

Standard Operating Procedure:

**PREPARATION OF
CONTINUOUS SUBCUTANEOUS INFUSIONS (CSCI)
FOR SYMPTOM CONTROL**

Reference Number	Version: 1.0	Status Approved	Author: Maja Moldawa Job Title Divisional Lead Pharmacist, CDCS	
Version / Amendment History	Version	Date	Author	Reason
	1	13/04/2023	M. Moldawa	New SOP for trust wide reference
Intended Recipients: All staff who prepare continuous subcutaneous infusions for palliative care (Syringe Driver medication)				
Training and Dissemination: SOP to be held on Pharmacy pages of Net-I and cross referenced to Professional Development pages. Professional and Practice Educators involved in review of procedure and will be signposted from relevant induction and training contact by clinical educators.				
To be read in conjunction with: UHDB Medicines Policy ; Infusion Guidelines (Intravenous & Subcutaneous)				
In consultation with and Date: Pharmacy BU; NMU nursing team & Educator; Professional & Practice Development Team (including deputy lead nurse and infusion therapy lead); Medicines Safety Group				
Approving Body and Date Approved		CDCS Divisional Governance Group 17/4/2023		
Date of Issue		April 2023		
Review Date and Frequency		April 2026 (3 years)		
Contact for Review		Maja Moldawa Job Title Divisional Lead Pharmacist, CDCS		

PREPARATION OF CONTINUOUS SUBCUTANEOUS INFUSIONS (CSCI) FOR SYMPTOM CONTROL

This document covers the preparation of drugs in syringes for administration using T34 syringe pumps or devices that simulate the T34 syringe pump setup.

The standards within this document apply to:

- All healthcare professionals involved in the prescribing of CSCIs for administration via syringe driver pumps.
- All registered nurses who prepare CSCIs on the ward for inpatient administration

RESPONSIBILITIES

It is the responsibility of **all staff** involved in the prescribing, preparation and administration of medicines for symptom management, such as continuous subcutaneous infusions, to ensure that they are familiar with this procedure. Staff must ensure that they are competent and able to provide safe practice for patients.

PRESCRIBERS

It is the responsibility of all prescribers involved in the prescribing of CSCIs to:

- Understand the rationale and principles of CSCI use
- Establish appropriateness of prescription based on:
 - Presentation of symptoms
 - Previous opioid use and number of 'when necessary' doses in the preceding 24 period
 - Stability of the drug combination in the CSCI, when more than one component is used. This includes maximum concentration of each drug within the combination (See Appendix 1)
- Perform an accurate opioid conversion, where appropriate
- Notify nursing staff of the initiation or change to a CSCI in a timely manner
- Consult a pharmacist if further assistance is required in establishing prescription safety and appropriateness

REGISTERED NURSES

It is the responsibility of all registered nurses involved with the preparation and administration of CSCIs to:

- Understand the rationale and principles of CSCI use
- Satisfy themselves that the CSCI prescription is safe and appropriate for the patient. This includes:
 - Second checking doses of drugs in the CSCI
 - Second checking the compatibility of drugs in the CSCI, including relative maximum concentrations of drugs within the CSCI (See Appendix 1)
 - Please note that second checking of the medication(s) must be undertaken by an infusion therapy competent nurse.
- Understand and implement the principles of Aseptic Non-Touch Technique (ANTT) and infection control during the CSCI preparation process
- Follow the procedure outlined to prepare the CSCI in accordance with the prescription
- Consult a pharmacist if further assistance is required in establishing prescription safety and appropriateness

PHARMACISTS

It is the responsibility of all pharmacists providing advice and support to other staff groups regarding CSCIs to:

- Provide clinical advice on the appropriateness of drug choice, dose and combination in a CSCI, when requested
- Support with conversion of opioids and appropriate dose adjustment, when requested
- Confirm stability of CSCIs, where the information is not available to other staff within this document *e.g. if doses of drugs go above maximum permitted concentration within a CSCI combination*
- Signpost staff to areas where additional equipment for manufacture of CSCIs may be sourced

EQUIPMENT REQUIRED

The following equipment is required for the preparation of the infusions:

- 30ml Luer lock BD syringe
- 1ml, 3ml, 5ml or 10ml BD syringe
- Syringe cap (if preparing in anticipation)
- Pink needle (without filter)
- Pink 5-micron filter needle (if glass ampoules used)
- Syringe Cap Green Fluid Dispensing Connector Syringe to Syringe Female Luer Lock
- Plastic tray
- Alcohol wipes
- Gloves
- Diluents – Water for injection OR Sodium chloride 0.9% - dependent on the drug to be prepared
- Prescribed drugs
- Labels
- Sharps bin

See Appendix 2 for list of common consumables needed for CSCI preparation

PROCEDURE FOR MANUFACTURE OF THE CSCI

1. Calculate the volume of drug(s) needed from the concentration of the preparation available in stock and the prescribed dose

Note: If the drug is available in a powdered form, use the correct diluent and volume to reconstitute the drug. Then measure the volume of drug prescribed from the reconstituted concentration.

2. Using appropriately graduated syringe(s), measure the exact volume of all the drugs required. One syringe should be used PER DRUG.
3. A second registered practitioner (with current infusion competence) must independently check the volume BEFORE transfer to the final syringe.
4. For each drug drawn up, remove needle and attach a syringe-to-syringe connector (also called fluid dispensing connector or transfer device, or “frog” e.g. BBraun FDC1000) to the small syringe.
5. Leaving the cap on the transfer device, draw back on the small syringe so you have approximately 0.1ml extra of air in the syringe. Remove cap from transfer device and connect the final container 30ml BD syringe.
6. Rotate the connected syringes so that the plunger of the small syringe is pointing up and allow the bubbles to float to the top.
7. Press down on the plunger of the smaller syringe (containing the drug), transferring the drug into the final container, using the 0.1ml air bubble to flush the liquid through.
8. Remove smaller syringe and attach next syringe to ‘frog’ connector repeating transfer process.
9. Replace the transfer device with a needle on the final container
10. Draw up the appropriate diluent into the 30 ml syringe to make up to **23ml**
11. Gently tip the syringe up and down to mix the contents and expel any bubbles
12. Cap the syringe only if made in anticipation, otherwise insert syringe into the driver and set up the programme

LABELLING

Complete infusion Label and attach to the final 30ml syringe. Keep graduation marks visible.

The label must include:

- Patient name
- Patient date of birth
- Patient Hospital Number
- Ward
- Date and time of syringe preparation

- Expiry date and time of preparation – **MUST BE 24 HOURS**
- Initials of registered nurses preparing AND checking the infusion
- Name and **dose** (mg or micrograms) of all drugs
- Name of diluent
- Total volume - **FINAL VOLUME MUST BE 23ml**
- Intended route of administration - **SUBCUTANEOUS**

CONTROLLED DRUG REGISTER ENTRY (IF APPLICABLE)

Record drug details in Controlled Drug (CD) register where applicable, in line with the Trust CD Policy.

SAMPLE CSCI LABELS

Sample Label:

Example of completed Label:

FINAL VOLUME: 23ML	SUBCUTANEOUS
DRUG.....	DOSE.....
DRUG.....	DOSE.....
DRUG.....	DOSE.....
Diluent	
Prepared by.....	Checked by.....
Date prepared.....	Expiry Date/Time.....
Patient name.....	Ward.....
D.O.B.....	Hospital No.....
Royal Derby Hospital Uttoxeter Road Derby Tel: 01332 785368	
KEEP OUT OF SIGHT AND REACH OF CHILDREN	

FINAL VOLUME: 23ML	SUBCUTANEOUS
DRUG..... MORPHINE.....	DOSE..... 20 MG.....
DRUG..... MIDAZOLAM.....	DOSE..... 10 MG.....
DRUG..... HYOSCINE BUTYL BROMIDE.....	DOSE..... 40 MG.....
Diluent SODIUM CHLORIDE 0.9%.....	
Prepared by..... JH.....	Checked by..... JP.....
Date prepared..... 01/05/23.....	Expiry Date/Time..... 21:00 02/05/23.....
Patient name..... JOHN DOE.....	Ward..... 412.....
D.O.B..... 06/09/1946.....	Hospital No..... 012345X.....
Royal Derby Hospital Uttoxeter Road Derby Tel: 01332 785368	
KEEP OUT OF SIGHT AND REACH OF CHILDREN	

IF IN DOUBT - CONTACT THE PHARMACIST

EXAMPLES OF DOSE CALCULATIONS

EXAMPLE 1:

Patient has been prescribed Midazolam 15mg in 23ml Water for Injection

You have Midazolam 10mg/2ml ampoules available

To measure out the number of mLs required:

1. Divide the dose (in mg) you **NEED** by the dose (in mg) you **HAVE**
i.e. $15\text{mg}/10\text{mg} = 1.5$
2. Multiply this value by the number of mLs the drug comes in
i.e. $1.5 \times 2\text{mL} = 3\text{mL}$

Based on this calculation you will need 3mLs of 10mg/2ml midazolam, therefore you need to book out 2 ampoules out of the CD register, withdraw 2mls out of one and 1ml out of the second ampoule.

EXAMPLE 2:

Patient has been prescribed Morphine 25mg, Hyoscine butylbromide 40mg and Haloperidol 2mg in 23ml Sodium Chloride 0.9%

Morphine: You have 10mg/ml ampoules available

$$25\text{mg}/10\text{mg} = 2.5$$

$$2.5 \times 1\text{ml} = 2.5\text{mLs of morphine required}$$

Hyoscine Butylbromide: You have 20mg/ml ampoules available

$$40\text{mg}/20\text{mg} = 2$$

$$2 \times 1\text{ml} = 2\text{mLs of hyoscine butylbromide required}$$

Haloperidol: You have 5mg/ml ampoules available

$$2\text{mg}/5\text{mg} = 0.4$$

$$0.4 \times 1\text{ml} = 0.4\text{ml of haloperidol required}$$

Based on this you will need 3 ampoules of morphine 10mg/ml, to be booked out of the CD register, 2 ampoules of hyoscine butylbromide, and 1 ampoule of Haloperidol.

USEFUL LINKS

[How to contact the pharmacist for advice](#) (downloads a document for you to open)

[Palliative care information \(BNF\)](#)

[VIDEO: How to prepare a syringe for a syringe driver \(CSCI\)](#)

See **Appendix 1** of this policy for compatibility and stability information

See **Appendix 2** of this policy for list of common consumables for preparation of injectables