Symptom control in the last days of life

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Principles of symptom management in last days of life

These principles are applicable to the care of patients who may be dying from any cause

Recognise that death is approaching

Studies have found that dying patients will manifest some or all of the following:

- Profound weakness - usually bedbound
- Drowsy or reduced cognition - semi-comatose
- Diminished intake of food and fluids - only able to take sips of fluid
- Difficulty in swallowing medication - no longer able to take tablets

Treatment of symptoms

The prime aim of all treatment at this stage is the control of symptoms current and potential.

- Discontinue any medication which is not essential
- Prescribe medication necessary to control current distressing symptoms
- All patients who may be dying would benefit from having ANTICIPATORY subcutaneous medication prescribed JUST IN CASE distressing symptoms develop
- All medication needs should be reviewed every 24 hours
- Prn medications may be administered via a Saf - T- intima line
- If two or more doses of prn medication have been required, then consider the use of a syringe driver for continuous subcutaneous infusion (CSCI)

The most frequently reported symptoms are:-

- Pain
- Nausea / Vomiting
- Excessive secretions / Noisy breathing
- Agitation / Restlessness
- Dyspnoea

Opioid choice and syringe drivers

Morphine sulphate is the injectable opioid of choice in the majority of patients.
Alternative opioids (when morphine is not tolerated or in patients with severe renal failure e.g. GFR< 30mL /min) include oxycodone or alfentanil.

Both morphine sulphate and oxycodone are compatible with all the medications that are recommended in the following guidelines (cyclizine, haloperidol, levomepromazine, hyoscine butylbromide, glycopyrronium, metoclopramide, ondansetron and midazolam).

Incompatibility may occur when higher doses of oxycodone >150mg are mixed with cyclizine.
Alfentanil is compatible with all the above medications that are recommended, with exception of cyclizine.

Use either water for injection or sodium chloride 0.9 % as the diluent, unless mixing with cyclizine, when water for injection must be used.
Use sodium chloride 0.9 % for levomepromazine by itself or syringe driver combinations containing octreotide, methadone, ketorolac, ketamine or furosemide.

With the introduction of the T34 McKinley syringe drivers use a 20mL syringe as standard and if a larger volume is required use a 30mL syringe.

For information on the usual doses of drugs used in a syringe driver see inside of back cover.
For guidance on converting between opioids see the coloured opioid conversion chart.
For further information on compatibility in a syringe driver contact:

<table>
<thead>
<tr>
<th>York and Scarborough Hospital enquiries</th>
<th>GP enquiries</th>
</tr>
</thead>
<tbody>
<tr>
<td>York Medicines Information</td>
<td>Newcastle Medicines Information</td>
</tr>
<tr>
<td>01904 725960</td>
<td>0191 2824631</td>
</tr>
</tbody>
</table>

The algorithms will support you in your management of the most frequently reported symptoms.
## Mouth care guidelines

### General principles of mouth care

Assess the whole mouth daily.

Clean the teeth and tongue using a toothbrush and toothpaste, morning and night. *If patients have apthous ulcers avoid toothpastes containing sodium laural sulphate*

Ensure all toothpaste is rinsed away.

Offer mouth care every 3 to 4 hours using a soft toothbrush.

Use lip salve for dry lips. Care when using oxygen mask.

Note any history of pain, dry mouth, change of taste, medications and respond if required.

### Document findings

<table>
<thead>
<tr>
<th>Problem</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dry mouth</strong></td>
<td>Consider discontinuing contributing factors, e.g. medication.</td>
</tr>
<tr>
<td></td>
<td>If required, consider humidifying oxygen.</td>
</tr>
<tr>
<td></td>
<td>Implement general mouth care principles.</td>
</tr>
<tr>
<td></td>
<td>Offer fluids hourly if appropriate.</td>
</tr>
<tr>
<td></td>
<td>Consider topical saliva substitutes, e.g. Oralieve spray or gel</td>
</tr>
<tr>
<td><strong>Coated tongue</strong></td>
<td>Implement general mouth care principles.</td>
</tr>
<tr>
<td></td>
<td>Rinse the mouth after food with water.</td>
</tr>
<tr>
<td></td>
<td>Encourage fluids as appropriate.</td>
</tr>
<tr>
<td></td>
<td>If no improvement in 24 hours consider infection as a cause.</td>
</tr>
<tr>
<td><strong>Pain / mucositis / ulceration</strong></td>
<td>Implement general mouth care principles.</td>
</tr>
<tr>
<td></td>
<td>Consider analgesia – topical/systemic.</td>
</tr>
<tr>
<td></td>
<td>Use soft toothbrush for hygiene.</td>
</tr>
<tr>
<td></td>
<td>Consider diluting mouthwash if the patient finds their use painful.</td>
</tr>
<tr>
<td></td>
<td><strong>Seek specialist advice if symptoms continue.</strong></td>
</tr>
<tr>
<td><strong>Infection</strong></td>
<td>Rinse mouth 3 times per day with chlorhexidine 0.2% (Corsodyl) or sodium chloride 0.9%.</td>
</tr>
<tr>
<td></td>
<td>Implement general mouth care principles.</td>
</tr>
<tr>
<td></td>
<td>Check for thrush and treat with antifungal, if appropriate. e.g. fluconazole or nystatin</td>
</tr>
</tbody>
</table>
(Non renal pathway – see next page for patients with renal failure)

Is the patient already taking an opioid?

Yes

Convert to 24 hour sc syringe driver plus sc dose every 2 to 4 hours prn

If possible continue with the same opioid the patient was already taking (ie. morphine or oxycodone) – refer to the opioid conversion table for equivalent dose

If the patient is on an opioid patch

Leave the patch on and top up with prn opioid. (usually morphine but oxycodone, if sensitive to morphine)

If over the next 24 hours 2 or more prn doses are required set up a 24 hour sc syringe driver with appropriate opioid.

The prn dose of morphine (or oxycodone) used should take account of both the patch and the syringe driver – see table below

No

Prescribe MORPHINE

3 to 5mg sc every 2 to 4 hours prn

(to be administered only if the patient has pain)

NB if patient sensitive to morphine use alternative opioid

Have more than 2 prn doses been given in 24 hours

Yes

Convert to syringe driver

Review

No

Continue with MORPHINE

3 to 5mg sc every 2 to 4 hours prn

Remember:

Any change in the syringe driver dose should take account of the number of sc prn doses given over the last 24 hours. If you change the syringe driver dose remember to also change the 4 hourly prn dose

To calculate the prn dose of sc morphine

Prescribe 1/6th of the 24 hour dose in the driver

e.g 20mg sc via driver over 24 hours will require 3 to 5mg sc every 4 hours prn

- Use the chart on the back of this booklet to help in converting between opioids
- If in doubt please seek advice from the palliative care team
- It is good practice to document calculations in notes and check dose conversions with a colleague.
- **Patients on opioid patches** - if a patient requires a syringe driver the patch should continue to be prescribed at the usual dose and the syringe driver used as a top up and titrated as necessary. The prn dose of opioid should be calculated from the dose of opioid in the syringe driver and the equivalent given by patch.
Pain control in renal failure

(Patients with severe renal failure i.e. GFR < 30mL/min use oxycodone or <15mL/min use Alfentanil if unable to tolerate oxycodone)

Is the patient already taking an opioid?

Yes

If patient is already taking and tolerating oral **OXYCODONE** and GFR >/= 15mL/min convert to 24 hour sc syringe driver plus sc dose every 2 to 4 hours **prn**

**OTHERWISE**

Convert to **ALFENTANIL** in a 24 hour sc syringe driver using the conversion table. Prescribe sc opioid every 2 to 4 hours **prn** (up to a maximum of 6 **prn** doses in 24 hours)

(Note alfentanil sc can be prescribed **prn** alongside the syringe driver, but as it has a short duration of action oxycodone is sometimes used instead. If this is the case take EXTRA care when calculating and amending doses for syringe driver and **prn** use.

If the patient is on a opioid patch

Leave the patch on and top up with **prn** oxycodone or alfentanil

If over the next 24 hours 2 or more **prn** doses are required set up a 24 hour sc syringe driver with oxycodone or alfentanil.

The **prn** dose of oxycodone or alfentanil used should take account of both the patch and the syringe driver.


No

GFR >/= 15mL/min
Prescribe **OXYCODONE**
1 to 2mg sc every 2 to 4 hours **prn** if patient has pain

GFR <15mL/min
Prescribe **ALFENTANIL**
250 micrograms sc every 2 to 4 hours **prn** if the patient has pain

Have more than 2 **prn** doses been given in 24 hours

Yes

Convert to syringe driver

Review

No

Continue with **OXYCODONE** or **ALFENTANIL** as initiated above

Remember:

Any change in the syringe driver (SD) dose should take account of the number of **sc prn doses** given over the last 24 hours. If you change the SD dose remember to also change the **prn** dose

To calculate the **prn** dose of oxycodone or alfentanil

For **prn** dose prescribe 1/6th of the 24 hour syringe driver dose e.g. 3mg alfentanil sc via driver over 24 hours will require 500 microgram alfentanil sc **prn** every 2 to 4 hours **prn** (up to a maximum of 6 **prn** dose in 24 hours) **OR** 3mg oxycodone sc every 2 to 4 hours **prn** e.g. 20mg oxycodone sc via driver over 24 hours will require 3mg oxycodone sc **prn** every 2 to 4 hours (If the patient is also on a patch you must calculate how much alfentanil or oxycodone this is equivalent to and include this in the 24 hour dose which you use as a basis for your **prn** dose)

- Use the chart on the back of this booklet to help in converting between opioids
- If in doubt please seek advice from the palliative care team
- It is good practice to document calculations in notes and check dose conversions with a colleague.
- **Patients on opioid patches** - if a patient requires a syringe driver the patch should continue to be prescribed at the usual dose and the syringe driver used a top up and titrated as necessary. The **prn** dose of opioid should be calculated from the dose of opioid in the syringe driver and the equivalent given by patch.
Respiratory tract secretions

(remember you cannot clear existing secretions, but you can help stop further production)
These drugs only reduce upper airways secretions and not lower collections from e.g. infection or pulmonary oedema)

Are respiratory tract secretions present?

Yes

Prescribe and administer HYOSCINE BUTYLBROMIDE
10 to 20mg sc STAT and
10 to 20mg sc every 4 hours prn (caution in ischaemic heart disease, heart failure or heart rate >100 bpm)

Have more than 2 prn doses been given in 24 hours

Yes

Convert to a syringe driver starting with total prn doses over previous 24 hours

Titrating HYOSCINE BUTYLBROMIDE dependant on doses given previously. If symptoms persist increase up to maximum of 120mg sc via syringe driver and
10 to 20mg sc every 4 hours prn

Maximum dose is 120mg in 24 hours

No

Prescribe HYOSCINE BUTYLBROMIDE
10 to 20mg sc every 4 hours prn (to be administered only if the patient develops symptoms) (caution in heart disease)

Review every 24 hours

No

Continue with HYOSCINE BUTYLBROMIDE
10 to 20mg sc every 4 hours prn

HYOSCINE BUTYLBROMIDE (BUSCOPAN) above 60mg in 24 hours may precipitate when mixed with CYCLIZINE. If problems discontinue cyclizine and switch to levomepromazine. Caution in heart disease.

GLYCOPYRRONIUM may be used as an alternative if hyoscine butylbromide not effective (reduced doses in renal failure).

HYOSCINE HYDROBROMIDE is not recommended in patients with renal failure because of excessive drowsiness or paradoxical agitation.
Agitation / Terminal restlessness

Before prescribing have all reversible causes been excluded? e.g. urinary retention

Is agitation/terminal restlessness present?

Prescribe and administer MIDAZOLAM
2 to 5mg sc every 2 to 4 hours prn

Have more than 2 prn doses been given in 24 hours?

Calculate amount of MIDAZOLAM administered over the last 24 hours and set up a syringe driver with this dose and 2 to 5mg sc every 2 to 4 hours prn

Is the patient’s agitation controlled?

Increase dose of MIDAZOLAM in syringe driver to maximum of 60mg (30mg in renal failure) in 24 hours and 2 to 5mg sc every 2 to 4 hours prn

Maximum dose in 24 hours is 60mg (NB 30mg in renal failure) which includes both prn doses and syringe driver

Seek advice if more required

Review every 24 hours

Continue with current prescription

Yes

Convert to a syringe driver

No

Review every 24 hours

Continue with MIDAZOLAM 2 to 5mg sc every 2 to 4 hours prn

Prescribe MIDAZOLAM
2 to 5mg sc every 2 to 4 hours prn (to be administered only if the patient develops symptoms)

Yes

Continue with MIDAZOLAM 2 to 5mg sc every 2 to 4 hours prn

No

No

Yes

Convert to a syringe driver

Review every 24 hours

Continue with current prescription

NB if uncontrolled on a maximum of 60mg midazolam (30mg in renal failure) consider levomepromazine starting at 6.25mg prn. Further doses may need to be added to the syringe driver. If symptoms continue contact the Specialist Palliative Care Team.
Nausea and Vomiting

Is nausea and vomiting present?

Chemically induced (opioid, renal failure, hypercalcaemia)

Is the patient already taking an antiemetic?

Follow the flow diagram for nausea present but only administer if symptoms develop.

Most commonly prescribe Haloperidol (1st line) and levomepromazine (for 2nd line)

Use the same antiemetic via the syringe driver - if this is possible (i.e. cyclizine, haloperidol, metoclopramide, levomepromazine)

If opting for cyclizine prescribe cautiously and at lower dose in renal/heart/liver failure (75mg to 100mg sc over 24 hours plus 25mg sc every 8 hours prn – NB. maximum total dose in 24 hours =100mg in renal failure).

(See note in shaded box re compatibility)

<table>
<thead>
<tr>
<th>Patient's condition</th>
<th>Antiemetic choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowel obstruction</td>
<td>Contact the Palliative care Team for advice</td>
</tr>
<tr>
<td>Increased intracranial pressure</td>
<td>Prescribe CYCLIZINE 50mg sc every 8 hours prn Avoid or use cautiously in renal/heart/liver failure (e.g. 25mg dose) (See note in shaded box re compatibility)</td>
</tr>
<tr>
<td>Is nausea and vomiting present?</td>
<td>Prescribe HALOPERIDOL 500 microgram to 1mg sc every 8 hours prn May need lower starting dose in renal failure (e.g. 500 micrograms)</td>
</tr>
<tr>
<td>Is the patient already taking an antiemetic?</td>
<td>Yes</td>
</tr>
<tr>
<td>Follow the flow diagram for nausea present but only administer if symptoms develop.</td>
<td></td>
</tr>
<tr>
<td>Most commonly prescribe Haloperidol (1st line) and levomepromazine (for 2nd line)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Remember:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haloperidol (H) – Good for chemically induced nausea</td>
</tr>
<tr>
<td>Levomepromazine (L) – Broad spectrum antiemetic</td>
</tr>
<tr>
<td>Metoclopramide (M) – prokinetic, pushes gut contents</td>
</tr>
<tr>
<td>Cyclizine (C) – Good for increased intracranial pressure</td>
</tr>
<tr>
<td>Not prescribed together</td>
</tr>
<tr>
<td>M &amp; C as opposing kinetic effect</td>
</tr>
<tr>
<td>H &amp; L as both dopaminergic (but can prescribe both prn as 1st and 2nd line options respectively)</td>
</tr>
<tr>
<td>H &amp; M as both dopaminergic</td>
</tr>
<tr>
<td>Can be prescribed together</td>
</tr>
<tr>
<td>H &amp; C</td>
</tr>
<tr>
<td>M &amp; L as prokinetic added to broad spectrum antiemetic, but note both are dopaminergic</td>
</tr>
<tr>
<td>H&amp;L if 1st (H) and 2nd (L) line prn choices, but not together in syringe driver</td>
</tr>
</tbody>
</table>

Note: cyclizine is not compatible with alfentanil and may be incompatible with hyoscine butylbromide if dose is greater than 60mg)

Patients with Parkinson’s disease - the above choices are best avoided - 5HT3 receptor-antagonist are preferred (eg ondansetron – see syringe driver chart and if unsure seek advice from palliative care). Avoid if possible all dopamine antagonists (e.g haloperidol and levomepromazine)
**Dyspnoea (Breathlessness)**

(Non renal pathway – see next page for patients with renal failure)

Opioids are more useful for patients who are breathless at rest than those who are breathless on exertion - PCF6.

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**Use prn doses for breathlessness even if not in pain**

Opioid doses required to relieve breathlessness may be less than the prn dose used for pain

- Convert to MORPHINE (or alternative opioid)
- 24 hour sc infusion using the opioid conversion table
- plus sc prn doses

**If the patient is on an opioid patch**

- Leave the patch on and initially top up with prn morphine or alternative opioid. See footnote

If over the next 24 hours 2 or more prn doses are required set up a 24 hour sc syringe driver with appropriate opioid.

The prn dose of morphine (or alternative opioid) used for breathlessness may be much less than the dose used for pain. See footnote

**If concurrent anxiety**

- Consider also prescribing MIDAZOLAM 2mg sc every 2 to 4 hours prn

If more than 2 prn doses required in 24 hours put total dose given in 24 hours into syringe driver

- Maximum MIDAZOLAM dose 60mg in 24 hours

If symptoms continue contact the specialist palliative care team

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**Note:**

- **Severe breathlessness** >7/10 a dose that is 100% of 4 hourly analgesic dose may be needed
- **Moderate breathlessness** 4 to 6/10 a dose that is 50 to 100% of 4 hourly analgesic dose may be needed
- **Mild breathlessness** < 3/10 a dose that is 25 to 50% of 4 hourly analgesic dose may be needed

Morphine is normally used for breathlessness. This is the opioid which has the best evidence base for treatment of breathlessness. In renal impairment however morphine accumulates and alfentanil or oxycodone is preferred for this reason.

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**Prescribe**

MORPHINE 2 to 5mg sc every 2 to 4 hours prn

(to be administered only if the patient develops breathlessness)

(If concurrent anxiety consider also prescribing MIDAZOLAM 2mg sc every 2 to 4 hours prn)

NB if patient sensitive to morphine use alternative – but note lack of evidence for other opioids

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**To calculate the prn dose of morphine or alternative opioid**

- Look at the foot note

Severe breathlessness

100% analgesic dose is 1/6th of the 24 hour dose

Moderate breathlessness

50% analgesic is the 1/12 of the 24 hour dose

Mild breathlessness

25% analgesic dose is 1/24 of the 24 hour dose
Dyspnoea (Breathlessness) in Renal Failure

(Patients with severe renal failure i.e. GFR < 30mL/m use oxycodone or <15mL/min use Alfentanil if unable to tolerate oxycodone)

Opioids are more useful for patients who are breathless at rest than those who are breathless on exertion

**Dyspnoea (Breathlessness) in Renal Failure**

**Use prn doses for breathlessness even if not in pain**

Opioid doses required to relieve breathlessness may be less than the prn dose used for pain. See footnote

If patient is already taking and tolerating oral OXYCODONE and GFR >15mL/min convert to OXYCODONE 24 hour syringe driver plus sc dose every 2 to 4 hours prn

**OTHERWISE**

Convert to ALFENTANIL

24 hour sc infusion using the opioid conversion table plus sc dose every 2 to 4 hours prn (up to a maximum of 6 prn doses in 24 hours)

(Note oxycodone may sometimes be used as the prn opioid – see pain flow chart in renal patients).

If the patient is on a opioid patch

Leave the patch on and initially top up with prn oxycodone or alfentanil.

If over the next 24 hours 2 or more prn doses are required set up a 24 hour sc syringe driver with oxycodone or alfentanil.

The prn dose of oxycodone or alfentanil used should take account of both the patch and the syringe driver

If concurrent anxiety

Consider also prescribing MIDAZOLAM 2mg sc every 2 to 4 hours prn.

If more than 2 prn doses required in 24 hours put total dose given in 24 hours into syringe driver.

Maximum MIDAZOLAM dose 30mg in 24 hours

If symptoms continue contact the specialist palliative care team

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**Note:**

Severe breathlessness > 7/10 a dose that is 100% of 4 hourly analgesic dose may be needed

Moderate breathlessness 4 to 6/10 a dose that is 50 to 100% of 4 hourly analgesic dose

Mild breathlessness < 3/10 a dose that is 25 to 50% of 4 hourly analgesic dose may be needed

Morphine would normally be used for breathlessness. This is the opioid which has the best evidence base for treatment of breathlessness. In renal impairment however morphine accumulates and alfentanil or oxycodone is preferred for this reason.
Last days of life Diabetes Care Management Algorithm

Discuss changing the approach to diabetes management with patient and/or family if not already explored. If the patient remains on insulin, ensure the diabetes specialist nurses are involved and agree with the monitoring strategy.

Type 2 diabetes controlled with diet or metformin
- Stop monitoring blood glucose

Type 2 diabetes on other tablets and/or insulin or glucagon-like peptide-1 (GLP-1) agonist
- Stop tablets and GLP-1 injections. Consider stopping insulin if insulin requirement ≤10 units

If insulin stopped:
- Check capillary blood glucose (CBG) once a day at teatime
- If CBG over 20mmol/L give 4 units of short acting insulin
- Re check CBG after 2 hours

If insulin to continue:
- Either prescribe once daily morning dose of isophane insulin or long acting insulin glargine (Lantus)

If patient requires short acting insulin more than twice, consider daily isophane insulin or insulin glargine (Lantus)

Check capillary blood glucose once a day at teatime:
- If <8mmol/L reduce insulin by 10 to 20%
- If >20mmol/L increase insulin by 10 to 20% to reduce risk of symptoms or ketosis

Type 1 diabetes always on insulin

Continue on current background (long acting) insulin or usual insulin if pt requests this with reduction in dose by 25%

If patient on twice daily mixed insulin:
- Either prescribe once daily morning dose of isophane insulin
- Or long acting insulin glargine (Lantus)

(Based on 25% less than total daily insulin dose)

KEY

1. Byetta (Exenatide)
   - Victozza, (Liraglutide)
   - Lyxumia (Lixisenatide)
   - Trulicity (Dulaglutide)
   - Bydureon (Exenatide prolonged release)

2. Novorapid
   - Peak 1 to 2 hours
   - Apidra
   - Duration 3 to 5 hours
   - Humalog
   - Onset 5 to 15 mins
   - Onset 30 to 45 mins
   - Actrapid
   - Peak 2 to 4 hours
   - Duration 6 to 8 hours

3. Insulatard
   - Peak 4 to 8 hours
   - Humulin I
   - Onset 2 hours

Keep tests to a minimum. It may be necessary to perform some tests to ensure unpleasant symptoms do not occur due to low or high blood glucose.
- It is difficult to identify symptoms due to hypoglycaemia or hyperglycaemia in a dying patient.
- If symptoms are observed, it could be due to abnormal blood glucose levels.
- Test urine or blood for glucose if the patient is symptomatic.
- Observe for symptoms in previously insulin-treated patients where insulin has been discontinued.

Insulin 2 & 3 in Key are in order of preference.

For queries relating to the diabetes flowchart please contact York Hospital Support 01904 726091
York Community Support 01904 724938 and in Scarborough 01723 342274

For queries relating to palliative care please contact the Palliative Care Team

For more information see Best Practice Guidelines on Staff Room

Adapted from End of Life Diabetes care: Clinical care recommendations 2nd edition
Date for review Jan 2020
Guidance for prescribing anticipatory medicines subcutaneously

If your patient has renal failure look at the cautions in red

<table>
<thead>
<tr>
<th>Drug</th>
<th>Use</th>
<th>Stat dose sc</th>
<th>24 hours sc dose in syringe driver (SD)</th>
<th>Usual max dose in 24 hours (prn + SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CYCLIZINE</strong></td>
<td>Centrally acting on vomiting centre. Good for nausea associated with bowel obstruction or increased intracranial pressure Dilute with water <strong>Note</strong> Dose reduction may be necessary in renal, cardiac or liver failure e.g. 25mg</td>
<td>50mg (25mg in patients with renal/heart/ liver failure,) <strong>Do not use if patient has two or more of above risk factors</strong></td>
<td>100 to 150mg (75 to 100mg in renal/heart/liver failure)</td>
<td>150mg (75 to 100mg in renal/heart/liver failure)</td>
</tr>
<tr>
<td>50mg in 1mL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HALOPERIDOL</strong></td>
<td>Good for chemically induced nausea</td>
<td>500microgram to 1mg May need lower dose in elderly/renal failure 500microgram</td>
<td>1 to 3mg</td>
<td>5mg</td>
</tr>
<tr>
<td>5mg in 1mL</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>METOCLOPRAMIDE</strong></td>
<td>Antiemetic action 1. Prokinetic (accelerates GI transit) 2. Centrally acting on chemo-receptor trigger zone (CTZ), blocking transmission to vomiting centre</td>
<td>10mg (5 to 10mg)</td>
<td>30 to 60mg (30mg in renal failure)</td>
<td>100mg (30mg in renal failure)</td>
</tr>
<tr>
<td>10mg in 2mL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NB MHRA caution</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>LEVOMEPRAMAZINE</strong></td>
<td>Broad spectrum antiemetic, works on chemo-receptor trigger zone (CTZ) and vomiting centre (at lower doses) Dilute with sodium chloride 0.9% when used alone</td>
<td>2.5 to 5mg</td>
<td>2.5 to 12.5mg</td>
<td>12.5mg If require higher doses consult palliative care</td>
</tr>
<tr>
<td>25mg in 1mL</td>
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</tbody>
</table>

Medication for agitation

| **MIDAZOLAM**       | Sedative/anxiolytic (terminal agitation). Also anticonvulsant and muscle relaxant | 2 to 5mg 5 to 60mg (30mg in renal failure) | 60mg (30mg in renal failure) |
| 10mg in 2mL         |                                                                      | Start with lower dose & titrate |                                       |
| **LEVOMEPRAMAZINE** | Antipsychotic used for terminal agitation (2nd line to midazolam) | 5 to 12.5mg 5 to 50mg Seek help with higher doses | 200mg (25mg to 50mg in renal failure) |
| 25mg in 1mL         |                                                                      | Start with lower dose & titrate |                                       |

Medication for respiratory secretions

| **HYOSCINE BUTYLBROMIDE** | Antisecretory - useful in reducing respiratory tract secretions. Has antispasmodic properties May precipitate when mixed with cyclizine or haloperidol. Less sedating than HYOSCINE HYDROBROMIDE as does not cross the blood brain barrier | 10 to 20mg Caution in heart disease | 40 to 120mg | 120mg |
| 20mg in 1mL            |                                                                      |                                      |                                        |                                       |
| **GLYCOPPYRONIUM**    | Antisecretory - useful in reducing respiratory tract secretions Also has antispasmodic properties | 200microgram (100microgram) | 400 to 1200 microgram (1.2mg) (200 to 600 microgram) | 1200 micrograms (1.2mg) (600 microgram in renal failure) |
| 200microgram in 1mL   |                                                                      |                                      |                                        |                                       |
### Opioid dose conversion chart, syringe driver doses, rescue / prn doses and opioid patches

Use the conversion chart to work out the equivalent doses of different opioid drugs by different routes. The formula to work out the dose is under each drug name. Examples are given as a guide.

<table>
<thead>
<tr>
<th>Oral opioid mg /24 hour (Divide 24 hour dose by six for 4 hourly prn oral dose)</th>
<th>Subcutaneous infusion of opioid</th>
<th>Subcutaneous prn opioid</th>
<th>Opioid by patch</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Morphine</strong> 24 hour</td>
<td><strong>Oxycodone 24 hour</strong></td>
<td><strong>Dose in mg every 4 hours injected as required prn</strong></td>
<td><strong>Dose microgram/hour</strong></td>
</tr>
<tr>
<td><strong>Diamorphine 24 hour</strong></td>
<td><strong>Dose in mg every 4 hours injected as required prn</strong></td>
<td><strong>Morphine 4 hour</strong></td>
<td><strong>Oxycodone 4 hour</strong></td>
</tr>
<tr>
<td><strong>Diamorphine 24 hour</strong></td>
<td><strong>Alfentanil 24 hour</strong></td>
<td><strong>Alfentanil 2 to 4 hour</strong></td>
<td><strong>Buprenorphine</strong></td>
</tr>
<tr>
<td>Calculated by dividing 24 hour oral morphine dose by 2</td>
<td>Calculated by dividing oral morphine dose by 3</td>
<td>Calculated by dividing oral oxycodone dose by 2</td>
<td>Calculated by dividing 24 hour oral morphine dose by 30</td>
</tr>
<tr>
<td>20</td>
<td>10</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>45</td>
<td>20</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>90</td>
<td>45</td>
<td>30</td>
<td>45</td>
</tr>
<tr>
<td>140</td>
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<td>180</td>
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<td>90</td>
<td>140</td>
</tr>
<tr>
<td>360</td>
<td>180</td>
<td>120</td>
<td>180</td>
</tr>
<tr>
<td>450</td>
<td>225</td>
<td>150</td>
<td>225</td>
</tr>
<tr>
<td>540</td>
<td>270</td>
<td>180</td>
<td>270</td>
</tr>
<tr>
<td>630</td>
<td>315</td>
<td>210</td>
<td>315</td>
</tr>
<tr>
<td>720</td>
<td>360</td>
<td>240</td>
<td>360</td>
</tr>
</tbody>
</table>

**Equivalent doses if converting from oral to sc opioid**

**Calculation of breakthrough/rescue/prn doses**

**Oral prn doses:**
- Morphine or Oxycodone: 1/6th of 24 hour oral dose

**Subcutaneous:**
- Morphine & Oxycodone: 1/6th of 24 hour sc syringe driver (SD) dose
- Alfentanil: 1/6th of 24 hour sc SD dose
  - Short action of up to 2 hours
  - Seek help if reach maximum of 6 prn doses in 24 hours

(For ease of administration, opioid doses over 10mg, prescribe to nearest 5mg)

**Renal failure/impairment:** GFR<30mL/min: Morphine/Diamorphine metabolites accumulate and should be avoided.
- **Fentanyl patch** if pain is stable.
- **Oxycodone** orally or by infusion if mild renal impairment
- If patient is dying & on a fentanyl or buprenorphine patch top up with appropriate sc oxycodone or alfentanil dose & if necessary, add into syringe driver as per renal guidance
- If GFR<15mL/min and unable to tolerate oxycodone use alfentanil sc

**If unsure please seek help from palliative care**

**Fentanyl and buprenorphine patches in the dying/moribund patient**
- **Continue fentanyl and buprenorphine patches in these patients.**
  - Remember to change the patch(es) as occasionally this is forgotten!
  - Fentanyl patches are more potent than you may think
- If pain occurs whilst patch in situ
  - Prescribe 4 hourly prn doses of subcutaneous (sc) morphine unless contraindicated.
- Use an alternative sc opioid e.g. **alfentanil or oxycodone** in patients with
  - poor renal function
  - morphine intolerance
  - where morphine is contraindicated

**Consult pink table when prescribing 4 hourly prn subcutaneous opioids**

Adding a syringe driver (SD) to a fentanyl or buprenorphine patch
- If 2 or more rescue/prn doses are needed in 24 hours, start a syringe driver with appropriate opioid and continue patch(es). The opioid dose in the SD should equal the total prn doses given in the previous 24 hours up to a maximum of 50% of the existing regular opioid dose. Providing the pain is opioid sensitive continue to give prn sc opioid dose and review SD dose daily.
- E.g. Patient on 50 micrograms/hour fentanyl patch, unable to take prn oral opioid and in last days of life. Keep patch on. Use appropriate opioid for situation or care setting. If 2 extra doses of 15 mg sc morphine are required over the previous 24 hours, the initial syringe driver prescription will be morphine 30mg/24 hour. Remember to look at the dose of the patch and the dose in the syringe driver to work out the new opioid breakthrough dose each time a change is made.
- Always use the chart above to help calculate the correct doses.