

Subcutaneous Drug Infusion Compatibility Guidelines

(Companion document to EMRPCC
Compatibility Guidelines)

Review date: August 2019

**Gippsland Region
Palliative Care Consortium
Clinical Practice Group**

<i>Title</i>	Subcutaneous Drug Infusion Compatibility Guidelines (A Companion Document to EMRPCC guidelines)
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<i>Ratified</i>	GRPCC Clinical Practice Group
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<i>Purpose</i>	<p>This guideline has been endorsed by the GRPCC Clinical Practice Group and is based on current evidence and best practice components. It is recommended this guideline be used to inform health services policies and procedures regarding injectable medication and continuous subcutaneous infusions in clinical practice across the region.</p> <p>Enquiries can be directed to GRPCC by email GRPCC.enquiries@wghg.com.au</p>
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Disclaimer

The intent of the GRPCC Clinical Practice Group endorsed clinical guidelines is to make them available to health services and clinical staff across the Gippsland region to promote evidence-based practice in when delivering palliative care.

Clinical guidelines are intended to provide general advice to the medical, nursing, and allied health staff working with clients with a life limiting illness. These endorsed clinical guidelines are not a substitute to comprehensive assessment and critical thinking relevant to the particular patient's individual clinical circumstances and degree of symptom burden. There may also be strong clinical evidence for choosing a therapeutic intervention that may be different to what is recommended in these guidelines. Timely consultation and advice from the palliative care service is always recommended, if appropriate, when using these guidelines.

When developing clinical guidelines, the GRPCC ensures the guidelines content is accurate and based on evidence. The GRPCC takes no responsibility for new clinical evidence or information that become available or be published following guideline distribution or nominated review date.

The GRPCCS guidelines may be used by providers to develop similar protocols and procedures that can be customised according to the organising clinical context and requirements. Health organisations must also ensure that utilisation of these guidelines complement their organisational governance structure including health professional palliative care delivery scope of practice.

Acknowledgment

Eastern Metro Region Palliative Care Consortium (EMRPCC)

Considerable information contained in this guideline was taken from Calvary Health Care Bethlehem related documents, when this guideline was first developed.

Policy Statement

In palliative care clinical practice, the oral route of administration is the preferred option. However, when the parenteral route is required, the subcutaneous route should be the first option. 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 of injectable medication.

This guideline must be used in conjunction with its companion document [The Eastern Metropolitan Region Palliative Care Consortium \(Victoria\) Syringe Driver Drug Compatibilities-Practice Guidelines 2016¹](#)

Procedure

Drugs that CAN be administered subcutaneously:

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

Drugs that CANNOT be administered subcutaneously:

Phenothiazines - Prochlorperazine, Chlorpromazine, Promethazine (irritant)
Phenytoin
Diazepam - absorbed onto PVC. Precipitates at certain dilutions

Drugs that need SPECIAL CONSIDERATION when administered subcutaneously:

Cyclizine, levomepromazine and ketamine tend to be infused alone, rather than in combination with other drugs due to cost considerations
Clonazepam - significant loss of clonazepam occurs when infused through PVC tubing, hence it tends not to be given as a continuous subcutaneous infusion.

<http://www.emrpcc.org.au/wp-content/uploads/2012/10/Syringe-Driver-Drug-Compatibilities-May-2016.pdf>

Phenobarbitone sodium - can be too irritating if not well diluted (with Sodium Chloride) - pH 8.5 – 10
Should be administered IV, but can be administered by CSCI (will possibly need site changes daily).

Number of drugs in infusion

Generally, it is recommended that no more than two drugs should be combined in an infusion. In the event that more than two drugs are proposed, please check compatibility in "Drug Compatibility in Subcutaneous Infusions Chart in Standard Forms" (p.4 of these guidelines), or other validated resource.

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

Procedure

1. Subcutaneous infusions will be initiated in accordance with each organisation's subcutaneous administration of medication policy
2. Check the compatibility table and references of the different drugs before commencing
3. Infusion site:
 - a. A plastic, teflon or vialon cannula should be used rather than a metal butterfly needle to minimise the risk of site inflammation (*Safe-T-Intima is a commonly used device*).
 - b. Infusion sites may last up to seven days, depending on the drugs/combination used.
 - c. Check the insertion site each visit for:
 - Inflammation
 - Induration
 - Bleeding
 - Leaking
 - Pain.
 - d. The overall integrity and patency of the Safe-T-Intima™ catheter will vary from client to client. The recommendation from the manufacturer is that it should be replaced weekly but the site should be changed if any of the above symptoms are present.
4. Diluent for infusions
 - a. Sodium Chloride 0.9% is the preferred diluent as it produces a solution which is as close to physiological tonicity as possible
 - b. 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

Infusions (syringe drug/s combinations) should be prepared immediately prior to commencement of infusion.

Syringes containing any drug or drugs combinations should be protected from light e.g. by placing the syringe driver in a pouch.

6. Duration of Infusion

The duration of drug infusions should be limited to 24 hours. However, if circumstances require otherwise (e.g. in the community) the duration of the infusions may be extended pending on stability data in published literature and client's symptom stability.

Key Performance Indicator

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

References

1. Syringe Driver Drug Compatibilities- Practice Guidelines 2016 Eastern Metropolitan Region Palliative Care Consortium (Victoria)*Clinical Working Party*
<http://www.emrpcc.org.au/wp-content/uploads/2012/10/Syringe-Driver-Drug-Compatibilities-May-2016.pdf>
2. Syringe Driver Compatibility Table. *The Palliative Care Handbook: Guidelines for clinical management and symptom control* 2018 pages 160-161
3. Syringe Driver - Drug Compatibility database. *Palliative Care Matters*
<http://www.pallcare.info> (accessed October 2018)
4. Gardiner PR. Compatibility of an injectable oxycodone formulation with typical diluents, syringes, tubings, infusion bags and drugs for potential co-administration. *Hospital Pharmacist* Sept 2003;10:354-361
5. Palliative Drugs www.palliativedrugs.com
6. Twycross R., & Wilcock A. *Palliative Care Formulary* 5th Edition Nottingham. Palliativedrugs.com Ltd; 2014

Drug Compatibility in Subcutaneous Infusions Chart in Standard Forms

	Cyclizine	Dexamethasone	Fentanyl	Glycopyrrolate	Haloperidol	Hydromorphone	Hyoscine Butylbromide	Hyoscine Hydrobromide	Ketamine	Ketorolac	Levomepromazine	Metoclopramide	Methadone	Midazolam	Morphine Sulphate	Octreotide	Ondansetron	Oxycodone	Phenobarbitone. Sodium
Cyclizine	pH 3-3.7	⚠	?	✔	✔	⚠	⚠	✔	?	?	✔	?	?		⚠	✔	✔	✔	?
Dexamethasone	⚠	pH 7-8.5	?	?	⚠	⚠	✔	✔	✔		⊘		✔	⊘	⚠		⚠	✔	⊘
Fentanyl	⚠	?	pH 4-7.5	✔	✔	✔	✔	✔	✔		?	✔	?	✔	?	✔	✔	?	✔
Glycopyrrolate	✔	?	✔	pH 2.3-4.3	✔	✔	✔	NA	✔			✔	✔	✔	✔	?	✔	✔	⊘
Haloperidol	✔	⊘	✔	✔	pH 2.8-3.6	⚠	✔	✔	✔	⊘	✔	✔	✔	✔	✔	✔	✔	✔	?
Hydromorphone	⚠	⚠	✔	✔	⚠	pH 4-5.5	✔	✔	✔	⚠	✔	✔	?	✔	NA	✔	✔	NA	?
Hyoscine Butylbromide	⚠	?	✔	?	?	?	pH 3-5.5	?	✔	?	✔	✔	✔	✔	✔	✔	✔	✔	?
Hyoscine Hydrobromide	✔	✔	✔	NA	?	✔	?	pH 4	✔		✔	✔	✔	✔	✔	✔	✔	✔	?
Ketamine	?	✔	✔	✔	✔	✔	✔	✔	pH 3.5-5.5		✔	✔	✔	✔	✔	?	?	✔	?
Ketorolac					⊘	⚠				pH 7-8			✔	?	✔	?	?		?
Levomepromazine	✔	⚠	?	✔	✔	✔	✔	✔	✔	?	pH 3-5	✔	✔	✔	✔	✔	✔	✔	?
Metoclopramide	✔	✔	✔	✔	✔	✔	✔	✔	✔		?	pH 3-6.5	✔	✔	✔	✔	✔	✔	?
Methadone	?	✔	?	✔	✔	?	?	✔	?		✔	✔	pH 4.5-7	✔	?	?	?	✔	⊘
Midazolam	?	⊘	✔	✔	✔	✔	✔	✔	✔		✔	✔	✔	pH 2.9-3.7	⚠	✔	✔	✔	?
Morphine Sulphate	✔	✔	?	✔	✔	NA	✔	✔	✔	✔	✔	✔	?	✔	pH 2.5-6	✔	✔	NA	?
Octreotide	⚠	⚠	✔	✔	✔	✔	✔	✔	✔	⚠	⚠	✔	?	✔	✔	pH 3.5	✔	✔	?
Ondansetron	⚠	⚠	✔	✔	✔	✔	✔	✔	✔		✔	✔	?	✔	✔	✔	pH 3.9-4.5	✔	?
Oxycodone	⚠	✔	?	✔	✔	NA	✔	✔	✔	?	✔	✔	?	✔	NA		✔	pH 4.5-5.5	?
Phenobarbitone. Sodium	?	?	?	⊘	?	?	?	?	?	?	?	?	⊘	?	?	?	?	?	pH 8.5-10.5

KEY Incompatible Compatible Sometimes incompatible (usually at higher concentrations) - observe carefully Unknown **NA** not usually used together

Please note:

- This table should be used as a general guide only as high concentrations of drug combinations will affect the compatibility of the desired infusion. Vigilance is required in all cases.
- pH may vary with different formulations; check product information or consult the manufacturer.
- Where there is no symbol indicating medication compatibility OR unknown symbol, it is not recommended for use, or proceed with caution and closely monitor administration site.**

References:

- Dickman A, Schneider J, Varga J. The syringe driver: continuous subcutaneous infusion in palliative care 3rd Ed. Oxford: Oxford University Press; 2011
- The Palliative Care Handbook: Guidelines for clinical management and symptom control, 2018, pages 160-161
- Syringe Driver - Drug Compatibility database. Palliative Care Matters. <http://www.pallcare.info>
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