

Palliative Care

Care Management Guidelines
Pain Management

Pain Management

Introduction

- These guidelines concern the management of pain for people who have a progressive life-limiting illness where death is the anticipated outcome.
- The challenge in palliative care is to optimise comfort and function against a background of eventual but inevitable deterioration and death.
- Although there is much common ground, chronic non-malignant or acute pain are not covered by these guidelines. These issues are usually managed by dedicated specialised acute and chronic pain teams.

Key Principles

- Pain is what the patient says it is. It is the clinician's responsibility to determine the nature and cause of the pain and its appropriate treatment.
- Experience shows that the longer pain is left untreated the more difficult it is to treat.
- Constant pain requires constant analgesia - don't rely on PRN dosing.
- There is more to pain management than opioid dose escalation. If opioid dose escalation is not improving control, other strategies need to be considered.
- Patients often have more than one site and mechanism of pain operating at any given time, and these may require different treatments.
- Pain management cannot be put on 'auto-pilot', continual monitoring and reassessment are necessary. Pain can change its cause, location and nature during the course of an illness, especially in cancer where new sites of spread or tumour extent can significantly change analgesic requirements.
- Uncontrolled severe pain is a medical emergency. It requires urgent effective treatment, often by subcutaneous infusion and the use of several drugs in combination.
- The answer to pain is not always more medication. The psychological and emotional dimensions of pain and suffering require attention at all times.

Assessment

Assessment needs to determine cause, impact on quality of life of the patient and their family, and the effectiveness of interventions.

It requires:

- A full history and examination.
- Appropriate investigations as necessary to confirm the source of the pain. Cancer patients may need re-staging of their disease.
- Accurate recording of a patient's pain is essential for both diagnosis and monitoring of effectiveness of treatment. This can be done by:
 - Drawing sites and distribution of pain on a body chart (refer to body chart below); and
 - Inserting pain scores and any essential observations onto a chronological pain chart where sequential information can be viewed (refer to pain assessment and

monitoring charts at:

www.health.vic.gov.au/qualitycouncil/downloads/app1_pain_rating_scales

For other pain assessment tools refer to - [Caresearch pain assessment page](http://www.caresearch.com.au)
www.caresearch.com.au

- **Reassess, reassess, reassess!** Pain, especially in cancer, is never static. Regular re-assessment is necessary to document and address pain site and mechanism fluctuations.

Onset of Pain

- **Establishing a time line** of the pain is often useful in establishing a cause and deciding on a treatment that may be useful for managing the pain.
 - Headaches that occur in the morning on waking is a pointer towards increased intracranial pressure.
 - Pain following meals and associated with a feeling of early satiety can be a marker of pressure on the stomach where there is liver swelling with consequent compression of the stomach.
 - Pain associated with normal bodily activity, breathing, micturition, defecation, etc. can help with localisation of pain.
- **How often it occurs** is useful in deciding treatment. Pain that occurs once a day warrants a different treatment regimen to a pain that happens many times a day.
- **How long the pain lasts** is also important as a pain which is persistent most of the day with only short periods of comfort warrants an analgesic regimen which is based around long acting medication, while a pain of short duration requires a different plan. Treating a pain that lasts for 20 minutes with a drug that lasts for three to four hours will lead to accumulation of redundant medication and added side effects, whilst treating a persistent pain with short duration PRN medication will consign the patient to a cycle of recurrent pain and distress.

Quality

- Trying to describe pain is difficult but it is important to try to get the patient to describe the pain in their own words if possible. Prompting through examples is often needed and offering patients choices can be a way of eliciting information.
 - Is the pain sharp or is it a dull like pressure?
 - Is there any change in sensation in the area of the pain?
 - Does it feel like it's been burnt or does it feel cold?
 - Is the pain constant or intermittent?
 - Are there pins and needles or does it feel like electric currents in the area?
 - Is it like any other pain they may have experienced?
- Pain that is able to be localised to an area and is sharp is characteristic of **superficial somatic pain**. The commonest example of superficial somatic pain is that caused by a mouth ulcer. Generally it can be localised accurately to a well defined area.
- Pain that is dull and localised generally to an area (covered by the hand and not indicated by the finger) is characteristic of **deep somatic pain**. The commonest example of such a pain is the pain from a bruised muscle or a sprain. It is generally localised to an area but is often more diffuse.
- Pain that is expressed in terms of changed sensations to the area, burning, scalding, pins and needles, hot or cold etc. is typical of **neuropathic pain**. The commonest example of neuropathic pain is the sensation that occurs as the nerves in the foot or leg regain sensation after "going to sleep" (a mild form of neuropraxia).

- Pain in the abdomen or chest, usually mid line pain, which is often deep, sharp and sometimes intermittent is characteristic of **visceral pain**. The commonest experience of visceral pain is the pain from an overfull bladder or bowel.
- All these pains can be intermittent or constant and can be disabling or an annoyance. The nature of cancer pain is that there can often be a mixed pain pattern due to invasion of superficial and deep structures with accompanying nerve damage as well. With non cancer pain, the ability to make a clear diagnosis of the pain type is often easier.
- Obtaining a history of sleep or other activities being disturbed can help with tailoring therapy not only for the pain but for other facets of distress as well.

Region/Radiation

- Referred pain and radiation of pain is a well known feature of medical diagnosis.
- Pain in the knee can be referred from the hip and pain from tonsillitis can be referred to the ear. Pain that is apparently dislocated from an obvious cause should never be dismissed as “being in the mind”. Spinal cord compression can result in a variety of pain sensations in various parts of the back and body and does not necessarily need to follow a dermatome distribution.
- The position of a cancer (primary or secondary) can lead to specific pain presentations which can help with diagnosis as well as treatment. For instance the presence of a lung cancer in the apical lobe can cause erosion of the upper pleural surface of the lung and invade deeper structures, muscles and nerves, resulting in pain in the arm and shoulder and radiation up the side of the neck as well – Pancoast Syndrome.
- Head and neck cancers have a high correlation with micro-invasion of neural sheaths. Pain in patients who have had a previous history of head and neck cancer who present with a pain in the head and neck region often signifies a recurrence of the cancer even in the absence of confirmatory investigations.

Severity

- Assessing the severity of pain requires an ongoing process. The individual’s perception of pain can be influenced by a number of factors including – the physical nature of the pain, how long it has been present, whether there has been any relief from medications, emotional factors, etc. The pain perception can vary from day to day depending on these factors.
- How to describe pain:
 - Words such as MILD, MODERATE or SEVERE can sometimes be useful when accompanied by descriptors relating to the QUALITY of the pain, but generally, the most useful way of monitoring the severity of pain is to encourage the use of a regular pain recording system by use of pain charts and using a scale of pain intensity to produce a measurement of that individual’s pain.
 - The most commonly used measurement tool is a Visual Analogue Scale known as a Likert Scale (numerous examples of these have been produced by various pharmaceutical companies as pain rulers).
- There are other scales in use for non verbal patients or patients who find numerical concepts difficult that have been validated for use in pain management.

Note: *Pain scores are specific to the individual and are useful for ongoing monitoring of pain management. They are not comparative between individuals as one person’s estimate of a pain of 7 out of 10 is not the same as another person’s 7 out of 10.*

Useful Questions When Assessing Pain

- **Onset:** When did it begin? How often does it occur? How long does it last?
- **Exacerbating or relieving factors:** What brings it on? What makes it better? What makes it worse? Is the pain better lying down or standing up? Is it worse on movement?
- **Localisation, Region and Radiation:** Where is the pain? Does it move anywhere? Is there more than one site?
- **Quality:** What does it feel like? Can you compare it to any pain you've had before?
- **Severity:** How intense is your pain? At best? At worst? On average? How bothered are you by the pain? Are there any other symptoms that accompany the pain?
- **Understanding and Impact:** What does the pain stop you doing? How are you sleeping? What do you think is causing the pain? What is your goal for the pain? Are there any other views or feelings about the pain that are important to you and your family?

Diagnosis

- **What is the mechanism?**
 - There are three main mechanisms of pain generation:
 - Somatic (body surface and some linings)
 - Visceral (deep body cavity and hollow viscus pain)
 - Neuropathic (nerve damage)
 - Most cancer pain is mixed mechanism in nature, and usually has a significant inflammatory component.
 - Treatment, especially certain drug choices, may vary according to mechanism. In particular:
 - There are a number of agents that are mainly used for nerve damage pain (anticonvulsants, antidepressants, membrane stabilisers).
 - Low dose opioids alone are often effective for visceral pain.
 - Bone pain usually responds to non steroidal anti-inflammatory medication, and focal bone irradiation.
 - **Is it locally tender?** Over a bone? Over the liver? If yes, this may be bone pain or liver capsule pain, a mainly somatic mechanism of pain causation.
 - **Is it a deep dull ache in the abdomen or thorax?** If yes, it may be a visceral mechanism of pain causation.
 - **If it is visceral abdominal pain, is it colicky in nature?** If so, consider the possibility of a blockage. Is it constipation or intestinal obstruction?
 - **Does the pain follow a nerve root or nerve distribution?** If yes, it may be neuropathic mechanism.
- Note:** *Neuropathic pain in cancer may be caused by peripheral damage and it may not conform to specific dermatomes.*
- **Is there evidence of the presence of a known cancer pain syndrome?**
Examples:
 - Spinal nerve root (dural) compression (radicular pain on coughing or straining).

- Brachial plexus invasion (pain in the arm in the relevant nerve root distribution).
- Sacral hollow invasion (usually from rectal cancer, pain in perineum).
- Chest wall extension.
- Retroperitoneal pain (pain worse on lying flat, interrupts sleep, better on standing and movement).
- Pancreatic – coeliac plexus (back and anterior root radiation).
- Malignant psoas syndrome (worse on leg straightening, legs drawn up, sciatic stretch test positive).
- Head and neck (radiation may be caused by widespread perineural invasion, up to base of skull).
- Raised intracranial pressure headache.

Management

Goals of Management

- Always engage the patient in the process of managing their pain.
- The overarching goal of pain management is to optimise comfort and function in the face of inevitable deterioration.
- Pain nearly always benefits from treatment, but perfect control may be hard to attain, especially initially. It is wise to be realistic.
- A practical approach is to aim to be pain-free:
 - at night (if this is a problem); then,
 - at rest when awake; then,
 - on movement (incident pain).
- Reassure the patient of an ongoing commitment to improving their pain control and build confidence that pain will be controlled with good communication, thorough assessment and regular review.
- Some permanent modifications to life-style may be necessary to avoid incident pain. These changes are often the most difficult to achieve because they serve as a constant reminder of the progression of disease, highlighting the loss of ability and function.

Management - Non Pharmacological

- Emotional support as part of routine holistic palliative care;
- Physical therapies e.g. heat and massage for muscle spasm, physiotherapy input for maintenance of function and splinting;
- Occupational therapy input for lifestyle adaptation;
- Meditation and visualisation;
- TENS (transcutaneous nerve stimulator); or
- Acupuncture.

Management - Pharmacological

- For 'mild' pain:
Paracetamol 500mg to 1gm four times a day (max 4gm/day) to which can be added
Naprosyn 500mg bd or 1gm sustained release (SR) daily in the morning

Or Celecoxib 100 - 200mg bd daily.

- For 'moderate to severe pain', both initially and if persistent, ADD an opioid.

Commencing Opioids in Opioid Naïve Patients

Note: *Commencing opioid naïve patients on sustained release opioids without appropriate titration with immediate release opioids is dangerous and there have been recorded cases of fatality.*

- Start with a small dose of an immediate release opioid (2.5 - 5mg morphine, 1.25mg - 2.5mg of oxycodone, 0.5mg - 1mg of hydromorphone) and give it 4hrly, checking pain levels and cognitive state 3 - 4hrly regularly. If patient becomes cognitively impaired give prn only. Exercise common sense re middle of the night doses – sleeping patients do not need to be woken.
- If the patient is frail, elderly, has renal or hepatic impairment, or has a past history of opioid adverse effects, “start lower and go slower”: begin the titration of opioids with doses that are at most half of the doses recommended (sometimes as low as a fifth) to prevent toxicity.
- Ensure there is provision made for a “top up” dose for “breakthrough” pain prescribed at the same level as the starting dose (2.5mg - 5mg morphine, 1.25 - 2.5mg of oxycodone, 0.5mg - 1mg of hydromorphone) available to take at any time as a prn dose, allowing an interval of 30 minutes between doses.
- Monitor opioid intake and pain response daily, and adjust as necessary. To adjust the dose:
 - calculate the total opioid taken in the previous 24 hours; then
 - divide by six to ascertain a new dose for regular and breakthrough administration.
- Warn patients and carers of predictable side effects in commencing opioids:
 - usually transient effects include nausea, drowsiness, mild confusion; and
 - long term effects include constipation.
- Provide for the control of nausea and constipation:
 - a prescription for a regular anti-emetic if needed e.g. Metoclopramide 10mg 6 hourly po; and
 - prescribe a prophylactic aperient.
- Once the opioid usage becomes stable sustained release medication can be introduced.

Note: *Nausea should settle in the first three days. If the patient requires anti-emetic therapy after this, referral to Palliative Care Services is recommended. If there is severe nausea or vomiting, early specialist help is essential.*

Using Sustained Release Opioids

Sustained release (SR) opioids provide a more even level of opioids over a longer period of time than immediate release opioids, and help with patient compliance. SR opioids are available in oral and transdermal forms and have durations of action varying from 12 to 24 hours in the case of morphine and oxycodone; to three days in the case of fentanyl transdermal patches; and to seven days in the case of buprenorphine transdermal patches.

- Use once pain levels and opioid use have stabilised with immediate release opioids.

- When changing opioids e.g. Codeine to Morphine etc. consult with opioid conversion tables and remember they are **guides** to conversion only and close review of the patient is necessary.
- To ascertain the appropriate SR dose divide the total 24 hour dose by the recommended duration of action e.g.:
 - a 24 hour dose of 40mg of immediate release morphine is equivalent to 20mg of MS Contin 12 hourly,
 - 30mg of oxycodone is equivalent to 15mg of Oxycontin 12 hourly.
- **Breakthrough pain medication** (oral or subcutaneous) needs to be prescribed e.g. immediate release opioid dose range between 1/6th or 1/12th of the 24 hour dose of opioid (some authorities suggest 1/10th for both oral and transdermal modes of delivery).
- **Constipation is a long term problem** - always prescribe an appropriate laxative regime.

Transdermal Patches

- DHHS Palliative care services recommend transdermal patches for delivery of sustained release opioid only where pain is very stable.
- The technology of transdermal drug delivery relies on the ability of the drug to pass through the dermis and lodge in the subcutaneous fat before being leached out into the blood stream.
- Fentanyl patches deliver medication over 72hrs.
- Buprenorphine patches deliver medication over seven days.
- Issues are:
 - absorption can be variable;
 - there is a wide range of opioid equivalence which makes titration problematic;
 - changes in patch dose have a delayed (up to 18 hour) rise in serum levels;
 - a depot of drug persists following removal of the patch.
- It is still necessary to prescribe a dose of immediate release opioid to cover the possibility of pain breaking through the sustained release opioid cover.
- If pain becomes unstable re-titration with immediate release opioids is recommended.

Parental Opioids

- Opioids can be given subcutaneously (S/C) intermittently (bolus dosing) or by continuous subcutaneous infusion (CSCI) via a Syringe Driver - refer to appropriate local or institutional policies or guidelines. See Syringe Driver pages of the [DHHS Tasmania guide](#).
- Indications:
 - inability to swallow;
 - nausea;
 - vomiting; and
 - drug only absorbed parenterally.
- The subcutaneous route is preferred because:
 - Intramuscular injections are painful and muscle mass may not be sufficient in cachectic patients;

- The intravenous route is suitable only for short term administration and maintaining intravenous access is difficult and often burdensome;
- The loss of subcutaneous tissue with weight loss makes the space able to tolerate the expansion of the tissues by the volume of injection; and
- Absorption is such that the route is equivalent to the intravenous route.

Note:

- *The subcutaneous dose is 1/4 to 1/2 of the oral opioid dose depending on the opioid used, due to first-pass metabolism in the liver via the entero-hepatic circulation. See opioid conversion guidelines below.*
- *Opioids delivered by CSCI need to be considered as long acting medications and provision made for breakthrough dosing.*
- *In renal failure there is the potential for an accumulation of morphine metabolites which could add to side effects and poor pain control. In this situation substitute with Hydromorphone, Fentanyl or Sufentanil.*
- Opioid conversion guidelines from the University of Melbourne can be accessed at <http://www.pallcare.unimelb.edu.au/> in 'Research' then click on 'Resources'.

Malignant Bone Pain

- Ensure an adequate trial of a non-steroidal anti-inflammatory.
- Consider radiotherapy, including re-treatment.
- Have systemic chemotherapy and hormone therapy options been excluded?
- Bisphosphonates
- Surgical fixation of fractures or prophylaxis of impending fracture.

Neuropathic Pain

Using adjuvant medications

Adjuvant medications are used when there is a suspicion that the pain is neuropathic in nature or when there is a pain that is difficult to control and there are significant opioid side effects. A high proportion of pain in cancer has a mixed mechanism of causation and there is often a 'hidden' neuropathic component present.

For neuropathic pain:

Tricyclic antidepressants

- Amitriptyline 10 - 50mg once daily at night, or
- Nortriptyline 25 - 50mg once daily at night

Anticonvulsants

- Sodium valproate 200 - 500mg nocté initially, up to therapeutic dose levels
- GABA analogues:
 - Gabapentin 300 - 600mg three times a day, up to 3.6g per day
 - Pregabalin 75 - 150mg twice daily, up to 2 - 3g per day
- Carbamazepine 100 - 200mg twice daily (up to 1200mg/24hrs in gradual increments of 100 - 200mg/week) monitor with serum levels

Antiarrhythmics

- Mexilitine 150 - 600mg in divided doses three times a day (commencing with 50mg three times a day increasing slowly)

Interventional Pain Management

In some centres it may be possible to call on Neurosurgeons, Interventional Radiologists or Anaesthetists with procedural experience to perform a variety of neurolytic procedures including:

- intercostal nerve blocks;
- coeliac plexus block (pancreatic cancer);
- saddle block spinal (rectal cancer, sphincter loss); or
- lateral cordotomy (resistant lateralised body pain).

Management of Refractory Pain

Refractory severe pain that has not responded to opioid dose escalation can be categorised as a palliative care emergency. There is a need to review and reassess the pain history and look at a range of factors including psychological stress.

Uncontrolled pain can be due to:

- poorly controlled or unrecognised neuropathic pain.
- central sensitization (“wind up” phenomenon) changes in the nervous system as a result of constant nociceptive input can lead to a process of ‘central sensitization’ of the nervous system that gives rise to a ‘wind-up’ of pain despite increasing opioids. One of the main pathways involved is thought to be mediated by the N-Methyl-D-Aspartate (NMDA) receptor.
- opioid induced hyperalgesia: where the neurones become sensitised to opioids and these drugs then generate pain signals (pro-nociception) or transmit sensations as pain.

The emergency management of this type of pain uses Triple Agent regimens, using an NMDA pathway inhibitor (e.g. Ketamine) in combination with a reduced level of opioid, together with a potent anti-inflammatory agent.

“KOK”:

Ketamine subcutaneously, initially 100mg / 24hrs increasing as needed to maximum of 500mg / 24hrs (Opioids and Ketamine can be combined in a syringe driver)

Opioid (reduce dose or be prepared to reduce dose by 25 - 50%)

and

Ketorolac 10 - 30mg SC twice, or three times daily for five days

OR

“KOD”:

Ketamine 100mg / 24hrs subcutaneously, initially 50 - 100mg / 24hrs increasing as needed to maximum of 500mg / 24hrs (Opioids and Ketamine can be combined in a syringe driver)

Opioid (reduce dose or be prepared to reduce dose by 25 - 50%)

and

Dexamethasone 4 - 16mg / 24hrs, or as single daily SC injection

Opioid Substitution and Delivery Route Change

Where there is a suspicion that the level of opioids could be contributing to pain through opioid induced hyperalgesia, opioid substitution or a change of route could reduce the opioid load and change the metabolites the body has to deal with.

Opioid Substitution

This is also known as opioid switching or rotation. It consists of changing from one opioid to another to improve adverse effects and/or pain control. Alternatives to morphine include:

- Oxycodone;
- Fentanyl;
- Hydromorphone;
- Methadone; and
- Sufentanil.

Any such change needs to take account of relative potency. A relative potency chart in a reliable publication should be consulted. DHHS palliative care services recommend table 10.7 in the Palliative Care [Therapeutic Guidelines, Version 2, 2005, p 96.](#)

Or Eastern Metropolitan Palliative Care Consortium (Victoria) Opioid Conversion Ratios - Guide to Practice at <http://www.pallcare.unimelb.edu.au/> in 'Research' then click on 'Resources'.

Delivery Route Change

Alternatives to the oral route are:

- Transdermal (fentanyl, buprenorphine);
- Subcutaneous (see above); and
- Spinal (usually an opioid – morphine or fentanyl, plus a local anaesthetic via intrathecal catheter) given for refractory lower body, especially pelvic cancer pain. This route is inserted by an anaesthetist or neurosurgeon and requires shared care between palliative care and anaesthetics. Nurses administering medication via an intrathecal catheter need to be trained and credentialed.

Change of route can be also be useful in situations where there is poor patient compliance, poor absorption, or refractory side effects to opioids.

Consultation and Advice

Consider seeking advice:

- Where two successive opioid dose escalation steps (by up to 50 - 100% of 24 hr dose) have failed to improve pain, and/or opioid induced side effects (cognitive impairment/nausea/vomiting) are present.
- Use of syringe driver is being contemplated.
- Switching from morphine, or another opioid because of side effects (opioid substitution).
- Methadone and Ketamine use is being considered.
- Neuropathic mechanism or incident component, if not responsive to recommended therapy.
- One of the cancer pain syndromes is believed to be present.
- Any pain crisis or emergency.
- Prior drug dependence history.

- History of sensitivity to adverse effects with analgesics.
- History of delirium, dementia.
- Renal failure, acute or chronic.
- Where pain behaviour, cause, and drug response do not seem to match.
- History of chronic non-malignant pain.
- Central pain (neurological conditions e.g. stroke, MS).
- Pain related to past surgical procedure (e.g. mastectomy, thoracotomy).

Definition of Terms¹

- **Pain** is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.
- **Breakthrough pain:** a transient increase in pain, occurring against a baseline level of otherwise acceptable pain control.
- **Incident pain:** a category of breakthrough pain related to a particular event, most commonly movement.
- **Allodynia:** pain due to a stimulus that does not normally cause pain.
- **Hyperalgesia:** an increased response to a stimulus that is normally painful.
- **Opioids:** a term to encompass both natural and synthetic drugs that are members of the drug class based on morphine. Used in preference to narcotic, that has pejorative implications.
- **Refractory:** in the context of cancer pain and palliative care practice this refers to pain that fails to achieve acceptable control despite the optimal use of the WHO analgesic ladder approach. This usually consists of opioid dose escalation, with an anti-inflammatory agent, and/or paracetamol, and first line neuropathic pain agents where indicated.

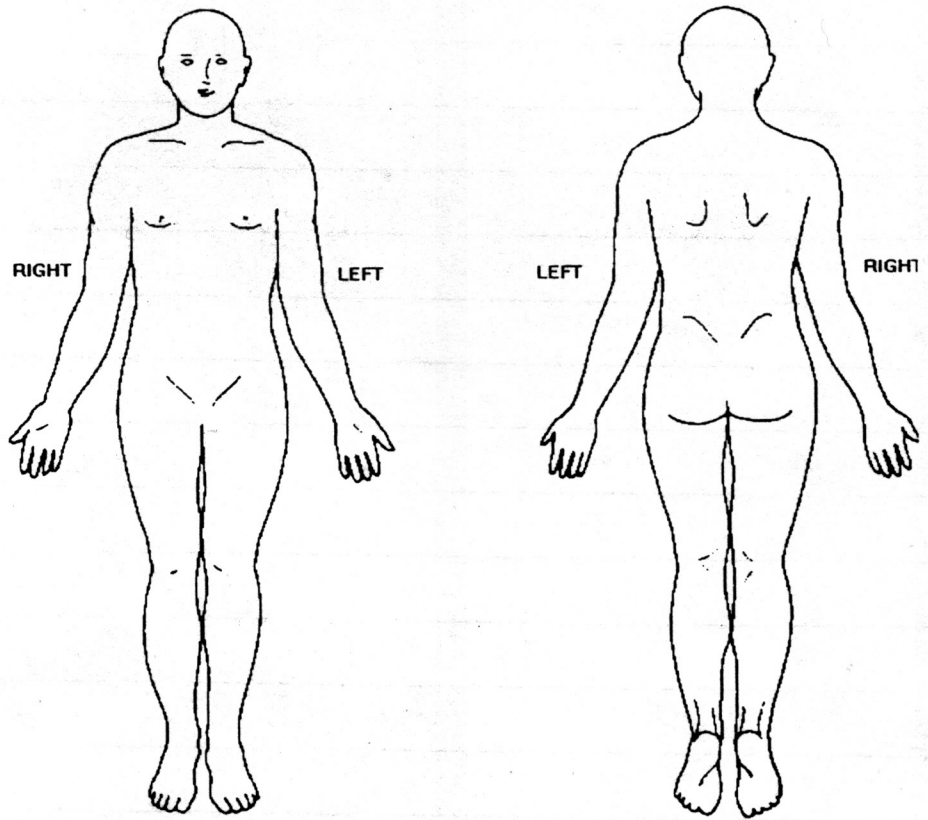
Revision history and planned frequency

Reviewed December 2009

Next review December 2010

¹ [International Association for the Study of Pain](#) (IASP) website provides a useful [glossary](#) of terms

Body Chart



Opioid Equivalence Table

CHANGING FROM ► CHANGING TO ▼	morphine oral 30 mg 4-hourly	morphine oral CR or SR 60 mg/day	morphine SC 10 mg 4-hourly	morphine CSCI 100 mg/day
fentanyl transdermal	50 micrograms/hour	25 micrograms/hour	50 micrograms/hour	75 micrograms/hour
hydromorphone oral	6 mg 4-hourly	2 mg 4-hourly	6 mg 4-hourly	10 mg 4-hourly
hydromorphone SC	1.5 -to 2mg 4- hourly	0.5 mg 4-hourly	1.5 -to 2 mg 4- hourly	3 mg 4-hourly
methadone oral	[NB2] [NB3]	[NB2] [NB3]	[NB2] [NB3]	[NB2] [NB3]
morphine SC	10 mg 4-hourly	3 mg 4-hourly	10 mg 4-hourly	16 mg 4-hourly
morphine CSCI	60 mg/day	20 mg/day	60 mg/day	100 mg/day
morphine intrathecal [NB3]	600 micrograms/day	200 micrograms/day	600 micrograms/day	1 mg/day
morphine intracerebro- ventricular [NB3]	60 micrograms/day	20 micrograms/day	60 micrograms/day	100 micrograms/day
oxycodone oral	15 mg 4-hourly	5 mg 4-hourly	15 mg 4-hourly	25 mg 4-hourly
oxycodone oral CR	40 mg twice daily	20 mg twice daily	40 mg twice daily	80 mg twice daily

CR = controlled-release preparation; CSCI = continuous subcutaneous infusion; SC = subcutaneous; SR = sustained-release preparation

NB1: these are average equivalents because of pharmacokinetic variation between individuals; doses are approximate because of the strengths of preparations available

NB2: care needs to be taken with methadone to avoid toxicity because the time to reach steady-state concentrations following a change in dosage may be up to 12 days. Dose conversion ratios from other opioids are not static, but are a function of previous opioid exposure. Published tables of equianalgesic doses of opioids, established in healthy opioid-naive individuals, indicate that methadone is 1 to 2 times as potent as morphine in single-dose studies, but in individuals on long-term morphine, methadone is closer to 10 times as potent as morphine

NB3: consultation with a pain clinic or a palliative care service is advised

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Examples of equivalent doses when changing from morphine to another opioid.

In: Therapeutic guidelines: palliative care. Version 2. Melbourne: Therapeutic Guidelines Limited; 2005. p.99. <http://www.tg.org.au>

Fentanyl Patches – guide to morphine doses for breakthrough analgesia					
Fentanyl patch strength	Fentanyl delivery rate	24 hr oral morphine dose	*Oral morphine breakthrough dose (approx. 1/6th 24 hr dose)	24 hr SC morphine dose	*SC morphine breakthrough dose (approx. 1/6th 24 hr dose)
Fentanyl 12 micrograms /hr (Durogesic® 12) Note: each patch contains total of 2.1 mg fentanyl	288 micrograms/24 hr	30 - 50 mg/24 hr	5 – 8 mg	10 - 15 mg/24 hr	1 - 3mg
Fentanyl 25 micrograms /hr (Durogesic® 25) Note: each patch contains total of 4.2 mg fentanyl	600 micrograms/24 hr	60 - 100 mg/24 hr	10 - 15 mg	20 - 35 mg/24 hr	3 - 7.5mg
Fentanyl 50 micrograms /hr (Durogesic® 50) Note: each patch contains total of 8.4 mg fentanyl	1200 micrograms/24 hr	120 - 200 mg/24 hr	20 - 30 mg	40 - 65 mg/24 hr	7.5 - 12.5 mg
Fentanyl 75 micrograms /hr (Durogesic® 75) Note: each patch contains total of 12.6 mg fentanyl	1800 micrograms/24 hr	180 - 300 mg/24 hr	30 - 50 mg	60 - 100 mg/24 hr	10 - 20 mg
Fentanyl 100 micrograms /hr (Durogesic® 100) Note: each patch contains total of 16.8 mg fentanyl	2400 micrograms/24 hr	240 - 400 mg/24 hr	40 - 60 mg	80 - 130 mg/24 hr	15 - 25 mg
<p>*Due to the variable and unpredictable rate of absorption from fentanyl patches, it is advised to be conservative when prescribing breakthrough analgesia and to titrate to effect.</p> <p>Please note that <u>micrograms</u> (rather than mg) are used as the units for <u>fentanyl release rates</u> in this table.</p>					

Reproduced from the [Adult Palliative Care Formulary](#)

Buprenorphine Patches – a guide to morphine doses for breakthrough analgesia					
Buprenorphine patch strength	Buprenorphine delivery rate	24 hour oral morphine dose	*Oral morphine breakthrough dose	24 hour SC morphine dose	*SC morphine breakthrough dose
Buprenorphine 5 micrograms/hr (Norspan® 5) Note: each patch contains total of 5 mg buprenorphine	120 micrograms/24 hrs	9 - 13 mg/24 hrs	2.5 - 5 mg	4 - 6 mg/24 hrs	1 - 2 mg
Buprenorphine 10 micrograms/hr (Norspan® 10) Note: each patch contains total of 10 mg buprenorphine	240 micrograms/24 hrs	18 - 26 mg/24 hrs	5 - 10 mg	8 - 12 mg/24 hrs	2 - 4 mg
Buprenorphine 20 micrograms/hr (Norspan® 20) Note: each patch contains total of 20 mg buprenorphine	480 micrograms/24 hrs	36 - 53 mg/24 hrs	10 - 20 mg	16 - 24 mg/24 hrs	4 - 7.5 mg
<p>* Because buprenorphine is a partial agonist with high receptor binding affinity, it impairs access to the opioid receptors by other agonists such as morphine; therefore breakthrough morphine doses need to be higher than would be suggested by the standard 24 hour dose equivalence. Please note that <u>micrograms</u> (rather than mg) are used as the units for <u>buprenorphine release rates</u> in this table.</p>					

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