

# Learning Portal Lite: Injection compatibility

This is a one-page summary; see the [full version online](#)

## Definition of incompatibility

Injections in the same bag, syringe or line can react together to cause a visible change such as precipitation (physical incompatibility) or there may be a chemical reaction which may not be visible (chemical incompatibility).

## Implications for patients

Physical or chemical incompatibility may make one or both drugs unavailable to the patient because they are no longer in solution or are destroyed. Small particles generated by physical incompatibility may block intravenous filters and may cause vasculitis, small emboli or even death.

## Avoid mixing injections if possible

NATO is a helpful acronym to remind yourself how mixing can be avoided:

- **N**ecessary? Is it possible for one or more injections to be stopped?
- **A**lternative routes? Can some medicines be given by non-injectable methods?
- **T**iming? Could altering times of administration avoid the need for mixing?
- **O**ther drugs? Might a change in drug overcome a potential incompatibility?

## Predicting incompatibility

The published evidence may give you clear guidance about compatibility or incompatibility, but the data are often incomplete. If forecasting compatibility, you may need to consider factors such as differences in the pH of injections, their stability, formulation, concentration and diluents in order to offer advice.

## Questions to ask

When advising about injection compatibility, your questions should include:

- Which drugs are *currently* being mixed? Which drugs are you *planning* to mix?
- *How* will the drugs be mixed and what types of lines are in place?
- Can alternative routes of administration be considered? If not, why?

## Information sources

These include SmPCs, ASHP Injectable Drug Information, Micromedex, Injectable Medicines Guide and Andrew Dickman's *The Syringe Driver* for palliative care compatibilities.