

Use of morphine in Paediatric end of life care - Full Paediatric Clinical Guideline – Derby & Burton

Reference no.: CH CLIN G160

1) Introduction

This guideline has been written to help professionals involved in the care of children who are thought to be in their last days or hours of life and who require morphine to alleviate symptoms of pain or distress.

If further advice is needed regarding symptom control in children who are at the end of their life, Rainbows Children's Hospice can be contacted for telephone advice on 01509 638 000. Alternatively, the Paediatric Palliative Care Symptom Control Manual can be accessed through <https://www.rainbows.co.uk/support-families/care-rainbows/symptom-control>. This is a document which gives guidance in alleviating distressing symptoms at the end of life.

2) Aim and purpose

The purpose of this guideline is to ensure that morphine is prescribed appropriately to children who are thought to be in their last days or hours of life.

Indications for use and guidance on route of administration and dosage, including converting from other opiates in children who are not opiate naïve, are included.

3) Definitions

Children who are thought to be in their last days or hours of life may require morphine for the alleviation of pain or distress.

It is important that prior to starting morphine for this indication other potentially reversible causes of distress are identified and treated. These may include (amongst others):

- Constipation
- Gastro-oesophageal reflux
- Muscle spasms
- Pressure sores
- Neuropathic pain
- Dyspnoea

4) Conversion of opiates

Morphine may be administered by a number of different routes and it may be that a child who is in their last days to hours of life requires consideration of the most appropriate route according to their changing circumstances.

Possible routes of administration for morphine include via the oral route (or gastrostomy), intravenous and subcutaneous route and transdermal routes. **The dose will vary**

according to the route administered and this should be taken into consideration when prescribing.

Children who are at the end of their life may have increased difficulty in swallowing or may be drowsier, making oral administration of morphine more difficult.

Consideration should also be made that, as part of the dying process, physiology will change and absorption of oral medications may slow. This may necessitate consideration of other routes of administration to achieve adequate symptom relief.

Some children may have been prescribed opiates in different preparations in the weeks or months prior to entering the last stage of their life (eg fentanyl transdermal patches, prolonged or modified release morphine eg MST or Zomorph) and this should also be taken into account when prescribing morphine at the end of life. Children who are not opiate naïve may require higher doses of opiate to manage their symptoms.

The paediatric pharmacist (in hours) or on-call pharmacist (out of hours) is available to provide advice and support regarding opioid conversion calculations.

5) Calculating morphine doses in opiate naïve children

Reference should be made to the BNFC when calculating starting doses for morphine in children who are opiate naïve. Particular care should be taken to ensure that the correct dose is prescribed according to the route of administration.

Oral immediate release morphine should be administered every **four hours**. An hour should be left between doses when considering additional doses for breakthrough pain.

If the child is requiring regular additional doses of morphine for breakthrough pain, then consideration should be made to converting to a longer acting opiate formulation eg MST granules, Zomorph capsules or fentanyl transdermal patches.

a) Converting to MST granules/ Zomorph (modified release morphine)

The total daily dose of immediate release oral morphine should be calculated, including regular doses and doses administered for breakthrough pain.

The total daily dose should be divided into 2 with $\frac{1}{2}$ total daily dose given in the morning and $\frac{1}{2}$ total daily dose given 12 hours later.

MST is available in tablet form or as granules. For children with a gastrostomy/ nasogastric tube or children who are unable to swallow tablets (they should not be crushed as they are modified-release), granules should be prescribed. It is anticipated that most children in their last hours or days of life will need granules. Zomorph is available as capsules which can be opened and placed down a large enteral tube (16 fr or greater) and flushed well.

Oral immediate release morphine should continue to be used for breakthrough pain. Advice on calculating the dose required for breakthrough pain is given below.

b) Converting to fentanyl patch

The total daily dose of oral morphine should be calculated, including regular doses and doses administered for breakthrough pain.

Fentanyl patches are available in a range of strengths, but the lowest strength available is a 12 microgram/hour patch, which is equivalent to 30mg oral morphine in 24 hours. In smaller children, therefore, fentanyl patches may not be appropriate.

Fentanyl patches are most suitable for patients with stable pain. Inflexibility in dosing renders them a less suitable choice for patients with significant pain fluctuation.

To convert oral morphine to fentanyl patch. (Oral morphine is expressed as total daily dose).

- Oral morphine 30mg = 12 micrograms/hour fentanyl patch
- Oral morphine 60mg = 25 micrograms/hour fentanyl patch
- Oral morphine 120mg = 50 micrograms /hour fentanyl patch
- Oral morphine 180mg = 75 micrograms /hour fentanyl patch
- Oral morphine 240mg = 100 micrograms /hour fentanyl patch

6) Calculating morphine doses in children who are **not** opiate naïve

Children may need higher doses of morphine to manage distress and pain in the last hours or days of their lives if opiates have previously been prescribed and administered. This is due to opiate tolerance which may make smaller doses less effective. Appropriate tools should be used to assess a child's pain and opiate dose adjusted as required.

a) For children previously prescribed oral morphine

The total daily dose (in 24 hours) of oral morphine should be calculated, including regular doses and doses administered for breakthrough pain.

To convert oral morphine to parenteral (intravenous or subcutaneous).

Ratio 2:1 oral : parenteral)

- 1mg oral morphine = 0.5mg parenteral morphine in 24 hours
- 5mg oral morphine = 2.5mg parenteral morphine in 24 hours
- 10mg oral morphine = 5mg parenteral morphine in 24 hours
- 20mg oral morphine = 10mg parenteral morphine in 24 hours
- 40mg oral morphine = 20mg parenteral morphine in 24 hours

Etc...

b) For children previously prescribed fentanyl patches

For rapidly escalating symptoms in the last few hours and days of life, continue transdermal fentanyl and give additional parenteral morphine as required (immediate release oral morphine may be used instead if tolerated).

If more than 2 PRN doses are required in 24 hours and immediate release oral morphine is not tolerated, give morphine by continuous infusion while continuing transdermal fentanyl.

Start with a parenteral dose equal to the sum of the PRN doses over the preceding 24 hours via continuous infusion.

If necessary, adjust the PRN dose taking into account the total opioid dose (i.e. transdermal fentanyl + continuous parenteral morphine or immediate release oral morphine). See section on prescribing breakthrough doses below.

If the transdermal fentanyl patch is removed, please note the conversion from transdermal fentanyl to parenteral morphine:

- 12micrograms/hour fentanyl patch = 15mg parenteral morphine in 24 hours
- 25micrograms/hour fentanyl patch = 30mg parenteral morphine in 24 hours
- 50micrograms/hour fentanyl patch = 60mg parenteral morphine in 24 hours
- 75micrograms/hour fentanyl patch = 90mg parenteral morphine in 24 hours
- 100micrograms/hour fentanyl patch = 120mg parenteral morphine in 24 hours

7. Prescribing breakthrough doses

These doses should be between one-sixth to one-tenth of the regular 24 hour (total daily) dose. A breakthrough dose can be repeated every 2 to 4 hours as required. In some cases this may be increased to hourly if pain is severe.

If a child requires more than 2 breakthrough doses of morphine in a 24 hour period, the total 24 hour dose of regular morphine needs to be reviewed and adjusted.

The prescribed breakthrough dose of morphine should also be adjusted to reflect adjustments to the regular morphine dose (ie recalculate one-sixth to one-tenth of the adjusted regular morphine dose in 24 hours).

Summary guideline for the use of morphine in paediatric end of life care

Previous total daily dose of opiate should be calculated when considering a child's ongoing needs for morphine in their last hours or days of life. For children who are not opiate naïve, a higher dose of morphine may be required to manage distressing symptoms and appropriate tools should be used to assess pain to direct management.

A quick reference table to calculate opiate equivalent doses:

Total daily dose immediate release oral morphine	Total daily dose parenteral (intravenous or subcutaneous) morphine	Fentanyl patch	Modified release morphine (using twice daily dosing preparations). Available as tablets, which should <i>not</i> be crushed/ granules (MST) or capsules (Zomorph) which can be opened and put down NGT/through gastrostomy
10mg	5mg	Not appropriate	5mg 12 hourly
20mg	10mg	Not appropriate	10mg 12 hourly
30mg	15mg	12micrograms/hour	15mg 12 hourly
60mg	30mg	25micrograms/hour	30mg 12 hourly
120mg	60mg	50micrograms/hour	60mg 12 hourly
180mg	90mg	75micrograms/hour	90mg 12 hourly
240mg	120mg	100micrograms/hour	120mg 12 hourly

Breakthrough doses need to be prescribed alongside the regular doses to ensure pain relief is adequate for the child.

The paediatric pharmacist (in hours) or on-call pharmacist (out of hours) is available to provide advice and support regarding opioid conversion calculations.

References

- 1. BNFC. Prescribing in palliative care and morphine sulphate monograph.**
<https://www.new.medicinescomplete.com/#/browse/bnfc>
- 2. Rainbows Children's Hospice. Basic Symptom Control in Palliative Paediatric Patients** <https://www.rainbows.co.uk/support-families/care-rainbows/symptom-control>
- 3. Association of Paediatric Palliative Medicine (APPM) formulary 2020.**
<http://www.appm.org.uk>

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