Pain Management: Optimised & Individualised

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PQUIP’s Top 5 National Improvement Opportunities 2018-2019

- Goals of perioperative pain management
  - Enhanced recovery, Reduced LOS
  - Increased patient satisfaction, reduced pain
  - Reduced SEs of medication & opioids
  - Reduced chronic post surgical pain (CPSP)
The Opioid Epidemic

- Opioids = leading cause death in under 50s in US
- 83% heroin users started with prescription opioids
- Proportion of UK patients prescribed opioids doubled 2000-2012
- Number admitted for opioid overdose doubled 2005-2006 & 2016-2017
- Drug-related deaths has hit a record high in England & Wales: 3,744 last year (mainly heroin & other opioids)

Perioperative multimodal analgesia

**Experience**
- Context & fears
- Education & expectations
- CBT, hypnosis, mindfulness
- Placebo

**Central**
- Opioids
- \( \alpha \) agonists

**Inflammation**
- Paracetamol
- NSAIDs
- IV lidocaine

**Transmission**
- IV lidocaine
- Regional
- Ketamine
- Gabapentin
Ketamine

- Perioperative sub-anaesthetic doses reduce analgesic requirements, effects last 36-72hrs if given pre-incision
- Reduces PONV & 24 hour PCA morphine consumption
- Shown to decrease chronic postsurgical pain and opioid consumption after total hip arthroplasty (ketamine 0.5 mg/kg IV before incision and a 24-hr infusion of 2 µg/kg/min) Remerand Anesth Analg 2009
- Overall evidence for reduction in CPSP but at lower doses equivocal on pain intensity
Ketamine – how?

- **Short Case**
  - 0.2-0.4mg/kg (10-40mg) bolus at induction

- **Medium Case**
  - short plus extra 10-20mg bolus

- **Long Case (a bit more)**
  - 0.1mg/kg (5-10mg) bolus at induction
  - followed by 0.3mg/kg (15-30mg) infusion for 1 hr
  - dropping to 0.1mg/kg/hr (5-10mg/hr)
  - continuous infusion 50mg in 50ml

- Always if neuropathic pain or long term opiate use
Intravenous infusion of lidocaine starting at the time of surgery for reduction of pain and improvement of recovery after surgery

Kranke et al. 2015

- 45 RCTs, 2802 participants (moderate-high risk bias, heterogeneity, small studies)

- SAFE (no adverse effects but not powered for this)

- Reduced (early) post-operative pain \( n=23 \) studies
- Reduced opioids \( n=32 \) studies
- Reduced length of stay \( n=21 \) studies
- Improved bowel function
  - Reduced nausea \( n=28 \)
  - Reduced time to first flatus \( n=11 \)
  - Reduced ileus \( n=3 \)
Lidocaine – who & how?

**Who?**
- High risk pain
- High risk ileus
- Regional not possible

**How?**
- Whole systems awareness of toxicity & treatment including at surgical Time Out
- Standard infusion protocol
- Non-return valve, labelled line
- Dose reductions in liver/heart failure
- Cautions in acidosis, hypoxia, paralysis
Gabapentin, Pregabalin

- Bind to presynaptic calcium channels, reducing excitatory neurotransmitter release
- Reduce opioid requirement & pain in a variety of surgeries in different trials
- Optimal dose of pre-incision & post-incision gabapentin for pain relief following lumbar laminectomy is 900-1200mg Khan et al 2011
- SEs - sedation, visual disturbances, dizziness, headache

- Doses & protocols not well evidenced. More research is needed to find dose which produces minimal adverse effects while reducing pain as part of multimodal analgesia
Mg, Clonidine, Dexmedetomidine

- **Magnesium**
  - (8 mg/kg/hr intraoperatively) appears to act via NMDA receptor antagonism & inhibition of calcium influx.
  - Some studies have found that it reduces postoperative opioid requirements but a meta-analysis showed no evidence for its efficacy in decreasing postoperative opioid demand & pain
    - Tan et al 2015, Canadian Journal Anaesthesia

- **Clonidine & dexmedetomidine**
  - Central & peripheral α2 stimulation
  - Systematic review & meta-analysis confirmed they decrease postop opioids, opioid SEs & pain intensity, when added to an opioid-based regimen
    - Blaudszun et al 2012 Anaesthesiology
  - Variability in administration route & timing: more research
What do I do?

- Listen. Manage pain expectations, explain analgesia, trade-offs
- Reduce high opioids pre-op
- Work on anxiety, teach breathing techniques, mindfulness
- Anaesthetic room “healing” language, positive suggestion e.g. of observations on monitor, experience on waking
- Regional technique every time possible (plus plan for after)
- Midazolam (1-2mg), Ketamine (10-20mg) at induction
- Lidocaine 3mg/kg peri-operatively
- Clonidine, Mg if high risk
- Set expectation of when opioids should be stopped
What to do if severe pain in recovery

• Listen – Validate - Act
• Your placebo effect - give care & medicines with warmth, attention & confidence

• If epidural bolus or 10mg morphine ineffective:
  • 2-10mg boluses IV Ketamine
  • 1mg bolus Midazolam (beware airway)
  • 25mcg Clonidine
Systemic suggestions

• Pre-assessment identification of patients at risk of severe post op pain
  • E.g. identify those on pain drugs pre-op, make a pain plan (UCLH audit)

• MDT post operative management of patients at high pain (and other risk)
  • E.g. NELA patients: surgery, pain management, ICU outreach: The Dream Team

• QI methodology to peri-operative pain management drug protocols & processes