

FACTSHEET: SYRINGE DRIVERS

Drug combinations and common problems

Syringe drivers are commonly used in palliative medicine for symptom management. The most common reasons for using a syringe driver are:

- Loss of oral route
- Impaired absorption of oral meds (e.g. nausea and vomiting)
- Use of specific medication which can only be given subcutaneously (e.g. alfentanil)

Whilst there is a common association between syringe drivers and the dying phase, for some patients they can be a useful method of medication delivery over a longer time period when alternatives are inappropriate. There are however some limiting factors to their use, and some of the common issues are detailed below:

Volume

Prescribers need to take into account the volume of the medication prescribed (alongside diluent). In a driver fitted with a 20ml syringe, the maximum infusion volume is 17ml. In a 30ml syringe, the maximum infusion volume is 22ml. Volumes exceeding these values are likely to need to be either split into separate syringe drivers, or if the patient is in an inpatient setting the use of a 50ml syringe may need to be considered.

Diluent

The two standard diluents are water for injection (WFI) and 0.9% sodium chloride (NaCl). Certain drug combinations will require a specific diluent.

Site reactions

Skin irritation at the site of subcutaneous infusions can occur and may influence the absorption of the medication being infused. There are numerous causes of this, but some medications are more likely to cause irritation – particularly cyclizine and levomepromazine. The risk can be reduced by regular site rotation, use of plastic SC cannulae (i.e. not containing nickel) and checking compatibility and diluent.

If a site reaction occurs, we would suggest the following:

1. Check drug compatibility and look for any signs of precipitation of the mixture being infused
2. Increase volume of diluent
3. Switch diluent
4. Consider switching medication to alternative or consider bolus dosing for longer acting medications
5. Apply hydrocortisone 1% cream to the skin around the infusion site

Some centres advise the addition of low dose dexamethasone to the infusion mix, but we would recommend seeking palliative care advice before considering this and reserving only for when above options fail.

Occlusion or problems with infusion rate

For patients with changes in body habitus, syringe driver infusion may be limited by occlusions or delays (e.g. if profound cachexia means limited SC tissue). Oedematous patients may also have issues with limitations to infusion sites. Site rotation is key in these patients to ensure optimal infusion where possible.

Drug compatibility

Resources to check drug compatibility are available online. One such resource is..... Based on the available compatibility and safety data, the following combinations can generally be safely mixed in a single syringe driver under the right conditions. Please contact The Kirkwood if in any doubt. For complex combinations or doses please contact The Kirkwood as we have further resources to check compatibility (Dickman book)

The diluent is listed as either water for injection (WFI) or 0.9% saline in brackets following each combination. Dosing depends on PRN requirements, clinical response and drug volume.

Unless otherwise specified “SC opioid” refers to either of oxycodone or morphine sulphate.

Syringe driver combinations involving 2 drugs:

- SC opioid, midazolam, haloperidol, hyoscine butylbromide and levomepromazine are all compatible in 2 drug combinations with WFI
- Morphine sulphate and glycopyrronium are **never** compatible.
- Hyoscine hydrobromide or glycopyrronium have multiple incompatibilities so we would recommend discussion if any combination including these drugs is being considered

Syringe driver combinations involving 3 drugs:

- SC opioid + midazolam + hyoscine butylbromide (WFI or 0.9% saline)
- SC opioid + midazolam + haloperidol (WFI or 0.9% saline)
- SC opioid + midazolam + levomepromazine (WFI or 0.9% saline)
- SC opioid + hyoscine butylbromide + haloperidol (WFI or 0.9% saline)
- SC opioid + hyoscine butylbromide + levomepromazine (WFI or 0.9% saline)
- SC opioid + levomepromazine + metoclopramide (WFI or 0.9% saline)

Syringe driver combinations involving 4 drugs:

- SC opioid + midazolam + hyoscine butylbromide + haloperidol (WFI or 0.9% saline)
- SC opioid + midazolam + hyoscine butylbromide + levomepromazine (WFI or 0.9% saline)

FOR FURTHER ADVICE

Please contact The Kirkwood 24 hour advice line on 01484 557910