



Primary Care  
Alberta

# Medication Essentials Group Session #1

Instructed by Chronic Pain Centre Pharmacists

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## Group Introduction



CONFIDENTIALITY  
AND LIMITATIONS



GROUP  
GUIDELINES



BRIEF  
INTRODUCTIONS



POLL QUESTIONS

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## Objectives

At the end of this presentation, you should be able to:

- Describe how medications are one "piece of the pie" when managing pain.
- Explain why ability to function and quality of life are useful ways to measure the impact of medication for pain.
- Describe how medications can create windows of opportunity to make more durable changes.
- Explain why the risks and benefits of medications change over time.
- Review of certain medication groups

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## Review

- Pain is a complex experience created by the brain when it perceives the need to protect from danger.
- Threat perceived by the brain is biopsychosocial – not only damage to our bodies.
- Pain and tissue damage are not well related.



Pain 2017;13(10):e00111 (5/11/18)

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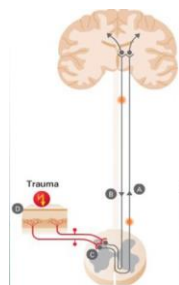
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## Medications Impact:

- **Biology:**
  - Nociception
  - Brain processing
- **Psychology:**
  - Coping
  - Mood and stress
- **Sociology and culture:**
  - Meaning of taking a medication
  - Social setting
  - Finances



Visual Neuroscience 100, 100 (2018) 100-100. doi:10.1016/j.visne.2018.100.001

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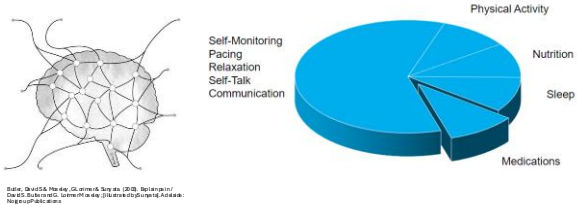
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## Medications do not account for all factors contributing to the pain experience




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## Measuring Medication Effects

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## Impact on pain intensity and frequency

### Reduce pain intensity

- Numerical rating scale (NRS)
- "On a scale of 1-10..."
- Challenging thing to measure over time

### Reduce pain frequency

- Reduce frequency of headaches
- Reduce frequency of flares in back pain causing you to cancel plans

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## Impact on function and quality of life

### Help you to function:

- Do things that bring you joy
- Care for people you love
- Do the things you need to do

### Improve your quality of life:

- Living your values
- Achieving your goals

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## Setting Goals, Assigning Purpose

- When using a medication, it can be useful to reflect on what you are trying to accomplish. Consider connecting using a medication to a goal related to your function or quality of life.
- Fore example:
  - "Pain in my legs and feet prevents me from walking my dog most days. With my family physician I am going to try using pregabalin. We agree that a good way to tell if pregabalin is working is whether I am able to consistently walk my dog three days per week after two months of using it.
  - **Specific, measurable, achievable, relevant, and timebound (SMART).**

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## What are your goals?

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## Medications Create Windows Of Opportunity

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### Role of medication

- When a medication improves pain, it can be confusing to know if a medication is now permanent.
- It is sometimes useful to think about medications creating a "window of opportunity".
  - Reduce pain intensity and frequency for a period of time.
  - Allows us to practice making changes to thoughts, beliefs, behaviours, movements which are likely to have a more beneficial impact.
  - A tool among many in the toolbox.

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### How big of a window?

- Medications can be used *occasionally* to create a window of opportunity during a *flare in pain*.
  - 1-2 times per week, on average, "As needed" or "episodic".
  - Examples:
    - Reduce intensity of a severe headache to attend an important family event.
    - Reduce low back pain when introducing a new physiotherapy exercise.
    - Using medications after an injury to allow tissues to heal and do rehabilitation exercises.

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## How big of a window?

- Medications can be used *daily* to create a window for a *longer period of time*.
  - Daily use, "preventive" or "foundational".
  - Examples:
    - Using a medication on for 6 months to help facilitate returning to work with low back pain so you can practice and increase tolerance for the duties of work
    - Using a medication on for a couple of years to improve anxiety and create space to work on contributing factors.

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## Risks And Benefits Change Over Time

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## Risks of medications for pain

- Off label
  - Many medications used for a different purpose than they were approved by Health Canada for.
- "Polypharmacy"
  - Using many medications at once
  - Various effects of many medications having unintended consequences
- Sedation, not being able to think clearly, dependence.

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## Weighing risks and benefits

- How do risk compare to benefits?
  - Requires you to be curious, collect data, experiment overtime.
- As a part of your goal consider:
  - "What if?" and "then what?"
  - Are medications helping more than they are hurting?

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## Risk and benefits change overtime

- How do they change:
  - Medications resulting in tolerance, dependence, or extra sensitivity
  - Long versus shortterm side effects
  - Age, weight, organ function
  - Changes to many biopsychosocial factors
- What is true today may not be true next month or next year. It is a good habit to check in on weighing the risk and benefits of using a medication for persistent pain every year or so.

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## Summary

- Medications are one piece of the pie when it comes to pain management. It will be a different size of pie for each person and the size of pie will change over the course of your lifetime.
- Medications impact pain intensity and frequency, but much of the time it will be more useful to measure medication impact on function and quality of life.

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## Summary

- Medications create windows of opportunity to make more durable changes to your life and pain experience. These windows can be hours, days, months, and sometimes years long, but likely aren't a lifetime
- Medication risks and benefits are different for everyone and likely change overtime. Risks and benefits ought to be weighed routinely to make sure a medication is helping more than it is hurting

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## Questions and Discussion

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## Chronic Pain Medication Classes:

- Acetaminophen
- Non-steroidal anti-inflammatory drugs (NSAID)
- Tricyclic Antidepressants (TCA)
- Serotonin Norepinephrine Reuptake Inhibitors (SNRI)
- Anti-epileptics
- Muscle relaxants
- Topical creams
- Natural Health Products
- Cannabinoids
- Opioids
- Low dose naltrexone

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## Acetaminophen

- Tylenol®
- Unclear mechanism of action. Well-tolerated.
- Used for: Arthritis, flare-up plans, as need for headache, for example.
- Liver toxicity: increased risk with higher doses, chronic daily use, age, alcohol use, previous liver disease
- Max 4 grams/day (4000 mg/day)
  - if used on a daily basis, max 3 grams/day (3000 mg/day) recommended
  - Watch for hidden sources (e.g. cough and cold products, codeine products)

## NSAIDs

- **Non-Steroidal Anti-Inflammatory Drugs**
- Ibuprofen (Advil®, Motrin®), Naproxen (Aleve®), Diclofenac (Voltaren®)
- Decrease prostaglandins (naturally-occurring chemicals in your body which cause inflammation)
- Used for inflammation, muscle and joint pain, migraines

## NSAIDs

- Common side effects: nausea, stomach upset
  - Take with food
- Serious side effects:
  - Increased risk of high blood pressure and cardiovascular disease
  - Bleeding (e.g. gastrointestinal system)
  - Kidney failure
- Prescription + over the counter + aspirin use
  - = increased risk of side effects

## Medication Overuse Headache

- Using NSAIDs or acetaminophen more than 15 days/month
- Reducing your use may help you experience fewer headache days/month or a lower severity of headache. Others may experience no change.

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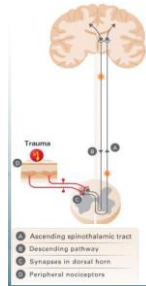
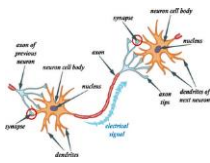
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## Antidepressants




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## Antidepressants:

### Tricyclic Antidepressants (TCAs)

- Amitriptyline (Elavil®), Nortriptyline (Aventyl®)
- Increase serotonin and norepinephrine
  - naturally occurring chemicals in your body important for decreasing the likelihood that your brain will produce pain
- Often used for back pain, fibromyalgia, headaches

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### Antidepressants: TCAs

- Common side effects:
  - Sleepiness (1 in 3), dry mouth (1 in 3), balance problems (1 in 5), blurred vision, constipation, difficulty urinating, weight gain (2-5lbs)
- Serious side effects:
  - irregular heartbeats
  - change in mood for the worse
  - Effects in the elderly

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### Antidepressants: TCAs

- Use for 1-2 months before making decision about effectiveness.
- A smaller dose is needed for pain than for depression.
- Slowly increase dose. Slowly decrease dose when stopping.
- May be helpful for sleep. Take at bedtime.

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### Antidepressants: SNRIs

- Serotonin and Norepinephrine Reuptake Inhibitors (SNRIs)
- Venlafaxine (Effexor®), Duloxetine (Cymbalta®)
- Increase serotonin and norepinephrine
  - naturally occurring chemicals in your body important for decreasing the likelihood that your brain will produce pain
- Fibromyalgia, osteoarthritis, headaches

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### Antidepressants: SNRIs

- Common side effects: nausea (1 in 4), dry mouth (1 in 10), headache (1 in 7), drowsiness (1 in 10), dizziness (1 in 10), difficulty sleeping (1 in 10). Sexual dysfunction.
- Be aware of withdrawal effects – do not suddenly stop taking.
  - Slowly decrease dose to avoid withdrawal symptoms including: flu-like symptoms, body shocks, poor sleep, worsening mood

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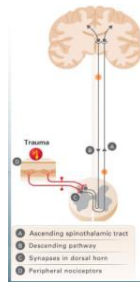
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### Antiepileptics

- Gabapentin (Neurontin®), Pregabalin (Lyrica®), Topiramate (Topamax®)
- Reduce the electrical or chemical messages that are sent to the brain
- Back pain, headaches, neuropathic pain




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### Antiepileptics

- Common side effects:
  - Drowsiness (1 in 7), dizziness (1 in 5), unsteadiness (1 in 7), unable to think clearly, changes in mood, weight gain (5-12 lbs)
- Use for 1-2 months before making decision about effectiveness
- Start with low doses and increase slowly.
- Do not stop suddenly. Important to decrease dose slowly when discontinuing.

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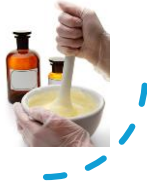
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## Topical Medications

- Many pharmacies are able to create compounded creams using various medications including:

- Diclofenac
- Gabapentin
- Lidocaine
- Amitriptyline
- Baclofen
- Ketamine




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## Topical Agents

- **Benefits:**

- Little to no side effects
- Tailored ingredients to meet your specific pain symptoms
- No drug interactions
- Able to treat a specific area

- **Drawbacks:**

- Skin irritation
- Can be expensive
- Frequent application (usually 2-4 times daily)
- Creams can feel sticky

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Question and Answer Time!

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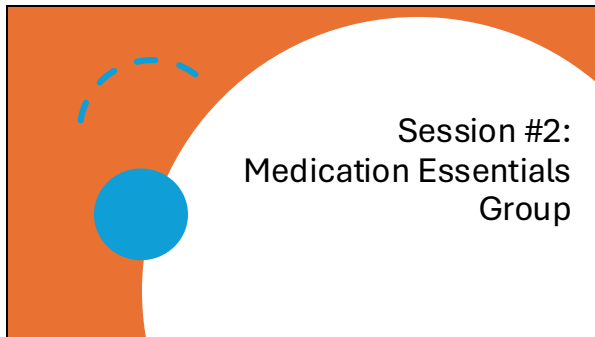
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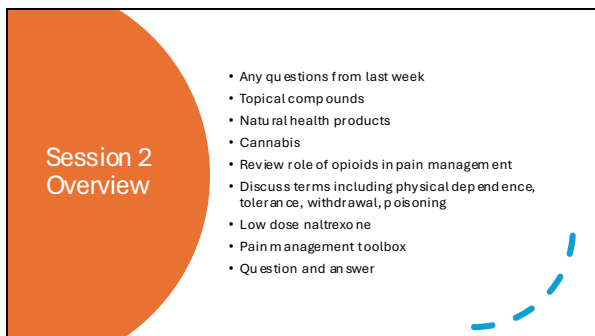
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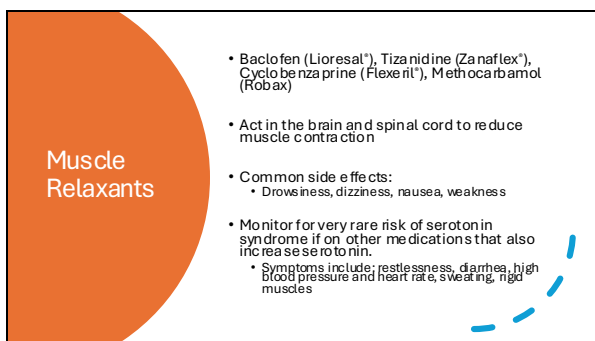
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## Natural Health Products (NHPs)

### • Include the following:

- Vitamins and minerals
- Herbal remedies
- Homeopathic medicines
- Traditional medicines
- Probiotics



- Usually over the counter and do not require a prescription

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## Natural Health Products (NHP)

- Various supplements, vitamins and minerals which may be helpful in chronic pain or other related symptoms such as difficulty sleeping or mood.

- Talk to your pharmacist or physician to make sure they are okay to take with your other medications. Just because they are natural does not mean they are always safe.

- Interact with other medications, side effects, effect medical conditions

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## Natural Health Products (NHP)

### How to use NHPs safely:

- Talk to a healthcare professional
  - elderly, pregnant/breastfeeding, serious medical conditions, using other medications
- Use approved products (contain a NPN or DIN-HM number which ensure they are licensed)
- Be skeptical of health-related claims that seem too good to be true
- Follow instructions



<https://www.canada.ca/en/health-canada/services/health-products/natural-health-products/natural-health-products.html>

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## Natural Health Products (NHP)

- **Magnesium**
  - May be helpful for headaches, chronic pain, constipation, sleep.
  - Citrate form most widely available.
    - Bisglycinate form may be easier on stomach.
  - Start with 150 mg daily, increase up to 600mg daily as tolerated
  - Caution with some medications - space 2 hours from other medications
  - May cause diarrhea or upset stomach

## Natural Health Products (NHP)

### Other NHP that can be used for pain:

- Turmeric (anti-inflammatory)
- Omega-3 (anti-inflammatory)
- Riboflavin or Vitamin B2 (for migraine prevention)
- Coenzyme Q10 (for migraine prevention)
- Glucosamine (joint pain)
- Peppermint oil (for constipation and abdominal pain)

## Cannabis

Manufactured  
Cannabinoids  
capsules  
spray



Medical  
Marijuana  
dried marijuana  
marijuana oils

Medical  
Cannabinoids

Cannabis

**Cannabinoids:**

- THC (delta-9-tetrahydrocannabinol): associated with intoxication and impairment
- CBD (cannabidiol): less psychoactive properties or impairment

**Short term effects:**

- Drowsiness, dizziness, increased anxiety

**Long term risks:**

- If smoked, can damage lungs and make it difficult to breathe, affect mental health, addiction

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Cannabinoids

**Prescription products:**

- Nabiximol (Cesamet<sup>®</sup>)
- Tetrahydrocannabinol and Cannabidiol (Sativex<sup>®</sup>)

• Bind to cannabinoid receptors in the body to help decrease pain

• May be helpful for pain, sleep, and nausea

• Not well supported by research

**Common side effects:**

- Drowsiness (1 in 2)
- Feeling "high" (1 in 3)
- Dizziness (1 in 3)
- Unsteadiness (1 in 3)
- Mood disturbances (1 in 5)
- Dry mouth

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Cannabis

| Ways of using cannabis     | When effects could begin | How long effects could last |
|----------------------------|--------------------------|-----------------------------|
| Smoking/vaporizing         | Seconds to minutes       | Up to 6 hours*              |
| Swallowing (food/capsules) | 30 minutes-1.5 hours     | Up to 12 hours*             |
| Under the tongue           | 5-30 minutes             | Up to 12 hours*             |

\* some effects could last as long as 24 hours

canada.ca/cannabis

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## Cannabis

- A lot of unknowns remain regarding the effectiveness and safety of cannabis in chronic pain
- Government of Canada resources:
  - <https://www.canada.ca/en/health-canada/services/drugs-medication/cannabis/resources.html>

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## Cannabis

- Consider the following for your safety:
  - Delay cannabis until the age of 25
  - Choose a product that has equal or higher amounts of CBD compared to THC
  - Avoid smoking
  - Avoid if you have mental health concerns, substance abuse or are pregnant or breastfeeding

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| Opioids        |                      |                                          |
|----------------|----------------------|------------------------------------------|
|                | Short-Acting         | Long-Acting                              |
| Codeine        | Tylenol #3®          | Codeine Contin®                          |
| Tramadol       | Tramacet®, Ultram®   | Durela®, Ralivia®, Tridural®, Zytram XL® |
| Buprenorphine  |                      | BuTrans®, Suboxone®                      |
| Morphine       | Statex®              | MS Contin®, M-Esion®, Kadian®            |
| Hydromorphone  | Dilaudid®            | Hydromorphone Contin®                    |
| Oxycodone      | Percocet®, Supeudol® | OxyNEO®, Targin®                         |
| Fentanyl patch |                      | Duragesic®                               |
| Tapentadol     | Nucynta IR®          | Nucynta ER®                              |
| Mefenadone     |                      | Metado®                                  |

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## Opioids

- Bind to opioid receptors in the body to help reduce pain.
- Clearly effective for pain in the short term.
  - After an injury or surgery
  - During a flare-up
- Harms likely to outweigh benefits over the long term.
  - Benefits over long term are less clear
  - Important risks adding up over time.

[illegible]

## Opioids

### Questions you might have:

Could I or my loved ones overdose on my opioids?

Will I have to take  
these for the rest  
of my life?

What happens if  
I take less?

Why am I still having difficulty with controlling my pain despite increasing my opioid dose?

[illegible]

## Opioids

### Fact or Myth?

If I take my opioid as prescribed I won't have any side effects

[illegible]

## Opioids: Side Effects

- Common side effects:
  - Nausea (28%), constipation (36%), drowsiness (29%), dizziness (22%), itchy/dry skin (15%), vomiting (15%), opioid poisoning

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## Opioids: Complications

- Long term complications:
  - May worsen headache or migraine (Medication Overuse Headache)
  - Sleep apnea or worsened sleep quality
  - Decrease in sex hormones
    - (libido, energy levels, bone health)
  - Decrease in memory and ability to think clearly
  - Opioid induced bowel dysfunction (OIBD)
  - Increase risk of car accidents, falls
  - Increase risk depression
  - Possible effects on immune system
  - Opioid use disorder.

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## Opioids

Fact or Myth?

If my opioid isn't helping my pain anymore, it means I need a bigger dose.




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## Opioids: Tolerance

- The effect a dose of opioid produces diminishes overtime.
- Expected outcome with chronic daily use of opioids.
- Can occur over days. More commonly weeks to months, certainly years.




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## Opioids

### Opioid-Induced Hyperalgesia (OIH)

- Hyperalgesia = increased pain sensitivity
- Phenomenon when opioids cause pain to worsen and spread to other areas of the body over time
- ≠ tolerance
- In OIH, increasing the dose may cause pain to worsen or you may experience pain from non-painful experiences
- May be associated with agitation, delirium, difficulty to perform physical exercises




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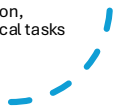
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## Opioid Induced Hyperalgesia

- Hyperalgesia=increased pain sensitivity
- Phenomena when opioids cause pain to worsen and spread to other areas of the body
- Not the same as tolerance
- Increasing the dose may cause pain to worsen or experience pain from non-painful sources
- May be associated with agitation, delirium, difficulty doing physical tasks




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**Fact or Myth?**

**Opioids**

If I stop my opioid suddenly, I will be in pain




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**Opioids: Physical Dependence**

- Natural occurring process of the body
- Suddenly stopping an opioid or reducing the dose significantly will produce withdrawal symptoms (e.g. nausea, diarrhea, chills, difficulty sleeping)
- Generally not life-threatening, but very uncomfortable
  - Within 1 day: physical symptoms may occur
  - Within 2 days: physical symptoms prominent
  - Within 3 days: symptoms likely reach maximum intensity

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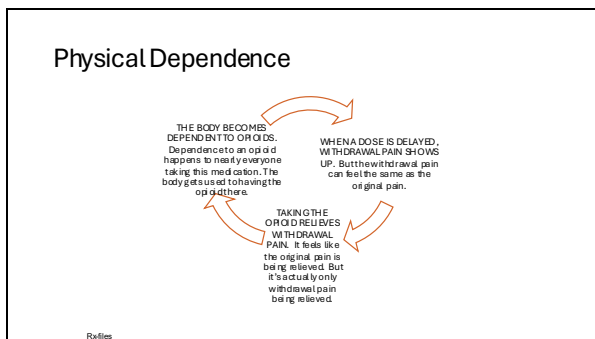
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## Opioids: Addiction

- Addiction is a word used to describe any behavior that is out of control in some way.
- Addiction includes presence of the 4 C's:
  - Craving
  - Loss of control of amount or frequency of use
  - Compulsion to use
  - Use despite consequences

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## Opioids: Addiction

- Risk of opioid addiction is 3-5.5% (in chronic pain)
- Combination of factors may cause addiction:
  - Genetic factors
  - How drugs interact with the brain
  - Environment
  - Mental health issues
  - Difficulty coping with thoughts and feelings

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## Opioid Use Disorder

- Problematic pattern of opioid use causing impairment or distress in the past year.
- Symptoms include:
  - Strong desire to use opioids
  - Difficulty decreasing opioid use
  - Increased tolerance, taking higher doses to achieve
  - Unable to work, go to school or take care of home
  - Unable to attend social events or activities

\*Treatment is available to help manage\*

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## Opioids: Serious Risks

- **Poisoning or Overdose**
  - Thinking and breathing slow down, and this may cause brain damage, coma and death
  - Taking more than prescribed greatly increases your risk
  - Stopping or missing doses then resuming at previous dose
  - Mixing with alcohol or other drugs that cause drowsiness (e.g. sleeping pills) greatly increases your risk

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## Naloxone (Narcan®)

- Antidote for opioid poisoning
- Reverses the effects of opioids by blocking the opioid receptors in the brain
- Safe to administer to anyone unless known allergy
- Administer outer thigh
- Works within 5 minutes
- Effects wear off within 30-60 minutes
- Store between 15-30 degrees, avoid light
- Expire within 2 years

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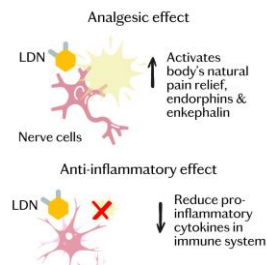
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## Low-dose Naltrexone




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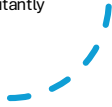
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## Low-dose Naltrexone

- Target dose range: 1.5mg-4.5mg/day (vs. 50mg/day for opioid use disorder)
- Off-label use, low quality evidence
- Minimal side effects, no withdrawal symptoms
- Side effects: vivid dreams, insomnia, N/V/D
- Cannot take opioids concomitantly




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## Medication Tips

- Start low and go slow
- One change at a time
- Always ask if unsure
- Never stop medications abruptly
- Realistic goals
- Weigh pain relief with acceptable side effects




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## More Medication Tips

- Over-the-counter and herbal products have drug interactions and side effects
- Medications are often used in combination because they work in different ways
- If one doesn't work or you have side effects, it may still be worth trying another medication
- Response is highly variable
- Medications = one tool in your toolbox




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## Tools that Change the Messages




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## Questions and Discussion

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Primary Care  
Alberta

Thank you

PrimaryCareAlberta.ca

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## Poll Questions

1. Medications can sometimes be helpful for reducing pain on a 10 point scale (0=no pain, 10=worst pain). According to research studies which of the following is considered a good response to starting a new medication:
- A) 10% reduction in pain on a 10-point scale (10/10→9/10)
  - B) A 30% reduction in pain on a 10-point scale (8/10→6/10)
  - C) A 50% reduction in pain on a 10-point scale (8/10→4/10)
  - D) A 75% reduction in pain on a 10-point scale (8/10→2/10)

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## Poll Questions

2. True or False: Psychology and physical rehabilitation services should only be considered after medications have not helped to manage pain
- a) True
  - b) False

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## Poll Questions

3. When creating a medication goal, it is important to set a time limit so you can decide if the medication has achieved what you wanted it to.
- a) 1 week
  - b) 2-4 weeks
  - c) 6 months
  - d) 1-2 months

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### Poll Questions

4. When creating a medication goal it is important to make sure your goal is measurable. Which of the following are important to measure:
- a) Pain on a 10-point scale
  - b) Your ability to function (do activities you need to do)
  - c) Your quality of life (do the activities you enjoy)
  - d) All of the above

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### Poll Questions

5. What medication class do duloxetine and amitriptyline belong to?
- a) Antiepileptic
  - b) Opioid
  - c) Antidepressant
  - d) Cannabinoid

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### Poll Questions

6. Sometimes stopping a medication quickly can result in symptoms of withdrawal (eg flu-like symptoms, difficulty sleeping, anxiety). Which of the following types of medications can cause symptoms of withdrawal if stopped quickly?
- a) Opioids
  - b) Antidepressant
  - c) Antiepileptic
  - d) All of the above

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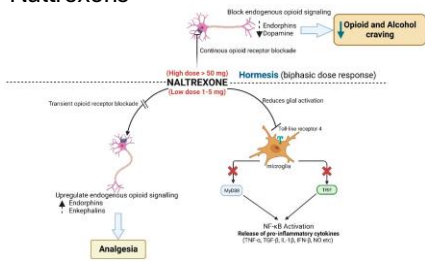
The diagram illustrates the mechanism of action of Naltrexone in pain management, showing its effects on endogenous opioid signaling and the resulting analgesic and anti-addictive outcomes.

**Top Pathway (Endogenous Opioid Signaling):**

- Endogenous opioids (Endorphins and Enkephalins) bind to the **Continuous opioid receptor blockade**.
- This leads to **Block endogenous opioid signaling**, which results in **Opioid and Alcohol craving**.

**Bottom Pathway (Naltrexone Mechanism):**

- NALTREXONE** (Dose: 1-16 mg) is administered.
- It causes **Transient opioid receptor blockade**, which **Upregulate endogenous opioid signaling** (increasing Endorphins and Enkephalins), leading to **Analgesia**.
- Simultaneously, it **Reduces GABA activation**, leading to **GABA receptor 4** activation.
- This activation leads to **Neuroinflammation** (involving **Microglia** and **Neurons**), which results in **Neuroinflammation** and **Release of pro-inflammatory cytokines** (TNF- $\alpha$ , IL-1 $\beta$ , IL-6, IL-8, IP-10, MCP-1).

[illegible]