

Ensure all postoperative patients receive safe and effective analgesia

When prescribing analgesia

- Use a variety of approaches (**multimodal** analgesia) to improve analgesia and decrease doses of individual agents.¹
- Paracetamol and non-steroidal anti-inflammatory drugs (NSAIDs) are valuable components of multimodal analgesia.²
- When using analgesics on a regular basis, have additional 'prn' medication available for breakthrough pain.
- Use individualised doses of analgesic(s) administered at appropriate dose intervals and titrate to patient response.¹

Routes of administration

- Use intermittent intravenous (IV) opioids to gain initial control of severe pain, as IV administration provides rapid and reliable drug absorption.² (Note: nurse administered IV opioids are not recommended for ongoing analgesia on general wards.)
- Consider the subcutaneous route for ongoing parenteral opioids, avoid intramuscular route (painful and less reliable absorption).²
- Once the oral route has been established, use when possible.²

Drug Class	Considerations	Selected precautions
Paracetamol	Useful adjunctive analgesic agent Consider regular order rather than prn When combined with opioids, increases pain relief ² Regular (1g every 4-6 hours) use can reduce opioid requirements by 20-30% ²	Provide clear directions when prescribing >1 paracetamol-containing preparation Maximum 4 g daily dose usually recommended in healthy adults; reduce dose in malnourished, underweight patients Avoid in severe liver dysfunction Only prescribe IV (avoid rectal) if oral is inappropriate ²
NSAIDs (e.g. conventional: ibuprofen, COX-2 selective: celecoxib)	Adjunctive analgesics for use with opioids and/or paracetamol ² Inadequate for severe pain when given alone, but can reduce opioid requirements ² Limit prescription to two to three days then review ¹	Adverse effects of NSAIDs are significant; may limit use ² Modify dose or avoid in congestive heart failure, those at risk of renal effects (renal disease, hypovolaemia, hypotension, concurrent use of other nephrotoxic agents), the elderly Lower risk of GI bleeding or ulcers with COX-2 selective NSAIDs ²
Tramadol	Weak opioid, with serotonergic and noradrenergic effects, as effective as morphine for some types of moderate postoperative pain, less so for severe acute pain ³ Less risk of respiratory depression and constipation ^{2,3}	Avoid in patients with history of seizures Use with caution in severe renal impairment and the elderly Be aware of rare, but potentially serious drug interactions with SSRIs, TCAs, pethidine, warfarin, St John's wort
Opioids (e.g. morphine, oxycodone, fentanyl, hydromorphone, pethidine, dextropropoxyphene)	Prescribe opioid dose based on age, use lower initial dose in the elderly and titrate upwards ³ Be aware of potential for prescribing and administration errors with immediate and sustained release preparations Be aware of factors that may increase risk of opioid overdose (e.g. concurrent sedatives, opioid naïve, sepsis)	Prescribing multiple opioids via multiple routes increases risk of opioid overdose and is generally not recommended Do not use morphine or pethidine in severe renal impairment ³ Avoid pethidine (accumulation of metabolite norpethidine, drug interactions) and dextropropoxyphene (unsafe in overdose, ceiling effect)

Abbreviations: NSAIDs = non-steroidal anti-inflammatory drugs, SSRIs – selective serotonin reuptake inhibitors, TCAs – tricyclic antidepressants

Monitor and manage adverse events

Monitoring – respiratory depression and sedation (patient on opioids ± sedatives)

- Respiratory rate alone as an indicator of respiratory depression is of limited value and hypoxaemic episodes may occur in the absence of a reduced respiratory rate.²
- Sedation scores are a more reliable indicator – respiratory depression is almost always preceded by sedation.^{2,4} The sedation score measures the patient's level of wakefulness and their ability to respond appropriately to verbal command. See recommended sedation scale at: http://www.health.vic.gov.au/qualitycouncil/downloads/apmm_toolkit.pdf.⁵

Monitoring – nausea and vomiting

- Effective antiemetics in the postoperative period are 5HT₃ antagonists, droperidol and dexamethasone.²
- Consider co-prescribing more than one antiemetic, each with a different mechanism of action, with instructions to change or add a different class of drug if the first agent is ineffective.⁶

Monitoring for other adverse events

Regular review will reduce the risk of serious side effects developing and will allow for adjustment of doses, dosage interval and alteration of analgesics as necessary. Side effects for the following include:

- Opioids – constipation (consider prescribing of prophylactic laxatives), urinary retention, itch, confusion and postural hypotension.
- NSAIDs – GI (peptic ulceration), renal (monitor renal function e.g. in renally impaired patient, and those being treated with angiotensin-converting enzyme inhibitors (ACEIs), diuretics and aminoglycoside antibiotics), bronchospasm, platelet inhibition (increased blood loss).² Risk and severity of side effects is generally increased in the elderly.²

1. Analgesic Writing Group. Therapeutic Guidelines: Analgesic, Version 4. Melbourne; Therapeutic Guidelines Limited, 2002.

2. Australian and New Zealand College of Anaesthetists (ANZCA). Acute pain management: scientific evidence, 2nd edition. ANZCA, 2005. <http://www.anzca.edu.au/publications/acutepain.htm> (accessed April 2007).

3. Australian Medicines Handbook, 2007.

4. Macintyre PE, Schug SA. Acute Pain Management – A Practical Guide, 3rd edition, 2007 (in press).

5. Acute Pain Management Measurement Toolkit, Victorian Quality Council, 2007 <http://www.health.vic.gov.au/qualitycouncil/activities/acute.htm> (accessed April 2007).

6. Habib AS, Gan TJ. Evidence-based management of postoperative nausea and vomiting: a review. *Can J Anaesth* 2004;51:326-41.