Effectiveness of Multi-Modal Analgesia

By: Mary Torres, RN, MSN, PHN, CCRN

A Capstone Project

Introduction

Despite many advances in health care, managing pain in the post-anesthetic period continues to be a challenge. With more procedures being performed on an outpatient basis, shorter lengths of stay and drive to improve patient satisfaction, providers are looking for ways to enhance the surgical care experience and reduce opioid use. In addition, the increase burden of obesity in society has contributed to a rise in co-morbidities such as diabetes, cardiovascular, and gallbladder disease making laparoscopic cholecystectomies the second most frequently performed general surgery procedure in the United States.

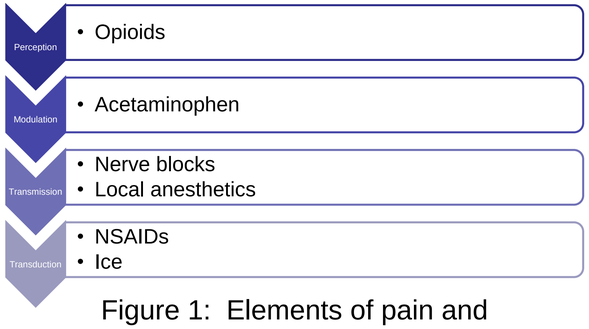


Figure 1: Elements of pain and blockage agents

Purpose

The purpose of this study was to examine if using multi-modal analgesia prior to incision time effectively reduces post-operative narcotic requirements for pain management in the laparoscopic cholecystectomy patient population.

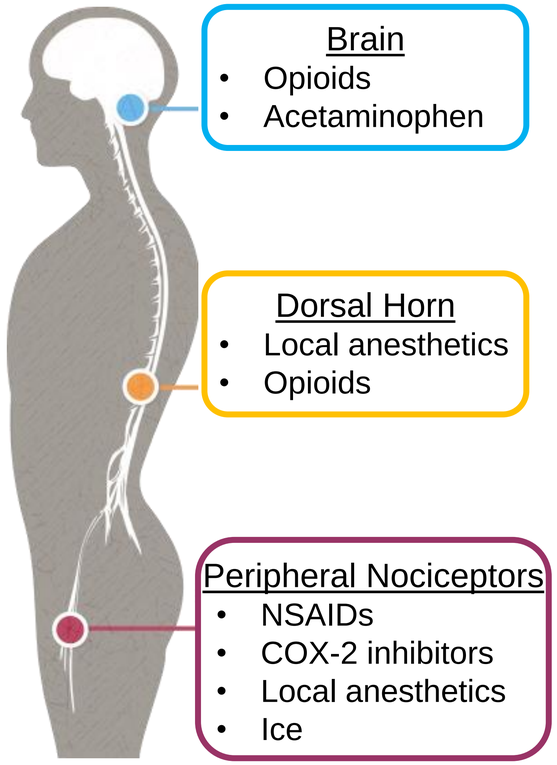
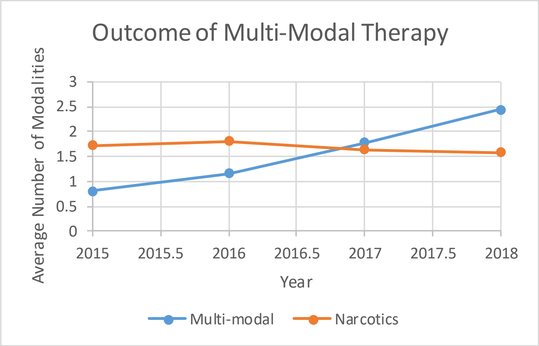


Figure 2: Analgesia effect on pain pathway

Results

After categorizing the variables and performing a systematic evaluation of the collected information, the results demonstrated there was a rise in the number of multi-modal agents given with a decrease in the number of narcotics utilized over the course of implementing an enhanced recovery after surgery improvement program.



Conclusions

The outcome of this project reinforces using multi-modal analgesia and provides a foundation for further research to maximize the benefit of these modalities to manage pain after surgical intervention.

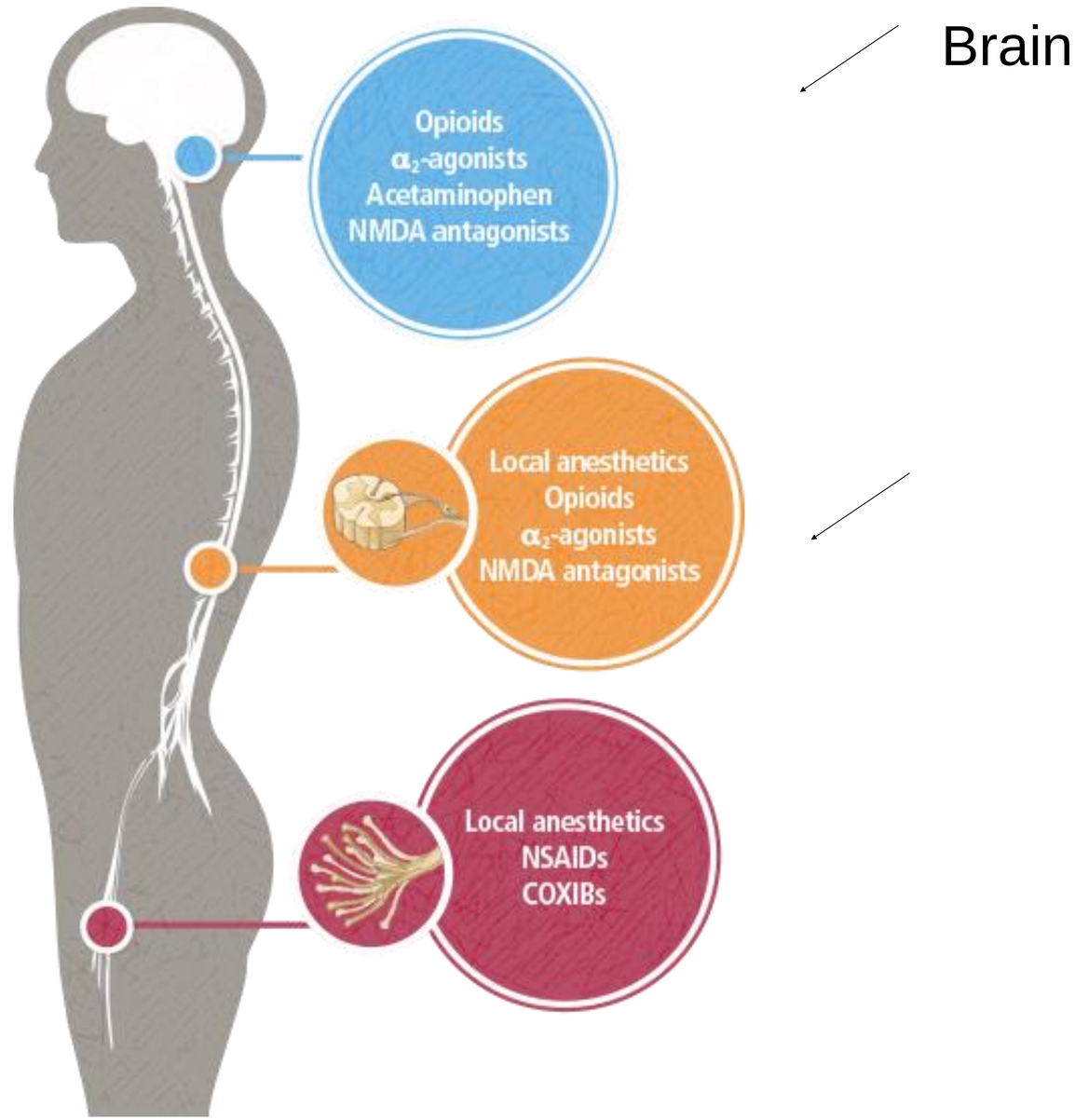
Applications

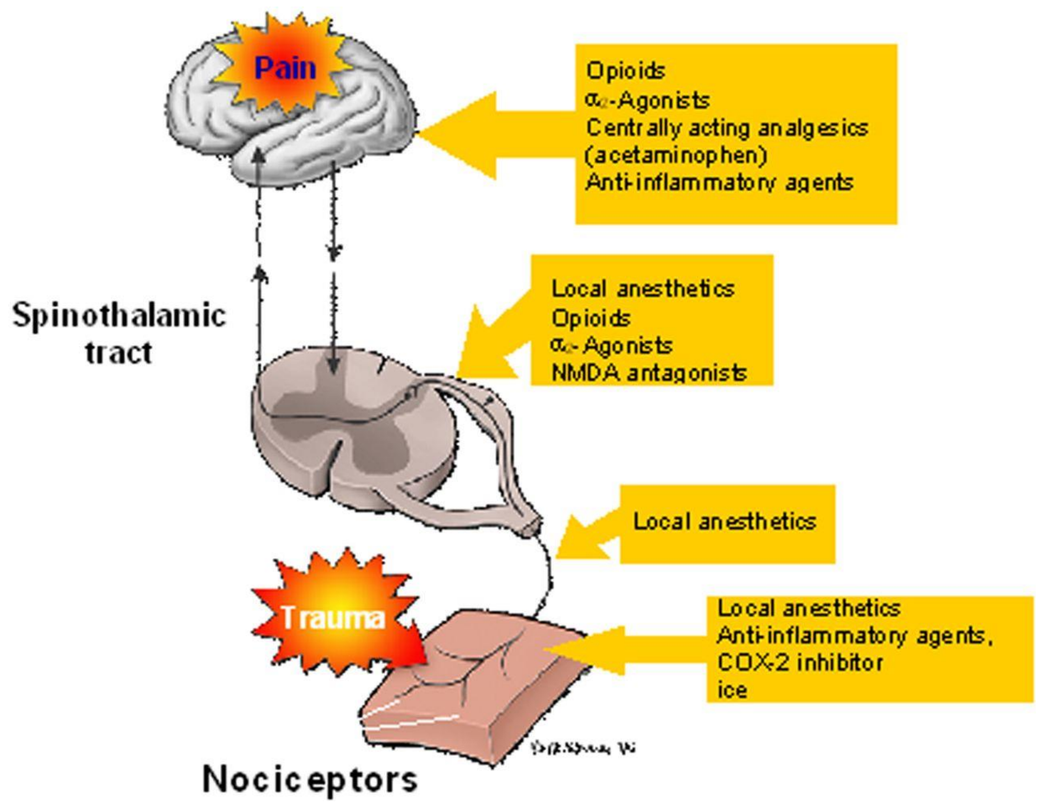
- Pain is a universal phenomenon and nurses must be familiar with the essential concepts of pain and methods of pain management.
- The concept of multi-modal analgesia is to reduce pain through targeting multiple receptor sites at peripheral and central nociception pathways to reduce the inflammatory response and pain sensation while simultaneously reducing narcotic utilization and their related adverse effects.
- Generate additional research into pain management.

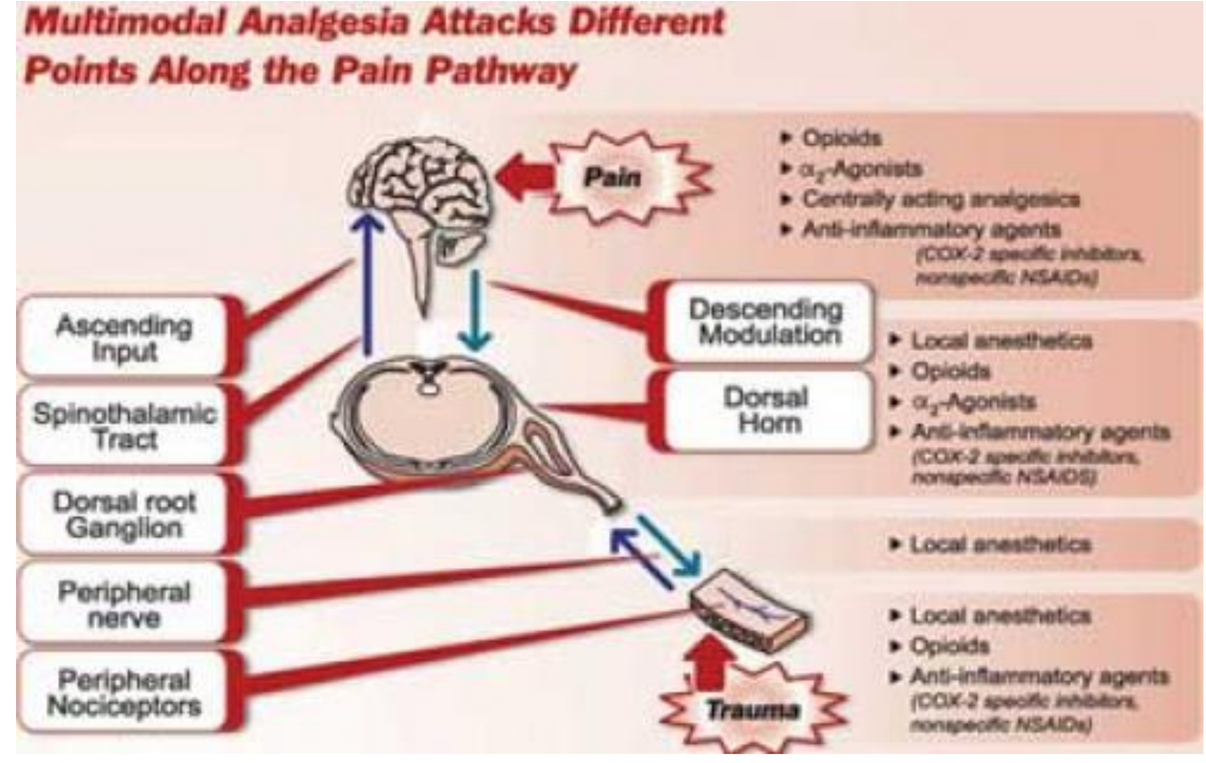
Acknowledgements

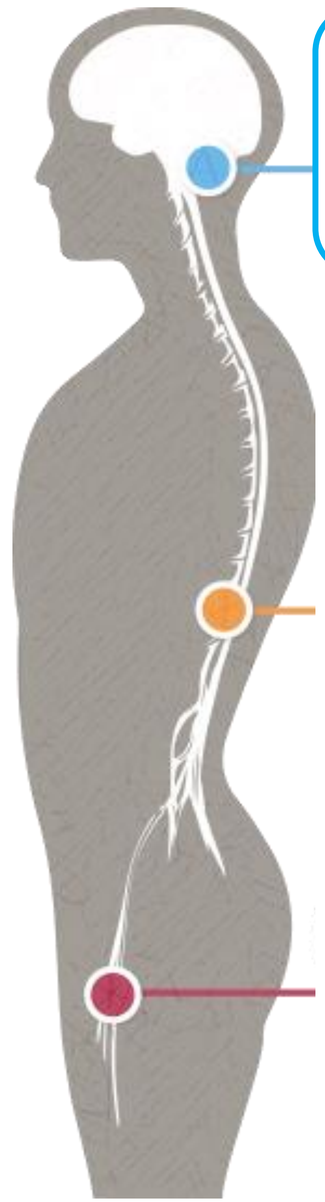
- **Capstone nursing advisors Dr. Nick Carte and Dr. Karen Brooks at Southern New Hampshire University for their encouragement and support during this project.**
- **Director of Perioperative Services, Glenn Padrid, MBA, BSN, RN, CPAN at Kaiser Permanente Zion Medical Center for his mentorship.**

printed by MegaPrint Inc. www.postersession.com


Brain
Opioids
α_2-agonists
Acetaminophen
NMDA antagonists
Local anesthetics
Opioids
α_2-agonists
NMDA antagonists
Local anesthetics
NSAIDs
COXIBs


Pain
Opioids
α_2-Agonists
Centrally acting analgesics
(acetaminophen)
Anti-inflammatory agents
Spinothalamic tract
Local anesthetics
Opioids
α_2-Agonists
NMDA antagonists
Local anesthetics
Trauma
Local anesthetics
Anti-inflammatory agents,
COX-2 inhibitor
ice
Nociceptors


Multimodal Analgesia Attacks Different Points Along the Pain Pathway
Pain
Opioids
α_2-Agonists
Centrally acting analgesics
Anti-inflammatory agents
(COX-2 specific inhibitors, nonspecific NSAIDs)
Ascending Input
Spinothalamic Tract
Dorsal root Ganglion
Peripheral nerve
Peripheral Nociceptors
Descending Modulation
Dorsal Horn
Local anesthetics
Opioids
α_2-Agonists
Anti-inflammatory agents
(COX-2 specific inhibitors, nonspecific NSAIDS)
Local anesthetics
Trauma
Local anesthetics
Opioids
Anti-inflammatory agents
(COX-2 specific inhibitors, nonspecific NSAIDs)



Brain

- Opioids
- Acetaminophen

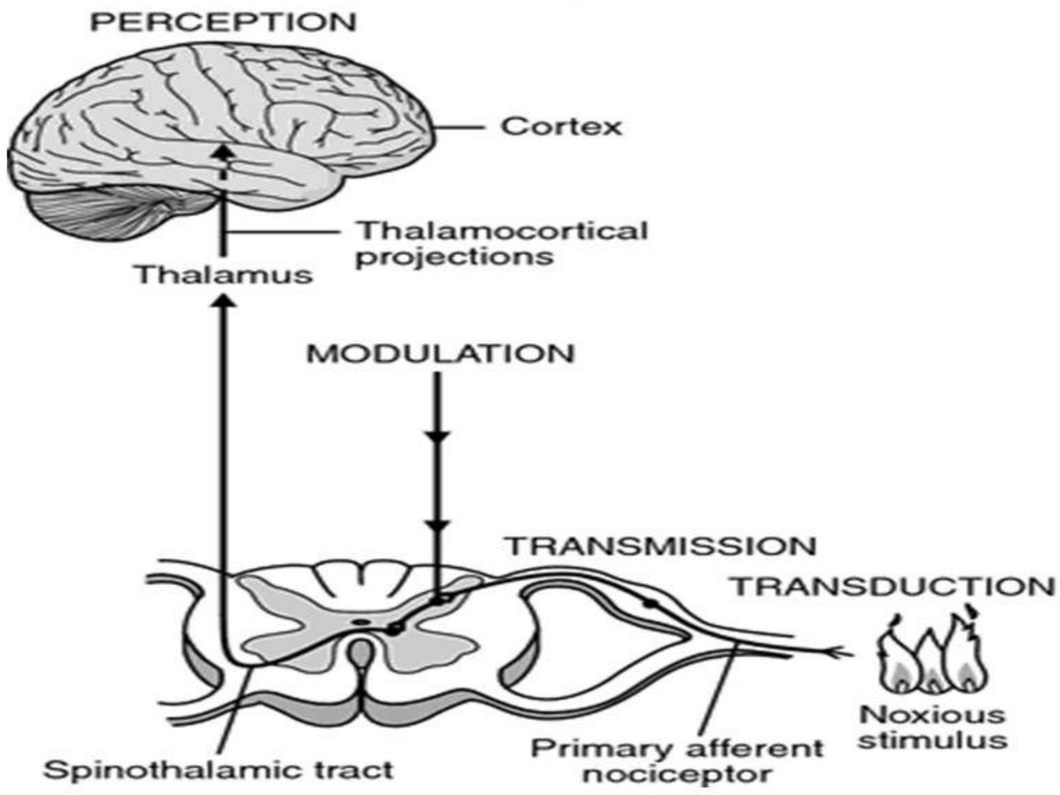
Dorsal Horn

- Local anesthetics
- Opioids

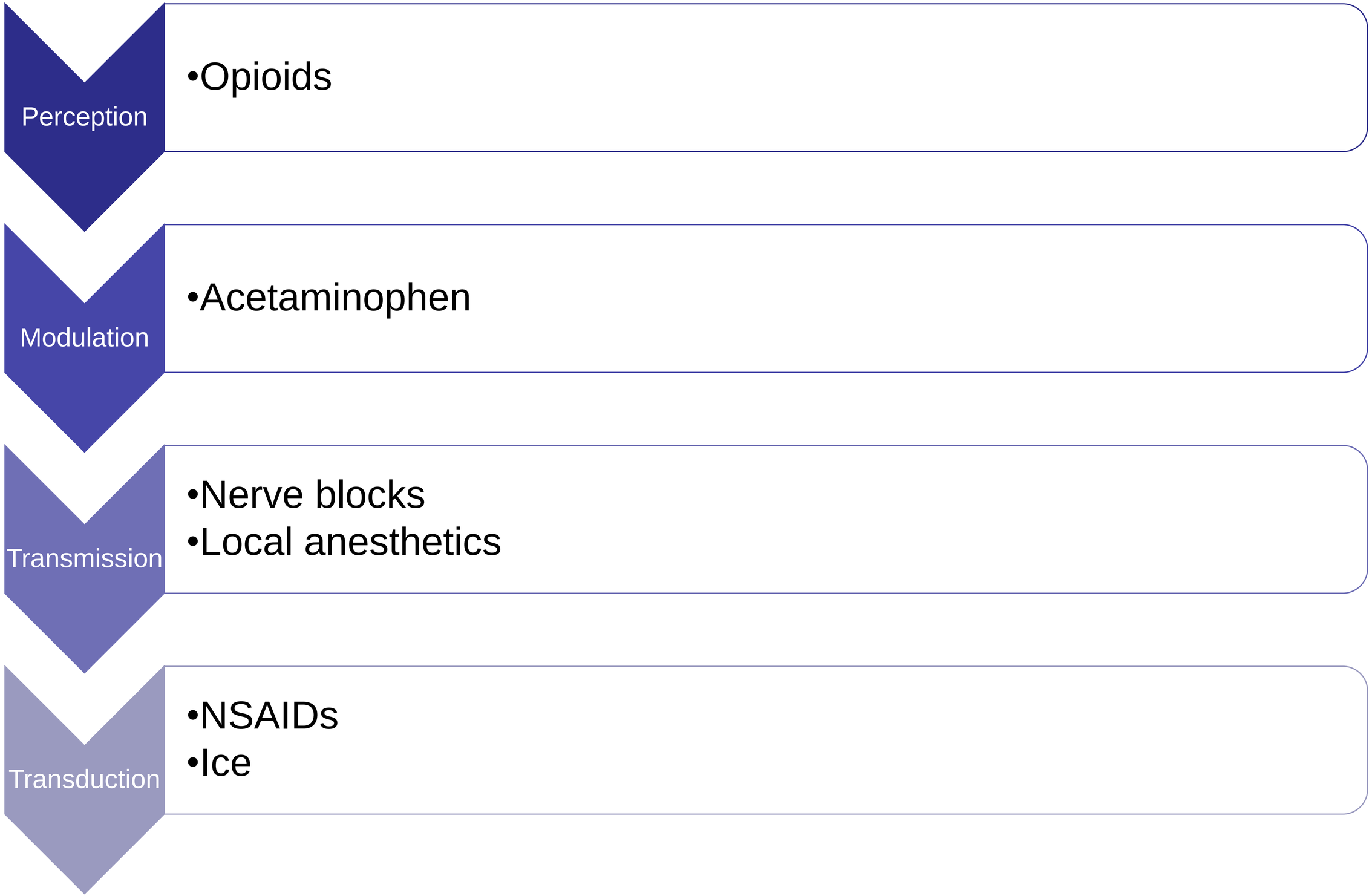
Peripheral Nociceptors

- NSAIDs
- COX-2 inhibitors
- Local anesthetics
- Ice

The Pain Pathway



Available at: http://medical-dictionary.thefreedictionary.com/nociception


Perception
•Opioids
Modulation
•Acetaminophen
Transmission
•Nerve blocks
•Local anesthetics
Transduction
•NSAIDs
•Ice