BUILDING PATHWAYS IN PAIN MANAGEMENT

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Supported by an educational grant from Pfizer/Lilly

TODAY'S FACULTY

BUILDING PATHWAYS IN PAIN MANAGEMENT

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BUILDING PATHWAYS IN PAIN MANAGEMENT

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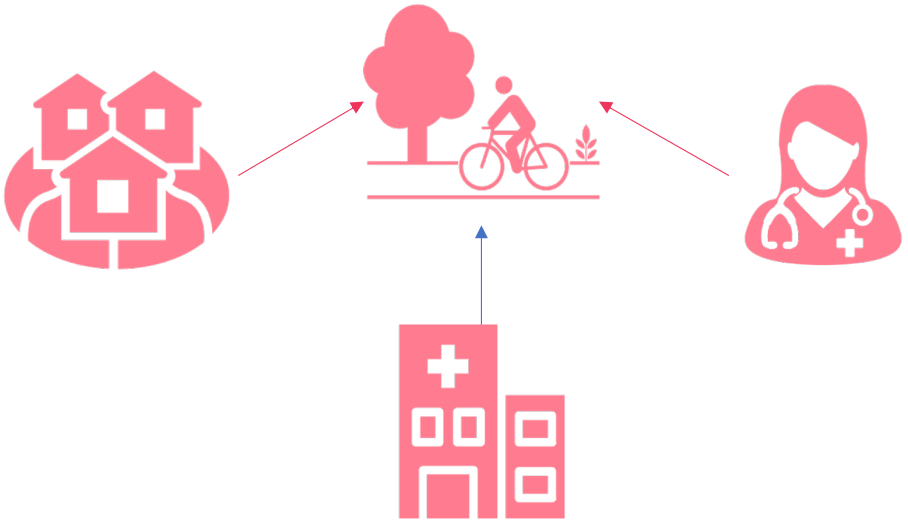
OUR GOALS

- Provide successful strategies and resources for the management of chronic pain including Osteoarthritis and Chronic Low Back Pain
- Support the art and science of medicine
- Increase your knowledge and confidence in caring for patients with OA and CLBP
- Support a patient clinician partnership in chronic pain



LEARNING OBJECTIVES

BUILDING PATHWAYS IN PAIN MANAGEMENT

This activity will improve your ability to:

Develop practical strategies to manage pain for patients with osteoarthritis (OA) and chronic low back pain (CLBP) by:

- Using appropriate assessment, management, and educational tools and resources in caring for patients with OA and CLBP
- Customizing chronic pain management for each patient's needs
- Evaluating existing and emerging therapies to manage pain
- Partnering with patients to establish positive and realistic goals

DISEASE BURDEN

BUILDING PATHWAYS IN PAIN MANAGEMENT

From twenty-five top outpatient diagnoses:

1. Hypertension
2. Hyperlipidemia
3. Diabetes
4. **Back pain**
5. Anxiety
6. Obesity
7. Allergic rhinitis
8. Reflux esophagitis
9. Respiratory problems
10. Hyperthyroidism
11. Visual refractive errors
12. General medical exam
13. **Osteoarthritis**
14. Fibromyalgia
15. Malaise and fatigue
16. **Pain in joint**

- 15M adults > age 25 have symptomatic OA of the knee
- 50% of those patients are under age 65
- 65% increase in prevalence of OA in the past 20 years.
- 25% of adults report low back pain in the past 3 months.
- Economic burden of back pain estimated range of $100 to $628 billion!

2013 Data from PracticeFusion EHR. Finley CR, Chan DS, Garrison S, et al. What are the most common conditions in primary care? Systematic review. *Can Fam Physician*. 2018;64(11):832–840.
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ONGOING EVALUATION OF CHRONIC PAIN

BUILDING PATHWAYS IN PAIN MANAGEMENT

Review history and medications
Evaluate for red flags
Evaluate function
as needed…
Assist with pain management

Create a partnership with your patient

DIFFERENTIAL DIAGNOSIS OF LOW BACK PAIN

BUILDING PATHWAYS IN PAIN MANAGEMENT

Mechanical	Infection	Malignancy	Inflammatory
• Lumbar strain • Degenerative disease • Spondylolisthesis • Herniated disc • Spinal stenosis • Osteoporotic fracture • Congenital disease • Possible spondylolysis • Possible facet joint asymmetry	• Osteomyelitis • Septic discitis • Paraspinous abscess • Epidural abscess	• Multiple myeloma • Metastatic carcinoma • Lymphoma and leukemia • Spinal cord tumors • Retroperitoneal tumors	• Ankylosing spondylitis • Psoriatic spondylitis • Reactive arthritis • Inflammatory bowel disease associated arthritis

Adapted from Deyo RA. Early diagnostic evaluation of low back pain. *J Gen Intern Med* 1986; 1:328.

DIFFERENTIAL DIAGNOSIS OF CHRONIC KNEE PAIN

BUILDING PATHWAYS IN PAIN MANAGEMENT

Mechanical	Infection	Inflammatory	Other
• Osteoarthritis • Trauma • Fracture • Internal derangement • Avascular necrosis of bone	• Lyme • Septic joint -Bacterial -Mycobacterial -Fungal	• Rheumatoid Arthritis • Juvenile idiopathic arthritis • Seronegative spondyloarthro-pathy • Crystal deposition disease -gout -pseudogout • Foreign body synovitis • Pigmented villonodular synovitis • Palindromic rheumatism	• Hemarthrosis • Benign hypermobility syndrome

TYPES OF PAIN

BUILDING PATHWAYS IN PAIN MANAGEMENT

Nociceptive Pain	Neuropathic Pain	Nociplastic Pain	Psychogenic Pain
Pain in response to an injury or stimuli	Nervous system damaged -typically chronic pain	Altered nociceptive function – typically chronic	Increased pain, or prolonged by mental, emotional, or behavioral factors
Examples			
Osteoarthritis, sports injury, sickle cell disease, mechanical low back pain	Post-herpetic neuralgia, trigeminal neuralgia, distal polyneuropathy, neuropathic low back pain	Irritable bowel syndrome, chronic pain syndrome, non-specific low back pain, fibromyalgia	Headache, back pain, or stomach pain

*Causes of fibromyalgia uncertain

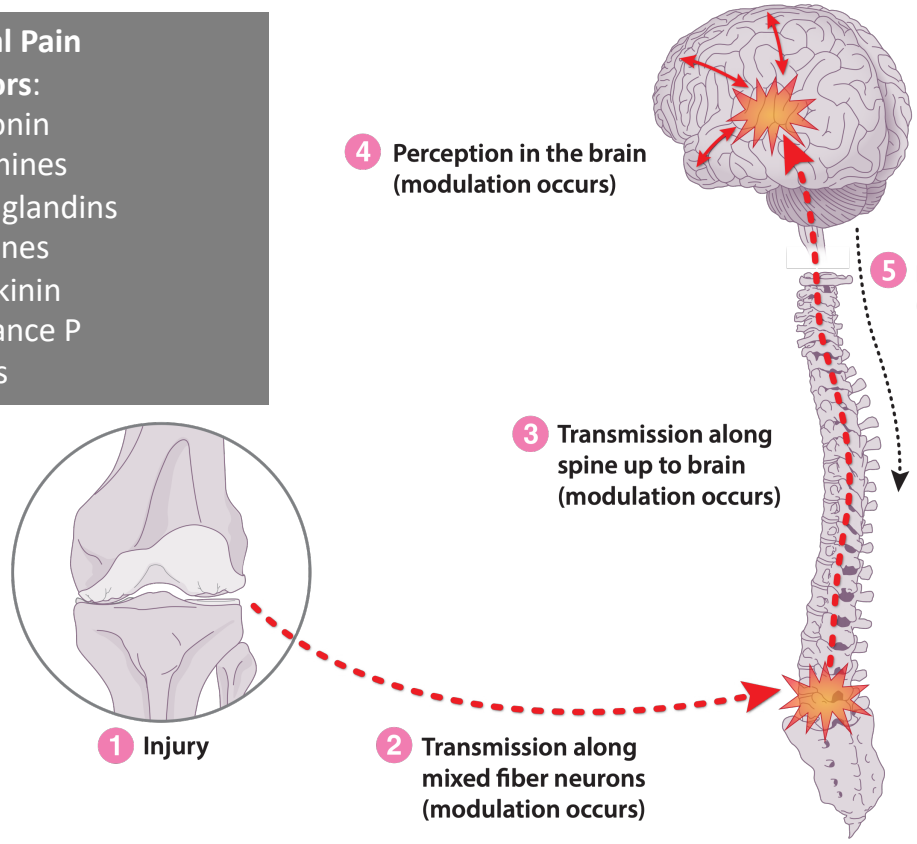
Slide adapted from CO*RE Collaborative

THE NEUROMECHANISMS OF PAIN

BUILDING PATHWAYS IN PAIN MANAGEMENT

Peripheral Pain Modulators:

- Serotonin
- Histamines
- Prostaglandins
- Cytokines
- Bradykinin
- Substance P
- Others



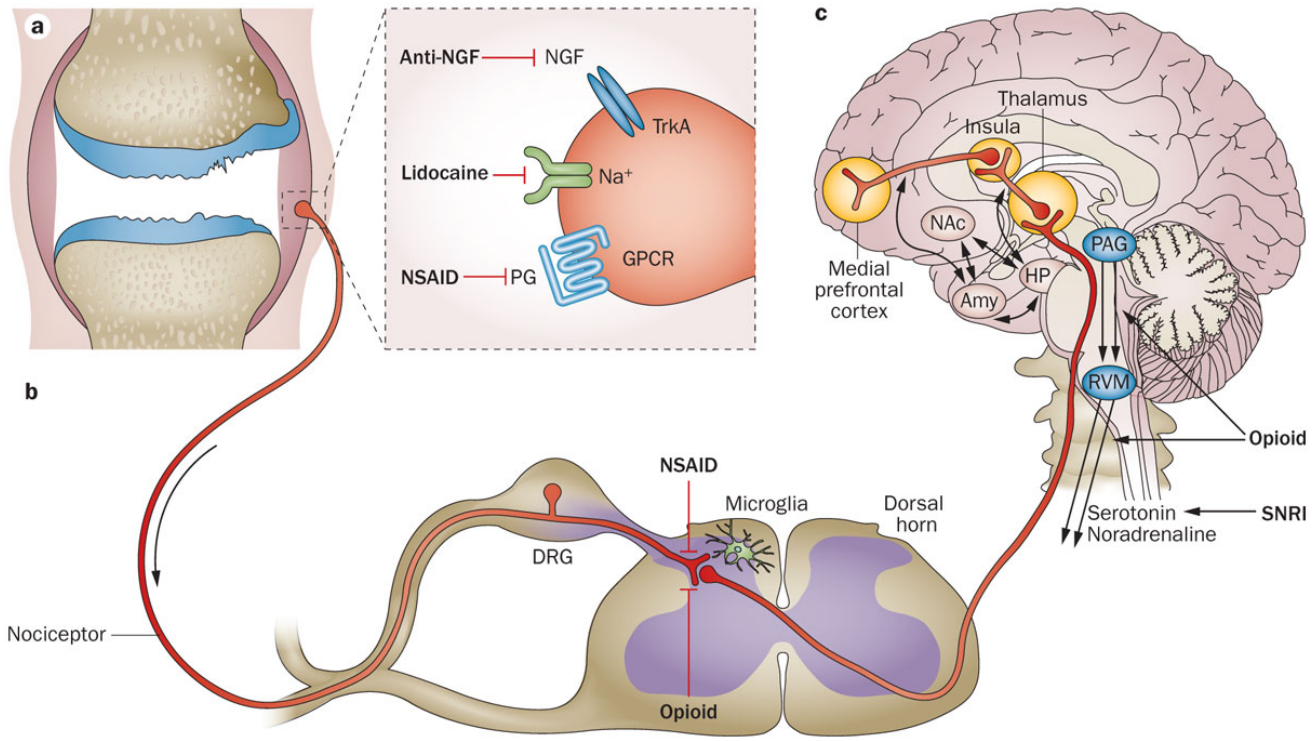
Descending Neurotransmitters:

- Serotonin
- Norepinephrine
- Endogenous opiates
- Substance P
- Others

Slide adapted from CO*RE Collaborative

NEUROANATOMY OF THE PAIN PATHWAY AND ANALGESIC TARGETS IN OA

BUILDING PATHWAYS IN PAIN MANAGEMENT



Malfait, A.-M. & Schnitzer, T. J. (2013) Towards a mechanism-based approach to pain management in osteoarthritis
Nat. Rev. Rheumatol. doi:10.1038/nrrheum.2013.138

ALWAYS REMEMBER…

BUILDING PATHWAYS IN PAIN MANAGEMENT

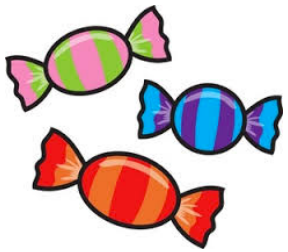
C **Consider**

A **Any** red flags?

N **Non-pharmacologic** approaches to management

D What is **different** in the patient's life? Are there any new medical conditions

Y **You** aren't going to cure this chronic condition



NON-PHARMACOLOGIC THERAPIES

BUILDING PATHWAYS IN PAIN MANAGEMENT

Non-pharmacologic therapies are the foundation for these chronic conditions

www.pathwaysinmanagement.org

Tools for clinicians and their patients that support functional assessment, movement, patient-provider partnership.

MRS. P

BUILDING PATHWAYS IN PAIN MANAGEMENT

Mrs. P age 64 arrives in your office for help with her aching knees. You recall your last conversation three months ago and in reviewing your records you note a diagnosis of osteoarthritis and that you completed a functional assessment using PEG (Pain, Enjoyment, General Activity). Mrs. P has now started walking early mornings at the local high school with her friends. She enjoys walking but finds that her knees ache. She is thinking of cutting back on her walking if the pain gets worse. You note that Mrs. P has lost a few pounds since her last visit.

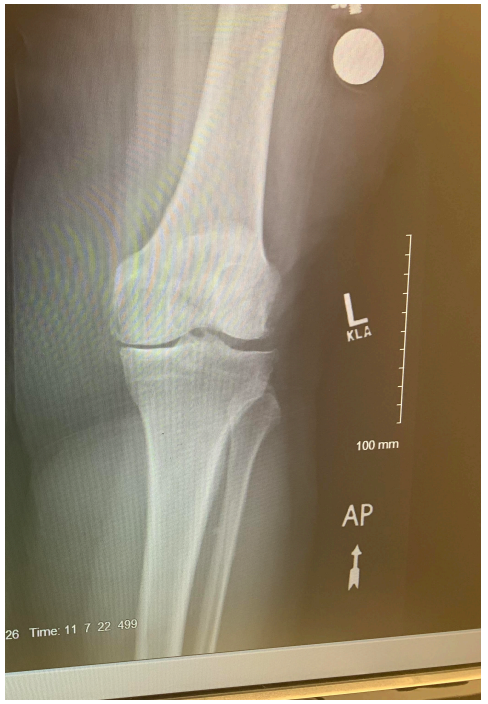
A GREAT FOUNDATION

BUILDING PATHWAYS IN PAIN MANAGEMENT

- ✓ Baseline functional assessment recorded
- ✓ Exercise started that patient
  - likes doing
  - is safe and social
- ✓ Weight loss

Your next steps:

- Review history and medications
- Evaluate for red flags
- Encourage Mrs. P to keep walking
- Assist with pain management



QUESTION 1: WHAT IS YOUR FIRST STEP?

BUILDING PATHWAYS IN PAIN MANAGEMENT

What medications would you start with to manage pain for Mrs. P.?

A. Acetaminophen 1000 mg 3 times daily
B. Aspirin 1950 mg 3 times daily
C. Ibuprofen 200 mg 4 times daily
D. Other

- What information would you need to know to be more confident in your selection?
- What would cause you to avoid one of these choices?

YOUR ACTIONS AND HER QUESTIONS

BUILDING PATHWAYS IN PAIN MANAGEMENT

You prescribe acetaminophen 1000 mg 3 times daily

Recheck with patient in 1 to 3 months – see patient sooner if pain further limits function and exercise

What Mrs. P is thinking

- Do I only take this when my knee hurts?
- Do I just take it with meals?
- I take acetaminophen already for some aches and pains. How will this help?
- I can get this at the grocery store so I don't think it is powerful enough for my knee pain.
- At least it won't cost much.

ACETAMINOPHEN PEARLS

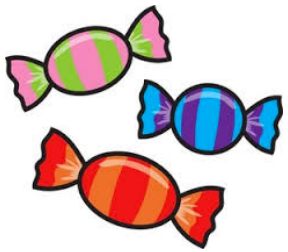
BUILDING PATHWAYS IN PAIN MANAGEMENT

- Take consistently at scheduled doses
- Recommend safe maximum daily dose 3000 mg: 1000 mg 3 times daily
- Dosing may vary between 2000 mg to 4000 mg per day dependent on comorbidities, age, and length of use
- Assess cumulative effect – multiple other medications contain acetaminophen
- Overcome patient perception to OTC medications
- Schedule follow-up 1-3 months
- Review adherence at next visit
- Use caution with liver disease

MRS. P. SECOND VISIT

BUILDING PATHWAYS IN PAIN MANAGEMENT

Mrs. P is in for her annual visit. She notes that her knees are still painful and keep her up at night. She has been taking the acetaminophen faithfully.



QUESTION 2: YOUR NEXT STEP

BUILDING PATHWAYS IN PAIN MANAGEMENT

What would your next action be to manage pain for Mrs. P?

A. Replace acetaminophen with ibuprofen 200 mg 3 x daily
B. Add ibuprofen 200 mg 3 x daily to acetaminophen 1000 mg 3 x daily
C. Replace acetaminophen with meloxicam 7.5 mg per day
D. Add meloxicam 7.5 mg per day to acetaminophen 1000 mg
E. Add OTC topical agent to acetaminophen 1000 mg 3 times per day
F. Other

- What information would you need to know to be more confident in your selection?
- What would cause you to avoid one of these choices?

YOUR ACTIONS/HER QUESTIONS

BUILDING PATHWAYS IN PAIN MANAGEMENT

- Next step may vary depending on patient preference and comorbidities
- You add Ibuprofen 200 mg 3 times daily to her acetaminophen 1000 mg 3 times daily and consider co-prescribing a PPI
- Recheck with patient in 1 to 3 months – see patient sooner if pain further limits function and exercise

Mrs. P. is thinking…

- Do I only take this when my knee hurts?
- Can I just take it with meals?
- Aren't IB and acetaminophen the same?
- I don't think it is powerful enough for my knees.
- At least it won't cost much.
- Why did you prescribe acid reflux medicine with this prescription?
- Can I take Ibuprofen with Aleve®?

CLASSIFICATION OF NSAIDS

BUILDING PATHWAYS IN PAIN MANAGEMENT

Para-aminophenol derivative	Acetaminophen
NSAID Agents	
Salicylates	Aspirin
Propionic acids	Naproxen, Ibuprofen, Ketoprofen, Furbiprofen, Osaprozin
Acetic Acids (pyrano-indoleacetic acids)	Diclofenac, Etodolac, Indomethacin, Tolmetin, Sulindac
Oxicams (enolic acids)	Meloxicam, Piroxicam
Fenamates (anthranilic acids)	Meclofenamate, Mefenamic acid
Nonacidic (naphthylalkanone)	Nabumetone
Selective COX-2 inhibitors	Celecoxib

NSAID PEARLS

BUILDING PATHWAYS IN PAIN MANAGEMENT

- Lots of options available – OTC and prescription
- Class of NSAID cumulative effect
- Older adults:
  - Consider topicals
  - Consider COX-2s
  - Consider concomitant PPI (ACR Guidelines)
- Consider renal and hepatic testing on chronic NSAIDs at 6 months
- Don't discount the risks
- Prescription NSAIDs
  - Consider cost, safety profile and frequency of dosing
  - Meloxicam 7.5 to 15 mg daily dosing, generic
  - Consider taking daily NSAID with largest meal of the day

Warning for
Cardiovascular Thrombolytic Events
Gastrointestinal Bleeding, Ulceration, Perforation.
CABG

Use caution with
- Renal disease
- Liver disease
- Hypertension
- Asthma related to aspirin sensitivity
- Increased risk of GI bleed

ADDING A TOPICAL

BUILDING PATHWAYS IN PAIN MANAGEMENT

What would make you consider using a topical for Mrs. P.?

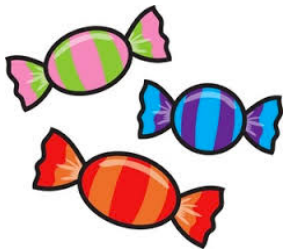
- GI problems
- Patient preference
- Effective for many patients
- Less (but not zero) side effects
- Evaluate cost to patient

Topical options

- Analgesic – SalonPas® lidocaine patch, Biofreeze® menthol, Bengay ® Methyl salicylate, capsaicin
- Anti-inflammatory - Diclofenac sodium gel or solution, Epolamine patch

WHERE WOULD YOU GO NEXT?

Mrs. P is back in your office 4 months later. She continues to have constant knee pain and is determined to keep walking with her friends. One friend suggested injections to manage her pain.



QUESTION 3: YOUR NEXT STEP

BUILDING PATHWAYS IN PAIN MANAGEMENT

What would be your next option for Mrs. P?

A. Intraarticular joint injection
B. SNRI (Serotonin and norepinephrine reuptake inhibitors)
C. TCA (Tricyclic Antidepressant)
D. Skeletal Muscle Relaxers
E. Anticonvulsants

KNEE INJECTIONS

BUILDING PATHWAYS IN PAIN MANAGEMENT

Which of the following injections might you consider?

A. Corticosteroid injection
B. Sodium hyaluronate
C. PRP (Platelet Rich Plasma)
D. Stem Cell

- What information would you need to know to be more confident in your selection?
- What would cause you to avoid one of these choices?

YOUR ACTIONS/HER QUESTIONS

BUILDING PATHWAYS IN PAIN MANAGEMENT

You select a corticosteroid injection

Mrs. P. is thinking….

- How often will I get these injections?
- Should I keep taking my other medications?
- How much will this cost?
- Will one injection cure me?
- My friends say I will feel amazing afterwards. Why have you waited so long to try this?

EVIDENCE FOR KNEE INJECTIONS

BUILDING PATHWAYS IN PAIN MANAGEMENT

Knee Injections
Some evidence for steroid injections (AAOS)
No evidence-based value for hyaluronic acid injections in improvement of function for moderate to severe knee OA (ACOEM)
No recommendation for intraarticular hyaluronic acid injections (ACRheum)
Metanalysis for PRP suggests improvement in function and pain

Yanhong Han, Hetao Huang, Jianke Pan, Jiongtong Lin, Lingfeng Zeng, Guihong Liang, Weiyi Yang, Jun Liu, Meta-analysis Comparing Platelet-Rich Plasma vs Hyaluronic Acid Injection in Patients with Knee Osteoarthritis, *Pain Medicine*, Volume 20, Issue 7, July 2019, Pages 1418–1429, https://doi.org/10.1093/pm/pnz011

INJECTIONS FOR OA

BUILDING PATHWAYS IN PAIN MANAGEMENT

- Corticosteroid injections
  - Anti-inflammatory and immunosuppressive response
  - Methylprednisolone immediate release
  - Triamcinolone acetonidide/hexacetonide immediate release
  - Betamethazone immediate release
  - Zilretta® triamcinolone acetonide extended release

- Sodium Hyaluronate
  - Increase lubrication and shock absorption properties of cartilage
  - Multiple brands available
- Platelet Rich Plasma
  - Growth factors released by the platelets possess multiple regenerative properties

Shahid M, Kundra R. Platelet-rich plasma (PRP) for knee disorders. *EFORT Open Rev*. 2017;2(1):28–34.
Published 2017 Feb 1. doi:10.1302/2058-5241.2.160004

INJECTIONS OSTEOARTHRITIS PEARLS

BUILDING PATHWAYS IN PAIN MANAGEMENT

- Corticosteroids
  - Option to use topical anesthesia (e.g. ethulene chloride) or use small needle to inject anesthesia subcutaneously prior to the injection
  - Zilretta® may last longer – up to 12 weeks
- Hyaluronic Acid
  - Can cause pseudogout flare
- No evidence on the number of times but lots of different practices
- May have systemic effect on blood sugar for patients with diabetes
- Provide patient education post injection
- Platelet Rich Plasma
  - Off antibiotics before and after

NON-SURGICAL TREATMENTS FOR BACK PAIN

BUILDING PATHWAYS IN PAIN MANAGEMENT

- Corticosteroid injections
  - More than 3 injections within 12 months not recommended
- Trigger point injection
  - No clear differences local anesthetic with/without corticosteroids or control interventions (saline/dry needle injections) for short term relief
- Botulinum Toxin
  - Limited evidence

Herndon CM, Schiel Zoberi K. Common Questions About Chronic Low Back Pain *Am Fam Physician*. 2015 May 15;91(10):708-714.

SNRI

Serotonin and norepinephrine reuptake inhibitors

You select duloxetine starting with 30 mg daily for 1 week then progressing to 60 mg daily.

What Mrs. P is thinking-

- I'm not depressed so why am I taking this drug?
- I have been a little depressed. Will this help?
- What do I do while this begins to take affect?
- Am I supposed to keep taking this with the Tylenol® and Advil®?

SNRI PEARLS

BUILDING PATHWAYS IN PAIN MANAGEMENT

- Consider adding SNRI to acetaminophen and/or NSAID
  - Monitor for risk of bleeding with NSAID use
- Start with duloxetine 30 mg for 1 week then progress to 60 mg
  - No evidence doses greater than 60 mg are beneficial
- Takes 4-6 weeks to see the benefit
- Gradual dose reduction beneficial when discontinuing
- Duloxetine may have initial weight loss effect followed by weight gain
- Duloxetine has indication for CLBP and reduction in peripheral nerve pain. Likely class effect
- On Beers Criteria for patients with risk of falls
- Avoid use in patients with CKD Stage 4/5
- Linked to hyponatremia in elderly

TRICYCLIC ANTIDEPRESSANT PEARLS

BUILDING PATHWAYS IN PAIN MANAGEMENT

- Use at bedtime
- Amitriptyline or nortriptyline most common
- Much lower dose used than for treating depression
- Patient education regarding constipation, dry mouth, sedation
- Maximum effect may not be seen for 2 weeks
- Beers Criteria 2019 for anticholinergic properties and sedation

ANTICONVULSANTS MEDICATION PEARLS

BUILDING PATHWAYS IN PAIN MANAGEMENT

- Gabapentin – Neuropathic pain
  - Use caution with renal impairment, hx of substance abuse
  - May need trial of 2 months or more
  - Schedule V drug in some states
  - Risk for misuse
  - Weight gain
  - Mental fog, dizziness, risk of fall
  - Prior authorization may be required before moving to pregabalin
- Pregabalin – Neuropathic pain, fibromyalgia
  - Use caution with severe cardiovascular disease, renal impairment, history of substance abuse
  - Beers Criteria for use with opioids
  - May cause weight gain
  - Schedule V drug in some states

SKELETAL MUSCLE RELAXANTS - PEARLS

BUILDING PATHWAYS IN PAIN MANAGEMENT

- Cyclobenzaprine – muscle spasms
  - Use with caution hepatic impairment
  - Beers Criteria 2019: anticholinergic effects, sedation, risk of fracture
- Tizanidine
  - Not recommended with liver disease
  - No dosage adjustment unless creatinine clearance <25
- Causes drowsiness
- Bedtime use alone may be useful strategy if sleep is interrupted from pain
- Concern with driving and work

OPIOIDS - TRAMADOL

BUILDING PATHWAYS IN PAIN MANAGEMENT

- Mu receptor agonist
- Controlled substance
- Currently included in guidelines from AAOS and ACR
- Higher one-year mortality as compared to other medication options for osteoarthritis
- Inhibits ascending pain pathways, altering perception of and response to pain
- Inhibits the reuptake of norepinephrine and serotonin

Zeng C, Dubreuil M, LaRochelle MR, et al. Association of Tramadol With All-Cause Mortality Among Patients With Osteoarthritis. *JAMA.* 2019;321(10):969–982. doi:10.1001/jama.2019.1347

OPIOID PEARLS

BUILDING PATHWAYS IN PAIN MANAGEMENT

- Use best practice CDC Guidelines when prescribing opioids
- Consider Cognitive Behavioral Therapy (CBT) before prescribing any opioid
- Use as last resort
- Do not use with benzodiazepines
- Do not drink alcohol or use other illegal drugs
- Dose adjustment for older adults
- Use caution with renal disease, respiratory disease, hepatic impairments, and mental health conditions

EMERGING THERAPIES

BUILDING PATHWAYS IN PAIN MANAGEMENT

- Biologic Therapies
  - Anti-nerve growth factor antibodies
    - Promising pain management results
    - Tanezumab and Fasinumab
    - Cytokines including IL-6
- Small molecules
  - G-protein coupled receptors (GPCRs)
    - Selectively target opioid receptors gamma, kau or mu
    - Cannabinoid receptors
  - Ion channels
    - Locally delivered capsaicin
- Cryoneurolysis/thermal radiofrequency
- Stem Cell injections
- Cannabis

Miller RE, Block JA, Malfait AM. What is new in pain modification in osteoarthritis?. *Rheumatology (Oxford)*. 2018;57(suppl_4):iv99–iv107. doi:10.1093/rheumatology/kex522

CANNABINOIDS

BUILDING PATHWAYS IN PAIN MANAGEMENT

"So, is herbal cannabis likely to be helpful for treating joint pain? In spite of the fact that it has been used for this purpose for thousands of years, it has to be concluded that rigorous clinical evidence is really not available supporting this claim at this point in time. On the other hand, there are numerous surveys suggesting that patients themselves are convinced that they do benefit from using it."

THC versus CBD

- THC provides psychotropic effect
- CBD balances that effect

Miller RJ, Miller RE 2017 Is Cannabis an effective treatment for joint pain? *Clin Exp Rheum* 2017 Sep-Oct;35 Suppl 107(5):59-67. Epub 2017 Sep 28

THE OPTIMAL MEDICATION

BUILDING PATHWAYS IN PAIN MANAGEMENT

- What your patient will take
- What doesn't cause harm
- What your patient can afford
- What is effective
- Prescribed at the lowest dose
- What improves functional status

MRS P

BUILDING PATHWAYS IN PAIN MANAGEMENT

At her latest visit, Mrs. P reports that she has started a yoga program in addition to walking with her friends. She continues to meet her functional goals. Her pain is managed and she is happy with what she can do. She is sleeping well. She has lost 5 more pounds.

She found acetaminophen 1000 mg 3 times daily and duloxetine 60 mg daily to be effective at managing her pain.

SUMMARY

BUILDING PATHWAYS IN PAIN MANAGEMENT

- Ongoing non-pharmacologic therapy vital in management of these common problems
- Focus on functional improvement
- OA and CLBP are chronic conditions that require us to journey with our patients
- CANDY – Consider any red flags, non-pharmacologic program, differences in patient health and life conditions and your role in supporting your patient
- Many options exist – all with benefits and risks
- New options will become available
- Patients will try whatever is the latest
- You CAN make a difference

REFERENCES

BUILDING PATHWAYS IN PAIN MANAGEMENT

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ACOEM https://www.mdguidelines.com/mda/knee-osteoarthrosis

Allan GM, Ramji J, Perry D, et al. Simplified guideline for prescribing medical cannabinoids in primary care. *Can Fam Physician*. 2018;64(2):111–120.

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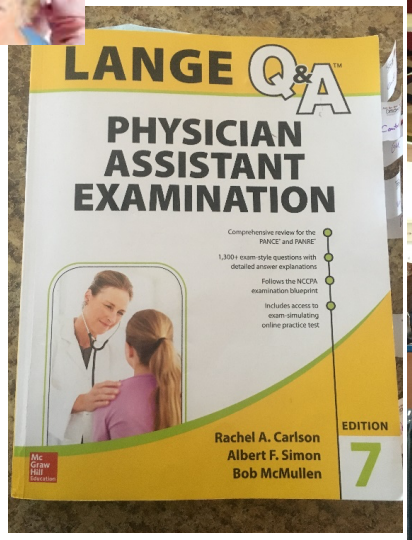
Thank You for Your Time and Interest

Remember:
Autoimmune disease affects all age groups



"A good PA treats the disease -
<u>A great PA treats the patient</u> who has the disease"

(Modified from) Sir William Osler (1849 – 1919), Physician

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