

# Treatment of Pain

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## TREATMENT OF PAIN

### Goal:

Healthcare clinicians will be able to choose the most appropriate first-line pharmacological and non-pharmacological therapy for common pain conditions based upon a complete pain assessment. They will learn to collaborate and communicate with colleagues to use an integrated approach to multidisciplinary pain treatment.

### After completing this module, participants will be able to:

- Describe the main pharmacological and non-pharmacological categories of pain treatments
- Communicate appropriately with patients about their pain treatment
- Follow first-line best practice guidelines for common chronic pain conditions
- Recognize indications for opioid and non-opioid pharmacological therapies for acute and chronic pain conditions
- Collaborate with colleagues in a multidisciplinary approach to pain management with a medical “home”

### Professional Practice Gaps

Chronic pain is a very common problem encountered in clinical practice. In a study involving 111 providers (attending physicians, nurse practitioners, physician assistants, and family practice residents), a mean of 37.5% of adult patients seen in a targeted week by any of the participating providers reported having current chronic pain<sup>1</sup>. Guidelines produced by the American Pain Society (APS) and the American Association of Pain Medicine (AAPM), Clinical Guidelines for the Use of Chronic Opioid Therapy in Chronic Noncancer Pain<sup>2</sup>, and CDC guidelines for prescribing opioids<sup>3</sup>, recommended multidisciplinary care for pain and that when opioids are prescribed for a patient with chronic pain, a single clinician should be identified who is primarily responsible for the patient's overall medical care<sup>2</sup>. However, multidisciplinary pain centers have decreased in number and are not an option for most patients in chronic pain<sup>4</sup>.

Individual pain providers need to coordinate care among themselves to provide the same multidisciplinary care in multiple settings. A survey of physicians found that they do not feel they have time to consult with other providers regarding their patients being treated for chronic pain<sup>5</sup>. Training in coordinating pain care and improved communications among pain providers is likely to lead to more efficient consulting, which will help address the barrier of not enough time. A survey of health care facilities regarding pain management practice standards and education revealed gaps in knowledge of pain management, and attitudes that hinder proper acute and chronic pain treatment<sup>6</sup>. In a needs analysis survey for developing this training program, 18 physicians and nurse practitioners surveyed rated strong agreement (mean=4.4/5) that they would be interested in CME on the topic: "Patient co-management by primary care and specialists"<sup>7</sup>.

Opioid misuse and abuse is a grave health concern in the U.S., and is one that continues to grow. The number of emergency department visits due to the non-medical use of prescription analgesics

increased from 145,000 in 2004 to 360,000 in 2010<sup>8</sup>. The number of drug poisoning deaths involving opioid analgesics increased from 4,000 in 1999 to 14,800 in 2008<sup>9</sup>. By 2008, opioid analgesics were involved in 40% of all drug poisoning deaths<sup>9</sup>. Also disturbing, every year starting in 2002, there have been at least 1.9 million new non-medical pain analgesic users<sup>10</sup>.

Opioids are very commonly prescribed for chronic pain. When comparing 2002 and 2012, MEPS estimates showed growth in the total number of outpatient prescription purchases of opioids, rising from 85.9 million purchases to 143.9 million purchases, an increase of 67.5 percent<sup>11</sup>. In a survey of prescribers (including physicians, physician assistants, and advanced practice nurses), 58% answered that they were “likely” to prescribe opioids for chronic pain. However, a significant amount of participants disclosed negative beliefs and attitudes about medication abuse and addiction which, they indicated, could complicate patient care and negatively impact clinical practice<sup>12</sup>. In a survey of family physicians, 80% were anxious about prescribing high-dose opioids to persons with chronic nonmalignant pain, and 92.4% did not prescribe opioids to individuals with a history of substance abuse<sup>13</sup>.

Professional organizations of pain specialists, based on expert consensus and review of the research literature, have created clinical guidelines for the use of chronic opioid therapy in chronic non-cancer pain<sup>2</sup>. The guidelines are designed to improve pain treatment outcomes and reduce the risk of prescription drug overdose and diversion. CASA has concluded from their research that physicians should receive more continuing medical education related to prescribing and administering controlled substances and identifying, diagnosing, and treating substance abuse and addiction<sup>14</sup>.

## INTRODUCTION

### Pain Treatment Categories

It is important to evaluate pain and functioning thoroughly, before prescribing pain therapy, especially opioid therapy. This module will train you to choose the most appropriate category of treatment for a patient with acute or chronic pain conditions.

### First-line best practice guidelines

Opioids are not first-line therapies for any of the common chronic pain conditions but they may be helpful if first-line treatments and multiple treatment modalities are not effective or tolerated. This module will train you on the clinical guidelines of common pain conditions.

### Non-opioid Therapies

Many conditions benefit from a combination of both pharmacological and non-pharmacological treatment. This module trains you to utilize non-pharmacological pain treatments that may help to minimize the dose of pain medication needed to achieve the treatment goal.





## Multidisciplinary Approach

Current research shows that 25.3 million (11.2%) adults in the United States experience chronic pain; 40 million (17.6%) experience severe levels of pain<sup>15</sup>. A multidisciplinary approach to chronic pain treatment optimizes treatment effectiveness and minimizes the risk of addiction to pain medication by involving the coordinated efforts of different specialists. This module will train you how to optimize patient care by including specialists in pain treatment.

## INFORMED CONSENT

When obtaining informed consent, it is the legal and ethical duty of the health care provider to explain both the benefits and risks of treatment, as well as patient rights<sup>16</sup>. It's important to touch on the following issues:

- Diagnosis and clinical overview of the issue
- Recommendations for treatment
- Treatment benefits and risks
- Patient's right to refuse or choose treatment
- Intervention costs
- Alternative interventions or services

It is very important to have documentation of patient's consent and involve this informed consent throughout treatment, especially during motivational interviewing<sup>17,18</sup>. Informed consent reminds you that patient contributions and individual needs are an important part of treatment. This also individualizes treatment and increases patient participation<sup>16</sup>.

## GETTING INFORMED CONSENT

### Elements of Informed Consent

The following are some of the elements of informed consent that should be reviewed when initially prescribing the medication and on an ongoing basis:



#### 1. Goals/purpose:

To treat moderate to severe pain. If opioids are being used to treat pain caused by an underlying condition, e.g., arthritis, then it should be understood that opioids target the pain, and do not "cure" the underlying condition.

#### 2. The potential benefits:

Potential pain reduction, improved function, and improved quality of life.

#### 3. Realistic idea of the benefits:

A total elimination of pain should not be expected, nor inability to feel other pain. Patients currently prescribed opioid medication report an average of 5 to 6 on a 0 to 10 pain scale<sup>19</sup>. Before a dose of opioid medication, patients report an average pain rating of 6.3 and a rating of 3.5 after the dose.

## 4. Risks:

Risks of long-term opioid use should be described<sup>2</sup>. These include:

- Addiction, withdrawal, tolerance, and physical dependence. These terms should be defined and their likelihood described depending on the patient's history and his or her family history.
- Misuse potential:
  - Importance of using delivery method prescribed (not crushing and inhaling or injecting to increase effect)
  - Importance of not using to manage moods (chemical coping)
- Overdose, toxicity at high doses and potentially harmful interactions; potential for diversion by other members of the household.
- Potential side effects:
  - Common side effects, for example, constipation, nausea, sedation. Descriptions should include what signs and symptoms might occur and how they might be treated.
  - Potential side effects with long-term or high dose use: hyperalgesia, endocrinologic dysfunction, sexual dysfunction. Long-term effects are uncertain.
  - Drug-specific side effects- Certain issues vary with the medication:
    - Cognitive and motor impairment may be affected; therefore, Discuss use while driving and operating machinery. Caution is especially important initially and during dose increases. Driving can be dangerous for patients taking opioids if they experience signs of impairment, such as drowsiness, slowed reflexes and decreased concentration. Patients should not drive if they are experiencing any of these side effects<sup>2</sup>.
    - Discuss safety in combining with other medications
    - Ask about plans for pregnancy
    - Methadone has a number of special issues to address. Methadone is especially hazardous and should only be used by clinicians skilled in its use. Methadone is very sensitive to drug interactions and is best prescribed to a patient as if they are opioid naïve to prevent a respiratory event<sup>20</sup>.
- Potential for withdrawal syndrome. Discontinue use only under guidance of a provider who prescribes this medication.

## 5. Alternative forms of treatment:

Describe alternative forms of treatment regardless of patient's ability to pay, provide realistic expectations. This is a good time to discuss financing for pain care.

### Sample Informed Consent

A sample informed consent form can be downloaded and adapted to your clinic's needs from PainKnowledge.org (See the Related Resources at the end of the module.)

### State Variations in Informed Consent

Many states also have legal requirements with respect to informed consent. Some states require that the informed consent process be documented. Check your state requirements for specific requirements and specific language that must be used in informed consent, and modify any

downloadable documents to meet these requirements. (See the Related Resources at the end of the module.)

## Patient Education

Patient education regarding opioids should include the following points:

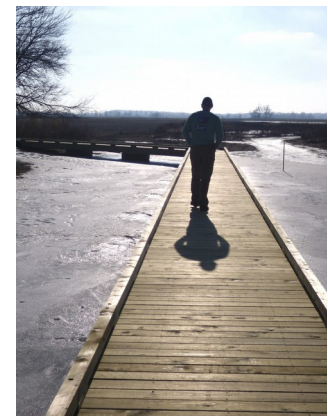
- Provide product-specific information about the opioid being prescribed opioid
- Explain how to take the opioid as prescribed.
- Describe the importance of adhering to dosing regimen and explain how to handle missed doses.
- Advise that opioid medications should not be tampered with in any way such as crushing a tablet or cutting a patch and that this may lead to rapid release of the opioid causing overdose and death.
- Warn that opioids should not be taken with other CNS depressants, alcohol, or illegal drugs as this could cause overdose and death.
- Describe withdrawal symptoms and warn that they can occur if the opioid is stopped suddenly
- Counsel patients to store opioid in a safe and secure place away from children and pets and to read the product-specific disposal information and not to share with others as it is against the law and potentially dangerous to them
- Caution patients regarding safety risks such as with driving, using machinery, etc, especially with dose changes. Also caution them regarding potentially serious side effects with long-acting/extended-release opioids and the importance of calling for emergency medical help with symptoms of overdose or respiratory depression, stomach or intestinal blockage, or allergic reactions.
- They should report side effects to the prescriber and seek advice on them and may report side effects to the FDA at 1-800-FDA-1088.

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## BEFORE CREATING A TREATMENT PLAN

### Basis for Choosing a Pain Treatment

- Pain history, especially:
  - Pain severity
  - Severity of functional problem(s)
  - Responses to past treatment(s)
- Diagnosis, physical examination, laboratory and other diagnostic tests.
- Pain category: The approach to pain treatment varies with the pain category (acute vs. chronic, nociceptive vs. neuropathic)
- Pain-causing condition. Evidence-based, first-line therapies for any specific pain diagnosis, e.g., for lower back pain
- Risks for specific treatments, for example, substance use disorder as a risk for using narcotics



## Goals for Pain Treatment

1. **Pain reduction** - Improvement is often only several points on the pain scale of 1 to 10; complete pain control may not be possible.
2. **Improved functioning** - Improvements in ability to perform activities of daily living, working, and being independent are important goals.
3. **Treatment of the underlying diagnosis** if there is one. Note that pain may need to be treated even in the absence of a clearly identified underlying cause.
4. **Treatment of secondary effects** of pain or treatment - Includes, for example, treatment of mood disorders related to chronic pain and side effects of medications.

Objectives by which treatment will be considered successful, that is, how much improvement in pain and functioning is expected.

## EVALUATION BEFORE TREATMENT PLANNING

It is important to evaluate pain and functioning thoroughly, before prescribing pain therapy, especially opioid therapy. Short-term pharmacological treatment can be provided during the evaluation period. Because chronic pain can persist indefinitely, the treatment plan should include a plan for long-term monitoring of:

- Analgesia: Treatment objectives need to be clear and realistic. It often is not possible to obtain a "0" level of pain on a scale of 1 to 10. The best improvement achievable may be a reduction of several points on the pain scale.
- Functioning:
  - *Physical function*: activities of daily living such as walking, working, attending to personal hygiene, child care
  - *Psychosocial function*: participation in relationships and general effect on mood, the ability to enjoy life. Note: May need to involve caregivers in this discussion.
- Side effects – constipation being the most common, sedation in the short term or with dose change, sleep disorders including sleep apnea even at relatively lower body mass index (BMI), cognitive effects, respiratory depression, overdose. In the longer term, add tolerance, endocrinopathies including hypogonadism, and addiction<sup>22</sup>
- Continued need

2

The PQRSTU acronym presented in module 1 for pain assessment can guide monitoring once treatment has been initiated. Note that improvement in pain may not correspond directly to improvement in functioning and vice versa. For example, side effects of pain medication may contribute to poor quality of life despite improved pain.<sup>23</sup>

## MRS. CATELL - EVALUATING CHRONIC PAIN BEFORE TREATMENT PLANNING

### **Mrs. Cattell**



**Patient:** Mrs. Donna Cattell, A 62 y/o

**Scenario:** Mrs. Cattell is a new patient who asks for pain medication for chronic lower back pain that bothers her every day for most of the day. She says that over-the-counter medications do not provide her with enough pain relief.

On further questioning, you learn that her lower back pain has been present for 3 years (T). Two years ago, she had lower back surgery, followed by physical therapy, and 3 months of an opioid pain medication (P). The provider who prescribed opioids for 3 months after that surgery, refused to continue prescribing them. In combination, these 3 treatments only yielded some pain relief (P). Despite extensive diagnostic testing, including a negative electromyogram, a specific cause for Mrs. Cattell's pain has not been identified.

The pain is now moderate to severe around half the time (S), is worse at night after work (P), and is described as a burning ache that bothers her every day (Q) for most of the day. She has had neither diagnostic imaging nor any non-pharmacological therapy in the past year and a half.

**Working Diagnosis:** Non-specific lower back myofascial pain

**Question:** Which of the following types of treatment has Mrs. Cattell reported having had for her lower back pain in the past 12 months (Check all that apply)?

### **Choose all that apply**

1. Pharmacological
  - Feedback: Correct
  - Yes, she reported taking over-the-counter medications that are insufficient in treating her pain. She also took opioids for 3 months around 2 years ago, but not in the past year.
2. Non-pharmacological: Physical interventions
  - Feedback: Incorrect
  - Mrs. Cattell has not had non-pharmacological, physical interventions in the past 12 months.
3. Non-pharmacological: Psychobehavioral interventions
  - Feedback: Incorrect
  - Mrs. Cattell has not had non-pharmacological, psychobehavioral interventions in the past 12 months.

## COMMUNICATING EFFECTIVELY DURING TREATMENT PLANNING

Collaborating with the patient in joint decision-making can enhance patient self-efficacy and improve outcomes. Patients in pain may not hear what you are saying or might interpret "treating pain" as "removing pain." These misperceptions can hinder treatment.



Steps in a patient-centered approach to developing a pain treatment plan include:

1. **Get the patient's perspective.** They may already have an idea of what is causing their pain and what might help.
2. **Clarify.** Start from what they currently understand and provide clear explanations about the pain diagnosis. Respond to the patient's idea about the cause of the pain and what treatment is needed. Explain their options and your concerns. Be sure to convey a realistic picture of the likely response to treatment.
3. **Confirm.** Then make sure that the patient's expectations match yours. You may need to clarify further. A minute spent here can save time later dealing with patient frustration.
4. **Negotiate a treatment plan** that is based on best-practice guidelines for treating the patient's specific pain condition and responds to their concerns
5. **Check the patient's understanding** of the treatment plan. Especially regarding realistic expectations and the need to pursue non-medication treatment options such as physical therapy.
6. **Get patient's agreement/buy-in** to the treatment plan, e.g., "Can I get you to try it for 3 days?"
7. **Reassure** patients that their pain will be treated even if opioids are not a good choice for them

Make sure to adequately document all patient interactions and treatment plans.

## ONGOING COMMUNICATION: PAIN DIARY

### **Pain Diary for Doctor-Patient Communication**

Having the patient keep a pain and activity diary may help assess pain over time, get better answers to pain history questions, improve your diagnostic abilities, and streamline efforts to relieve suffering. Typical diaries have patients record:

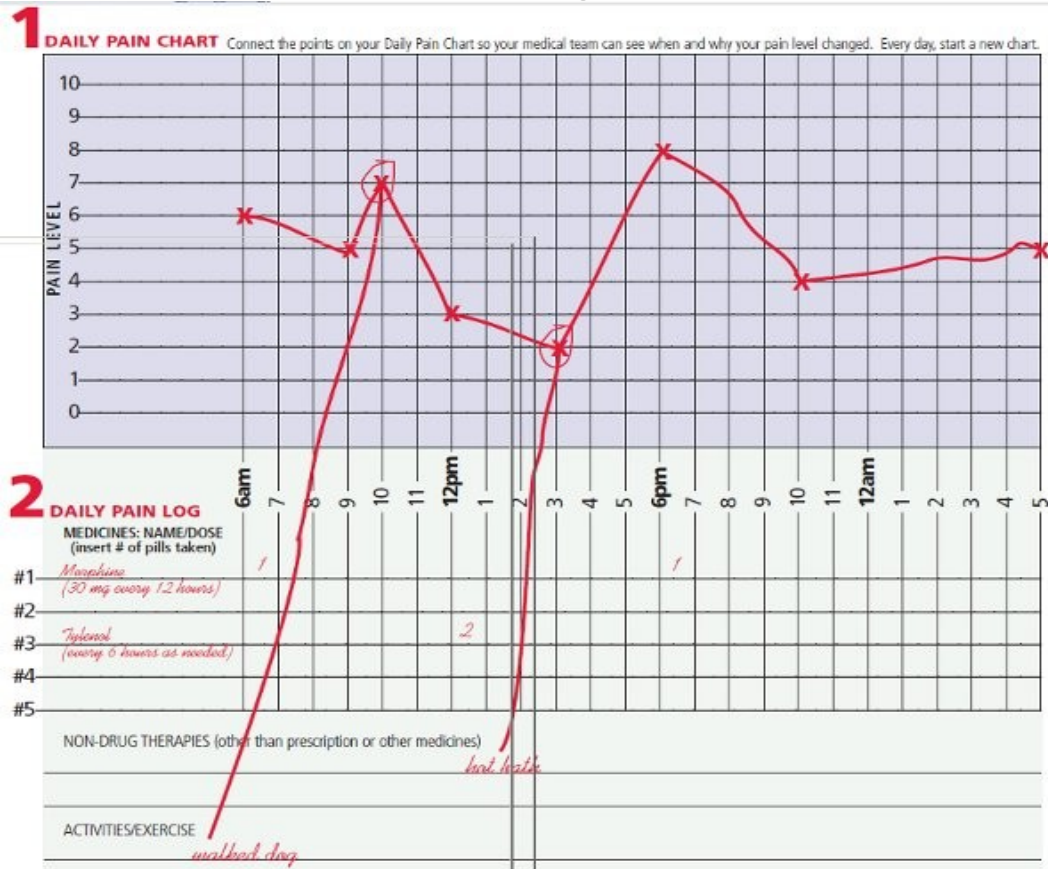
- Pain levels (scale of 1 to 10)
  - Monitored retrospectively to avoid bringing attention to the pain throughout the day, but monitored throughout the day when appropriate, for example, when changing medications
  - Individual recordings can be connected to show a graph of pain throughout the day (see below)
  - Many apps for cell phones or other mobile devices are available now for tracking pain and can be found with an Internet search of "pain diary app" or "pain tracking app"
- Medications and other treatment modalities
- Functioning
  - The impact of pain and treatment on the patient's ability to engage in his/her activities of daily living



- Mood

The Target Chronic Pain Notebook (see Related Resources at the end of the module) is an example of a pain diary that can be used.

## Example Pain Chart and Pain Log



Source: American Pain Foundation. *Target Pain Notebook*

## RACE, ETHNICITY, AND SOCIOECONOMIC FACTORS IN PAIN CARE

### Barriers to Pain Care Based on Race, Ethnicity, and Other Socioeconomic Factors

There are many potential barriers that contribute to differences in pain care received by different groups on the average. For example, ethnic minorities in the United States have been relatively under-treated with analgesics<sup>24</sup>. Common social barriers to treatment include: education, financial stability, location, lack of public transportation, and language<sup>25</sup>.

**Primary barriers:** The result of social determinants. More difficult for providers to address. These barriers are common in certain racial, ethnic, or socioeconomic groups and include:

- Compromised access to adequate pain care due to:

- limited pain care facilities
- pharmacies not stocking pain medications, e.g., inadequate supplies of opioids in communities of color<sup>26</sup>
- limited transportation in a particular neighborhood
- Lack of health insurance or the ability to pay for health care

**Secondary barriers:** Originate from providers and can therefore be addressed more readily by them, including providers' own problems with:

- prejudices
- cultural sensitivity
- cultural competency

It is important for providers to:

- Become aware of their biases and not allow them to get in the way of providing equal pain care for all groups
- Become familiar with and respect differences in race/ethnicity, gender, sexual orientation, religious beliefs, and disability that may affect pain treatment
- Integrate the response to these differences into the pain treatment plan
- Address language and other communication barriers

## Genetic Differences in Pain

Racial and ethnic differences in response to pain medications have been observed<sup>27</sup>. Differences in metabolism, clinical effectiveness, and side-effect profiles have been described, but further research is needed. Treatment outcomes can vary among ethnic groups and this should be a factor in treating patients.

## NON-PHARMACOLOGICAL PAIN THERAPIES

### Pain Therapies

Many conditions benefit from a combination of both pharmacological and non-pharmacological treatment. Non-pharmacological pain treatments may help to minimize the dose of a medication needed to achieve the treatment goal. Depending on the severity and type of pain, a non-pharmacological treatment alone may be sufficient.

### Common Non-Pharmacological Pain Treatments

#### Provided by a healthcare provider

- Physical therapy or therapeutic exercise
- Surgical interventions
- Physical manipulations and releases (e.g., chiropractic)
- Therapeutic injections (e.g., nerve blocks, trigger point injections, radiofrequency ablation, intrathecal pumps)
- Pain blocking devices (e.g., TENS units, pain pacemakers)





## Provided by the counseling professions

- Counseling techniques for better coping (e.g., developing coping skills, hypnotherapy)
- Counseling for co-morbid mental health conditions, most commonly depression

## Self care

- Rest, ice, and elevation (often used with acute pain, it is also effective with specific chronic pain conditions)
- Adequate sleep (may help if they are not getting 7 to 9 hours per night - Roehrs 2012)
- Smoking cessation (may help in some cases)

## From combined or miscellaneous resources

- Relaxation, stress management, and mindfulness techniques (e.g., meditation, imagery, breathing exercises, massage, biofeedback)
- Acupuncture

2,28–34

## Topical Pain Therapies

Both pharmacological and non-pharmacological topical pain therapies may serve as a first-line or adjunctive pain treatment, depending upon the pain condition. Topicals should only be applied to non-injured skin. Care should be used not to get them in the eye. They include creams, rubs, or sprays containing:

- counterirritants (e.g., menthol, methylsalicylate, camphor)
- salicylates
- capsaicin
- hot and cold packs

## PHYSICAL THERAPY

Physical therapists are licensed professionals who diagnose and treat patients with conditions that inhibit their ability to move and perform physical activities. Physical therapy for pain involves identification of movement dysfunction and developing tailored treatment programs. Physical therapists work to promote:

- ability to move
- reduced pain
- restored function

Physical therapists can also help prevent further deterioration, injury, and disability<sup>35</sup>.

## Physical Therapy Treatments

### Mr. Alvarez



Mr. Alvarez was fitted for a modified steel-toed work boot and crutches for mobilization without

pressure on his contused toe.



**Ms. Cattell**

After neck surgery, Mrs. Cattell attended several weeks of physical therapy, which included passive range of motion exercises, soft tissue mobilization to reduce muscle tension and prevent adhesions, and therapeutic exercises.

Possible physical therapy treatments include:

- therapeutic exercise
- functional training
- manual therapy techniques
- assistive and adaptive devices and equipment
- physical agents and electrotherapeutic modalities

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**Physical Therapy Locations**

Mr. Alvarez received his adaptive equipment from a physical therapy outpatient clinic. Mrs. Cattell found a physical therapy office in a fitness center near her.

Locations for physical therapy include:

- inpatient rehabilitation facilities
- outpatient clinics
- skilled nursing facilities
- fitness centers



**COUNSELING FOR PAIN**

**Behavioral Therapies**

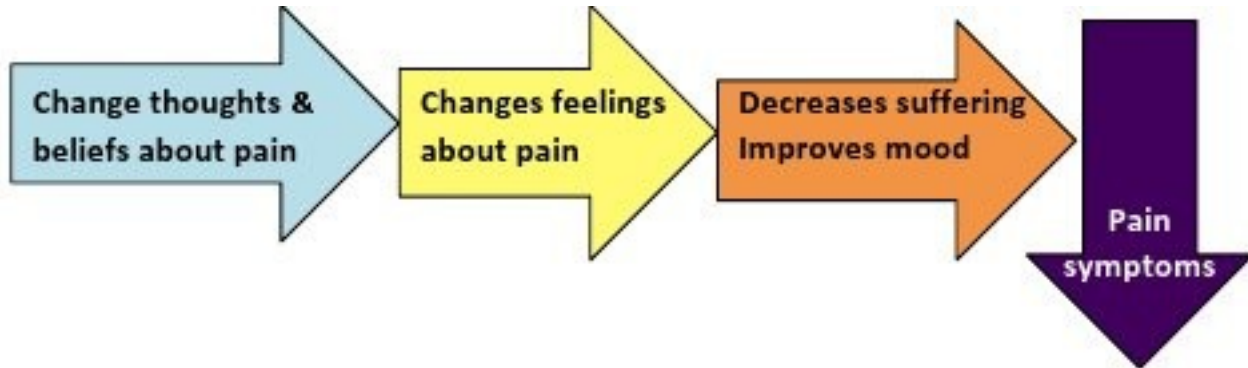
The following psychosocial treatments help improve a patient's ability to follow through with treatment and maintain treatment gains:

- Cognitive-behavioral therapies
- Group and family therapies
- Support groups
- Behavioral therapies (e.g., contingency management)
- Relaxation techniques (e.g., hypnosis, progressive relaxation, biofeedback)

- Substance abuse counseling (if indicated)

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Individuals who provide these services may include psychiatrists, licensed clinical social workers, psychologists, counselors and nurses.



## Cognitive behavioral therapy (CBT)

CBT is the most widely used and effective form of therapy for helping patients cope with chronic pain<sup>38</sup>. CBT helps patients change thoughts and beliefs about their pain, which leads to changes in their feelings about it. This, in turn, improves their mood and decreases suffering. Increasing acceptance and adaptability and bringing behavior in line with personal values are changes that are particularly effective for coping with pain.

## Support Groups

Support groups, both informal and led by the members themselves, or those led by a trained facilitator – usually someone with group counseling expertise can be effective in pain treatment. Groups are more affordable than individual therapy and peer-run groups are usually free. Groups are often organized around a common condition or experience (e.g., fibromyalgia, cancer, injured in military duty, substance abuse).



Groups provide:

- A safe space to share difficult feelings
- An opportunity to learn coping skills and get practical advice from peers
- A greater sense of empowerment and/or control
- A reduced sense of loneliness, isolation, or judgment

## MINDFULNESS AND PAIN

### Research on Mindfulness as a Chronic Pain Therapy

Research reveals that practicing mindfulness meditation has positive effects on several aspects of pain:

- pain severity
- functioning

- quality of life
- pain-related psychological distress

31,39,40

Mindfulness means:

“paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally”<sup>41(p4)</sup>.

## Examples of recent studies:

Studies of mindfulness with pre-existing pain:

- Seniors with various pain conditions who engaged in mindfulness techniques for an average of a half hour, 4 times per week had significant improvement in pain acceptance, engagement in activities, and functioning<sup>31</sup>
- Improvements when practicing mindfulness-based stress reduction techniques<sup>41</sup> varied with the pain condition<sup>40</sup>:
  - Patients with arthritis, back/neck pain, or multiple pain conditions experienced the most significant improvement in pain intensity and functioning.
  - People with arthritis had the greatest improvement in quality of life and psychological distress. Patients with chronic headache or migraine had the least improvement in quality of life, and those with fibromyalgia had the least improvement in psychological distress.

Studies of mindfulness with induced pain:

- A form of mindfulness called "focused attention" reduced pain intensity from heating the leg by an average of about 40% (compared to morphine at 25%) and pain unpleasantness by 57%. This study also found a corresponding decrease in activity in the primary somatosensory cortex, a region of the brain involved in detecting the location and intensity of a pain stimulus<sup>42</sup>.
- Use of mindfulness techniques reduced pain unpleasantness from an electric stimulus by a mean of 22% and anticipatory anxiety by a mean of 29%<sup>39</sup>.

## A Simple Mindfulness Technique to Teach Your Patients

1. Sit quietly and comfortably with your eyes closed
2. Relax your body, releasing any tension
3. Breathe naturally and bring the focus of your attention to the breath going in and out of your nose (choose a location away from the painful region of the body; an alternative is to notice the belly moving in and out)
4. When you notice that attention has drifted, which is natural, simply bring your attention back to the breath, without being self-critical
5. Continue focusing and re-focusing your attention on your breathing this way for 15 to 20 minutes

## Mindfulness and Pain Case



**Patient:** Mrs. Donna Cattell, 62 y/o

### **Mrs. Cattell's Pain History (repeated for convenience):**

Mrs. Cattell is a new patient who asks for pain medication for chronic lower back pain that bothers her every day for most of the day. She says that over-the-counter medications do not provide her with enough pain relief. On further questioning, you learn that her lower back pain has been present for 3 years. Two years ago, she had lower back surgery, followed by physical therapy, and 3 months of an opioid pain medication. In combination, these 3 treatments only yielded some pain relief. Despite extensive diagnostic testing, a specific cause for Mrs. Cattell's pain has not been identified. The provider who prescribed her opioids for 3 months then refused to prescribe them anymore. The pain is now moderate to severe around half the time, is worse at night after work, and is described as a burning ache that bothers her every day, most of the day. Diagnostic imaging of her cervical and thoracic vertebrae did not reveal any structural problems. Physical exam results suggest mild nerve impingement.

**Question:** Which aspect(s) of Mrs. Cattell's pain might be improved by a practice of mindfulness meditation? (Select all that apply)

### **Choose all that apply**

1. Quality of life, psychological distress about the pain or pain acceptance
  - Feedback: Correct
  - Current research supports the possibility that Donna might experience improved quality of life, psychological distress about the pain or pain acceptance with the practice of mindfulness meditation.
2. Perceived pain severity
  - Feedback: Correct
  - Current research supports the possibility that Mrs. Cattell might experience improved quality of life, psychological distress about the pain, pain acceptance, or physical functioning with the practice of mindfulness meditation all of which can impact the perception of pain.
3. Physical function
  - Feedback: Correct
  - Current research supports the possibility that Mrs. Cattell might experience improved physical functioning with the practice of mindfulness meditation.

## MRS. CATTELL - NON-PHARMACOLOGICAL PAIN TREATMENT



**Patient:** Mrs. Donna Cattell, 62 y/o

### Review Mrs. Cattell's Pain History

Mrs. Cattell is a new patient who asks for pain medication for chronic lower back pain that bothers her every day for most of the day. She says that over-the-counter medications do not provide her with enough pain relief. On further questioning, you learn that her lower back pain has been present for 3 years. Two years ago, she had lower back surgery, followed by physical therapy, and 3 months of an opioid pain medication. In combination, these 3 treatments only yielded some pain relief. Despite extensive diagnostic testing, a specific cause for Mrs. Cattell's pain has not been identified. The provider who prescribed opioids for her for 3 months then refused to prescribe them anymore. The pain is now moderate to severe around half the time, is worse at night after work, and is described as a burning ache that bothers her every day for most of the day.

Diagnostic imaging of her cervical and thoracic vertebrae did not reveal any structural problems. Physical exam results suggest mild nerve impingement.

**Question** Based on what you know about Mrs. Cattell's pain so far, what categories of nonpharmacological pain treatment might help relieve her lower back pain? (Choose all that apply)

### Choose all that apply

1. Analysis of her work environment
  - Feedback: Correct
  - Because Mrs. Cattell's pain appears to be chronic and musculoskeletal, analysis of how she sits habitually at her workstation might be of benefit.
2. Physical therapy
  - Feedback: Possibly correct only because she may not be willing to try it.
  - Because Mrs. Cattell's pain appears to be chronic and musculoskeletal, physical therapy is likely to be of benefit, along with other non-pharmacological and pharmacological therapies and rest and ice. Although her past experience with physical therapy was that it provided only a little pain relief, it does not rule out the possibility that another approach to PT might be of some benefit, such as a focus on pain relieving treatments and exercises for strengthening core muscles. She would require motivational interventions to get her to give it a try.
3. Counseling referral
  - Feedback: Correct
  - Given that Mrs. Cattell may have some degree of pain indefinitely, referral to a therapist who can teach her coping skills might be a good idea. Cognitive behavioral therapy has been shown to be effective in reducing pain suffering.
4. Pain-blocking device
  - Feedback: Correct

- Because of the severity of Mrs. Cattell's pain and because multiple treatment modalities can add up to significant pain relief, a pain-blocking device is one treatment that could be considered.

#### 5. NSAID

- Feedback: Correct
- NSAID would be a first-line pharmacotherapy to try.

## PHARMACOLOGICAL PAIN THERAPIES

### Common Pharmacotherapies for Pain

There are a variety of pharmacotherapies available for treatment of acute and chronic pain. Some of the more common pain medications include:

- Nonsteroidal anti-inflammatory drugs (NSAIDs)
- Other non-opioid analgesics, e.g., acetaminophen, steroids
- Opioids
- Adjuvant medications, such as antidepressants, anticonvulsants, and muscle relaxants.
- Topical pain killers, e.g., lidocaine patches, creams containing salicylate, capsaicin, or counter-irritants like camphor, eucalyptus oil, and menthol



### Examples of First-Line Pharmacotherapies

The following are examples of first-line pharmacological therapies, that is, therapies with the most evidence demonstrating safety and effectiveness for common pain conditions.

- Low back pain – acetaminophen or NSAIDs for most patients<sup>43</sup>
- Osteoarthritis – acetaminophen, NSAIDs, corticosteroids, tramadol<sup>44</sup>
- Trigeminal neuralgia – anticonvulsants<sup>45</sup>
- Fibromyalgia – Serotonin and norepinephrine reuptake inhibitors (SNRIs) and anticonvulsants<sup>46</sup>
- Rheumatoid arthritis – NSAIDs, corticosteroids, disease-modifying antirheumatic drugs (DMARD)<sup>47</sup>
- Migraines – Triptans, combination analgesics, ibuprofen, IV metoclopramide, parental dexamethasone<sup>48</sup>
- Co-morbid Depression – Chronic pain is often accompanied by depression and treating the depression with antidepressants, especially tricyclics and SNRIs, has been shown to improve the pain<sup>49</sup>. In fact, these medications help chronic pain even in the absence of depression, especially in fibromyalgia and neuropathy.

Note that all first-line treatments should include non-pharmacological treatments as stress reduction, functional support, managing triggers, physical therapy, or exercise, selected based upon the diagnosis and patient's condition.

Consider the cardiovascular/cerebrovascular and gastrointestinal risk and other potential side effects of individual NSAIDs vs. benefits when prescribing.



## Pharmacological Therapy for Mr. Alvarez's Pain

**Mr. Alvarez:** In Mr. Alvarez's case, non-pharmacological interventions alleviated some of his acute, moderate to severe pain. Upon further questioning, the provider found that Mr. Alvarez's use of over-the-counter medications had been limited to ibuprofen which he was not taking often enough. When longer-acting naproxen was combined with acetaminophen, his pain became tolerable at a mild level.



## NSAIDS

### Types of NSAIDs

- Non-steroidal anti-inflammatory drugs (NSAIDs) are commonly used to relieve pain and reduce inflammation in adults. They are used for a variety of acute or chronic pain conditions.
- Similar mechanism of action: inhibit the cyclo-oxygenase enzymes (COX)
- Differ in safety and cost.
- Two main types of NSAIDs: nonselective and selective
  - **Nonselective NSAIDs** inhibit both COX-1 (normally found in the stomach, blood platelets, and blood vessels) and COX-2 enzymes (found at inflammation sites) to a specific degree. Non-selective NSAIDs include aspirin, ibuprofen (Advil, Motrin), and naproxen (Aleve), and numerous prescription-strength NSAIDs.
  - **Selective NSAIDs** (also called COX-2 inhibitors) inhibit COX-2 more than COX-1.
    - They are just as effective in relieving pain/inflammation as nonselective NSAIDs and less likely to cause gastrointestinal (GI) injury, which is why they are recommended for patients with peptic ulcer, GI bleeding, or GI upset with nonselective NSAIDs.

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Cardiovascular risks are seen to varying extent with both forms of NSAIDs are discussed on the next page.

## RISKS OF NSAIDS

The most frequent side effects include: gas, heartburn, stomach pain, nausea, and vomiting (these may generally be relieved by taking the NSAID with food)

More serious side effects include: Increased blood pressure, adverse effect on control of hypertension; increased risk of cardiovascular disease and cerebrovascular disease, short-term use may cause stomach upset; long-term use may cause peptic ulcer disease and bleeding from the stomach; kidney damage is possible (especially in patients with an underlying kidney disease).

Details regarding these risks include the following:

- **Risk factors for serious GI events:** aged 65+, history of GI disease, concomitant use of drugs that increase the risk of GI adverse events, serious comorbidity (cardiovascular or renal)



disease), requirement for prolonged NSAID use, and use of the maximum recommended dose of an NSAID.

- **Risk with hypertension treatment:** The addition of NSAIDs to medications taken by a patient with hypertension can result in the loss of blood pressure control. To avoid this, the lowest effective dose, for the shortest amount of time, should be used.
- **Risk of cardiovascular disease:** Patients already at risk for cardiovascular disease or who already have cardiovascular disease may have an increase in risk of heart attack while taking an NSAID<sup>50,51</sup>. NSAIDs also increase the risk of cardiovascular disease to varying degrees in general, depending upon the NSAID. Some results have been conflicting and so risk of NSAIDs for cardiovascular/cerebrovascular disease, in general, is presented below as a discussion.

## Discussion of the Literature on NSAIDs and Cardiovascular/Cerebrovascular Risk

**Ibuprofen:** Meta-analyses have found ibuprofen is associated with mixed but mostly increased risk for cardiovascular events<sup>52-54</sup>. One study found ibuprofen is associated with the highest risk for stroke of NSAIDs<sup>54</sup>.

**Naproxen:** Results have been more mixed for naproxen, with its risk overall tending to be lower than ibuprofen<sup>52,53,55</sup>. However, the Women's Health Initiative found that the risk for cardiovascular events was slightly higher for women regularly taking naproxen over ibuprofen, however, this study had some limitations, such as a low rate of such events. The ADAPT study found possible increased cerebrovascular risk, however, the American Heart Association noted limits to this study and recommended naproxen as the preferred choice<sup>56</sup>.

**Coxibs:** It is fairly well established that coxibs are associated with greater cardiovascular risk but decreased gastrointestinal risk.

**Diclofenac:** Diclofenac also has increased cardiovascular and cerebrovascular risk<sup>55,57,58</sup>.

**In Patients with Coronary Artery Disease:** In a study of patients with coronary artery disease, cardiovascular risks were increased (in order from greatest to least) for coxibs, ibuprofen, diclofenac, and other NSAIDs including naproxen<sup>59</sup>.

## MINIMIZING RISK OF NSAIDS

### Prescribing NSAIDs appropriately:

- Lower doses of NSAIDs are adequate to relieve pain in most patients.
- If possible, NSAIDs should be avoided in patients with preexisting renal disease, congestive heart failure, or cirrhosis to prevent acute renal failure.
- National Institute for Health and Clinical Excellence (NICE) recommends a proton pump inhibitor (PPI) be prescribed with NSAID for patients with osteoarthritis.
- COX-2 agents are not recommended for patients with acute pain or general musculoskeletal complaints.

- Avoid NSAIDs in patients with a higher risk for cardiovascular events. NSAIDs increase the risk of cardiovascular adverse events (myocardial infarction), with patients who are at high risk for cardiovascular disease before beginning treatment.
- For all patients, weight the risk of cardiovascular and cerebrovascular events, as described above, vs. the benefits and select NSAIDs or alternatives accordingly.
- Treatment of the underlying disease causing pain may reduce the need for NSAIDs.
- Non-drug treatments should be utilized, especial in situations of chronic pain with psychological and psychosocial factors.
- For patients who must take NSAIDs, but have had an NSAID-related ulcer, it is recommended to prescribe PPIs, double-dose histamine blockers, or misoprostol (Cytotec) with the NSAIDs. Misoprostol should not be used in women who might become pregnant.

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### NSAID Use for Special Populations:

- For pregnant women, NSAIDs can be used if the benefits outweigh the risks, but the fetus should be monitored regularly. Use in early pregnancy and after 30 weeks' gestation is associated with complications with the fetus. Use the lowest effective dose for the shortest duration.<sup>61</sup>
- Ibuprofen, indomethacin, and naproxen (Naprosyn) are safe to use in breastfeeding women but should be used with caution.<sup>51</sup>
- Children are at higher risk for overdose. There is little research on chronic NSAID use in children.<sup>62</sup>
- The elderly may be more susceptible to GI bleeding, hypertension, and renal function compromise if taking NSAIDs, therefore NSAIDs should be avoided if possible; or patients monitored more carefully and medication for GI protection considered.
- Interactions with blood thinners such as Coumadin should be considered.<sup>51</sup>



### Monitoring:

60

- If initial dose does not relieve pain/inflammation, the provider may recommend increasing the dose incrementally, trying a different NSAID, and use of adjunctive pain treatments including exercise/physical therapy if applicable, topical analgesics, injections, counseling, etc.
- Monitor kidney function at least once per year to look for kidney damage (more often with patients with kidney disease)
- Continue to monitor efficacy and side effects

## OPIOIDS

### Indications for Opioids

#### CDC Guideline Findings on the Effectiveness of Opioids

"No study of opioid therapy versus placebo, no opioid therapy, or nonopioid therapy for chronic pain evaluated long-term ( $\geq 1$  year) outcomes related to pain, function, or quality of life. Most placebo-controlled randomized clinical trials were  $\leq 6$  weeks in duration. Body of evidence insufficient"<sup>63</sup>

- Opioids are not a first-line therapy for many common pain conditions but may be important if first-line therapies are ineffective.
- Evidence-based, first-line therapies including non-pharmacological treatments and scheduled doses of non-opioid medications should be used for each pain condition before prescribing opioids.
- Pain should be moderate to severe to prescribe opioids; some experts now advocate their use only for severe pain.  
Extended Release/Long-Acting (ER/LA) opioids are only approved for treatment of chronic severe pain.
- Even patients with a substance abuse history should be appropriately treated with opioids, but with precautions to prevent misuse.

2

### Expected Benefits

- The potential benefits of opioids include decreased pain and improved function.
- Opioids may be beneficial for severe acute pain, but only with special precautions including: prescribing small quantities, and patient education on the safe use, storage and disposal of opioids.
- Pain severity can be assessed using a scale of 1 to 10 or other assessment.
- Opioids can reduce chronic pain a few points on a scale of 1 to 10, they generally do not eliminate pain.

### CAUTION TIP

Prescribe opioids carefully in order to help reduce the current high rate of prescription drug abuse.

### OPIOID TREATMENT STANDARDS

- Use written, signed Patient/Provider Treatment Agreements that describe the responsibilities of both patient and provider, including terms of treatment, prohibited behavior, and points for termination.
- Adjust treatment structure as needed for risk, with a higher level of treatment structure for high-risk patients (including an increased monitoring of medication use, more frequent drug-screenings, and a more stringent Treatment Agreement).
- Use the least addictive drug formulation that will adequately manage pain.

- Use opioids as a part of a multimodal treatment plan, in combination with other pain medications and non-pharmacological treatments (such as physical therapy, exercise and counseling) to increase effectiveness and minimize the necessary dose.
- Patient education should include information on how to take the medication, drug interactions, withdrawal symptoms, safe storage and disposal, and safety risks.
- For the initial trial dose, choose the dose based on efficacy and tolerability, and use caution in an opioid-naive patient.
- Limit the number of days to three for a new acute pain prescription<sup>64</sup>. Longer prescriptions are associated with a sharp increase in long-term opioid use.
- To minimize diversion, patients should be educated on the proper storage and disposal of opioids.

## RISKS OF OPIOID MISUSE AND MONITORING

### **Risks of Opioid Misuse**

- Potential risks of chronic opioid therapy include addiction, misuse, and overdose. SAMHSA (2014) recommends considering prescribing naloxone along with the initial opioid prescription for patients on long-term opioid therapy.
- Assess all patients for risk of opioid misuse or addiction using a questionnaire such as the Opioid Risk Tool
- Risk factors for opioid misuse/addiction are: personal/family history of drug/alcohol misuse, mental health disorders, history of pre-adolescent sexual abuse, younger age (18-45 years), tobacco use, being male, and social problems.
- Potential Side Effects of Chronic Opioid Therapy include: constipation (most common), sedation, nausea, endocrine effects with long term use (hypogonadism, decreased libido), sleep apnea, physical dependence, and tolerance
  - Side effects vary with: the opioid and dose, race, gender, and age
  - Pre-existing conditions that increase side effects are: constipation, nausea, pulmonary disease, cognitive impairment, substance misuse, and advanced age

### **Monitoring**

- Monitor patients regularly, in accordance with risk
- Check prescription drug monitoring programs (PDMPs) to see when a patient has already been prescribed opioids by another provider. Check at least every 3 months and consider checking at each prescription. When allowed, you may be able to check what prescriptions have been written with your name as the provider.
- Urine Drug Testing (UDTs) are used to establish a baseline for later comparison, detect illicit drugs or correct use of prescribed drugs, and motivate and provide structure for patient to use opioids and other substances properly.
- Aberrant drug-related behaviors are behaviors outside of the societal norm and clinical expectations that may indicate substance misuse or addiction, but also may indicate undertreated pain, misunderstandings, and a number of other problems. These behaviors should be monitored at every appointment, with more formal monitoring for high-risk patients.

- If aberrant behaviors occur, use empathy with a non-judgmental approach to discussing the issue.
- Chronic Opioid Therapy should be discontinued safely with improved pain condition or severe aberrant behaviors. To avoid withdrawal symptoms in patients who have become dependent on opioids, two possible methods for the humane discontinuation of opioids are tapering and opioid replacement therapy.

## COMPREHENSIVE ADDICTION AND RECOVERY ACT

### **CARA and Its Initiatives for Ending Opioid Use Problems**

**The Comprehensive Addiction and Recovery Act of 2016 (CARA):** Among the provisions of this broad purpose bill, which was signed into law by President Obama on July 22, 2016<sup>65</sup>, are changes that affect opioid prescribing, treatment of opioid use disorder, and prevention of overdose:

Provisions of CARA, that aim to help with the opioid epidemic, include:

- Authorization for the HHS Secretary to award grants to state agencies and governments to make medication assisted treatment for opioid use disorder more available in areas hardest hit by the opioid epidemic
- Improved access to overdose treatment via authorization for grants to buprenorphine prescribers and others to establish a naloxone co-prescribing program including training for providers, purchasing naloxone, reaching out to patients who have overdosed. There also is a training initiative for pharmacists.
- Allowing pharmacists to fill only part of a prescription for opioids, in order to reduce the numbers of unused opioids sitting in medicine cabinets.
- Improving treatment for pregnant and postpartum women by reinstating a grant program for their residential treatment and pilot studies for non-residential treatment.
- Miscellaneous other grants for education for providers and providers in training, improving prescription drug monitoring programs (PDMPs), expanding availability of treatment, enhanced efforts to prevent overdose, and advancing public awareness.

Several provisions aim to increase the availability of treatment for opioid use disorder:

- Previously, only physicians were allowed to prescribe buprenorphine, but with CARA 2016, physician assistants and nurse practitioners (PAs and NPs) are now permitted to prescribe it. PAs and NPs may prescribe buprenorphine within the limits set by their respective states and completion of a 24-hour training.
- CARA 2016 also raised the upper limit of the number of patients a provider can treat for opioid use disorder using buprenorphine, which starts at 30. After a year providers can apply to treat 100 patients and then after two years of treating experience they can apply for 275 patients.

## FDA BLACK BOX WARNINGS FOR OPIOIDS

Because of the risks of misuse, abuse, addiction overdose, and death, the FDA enhanced the warnings for immediate release opioids<sup>67</sup>. The FDA had enhanced the warnings for extended-release/long-acting opioids (ER/LA) for the same reasons in 2014<sup>68</sup>.

### **Immediate Release Opioids**

A boxed warning is required on immediate-release (IR) opioids to warn of the safety issues of "misuse, abuse, addiction, overdose, and death"<sup>67</sup>:

- "IR opioids should be reserved for pain severe enough to require opioid treatment and for which alternative treatment options (e.g., non-opioid analgesics or opioid combination products, as appropriate) are inadequate or not tolerated. "
- Product information should be consulted for required information on patient monitoring and drug administration including initial dosage, dosage changes during therapy.
- Physically dependent patients should be warned not to stop taking opioids abruptly.

### **Extended Release/Long-Acting Opioids**

A boxed warning is required on ER/LA opioids to warn of the safety issues of "misuse, abuse, addiction, overdose, and death"<sup>68</sup>:

- "ER/LA opioids are indicated for the management of pain severe enough to require daily, around-the-clock, long-term opioid treatment and for which alternative treatment options are inadequate."
- "Because of the risks of addiction, abuse, and misuse, even at recommended doses, and because of the greater risks of overdose and death, these drugs **should be reserved for use in patients for whom alternative treatment options (e.g., non-opioid analgesics or immediate-release opioids) are ineffective, not tolerated, or would be otherwise inadequate to provide sufficient management of pain**; ER/LA opioid analgesics are not indicated for as-needed pain relief.

### **Enhanced Warnings for All Opioids**

Both IR and ER/LA opioids require a warning of the risk of neonatal opioid withdrawal syndrome.

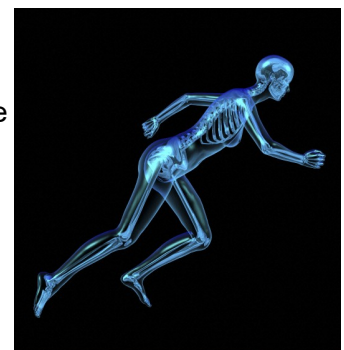
Chronic use of IR and ER/LA opioids taken during pregnancy "can result in neonatal opioid withdrawal syndrome (NOWS), which may be life-threatening if not recognized and treated"<sup>67</sup>.

Both IR and ER/LA opioids are affected by the relatively more recent, enhanced safety warnings for all opioids, including warning of risk for serotonin syndrome, adrenal insufficiency, and decreased sex hormone levels with chronic use<sup>67</sup>.

## **FIRST-LINE THERAPIES FOR COMMON CHRONIC PAIN CONDITIONS**

### **Overview of First-Line Therapies**

First-line therapies are the treatments that evidence supports trying before other therapies that are often less effective or less safe. They usually include



both pharmacological and non-pharmacological treatments that are recommended to be used concurrently. Most common pain conditions have clinical guidelines providing a clear description of optimal treatment based on a body of scientific evidence that has been reviewed by the relevant medical professional society.

Opioids are not first-line therapies for any of the common chronic pain conditions, but may be helpful if first-line treatments and multiple treatment modalities are not effective or tolerated.

## **BEHAVIORAL THERAPEUTIC INTERVENTIONS**

Behavioral therapeutic interventions need not be limited to counseling specialists. Health care providers can implement simple, brief cognitive behavioral pain interventions, such as:

- Validating the patient's pain and difficulties (e.g., "It sounds like you're having a lot of pain and it is affecting your ability to work.")
- Using empathy (e.g., "That sounds difficult.")
- Teaching simple mindfulness meditation techniques (e.g., "Focus your attention on your breath, noticing your belly rise and fall, for two minutes. You can count the breaths if that helps you focus.")
- Encouraging patients to take an active approach to their pain management (e.g., "It's very important that you go to physical therapy and do the prescribed exercises.")

## **BACK PAIN**

### **Clinical Guidelines for Back Pain**

**Imaging:** Imaging is generally not needed for non-specific low back pain in the absence of red flags suggesting severe or progressive neurologic deficits, or serious underlying specific cause (<sup>69</sup>—strong recommendation, moderate-quality evidence).

### **Treatment:**

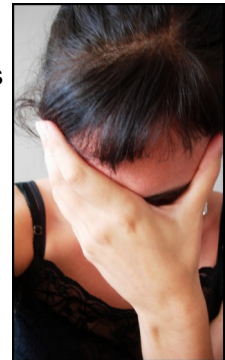
Non-pharmacological treatments are emphasized for non-specific low back pain and relatively less severe radiculopathy, with certain pharmacological treatments added as needed.

#### 1. Acute/Subacute Low Back Pain

- Non-Pharmacologic: For acute or subacute back pain: Advise patients to remain active, describe the expected course of the condition of strong improvement being likely within a month, and provide information about effective self-care options<sup>69</sup>. Guidelines strongly recommend superficial heat (moderate-quality evidence) and massage, acupuncture, or spinal manipulation (low-quality evidence).
- Pharmacologic: If pharmacological treatment is needed for acute/subacute low back pain, non-steroidal anti-inflammatory drugs or skeletal muscle relaxants are the first-line treatments (<sup>69</sup>—strong recommendation, moderate evidence).

#### 2. Chronic low back pain

- Non-Pharmacologic: For chronic low back pain, non-pharmacological treatment should be tried as the first treatment and should include "exercise, multidisciplinary





rehabilitation, acupuncture, mindfulness-based stress reduction (moderate-quality evidence), tai chi, yoga, motor control exercise, progressive relaxation, electromyography biofeedback, low-level laser therapy, operant therapy, cognitive behavioral therapy, or spinal manipulation (low-quality evidence, strong recommendation)<sup>69</sup>.

- Pharmacologic: If the response of chronic low back pain to non-pharmacologic treatment is inadequate, nonsteroidal anti-inflammatory drugs are the first-line pharmacologic treatment. Tramadol or duloxetine are second-line. (weak recommendation, moderate-quality evidence) *Opioids should only be considered if the above treatments have failed and "if the potential benefits outweigh the risks for individual patients and after a discussion of known risks and realistic benefits with patients" (weak recommendation, moderate-quality evidence).*

## HEADACHE & MIGRAINE

### Migraine

A combination of treatments may be effective in treating migraines.



### Pharmacological

- First-line pharmacological therapies<sup>48</sup>:
  - NSAIDs (nonsteroidal anti-inflammatory drugs) \*Consider increased cardiovascular/cerebrovascular and gastrointestinal risk vs. benefits when prescribing.
  - Combination analgesics containing acetaminophen, aspirin, and caffeine
  - Triptans (e.g., sumatriptan, rizatriptan, etc.) for moderate to severe migraine, or mild to moderate migraine that has not responded to simple analgesics. Note: Avoid triptans in patients with vascular disease, uncontrolled hypertension, or hemiplegic migraine.
  - Alternative: Isometheptene-containing compounds and intranasal dihydroergotamine
  - Adjunctive medications:
    - Intranasal lidocaine
    - Dexamethasone to prevent short-term recurrence
  - Children and teens: acetaminophen, ibuprofen, intranasal sumatriptan, and intranasal zolmitriptan
  - Emergency department treatment: Intravenous antiemetics, with or without intravenous dihydroergotamine are often used
- Other pharmacotherapy:
  - Use opioids for moderate to severe pain with no response to/intolerance of first-line treatments. Use only as needed<sup>23</sup>
- Migraine preventions, for when abortive medications are not effective or when migraines are frequent:
  - Anti-epileptics - e.g., valproate, divalproex, topiramate
  - Beta blockers - e.g., timolol, propranolol, metoprolol
  - Anti-depressants - e.g., amitriptyline, venlafaxine
  - Botox for extremely frequent migraines



- Avoid or reduce estrogen for estrogen-related migraines

## Non-pharmacological treatments

- First-line life-style changes include sufficient and regular:
  - Sleep
  - Exercise
  - Meals, and avoid personal triggers
  - Water
- Complementary therapies:
  - Acupuncture
  - Massage
  - Cognitive behavioral therapy

70,71

## Tension-Type Headache

- OTC analgesics and adjunctive therapy, including managing triggers, stress reduction, etc., are the first-line treatments.
- Regular use of analgesics may lead to chronic daily headaches.
- Opioids are not helpful for most people with chronic daily headaches and therefore should be used only in rare circumstances<sup>2</sup>.

## MRS. JONES - MIGRAINE



**Patient:** Mrs. Dorothy Jones, 35 y/o

**Scenario:** Mrs. Jones is brought by her friend into your office for treatment of an acute migraine with aura. Dorothy reports a medical history significant for Sickle Cell Disease and tells you that she took 2 Excedrin Migraine tablets 2 hours ago. She says her pain is still a 7 or 8 out of 10.

**Question:** Which of the following is an appropriate treatment (check all that apply)?

### Choose all that apply

1. Valproate
  - Feedback: Incorrect
  - Anti-epileptics are sometimes helpful in the prevention of migraines, but not treatment during a migraine episode.
2. Oral or nasal sumatriptan
  - Feedback: Incorrect
  - Triptans are contra-indicated in patients with vascular disease or vaso-occlusive components, like sickle cell disease, which Mrs. Jones does have.
3. Intranasal dihydroergotamine
  - Feedback: Correct
  - This is an alternative abortive medication to triptans.
4. Intranasal 4% lidocaine solution
  - Feedback: Partially correct (if used as an adjunct treatment)
  - Intranasal lidocaine is considered an adjunctive topical analgesic.

## FIBROMYALGIA

### Clinical Guidelines for Fibromyalgia

Both pharmacological and non-pharmacological treatments are recommended

#### Pharmacological:

- For treatment of insomnia, fatigue, and depressive symptoms:
  - Tricyclic antidepressant medications, especially amitriptyline and serotonin/norepinephrine reuptake inhibitors (SNRIs)
- For treatment of muscle spasms:
  - Cyclobenzaprine or low dose benzodiazepines (e.g., clonazepam) to treat muscle spasms

- Certain anticonvulsants are also effective on pain and other fibromyalgia impact (gabapentin and pregabalin)
- SSRI antidepressants have modest evidence for effectiveness on pain, fatigue, other impacts of fibromyalgia
- Not recommended are NSAIDs, because fibromyalgia is not inflammatory, but it can be used for comorbid rheumatic disease
- Tramadol, a weak opioid, made a schedule IV controlled substance in 2014, has moderately strong evidence for improving fibromyalgia pain. Otherwise, chronic opioid therapy (COT), is rarely effective for fibromyalgia and should be used as a last resort.

### **Non-Pharmacological:**

- Patient and family education
- Massage
- Exercise
- Including pool therapy
- Cognitive behavioral therapy
- Acupuncture

72,73

## OSTEOARTHRITIS

### **Clinical Guidelines for Osteoarthritis**

Both pharmacological and non-pharmacological treatments are recommended

#### **Pharmacological**

- Systemic treatments
  - First-line treatment includes, in order of increasing symptom severity, acetaminophen, NSAIDs, or glucocorticoids
  - Due to potentially dangerous side effects, acetaminophen is the first-line treatment of choice for the elderly. Opioids taken on a schedule are often used before NSAIDs in this population
- Local treatments:
  - Hyaluronic acid injections may provide relief for mild to moderate arthritis
  - Topical NSAIDs (topical delivery helps avoid systemic effects)

#### **Non-Pharmacological**

- Exercise is important to strengthen muscles around affected joints
- Weight loss for those who are overweight reduces stress on joints

74

**Opioids.** Opioids are not considered a first-line treatment option for osteoarthritis and "should be considered only if traditional methods of pain management (e.g., acetaminophen, NSAIDs, or tramadol) have been ineffective" or intolerable<sup>75</sup>. If used, they should be part of a comprehensive pain

treatment plan. In the elderly, NSAIDs may present serious health risks so opioids are sometimes used in this patient population to treat arthritis when other first-line treatments are not effective.

## MR. JOHNSON - NEUROPATHY / NEURALGIA

- First-line, efficacious medications for neuropathy or neuralgia include<sup>76,77</sup>:
  - carbamazepine (FDA-approved for trigeminal neuralgia)
  - gabapentin (FDA-approved for post-herpetic neuralgia)
  - 5% lidocaine patch FDA-approved for post-herpetic neuralgia)
  - tricyclic antidepressants for neuropathy
  - tramadol hydrochloride for neuropathy (a controlled substance, Schedule IV, as of 2014)
- Opioids are considered effective and useful as second- or third-line drugs. Acceptance of opioids in long-term management of neuropathic pain is mixed. Medications other than opioids are typically utilized first due to the more serious adverse effects and risks associated with opioids.



**Patient:** Mr. Marcus Johnson, 44 yo

**Scenario:** Mr. Johnson presents with several weeks of aching, sometimes 'buzzing-like' pain across his right chest where he experienced an episode of shingles that was diagnosed 7 weeks ago. He has no history of substance abuse and reports having "smoked weed" a couple times only when he was a teenager. He requests something 'strong' for the pain because he is convinced that if it resolves completely even once, the 'cycle' of pain will be broken and the pain will not return.

**Question:** What is appropriate first-line treatment for Mr. Johnson (check all that apply)?

### Choose all that apply

1. Oxycodone for strong pain relief
  - Feedback: Incorrect (not first-line)
  - Opioids are second- or third-line therapies for post-herpetic neuralgia.
2. Gabapentin
  - Feedback: Correct!
  - Gabapentin is FDA-approved for post-herpetic neuralgia.
3. Carbamazepine
  - Feedback: Incorrect
  - Carbamazepine is FDA-approved for trigeminal neuralgia.
4. Lidocaine patch (5%)
  - Feedback: Correct!
  - Lidocaine patch (5%) drug is FDA-approved for post-herpetic neuralgia.

## CANNABIS (MARIJUANA) FOR PAIN CONTROL

### Overview

*Cannabis* (Marijuana) includes chemicals being used to treat a variety of pain conditions and types of pain. *It is not FDA-approved for that purpose*, however, some states have legalized its use for medical purposes, including the treatment of pain.

The mechanism for analgesia from *Cannabis* differs from opioids. The active chemical ingredients are called cannabinoids. The physiological response to cannabinoid receptor activation includes "euphoria, psychosis, impaired memory and cognition, reduced locomotor function, increased appetite, and antiemetic, pain-relieving, antispasticity, and sleep-promoting effects"<sup>78</sup>.

Cannabinoid receptors (CB<sub>1</sub>) are found in the brain (especially basal ganglia, hippocampus, cerebellum, and association cortices) and the spinal cord and peripheral nerves throughout the body including adipose tissue, muscle, liver, GI tract, pancreas, and reproductive and cardiovascular tissues<sup>78</sup>. The pain relieving ability of cannabinoids also appears to be mediated through anti-inflammatory effects via CB<sub>2</sub> receptors on immune cells.

### Cannabinoids

Over 60 pharmacologically cannabinoids are found in marijuana<sup>78</sup>. The naturally occurring cannabinoids (endocannabinoids) affect many physiologic processes, including pain perception<sup>79</sup>. The percent of each cannabinoid in a Cannabis plant varies with the strain and growth conditions. Activation of CB1 and CB2 receptors inhibits the release of multiple neurotransmitters, including acetylcholine, dopamine, and glutamate. Opioid and serotonin receptors are affected indirectly.

The primary cannabinoids found in marijuana are:

1. Delta-9-tetrahydrocannabinol (THC) – A psychoactive cannabinoid associated with euphoria as well as many mild adverse effects including accelerated heartbeat panic, confusion, anxiety, and paranoia. THC also has mild to moderate analgesic effects.
2. Cannabidiol (CBD) – Appears to relieve pain and decrease inflammation without causing intoxication or producing the negative side effects of THC. It appears to have anti-anxiety and antipsychotic effects.

78,80

### Effectiveness

*Cannabis* is being used by patients for a variety of pain syndromes and types of pain including neuropathic, mechanical, and inflammatory pain<sup>79</sup>.

### In combination with other pain medication:

- Vaporized *Cannabis* added to opioids relieved chronic pain better than the opioid alone in a small clinical trial<sup>81</sup>.

## INDICATIONS FOR USING MARIJUANA FOR PAIN

Medical marijuana is used most often to relieve pain. A study of 1746 users in California found that 82.6% used it to relieve pain<sup>82</sup>.

### **The Evidence**

A review of 28 randomized clinical trials found that high-quality evidence supports the effectiveness of using marijuana to treat chronic pain, neuropathic pain, and spasticity due to multiple sclerosis<sup>78</sup>.

Pain-related diagnostic codes used most often as reasons for approving medical marijuana use included:

- Back/Spine/Neck Pain – 30.6%
- Muscle spasms – 15.7%
- Arthritis – 8.5%
- Injuries (knee, ankle, foot) – 4.5%
- Joint disease/disorders – 4.4%
- Inflammation (spine/nerve) – 2.9%
- Headaches – 2.7%

### **In cancer and chemotherapy pain:**

- Delta-9-THC: Oral THC relieved cancer pain as well as nausea and vomiting and improved appetite in one small study and in another study, cancer pain relief was comparable to codeine. In another study, anxiety and distress were relieved in addition to cancer pain and nausea, in comparison to no treatment<sup>80</sup>.
- Whole *Cannabis* extract sprayed sublingually, relieved cancer pain that had not been relieved by opioids<sup>80</sup>. Sleep loss also decreased. Low doses were found to be effective.
- In animal studies, cannabinoids appear to prevent neurological damage, including pain, that is associated with some forms of chemotherapy<sup>80</sup>.

## SIDE EFFECTS AND OTHER RISKS OF MEDICAL MARIJUANA FOR PAIN

### **Potential Adverse Effects During Use**

A one year study of the safety of medical marijuana in 141 users concluded it is fairly well-tolerated with only mild to moderate non-serious adverse events and no difference from non-user controls with respect to serious adverse events<sup>83</sup>.

Potential adverse effects of cannabinoids during use include:

- Increased pulse rate
- Decreased blood pressure
- Muscle relaxation
- Dilated blood vessels conjunctiva
- Decreased gastric and intestinal motility
- Dizziness

Note that, unlike opioids, there is no respiratory depression.



- Depression
- Hallucinations
- Paranoia
- Acute effects from smoke inhalation
- Short-term memory impairment
- Balance, decreased coordination

79,80

Adverse effects during acute intoxication are more common in new users<sup>79</sup>.

Cannabinoids are quickly deactivated and slowly metabolized and cleared through the hepatic cytochrome P450 system, with excretion through urine and feces<sup>79</sup>.

## Adverse Effects of Chronic Use

Adverse effects of chronic use include<sup>78,79</sup>:

- Increased respiratory tract infections and pneumonia<sup>78</sup>
- (smoked form) Loss of lung function – A study of 5000 people who smoked marijuana over 20 years found some loss of lung function<sup>80</sup>. Occasional and low use was not associated with loss of lung function.
- Preliminary research associates use with myocardial infarction, stroke, and peripheral vascular disease<sup>78</sup>.
- Associated structural brain differences in the nucleus accumbens and amygdala are found even with occasional users compared to controls<sup>78</sup>.
- Possible endocrine effects including reproductive effects<sup>79</sup>
- Addiction – Addiction is primarily psychological and physical dependence is minimal<sup>79</sup>. *Cannabis* and cannabinoids may be addictive<sup>80</sup>. Withdrawal is milder than for opioids. Symptoms include irritability, anxiety, dysphoria, craving, insomnia, restlessness, hot flashes, and (rarely) nausea and cramping<sup>78,79</sup>. Some tolerance may develop resulting in the need for higher doses with long-term use<sup>79</sup>.

## Beneficial Side Effects

Beneficial side effects of chronic use include:

- Decreased rate (45% lower) of bladder cancer in men<sup>80</sup>.

## PRESCRIBING MEDICAL MARIJUANA FOR PAIN

### How Supplied

Medical marijuana can be obtained from dispensaries in a variety of forms but is not available from pharmacies because it is illegal federally.

Cannabis can be taken in several forms:

- Inhaled – smoked or vaporized dried marijuana plant or resin or oil (hashish). Quickly absorbed into the bloodstream. Less psychoactive ingredient is produced in comparison to ingesting *Cannabis* by mouth.

- Ingested/Infusion – The plant or resin taken by mouth via food products (nonvolatile solvents such as butter, cooking oil) into which it is baked, or tea. More psychoactive ingredient is produced via processing by the liver, in comparison to inhaling smoked *Cannabis*.
- Sublingual absorption – Clinical trials are testing a *Cannabis* plant extract that is sprayed under the tongue and absorbed through the mucosa. The ability to control the quantity of specific cannabinoids is advantageous over the other routes of administration.
- Other: Medical marijuana can also be vaporized using a preheated vaporizer. An advantage over smoking may be that it is less harsh on the lungs. Other products include patches, suppositories, topicals (salves, ointments, etc). The topicals are sometimes beneficial for arthritis or tendonitis.

80

## Products Available

- Nabiximols (Sativex) – A *Cannabis* extract containing delta-9-THC and cannabidiol. Approved in Canada for treatment of pain in advanced cancer and MS<sup>80</sup>
- Dronabinol – FDA approved for nausea and vomiting associated with chemotherapy and to stimulate appetite in wasting illnesses, such as cancer or HIV infection<sup>78</sup>
- Nabilone – FDA approved for nausea and vomiting associated with chemotherapy and to stimulate appetite in wasting illnesses<sup>78</sup>
- Marinol – THC psychoactive

## Dosage

Anecdotal reports of marijuana cigarettes include many patients for whom just 2 to 3 inhalations per day are effective at reducing pain significantly<sup>79</sup>.

## States Where Medical Marijuana Is Legal

**(But not necessarily for treatment of all chronic pain – consult laws by state)**

It is illegal by federal law in the U.S. to use *Cannabis* outside of research settings, however, a number of states have legalized the use of medical marijuana. Currently, it is legal for at least some medical purposes in<sup>84</sup>:

- Alaska
- Arizona
- California
- Connecticut
- Colorado
- Delaware
- DC
- Guam
- Hawaii
- Illinois
- Maine
- Maryland
- Massachusetts



- Michigan
- Minnesota
- Montana
- Nevada
- New Hampshire
- New Jersey
- New Mexico
- New York
- Oregon
- Puerto Rico
- Rhode Island
- Vermont
- Washington

Additional states have legalized specific ingredients of *Cannabis*, e.g., cannabidiol. For a summary of approved conditions by state as of 2015, view the review article in JAMA, Medical Marijuana for Treatment of Chronic Pain and Other Medical and Psychiatric Problems by Hill, KP

## MR. ALVAREZ - TREATMENT PLANNING FOR ACUTE PAIN

### Treatment Plan:

Often acute pain is a symptom of an illness or injury, whether a broken bone or pulled muscle. Both the pain and its cause should be treated simultaneously with follow-up to ensure appropriate pain resolution.

### Examples of Acute Pain Treatments

The following are some common treatments for acute pain<sup>85</sup>:

Institute for Clinical Systems Improvement (ICSI). Pain, Chronic; Assessment and Management of: Guideline Summary. Institute for Clinical Systems Improvement (ICSI). 2011. Available at: [https://www.icsi.org/\\_asset/bw798b/ChronicPain.pdf](https://www.icsi.org/_asset/bw798b/ChronicPain.pdf) Accessed on: 2013-09-12.

<b>Non-Pharmacological</b>	Exercise, heat/cold packs, massage, rest and relaxation
<b>Pharmacological</b>	Somatic – acetaminophen, NSAIDs, local anesthetics, opioids Visceral – corticosteroids, local anesthetics, NSAIDs, opioids Neuropathic – anticonvulsants and antidepressants

### Acute Pain Case



**Patient:** Mr. Eric Alvarez, 42 y/o

**Scenario:** Mr. Alvarez was evaluated at a 24-hour urgent care center last night where the physician assistant (PA) on staff indicated that his toe appeared severely bruised but not fractured. The PA secured the toe with tape and offered him a prescription for

two days of acetaminophen plus hydrocodone for pain. He was told he should not drive or operate machinery if he took the pain medication. Because he operates machinery in his job, he did not fill the prescription. Now, he is still in pain after taking over-the-counter ibuprofen and is reconsidering getting a prescription for a "stronger" medication.

Given Mr. Alvarez's acute, moderate to severe pain, and insufficient response to over-the-counter medications, it is important to consider other treatments.

**Question:** Which of these treatment options would you suggest for Mr. Alvarez (please check all that apply)?

### Choose all that apply

1. RICE (rest, ice, elevation, compression)
  - Feedback: Correct!
  - Yes, RICE can reduce swelling, decrease pain, and promote healing
2. Prescription NSAIDs plus acetaminophen (e.g., Diclofenac, Naproxen)
  - Feedback: Correct!
  - Yes, this line of pharmacological treatment would address Mr. Alvarez's moderate to severe pain without the unwanted and potentially dangerous sedating side effects of opioids or risk of addiction.
3. Short-term opioid treatment (i.e., something 'stronger' than Vicodin)
  - Feedback: Incorrect
  - No, Mr. Alvarez does not like the sedating effects of opioids, and since his job involves the use of machinery, these sedating side effects and the risk of addiction are potentially dangerous.
4. Modified shoes and/or crutches
  - Feedback: Correct!
  - Yes, remember to consider functioning when treating pain. These could help Mr. Alvarez mobilize without applying pressure to the affected toe.

### Case Discussion:

For Mr. Alvarez, achieving the first three goals of pain treatment – pain reduction, treatment of underlying diagnosis (contusion), and improved functioning – involves multiple non-pharmacological and pharmacological non-opioid treatments. In combination, these aim to reduce acute swelling in the toe, address his pain, and promote healing while enabling him to work safely. He may need referral to an orthopedist for further evaluation of the injury.

## MRS. CATELL - PHARMACOLOGICAL TREATMENT



**Patient:** Mrs. Donna Cattell, 62 y/o

**Review Mrs. Cattell's Pain History:**

Mrs. Cattell is a new patient who asks for pain medication for chronic lower back pain that bothers her every day for most of the day. She says that over-the-counter medications do not provide her with enough pain relief. On further questioning, you learn that her lower back pain has been present for 3 years. Two years ago, she had lower back surgery, followed by physical therapy, and 3 months of an opioid pain medication. In combination, these 3 treatments only yielded some pain relief. Despite extensive diagnostic testing, a specific cause for Mrs. Cattell's pain has not been identified. The provider who prescribed her opioids for 3 months refused to prescribe them any more. The pain is now moderate to severe around half the time, is worse at night after work, and is described as a burning ache that bothers her every day for most of the day.

Diagnostic imaging of her cervical and thoracic vertebrae did not reveal any structural problems. Physical exam results suggest mild nerve impingement.

Mrs. Cattell's provider prescribed prescription NSAIDs and refers her for physical therapy as well as a psychological consultation on her pain coping skills.

**Question:** Based on what you know about Mrs. Cattell's pain so far, what categories of pain treatment are first-line pharmacological therapies for her lower back pain? (Choose all that apply)

### Choose all that apply

1. NSAIDs

- Feedback: Correct!
- Because Mrs. Catell's pain appears to be chronic and musculoskeletal, an NSAID would be a first-line therapy to try along with non-pharmacological therapies.

2. Immediate Release Opioids

- Feedback: Incorrect
- Because Opioids are not first line therapy in this situation and the first-line treatment, NSAIDs and non-pharmacological therapies, has not been tried.

3. Muscle relaxants

- Feedback: Incorrect
- Sometimes muscles do tense around chronic injuries or painful areas, and muscle relaxants may be used as part of pain treatment, but as far as we know, muscle spasms or painful muscles have not been identified in this case. Furthermore, gentle stretching and physical therapy could be tried first.

4. Sedatives

- Feedback: Possibly correct (See warning)

- Sedatives might be helpful for someone in acute pain if they report trouble sleeping due to severe pain, or severe pain in muscles due to muscles guarding the primary painful area, but should only be used if absolutely needed and **caution should be exercised as they can be addicting and sedating.**

## MULTIDISCIPLINARY APPROACH TO CHRONIC PAIN

### Multidisciplinary Approach

A multidisciplinary approach to chronic pain treatment optimizes treatment effectiveness and minimizes risk of addiction to pain medication by involving the coordinated efforts of different specialists. Multidisciplinary treatment approaches including medications, physical interventions, and psychobehavioral interventions are often needed for chronic pain<sup>86</sup>, especially with psychological or medical co-morbidities or impaired function<sup>2</sup>.

Few multidisciplinary pain clinics exist and they are primarily located in major medical center hospitals and rehabilitation centers. A multi-modal treatment team with a "home" clinician, to coordinate care may be needed as an alternative.



### Medical Home

Patients with chronic non-cancer pain use health care services more frequently and have more comorbidities than other patients<sup>2</sup>. Because of this and the need for multidisciplinary care to manage the pain, they often need a "medical home" clinician to coordinate communications among the health care professionals involved. The "home" provider may or may not prescribe the pain medication. Thus, **primary care providers can serve as the patient's medical home.** The disciplines involved in a treatment team may find a written agreement helpful, one that describes the roles for each provider, communications, and scheduled visits<sup>23</sup>.

## MAKING A REFERRAL

### When to Refer

- Moderate to severe substance use disorder suspected
- Complicated medical or mental health history
- Complex pain conditions
- Care needed is outside providers' expertise or practice's structure or focus



### Where to Refer

- Pain specialist – Complex pain conditions
- Multidisciplinary pain clinic – Long-standing pain problems or multiple issues
- Addiction specialist – History of addiction/substance use disorder

## How to Refer

- Send a referral letter before the patient's first visit. (See sample letter in Related Resources at the end of the module)
- Consider affordability and insurance accepted by the recommended practice.
- The referring clinician can make the initial call for the patient in the patient's presence.
- The referrer should inform patients about the practice to which they are being referred.
- It is important for the referrer to encourage patients to follow through and to check on whether the referral was successful; referrals may need to be repeated several times.

## Coordinating Care After Referral

- Ideally, the specialist will communicate with the referring provider after the patient's assessment
- The referring clinician continues to act as an advocate and collaborates with the patient and the specialist after referral.
- Coordinated care can enhance psychological well-being, reduce medication use, improve functional ability, increase return-to-work outcome, and prevent secondary dysfunction<sup>87</sup>.

## CASE VIGNETTE: MRS. BISCHOFF CONTINUED

**Instructions:** Please review this case by reading information in all tabs. Once you have completed your review, please proceed to the next page.

### New Patient



**Name:** Mrs. Bischoff

**Age:** 36 years old

**Reason for visit:** Frozen shoulder

**History of Present Illness:** 3-month history of severe right shoulder pain when moved behind her or laterally and mild to moderate pain at other times while taking prescription NSAIDs. Severe pain after inadvertent use of her shoulder lingers around an hour and sometimes she triggers it in her sleep. She is interested in whether opioids might help.

Evaluation so far suggests a chronic inflammatory/musculoskeletal condition with episodic acute exacerbations.

<i>Vital Signs</i>					
Height:	Weight:	Pulse:	Blood Pressure:	Respiration Rate:	Temperature:
5'7"	142 lbs	74	112/65	12	98.2° F

### Past Medical History

**Medical Illnesses:** Onset of frozen shoulder after mild injury in martial arts class - managed with NSAIDs.

**Alcohol/Tobacco/Recreational Drug Use:** None

## Family/Social History

**Relatives:** Mother, age 72 – Hypertension; Father, age 75 – Hypertension, early Alzheimer's 62

**Occupation:** Graduate student in microbiology

**Marital/Family Status:** Married; no children

## Current Medications

-Diclofenac bid, used intermittently, but she does not notice much effect.

Ice: used after initial injury

Allergies: NKDA. Acetaminophen causes nausea

## Labs

Slightly elevated ESR and C-Reactive Protein thought to be due to the shoulder inflammation. Lab values otherwise within normal limits.

## Imaging

Initial diagnostic radiograph of right shoulder showed no evidence of fracture, tumor, arthritis, or calcifications.

An MRI of the right shoulder two weeks ago revealed a thickened coracohumeral ligament and soft tissue thickening in the rotator interval confirming the diagnosis of adhesive capsulitis ("frozen shoulder"); no additional intra-articular pathology was noted.

## Physical Exam

10 to 50% loss of shoulder range of motion in all planes, loss of both active and passive range of motion, some tenderness at rotator cuff and biceps head upon palpation, some radiation into deltoid muscle.

## MRS BISCHOFF - POTENTIAL TREATMENT CHOICES

This section describes potential treatments for Mrs. Bischoff. You will be asked to choose from them later. Be sure to look for an appropriate multi-disciplinary approach to treating her pain.

**Case Review:** Based on Mrs. Bischoff's chronic inflammatory, musculoskeletal process with acute inflammatory elements, an MRI was ordered. It confirmed intense inflammation in the right shoulder. Combining the MRI results with (1) a pain history of increasingly limited function of this shoulder, and (2) a physical exam that confirmed severely limited range of motion and severe pain upon motion in several directions, a diagnosis of adhesive capsulitis (frozen shoulder) was made.

**Ms. Bischoff:** "What can you do to help me with this pain? What about opioids?"

Review the following pages for possible treatments to determine what treatment option(s) you would recommend for Mrs. Bischoff.

## MRS BISCHOFF - NON-PHARMACOLOGICAL TREATMENT

### **Physical Therapy**

Physical therapy is an excellent treatment choice because her range of motion is decreasing. Using her shoulder in as full a range of motion as possible will help limit the immobilization from the scarring process of "frozen shoulder." Use of heat to prepare for exercise followed by ice after an exercise session can help mobilize the joint and then minimize inflammation.

### **Psychiatry/Counseling**

It is an excellent choice to think about whether Psychiatry/Counseling is indicated. This condition often lasts around a year and living with this much pain for a long period of time can be depressing. Cognitive behavioral counseling can help a patient develop pain coping skills. A brief screening for depression is a good idea. If she does have depression, you can determine whether it is something that can be addressed in your practice or requires referral.

### **Other Non-pharmacological Treatment**

- Exercise: She can do exercises at home that maintain her range of motion. She can use a little heat, such as a warm shower, before doing the exercises and follow with ice afterward.
- Surgery:
  - Manipulation: This is a treatment for limited range of motion that happens late in the disease process. Performed under general anesthesia, manual manipulation involves forced movement of the shoulder through its full range of motion, causing the capsule and scar tissue to stretch and/or tear
  - Arthroscopy: Also for late in the disease process, this is performed to remove scar tissue and adhesions

### **Less Effective Non-pharmacological Treatment**

Certain treatments that are effective for other pain conditions may not be effective or could even be harmful with frozen shoulder:

For example, immobilization, which is so important for many musculoskeletal injuries, is not a good idea in this case because of the scarring process that produces "frozen shoulder." Movement in as full a range of motion as possible can help prevent the decrease in mobility. She may, however, be advised to avoid those motions that trigger the most severe pain, as these could exacerbate the inflammation.

Massage, which is helpful to relax muscles that are tense from guarding a painful area, is not as effective with frozen shoulder as it may be from some other pain conditions. However, it may help with stress management, which ultimately can help with overall functioning and even perception of pain.



## MRS BISCHOFF - PHARMACOLOGICAL TREATMENT

### NSAIDs

NSAIDs are the first-line of treatment for adhesive capsulitis. Bischoff reported taking her NSAID 'intermittently'). Because her pain is constantly at least mild to moderate and only occasionally severe, instead of taking the NSAID diclofenac prn severe pain, she could take it on a scheduled basis. If one NSAID is still not effective, another one can be tried. In either event, benefits vs. risks of side effects of NSAIDs would have to be considered.

### Adjunctive Pain Medications

- Acetaminophen is commonly used as an adjunctive medication in chronic pain, but may not be an option in this case because it causes Mrs. Bischoff "stomach problems." It might be worth asking her about the stomach problems as sometimes a medication can be tolerated in a lower dose or with an adjustment in how the drug is taken (e.g., with/without food, time of day). It may also be worthwhile to confirm that the patient is taking her medications as prescribed (note that Mrs.
- Steroid injections: Injections of cortisone directly into the joint can help reduce inflammation and increase mobility
- Topical NSAIDs are another possibility.

### Less Effective Treatments

Switching to chronic opioid therapy would risk her developing dependence for pain that is only mild to moderate most of the time as long as she is taking an NSAID. Her pain is only severe intermittently in response to use. Relief with the opioid would be only a few points on a scale of 1 to 10 for a pain condition that is likely to resolve within months to a couple of years. Before considering such an option, a different NSAID, adjunctive acetaminophen, topical NSAID, and other, non-pharmacological therapies listed could be tried.

## MRS. BISCHOFF - PATIENT RECORD NOTE

### Patient information

Mrs. Heidi Bischoff - 36-year-old white female

### Pain History

**Pain severity:** reaches 10 out of 10 for a second with certain motions, lingers at a 7 to 9, and then "calms down" to a constant 4 to 5 within an hour or two.

**Onset:** 3 months ago. Pain is "hot," piercing, constant, intense in a small localized area in the center of the joint with some radiation to her deltoid muscle.

**Aggravating factors:** Elicited by movements in specific directions (posterior and lateral) produces. Patient reports it is not tender to the touch, because the pain "feels like it is inside the joint where it cannot be touched" (however muscle tenderness with palpation found during PE).

**Treatment history:** In the past month, treated with diclofenac bid, with little relief. Acetaminophen causes nausea. **Pain effects on her life:** Loss of sleep when triggered inadvertently by moving in

sleep and lost ability to do her favorite activities (martial arts and yoga classes). Decreased range of motion in lifting her arm over her head and reaching behind her.

## Physical Examination

Range of motion: shoulder 10 to 50% loss in all planes, both active and passive  
Tenderness to palpation at rotator cuff and biceps head  
Pain radiation into deltoid muscle.

## Diagnostic Category

Chronic inflammatory/musculoskeletal

## NON PHARMACOLOGICAL Treatment Plan

**Question:** What non-pharmacological treatment is likely to benefit Mrs. Bischoff?

### Choose all that apply

1. Massage
  - Feedback: Correct
  - Massage may be helpful if she is experiencing secondary pain from muscle "guarding" although there was no mention of this in the history. This type of pain is more common with backaches and headaches.
2. Rest
  - Feedback: Correct
  - Rest is a good recommendation during acute flare-ups of frozen shoulder, however, she should be encouraged to use her shoulder in normal functioning to the extent that it does not trigger flare-ups.
3. Cold/heat packs
  - Feedback: Correct
  - Heat packs may help warm up the joint before doing any recommended exercises. Cold packs after exercise and during acute flare-ups of pain may be effective in reducing pain from inflammation.
4. Exercise
  - Feedback: Correct
  - Exercise is important to prevent progression of the "freezing" or immobility caused by scarring in frozen shoulder. However, this needs to be done without triggering an acute exacerbation of the inflammation. Supervision of the exercise in physical therapy will help guide the patient to avoid triggering further damage.
5. Physical therapy
  - Feedback: Correct
  - Exercise is important to prevent progression of the "freezing" or immobility caused by scarring in frozen shoulder. However, this needs to be done without triggering an acute exacerbation of the inflammation. Supervision of the exercise in physical therapy will help guide the patient to exercise in a way that avoids pain and triggering further damage.

## SUMMARY AND KEY POINTS

### Treatment Planning for Pain

- Use the working diagnosis to develop a treatment plan that includes initial treatment and ongoing monitoring. It is important to have a plan that:
  - reduces pain – pain elimination may not be possible
  - improves function – physical and psychosocial
  - treats the underlying diagnosis and any secondary effects (e.g., mood disorders, medication side effects)
- Many forms of pain are best treated with a combination of non-pharmacological and pharmacological treatments.
  - Common non-pharmacological therapies for pain include physical therapy, counseling, exercise, relaxation techniques, therapeutic injections, acupuncture, pain-blocking devices such as TENS units, and surgery.
  - Common pharmacological therapies for pain include nonsteroidal anti-inflammatory agents, acetaminophen, corticosteroids, topical pain killers, adjuvant medications (such as antidepressants, anticonvulsants, and muscle relaxants), and opioids.
- First-line pain treatments are based on research indicating an optimal balance between effectiveness and safety. They should be used before other treatments, such as opioids.
- Opioids or opioid/non-opioid analgesic combinations may be indicated when:
  - first-line treatments, including all non-pharmacological treatments, have been tried
  - first-line treatments are contraindicated
  - Pain is moderate to severe

### Communicating Effectively During Treatment Planning

- Use a patient-centered approach to treatment planning by involving the patient.

### Multi-Modal Approach to Chronic Pain Treatment and Medical Home

- A multimodal treatment approach is best for many cases of chronic pain. Disciplines that may be involved are: surgery, neurology, rehabilitative medicine, orthopedic medicine, anesthesiology, psychiatry, psychology, complementary medicine, physical therapy, pharmacology, and addiction specialists
- Chronic pain patients should have a "medical home," that is a provider who takes primary responsibility for coordinating their care with multiple interdisciplinary providers. Primary care providers often serve as the patient's medical home.
- Consultation and/or referral to specialists is indicated if a chronic pain patient presents with issues beyond a provider's ability or expertise, e.g., when a patient has multiple comorbid conditions or problems with substance abuse.

## RESOURCES AVAILABLE THROUGH THIS MODULE:

- [American Pain Society: Pain - Current Understanding of Assessment, Management, and Treatments](#)

The American Pain Society in 2006 published this guideline "Pain: Current Understanding of Assessment, Management, and Treatments". The guideline provides common assessment tools used to assess types of pain.

- [An Alternative and Complementary Medicine Resource Guide](#)  
Provides information about alternative and complementary methods of pain treatment. Includes lists of relevant books, journals, articles, organizations, treatment center, and government resources.
- [A Rehabilitation Based Approach to Pain Management \[Harden\]](#)  
R. Norman Harden, MD leads this discussion of interdisciplinary pain management which may be the standard of care but is more targeted to specialists. He discusses the different roles of different disciplines, as well as the role of psychosocial and societal factors and CAM/Acupuncture.
- [Clinical Guidelines for the Use of Chronic Opioid Therapy in Chronic Noncancer Pain \(APS/AAPM\)](#)  
Recommendations published in 2009 for chronic opioid therapy based on a review of the evidence. Provide guidance on patient selection, risk stratification, informed consent, opioid management plans, and more. Authors: Chou R, Fanciullo GJ, Fine PG, et al.
- [Complementary and Alternative Medicine Index U of MD](#)  
Searchable Alternative Medicine database that provides the following information on many common conditions and symptoms: Introduction, Treatment Approaches, Conditions, Herbs, and Supplements
- [Definitions Related to the Use of Opioids for the Treatment of Pain](#)  
A document approved by the American Academy of Pain Medicine, the American Pain Society, and the American Society of Addiction Medicine. Provides definitions for common terms that are often misused, which can cause misunderstandings between health care providers.
- [Informed Consent for Using Opioids to Treat Pain](#)  
A very detailed written patient agreement that includes informed consent for opioid use in the treatment of pain. The form includes the effect of opioids at the injury site and the central nervous system, what a patient should and should not expect from the treatment, varying negative effects, common sense rules and other expectations, and potential consequences that may result from the failure to follow the agreement. Author: Michael H. Moskowitz, MD, MPH
- [Initial Patient Contact About Buprenorphine](#)  
Initial Patient Contact about Buprenorphine Checklist
- [Interagency Guideline on Opioid Dosing for Chronic Non-cancer Pain](#)  
This set of guidelines aims to improve care and safety in the opioid treatment of patients with chronic, non-cancer pain. Part I aids primary care physicians in treating patients whose acute pain has become chronic, monitoring opioid treatment, and tapering from opioids if necessary. Part II aids primary care physicians in treating patients whose daily morphine equivalent dose is higher than 120 mg. An FAQ also exists which offers answers to questions on many aspects of the documents.
- [Medical Assisted Treatment](#)

Highlights the prevalence of opioid addiction, along with different treatment methods that have proven effective.

- [Medical Marijuana for Treatment of Chronic Pain and Other Medical and Psychiatric Problems](#)  
A review of the pharmacology, indications, and laws regarding use of medical marijuana.
- [Noninvasive treatments for acute, subacute, and chronic low back pain: A clinical practice guideline from the American College of Physicians](#)
- [Pain Evaluation Form](#)  
A clinical pain evaluation form for the use of physicians or other healthcare providers. The form will help to better understand the type of pain a patient is experiencing and how to best treat the pain.
- [Patient Information and Consent to Treatment with Buprenorphine](#)  
Sample of a patient information and consent to treatment with buprenorphine.
- [Referral Form for Substance Abuse](#)  
A referral form which includes both doctor and patient information.
- [Registered Nurses Association of Ontario: Assessment and Management of Pain](#)  
The Registered Nurses Association of Ontario offered an updated version of their “Assessment and Management of Pain” guidelines in 2007. The RNAO guidelines offer recommendations for patient practice related to pain assessment and management.
- [Target Chronic Pain Notebook](#)  
A notebook for tracking chronic pain.
- [The American Academy of Pain Medicine: Find a physician](#)  
This search engine produces searches for accredited pain by city and state.
- [Treatment Locators for Referral](#)  
This table provides a list of various pain and addiction treatment locators, to help you find a provider or treatment center in your area for referral. For each treatment locator, a website link and brief summary is provided, and information is included such as what treatment centers/counselors/specialists can be found.

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