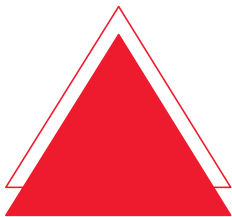


West Midlands Palliative Care Physicians

Palliative care

Guidelines for the use of
drugs in symptom control



Revised Jan 2007

4th Edition, 2007

Guidelines for the use of drugs in symptom control

These guidelines are not meant to replace the many available texts on the subject of palliative care. They are a summary of the current practice of specialist units in the West Midlands Region. It is acknowledged that there may be slight local variation and emphasis in practice.

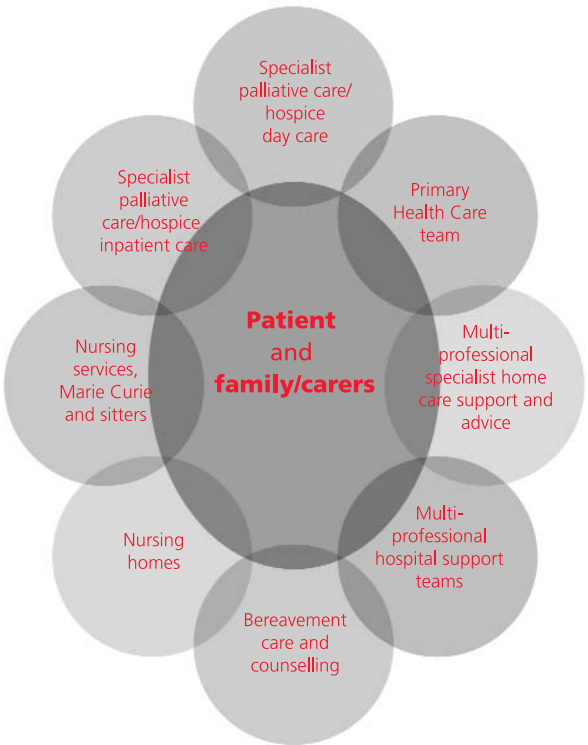
These guidelines can be used for patients who are receiving care at home or in hospitals and should meet the needs of most patients. The Medical and Nursing staff of your local specialist unit are always available if further advice is required. (See 'reference' section for your local unit)

Some of the management strategies describe the use of drugs outside their licensed indications. They are, however, established and accepted good practice.

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Fourth edition 2007

West Midlands Palliative Care Physicians



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Chapter 1

Pain

POINTS ABOUT PAIN IN PEOPLE WITH CANCER

- 30% of people with cancer have no pain.
- Those with pain often have several types.
- A patient who feels cared for may feel less pain.
- A patient free of pain is better placed to face his/her illness.
- Cancer pain can be well controlled in 95% of patients. If the patient's pain appears not to respond, consider alternative causes of pain (spiritual, social or psychological factors).
- Patient and carer understanding of the use of their medication is vitally important in achieving good pain control.

PAIN ASSESSMENT

Is it a *cancer related* pain? If so consider three main types:

1 Visceral/soft tissue pain

- opioid sensitive - use the "ladder" (see opposite)

2. Bone pain

- NSAID sensitive
- partly opioid sensitive
- radiotherapy may help

3. Nerve related

- partly opioid sensitive
- adjuvant analgesics may often be needed (see page 25)

4. Incident pain

- exacerbations of pain on movement, may require fast acting analgesia

Many pains are *not cancer related* but may be:

- Treatment related e.g. constipation, post radiotherapy.
- Coincident illness or condition e.g. arthritis, migraine.

**Many factors influence the perception of pain.
e.g. Fear, loneliness, boredom.**

PAIN RELIEF

1. By the clock

Cancer pain is continuous - Use **regular** analgesia at appropriate dose intervals - **not PRN**

2. By the 'ladder'

Step 1

Non opioid
e.g.
paracetamol

Step 2

Weak opioid
e.g. codeine for
mild to
moderate pain +
non opioid

Step 3

Strong opioid
e.g. morphine
for moderate to
severe pain +
non opioid

◀ Plus adjuvant analgesia if required
e.g. NSAID / anticonvulsant / antidepressant (page 25) ▶

The 'ladder' has no 'top rung' as there is no maximum dose for strong opioids.

If pain is still a problem with high doses of strong opioid, (>300mg morphine equivalent /24hrs), or severe side effects, reconsider the cause of the pain, or seek specialist advice.

3. By the mouth

The oral route is preferred for all steps of the analgesic 'ladder' unless there is a clinical reason why absorption of drugs given orally will not be effective.

STEP 1: PARACETAMOL AND NON-STEROIDAL-ANTI-INFLAMMATORY DRUGS

Paracetamol

Therapeutic effects

- analgesic
- anti-pyretic

Dose: 500mg -1g, 4-6 hourly. Max dose 4g in 24 hours

Preparations: Tablets: 500mg

Dispersible tablets: 500mg.

Oral suspension: 250mg in 5ml.

Suppositories: 500mg

Non-steroidal anti-inflammatories – NSAIDs

Therapeutic effects

- Anti-inflammatory
- Anti-pyretic
- Analgesic

Indications as analgesics in palliative care, including action as adjuvant analgesic

1. Bone pain
 2. Soft tissue pain due to malignant infiltration
 3. Arthritis
 4. Possible role in early management of neuropathic pain
- Assess analgesic response after regular use for one week
 - Patients considered to be at risk of NSAID induced gastroduodenal ulceration (age over 65 years, past history of PUD, concomitant oral steroids or anticoagulants, serious comorbidity ¹⁾) should receive a gastroprotective drug such as a proton pump inhibitor.

- Extreme caution in renal failure. Fluid retention and renal function may all be worsened by NSAIDs.
- NSAIDs may be considered for asthmatic patients unless they have a history of aspirin sensitivity.

Non-steroidal anti-inflammatory drugs

Drug	Adult dose	Dosage forms
Ibuprofen*	Oral: 200–400mg tds or qds. Increasing to a maximum of 2.4 g in 24 hours	Tablet: 200mg, 400mg, 600mg MR tablet: 800mg MR capsule: 300mg Suspension: 100mg/5ml Granules: 600mg sachet
Naproxen**	Oral: 250–500mg bd	Tablet: 250mg, 500mg Tablet EC: 250mg, 500mg Suspension: Specials manufacturer
Diclofenac**	Oral: Up to 150mg in 24 hours Rectal: 75–150mg daily in divided doses	Tablet: 25mg, 50mg MR tablets and capsules: 75mg, 100mg Dispersible tablets: 50mg Suppositories: 25mg, 50mg, 100mg

Risk of GI side effects:

* Low

** Intermediate

MR = modified release

EC = enteric coated

For further guidance on the use of NSAIDs consult your local palliative care team.

STEP 2: WEAK OPIOIDS (FOR MODERATE PAIN)

Eg. codeine, dihydrocodeine, tramadol

These opioids have low potency but can be a useful second step for patients with moderate pain. There is some overlap in 'analgesic effect' between the higher doses of weak opioids and lower doses of strong opioids (see Table page 14)

It is seldom useful to change from one preparation to another (unless to alter side effects). If regular doses do not provide adequate analgesia, move up the ladder to step 3.

Compound preparations of paracetamol and weak opioids may be useful. Only preparations with higher doses of opioids (codeine 30mg, dihydrocodeine 20-30mg) should be used, as the lower strength preparations produce opioid side effects with little analgesia.

Weak opioid drugs

Drug	Adult dose	Dosage forms
Codeine	30–60mg 4 hourly Max 240mg in 24 hours	<i>Tablets: 15mg,30mg,60mg</i> <i>Syrup: 25mg/5ml</i> <i>Injection: 60mg/ml (CD)</i>
Co-codamol 30/500 (Codeine 30mg with Paracetamol 500mg)	2 tablets 4–6 hourly Max 8 in 24 hours	<i>Tablets, capsules,</i> <i>effervescent tablets and</i> <i>granules: 30/500</i> <i>Granules: 60/1000 –</i> <i>max 4 daily</i>
Dihydrocodeine	30–60mg 4 hourly Max 360mg in 24 hours (higher dose may be associated with more side effects)	<i>Tablets: 30mg, 40mg,</i> <i>MR tablets: 60mg</i> <i>Oral solution: 10mg in 5ml.</i> <i>Injection: 50mg/ml (CD)</i>
Dihydrocodeine 20mg with Paracetamol 500mg	2 tablets every 4–6 hours Max 8 in 24 hours	<i>Tablets: 20/500</i>
Dihydrocodeine 30mg with Paracetamol 500mg	2 tablets every 4–6 hours Max 8 in 24 hours	<i>Tablets: 30/500</i>
Tramadol	50–100mg 4 hourly Max 400mg in 24 hours	<i>Capsules: 50mg,</i> <i>Soluble tablets: 50mg</i> <i>Effervescent powder:</i> <i>50mg, 100mg.</i> <i>MR 12 hourly tablets:</i> <i>50mg 100mg, 150mg,</i> <i>200mg</i> <i>MR 24 hourly tablets:</i> <i>150mg, 200mg, 300mg,</i> <i>400mg.</i> <i>Injection: 50mg/ml</i>

For analgesic equivalence see conversion table (Page 14)

STEP 3: STRONG OPIOIDS (FOR MODERATE TO SEVERE PAIN)

First line: Morphine remains the drug of choice

1. Gain Control of Pain.

- 'Immediate' release morphine (elixir or tablets) gives greatest flexibility for dose titration.

Starting dose 5-10mg morphine 4 hrly i.e. 6 x daily, (In the elderly or those with renal impairment use smaller doses e.g. 2.5mg – 5mg four-hourly, with close monitoring). Additional prn doses at the same starting dose may be prescribed.

- Titrate the dose to achieve pain relief by 30 - 50% increments in dose every 2-3 days or sooner if necessary.

Reassess pain control daily

- A 'log' of treatment kept by patients and carers is helpful in titration.
- There is no 'maximum' dose if pain is morphine responsive. However if the dose escalates rapidly or if the dose of morphine exceeds 300mg in 24 hours consider seeking specialist advice.
- In patients with less severe pain, or where circumstances dictate, morphine may be initiated as a modified release preparation at the appropriate dose. Use conversion table (page 14) to determine the appropriate starting dose.

Always prescribe a laxative when initiating opioids.
See side effects (Page 12)

2. Maintenance.

Once pain is controlled there is a choice of options for maintenance.

- Continue a 4 hourly immediate release morphine.
- Change to 12 hourly modified release morphine.
- Change to an alternative strong opioid

- A patient should never be prescribed more than one modified release opioid at a time.

Patients on modified release opioids should *always* have available normal release opioid for episodes of breakthrough pain.

- The recommended dose of normal release opioid (usually morphine) for breakthrough pain is the equivalent of up to one sixth of the total 24-hour opioid dose.
- If the regular dose of opioid is increased, ensure that the breakthrough dose is increased appropriately.
- Incident pain may require faster acting analgesia (see page 23)
- Ensure patients and their carers understand the use of the opioids they are taking and that doses are reviewed regularly

3. If further pain develops

- Reassess cause of pain and treat appropriately (see Pain Assessment section).
- If there is regular need for breakthrough analgesia, and the pain is opioid sensitive, increase the dose by the average daily dose of breakthrough analgesia and reassess.

Morphine preparations

Immediate release oral preparations	Morphine Sulphate tablets	Sevredol tablets 10mg (blue), 20mg (pink) and 50mg (pale green) (56 tablet pack)
	Morphine Sulphate Solution	Oramorph oral solution 10mg in 5ml, (100ml, 300ml and 500ml). Oramorph unit dose oral vials 10mg, 30mg and 100mg (the solution is sugar-free and alcohol-free, each dose is contained in a 5ml volume). (20 vial pack) Oramorph concentrated oral solution 100mg in 5ml (30ml & 120ml both sugar-free and alcohol-free with calibrated dropper).
	Morphine Sulphate suppositories	10mg, 15mg, 20mg, 30mg. (12 suppository pack)
12-hourly Morphine Modified Release oral preparations	Zomorph Capsule*	10mg (yellow/clear), 30mg (pink/clear), 60mg (orange/clear), 100mg (white/clear), 200mg (clear) (60 capsule pack)
	Morphgesic MR tablets	10mg (buff), 30mg (violet), 60mg (orange), 100mg (grey) (60 tablet pack)
	MST Continus Tablets	5mg (white), 10mg (brown), 15mg (green), 30mg (purple), 60mg (orange), 100mg (grey), 200mg (green). (60 tablet pack).
	MST Continus Suspension	20mg, 30mg, 60mg, 100mg, 200mg. (30 sachet pack) (sachets of granules to mix with water)
24-hour Morphine Modified Release oral preparations	MXL capsules*	30mg (light blue), 60mg (brown), 90mg (pink), 120mg (green), 150mg (blue), 200mg (red-brown) (28 capsule pack)
Morphine injection	Morphine sulphate	10mg/ml, 15mg/ml, 20mg/ml, 30mg/ml (in 1 and 2ml ampoules) (5 ampoule pack)

*Capsules containing slow release pellets can be opened and sprinkled onto soft food

SIDE EFFECTS OF OPIOIDS (STRONG & WEAK)

Constipation - **Must** be anticipated and prevented in all patients on weak or strong opioids. Constipation may be less severe in some patients with transdermal fentanyl. Regular stimulant laxatives must be commenced at the same time as weak or strong opioids. The dose of laxative required may increase as the dose of opioid increases. (See constipation section page 33)

Sedation - May occur with the first few doses, but then lessens.

Nausea - Is a common problem during the first few days of treatment. If it occurs, haloperidol, domperidone, cyclizine, or metoclopramide are suitable anti-emetics. (See anti-emetics section page 27).

Also recognised are: Dry mouth, itching, sweating, hallucinations and myoclonic jerks

Psychological Addiction - Does not occur in patients taking opioids for their analgesic effects.

Tolerance - May occasionally occur, but an increase in dose requirement usually reflects an increase in pain due to advancing disease. Some patients may exhibit tolerance or intolerance (excessive side effects), to a particular strong opioid and switching to another strong opioid might be helpful. **Seek specialist advice.**

Respiratory Depression - Is not a risk when doses are increased by appropriate increments. If pain is relieved by alternative methods e.g. radiotherapy or nerve block, a reduction in opioid dose will be required.

SECOND LINE STRONG OPIOIDS

Alternative strong opioids may be used to try and improve compliance or the side effect profile for patients. Their use must be individually tailored and the following TABLES USED AS GUIDANCE ONLY, together with information in the following text.

Specialist advice is usually needed when changing from one strong opioid to another. Usually convert to a slightly lower equivalent dose and provide appropriate breakthrough analgesia for titration.

RELATIVE DOSES OF OPIOIDS

Approximate equivalent doses of opioids in chronic usage

Analgesic	Approximate equivalence to 10mg oral morphine on repeated dosing		Duration of action
	Oral dose	IM/SC dose	
Morphine	10mg	5mg	3-6 hours
Alfentanil	-	0.3mg	10 minutes
Buprenorphine sublingual	0.2mg	-	6-8 hours
Buprenorphine transdermal	See conversion table page 21, 22		
Codeine +	100mg	-	3-5 hours
Diamorphine	-	3mg	3-4 hours
Dihydrocodeine	100mg	-	4-6 hours
Fentanyl transdermal	See conversion table page 18		
Hydromorphone	1.3mg	0.6 mg	3-4 hours
Methadone	Prolonged plasma half life leads to accumulation on repeated dosing. Requires titration under specialist supervision.		
Oxycodone	5mg – 7.5mg Reference ^{2,3}	2.5 – 3.75mg	4 – 6 hours
Tramadol	40mg	-	4 – 5 hours

+ = Determined for parenteral but also appears to apply to oral route.

IM – intramuscular

SC – subcutaneous

Approximate equivalent doses of oral morphine and subcutaneous morphine and diamorphine

3mg Oral morphine = 1.5mg SC morphine = 1mg SC diamorphine

4-hourly oral morphine dose (mg)	Total daily dose of oral morphine (mg/24hour)	Subcutaneous morphine (mg/24hour)	Subcutaneous diamorphine (mg/24hour)	Dose of SC diamorphine for breakthrough pain (mg)	Dose of SC morphine for breakthrough pain (mg)
15	90	45	30	5	5
30	180	90	60	10	15
40	240	120	80	15	20

Diamorphine

Diamorphine is usually used as the first line injectable strong opioid as it is more water soluble than morphine. Morphine sulphate injection should be used as alternative first line injectable strong opioid if diamorphine is not available. Equivalent doses are shown in the table above.

Diamorphine Preparations, Injection: 5mg, 10mg, 30mg, 100mg, 500mg in packs of 5 ampoules. Morphine preparations shown in table on page 11

Hydromorphone

An alternative if morphine is not tolerated because of adverse effects. Normal and modified release capsules may be opened and sprinkled onto food.

Preparations of Hydromorphone (Palladone)

'Immediate' release capsules: 1.3mg (orange/clear), 2.6mg (red/clear) for 4-hourly administration. (Packs of 56)

Modified release capsules: 2mg (yellow/clear), 4mg (pale blue/clear), 8mg (pink/clear), 16mg (brown/clear), 24mg (dark blue/clear) for 12-hourly administration.

Hydromorphone injection (Martindale): 10mg/ml, 20mg/ml, 50mg/ml (unlicensed, available on named patient basis).

Oxycodone

Has good oral bioavailability and considered to be 1.5 to 2 times more potent than oral morphine ^{2,3}. An alternative option if morphine is not tolerated. Care should be taken to ensure clarity when prescribing immediate release capsules or modified release tablets. The modified release tablets also deliver a small dose which is immediate release.

Preparations of Oxycodone

'Immediate release' (OxyNorm) capsules, for 4-hourly administration : 5mg (orange/beige), 10mg (white/beige), 20mg (pink/beige) (Packs of 56)

Oral solution (OxyNorm) : 1mg/ml (250ml)

Concentrated oral solution (OxyNorm): 10mg/ml (120ml)

Modified release tablets (OxyContin) for 12-hourly administration: 5mg (blue) 10mg (white), 20mg (pink), 40mg (yellow), 80mg (green) (packs of 56).

Injection (Oxynorm injection) 10mg/ml: 1ml, 2ml ampoules.

Suppositories, modified release :30mg (Unlicensed, available on named patient basis from BCM specials).

Alfentanil

Safe for use in renal failure but only available as parenteral preparation. Alfentanil has a short duration of action which limits its use for breakthrough analgesia.

Preparations

Injection (Rapifen®) 500 microgram per ml, 2ml, 10ml ampoules

Intensive Care Injection 5mg per ml, 1ml ampoules to be diluted before use.

Methadone

Always seek specialist advice.

TRANSDERMAL OPIOID PREPARATIONS

Transdermal Fentanyl Patches

Fentanyl is a strong opioid, available in a patch applied to the skin for transdermal administration, over 72 hours for chronic cancer pain. Both matrix and reservoir patch formulations are available (See page 21). When prescribing, patches should be prescribed by their brand name or specify 'matrix' or 'reservoir' to avoid confusion.

Transdermal fentanyl could be considered when patients have an opioid-responsive pain and where pain control is stable, as an alternative to morphine, (ie. a 2nd line strong opioid) where the patient is...

- unable to tolerate morphine.
- unable to take oral medication, e.g. dysphagia, vomiting.
- where drug compliance needs to be improved.

BUT NOT in situations where the pain is acute, and rapid dose titration is required.

Cautions:

- If the patient has not had strong opioids
- Patients previously on doses of oral morphine (or equivalent opioid) < 60mg/24hr.
- Pyrexial patients where rate of absorption may be unpredictable.

Contraindications:

Sensitivity to fentanyl or silicone medical adhesive.

Initial dose:

Convert from the oral morphine dose using the table below.

Patch Application

- After application of the first patch, plasma levels rise for 24 hours, analgesic levels are reached by 6-12 hours and a steady state is reached by the time of application of the second patch.
- The patch should be replaced every 3 days.

Approximate equivalent doses of oral morphine, transdermal fentanyl and subcutaneous morphine and diamorphine

When converting, because the patches cover a range of equivalent oral morphine doses, it is usually safer to choose an initial dose at the lower end of the equivalent dose range plus breakthrough analgesia.

4 hourly oral morphine (mg)	24 hourly oral morphine (mg)	Fentanyl Patch (mcg/hr)	24 hourly SC morphine (mg)	24 hourly SC diamorphine (mg)
5 - 15	< 90	25	15 - 45	10 - 30
15 - 20	90 - 134	37	45 - 60	30 - 45
20 - 30	135 - 189	50	60 - 90	50 - 65
30 - 40	190 - 224	62	90 - 110	65 - 75
35 - 50	225 - 314	75	110 - 150	75 - 100
50 - 65	315 - 404	100	150 - 200	100 - 130

SC = subcutaneous infusion

- The table has been derived from the manufacturer's SPC, and simplified to match available preparations. Doses given in the table are approximations for guidance only and should always be titrated to the individual patient's requirements as directed in the following section.
- Currently 12 microgram patches are only licensed for titration of doses, rather than initiating transdermal fentanyl.
- When converting doses >100 micrograms fentanyl seek specialist advice.

Starting fentanyl patches, converting from oral morphine

A normal release opioid preparation should always be available for breakthrough pain
(equivalent to 4 hourly morphine dose)

Original regular oral morphine dosing frequency:	Fentanyl patch to be applied	Original regular oral morphine dose continued after patch application for:
'Immediate' release regular 4-hourly morphine (liquid or tablets)	At any convenient time	12 to 24 hours
12- hourly modified release morphine	At the same time as taking the final 12 hourly morphine capsule	No further modified release morphine
24-hourly modified release morphine	12 hours after taking the final 24-hourly morphine capsule	No further modified release morphine

Switching to an alternative opioid from Transdermal Fentanyl

On removal of the patch, it takes approximately 17 hours for serum concentration of fentanyl to reduce by 50% and this must be considered when converting.

Different methods of conversion are practised. Options are given below:

If converting a patient with renal failure from transdermal fentanyl to an alternative opioid, seek specialist advice.

Discontinuing the patch if the patient's pain is controlled	
EITHER Change to oral morphine:	<ul style="list-style-type: none"> • A starting dose of morphine at the lower end of the conversion range should be used. • The patch should be removed and regular dosing of modified or normal release morphine started at the same time. • Adequate doses of opioid should be available for breakthrough pain
OR Change to subcutaneous diamorphine or morphine infusion:	<ul style="list-style-type: none"> • Remove patch and set up a syringe driver with an 'equivalent' dose of diamorphine at the lower end of the conversion range. • Ensure adequate dose of diamorphine is available for breakthrough pain. <p>REVIEW the patient regularly during the change over period.</p>
OR Add an appropriate increment of opioid by the subcutaneous route whilst continuing the patch.	<p>In some areas, it is practice to continue with fentanyl patch administration, adding an appropriate dose of diamorphine or morphine via the subcutaneous route. Consult local guidelines</p>
Discontinuing the patch if the patient's pain is uncontrolled:	
<p>Consider why the pain was not responding and address any other issues. Consider seeking specialist advice.</p> <p>Administer an immediate release opioid (e.g. 4 hrly equivalent oral morphine or SC diamorphine). Re-titrate to the patient's requirements.</p> <p>REVIEW the patient regularly during this change over period.</p>	

Transdermal fentanyl preparations:

Transdermal fentanyl patches releasing '25', '50', '75', and 100' micrograms of fentanyl per hour over 72 hours. A 12microgram per hour fentanyl matrix formulation patch is available, licensed for titration of patients already on fentanyl patches.

In the matrix formulation patch (Durogesic D Trans) fentanyl is contained throughout the patch.

In the reservoir formulation patch (Tilofyl) – fentanyl is contained in a gel reservoir in the middle of the patch and should not be cut. When prescribing, patches should be prescribed by their brand name or specify 'matrix' or 'reservoir' to avoid confusion.

Transdermal Buprenorphine Patches

Buprenorphine is a partial opioid agonist. The transdermal preparation releases the patch strength in micrograms per hour of buprenorphine over several days and the manufacturers recommend changing the Transtec® patch twice weekly. 24 hours should be allowed for full analgesic effect. After removal, plasma concentrations of buprenorphine will be halved after 30 hours.

Approximate relative doses of Transtec® buprenorphine twice weekly patch

Transtec (micrograms per hour)	Oral dihydrocodeine (mg per 24 hours)	Oral morphine (mg per 24 hours)
35	120 – 240mg	30-60mg
52.5	240 - 360mg	60-90mg
70		90-120mg

A further transdermal buprenorphine patch formulation containing a lower dose of buprenorphine is available (BuTrans®, releasing between 5 and 20 micrograms per hour of buprenorphine over 7 days). It is not yet clear what place these buprenorphine preparations have in palliative care.

Approximate relative doses of BuTrans® buprenorphine once weekly patch

BuTrans (micrograms per hour)	Oral Codeine (mg per 24 hours)
5	30-60
10	60-120
20	120-180

Transdermal buprenorphine patch preparations:

Transtec® Patches releasing '35', '52.5', or '70' micrograms buprenorphine per hour as a twice weekly patch.

Bu-Trans® patches releasing '5', '10' or '20' micrograms per hour over 7 days.

General information about opioid analgesic patch preparations:

- The patient should be warned that they may experience more breakthrough pain than usual in the first 1 to 3 days. Breakthrough analgesia should be provided rather than changing the patch strength at this point.
- Laxatives may need to be reduced and titrated to need.
- Replace the patches at the same time of day as indicated on the product information.
- Vary the site of application with each change.
- Apply to clean, dry, undamaged, non-hairy, flat areas of skin.
- Never apply heat over the patch as this will increase absorption. Excessive heat should be avoided e.g. sauna, infra-red radiation.
- Dispose of patches by folding in half, sticky side together and putting in safe disposal unit e.g sharps box.
- Check that patches stick well. Sweating, crinkling and lifting at edges can make pain control inadequate.
- Patients can shower or swim, but often a vapour-permeable film dressing needs to be placed over the patch to aid adhesion.

INCIDENT PAIN

First line choice of analgesia for predictable breakthrough pain should be an immediate release opioid, usually the same opioid as that prescribed as a modified release preparation. Immediate release preparations of morphine, hydromorphone, oxycodone are available.

Oral transmucosal fentanyl citrate lozenges may be an alternative preparation to be considered for some patients, however counselling in the correct use is important and currently there is insufficient evidence to identify those patients who will benefit from this preparation in palliative care. Consider seeking specialist advice before prescribing

Close monitoring of patients by healthcare professionals is required during the titration process as directed in the summary of product characteristics.

Transmucosal fentanyl preparations:

Oral transmucosal fentanyl lozenges (Actiq): 200mcg, 400mcg, 600mcg, 800mcg, 1.6mg

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1. MeRec Briefing 2003. Issue No.20 NSAIDs and gastroprotection.
2. Oxynorm injection. Summary of product characteristics. Napp Pharmaceuticals
3. Deputy Chief Medical Officer Circular, 23rd December 2004. Epinet message. Supply of Diamorphine Injection.
4. Drug & Therapeutics Bulletin. Opioid analgesics for cancer pain in primary care. 2005;43(2):9-12.

Adjuvant analgesia
(usually used in conjunction with classical analgesics)

Origin Of Pain	Drugs / Treatment	Dose & Preparations
Bone pain	NSAIDs Bisphosphonates Steroids Consider radiotherapy	See NSAID section (page 6) Seek specialist advice See steroid section (page 42) Seek specialist advice
Neuropathic pain	Step 1 Antidepressant (tricyclic) e.g. amitriptyline OR Anticonvulsant Step 2 Antidepressant (tricyclic) PLUS anticonvulsant For nerve compression pain consider steroids (see steroid chapter pages 42 and 43) also consider Transcutaneous Nerve Stimulation (TENS) or nerve block	
	Amitriptyline	Oral 10-25mg at night increase slowly up to 150mg nocte Preparations: Tablets 10, 25, 50mg. Solution 25mg/5ml and 50mg/5ml.
	Gabapentin	Oral :100-300mg nocte increasing gradually. Usual dose range 900 – 1800mg. Preparations: Capsules 100mg, 300mg, 400mg. Tablets 600mg, 800mg
	Pregabalin	Oral: 150mg od in divided doses increasing gradually. Max daily dose 600mg in divided doses. Preparations: Capsules 25mg, 50mg, 75mg, 100mg, 150mg, 200mg, 300mg.
	Sodium Valproate	Oral :200mg –500mg nocte increasing to 1g daily if necessary. Preparations: Tablet E.C 200mg and 500mg. Crushable tablets 100mg. Oral Solution 200mg/5ml

continues on next page

Adjuvant analgesia (cont.)

Origin Of Pain	Drugs / Treatment	Dose & Preparations
Neuropathic pain (cont.)	Carbamazepine	Oral 100mg BD increasing gradually if tolerated up to 1200mg daily in divided doses if necessary. Preparations: Tablets 100mg, 200mg, 400mg. Chewable tablets 100mg and 200mg. MR Tablets 200mg, 400mg and Oral liquid 'sugar free' 10mg/5ml. Suppositories 125mg (equivalent to 100mg tablets)
Raised intracranial pressure Hepatomegaly Enlarging tumours	High dose steroids Consider Radiotherapy	See Steroid section (page 42)
Muscle spasm	Diazepam Baclofen	Diazepam Oral: 2-10mg daily increase if necessary. Preparations: Tablets 2mg, 5mg and 10mg Oral solution - 2mg/5ml Baclofen Oral: 5mg TDS after food (gradually increase to a max of 100mg daily, if necessary) Preparations: Baclofen tablets 10mg. Oral solution 'sugar free' 5mg/5ml
Smooth muscle spasm/ colic	Hyoscine butylbromide	SC: 20mg stat, or sc infusion 60mg up to 120mg in 24 hours. Tablets are poorly absorbed. Preparations: Tablets 10mg, Injection, 20mg/ml
Tenesmus	See Neuropathic pain above Nifedipine Consider nerve block	Oral 5/20mg BD Preparations: Capsules 5mg, 10mg. Tablets SR 10mg, 20mg.

This table is not all inclusive and further specialist advice should be sought if necessary

Chapter 2

Nausea and vomiting

A logical approach to the use of anti-emetics is to consider the cause of the symptoms. After careful assessment, treat the cause and choose an anti-emetic based on its specific mode of action. There may be several causes.

For example consider:

- **Abnormal biochemistry** (e.g. hypercalcaemia, uraemia or hyponatremia)
Treat where appropriate.
- **Drugs** (e.g. opioids, bisphosphonates, metronidazole, anticonvulsants)
Anti-emetics may be necessary for a few days when opioid treatment is initiated. Not all patients require this.
Avoid drugs with anticholinergic effects in patients with gastric stasis (e.g. hyoscine, antidepressants, cyclizine)
- **Constipation**
Prevent and treat aggressively.
- **Gastritis**
Use a proton pump inhibitor e.g. lansoprazole
- **Chemotherapy** induced nausea & vomiting – a short course of 5HT₃-receptor antagonists may be appropriate.
- **Raised intra-cranial pressure**
See Steroid chapter page 42

- **Anxiety**
Psychological care + / - benzodiazepines
- **Oropharyngeal thrush**
A course of antifungal treatment.

CHANGING ANTI-EMETICS

1. Ensure the anti-emetic is used **regularly**, and to a **maximum dose** before changing.
 - If first drug is ineffective, change to an alternative first line drug (see table on page 29)
2. If first line drug was partially effective, another anti-emetic drug may be added (see Second line treatment)
3. Haloperidol with cyclizine is often effective, **especially by continuous subcutaneous infusion**.
4. Cyclizine and other anticholinergic drugs may antagonise some of the effects of metoclopramide and other prokinetic agents. The combination should therefore be avoided if possible.
5. Re-assess patient

If symptoms persist in spite of oral treatment, use a non-oral route.

Anti-emetics

Cause of nausea	Suggested drug	Dose and route
1. First line – single agent based on underlying cause. Use regularly and to maximum dose before changing. If one drug is ineffective use an alternative first line agent		
Drug induced and biochemical	Haloperidol	Oral: 1.5–3mg OD–BD SC: 2.5–10mg/24hr Preparations Tablets: 500micrograms, 1.5mg, 5mg, 10mg Liquid: 1mg/ml, 2mg/ml Injection: 5mg/1ml, 20mg/2ml
Evidence of gastric stasis	Metoclopramide Or Domperidone <i>(does not cross blood brain barrier so fewer side effects)</i>	Oral: 10mg–20mg QDS before meals SC: 30–100mg/24hr Preparations Tablets: 10mg Oral solution: 5mg/5ml Injection: 10mg/2ml Oral: 10mg–20mg QDS PR: 30–60mg TDS Preparations Tablets: 10mg Suspension: 5mg/5ml Suppositories: 30mg
If GI tract involvement or cerebral tumour, or if the above have not worked	Cyclizine	Oral: 50mg TDS SC: 150mg/24hours Preparations Tablets: 50mg Injection: 50mg/1ml
2. Second line – Add another first line agent (eg cyclizine + haloperidol) or change to a 'broad spectrum' agent		
Broad spectrum anti-emetic useful if multiple possible causes	Levomopromazine <i>(acts at multiple receptor sites)</i>	Oral: 6mg–25mg nocte SC: 5–20mg/24h or 25–75mg/24h if sedation required Preparations. Tablets: 25mg, 6mg (6mg unlicensed available on named patient basis). Injection: 25mg/1ml

Anti-emetics continued

Cause of nausea	Suggested drug	Dose and route
3. Third line – if other drugs are not controlling symptoms try:		
	3 day course of 5HT ₃ -receptor antagonist – Ondansetron, Granisetron	Ondansetron Oral: 8mg BD SC: up to 24mg over 24 hours Granisetron Oral/SC: 1–2mg per 24 hours Preparations <i>Ondansetron</i> Tablets and dispersible tablets: 4mg, 8mg Syrup: 4mg/5ml Suppositories: 16mg Injection: 4mg/2ml, 8mg/4ml <i>Granisetron</i> Tablets: 1mg, 2mg Solution: 1mg/5ml Injection: 1mg/1ml, 3mg/3ml
4. For bowel obstruction see page 31		

THE MEDICAL MANAGEMENT OF INTESTINAL OBSTRUCTION

- Surgery should always be considered, but is usually only indicated in a small number of patients with single level obstruction but not where there is diffuse intra-abdominal disease or ascites.
- The main principles of management are to control nausea, colic and other abdominal pain using drugs shown in the table on page 32
- It can be possible to keep a patient's symptoms controlled with SC medications given via a syringe driver, (see table page 54) Occasional vomits, if not accompanied by persistent nausea, may be an acceptable price to pay for the freedom from the discomfort of a nasogastric tube.
- Thirst can be managed with regular oral care and ice cubes to suck. Effective oral care may avoid the need for IV or SC saline infusion for persistent thirst.
- Generally, when complete intestinal obstruction occurs, prokinetic agents and bulk-forming or stimulant laxatives are contra-indicated.
- If symptoms are thought to be due to ileus rather than mechanical obstruction, a combination of metoclopramide and dexamethasone can be effective in restoring function.
- Patients may be able to tolerate small amounts of food and drink, if the nausea is well controlled.
- Where there are large volume vomits, a naso-gastric tube may be of value.
- Some patients may benefit from corticosteroids. See page 42

The medical management of intestinal obstruction

Symptom	Drug	Dose via Syringe Driver
Nausea	Haloperidol and/or Cyclizine	2.5-10mg/24hr 100-150mg/24hr
Colic	Hyoscine butylbromide	60-180mg/24hr
Abdominal pain	Diamorphine or alternative strong opioid may be continued in a suitable formulation.	As required See 'pain' section
Vomiting with large volume of intestinal secretions (1 or 2)	<ol style="list-style-type: none"> 1. Hyoscine butylbromide 2. Octreotide 2nd line (if hyoscine butylbromide ineffective) 3. A three day course of 5HT₃-receptor antagonists. (see page 30) 	60-180mg/24hr 500microgram/24hr initially. If ineffective stop after 48 hours. If effective titrate to lowest effective dose (Range 50-600microgram/24hr)

As a general rule it is advisable not to combine more than two drugs in a syringe driver, therefore two syringe drivers may be required. However there are combinations of drugs which are well established in intestinal obstruction:

- Diamorphine, haloperidol and hyoscine butylbromide may be mixed together.
- Diamorphine, haloperidol and cyclizine may be mixed together.
- Diamorphine and octreotide can be mixed.

Chapter 3

Constipation

Constipation is a common cause of distress. Prevention is better than waiting until treatment is needed.

Constipation should be anticipated in all patients taking opioids or anticholinergics (e.g. tricyclic antidepressants, cyclizine, etc.) and those who are either inactive or have a reduced fluid or dietary fibre intake.

Effects of chronic constipation

Anorexia, occasionally vomiting, colic, tenesmus, overflow diarrhoea, urinary retention, confusion.

TREATMENT OF EXISTING CONSTIPATION

Before prescribing laxatives for established constipation

- Rule out bowel obstruction. If bowel obstruction is suspected seek further advice.
- Consider underlying causes e.g hypercalcaemia, drugs.

In spinal cord compression

- If normal sphincter sensation and function is present, titrate laxatives as normal, avoid excessive softening.
- If normal sphincter sensation and function is absent, bisacodyl or sodium acid phosphate (Carbalax) suppositories should be prescribed, aiming for a planned bowel action every two to three days.

Treatment of existing constipation

Symptom/sign	Management
<p>Is the rectum impacted?</p> <ul style="list-style-type: none"> • If so, is stool hard? 	<p>Lubricate using glycerin suppositories or soften with oil enema followed by stimulant e.g phosphate enema once softened</p> <p>Once disimpacted commence or increase oral stimulant or softener.</p>
<ul style="list-style-type: none"> • If so, is stool soft? 	<p>Use a rectal stimulant, eg bisacodyl suppositories or phosphate enema.</p> <p>Once disimpacted commence/increase stimulant by the oral route.</p>
<ul style="list-style-type: none"> • If no success 	<p>Stimulant laxative (There will be up to a 10 hour delay in effect).</p> <p>Manual evacuation (consider sedation).</p>
<p>Is the rectum empty?</p>	<p>May still be constipated if bowel habit history indicates this, but exclude obstruction before prescribing a stimulant laxative.</p>
<p>If the rectum is empty, is colon loaded?</p> <ul style="list-style-type: none"> • If colic is present: • If colic is absent: 	<p>Reduce any stimulant laxative and add softener or osmotic agent, eg Movicol</p> <p>Add or increase stimulant laxative +/- softener</p>

LAXATIVES

- Laxatives should be prescribed on a regular basis as soon as weak or strong opioids are prescribed (except those with ileostomy or diarrhoea), with full explanation to the patient.
- Relatively high doses may be needed - the laxative dose may need increasing as the dose of opioid is increased but this should be titrated to the individual's requirements. (A recent study showed no relationship between opioid dose and optimum dose of sodium picosulphate¹.)
- Many ill patients will not tolerate high fibre diet or bulk forming laxatives but the need for good fluid intake, exercise, fruit and fruit juice (especially prune juice) should be explained to the patient.
- Patients can be encouraged to become expert at adjusting their own laxatives.
- A combination of stimulant laxative with a softening/ osmotic agent is a good first choice (see table pages 36 to 41)
- 25% of patients on oral laxatives may still need rectal measures at times.

Reference

1. Twycross et al. Sodium picosulfate in opioid-induced constipation: results of an open-label, prospective, dose ranging study.

Palliat Med 2006;20:419-23

Laxative doses and preparations available

ORAL PREPARATIONS

Stimulants

Increase intestinal motility. Often cause abdominal cramp

- **Senna**

Onset of action 6–12 hours

Starting dose 7.5mg od or bd

Formulations Tablets 7.5mg sennosides, Syrup 7.5mg sennosides/5ml, Granules 15mg sennosides /5ml

- **Bisacodyl**

Onset of action 10–12 hours

Starting dose 1–2 tablets nocte

Formulations Tablets 5mg

- **Sodium picosulphate**

Onset of action 6–14 hours

Starting dose 5 to 10mg nocte. Potent stimulant indicated only where other stimulant laxatives have failed

Formulations Capsules 2.5mg, Elixir 5mg/5ml

Softeners

Faecal softening by acting as a surface wetting agent

- **Docusate sodium**

Onset of action 1–3 days

Starting dose Up to 500mg in divided doses

Formulations Capsules 100mg. Avoid liquid due to unpleasant taste

ORAL PREPARATIONS

Combined softeners and stimulants

Combines faecal softening and increased intestinal motility.

Dantron stains urine red (warn patient) and can also cause perianal skin irritation, especially in incontinent patients. It may be prudent to avoid dantron containing products in patients who are faecally incontinent or have a colostomy.

- **Co-danthrusate** (dantron 50mg, docusate 60mg)

<i>Onset of action</i>	6–12 hours
<i>Starting dose</i>	1–2 capsules or 5–10mls at bedtime
<i>Formulations</i>	Capsules 50/60, suspension 50/60 in 5ml
- **Co-danthramer** (dantron 25mg, poloxamer '188' 200mg)

<i>Onset of action</i>	6–12 hours
<i>Starting dose</i>	2 capsules or 10ml at bedtime
<i>Formulations</i>	Capsules 25/200. Suspension 25/200 in 5ml 5ml suspension = 1 capsule
- **Strong co-danthramer** (dantron 37.5mg poloxamer '188' 500mg)

<i>Onset of action</i>	6–12 hours
<i>Starting dose</i>	2 capsules or 5ml suspension at bedtime. 5ml co-danthramer strong suspension ≡ 15ml co-danthramer suspension
<i>Formulations</i>	Capsules 37.5/500 Suspension 75/1000 (dantron 75mg, poloxamer '188' 1000mg in 5ml) 5ml strong suspension ≡ 2 strong co-danthramer capsules

ORAL PREPARATIONS

Osmotic agents - oral

Increase the amount of water in the large bowel

- **Macrogol** preparations may be preferable to lactulose if additional softener is required. Up to 8 sachets a day may be used in faecal impaction.

Onset of action 1–2 days

Starting dose 1 sachet dissolved in 125ml water

Formulations **Movicol** (macrogol '3350' 13.125g, Sodium bicarbonate 178.5mg, Sodium chloride 350.7mg, Potassium chloride 46.6mg).

Movicol-Half (macrogol '3350' 6.563g, Sodium bicarbonate 89.3mg, Sodium chloride 175.4mg, Potassium chloride 23.3mg).

Idrolax (macrogol '4000') 10g oral powder

-
- **Lactulose** alone is not effective for opioid induced constipation and should not be used in patients with inadequate fluid intake. Lactulose can cause flatulence & abdominal cramps.

Onset of action 1 –2 days

Starting dose 15ml bd

Formulations Solution Lactulose 3.1-3.7g in 5ml

-
- **Magnesium hydroxide liquid**

Onset of action 3 – 6 hours

Starting dose 10-20ml od

Formulations **Magnesium hydroxide mixture BP.**

Combined softener and osmotic agent - oral

Faecal softening and increases the amount of water in the large bowel.

(Liquid paraffin alone as a softener is no longer recommended as prolonged use can lead to anal seepage of paraffin and consequent irritation. Inhalation pneumonia has occurred and interference with absorption of vitamins.)

- **Liquid paraffin and magnesium hydroxide**

Onset of action 6-12 hours

Starting dose 5-20ml

Formulations Liquid paraffin and magnesium hydroxide oral emulsion BP. (Milpar is on sale to the public).

RECTAL PREPARATIONS

Stimulants

Local stimulation of intestine.

- **Bisacodyl suppositories**

Onset of action 20-60 minutes

Starting dose 1 suppository

Formulations 10mg suppository

- **Glycerol suppositories**

Onset of action 1-6 hours

Starting dose 1 suppository

Formulations 4g suppository

Softeners

Lubricates and softens faeces

- **Arachis oil enemas**

(Do not use in patients with peanut allergy)

Onset of action Normally administered overnight

Starting dose 130ml (warm before use)

Formulations Fletchers' arachis oil retention enema

- **Docusate sodium enema**

Onset of action 15-60 minutes

Starting dose Dose 10g

Formulations **Norgalax** (docusate sodium 120mg in 10g, micro-enema)

Osmotic agents

Increase the amount of water in the large bowel.

Caution with sodium salts where use may cause sodium and water retention in susceptible individuals.

- **Phosphate enemas**

Onset of action 15–60 minutes

Starting dose 1 enema

Formulations **Fletchers' phosphate enema** (sodium acid phosphate 12.8g, sodium phosphate 10.24g)

Fleet enema (sodium acid phosphate 21.4g, sodium phosphate 9.4g)

- **Sodium acid phosphate suppositories**

Onset of action 15-30 minutes

Starting dose 1 suppository

Formulations **Carbalax** (sodium acid phosphate 1.3g, sodium bicarbonate 1.08g) suppository

- **Sodium citrate enema**

Onset of action 15–60 minutes

Starting dose 5ml

Formulations **Micolette** (sodium citrate 450mg, sodium lauryl sulphate 45mg, glycerol 625mg with citric acid potassium and sorbitol)

Micalax (sodium citrate 450mg, sodium alkylsulphoacetate 45mg, sorbic acid 5mg, sorbitol and glycerol)

Relaxit (sodium citrate 450mg, sodium laurylsulphate 75mg, sorbic acid 5mg with glycerol and sorbitol.)

Chapter 4

Corticosteroids

- Patients with advanced malignancy may benefit from corticosteroids for a variety of symptoms. There should always be a clear indication to justify starting corticosteroids and benefits should always be balanced against the side effects.
- Doses should be tailored to the individual and regularly reviewed, as responses may not be prolonged.
- Each stage of the corticosteroid plan should be documented, e.g. indication(s), expected outcome(s), and expected response time. Risk to benefit should be considered for each patient¹.
- Dexamethasone is the corticosteroid of choice. There are however few trials on which to base guidance for indications and dosing. Dose ranges in common use are shown in the table (page 43).^{2,3}

Corticosteroid dose ranges

Indications	Treatment and dose range
<p>Neurological Spinal cord compression or cauda equina syndrome Superior vena caval obstruction</p> <p>Symptoms secondary to cerebral tumour. (Headache alone often requires lower dose.)</p> <p>Nerve compression pain</p>	<p>Dexamethasone 12-16mg/day</p> <p>Dexamethasone 6-16mg/day</p> <p>Dexamethasone 4-8mg/day</p>
<p>Respiratory Dyspnoea. (Pneumonitis after radiotherapy, lymphangitis carcinomatosa, large airways obstruction)</p>	<p>Dexamethasone 2-8mg/day, up to 12mg/day</p>
<p>Gastrointestinal Tract Dysphagia. Intestinal obstruction</p> <p>Rectal discharge</p>	<p>Dexamethasone 6-16mg/day</p> <p>Rectal corticosteroid preparations e.g. hydrocortisone or prednisolone foam enema, or prednisolone suppositories. Once at night.</p>
<p>Miscellaneous Ureteric obstruction/pelvic disease.</p> <p>Pain from hepatic metastases Bone pain (occasionally helpful)</p> <p>Antiemetic</p> <p>Anorexia</p>	<p>Dexamethasone 6-16mg/day</p> <p>Dexamethasone 4-8mg/day</p> <p>Dexamethasone 2-8mg /day</p> <p>Dexamethasone 2-4mg /day Prednisolone 5-30mg/day</p>

- Prescribe as a single morning dose (or two morning doses if numerous tablets required).
- Consider a higher dose of corticosteroids initially to ensure any effect not missed and review after 3-5 days. Consider the need for higher doses for patients on phenytoin, carbamazepine, phenobarbitone.

- Use a 5-7 day corticosteroid 'trial' and unless desired effect achieved, corticosteroid should be stopped. This can be done abruptly unless the patient has:
 1. received > 3 weeks treatment or
 2. received doses < 4-6mg dexamethasone (or equivalent) or
 3. had a second dose in the evening or
 4. taken a short course within 1 year of stopping long term therapy or
 5. other possible causes of adrenal suppression.

Then gradual withdrawal advised. Initially reduce rapidly to physiological doses (dexamethasone 1mg or equivalent) and then more slowly. Patients should be monitored for any deterioration⁴.

- If beneficial, corticosteroids should only be continued at a set dose for a maximum of 2-4 weeks, with planned review date to consider withdrawal.
- **Aim to prescribe the lowest dose that controls the symptoms.**
- Watch for symptoms e.g. increased thirst, increased frequency of micturition which might indicate hyperglycaemia.
- Consider prescribing gastric protectants (e.g. lansoprazole 15-30mg daily) if at risk (e.g. on a concurrent NSAID⁵, previous history of peptic ulcer disease)

Approximate relative potencies of corticosteroids

Steroid	Route of administration	Equivalent anti-inflammatory dose
Dexamethasone	Oral/subcutaneous/IV/IM	2mg
Prednisolone	Oral/rectal	15mg
Hydrocortisone	Oral/IM/IV/rectal	60mg

- If oral route is no longer available, dexamethasone may be given by infusion but may need to be given in a separate syringe driver (check compatibilities) or as a stat subcutaneous dose depending on volume.
- The oral bioavailability of dexamethasone tablets is 80%, compared with intravenous doses ⁶. There is no published literature comparing oral and subcutaneous administration. Generally oral and subcutaneous doses are considered equivalent. Other sources state dexamethasone to be twice as potent by the subcutaneous route, compared to oral ⁷.
- Where patients have recently discontinued corticosteroids consider additional doses for any circumstances involving physiological stress (pain, infection, trauma)

What should the patient be told?:

- Reason for prescribing, including anticipated benefits and side effects
- Take early in the day
- Don't stop suddenly, especially if steroids have been taken for more than 3 weeks – give a plan for dose reduction
- Improvement does not mean tumour regression
- Carry a steroid card
- To seek medical help if more unwell while taking corticosteroids, or come into contact with infectious disease (as recommended on steroid card)
- Vigilance for oral thrush

Steroid preparations

Dexamethasone:	Oral – tablets 0.5mg, 2mg Oral suspension – dexamethasone 2mg in 5ml Injection – dexamethasone or dexamethasone phosphate (as dexamethasone sodium phosphate) 4mg/ml. 1ml amp, 2ml vial
Hydrocortisone:	Rectal Colifoam 10%(hydrocortisone acetate) 125mg/ metered application (14 applications)
Prednisolone:	Oral tablets 1mg, 5mg, 25mg; soluble 5mg, EC 2.5, 5mg Suppositories – prednisolone 5mg (Predsol) Rectal foam – prednisolone (as metasulphobenzoate) 20mg/metered application – 14 applications Retention enemas – Predsol retention enema 20mg (as sodium phosphate) in 100ml Predenema retention enema, 20mg (as sodium metasulphobenzoate) in 100ml

References

1. NICE Guidelines (2004). Improving Supportive Palliative Care for Adults with Cancer.
2. Wooldridge JE et al (2001). Corticosteroids in advanced cancer. *Oncology* 15:225
3. Twycross R et al. (2002). *Palliative Care Formulary*. 2nd Ed. Radcliffe Medical Press.
4. Committee on Safety of Medicines and Medicines Control Agency Expert Working Group. Focus on Corticosteroids. *Current Problems in Pharmacovigilance* 24:5
5. Piper JM et al (1991). Corticosteroid use and peptic ulcer disease: role of non-steroidal anti-inflammatory drugs. *Ann Intern Med* 114:735
6. Duggan D E et al (1975). Bioavailability of oral dexamethasone. *Clinical Pharmacy and Therapeutics* 18(2):205-209
7. Back I. (2001). *Palliative Medicine Handbook* 3rd Ed. BPM Books.

Chapter 5

The syringe driver

The following guidelines acknowledge that subtle changes in clinical practice may occur between hospital, hospice and community practice and endeavour to promote safe and consistent methods of practice, based on collaborative experience around the West Midlands Region. The Regional syringe driver standards are included Appendix 1.

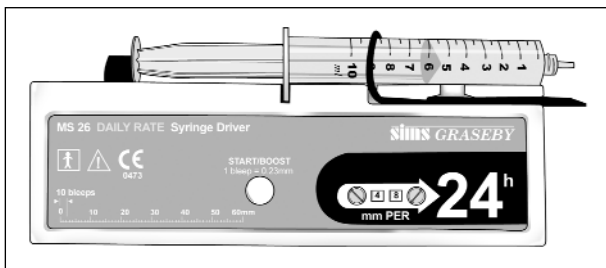
The syringe driver is a small, portable battery-driven infusion pump, used to deliver medication subcutaneously as a continuous infusion usually over 24 hours. It can be used when other routes (e.g. oral, buccal, rectal, transdermal) are unsuitable.

Two of the commonest syringe drivers are

Graseby MS16 (Blue) delivers at a rate of **mm/hour**

Graseby MS26 (Green) delivers at a rate of **mm/day**

Graseby MS26 (Green)



Since the syringe bore varies with different manufacturers and syringe volumes, it is the length of the infusion fluid that is important, not the volume in the syringe. These guidelines use a **48mm** length as the usual length of infusion fluid in the syringe, for a 24-hour infusion.

SELECTION OF DRUGS

The choice of drug is dictated by the symptom, the safety by subcutaneous route and the compatibility with other drugs to be delivered. See *Compatibility Table* (page 90).

Notes

- Opioids via the syringe driver will not give better analgesia than orally unless there is a problem with absorption or administration of the drug.
- Long term use is rarely indicated but if required a syringe driver may be maintained as long as is necessary.

SETTING UP A SYRINGE DRIVER

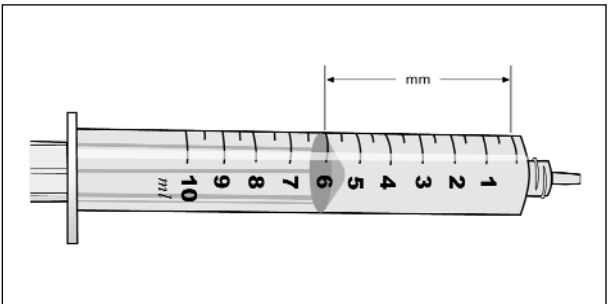
You will need:

- Syringe driver
- 9v Battery
- Luer-lok syringe (usually 10ml but 20ml or 30ml may be used)
- Infusion or (giving) set (choose the smallest volume)
- Fine gauge needle (23G or 25G butterfly)
- Clear adhesive film dressing
- Diluent (usually water for injection)
- Medication as prescribed
- Label to be attached to the syringe

PREPARING THE INFUSION

- Note the volume (ml) that measures 48mm in length. This will vary with different makes and sizes of syringe
- Dissolve powdered drugs to be used with sterile water for injection.
- Draw up drugs into the syringe and dilute to the volume required with sterile water for injection.
- Invert the syringe several times to ensure good mixing.
- The infusion line will need to be primed if you are initiating treatment or re-siting the infusion. Connect the infusion (giving set) to the luer lock and prime the infusion line with the contents of the syringe.
- Label the syringe clearly with the patient's name and infusion contents and dose.

Diagram of syringe barrel with volume measurement



PREPARING THE SYRINGE DRIVER

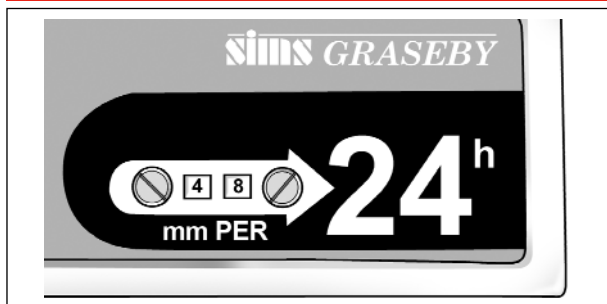
- Set the rate of delivery.

The rate of delivery is calculated as:

$\frac{\text{length of volume (eg 48mm)}}{\text{delivery time (eg 1 day)}}$

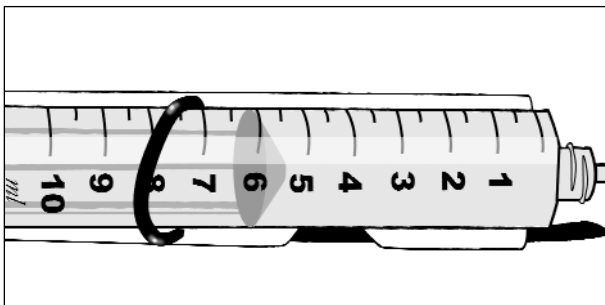
eg with 48mm of infusion: the MS16 is set at 02 mm/hr
the MS26 is set at 48mm/day

Diagram MS 26 rate setting from Graseby



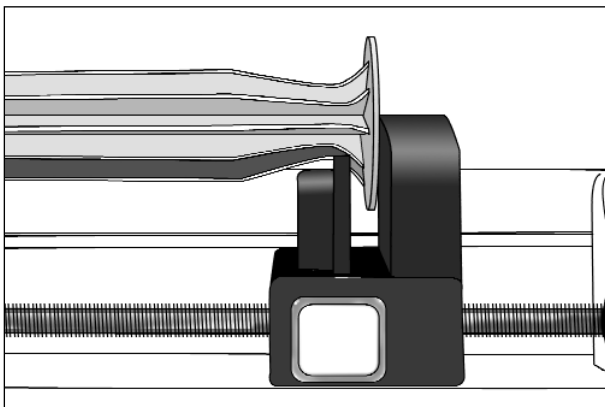
- Insert battery: alarm will sound for a few seconds
- Attach the loaded syringe to syringe driver
- The syringe sits on top of the driver in a V-shaped recess: fit the flange of the barrel into the slot provided.
- Secure in position with neoprene strap

Diagram neoprene strap



- Press white release button to slide activator assembly up to the plunger and clamp in place.

Diagram of slide activator with plunger in slot



COMMENCING THE INFUSION

- Insert fine gauge butterfly with long tubing into the skin of the anterior chest wall (or other convenient subcutaneous site) at an angle of 45 degrees to the skin.
- Start the driver by pressing the start/boost button.
- Light will flash every 20-25 seconds on MS26
- Protect the mixture from light by using a holster or covering.
- A separate subcutaneous dose of analgesic, anti-emetic, antisecretory or anxiolytic may be required when setting up the syringe driver. Do not use the boost button for this.
- **Any unused solution should be discarded**

CARE OF THE SYRINGE DRIVER

If doses of drugs need to be changed then recharge the syringe. It is best not to alter the rate.

Check the syringe driver and infusion regularly for:

- Irritation at the injection site, change site or ask advice.
- Crystallisation of drugs.
- Light flashing (if not check the battery).
- Secure connections or kinked tubing
- Leakage.
- Correct volume remaining.

PRESCRIBING FOR THE SYRINGE DRIVER

- The dose of each drug to be given by infusion over a specified time period (usually 24 hours) should be clearly written using a dedicated form where this is available.
- If required, a range of drug dose to be administered over a specified time period may be indicated. Variable rates of infusion length (mm/time) **should not** be prescribed.

- Bolus doses of drugs should be prescribed separately in anticipation of breakthrough symptoms.

Do not

- Change the rate setting on the syringe driver in order to change a dose
- Add medication to an existing syringe
- Use the boost button

MIXING DRUGS IN THE SYRINGE DRIVER

Definitive data on compatibility, stability and efficacy are still lacking. Generally all of the drugs included in the table (page 54) are compatible with morphine and diamorphine, however cyclizine compatibility is concentration dependent. Cyclizine does not mix with oxycodone at therapeutic doses.

Dexamethasone compatibility is unpredictable and is best given in a separate syringe driver if possible or as a bolus subcutaneous dose once daily. A compatibility chart based on studies performed at specified drug concentrations is shown on page 90.

The following precautions will minimise the risk of problems of incompatibility and instability:

- Try to avoid mixing more than two drugs in a syringe unless there is specific advice that this is acceptable at the doses required.
- Do not leave drugs in a syringe driver for more than 24 hours
- Seek advice from the local specialist in Palliative Medicine before using unusual combinations.

Notes

Although subcutaneous administration of these drugs is common and accepted good practice in palliative care, the use of this route lies outside the product licence for most of these preparations.

Medication	Indication	S.C. Starting dose and range in 24 hours	Ampoules available
Analgesic Diamorphine Morphine	Pain	1/3 total daily dose of oral morphine 1/2 total daily dose of oral morphine Increasing as necessary by 30-50% increments	5, 10, 30, 100, 500mg 10mg/ml, 15mg/ml, 20mg/ml, 30mg/ml as 1ml and 2ml ampoules.
Antiemetic Metoclopramide Haloperidol Cyclizine	Impaired gastric emptying Drug induced or metabolic cause of nausea Intestinal obstruction	30-40mg (range 30-80mg) 2.5mg – 5mg (range 2.5mg – 10mg) 100-150mg (range 50-150mg)	10mg/2ml 5mg/1ml and 20mg /2ml 50mg/1ml
Antiemetic and sedative Levomepromazine	Nausea Sedation, confusion, agitation	2.5 – 12.5mg 12.5-100mg	25mg/1ml

Sedative Midazolam Clonazepam	Terminal restlessness Myoclonic jerking Anticonvulsant	10-30mg (range 10-90mg) 10-30mg (range 10-90mg) 10-30mg (range 10-90mg) 0.5 – 8mg	10mg/2ml 10mg/5ml 1mg/1ml
Anticholinergic Hyoscine hydrobromide (also anti-emetic) Glycopyrronium Hyoscine butylbromide	Terminal bronchial secretions for all 3 drugs but severe colic Intestinal obstruction for Hyoscine butylbromide only	0.6 – 1.2mg 0.6 – 1.2mg 60-180mg	0.4mg/1ml and 0.6mg/1ml 0.2mg/1ml and 0.6mg in 3ml 20mg/1ml
Steroid Dexamethasone	Reduction in peritumour oedema	3-16mg (see page 43)	Dexamethasone as dexamethasone sodium phosphate 4mg/ml, 2ml vial
Anti-secretory Octreotide	Intestinal obstruction to reduce secretions if hyoscine butylbromide ineffective	500 micrograms/24hr initially. (Range 50-600 micrograms/24 hours) see page 32	50mcg/1ml 100mcg/1ml 500mcg/1ml 1000mcg/5ml

Contraindicated: DIAZEPAM, PROCHLORPERAZINE AND CHLORPROMAZINE are too irritant to be used subcutaneously. Diamorphine or morphine should be the opioid of first choice for injection. To convert from oral morphine to subcutaneous diamorphine, divide the total 24 hr oral morphine dose by 3 to obtain the total 24hr diamorphine dose. When converting from oral morphine to subcutaneous morphine divide the 24 hr oral morphine dose by 2

e.g 3mg oral morphine = 1mg diamorphine subcutaneous injection
 3mg oral morphine = 1.5mg morphine subcutaneous injection

Chapter 6

Terminal care

DEVELOPMENTS IN PALLIATIVE CARE

Three “End of Life” initiatives aim to improve care of patients and their families:

Gold Standards Framework (GSF)¹ applies to patients in the last few months of life. It is based in primary care. Key points include:

- A palliative care register - to monitor patients’ progress and anticipate the need to increase medical, nursing and social input.
- Education - to support staff and foster communication between disciplines and settings.

Liverpool Care Pathway (LCP)² applies to patients in the last hours of life. It covers:

- Hospital, community, nursing home or hospice settings.
- Aspects of nursing care, medical care, and communication.
- Gives detailed prescribing advice for common symptoms.

Preferred Place of Care aims to document:

- Where the patient wishes to receive care in the final days of life
- What care they want (i.e. advance decisions, CPR status, etc.)

In addition, the Mental Capacity Act comes into force in April 2007, which will clarify the status of advance decisions. A patient (or an appointed representative in the case of a patient without capacity)

- Can refuse treatment, such as enteral feeding, ventilation for respiratory failure or antibiotics for infection.
- Cannot demand treatment.

Sensitive discussion between patients and their representatives and professionals is important to ensure patient wishes are clear.

CARE IN THE DYING PHASE – USING THE LIVERPOOL CARE PATHWAY

It is important that the patient is known to have advanced disease and that reversible causes of deterioration have been excluded.

Usually the dying phase can be recognised from the following features³:

- Unconscious / sleeping much of the time
- Little interest in food/fluids
- Unable to swallow tablets
- Largely bed-bound

At this stage, only drugs that are required for comfort and symptom control should be prescribed:

- a) Stop non-essential medication e.g.
- hypoglycaemic agents
 - anti-hypertensive drugs
 - levothyroxine
 - antibiotics

Consider whether reducing or stopping steroids in patients with raised intracranial pressure is appropriate.

- b) Analgesic, anti-emetic and anxiolytic drugs should be continued by a suitable route (subcutaneous syringe driver, subcutaneous injection, or rectally). Essential drugs that cannot be given by the subcutaneous route should be changed to an alternative (e.g. anticonvulsants switched to subcutaneous midazolam).
- c) "As required" stat medication should be prescribed (**and available**) for pain, vomiting, agitation, or retained respiratory secretions.²

PAIN IN THE DYING PHASE

When the patient is no longer able to swallow oral morphine, change to:

- continuous diamorphine (or morphine) infusion via a syringe driver (see conversion table on p 15).
- prescribe a dose of subcutaneous diamorphine (or morphine) for breakthrough pain one sixth of the total 24-hour dose of diamorphine. This can be given as frequently as necessary and increased in proportion to increase in 24-hour dose.
- If the patient is still in pain, the 24-hour dose of subcutaneous diamorphine (or morphine) may be increased by the sum of the breakthrough doses given in the previous 24 hours.
- If the patient does not currently have pain, prescribe subcutaneous diamorphine 2.5 - 5 mg (or morphine 5 – 7.5mg) pm. If after review at 24 hours two or more doses have been required, set up a syringe driver containing diamorphine (or morphine).
- If the patient is on an alternative strong opioid and needs to switch to a syringe driver, see Chapter 1 (p14 Relative Strength of Opioids; p20 Discontinuing transdermal Fentanyl) or seek specialist advice.

NAUSEA AND VOMITING IN THE DYING PHASE

See Chapter 2 for the management of nausea and vomiting (p29) and the medical management of intestinal obstruction (p31).

RESTLESSNESS AND AGITATION IN THE DYING PHASE^{3,4}

In advanced illness, confusion and terminal restlessness/agitation are common.

A prognosis of only hours to days may leave insufficient time for a response to some specific treatments and therefore confusion or agitation should be managed symptomatically.

Common causes of confusion or agitation in the dying phase

Treat underlying cause	Treat symptomatically
Drug toxicity (opioids, steroids)	Hypercalcaemia
	Infection
Constipation	Uraemia
Urinary retention	Primary brain tumour
Hypoxia	Cerebral metastases

It is difficult to address psychological causes of distress and anguish in the last few days. Reliance is placed on improving environmental factors and sedation.

GENERAL MANAGEMENT

	Oral PRN	SC stat	SC 24-hour syringe driver*
Midazolam	-	2.5 – 5 mg	10 - 60 mg
	Especially if anxiety is prominent.		
Levomepromazine	12.5 – 25 mg	12.5 – 25 mg	12.5 - 150 mg
	Especially if nausea is also present. Very sedative at higher doses.		
Haloperidol	1.5 – 10 mg	1.5 – 10 mg	5 – 20 mg
	Especially in confusion. Smaller doses in elderly		

* If the patient is already on any of these drugs orally, the starting dose may need to be higher but exercise care in the elderly

- Patients with severe agitation are often very resistant to the effects of sedatives and may need repeat doses at 30-minute intervals until settled.
- Midazolam or levomepromazine can occasionally cause increased agitation so early and frequent review is essential.
- Occasionally the combination of an anti-psychotic and benzodiazepine is required.

RESPIRATORY SECRETIONS IN THE DYING PHASE⁵

Noisy, bubbly breathing is due to retained secretions and may occur in up to 70% patients in the terminal phase. There is little evidence to support the effectiveness of drug treatment for this symptom.

- Explanation and reassurance for relatives and carers is paramount. It may remove the need for drugs or other intervention (such as repositioning or suction).
- Hyoscine butylbromide and glycopyrronium do not usually cause drowsiness, confusion and paradoxical excitation since they do not cross the blood-brain barrier.
- When considering the cost of a stat dose, hyoscine butyl bromide is cheaper than glycopyrronium bromide, which is in turn cheaper than hyoscine hydrobromide.
- Additional prn injections can be given (same dose as for stat injection) while the patient is on a syringe driver.

ANTICHOLINERGIC DRUG	SUBCUTANEOUS ROUTE	
	STAT INJECTION	SYRINGE DRIVER OVER 24 HOURS
Hyoscine butylbromide	20 mg	20 - 120 mg
Glycopyrronium bromide	0.4 mg	0.6 – 1.2 mg
Hyoscine hydrobromide	0.4 mg	0.6 - 1.2 mg

Hypercalcaemia that has recurred within a short time after previous treatment often represents advancing disease and is unlikely to respond to further treatment.

- Patients should be counselled regarding osteonecrosis of the jaw.
- Ensure the patient is appropriately hydrated before giving a bisphosphonate.
- Disodium pamidronate IV infused at a rate not exceeding 1 mg/min.

Corrected calcium (mmol/L)	Pamidronate (mg)	0.9% saline (mL)
< 3	30	250
3 – 3.5	60	250
> 3.5	90	500

- Zoledronic acid IV 4 – 8 mg in 100 mL 0.9% saline infused over 15 minutes at least.
- If required, a further dose can be administered at 5-7 days.
- If response persists for 3 – 5 weeks consider maintenance with further IV treatment or an oral bisphosphonate.
- In renal failure consult product literature for dosing guidance.

Spinal Cord Compression¹⁰

This occurs in 5 - 10% of cancer patients, the most common underlying tumours being lung, breast and prostate (40% of all cases).

Speedy diagnosis and treatment of spinal cord compression can make the difference between a patient regaining the ability to walk or becoming paraplegic.

Immediate advice should be sought from an oncologist, spinal surgeon, or neurosurgeon if the diagnosis is suspected.

Symptoms and signs:

Pain over affected vertebra; pain down compressed nerve roots; weakness (usually legs; also arms if at cervical level); perianal numbness.

A sensory level or sphincter dysfunction are late signs.

A mixture of sensory, upper and lower motor neurone signs may point to the level in the spinal cord or cauda equina, although multiple levels can be affected.

Immediate treatment:

Oral dexamethasone 12 – 16 mg daily.

If the patient is not thought to be in the end-phase, an **urgent** spinal MRI is indicated to confirm the diagnosis. This may be arranged locally or through the patient's oncologist or a spinal unit, who may then arrange radiotherapy or surgery.

Epileptic fits¹¹

Fits may occur in patients in the following situations:

- Pre-existing epilepsy
- Previous stroke
- Primary or secondary brain tumour
- Biochemical disturbance e.g. severe uraemia, hyponatraemia, hypoxia, hypoglycaemia

Treatment of grand mal fits:

- Ensure the airway is clear
- Administer oxygen, if available
- Exclude hypoglycaemia. If present, treat with 25 mL glucose 50% intravenously, or glucagon 1 mg IM if venous access is not possible.
- Other causes should be treated with diazepam 10 mg via the rectal or intravenous route (use diazepam oil in water emulsion). This can be repeated after 15 and 30 minutes if needed. Alternatively, give midazolam 5-10 mg by the SC or IV route, and repeat after 15 minutes if needed.

Major haemorrhage¹¹

This is rare, but can often be predicted in patients with fungating wounds in the neck and groin. Sensitive discussion with the patient, carers and professionals can allow forward planning to minimise distress.

It is useful to ensure that the necessary drugs and a coloured towel are readily available. Since most such events cause death within minutes the most important aspect of care is for someone to stay with the patient.

The main aims of drug treatment are to reduce:

- Pain
- Fear
- Awareness of the patient

Treatment: Ideally drugs should be administered IV where appropriate or IM to speed absorption.

- Midazolam 5 – 10 mg (can also be given by the buccal route)
- Diazepam 5 – 20 mg IV (oil in water emulsion)
- Diazepam 10 – 20 mg PR

If the patient is already receiving benzodiazepines, e.g. midazolam sc infusion, a bigger dose may be required.

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Chapter 7

Symptom control in patients with renal and cardiac impairment

Symptom control measures may need to be modified in cancer patients who have concurrent illness or who have organ failure as part of their malignant disease. In addition, patients who have non-malignant, end-stage organ failure are likely to have palliative care and symptom control needs.

The principles of pain and symptom control previously described for cancer patients can be modified for use in palliative patients with non-cancer disease. The concept of total pain and identification of the cause and nature of pain remains important. The prescription of analgesia by the clock, by the WHO ladder and by mouth, where possible, is ideal. However the choice and dose of analgesia and other symptom control drugs may need to be modified depending upon the type of non-cancer disease.

The following guidelines aim to provide general symptomatic prescribing advice for patients who are in the “palliative phase” of renal and cardiac failure or have renal and / or cardiac failure in addition to a malignant condition. Identification of the palliative phase can be more difficult and unpredictable than in cancer patients. Advice should be sought from the patient’s specialist team and the Palliative Care Team if necessary, alongside discussion with the patient and family. Management of patients on dialysis should always be discussed with their specialist renal team.

RENAL IMPAIRMENT

Renal Impairment may occur in cancer patients e.g. due to ureteric obstruction secondary to a pelvic tumour or as a consequence of a concurrent illness e.g. diabetic nephropathy. In these patients the origin of their renal impairment should be investigated and corrected if clinically appropriate e.g. stenting in ureteric obstruction.

The cause of pain and symptoms should be identified as previously described. In patients with End Stage Renal Disease (ESRD) specific causes of pain may be:

- Due to the underlying disease eg. polycystic kidney disease, diabetic nephropathy and neuropathy.
- Secondary to renal failure and its treatment eg. calciphylaxis (tissue ischaemia due to calcification of tissue and small arteries in dialysis patients); ischaemic neuropathies due to A-V fistulae and peritonitis due to peritoneal dialysis.

ANALGESIA IN PATIENTS WITH RENAL IMPAIRMENT

Many analgesics are excreted by the kidneys and any degree of renal impairment can reduce drug clearance, and therefore the dose of drug required. Glomerular filtration rate (GFR) gives an indication of how much drug clearance will be affected by renal impairment. Renal dysfunction can also influence the absorption, metabolism, distribution and pharmacodynamics of many drugs.

ESTIMATION OF GFR

The creatinine clearance can be used as an estimate of GFR. Most hospital biochemistry departments now include this as part of their U&E reports. The creatinine clearance is calculated using the Cockcroft and Gault formula.

$$C_{cr} \text{ (men)} = \frac{1.23 \times (140 - \text{age}) \times \text{weight (Kg)}}{\text{Plasma Creatinine (micromoles/l)}}$$

$$C_{cr} \text{ (women)} = \frac{1.04 \times (140 - \text{age}) \times \text{weight (Kg)}}{\text{Plasma Creatinine (micromoles/l)}}$$

Grade of renal impairment	Glomerular filtration rate (GFR)
Mild	20-50mL/min
Moderate	10-20mL/min
Severe	<10mL/min

Analgesics in Renal Failure

Drug	Metabolism	Dose adjustments	Comments
WHO Ladder Step 1 analgesics			
Paracetamol <i>Generally safe</i>	Extensively metabolised by liver.	Generally safe at full dose. Maximum 1g q.d.s.	May hasten progression of renal failure.
NSAIDS <i>Avoid (unless risk of deteriorating renal function outweighed by need for NSAID analgesia or patient is on dialysis).</i>	Inhibits COX in kidney. Excreted mainly by liver.		Can cause severe and irreversible reduction in GFR. Avoid in renal failure.
WHO Ladder Step 2 analgesics			
N.B. All patients with renal impairment should be monitored for signs of toxicity e.g. myoclonic jerks, drowsiness, confusion, hallucinations, agitation.			
Codeine <i>Tolerated by some patients but use cautiously</i>	Metabolites excreted by the kidneys and accumulate.	Commence at 15 – 30 mg qds and monitor for side effects of opioid accumulation.	Tolerated by some patients but may cause prolonged respiratory depression and unconsciousness. Use cautiously.
Tramadol <i>Generally tolerated at reduced doses</i>	Metabolised by the liver. Excreted in urine.	Dose reduction required in patients over 75 years and in renal failure. If GFR <30 consider using 100-200mg per day. Commence at 50mg b.d. or t.d.s.	Use immediate release preparation initially. Generally has fewer opioid side effects than other opioids at an equivalent dose.

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Analgesics in Renal Failure (cont.)

Drug	Metabolism	Dose adjustments	Comments
WHO Ladder Step 3 analgesics N.B. Patients should be monitored for signs of toxicity when commencing any strong opioid. e.g. myoclonic jerks, drowsiness, confusion, hallucinations, agitation.			
Alfentanil <i>Can be used safely</i>	Extensively metabolised in the liver.	No change in dose required. See conversions in Pain chapter.	Can be given via s.c. syringe driver. Good alternative to diamorphine in patients with renal impairment. Short duration of action limits its use for breakthrough analgesia.
Buprenorphine <i>Use with caution</i>	Metabolised in liver but metabolites excreted in the urine.	Limited data. Use lowest dose possible.	Available as transdermal patch and sublingually. Accumulation of metabolites in renal failure may cause respiratory depression.
Diamorphine <i>Not well tolerated. Avoid if possible</i>	Metabolised to morphine.	If necessary to use, start with small doses e.g. 1.25–2.5mg every 4 to 6 hours.	As for morphine
Fentanyl <i>Can be used safely</i>	90 % metabolised in the liver.	Does not appear to significantly accumulate in renal failure. Use according to guidelines for non-renal failure patients (see Pain chapter).	Available as transdermal patch. Remember there is a delay in achieving steady state, and in elimination once patch is removed. Can be given s.c. via a syringe driver but the more soluble alfentanil is preferable.

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Analgesics in Renal Failure (cont.)

Drug	Metabolism	Dose adjustments	Comments
WHO Ladder Step 3 analgesics (cont.) N.B. Patients should be monitored for signs of toxicity when commencing any strong opioid. e.g. myoclonic jerks, drowsiness, confusion, hallucinations, agitation.			
Hydromorphone <i>Use with caution.</i>	Primarily metabolised in the liver but excreted in the urine.	Use immediate release preparation 4 – 6 hourly initially and titrate cautiously. 1.3mg equivalent to 10mg morphine.	Theoretically may cause similar problems to morphine but in practice often better tolerated than morphine. Available in immediate release and slow release oral preparations and s.c. (See Pain chapter for conversions and further information.)
Methadone <i>Use by experienced clinician only.</i>	Metabolised in liver. Excreted mainly in faeces.	Significant individual variation makes titration of doses difficult as in patients with normal renal function.	May be a useful alternative to other opioids in renal failure BUT requires specialist supervision.
Morphine <i>Not well tolerated. Avoid if possible.</i>	Major metabolite (morphine-3-glucuronide) excreted by kidneys and accumulates in renal failure.	If necessary to use, start with an immediate release preparation in small doses. E.g. 1.25 – 2.5mg every 4 to 6 hours.	Likely to cause toxicity and have a longer duration of action. Not well tolerated in patients with severe renal failure.
Oxycodone <i>Little data available. Use with caution.</i>	Eliminated mainly by the liver, 10% excreted unchanged in urine.	If used, start with smallest dose possible in an immediate release preparation. Consider extending dose interval and monitor for side effects of opioid accumulation.	Elimination half-life is prolonged, therefore may accumulate in renal failure.

Analgesics in Renal Failure (cont.)

Drug	Metabolism	Dose adjustments	Comments
Adjuvant analgesics			
NSAIDS <i>Avoid – see under step 1 analgesics</i>			
Tricyclic antidepressants	Metabolised by the liver.	Dose reduction is not usually necessary in renal failure.	Start with low doses e.g. amitriptyline 10 to 25mg, increasing slowly.
Anticonvulsants: Carbamazepine	Metabolised by the liver.	No dose adjustment required. Commence at 200mg daily.	May accumulate in renal failure.
Gabapentin <i>Use with caution</i>	Excreted unchanged by the kidneys.	Dose reduction necessary. Start with small doses e.g. 100mg o.d. and monitor closely.	May accumulate in renal failure.
Pregabalin <i>Use with caution</i>	Excreted unchanged by the kidneys.	Dose reduction necessary.	May accumulate in renal failure.
Sodium valproate.	Metabolised by the liver and eliminated by the kidneys.	No dose adjustment required. Commence at 200mg daily.	Usually well tolerated.

Antiemetics in Renal Failure

Drug	Metabolism	Dose adjustments	Comments
Cyclizine	Metabolised by the liver.	Dose reduction not found to be necessary in practice.	No studies available regarding its use in renal failure.
Haloperidol	Metabolised mainly by the liver.	Dose reduction is not usually necessary.	
5-HT ₃ receptor antagonists	Ondansetron is metabolised mainly by the liver.	No dose reduction is necessary.	
Levomepromazine	Metabolised by the liver but excreted in the urine and faeces.	Reduced doses may be required.	
Metoclopramide	Excreted by the kidneys.	Avoid or use smallest dose possible in severe renal failure.	Increased risk of extrapyramidal side effects.

Drugs used in terminal care

Drug	Indication	Metabolism	Dose adjustments	Comments
Glycopyrronium	Upper respiratory tract secretions	Excreted via the kidneys.	Use reduced dose or consider an alternative agent.	Does not cross blood-brain barrier
Hyoscine butylbromide	Upper respiratory tract secretions	Metabolised in the liver	No dose reductions necessary	Does not cross blood-brain barrier
Hyoscine hydrobromide	Upper respiratory tract secretions.	Metabolised in the liver	No dose reductions necessary.	Crosses blood-brain barrier and can cause agitation.
Midazolam	Agitation.	Predominantly metabolised by the liver.	Start with small doses e.g. 1.25–2.5mg sc prn and 5mg / 24hr via a syringe driver.	Increased cerebral sensitivity can occur.

CARDIAC FAILURE

Cardiac Failure can be classified according to the New York Association Classification (NYHA).

NYHA CLASS	SYMPTOMS
I	Asymptomatic. Objective evidence of left ventricular systolic dysfunction, but no symptoms even on exercise.
II	Mild. Symptoms only on moderate exercise.
III	Moderate. Symptoms on mild exercise.
IV	Severe. Symptoms at rest.

50% of patients with heart failure (all classes) die within 4 years and 50% of those with class IV heart failure die within 1 year.

Common symptoms include:

- Breathlessness and reduced exercise tolerance.
- Pain e.g. secondary to ischaemic heart disease or liver distension.
- Anorexia and weight loss.
- Nausea, vomiting and constipation.
- Anxiety and depression.

Symptoms can also be secondary to drug therapy e.g

- Digoxin toxicity – nausea, diarrhoea, drowsiness, confusion.
- Diuresis and fluid restriction – dry mouth, dizziness, and falls secondary to reduced blood pressure.
- ACE inhibitor cough.
- Beta-blockers - malaise and lethargy.

In the palliative phase, it may be appropriate to review (in consultation with the specialist team) and discontinue some of the patient's medication e.g. lipid lowering drugs. However many

of the cardiac medications will remain important in managing the patient's symptoms even in the advanced stages e.g. furosemide for breathlessness secondary to fluid overload.

Some drugs used in symptom control may worsen heart failure and these should be avoided or used with caution. The following table gives guidance with regard to drugs which may cause particular problems. However all prescribing should be undertaken in conjunction with BNF guidelines and specialist advice sought if there are particular concerns.

Drug	Problematic Side Effects In Heart Failure
NSAID's	Cause sodium and water retention and can worsen renal function.
Steroids	Cause water retention.
Progestogens	Cause water retention.
Tricyclic antidepressants	Anticholinergic. Can cause cardiac arrhythmias, hyponatraemia and postural hypotension. Should be avoided in cardiac disease particularly if there is a history of arrhythmias. SSRI's and mirtazapine are safer.
Cyclizine	Anticholinergic. May cause arrhythmias and hypotension. Avoid in severe cardiac failure.
Glycopyrronium Hyoscine hydrobromide Hyoscine butylbromide	Anticholinergic. Use with caution in cardiac disease.
Haloperidol and Levomepromazine	Anticholinergic. May cause arrhythmias, tachycardia and hypotension. Use with caution in cardiac disease.

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Chapter 8

Palliation of breathlessness¹

Breathlessness is a common symptom in both malignant and non-malignant disease. Up to 70% patients with cancer experience breathlessness in the 6 weeks prior to death², and this may be greater in lung cancer patients because of co-existent chronic obstructive pulmonary disease (COPD)³. Up to 40% of heart failure patients are breathless in the 6 months before death, rising to 65% in the three days leading up to death⁴. Breathlessness is almost universal in patients with more than mild COPD.

Specific pharmacological treatment aimed at particular lung pathology (e.g. bronchodilators for bronchospasm) has limited success at this stage and more general symptom control measures are often necessary.

STRATEGY IN THE BREATHLESS PATIENT

- Determine the correct diagnosis
- Decide on the optimal management
- Consider if there is concurrent disease including psychological factors

It is only worth pursuing investigations or treatment if it is likely to alter the outcome.

MANAGEMENT OF BREATHLESSNESS

General measures

- Explanation of cause/reassurance will not choke or suffocate
- Calm manner; fan or open window in acute attack
- Posture leaning forward or against wall or shopping trolley

- Diaphragmatic breathing through pursed lips; long expiration
- Nutritional advice (e.g. small frequent meals, easily chewed)
- Relaxation training and/or complementary therapy
- Energy conservation/pacing training/equipment
- Treat depression and anxiety if present
- Benefits advice
- Encourage social interaction (e.g. peer group support, Breathe Easy Club)

Specific measures

Conditions such as pneumonia, COPD, asthma, effusions etc should be dealt with using standard management.

Psychological measures

Psychological factors (e.g. anxiety, fear of choking or suffocating) often exacerbate any breathlessness resulting from physical disease.

Occasionally breathlessness may be largely due to psychological factors.

In such circumstances, good palliation depends on exploring the patient's beliefs about their breathlessness and their concerns. Reliance on drug treatment alone will only result in partial control of breathlessness.

Palliative measures⁸

Oxygen

- **Short-burst oxygen**
 - Compressed gas, for home use
- **Ambulatory oxygen**
 - Liquid, if mobile outside (via hospital respiratory service)

- Long-term oxygen
 - Patients using more than 8 hours daily
 - Long-term oxygen therapy for COPD (at least 15 hours daily)
 - Usually 1-2 L/min unless formal blood gases dictate otherwise. Care needed if patient known to retain CO₂. Blood gas measurement not needed if for palliative use⁵.

Non-opioid drugs

- Lorazepam 0.5–1 mg oral or sublingual PRN or tds, if the patient is anxious.
- Midazolam 2.5-5 mg PRN by subcutaneous, sublingual or intravenous routes or 10-20 mg per 24 hours subcutaneous via syringe driver.

Opioid drugs

- Dihydrocodeine 30-60 mg 4 x daily
- Oral morphine
 - Opioid-naïve
Oral morphine 2.5 - 5mg 4 hrly
 - On opioids for pain
Increase current 4 hrly dose by 25-50%
 - Laxative
 - More caution in severe COPD

Complementary therapy

- Relaxation particularly combined with controlled breathing

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Appendix I

Standards for the use of syringe drivers for subcutaneous administration of drugs

Produced by the West Midlands Palliative Care Physicians, researched by Christine Hirsch, Research Pharmacist. Revised January 2002. Reviewed November 2006.

The Standards have been produced collaboratively by a working party in consultation with representatives from Medical, Nursing and Pharmacy staff throughout the Region. The Standards seek to maintain safe best practice, being applicable to hospice, community and hospital practice whilst acknowledging practical differences between these care settings.

1. Nursing standards

All nurses setting up and maintaining treatment via this route should have demonstrated and be assessed in the safe and effective use of a syringe driver, the subcutaneous route of infusion and drug administration. The training authority should document assessment. Re-assessment should be carried out at least every two years to ensure that technique and knowledge is up to date with current techniques.

Standard areas of knowledge and assessment are detailed on page 90.

2. Indications for starting a syringe driver

The syringe driver may be indicated in the following situations:

- Persistent nausea or vomiting
- Difficulty swallowing
- Poor alimentary absorption
- Intestinal obstruction
- Profound weakness/ cachexia
- Comatose or moribund patient
- Administration of drugs that can not be given by non-parenteral routes

3. Information for patients and carers

In order to alleviate fears and promote understanding and acceptance, patients and or carers should receive both **verbal** and **non-verbal** information on the following points:

- Explanation of rationale of the syringe driver
- Essential points of how it works, what action to take if alarms sound, who to contact if in need of help and advice.
- Essential basic information on the drugs being given.
- There should be documentation to indicate that this has been done.

4. Directions for prescribing and administration of drugs by subcutaneous infusion

- The choice and combination of drug(s) should be led by locally endorsed Guidelines. When auditing, the Guidelines used should be specified. Medication should be obtained via FP10 prescription in the community or hospital/hospice prescription.

Directions for administration should:

- Clearly identify the dose of each drug in the infusion to be given over a specified time period (usually 24 hours).
- In the community setting, ranges of doses may be prescribed. The reason for any change in dose administered should be recorded. Variable rates of infusion e.g. range of infusion length (mm/time) should not be prescribed (see 11 below).
- It is good practice to prescribe the appropriate diluent.
- An appropriate bolus dose of analgesia or other drug should be prescribed on a 'prn' (as required) basis in anticipation of 'breakthrough' symptoms.

5. Monitoring and documentation

There should be a dedicated syringe driver monitoring chart which need not be standardised but should record:

- Drug and doses
- Length of infusion (mm)/volume remaining at time of monitoring
- Rate of infusion
- Date and time of syringe set up , with signature
- Appearance of syringe (clear/cloudy)
- Appearance of infusion site
- Check that battery life and syringe functioning has been checked

6. Labelling

The syringe barrel should be labelled clearly, allowing syringe driver contents to be monitored, with:

- Patients name (ward if applicable)
- Drugs and doses of drugs
- Diluent
- Final length (mm)
- Date and time prepared
- Signatures of preparing nurse/s

7. Choice of infusion sites

Sites of choice include:

- Sites of choice include:
- Anterior chest wall
- Lateral upper arms
- Anterior abdominal wall
- Anterior outer thigh
- Area over scapula (in confused or disorientated patient)

Avoid areas of inflammation, oedema, broken skin, bony prominences, recently irradiated areas, sites of tumour, sites of infection, skin folds or lymphoedema.

8. Use of plastic covers on syringe drivers

The syringe driver should be protected by placing in the designed plastic cover during use.

9. Protection from light

The syringe driver contents should be protected from light.

10. The “boost button” MUST NOT BE USED, unless there are exceptional circumstances.

- The volume delivered by pressing the boost button once is insufficient to deliver an appropriate dose of analgesia for breakthrough pain.
- The boost button also delivers all drugs in the syringe driver leading to the potential for increased side effects.
- Frequent boosting will cause the syringe driver to run out before its due time leaving the patient without analgesia.³

11. In the event of a dose change, a new syringe should be set up rather than altering the infusion rate

- Changing the infusion rate will also change the rate that other drugs in the driver are given.
- Re-calculating a rate is a potential area for error and may result in the drug supply in the syringe being exhausted before its expected time.
- If new drugs are prescribed, the infusion giving set should also be replaced.
- If the dose of medication is increased, changing the infusion giving set is optional. If the giving set is not changed, it must be acknowledged that there will be a delay before the patient receives the dose increase, unless a bolus dose is given.

12. Maintenance of syringe drivers

A service contract should exist to ensure that all syringe drivers are checked regularly in line with the manufacturers recommendations.

Syringe drivers should be cleaned in line with the manufacturers recommendations between these regular services.

13. Recommendations for good practice

The data on drug stability and compatibilities is limited. The table in *Guidelines for the use of Drugs in syringe drivers*¹ gives a list of drugs which may be mixed with diamorphine or morphine in the syringe driver. Until further data is available:

- Drugs should be diluted with water for injection unless there is a specific recommendation to use sodium chloride 0.9%.
- Try to avoid mixing more than two drugs in a syringe unless stability data is available.
- Do not leave anti-emetics in a syringe for more than 24 hours
- Seek advice from the local specialist in Palliative Medicine before using unusual combinations.

References

1. Twycross R, Wilcock A, Charlesworth S, Dickman A. Palliative Care Formulary, PCF2. 2002. Radcliffe Medical Press.
2. Evans N & Palmer A. Controlling breakthrough pain in palliative care. *Nursing Standard*.1998;13;7:53-54.
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COMPATIBILITY CHART FOR COMMONLY USED DRUGS IN SYRINGE DRIVERS

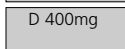
All drug dilutions should be carried out with water for injections unless otherwise stated.

This guide is produced using the best available published information at the time of publication, for those drugs recommended by these guidelines. For further information contact your local Specialist Palliative Care Unit or Hospital Medicines Information Pharmacist.

Key



Laboratory chemical stability data



Compatible and indicating where available the maximum doses which are known to be compatible in **8ml volume**. If higher doses required, a larger syringe must be used to provide a larger volume. Based on chemical stability data. Morphine compatibility data based on morphine hydrochloride data¹¹ and PCF2¹² data for morphine sulphate.



Physical compatibility data only



No data



Occasional incompatibility



Mixture not recommended clinically



Incompatibility

Revised November 2006

References

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Annex 9. www.sign.ac.uk
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Appendix II

Standard knowledge base for nurse education

Many hospices and Healthcare Trusts have established programs for training and education in the setting up and maintenance of subcutaneous drug administration via a syringe driver. The following lists emphasises those areas felt to be standard and essential knowledge for nurses working in this field.

1. Advantages and disadvantages of a syringe driver

- Nurses should be able to list advantages and disadvantages of using a syringe driver for symptom control in palliative care.

2. Types of portable syringe drivers:

Graseby MS26 and MS16A are the syringe drivers most commonly used in the West Midlands Region for subcutaneous administration of drugs for symptom control in palliative care.

- Nurses should be familiar with the differences in the syringe drivers as described in Graseby MS16A/MS26 syringe driver instruction booklet.
- Nurses should have had hands on experience in setting up both types of driver.

3. Syringe sizes, dilution and diluent:

- Nurses should demonstrate a knowledge that different brands of syringe may measure different lengths for any given volume hence the need to measure the length of fluid in the syringe during the set-up procedure for Graseby syringe drivers.
- "Luer lok" syringes should be used to reduce the risk of infusion set disconnection.

- Although 10ml syringes are generally used, 20ml and 30ml syringes may be used for higher volumes or to achieve lower drug concentrations where precipitation or site irritation is a problem. Larger syringes need to be underfilled, e.g. 15ml in a 20ml syringe.

4. Monitoring

- Nurses should be aware of the importance of recording and documentation on monitoring forms

5. Setting up the syringe driver

- Nurses should be able to explain and demonstrate the procedure for setting up a syringe driver, including checks to ensure that the driver is functioning correctly. A check-list such as the one produced in the Graseby training package may be used.
- When priming the syringe driver it is accepted good nursing practice to draw up the drug and its diluent to an agreed length of liquid (usually 48mm or 50mm) then prime and leave the rate unchanged so that the first syringe will run through in less than 24 hours. It is felt that errors are less likely to occur if the infusion rate is constant.
- There may however be occasions when the infusion rate needs to be altered. Nurses should be aware of situations where this might be appropriate and should demonstrate that they are able to calculate the correct rate setting and adjust the syringe driver correctly.
- Nurses should be able to demonstrate the procedure for starting the syringe driver and explain the significance of lights and alarms on the driver.

6. Choice of infusion sites

- Nurses should be able to list all appropriate infusion sites together with those that are not suitable. (see standards)

7. Insertion of cannula

- Nurses should be able to choose an appropriate cannula and insert this correctly allowing a sufficient length to prevent the cannula dislodging.

8. Administration of a bolus dose at the start of an infusion or change in dose

- Where quick control of symptoms is required it may be necessary to give a bolus dose of drug whilst adequate blood levels are achieved via the infusion.

9. Reloading the syringe

- Check cannula site and document appearance
- Document volume and length of unused infusion
- Follow procedure for re-loading syringe:
 1. Draw up medication
 2. Measure syringe on rule
 3. Check that rate setting is correct
 4. If a new extension set is required this will need to be primed. (The syringe will then 'run through' in less than 24 hours.)
 5. Place new syringe into the syringe driver and release the clamp
 6. Check syringe driver is functioning correctly.

10. Monitoring

The following should be checked and documented at each visit or drug round as appropriate:

- The appearance of the infusion site. The site should only need changing if there is evidence of inflammation, infection, hypertrophy or pain.
- The infusion rate, and millimetres of fluid infused.

- Battery life should be checked. (If the light flashes there is sufficient battery power to complete the next infusion period.)
- Check the solution is clear, with no signs of crystallisation or precipitation e.g. cloudy solution or discoloured solution. If change in appearance has occurred the solution should be changed.
- Ensure the connections are intact and that the tubing is not kinked or disconnected.
- Alarm should sound if the pump stops. Check whether syringe is empty, tubing kinked, needle or tubing blocked, or plunger jammed.

11. Unlicensed indications

Although subcutaneous administration of drugs is common and accepted good practice in palliative care, the use of this route lies outside the product license for most of these preparations.

Many of the drugs commonly used in syringe drivers are well established drugs where licences were not originally applied for administration via the subcutaneous route. Doctors have the freedom to prescribe and use unlicensed drugs. Pharmacists may dispense and nurses administer drugs prescribed in this way.

12. Trouble shooting with the syringe driver

Nurses should be able to indicate what action should be taken in the following situations:

- Light not flashing
- Alarm sounding
- Syringe driver action slow
- Syringe driver action fast
- Localised tissue reaction
- Intermittent pulses from the driver- sound absent

Appendix III

Specialist palliative care services in the West Midlands

Abbreviations

BS	Bereavement service
DC	Day care unit
HC	Home care nursing service
HR	Respite care at home or hospice at home. An extended home care nursing service enabling patients to stay at home longer and avoid admission to an inpatient facility.
HSN	Hospital support nurse
HST	Hospital support team
OTI	Unit/team willing to consider caring for patients with other terminal illness other than cancer

Coventry and Warwickshire

Myton Hamlet Hospice

Myton Lane
Myton Road
Warwick CV34 6PX
Tel: 01926 492518
Fax: 01926 492518
Palliative Care Team: 01926409110
Head of Medical Services:
Dr Helen Johnson
Consultant: Dr Dan Munday
Director of Nursing:
Mrs Maria Coles
Beds: 24+
HC HH RC DC BS OTI
Website: www.myton-hospice.org

Palliative Care Team

Warwick Hospital
Lakin Road, Warwick
CV34 5BW
Consultant: Dr Chantal Meystre
Lead Nurse: Heather Goding
Tel: 01926 495321 ext 4074
HST OTI

South Warwickshire Community

Macmillan Team
Myton Hamlet Hospice
Myton Lane
Myton Road
Warwick CV34 6PX
Consultant: Dr Chantal Meystre
Lead Nurse: Heather Goding
Tel: 01926409110
HC OTI

North Warwickshire Community

Palliative Care Team
Mary Ann Evans Hospice
George Elliot Hospital
Nuneaton
CV10 7DJ
Tel: 024 7686 5440
Fax: 024 7686 5438
Community Macmillan service Tel:
024 7686 5450
Hospice manager: Maggie Cole
HC HH DC OTI

Hospital Palliative Care Team

George Elliot Hospital
Nuneaton
CV10 7DJ
Consultant in Palliative Medicine
(Hospital): Dr Mandy Barnett
Hospital Macmillan nursing team
Tel: 024 7686 5345
HST HSN OTI

Community Macmillan Nurse Service

Rugby Myton Day Hospice
Barby Road
Rugby, CV22 5PX
Tel: 01788 550085
HC OTI

Rugby Myton Day Hospice

Barby Road
Rugby, CV22 5PX
Nurse Manager: Ceri Meesham
Tel: 01788 550085
DC HH OTI

Shakespeare Hospice

Church Lane
Shottery
Stratford-upon-Avon
CV37 9UL
Tel: 01789 266852
Fax: 01789 415081/267038
Head of Clinical Services:
Pat Dunn
DC BS HH OTI

Macmillan Palliative Care Team

Radiotherapy Centre
Walsgrave Hospital
Coventry CV2 2DX
Tel: 024 7653 8908
Fax: 024 7653 8900
Consultant in Palliative Medicine
and Oncology: Dr Alison Franks
Lead Nurse: Julia Lawrence
HST BS OTI

Coventry Community

Macmillan Team
25 Warwick Road
C/o Christchurch House
Greyfriars Lane
Coventry CV1 2GQ
Consultant in Palliative Medicine:
Dr Dan Munday.
Lead Nurse: Julia Lawrence
Tel: 02476 961561
Fax: 02476 961565
HC OTI

Herefordshire

St Michael's Hospice

Bartestree, Hereford
HR1 4HA
Tel: 01432 851000
Fax: 01432 851022
Community Macmillan Nurses:
01432 853076
Website: www.st-michaels-hospice.org.uk
Medical Director: Dr A Blower
Head of nursing: Mrs Jane Mason
Beds: 16+
DC/BS/HC/OTI

**Hospital Palliative Care Team
County Hospital**

Union Walk, Hereford
HR1 2ER
Hospital switchboard:
01432 355444
Direct line: 01432 364414
Fax via Charles Renton Unit:
01432 364108
Consultant: Dr S. Johnson
Hospital Macmillan CNS:
Mrs Ros Peter
Medical Secretary: Trudy Wood
HST OTI

Herefordshire Primary Care Trust

Ross Community Hospital
Ross-on-Wye
Herefordshire. HR9 5AD
Sally Mirando, Nurse consultant,
palliative care associate lecturer
Tel: 01989 562100

Shropshire

Severn Hospice

Bicton Heath
Shrewsbury, SY3 8HS
Tel: 01743 236565
Fax: 01743 261511
Medical director: Dr Jeremy Johnson
Matron: Mrs Annette Rushton
Beds: 25+
HC/DC/HST/BS/OTI
Website: www.severnhospice.org.uk

Hospital Palliative Care Team

Royal Shrewsbury Hospital North,
Mytton Oak Road, Copthorne
Shrewsbury SY3 8QX
Tel: 01743 261649
Consultant in Palliative Care: Dr
Jeremy Johnson
HST/OTI

Macmillan Service

The Mews
St Austin Friars
Shrewsbury SY1 1RY
Tel: 10743 244222/240449
Fax: 01743 289534
HS BS

Macmillan Service

Church Stretton Medical Practice
Church Stretton
Shropshire SY6 6B
Tel: 01694 723811
Fax: 10694 723811
HC

Macmillan Home Care

Hadley Health Centre
High Street, Hadley
Telford, Shropshire, TF1 4NG
Tel: 01952 249876/222609
Fax: 01952 222609
HC

Staffordshire

St Giles Hospice

Fisherwick Road
Whittington, Lichfield, WS14 9LH
Tel: 01543 432031
Fax: 01543 433346
Medical director: Dr Diana Webb
Director of Nursing:
Ms Sarah Riches
Beds: 18
HC DC BS OTI HR LC
Website: www.st-giles-hospice.org.uk

Douglas Macmillan Hospice

Barlaston Road
Blurton
Stoke-on-Trent
Staffordshire ST3 3NZ
Tel: 01782 344300
Fax: 01782 344301
Nursing consultant:
Mr David Wilson
Consultant in palliative medicine/
Medical director: Dr Claire Hookey
Beds: 28+ HC HR DC BS OTI

Macmillan Service

Oncology Department,
Burton Hospital
Belvedere Road
Burton-on-Trent, DE13 0RB
Tel: 01283 566333 ext 5033/4
Fax: 01283 593041
Consultant in Palliative Medicine:
Dr Pamela Choudhury
HST OTI

Katharine House Hospice

Weston Road
Stafford, ST16 3SB
Tel: 01785 254645
Fax: 01785 247803

Director of nursing services:
Catherine Howlett
Medical director: Dr Sam Soliman
Beds: 10+
DC BS OTI

**Macmillan Hospital
Support Team**
North Staffordshire Hospital
C/o Ward One
Princes Road
Stoke-on-Trent
Staffordshire ST4 7LN
Tel: 01782 554087
HST OTI
Consultant: Dr Claire Hookey

Macmillan Palliative Care Team
Staffordshire General Hospital
NHS Trust
Weston Road, Stafford
ST16 3SA
Tel: 01785 230608/230658
Fax: 01785 230853
HST OTI
Consultant: Dr P Choudhury

**Stafford Community
Macmillan Service**
Trentside Clinic
Stafford Street, Stone
Stafford ST15 OTT
Tel: 01785 814817
Fax: 01785 247803
HC OTI

West Midlands

Compton Hospice
Compton Road West, Compton
Wolverhampton, WV3 9DH
Tel: 0845 2255497
Fax: 01902 745232
Home Care Service: 01902 744800
Medical director: Dr D Pearson
Director of nursing & education:
Katrina Poulson
Beds: 22+
HC HH DC HST BS OTI

Palliative Care Team
New Cross Hospital
Wednesfield Road,
Wolverhampton,
WV10 0QP
Tel: 01902 643098
Fax: 01902 644889
Consultant: Dr Clare Marlow
HST OTI

Bradbury House Day Hospice
494 Wolverhampton Road
Oldbury, West Midlands B68 8DG
Tel: 0121 612 2920
Fax: 0121 612 2925
DC

Little Bloxwich Day Hospice
Stoney Lane, Little Bloxwich
Walsall WS3 3DW
Tel: 01922 858735
Fax: 01922 858741
Macmillan service:
Tel: 01922 858738
Day Centre Leader:
Mrs Brenda Aitkin
Consultants in Palliative Medicine:
Dr D Pearson, Dr D Webb.
HC DC OTI

Mary Stevens Hospice

221 Hagley Road
Oldwinsford, Stourbridge
DY8 2JR
Tel: 01384 443010
Fax: 01384 373731
Head of Patient Care Services.
Jacky Kelly
Beds: 10+
DC BS OTI

**Dudley Macmillan
Palliative Care Team**

Kingswinford Health Centre
Standhills Road, Kingswinford
Dudley DY6 8 DN
Tel: 01384 366662
Fax: 01384 366663
HC BS OTI

Palliative Care Nurse Specialists

Russells Hall Hospital
Dudley, DY1 2HQ
Tel: 01384 244238
Consultant in Palliative Medicine.
Dr Ben Ritzenhaler
HC HSN OTI

**Macmillan Clinical Nurse
Specialists**

Top Floor, East Wing
Manor Hospital
Walsall W22 9PS
Tel: 01922 656253/721172 ext 7111
Fax: 01922 656253
HSN OTI

Sandwell Macmillan Nurses

Primary Care Offices
Sandwell General Hospital
Lyndon, West Bromwich B71 4HJ
Tel: 0121 607 3211
Fax: 0121 607 3042
HC HSN BS OTI

St Mary's Hospice

176 Raddlebarn Road
Selly Park
Birmingham B29 7DA
Tel: 1021 472 1191
Fax: 0121 472 5075
Head of Medical Services:
Dr Gill Hayes
Head of nursing: Trisha Castanheira
Beds: 27+
HC DC BS OTI

Macmillan Team

University Hospital Birmingham
NHS Trust
Nuffield House, Queen Elizabeth
Hospital, Edgbaston,
Birmingham B15 2TH
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HSN OTI

John Taylor Hospice

East Birmingham Primary Care
NHS Trust
76 Grange Road, Erdington
Birmingham B24 0DF
Tel: 0121 465 2000
Fax: 0121 465 2010
Palliative Care Services Director:
Ms Marie Ballard
Medical Director: Dr D Bhomra
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HC DC BS OTI

Macmillan Palliative Care Team

Good Hope Hospital
Rectory Road, Sutton Coldfield
B75 7RR
Tel: 0121 378 2211 ext 1316
Fax: 0121 378 6196
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Dr Diana Webb
HST

Hospital Macmillan Team

City Hospital NHS Trust
St Chad's Unit, Dudley Road
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Tel: 0121 507 5242
Fax: 0121 507 5296
HSN OTI

Palliative Care Team

Heart of England NHS
Foundation Trust
Heartlands Hospital Site,
Bordesley Green East
Bordesley Green
Birmingham B9 5SS
Tel: 0121 424 2442
Fax: 0121 424 1139
HST OTI

Solihull Hospital Site

Lode Lane
Solihull
B91 2JL
Tel: 0121 424 4127
Fax: 0121 424 1139

Marie Curie Hospice, Solihull

911-913 Warwick Road
Solihull B91 3 ER
Tel: 0121 254 7800
Fax: 0121 254 7840
Bed manager phone:
07979 503158
Senior medical officer:
Dr Ian Morgan
Hospice Manager: Elizabeth Cottier
Beds: 18
HC DC BS HR OTI

Solihull PCT Macmillan CNS

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Freshfields, Downing Close
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HC OTI

Worcestershire

**Worcestershire Department of
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Worcestershire Primary
Care Trust
Aconbury East
Worcestershire Royal Hospital
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March 1st 2007)
HC HST OTI

Hospital Macmillan Team

Sky level
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HST OTI

St Richards Hospice

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Macmillan Unit
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 Charmian Kelso
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 OTI

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 HC

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 Redditch
 B98 7UB
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 Fax: 01527 512197
 HST OTI

**Primrose Hospice and Cancer
 Help Centre**
 St Godwalds Rd
 Finstall
 Bromsgrove B60 3BW
 Tel: 01527 871051
 Fax: 01527 578317
 Nurse manager: Libby Mytton
 DC BS OTI
 Drop in centre and 24 hours cancer
 helpline Tel: 01527 878780

**Redditch and Bromsgrove
 Community Palliative Care Team**
 Princess of Wales Community
 Hospital
 Stourbridge Road
 Bromsgrove
 Worcs
 B61 0BB
 01527 488037
 (Consultant: Dr Ian Douglas)
 01527 488064 (Macmillan Team)
 01527 488066
 HC OTI

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 Hospital**
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 B61 0BB
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 01527 488066
 HST OTI

**Wyre Forrest Community
 Specialist Palliative Care Team**
 Palliative Care Office
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 Kidderminster DY11 6AG
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