Recommendations for Acute Pain Management in Adults - Systemic Guideline

Effective: 21 February 2017

1. Guideline

Systemic Analgesia

1) Non-opioids

A. Paracetamol

1. Paracetamol in a dose of 1g 4 to 6 hourly regularly orally or intravenously is the standard background analgesic for all patients. Maximum daily dose 4g.
2. In view of its good oral bioavailability, intravenous administration should be reserved to patients with no reliable oral absorption.
3. The dose of paracetamol should be reduced to 500 milligrams 4 to 6 hourly in patients with cachexia (body weight below 45 kilogram), significant hepatic impairment and severe alcoholism.
4. Patients should not be wakened for their night dose, but only receive it when awake.

B. Non-steroidal Anti-inflammatory Drugs (NSAID) and Coxibs

1. NSAIDs including “coxibs” should only be used as routine background analgesics in patients without contraindications for a limited time period. For coxibs the major contraindications are concerns about kidney function.
2. In patients at increased risk of gastric ulceration, prophylactic use of a proton pump inhibitor should be routine.
3. Coxibs are preferable in the postoperative period:
   - Celecoxib: loading dose of 400mg followed by 100-200mg BD
   - Parecoxib: 40mg iv BD for up to 5 doses only in fasting patients or patients with unreliable oral absorption.
4. NSAIDs/ coxibs for acute pain should be ideally prescribed with a time limit for regular intake; this time limit is in the range of 3-7 days for most situations, but needs consideration of clinical circumstances.
5. Non-selective NSAID increase the risk of minor and major bleeding after surgery compared to placebo. It may increase risk of perioperative bleeding after tonsillectomies in adults, but not in children.

2) Opioids – Route of Administration

A. Oral Administration

1. The oral route of administration is the preferred route for opioid administration. Fasting for surgery is not necessarily a contra-indication to oral opioids (See 2B.1. below *).
2. To titrate pain relief, all immediate release oral opioids should be charted in appropriate doses PRN 1-hourly. Reduce dose and increase dose interval in hepatic and renal disease and in frail and elderly patients. Due to the delayed onset of effect of sublingual buprenorphine, the dosing interval should be not less than two hours.
3. Oral slow release preparations of opioids should only be prescribed in patients with established continuous opioid requirements (i.e. previous long-term intake of slow release preparations, continuous high demand intake of immediate release preparations or ongoing high PCA requirements). They can be used post-operatively to reduce opioid requirements and facilitate transition from parenteral or regional techniques to oral analgesia.

B. Parenteral Administration

1. Parenteral opioids should only be used if:
   - the patient is fasting or unable to tolerate oral intake
   - gastrointestinal absorption is questionable or poor
   - urgent pain relief in an acute situation is required.
2. The intravenous route is the preferred parenteral route of drug administration.
3. All postoperative patients should have an intravenous opioid prescribed for titration by recovery room staff according to standard pain protocols.
4. An individually titrated loading dose of IV opioid should be given to control pain prior to commencement of PCA which is the preferred method for intravenous opioid administration for maintenance therapy.
5. Routinely, PCA pumps should be programmed with a 5 minute lock-out interval, no background infusion, no dose limit and no loading dose.
6. Only patients, who are unable to use PCA pumps, should receive parenteral opioids via continuous intravenous infusion. Nurse-controlled use of PCA is an alternative here. Indications for continuous intravenous infusion of opioids are among others:
   - unable to comprehend concept of PCA
   - unable to use demand button
   - unwilling to be in control of pain.

   These patients should be nursed in the High Dependency Unit.
7. If parenteral management is necessary, but maintenance of IV access difficult or long-term management required, then subcutaneous infusions or transdermal administration are alternatives.

8. The use of intramuscular opioid injections is discouraged.
9. Cessation of PCA and commencement of oral analgesia should be encouraged as soon as the patient is able to take oral medications.

C. Transdermal Administration

1. Transdermal fentanyl should **NOT** be used in opioid naïve individuals and only be used in those patients in whom opioid use has been established and stabilised.
2. Transdermal fentanyl might also be an option in patients who cannot take or absorb oral opioids and need to be changed from parenteral administration of fentanyl.
3. Transdermal fentanyl can only be initiated by experienced clinicians.
4. Transdermal buprenorphine is a safe alternative and often useful in elderly patients, as very low doses can be used.

3) Opioids – Selection of Appropriate Opioid

A. Principles

1. As there is not one best opioid for all patients, opioid rotation should be utilised if one opioid fails to achieve satisfactory pain control or leads to unacceptable side effects.
2. The use of pethidine by any route is prohibited.
3. See recommended concentrations and doses of all opioids in attached Appendix.
4. Pain management problems such as acute pain in the chronic pain patient and severe acute pain not controlled by these recommendations should be referred to the Anaesthetist on call.

B. Oral Administration

1. Tramadol (first line) or oxycodone immediate-release tablets (second line) are first choice opioids for oral titration of pain relief. In selected patients, buprenorphine administered sublingually (this in particular in patients with history of abuse or drug seeking behaviour) and oral hydromorphone are other options.
2. These immediate release preparations can be supplemented by tramadol or oxycodone/naloxone slow-release tablets (try to avoid) in those patients with ongoing opioid requirements or high opioid usage.
3. Ensure that the prescription clearly differentiates between the immediate and slow-release preparation e.g. oxycodone IR (immediate release) or Oxycodone CR (controlled release).

4. Methadone can be used as an alternative oral opioid in particular in patients:
   - with established opioid use
   - with neuropathic pain
   - with concerns about abuse liability
   - in whom morphine metabolites might be the cause of adverse effects.

   It is of note, that tramadol or tapentadol fulfils some of these criteria too, and these are much easier and safer to use.
5. Methadone should only be initiated by experienced clinicians or Palliative Care physician as introduction has increased risks due to its long and variable half-life causing potentially retention and respiratory depression and the potential to cause QT prolongation.

C. Patient Controlled Analgesia

1. Fentanyl is currently the drug of choice for use via PCA pumps**,** in particular in those patients with:
   - renal problems
   - pruritus on morphine
   - a history of previous problems with morphine exposure.
2. A second alternative is the use of morphine.
3. Tramadol can also be used via PCA pumps, in particular in those patients with:
   - a previous history of respiratory depression on opioids
   - sleep apnoea
   - renal problems
   - a past history of opioid abuse
   - constipation or post-operative ileus
   - age over 65 years.

D. Intravenous Infusion

1. Fentanyl or tramadol should be considered for continuous intravenous opioid infusions.
2. Other opioids should be used for continuous intravenous infusions only in selected situations.
3. All patients with IV opioid infusion should be monitored on HDU.

E. Systemic Opioids Following Intrathecal Morphine

1. Intrathecal morphine up to 200mcg can be used for certain procedures usually in combination with local anaesthetic.
2. Dosage may need to be reduced in frail and/ or elderly and monitoring on HDU may be required.

3. Additional sedatives and/or opioids to be given by any route are to be ordered by the anaesthetist only and the dose/ frequency should be reduced.
4. PCA can be prescribed by the anaesthetist in patients who had intrathecal morphine. There is minimal evidence that respiratory depression is a problem when <300mcg of intrathecal morphine is used. Sedation is the most useful clinical sign.

4) Adjuvants

A. Ketamine

1. Low dose ketamine can be a useful adjunct to systemic analgesia after major surgery.
2. Low dose ketamine should be used in particular as an adjuvant:
   - in neuropathic pain including phantom limb pain
   - in ‘pathological’ pain (usually with hyperalgesia and/or allodynia)
   - in pain with poor opioid responsiveness
   - in patients with preceding high opioid consumption ('opioid tolerant' patient)
   - as a component of multimodal analgesia after major surgery.
3. The most appropriate way to introduce ketamine is by titration in form of IV bolus doses in the range of 2.5-5 mg, repeated until benefit is achieved or side effects occur.
4. Alternatively or subsequently an intravenous infusion of ketamine according to standard protocols is recommended. An infusion rate in the range of 0.1mg/kg/hour is a good starting point. Infusion rates can be titrated upwards as required as long as tolerated without adverse effects; often a bolus dose for break through pain should be prescribed (5-10mg).

B. Pregabalin

1. Pregabalin in a dose of 150mg (range (25) 75-300mg depending on age and weight) as a premedication at least 1 hour pre-operatively and possibly repeated 12 hours later can be used as a routine adjunct to multimodal analgesia.
2. Pregabalin can be continued perioperatively in patients with poorly controlled (potentially neuropathic) pain, with significant symptoms of hyperalgesia/ allodynia and/ or at high risk of developing persistent postsurgical pain.
3. Pregabalin doses need to be reduced in patients with renal failure and additional top-up doses are often required after dialysis.
4. Pregabalin is also the first line anticonvulsant for neuropathic pain treatment. Starting doses for inpatients are (75-) 150mg BD. Subsequent dose titration should then again be to effect versus sedation (with maximum doses of 300mg BD).

C. Antidepressants

1. Tricyclic agents are indicated in neuropathic pain. It is often useful to combine these with membrane stabilisers. Empirical evidence suggests that they are in particular helpful in burning pain and hyperalgesia.
2. Amitriptyline in a starting dose of 10-25mg at night is the agent of choice; starting doses in the elderly should be 5mg. Again dose titration is to effect versus sedation or other tricyclic effects.
3. In cases where sedation is not desirable at night, desipramine/ nortriptyline are alternatives to amitriptyline.
4. Duloxetine/ Venlafaxine as SNRIs are alternatives if tricyclics are contraindicated or cause adverse effects.

D. Calcitonn

1. Salmon Calcitonin is indicated in acute phantom limb pain, after vertebral crush fractures and possibly in difficult to treat neuropathic pain; early treatment is more successful.
2. Calcitonin should be used in a dose of 100 I.U. subcutaneously or intravenously (in 100ml normal saline over an hour) daily on three subsequent days.
3. Prior to each injection, an antiemetic should be given.

E. Lignocaine

1. Intravenous lignocaine in antiarrhythmic doses of 1-2 mg/kg as a bolus is an alternative to ketamine to treat severe neuropathic pain in an emergency.
   - If in such a situation pain control cannot be maintained by a single injection, then continuous infusion of lignocaine in antiarrhythmic doses in a range of 1-3mg/min should be initiated. A 0.4% lignocaine infusion should be used. (2000mg lignocaine in total 500mls 5% dextrose). 4mg/ml lignocaine translate into infusion rates of 15-45ml/hour.

2. Definitions

Acute pain	is defined as ‘pain of recent onset and probable limited duration. It usually has an identifiable temporal and causal relationship to injury or disease’.
Systemic administration	can be via the oral, intravenous, intramuscular, subcutaneous, rectal, transdermal or transmucosal route.

3. Roles and Responsibilities

The WACHS Executive Director Medical Services is responsible for endorsement of this guideline for publication via HealthPoint Policies.

All staff are required to work within policies and guidelines to make sure that WACHS is a safe, equitable and positive place to be.

4. Compliance

Failure to comply with this policy document may constitute a breach of the WA Health Code of Conduct (Code). The Code is part of the Employment Policy Framework issued pursuant to section 26 of the Health Services Act 2016 (HSA) and is binding on all WACHS staff which for this purpose includes trainees, students, volunteers, researchers, contractors for service (including all visiting health professionals and agency staff) and persons delivering training or education within WACHS.

WACHS staff are reminded that compliance with all policies is mandatory.

5. Evaluation

Monitoring of compliance with this document is to be carried out by a delegated anaesthetist, Albany Health Campus every 12 months via audit of a random selection of PACU records for post-operative pain management.

6. Standards

National Safety and Quality Health Care Standards - Standard 4, Medication Safety:

4.3.2, 4.5.1.

7. References

1. Royal Perth Hospital Pain Service Standard Operating Procedures, APS Systemic SOP Nov 2015
2. ANZCA and FPM, Acute Pain Management: Scientific Evidence 2015, 4th edition, NHMRC: Canberra
3. Pain Service Guidelines, Joondalup Health Campus, June 2016.
4. Gan, TJ et al, 2003, Consensus guidelines for managing post-operative nausea and vomiting, Anaesthesia and analgesia,97:62-71

This document can be made available in alternative formats on request for a person with a disability

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Appendix A

RECOMMENDED DRUG CONCENTRATIONS AND REGIMENS FOR SYSTEMIC ANALGESIC INFUSIONS

PLEASE DO NOT VARY THESE CONCENTRATIONS WITHOUT CONSULTING AN ANAESTHETIST
e.g. for patients with chronic pain

PATIENT CONTROLLED ANALGESIA (PCA)

In order of preference:

1. FENTANYL 10 mcg/ml (1000 micrograms Fentanyl in 100mls N/Saline pre-mixed bag)
2. MORPHINE 1 mg/ml (100 mg Morphine in 100mls N/Saline pre-mixed bag)
3. TRAMADOL 10mg/ml (500mg in 50mls N/Saline)

Usual prescription:

- FENTANYL 10-20 mcg bolus, 5 minutes lockout
- MORPHINE 1mg bolus, 5 minutes lockout
- TRAMADOL 10mg bolus, 5 minutes lockout

OPIOID INFUSION

Continuous opioid infusions require HDU admission

Fentanyl is the preferred drug for continuous IV. Opioid infusions

1000 micrograms Fentanyl in 500 ml Normal Saline (2 mcg/ml) OR

50 mg Morphine in 500 ml Normal Saline (1 mg/ 10ml) OR
500 mg Tramadol in 500 mL Normal Saline (1 mg/ mL)

Please prescribe a wide rate range e.g. 0 – 40 ml/hour, to allow titration of the infusion.

Exception: In patients over 70, please restrict the maximum rate to 25 ml/hr, as elderly patients require much less.

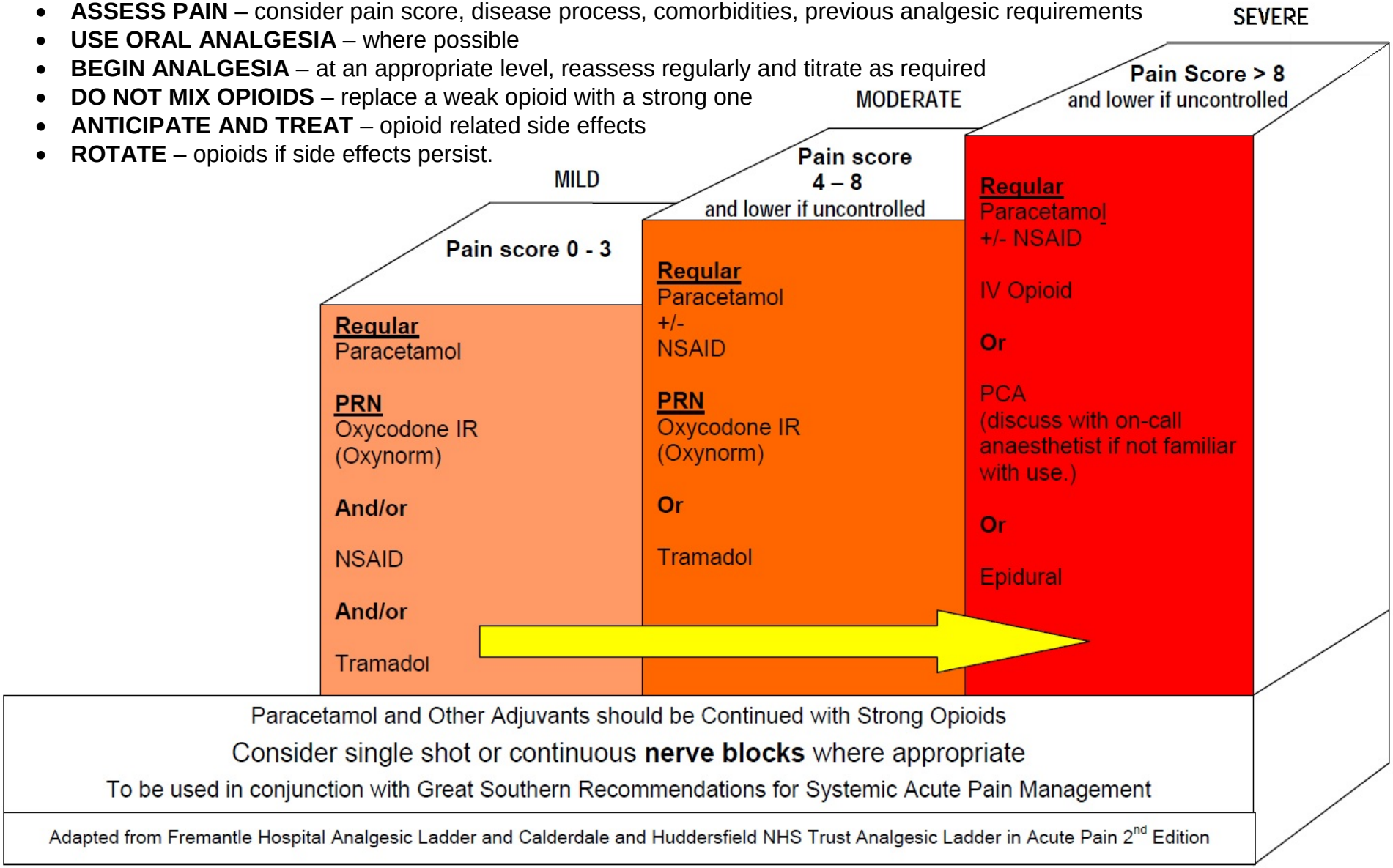
KETAMINE INFUSION

IV Infusion: 200 mg Ketamine in 200 ml N/Saline (1 mg/ml).

Suggested Rate: 0.125 - 0.2 mg/kg/hour e.g. 70 kg person - 8-15 ml/hr.
(Infusion is usually at a set rate. Require admission to HDU.)

ANALGESIC LADDER for ACUTE PAIN

- **ASSESS PAIN** – consider pain score, disease process, comorbidities, previous analgesic requirements
- **USE ORAL ANALGESIA** – where possible
- **BEGIN ANALGESIA** – at an appropriate level, reassess regularly and titrate as required
- **DO NOT MIX OPIOIDS** – replace a weak opioid with a strong one
- **ANTICIPATE AND TREAT** – opioid related side effects
- **ROTATE** – opioids if side effects persist.



Suggested Standard Pain Therapies

Analgesic ladder for acute pain management

	Pain score	Treatment
Mild Pain	**1-3, no pain at rest and slight pain on movement**	**Non-opioid e.g. paracetamol +/- NSAID**
Moderate Pain	**4-7, intermittent pain at rest or moderate pain on movement**	**Add mild opioid e.g. codeine or tramadol**
Severe Pain	**>8, continuous pain at rest or severe pain on movement**	**Add strong opioid e.g. morphine, fentanyl or oxycodone**

NSAIDs: The main concern, in particular in the perioperative period, is renal toxicity. Therefore check creatinine before you prescribe. Consider parallel use of other nephrotoxic agents (e.g. ACE inhibitors, diuretics, aminoglycoside antibiotics) and watch for hypovolaemia, hypotension and decreased urine output.

Regular Analgesia

1. **Paracetamol** 1g QID Oral
   Reduce doses in elderly, liver dysfunction, heavy alcohol use, low body mass.

2. **NSAIDs and COX-2 inhibitors**
   Prescribed as required (not routinely) as part of multimodal analgesia after excluding contraindications (renal, cardiovascular, peptic ulcer disease, bleeding risk).

   Always check renal function and fluid balance before prescribing.

Celecoxib	100-200mg	BD	Oral (first preference)
OR			
Naproxen	250-500mg	BD	Oral
OR			
Ibuprofen	400mg	TDS	Oral
OR if nil by mouth			
Parecoxib	40mg	BD	IV

Opioid Analgesia

- Prescribe only **ONE** opioid by **ONE** route
- Prescribe **EITHER** oxycodone IR**, OR** buprenorphine
- Tramadol **MAY** be co-prescribed with oxycodone or buprenorphine.

Opioid analgesia remains the main stay of acute pain management

Tramadol	50-100mg	2 hourly	oral/ IV PRN	Max 400mg/24 hours
AND / OR				
Oxycodone IR	10-20mg	2 hourly	oral PRN	**Young age <40**
Oxycodone IR	5-10mg	2 hourly	oral PRN	**Older age 40-70**
Oxycodone IR	2.5-5mg	2 hourly	oral PRN	**Elderly age >70**

OR If nil by mouth, respiratory or renal impairment

Buprenorphine	100-400mcg	2 hourly	S/L PRN

Controlled (Slow) release Opioids

Controlled release (CR, SR) opioids **should not be prescribed *routinely*** in acute pain because of the risk of opioid overdose. However in some cases, CR opioids are required to reduce the amount of PRN opioid used (‘step down’), or for chronic pain management.

Tramadol SR	50-150mg	BD	Oral
OR			
Targin (Oxycodone/ naloxone) CR		BD	Oral

Opioid safety tips

- **Sedation** (not respiratory rate) is the first sign of impending opioid overdose (also pin-point pupils)
- Write **'withhold if sedated'** on the medication chart if concerned about opioid sedation / respiratory depression.