Pain…pain…pain

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Pain treatment ideas

- Chiropractic
- Acupuncture
- Cognitive Behavioral Therapy
- Physical Therapy
- Massage
- Rolfing
- Mindfulness based stress reduction
- Multidisciplinary rehab
- Ice/heat/elevation
- Music
- Transcutaneous stimulation

- Acetaminophen
- NSAIDS (ibuprophen, etc)
- Cox-2 inhibitors
- Diclofenac (top), ketorolac IM
- Topical
  - Lidocaine
  - EMLA
  - Cold spray
  - Viscous lidocaine
  - Capsaicin
  - Botox

TCAs, Duloxetine

Gabapentinoid/ pregabalin,

Anti seizure medications (Carbam)

Buprenorphine

Topiramate

Muscle relaxants

Tramadol

Ketamine

Calcitonin-salmon nasal spray

Opioids: codeine, hydrocodone, oxycodone, morphine

Acute pain

- Surgery
- OB
- Back pain
- prescribe the lowest effective dosage of immediate-release opioids for acute pain and prescribe no more pills than are needed for the expected duration of severe pain. For most patients, 3 days or less of opioid treatment is felt to be sufficient and more than 7 days is rarely needed.

Post surgery

- Guidelines from the American Pain Society and the American Society of Anesthesiologists recommend oral rather than intramuscular or intravenous analgesia when the patient is able to tolerate this route of administration. Multimodal approaches to postoperative analgesia are recommended, including the use of NSAIDs and/or acetaminophen in patients without contraindications to these medications.
  Short-acting opioids are preferred over long-acting opioids in the postoperative period. The guideline recommends avoiding the intramuscular route for postoperative analgesia due to its unreliable absorption and inconsistent effects.
- https://www.jpain.org/article/S1526-5900(15)00995-5/fulltext

OB Pain

- The American College of Obstetricians and Gynecologists published a clinical consensus document regarding postpartum pain management in 2021 recommends a stepwise approach:
- starting with ibuprofen and/or acetaminophen, ice packs.
- then low-potency opioid to achieve adequate pain control. Rare instances of severe respiratory depression and even death have occurred after infant exposure to opioids via breast milk. FDA has recommended that codeine and tramadol not be used by breastfeeding individuals.
- https://journals.lww.com/greenjournal/Fulltext/2021/09000/Pharmacologic_Stepwise_Multimodal_Approach_for.31.aspx

Acute Back pain

- A 2020 Clinical Guideline from the American Academy of Family Physicians and the American College of Physicians recommends topical NSAIDs as first-line therapy in the treatment of acute non–low back musculoskeletal pain. Oral NSAIDs and oral acetaminophen are also recommended but with less strong evidence. Avoidance of opioids is recommended for acute musculoskeletal pain.
- Passive physical treatments, or the external application of manual and physical treatments such as spinal manipulation, massage, and acupuncture, are indicated for the treatment of short-term acute musculoskeletal pain or flares of chronic pain. They should be complementary to exercise and other active therapies and should not be the sole intervention. For patients with more severe pain, passive therapies may reduce pain-related fears and help patients engage in exercise programs. There is no clear evidence that any of these passive modalities are superior to the others.
- Spinal manipulation therapy may include high-velocity, low-amplitude thrust movements or slow, passive muscle relaxation techniques to increase range of motion and reduce spinal pain. It has modest evidence of benefit but is generally safe and may provide small benefits for up to several months, particularly for mechanical low back and neck pain. It has not been shown to be significantly more effective than pain medications, physical therapy, exercise, acupuncture, soft-tissue treatments and exercise instruction or usual care.
https://www.acpjournals.org/doi/full/10.7326/M16-2367

Opioids for Acute pain

- Between 3 and 7 days of opioids
- keeping doses below 50 morphine milligram equivalents (MME) daily helps to reduce risk
- No long acting opioids
- No benzos-both suppress breathing
- Check PDMP:
- https://www.cdc.gov/mmwr/volumes/71/rr/rr7103a1.htm?s_cid=rr7103a1_w

Opioid therapy

- Prior to initiating opioid therapy, patients and clinicians should establish treatment goals based on a combination of pain relief and functional goals. Total pain relief should not be a goal, and the goals should be revisited periodically during treatment.

  Opioid therapy for chronic pain is not supported by a robust evidence base. Although individual patients may experience substantial pain relief and improvement in symptoms and functioning, clinical trials suggest that patients frequently discontinue opioids due to lack of efficacy, adverse effects, or both. Given the risk of opioid use disorder and the lack of consistent evidence of benefit, clear treatment goals that are linked to functional status and overall well-being can help determine whether opioid therapy is beneficial and should be continued. If the goals are not met, then a gradual dosage reduction followed by discontinuation of opioid therapy should be considered.

  There is no evidence that patients with functional goals achieve higher levels of functioning than those without. Functional goals do not help family physicians and other clinicians assess for diversion.

Other things to consider regarding opioids

- All opioids cause respiratory depression and must be used at low doses and with caution in children. Morphine, oxycodone, and hydromorphone do not require enzyme activation to provide analgesia and thus have a more predictable analgesic effect.
- Codeine has an FDA black box warning recommending that it not be used at all in children under the age of 12 or in children under age 18 who have obstructive sleep apnea or are post-tonsillectomy and adenoidectomy. Codeine is metabolized via the cytochrome P450 pathway into morphine, the principle active metabolite that produces its analgesic effect. A substantial number of people are ultrarapid metabolizers (UMs) of codeine, which leads to elevated levels of morphine that can cause respiratory depression and even death. The presence of UM phenotype varies from <1% in some White populations to almost 30% in Ethiopia.

https://onlinelibrary.wiley.com/doi/10.1111/apa.13012

Chronic pain

- The response to chronic pain therapy is best measured in terms of the patient's ability to function, regardless of reported pain severity, using validated functional scales. Several scales have been validated for low back pain, including the Oswestry Disability Index and the Roland-Morris Disability Questionnaire.
- Ideally, patients should set functional goals with the clinical team (e.g., improved sleep, return to a specific activity, improvement in stamina) that can be monitored while the therapeutic plan is enacted.
- Osteoarthritis
- Compression fracture
- Fibromyalgia
- Neuropathic pain
- Trigeminal Neuralgia

Back pain- chronic

- This patient has chronic low back pain, defined as pain lasting >3 months or beyond typical tissue healing time. Therapy is focused on functional goals and is individualized based on the patient's needs and specific desired outcomes. Nonpharmacologic methods, including exercise according to the patient's ability, are the preferred first-line therapy.
  Cognitive behavioral therapy?
  When pharmacologic treatment is warranted, NSAIDs should be used as first-line therapy. High-quality evidence suggests they reduce both pain and disease-specific disability scores in patients with chronic low back pain. A long-acting NSAID with lower cardiovascular risk such as naproxen should be considered when longer-term use is anticipated. In addition, long-term NSAID use should be paired with the use of a proton pump inhibitor to prevent ulcers and gastrointestinal bleeding. Testing for *Helicobacter pylori* before treatment is initiated can allow for eradication therapy, which reduces the subsequent risk of ulcers. Topical NSAIDs are increasingly recommended for acute pain but have not been evaluated for chronic low back pain.

  The choice of second-line medication is less clear. Evidence is mixed on the safety and efficacy of medications such as tramadol or duloxetine. Skeletal muscle relaxants are also an option. Adverse effects, particularly sedation, are common. Carisoprodol has a higher risk of misuse, abuse, and diversion than other agents. Tizanidine may transiently lower blood pressure. Cyclobenzaprine increases the risk of serotonin syndrome.

  Acetaminophen, other antidepressants (including tricyclic antidepressants and SSRIs), antiseizure medications, and lidocaine patches appear no more effective than placebo for the treatment of chronic low back pain in many studies. However, when used in conjunction with other therapies, they may have synergistic effects that justify their use despite the lack of high-quality evidence.

Migraines

- Several options are available for the prevention of migraines. The choice of therapy is usually made based on side-effect profiles. β-Blockers, including metoprolol, propranolol, and timolol, are effective and well tolerated. Metoprolol succinate has the advantage of once-daily dosing. Topiramate and divalproex are also effective, although tolerance may develop, and weight gain is common with divalproex. Calcitonin gene-related peptide (CGRP) receptor antagonists can also be used for migraine prevention, but cost may be a concern. Nonpharmacologic therapies such as relaxation training, thermal biofeedback combined with relaxation training, electromyographic feedback, and cognitive behavioral therapy also have evidence to support their use in migraine prevention.
  Research suggests that riboflavin and feverfew are probably effective, and coenzyme Q10 and magnesium are possibly effective.
  Amitriptyline, atenolol, nadolol, and venlafaxine have less consistent evidence of efficacy and are considered second-line therapies. Additional agents with some evidence of benefit include candesartan, carbamazepine, lisinopril, nebivolol, and nicardipine.
  https://www.aafp.org/pubs/afp/issues/2019/0101/p17.html

Sickle cell crisis

- Pain caused by vaso-occlusive crisis (VOC) due to sickle cell disease can be severe and difficult to control. Opioids are recommended as first-line therapy in addition to scheduled NSAIDs in those without contraindications. Patients who have had previous pain episodes associated with VOC often know what dosage is needed to achieve adequate pain control. Physicians should personalize their approach to pain management based on prior documentation of medications and doses. Ketamine may be considered in patients in whom opioids are not effective.

  Duloxetine and gabapentinoids may be used in patients with chronic pain but they do not have evidence of benefit in the management of acute pain due to VOC.

- https://onlinelibrary.wiley.com/doi/10.1111/ejh.13430

Osteoarthritis

- Like other chronic pain syndromes, osteoarthritis (OA) of the knee is best managed with multimodal therapies. Nonpharmacologic treatments, including regular aerobic exercise, strength training, stretching, and weight management, should be combined with pharmacologic or more invasive modalities as appropriate.

  Topical NSAIDs such as diclofenac gel are recommended as first-line pharmacologic therapy for knee OA. If gel is not practical due to multiple joint involvement or if it is not preferred, oral NSAIDs are effective but carry more risk. A proton pump inhibitor should also be prescribed for patients at increased risk of gastrointestinal side effects or for long-term therapy. COX-2 inhibitors may also be considered in the absence of cardiovascular contraindications. Acetaminophen may also be considered but has less evidence of benefit than NSAIDs. Glucosamine and chondroitin sulfate, either separately or in combination, have not been shown to be superior to placebo in the treatment of OA.

  If those therapies are ineffective, more invasive approaches should be considered. Intra-articular glucocorticoid injections typically provide relief for a few weeks, which may help with acute symptom flares and facilitate resumption of exercise and normal activities. Regularly repeated injections are not recommended. Hyaluronic acid injections have conflicting evidence of benefit. Stem cell, platelet-rich plasma, and other growth factor injections are not recommended due to a lack of evidence of benefit.

  Patients must be reassured that recreational exercise does not lead to progression of osteoarthritis. In fact, walking, low-impact aerobics, and muscle-strengthening exercises, often with formal physical therapy, reduce pain and improve function, as does weight loss. Aquatic and mind-body exercise such as tai chi can be considered. Assistive devices such as canes and tibiofemoral knee braces can be helpful. Patients should engage in therapies aligned with their preferences and motivation.

- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8225295/

Compression fracture

- Vertebral compression fractures (VCFs) are the most common complication of osteoporosis, especially in older women. More than two-thirds of patients are asymptomatic and are diagnosed incidentally on plain radiography. More severe fractures can cause significant pain, leading to the inability to perform activities of daily living, and even a life-threatening decline in elderly patients with decreased reserves. These fractures may be precipitated by minimal activity, including rolling over in bed, bending over, coughing, or sneezing. VCFs are usually very stable and are rarely associated with neurologic compromise.

  Calcitonin-salmon nasal spray significantly reduces pain associated with VCFs and facilitates earlier mobilization. Acetaminophen or NSAIDs often provide adequate pain control, but NSAIDs have been shown to significantly increase gastrointestinal bleeding in the elderly and must be used with caution. Patients with more severe symptoms may require opioids.

  Muscle relaxants, external back braces, and physical therapy modalities are other reasonable treatment options. Nerve root blocks and epidural injections may be considered for patients with radicular pain.

  If necessary due to severe pain, patients may be treated with a limited period of modified bed rest lasting no more than a few days. Prolonged inactivity should be avoided. Most patients can make a full recovery, or at least significant improvement, within 6–12 weeks, and can return to a normal exercise program after the fracture has fully healed.

  Nonoperative treatment is usually sufficient to relieve pain and regain function. Percutaneous vertebral augmentation, including vertebroplasty (the injection of cement into the vertebral body) and kyphoplasty (the inflation of a balloon within the vertebral body, followed by the injection of cement), is controversial, but more recent trials found no benefit in pain reduction, function, or quality of life. Based on current evidence, these procedures should be reserved for patients with debilitating pain or substantial functional limitations despite conservative therapy for at least 3 weeks.
  https://www.amjmed.com/article/S0002-9343(22)00192-9/fulltext

Fibromyalgia

- Fibromyalgia, a common cause of chronic widespread pain, is the second most common rheumatologic condition in the United States, occurring in 2%–8% of the population. It is thought to be primarily a disorder of pain regulation and central sensitization, and it negatively affects quality of life, with 35% of affected patients reporting difficulty with activities of daily living.
The mainstays of treatment in fibromyalgia are nonpharmacologic in nature and include exercise and cognitive behavioral therapy (CBT). Patients with fibromyalgia should engage in moderately intense aerobic exercise 2–3 times per week. In deconditioned individuals, starting with low levels of exercise is recommended to avoid worsening pain and fatigue. Stretching or flexibility exercises, strengthening exercises, yoga, and tai chi are also helpful. The best exercise program is the one the patient will engage in regularly. CBT is associated with modest improvements in pain, function, and mood in patients with fibromyalgia. Sleep disturbance is common and CBT is recommended as a first-line treatment for insomnia.
Acupuncture has some evidence of benefit but has not been found to be superior to sham acupuncture. Manual therapies (including chiropractic care and osteopathic manipulation therapy), massage, and myofascial release have limited evidence of benefit. Medication classes with the best evidence of benefit include tricyclic antidepressants, SNRIs (especially duloxetine and milnacipran), and gabapentinoids (gabapentin, pregabalin). Topical capsaicin has weak evidence of benefit for pain. Acetaminophen and NSAIDs have not been found to be effective in fibromyalgia. Patients with severe pain that is unresponsive to those medications may try tramadol, which has some evidence of benefit. Other opioids do not have evidence of benefit in fibromyalgia.
https://www.acpjournals.org/doi/10.7326/AITC202003030

Neuropathic pain

- Neuropathic pain can be caused by a variety of conditions: direct damage of sensory nerves (diabetes mellitus, alcohol), infections (herpes zoster, HIV), dysproteinemic disorders, certain medications and toxins (particularly chemotherapeutic agents), and cancers that invade nerve structures. Peripheral neuropathy may be idiopathic or related to hereditary neuropathies, which are often unrecognized and become increasingly symptomatic with age.

  The primary goal in the evaluation of neuropathy is to identify the etiology and, where possible, treat the underlying cause.

- tricyclic antidepressants, gabapentinoids, and SNRIs. Most studies have been done in patients with painful DPN, but the response in patients with other etiologies is likely similar. While most patients are started on a tricyclic antidepressant as initial therapy, many will eventually require a second agent. The addition of duloxetine and/or pregabalin has been shown to further reduce symptoms. Topical treatments may be of benefit to some patients. Exercise may help improve pain and functioning as well. Carbamazepine, topiramate, and valproate have inconclusive evidence of benefit and opioids should not be used as first-line therapy.

Neuropathic pain

- For the treatment of peripheral neuropathy associated with diabetes mellitus, a combination of amitriptyline (up to 50 mg) initially and then adding pregabalin has been shown to be well tolerated and effective for pain reduction. A combination of duloxetine/pregabalin was also studied and appears effective. Oxycodone and tramadol should only be used as a last resort for PDN. Duloxetine has evidence of benefit
- The gabapentinoids gabapentin and pregabalin are increasingly prescribed as alternatives and adjuncts to opioids for neuropathic pain. Only FDA approved for post herpetic neuralgia
- Gabapentinoids are potentially addictive
- https://n.neurology.org/content/98/1/31.long
- Topical therapies with evidence of benefit include lidocaine and capsaicin. Tricyclic antidepressants have good evidence of benefit for pain relief in PHN. In addition to their role in pain control, they may be helpful in treating depression, which can be seen in almost 90% of such patients. The anticonvulsants gabapentin and pregabalin are both FDA-approved for the treatment of PHN. Opioids can have a role in the treatment of pain due to PHN but should be considered third-line agents that require careful monitoring. Corticosteroids are not useful in the management of PHN

Trigeminal Neuralgia

- trigeminal neuralgia (TGN), a painful condition that affects one side of the face is characterized by brief, shock-like pain limited to the distribution of one or more divisions of the trigeminal nerve. The pain may be stimulated by such actions as washing, shaving, smoking, talking, and brushing teeth, but may also occur spontaneously. It begins and ends abruptly and may remit for varying periods. In medical studies, success is usually defined as at least 50% pain relief from baseline while complete pain relief is the measure of success in surgical studies.

  Carbamazepine is recommended as first-line therapy for TGN. Side effects that can limit its use include drowsiness, dizziness, rash, and liver injury. Long-term data at 5–10 years of treatment has shown about 50% efficacy. Oxcarbazepine should be tried if carbamazepine fails to provide adequate relief or is poorly tolerated.

  Though high-quality evidence is lacking to support its use, baclofen may be useful for persons with MS who develop TGN. Lamotrigine may be used in patients who cannot tolerate carbamazepine, but the dosage must be increased slowly to avoid rashes, making it unsuitable for acute treatment. Gabapentin and nortriptyline are used for other neuropathic pain conditions but their use in TGN is not supported by robust evidence.

  Nonpharmacologic modalities with some evidence of benefit include acupuncture and onabotulinumtoxinA injections.

- Microvascular surgical decompression has been shown in several high-quality observational studies to provide complete pain relief, durability of response (up to 5 years), and preservation of trigeminal sensation. It does require general anesthesia and is associated with rare (<5%) ipsilateral hearing loss. Other less invasive interventional procedures (e.g., cryotherapy, alcohol blocks, stereotactic radiosurgery) are also effective but may have higher rates of complications. https://pubmed.ncbi.nlm.nih.gov/37263669

Radicular Back Pain

- Radicular back pain (radiculopathy) is pain in a dermatomal pattern, sometimes accompanied by a strength or sensory deficit or a change in reflexes. The initial treatment for radiculopathy is the same as for nonspecific low back pain, including nonopioid analgesics, skeletal muscle relaxants (short-term), spinal manipulation, physical therapy, massage, and acupuncture. Epidural steroid injection (ESI) are associated with immediate reductions in pain and improved function.. ESIs do not improve pain or disability in patients with spinal stenosis or nonradicular low back pain.

  Acetaminophen has minimal evidence of benefit in low back pain and is unlikely to add benefit in this patient. Short-term opioid use could be considered until ESI can be completed. Trigger point injections would not be expected to improve his symptoms.

  Gabapentin, while effective for other neuropathic conditions, is not effective for lumbar radiculopathy and is associated with adverse effects such as sedation and mental fogginess.

  Surgery for radiculopathy with a herniated disc and symptomatic spinal stenosis is associated with short-term benefits compared to nonsurgical therapy. Less invasive approaches are typically recommended prior to surgery.

- https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD013577/full

Cannabis, Pakalolo, Maryjane

- A 2022 meta-analysis on the use of cannabis-based products to treat pain found that products with a higher tetrahydrocannabinol/cannabidiol (THC/CBD) ratio showed a small but significant reduction in chronic pain, though accompanied by an increased risk of adverse effects such as somnolence and dizziness.
- Products with a more even THC/CBD ratio (closer to 50/50) demonstrated no improvement in pain and an increase in adverse effects, while those with a higher proportion of CBD had no change in pain and no adverse effects. A 2021 meta-analysis similarly found small benefits in pain reduction.
- Cannabis use is associated with both mental and physical health adverse effects, including anxiety disorders, cognitive effects, and psychosis. Just as with effectiveness, the degree of adverse effects and exactly who is at highest risk is not completely clear.

- Dosing is difficult, research is challenging because it is schedule 1
- https://www.acpjournals.org/doi/full/10.7326/M21-4520

Racism in pain management

- Multiple studies have demonstrated that race and ethnicity are associated with analgesia prescription and administration disparities for many types of pain, including acute traumatic pain, chronic cancer pain, and pain at the end of life. The reasons for the disparities are complex and likely multifactorial. For example, in addition to receiving fewer prescriptions for analgesics, barriers that minority populations may encounter while attempting to obtain prescriptions at local pharmacies include decreased stocking of some opioids and fewer pharmacies per capita in neighborhoods with high minority populations. Black patients in particular are prescribed fewer analgesics than White patients. Latinx patients are similarly impacted by racial bias, with less data available for Asian American and Native American populations.
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6735324/

Prescription Drug Monitoring Program (PDMP)

- https://dps.hawaii.gov/wp-content/uploads/2018/08/HAWAII-PDMP-FREQUENTLY-ASKED-QUESTIONS_updated-2018-FOR-WEB.pdf

Who is required to register with the Hawaii Prescription Drug Monitoring Program?

Any registrant of the Narcotics Enforcement Division (NED) that holds a controlled substance license (except pharmacies and veterinarians) must register as a data requestor through the AWARxE website. Registrants who dispense controlled substances will need to register through the Clearinghouse website as a data submitte (except veterinarians). (HRS Chapter 329-101)

What are the registration requirements for the Hawaii Prescription Drug Monitoring Program?

The general requirements for the Hawaii PDMP include a current and valid Professiona Vocational License (PVL) with the State of Hawaii, NED Controlled Substance license a a Federal DEA license. If any of these licenses are expired or not on file with the Narcotics Enforcement Division to verify, account registrations will be rejected.

What are the new laws for prescribers regarding the Hawaii Prescription Drug Monitoring Program?

There are two recent laws relating to the PDMP:

- Hawaii Revised Statutes, HR S329-101(b). This requires that as part of the "controlled substance registration process, all practitioners, except veterinarians, and pharmacies shall be registered with the department to utilize the electronic prescription accountability system (also known as HI-PDMP and AWARxE)

- Effective July 1, 2018 Act 153(18): Relating Prescription Drugs (also known as SB2646) became law. Act 153 (18) requires prescribers to consult electronic prescription accountability system (also known as HI-PDMP or AWARxE) before prescribing as schedule II-IV controlled substance, in order reduce the risk of abuse of addiction to a controlled substance, to avoid harmful drug interactions, or as otherwise medically necessary. (Refer to Act 153(18): for specifics and exceptions to this requirement.)

PDMP

- The PMP should be queried whenever an opioid is prescribed, even in seemingly low-risk patients. Routinely accessing the PMP, not just when the physician has some concern, minimizes the risk of stigma and bias.
- The PMP lists all controlled substances filled in the state in the last 12 months and data from other states can be queried as well. Not every source of opioids is captured in a state PMP. For example, prescriptions from methadone maintenance clinics, Indian Health Service, long-term care facilities, and the Veterans Administration pharmacy have only recently been added to some state PMPs.

Quick case

My patient says they have picked up prescriptions for a controlled substance, why is it not showing up on his/her PDMP report?

There may be several reasons:

First, the data is not in real time, pharmacies are required to report dispensed data every 7 days. Therefore, a prescription that was dispensed on Monday may not appear on a PDMP check done within 7 days.

Second, Military healthcare facilities and pharmacies are not required to report to the PDMP at this time.

Third, the PDMP will show only those controlled substance prescriptions dispensed in Hawaii.

Fourth, pharmacies will only provide data on dispensed/picked up controlled substance prescriptions to the PDMP.

Lastly, the date range of fill dates must include the prescription(s) dispensed to the patient.

Quick case O

- You are seeing a patient with an acute distal fibular fracture and have arranged outpatient orthopedic follow-up in 2 days. She rates her pain as an 8 out of 10. The patient has a history of opiate use disorder in remission, and relapse prevention is of utmost importance to her. She does not take any other medications currently.

  Which one of the following medications would help her meet her goals of acute pain management and avoidance of relapse?

- Ibuprophen + Acetaminophen
- Tramadol
- Sublingual buprenorphine
- Hydrocodone plus acetaminophen

Quiz case #1

- A 27-year-old male with no other significant medical history presents with a 6-month history of headaches. Initially he was getting them 2–3 times a month, but they have increased to several times a week. He describes the pain as squeezing in nature, bilateral, and occipital, with radiation to the bilateral temples. It is not so bad that he must stop working when they occur, but he finds them bothersome. He has not had any nausea, vomiting, phonophobia, or visual changes, but endorses mild photophobia with some of the headaches. They have been relieved with ibuprofen, which he takes intermittently. A complete neurologic examination is normal.

Case FU 1

- This patient has chronic tension-type headaches. Tension-type headaches last hours to days, and by definition are not moderate-to-severe in intensity. Some patients may experience mild nausea, photophobia, or phonophobia, but not more than one of those symptoms, and severe nausea or vomiting suggests another diagnosis. Tension-type headaches are often bilateral, tightening or pressing, and not worse with regular activity. Chronic headaches are defined as headaches at least 15 days of the month for at least 3 months.

  Chronic tension-type headaches are an indication for prophylactic therapy. Stress reduction, exercise, massage, CBT. Amitriptyline has the most consistent evidence of benefit for prophylaxis in tension-type headaches, in contrast to prophylaxis for migraines. SSRIs, muscle relaxants, and onabotulinumtoxinA injections have been found to be probably ineffective. The evidence of benefit from topiramate has been inconsistent.

Quick case2

- A 58-year-old female presents as a new patient to discuss chronic back pain. She prefers nonpharmacological and noninvasive approaches to her health.

  Which one of the following therapies has the best evidence of long-term (>12 months) benefit in her situation?
- Exercise
- Massage
- Mindfulness based stress reduction
- Psychological therapies
- Spinal manipulation

Quick case follow up-2

- The authors found that psychological therapies (primarily cognitive behavioral therapy) were associated with small improvements in pain and functioning at short-, intermediate-, and long-term follow-up. Exercise was associated with small improvements in short-term function but not in the intermediate or long term. Spinal manipulation was associated with small improvement in short- and intermediate-term pain, but not long-term improvement. Mindfulness-based stress reduction was not associated with any functional improvements in the short, intermediate, or long term. It was associated with small improvements in pain in the short and intermediate term but not long term. Massage was associated with small improvements in short-term functioning and pain, with no improvements in intermediate- or long-term outcomes.
- https://www.ncbi.nlm.nih.gov/books/NBK556229/

Acute to chronic pain 2

- This patient is at a crucial juncture with her health status as it relates to pain management. Chronic pain, typically defined as pain lasting longer than 3 months, starts as acute pain. While there is evidence of benefit for the use of opioids in the management of acute pain, and some evidence of benefit in outcomes in short-term studies of chronic pain (<1–6 months), no study shows improved long-term outcomes with the use of opioids for chronic nonmalignant pain. The only long-term (12 month) study assessing opioid- versus nonopioid-based therapies randomized patients with chronic back pain or knee or hip osteoarthritis into two cohorts. No differences were found in functional status and health-related quality-of-life assessments between the two groups, and pain scores were worse in those using opioids. Mental health as assessed by the VR-12 tool and depression as assessed by Patient Health Questionnaire–8 (PHQ-8) was not different between the two groups. Other assessments with no difference included sleep quality, sexual functioning, and fatigue. The only positive difference noted in secondary analysis was a small improvement in anxiety as measured by General Anxiety Disorder–7 (GAD-7) for those treated with opioids.

  Medication-related symptoms were reported significantly more often in the group treated with opioids. Nonopioid therapies should be offered to this patient before consideration of opioid therapy.

- https://jamanetwork.com/journals/jama/fullarticle/2673971

- Tricyclic antidepressants (TCAs) have evidence of benefit in several pain conditions, including headaches, neuropathic pain, chronic low back pain, fibromyalgia, irritable bowel syndrome, and chronic pelvic pain. Amitriptyline has been the most studied of these agents and has significant anticholinergic side effects, including dry mouth, constipation, urinary retention, sedation, orthostatic hypotension, and weight gain. For these reasons, amitriptyline should be avoided in the elderly. The secondary amines (desipramine, nortriptyline) have less anticholinergic activity and may be better tolerated.

  Cardiac conduction abnormalities, recent cardiac events, and narrow-angle glaucoma are contraindications to using TCAs. EKG and monitoring of blood pressure and heart rate are indicated, particularly in older adults and patients with preexisting cardiac disease. TCA overdose is a highly dangerous condition associated with death and severe morbidity. Caution should be used in patients with a history of medication overdose.

  Analgesic efficacy is typically achieved with dosages lower than those required to treat depression. Similarly, the onset of analgesia typically occurs within 1 week, compared to the 3 weeks often required for an antidepressant effect.

Last Quick case

- You are seeing a 57-year-old male who takes oxycodone, 20 mg four times daily, for chronic low back pain. He has been stable on this dosage for several years and works full time in an office. The only side effect he reports is chronic constipation that he manages with scheduled sennoside. He has been adherent to your office protocols regarding visit frequency, and urine drug testing has not shown any aberrant findings. He also adheres to nonopioid and nonpharmacologic management. He feels his pain is well managed currently, and he does not want to make any medication changes.

Last case follow up

- Opioid-induced constipation (OIC) occurs almost universally in patients on scheduled opioids. Unlike nausea and sedation, tolerance to OIC does not develop over time. Transdermal fentanyl and buprenorphine dosed for pain management may be less constipating than other opioids, but OIC occurs with all opioids and should be proactively managed with a bowel regimen.

  Stimulant and osmotic laxatives are the mainstay of treatment for OIC. Docusate has not been shown to be effective as monotherapy but may be used as an adjunct. Fiber supplementation has a role in management of dietary fiber deficiency but requires adequate water intake for effectiveness.

  When an aggressive laxative regimen fails to alleviate OIC, a peripherally acting mu-opioid receptor antagonist (PAMORA) should be considered. PAMORAs are highly effective in the treatment of OIC. They block opioid receptors in the gut but do not cross the blood-brain barrier, so they do not affect pain control or precipitate withdrawal.

  Naloxegol, methylnaltrexone, and naldemedine are PAMORAs that are currently FDA approved for OIC and are all available as oral tablets. Methylnaltrexone is also available as a subcutaneous injection.

  All laxatives should be stopped upon initiation of PAMORA therapy. They can be added back after 3 days if the response to the PAMORA alone is inadequate. Bowel obstruction is an absolute contraindication to PAMORAs.

  Naloxegol is metabolized via CYP3A4 and has the potential for numerous, significant drug interactions.

Buprenorphine as pain treatment, if…

- Lack of efficacy (including tolerance or hyperalgesia)
- Risk of adverse events
- Concern from health care providers regarding risk of addiction, misuse, and/or overdose death
- The limited ability to utilize oral formulations in patients with altered gastrointestinal motility/function
- A patient is receiving immediate-release treatment and would benefit from a longer-acting analgesic with a relatively favorable safety profile
  A protocol that has been recommended for transition of this patient who is taking less than 90 MME would be:
  1. Discontinuing oxycodone after the last nighttime dose.
  2. Considering initiating an adrenergic α_2-agonist (e.g., clonidine, lofexidine) or an immediate-release opioid (e.g., current opioid) to reduce the symptoms of withdrawal.
  3. Initiating buprenorphine the following morning per the prescribing information, as either 10-µg/h transdermal buprenorphine or 150-µg buccal buprenorphine twice daily. Titrate buprenorphine as needed for pain per recommendations in the prescribing information.
  For those taking more than 90 MME, the dose of buprenorphine would be double the above recommendation.

https://academic.oup.com/painmedicine/article/21/4/714/5699282

Topical pain

- American Academy of Pediatrics guidelines recommend using topical anesthetics prior to minor procedures in children. For lacerations, lidocaine/epinephrine/tetracaine (LET) can be placed in the wound. In about 10 minutes, LET can anesthetize a skin wound ≤5 cm long with good effect for 20–30 minutes.

  Eutectic mixture of local anesthetics (EMLA) cream and liposomal 4% lidocaine are effective in numbing intact skin to the pain of venipuncture (including starting an intravenous line), lumbar puncture, joint aspiration, and abscess drainage. EMLA cream's effect peaks at 1 hour and cannot be used in patients who have recently taken sulfonamides but is safe for those with penicillin allergy. While vapocoolant sprays decrease the pain of injections in adults, they are less effective in children.

  Other techniques that decrease the pain of infiltration of local anesthetic include using the smallest needle possible, distraction, using the smallest volume possible, and infiltrating slowly. Buffering the lidocaine/epinephrine with bicarbonate has also been shown to reduce the pain associated with the administration of local anesthesia. A recent randomized trial found that a 3:1 ratio of lidocaine/epinephrine to bicarbonate reduced pain more than a 9:1 ratio.

Dysmenorrhea

- The pain of primary dysmenorrhea is mediated by prostaglandins. NSAIDs inhibit prostaglandin synthetase and are the first-line treatment for primary dysmenorrhea, especially in patients who are not in need of contraception. NSAIDs are usually taken for 2–5 days and may be started before the onset of bleeding in those with predictable cycles. Scheduled rather than as-needed dosing is recommended, and a higher initial loading dose can lead to improved pain relief. Many patients do not take an adequate dosage of NSAIDs to provide optimal relief. In young patients without risk factors for gastrointestinal bleeding, there is no need to use a COX-2 inhibitor such as celecoxib or add a proton pump inhibitor.

  Hormonal contraceptives are another first-line option for managing dysmenorrhea. They work by inhibiting ovulation, which prevents endometrial proliferation and prostaglandin production. The specific type of hormone delivery should be customized to patient preference. Effective options include oral contraceptive pills, intravaginal rings, patches, etonogestrel implants, and levonorgestrel IUDs. Patients needing contraception should be offered these options as initial therapy and NSAIDs.

  Nonpharmacologic therapies with some evidence of benefit include engaging in regular physical activity (45–60 minutes at least 3 days a week), high-frequency transcutaneous nerve stimulation, topical heat, acupressure and acupuncture, and behavioral interventions such as progressive muscle relaxation and biofeedback. Insufficient evidence exists regarding nutritional supplements and Chinese herbs.

  Acetaminophen is not an NSAID and is not as effective as NSAIDs for dys-