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Molly: I would like to introduce our speakers for today. Joining us we have Colonel Geoffrey Grammer, he is a medical doctor and the National Director of Defense in Veterans Brain Injury at the Brain Injury Center; also an Assistant Professor of Psychiatry at Uniform Services University of Health Sciences. Joining him today is also Dr. Thomas DeGraba he is the Chief Innovations Officer and Founding Deputy Director of the National Intrepid Center of Excellence \_\_\_\_\_[00:00:24] [skipped] Prior Associate Professor of Neurology in the Uniformed Services University of the Health Sciences. Also joining us is Linda Picon she is a Department of Veterans Affairs Senior Consultant and Liaison for Traumatic Brain Injury to the Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury and an expert lecturer for topics related to TBI related dysphasia, communication and cognitive rehabilitation. There are many other accomplishments and appointments of these three presenters and those can be found on slides two, three, five in your handouts. But in the essence of time and content we would like to get straight to the presentation so I would like to turn it over to you now Colonel Grammer.

Colonel G. Grammer: Great thank you very much, just give us a second while we bring up the slide deck here. Thank you for the opportunity here to talk about the clinical practice guidelines for the management of mild traumatic brain injury which was updated in 2016.

These are our bios; you can these off the deck that is my mug, Dr. DeGraba right there and Ms. Picon.

The reason that we are doing this is because the original guidelines were published in 2009 and we felt there was a need to refresh based on new literature that had come to publication. The members of the Management of Concussion and Mild Traumatic Brain Injury working group, to provide clinical practice guidelines so that is basically what we are going to do here.

Disclosures, none of us fortunately have any disclosures.

What I am going to go over is sort of the outline of the clinical practice guideline and some of the algorithms and then I will turn it over Ms. Picon to go over some of the specific recommendations. The guidelines are formatted as two algorithms and twenty-three evidence based recommendations. Algorithm A goes over the initial presentation after someone presents with a head injury more than seven days out from the time of injury; Algorithm B is how to manage those symptoms. All of this is based off very extensive literature review.

The reason for the CPG was to assess providers in managing or managing patients with a history of mild traumatic brain injury. The population of interest that this relevant for are Veterans both deployed and non-deployed active duty service members, and National Guard and Reserve components eligible for care in the Veterans Administration or DoD healthcare delivery system. This is only meant to be applicable to adults in the acute to chronic period’s post-injury, and only for the severity classification of a mild traumatic brain injury.

Some caveats: we used the best information available at the time of this publication which was in March, 2016. We want the audience to know that we closed out the literature review in the Fall of 2015 because we had to basically adjudicate the draft and get it reviewed by outside experts. This is not meant to replace or define a standard of care, but it is to be used by providers in a calculus that they make and exercise their clinical judgment. It does not recommend or prescribe an exclusive course of management. Obviously there is a lot of art in the management of mild traumatic brain injury. We recognize that there is a lot of variability in practice and that should be considered as self-evident within the guidelines. Obviously every healthcare professional is responsible for using these guidelines within proper clinical judgment in any particular clinical situation.

The first poll question which we will get is: How familiar are you with the 2009 version of the VA/DoD CPG for Management of mild TBI? A) very familiar. B) somewhat and C) never heard of it.

Molly: Thank you Colonel, we do have our responses coming in now. For those of you who this is your first time doing one of our polling questions, please go ahead and click the circle next to the response right there on the screen. It does look like we have a very responsive audience, two-thirds of our attendees have already voted and we appreciate that. At this point I see a pretty clear trend so I am going to go ahead and close out the poll and share those results. As you can see on our screen, half of our respondents are somewhat familiar but never or rarely used it in practice. About a quarter each for very familiar or never heard of it. We appreciate your replies and with that I will go ahead and turn the screen share back over to you.

Colonel G. Grammer: Great and I will just throw it out there that we have links to the CPG both the comprehensive version, the briefer version and the algorithm cards; they are all available on the DVBIC website if you need to find those.

In 2009 we used different criteria for the post-injury periods. We revised those with 2016 and you can read this but obviously 2016 we changed around and said the immediate period is zero to seven days post-injury. This clinical practice guidelines does not cover that timeframe. So we picked it up really at one week post-injury all the way out to six weeks which we consider acute; seven to twelve is post-acute and greater than twelve is chronic. I will tell folks that there was a lot of discussion about this and basically we acknowledge that there could be legitimate deliberation for alternatives to this period definition, but this was the consensus reached by the group and we had to come up with something to basically help frame it within the guidelines.

Some terminology considerations. When we say mild traumatic brain injury and concussion we mean the same thing. We recommend using the term “Patients with a history of mTBI” over “Patient with mTBI”. Recognizing that a history of mTBI can have a completely connotation for chronicity of symptoms or association with symptoms later on. Classification of TBI only refers to those signs or symptoms that occur in the immediate injury period, and thus should never be used in the present tense to refer to ongoing symptoms that persist and are attributable to the TBI injury after the immediate. So symptom severity after the injury is really the immediate post-injury period that defines the classification.

There was a very rigorous methodology for this. The Evidence-based Practice Work Group and the CPG partner champions were selected and tasked with identifying basically key questions that then guided the systematic literature review. We came up with an extensive list and then we paired it down to sort of ten key questions and that drove what they went to the literature to try to find which was hopefully then incorporated into changing some of the recommendations. The Lewin team did a great job with the very comprehensive literature review in a four inch notebook, it was pretty amazing. We had multiple phone conversations, and then eventually met here in the D.C. area for a three-day face-to-face meeting involving the entire workgroup where we kind of went through the evidence and the recommendations and used a new grading system to update the recommendations. There were several drafts and revisions, we did both internal and external feedback comments and finally the Guideline was finalized for publication in 2016.

The working group was composed of both DoD and VA representatives and it included a wide body of disciplines both direct share providers and researchers alike. I think it was actually a very broad carefully selected group of people so that it did not weight towards any one particular position towards the management of TBI. David Cifu was the co-chair for the VA and both myself and Colonel Teegarden were the co-chairs for the Department of Defense.

The way that we got down to our literature review you can see we start off with over three thousand citations and they begin to exclude those based on their relevance, based on the quality of the evidence, based on the applicability to the questions and eventually we ended up with forty-two studies and forty-four publications that were used to update the guidelines.

We used a grade system for recommending the strength and it was based on four decision domains to determine the strength and direction – are relative strengths strong or weak; direction is for or against. You will see each of the recommendations are listed as: Strong For which is us recommending offering this option; Weak For which is suggesting offering this option; Weak Against which is suggesting not offering this option and Strong Against is recommending against offering this option. I will caution folks that the Weak Against and Strong Against there are a few recommendations with a bit of a double negative and those will be pointed out when we get later on in the discussion.

Obviously we added in qualifiers and whether it was newly added or mandated or deleted and you can see those and they are kind of all self-evident.

We made twenty-three recommendations in four categories. They went over diagnosis and assessment; co-occurring conditions; treatment and setting of care.

On this slide you can see the breakdown on how those recommendations played out and as one would expect in a clinical practice guideline, the bulk of those were under treatment.

There are a few clinical algorithms both for initial presentation and symptom management. We used these geometric shapes; rounded rectangles are basically a clinical state; the hexagons are decision points and the rectangles are an action in the process of care. These are what the algorithms actually look like; we are going to dive down into these in more detail.

For the initial presentation this is what it looks like and actually we will go into even more detail.

The first step that we had in this is when a person is identified with a head trauma resulting in alteration or loss of consciousness one of the questions we wanted to make sure people answered was whether or not there was an emergent condition which would warrant immediate referral for treatment. We had the sidebar there for all the things that usually suggest that someone has a significant neurologic injury and things like seizures or pupillary asymmetry. Obviously if anyone has that primary care clinic which is what the algorithm was really meant for is probably not the place for those and rather emergency care would be where they would go.

Assuming that does not occur then the next thing is to classify the TBI severity. As I mentioned before this is based on the severity of symptoms at the time of the injury not later on and this should be well known to everyone.

Then the next thing was to determine whether or not there was the presence of symptoms so we listed kind of what all of those symptoms would be here. Obviously if someone is asymptomatic it is going to be a different algorithm then if they are symptomatic.

If symptoms are not present then basically the recommendation was to provide education and access to information regarding concussion and mTBI and then just provide usual care. But if someone did have symptoms when they presented, then the next decision point is whether or not they are in a deployed setting versus a non-deployed setting. If it is in a deployed setting there is DoD policy guides for how to manage that and a non-deployed setting we go to Algorithm B. So to summarize the whole point of this initial presentation was to rule out emergent conditions; to grade the severity of traumatic brain injury and to determine the presence of symptoms and find out whether or not they are deployed or not deployed. If they are symptomatic in a non-deployed setting then you move on to Algorithm B.

This is Algorithm B and just like the first one we will deep dive into this.

Patient now has persistent symptoms, the primary care manager then builds a therapeutic alliance and assesses patient priorities, completes the history and physical and includes mental status exam, physiologic evaluation and attributes. Included side bar four which, I am sorry system attributes should be symptom attributes; I am sorry, there is a typo on this. The whole point of this was to sort of say what are the things you are looking for when you are doing your initial evaluation. We also recommended evaluating for co-occurring disorders for example depression, PTSD, musculoskeletal pain disorders or substance use disorders and then determining a treatment plan. I will tell you the group had a discussion about this and while most of this seems self-evident we decided it was best to kind of list this out if anything just to make sure that none of these steps were missed in the process during the evaluation. Then we educate the patient and family on symptoms and them provide early interventions so start treatment.

That is where we go to sidebar five. Early interventions can be education, information, reassurance on expectation of positive recovery recognizing that most patients with mild traumatic brain injury make sure they do not do maladaptive things like engaging in excessive alcohol use and then have a progressive return to normal duty work, activity or exercise. Usually just keeping people healthy and safe is enough to help the recovery. The idea was we would give them night aids the get better, if they did get better then it was sort of follow up as needed, if they did not then we recommended to you reevaluate to make sure there was nothing that was missed on the first evaluation that could explain the persisted symptoms. We also said that if their symptoms were persistent and affected function that there should be consideration for consulting a TBI specialist. The group had a consensus that they wanted to make sure that this stayed in the hands of primary care but if someone is remaining symptomatic over a period of time they should possibly have at least one subspecialty evaluation addressing that particular symptom just to make sure that everything is being done that is currently available to mitigate the suffering.

Eventually it falls down into if the patient still does not get better than we talked about other \_\_\_\_\_[00:16:11] [skipped] chronic symptomatology within primary care avoiding fragmentation of care, avoiding subspecialty referrals that could lead to iatrogenic harm.

Polling question: What is your role in the management of Veterans with Concussion/mild TBI? You can see the answers there so just figuring out who is in the audience.

Moderator: Thank you. For the attendees, the answer options are: Primary Care; Rehabilitation; Mental Health; Medical specialty such as Neurology or Ophthalmology; or Other. Please note if you are selecting other we do have a more extensive list of job titles in the feedback survey that I will put up in the session and you might find your exact title there to select. It looks like we have had about three quarters of our attendees respond so I am going to go ahead and close the poll out and share those results. As you can see on your screen five percent selected primary care; forty-one percent rehabilitation; twenty-six percent mental health; seven percent medical specialty and twenty-one percent other. So thank you again to those respondents and I will turn the screen share back to you now.

Dr. G. Grammer: Alright, now we are going to move into the actual recommendations which are probably the primary reason why people are attending. I will turn this over to Dr. DeGraba.

Dr. T. DeGraba: Thank you Colonel Grammer and it is a pleasure to be with you today. As we address the care of the service members who have mild TBI particularly with comorbid psychiatric disturbances, the heterogeneous population or heterogeneous presentation can be somewhat challenging. And having this clinical practice guidelines provides us the opportunity to basically reach into the minds of a multidisciplinary subject matter expert working group that has recently gone over the literature and gleaned from that those things that will help us with some of the diagnosis treatments options in our service member population. As always starting off with any guideline terminology is critical and I will just reiterate what Colonel Grammer mentioned which is when a provider comes to you or a patient comes to you and says had five minutes of loss of consciousness after a forced blow to the head do I have a concussion or an mTBI and the answer is yes. Remember these terms are interchangeable and not to be confused with one or another, they are interchangeable.

When we look at the recommendations – Recommendation One we suggest and this is a week four suggest – using the history of mild traumatic brain injury. Again Colonel Grammer elucidated some of the reasons as to why but the main concern is that designating somebody either as brain damaged or patient with mTBI does two things: one is it implies that the state is a static state and unrecoverable which we know is not the case. In addition to that it provides a potential stigma for the service member themselves. But it also provides us the opportunity when we say ‘has a history of mild TBI’ to be cognizant of the fact that there are subsequent changes that can occur with the body such as changes in sleep disturbances, endocrinologic changes. So it is important to recognize that a history of TBI has occurred but to not designate all of the patients attributes as symptoms particularly once you start getting thirty days or more out to the TBI itself.

The second recommendation we recommend that evaluating individuals who present with symptoms or complaints potentially related to an mTBI at the initial presentation be performed. In other words to evaluate a patient seems like common sense, however, the reason we make the point itself of saying that we recommend that evaluation occurs in this patient population, one in the population who are in a deployed setting, there is a Department of Defense instruction 6490.11 that mandates a screening utilizing the MACE to be able to identify particular disturbances that can be followed particularly in the first week after an event has occurred. Also too in recognizing that those patients who have had an event may also deteriorate and that the initial presentation may change over the course of the next hours to days. So not to miss the red flags such as a decreasing level of consciousness, increase in pupil asymmetry, seizure activity, double vision, decreased motor and sensory capabilities, slurred speech, disorientation, unusual behaviors. All of those things are red flag that there may need to be further evaluation and indicate urgent specialty and subspecialty consultation.

Third recommendation is excluding patients with indicators for immediate referral for patients identified by post-deployment screening or who present to care with symptoms or complaints potentially related to brain injury we suggest against using the following tests to establish diagnosis of mTBI such as: neuro-imaging, serum biomarkers including S-100, GFAP, UCH-L1, and EEG among others you can see here on the slide. Now that does not mean that neuro-imaging is not useful in some cases of head injury. What this recommendation is saying is that findings on these and findings with these particular markers are not necessary to be present for the patient to be diagnosed with TBI. TBI at this point is a clinical diagnosis and that predominantly you do not withhold work up for the lack of one of these biomarkers being positive. Again, clinical presentation, identification of symptomatology directs you to work up those patients as a result of your clinical inclination that patients have had injuries to the brain with force blow to the head. Again these markers at this time are not the Sinequan known or necessary to be present for you to make the diagnosis of mTBI. Recognize that some of these markers may in the future present a promising capability that may allow us to identify milder events. But at this particular point these are not to be used as the diagnostic marker for mTBI.

With the next slide we look at recommendations for where a Strong Against, recommending against performing comprehensive neuropsychological and cognitive testing during the first thirty days following mTBI. They say well this is counterintuitive I want to find what is wrong with the patient and this does not mean that you do not do cognitive assessment skills such as the orientation, balance etcetera. Those things that help you immediately assess a patient particularly in the first thirty days. What it means is that we do not utilize or recommend that patients have full comprehensive neuro-psychological testing that require an extensive resource, an intensive resource to assess the patient because the patient at that time in the first thirty days is in a dynamic state of recovery. Recovery is expected. There are also changes with regard to sleep disturbance, headache, etcetera which can confound the formal neuropsychological testing. But most importantly is it does not have the capability of providing any greater evidence with regards to prognostic values other than your conventional assessment. And it limits the ability for formal testing for the next six months. In other words if you have somebody who has some disturbances but is improving and you do formal testing, and at two months you still have a disturbance, formal testing that may be beneficial to be done by the neuropsychologist \_\_\_\_\_ [00:25:14] [skipped] not be done. Because your initial formal testing and again, we do not want to unnecessarily utilize intensive resources in that first thirty days to provide us with information that is not valid in the first thirty days, tells us nothing about prognosis and hampers our ability to do diagnostic capabilities beyond the thirty-day period.

Recommendation number five for patients identified with post-deployment screening or presenting symptoms, complaints that may relate to mTBI we recommend again, and this is a Strong Again, using the following routine diagnosis and care of patients with mTBI including the comprehensive focus neuropsychological exam as we said above, the ANAM, the NCAT impact testing. Again these features have poor sensitivity and specificity with regards to describing the injury that the patient has had particularly in post-deployment screening more than seven days out. It can in fact provide harm because it could label somebody with a deficit when in fact those do not exist or is not something that you would utilize again for prognostic value. It lacks evidence for being able to be a prognostic indicator and a diagnostic indicator. That being said we do recognize these types of tools like the ANAM and others in the more acute setting to be able to measure the recovery after an acute event. Again in the post-screening setting these tools are not to be used to describe the service members or the patient’s deficits from a diagnostic purpose.

Recommendation Six patients whose symptoms appear greater than thirty days after mTBI, we suggest a focused diagnostic workup based on the symptoms. The importance of this is that when symptoms occur or symptoms appear thirty days beyond do not focus solely on the fact that they had a history of mTBI. Though patients may indeed have sequelae from mTBI that may cause those symptoms we have to be able to address the issues of those symptomatology from a much broader perspective. Say for example a patient comes in with a new set of symptoms of fatigue you can say ‘ well that is just because the patient had an mTBI, is having difficult at work, working harder to do the same amount of production and performance then they used to do before the mTBI that is making them fatigued’. That in fact one of the things that we do see, however it also may be because the patient has developed a sleep disorder that is commonly seen after head injury and the fatigue is based on the fact that they have a sleep apnea or insomnia. It may also be due to depression, which can occur after TBI, or neuroendocrinologic changes that can also occur. Again, we address when these symptoms crop up thirty days out, we address the symptomatology based on the presentation and not ascribe everything to the fact that the patient had a mild TBI.

On the next slide we go to Recommendation Seven. This recommendation is recommended a Strong For recommend assessing patients with symptoms attributable to mTBI for psychiatric symptoms and comorbid psychiatric disorders including major depressive disorder, posttraumatic stress disorder, substance use disorders and reviewed suicidality. Consultation to the appropriate VA/DoD clinical practice guidelines is also beneficial, but recognizing the fact that patients have head injury, a recent study that came out the Army Star Study clearly demonstrated that those patients who had in-theater head injury had over forty percent screening positive for psychiatric disturbances, such as Post Traumatic Stress Disorder, depression and anxiety. It is a common thing. Now patients can present with symptoms that overlap with TBI and can be based solely on the psychiatric condition itself, but in addition to that psychiatric conditions can enhance the perception of the severity of neurological injury manifested by the patients. There is an interplay between head injury as well as psychological \_\_\_\_\_ [00:30:28] [papers rustling] that can occur after head injury and we must be very cognitive of the fact that assessment for those disturbances is strongly recommended.

Moving to the next slide, Recommendation Eight. We suggest considering g, and offering as appropriate primary care, symptom-driven approach and I think we covered that actually in one of the earlier times so I will not spend a great deal of time talking about that recommendation.

Recommendation Nine we recommend not adjusting treatment strategies based on a mechanism of injury. In the mild TBI setting exposure to forces to the brain whether it is blunt force trauma or blast trauma at this point \_\_\_\_\_[00:31:19] [skipped] does not have the evidence based to suggest or recommend that there is any different trajectory of recovery or injuries that we are seeing in that patient population. That is a little bit different than the mild to moderate TBI where high energy states associated with primary blasts do result in unique tissue pathology. But in the mild head injury do not change your strategy based on the mechanism of injury you treat patients to symptoms as we described before.

Recommendation Ten is a corollary to that. We recommend not adjusting outcome prognosis based on mechanism or injury. Again, there may be subtle differences that will emerge in the future related to blast versus blunt force trauma but currently there is not specific evidence that will tell us that the trajectory of recovery or prognosis is any different in the two settings.

The next slide, we look at Recommendation Eleven talk about suggesting the treatment of headaches should again be individualized and tailored to the clinical features. You can read the different recommendations on the slide and utilize that. Recognize that again, in the setting of post-head injury there are really three main presentations that we see and the majority of patients will present with what looks like a post-concussive migraine syndrome is the most common feature that we see in headaches. We also commonly see tension headaches or a mixed combination of tension and migraine. Finally a cervicogenic headache, which in many times is placed with those tension headaches as well. Those are the primary types of post-concussive headaches that we commonly see; the important thing is not to miss the red flags with the headaches particularly in the earlier period after a head injury in which progressive drowsiness, again focal neurologic deficits, nausea, vomiting, pupil asymmetry, or other evidence of intracranial pathology may be present. Again that worsening headache or change in headache would indicate an additional workup for the patient to assure that we are not missing treatable causes of the change in headache quality as well as intensity.

On the next slide, talking about headache management, again taking full advantage of the clinical Practice Guidelines. Clinical Practice Guidelines is about a hundred and thirty-three pages. One of the new features in the Clinical Practice Guideline are the appendices at the end. And in particular Appendix B is extraordinarily detailed, in fact table B-3 and B-4 for headaches looking at the efficacy of the different types of drugs utilized both in the abortive and prevention of tension-like headaches and migraine-like headaches is extraordinarily useful, not just saying just use some medications. These go into the type of medication, the dosing of the medication, what they are most useful for, and what some of the problems are that can result and I will just give you a few examples from the slide. In dealing with tension-like headaches and using abortives, it has been seen that the combination drugs again combo of NSAIDS or acetaminophen medications, caffeine and sedative drugs seem to have the best effect in the tension-like headache. The note is and to be very careful when you are using drugs like the NSAIDS or caffeine, overuse or withdrawal headaches can occur. So when you are using these combo drugs, using them no more than two days a week is what is recommended to avoid that complication. When using medications such as propranolol and other medications such as the anti-epileptics when treating either tension-like or migraine-like headache remember and recognize that these medications can have effect on the cognitive function of the patients themselves. So again how we use it and when we use these drugs and alerting the service members and patients to the side effects are critical for both efficacy as well as the service members continuing to utilize the medications.

On the next slide make a quick comment with recommendations for tinnitus. There is no evidence to suggest for or against the use of any particular modality for treatment for tinnitus. Now that does not mean that there are not strategies that have been extraordinarily useful and you can see those below in utilizing a variety of items such as noise generator, biofeedback. These are all tools that have been used and just no studies that have designated one particular therapy as the gold standard.

On the next slide I will make one comment about hearing. We talk about hearing and trying to reassure our patients but \_\_\_\_\_ [00:37:08] [change of speaker].

Linda Picon…medication side effects, inner ear disturbances for example and then referring to specialty care if needed for any refractory symptoms. The review of the literature for this CPG did not yield any evidence that any specific program or intervention was effective for management of dizziness and disequilibrium in the context specific to mild TBI. The recommendation that you see on this slide is essentially based on what has been shown to be effective in the general population. Things that are commonly used for people who present with those symptoms without history of mild TBI. As such the recommendations suggest offering a short-term trial and the operant word here is short-term, of specific vestibular visual or proprioceptive therapeutic exercises by qualified rehabilitation specialists. Which is typically PT, sometimes OT to determine if it is a benefit to a particular patient to minimize that prolonged therapy interventions and to keep a provider focused on functional outcomes. The guidance calls for use of specific outcomes measures keeping always those in mind in the context of therapy. I think they suggested Berg Balance Scale and the dizziness handicap inventory which were the ones that were most cited in the literature to assess whether a particular patient shows functional improvements. As in most cases with the CPG the evidence really was not sufficient to allow us to provide any specific guidance on what the right therapeutic dosage but to simply say from case observations for some people, they require several sessions. But others one or two sessions may be enough especially if what you are going to do is educate and set them up with perhaps a home exercise program. The factors here, the fragment factors are setting clear treatment, expectations and performing regular reassessments to keep the clinician and the patient both focused on real life gains. You will see at the end of this slide that that statement that a prolonged course of therapy in the absence of patients improvements is strongly discouraged. And that is the statement that we chose and you will see it throughout the following recommendations to indicate that functional reassessment needs to occur so that people do not stay in therapy forever and ever and promote an environment of illness with the patient.

As Dr. DeGraba mentioned earlier in the Appendices a nice feature of the electronic version of the CPG and I wanted to mention this specifically is on the electronic version you can actually click from the recommendation on the link that gives you immediate access to the symptom management. You do not have to be flipping back and forth throughout the document, you can jump from section to section so you can jump from the recommendation directly to the symptom management section that you see here where you have at a glance quick suggestions for pharmacologic and non-pharmacologic treatment options. So if I focus you here on the right side of this slide, given that there is no evidence for the benefit of vestibular suppressants in the chronic stages of mild TBI, the CPG really highlights that meds should only be used for very short periods of time. Specifically for acute exacerbation of dizziness and vertigo that are functionally limiting. In general they offer here some medication guidance but at any rate any medication should be used with caution because patients often report significant side effects especially sedation can be a problem with the use of these medications.

Another nice feature that is not shown here but I wanted to mention is that CPG also offers you a table that outlines the broad categories for functional complaints that are often associated with dizziness and imbalance. It cross-references it with possible root causes that can guide assessments and the rehabilitation treatment options and referrals to any specialties that may be needed for refractory symptoms.

You also heard Dr. DeGraba talk earlier about the timing of neuropsychological or cognitive assessments specifically calling for non-comprehensive assessments or comprehensive neuropsychological assessment within the first thirty days post-injury. Over the next few slides we are going to highlight recommendations for cognitive assessment and treatment for those who present with new, persistent or worsening symptoms that have not resolved within that thirty to ninety day post-injury period in spite of primary care management of sleep disturbances, headaches and pain and other coexisting factors that we know can interfere with cognitive function. And that we want to make sure are treated before referral for any type of cognitive intervention.

As with other clinical systems we talked about so far the emphasis of the focus assessment should be on functional limitations with the goal of using those assessments to guide the treatment interventions. There was no evidence to recommend any specific test over another so the suggestion is that cognitive testing is based on the skills, the training and the preferences of the clinician as well as on the needs and presentation of that specific patient. One of the things that changed from the 2009 version to this one is that instead of using neuropsychological assessment we chose to use the word Structured Cognitive Assessment to represent other types of functional assessments that may be helpful from very disciplined to guide cognitive treatment that can be based on patient presentation as well as on the availability of services that are in any particular setting. We do not want to force anybody to go out and refer to a neuropsychologist if they do not have that service available but they may have other services that could administer those treatments and assessments within their setting.

As we continue on the recommendations for this chronic phase the recommendation for cognitive treatment here on this slide also refers to those that are symptomatic for thirty to ninety days post-injury but for clarity I wanted to add that this can include also those who report current symptoms. So symptoms that are functionally limiting at the point in time when they show up to your clinic and that could be months or sometimes years after the injury event. This recommendation suggests referral to TBI rehabilitation specialists, which typically include psychology, neuropsychology, speech language pathology, occupational therapy as well. A referral for a short-term trial of strategy training including instruction and practice with memory aids and the structured training of a system technologies that would facilitate daily functioning. So the body of evidence for the efficacy of cognitive interventions for those with a history of mild TBI is starting to grow, it is nowhere near where the evidence for moderate to severe TBI is at this point in time but there was enough that we could actually offer some suggestions for structured interventions in addition to providing education which was the main recommendation of the previous CPG for cognitive symptoms. Still, there were significant limitations in the body of literature, a lot of studies with mixed populations including studies that had both mild and moderate mixed in there, very small number of subjects in some of those studies. We really could not recommend any specific type of service, any specific therapy dosage. So the emphasis remains on short-term functional and goal oriented.

At the bottom here you see on Recommendation Number Nineteen that we only amended the wording from 2009 but the group continued to suggest against the use of medications, nutraceuticals, herbal supplements and those sorts of things for the purposes of attempting to improve cognitive function.

The symptom management table here also part of the appendices that the others outlined the non-pharmacologic treatments that were suggested by the working group and the guidance section of the full document also expands on the consensus based tools such as metacognitive strategy training, CBT, motivational interviewing and goal attainment scaling as you see here. As I said earlier in addition to the psycho-education that can be offered to help focus the interventions and improving the patient’s participation in meaningful activities and focused on recovery and positive outcomes.

At the end of the presentation I know Colonel Grammer talked about where you can find the CPG’s in the DVBIC website. There is also a link through the VA website that you can have access to that and we will show you that at the end.

The last four recommendations here pertain to the setting of care and when is it inappropriate to use primary care providers or when it is important to involve specialists and most of the disciplinary provider teams. Consultation and collaboration with TBI specialists continues to be encouraged if the symptoms are refractory, the primary care treatment or sleep, headache, pain all those kinds of things have been taken care of, there are still symptoms and the primary care provider in his or her clinical judgment believes that a specialist may be helpful. However, there was only limited evidence that people with a history of mild TBI who received those multi-disciplinary interventions have better functional outcomes than those that receive usual care by a general practitioner. There also was no evidence to dictate that care should be received solely in the primary care setting or solely in a multidisciplinary setting. The primary care setting remains the setting of choice for care coordination and management of these patients in this CPG but the group recognized that primary care providers are often overwhelmed and that for some patient’s clinical judgment as I said earlier may indicate otherwise and the primary care provider may suggest a referral to specialty services. The group put great emphasis on the importance of a coordinated approach to primary care and the value of case managers as you see here in Recommendation’s Twenty-two and Twenty-three to help the primary care provider in supporting patients, educating them, monitoring them in those settings particularly for patients who present with multiple and persistent symptoms where that increased coordination and collaboration may be a benefit.

A lot of the discussion for this section in setting up care in the chronic phase we also run the evidence that the longer post-injury the higher the chances are that the patient presents with other conditions, coexisting conditions, depression, anxiety, pain, negative self-belief and so forth. The working group really suggests that providers should be cognizant of the risk of assuming that symptoms that present months or years after the injury are actually caused by the injury itself. And encourage providers to consider taking a chronic multi-system approach to problems that are longstanding and maybe a lot of problems present and referred to CPG’s for chronic multi-symptom management for additional guidance. That is also available on the websites that we are going to show here next.

Here are the sites where you can find the VA/DoD CPG’s as well as the DVBIC website, the Defense Centers of Excellence website. There are also some other tools and guidance that offer throughout the CPG and these are some of those websites or links where you can find rehabilitation toolkits that also provide additional symptom management options for cognitive, visual, headache, hearing disturbances and so forth.

I think with that we will leave it up to Molly to lead us in the question and answer session. Thank you.

Molly: Thank you all very much. We may run a few minutes over, are the three of you available to stay on and capture the answers in the recording?

Linda. Picon: Yes we are Molly.

Molly: Excellent. The first question – is ST amnesia not a symptom of mild TBI?

Linda Picon: I am sorry Molly can you say that again, the part before amnesia?

Molly: ST as in Susan Tom, I am not sure what those letters stand for, ST amnesia.

Linda Picon: I am guessing short-term maybe; your guess is as good as mine I am not sure what ST stands for.

Colonel. G. Grammer: This is Colonel Grammer, amnesia would be included as part of alterations and consciousness so we go back to I am trying to find the slide for you, give me one second [background talking]. [There it is right on the back] Posttraumatic amnesia is the fourth one down so zero to one day; one to seven days; greater than seven days for mild/moderate/severe. Hopefully that answers the questions, I am sorry if I glossed over that, but we still included that. I will say that as long as we are talking about, the Glasgow Coma Scale has actually gotten dropped in 2015 but we kept these old criteria in the guidelines because it was a refresh in 2009 as opposed to a new guideline from 2016.

Molly: Thank you very much. If neuroimaging is not recommended how do you handle discriminating between uncomplicated and complicated? For instance concussion with findings on MRI, which can affect the outcomes.

Dr. T. DeGraba: Right, this is Tom DeGraba, and so if not that neuroimaging is not indicated and I want to make it clear that that recommendation was specifically designed to not make the diagnosis of mTBI based on neuroimaging. In fact many patients who come in who do in fact have the clinical criteria for mTBI may have perfectly normal CT scans and in fact MRI scans and yet they have all the classic manifestations of having a neuro-network or neuro-injury actually occur. It is very useful again in looking and identifying things such as subdural hematomas and other features that can affect how you look at those service members and patients longitudinally. Again, it is not saying that those tools are not useful it is saying that they are not necessary to be positive to make the diagnosis.

Linda Picon: Tom this is Linda, if I may add one point that I think is worth highlighting. It is the word that is used throughout the CPG – routine. The idea is that we do not consider these things as part of a routine evaluation that they are only used as needed based on clinical judgments but not everyone every time should undergo these tests.

Colonel G. Grammer: This is Colonel Grammer just a reminder for everyone that this guideline picks up seven days after the point of injury so that may be different than someone showing up in the emergency room with a loss of consciousness from a head injury and what you do in that situation.

Molly: Excellent thank you all very much. Here is a comment that came in – regarding headaches please also include your local optometrist or ophthalmologist early on in the multidisciplinary treatment plan to rule out visual disturbances, acute onset, asthenopia (I am sorry I know I am butchering that) or double vision as a source of their headaches. Careful examination can reveal conditions amenable to treatment and improvement in symptoms. Thank you to that commenter.

Dr. T. DeGraba: Certainly in the post-concussive setting, eye movement abnormalities can play a significant role in not only headaches but also in what is described as balance disturbances. Many times people look to see if they have vestibular or balance services and it turns out that it is eye movement abnormalities, loss of or disruption of accommodation technique or disruption of fourth cranial nerve so people will have a head tilt. So absolutely agree with that comment that in fact eye movement abnormalities can indeed lead to and present as something such as a headache disorder and not to miss that as a potential treatable etiology to the presentation state.

Molly: Thank you. Finally - is there a test battery recommended for APD testing?

Linda Picon: Tom you can certainly take this. I would say that no there is no specific battery recommended for this. In fact there is not a recommendation for the assessment and management of auditory processing disorder. Still the recommendation tool to refer to a hearing specialist, i.e., audiologist when symptoms are present is the recommendation of choice. Clinical judgment I think that also working with the speech pathologist in conjunction with the audiologist because we know that there are cognitive symptoms and issues that sometimes sort of play together. We do not want to ignore the cognitive factors that may be present there but there is no recommendation on the CPG for any auditory processing battery, no.

Molly: Thank you. That is the final question that came in, would any of you like to give me concluding comments before we wrap up?

Linda Picon: Dr. DeGraba you may want to say something on your own. I just want to thank everyone; the healthquality.va.gov has the links to the full CPG, the clinician summary which is a little more usable in terms of length. There is a patient summary of the CPG as well as some pocket cards that have the algorithms that we talked about today, very useful to have quick access to them whether as an actual hard copy pocket version or perhaps even to have them as icons on your desktop that you can easily reference for quick access when patients with mild TBI present to your clinic. Lastly I would say that I know there were lot of rehab providers present on the call today and we thank you. I want to exert everyone to take on the responsibility to educate primary care providers and make sure that they are seeing this so that we can continue the collaborative effort of everyone standardizing practice and helping us to disseminate this important information with primary care and other providers.

Dr. T. DeGraba: I echo the comments by Ms. Picon, and again thank you so much for the opportunity to participate in today’s conference.

Molly: Excellent, well thank you so much all of you for coming on and lending your expertise to the field and of course thank you to our attendees for joining us. This session has been recorded and you will receive a follow up email with a link leading to the recording and you can pass that along to anybody you feel may be interested in this topic.

I am going to close out the session now and a feedback survey will populate on your screen. Please take just a moment to fill out those few questions, we do look very closely at your response and it helps us to improve sessions we have already given as well as ideas for new topics to facilitate. If you are looking for a copy of today’s handouts they are in the reminder email you received this morning.

Thanks again everybody have a great rest of the day.