

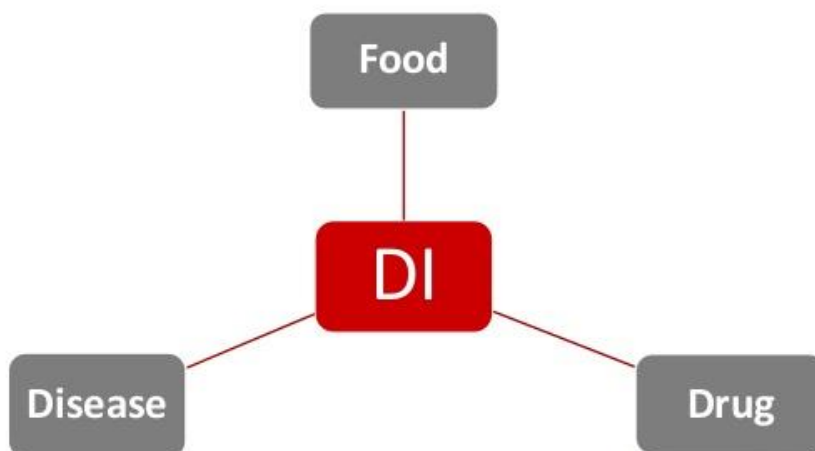


DRUG INTERACTIONS

A drug interaction is a change in the action or side effects of a drug caused by concomitant administration with a food, beverage, supplement, disease or another drug.

TYPES OF DRUG INTERACTIONS

Drug interactions can be categorised into 3 groups:



- Interactions of drugs with other drugs (drug-drug interactions)
- Drugs with food (drug-food interactions)
- Drug with disease condition (drug-disease interactions).

DRUG-DRUG INTERACTIONS

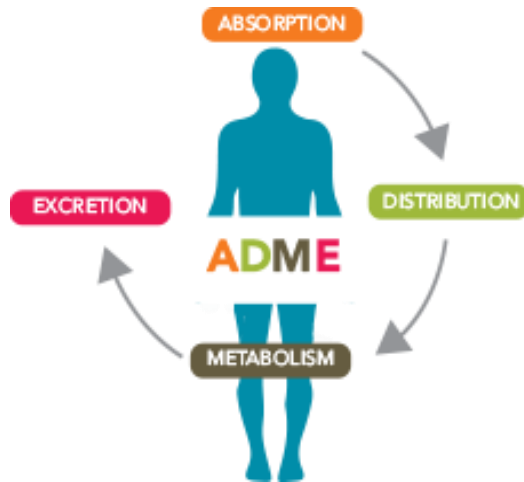
Drug-drug interactions occur when two or more drugs react with each other. This drug-drug interaction may cause you to experience an unexpected side effect.

MECHANISMS OF DRUG-DRUG INTERACTIONS

There are several mechanisms by which drugs may interact, but most can be categorized as,

- Pharmacokinetic (absorption, distribution, metabolism, excretion)
- Pharmacodynamic (additive, synergistic, or antagonistic effects)


Pharmacokinetic interactions occur when a drug alters the disposition (absorption, distribution, elimination) of a coadministered agent. Pharmacokinetic interactions may result in the increase or the decrease of plasma drug concentrations.




Pharmacodynamic interactions refers to interactions in which drugs influence each other's effects directly. As a rule, for example, sedatives can potentiate each other. The same is true of alcohol, which can potentiate the sedative effects of many drugs.


Pharmacodynamic Interactions

Pharmacodynamic interactions refer to medications that may exhibit similar pharmacological effects, thus the combination may have the ability to potentiate specific therapeutic or adverse effects.




**Antidepressant + Sleeping Pills
may increase risk of sedation**





**Blood Thinner + Antiplatelet
may increase risk of bleeding**



SOME OF THE EXAMPLES OF DRUG - DRUG INTERACTIONS

	Class	Names	Interaction	Effect
1.	Analgesics	Aspirin Acetaminophen	Increase gastric emptying Inhibition of gastric ADH Toxic metabolite of acetaminophen	Faster alcohol absorption Liver damage
2.	Anticonvulsant	Phenytoin	Induces phenytoin breakdown	Decrease effect
3.	Antihistamines	Chlorpheniramine	Increase CNS effect	sedation
4.	Antidiabetics	Chlorpropamide Glyburide Metformin	Increase risk of hypoglycemia	Unconsciousness Disulfiram like reaction Lactic acidosis
5.	BZDs	Diazepam	Increase effect	Sedation
6.	H ₂ Antagonists	Cimetidine	Inhibits ADH	Increases BAL levels

DRUG- FOOD INTERACTIONS

A drug-food interaction occurs when your food and medicine interfere with one another. Interactions can happen with both prescription and over-the-counter medicines. These include antacids, vitamins, and iron pills. Not all medicines are affected by food. Some of the examples are,

- Green, leafy vegetables, which are high in vitamin K, can decrease how well aspirin thins the blood. Consuming the same amount of green-leafy vegetables each day will decrease this interaction.
- Grapefruit juice alters the way the body absorbs statins (cholesterol-lowering drugs) like Lipitor in the blood. It can cause these drugs to be absorbed in higher than normal amounts resulting in a greater risk of side effects.
- Calcium channel blockers are prescribed for high blood pressure and are also affected by grapefruit juice. Grapefruit juice changes the way this drug breaks down in the body and may cause overly high levels of the drug in the blood, raising the risk of side effects.
- Dairy products such as milk, yogurt and cheese decrease the absorption of antibiotics. Try to eat meals one to two hours before taking these to avoid this interaction.

- Alcohol affects insulin or oral diabetic pills. Alcohol prolongs the effects of these drugs, which leads to low blood sugar.
- Moderate pain reliever drugs with acetaminophen should not be taken with alcohol because it has a higher chance of causing severe liver damage. Antihistamines, like Benadryl, should not be taken with alcohol because it will cause increased drowsiness.

Common foods and their interactions with various drugs:



DRUG-DISEASE INTERACTIONS

Drug-disease interactions (DDIs) are situations where the pharmacotherapy used to treat a disease causes worsening of another disease in a patient. In these circumstances drugs should be avoided (i.e., are contra-indicated), adjusted or accompanied by extra monitoring.

People should tell their doctor all of the diseases they have before the doctor prescribes a new drug. Diabetes, high or low blood pressure, an ulcer, glaucoma, an enlarged prostate, poor bladder control, and insomnia are particularly important, because people with such diseases are more likely to have a drug-disease interaction. Sometimes, drugs that are helpful in one disease are harmful in another disorder. For example,

- Beta-blockers taken for heart disease or high blood pressure can worsen asthma and make it hard for people with diabetes to tell when their blood sugar is too low.
- Some drugs taken to treat a cold may worsen glaucoma.

Drug-disease interactions can occur in any age group but are common among older people, who tend to have more diseases.

Drug-Disease interactions

1. Drug-condition interactions occur when a drug worsens or exacerbates an existing medical condition
2. Nasal decongestants+ Hypertension Increased blood pressure
3. NSAID'S+ Asthmatic patients Air way obstruction
4. Minoxidil+ Heart failure Fluid rentation
5. Calcium channel blocker + Heart failure Negative inotropic activity
6. Nicotine + high blood pressure Increased heart rate
7. Beta blockers+ Heart failure Worsen asthma
8. Metformin + Heart failure Increased lactate level