Please stand by for real time captions.

Hello, everyone. Welcome to the workshop being help to housekeeping items. This session is being recorded. If you have not already done so, please make sure you mute your microphone until we get into the Q&A portion of the workshop. We have recorded the plenary sessions and posted them on the pain care skills training website, along with assigning a sign in sheet to receive the CME/CNE credits.

This workshop's agenda and CME/CNE sign in sheet are located in the file pod. Remember to download, sign and return the sign in sheet if you would like to receive the CME/CNE credits. In addition to screenshots, names will be taken to confirm your attendance to this workshop and documentation for the CME/CNE.

During the Q&A, please place your questions in the chat box. Please use the raise your hand feature when you are called on. That is located at the top of your screen. At that time, if you have a question, you can use the raise your hand feature and I will unmute your microphone so you can ask your question. Our presenters today would love to see you when we go into the Q&A session. If you would like to turn on your web cam, that is appreciated. I will activate that for you. It may take a couple seconds for everyone to see it. We are following the training with a survey evaluation. Your responses are invaluable to the future funding and planning for the pain skills training. Please make sure you complete that.

In addition to the training survey, there will be a survey to complete in the CME/CNE website. The survey from our program, the survey for the CME/CNE are two separate items. CME/CNE could take anywhere from three to four weeks for you to receive your credit. Once your credits have been resized -- assigned, you can complete the survey. You will need to complete the survey to retrieve your certificate. Please make sure you do this. If you have any trouble during the presentation during this workshop, please exit out and come back in, it shook react -- shook correct it. I would like to now turn the meeting over to our presenters.

Thank you, Sara. I think we have our video up. Good afternoon. I am Dr. Franz Macedo director of the pain center here.

I am Rebecca Vogsland. I am the director of the pain center and the director of the headache center. Dr. Macedo is the medical director of our Headaches Center of Excellence.

That, too. Sorry. We are going to cover a lot of slides about headaches today, a lot of things about headaches today. One of the things that we always try to do is make sure that throughout the talk people ask questions if we are not covering something you want to cover or week loss over something, feel free to stick a comment in the chat. We can always go back. We have over 180 slides or something like that. It is Freeform. We want to make sure all the people attending get what they want to get out of this. We will cover a lot of the basics about headache evaluation and primary and secondary headaches, but interspersed throughout this, especially as we get into some of the treatments is information from the

recently published DOJ clinical practice guidelines that we were both involved in working on. We will make sure you have that information. If you just search and type headache, it will come up and we have access, the big one is like 150 pages or there is a shorter version.

We will get going here. We will turn off our camera while we are chatting and for different parts we will pop back up for the Q&A. Here we go. I do not have any disclosures. I teach for an education company. I don't really have anything to do with that during our talk today.

This is the same disclaimer. Everything we cover in here does not reflect the official policy of the D.O.T. or the Federal government. Here we go. We will cover in order basics for headache evaluation, primary headaches, evidence-based review of those treatments, talk about rehab and interdisciplinary care within headache management and wrap up with interventional options.

We start off with a case, which is a 35-year-old female presenting with worsening headaches around the left eye, unrelated to any injury or trauma. The headaches have been present for about two years. Prior to that, only really about one headache a month, more squeezing headache. The headaches are bothersome and do interfere with aspects of her life, like her job. Imitrex did not do much. A few months ago, she tried Naproxen and Zomig, which also was not really helpful. Going for it, with that, keep this keep in mind. We will have questions come up about this case. This is our backbone of our initial discussions. Headache management, it depends on trying to make an Acura diagnosis, addressing risk factors, addressing the impact of the headache and ultimately with your goal, we talk about acute pain, it is relieving the headache in that moment. With prevention, you're trying to reduce the severity and frequency of headaches. Overall, you're trying to improve function and decrease disability.

The way we go about kind of thinking about the structure and evaluation of headaches, you want to take a really good history. This gives you a lot of information to help start your diagnosis and your management strategy. There are some acronyms. We will get into the first one in a little bit. SNOOP 4, there are many outcome measures that can help you gauge your project progress. I know working with patients with headaches, trying to get a percentage of improvement or of frequency of the headache, that doesn't always get to the whole picture. It can really impact your treatment planning. You need to do a really good exam.

C.O.L.D.E.R., we have random graphics from when we did this talk a few weeks ago. At that time this was done, "Game of Thrones" was coming to an end. Some of the important things to ask are the character of the headache or quality. Is it throbbing, pulsating, viselike, or dull? The onset of the headache, when it really started and within the day, when does it start and when does it abate? Where is it located? Bilateral, unilateral, does a rat from the back to the front? Does it stay just behind the eye? Duration, how long does it last for?

This is important as we talk about primary headaches and differentiating them. It was only a few seconds and happens repetitively or is it a few hours every day? Is every headache is lasting hours to days long? What makes it worse? What makes it better? The nice thing with this acronym, if you walk through it, there are a couple more things to add after it, this will get you through a lot of the questions that will help in your differentiation and the type of headache. By asking, our template deals with these questions in order to facilitate you asking them in in order eat to where you can get the information to make the diagnosis.

When you're continually reassessing your patient, headaches can change over time, this is great. At your follow-up, you always run through this acronym and it is a really great way for you to look over time on how that headache has evolved, for better, worse, or just for different.

In addition to that C.O.L.D.E.R. acronym is frequency of the headaches, are they daily, or are they every day? Are they every couple days a week or just twice a month, what is it? What are the associated symptoms? Photophobia, photophobia, nausea or vomiting, weakness, numbers, tingling or facial drop. There is some poll questions we asked. We hit the midpoint, we will ask Sara to upload part one of the slides and then we get to part two, she can do that. We don't want to give away all the poll questions. With the template questions, our templates are built for CPRS, which is a VA template. We could probably figure out a way to put it in a work format and get it to Sara to disseminate, if we can figure that out.

There are a few, you know, aside from headache frequency and duration, which are really kind of mechanical. They are objective, depending on what the patient tells you. It is kind of one of those Markey, objective/subjective sort of measures. It is discrete, if you will. It does not tell us what is going on in a patient's life. A patient could have five headaches a month and maybe have a huge impact on their life, or they could have 15 headaches a month and not have that much impact. There are ways to find out how it is impacting them and how severe their headache problem is.

There are a number of functional questionnaires, the ones that are really popular in short are these. The headache inventory is a little longer. It is typically not used by physician providers, more in behavioral health or in therapy. It is a 25-question handout on the impacts of headaches into both the functional and emotional domain. You can really look at, okay, how is this impacting the person? Is there a lot of emotional overlay that starts to be impacted by these headaches or is it primarily functional with little emotional overlay? That can really help you with treatment planning from a therapy perspective.

H.I.T. -6 and M.I.D.A.S. are really helpful in intervals. Maybe you do that every three months or six months, which is really nice to track all the times for the success or not of your treatment plan. After you have taking your initial history, much like any other condition, red flags are an important thing to determine. Is there anything concerning? Does anything require more advanced workup? This is commonly accepted for red flags, it is called SNOOP 4. It is systemic symptoms, neurologist symptoms, sudden ones that could be a hemorrhage, headaches don't

typically start in the app – in the absence, if your patient is 50 years old or older you want a more aggressive workup than a patient in their 30s or 40s. One of the prior headache histories and has a change in an overall pattern.

If you have had that headache, it has only been one or two a month and now all of a sudden, you are having daily headaches, it is a change in the pattern. More workup is warranted. Postural or positional changes, precipitated by Valsalva and this is more of an exam thing. Related to history, the other history things you want to start figuring out, what medications have they taken in the past and in the present? If there is something in the past, how long did they try it for, did it really cause significant side effects, or did they only take it once or twice and did not like it and stopped? It will help with the preventative. Did they really give it a try on the preventative or did they just stop them really fast and not actually have a trial of prophylactic medications. What they're taking now, obviously, any relevant medical history, family history, genetic predisposition of migraine is a big deal. You want to ask if there is a family history of migraines. Any mental health core morbidities will affect pain in general, but it will affect what treatment you use.

Related to what we see in our Center of Excellence is also related to titration of meds. Not only duration, someone who didn't try it very long or were not adherent to the medication plan because they felt it wasn't working, ultimately we find out it wasn't working but it had not been titrated up to the therapeutic dose. Really paying attention to what, maybe it is not the side effects, or was it because the patient found it to be ineffective or was it ineffective because it had not been titrated up? When you are doing your exams, the things you really want to look at our cranial nerves, including the neurologic exam.

Looking at movement, papilledema, as mentioned and that is something we find when we have taught this class in the past. Folks feel really uncomfortable with this. I think you learn that way back in medical school at some point but a lot of us don't practice that. I know I had to relearn how to do it. We learned in our Nero section in my program. I never did it until I started seeing more headaches. I thought it was a very important skill for me to be good at. That is something where you might pay her up with your friendly neighborhood neurologist or other folks, headache specialists, who can help with that. Doing a myofascial exam and recognizing that can be a component, it can be one of the things that leads to the overflow that leads to headaches and looking at the cervical spine. We would also have the jaw and here. We will talk about that later. In more detail, we talked about that.

Vision can be icy important component here, especially with your folks with posttraumatic headaches, but not exclusive to them. We have seen that. Most of us have convergence insufficiency, however that may not be relevant to the rest of us. For somebody with headaches, maybe that is another contributor to what fills the cup until it flows over, and they end up with a headache. Range of motion, you want to have a look at posture. I would not get too hung up there.

People get really excited about forward head posture. I am not sure that is as big a demon as we make it out to be. We want to encourage people to change position, they have forward head posture, and we don't want them hanging there all day. Looking at therapy Pacific test we go, flexor rotation tests are pretty good, compression and distraction, cervical proprioception, that is more on the therapy realm. I would not expect that to happen in a primary care or physician encounter. Looking at the sounds, deviations, pain and the sides of the tongue for any grinding.

We want to look at tender points in soft tissue. Tender points are different than trigger points. Both are part of the human condition. We have to look at relevance. If you have a trigger point, which has three components and a referral pattern with a different set of tender points, we see a lot of confusion in the naming of those in documentation. You really want to look at the three groups of muscles that have been found to have a really high correlation with headaches, including trigger points. You want to look at all of this for mystical Corey muscles and then your dynamics. That goes all the way up and extends to the cranium. If you want to look at slump and long since slump.

Is this where we have a poll question? This is where it is. Here we go. Here we go. For all of you, there is a poll question for you to click on. Which of these is not a primary headache? You have six options to choose from.

A primary headache disorder means the headache itself is the disorder. It is not because of something else.

We have 23 people. How many do we have? Eight? 11?

[Indiscernible - speaker is muffled] we have one person with posttraumatic headache is the answer. BNC with one and C&D with two. The answer is actually posttraumatic headache. We will talk about that as we go through this. I think there is one more poll question that comes up. Or do we have to in a row? [Indiscernible - speaker is muffled]

Sara, I think there is one more poll question. There it is. Perfect.

The most common type of headache is migraine with aura, migraine without aura, cluster headache or SUNCT? 15 is pretty good for an answer? We will give you a couple more seconds to get one in here. If not, we can end that poll. That is accurate. Attention headache is the most common. We will go through that in the next slides. There you go. Let's move over for a second. We will get going on the slides and talk more about those two questions that came up. Thank you for answering the questions. It makes it more interactive.

The primary headache is where the headache itself is the problem. It can be quite disabling. They are not typically life-threatening. That is really helpful. It is not like the S.N.O.O.P. 4 signs you're looking for. That is what you want to do. Otherwise, primary headaches, we answered that. Migraine is the one, the reason they come up in the order they do, a lot of people think of migraine is the most common headache. It only accounts for about 15% of headaches. In those presenting to their

provider or to a specialty headache center, it is the vast majority of headaches. Tension headaches are much more common. Those are well over two thirds of the headaches out there, but they are not nearly as disabling. Patients can typically manage them with over-the-counter meds, especially if they're not chronic and they don't present to providers quite as much, let alone a specialty. The last group is Trigeminal Autonomic Cephalism, also listed as cluster headaches but encompasses other had a tights we will talk about as we go through. Cluster is one of the Trigeminal Autonomic Cephalism, but that is the category of your three typical primary headaches.

A lot of these multi-color graphs are from the VA pharmacy academic detailing. That website is where you can access these. I'm pretty sure they are public domain. You can go in and type it in and you will find these resources. They have patient handouts and provider handouts. This is just a nice graph to walk through, what are your main primary headaches, what are your main secondary headaches, simple things to help you determine what they are.

We will walk through diagnosis and diagnostic criteria for all of these. It is a nice hand out. Be on the primary headache disorders, typically, when people talk in lectures about the primary headaches, they are really only covering these three, tension type, migraine and cluster. If you go to the ACHD 3, the website for all headaches, everything you can think of. There are other primary headache disorders that are not as commonly listed and seen. This one will pop up on your radar. Really what it is, patients out of the blue on one specific day will develop headaches. From that point on they will have jelly headaches. It is not associated with any trauma but they have a headache and they can tell you on September 2 I started having headaches and I have had a headache every day since the there is no other sinister stuff. You the rest of the workup is negative. It can be a little bit of a migraine or it can be a tension, but it started that day.

Posttraumatic headache is a secondary headache because the headache is due to this traumatic event. There is a list of criteria that go into naming posttraumatic headaches. The way we manage posttraumatic headaches and the way it is referred to is for the primary headache it resembles. People can have mixed headache types. You might say posttraumatic headaches with mixed tension and migraine features. Or, you might say posttraumatic headache with migraine type feature. You are naming it for the type. Cervicogenic is another secondary headache. That is from any sort of lesion or trauma and the neck area. TMD, only referring to the joint and soft tissue. As far as epidemiology related to headaches, we find as far as disabling pain disorders, this one comes up just behind back pain.

This is a breakdown for what you might see in the world, but you will probably only see those that are disabling in your clinic.

This is the next poll that comes up. Based on epidemiology and how migraines present, what would you expect the typical age of the patient to be to present with a migraine in your clinic?

The strong recommendations, when we write strong evidence that means we say you should always use it ahead of in the quality of the evidence for the treatment is better. So, the strongest evidence that came out was for Sumatriptan and some Imitrex and [Indiscernible] and the combination with Naproxen. In this is been mentioned in different societies and conferences where they talk about the combination of an NSAID and with acute. That was a newer one for a lot of our providers that didn't quite realize that they had to helpful effect.

Synergistically. And the ones below listed as suggests. So ibuprofen, Naproxen, aspirin, Tylenol, Triptans over non-opioid analgesics to reduce headache and fry will Triptan and riser Triptan.

And these are similar to the guidelines for American Academy of Neurology and into people with mild symptoms like more of the NSAID category. And the more moderate severe that not respond to this and bump it up into the trip didn't category. And they describe people who have refractory to those above an interesting they put the Triptan NSAID SSTEP three a notice we have more recently strong recommendation at something I consider to deliver earlier like Tylenol [Indiscernible] and maybe Triptan and NSAID at the same time would be reasonable. And the medications we will talk about later, but their suboptimal and typically should be relegated to the category which have contraindications to the medications where you consider the combination medications of opioids or barbiturates.

This is a graph to give you speed potencies so and easy graphic to get a sense of one of the more gentler and less adverse effect lay 10 Triptans which don't work quite as strongly and soon will Triptan the most potent for the oral and these are also in your category [Indiscernible] and know that and then the combo listed here. So, gives you a sense of the graphic of why these are may be less effective in the grand scheme of things and not as potent but less side effects. So Triptans and I apologize it should be agonist and not antagonist. They are agonists and we talked about they have good evidence for use in migraine without aura. Patients have a recurrence you take it again and maybe another second dose within the first 24 hours or two hours later in the first 24 hours, but you should not take three doses a day.

And the next question is, what are the contraindications for Triptans? And this is important to know in that patients with basal or hemiplegic migraine which could be basal construction and patients with intrinsic heart disease or coronary basal spasms should not be giving them Triptan. You shouldn't and then patients who have taken recent inhibitors in the last two weeks are also basal constricting.

So, these three categories if you have patients with these, Triptans are probably a set off and potentially straight up contraindicated and will not give them these two groups. People with hypertension depending how bad it is but if it's not well controlled or not compliance you should consider avoiding Triptans for other options. This is a poll question.

So, DAG is the medication that comes up in management and it's important to at least know when it is the drug of choice so go ahead and pick. I

think we are doing pretty well. So 15 or 16 people. That is great. The answer is status migrant gnosis. So if you have a patient with this, then DHE is used in the ED for severe headaches with people who aren't getting better but they are concerned the severe migraine is moving into that status of migraine category.

Antiemetic's, this is used as well for migraine headaches. They describe a two-part group for these. They have nausea and vomiting and in addition there helpful. Evidence is not phenomenal for the medications but there are patients that say it works for me like the Triptan plus chlorpromazine and if that doesn't work I could take it but you have to be careful with this side effects. So rare uses are reasonable, but reasonable things to do and help with the migraine as well and not just a nausea. If we think of migraine and the sensitization category you see why it makes sense. If we help to dampen some of the response to some of that input or decreasing more of the noise, you can see where that may actually pack down a headache a little bit. We go through some more here.

I apologize. Some more recent medications have come out and we talked about CGRP molecule earlier and calcitonin and Gene related peptides and multiple medications that have come out and Gepants is a group of medications that came out that our small molecule CGRP receptor antagonist. They are oral pills and can be taken as a blood-brain barrier and they are abortive medications. So more widely discussed medications of the category which are larger molecule CGRP monoclonal antibody medications are more preventive.

So the older Gepants have been around a long time in the scheme of things that were looked at a long time ago but had liver toxicity but they have redesign them at CGRP target for drugs which became more popular in the last five or six years. There are new drugs coming out related to that. This slide is busy and I apologize. These are the big Gepants and the top one is the most advertise and I don't know if I've seen the other one advertise a lot but I know I've seen TV ads. And it gives you a sense of the number needed to treat for benefits.

So, 75 is the number to treat, 13.2 for 75 and the oral dissolvable is 10. Still pretty high and you still need [Indiscernible] to get benefit. So, they have their place and certain patients don't tolerate other things then you need to think about these medications. The side effect, they don't have near the liver toxicity issues so low risk of that in the grand scheme of things compared to the other medications.

So, another more recent medication that came out as Lasmitidan and it is a five HT one half serotonin receptor antagonist. Unlike the 1D and 1B binding these don't have that restrictive action that has been seen. Because there is no receptors on blood vessels so the nerve endings in the trigeminal cervical complex, it's expensive and just starting to come onto formularies in the VA and DOD discussing at the formulary level. The medication has a role with the best place as a [Indiscernible] patients of significant heart disease or stroke for reasons they cannot take a Triptan.

So, we talk about later why those medications are suboptimal in the grand scheme of things. I put these on here and another one adding the number needed to treat for common things. These are the ones we use a lot so [Indiscernible] and Imitrex and the number needed to treat are single digits. Rise of these are also relatively low.

The newer medications, you need more [Indiscernible] to get the same effect so not everyone responds, but when you are limited and cannot get these, these are things you should be considering in your arsenal for abortives even if you've tried NSAIDs and can't use them and try Triptans and can't use those, these are things to consider in your arsenal especially if [Indiscernible] is a good option. So, I have given a lot of abortive medications things to give you the four-bucket framework of natural management, screen for medication overuse preventative management and abortive stuff in general. What do you think would be the best management at this time for the patient we discussed?

This is better if we had a bunch of people so you could argue with each other while this is happening. It's a debate on what you do going forward. Leave it up for second, I would probably not try a different Triptans at this point because you tried two different one soul the likelihood you have a slam dunk with the weaker one is lower.

In my case, definitely considering preventative medication and lifestyle modification are things you would do in both of those things. In general now, in my mind, reserving the Gepants are cases where everyone can't do with the medication so [Indiscernible] counter indicated. So, you could do those, but they are fairly costly in the preventative things are more reasonable next steps you would try.

Could you try Triptans with Naproxen if she hasn't done that?

If she hasn't done that, yeah. I give her a trial of that but if you try Triptans and they've never had Naproxen I would definitely do that. That's fine. We can pull that.

Some patients will say I have used NSAIDs but are they carrying them [Indiscernible] and that's important to see if you look at in their history.

So, we brought the slide back and our headache patient was having 12 headaches a month and three a week and it was random into this realm where probably not worried about medication and using it too much. Migraine prevention is a reasonable thing. At the point which you cross and maybe I should change the order but we have gone you should always use natural stuff and if Yorty there you should do that and start considering that so do both of those. And we will talk about prevention more detail.

When you consider preventative, we talked about that and when you cross over two headaches per week requiring abortive treatment and it means you're getting three headaches, three days a week so 12 a month. Daily routines affected, and the abortive medications are ineffective

contraindicated and are overused and patients say they work for me but I have to take 10 or 12 doses of Imitrex a month and I'm taking 20 days of NSAID and starting to get into a window where you want to get a preventive to not be an issue anymore.

The goals for migraine prophylaxis ideally are targeting frequency of severity and reduce frequency as much as you can and hopefully by 50%. And sometimes but not always responsiveness improves from abortive medication so you have patients with Triptans and they might work but not really trying prophylaxis and keeping them on it with a combination helps. Improve overall functioning and quality of life and how are you measuring that? It's important if you do something to improve quality of life and function you should be measuring quality of life and function instead of random asking every six months if it works as well. So, headache diaries are measures we talked about.

And then other things are to avoid side effects. These are the recommendations that came out of the VA DoD for prevention for migraines. So, the strongest recommendation and that doesn't mean it's what you do first, but the best strength of evidence was for angiotensin receptor blockers. We will talk about that in a little bit. But Candace Sartain or tell Ms. Sartain are listed. In the next category down is weaker evidence for those listed below. Also, oral Meg not Gepants but the other CGRP drugs.

There's more discussion on all of the within the seat myself you die, it's good after work reading. And on the 21st of this month there is a presentation that gives a quick synopsis of the CPG and we have highlights of the CPG itself as well as the discussion of algorithms. Within the guideline are recommendations and algorithm sorts out how to walk through your patient evaluation and takes you where you should go for treatment and what you should do to consider as pearls and charts to guide you.

Prevention, patient standpoint the things that have insufficient evidence are gabapentin, nutraceuticals and combination pharmacotherapy in trying different combos outside of, we talked out. And is important to understand this is FDA-approved well-known for migraine headache prevention. The issue when you get to this one is the side effect profile. The prevalence of side effect and its relative benefit compared to the group above it. The side effects profiles for these are not nearly as significant. All of these, the ones that are FDA-approved with stars, the CGRP drugs and Valprolate are FDA approved for episodic migraines. And some of these things in order to get into the CPG have to have more recent studies. Some of these older agents maybe have not had more recent studies and we will see that in some of the nonfarm options as well.

And suggest against begins with Botox which was recommended and suggested against the use for episodic migraine. So episodic was adjusted against it. CGRP antagonists, these are the large molecule CGRP monoclonal antibodies and things that are more on TV about pain free life. I'm not even going to try to say these. They are all listed here. Of subcutaneous injections and can be given monthly or quarterly. They are FDA approved for episodic and chronic migraine.

Efficacy, if you look compared to placebo they help about 1.2 to 2.5 days a month reduction in headaches compared to placebo. And with this, what I describe when I'm teaching our fellows or talking to patients is there are some people who respond to get good relief and others who don't. That's how you end up with around two days better. Not every person gets two days better but there are people who feel like this is a godsend and taken and injected and there headaches are better. But there are people who just don't respond and that's the reality.

That's how we end up with --

Just know that going in. This is another chart pulled up that goes over when it was approved a lot of this was 2018 when things were crazy and they were having a lot of work. So that first one finds a receptor to the molecule to keep it from binding to the receptor and these are the side effect profiles and the major side effect profile is constipation which limits people from tolerating it and the rest are similar which is injection site stuff. There is some cardiovascular disease and the mean reduction depending where you look it's debatable. We talked about the numbers.

For the other prophylactic medications, anti-hypertensive, beta blockers, something that is FDA-approved and used. If your patient has asthma we give it but you wouldn't consider it for that reason. And Valproic acid has a lot of side effects for the patients who can tolerate it and don't have a lot of the other liver function problems, it's a great medication and works well but people have a hard time tolerating it.

So, the pyramid can be effective but robust side effect and can be called Topamax for a reason so additionally a few of a history of kidney stones and carbonic anhydrase inhibitor [Indiscernible]. Also appear patients are very thin, really avoid it because it could cause weight loss. If they are not been it's not the worst thing in the world but shouldn't use it alone in this case because we’re talking about headaches.

Principles of preventative drug treatments start a low dose that the patients are likely to tolerate and increase slowly. I'm not a fan of wrapping up aggressive. This goes for pretty much everything that I do because if you give patients the drug up front and they have side effects, start the metal low dose and get them to tolerate whatever mild side effects they may have and move up slowly like every week or every couple of weeks and they are more likely to tolerate it and get an adequate trial. When you look at the overall medication management, consider things that can result in sedation because a lot of medications and up sedating stuff like Depakote and [Indiscernible] all have oxidation side effect.

And we talked about how do you evaluate efficacy? Some of these measures like the hit six and the M.I.D.A.S. are easier to do in a clinic. If you are able to get these done in the front end of treatment and measure it again at the one month mark, two-month market somewhere down the line and more likely to have the treatment working.

We find patients get attached to medications and may exaggerate what is really helping or they think it might be helping a little bit but it's something that's better than nothing even though there may be other options that are better for them. If we do some of these disability indices, these measures can really help to better color in the context and the picture of what is better in your life. Or maybe their headaches are better but still having a high level of disability so what might, you want to do in the treatment plan and maybe it needs to go to occupational therapy or physical therapy to really address some of the functional disability in their lives.

And I said earlier we will take a break, so you have all the slides and you look at some of the numbers and they are about the same. A little higher for some of these drugs like beta blockers and Topiramate are a little higher than these, but all about the profile and if you're patient is a good candidate and if you tried them and tolerated them you then you should definitely try these because try these first.

I almost gave my question away. If you are fast on the read then you read the answer to the question. This came up when we were asking to diagnose our patient and what the diagnosis was. And part of it was, what is the definition of a chronic migraine? And I think there are a ton of options so which of these do you have to have to have a chronic migraine?

Sara, can you make the box bigger?

There you go. Sweet.

So, our average voting numbers about 15 or 16 people so we can pause. It looks like the vast majority of people picked greater than 15 days and migraines for at least six months. So good, we will pull that aside for the walk-through. At least it was not too quick on jumping to the next slide. This is actually the definition of chronic migraine. There are two parts to it. It's greater than 15 headaches, not migraine headaches, 15 headaches of any type, tension type or migraine over a three-month period for greater than three months. And it doesn't have to be three consecutive months but any three months ever and then on at least eight of those months they have to have a migraine headache, so it has to meet the criteria for migrant.

So, two parts, you have to have eight migraines over the months and then 15 headache days. So, you don't have to have 15 migraines a month. So it's important to understand the definition is people with chronic migraine have more of those headaches more often so to beat the concept into the ground but me think about my great is a help to kind of make sense. Thing into the chronic use of headaches or kinds of happening which is driving a part of the quantification process.

So, risk factors for chronic migraine. We can divide these into a couple of buckets. Viable and modifiable. For non-modifiable these are things that can go into your counseling a patients to let them know what may be at play. And also let them know that part is not their fault. We don't spend time pushing against brick walls you cannot move. However, now we

can look at the modifiable factors and where should we focus our energy, our time and resources in addressing the modifiable risk factors?

These include some of those things that relate to medication overuse headaches, so acute medication overuse, ineffective acute treatment, obesity which we talked about exercise as part of the lifestyle or non-medication based factors. Addressing comorbid mental health diagnoses particularly depression. A lot of caffeine use, sleep apnea or snoring, persistent and pervasive nausea and tobacco use are things we talked about as part of your natural or non-medication strategies for managing headaches.

Preventative options for chronic migraine, we talked and the CGRP drugs are FDA-approved for episodic migraines and chronic migraines. We talked about it episodic migraines but I hear. Additionally, they suggest [Indiscernible] also known as Botox for chronic migraine. And a number of studies for that and FDA-approved for chronic migraine. There are others for that, but we won't go in great detail. But in the preamp studies the majority quality studies done for botulinum toxin for migraine shows cumulative benefits and if you do it preventively you get increasing benefit. So, they respond on the first dose but within two cycles the benefit is unlikely, but some patients don't respond to the first cycle [Indiscernible]. There are issues with eye pain and doesn't feel like they are being pushed out or sucked in?

And the reason we put the slide in is there is data more case reports and not retrospective studies to botulinum toxin B or A. So that study appear, they said ocular and imploding headaches are more likely to respond to ask then more exploding headaches and there are retrospective studies in Botox as well.

That goes to history taking when you ask about the quality. Be looking for some of the keywords related to what might be treatment options.

SO SUGGESTED, so I think we have questions here. This is sort of where we stop migraines, and we go to non-migraine things and cover some of the other primary headaches, so we wanted to pause a second, pull up the Web Cam, and other people, if there's questions, we can have questions at that point.

You can raise your Hand or type in the chat box.

We are back. All right. So we've got some stuff coming in, and that we will talk, and if you want to pull up your cameras, if you have cameras, so it feels like we're not just talking to a screen that would be awesome. First question is up there. Do you use TCA for chronic migraine, and I would say there's not a lot of evidence for that, and I don't typically use them for chronic migraine, so a fairly quick answer.

If you are treating comorbid depression?

Perhaps.

Hey, we've got one video.

We can't have only one person want their video up now, come on.

The next question is about experience related to surface stimulator device, such as supraorbital for migraine prophylaxis. We will address that, so there's a little deeper dive there. The evidence is what we would call insufficient. In the language of a CPG.

I think the protocol that we have developed and we can talk a little bit more about this later on, but address it here, headaches of any major -- remember, separately is a unit. It has been around for a very long time, and we start with, now for example in the VA, we have suggest big batch contract for TIP/PENS units, it cost the VA every unit 20 $25. Whereas, Saif Ali is $550. So, it makes sense that we might start with a lower tech version and use placement options for TENS I find virtually in my practice, separately is not really well-tolerated.

And the alternative options for placement with the TENS unit are better like the and our patients come so we have to take an approach related to the gadgetry, and we'll start with the TENS unit, play with some placements, and if that's not doing it, if we're going to go with one of the more expensive or other stimulator devices, we do 80 eight separate trial in clinic to make sure it tolerated, and make sure the patient is able to utilize that independently or have a caregiver who can be trained to utilize it safely.

If there's other questions?

So, there is, if you like any of that resilient tax, there's a difference between stress and resiliency. For example, if somebody is in theater and in a high stress occupation all the time, there may not be anything that we can do about that in that moment, so that is where you would then think about resiliency and coping sort of treatment options.

Yeah, I think maybe the stressor is there and you can't remove it, but you can't manage it, so it's a gray, in the middle, so if there was a gray category, modifiable--ish, there would be a were there, but you can make an argument either way. I would not disagree with that.

[Laughter] Questions coming in here about the effective difference in Botox versus Xeomin?

You know, the evidence for Xeomin isn't as good at all, but if you have a patient who is not responded to botulinum toxin-A, it's not unreasonable to consider Xeomin at that time. It's just a reasonable consideration that if you're limited by other preventives, if botulinum toxin A was not effective, the people that have used botulinum toxin have been affected and has a weighted waning effects. It was like less than 10 people over the last decade, so we are not talking a huge amount but a reasonable effect. Yes, totally agree.

Yup.

Everybody says that. You are only gluing psychological stress took stressors are of multiple categories. We use a lot of the Navy's physical self-regulation program. Is probably similar of U of M. Yup, I would agree. I'm glad to see those are being employed and used. It looks like we have one more person typing in.

That we will move on.

If there's nothing after that then we will move along.

Yeah, yeah.

As an actor, we still cover some botulinum toxin-A, injection, and patient seem to respond fairly well with Xeomin as a substitute. That would be consistent with what our provider and that we don't use it regularly. We only use it in limited scenarios where people had, like I said, our anecdote will be patients that had a waning effect and wanted to try something, and the shift was to Xeomin.

So, we'll move on now and go to kind of the second part of the primary headaches, which is a little shorter before we have a break. Turn up our video. Yup, yup. All right.

So now we're going to cover tension type headache. The differences being tension type headache is more whole cranial or bilateral, more pressing, tightening tickets not typically pulsating or viselike, not worsened by routine, not nearly as severe. Again, this is that category were 70% of people, of all headaches are tension type headaches, and less likely to present to their provider. More likely to take over the counter measures with medicines. You're not going to have vomiting or nausea or photophobia or photophobia. And then no autonomic features.

Talked about that in general, so sort of ends up being and that there is a referral pattern for neck pain pill people feel a tightness in the neck.

So this gets messier. I was telling you it was murky and messy for migraine. Remains murky and messy for tension type headache. There's been multiple theories whether referral from cervical structures, pure cranial or cervical muscle spasm. That's really causing it. Or is it a pain modulation sort of issue similar to migraine? And there's a lot of growing literature that sort of discusses, and it's not even that no.

It's been out for a decade, discussing a sort of continuum headaches, and is being on the low end of the severity of the continuum. All of them having similar types of physiology and just the patient's responsive severity of that being lower. And I would say the more I've done headache management, I've agreed with that concept as a similar underlying mechanism but maybe less severe aspects of it.

Actually, there's nothing super exciting here. It’s episodic versus chronic, episodic subdivided. This is where for chronic headaches, more than 15 type tension type headaches, the definition of chronic migraine headaches, so there is 10 headaches there. Fulfilling all this criteria,

I'm not going to read that tickets basically a built-up version of the short chart I read earlier. Chronic being 15 days on average for three months or over 180 days in a year.

So, the next poll question here is if tension type headaches a 70% of what we see in theory, semi-present in general, which limits are indicated? What is the right things to do for tension type headache?

[Poll being conducted]

All right, we're at 12. Any other answers? Good, so we end the poll here took it looks like three people named ibuprofen as an indicated treatment, and $0.10 all of the above comes ibuprofen, physical therapy, amitriptyline, and acetaminophen, and the answer really is all of them, so we will go through that here. Let me jump back poll over. Sara is awesome, so here we go. This is actually, as a clinical practice guideline as well, so if you have a tension type headache, they are all suggest level which means not the strongest level but pretty solid evidence. Ibuprofen for acute treatment, Tylenol for acute treatment, and amitriptyline, anti-prevention. Relisten, they list amitriptyline, but people who can use, its better tolerated.

Amitriptyline is more potent but has a larger side effect profile and is well less well-tolerated. Definitely started at a low dose and go slow with your titration. And botulinum toxin was suggested for prevention of headaches. You start to see a trend where botulinum toxin has good evidence for chronic migraine not so good. Really no evidence in its use for either tension type headache or episodic migraine. It's not so bad that people have severe side effects. It just does not really work at all, and it's not even a mix of it. It just doesn't work. That's why it's suggested.

So I talked about this, maybe had my slides out of order a little bit. This is that type of idea of a headache continuum, where your milder stuff, your tension type headaches, so this is still the bulk of the headaches out there, but it's mild, less severe. Your mixed headaches were people have this morphed, in between, sometimes to migraine, working them up. And patients that start developing severe migraines with her it's severe migraines are incredibly disabling or cluster headaches are severe migraines with autonomic features, they are on the far right of this continuum, and there's a lot of overlap. They don't look so dissimilar from each other at times.

Patients have a hard time with history because it will get kind of in between variations of this. All right, so next poll question. We talked about the tri-general autonomic. Yes. Let me make it a little bit bigger. There we go. Which of these are trigeminal autonomic *Cehalalgias*? Cluster, hemic crania, SUNCT, NB, or all of the above?

Are there any other answers out there?

That is pretty good. We'll take that. So ending in full there. The bulk of people thinking, believing all of them. It is all of them. There is four main categories. This cluster headache, hemic crania. Is it two of

them? And SUNCT. I cannot say it. It is SUNCT. There you go. Let's push that away. There you go. The list of the answer there. So I'm going to go through this fairly quick as you get the slides later, you can go ahead and read that. So the Trigeminial autonomic Cehalalgias, also known as TACs, have very similar symptoms, so clinical history is pretty unremarkable. A typical neuro-exam unless they are having a headache in front of you. The headaches of various duration and frequency. We will go to that. They present unilaterally, and they're going to have and the distribution of that.

So they are going to have prominent autonomic. Nasal stuffiness, conjunctival injection, and these are things you don't see to the same extent with other headaches may be severe migraines, you will have mild versions of these, but these are not the same. These are incredibly prominent when you see them, so there are things you look for when you take their history. And you don't see this all frequently. So there's roughly 70% of all headaches out there that are tension type headaches, 15% may be higher, 60, 70% are migraines, then the remainder include a lot of different headaches to include Trigeminial autonomic Cehalalgia, so 85%, but I feel like that's an over calculation. You don't see all that many of these migraines. I will go back if I need to.

Fitting into that same single chart to sort of temp separate tension type headache and migraine cluster. Look at that. So cluster headaches, so there are some important things that sort of help differentiate. Cluster headaches are more male predominant, so if you have a male patient coming in with what you think is a Trigeminial autonomic Cehalalgia, they have eye droop, tearing, they are male, you're going to think more likely cluster or SUNCT. We will talk about that. These are hard to treat. Alcohol can provoke the attack. Patients are really, really restless. We talked about in our case, in the migraine case, there wasn't any to lie down, get in a dark room. Especially cluster and SUNCT, patients are restless till they cannot get comfortable. They feel like an ice pick is being shoved in their eye, and they still cannot find a comfortable position.

If you have those sort of symptoms, keep those in the back of your mind. Touch you when you come to the treatment of cluster headaches, they actually have some things listed. M Galilee was a suggestion. Was a weak treatment for episodic cluster? There's not a lot out there that is great. We'll talk about it in the next slide, some options that had been classically used, but nothing works wonderfully as far as prevention and headaches.

Oxygen therapy is pretty classically known when you're looking at guidelines listed as a treatment of these headaches as well as a diagnostic thing for cluster headaches, so if you have an attack. There headache goes away, it's more than likely a cluster headache, but the CPG had insufficient evidence pick from the evidence we have, it's only about a decade old, so a decade we have, a decade of evidence we had did not have as much option, so we cannot make a strong recommendation. There was not really any good recommendation for cluster, just a prevention option.

The other thing that was suggested for acute treatment, so any particular medication, right Matt? So when you think about non-medication options, noninvasive Vegas nerve stimulation otherwise known as gamma core has evidence of treatment.

It's important to understand the context in which this was given this recommendation, so when we grade the recommendations, it's not only the evidence, but then we look at, you know, this tool. We look at a lot of different factors, how accessible it is to a patient, what is the risk, and, you know? Given that there is a dearth of effective treatments or treatment options at all for this kind of headache, which carries a higher risk of suicide pick a lot of other problems surrounding it. This particular treatment is low risk and may have some efficacy. It's reasonable to try it. Especially in the context that there are no, or not as many things that work at all. So, oxygen works but is obviously complex to give to patients. If you look at him Galilee, it's not a cure for everybody. There's a multitude of options to be used for treatment. This gives you an option in your toolbox for cluster headaches. So, I put this on there. This is a slide we give to our fellows as well. Question that would be used is preventative's will still come up if you are taking any kin. Botulinum toxin he will not show up on a test right now because it is so new, but in my practice, but if I do, I have a few more to try Emgality or Galcanezumab as a preventative or even the noninvasive stem.

As far as steroids, you can consider it. The hard thing with steroids is the clusters, if they know when they're going to have clusters, find. Clusters aren't always so perfectly known. They are a reasonable consideration. It is not a lot of great evidence for them. Similarly, simple nerve blocks with steroids and people having severe clusters are things listed as options. There's not a lot of great data behind it. It's not an unreasonable thing to do because clusters don't happen with the same repetitive like the other ones we're going to cover, so it's not an unreasonable thing, that question.

The hemicranias is female predominant. This one is an important one. Put a question on here, but it's important one in our poll question. Treatment and diagnostics, so if you have a patient that is a female patient who has unilateral pain, basically, it is gone, then potentially Hemicrania. It's also known as indomethacin headache. They are having multiple headaches per day, and they last for, you know, minutes, seconds to minutes, but they will have multiple headaches that spike up and down.

And then SUNCT we talked about is even rarer than cluster, rarer than the hemicranias. It's also male predominant, and they will have tons of headaches per hour. Just a quick second, stabbing headache, goes away, jabbing headache, goes away. Really, nothing works well. If you look up evidence-based treatment for SUNCT, it doesn't respond well to anything. You can consider some of these other drugs like oxcarbazepine or lamotrigine.

In my view, it would be reasonable to consider anything that works for cluster for SUNCT because they have the same, more than likely the same underlying mechanism. They are just variations on it, but there's no great evidence-based treatment for SUNCT. I have not seen anything on

melatonin. The question was thought I've seen a couple evidence on a couple of poster presentations on melatonin, and I have not seen anything like that for headaches.

I think when we did our literature poll for headache in general, we looked at the supplements, and that one did not come up.

I have not seen poster presentations on it. Not discounting. I've just not seen them.

The last couple of slides here on TACs, there's a couple different ways for your brain to separate them out. The number of attacks and attack duration can help you separate them out, and there's overlap. Cluster headaches tend to last longer between and SUNCT. Another way to look at it is male/female predominance, cluster and SUNCT being male W, hemicranias being female predominant, and Emgality would go underneath here as a more recent treatment.

So essentially, the non-pharmacologic recommendations for headaches included a week for aerobic size or strength training, and essentially pick your pleasure with that one, then mindfulness-based their piece. What we ran to especially would mindfulness-based therapies was some problems with how they measured their data was not what we were originally trying to capture so they can compare it across kinds of treatments, and then a lot of the data was quite old for some of these, but mindfulness based in general, despite the, bubbled up to at least a suggest or week four, and this insufficient evidence again, some of this was plagued by how these studies measured. They are comparators. It doesn't mean that these are not things that are reasonable to employ pick it just means the evidence we were able to find was insufficient for us to generate a recommendation. So a lot of options in there.

This goes back to what we were talking about with some of the gadgetry. Again, there was insufficient evidence for transcranial magnetic stim. The one that is out there on the market typically is Enerua I would be careful with any of these that say they solve things in the kitchen sink, so that is just my little editorial there. External trigeminal nerve stimulation, so that is some of your other Eastham devices, and there's the supraorbital stem.

Okay, we have another option for discussion here.

This is right before we take our break here, kind of our midway point. So are there any questions? We will take a 15-minute break before we go into the secondary headache part of the discussion and other rehab treatments and interventional stuff. Questions?

And again, feel free to put your video on if you want to hang out virtually with us.

I can understand if you are at home. It was hard for us to know exactly how people or were viewers would be viewing these. I've been attending some discussions from home and I'm coming in. This is all new learning for us.

Yeah.

What's the question?

For speedup a lateen block?

We'll get to that. We have that covered towards the end. The intervention slide.

How much interaction do you have with the oral facial pain community?

So, we have one of our providers on staff that is partly, his specialty not by background, he's actually a neurologist by background, but he is kind of a head and facial pain guy. We will also interact with our dental. Some in the VA system. It's a little tricky with dental services. There is some criteria for which you have to meet to engage in their services, but we in PT do a lot of job related stuff. Jaw and cervical complex things, so that is something that we will do lots of that.

The next question is related to, are we having the success virtual health appointments for headaches? I'm going to let you talk about how we design that. A little background is that we ended up doing an initiative here during the shutdown for COVID. We did not continue offering Botox treatments. We came up with an alternative where we offered everyone, essentially, a review of their whole headache care and a virtual meeting with physicians. I will let him talk about that, but then we were also able to offer behavioral health, PT, and OT virtually, including the provision of some of these devices.

And for the question, are you having the success? Is there anybody for hands-on assessment and can you have the patient? I would say for the first question, are you having good success? I would say yes. Interestingly, we were probably slow to get on the telehealth bandwagon for a multitude of reasons. Because of the COVID shutdown and the huge drop, we sort of ramped that up rapidly. The first thing we did virtually and it was a relatively smashing success because of all the things that we do in pain, the one that needs the most sort of history focus to make a decision on what to do is headache. So your headache history, you have a nice detail headache history that you run through.

As I said, with the headache history that we developed that I sort of talked with Becky and her other official pain guy is we basically took the stuff out of the slides in order and had them as bullets and have drop downs and everything so you can go through and ask all the questions and have a good snapshot of what is going on. The need for hands-on assessments for patients who we don't think have really TMD a whole lot by history and do not have any significant neurologic deficits is low. And so a hands-on assessment wasn't overly necessary. There are some scenarios where people will sort of describe some findings and once we were able to bring people in, we brought them in to assess and make a decision before we start doing treatment.

The American Headache Society actually had a webinar. I think it was a Facebook webinar. I have to remember and see. I will see if I can figure

out the link so we can type it in. I think it was a Facebook webinar on how to do a physical exam virtually. A neurologic exam virtually. It was fantastic. Basically, you took that and built it into a template that we can do. Generally, from my standpoint you can get on video a lot of cranial nerves. If patients get close enough to the screen and camera, they can cover their eye.

But in the absence of these things, the need for sort of that aggressive markup drops down, so you can probably make a decision to that point. It's been around and really good. The one I am most comfortable doing virtually by far. I think this is a little messier because you don't get any sort of feedback. You can also do cervical range of motion quite easily and mouth opening and have them sort of put their hands on their jaw and feel any clicking or popping. Most of that stuff is done fairly easy. It is good. I would definitely advocate that. Something we are going to continue. It's something the things as we reopened, we have kept headaches as one of the things we want to do virtually as much as we can.

The next question is about labor pressure. I assume you mean low level, which has some recommendations for, and correct me if I'm wrong on that. Has some evidence, I have seen it as just typing it in and looking to see if it is any more recent than the one I had previously seen. It made it into some guidelines for low back pain, but my last understanding of that is that they were starting to walk that back. And then as far as bio stem, I haven't read the most recent paper on it.

My general word on gadgets is that we should be very careful and thoughtful with how we do them. I'm not anti- gadgets, but I want to make sure that they are always issued in the context of a broader treatment plan. I think what I have seen is them being used like a medication. Take two and call me in the morning or take two and we will use this and check in and six months.

That's the only thing that's offered. So, I don't think that's the best use or the most efficacious use of them. I think careful education assessment planning and really explained to the patient how this fits in with an overall self-management strategy is probably the best thing to do. But overall, as a bucket of things, they don't have great evidence. And if they did, we would be using them a lot. I know that gets sensitive for some folks because I think some people are very attached to their gadget, but when we take a step back and really look at them, I think the evidence is not there. I'm not saying don't use them. Just saying the really thoughtful about how you do.

Any other questions before we roll into a break here? Okay. So, we are going to be taking a 15-minute break. Everybody stretch and move and not be staring at us. There will be a timer that pops up on the screen. That will be a countdown. Once it counts down, Sara will do a little kind of intro back and then we will get back into the rest of our talk.

All right, everybody, welcome back. Just a reminder that to make sure that you download the sheet. I'm going to kind of move this around so everyone can see where it is located. In the first part of the

presentation was uploaded, so you can now take that -- download that slide deck for yourself. I will turn the meeting back over to you.

Thank you. Hopefully, everyone got a little stretch break in. I put this slide, mostly just to break point, and I also think his comedy. He is from the daily show. He's phenomenal. As an Indian kid growing up, my parents definitely said something like this. I just find it absolutely hilarious. In case you didn't know from his name, which he would never know it from his name, he is Indian. Plus, I'm jealous of his hair. You could maybe see a little. Degenerative hair disease.

All right. So, I am going to kind of do leading into case two, and Becky is going to talk more in the second half since you are probably tired of hearing my voice. A 32-year-old veteran fell off a ladder in 2004 working as a firefighter and suffered it upper limb brachial plexus injury. Fell again in 2005 and hit her head, diagnosed with a mild TBI, but had headaches immediately thereafter. Prior to that, no significant headache injury. Now is having debilitating headaches.

The character of these headaches was a dull ache on the right-side of the skull that we will talk a little bit about location. First, she also had sharp shooting pain that was at the base of the right occiput and posterior scalp that wrapped to the right I, both the superior orbital and the retro orbital, and that was kind of the imploding versus exploding. The onset was after her fall, but also how the headaches come on our sometimes she will wake up in the middle of the night just having one. She could also sometimes have not so much of a visual aura but this sense that she was going to have a migraine. Again, right-sided only. Never on the left, never hold cranial, but this very consistent pattern to the back of the head, radiating up through to the eye.

She has, essentially, a constant dull pain in her head, on the back of her head on the right-side. But then would have these exacerbations that she would say would go into full-blown migraine episodes or headache episodes. She called the migraines when she was coming and telling us. Four to six times per week. These would last, depending anywhere from hours to days. She would identify, exacerbating, so things that worsened the headache. Voters, elevated motion, a lot of visual stimuli. These would also be triggers that would progress her toward having a headache episode. The only thing that she had really found to be relieving was peppermint oil in a warm bath.

So, she had been seen and managed by neurology before coming to us, so if this were your patient. Her prior medications included. On the headache disability inventory, she indicated a pretty high disability. 74 out of 100. When we look at the domain, more functional than some of that emotional piece. Neck disability Index was also pretty high. She also had associated neck pain, and then the fear avoidance beliefs questionnaire is something that comes out of the pain literature, but I think it is really relevant in folks with, essentially, persistent daily headache or chronic headache conditions. She indicated pretty low avoidance as far as physical activity. She would kind of works office person in a medical facility. 21 is relatively high for how she perceives her work tasks

relative to her pain and her headache problem. So, we have a couple of videos here. We are going to talk about posttraumatic headache.

Don't do us like that. Clearly, just took it over.

This is, you know, fairly sizable a couple years ago. The other one, the other video is more related to our military population directly and IED blast exposures, things of that nature. So, there's a few things I want you to watch for here as this happens.

That initial shock way. Wait for it. There. So, this video is really interesting, because if you can see the initial pressure wave or shock wave coming, and then you can also see the back end of it.

We will play it again here, get kind of two thoughts. You see that first wave coming through the sand and dirt.

Think about your fluid-filled tissues when it comes to the end of the pressure-wave in a vacuum. So, some of the things that happen that we can't necessarily measure or see per se. Posttraumatic headaches are a huge issue related to our population. Essentially almost all of the military personnel who sustained a mild TBI have some manner of posttraumatic headache. Posttraumatic headache and disturbance are the two highest incidence of concussion or mild TBI. There is decent prevalence for U.S. soldiers compared to the general U.S. population, almost 5 times higher. When we think of the population that we serve, we are getting a higher dose of this then we would see in the community.

And then patients who have essentially a continuous headache of some nature all the time are really high risk or high rate of being medically discharged or medical retirement from the military service. That is a really big problem for a lot of folks. Think about people who go in intending to have a career or have this be a career ending phenomenon for them and what that means for themselves, their social functioning and this sense of self-efficacy. More information about posttraumatic headaches. Persistent posttraumatic headaches we see more of that persistent continuous pain in addition to the exacerbations. We find that my dream is the most common phenotype for the people coming in.

Again, continuous headache and negative occupational outcomes and you can see why that might be. Where we start to draw more of a parallel between this population and the prime population is high characteristics are important when we try to determine someone's ability to keep working or active duty status rather than just the diagnosis. And there is a high prevalence of PTSD in folks with posttraumatic headache.

This again is another graphic from the academic detailing folks who did a nice job with this and talked about how people can have primary migraine phenotypes and they can have a mix of migraine and tension type features or they can vacillate between one episode being tension like an another episode being migraine like. So that makes treatment a little tricky and you have to know both of these headaches and the treatment options to be able to pick and choose from the menu.

So Cervicogenic headache is a headache emanating from any of the next structures. This is the criteria by the ICH D3. I never understood why laboratories in the clinical and imaging evidence of a disorder or lesion on the neck and it's in an area known to cause headache. So not just lower neck pain that we will talk about and anything related to that. The headache developed in relation to the onset of neck pain. It is resolved if you can resolve some of the neck pain.

So, if you treat the neck pain symptoms the headache gets better. But it is motion produced or when you do things with the neck which worsens it with range of motion with provocative maneuvers. And you can do a diagnostic blockade and gnome up the structures on the nerves supply to the structures, the headache will go away which is how they define server genic headache. And it can be any and all of these. It can be myofascial structures, joints, discs and nerves.

The other ones, putting your hands on the patients and putting it on their neck can help identify but they have myofascial structures and looking to see if there is joint related pain areas or range of motion bringing on some of that headache pain. A lot of that neck structures causing headache related to [Indiscernible] will recover that down there. So, we mentioned the trigeminal cervical complex and this is from an article in Lancet Neurology 2009 that looked at figuring out why does Cervicogenic headache exist and why do things in the upper deck cause headache?

This is one graphic of the whys and how's. They injected saline into volunteers in here in these lower neck structures it irritates the local structures but doesn't go further out. It stops at the base of the skull. Once they start injecting in the higher structures, CT three in her spine and above, you now see as soon as you jump one level above that three or four you have referred pain which is the higher you go the more referred pain escort. So, 01 area where they inject at the base of the ligament, in that region they are causing 85% of patients having pain, 70% [Indiscernible] in the temporal region.

It's important to recognize irritating structures back here can cause pain. But no nerve goes from here to there. The greater occipital nerve comes up and stop somewhere about where my arrow is just in front of the 40 sign. So, this nucleus inputs to it are the rationale and the reason why it occurs. So irritation of structures here, C1, C2 and C3, they enter into the dorsal and so close to the nucleus that it results in essence irritation of the system and up regularization and centralization of the system causing pain in the area. They are not directly connected but so near each other they irritate each other and thus irritating the structure you’re causing referred pain over here.

So, a concept to understand it doesn't mean everyone with neck pain has headaches in front of the eye or that everybody with migraine headaches here are caused by their neck. There are patients with my Grade 2 don't have neck soreness. You can address it and has no impact on the eye pain. Its’ own anatomical basis of why this occurs.

There is a nice test which is easy and quick to do in a clinic which is flexion rotation test. You have the patient in supine and then you put them into maximal cervical flexion and make sure you're getting a nice chin talk. Then you add in rotation while maintaining the flexion and the biggest incidents I see one practitioners do the test is when they rotate they lose cervical flexion. Ultimately a 15-degree different side-to-side is a positive test. I don't own one of those nifty headgear things, so you use a little bit of eyeballing, but a pretty good sensitivity and specificity that if that is positive and consistent with the side of the headache, that you probably have a Cervicogenic headache on your hands. A nice one to do.

Myofascial pain, we mentioned trigger points earlier and implicated in a number of headache types as either contributors and sometimes could be causal. We have some pictures of trigger points and they are general referral patterns. Places to look, be advised that when you are squeezing someone's sterna clean oh mastoid if you don't have a lot of training in that the muscle can have impact to make people feel dizzy so when you cleave it they can get nauseous when you do it.

But a fun fact is it's one of the only muscles where the trigger points for a referral pattern crosses midline see you can have referral pattern from lateral SCM outpatient intern points. And post serially you can have trigger points as well.

And now we get into temporomandibular joint and much like Cervicogenic headache it's due to a problem in the TMJ or muscles in associated structures. It wasn't a great picture of the job. Trigger points, I have seen a few folks who have had teeth removal or sinus surgeries and whether those were part of the problem or not, I don't know, but they are gone now what people still have the headache or pain. You can see sometimes these soft tissue structures might be implicated.

In the ear, you want to consider the vascular which could be something. So visual and vestibular deficits are common with posttraumatic headache. There is a central injury or deficit and you can also have peripheral injury or deficit but mostly with posttraumatic headache we think central deficits. And there is a lot of linkage into essentially the central processing of visual and vestibular input and a parallel process related to the central processing of pain.

So, we start to think about post-concussive syndrome as a sensitization syndrome as well. There is some more emerging evidence related to the phenomenon of vestibular migraine. The central processing problem and that headaches associated with visual stimuli overall is again hyper-responsiveness of central vision mechanisms found in folks with migraines and we also see the convergence or accommodative insufficiency can be part of the triggering factors for these folks. When we did a physical exam on her, she had what you would expect like diffuse and strange findings we all love with injuries. So cranial nerves were clear, and gait was normal and had some static balance deficits especially when we took delayed vision. It fits with some of her descriptions of some of the vestibular dysfunction.

She also had some problems with smooth pursuits which really bothered her and felt like she would get a headache if she kept doing those. Same with convergence. The TMJ was clear and no problems there. She had limited cervical range of motion to the right and in extension. Her headaches were all right-sided at the base of the skull wrapping around the eye and had deficits in the deep next flexor endurance so less than 10 seconds when she should be able to do that for 30 seconds or more. She had weakness in the right shoulder girdle and problems related to injuries. She was very allogenic over the right posterior and superior had to talk about dreading washing that part in the shower and how she would do the rest of herself first and then wash her hair and do everything last so she could hurry through that. She had some interesting hyperalgesia in her face also.

She said she would feel almost like her zygomatic arch, if she pressed on it was mush. So, it's an interesting visual. She had lots of tenderness in that right upper quarter and some of the things were weird things like things down into the arm and really intense pain over the right occipital nerve that referred and positive neural dynamics and while they were not well tolerated we could not continue with the exam because it would all light up the right side. But then the long sit slumped test was provocative for headache pain. So, when we did that it was provocative as well. So, a history of mild TBI and right brachial plexus topic and visual vestibular complaints and also had some mild IBS. Nutrition was be good. This is not that. When we talk about nutrition, and some sort of awareness of triggers. Consider referral on if you think it's an issue. Also stress management. Exercise, so obesity and we have an increased prevalence of high frequency migrates with folks who are obese. And looking at psychosocial factors. What is their support network and what are they doing and what is their purpose during the day?

Housework, do they like it or hate it? So with one daughter, she works full-time in a fast-paced environment. She does have port where it is at the source of stress and contributor to her problem. She has good family support, but no real specific stress management or coping strategies and lives quite a distance from the VA, not by far our fire this folks because we have a highly rural population in the area, but getting to the VA is an issue for her. So we have a poll question. Given this, what do you think is your working diagnosis? And as we get close to 14 or 15, we put pressure on the others. If we get back to 12, it's all good. Beckons. All right. There we go.

You can and the poll. So, the votes were strongest first Cervicogenic headache followed by dramatic headache and temporomandibular disorder. Was a combo and unfortunately, we purposely left it where you couldn't pick two. Her TMJ evaluation was pretty unremarkable. Given the fact she had fallen and hit her head and that was the onset of headaches, posttraumatic headache diagnosis is reasonable and she has done of the tension features and migraine phenotype makes no sense but has a servant genic headache and neuralgia on top of it so instead of having one or the other less Cervicogenic but melds into the two of those in the other aspect of the headache.

Much of the talk yesterday, we tell trainees talk about what patients can have more than one thing and we have to consider a multitude. Going with this, we work in a lot of different headache work groups about the CPG are some of the headache center of excellence stuff we do in the VA. Some of the discussions we have heard comments from providers say I've never actually seen anyone with the Cervicogenic headache. So, migraine is a very common diagnosis that a lot of people go to because it's comfortable. As we talked about in posttraumatic headache, you name it what it looks like the most.

Is a mostly migraine or tension or mixed? In posttraumatic headache, there is a large Cervicogenic component in a lot of patients get whiplash and if you fell and hit your head there's often a whiplash component to it that might be mild, but don't keep moving and manage that you could get a lot of muscle [Indiscernible] or lack of range of motion where if there is in any joint problems or disk problems, the structures remain uncomfortable and can reproduce. So, something to keep in mind that when you have a posttraumatic headache patient, look for TMD and Cervicogenic headache.

We were going to say if anyone has anything they thought, what would be your management strategy for this? You could read your hand and speak or type. We will pause for some comments. As he is typing, these are things we did. We had more migraine features to posttraumatic headache, so we try things never tried before. We considered to discuss with her the occipital nerve blocks as the first line intervention because of that significance of reproduction with palpation of range of motion the occipital region popped out and if you push on those increased a lot of the eye pain so we started with occipital nerve block early and treatment not as a cure but as to get her system calmed down so she could do therapies. Got her plugged in with physical therapy early on, one of the first referrals and as things were going we also plucked her in for biofeedback and relaxation which are things that are not specific so I listed binding a targeted diagnoses we considered and those were things we did.

And we did hook into our team who helped create a treatment plan for vision therapy and helped some of the diagnoses as what was going on with her vision stuff. Again, we have a comment that says reduce cervical input to help decrease the rest of the headache experience and that's exactly what we were thinking about when we were talking about interventions we elected both the procedures and NPT we did some manual stuff. We did dry needling both of which were helpful anecdotally for this patient.

Your decision of what intervention what to do with her depends on the person. In her case she was so hot in her sensitivity was really high that even laying hands in the area was provocative so the comments as if we could make some of it to allow her to tolerate manual work, it's a win. She was game for that. She has been dealing with it for quite a while but hasn't had any treatments to that point, so it was reasonable to make a little bit of a kitchen table approach but more of a targeted one.

This particular patient, pure mate was really helpful and didn't increase her headache frequency but decrease to some of the intensity and the interventional procedures made it possible for me to be able to move from exposure and proprioceptor chin to drive billing which after that she was able to wear her hair in a ponytail for the first time in 10 years. In the summer the hot weather with a female with longer hair that's really great. It's those little bits. She even called me to tell me she had worn her hair in a ponytail and had wanted in a ponytail all day.

Before we move on to the next case, we could do the video thing. We talked about posttraumatic headache and Cervicogenic headache and TMD and questions about them? We will start the Webcam and feel free to start your Webcam. Hopefully you are summer by yourself we don't have to wear a mask. Given an opportunity we are trying to pause at intervals to allow for questions as much as we can.

This is a different platform for us.

We will give a couple of seconds for anyone to type or raise their hand and -- Then we will Staring at us in asks for. Camera right. Doing it. Turn the camera. Good question. This is the question that came up. Where did we do the occipital nerve to the spine and the answer in a moment is close to the cervical spine and I will have some slides about it when we get to the intervention stuff in more detail. But it's the latter and not the former.

In my career, early, amount of training before I ever did pain, I would say almost all of my occipital nerve documents were a the occipital ridge and overtime we were dissatisfied with the outcome and I dug deeper and one of the pain conferences at a presentation on ejecting lower at the level of C2 through some muscle layers close to the cervical spine and find that technique to be more efficacious, at least in my practice. There are studies that say it is more helpful in the short term and may be equivocal in long-term. But I find it to be helpful and we will talk about that a little bit here in more detail. So, our next case is Mr. RR who is a 50-year-old male Marine veteran and med boarded for headaches in 2015. He is referred to the PCP for headaches for 7 years. That should be 2017 and I can't do math.

So vague history of blast exposure but headache started two months after he returned from deployment so no direct exposure and initially headaches were one to 2 days a week. When you do your C.O.L.D. E.R. history the patient says the headaches are sharp, achy and throbbing. Present when they wake up and worsened throughout the day but there all the time. They are bi-frontal and they last hours and days and waxing and waning. Activity and work exacerbates the headaches. Medications, they relieve a little bit but only for a few ours and then they come back and never really go fully away long-term. So, Mr. RR this is a Marine veteran and 50 years old now.

Not actually our patient. If he was my patient, I would do a better. So, this patient fictional, obviously, is taking Percocet five milligram, 325, 1 to 2 tablets per day. And ibuprofen as needed but takes about 800 to 1200 milligrams per day. Previously had multiple trials of Triptans

and for two years before med boarded was taking Fioricet for about two years on a daily basis. And history of anxiety and PTSD. Smokes and does smoke now and a little alcohol and no illicit substances. Works in I.T. in last six months has missed three weeks of work and activity was he just chuckles and little to no exercise.

And so we'll talk about medication overuse headache but before we get there, we have a poll question. For you out there in the audience, how many days of acute medication use per month do you consider to be a risk for medication overuse headache? At what point are you saying that's also much and that's the place you make a decision.

Franz

Typical 16 answers. Super quick. We are going up. Wow, 17. We are making the rules. That is great. So, the 15s have a as a winning boat. 10 people voting 15, three voting for 10, one voting for 20. So, keep that in mind. The majority pick 15 as the cut point. We will move that over and walk through here. The answer is, at what point? And there are two points to this. When you consider MOH, headaches occurring greater than 15 days per month. Member they had the five, 10, 15 headache day? That half the month, they start to think about medication overuse headache.

If the overuse medication for three months, overuse needs for acute or systematic treatment, you want to consider it. And if nothing else, really if it fits the diagnosis. This is the answer to the question. This is for the same academic detailing. It is not perfect, but it is a pretty good reference. The answer was a little bit of all of them, because it depends on what drug we are told about. If you're talking about and said, 15 days, tripped and is greater than 10 and when you talk about opioids and Butalbital, it's the Aspen combo, those are greater than five days of use.

So, it really depends on what dedication you are talking about that you would be concerned for medication overuse. Some of it has to do with the significance of the withdrawal, but the mechanism of the medication, itself and the Butalbital and opioid should be reserved for those really specific cases where the trip them and turn in our country indicated. There are no meds that are probably less likely to be concerned as concerning for medication overuse. And if they are, they will have probably and a day and five-day window for more of the 10 day or 15-day window, plus the Jeep and medication. So keep those things in mind. But 10 days for tripped and the default is 90s a month. So, it specifically keeps you under that 10 point. And then NSAID.

Lot of patient utterly surprised to hear the education related to NSAID. Think about patients with multiple kind of aches and pains. And they might be taking 600 ibuprofen for the knee or Naproxen for the back, and so that is an important part when you are taking your history into, ask them what they are taking for other aches and pains.

So be kind of came back to it. It has a recommendation of about suggesting providers assess for the following risk factors for medication overuse. So obviously frequent use of those medications that we talked

about what that means. As a goal and activity, history of whiplash come history of anxiety or depression, think of it musculoskeletal, G.I. complaints. Sick leave two weeks more than last year and actively using tobacco or smoking.

Those are all risk factors for medication overuse. But a lot of those and our patient history. So just give you a little background there or reminder of stuff about that, so here is taking Percocet Cummings taking five days a week. So that's 20 days a month. I've the probe and daily that's more than 15 days. Used to do Fioricet for 2 years daily, that's overuse. Some of those risk factors, history of anxiety and PTSD. Smoking, his missing work he doesn't exercise.

Those are all risk factors. None of these things are shocking come history things for a headache patient, I feel like I can get two thirds of my headache patient and most of these would apply. Depending on whether or not there's alcohol or not, but otherwise that's the common history. So listing it here, those are the risk factors and the patient of those, the VAD or as they recommended and things they had. And these are the statements that come from actually the ICH day.

So, in the diagnostic criteria for the management of medication overuse headache, they have some things that are listed. And I pulled them out of it it's kind of in the subtext, but it is in there. So basically, this one makes sense. We cover this. So multiple drugs for acute, even though one drug may not be overused, they start to add them together doing multiple things and doing 15 or 16 days when you add together NSAID or opioids and the Butalbital and Japan, they start to get 15 to 20 days per month. That is a risk. Half of the people with 15 more headache days per month have medication overuse headache. That simply ICH day. The majority of patients will get better if you can discontinue the medication and responsiveness to other treatments gets better if you get them off the medication.

That is one of the sales points for wanting to make them go through the withdrawal and winning them off of everything is that it may actually make their prior management strategy more effective, and I know that we have had some success with that strategy for a few of our patients. It is hard. This one is an interesting one, simple advice on the causes and consequences of OH as an essential part of the management. I think the vices is an essential part of prevention. It, managing it is a different animal, but preventing it, if you can get people educated early, you are more likely to be successful. We tend to inherit them when they are overusing which makes it more complex. And that's where this last bullet was the most interesting to me, the explanatory brochure is all that is necessary or all that is necessary to either event or discontinue medication overuse.

And so am I going to put a poll question up, but I feel like I would have 100% say do you believe is true or false, everybody would say false, because if you manage any patients with NA, can you people with medication overuse, if I give them a handout and say all you have to do is stop it, life will be good I would have no patience with the medication overuse. So, I think it is a misnomer and sort of a

misstatement that half the diagnostic criteria, all you need is an explanatory crusher.

I think the brochure is important on the front end, dividends or data that says that people get better, it's useful, but you still have to work with patients. It is really complex and not simple to convince people that they have to withdraw, and they need to come off the med and then how do you manage it at that point when they start to come off? If any of you have tried to get somebody off of Butalbital, a pamphlet is not going to do it.

So, what you do when you suspect, and with that we do here? We are advocating patients and telling them what they're doing is likely not helping. It is feeding into the system and its resulting in more sensitization. They're having the ups and downs and the sort of waxing and waning symptoms versus actually propagating symptoms Asian. We help them develop the cessation plan, what is a reasonable way to sort of taper off the medication or go off of it cold turkey?

We make it very clear, it can take 4 to 6 weeks to see positive effects and I'm less optimistic. I say 6 to 8 weeks to see positive effects. And that needs to last at least three months before we start [Indiscernible] in that region. That is a tough sell. You have to be off the medication for potentially three months before you consider starting a single abortive medication. And here is the big one that I think -- it is not super hard to educate patients, it isn't hard to come up with a cessation plan, this is what you need to do when you are going to go to that, because the patients will suffer and feel bad and feel uncomfortable and they will be less apt to stay on the cessation plan if you don't do something else. So address the lifestyle modification. I am big on pushing, biofeedback with a headache anyway, but in these scenarios, this is the time. I don't know if you did before, but if you did, let's do it again while you are struggling, because if you can get the nervous system quieter while it is ramping up, because you are struggling, [Indiscernible] neutralized that a balance state if not better.

I think what is great about that as well the nervous system has to unwind or unlearn or decouple from some of those patterns that it's made, filling it with something else, so that's where some of these other strategies are really helpful. And that is consistent with addiction management across the board. In that we often see, I want to say failures, but less advocacy when we just try to unwind the addiction behavior without giving it something else.

A lot of the guys recommend short-term use of another agent. I'm not super excited about that, because of the patient is already overusing one or two, giving a third one, you will battle and in some cases if it is NSAID or Butalbital, you can stop them cold, short-term use of a trip down if you really limit the amount that the use or Billy restrict and say you are talking about no more than 1 to 2 times per week and you have a complaint patient that is a reasonable thing to do. This is your opportunity for preventative or prophylactic medications. If they haven't been used, try them. If there are new ones that haven't been used, try

them. This is the time to add them to the pile of things you are doing in this bucket so that you can get them moving forward.

Interventional procedures, we will use the acceptable nerve blocks, acupuncture, and chiropractic. Manual therapy in general. As an adjunct in this time, because it is anything you can do to calm down the system. I think there was an earlier comment that said calm down the cervical spine to help everything it better. At this point, anything you do to reduce input from anywhere is going to be helpful. Anything you can do to help the nervous system be quiet with a barrow, a bio effect CPT advocating mindfulness is going to be beneficial and so we kind of kitchen sink approach again. When you're taking them off the abortive center doing anything else around that they can't do that is evidence-based. That's reasonable.

You are really giving them a specific plan. Helping them make choices from the menu, if you will and saying we will do this on the schedule. During this 4 to 6 weeks, we will do this. And then we will stop that, because we do worry a bit about, again, when I talked about replacing something, I don't need patients dependent on me to push on their neck or pop their neck or push on their muscles or do any of those things. While that is certainly safer than being on Butalbital or safer, I'm picking on Butalbital here, but that is the problem child that we've seen in our click. Making them dependent on a passive modality if not maybe necessary better for the overall efficacy.

Some people will use steroids like a steroid burst in the initial what people go cold turkey. And the steroid burst to calm things down. You need to be clear if you do that that this is a one-time thing, we won't do steroids for 12 weeks or do a measurable does pack to get you to the struggle as you wash out aggressively and that's not an unreasonable thing to do.

Steroids make you feel good. So the CPG for medication overuse headache talk about the risk factors, when he came to withdrawal strategy, we asked for an evidence review and there was insufficient evidence for any specific strategy or setting to do withdrawal medications for medication overuse headache. Whether you do it rapid or you do a short one or you have a min patient on an IV, there's no evidence for what the best way to do it is. You have to sort of go with what your resources allow you to do and what you think works and sort of be a rational approach for patients in front of you when you have the resources.

So looking at comorbidities, it is really important in folks with headaches. So again, mentioned a few times, but psychopathology is a risk factor in crab occasion of headache. Including anxiety depression and bipolar disorder, PTSD and substance abuse and you need to be straining for this along with suicidality. And referral or initiate a treatment plan related to that. We've touched briefly on sleep problems again, sleep apnea. Other sleep disorders. Sleep cycle disorders should be addressed. And then there are some nice CBT treatments for insomnia, CBT I is nice, a nice effective treatment.

I love this piece from neurology in 2017. Look at the evidence that indicated the depression and anxiety and poor sleep stress, medication overuse and this concept of poor self-efficacy which is this idea that you don't have control or ownership of what is happening to you, for managing headaches or potential prognostic factors for poor prognosis and unfavorable outcomes from preventive treatment and chronic headache. So even if we looked at the evidence for Botox or the CG RP medication, these other factors are at play that will weaken the potential success with those medication agents. And this also goes back to the gadgetry. If we aren't addressing some of this other stuff and we are treating a device like a med and we aren't doing it as part of an overarching treatment plan, the success is probably not going to be very good.

And at least the reality for us, and it's very rare that I have patients that have none of those. They may not have all of these things, but whether it is for self-advocacy and stress or poor sleep and medication overuse them a so many patients have some or many of these that you need to step back and think that medications alone, gadgets alone, infections, injections alone aren't likely to be helpful if you don't address the whole person and address these issues and how they impact the treatment. So, it's super important to always do that.

So, looking at therapeutic alliance or therapeutic rapport, goals are really helping us to set a focus for function and engagement. Asking people, we talked about yesterday, what do you do for fun? Would you like to do? What is this problem keeping you from doing? And then setting goals towards that. Instead of just surrounding headache days per month or making my headaches go from a 10 to an eight, the government 10 to an eight and you aren't able to do anything, are we really succeeding in this management strategy?

Shared decision-making is, and really outlining that menu of possibilities and options and perhaps recommendations related to, should we take a sequenced approach to these various treatments, or should we do a shotgun and try a little bit of a lot of things all at once? It is important when you make those referrals to set the expectation for the patient. And why you're doing it, and make sure they have lion and then, thinking about what is your follow-up strategy? So patient, I'm going to send you to XYZ, and I want to see you back in three months to evaluate if this is an effective treatment strategy. And then also flare management is something that comes out of the chronic pain literature again.

But we have these folks who are terrified of when the next episode is going to hit. And you notice that Franz and I have been using the verbiage of episode. Whereas in a lot of headache literature, they will use the term, attack. I don't think this is particularly helpful for patients although there are some patient advocacy groups that really feel like the use of attack helps to underline and emphasize the realness of the impact of the headache on their patients and I don't mean to undercut that in any way. But I think that that framework contributes to the stress of this condition. And I think they're waiting for a random attack. And if we have somebody that has that kind of episodic headache or they're waiting for a flare up and they have a plan, that gives them a

lot more ownership in the sense of self-efficacy, if this does happen, here's what I do.

Here's my very specific list of the actions that I take. So, there is a huge impact on overall disability related to these comorbid factors. So most of our Mike Remmers have a comorbid mental health diagnosis and a lot of the other headache sufferers also have a comorbid mental health diagnosis, but what is really key here is that for people with migraines, 65% of the world disability and what I mean by that is my ability to complete the roles, defined roles that I have in my life, an employee, mother, sister, parent, or daughter, any of those things is due to the mental health diagnosis. Not to the headache. And later to roll disability and other headaches come about 100% of the disability is more related to the mental health comorbidity as opposed to the headache problem itself. And there are these odds ratios in this table which I think is interesting to see.

So, we have psychological comorbidity, other pain conditions, which we see is also pretty high, and then when we look at other physical disease are not as much. So the psychological and other pain conditions. They have a pretty high prevalence of being kind of hand in hand with headache disorders. So again, back to the CPG.

There was a week 4 for the physical therapy for management of tension type headache. And what they looked at in those studies was a combination. They looked at manual therapy, that was a big heart of it, but the studies were patients did best was when manual therapy was part of a multimodal treatment plan, not single manual therapy where they integrated exercise and therapeutic exercise and general exercise into their plan which dovetails nicely into the recordation related to aerobic exercise or progressive strength training for the management of headaches overall.

So, we can have both stress management. If we are thinking of coping with stress management strategies, exercise is key for that. We can do low impact, aquatics, moderate intensity, the point is you want to get someone to that point where they can have some aerobic output. For a lot of those benefits, but if they can't get there, you want to start them where they are, not where they are not. So, some movement-based exercises like yoga, Pilates, Chi gong, tai chi. They have really nice kind of when we think about systemic soothing properties to them. So while not getting the aerobic component can be really helpful and feel really good for patients.

Looking at physical impairment, so we want to address the biomechanical components that might be at play here. Again, decreasing some of that input that maybe nociceptive input into the system from the periphery. So, we can do things, there are muscular reeducation, strengthening and stretching, manual treatments manure dynamics are really nice and I headache population, that is one of my go to treatments for that.

Try needling, you have people that will swear by it. I think it is more of an adjunct for me. And then overall conditioning. Looking at modality for pain modulation. Again, decreasing some of that input and then

thinking about retraining the whole nervous system. So, there are some strategies related to that to become somewhat from the chronic pain literature. But I think it applies really nicely to our folks with headaches.

Behavioral treatments again, we had a week 4 from mindfulness-based therapies. They found that mindfulness-based stress reduction which is a specific protocol maybe a little better than some of the other mindfulness-based strategies. That as a group, they had some okay evidence. Unfortunately, there was insufficient evidence for cognitive behavioral therapy and biofeedback in the treatment of headaches against older evidence. And there was this kind of lack of using specific headache outcomes, more using quality-of-life outcomes which we looked at in our search. But they weren't weighted as heavily as some of the headaches, the specific outcomes.

So again, when we look at other guidelines, AHS and American Academy of Neurology rated relaxation biofeedback and CDT as all great evidence. And it included them in the recommendation. And behavioral therapy, to enhance the effectiveness of inventive drug therapy was great be. So, we wanted to see again, the pairing of treatment options.

And then the last was gadgetry and hypnosis. When we look at CBT overall, there is mixed evidence on reduction of symptoms, but good evidence when it is combined with relaxation and biofeedback and meds. Looking at the multimodal approach. Relaxation training with on what you read, it favors in combination with CBT for migraine, and that mindfulness-based stress reduction which I mentioned earlier, good comic some decent evidence on tension type headaches and improved quality of life for folks with migraine and tension type headaches.

So, acupuncture in the VA DOD CPG cannot is insufficient evidence to recommend against treatment headache and was for any type of headache. And there's depending on where you look, there are recognitions, there were multiple systematic reviews, and then Cochrane reviews that said it's an effective treatment. But they also say further trials comparing it to other trials are needed and a lot of, when we looked at the evidence, it was due to the comparison to Shannon and it was basically almost a wash compared to sham and maybe slightly better than sham but not significant. Like the main difference was standardized and the difference was pretty minimal. And then it was about as a critically good as some of the medications that the CPG rated as insufficient as well.

And so it's not something you don't do, it is just realize there are other treatments that have stronger evidence. That something depending on your patient, when you make the patient centered choices and discussing options with them, making them realize that it may not be a cure-all, but it may be an adjunct to for headaches. There are studies looking at multidisciplinary entered this plenary care for chronic pain and for headaches. There aren't a lot of studies looking at it that we were able to look at for the CPG. So, there wasn't anything good that we could come out with for that.

The multidisciplinary, there are programs that you get admitted to a program and you get headache care, that is multidisciplinary for a certain amount of weeks and they have similar components. They have common themes. So if you are in a setting where you can, you have the resources at your disposal or can refer to them and develop a good relationship, these are the things that will allow you to have a good interdisciplinary approach to headache and we covered a lot of them today. Having them as a standalone service is limited a lot by time resources and the number of patients that would want to do a program dedicated to headache.

So on our team, this is kind of what it looks like. This could look differently in other teams depending on how you are organized. But these are some suggestions of the kinds of roles and tasks that different members of the team could take on. We found when we were establishing these headache centers of excellence across the VA system, the enterprise, that people were really shocked to see the inclusion of occupational therapy.

I want to give a shout out to all of our occupational therapy folks. I think that they fit into headache management so well. We tend to use them as a gateway sometimes into our behavioral health folks. Because they have a lot of that in their basic education. And the entry-level programming. But they really focus on the roles and habits and routines of the individuals, the occupation of living. And so much of headache care is lifestyle management. Lifestyle mediated. They are really experts in that arena. So, I would encourage you to explore that.

So we didn't do a specific poll question on this, but we assigned, we wanted to put it out there and see if you felt like any of the resources would strengthen your headache management team. Just a thought exercise.

Will move on for now. And the really will be time for the end at, for questions. This is a question the slide deck which was easier to do when you are in person, and then a little bit more awkward having it virtual. So interdisciplinary care, talk about this. So we covered this in the earlier discussion. So we will move forward. So interventional procedures, we will cover three main categories and four main messages. SharePoint injections, nerve blocks, the septal nerve and to [Indiscernible] or the common things done for neck pain and headaches.

This is a graph by a book called the interventional management of head and neck pain. And it sort of says with a central headaches how to walk through, do people have more tension type headaches where you have a submittal for more Cervicogenic headache, do some of the treatments targeting [Indiscernible] trigger points or branch blocks and piquancy ovulation or if they have more tennis oblation or a civil nerves or [Indiscernible].

I don't really espouse too much of a submittal nerve stimulation or Botox injection for a Botox for trigger point injection. Pardon me. We talked about trigeminal cervical complex already. Trigger points, trigger points to help. They are reasonable things to do. These are a couple of studies to look at. This one, the bottom one performed and the appropriate

setting and proper expertise, trigger point injections and common headache disorders. I think you have to look at if you are looking at your patient, if they have trigger points, that's one thing. If they have trigger points and reproduce that a, that's a different thing and these are ones that are probably more apt to be responsive to a trigger point injection. When it comes to a trigger point injection, you can really pretty much inject anything and the efficacy is not significantly different.

There's no evidence that Botox is better than steroids is better than anesthetic is better than saline is better than needling alone. So I advocate for either dry needling or injection with local anesthetic only. As far as a submittal nerve blocks, the VA DOD CPG suggested for the acute treatment of migraine headaches. There's multiple studies that have been out there that show reduction of severity and frequency as a preventive, and there's not enough strong evidence really and it didn't come out to hit the recommendation with CPG, but there is a reasonable thing to consider for migraine headaches.

A good technique and the risk is relatively low, they aren't that hard to do and for cluster type headaches and attacks in general, that's a reasonable consideration if your other treatment options are limited and you aren't able to use or you run out of things to do. I've used them in occipital nerve blocks in tax and cluster headaches. To good effect. They can sometimes break a cycle.

This is, to the question that came in earlier as to where do you inject for a septal nerve blocks, these two classic locations of people do and the most classic is the landmark guided or non-image guided technique here at the occipital ridge. Then you get the nerve coming up and coursing underneath the skin but above the para cranial muscles met along the scalp and people do the injection right there, they put the needle down and they will touch off and back up and they will go through often roughly if you put your fingers out like one finger here and your thumb here and the fifth digit over here on the mastoid, where the middle finger lies is roughly where you would inject. And that's where that it previously for most of my injections but is a lot of short-term benefit not a lot of long-term benefit and of shifted to injecting down here.

This is an article where they actually use an ultrasound and inject along this muscle, the oblique as it is inferior and what they do is target the nerve that lies along the muscle. Going back one slide, that is this muscle right here going diagonally. The nerve is coming upward through their and there is a muscle that lays on top of it. [Indiscernible] this is the muscle here and here and you can see the nerve that lays in the facial area right there and I find it to be a better target. People get better benefit when you are able to target that. How do we do this? We are having some weird stuff over here. I think our TV is auto off over here. We will try to fix that real quick.

There we go. We are back. Sorry about that. So I inject typical using ultrasound guidance coming down here. I would not recommend this technique non-image guided because you need to see the muscle layers and stick a needle deep. This is the study they did out of the article.

Didn't compare it head-to-head, just when they did the technique that patients did well even up to four weeks and there's been some studies that said it last fairly well long-term up to four months.

Speedo palanquin blocks, this is the comment from her question from Colonel Chang. There's the main along here, the blockade is been demonstrated to be helpful in migraine. It is reasonable to do. The technique I've done a lot in the VA, much of patients have been that interested, but I was a cotton swab with lidocaine gel and I place it in the nose and up against the medial aspect. And allow the medicine to diffuse in. There is an auto-injector like TRX 93 and that is advertised to be used as well and I haven't used that. But the studies on the blocks involve the device and they have shown efficacy. Either one is reasonable. When I did them in fellowship, we used a cotton swab and people did well. There we go, TX 360. I was close.

And then cervical causing she me, let's see 23, that's the one we can target a lot with radiofrequency. The cervical radiofrequency actually has pretty good efficacy for neck pain. It's never really been studied for Cervicogenic headaches. You don't find a lot on it. But her neck pain and upper neck pain, when done well using the grade system, the same system used when we did the CPG, the number needed to treat, and two for complete relief in six months.

That is a pretty solid number needed to treat [Indiscernible] just find the right patient to be convinced that the neck pain is from the upper cervical medial branches into a good block technique and it's a good frequency technique and patients will do well. If you have a patient that has neck pain radiating into the occipital and ongoing high but the range of motion reproduces headache symptoms, this is something to consider as well. And that might be the last slide. Yes. No. Oh, so we will go through a couple of slides here about headaches and then we will have questions.

So, we just recently had the 2018 Congress allotted funds for the creation of headache centers of excellence across the VA enterprise. So, there were seven medical centers that included the five poly trauma rehabilitation centers of which Minneapolis is one and then they also included poly trauma network site at Cleveland VA and the VA Connecticut healthcare system. There's also some dedicated funds for connected to the VA healthcare system because they have the prime center which is a research center. So, they are doing some data management. We've included some consortium sites that include greater LA, Salt Lake, Birmingham, Orlando, and Pittsburgh.

There are some other resources that we talked about academic detailing and we suggest you check those out. And then the VA beauty clinical practice guidelines that we've mentioned several times throughout this talk. This is one of the algorithms.

CPG has algorithms in it so you can follow that, and that is the last slide. Now it's an opportunity for any Q&A to finish well under the gun. So let's see. Start the Webcam, start sharing. Now that we've gone

through 190 slides on headache and you guys have stayed awake probably hopefully throughout all this, what questions do you have or any?

Does anyone have a headache now? That they didn't have before? What evidence is there regarding micro-current and headaches? A quick answer.

I'm sorry, and it sounds like I'm a hater on it. I will try just about anything if it's safe. And again, the micro-current Galveston is one of those sorts of deals, micro-current was very In vogue in the 80s and early 90s for all sorts of pain conditions and now it's having a resurgence and anyone that is in the physical medicine Geo or PT room has seen the same thing happened with diathermy. PT in the 80s used to be shake and bake. Now you rub them down and put some heat on them and you send them out the door. The evidence to support that so we started moving away from the really passive treatments and I think some people get really aggressive and they throw the baby out with the bathwater and it's just important to consider how you are using them and when. My recommendation overall should be as an adjunct and short-term as opposed to the focus of the treatment strategy.

No one else, someone else is typing a question so we will wait for that. Feel free to ask questions. We covered a lot of stuff in relatively rapid fire. So the discussion notes box is empty and not able to download the part two slides. I don't know if that jumped over. There we go. Disappearing. Thank you. There we go. It's coming over. There you go.

Part two is available for you right now. Any other questions? We are just waiting. People are typing. We should've brought some tunes.

Intervention, so the first question is, any interventions that you recommend to assist with helping stop the MOH cycle? So I assume you're asking to help stop the medications? To start the process? Clarity.

Then below that, I believe there is-- it's not just me picking on that one.

Getting patients of fear said, whether it's that or opioids, first off, please, if you're getting any headache stuff, educate. If you are on the specialty sort of clinic world where you are seeing headaches, educate the heck out of your referring providers are primary care, to stop giving Fioricet to patients at all. There's no great use for it as we have newer medication, which not be using that at all.

You did that on the DOD side for the come see us on the VA side, we would appreciate that. There be a big solid for us.

I think it is educate, educate. Engender the trust with the patient and get them to realize that this is not a good treatment, explain to them why it's not a good treatment and why if it were working, they would be in your office to begin with. I tell patients that all the time. If whatever you're doing was working, he wouldn't have shown up to the point and it's been an hour hanging out with me. If that is the case, we need to get you off and you to do something that doesn't carry risk and

hopefully can make things better. And really the best thing with Fioricet is a relatively rapid taper.

With Butalbital, be careful and do it over the course of days or weeks but, getting them away from it is the best thing you could do and not going super slow. You can go superfast but 1 to 2 tabs a day, you can just stop it and start to get them on other treatments. And we had the slide earlier the talked about enacting all of the other things. For the more complex opioid Fioricet and act other things and give them options. I tell patients all the time, here's biofeedback, here's a simple nerve blocks, which of these do you want to do?

If you want to get off the bed, you'll struggle for a while it could be, we can make things quiet, astute, and deftly consider steroids a steroid dose with Fioricet because the suffering tends to be worse and the grip the patient have on it tends to be stronger. That is the thing I would do. It's the first time you are educating them, then I believe you and you have to spend more time in the second or third time, when they are educated, they will finally buy-in and that's if you've been able to build trust.

I don't think any of our patients that we've shared that we've gotten Fioricet have gone back on it and I think most of them have realized a significant benefit in their headache and disability and how much more effective the other treatment strategies become once they are off of that drug. Some of them will still lament of the feeling. But they are not sad about it.

As the next couple are being typed, Sara could be able to speak to how you can listen to the recording again?

There was a question. They are being recorded.

They are. My guess is they will go on the website. So, I will have to get back to you, and we will I'm sure will be putting out some information. To attendees as the how to access the videos.

Another question, impairment is often used for multiple complaints, where's the role in headache? The same primary care, Topiramate is evidence-based treatment for migraine prevention. So that is the main role in headache. So, migraine preventive. If you have a patient in primary care where they are using a short-term acute agent and they aren't getting a ton of benefit for and they're still getting headaches, that is where whatever preventive you think is appropriate is a reasonable thing to consider and it's, prior to the see GRP drugs coming on the market for episodic migraine, those drugs are the three go-to's. And is probably my most favorite of those as patients can tolerate it as long as you don't ramp up fast. And there's a subset that just don't tolerate, because they get a little sedated or they get a little goofy and they were finding issues. But it is worth a try, you just have to be careful of the sedative side effects, the weight loss side effect and the carbonic inhibition and kidney stones and those who have had kidney stones which is super lame.

I've a question about biofeedback, what protocols we tend to utilize. We use HRV mostly with those folks, but also some of the EMG, the surface EMG work is nice, because that one really helps patients see how what they are doing with their body cam, in their sense, the physical body to my muscles and joints, I think that is really nice to help people build some awareness into what they've been doing with their body. So we will use both of those primarily. Unless GSR, but more of the HRV stuff.

To add steroid city a simple nerve block? Yes. I can kind of quickly roll through. For a simple nerve blocks promoted the ultrasound-guided CT with steroid and anesthetic for diagnostic [Indiscernible], that patients get good longer-term benefits of 2 to 3 months or repeated every three months. It is helping. If it helps only really short-term, but it's profound short-term, we will do the pulse frequency. So it doesn't come out any of the CPG stuff and we kind of glazed over it as a slide that mentions it in passing in the talk, but there is a study done in the military and at Johns Hopkins that look at polls radiofrequency compared to occipital nerve blocks and they were basically equally efficacious. So if I the patient that gets good results short-term with anesthetic but nothing with steroids, I will offer them a polls radiofrequency and we have a subset of patients that never got steroid benefit and swear by the pulse radiofrequency. And it's a really weird thing, no one knows how it works, that's why it's not covered outside of closed systems like the military and DOD, but honestly, it does work for some people and I'm happy to do it and it is not overly complex. It’s the same ultrasound-guided technique at C2 when I do it and get the RS needle in place and do some sensory testing and I do not add steroids if it didn't work the first time. Do not keep dumping steroids if it didn't work the first time.

Is it possible to get there? A PDF of the intake form using the VA? I will try to figure out, it is right now in a sort of weird text format that goes into the EMR. I will see if I can turn it into PDF or whatever version, the one that we created, headache centers of excellence graded headache intake forms. We don't use exactly that, because it has was developed set of half research, have for clinical use and we're not using it currently. But we will try to figure out how to get that to somebody to then get to you guys and I think, all Lieutenant Colonel Chang is typing. I our email. We did it last talk. So feel free to email us with if you need something or you want something related to this or have a question, we are happy to feel free to email us if you have any questions at all. You can include both of us. And they are asking about uploading part two, there are some issues.

Are there any other questions? There does, part two popped up a second time. There aren't any other questions, feel free to keep typing. If some of things of the question, we are here. Thank you for putting up with us. We are working to this. We did one of these for a physical exam and we've done this many times but never virtually. And it is better when it's interactive and we can see people's faces when we are talking and see faces and have more of a discussion. Hopefully it was helpful and engaging enough and Sara, from the main group was really helpful. So thank you to Sara for helping us get all of the stuff up and running and

get the poll questions, because we did a lot of that in the past couple days, and getting the videos to work made it a little engaging.

Navigating back and forth, you were relying on us to go back and forth for video and slide and polls, this would've been a hot mess.

Thank you very much.

My pleasure.

Again, feel free to email us if you have questions. Otherwise, have a wonderful rest of your day. Thank you. And I will leave the meeting site open for about another five minutes. If anyone has issues with uploading or downloading or downloading files, please put a note in the chat box and I will help you.

Thank you.

Take care, everyone.

Thank you.

[Event Concluded]