Opioid Free Anesthesia

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Disclosures

- No disclosures

Target Audience

- The overarching goal of PCSS is to train healthcare professionals in evidence-based practices for the prevention and treatment of opioid use disorders, particularly in prescribing medications, as well for the prevention and treatment of substance use disorders.

Educational Objectives

- Identify alternatives to opioids in the surgical/anesthesia setting.
- Understand the importance of pain management.
- Describe the hyperalgesia associated with a typical surgery.

Importance of pain management

- The goal of postoperative pain management is to maintain pain at a tolerable level, allowing the patient to recover and get back to everyday activities.
- Pain, especially the hyperalgesia from surgery, affects multiple body systems and can delay recovery and can lead to postoperative complications.
- Uncontrolled surgical pain can cause distress, slow healing, and increases the risk of blood clots, pneumonia, and chronic pain.

Three types of hyperalgesia occur during typical surgery

1. The inflammatory process: causes peripheral nerves to fire repeatedly even after the painful stimulus has stopped.
2. Central sensitization: the continuous release of pain neurotransmitters causing up regulation of pain receptors therefore intensifying pain. This causes perception of gentle touch as painful.
3. Opioid induced: As the pain receptors up regulate and begin to be only partially blocked a tolerance to opioids results. Standard doses will then cause an increased perception of pain.

Hyperalgesia: abnormally increased sensitivity to pain

Will opioid free anesthesia control my pain?

Yes!!! Opioid free anesthesia is a highly specialized service that not only controls pain but has multiple other benefits.

- Increased patient satisfaction
- Enhanced recovery
- Reduced need for overnight stay
- Decreased overall cost
- Risk reduction of postoperative complications
- Combats opioid epidemic and reduces risk of addiction
- Decreased risk of chronic pain when utilized for hernia repair
- Decreased breast cancer recurrence rate when utilized during mastectomy.
- Decreased risk of metastasis.

How does OFA work?

- Dexamethasone: Inhibits prostaglandins, histamine, & leukotrienes yielding analgesia, anti-inflammatory, and antiemetic effects.
- Ketamine: Blocks the NMDA receptor (similar to Mu receptors without the negative side effects). Prevents hyperalgesia, causes bronchodilation, minimal to no respiratory depression, and profound analgesia.
- Magnesium: Prevents the loss of the magnesium plug on the NMDA receptor therefore potentiating the analgesic effects of ketamine for up to 24 hrs.
- Alpha 2 agonists: Blocks substance P and increases norepinephrine in the dorsal root horn and locus coeruleus causing decreased post-op delirium, shivering, anxiety, and provides profound analgesia.
- Just a few examples of the medications used in an opioid free anesthetic as I can't share all of my magic tricks.

Just Kidding! Magic tricks are meant to be shared!

- Gabapentin: Prevents the release of glutamate and substance P by blocking the presynaptic calcium channels causing analgesia and preventing chronic post surgical pain.
- Celebrex: Cox 2 inhibitor which prevents the release of histamine, prostaglandins, and bradykinin causing anti-inflammatory and analgesic effects.
- Acetaminophen: the medication most well known has a mechanism of action that is unknown. It may reduce the production of prostaglandins. What we do know it that it has analgesic properties and when used in a multi model approach it may prolong the analgesic effects of the other medications.
- Esmolol: Selective beta 1 antagonist. Thought to inhibit neurotransmitter release blunting the sympathetic response to surgical stimulus.

The Wonder Drug

- Lidocaine infusion (anesthesia's best kept secret): Sodium channel blocker and prostaglandin inhibitor yielding analgesic effects, anti-inflammatory properties, and bronchodilation. But thats not all…
- Lidocaine is cardioprotective and can be used in cardiac ischemia, ARDS, and sepsis. Caution must be used epileptic and protein poor patients and avoided in patients with a high level AV block. Wait! It gets even better!
- Lidocaine has antifungal, antiviral, and antibacterial properties and actually promotes would healing.

Ultrasound Guided Nerve and Fascial Plane Blocks

- Ultrasound guidance has greatly increased the margin of safety when performing nerve/fascial plane blocks. Use of the ultrasound allows the anesthesia provider to locate and identify the selected nerve and surrounding structures. The needle is visualized throughout the procedure to avoid needle misadventure. As the local anesthetic is injected in an incremental fashion the US allows the provider to visualize the local enveloping the nerve or hydro-dissecting the fascial plane.
- Ultrasound guided nerve/fascial plane blocks play a large part in the multi modal approach and the success of an opioid free anesthetic.

Can you block that?

- Neck: cervical plexus block
- Clavicle: cervical plexus block
- Shoulder: Interscalene (isolated C5 nerve root) block or supraclavicular block
- Elbow, forearm, wrist, or hand surgery: supraclavicular, infraclavicular, axillary, or selective radial, median, and ulnar nerve blocks
- Breast: PECS 1 & 2, intrapec, and erector spinae plane block. *these blocks along with OFA decrease reoccurrence and metastasis of breast CA.
- Rib fractures: erector spinae plane block (ESP), serratus anterior plane block

What about that?

- Cholecystectomy (gallbladder): subcostal TAP block or quadratus lumborum (QL)
- Appendectomy: midaxillary TAP block or QL
- Ventral Hernia: subcostal TAP block or QL
- Umbilical Hernia: subcostal or midaxillary TAP block or QL
- Inguinal Hernia: illioinguinal-illiohypogastric block
- Bowel resection: QL or tap
- C-section: midaxillary TAP block, quadratus lumborum block,illioinguinal-illiohypogastric or ESP

Even that?

- Hip fracture: fascia iliaca or PENG block
- Total hip arthroplasty: PENG block (sensory block only) spares femoral nerve promoting early ambulation.
- Tibial plateau fracture: adductor canal block with subgluteal sciatic nerve block
- Total knee arthroplasty: adductor canal block (sensory block only) promotes early ambulation
- ACL surgery: femoral nerve block or adductor canal
- Ankle: popliteal sciatic nerve block
- Foot: ankle block

This all sounds great but is it necessary?

- Opioid related deaths exceed the number of deaths from firearm and motor vehicle deaths combined.
- Are you between the ages of 35-54 years? If so you are in the age group that is at the highest risk for addiction.
- 80% of heroin users started with prescription opioids.
- Study of 391,139 opioid-naïve patients having short-stay surgery

  *7.7% were prescribed opioids 1 year after surgery

  *44% more likely to be opioid dependent at 1 year if

prescribed more than 7 days of opioids postoperatively.

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What about opioids and cancer?

- Opioids can cause as much as a 50% reduction in killer-T-cells.
- Opioids have shown to decrease the immune response therefore promoting metastasis.
- Utilizing an opioid free anesthetic during tumor resection will prevent the reduction of killer-T-cells and decreased immune response so the cancer cells that can be potentially left behind will not be able to migrate through a vessel wall (extravasation) and adhere in a different location.
- The local anesthesia used in ultrasound guided nerve blocks work on voltage gated sodium channels in which cancer cells are dependent. Nerve and fascial plane blocks can promote anti proliferation of cancel cells.

Don’t be afraid to request and opioid free anesthetic.

- Multiple body systems are significantly affected and contribute to the post operative pain you may experience so it is more beneficial to you to receive a multimodal opioid free anesthetic. This approach blocks pain from multiple different pain pathways without the negative side effects opioid can cause.
- Opioids during anesthesia can cause: respiratory depression, dysphoria, constipation, post-op ileus, urinary retention, nausea, vomiting, prolonged recovery stay, increased risk of dependance in opioid naive patient, and increased overall cost.

Recent Patients

- 70 y/o F chronic pain pt on methadone for total shoulder arthroplasty. Discharged within 24 hrs no additional pain meds required. Pt took her routine methadone. Postop shoulder pain 0/10 throughout. Highest pain score during admission was a 4/10. Pt stated prior to surgery her pain is a 6-8/10 on a daily basis.
- 20 y/o F with hx of ETOH and THC abuse for exploratory laparotomy for small bowel obstruction. Pt ambulated in the hallway 2hrs postoperative and denied pain. Pt d/c under 48 hours and required no opioids during her admission.
- 70 y/o M for exploratory laparoscopy for small bowel obstruction. Pt d/c under 24 hrs, denied pain, and received no opioids during his stay.
- 65 y/o M with hx of COPD and sleep apnea presented to the clinic with two fractured ribs, oxygen saturations 78-82%, RR 30's, hypertension, and extremely guarded movements. Pt stated pain was 100/10. Erector spinae plane block performed, pt discharged 30 min later with 0/10 pain, 92% oxygen saturation, normotensive, unguarded movements, and a hug.
- 55 y/o frequent flyer for renal calculi, past treatment included a 4 day stay on dilaudid PCA. ESP block performed, pain from a 10/10 to 0/10. Pt d/c home.

Together we can make a difference by providing superior care and combatting the opioid epidemic one patient at a time.

PCSS Mentoring Program

- PCSS Mentor Program is designed to offer general information to clinicians about evidence-based clinical practices in prescribing medications for opioid use disorder.
- PCSS Mentors are a national network of providers with expertise in **addictions, pain, evidence-based treatment including medications for opioid use disorder (MOUD)**.
- 3-tiered approach allows every mentor/mentee relationship to be unique and catered to the specific needs of the mentee.
- No cost.

For more information visit:

https://pcssNOW.org/mentoring/

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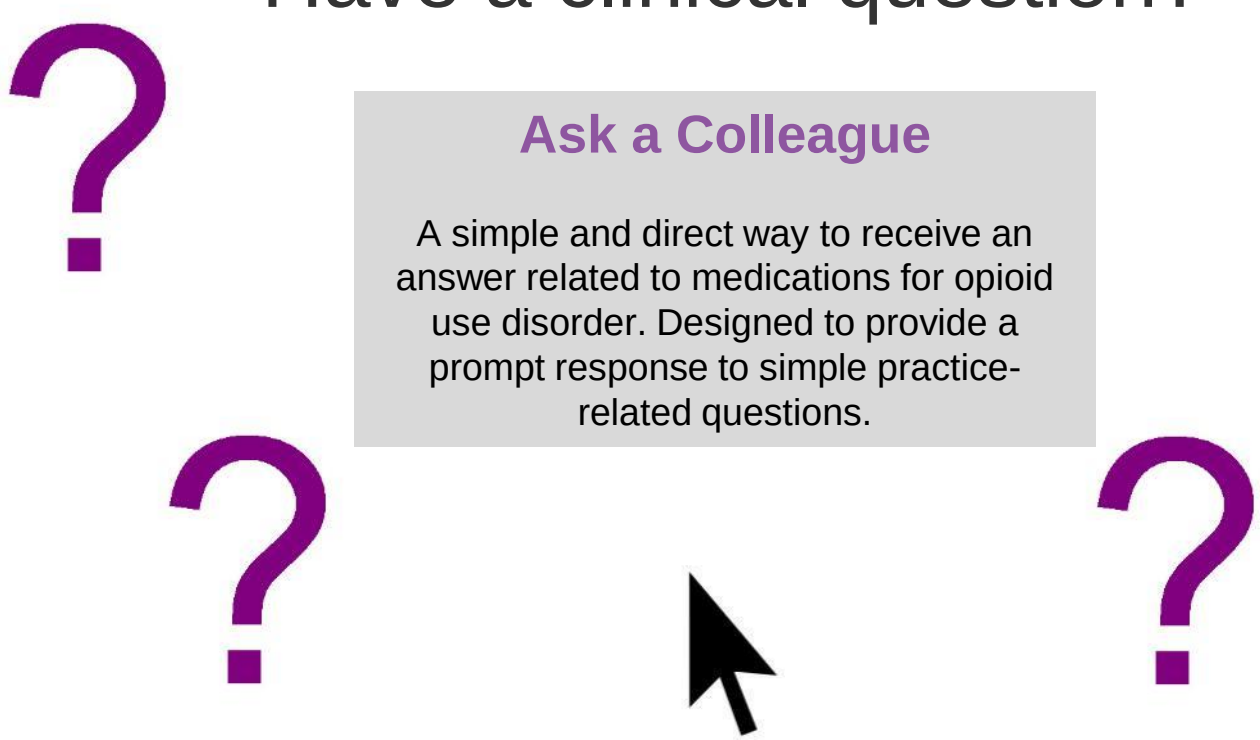
PCSS Discussion Forum

Have a clinical question?



Ask a Colleague

A simple and direct way to receive an answer related to medications for opioid use disorder. Designed to provide a prompt response to simple practice-related questions.

http://pcss.invisionzone.com/register

PCSS Providers Clinical Support System

Providers Clinical Support System

PCSS is a collaborative effort led by the American Academy of Addiction Psychiatry (AAAP) in partnership with:

Addiction Technology Transfer Center	American Society of Addiction Medicine
American Academy of Family Physicians	American Society for Pain Management Nursing
American Academy of Pain Medicine	Association for Multidisciplinary Education and Research in Substance use and Addiction
American Academy of Pediatrics	Council on Social Work Education
American Pharmacists Association	International Nurses Society on Addictions
American College of Emergency Physicians	National Association for Community Health Centers
American Dental Association	National Association of Social Workers
American Medical Association	National Council for Mental Wellbeing
American Osteopathic Academy of Addiction Medicine	The National Judicial College
American Psychiatric Association	Physician Assistant Education Association
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