

Side effects, adverse effects, and allergies

Side effects

An undesired effect that occurs when a medication is given, regardless of the dose. Most are expected and independent of the dose; some may be beneficial. They often resolve on their own.

Adverse effects or reactions

Unwanted, undesirable effects related to a drug. Some are dose-dependent and some unpredictable. They often require treatment.

Allergies

The immune system's reaction to the drug. Not dose-dependent.

Types of liquid dosage forms

- ✓ **Syrup:** a thick, sweet liquid used as a carrier for drugs or as a flavoring agent
- ✓ **Elixir:** a clear liquid dosage form containing sugar, water, and alcohol
- ✓ **Solution:** a clear liquid preparation for internal or external use
- ✓ **Emulsion:** a biphasic form where two or more liquids are mixed with the help of an emulsifier (e.g., oil-in-water)
- ✓ **Suspension:** a biphasic form with fine solid particles suspended in a liquid
- ✓ **Lotion:** a low- to medium-viscosity liquid applied to the skin
- ✓ **Enema:** a liquid dosage form inserted rectally

Common inhibitors and inducers of cytochrome P450 (CYP450)

Inhibitors

Cimetidine, amiodarone, erythromycin, ticlopidine, ciprofloxacin, omeprazole, fluconazole, bupropion, metoclopramide, quinidine, disulfiram, metronidazole, grapefruit juice, ritonavir, saquinavir

Lower the dose of a drug given with any of these

Inducers

Carbamazepine, phenytoin, rifampin, phenobarbital, isoniazid, alcohol, tobacco, dexamethasone, prednisone

Raise the dose of a drug given with any of these

ADME, the levels of pharmacokinetic interactions: **A**bsorption, **D**istribution, **M**etabolism, **E**limination