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## Palliative Care Syringe Driver – DCHS Medication Compatibility Guide v8 November 2023

This guide is for prescribers and nursing staff who are preparing by the bedside and immediately administering 24hour subcutaneous infusions using a syringe driver for patients with palliative care needs. This guide provides information about compatibility of different drug combinations in syringe drivers.

**PLEASE NOTE: THIS IS NOT A COMPREHENSIVE LIST OF DRUG COMPATIBILITIES AND IF THE COMBINATION PRESCRIBED IS NOT LISTED HERE IT DOES NOT NECESSARILY MEAN IT CANNOT BE MIXED.** If the combination of drugs is included in this guide they are usually compatible (✓) and further verification is not required. If the combination is not included here, the strength of medicines prescribed exceeds that stated in the tables, or sodium chloride 0.9% is being considered as a diluent, then advice from pharmacy or specialists in palliative care should be sought. If more than 3 drugs are required seek specialist palliative care advice. Specialist contact details can be found in the [End of Life - Directory of Services :: Derbyshire Community Health Services \(dchs.nhs.uk\)](https://dchs.nhs.uk).

### Important advice

- Syringe drivers should be made up **immediately prior to administration** using strict aseptic technique and given an expiry of 24 hours.
- Water for injection (WFI) should be used as the standard diluent of choice. However, 0.9% Sodium Chloride (NaCl) should be considered if there is a potential or actual problem with inflammatory reactions at the skin injection site, and pharmacy or specialist advice sought.
- The following tables indicate if a drug combination is likely to be stable and compatible however, **staff should always check for physical compatibility on making up** (e.g. no discolouration, clouding or crystallisation). If these are noted then the administration should be stopped immediately and medical staff notified. Do not expose drugs or syringe drivers to direct sunlight during assembly or throughout administration as some drugs are unstable under these conditions.
- On average it takes 4 hours for syringe driver medicines to reach full effectiveness.
- Morphine may be available as different salts: Morphine **Sulfate**, Morphine **Tartrate** and Morphine **Hydrochloride**. **Morphine Sulfate is the preferred option**. Morphine hydrochloride is the least soluble and morphine tartrate is the most soluble salt.

**T34 and Bodyguard syringe drivers: use 20ml/30ml/50ml BD Plastic Luer lock syringes.**

- Final total volume in a 20ml syringe should be 18ml\*
- Final total volume in a 30ml syringe should be 23ml
- Final total volume in a 50ml syringe should be 34ml (used in exceptional circumstances. Note this size syringe may not fit into the lockable box)

Note: \*If the medications total is greater than 10ml before dilution, it may be necessary to use a 30ml syringe.

### Single Item Syringe Drivers

If there is only ONE item to be included in a syringe driver the smallest volume in which it will fit should be used. Water for injection should be used as the standard diluent for any drug listed in this guide. For any other drugs seek pharmacy or specialist advice. **Tranexamic acid** must not be mixed with other drugs and should always be in a separate syringe driver.

## Two Item Syringe Drivers

Key: ✓ = compatible within dose quoted; ✗ = incompatible do not mix; **grey box** = seek pharmacy/ specialist advice

a. Make 2 drug combinations up to a convenient volume with **water for injection**, usually 18mls *except where specifically stated otherwise eg 23mls*, see also note\* on page 1.

b. **THIS IS NOT A DEFINITIVE LIST.** If the combination is not included here, the strength of medicines prescribed exceeds that stated in the tables, or sodium chloride 0.9% is being considered as a diluent, then advice from pharmacy or specialists in palliative care should be sought.

|  | Alfentanil ≤5mg<br>Specialist use only | Cyclizine<br>≤ 150mg | Diamorphine<br>≤ 100mg | Haloperidol<br>≤ 10mg | Hyoscine<br>butylbromide<br>≤ 80mg | Levomopromazine<br>≤ 37.5mg | Metoclopramide<br>≤ 50mg | Midazolam<br>≤ 20mg | Morphine sulfate<br>≤ 140mg | Oxycodone<br>≤ 100mg |
|--|--|----------------------|------------------------|-----------------------|------------------------------------|-----------------------------|--------------------------|---------------------|-----------------------------|----------------------|
| Alfentanil ≤5mg<br>Specialist use only |  | ✓ 23ml               |                        | ✓                     | ✓                                  | ✓                           | ✓                        | ✓                   |                             |                      |
| Cyclizine<br>≤ 150mg                   | ✓ 23ml                                 |                      | ✓                      | ✓                     | ✗                                  |                             |                          | ✓                   | ✓ 23ml                      | ✓                    |
| Diamorphine<br>≤ 100mg                 |  | ✓                    |                        | ✓                     | ✓                                  | ✓                           | ✓                        | ✓                   |                             |                      |
| Haloperidol<br>≤ 10mg                  | ✓                                      | ✓                    | ✓                      |                       | ✓                                  |                             | ✓                        | ✓                   | ✓ 23ml                      | ✓                    |
| Hyoscine<br>butylbromide<br>≤ 80mg     | ✓                                      | ✗                    | ✓                      | ✓                     |                                    | ✓                           |                          | ✓                   | ✓ 23ml                      | ✓                    |
| Levomopromazine<br>≤ 37.5mg            | ✓                                      |                      | ✓                      |                       | ✓                                  |                             |                          | ✓                   | ✓                           | ✓                    |
| Metoclopramide<br>≤ 50mg               | ✓                                      |                      | ✓                      | ✓                     |                                    |                             |                          | ✓                   | ✓                           | ✓                    |
| Midazolam<br>≤ 20mg                    | ✓                                      | ✓                    | ✓                      | ✓                     | ✓                                  | ✓                           | ✓                        |                     | ✓                           | ✓                    |
| Morphine sulfate<br>≤ 140mg            |  | ✓ 23ml               |                        | ✓ 23ml                | ✓ 23ml                             | ✓                           | ✓                        | ✓                   |                             |                      |
| Oxycodone<br>≤ 100mg                   |  | ✓                    |                        | ✓                     | ✓                                  | ✓                           | ✓                        | ✓                   |                             |                      |

## Three Item Syringe Drivers

a. Make 3 drug combinations up to a convenient volume with **water for injection**, usually 18mls *except where specifically stated otherwise eg 23mls*, see also note\* on page 1.

b. **THIS IS NOT A DEFINITIVE LIST.** If the combination is not included here, the strength of medicines prescribed exceeds that stated in the tables, or sodium chloride 0.9% is being considered as a diluent, then advice from pharmacy or specialists in palliative care should be sought.

|   | Diamorphine   | Morphine sulfate   | Oxycodone  |
|---|---|--|--|
| Haloperidol and Hyoscine butylbromide     | ≤ diamorphine 130mg, haloperidol 5mg, hyoscine butylbromide 80mg      | ≤ morphine sulfate 60mg, haloperidol 5mg, hyoscine butylbromide 80mg, <b>to 23ml</b>         | ≤ oxycodone 90mg, haloperidol 5mg, hyoscine butylbromide 80mg, <b>to 23ml</b>      |
| Haloperidol and Metoclopramide            | ≤ diamorphine 130mg, haloperidol 5mg, metoclopramide 50mg             | ≤ morphine sulfate 120mg, haloperidol 5mg, metoclopramide 50mg, <b>to 23ml</b>               |  |
| Haloperidol and Midazolam                 | ≤ diamorphine 130mg, haloperidol 5mg, midazolam 30mg                  | ≤ morphine sulfate 120mg, haloperidol 5mg, midazolam 30mg                                    | ≤ oxycodone 90mg, haloperidol 5mg, midazolam 20mg, <b>to 23ml</b>                  |
| Hyoscine butylbromide and Levomepromazine | ≤ diamorphine 130mg, hyoscine butylbromide 80mg, levomepromazine 25mg | ≤ morphine sulfate 120mg, hyoscine butylbromide 80mg, levomepromazine 12.5mg, <b>to 23ml</b> | ≤ oxycodone 90mg, hyoscine butylbromide 80mg, levomepromazine 25mg, <b>to 23ml</b> |
| Hyoscine butylbromide and Midazolam       |   | ≤ morphine sulfate 120mg, hyoscine butylbromide 80mg, midazolam 15mg, <b>to 23ml</b>         | ≤ oxycodone 90mg, hyoscine butylbromide 80mg, midazolam 15mg, <b>to 23ml</b>       |
| Levomepromazine and Midazolam             | ≤ diamorphine 130mg, levomepromazine 25mg, midazolam 30mg             | ≤ morphine sulfate 120mg, levomepromazine 25mg, midazolam 30mg, <b>to 23ml</b>               | ≤ oxycodone 50mg, levomepromazine 25mg, midazolam 30mg, <b>to 23ml</b>             |
| Metoclopramide and Midazolam              | ≤ diamorphine 130mg, metoclopramide 60mg, midazolam 20mg              | ≤ morphine sulfate 120mg, metoclopramide 40mg, midazolam 20mg, <b>to 23ml</b>                | ≤ oxycodone 90mg, metoclopramide 40mg and midazolam 10mg, <b>to 23ml</b>           |
| Cyclizine and Midazolam                   | ≤ diamorphine 130mg, cyclizine 150mg, midazolam 10mg                  | ≤ morphine sulfate 120mg, cyclizine 150mg, midazolam 10mg, <b>to 23ml</b>                    | ≤ oxycodone 90mg, cyclizine 150mg, midazolam 10mg                                  |

### Associated resources and references:

- <https://derbyshire.eolcare.uk/> :
  - 'Derbyshire Symptom Management Guidance for last days of life' - symptom management, prescribing advice and opioid equivalency.
  - 'Continuous subcutaneous infusions (CSCI) using a syringe driver (SD) - Guidance and tips for community prescribers' - advice about indication and use.
- S61 – SOP for the T34 and Bodyguard Syringe Drivers [https://dchs.nhs.uk/download\\_file/1451/182](https://dchs.nhs.uk/download_file/1451/182)
- Andrew Dickman & Jennifer Schneider (2016). *Syringe driver*. 4<sup>th</sup> Edition. Oxford University Press.
- Chesterfield Royal Hospital Medicine Information Syringe Driver Compatibility Tables v2 March 2020
- UHDB - [Details for: Continuous Subcutaneous Infusions \(CSCI\) - Preparation of - Standard Operating Procedure \(SOP\) - Derby site only > Trust Policies Procedures & Guidelines catalog \(koha-ptfs.co.uk\)](#) Appendix 1 - Continuous Subcutaneous Infusion combinations and stability data.

**Acknowledgement:** Based on Chesterfield Royal Hospital Medicine Information Syringe Driver Compatibility Tables v2 March 2020