

Acute Pain Management

Difficult Cases

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Case 1.

Brought in to ED at 04:00 having sustained distal femoral & tibial plateau fractures

Longstanding chronic severe OA pain

Lives in ground floor flat, limited mobility, carer for shopping, meals etc

OA pain managed by GP

Oral oxycodone IR (OxyNorm™) 40 mg 4 hourly

Multiple drug allergies; paracetamol & NSAIDs

Initial management in ED

Splintage of fractures

Referral to T&O for fixation of fractures

Acute Pain Service called to ED @ 08:00 hrs

Oxycodone IR changed to SR, morphine PCA commenced

Issues

Acute pain management in the ED

Acute pain management in opioid dependent patients

Opioid use in chronic non-cancer pain (CNCP)

ED patients expectations regarding pain relief

- **Much higher than those for postoperative pain**
- **Significant pain relief; mean 72% (~18% expect 100% relief)**
- **Rapid pain relief; mean expectation for time to analgesic administration 23 min vs actual mean time 78 min**

Pain protocols in the ED (basically opioid titration regimen)

- **Reduce number of patients with unsatisfactory analgesia from 91% to 69%**
- **Increased the use of iv analgesia from 9% to 37%**

Motov SM, Khan AN. Journal of Pain Research 2009;2:5–11

Goodacre SW, Roden RK. *J Accid Emerg Med.*1996;13:177–179

NHMRC. Emergency Care Acute Pain Manual 2011

Fractures and dislocations

- **For severe pain use iv morphine (or fentanyl) plus paracetamol then consider appropriate nerve or regional block**
- **For less severe pain po paracetamol with or without po OxyNorm**
- **For procedural analgesia during fracture reduction consider entonox or ketamine with or without midazolam**

http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/cp135_emergency_acute_pain_management_manual.pdf

Acute pain in opioid dependent patients often underestimated and undertreated

Consensus recommendations:

- **Maintain regular provision of pre-existing opioid**
 - Sustained release formulations**
 - Transdermal patches**
 - Implantable pumps**
- **Additional multimodal analgesia**
 - Short-acting opioid (as required); PCA with higher bolus dose shorter lock-out interval**
 - Local anaesthesia**
 - Adjuvant anti-inflammatory drugs & paracetamol**

Mehta V, Langford R. Anaesthesia 2006;61: 269-76 / Reviews in Pain 2009;3: 10-4

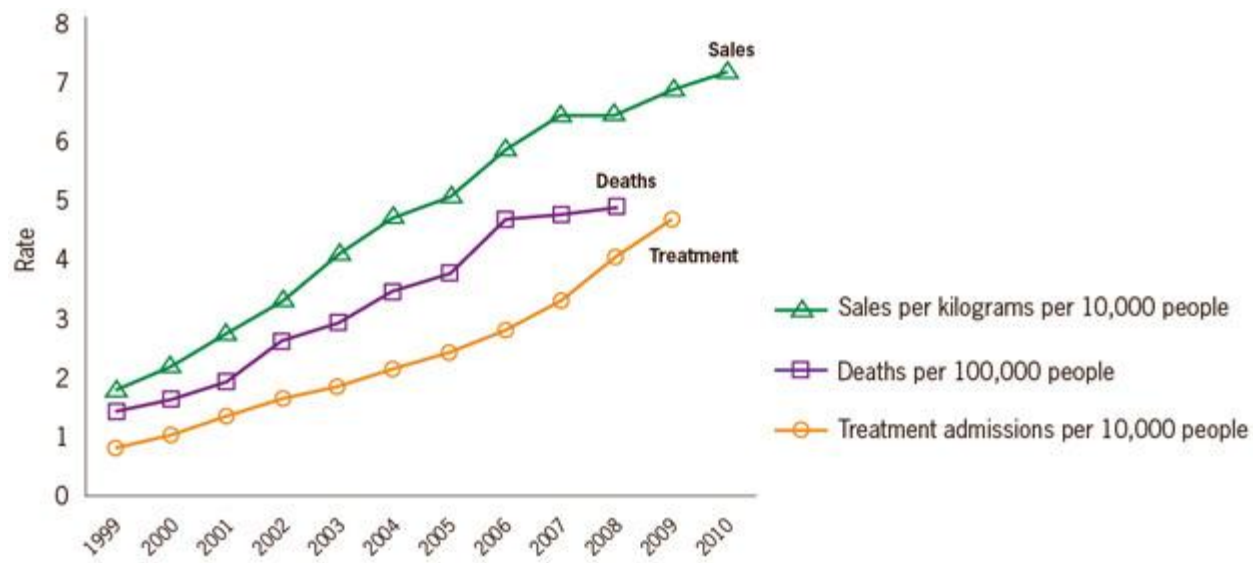
Mitra S, Sinatra RS. Anesthesiology 2004;101: 212-27

Alford DP, Compton P, Samet JH. Annals Int Med 2006;144: 127-34

Opioid use in chronic non-cancer pain (CNCP)

- **5-fold increase in opioid sales in 6 years; equivalent to everyone in USA taking 700mg morphine/year**
- **Substantial increase in unintentional drug overdose deaths**
60% originate from opioids prescribed within guidelines

Rates of prescription painkiller sales, deaths and substance abuse treatment admissions (1999-2010). Source: US Drug Enforcement Administration



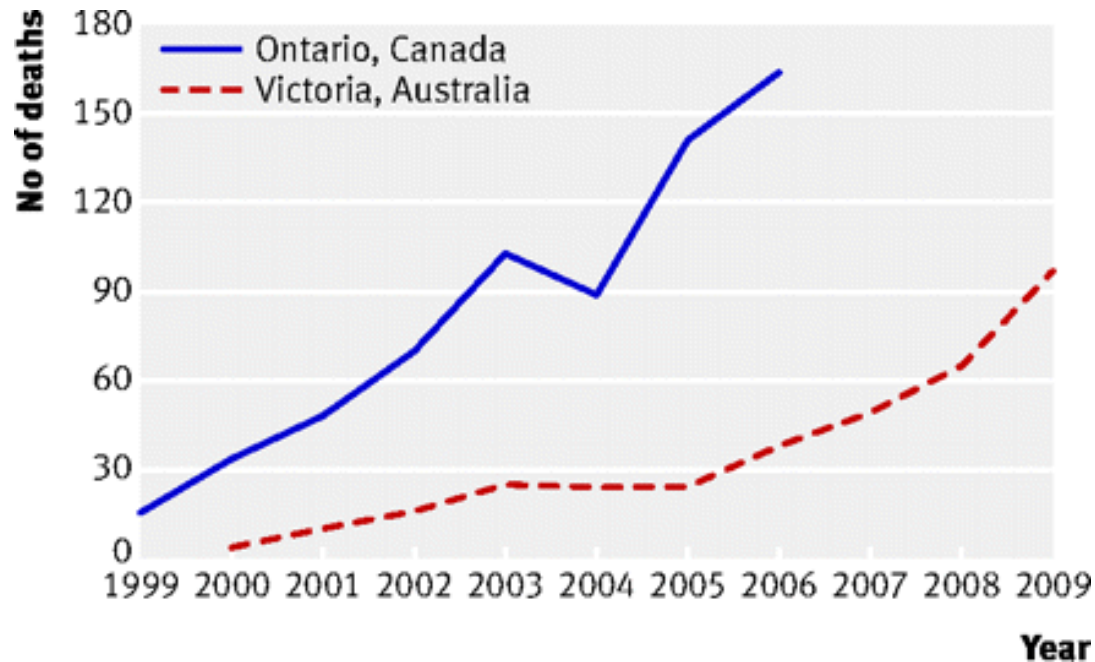
Dhalla IA, Persaud N, Juurlink DN. BMJ 2011; 343: S51421-66

CDC Grand Round: Prescription drug overdoses – a US epidemic. www.cdc.gov/

Evidence suggests that oxycodone and hydrocodone may have higher abuse liability than morphine

In Ontario, oxycodone prescriptions rose by 850% from 1991 to 2007

Deaths involving oxycodone in Ontario, Canada (and Victoria, Australia)



Guidelines for safe opioid prescribing in CNCP

- **An opioid-prescribing policy will provide guidance on prescribing which in turn facilitate a consistent response**
- **CNCP can be managed effectively in most patients with morphine equivalent dose at or below 200 mg/day; higher dosage requires careful reassessment of the pain and of risk for misuse**
- **The small-to-moderate beneficial effects of opioids for OA are outweighed by large increases in the risk of adverse events (Cochrane Review 2009)**

Nuesch E, et al. Cochrane Database Systematic Review 2009;4:CD003115

ASIPP guidelines for responsible opioid prescribing in CNCP. Pain Physician 2012; 15: S1-66

Canadian guideline for safe and effective use of opioids for CNCP. April 2010.

<http://nationalpaincentre.mcmaster.ca/opioid/>

VA/DoD Clinical practice guideline for management of opioid therapy for chronic pain. May 2010

Management in ICU

OxyContin changed back to OxyNorm and increased to 80 mg hourly, morphine PCA hourly limit unchanged

iv ketamine infusion 0.2 mg/kg/hr commenced then stopped and replaced by oral methadone

Methadone stopped and replaced by oral MST 40 mg BD plus sevredol PRN for breakthrough pain

Issues

Opioid induced hyperalgesia (OIH)

Opioid switching

Opioid induced hyperalgesia (OIH)

Opioid induced hyperalgesia (OIH) opioid-induced pain sensitivity (OIPS)

Enhanced pain perception in subjects receiving opioids can lead to an apparent need to increase the dose

Increasing the dose of opioid may worsen the patient's condition by increasing sensitivity to pain while escalating physical dependence.

An individual taking opioids who develops increased pain but cannot achieve effective pain relief despite increases in dose may be experiencing OIH

OIH may be managed by switching, tapering or discontinuing opioid therapy

Opioid switching (opioid rotation)

Canadian Guidelines recommend that for patients experiencing unacceptable adverse effects or insufficient opioid effectiveness from one particular opioid, a different opioid should be prescribed or therapy discontinued.

- **Step-wise Rotation:**
Reduce the old opioid dose by 25-50% decrements & replace the amount removed with an equianalgesic conversion dose of the new opioid.
- **Single-step Rotation:**
Stop the old opioid and start the new opioid in an equianalgesic conversion dose.
NB pain may worsen if the new agent has a delayed peak analgesic effect (eg methadone)

Discharged to ward

MST increased and eventually stopped due to twitching

Recommended OxyContin 90 mg BD plus OxyNorm

Satisfied with analgesia

**At case conference agrees to opioid treatment plan with no
escalation of regular analgesia**

Issues

Opioid treatment agreement

Opioid treatment agreements

- **Tools for educating patients (and providers) about the opioid treatment plan and documenting the patient's agreement to participate**
- **Designed for patients with, or at risk of, aberrant behaviour**
- **Written or verbal**
- **Evidence supporting their efficacy is largely unremarkable**

Case 2.

Admitted with blocked ileostomy, vomiting, abdominal sepsis and worsening of chronic abdominal pain

Complex past history of ruptured appendix, bowel damage and multiple laparotomies with extensive adhesions

Chronic abdominal pain managed by GP using oral oral oxycodone/naloxone (Targinact™) 30/15 mg BD

Multiple drug allergies/intolerances

Initial management

NBM, nasogastric tube

Replace targinact with fentanyl patch & im morphine

For long term TPN

Fentanyl patch increased then removed at patient's request and replaced with Butrans™ patch with sl buprenorphine PRN for breakthrough pain

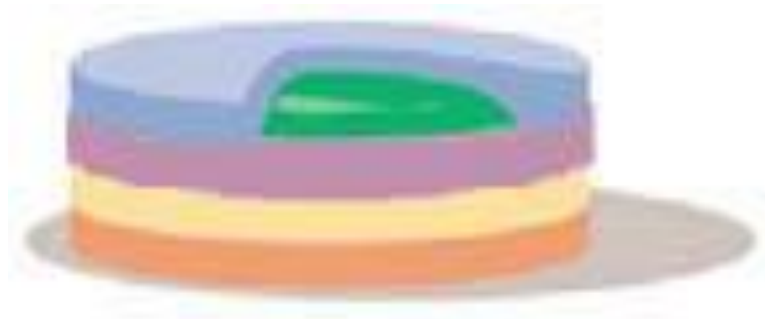
Butrans later stopped because of skin rash and replaced with sc morphine infusion via syringe driver according to palliative care protocol

Issue

Opioid patches

Continuous subcutaneous infusion of drugs

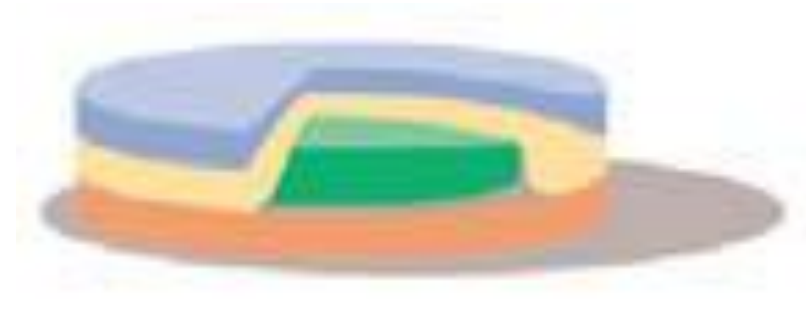
Drug Reservoir-in-Adhesive



- Backing
- Drug
- Membrane
- Adhesive
- Liner

Characterized by the inclusion of a liquid compartment containing a drug solution or suspension separated from the release liner by a semi-permeable membrane and adhesive

Drug Matrix-in-Adhesive



- Backing
- Adhesive
- Drug
- Liner

Characterized by the inclusion of a Semisolid matrix containing a drug solution or suspension which is in direct contact with the release liner

Continuous sc infusion of drugs is particularly useful in the management of malignant intestinal obstruction

Breakthrough analgesia should still be prescribed

Cost of delivering subcutaneous morphine by syringer driver is twice the cost of a comparable dose of sustained release tablets.

NPSA safety alert (2010) identified 8 deaths and 167 non fatal incidents between 2005 and 2010 involving older ambulatory syringe drivers with rate settings based on length of liquid rather than volume

**Guidelines for the Use of Subcutaneous Medications in Palliative Care for Adults – Primary Care and Hospices. <http://www.palliativecareggc.org.uk>
<http://www.hospiceworld.org/book/subcutaneous-infusions.htm>**

Case 3.

Brought in to ED following RTC (motorcycle vs car)

High velocity impact to the left side of body

Conscious at the scene

Transferred by air ambulance

No past medical history of note, no regular medications

Rib fractures with small pneumothorax; chest drain inserted

Closed fracture of the right femur

CT scan head and cervical spine demonstrated no injuries

Femoral nailing undertaken under GA

Postoperative analgesia; epidural plus PCA morphine

Issues

Regional analgesia and compartment syndrome

**NAP3 recommendations on duration of epidural analgesia
and 'Red Flags'**

**AAGBI recommendations for epidural catheter removal and
thromboprophylaxis medication**

Epidural for lower limb trauma is moderately controversial (compartment syndrome)

Systematic review (2009) has found no convincing evidence that regional analgesia (including epidural analgesia) delays the diagnosis of compartment syndrome provided patients are adequately monitored

In 32 of 35 patients classic signs and symptoms of compartment syndrome were present in the presence of epidural anaesthesia including 18 patients with documented breakthrough pain

Mar GJ et al BJA 2009; 102: 3-11

Karagiannis G, Hardern R. Emergency Medicine Journal 2005; 22: 814

Duration of epidural analgesia

Infection of the epidural space is extremely rare with an estimated occurrence from 1:10,000 to 1:100,000 patients

Localised infection at the skin site is more common.

Long length of epidural use (especially >4 days) is particularly associated with increased risk

Guidelines?

“Epidurals are never kept in for more than 4 days because of the risk of infection”

“The indications for a catheter to be retained for 7 days or more must be reviewed by the anaesthetist who inserted it”

Cook TM, Counsell D, Wildsmith JA. Br J Anaesth 2009; 102: 179–90

Epidural ‘Red Flags’

- **Significant motor block with a thoracic epidural**
- **Unexpectedly dense motor block, including unilateral block**
- **Markedly increasing motor block during epidural infusion**
- **Motor block that does not regress when an epidural is stopped.**
- **Recurrent unexpected motor block after restarting an epidural infusion that was stopped because of motor block**

Discuss case with regional neurosurgical unit if any of the above Red Flags are present

Cook TM, Counsell D, Wildsmith JA. Br J Anaesth 2009; 102: 179–90

VTE prophylaxis and timing of epidural catheter removal

- **Unfractionated heparin**
Catheter removal should be delayed for 4 hours after the previous dose also check that APTT is normal
- **Low molecular weight heparin (LMWH)**
Catheter removal should be delayed for 12 hours after the previous dose

In both cases wait 2 hours before the next dose.

Times may need to be longer for patients with renal failure as heparin undergoes renal elimination and may accumulate if renal function is poor

Thank you!