



Pharmacological Medications and Non-Pharmacological Alternatives to Opioids

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Introduction

- Opioids remain first line treatment for post-operative pain management
- CDC claims "more than 70,000 people die due to a drug overdose -- 68% involve prescription or illicit opioid drugs
- As providers increase rate, dose, and quantity of these drugs, patients become higher risk for dependence, tolerance, and withdrawal symptoms related to use and discontinuation
- Abuse of these drugs are now seen in young adults (18-24) due to early exposure (i.e., surgery, long-term use)
- Increase in prescriptions correlates with number of deaths due to overdose
- Unintentional poisoning was second highest number of accidental death in 18-24 age group

PICO Question

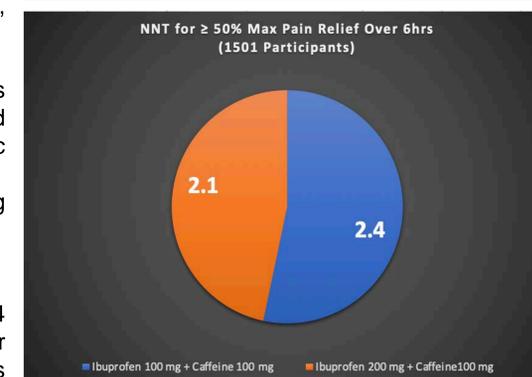
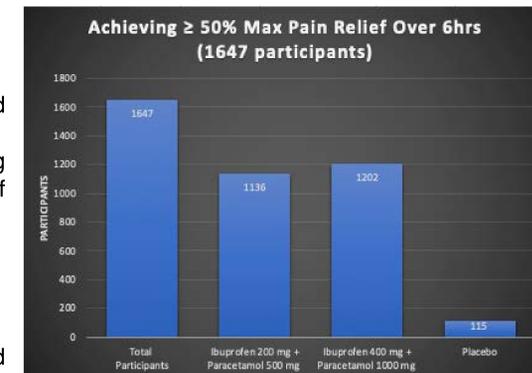
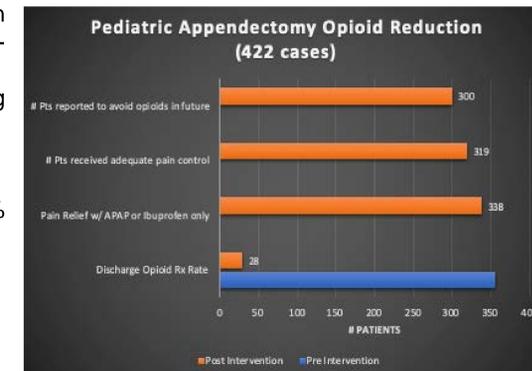
- In post-surgical adults, are alternative treatments such as psychotherapy, acupuncture, and NSAIDs compared to opiates, effective in decreasing pain and preventing opiate dependence.

Search Strategies/Keywords

- PubMed: "alternative medication to pain management compared to opioid post-operative" + w/in 10yrs yielded 10 articles
- Google Scholar: "alternative to opioid dependency" + age group 19+ w/in 10yrs yielded 16 articles
- CINAHL: "preoperative opioid use dependence" w/in last 5yrs yielded 16 articles
- 12 articles selected and evaluated for study design, purpose, findings, limitations, results, clinical implications, and conclusions

Results

- 84.3% of patients from 422 pediatric appendectomy control study cases were given prescription for opioids at discharge in pre-intervention compared to 6.7% in post-intervention (POST)
 - 80% were given acetaminophen and/or ibuprofen POST with 94.4% reporting adequate pain control
 - 88.9% reported they'd agree to avoiding opioids in future pain control needs
- 1,647 participants from three randomized, double-blind clinical trials achieved $\geq 50\%$ maximum pain relief over 6 hours in:
 - 69% with ibuprofen 200 mg + paracetamol 500 mg
 - 73% with ibuprofen 400 mg + paracetamol 1000 mg
 - 7% with placebo
- In the same clinical trials, median time to use rescue medication were:
 - 7.6 hours with ibuprofen 200 mg + paracetamol 500 mg
 - 8.3 hours with ibuprofen 400 mg + paracetamol 1000 mg
 - 1.7 hours with placebo.
- 1,501 participants from five randomized, double-blind, placebo- or active-controlled clinical trials reported:
 - Both ibuprofen 200 mg + caffeine 100 mg and ibuprofen 100 mg + caffeine 100 mg produced significantly more participants than placebo who achieved at least 50% of maximum pain relief over 6 hours
 - For at least 50% of maximum pain relief, NNT (Needed Number to Treat) was:
 - 2.1 for ibuprofen 200 mg + caffeine 100 mg
 - 2.4 for ibuprofen 100 mg + caffeine 100 mg
- 2,220 participants from 15 trials found that both persistent post-surgical pain and physical impairment, perioperative education was ineffective (high quality evidence), whereas active psychotherapy suggested a benefit (moderate quality evidence)
- 180 participants from randomized control trial comparing effectiveness and side effects of multimodal regimen including dexamethasone, gabapentin, ibuprofen, and paracetamol versus traditionally used morphine and paracetamol following cardiac surgery showed:
 - Multimodal group reported lower pain scores and denied nausea or vomiting compared to morphine regimen
 - Multimodal group showed non-significant increases in creatinine levels
- 682 patients from a systematic review and meta-analysis of 13 articles found 384 patients treated with acupuncture or related techniques had less pain and used fewer opioid analgesics on Day 1 following surgery compared to the 298 control patients treated ($P < 0.001$)
- 300 patients from cross-sectional chart review showed:
 - Mean age of receiving opioid prescription was 58yrs compared to 50.4yrs for non-opioid analgesic prescription
 - Patients prescribed opioids had significantly higher reported marijuana and prescription abuse compared to non-opioid prescriptions patients



Clinical Implications

- All providers must calculate risks vs benefits when prescribing opioids for pain management (captured by taking a thorough history)
- All healthcare providers & staff must inform and educate patients on different pain management modalities, adverse effects, and risk for opioid dependence
- Research indicates NSAIDs for post-operative pain are just as effective for pain management with minimal adverse effects
- When healthcare providers introduce NSAID or acetaminophen prescriptions as first line therapy, opioid use and addiction decreases

Conclusions/Further Study

- Identifying opiate alternatives for pain management is critical in combating the opiate epidemic, preventing overdose, and dependence
- NSAIDs (i.e., ibuprofen, naproxen) and acetaminophen are at the forefront of research showing adequate pain reduction with minimal long-term effects
- Other effective pain reduction strategies studied include psychotherapy, and acupuncture showing adequate pain relief
- Due to limited research studies addressing non-opioid pain management modalities, a precedence to focus research on the efficacy of non-pharmacologic modalities must occur
- Post-operative pain management standardization needs to be established

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