HISTORY OF OPIOIDS AND ADDICTION AND NON-OPIOID PAIN RELIEF

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CASES

A 40-year-old woman with a severe headache and non focal examination.

A 30-year-old man with sudden onset left flank pain who looks uncomfortable and otherwise normal examination.

NON-OPIOID PAIN MANAGEMENT "OPIOID FREE ED AND UC"

Renal colic acetaminophen, indomethacin, ketorolac, lidocaine, rectal indomethacin	Back pain acetaminophen, diazepam, ibuprofen, lidocaine patch, methocarbamol, trigger-point myofascial injections	Headache diphenhydramine, ketorolac, metoclopramide, prochlorperazine, sumatriptan, CGRP antagonist
Musculoskeletal pain acetaminophen, ibuprofen, lidocaine patch, naproxen, nitrous oxide, regional nerve blocks	Neuropathic pain clonidine, gabapentin, ibuprofen, nortriptyline, pregabalin	Burns acetaminophen, bupivacaine, ibuprofen, naproxen, nitrous oxide
Sickle cell crisis hydroxyurea, ibuprofen, ketamine, nitrous oxide	Chronic pain gabapentin, ibuprofen, lidocaine patch, prednisone, trigger-point injections	Pediatric pain acetaminophen, ibuprofen, ketamine, nitrous oxide

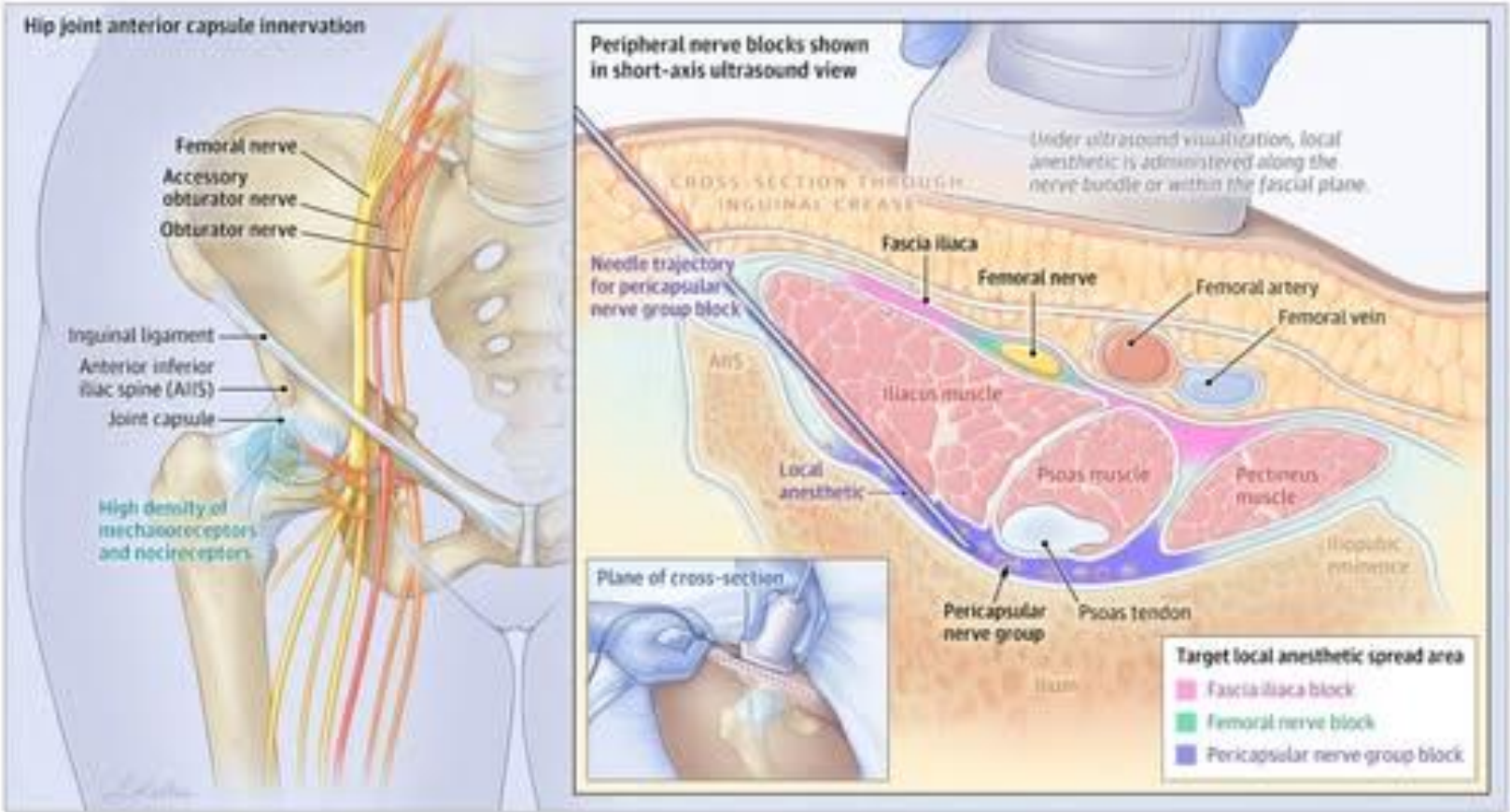
KETAMINE

Dose	Effect
0.1 – 0.3 mg/kg	**Analgesia**
0.2 – 0.5 mg/kg	Recreational
0.4 – 0.8 mg/kg	Partially dissociated
1-2 mg/kg	**Fully dissociated**

JAMA

JAMA Insights

Peripheral Nerve Blocks for Hip Fractures



HISTORICAL OPIUM

First used Medicinally in the Stone Age

Sumerian, Assyrian, Egyptian, Indian, Minoan, Greek, Roman, Persian, & Arab Empires all report medicinal use.

Fifteenth Century China first reported recreational use

Opium Wars in 1839 & 1858

International Opium Commission of 1914, followed by the International Narcotics Control Board

DEA


ROBERT THOM

HISTORICAL OPIATES

1804 Friedrich Serturner isolated Morphine

Morphine first marketed by Heinrich Merck

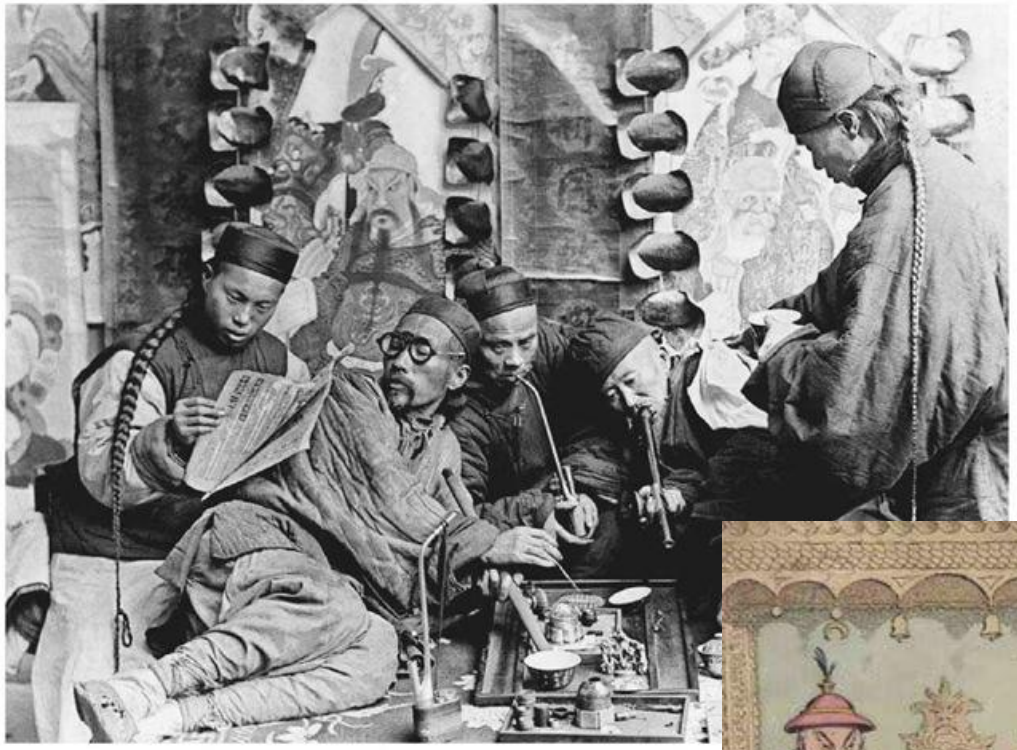
Codeine isolated in 1832

Heroin synthesized in 1874 by the Bayer Pharmaceutical Company

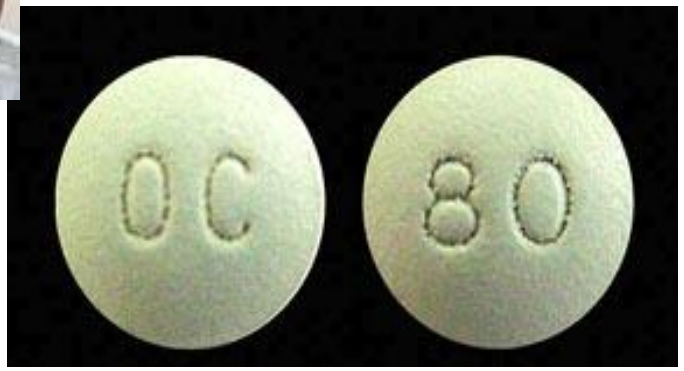

La tos desaparece
en seguida, lo más tarde al cabo de media hora; la ronca se aclara, el catarro se desvanece en cuanto se toma el JARABE BAYER de HEROINA. Contra la bronquitis, faringitis, laringitis, ronca, ansiosa, tuberculosis miliar, este sorprendente medicamento produce un efecto seguro, sin acarrear los fenómenos secundarios de los preparados medicinales. El JARABE BAYER de HEROINA ejerce una acción calmante sobre los nervios excitados de las mucosas laríngeas. La respiración se regula, la irritación producida por la tos, desaparece, y á los fuertes accesos de tos, la ronca y el insomnio nervioso habían perturbado el descanso, con el JARABE BAYER de HEROINA se consigue un sueño reparador.
BAYER
Jarabe Bayer de Heroína


The Brief History of
HEROIN
1800s
OPIUM, a pain relieving and euphoric drug derived from poppy seeds, was brought over to the United States from China and Europe. By the 18th and 19th centuries, opium was frequently found in American homes.
MID 1850s
Gaining popularity as a painkiller, and a solution to opium addiction, morphine was commercially produced during this time along with the invention of the HYPODERMIC NEEDLES.
1874
British chemist C.R. Alder Wright discovered a new COMPOUND of morphine that offered even more powerful pain relief and was thought to be non-habit forming.
OPIUM POPPY
1898
Bayer began marketing the new drug under the name HEROIN. Users noted a heroic feeling they got while testing the drug, which lent to its brand name. Campaigns promised its non-addictive nature while the drug was often used as a cough suppressant for adults and children.
FOR COUGHS, COLDS & CONGESTIONS
20TH CENTURY
Decades after the war, about four million servicemen and women would be stationed in the area of SOUTHEAST ASIA where supplier routes for heroin and its manufacturing would come to meet. This would be one of the influences that led to a surge in American addiction rates.
1810
While alternatives for pain relief were sought, a new compound was isolated from opium by a pharmacist's assistant Friedrich Wilhelm Serturner. He then named the yellowish-white crystalline compound MORPHINE, after the Greek god of dreams, Morpheus.
CIVIL WAR
War-related injuries caused morphine use to skyrocket. Tens of thousands of soldiers became addicted to the drug. Increasingly, morphine was being injected with the hypodermic needle thanks to the creation of "MORPHINE KITS."
RATION STAMP NO. 7
EARLY 1900s
The number of American addicts rose until World War II when supplies were RESTRICTED due to increased security.
HOW IT'S MADE
It all starts with the poppy, dating back to 3400 B.C. where the earliest accounts of opium cultivation are recorded in Southeast Asia. Raw opium is collected from the flower pod, a dark brown, sticky substance. After a long process to extract the morphine from opium, by way of boiling water, adjusted pH levels, filtering and the addition of corrosive chemicals like ammonium, the morphine is ready to be converted to heroin. Through another process of harmful chemical mixtures and filtration, the brown crude heroin can then be purified into its white powder form.
The above content is for educational purposes only.
If you or someone you know is struggling with a heroin addiction, we're here to help.
therecoveryvillage
an advanced approach to patient care
therecoveryvillage.com

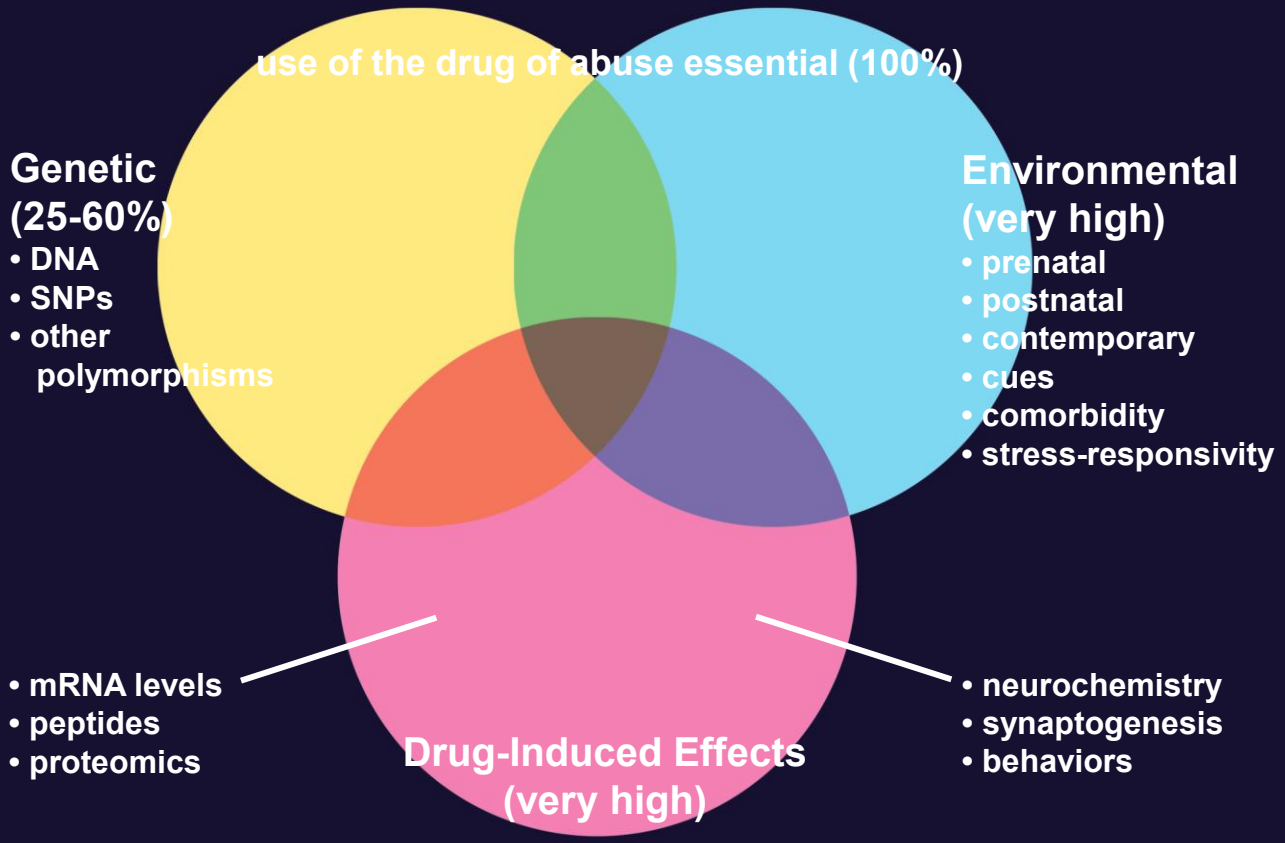

En la irritación
producida por la tos, bronquitis
y otros catarros de los órganos respiratorios, acúdase al JARABE BAYER de HEROINA, excelente é indefectible hasta para las criaturas, administrado según la prescripción.
El JARABE BAYER de HEROINA apaga la tos, alivia los dolores, permite un sueño reparador, aun cuando hubiera sido perturbado por los accesos de tos, insomnio nervioso, ronca, etc.
Con él se conseguirá abreviación de la enfermedad.
BAYER
Jarabe Bayer de Heroína



OPIATE ABUSE



Factors Contributing to Vulnerability to Develop a Specific Addiction



Kreek et al., 2000; 2005

TREATMENT OPTIONS

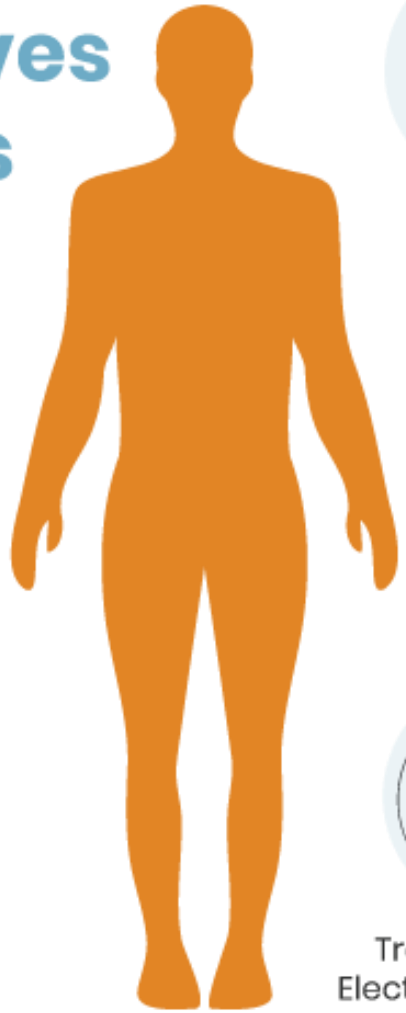
- **Best treatment option is <u>PREVENTION!</u>**

- **Counseling & Behavioral Therapies**
  - Individual and group counseling
  - Inpatient and residential treatment
  - Intensive outpatient treatment
  - Case or care management
  - Recovery support services
  - 12-step fellowship
  - Peer supports

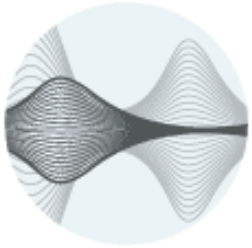
- **Medication Assisted Treatment**
  - Buprenorphine
  - Methadone
  - Naltrexone

"Treatment for Substance Abuse Disorders." *SAMHSA*. N.p., 8 Sept. 2016. Web. 26 Jan. 2017. Available at: https://www.samhsa.gov/treatment/substance-use-disorders

Alternatives to Opioids

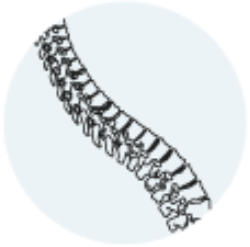


Acupuncture



Radiofrequency Ablation

Yoga



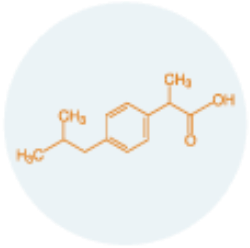
Spinal Cord Stimulation

Nerve Blocks

Exercise

Physical Therapy

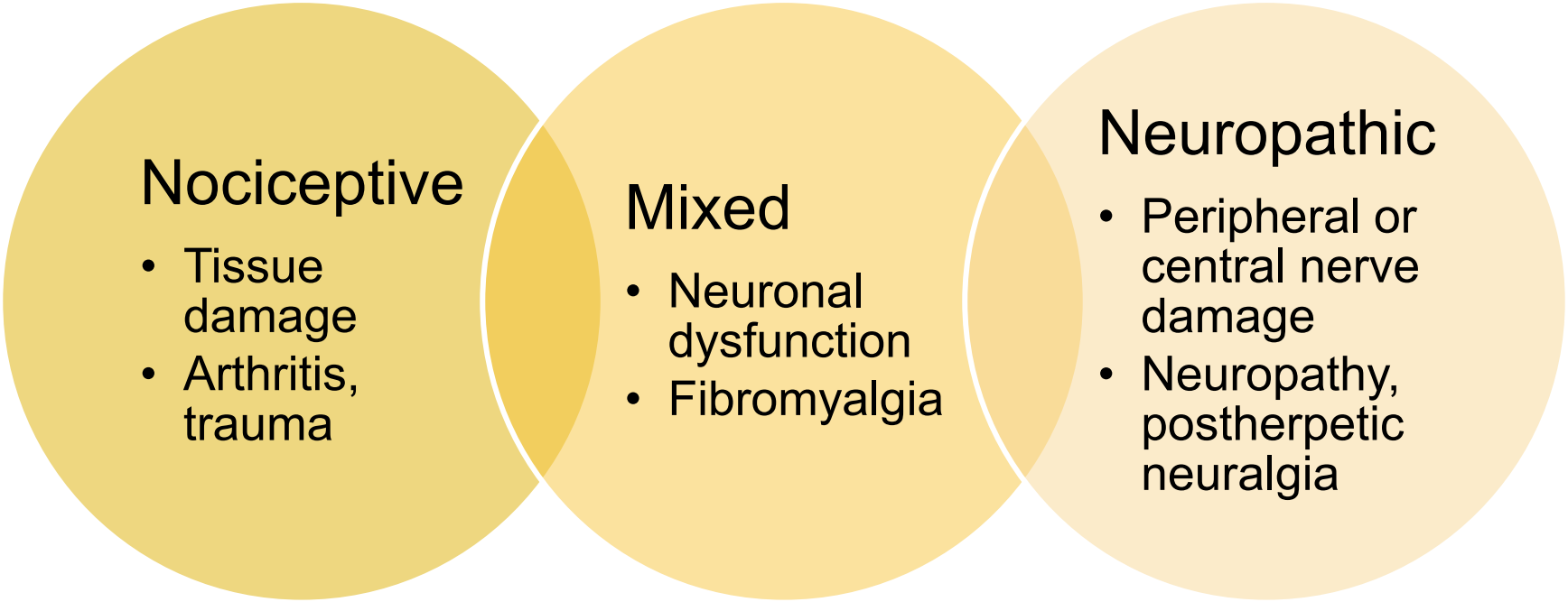
Transcutaneous Electrical Stimulation



Non-Opioid Medications

Therapeutic Massage

TYPES OF PAIN



1. Nicholson B. Differential diagnosis: Nociceptive and neuropathic pain. *AJMC*. 2006:256-262.

TREATMENT MODALITIES

- Pharmacological
- Physical
- Behavioral
- Interventional

1. Dowell D, Haegerich TM, Chou R. CDC Guideline for Prescribing Opioids for Chronic Pain — United States, 2016. MMWR Recomm Rep 2016;65(No. RR-1):1–49.

Neuropathic Pain

1. PO Ibuprofen-400-800 mg
2. PO Gabapentin-100-300 mg
3. PO Prednisone-25-50 mg
4. PO Clonidine 0.1-0.2 mg
5. IV Ketamine-0.3 mg/kg over 10 min, + IV drip at 0.15 mg/kg /hr
6. IV Lidocaine -1.5.-2.5 mg/kg /hr drip x2-4 h (2% cardiac Lidocaine)
7. IV Dexemedetomidine-0.2-0.3 mcg/kg/hr drip
8. IV Clonidine-0.3-2 mcg/kg/hr drip

Post-Operative Pain

1. IV Acetaminophen-1g over 10-15 min
2. IV Ketamine-0.3 mg/kg over 10 min, + IV drip at 0.15 mg/kg /hr
3. IV Dexemedetomidine-0.2-0.7 mcg/kg/hr drip

Dental Pain

1. Dental Blocks
2. PO Ibuprofen -400-800 mg
3. PO Acetaminophen-500-1000mg

Burns

1. PO Ibuprofen-400-800 mg
2. PO Acetaminophen-500-1000mg
3. PO Naproxen-375 mg
4. IV Acetaminophen-1g over 15 min
5. IV Ketamine-0.3 mg/kg over 10 min, + IV drip at 0.15 mg/kg /hr
6. IV Lidocaine -1.5.-2.5 mg/kg /hr drip x2-4 h (2% cardiac Lidocaine)
7. IV Dexemedetomidine-0.2-0.7 mcg/kg/hr drip
8. IV Clonidine-0.3-2 mcg/kg/hr drip

Sickle Cell Painful Crisis

1. PO Ibuprofen-800mg
2. PO Hydroxyurea-100mg
3. **IN** Ketamine 1mg/kg (no more than 1ml per nostril)
4. IV Ketamine-0.3 mg/kg over 10 min, + IV drip at 0.15 mg/kg /hr
5. IV Lidocaine -1.5.-2.5 mg/kg /hr drip x2-4 h (2% Cardiac Lidocaine)
6. IV Dexemedetomidine-0.2-0.3 mcg/kg/hr drip

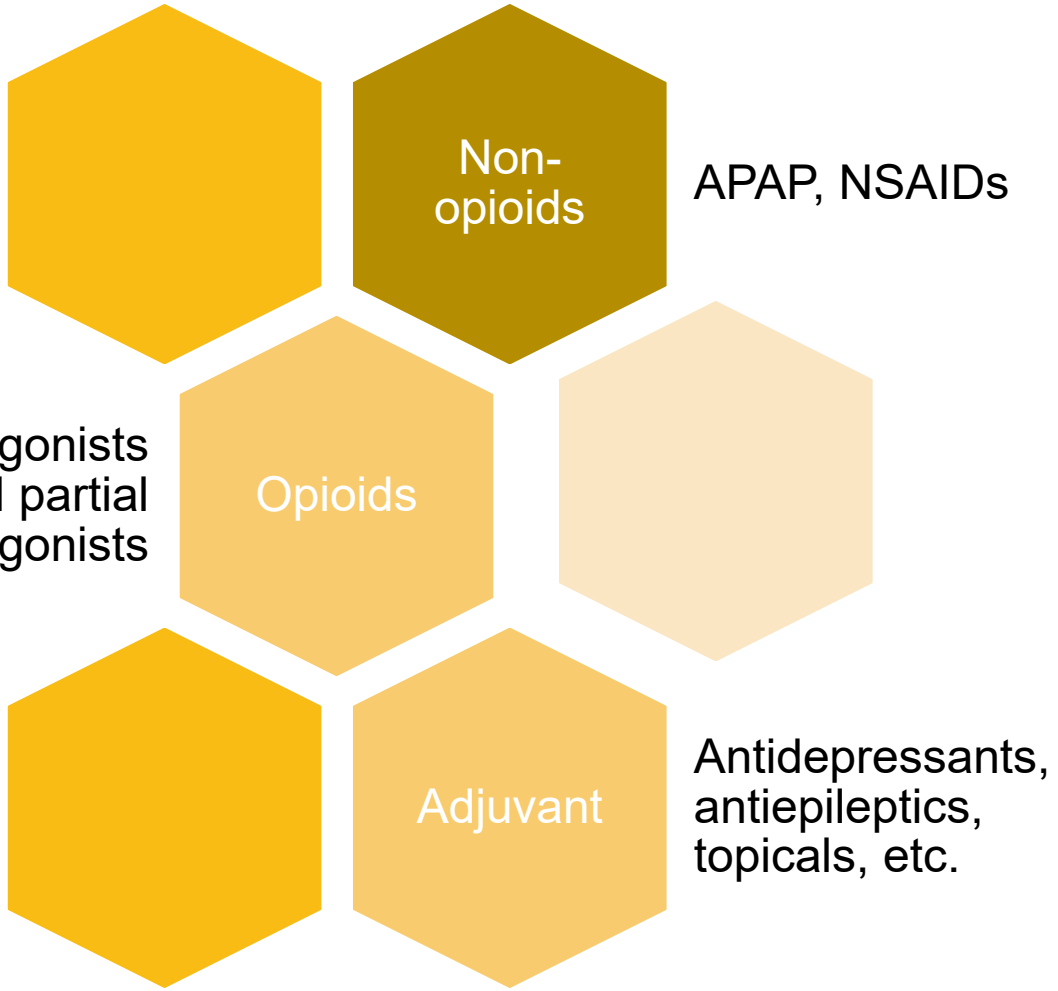
Alternatives to Opiates (ALTO®)

www.emra.org

Table 1. Non-Opioid Suggestions for Pain Management in Select Conditions

Condition	Analgesia
Acute Headache	Ibuprofen/Ketorolac, Acetaminophen, Reglan, Trigger point injection, Magnesium, Valproic Acid, Dexamethasone, Haldol
Renal Colic	Ketorolac, Acetaminophen, Cardiac lidocaine
Musculoskeletal Pain (sprains, strains or opiate naive low back pain)	Ibuprofen/Ketorolac, Acetaminophen, Cyclobenzaprine, Lidocaine patch, Gabapentin, Trigger point injection
Acute on Chronic Radicular Low Back Pain (opiate tolerant)	Ibuprofen/Ketorolac, Acetaminophen, Cyclobenzaprine, Lidocaine patch, Gabapentin, Trigger point injection, Dexamethasone, Ketamine
Extremity Fracture or Joint Dislocation	Acetaminophen, Ketamine Intranasal, Nitrous Oxide, Ultrasound guided regional anesthesia

PHARMACOLOGICAL OPTIONS



TOPICALS

Lidocaine: ointment, cream, gel, patch

Potentially effective for neuropathic pain

5% patch: 3 patches for up to 12 hours during a 24 hour period

4% patch is available OTC

Doxepin

Treatment of pruritis, minimal effect on pain

Capsaicin

Repeated application is thought to deplete substance P

Adverse effects: burning, stinging, erythema

Avoid other forms of heat (sun, shower) and wash hands thoroughly

NSAID

Pros

Analgesic, anti-inflammatory, antipyretic

Benefit in the treatment of different types of pain

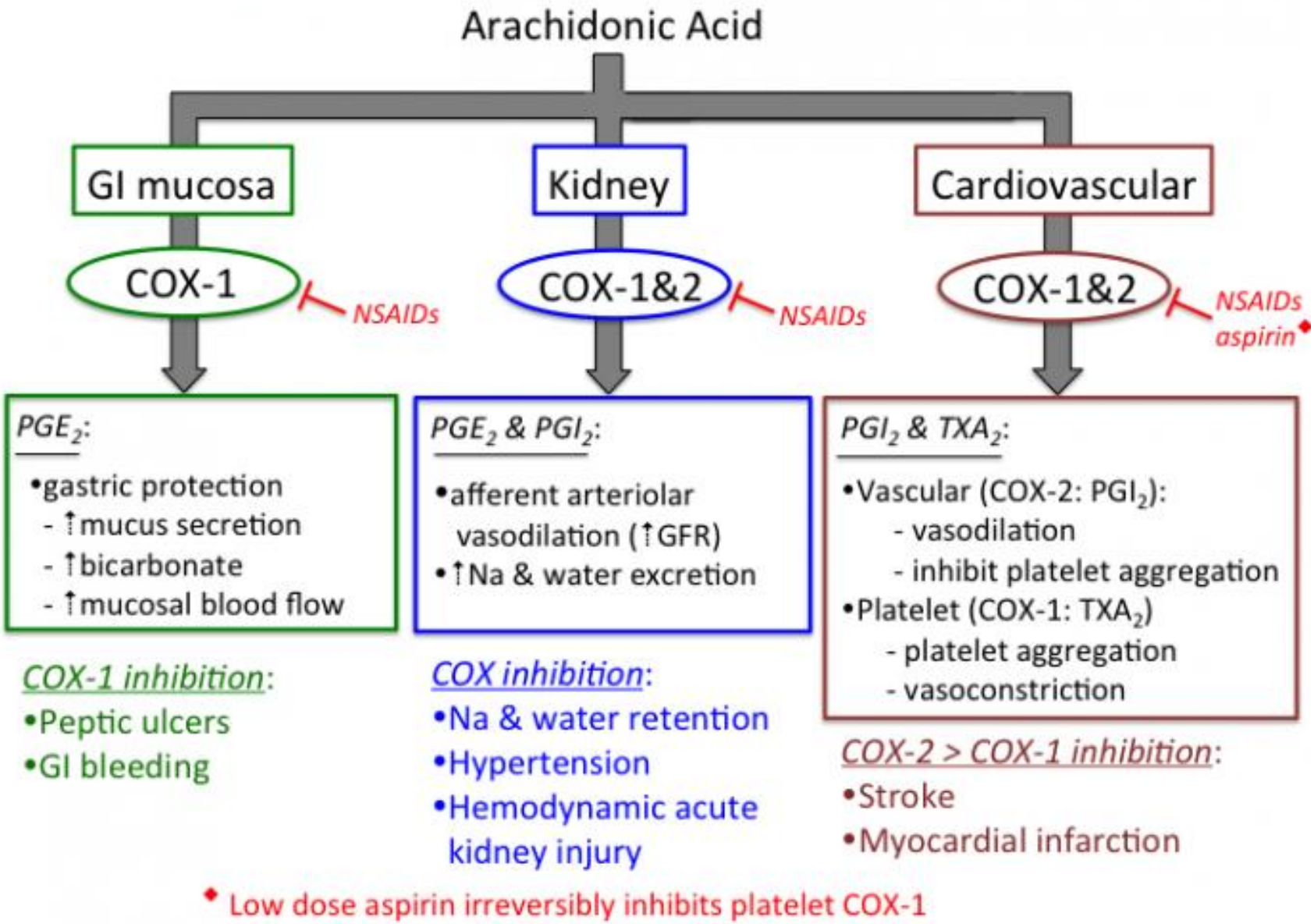
Cons

Nephrotoxic, hepatotoxic

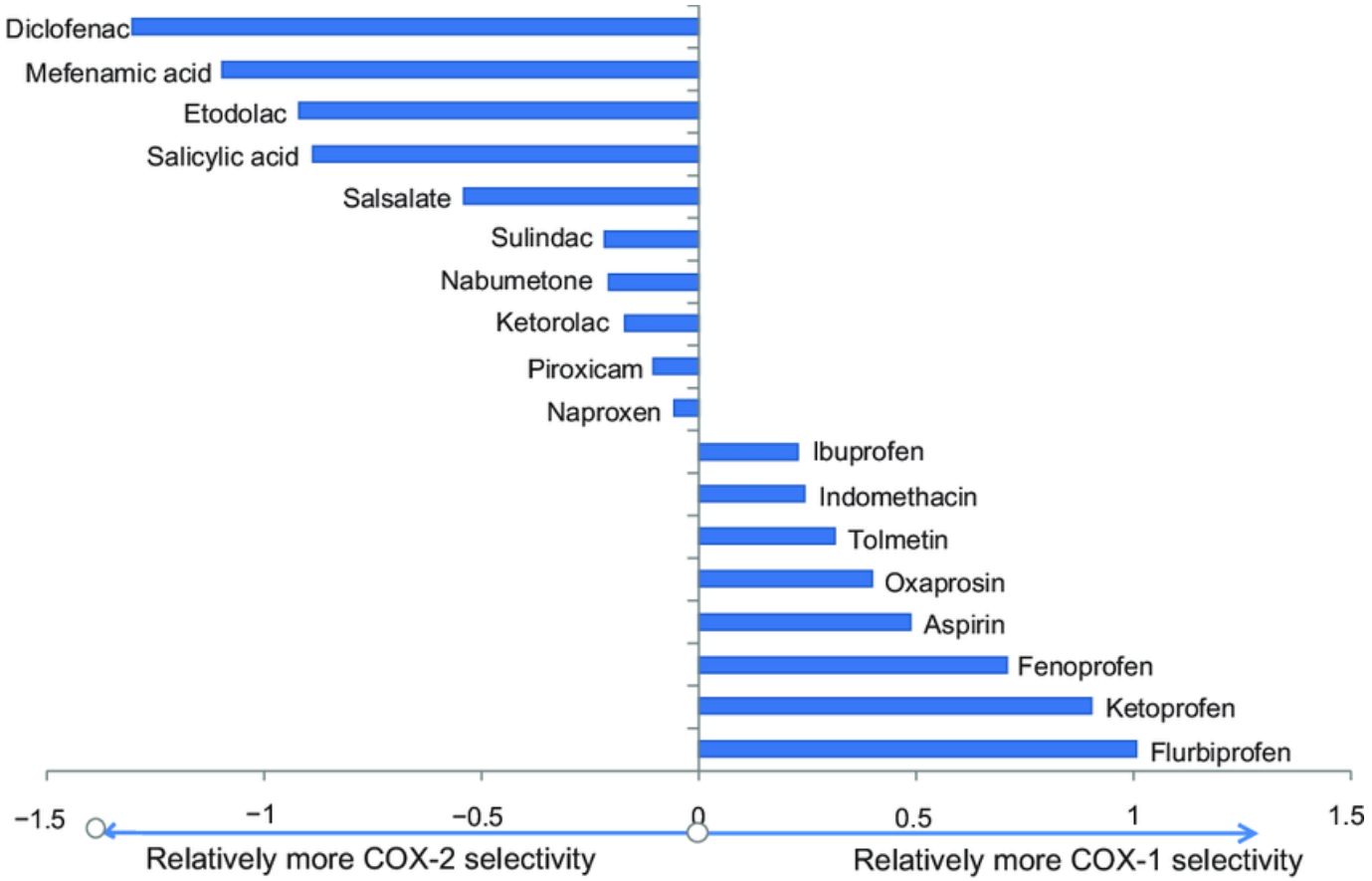
Increase in blood pressure

Potential to cause GI ulceration/bleeding and CV events

NSAID Side Effects:



◆ Low dose aspirin irreversibly inhibits platelet COX-1


Diclofenac
Mefenamic acid
Etodolac
Salicylic acid
Salsalate
Sulindac
Nabumetone
Ketorolac
Piroxicam
Naproxen
Ibuprofen
Indomethacin
Tolmetin
Oxaprosin
Aspirin
Fenoprofen
Ketoprofen
Flurbiprofen
−1.5
−1
−0.5
0
0.5
1
1.5
Relatively more COX-2 selectivity
Relatively more COX-1 selectivity

NSAID: RISK

Risk factors for GI event

- Male gender
- Age ≥60
- Hx of peptic ulcer
- Dyspepsia
- CVD
- Use of antiplatelets, anticoagulants, steroids, high-dose NSAID

Risk factors for CV event

- Hx of CV event
- DM
- HTN
- HLD
- Obesity

1. Clinical Resource, Managing NSAID Risks, Pharmacist's Letter/Prescriber's Letter. July 2018.

NSAID: GI RISK

Low

- Celecoxib, low-dose ibuprofen
- Meloxicam, nabumetone, etodolac

Moderate

- Naproxen, high-dose ibuprofen

High

- Ketorolac, piroxicam

1. Clinical Resource, Managing NSAID Risks, Pharmacist's Letter/Prescriber's Letter. July 2018.

NSAID: MANAGING GI RISK

Misoprostol

- Recommended dose: 200 mg four times daily
- Reduces risk of gastroduodenal complications by 40%

PPI

- Protective against NSAID-induced ulcer bleeding

H2RA

- Standard dose: reduce risk of NSAID-associated duodenal ulcers
- High-dose: reduce risk of duodenal and gastric ulcer

1. Clinical Resource, Managing NSAID Risks, Pharmacist's Letter/Prescriber's Letter. July 2018.

NSAID: MANAGING RISK

Patient Factors	Low GI Risk	Moderate GI Risk	High GI Risk
Low CV Risk	• Celecoxib or other low-GI risk NSAID	• Celecoxib alone • NSAID + PPI, misoprostol, double-dose H2RA	• Avoid NSAID if possible • Celecoxib + PPI or misoprostol
High CV Risk	• Naproxen or low-dose celecoxib • If on aspirin, naproxen + gastroprotection	• Naproxen + PPI, misoprostol, double-dose H2RA • Low-dose celecoxib	• Avoid NSAID

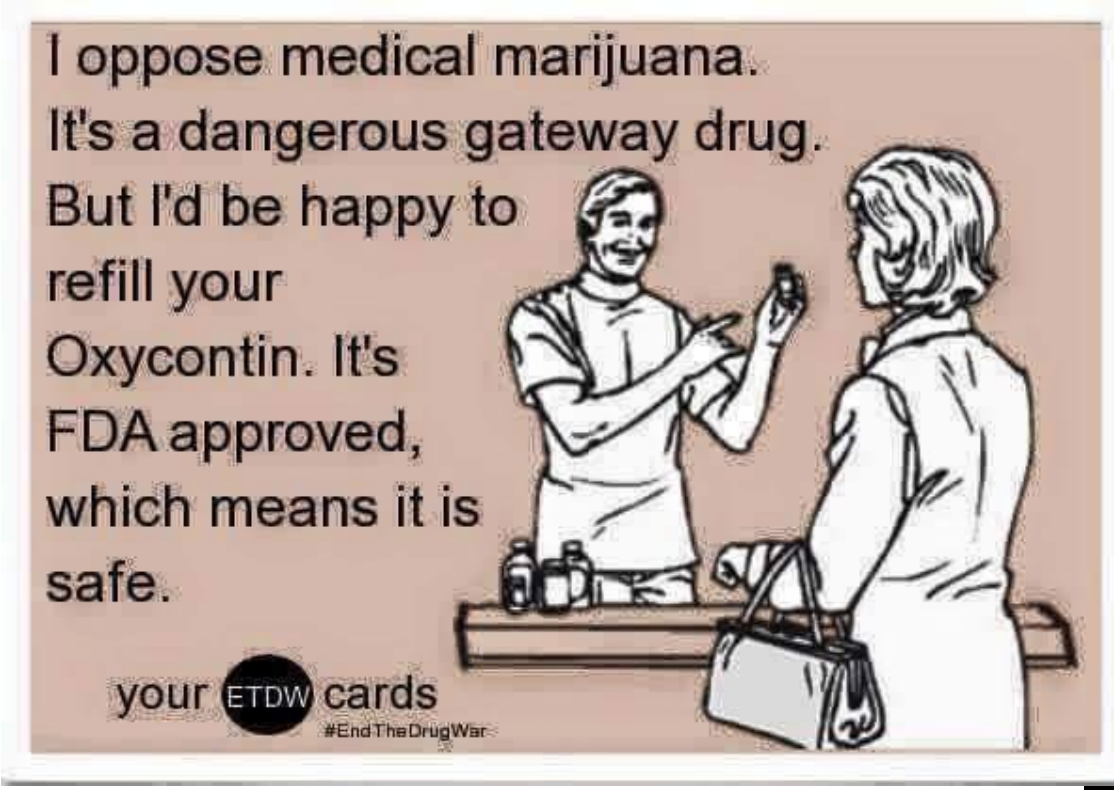
1. Clinical Resource, Managing NSAID Risks, Pharmacist's Letter/Prescriber's Letter. July 2018.

CANNABIS AND CANNABINOIDS

Use for chronic pain is controversial

Systematic reviews and meta analyses of trials looking at multiple populations and formulations have found some evidence for efficacy

Small evidence for neuropathic pain, but insufficient evidence for other types of chronic pain



1. Whiting PF, Wolff RF, Deshpande S, et al. Cannabinoids for medical use: A systematic review and meta-analysis. JAMA 2015; 313:2456.
2. Hill KP. Medical Marijuana for Treatment of Chronic Pain and Other Medical and Psychiatric Problems: A Clinical Review. JAMA 2015; 313:2474.
3. Andreae MH, Carter GM, Shaparin N, et al. Inhaled Cannabis for Chronic Neuropathic Pain: A Meta-analysis of Individual Patient Data. J Pain 2015; 16:1221.
4. http://www.health.state.mn.us/topics/cannabis/intractable/medicalcannabisreport.pdf.
5. Nugent SM, Morasco BJ, O'Neil ME, et al. The Effects of Cannabis Among Adults With Chronic Pain and an Overview of General Harms: A Systematic Review. Ann Intern Med 2017; 167:319.

CANNABIS AND CANNABINOIDS

Cannabidiol (CBD)

Anecdotally effective for some patients

Oil, cream, lotion, gel, ointments, edibles, etc.

ADE: dizziness, dry mouth, fatigue, euphoria, disorientation, hallucination

1. Whiting PF, Wolff RF, Deshpande S, et al. Cannabinoids for medical use: A systematic review and meta-analysis. JAMA 2015; 313:2456.

NONPHARMACOLOGIC AL TREATMENTS

- CBT
- Acupuncture
- Physical therapy
- Occupational therapy

1. Dowell D, Haegerich TM, Chou R. CDC Guideline for Prescribing Opioids for Chronic Pain — United States, 2016. MMWR Recomm Rep 2016;65(No. RR-1):1–49.
2. Nielsen S, Lintzeris N, Bruno R, et al. Benzodiazepine use among chronic pain patients prescribed opioids: associations with pain, physical and mental health, and health service utilization. Pain Med 2015; 16:356.

TAKE HOME POINTS

There are many non-opioid treatment options for chronic pain

Recommend a multimodal and interdisciplinary care, including nonpharmacological therapies

Use an individualized approach taking into account patient-specific factors to guide treatment selection