

VETERAN'S GUIDE TO EFFECTIVE PAIN MANAGEMENT

Durham Veterans Affairs Health Care System | VISN 6 Mid-Atlantic Mental Illness Research, Education and Clinical Center (MIRECC)

A Presenter's Guide

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VISN 6 Mid-Atlantic MIRECC

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Table of Contents

Introduction	1
Key Definitions	3
Slide Guide	5
Title Slide (Slide 1).....	6
Goals for Today (Slide 2).....	7-8
Define Pain (Slide 3).....	9
IASP Pain Definition (Slide 4).....	10-11
Acute Vs Chronic Pain (Slide 5)	12-13
Chronic Pain Cycle (Slide 6).....	14
Pain Signal Transmission (Slide 7).....	15
Gate Control Theory Biology (Slide 8).....	16-17
Gate Control Theory Open (Slide 9).....	18
Gate Control Theory Closed (Slide 10)	19
Manage Pain (Slide 11)	20
Pain Differences (Slide 12).....	21
Pain Management (Slide 13).....	22-24
Opioid Risks & Side Effects (Slide 14)	25-26
Changing Thoughts (Slide 15).....	27
Unhealthy/Healthy Thoughts and Behaviors (Slide 16).....	28
Healthy Behaviors (Slide 17).....	29
Understand Pain (Slide 18).....	30
Time-Based Pacing (Slide 19).....	31
Communicate Effectively Transition (Slide 20).....	32
Communicate Effectively (Slide 21).....	33-34
Today's Summary (Slide 22)	35
References	36-38

Important information about this guide

This section will provide the presenter with a brief introduction to chronic pain management, explain how to deliver the associated training materials, and will provide some technical guidance.

Background

These pain management training materials are a unique educational contribution to the field, as they were thoughtfully developed by an interdisciplinary team of pain specialists. Contributing specialties include anesthesiology, nursing, pharmacy, physiatry, primary care, psychiatry, and psychology. The result is a well-informed training that addresses pain management using a biopsychosocial approach to pain care.

Introduction

Chronic pain disorders are a critical health problem for Veterans, affecting almost half of Veterans seen in the VA (Kerns et al., 2003). As many as 50% of male and 75% of female Veterans report pain in a primary care setting (Murphy et al., 2014) which can negatively impact emotional and physical well-being, cognition, quality of life, and functional abilities, and increase the risk for suicide (Office of the Army Surgeon General, 2010). In addition, chronic pain disorders are extremely challenging to treat safely and effectively, as pain frequently co-occurs with other physical and mental health problems.

Although most pain conditions are treated in primary care settings, primary care providers (PCPs) may not feel adequately prepared to handle chronic pain disorders. PCPs identify several barriers to providing optimal care, including significant knowledge deficits in pain management education and training, pessimistic expectations for effective pain relief, and generally unfavorable views of patients with chronic pain disorders. These factors too often result in suboptimal or inappropriate pain management. PCPs are often uncertain about risk/benefit tradeoffs in initiating and/or continuing chronic opioid therapy and are concerned about the potential for opiate misuse. Unfortunately, the net result is that many patients with chronic pain conditions do not engage in less-invasive treatments; instead, pain symptoms are managed with a single pharmacological modality that have contributed to a surge in opiate-related overdoses.

In response, the VA recently issued pain management directive VHA 2009-053, advocating for concurrent development of Patient Aligned Care Teams (PACT), implementation of Stepped Pain Care, and integration of Behavioral Medicine into Primary Care. Locally, PACTs have been successfully implemented into the Durham VA Health Care System (DVHCS)'s primary care setting and Behavioral Medicine providers are now present in primary care settings. This project's initial aim was to address the VHA 2009-053 directive by providing patients and providers at the DVHCS with information and education to help them better understand chronic pain, its impact, and provide *multimodal* treatment options to be used early and in a stepped care fashion.

Mission

With successful implementation of this project at the local level, our project aims have expanded to developing and distributing this package (i.e., PowerPoint presentation and Presenter's Guide) to providers in VA facilities nationwide to help increase access to chronic pain education for Veterans. This package was developed to be delivered to Veterans by providers with varying levels of familiarity with chronic pain and behavioral pain management. It includes basic background information on all topic areas and contains a list of references and suggested readings for continuing education. Our primary goal is to assist providers in successfully and competently delivering the presentation to Veterans with chronic pain with an emphasis on encouraging Veterans to be active in their own healthcare through positive behavior change and improved communication with medical providers.

Target Audience

The target audience for this project is Veterans who may be new to the experience of chronic pain and/or new to cognitive-behavioral approaches to treatment. The audience will also include providers who may be treating patients with chronic non-cancer pain and who are responsible for providing targeted education and guidance for patients to self-manage their chronic pain conditions.

Organization

This Presenter's Guide is organized by presentation slide; below each slide is a summary of the slide's purpose followed by background information the user will find helpful for the presentation. More specific information is provided in the "notes" section of the companion slide deck. The presentation begins by defining chronic pain and describing its impact, shifts to outline effective pain management strategies, and concludes with tips to communicate more effectively with medical providers.

Technical Considerations

Duration to Deliver: This class will require between 60-90 minutes to complete. It is meant to be more of an overview of effective pain care management and an introduction to Cognitive Behavioral Therapy skills development. Please provide attendees with behavioral health and other pain-related resources available at your institution and within the local community.

Power Point Presentation Set Up: Details on how to set up the power point presentation can be found [here](#). If you find that the speaker notes are being displayed to the audience you can quickly swap the presenter view and slide view monitors. To do this, on the task bar at the top of Presenter view, select **Display Settings**, and then select **Swap Presenter View and Slide Show**.

The presenter is encouraged to be familiar with key definitions and aspects of pain management

This section will provide the presenter with some key definitions that will help facilitate the presentation and discussion with attendees.

Key Definitions

When referenced in this guide and associated presentation, the term “pain” will refer to chronic non-cancer pain, as defined by the International Association for the Study of Pain (IASP), unless otherwise stated. Slide content will assist presenters in teaching the distinction between acute and chronic pain. Pain associated with malignancy will not be a focus of the current presentation or Presentation Guide.

Acute Pain: Acute pain is time limited, typically lasts for a few weeks, and can happen for many reasons. It's usually caused by something specific, such as a surgery, a back injury, or a sprained ankle, and goes away after the body has healed, usually within 3-6 months.

Biopsychosocial model: The current and most widely accepted model to understand and treat pain. It views chronic pain through a framework that considers physical, psychological, and social factors that may collectively influence a patient’s clinical presentation and attempts to address many of these factors as opposed to just one.

Chronic Pain: Pain that continues after an injury is healed and persists for more than 3-6 months. Chronic pain is much more complicated than acute pain. Chronic pain can impact mood, lifestyle, and overall well-being.

Cognitive Behavioral Therapy for Chronic Pain (CBT-CP): CBT-CP is an approach rooted in the development of a strong therapeutic relationship that encourages clients to adopt an active, problem-solving approach to cope with the many challenges associated with chronic pain (Burns et al., 2015 in Murphy et al., *Cognitive behavioral therapy for chronic pain among veterans: Therapist manual*. Washington, DC: U.S. Department of Veterans Affairs).

Gate Control Theory of Pain: A model that proposes that pain signals come from the pain location and can be modified. A “gate” in the spinal cord can be opened or closed; therefore, the experience of pain can be exacerbated or minimized by addressing particular stimuli.

Motivational Interviewing (MI)/Motivational Enhancement (MET): Evidence-based strategies to enhance one’s motivation for change. The process explores reasons to change unhealthy behaviors and addresses ambivalence, which is common during any change process.

Neuropathic pain: Pain that occurs where there is nerve damage. Neuropathic pain is often described as shooting, burning, or tingling.

Nociceptive pain: Pain that is caused by damage to body tissue based on input by specialized nerves called nociceptors. Nociceptive pain is generally musculoskeletal and described as aching pain.

Non-opioid analgesics: Medications unrelated to natural or synthetic opioids which are used to treat pain. Nonsteroidal anti-inflammatory drugs (NSAIDs), which includes aspirin, ibuprofen, and naproxen, are commonly used non-opioid analgesics.

Opioid analgesics: Opioid analgesics or narcotics are compounds that bind to opioid receptors in the brain. Common opioids include morphine, hydrocodone, oxycodone, codeine, and methadone. Opioids produce effects centrally and are associated with high rates of misuse and physiological dependence.

Stepped pain care: Stepped pain care provides the framework requiring the progressive addition of resources based on complexity, treatment response, medical and mental health comorbidities, and risk to patients. It begins with low intensity interventions and progresses through a series of increasingly intensive interventions.

Additional resources to be familiar with:

The VA has several websites with educational information on chronic pain.

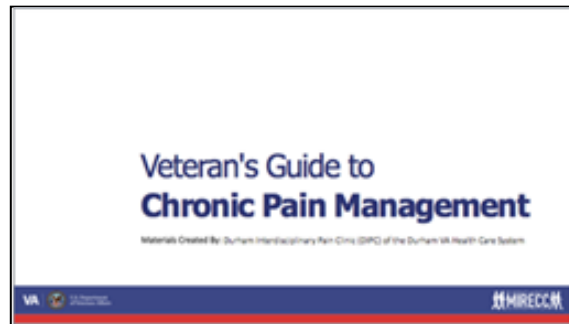
1. For Patients:
 - a. https://www.va.gov/PAINMANAGEMENT/Veteran_Public/CHRONIC_PAIN_101.asp
 - b. <https://www.myhealth.va.gov/mhv-portal-web/ss20180620-understanding-acute-chronic-pain>
 - c. https://www.va.gov/PAINMANAGEMENT/Veteran_Public/index.asp
2. For Providers:
 - a. <https://www.va.gov/PAINMANAGEMENT/Providers/index.asp>
 - b. <https://www.va.gov/painmanagement/>

Useful information needed to effectively present these materials

This section will provide the presenter with detailed information to deliver the materials in the companion slide deck. An image of each slide is presented in the right top corner of the page with relevant content in the text below. The goal of each slide is presented to the left of the slide image. Some sections will include additional images and recommended links for further reading. Speaker notes are also included in the companion slide deck. The speaker notes are generally not as detailed as the information in this guide, but should provide sufficient guidance, particularly if the presenter is knowledgeable of the topics presented.

Slide 1

Goal: Introduction slide to allow for a brief welcome of Veterans to class, including orienting them to purpose of presentation and class guidelines. This time can be used to introduce the speaker(s) and establish confidentiality and other rules for the class. Also, a brief introduction about the development of the training materials will help participants understand the uniqueness of the class.



Background: This class was developed by several pain specialists from different disciplines including anesthesiology, nursing, pharmacy, physiatry, primary care, psychiatry, and psychology. We have heard many patients say, “I wish my doctors would talk to each other.” So, we did. And we found that by combining efforts of people with different areas of pain expertise, we were able to develop approaches that no one specialty could do on its own. The result is this educational program that addresses pain management with an emphasis on a biopsychosocial approach to pain care. Perhaps most importantly, this approach includes the one expert on your pain that can often be excluded: the patient!

Slide 2

Goal: Communicate the goals for the presentation and provide a general outline of areas covered.



Background: The goals of this course are many; however, we first and foremost want patients to understand that the field is transitioning from a biomedical approach to a biopsychosocial approach of pain care. Functionally, this means that patients with chronic pain are encouraged to become more engaged in their own care, and to make positive behavioral changes that improve their ability to manage their pain and increase function.

Often patients with chronic pain feel they have little control of their pain and/or their life. They feel that pain has taken away their ability to do the things they enjoy. We want to give patients the tools to live the life they want to live. Through collaborative self-management, the emphasis is on improving function rather than cure.

We want patients to understand how acute and chronic pain differ and that they require different treatments. The biomedical approach used to successfully treat acute pain is often ineffective when applied to chronic pain.

Mistaken beliefs about chronic pain by the patient, provider, or both can and often do lead to poor treatment outcomes. Take for example, the belief that there must be a biological or physical problem for pain to be “real.” Perhaps the patient is subjected to many tests and when the tests do not show any physical problems, providers begin to doubt the patient’s accounts of pain. Or perhaps the opposite happens, and the patient insists on many unnecessary tests in a mistaken belief that there is a physical problem to be found if only the provider would try harder. In either case, patients and providers end up feeling helpless, and often the relationship ends with patients seeking a new provider, where the cycle starts all over again. And worst of all, throughout the entire ordeal, at no time was effective treatment offered or tried.

These mistaken beliefs lead to an exclusively biomedical approach. No doubt, a biomedical approach is usually appropriate and effective for acute pain, but often leads to poor results when applied to chronic pain. Treatments begin as rational, with interventions like medications, injections, etc. All is well when these interventions are effective; however, when pain doesn’t improve, these treatments can become non-rational (i.e., increasing medications that are not effective). Doubling down on ineffective treatments is not the way to improve chronic pain. Fortunately, there are better options!

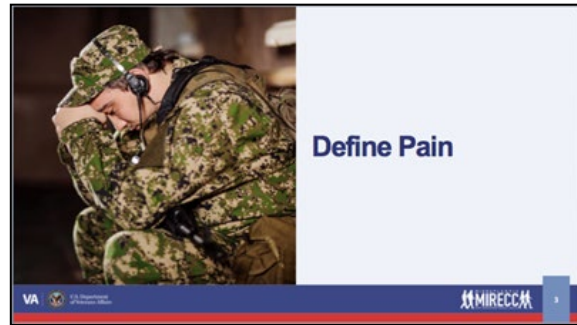
In this presentation, we will introduce patients to the persistent pain cycle and help them develop a better understanding of how pain interacts with their mood and function. We will discuss strategies

to help them better manage their pain, including time-based pacing, and will briefly discuss how thoughts about their pain result in various helpful, and sometimes not so helpful, behaviors.

Finally, we will briefly discuss how patients can more effectively talk with their medical providers about their pain. We also hope to help patients better understand some of the reasons for recent changes in long term opioid prescribing for chronic pain conditions.

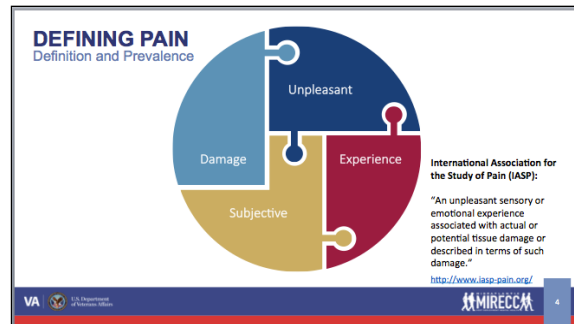
Slide 3

Goal: Transition slide to help patients better understand their own experience of pain.



Slide 4

Goal: Develop an understanding of the accepted definition of pain, and what may contribute to an individual's unique pain experience.



Background: Chronic non-cancer pain is a symptom of many diseases (e.g., arthritis, diabetic neuropathy, past traumatic injury), and often occurs in the absence of any specific underlying diagnosis. Chronic pain is unfortunately a common experience for many people in this country – National Health Interview Survey (NHIS) data demonstrates that approximately 11% of adult Americans experience chronic pain (NIH, 2015). In male Veterans seen in VHA, however, estimates are higher. As many as 50% of male Veterans have chronic pain conditions (Kerns et al., 2003). Pain affects approximately 50 million Americans, and as many as 41% will report that their pain is not well controlled (Nicholson et al., 2006). The costs related to treatment and lost productivity range from \$70 to \$100 billion annually (Gatchel & Turk, 1996; Gatchel & Mayer, 2000).

The International Association for the Study of Pain (IASP, Merskey and Bogduk, 1994) defines pain as *an unpleasant sensory or emotional experience associated with actual or potential tissue damage or described in terms of such damage*. The IASP definition of pain is important both for what it states and what it doesn't state. "Sensory or emotional experience" could perhaps have been better phrased "and/or". What is critical to recognize is that pain does not have to be sensory but can be additionally or exclusively emotional. Carefully teasing out the sensory and emotional components of chronic pain will allow for better diagnosis and treatments, which may be very different for sensory vs emotional pain, even if the latter is expressed in terms of the former.

"Experience" is an important word in this definition, as pain is experienced differently. Pain is by its nature perceived through the experience of the patient; it is subjective, and there are no lab tests or imaging studies that can quantify or measure pain. Numerical scales, visual analog scales, verbal descriptors, and even pain behaviors are all merely tools used to help the patient communicate his/her experience. Seen in this light, it is easy to understand why a patient observed surreptitiously may appear comfortable, while the same patient when engaged face-to-face may exhibit pain behaviors.

"Associated with actual tissue damage" is easy to understand as injuries typically hurt. "Potential tissue damage" points out the protective function of pain: most mechanisms of injury cause pain *before* tissue is damaged. For example, heat sufficient to cause a burn injury typically causes pain prior to causing injury. This pain serves as an aversive stimulus that tends to cause the organism to remove itself from the source of potential injury.

"Described in terms of such damage" highlights the experiential nature of pain. Were there an objective measure of pain one would not need such descriptors. Because pain is an experience



without objective measure, people must communicate their experience by analogy to previous experience. Because certain types of injury are nearly ubiquitous, the pain associated with such experiences serves as common ground between speaker and the listener. Thus, we have descriptors such as “burning pain” and “stabbing pain.”

What the IASP definition of pain doesn't state is as important as what it does state. It nowhere makes a distinction between “real” pain and other types of pain. Pain is what the patient experiences it to be. Of course, there can be (and are) instances of deception. Trust by both patient and provider is critical to assessment and treatment of pain conditions. Providers are dependent on the patient to provide information regarding their pain. While outside observers can confirm or deny certain manifestations of pain thereby strengthening or weakening the patient's description, the patient is the sole authority regarding the pain itself. Unless the provider can trust the patient, s/he cannot assess the patient's pain. At the same time, the patient must trust that the provider believes them lest the patient augment the story to convince the provider that s/he really is having pain. Such augmentation, if misinterpreted will lead to a recursive loop of misstatements and mistrust.

[*The IASP website*](#) contains many helpful resources regarding education, information regarding pain schools/camps, pain scale references, and translated resources.

Slide 5

Goal: Define pain and describe factors that contribute to an individual's unique pain experience.

DEFINE PAIN Acute Pain vs. Chronic Pain	
 Acute Pain	 Chronic Pain
Lasts less than 6 months	Lasts more than 6 months
Symptom (of tissue damage)	Becomes the illness vs. symptom of something else
Expected to go away	No known cure / Focus on function
Useful signal something's wrong	Signal is no longer helpful as a warning sign
Rest often recommended	Rest (too much) can make things worse
Less (short-term, limited) life disruption	More (long-term, ongoing) life disruption

Background: While acute pain and chronic pain share a similar vocabulary, they are different conditions and require different treatment approaches.

The simplest way to distinguish between chronic and acute pain is based on time. The specific amount of time chosen is somewhat arbitrary and may be different in different contexts. In this example, we use 6 months. A strict time definition is very precise but may not be accurate. For example, is there really much difference between pain of 5 months and 29 days' duration vs. 6 months? Despite such limitation, a time-based definition may be very useful in certain instances, like determining inclusion criteria for a research study. In such a case, the clarity and repeatability of a strict time definition may be desirable.

Acute and chronic pain are different conditions and the differences go beyond merely time. For example, acute pain is generally associated with a sympathetic autonomic response, which generally extinguishes over time. Thus, a stubbed toe usually results in increased heart rate and blood pressure, while chronic back pain does not. Just as a person's hypertension should not be attributed to a chronic pain condition, the lack of a sympathetic autonomic response should not be interpreted as evidence against the existence of a chronic pain condition.

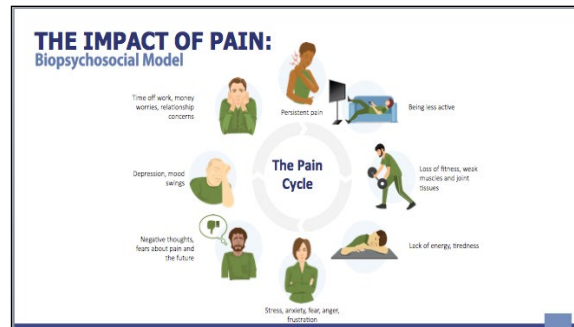
Acute pain is generally caused by some physical process. While a person's psychological state can significantly modify pain perception (for example, a gunshot wound experienced in battle may not begin to hurt until the soldier has reached the relative safety of an aid station), it is rarely the cause of acute pain. In contrast, chronic pain can result from psychological mechanisms. Nonetheless, the pain experienced is real and should be validated. As alluded to regarding the IASP's definition of pain, there is no difference in the legitimacy of pain caused by physical or psychological reasons. There are however, crucial treatment differences. Just as a broken leg will not be well treated with psychotherapy, back pain due to psychic conflict is unlikely to benefit from surgery. Again, taking care to look for and distinguish between the sensory and emotional components of pain has critical treatment implications. Care must be made when treatment includes opioid medications as these medications have effects on both sensory (nociceptive) pain, and emotional pain.

One major difference between acute and chronic pain is that acute pain serves a physically protective biological function while chronic pain does not. For example, a burn hurts and signals the organism to avoid the heat source, thus avoiding or limiting injury at the time. The ongoing pain during the healing process signals the organism to limit further injury. Finally, memory of the pain signals the organism to avoid similar situations in the future. It is through the experience of acute pain that we learn the association between hurt and harm.

In contrast, chronic pain has essentially outlived its protective function and ceases to be the symptom of a disease but rather becomes the disease itself. In fact, by altering body mechanics and limiting exercise it can become the cause of ongoing dysfunction and more pain, leading to a vicious cycle. In this case, pain no longer leads to an avoidance of harmful or potentially harmful behaviors, but in fact causes harmful behavior (either directly or indirectly by causing the avoidance of healthful behaviors). Restoration of function and health then involves not only treatment of the sensation of “hurt” but also a relearning of the relationship between “hurt” and “harm.”

Slide 6

Goal: Describe the persistent/chronic pain cycle and explain how pain impacts and is impacted by mood, thoughts, and behaviors.



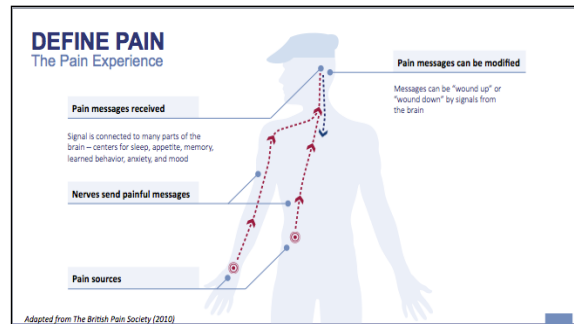
Background: The chronic pain cycle demonstrates the interplay between chronic pain and all domains of life (physical health, emotional health, social/family, work, etc.). This is a specific and visual cycle of the biopsychosocial model. It's not “just” about the pain; rather, the life dysfunction that the patient attributes to the pain is at the center of effective treatment.

The pain cycle graphic in the slide deck reveals the perpetual nature of chronic pain. Painful conditions can result in reduced activity. Sometimes this is due to the pain associated with certain movements, but other times it is related to fears of harming oneself more (i.e., increasing pain or injury). When one becomes less active, the body loses fitness—muscles weaken, and joints become stiffer. As a result, stamina is lost, and individuals feel more tired and experience low energy. Negative emotions and thoughts often accompany these negative moods, such as “I can’t do anything when I have pain like this.” One may often worry about their pain and how it will affect them in the future and may begin avoiding friends/family and any activities that involve movement because it hurts to move. The combination of negative mood, reduced activity, and less or no time with friends/families or engagement in meaningful activities leads to distress (such as depression, mood swings) and increased disability, which in turn increases the pain experience.

Additionally, the persistent pain cycle is important to providers for several reasons. First, it reminds the provider that persistent pain is not simply a biological experience, but rather a cycle with multiple influences. Conceptualizing a Veteran’s persistent pain symptoms in this manner is a way to directly apply the biopsychosocial model of chronic pain. In addition, it gives providers various avenues to help intervene and break the pain cycle without the initiation of or increased use of medication. For example, behavioral activation and pleasant activity scheduling can be used for patients who are withdrawn and not engaging in activities they enjoy and psychologically-informed physical therapy can help patients address a fear of movement and better discriminate the difference between “hurt” and “harm.” This pain cycle graphic can also be used as an educational tool to help patients understand how their pain is influenced by thoughts, feelings, and behaviors. Ultimately, the persistent pain cycle needs to be broken.

Slide 7

Goal: Briefly describe the pain experience and the basic biological process through which pain is felt in the human body (adapted from The British Pain Society, 2010).



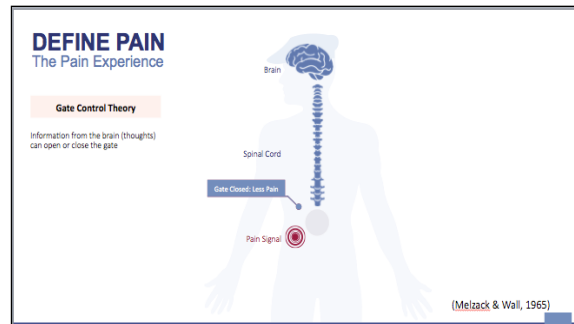
Background: Some, but not all data demonstrate that teaching patients the neuroscience of pain can be helpful (Louw et al., 2017; Watson et al., 2019; Wood & Hendrick, 2019). Some evidence suggests that pain neuroscience education can decrease pain, disability, fear-avoidance, pain catastrophizing, and improve movement. According to Louw et al., 2017, educating or re-educating patients about chronic pain neurophysiology and neurobiology is also about de-educating them about falsehoods and misbeliefs developed over the years. This presentation provides a very brief introduction to pain neuroscience but allows presenters the opportunity to expand this topic based on their own educational and comfort level with the topic.

Briefly, pain receptors are activated by a stimulus (internal or external), and this stimulus is converted (transduced) into electrical energy that travels (conduction) to the spinal cord along nerve fibers. When this signal reaches the brain, the brain perceives the pain. This bottom-up process of pain transmission is called the ascending pain pathway. However, once the pain signal reaches the brain, it gets processed further. There is a part of the brain called the thalamus that relays this pain signal to limbic and cortical brain areas that process emotion and perception. These pain signals thus can be increased/wound up or decreased/wound down within the brain. This is in part why pain is experienced more intensely when we are stressed, are sleep deprived, or are experiencing negative emotions like anger, frustration, and sadness. The good news is that we have some control over how these signals are processed in the brain and can learn skills to modify this process and thus feel less pain.

We recommend a 6-minute video entitled “Understanding Pain” for patients and for providers that can be found [here](#).

Slide 8

*Goal: Introduce the gate control theory of pain and explain how it may result in patients developing more control over their pain experience. *Note, this is an animated slide to show that the “gate” still allows some pain signals to travel to the brain, but that those signals can be reduced.*



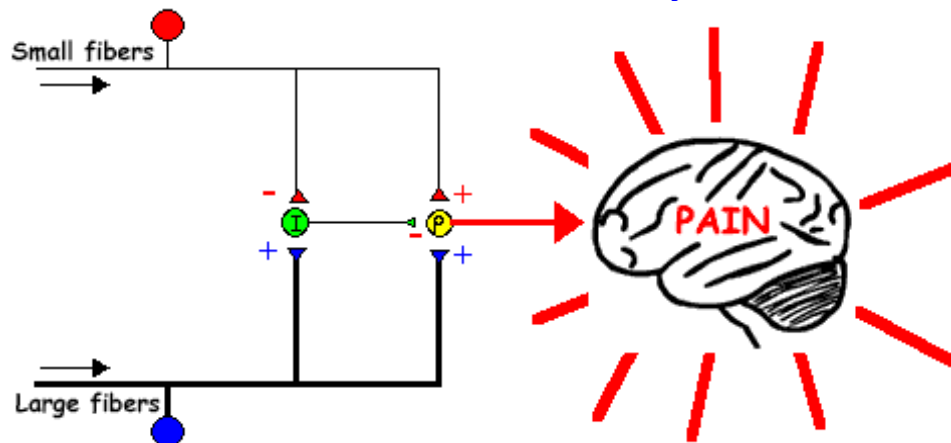
Background: The level of neurobiological detail discussed in this section is not likely necessary to discuss with patients. At a basic level, there are neurons in the spinal cord that carry pain information to and from the brain, and there are various factors that can reduce or increase these signals, thus reducing or increasing pain. These factors are to some degree within our control and become targets for intervention. We find it useful for presenters to be familiar with some of the neurobiological underpinnings of the Gate Control theory in order to be able to describe and explain it, as well as answer more detailed questions which may arise during the presentation.

The Gate Control theory of pain addresses how different factors can increase or decrease the pain experience. This theory contends that the pain we experience is a result of the balance between information coming into the spinal cord through different nerve fibers. There are large nerve fibers which carry non-nociceptive information (like pressure and touch) and small nerve fibers that carry nociceptive (painful) information. If the activity of the larger fibers is greater than that of the smaller fibers, less pain will be experienced. However, if the activity of the smaller fibers is greater than that of the larger fibers, then there will be more pain. This information converges in the spinal cord, which has been dubbed the “gate.” Both large and small fibers can modify an inhibitory neuron (“stop message”) that sends a signal to the projection neuron which connects to the brain (see figure below from [Neuroscience for Kids](#)). At rest (i.e., no pain signal input or stimulation), the inhibitory neuron stops the projection neuron from sending any information to the brain about pain. This is a situation in which the gate is closed, and less/no pain is experienced. When small fibers (nociceptors) are activated, they turn off the inhibitory neuron and the projection neuron sends information to the brain about pain. The gate is now open, and pain is experienced.

Now, what happens when both small and large fibers are activated simultaneously? When large (non-nociceptive fibers) are activated, the inhibitory interneuron is activated. However, when small (nociceptive) fibers are activated, the inhibitory neuron is turned off. When both large (touch, pressure non-nociceptive) fibers are activated at the same time as the smaller (pain, nociceptive) fibers are activated, the projection neuron is activated, but the inhibitory interneuron is also activated, which blocks the signal coming into the projection neuron. Thus, the pain signal from the projection neuron sent to the brain is reduced. This can easily be demonstrated by our behaviors when we stub a toe or injure our fingers. Often our first reaction is to rub, shake, or put pressure on an injury. This activates those larger fibers which increase activation of the inhibitory neuron and reduces the information sent to the brain through the projection neuron.

Some brain areas that receive this information are involved in perception and emotion, and some connect back to the spinal cord. Thus, information about pain can be modified by the brain. This is one way that pain can be reduced. Electrical activation of some brain areas, such as the periaqueductal gray can result in pain alleviation.

Gate Control Theory



I = Inhibitory interneuron (this turns off the projection neuron)
P = Projection neuron (signal to brain)
- = inhibition (blocking or reducing information sent to brain)
+ = excitation (activation or increasing information sent to brain)

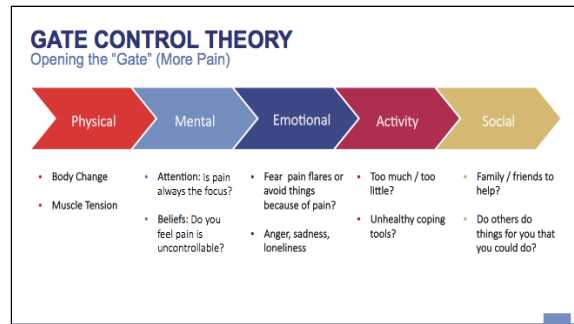
Graphic from Neuroscience for Kids ®, Eric H. Chudler, PhD

Resources on the Gate Control Theory can be found here:

1. [VISN 2 MIRECC Handout](#)
2. [Neuroscience for Kids](#)

Slide 9

Goal: Describe factors that “open” the pain gate (i.e., increase perception of pain). It may be helpful to continue to talk with patients about the neuroscience behind this concept. It’s an opportunity to help them understand the underlying pain biology, and the control they have to change their brains.

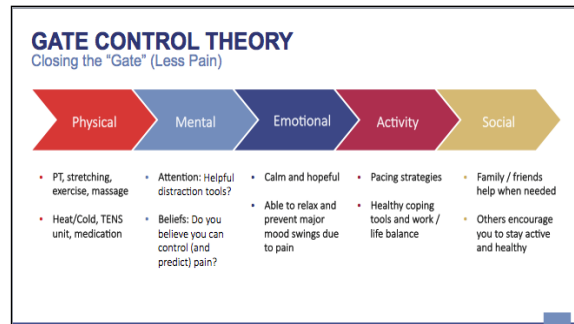


Background: As mentioned from earlier slides, the brain processes information received from the body about pain. It then sends a descending signal down the spinal cord to close, or open, the “gate.”

There are several factors that open the gate (i.e., increase our pain experience) (Melzack & Wall, 1965). These include, but are not limited to physical, mental, emotional, activity, and social states. For example, muscle tension can increase pain. Additionally, hyper-focus on pain and beliefs about one’s own ability to manage/control pain play a large role in how pain is experienced. Negative emotions (e.g., anger, sadness) can open the “gate” and create muscle tension to further worsen pain. Fear of pain or anticipating a pain flare-up can also cause us to avoid activities we really want to do. This can lead to reduced activity and stiffness and can lead to some of the negative emotions that open the pain “gate” and make pain worse. Too much or too little activity can increase pain, and the use of unhealthy coping tools such as overeating or substances like alcohol, cigarettes, and illicit drugs can also impact pain. Social support can also play a role in the pain experience, both in positive and negative ways. For example, it is good to have a support network to assist when needed, but sometimes people may do too much, thus leading individuals with pain feeling unable to do things for themselves and perhaps becoming further isolated and physically deconditioned.

Slide 10

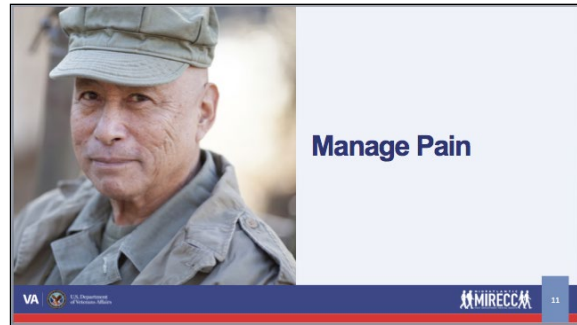
Goal: Explain factors that can help to “close” the pain gate and reduce pain.



Background: There are also factors that can “close” the gate (i.e., decrease our pain experience) (Melzack & Wall, 1965). Experimenting with a variety of physical pain management strategies can help with pain. These management strategies include physical therapy, stretching, exercise, and massage. Heat/cold treatments, transcutaneous electric nerve stimulation (TENS unit), and medication can also be helpful. Distraction techniques can be powerful, as can the belief that one has some ability to effectively manage and control some of their pain experiences. Positive emotions, such as feeling calm or hopeful, or being able to relax can improve pain and prevent major mood swings that occur because of pain. Having a healthy mix of both rest and activity is helpful. It is important to pace physical activity and maintain healthy coping tools for a strong work/life balance. It is important to have people who can help when needed, while also encouraging activity and positive health behaviors. People should be encouraged to surround themselves with others they feel connected to, who provide support when needed, and who we feel good about being around.

Slide 11

Goal: This is a transition slide. Encourage attendees to think of ways these strategies can be applied to their own pain condition.



Background: The most important thing to remember is that pain is always experienced in the brain. Treatments can help reduce pain anywhere along the pathway including within the brain itself.

Slide 12

Goal: Describe how pain is a unique and subjective experience and outline the chronic pain pattern.

MANAGE PAIN
The Chronic Pain Experience

Everyone's Pain is Different

Location
Initial cause
Perceived severity, etc.

Chronic Pain Pattern

- Continuous**
present about 1/2 the day or more
- Flare-up**
increase from "usual" pain level and may vary in how long it lasts

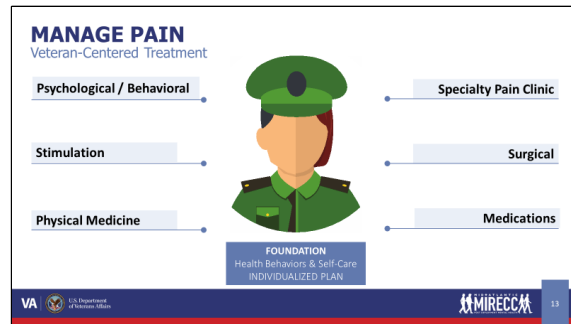
VA U.S. Department of Veterans Affairs MIRECC 12

Background: We can experience different types of pain, and each person's pain is unique. Some experience pain in several locations from a similar injury or experience, and others have the same pain location resulting from different types of injuries. Some may feel their pain is more (or less) severe than another's pain, despite the same type of location or injury that caused it. The ability to function (daily activities, chores, work, etc.) can differ between people, and the reason for such differences in experience is not always clear.

What is common for chronic pain conditions is a pattern of continuous pain, which is present half of the day or more, for 6-months or longer. Flare-ups, in which a person experiences an increase in severity from the usual pain level, are also common. There are several treatment strategies to help manage both continuous pain and flare-ups which are detailed in subsequent slides.

Slide 13

Goal: Describe common treatment options for chronic pain and how treatment is not a “one-size-fits-all” approach. Emphasize self-care and positive health behaviors.



Background: Multiple factors influence the experience of pain. We have presented two ways to describe or conceptualize this, the biopsychosocial model and the gate control theory of pain. As a reminder:

- The biopsychosocial model demonstrates how pain impacts physical health, emotional health, and social life.
- The Gate Control Theory of Pain describes how different factors “open” or the “close” the pain gate (i.e., increase/decrease our pain).

Pain is impacted by multiple factors (e.g., stress, mood, physical changes), so an individual’s treatment plan can include treatments targeting each of these factors. Everyone’s pain experience is unique and thus, it is essential that treatment plans be tailored based on individual characteristics and should emphasize collaborative self-management, pacing, shift in thinking (ability versus disability focus), accountability, adherence, and health behavior promotion that emphasizes improvements which are valued by the patient.

These treatments are available in medical facilities like VA, and individuals may benefit from a combination of these treatments to most effectively manage pain. However, before we begin to discuss specific pain treatments, we should emphasize the importance of a strong foundation of good health behaviors. All of us, including individuals with chronic pain conditions, need to take good care of ourselves. We need to eat well, sleep well, and play well. Investing in our own well-being can pay great dividends for our physical and emotional health and substantially impact our pain experience.

The following bulleted points will help presenters discuss the slide about pain management and case conceptualization.

- *Healthy Behaviors & Self-Care:* Individuals with chronic pain play the most important role in their own treatment. Self-care is a critical aspect of dealing with chronic pain. There are strategies individuals can use to decrease their pain experience and put them in the driver’s seat to improve their sense of control over pain. A discussion about a transition in pain care from a biomedical to biopsychosocial focus can be re-iterated in discussion of this slide.

One method of conceptualizing chronic pain management is to classify intervention techniques into one of six general categories. These categories are intended for practical utility rather than for scientific purposes.

Psychological measures: Treatment of the psychological or behavioral components of chronic pain as well as any psychiatric comorbidities is critical to long-term pain management success—both for the patient and the provider. One behavioral intervention that should be taken with every patient at the first encounter is to set realistic expectations for treatment and expectations for management, rather than a cure, of the chronic pain condition.

Several psychological or behavioral intervention strategies may reduce the experience of pain by improving pain coping and self-management skills training. Patients may find pain relief through treatments such as guided imagery, progressive muscle relaxation, self-hypnosis, or meditation. These treatments can be inherently empowering to patients, providing a sense of control and self-efficacy. Pain-specific cognitive behavioral therapy for chronic pain can also be very useful for helping patients to learn pain coping skills. Skills training is valuable since few chronic pain conditions can be eliminated, therefore most individuals benefit from learning strategies to live more successfully despite some degree of persistent chronic pain. Personality traits and cognitive processing styles such as [pain catastrophizing](#) can be identified with the guidance of mental health professionals and addressed in cognitive or cognitive behavioral treatments for pain. Those who exhibit catastrophic thinking will tend to be unnecessarily high utilizers of the health care system and effective treatment can have benefit for both the patient and the provider.

Additionally, symptoms of depression, grief, anxiety, trauma, and interpersonal conflict may manifest as physical complaints and chronic pain. These forms of pain are every bit as real as pain from an obvious physical cause such as a broken leg. Thus, careful evaluation of psychosomatic disease is essential and can facilitate appropriate treatment. Cognitive-Behavioral Therapy (CBT) is often recommended (Murphy et al., 2014), and Mindfulness-Based Stress Reduction and Acceptance and Commitment therapies are also used as alternatives to CBT (Veehof et al., 2016). However, those who perceive psychological stress as somatic symptoms may be reluctant to agree to psychological or psychiatric evaluation or treatment. Thus, providers may consider alternative methods to treat the patient's experience of pain such as medications (e.g., antidepressants).

Physical Measures: This category is listed second because many conditions can be caused or exacerbated by altered body mechanics. If a patient receives pain treatment and then returns to his/her lifestyle from before treatment, the same pain is likely to return. Exercise (with or without the help of a therapist), stretching, heat, cold, massage, yoga, weight loss, etc. all may be helpful. While not always applicable, it is often helpful to directly explain to the patient that effective pain management almost always requires the participation of the patient; the injections, pills, etc. can best be thought of as ways to help the patient make the changes that improve the painful condition. Collaborative management, including integrated care with a health psychologist or other MH provider skilled at working with patients with chronic health conditions, can be helpful in addressing some of these issues (e.g., weight management, compliance issues).

Particularly with exercise, there is likely to be some acute increase in pain or new pain when first starting. This is perfectly normal, expected, and predictable; therefore, the patient should be warned of this beforehand. Working with a physiatrist and/or physical therapist will help the patient learn

to distinguish between hurt and harm and help him work through the hurt, avoid harm, and eventually derive benefit.

Additional physical measures include adaptations to accommodate alterations in the patient's function. Physical and Occupational Therapists can evaluate patients for braces (e.g., knee brace or carpal tunnel splint), assistive mobility devices (e.g., wheelchairs, walkers, canes), and adaptive equipment (e.g., raised toilet seats, adaptive feeding, bathing, and dressing utensils) and train them on use.

Stimulation: TENS (transcutaneous electrical nerve stimulation) can be helpful and carries few risks or side effects. While it is difficult to predict whether TENS will be helpful in most situations, it is of such low risk that it should be tried aggressively. TENS does seem to be particularly effective for chest wall pain. Spinal cord stimulation should be considered in select cases.

In addition, there is growing interest in the study and use of electroceuticals not classified as TENS for pain reduction and functional improvement. Current limitations include little or no specific clinical studies, small studies lacking scientific rigor, limitations in the FDA approval process, and cost versus insurance coverage.

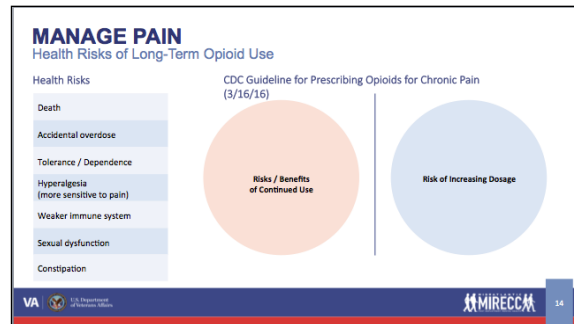
Injections: Trigger point injections, joint injections, epidural steroid injections, and facet injections are rarely curative, but in many cases can provide effective pain relief of several months' duration. Such relief can be very helpful for treatment of pain exacerbation (for example, to avoid increasing opioid analgesics) or for treatment for specific time periods (patient has a vacation with lots of walking planned or has a family reunion coming up for which s/he wants to be particularly active). Perhaps the best use for injection therapy is to provide analgesia so that the patient can better participate in the physical measures that will ultimately provide improvement of the underlying condition.

Surgery: Patients with chronic pain often have unrealistic hopes for a surgical cure to their problem, and if they search long and hard enough, will often find someone willing to operate. While surgery is often the definitive treatment (e.g., joint replacement) for both the underlying condition and the chronic pain, not every or even most painful conditions will respond favorably to surgical intervention. Because surgery carries significant risk, a conservative approach is prudent.

Medications: Medications are listed last because they are often thought of first. Tricyclic Antidepressants (TCA), Serotonin-Norepinephrine Reuptake Inhibitors (SNRI), Non-steroidal Anti-inflammatories (NSAID), steroids, immunomodulating agents, muscle relaxants, anticonvulsants, all may be helpful either alone or in combination. Combinations of moderate doses of drugs with different side effects and mechanisms of action are often better-tolerated and/or more effective than large doses of single agents. Opioids are at most *part* of an effective pain management regimen and deserve special caution because of the associated risks.

Slide 14

Goal: Describe risks associated with long-term opioid use and provide a rationale for optimizing or decreasing opioid use.



Background: Opioid treatment is often an area of confusion and stress for many individuals with chronic pain. For acute pain or cancer pain, opioids can be an effective way to manage pain. However, the long-term benefits of opioids for chronic pain are unknown, although there is substantial risk of harm:

All-cause mortality: Individuals using long-acting opioids for chronic pain (versus other types of medications such as anticonvulsants or cyclic antidepressants) are at a significant increased risk of death from all causes investigated (respiratory, cardiovascular, and non-overdose causes such as accidents or medication interactions; Ray et al., 2016).

Unintentional overdose: The risk for accidental overdose can increase with higher doses of prescribed opioids, and can include concerns such as respiratory depression, cardiac risks, and fatal drug interactions (Bohnert et al., 2011).

Opioid-induced tolerance / Opioid Use Disorder (OUD): With use over time, our bodies become less sensitive to opioids, which can lead to an increase in dosage and higher risk for side-effects or complications. Tolerance and increased use can result in OUD. Thus, a medication that was prescribed originally to help alleviate pain, can create new health concerns that will likely require formal and perhaps intensive treatment to return to better health.

Opioid-induced hyperalgesia (OIH): Opioid-induced hyperalgesia (OIH) is a state of nociceptive sensitization caused by exposure to opioids. It is characterized by a paradoxical response that occurs when a patient's pain is treated with opioids and he/she becomes more sensitive to painful stimuli. As a result, over time, patients may feel more pain and/or be more sensitive to pain despite no change in medical condition. Discontinuation of opioids can alleviate the pain resulting from OIH.

Immune system changes: Opioids cause the immune system to weaken, making it harder to fight infections.

Sexual dysfunction: Opioids are known to cause sexual side-effects (i.e., erectile dysfunction).

Constipation: Opioids are known to cause gastrointestinal side-effects such as chronic constipation. This link is so well known that we now have new medications on the market targeting the treatment of "opioid induced constipation."

Due to the developing awareness of the long-term risks of opioid use, the CDC published guidelines to help protect patients from long-term opioid use (CDC, 2016). Medical providers are advised to follow these guidelines on prescribing opioids. Providers are to evaluate the risk and benefits of continued use of these medications and to be aware of the risk that come with increasing dosage of these medications.

It is important to emphasize that patients should not make any changes with their own medication regimen without first consulting with prescribing medical providers.

Slide 15

Goal: Explain the importance of changing thoughts and shifting one's perspective in order to live well with pain.



Background: Shifting the perspective or changing how one thinks about their pain can be challenging; however, this is important in helping individuals be able to live well *with/ despite* the pain. These statements represent examples of ways of thinking that can lead to a more active and healthy response to your pain. This is the foundation for Cognitive Behavioral Therapy for Chronic Pain (CBT-CP).

It's essential to validate how challenging it can be to shift one's perspective. It's more than just thinking good thoughts. Negative, self-defeating, or pessimistic thoughts about pain are common and often automatic, and simply trying to avoid negative thoughts altogether is unrealistic. The process of shifting one's perspective is about identifying automatic thoughts when they arise (because they will!), recognizing that they are often inaccurate and lead to unproductive behaviors and outcomes, and then trying to replace the thought by attending to more balanced, helpful thoughts. This process takes time and practice, and it won't happen immediately for most patients.

Because this process can be challenging, it is a key skill discussed in CBT-CP. Most VA systems offer CBT-CP either in a group or individual format. Remember, because of the way pain is experienced in the brain, this is not just about learning to live with the pain. Making changes that allow patients to live well despite pain can reduce the pain. Just as some responses such as inactivity and isolation can lead to a cycle of worsening pain, positive changes can lead to a cycle of improving pain!

Slide 16

Goal: Emphasize the importance of our response to pain, contrast unhealthy and healthy responses.

Unhealthy Responses Increase Pain	Healthy Responses Decrease Pain
Thoughts <ul style="list-style-type: none">• My life is controlled by my pain.• No one understands what I'm going through.	Thoughts <ul style="list-style-type: none">• I am having a bad pain day, but I can still get things done.• When I have felt pain like this in the past, it was helpful to apply a hot compress.
Behaviors <ul style="list-style-type: none">• Inactivity• Isolating from others• Not taking care of oneself	Behaviors <ul style="list-style-type: none">• Doing things you enjoy• Being physically active• Taking care of yourself (physically & mentally)

Background: How one responds to pain directly impacts their pain experience in negative ways (i.e., opening pain “gate”) or positive ways (i.e., closing pain “gate”). Unhealthy responses to pain include unhelpful *thoughts* about the pain. For example, the belief that pain is uncontrollable and unpredictable or that no one understands what the patient is going through. The perception of control over one’s pain is a large predictor of health outcomes and function (Hanley et al., 2008). Unhealthy responses also include unhealthy *behaviors* that increase pain, including being inactive, isolating from others, and generally not taking care of ourselves. The good news; however, is that we know what types of thinking and behaviors can help decrease pain. Healthier ways to respond to pain include: helpful thoughts such as “I am having a bad pain day but I can still get things done”, or “When I have felt this type of pain in the past, it was helpful to apply a hot compress” and healthy behaviors, including doing things we enjoy, being physically active, and taking care of ourselves (both physically and mentally).

Slide 17

Goal: Describe self-care strategies for managing pain.



Background: Taking time to take care of oneself is an important way to gain more control over one's pain experience.

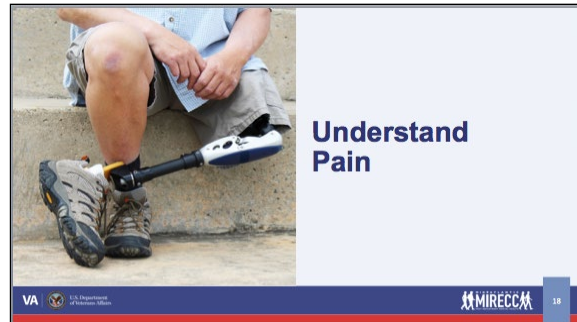
Stress can take a toll on overall health and can increase pain. Stress can lead to increased muscle tension, posture changes, negative emotions, and changes in thinking that impact our overall well-being. Some ways to manage stress include: engaging in relaxing or calming activities (such as meditation, prayer, reading a book, etc.) and staying active (exercise, volunteering, yoga). Stress management can be challenging, but it gets easier with practice. Mental health care providers and some Chaplains are trained in assisting Veterans to better manage stress.

Getting better quality *sleep* can also improve pain. It is beneficial to maintain a consistent wake time, reserve the bed for sleeping, avoid alcohol or caffeine close to bedtime, and use a continuous positive airway pressure (CPAP) device if prescribed. We also recognize that pain can negatively impact sleep. Implementing these other strategies can help. Our bodies may feel less painful with more restorative sleep, and if we wake up refreshed, we have a better opportunity to do productive things during the day that lower our stress level and help us feel more in control of our lives *despite pain*.

Maintaining a *healthy weight* through healthy nutrition and exercise can also improve pain experiences. Making small changes can add up over time. We recommend thinking about setting concrete goals like increasing daily servings of vegetables (e.g., to 3 if normally eat 2 usually) and making small changes in physical activity level (e.g., walk to the mailbox 1-2 times per day, stand and stretch, or walk around for 5 minutes every hour if sitting most of the time at work or home). There are additional services at the VA (i.e., MOVE! program, Wellness groups with Primary Care Psychology) that can help support Veterans in making better diet and exercise choices.

Slide 18

Goal: This is a transition slide. A major goal of this portion of the presentation is to help patients understand pain so that they can live more effectively with (or despite) pain.



Slide 19

Goal: Describe the importance of time-based pacing during physical activity and how to create a pacing strategy that is right for the individual.

UNDERSTAND PAIN

How We Move Matters: Introduction to Pacing

Find Your Active Time

I can walk for 10 minutes before a pain flare-up.

Find Your Rest Time

If I rest for 15 minutes, I can start walking again without experiencing a pain-flare up.

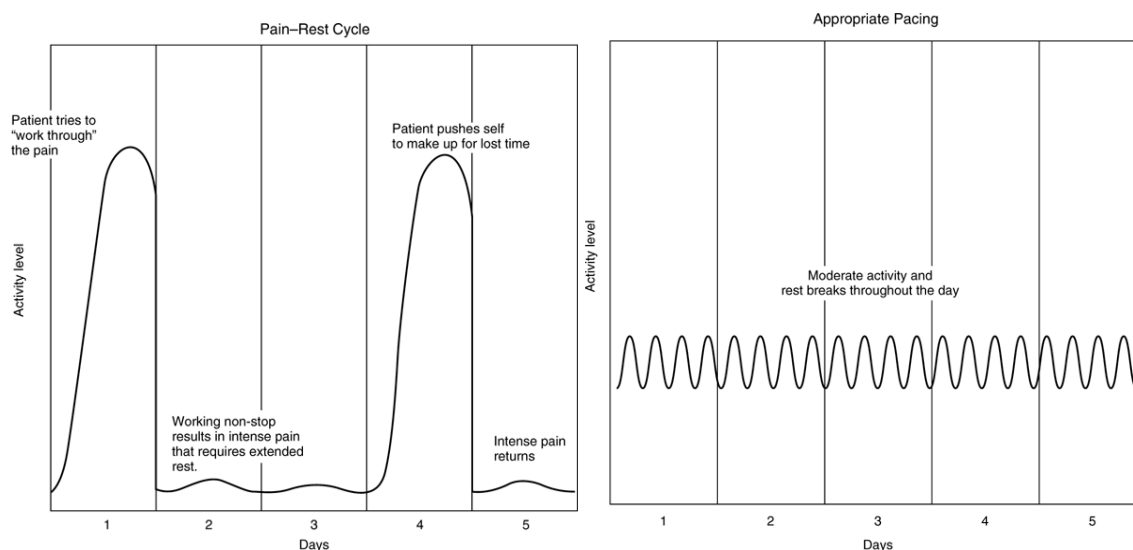
Alternate Between Active and Rest Time (Cycle)

After I walk for 10 minutes and rest for 15 minutes, I walk again for another 10 minutes.

Over time, the more cycles of walking and resting I do the more overall walking I can accomplish.

VA 19

Background: Sometimes, when one begins a project, it is hard to stop before it is completed. Often, people with chronic pain work on the project nonstop despite the increase of pain (pain flare). As a result of pushing through the pain, an individual may experience a severe level of pain that may require rest for an extended period. Sometimes, this time period can extend for days before s/he is able to work again. Once the pain decreases, one may have significant negative feelings about the time spent out of work and may feel a need to catch up on missed work. The “to do” list is approached similarly, and once again the pain becomes so severe that extended rest is required. This cycle is very common for those with chronic pain (“Pain Rest Cycle” graphic below, Otis, 2007).



Time-based pacing is a strategy to help individuals engage in activities that may be more difficult due to chronic pain (“Appropriate Pacing” graphic above, Otis, 2007). It is a process in which activity breaks are based on time intervals, not on how much of the job is completed:

- *Active Time:* How long one can engage in a task safely without causing a pain flare-up
- *Rest time:* Estimate how long needed to rest before doing activity again

Pacing strategies can be used for physical activities such as mowing the lawn but also could be used for other activities that may not be as difficult, such as sitting down and reading a book.

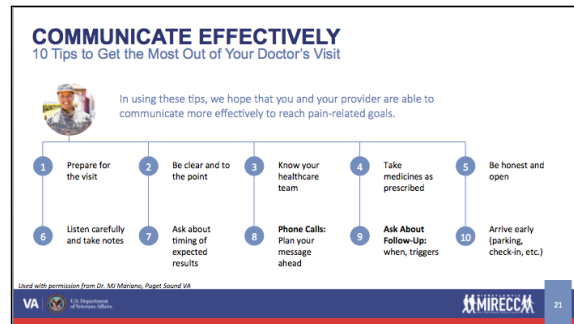
Slide 20

Goal: This is a transition slide. Another strategy to help manage pain is to communicate well with medical providers. A good relationship between provider and patient is key to effective pain management. Providers can support patients with goals and can help them to better understand their condition and treatment plan.



Slide 21

Goal: Provide a brief list of tips to help patients make the most of limited time with their doctor.



Background: In VHA, most chronic pain conditions are managed by primary care providers (Bergman et al., 2013). However, primary care providers have limited time to address chronic pain conditions during routine visits, as these visits are focused on disease management and prevention (i.e., blood pressure, diabetes, and heart disease). Patients; however, are frequently very eager to discuss their pain care, often prioritizing pain management concerns over all other medical needs. Thus, provider and patient agendas are often quite different and can result in misunderstandings, frustrations, and resentment. The patient-provider relationship is very important to VA providers (Matthias et al., 2010) and providers recognize the value that a positive relationship has on effective pain management outcomes. In addition to a variety of communication strategies that providers can engage in, patients can also play a substantial role in improving communication with providers and maximizing their experience.

Here are ten tips to make the most of health care visits with primary care providers. In using these tips, we hope that patients and their provider can communicate more effectively to reach pain-related goals.

Review each tip with additional information provided below:

1. Be prepared for the visit. Write down concerns and questions and prioritize them as there may not be enough time during the visit to discuss everything. Consider writing an agenda and sharing it with the provider at the beginning of the visit. The provider may share his/her agenda as well. Patients should expect that providers will ask about routine health issues such as high blood pressure, diabetes, and health screening. A new agenda can be established based on the priorities of each party.

2. Provide complete but succinct information. Although it would be helpful to be able to expand on their pain experience, time is limited during appointments, so it is important to include relevant and appropriately detailed information. Encourage patients to include information about expectations of pain care interventions and of their provider and to be prepared to describe pain location, severity, duration, and current function. They should also mention if function has changed as a result of treatment.

3. Know who's who on the health care team. Ask if it's not known. Patients in VA have PACT teams that include primary care providers, nurses, and mental/behavioral health staff. Patients should be aware that a separate mental health appointment is often not required, so patients can meet with mental health staff during their primary care appointments. In addition, some pain-

related groups are run out of primary care and are readily accessible to those receiving primary care services at VA. Encourage patients to ask about these opportunities.

4. Take medicines as prescribed. Encourage the patient to keep the team informed about changes in medication regimens s/he would like to make. Patients can reach out to providers at appointments, via phone calls, or through *My Health@Vet*. Reiterate that patients should not take medications that are prescribed to others and not to use illicit substances to treat pain or any other condition.

5. Be honest and as open as possible. Encourage patients to let their provider know if they have anxiety about the visit or any concerns. Providers are not able to read minds, so patients need to be honest about their experiences, symptoms, and care. Encourage patients to talk with providers about function and what they can do or not do. In this way, providers can work collaboratively with patients to set functional goals that are easy to evaluate.

6. Listen carefully & take notes. Listening to information one may not 100% agree with can be challenging. Listen to what your provider has to say and consider the options presented. Encourage patients to remain open to new or even old approaches to pain care that have been effective in the past. Suggest patients write things down so that they can remember all the information provided during the appointment.

7. Ask for information about time frames to expect test results, change in symptoms, and when to report back if not received. If patients have had pain for many months, it probably won't get better overnight. Have realistic expectations about time frames for improvement.

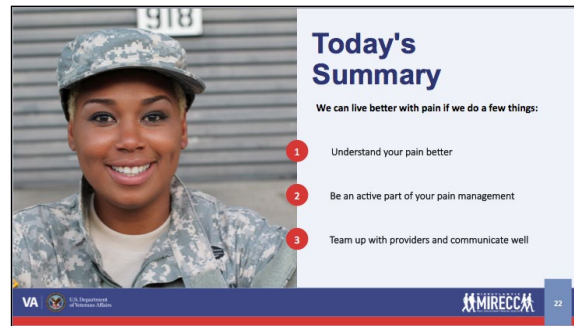
8. Plan phone message before you call. Be concise and succinct. Busy providers will appreciate a short message with a specific and well-organized question. For example, the patient might say, "Hi, this is John Smith 1234, date of birth 1/1/1974. My primary care provider is Dr. Smith. My ibuprofen prescription was changed, and I would like to speak with someone to tell me if I am taking it the right way. My number is 123-4567."

9. Ask for clarification about when to follow up and under what circumstances. Patients may not understand how to take medications when they have a pain flare or an acute pain condition. Being prepared for these circumstances can provide the patient with a sense of control and predictability, which is very important for positive pain outcomes. For example, if a patient has 2 different pain medicines, a heating pad, and a TENS unit to use as for pain flares, they should have a plan for how and when to use them.

10. Plan to arrive at appointments early enough to deal with possible unexpected delays due to traffic, parking, or finding a new clinic location. That way, the provider will have the maximal amount of time to be able to spend working with the patient. Sometimes clinics get behind for all kinds of reasons (emergencies do happen!), and patients can do their part to try to keep the clinic on track instead of running late.

Slide 22

Goal: Review summary of content of presentation.



Background: A lot of information was covered today. It is hoped that patients have a better understanding of the transition in chronic pain treatment from a biomedical to biopsychosocial approach. In support of this, we discussed how acute and chronic pain differ and emphasized how this guided different treatment approaches. In addition, we talked about how chronic pain impacts different areas of life. Pain has a reciprocal relationship with our mood, our interactions with others, and our physical function. Fortunately, we have some control over how much we allow pain to impact our lives. We discussed some strategies to do this, all while developing a better understanding of how our pain is experienced from a biopsychosocial perspective. Finally, we discussed a few ways that patients can improve communication with pain care providers.

Presenters should be prepared to provide patients with resources available to them at their local facilities and within the community. Consider inclusion of behavioral health interventions, complementary care, Whole Health classes and any other opportunities for patients to become engaged in their own pain care.

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