

1. IV infusion in a baby

A flustered nurse from the special care baby unit asks you if phenytoin infusion can be given in the same line as propofol.

Suggested questions to ask include:

(a) What are the concentrations of the two drugs in question?

(b) What are the diluents?

(c) How are the two drugs being mixed?

You cannot answer this question without these basic pieces of information. Are these drugs in the same intravenous bag or syringe, the same line, or the same cannula? If they are being given via a central line are they in the same lumen?

(d) What other drugs are being given IV and what other IV access is available?

You need this information in case you have to recommend not mixing phenytoin and propofol. If you know what other lines are available, and what drugs are being given through them, then you may be able to recommend alternative means of administration.

(e) Is the oral route an option for the phenytoin?

(f) Are they mixing at the moment?

If 'yes', a quick answer is required. It would be a good idea to suggest that in future drugs not be mixed in unfamiliar combinations before checking with a pharmacist first.

EXTRA: When you tell the nurse that the two drugs are not compatible, she says that actually the two are already mixing and that she can't see any problems. What would you say to her now?

You could point out that propofol is opaque so any changes might not be visible and that it is unwise to rely on visual checks alone for compatibility anyway, because many chemical changes are not visible. The doctor should be contacted asking if one of the existing infusions can be halted immediately to prevent further mixing and requesting urgent administration of the two medicines separately. You should suggest that since this is an administration error that it ought to be reported via your trust's critical incident procedure.

Suggested sources:

- ASHP Injectable Drug Information, Micromedex, SmPCs, the NHS Injectable Medicines Guide. Medicines Complete has a Drug Compatibility Checker.

2. Syringe driver in terminal care patient

A Macmillan nurse asks about the advisability of adding midazolam into a syringe driver already containing diamorphine and cyclizine.

Suggested questions to ask include:

(a) What are the doses of all three drugs?

(b) What is the midazolam for?

(c) What is the diluent, and the syringe volume?

You will want to check doses of the drugs concerned. For some drugs used in syringe drivers the concentration is particularly important in determining compatibility, and cyclizine is one of these.

(d) What other drugs are being administered?

Just because there is a syringe driver in place it does not mean that other drugs might not be being given orally. There are also other routes by which potentially interacting drugs could be given (e.g. fentanyl patches).

Suggested sources:

- Andrew Dickman's The Syringe Driver, the Medicines Complete Drug Compatibility Checker.

3. Multiple infusions

A junior doctor rings to tell you that he has a patient who needs several infusions, but she only has two peripheral IV lines. She needs to administer gentamicin, heparin, furosemide, benzylpenicillin, and methylprednisolone. It is possible that they will start an infusion of an investigational drug as part of a clinical trial tomorrow and she wonders how they could fit that in.

Suggested questions to ask include:

(a) What are the doses and diluents of the drugs concerned?

(b) What are the rates of administration?

All of these could be given by injection or a short infusion, and short administration times may mean you don't need to mix any of them.

(c) Is the oral route unavailable? What about other routes?

Some of these drugs can be given orally. Is that an option? If not, why.

(d) Has the manufacturer or the trial protocol any advice on mixing the investigational drug with other drugs?

The questions above may give you enough information to avoid the need for mixing. If mixing cannot be avoided you should ensure that the manufacturer has been asked for advice about the investigational drug. If they cannot help, or if they advise that mixing be avoided, you should ask if another IV line can be inserted. Alternatively, might some of the other drugs be given by different routes to free up a line? (e.g. can heparin be converted to SC enoxaparin? Can methylprednisolone be given orally?).

Suggested sources:

- ASHP Injectable Drug Information, SmPCs, manufacturer, Micromedex, the NHS Injectable Medicines Guide, the Medicines Complete Drug Compatibility Checker.