What is a drug interaction?

Drug interaction refers to two medications taken together that may influence each other’s actions. This may happen when one medication interferes with the uptake, breakdown, or excretion of another medication. Interference also may occur at receptor sites in the body that bind the active chemical components of medications. As a result, treatment effects may be weakened or strengthened.

How common are drug interactions?
Drug interactions are fairly common. Currently, there are about 800 documented drug interactions, not all of which are clinically important. The risk of experiencing an interaction is 10 percent to 20 percent for patients taking two or more medications. This risk increases with age; it is estimated that the risk of a serious interaction is about 5 percent in patients age 70 or older.

In addition to age, the seriousness of a drug interaction also depends on dosing, the medical condition being treated, and genetic factors. If the interaction weakens the effect of a medication, one possibility would be to increase its dose. If the effect is strengthened, the dose may be reduced.

Do only prescription medications cause interactions?
In addition to prescription medications, interactions can involve over-the-counter (OTC) medications, unregulated natural health products, dietary supplements, and certain foods.

Aspirin, a common ingredient in many pain killers, strengthens the effect of the blood thinner warfarin (Coumadin) and can lead to increased risk of bleeding. Acetaminophen, another common ingredient in pain medications, can interact with alcohol to cause liver damage.

Natural health products (health food supplements, herbal preparations) also may interfere with medications. St. John’s wort increases the breakdown of warfarin, oral contraceptives, and certain blood pressure-lowering agents such as verapamil (Calan and others), HIV medications, and those used to prevent rejection of transplanted organs. The problem with St. John’s wort is potentially serious, since it blocks the anticipated benefits of some essential drugs. Another potential problem may emerge if treatment with St. John’s wort is stopped, as this could lead to a rebound effect with strengthened actions of the medications being continued. Other natural health supplements (ginseng, gingko biloba, omega-3 fatty acids) and even foods (onions) have been reported to increase the risk of post-surgical bleeding.
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Food intake also may interfere with your medication. Many medications are supposed to be taken with a meal, while others should be ingested between meals. The medication package insert should state when a medication should be taken in relation to meals. For a few medications, it may also matter what you eat. Milk and certain cheeses could reduce the beneficial effect of tetracycline (an antibiotic). Grapefruit juice inhibits the breakdown of many medications and may lead to increased blood concentrations of other drugs that could result in serious adverse reactions.

**How can I reduce my risk of experiencing drug interactions?**

One important piece of advice is to stop taking medications you don’t need. Polypharmacy (see Chapter 37) increases the risks of adverse effects and drug interactions. This may be one reason why older adults have more serious drug interactions. Look at the package insert (see Chapter 15), which will inform you about any known interactions. Discussing concerns with your physician or pharmacist also is recommended. In these discussions, it is important that you mention any use of over-the-counter medications and natural health products. Your doctor should be able to determine whether you are at risk for any drug interactions.

An important safeguard is your pharmacist, who should be able to identify potential drug interactions based on your personal medication profile. Using the same pharmacy to fill your prescriptions is good in this case, because your medication profile remains up to date in the pharmacy database. A limitation of this program is that your pharmacy does not know whether you are taking natural health products, and their use is very common. Around 14 percent of adult Americans are estimated to be using natural health products or dietary supplements.

**Key messages**

- Medications taken together may weaken or strengthen each other’s actions.
- Such drug interactions are common and vary in severity from mild to serious.
- Over-the-counter medications, natural health products, and foods -- especially grapefruit juice -- may cause interactions with prescription medications.
- Your doctor or pharmacist can help you avoid drug interactions.