

Good practice Guidance for Preparing Injections at ward level via syringe-to-syringe mixing

Preparation at ward level may require small volumes to be measured in a small syringe and then diluted into a larger syringe. This document gives guidance on good practice in such mixing of solutions.

Staff carrying out this type of preparation must have made appropriate checks as set out in NPSA alert 20 (see link below).

<https://www.sps.nhs.uk/articles/npsa-alert-promoting-safer-use-of-injection-medicines-npsa-20-2007/>

Local procedures must be followed to carry out any required checks during this process.

To maintain sterility and to reduce the risk of a needle stick injury it is recommended that a **syringe-to-syringe** connection device is used when transferring a solution between syringes. This method also requires an additional syringe for diluting and mixing.

Preparation of Drug Solution

- The table below is a suggestion only.
- For very low volumes (i.e. <0.1mL) consider serial dilutions, following local policy or advice from pharmacy.
- *Suggested syringe sizes for measurements*

Volume to be measured	Syringe size
Up to 1ml	1ml
1ml to 3ml	3ml
3ml to 5ml	5ml
5ml to 10ml	10ml
10ml to 20ml	20ml
20ml to 30ml	30ml
30ml to 50ml	50ml

- If required for a drug in powder form, reconstitute with appropriate diluent.
- Measure the required volume of drug solution into an appropriately sized syringe (see table above)
- Remove and discard needle and attach a new needle. Check the volume in the syringe is correct.



Preparation of Diluent

- Select an appropriately sized syringe (see table above) and draw up the required amount of diluent.
- Remove and discard needle and attach a new needle.
- Check the volume in the syringe is correct



Mixing of Drug and Diluent

- Select an appropriately sized syringe, sufficient enough to hold both the drug and diluent.
- Select a syringe to syringe connector



- Remove the needle from the drug syringe and attach to the syringe-to-syringe connector. e.g.



- Attach the empty syringe to the other end of the syringe to syringe connector.
- Push the drug solution into the final syringe and discard the empty drug syringe.



- Attach the diluent syringe to the syringe to syringe connector.
- Push the diluent into the final syringe.
- Gently pass the solution back and forth via the connector to mix thoroughly.



- Ensure all the solution is in the final syringe and that no liquid remains in the connector.
- Check the actual volume in the final syringe matches the expected volume.
- Remove and discard the diluent syringe.
- Discard the syringe to syringe connector, and attach a new needle to the final syringe.



- Take the filled syringe; expel the air by rotating the syringe and tapping the barrel with the syringe tip upwards.
- Remove the needle & fit a tip-cap.
- Gently press the syringe plunger to test the seal for leakage.
- Label the final syringe as per local policy.

Additional sources of information

The following list is not exhaustive; however consideration may be given to the following:

- ◆ Injectable Medicines Guide (Medusa)
- ◆ Trust Injectable Medicines Policy
- ◆ Local Protocols
- ◆ Medicines Information Department
- ◆ Pharmacy Department
- ◆ SPC