Subcutaneous Drug Infusion Compatibility Guidelines

February 2011

Gippsland Region Palliative Care Consortium Clinical Practice Group

Policy No. GRPCC-CPG003_1.0_2011
Title Subcutaneous Drug Infusion Compatibility Guidelines
Keywords Guideline, Palliative, Care, Clinical, Practice
Rated GRPCC Clinical Practice Group
Effective Date February 2011
Review Date February 2013
Purpose This policy has been endorsed by the GRPCC Clinical Practice Group and is based on current evidence based practice and should be used to inform clinical practice, policies and procedures in health services. The intent of the policy is to promote region wide adoption of best practice. Enquiries can be directed to GRPCC by email GRPCC@gha.net.au
Pages 4
Policy Statement

The oral route of administration is preferable. However when the parenteral route is required, the subcutaneous route is preferred. Drugs may be given as infusions over 24 hours or as bolus doses.

The combination of drugs for subcutaneous infusions must be checked for compatibility prior to prescription and administration.

Drugs which CAN be given subcutaneously:

- cyclizine
- clonazepam
- dexamethasone
- fentanyl
- hyoscine butylbromide
- hyoscine hydrobromide
- glycopyrrolate
- haloperidol
- hydromorphone
- ketamine
- ketorolac
- levomepromazine
- metoclopramide
- methadone
- midazolam
- morphine
- octreotide
- ondansetron
- oxycodone
- phenobarbitone
- sufentanil

The drug compatibilities in this guideline are collated from published literature. The criteria for the selection of compatibilities into this guideline included at least two of the following:

- published in a journal or hospital newsletter,
- published in a reference book,
- laboratory analysis,
- documented concentrations,
- documented use in a clinical setting.

Policy

PROCEDURE

1. Subcutaneous infusions will be set up in accordance with each institutions’ subcutaneous administration policy

2. Check the compatibility table and references of the different drugs before commencing.

3. Number of drugs in infusion

   No more than two drugs should be combined in an infusion except for the following combinations:
   - Morphine, Metoclopramide and Haloperidol
   - Morphine, Metoclopramide, Midazolam
   - Morphine, Haloperidol, Midazolam, Hydromorphone, Metoclopramide, Midazolam

   The administration of other drug combinations may be considered if there is supporting literature for drug compatibility.

4. Diluent for infusions

   Sodium Chloride 0.9% is the preferred diluent as it produces a solution which is as close to physiological tonicity as possible. The main exceptions to this rule are solutions containing cyclizine, in which case Water for Injection should be used.
5. Storage conditions for drug infusions

Syringes containing drugs for infusion should be prepared immediately prior to commencement of infusion.

Syringes containing drugs should be protected from light eg by placing the syringe driver in a pouch.

6. Duration of Infusion

The duration of drug infusions should be limited to 24 hours. If however, circumstances require otherwise (e.g. in the community) the duration of the infusions may be extended pending on stability data in published literature.

7. Drugs Not Suitable for Subcutaneous Administration

Phenothiazine's - prochlorperazine (Stemetil), chlorpromazine (Largactil)
promethazine (Phenergan) - too irritant
Phenytoin
Diazepam - absorbed onto PVC. Precipitates at certain dilutions

8. Potential Problems to Consider

Phenobarbitone sodium - can be too irritant if not well diluted - pH 8.5 – 10
Clonazepam - significant loss of clonazepam occurs when infused through PVC tubing, hence it tends not to be given as a continuous subcutaneous infusion
Cyclizine, levomepromazine and ketamine tend to be infused alone, rather than in combination with other drugs due to cost considerations

References

2. Palliative Care Therapeutic Guidelines. Version 2, 2005
6. GRPCC-CPG002_1.0_2010 - Opioid Conversion Guidelines.
   Available online from www.gha.net.au/grpcc

Key Performance Indicators

OUTCOME

100% of drugs in a subcutaneous infusion are checked for compatibility before the preparation and administration of the prescribed combination.

USED WITH PERMISSION OF CALVARY HEALTH CARE BETHLEHEM
Drug Compatibility in Subcutaneous Infusions Chart in Standard Forms

<table>
<thead>
<tr>
<th></th>
<th>Cyclizine</th>
<th>Dexamethasone</th>
<th>Fentanyl</th>
<th>Glycopyrolate</th>
<th>Haloperidol</th>
<th>Hydromorphone</th>
<th>Hyoscine N-Butylbromide</th>
<th>Hyoscine HBr</th>
<th>Ketamine</th>
<th>Ketorolac</th>
<th>Levomepromazine</th>
<th>Metoclopramide</th>
<th>Methadone</th>
<th>Midazolam</th>
<th>Morphine</th>
<th>Octreotide</th>
<th>Ondansetron</th>
<th>Oxycodone</th>
<th>Phenobarb. Sod</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>3-3.7</td>
<td>pH 7-8.5</td>
<td>pH 4-7.5</td>
<td>pH 2.3-4.3</td>
<td>pH 2.8-3.6</td>
<td>pH 4-5.5</td>
<td>pH 3-5.5</td>
<td>pH 3-6</td>
<td>pH 7-8</td>
<td>pH 3.5-5.5</td>
<td>pH 3-6.5</td>
<td>pH 4.5-7</td>
<td>pH 3.5</td>
<td>pH 2.9-3.7</td>
<td>pH 2.5-6</td>
<td>pH 3.5</td>
<td>pH 3.9-4.5</td>
<td>pH 4.5-5.5</td>
<td>pH 8.5-10.5</td>
</tr>
</tbody>
</table>

**KEY**
- Incompatible
- Compatible
- Usually compatible (may be concentration dependent - observe carefully)

**Please note:**
- This table should be used as a general guide only as high concentrations of drug combinations will affect the compatibility of the end infusion, and vigilant monitoring is required in all cases.
- pH may vary with different formulations; check product information or consult the manufacturer.

**References:**
2. Palliative Care Therapeutic Guidelines. Version 2, 2005

Subcutaneous Drug Infusion Compatibility Guidelines
**GRPCC-CPG003_1.0_2011**
Gippsland Region Palliative Care Consortium