PCSS Providers Clinical Support System

Basic Tenets of Pain Treatment

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Educational objectives

At the conclusion of this activity participants should be able to:

- Describe the sociopsychobiological model of pain and how that impacts treatment approaches
- Review the evidence for pharmacological and non-pharmacological therapies for pain
- Compare recommended strategies for managing common pain conditions

Case

- 53 year old male who developed low back pain three days ago after playing golf
  - Pain rated 9/10, not doing regular morning walk due to pain
- No symptoms radiating to legs, no trauma, no bowel/bladder changes, no constitutional symptoms
- Tried over-the-counter ibuprofen with no relief
- Having trouble sleeping
- History of alcohol use disorder, in remission
- Treated for depression with paroxetine

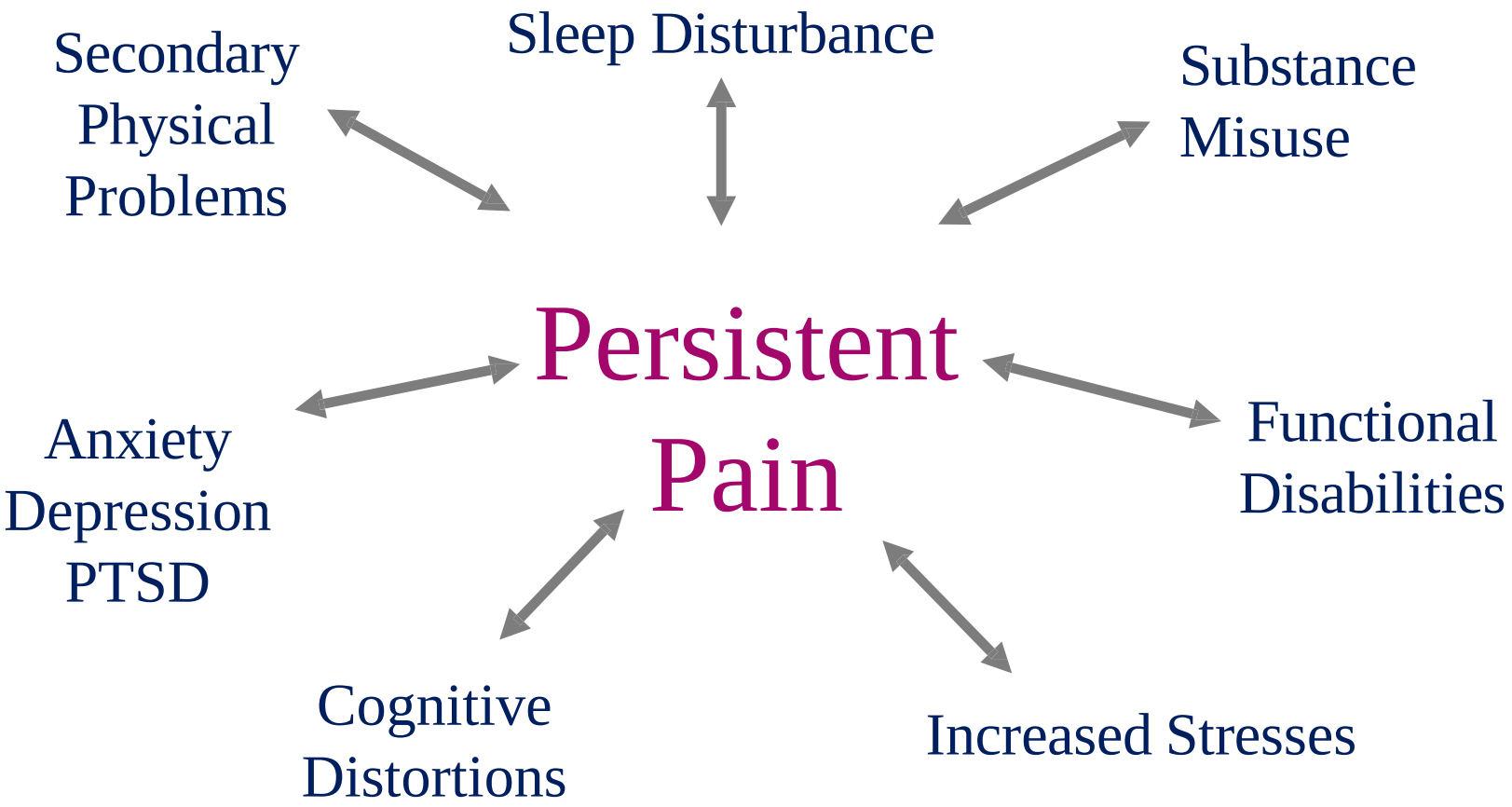
Case: Questions

- What is your initial approach to management of this patient?
  - Would you recommend medications and if so, which ones?
  - Would you recommend non-pharmacological therapies, and if so, which ones?
- What if the patient does not improve after a week of initial therapies?
- What if he is still having pain after 3 months?

Treating Acute and Chronic Pain

- Acute (<4 weeks) pain
  - In most patients, the natural history is for marked improvement over days to a few weeks, analgesics tend to be more effective
- Chronic (>3 months) pain
  - Symptoms tend to be persistent or recurrent over time, more difficult to treat
- Sociopsychobiological perspective
  - Psychosocial factors are stronger predictors of transition to chronic pain and severity
  - Biological factors (e.g., imaging findings, lab tests) poorly correlate with transition to chronic pain or severity
  - Treatment approaches for chronic pain must address psychosocial contributors to pain to be most effective
  - Chronic illness management approach

Gatchel RJ et al. Psychol Bull 2007;133:581-624
Chou R and Shekelle P. JAMA 2010;303:1295-1302


Secondary Physical Problems
Sleep Disturbance
Substance Misuse
Persistent Pain
Anxiety Depression PTSD
Functional Disabilities
Cognitive Distortions
Increased Stresses

Adapted from: McCorkle et al (UWash) Self-Management: Enabling and empowering patients living with cancer as a chronic illness Cancer Clinical Journal, 2011

Treatment Options For Pain

- Self-management
- Medications
- Exercise and related interventions
- Physical modalities
- Cognitive behavioral therapies and other psycho-behavioral interventions
- Complementary and integrative therapies
- Interventional therapies
- Interdisciplinary rehabilitation

Approach To Treatment for Pain

- Acute pain
  - Avoid prescribed bed rest, early return to activity as able, heat/cold, OTC analgesics
  - Identify and address psychosocial risk factors early to help prevent transition to chronic pain
- Chronic pain
  - Focus on functional goals and improvement
  - Self-care (coping skills, relaxation/meditation, activity/exercise)
  - Identify and address psychosocial contributors to pain
  - Factors to consider when selecting treatments:
    - Safety and efficacy
    - Emphasize active over passive modalities of treatment
      - Active therapies include psycho-behavioral treatments, exercise therapies, interdisciplinary rehabilitation
      - Passive therapies include medications, physical modalities, complementary and alternative treatments, interventional treatments
      - Can be used as an adjunct or bridge to active therapies
    - Costs, availability, patient adherence, prior response

Cognitive Behavioral Therapy (CBT)

- Psychological therapy that integrates:
  - Cognitive therapy
    - Restructures maladaptive thinking patterns associated with counterproductive or irrational thinking patterns, coping behaviors, and emotions
  - Behavioral therapy
    - Trains individuals to replace undesirable behaviors with healthier behaviors
- Objectives
  - Go from overwhelmed to manageable
  - Go from passive to active role in care
  - Reduce symptoms
  - Increase function and quality of life

Cognitive Behavioral Therapy

- Basic strategies
  - Break challenges into small pieces, set achievable goals, and strategize solutions
  - Transform negative thoughts to positive self statements
    - Address fear-avoidance and catastrophizing
  - Engagement to distract from pain
  - Practice deep relaxation
  - Practice situational coping strategies to prevent and reduce pain

Effectiveness of CBT

- Systematic review of CBT for chronic pain found small to moderate effects on pain (1 to 2 point reductions on a 0 to 10 point scale), disability, mood and catastrophizing versus usual care/wait list control
- Some effects on mood maintained at 6 months after treatment
- CBT has been found to be effective for specific conditions e.g. low back pain

Williams AC et al. Cochrane Database Syst Rev 2012:CD007407
Henschke N et al. Cochrane Database Syst Rev 2010:CD002014

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CBT in Practice

- Time-limited (8-10 sessions, often with refreshers)
- Group-based or individual
- Evolving online self-guided programs
  - FibroGuide – University of Michigan
- Basics can be implemented by diverse professionals, including primary care; may be more effective in persons with psychosocial risk factors
  - STarT Back Screening Tool—Risk stratified approach to use of CBT-informed PT
- Books for patients and non-psychology professionals
  - Managing Your Pain Before It Manages You – Margaret Caudill MD
  - Mastering Chronic Pain/Learning To Master Your Chronic Pain – Robert Jamison PhD
  - Less Pain, Fewer Pills: Avoid the Dangers of Prescription Opioids and Gain Control Over Chronic Pain – Beth Darnall PhD

Hill JC et al. Lancet 2011;378:1560-71

Meditation/Relaxation

- Helpful technique for self-management and coping
- Often incorporated in CBT and utilizes CBT principles
- Distraction, reduce anxiety, reduce sympathetic arousal, reduce muscle tension, altered central processing
- Evidence on effectiveness limited
- Varied techniques
  - Meditation
    - Mindfulness or mantra/focus-based
  - Progressive muscle relaxation
  - Autogenic training
  - Hypnosis
  - Guided imagery
  - Yoga, Tai Chi and some other therapies involving movement or exercise incorporate meditation or relaxation principles

Chiesa A et al. J Altern Complement Med 2011;17:83-93

Role of Clinicians in Promotion of Self-care

- Active listening
- Education
- Link patient with resources
- Set goals and problem solve
  - Motivational interviewing techniques
- Encourage engagement
- Cheering small and big successes

Exercise

- Effects on pain and function (and general health!)
  - Reduce fear avoidance behaviors
- Many different types of exercise
  - Aerobic, strengthening, stretching, mixed
  - McKenzie, motor control and stabilization, active trunk exercise, others
- Related therapies
  - Alexander technique, Pilates, yoga, Tai Chi, others
- Supervised vs. home exercise
- Group vs. individual
- Ideally done within a CBT-informed framework
- Variability in intensity
- Can increase pain in the short term, but has long term benefits

Exercise

- No clear evidence that one type of exercise is superior to another
- Exercise has been shown to prevent low back recurrence
- Exercise will only be effective if patients engage in it
  - Encourage patients to engage in exercise that they enjoy and will continue
- Supervised, individualized exercise programs may be more effective, at least initially
- Hand-outs and videos for home exercise
  - Use as part of self-care/CBT intervention
- Start slow, incremental increases

Hayden JA. Ann Intern Med 2005;142:765-775
Hayden JA. Ann Intern Med 2005;142:776-85
Steffens D, et al.JAMA Intern Med.2016;176(2):199-208.

Interdisciplinary Rehabilitation

- At a minimum, combines both physical and biopsychosocial treatment components
  - Provided by professionals from at least two different specialties
- Components and intensity of interdisciplinary rehabilitation vary
- Related interventions include functional restoration, work hardening (usually workers' compensation setting)
- Lack of availability and reimbursement an important barrier

Interdisciplinary Rehabilitation

- Slightly to moderately more effective than non-interdisciplinary rehab for chronic pain at improving pain and function
- Ideal components of interdisciplinary rehabilitation uncertain
  - Exercise and CBT recommended at a minimum
- More intensive programs may be more effective than less intensive programs, but more costly
- Consider for patients who have failed standard treatments, severe functional deficits, or severe psychosocial risk factors

Kamper SJ. Cochrane Database Syst Rev 2014:CD000963
Gatchel RJ. J Pain 2006;7:779-93

Physical Modalities

- Include a variety of mostly passive treatments:
  - Heat/cold
  - Ultrasound
  - Interferential therapy
  - Shortwave diathermy
  - Transcutaneous electrical nerve stimulation
  - Low level laser therapy
  - Traction
  - Taping
  - Braces and supports
  - Others (magnets, etc.)

Kamper SJ. Cochrane Database Syst Rev 2014:CD000963
Gatchel RJ. J Pain 2006;7:779-93

Approach To Physical Modalities

- Evidence for most physical modalities is limited and have generally failed to show consistent benefits
  - Heat similarly effective to NSAIDs for acute low back pain
  - Other modalities not routinely recommended
- But, generally safe and some patients may experience/perceive some benefit
  - Caution with certain types of traction
- If used, only as adjunct to active therapies
  - Be aware of costs and discontinue if ineffective in initial trial

Complementary and Integrative Therapies

- Chiropractic spinal manipulation/mobilization
- Osteopathic manipulation
- Acupuncture
  - Electroacupuncture, acupressure, other related techniques
- Massage
- Meditation/mindfulness previously addressed
- Yoga, Tai Chi and other movement-based therapies covered in exercise section
- Many others

Effectiveness of Complementary and Alternative Medicine Therapies

- Some evidence that spinal manipulation/mobilization, acupuncture, and massage are more effective than no therapy and similarly effective versus exercise
  - Generally safe; caution with manipulation of cervical spine
  - Evidence on effectiveness varies for different pain conditions (e.g., manipulation not effective for fibromyalgia)
- Variability in techniques and number/frequency/duration of sessions
  - Optimal techniques and dose uncertain
  - Often methodological shortcomings in the trials
- Some techniques can be done in primary care with training
- Enhanced access through Affordable Care Act
- Some effects may be non-specific due to “hands-on” nature of therapies, attentional effects; difficult to blind
  - Consider patient expectations of benefit
- Less “active” than exercise/CBT
  - Consider primarily as an adjunct to active therapies

Furlan AD. Evid Based Complemen Alt Med 2012:953139
Terry R. Clin Rheumatol 2012;31:55-66

Medications

- Opioids
- Acetaminophen
- NSAIDs
- Tramadol/tapentadol (dual action)
- Gabapentin/pregabalin
- Antidepressants (tricyclics, SNRI’s)
- Skeletal muscle relaxants
- Benzodiazepines
- Topicals
- Others

Approach To Medications

- Analgesics generally more effective for acute pain
- For chronic pain, effectiveness for short-term pain is small to moderate and limited for function; evidence very limited on long-term effects[1]
  - Medications do not address psychosocial factors that contribute to pain
  - Use in conjunction with active non-pharmacological treatments
- Individualize medication decisions based on assessment of potential benefits and harms
  - Opioids carry special risks related to addiction and overdose potential—use cautiously in appropriately selected patients
  - Consider prior response to medications
  - Consider type of pain (nociceptive vs. neuropathic)
  - Specific medications for some conditions (e.g., DMARDs for rheumatoid arthritis, triptans for migraine headaches)
  - Consider co-morbidities (e.g., patients with depression and pain might benefit from an antidepressant with analgesic properties)

[1]*Williams CM, et al. Lancet 2014; 384(9954):1586-96.*

Opioids

- Opioids have become widely prescribed for chronic pain
- Moderate short-term effects on pain, small/inconsistent effects on function
- Evidence on long-term benefits very limited
- Serious harms, including overdose, abuse, opioid use disorder
- See opioids webinar for details on approach to opioid therapy

Chou R. Ann Intern Med 2015;162:276-286
Busse JW, Wang L, Kamaleldin M, et al. JAMA.2018;320(23):2448–2460.

Non-opioid Analgesics

- Acetaminophen: Most prescribed, hepatotoxic in doses >3 to 3.5 g/day; probably less effective than NSAIDs
- NSAIDS
  - Non-COX-2-selective: Cardiac, GI (ulcers), renal, and liver toxicity; platelet inhibition, naproxen may be less cardiotoxic than others; gastropathy the most limiting issues
  - COX-2-selective: Less GI toxicity but may be more cardiotoxic

Non-opioid Analgesics

- Use of non-opioid analgesics may lower total opioid requirement
- Effective for nociceptive pain, some anti-inflammatory properties; little use for neuropathic pain
- NSAIDs first-line for many pain conditions
  - Magnitude of effects small to moderate, but relatively safe for short-term use in appropriate patients
  - Naproxen less cardiotoxic—good first nonselective NSAID choice
  - Use lowest dose of NSAIDs for shortest duration to reduce cardiac and GI toxicity
  - NSAIDs may interfere with aspirin antithrombotic effect, take at least ½ hour before aspirin
- Acetaminophen ineffective for acute LBP in one well-conducted RCT[1]

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[1]*Williams CM, et al. Lancet 2014; 384(9954):1586-96.*

Tramadol and Tapentadol

- Dual mode of action
  - Opioid mu-receptor agonist and norepinephrine or serotonin/norepinephrine reuptake inhibitor
  - Tramadol: Weak mu-receptor affinity, FDA schedule IV as of August 2014
  - Tapentadol: Strong mu-receptor affinity, FDA schedule II
- No clear difference in efficacy or safety vs. opioids
  - Tramadol can be approached like a weak opioid
  - Tapentadol can be approached like a stronger opioid
  - Seizure caution with tramadol
  - Abuse potential
  - Long-term studies lacking

Santos J. Cochrane Database Syst Rev 2015:CD009923
Furlan AD et al. CMAJ 2006;174:1589-94

Gabapentin and Pregabalin

- GABA analogues
  - Bind to alpha 2-delta subunit of voltage-gated calcium channels, inhibiting neurotransmitter release (glutamate and norepinephrine)
  - Pregabalin is a structural congener of gabapentin with superior absorption, resulting in higher potency and more predictable effects
- First line agent for neuropathic pain
  - Pregabalin approved for fibromyalgia; both drugs increasingly used off-label for other non-neuropathic pain
  - Adverse effects include sedation, dizziness, ataxia
  - No clear differences between gabapentin and pregabalin, though pharmacokinetics of pregabalin are more predictable and can use lower doses
  - Appears ineffective for LBP (with or without radiculopathy)
- Often used off-label in US for anxiety and/or insomnia
  - Caution when used with opioids: Potential increased overdose risk[1]

Bockbrader HN. Clin Pharmacokinet 2010;49:661-9
[1]Enke O et al. CMAJ 2018;190(26):E786-E793

Gabapentin

- Best studied for post-herpetic and diabetic neuropathy
  - FDA approved for post-herpetic neuralgia
- Titrate slowly from 300 mg/day up to 3600 mg/day in divided doses (BID to QID)
  - >3600 mg/day sometimes used in clinical practice but off-label
- Poorly absorbed and may take 2 months for adequate trial
- Adverse effects: Sedation, weight gain, dizziness, frequency of dosing
- Risks: Overuse in substance use disorder populations, renal dose adjustment

Pregabalin

- FDA-approved for use in fibromyalgia
- Can be more quickly titrated to max recommended dose (600 mg) than gabapentin
- 300-600 mg efficacy for post-herpetic and diabetic neuropathy better than for fibromyalgia and central neuropathic pain
- Similar side effects to gabapentin, perhaps less sedation
- Schedule V due to reports of euphoria

Other Anti-seizure Medications

- Long history of use for neuropathic pain since the 1960s
- Direct analgesic effects plus calming/mood stabilizing effect, but these are second or third-line agents
- Exception is carbamazepine for trigeminal neuralgia, used in post-herpetic neuralgia
  - Oxcarbazepine similar— complicated interactions
- Blood levels do not correlate with pain efficacy
  - Follow normal prescribing precautions, such as checking liver tests, monitoring blood counts

Antidepressants

- First-line agents for neuropathic pain
  - Off-label for this condition, except duloxetine for diabetic neuropathy
  - Caution with TCAs and older patients (anticholinergic and cardiac conduction effects)
- Best studied in neuropathic pain, fibromyalgia, and headaches
- Mechanism of action: Block re-uptake of norepinephrine and serotonin, and other receptors/channels
- Efficacy for neuropathic pain does not correlate with antidepressant response
- SSRIs less effective for pain than TCAs and SNRIs

Serotonin/norepinephrine Reuptake Inhibitors (SNRIs)

- Can think of as kinder/gentler TCAs
- Lack the adrenergic cholinergic and sodium channel effects of TCAs
- Much better tolerability and better safety profile
- Venlafaxine, duloxetine, and milnacipran in this class
- First or second line agents for neuropathic pain
- Duloxetine FDA-approved for fibromyalgia, diabetic neuropathy, and chronic musculoskeletal pain (LBP and chronic pain due to osteoarthritis)
  - Pain efficacy may be no better for 120 mg than for 60 mg; antidepressant efficacy may require higher dose
- Milnacipran FDA-approved for fibromyalgia
- Head-to-head trials of SNRIs lacking
- Tolerability may vary - venlafaxine associated with hypertension

Skeletal Muscle Relaxants

- Drugs classified as skeletal muscle relaxants by FDA have heterogeneous chemical structures and mechanisms of action and don't represent a true "drug class"
  - Cyclobenzaprine: Similar to TCA
  - Tizanidine: Similar to clonidine
  - Orphenadrine: Similar to diphenhydramine
  - Carisoprodol: Metabolized to a barbiturate (addiction potential, recommend avoiding use)
  - Baclofen—acts on GABA receptors
  - Others
- Different indications
  - Musculoskeletal conditions: Cyclobenzaprine, methocarbamol, orphenadrine, others
  - Treatment of spasticity: Baclofen, dantrolene (serious liver toxicity caution), tizanidine

Skeletal Muscle Relaxants

- All skeletal muscle relaxants are sedating
- Not well studied for chronic pain; 2nd or 3rd line for acute pain
  - Be familiar with properties of one or two muscle relaxers and use those
  - Cyclobenzaprine and tizanidine best studied for chronic pain
  - Short-term (e.g., <1-2 weeks) use for acute pain (may help with sleep)
    - No evidence of efficacy with long-term use
  - Avoid carisoprodol due to addiction potential (Schedule IV as of 2012)

Benzodiazepines

- Generally AVOID for treatment of acute or chronic pain
- Mechanism of action on $GABA_A$ receptors
- Used off-label as muscle relaxers
- Sedating, anxiolytic effects
- Risk of misuse/addiction (schedule IV), withdrawal can be severe and result in seizures/death
- High risk of overdose when used with opioids or other CNS depressants such as alcohol
- Evidence for use in pain very limited; other medications recommended for treating anxiety/insomnia, particularly long-term

Chou R et al. Opioid Treatments for Chronic Pain. AHRQ Comparative Effectiveness Review, 2020

Topical Agents

- A number of agents are available
  - Topical lidocaine: Effective for neuropathic pain
  - Topical NSAIDs: Effective for localized osteoarthritis
    - Head-to-head trials show effectiveness similar to oral NSAIDs
    - Low serum levels of NSAIDs may result in fewer serious AE's
    - Absorption of NSAIDs depends on the NSAID and carrier; several FDA-approved formulations (caution with compounded formulations)
  - Topical salicylates/rubefacients: Unclear if effective
    - Surface effects and local effects from rubbing; not absorbed beneath the skin
  - Topical capsaicin: Effective for musculoskeletal pain, neuropathic pain (off-label)
    - Depletes substance P. initial flare/burning sensation, irritation of skin and mucous membranes

Chou R. Analgesics for Osteoarthritis. AHRQ Evidence Report, 2011

Combination Therapy

- Because no one drug is a “magic bullet,” polypharmacy often occurs
  - Avoid or minimize polypharmacy by doing trials of individual drugs, stopping drugs that are ineffective or causing side effects, be aware of and avoid drug-drug interactions
- Few studies have examined efficacy of drug combinations
- Non-opioid analgesic combinations with opioids are common
  - Unclear if they are more effective than opioid or non-opioid alone

Interventional Pain Procedures

- Trigger point injections
- Diagnostic blocks/procedures
- Corticosteroid injections
- Variety of ablative procedures
- Nerve blocks
- Intrathecal drug delivery
- Spinal cord stimulation
- Deep brain stimulation--in the future?
- Others

Approach to Interventional Pain Procedures

- Consider for patients with persistent severe pain despite standard treatments, high risk for opioids, failure to improve
- Evidence varies for different interventions
  - Caution when evidence is limited or doesn't clearly show benefit
  - Magnitude of benefits is relatively modest or limited in duration for some interventional procedures
- Risks associated with invasive procedures
  - Some procedures associated with long-term or permanent placement of hardware, with attendant risks
- Costs

Treatment Recommendations for Common Pain Conditions

- Evidence-based treatment recommendations for:
  - Low back pain
  - Migraines
  - Fibromyalgia
  - Osteoarthritis
  - Neuropathic pain

Acute Low Back Pain

- Most acute, nonspecific low back pain resolves over time without specific treatment
  - Controlling pain and maintaining function while symptoms diminish on their own is the goal for most patients with acute low back pain
- Self-care, including advice to remain active
  - Discourage bed rest
- Non-pharmacological therapy preferred: Superficial heat, massage, acupuncture, spinal manipulation
- NSAIDs first-line analgesics
  - Acetaminophen may be ineffective, but safe in most patients
  - Opioids in appropriately selected patients with moderate/severe pain, 3-5 days sufficient in most cases
  - May consider skeletal muscle relaxants for 3-5 days in persons with sleep issues related to pain
- Inform patients that back pain is common and that the spontaneous recovery rate is more than 50-75% at 4 weeks and more than 90% at 6 weeks

Qaseem A et al. 2017 ACP Clinical Guidelines: Noninvasive treatments for acute, subacute, and chronic low back pain, Ann Intern Med;166:514-530

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Chronic Low Back Pain

- Self-care and education in all patients
- Non-pharmacological therapies
  - Active modalities preferred: Exercise (yoga, Tai Chi), CBT, mindfulness-based stress reduction, interdisciplinary rehabilitation
  - Supplement with spinal manipulation, acupuncture, or massage based on response to active modalities and patient preferences
- Medications
  - First line: NSAIDs
  - Second line: SNRI, tramadol
  - Consider short-term trial of opioids in carefully selected patients
  - Avoid benzodiazepines, systemic corticosteroids, carisoprodol
  - Treat psychiatric co-morbidities

Qaseem A et al. 2017 ACP Clinical Guidelines: Noninvasive treatments for acute, subacute, and chronic low back pain, Ann Intern Med;166:514-530

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Migraine: Acute Treatment

- Aspirin, acetaminophen, NSAIDs
  - Combining with caffeine may enhance antimigraine effect
- Anti-nausea medication (may be given by suppository)
- Triptans—migraine-specific
  - Contraindicated in persons with uncontrolled high blood pressure, vascular disease, pregnant, severe kidney or liver disease, familial hemiplegic migraine, basilar migraine
- Ergots—combined with caffeine
  - Not as effective as triptans, more nausea
- Medications more effective if taken early and as larger single dose than repeated smaller doses
  - Non-oral routes may be necessary if nausea/vomiting severe
- Avoid medication overuse
  - Can result in rebound headaches
  - Opioids and barbiturates generally not recommended; less effective, little evidence, abuse potential, and risk of overuse headaches

MacGregor EA. Ann Intern Med. 2013;159:ITC5

Migraine: Preventive Treatment

- Beta-blockers
  - Side effects depression and impotence
- Tricyclic antidepressants
  - Amitriptyline best studied
- Antiseizure medications
  - Valproate, gabapentin, topiramate
- Calcium channel blockers
- Calcitonin gene-related peptide antagonists
- Preventive treatments may take 3-4 weeks to show effectiveness
- Non-pharmacological treatments
  - CBT, relaxation training, biofeedback, exercise therapy
  - Avoid migraine triggers
  - Your Headache Isn't All in Your Head by Adriaan Louw
  - American Migraine Foundation

MacGregor EA. Ann Intern Med. 2013;159:ITC5

Pharmacologic Treatment: Neuropathic Pain

Medication	Optimum Dose	Number needed to Treat
FIRST LINE *TCAs* (2nd generation Nortriptyline) (3rd generation Amitriptyline)	25-150mg QHS	2-3
SNRIs Venlafaxine Duloxetine	150-225mg/day 60-120mg/day	4.5 5-6
Calcium channel alpha 2-δ ligand Gabapentin Pregabalin	900-1,200mg TID 50 TID or 75mg BID	3-8 3-5
Lidocaine Patch or gel 5%	Max 3 patches daily x 12 hr	4

S.H. Sindrup, T.S. Jensen . Pain 83 (1999) 389±400
Sultan, et al. BMC Neurol. 2008 ; 8: 29.
Rowbotham, et al. Pain. 2004, 110: 697-706.

Pharmacologic Treatment: Neuropathic Pain

Medication	Optimum Dose	Number needed to Treat
SECOND LINE: Opioids*		2.5-4.8
THIRD LINE Lamotrigine	25-500mg	2.1-5.4
Carbamazepine	400-1220mg	2.6-3.3
Topical capsaicin	QID dosing	3.2 – 6.7

*In appropriately selected and monitored patients

S.H. Sindrup, T.S. Jensen . Pain 83 (1999) 389±400
Sultan, et al. BMC Neurol. 2008 ; 8: 29.
N.B. Finnerup et al. Pain 118 (2005) 289–305

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Osteoarthritis

- Non-pharmacologic treatments generally tried before medications
  - Exercise, weight loss, patient education
  - Yoga, CBT, orthoses, acupuncture as options
  - Consider acupuncture as adjunct
- Medications
  - First line: Acetaminophen, oral NSAIDs, topical NSAIDs or capsaicin, duloxetine
  - Intra-articular glucocorticoids if acetaminophen and NSAIDs insufficient
  - Second line: Opioid analgesics, intra-articular hyaluronic acid, glucosamine and chondroitin

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Kolasinski SL et al. Arthritis Rheumatol 2018; 72:220-233

Fibromyalgia

- 3 FDA approved medications
  - Pregabalin 300mg (Number needed to treat for a 50% reduction of pain (NNT50) = 6-14)[1]
  - Duloxetine 60mg (Number needed to treat for a 30% reduction of pain (NNT30) = 6; NNT50=8)
  - Milnacipran (NNT 13-14 at 50mg BID and 100mg BID)[3-4]
- Moderately intense aerobic exercise or strength training
- Cognitive behavioral therapy
- Interdisciplinary rehab
- Acupuncture
- Biofeedback

1. Crofford, et al. Arthritis Rheum. 2005; 52: 1264-1273.; BMJ 2014
2. Clauw, et al. Clin Ther. 2008; 11: 1988-2004
3. Mease, et al. J Rheumatol. 2009; 36: 398-409.
4. Gendreau, et al. Arthritis Rheum. 2004; 99.

Fibromyalgia: Other meds that may work

- All off-label, evidence limited: Second line therapies
- Amitriptyline or nortriptyline (NNT 4, but low quality evidence)
- Gabapentin (NNT for 30% reduction of pain = 5)
- Venlafaxine
- Tramadol + tylenol (NNT for 30% reduction of pain =1.62; NNT for 50% reduction of pain = 1.91)
- Tizanidine
- Compounded naltrexone 4.5mg

Fibromyalgia. BMJ 2014;348:g1224
Arthritis Rheum. 2013 Feb;65(2):529-38.

Case

- Initial treatment for acute low back pain
  - No neurological signs or symptoms
  - Education, reassurance, heat, advice to remain active
  - Offered 3 days of skeletal muscle relaxant to help with sleep
  - Continued over the counter NSAID
- Failure to improve after 1 week
  - Patient reports stress at work and at home, poor sleep, mood doing worse
  - Afraid of walking/exercising due to concerns of damaging back
  - Switched SSRI (paroxetine) to SNRI (duloxetine) and titrated up
  - Naproxen 500 mg bid (prescription dose)
  - Discussed contribution of psychosocial factors to pain and coping strategies
- Failure to improve after 3 months
  - Referred for supervised exercise therapy and cognitive behavioral therapy
  - Patient interested in acupuncture; referred to acupuncture as adjunctive therapy
- Pain and function improved at 5 month follow-up visit
  - Back to playing golf and walking daily with home exercise program
  - Mood improved
  - Pain still present but manageable

Conclusions

- Numerous medications and non-pharmacological therapies available for pain
- For acute pain, favorable prognosis; main goals are symptom relief and early activity/self-care
- Approach chronic pain from a sociopsychobiological perspective
  - Assess psychosocial risk factors
  - Self-care
  - Focus on active treatments (exercise/CBT)
  - Treat psychiatric comorbidities
  - Consider benefits and harms of therapies, and supporting evidence
    - Understand first-line options
    - Use condition-specific medications when available
  - Consider costs
  - Consider patient preferences when options are present

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- Bockbrader HN. (2010) A comparison of the pharmacokinetics and pharmacodynamics of pregabalin and gabapentin. Clin Pharmacokinet;49 (10):661-9.
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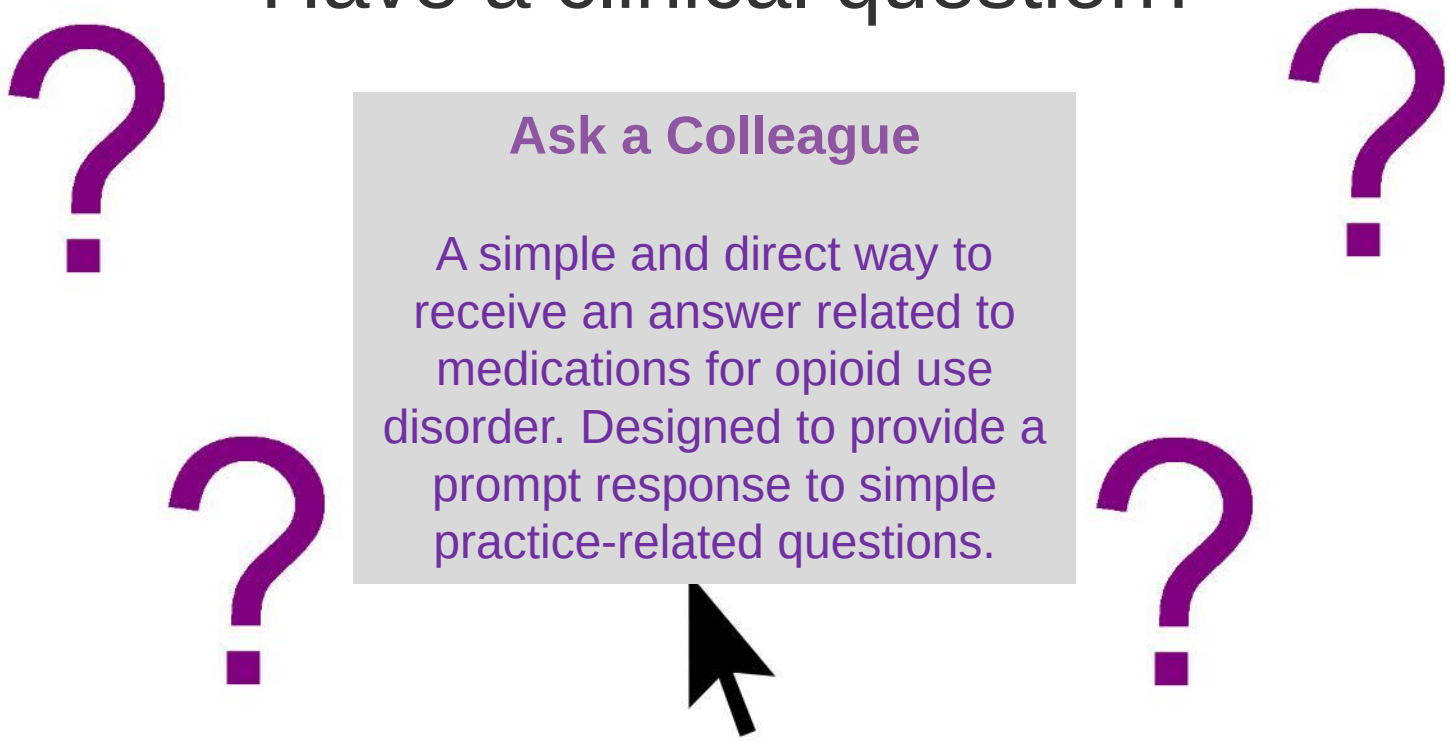

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