

Understanding and Optimizing Pain Management

AVATAR

Same Day Joint Replacement Surgery



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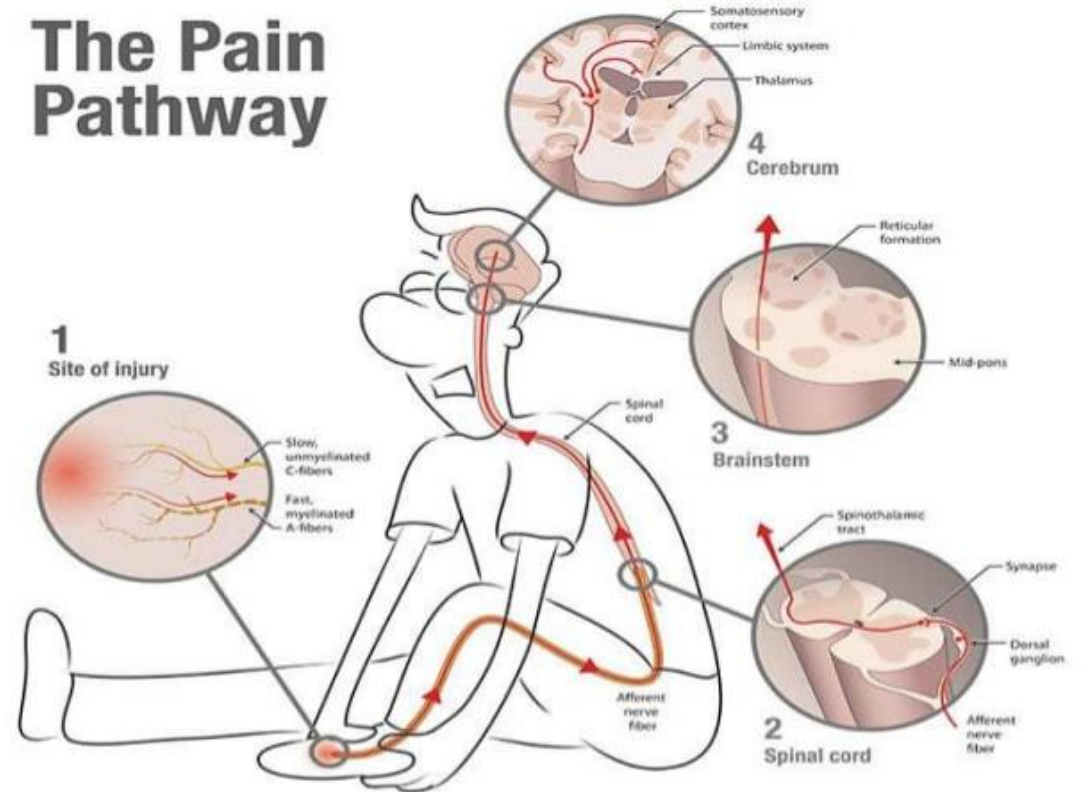
What is pain?

- Physical pain results from insult or injury to the body
- The perception of pain is a complex phenomenon that has physical, emotional and cultural components
- Each individual has a different threshold of they consider a tolerable or acceptable level of pain (pain tolerance)



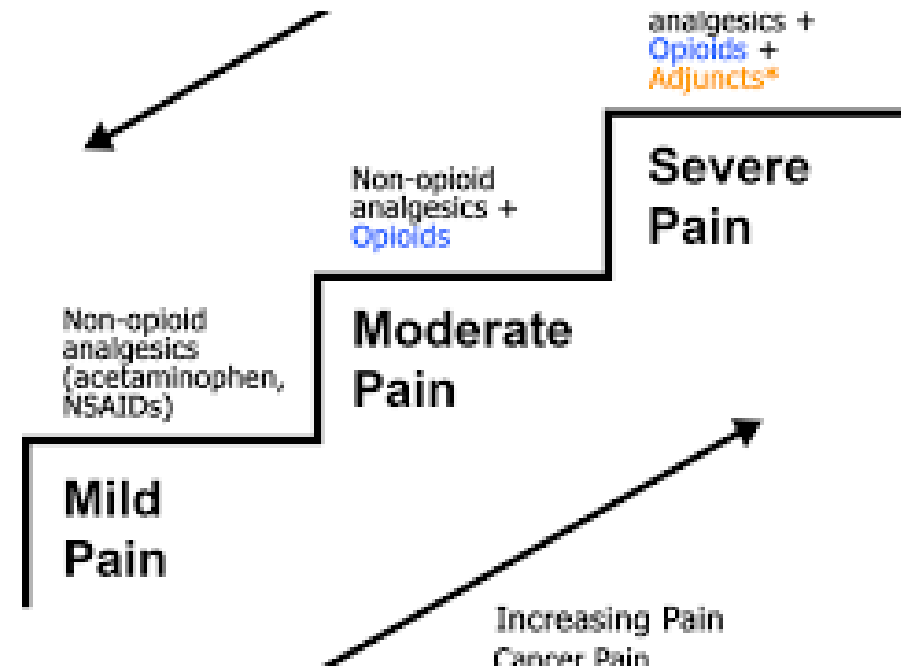
The Pain Pathway

- The sensation of pain travels from the site of injury, along a peripheral sensory nerve, to the spinal cord and to the brain.
- The perception of pain occurs in the brain



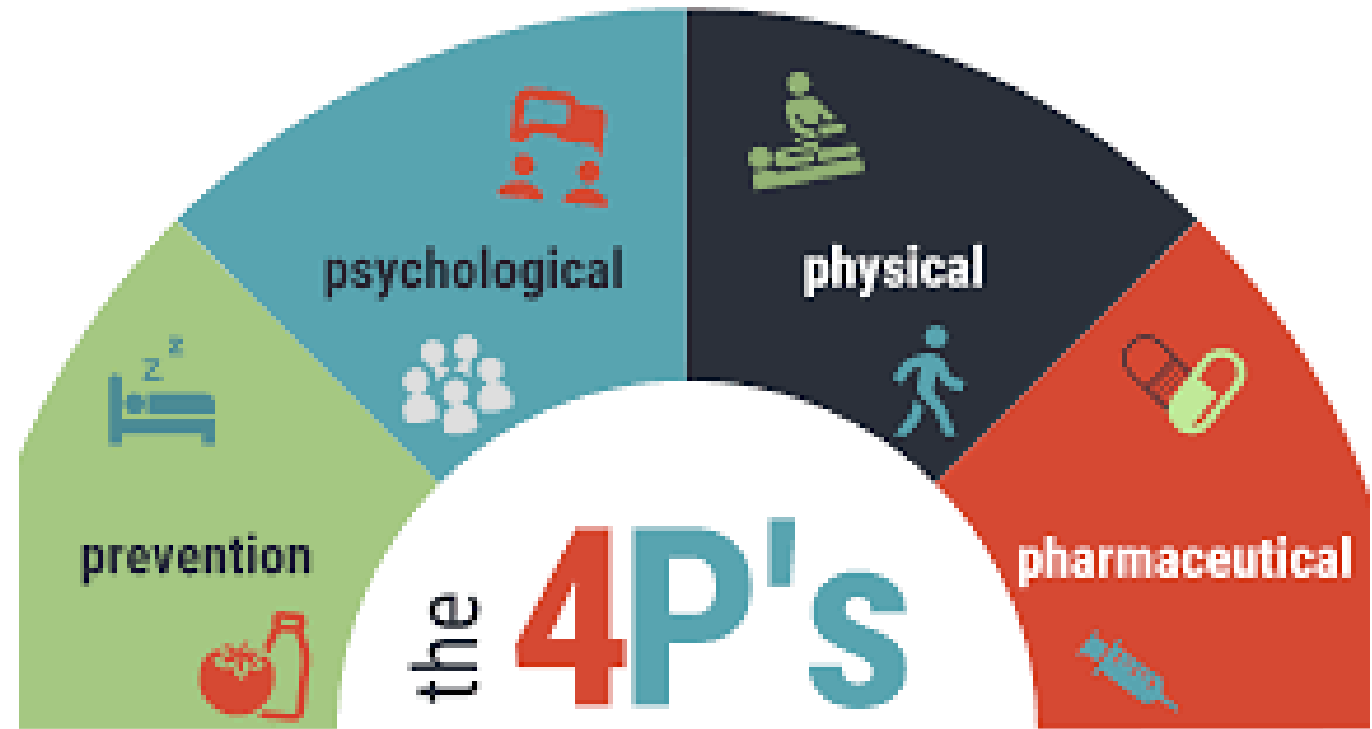
Surgery and Pain

- Joint replacement surgery will inevitably result in postoperative pain.
- Our goal is to keep the level of this pain within an acceptable range for our patients so they can actively participate in the recovery process
- This is referred to as **pain management**



Pain Management

- Patients who understand this process are more likely to be able to manage their pain more effectively
- WE CANNOT MAKE SURGERY PAIN-FREE



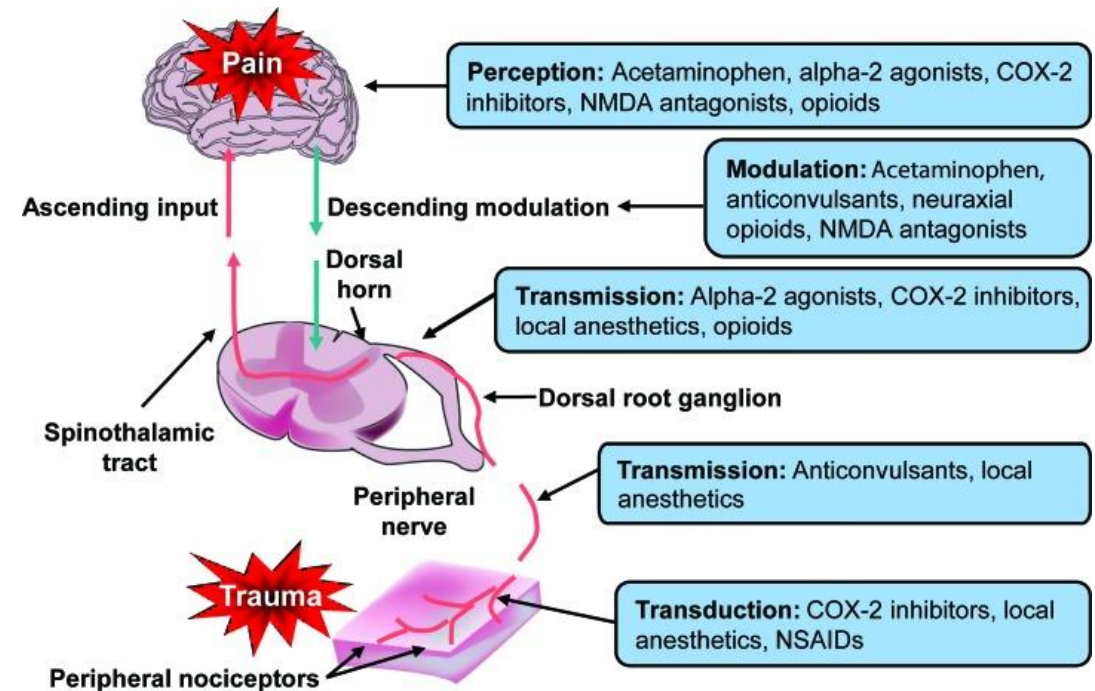
Pain Management Goals

Achieve	Minimize	Limit	Allow
Achieve a manageable level of discomfort	Minimize opiate medications	Limit side effects from pain medications	Allow regular physical therapy to achieve functional goals

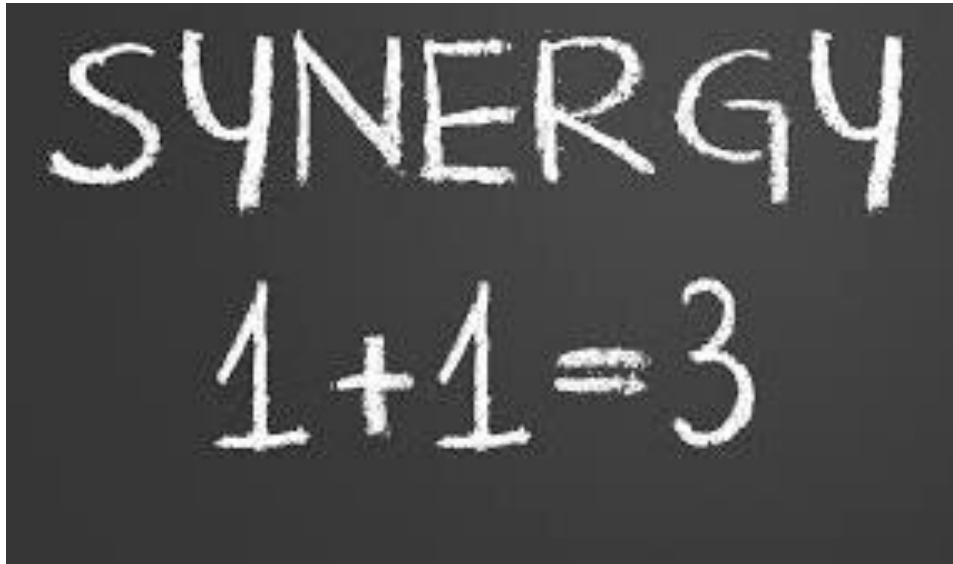


Multimodal Analgesia

- Pain can be addressed at multiple levels along this pathway using different strategies that work at each level.
- Rather than treating just one level, treating all levels can provide more thorough pain management.



Multimodal Analgesia



- Multimodal refers to the process of **using several different medications simultaneously** to address pain at different points in the perception pathway
- These medications act synergistically when used in combination
- While none of these medications may be effective alone, the **combined effect is greater than the sum of the individual medications**



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Tylenol (Acetaminophen)

- **Maximal Daily Dose** = 3000mg
- **Recommended Regimen** = 1000mg (2 pills) every 8 hours
 - Each extra strength pill = 500mg
 - Start 3 days prior to surgery and continue for 2-3 weeks after surgery
- **Side effects**: generally few
- **Contraindications**: Liver disease such as hepatitis or cirrhosis



Anti-inflammatory (NSAID)

- **Effect:** reduces postoperative inflammation
- **Type:** many brands on the market – this will be customized for each patient
 - Aleve 2 pills twice daily
 - Ibuprofen 3 pills 4 times daily
 - Meloxicam 1 pill twice daily
 - Celebrex 1 pill twice daily
- **Schedule:** start the evening of surgery as instructed and continue x 4-6 weeks
- **Side Effects:** GI upset
- **Contraindications:** history of stomach ulcers, blood thinner medications

Tramadol (Ultram)

- **Role:** centrally acting, non-narcotic pain medication
- **Recommended Dose:** 1-2 pills every 6 hours
- **Side Effects:** dizziness, headache, drowsiness, nausea and vomiting, constipation
 - **Note:** stopping Tramadol abruptly can cause withdrawal symptoms so we recommend a slow wean to prevent this
- **Contraindications:** patients on certain anti-depressants have a rare chance of serotonin syndrome. We recommend a trial of Tramadol preoperatively to assure patients will tolerate it.

Gabapentin (Neurontin)

- **Role:** works in combination with other medications to alter perception of pain
- **Schedule:** 1 pill every 8 hours
- **Side Effects:** dizziness, drowsiness
- **Contraindications:** Neurontin should be used carefully in elderly patients or potentially avoided as it may cause cognitive issues such as memory loss



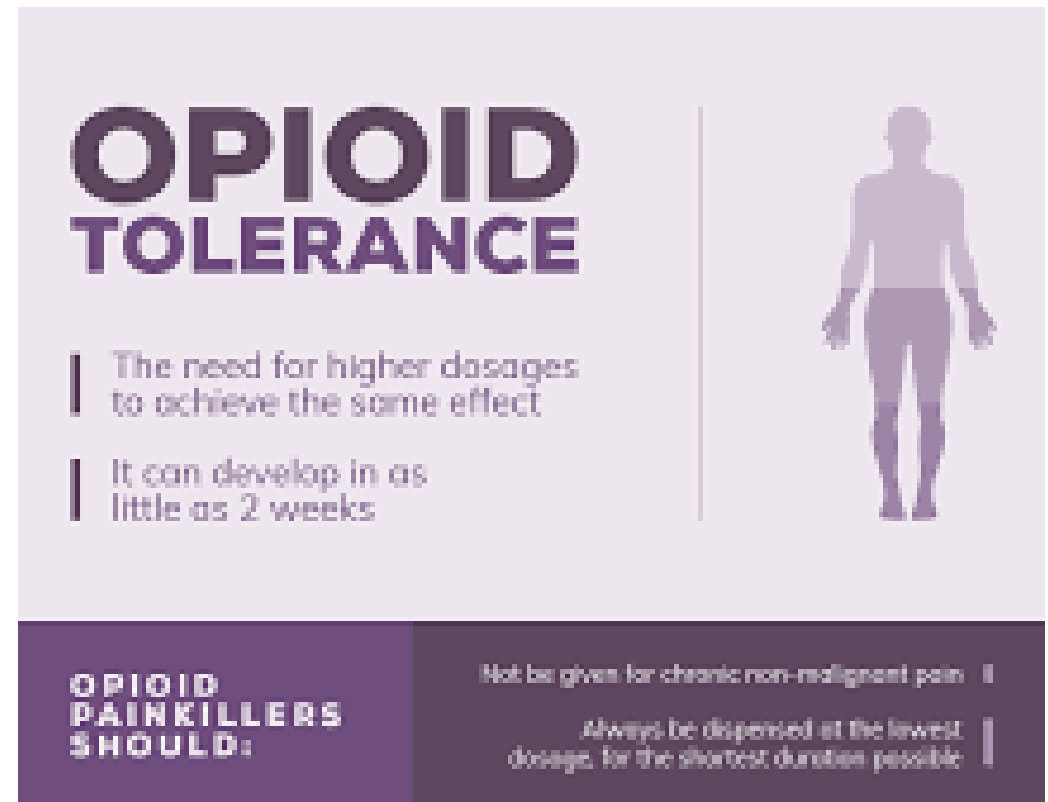
Oxycodone

- **Role:** opioid medications that specifically treats pain
- **Schedule:** 0.5 to 2 pills every 4-6 hours as needed
- **Side Effects:** nausea, vomiting, drowsiness, constipation
- **Notes:**
 - Prolonged use of opiate medications can result in dependence and addiction
 - The intent is to **use this only if necessary** after taking all other medications
 - The goal is to stop the use of opioids as soon after surgery as possible
 - Overdosing on opioids can cause respiratory depression and death



Opioid Tolerance

- Patients who use opioid medications for chronic pain have a difficult time with pain management after surgery because they are tolerant to the medications
- Research has shown this difficulty in controlling postoperative pain leads to worse outcomes after surgery



The infographic is titled "OPIOID TOLERANCE" in large, bold, purple letters. To the right of the title is a purple silhouette of a human figure. Below the title, there are two bullet points, each preceded by a vertical purple line: "The need for higher dosages to achieve the same effect" and "It can develop in as little as 2 weeks". At the bottom, there are two purple rectangular boxes. The left box contains the text "OPIOID PAINKILLERS SHOULD:" in white. The right box contains two lines of text in white: "Not be given for chronic non-malignant pain" and "Always be dispensed at the lowest dosage, for the shortest duration possible".

OPIOID TOLERANCE

- | The need for higher dosages to achieve the same effect
- | It can develop in as little as 2 weeks

OPIOID PAINKILLERS SHOULD:

- | Not be given for chronic non-malignant pain
- | Always be dispensed at the lowest dosage, for the shortest duration possible

Opioid Tolerance

- For this reason, we strongly recommend that patients wean off opioid medications well prior to surgery so they may have more effective pain management after surgery
- If you are treated by a chronic pain specialist, you should discuss a strategy for this well before the surgery



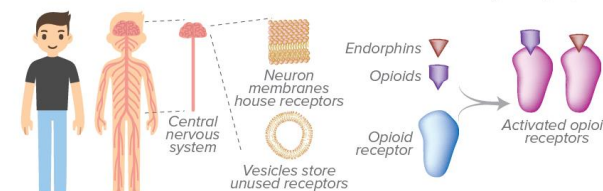
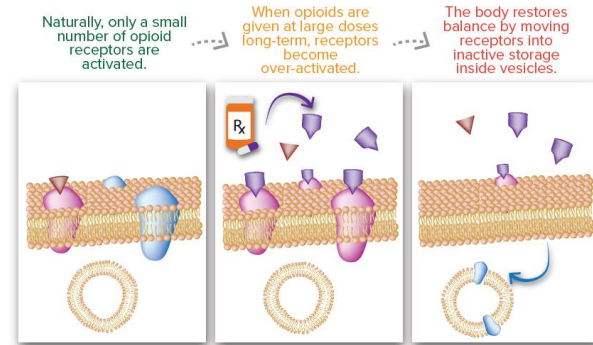
Opioid Withdrawal

- Long-term, regular use of opioids can cause withdrawal symptoms if the medication is abruptly stopped
- To avoid this, we urge patients to limit opioid consumption after surgery and focus on non-opioid medications using our multimodal regimen
- If patients have been on opioid therapy for a few weeks after surgery, we recommend a gradual taper rather than abruptly stopping the medications

Tolerance, dependence, & withdrawal

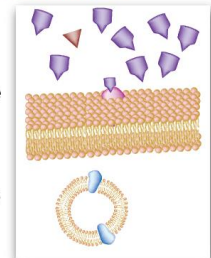
@DrMingKao

While each patient is on opioids for a different reason, every person on opioids is equally subject to its powerful effects. The most dangerous effects are "tolerance" & "withdrawal", which are not "addiction".



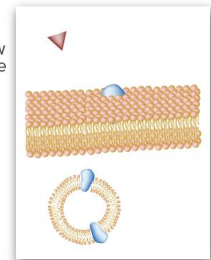
Opioid Tolerance & Opioid Dependence

With few receptors left, regardless of dose opioids, only a few receptors will be activated. The few receptors also require continuing opioids to maintain activity.



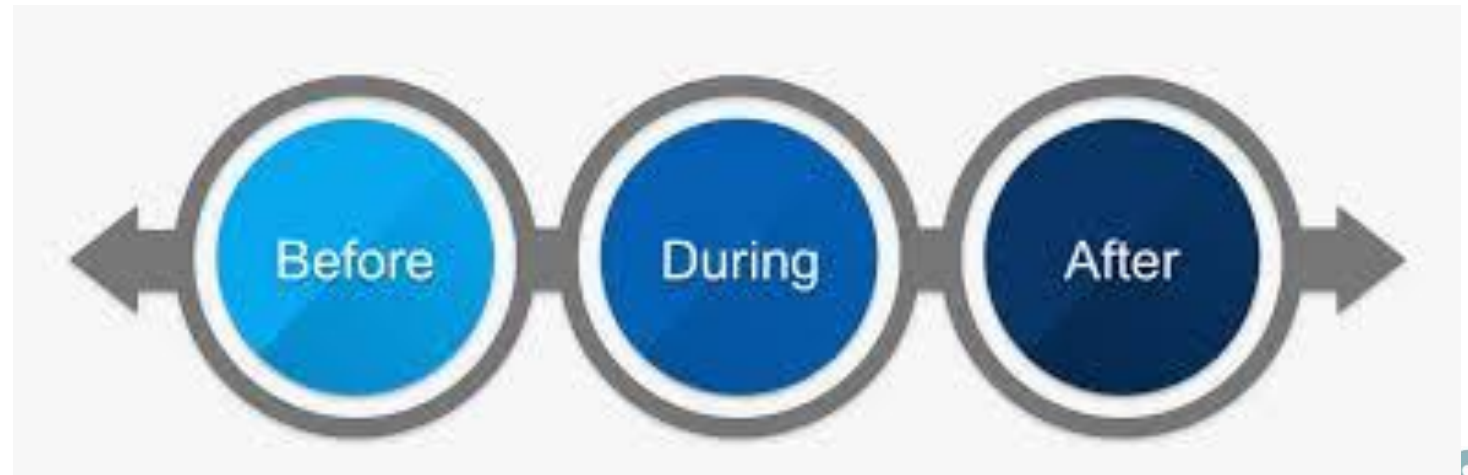
Opioid Withdrawal

If opioids are stopped suddenly, the few receptors that are left are also turned off. This causes opioid withdrawal symptoms.



Three Phases of Pain Management

- Pre-operative: before surgery
- Intra-operative: during surgery
- Post-operative: after surgery

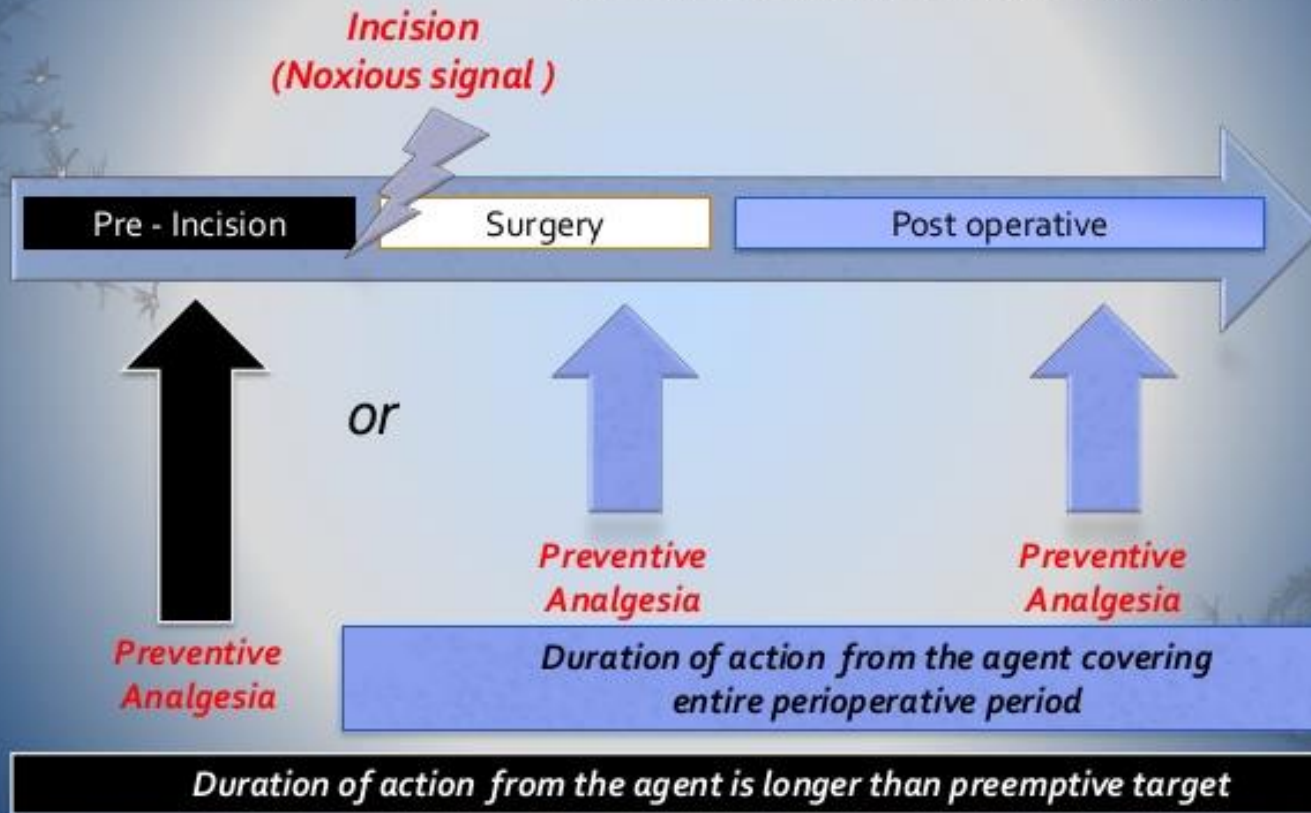


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Preventive Analgesia

Broader definition of preemptive



Pre-emptive Analgesia

- Introduction of an analgesia regimen before the surgery with the goal of preventing sensitization of the central nervous system to subsequent stimuli that can amplify pain
- ***Starts before surgery***
- Involves both regional nerve blockades and oral medications
- Aim is to reduce acute pain that can subsequently lead to chronic pain

Pre-operative Strategies

- Research has shown that taking certain medications *before* surgery can lead to less pain after surgery
- We advise all patients to take Tylenol 1000 mg 3x/day starting 3 days before surgery
- This helps establish a blood level of the medication in the brain which makes it more effective when continued after surgery
- Do not take this on the morning of surgery as it will be administered just prior to your surgery



Preoperative Strategies

- Just prior to surgery we give additional medications provided there are no contra-indications.
- These include
 - Tylenol 1000mg
 - Celebrex 200-400mg
 - Decadron 10 mg
 - Gabapentin 100-300mg
- This combination of medications has proven effective in reducing postoperative pain



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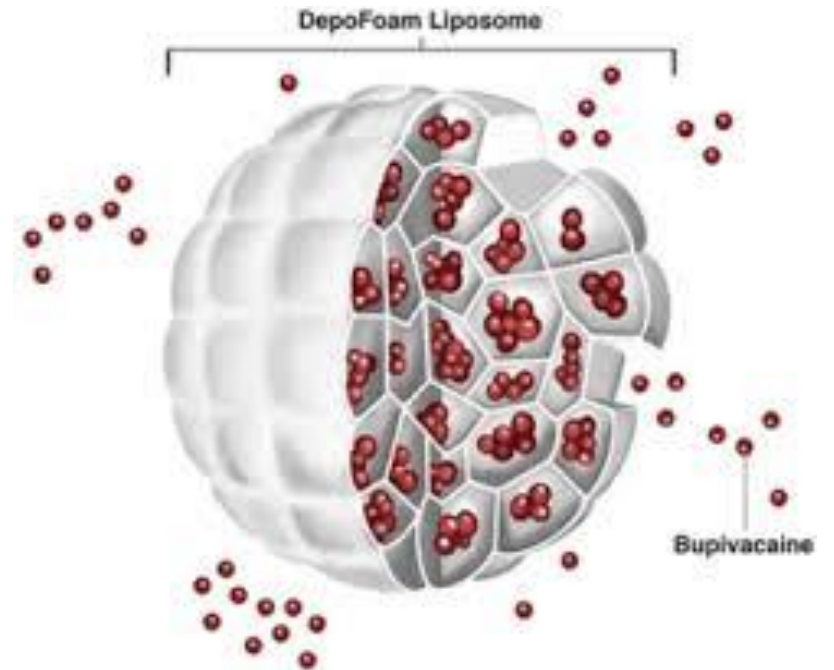
Regional Nerve Blocks

- Sensory nerves for shoulders and knees can be anesthetized with local anesthetic before surgery
 - Knee = adductor canal block
 - Shoulder = interscalene block
- These nerve blocks may provide 12-24 hours of pain relief after surgery
- Nerve blocks are not possible for hip replacement surgery but usually not necessary



Intra-operative Strategies

- Long-acting local anesthetic injection into the tissues around the joint
- Exparel = local anesthetic wrapped in fat globules
- This leads to a delayed release allowing sustained pain relief over several days following surgery



Postoperative Strategies

- Multimodal Analgesia
- Taking medications on a fixed schedule rather than waiting for the pain to occur
 - This keeps a steadier blood level of medications
 - Helps keep one ahead of the pain curve

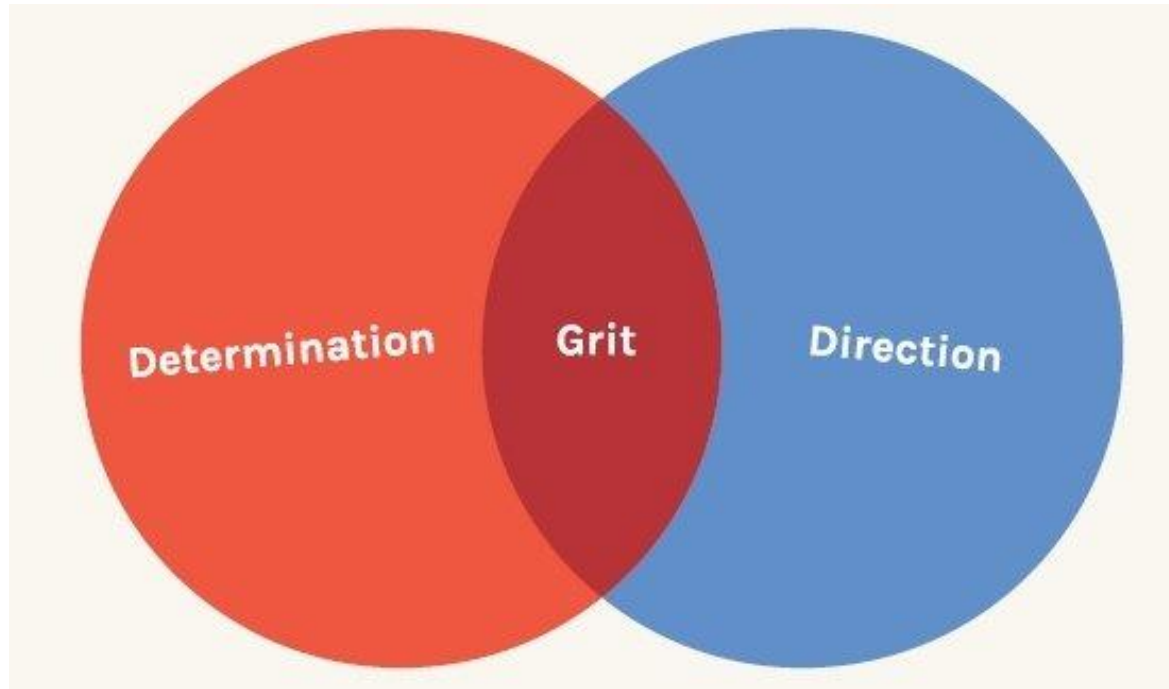


Other Postoperative Strategies

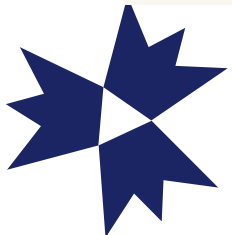
- Cryotherapy: ice packs several times day for 20 minutes at a time
- Topical treatments: Voltaren gel (OTC) can be used 4x/day to provide relief



The Role of Grit and Determination



- Motivation, grit and determination provide coping mechanisms to deal with discomfort
- People who focus on pain tend to experience worse pain
- Those who distract themselves with other activities and positive thoughts have less pain



Focus on the end result not the day to day

- Many things can affect pain
- Like blood pressure it may fluctuate day to day and week to week
- The key is to focus on the end result and the ultimate goal
- Do not obsess about short-term fluctuations



Opioid Sparing Surgery

- With these strategies and proper preparation for surgery (both mental and physical) many patients can limit the amount of opiate medications they require after surgery
- This reduces negative side effects and problems with tolerance and withdrawal



The Role and Fear and Anxiety

- Fear and anxiety about pain can actually increase patient's perception of pain
- Apprehension about this can sometimes cause more emotional strife and than apprehension about the surgery itself
- Realize that pain is manageable and develop a strategy in advance that puts you in control

