverse effect. Realistic goals should be set, reevaluation should occur frequently and an adequate trial of 2 to 6 months should be given before deciding on the effectiveness of a given drug for a patient.<sup>11</sup>

While a number of categories of medications are used for preventive migraine therapy, many are not migraine specific.

However, topiramate, onabotulinumtoxinA and monoclonal antibodies against calcitonin gene-related peptide (CGRP) or its receptor have all demonstrated evidence-based effectiveness in the treatment of chronic migraine.<sup>5</sup>

Antidepressants, antihypertensives and anticonvulsants are all used for migraine prophylaxis. Specifically, beta blockers, topiramate and amitriptyline are among the more effective medications in these categories. Valproate is also used for migraine prevention, although topiramate is typically preferred because its efficacy has stronger supporting evidence. In addition, valproate is not recommended for women of childbearing age due to its risk of teratogenicity. Dihydroergotamine is not recommended for the prevention of migraine, only acute treatment.<sup>5</sup>



OnabotulinumtoxinA is FDA approved for the treatment of chronic migraine. Injections of 155-195 units are given in the head and neck every three months.<sup>3</sup> The most common adverse effects associated with onabotulinumtoxinA are neck pain, muscle weakness and injection-site soreness. No systemic adverse effects have been reported.<sup>5</sup>

Anti-CGRP monoclonal antibodies prevent both episodic and chronic migraine. These agents work by blocking the release of CGRP, which prevents vasodilation and neurogenic inflammation.<sup>2</sup> Erenumab is an IgG2 CGRP receptor blocker. It is given subcutaneously, as are fremanezumab and galcanezumab. Eptinezumab is given intravenously. Atogepant is a recently FDA approved oral anti-CGRP antibody. The most common adverse effect of anti-CGRP monoclonal antibodies is injection site pain for subcutaneous administration.

### Case continues

Esther decides to proceed with onabotulinumtoxinA preventive treatment and her headache days are reduced to 4 per month with less intense symptoms. In addition, she has discontinued the combination analgesic she was previously taking. She feels this regimen has met her treatment goal and is an excellent improvement from her status when she first sought medical care for her migraines. She is now pulled away from her work because of a migraine far less often and her daily activities are much less impaired.

### Conclusions

Migraine headache is a significant cause of disability and emergency department visits in the US and around the world. The condition is severely underdiagnosed and undertreated following diagnosis. The first step in optimizing treatment for patients with migraine is to reach an accurate diagnosis that discerns the migraine subtype and whether it is episodic or chronic. For episodic migraine, acute treatment options include OTC analgesics, triptans, ergot alkaloids, ditans, and gepants. Antiemetic treatment can additionally be used for patients with accompanying nausea or vomiting. MOH commonly develops in patients who frequently use acute medical therapy and can present like chronic migraine. Special attention must be paid to discussing this entity with patients when acute medications are prescribed in order to promote judicious medication use and potentially prevent medication overuse. For patients with multiple monthly migraine days that interfere with their ability to function normally who are not adequately treated with acute medications, preventive migraine therapy may be the most effective approach to treatment. Antidepressant, anticonvulsant and antihypertensive medications are frequently used for this purpose. Newer agents like anti-CGRP monoclonal antibodies and onabotulinumtoxinA offer alternative medication administration options with strong efficacy and safety profiles. It is essential for clinicians to include patients in the decision-making process in migraine treatment in order to assess tolerance and efficacy, address adverse effects and maximize outcomes.

### CLINICAL PEARL

We hope you have enjoyed this *eCase Challenge* and that you have increased your knowledge and confidence in assessing and treating patients with migraine. Migraine is common in the primary care and emergency settings, and a substantial source of disability in the United States and worldwide.

Unfortunately, research still shows that it's underrecognized and undertreated. However, with multiple new treatment options available, patients now have better choices for migraine treatment and prevention that may better meet their needs in both the outpatient and emergency department settings.

The first step in optimizing treatment is the correct recognition and diagnosis of migraine, particularly whether it's episodic or chronic. Treatment plans should be developed accordingly and include acute migraine treatment options as well as preventative treatment options when appropriate.

Both acute and preventative treatment plans should take into account a patient's specific characteristics, goals and other factors, including the presence of comorbidities, past use of medications, contraindications to certain medications, presence of additional symptoms, such as nausea, and potential to become pregnant.

Frequent follow-up and assessment of treatment response is recommended to remove any barriers to optimal care, as trials of multiple or combination medications may be needed over an extended period of time to achieve desired results. Ongoing patient education about migraine and its treatment process is essential.

## References:

1. Headache Classification Committee of the International Headache Society (IHS) The International Classification of Headache Disorders, 3rd edition. *Cephalalgia*. 2018;38(1):1-211. doi:10.1177/0333102417738202
2. Peters GL. Migraine overview and summary of current and emerging treatment options. *Am J Manag Care*. 2019;25(2 Suppl):S23-S34.
3. Loder E, Rizzoli P. Pharmacologic prevention of migraine: a narrative review of the state of the art in 2018. *Headache*. 2018;58 Suppl 3:218-229. doi:10.1111/head.13375
4. Katić BJ, Krause SJ, Tepper SJ, Hu HX, Bigal ME. Adherence to acute migraine medication: what does it mean, why does it matter? *Headache*. 2010;50(1):117-129. doi:10.1111/j.1526-4610.2009.01535.x
5. Ashina M, Buse DC, Ashina H, et al. Migraine: integrated approaches to clinical management and emerging treatments. *The Lancet*. 2021;397(10283):1505-1518. doi:http://dx.doi.org/10.1016/S0140-6736(20)32342-4
6. Pringsheim T, Davenport WJ, Marmura MJ, Schwedt TJ, Silberstein S. How to apply the AHS evidence assessment of the acute treatment of migraine in adults to your patient with migraine. *Headache*. 2016;56(7):1194-1200. doi:10.1111/head.12870
7. Evans RW, Burch RC, Frishberg BM, et al. Neuroimaging for migraine: The American Headache Society systematic review and evidence-based guideline. *Headache*. 2020;60(2):318-336. doi:10.1111/head.13720
8. Ailani J, Burch RC, Robbins MS; Board of Directors of the American Headache Society. The American Headache Society consensus statement: update on integrating new migraine treatments into clinical practice. *Headache*. 2021;61(7):1021-1039. doi:10.1111/head.14153
9. Lipton RB, Dodick DW, Ailani J, et al. Effect of ubrogepant vs placebo on pain and the most bothersome associated symptom in the acute treatment of migraine: the ACHIEVE II randomized clinical trial [published correction appears in JAMA. 2020 Apr 7;323(13):1318]. *JAMA*. 2019;322(19):1887-1898. doi:10.1001/jama.2019.16711
10. Becker WJ. Acute migraine treatment in adults. *Headache*. 2015;55(6):778-793. doi:10.1111/head.12550
11. Silberstein SD. Preventive migraine treatment. *Continuum (Minneap Minn)*. 2015;21(4 Headache):973-989. doi:10.1212/CON.0000000000000199
12. Diener HC, Holle D, Solbach K, Gaul C. Medication-overuse headache: risk factors, pathophysiology and management. *Nat Rev Neurol*. 2016;12(10):575-583. doi:10.1038/nrneurol.2016.124

**CME POST-TEST: Participants must: 1) read the educational objectives and faculty disclosures; 2) study the educational materials; 3) complete the post assessments in Learning Central. See page 2 for further information.**

**Question #1**

Which of the following is one of the International Classification of Headache Disorders diagnostic criteria for migraine?

- A. At least 10 attacks
- B. Attacks lasting 2 to 24 hours
- C. Bilateral location
- D. Pulsating quality

**Question #2**

Patients with which of the following conditions should avoid triptan medications?

- A. Coronary artery disease
- B. Glaucoma
- C. Osteoporosis
- D. Type 2 diabetes

**Question #3**

Certain medications from which of the following categories can be used for migraine prophylaxis?

- A. Antibiotics
- B. Anticonvulsants
- C. Antiemetics
- D. Antihistamines

**Question #4**

What is one of the most commonly reported adverse effects of anti-CGRP monoclonal antibodies?

- A. Diarrhea
- B. Injection site pain
- C. Insomnia
- D. Numbness/tingling of extremities

**Question #5**

Which of the following should all patients with migraine be counseled to do regarding acute migraine medication use?

- A. Do not take acute medications more than two times per month
- B. Take acute medications daily to prevent migraine
- C. Take medications immediately at the onset of pain
- D. Wait until the peak of pain to take medication

**Question #6**

A patient should have a minimum of how many migraine days per month in order to meet the criteria for chronic migraine?

- A. 5
- B. 10
- C. 15
- D. 20

**Question #7**

Which of the following is a common adverse effect of triptans?

- A. Diarrhea
- B. Insomnia
- C. Nausea
- D. Palpitations

**Question #8**

Which of the following is a risk factor for developing migraines?

- A. Family history of migraine
- B. Male sex
- C. Personal history of tension headaches
- D. Physical inactivity

**Question #9**

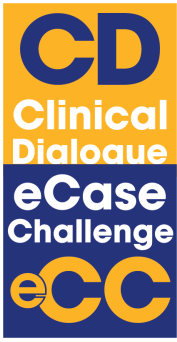
Which anti-CGRP monoclonal antibody is available in an oral form?

- A. Atogepant
- B. Erenumab
- C. Eptinezumab
- D. Fremanezumab

**Question #10**

Which antidepressant medication can also be prescribed for migraine prevention?

- A. Amitriptyline
- B. Escitalopram
- C. Fluoxetine
- D. Sertraline



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- *Getting Ahead of Migraine: Best Practices for Migraine Treatment and Prevention*

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