

Quick Reference Guide: The Administration of Medicines via Syringe Pump

Important Information

In palliative care, medicines may be administered by continuous subcutaneous infusion (CSCI) at various points along a patient's disease trajectory for symptom management e.g. pain, nausea and vomiting, bowel obstruction or dysphagia. The administration of most medicines by CSCI is off-label, however there is extensive documentation of clinical experience to support the administration of many medicines by this route.

Prescriptions for CSCIs should specify:

- The drug & dose (subject to normal prescription writing requirements)
- The diluent
- The duration of the infusion (usually 24 hours)

Prescriptions should be reviewed on a daily basis and must be specifically tailored to the needs/symptoms of the individual patient. If in any doubt, contact your specialist palliative care team.

Diluents for CSCI

- Diluents reduce site reactions and enable drug delivery.
- Water for Injection (WFI) and Sodium Chloride 0.9% (NaCl) are the most commonly used diluents. Glucose 5% in water has also been used.
- At OLH&CS, NaCl is the preferred diluent with the exception of **haloperidol at concentrations >1mg/mL and cyclizine** which must **ALWAYS** be diluted with WFI to avoid precipitation.

Diluent	Advantages	Disadvantages	Maximum volumes when using McKinley T34 Syringe Pump (note values are approximate)	
			BD Plastipak Syringe Size	Maximum Volume
WFI	Less chance of incompatibility	Hypotonic which can contribute to infusion site reactions (however these reactions are rare)	10mL	10mL
	Generally more compatibility data available		20mL	17mL
NaCl	Isotonic, reduces risk of infusion site reactions	Incompatible with some drugs e.g. cyclizine	30mL	22mL
	Preferable for diluting irritant drugs	Generally less compatibility data available	50mL	34mL

General Principles for Compatibility of Medicines in a Syringe Pump

Mixing medicines for CSCI

- The mixing of most medicines is off-label, however has been long accepted practice in palliative care.
- As a general rule, no more than three medicines should be mixed together in a single syringe pump.
- It is essential to consider the physical and chemical compatibility data available before a syringe pump is set up. Compatibility decisions are often based on observational data and clinical experience.
- For compatibility information, consult the Palliative Care Formulary or the Syringe Driver Book, or contact your pharmacy department (if available) or Palliative Meds Info (see details below) for advice.
- Consider the pH of each drug. Drugs with similar pHs are more likely to be compatible.
- A 20mL syringe at a minimum is recommended as a larger dilution will reduce both the risks of adverse site reaction and incompatibility.
- The compatibility of many medicines with cyclizine or haloperidol is often concentration dependent. Higher concentrations of medicines are more likely to cause problems.
- When used at low doses for prevention of site reactions, the risk of precipitation with dexamethasone is reduced if it is added last to the diluted drug mixture.
- Protect syringe pumps from direct sunlight and heat (particularly with levomepromazine).
- Monitor the syringe pump carefully to check for signs of incompatibility (crystallisation/dicolouration).

Medicines which must be administered separately and not mixed with other medicines:

Diclofenac, furosemide, phenobarbital, & dexamethasone (unless low dose for site reaction).

Medicines which should be administered separately where possible:

Levetiracetam (please contact us for further information if administering separately is not possible).

The information outlined is intended as a guide only. All combinations should be checked and prescribed by an experienced practitioner. For questions regarding CSCI compatibilities please contact Palliative Meds Info in OLH&CS on 01 4912578 or email medsinfo@olh.ie.