

DRUG INTERACTION

Description: Drug interactions can have desired, reduced or unwanted effects. The probability of interactions increases with the number of drugs taken. The high rate of prescribed drugs in elderly patients (65-year-old patients take an average of 5 drugs) increases the likelihood of drug interactions and thus the risk that drugs themselves can be the cause of hospitalization.

A drug interaction occurs when a patient's response to a drug is modified by food, nutritional supplements, formulation excipients, environmental factors, other drugs or disease. Interactions between drugs (drug–drug interactions) may be beneficial or harmful. Harmful drug–drug interactions are important as they cause 10–20% of the adverse drug reactions requiring hospitalisation and they can be avoided.

Types of drug–drug interactions

- Behavioural drug–drug interactions occur when one drug alters the patient's behaviour to modify compliance with another drug. For example, a depressed patient taking an antidepressant may become more compliant with medication as symptoms improve.
- Pharmaceutical drug–drug interactions occur when the formulation of one drug is altered by another before it is administered. For example, precipitation of sodium thiopentone and vecuronium within an intravenous giving set.
- Pharmacokinetic drug–drug interactions occur when one drug changes the systemic concentration of another drug, altering 'how much' and for 'how long' it is present at the site of action.
- Pharmacodynamic drug–drug interactions occur when interacting drugs have either additive effects, in which case the overall effect is increased, or opposing effects, in which case the overall effect is decreased or even 'cancelled out'.

We use five 'rules' to manage potential drug–drug interactions in clinical practice:

1. Any interactions between existing drugs in a given patient have already occurred. Hence they are part of differential diagnosis.
2. Knowledge of the pharmacological effects of drugs and of patient physiology together allows recognition of potential pharmacodynamic drug–drug interactions.
3. Drugs with a narrow therapeutic index are particularly susceptible to pharmacokinetic drug–drug interactions
4. A small number of drugs are important 'perpetrators' of pharmacokinetic drug–drug interactions.
5. Starting or stopping a drug is a prescribing decision that may cause a drug interaction. Monitoring patients for drug toxicity or loss of efficacy is part of routine care. Checking for changes in symptoms, biomarkers of effect, or drug concentrations soon after prescription changes helps identify drug interactions early and can reduce harm.

Conclusion

Most potential drug interactions can be recognised by applying principles of clinical pharmacology and good clinical care. Increased vigilance by clinicians at the time of changing

drugs improves the chance of identifying unwanted drug interactions before they cause significant harm.