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## Drug Interactions

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For a drug to work properly, a person must take the correct dose at the correct time so that the right amount of drug enters the bloodstream. Before an HIV drug is approved, researchers study different doses and choose one that is both safe and effective. The dose has to be high enough to stop HIV from

making copies of itself, but not so high that it causes a lot of [side effects](#).

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Some prescription, over-the-counter, and recreational drugs, as well as herbs, vitamins, and supplements, can cause changes in the amount of HIV drugs in your bloodstream, even if you take the correct doses.

All people living with HIV who are on treatment take more than one HIV drug, even if they only take one pill. Some pills contain more than one drug; for example, Biktarvy contains the HIV drugs bicitegravir plus Emtriva (emtricitabine) and tenofovir alafenamide. Many people living with HIV take other types of medications as well. Some prescription, over-the-counter, and recreational drugs, as well as herbs, vitamins, and [supplements](#), can cause changes in the amount of HIV drugs in the bloodstream, even if the correct doses are taken. Some medicines need to be taken with food and others on an empty stomach. Certain foods and beverages, such as grapefruit juice or garlic, can also interact with some older HIV medications. Not following these recommendations can change drug levels in the blood.

When one drug affects the level of another drug, it is called an interaction. Some drug interactions do not cause problems, but some interactions can be harmful. It is important to discuss the possibility of drug interactions with your healthcare provider when choosing a new HIV drug combination, when adding or removing any drug from your regimen, or when you are taking a new drug for another condition.

## How Drugs Are Metabolized

The body metabolizes (breaks down) the drugs you take. This process involves the liver and kidneys:

- The liver makes chemicals called enzymes to break down the drug
- The kidneys filter the drug out of the bloodstream and into the urine
- The drug is removed from the body in urine or feces (poop)

Sometimes, one drug affects the way another drug is metabolized by slowing down or speeding up the action of liver enzymes. This can cause big changes in the blood levels of other drugs that are broken down by the same enzyme.

## Drugs That Slow Down Metabolism

Some drugs inhibit (slow down) the liver enzymes. This causes other drugs to be metabolized and removed from the system more slowly, which:

- Increases the amount of these other drugs in the body
- Increases the length of time other drugs stay in the bloodstream

This can be useful in HIV treatment. Here is an example: Norvir (ritonavir) is a protease inhibitor (PI) that makes the liver enzymes work more slowly. This keeps some other drugs in the body longer and at

higher levels. So, if Norvir is given with another PI, such as Reyataz (atazanavir), it "boosts" Reyataz. This means the amount of Reyataz in the blood is higher than it would be without Norvir.

As a result, one tablet of Reyataz can be taken once a day with a little Norvir instead of two tablets of Reyataz. The boosted regimen increases the amount of Reyataz in the body and lowers the chance of developing [resistance](#). Several other PIs can be boosted with Norvir. This can make the other PIs work better so that you can take lower doses and fewer pills. However, Norvir can also cause other types of

Tybost (cobicistat), a boosting agent and one of the drugs in several combination HIV drugs including Genvoya (emtricitabine + tenofovir alafenamide + elvitegravir + cobicistat), can cause higher levels of other drugs, much like Norvir does. For more information, see our [HIV Drug Chart](#).

Unfortunately, increased blood levels of drugs can also cause overdoses or increase [side effects](#). If you are taking a drug that slows down liver enzymes, your healthcare provider may need to adjust the doses of your other medications.

## Drugs That Speed Up Metabolism

Some drugs induce (speed up) the action of the liver enzymes. This causes other drugs to be metabolized and removed from the system more quickly, which:

- Decreases the amount of these other drugs in the body
- May cause other drugs to be less effective

Some drugs used to treat other medical conditions speed up liver enzymes. This can be a serious problem if it causes the HIV drugs to be metabolized too quickly. If HIV drug levels drop too low:

- HIV can make more copies of itself
- [Viral load](#) can go up
- [Resistance](#) can develop
- HIV drugs can stop working

Non-nucleoside reverse transcriptase inhibitors (NNRTIs), such as Viramune (nevirapine), speed up enzymes and remove some other drugs from the system more quickly. If you are taking a drug that speeds up liver enzymes, your healthcare provider may need to increase the doses of your other medications.

## Other Types of Drug Interactions

Some drugs work against each other and should not be taken together.

If drugs cause similar side effects, combining them may increase the amount or seriousness of those side effects. For example, combining Zerit (stavudine) with Videx (didanosine) may increase the risk of a serious condition called [lactic acidosis](#) (high levels of lactic acid, a waste product of your body's energy production, in the blood), especially in [pregnant](#) people. Pregnant people living with HIV should not take Zerit and Videx together.

Some drugs work against each other and should not be taken together. An example is Retrovir (zidovudine) and Zerit. Many of these drugs are rarely used in the US today.

## Drugs and Other Substances That May Interact with HIV Medications

There is a long list of prescription, over-the-counter, [complementary](#), and recreational drugs that may

have major interactions with HIV medications. Food can also change the way HIV drugs are absorbed (soaked up) by the body. Below are a few examples:

## Birth Control Pills

[Birth control pills](#) containing ethinyl estradiol (a form of estrogen) can interact with HIV drugs. This can make the birth control pills less effective and increase the chances of pregnancy. If your HIV drugs affect hormone levels from your birth control pills, talk with your provider about switching to or adding another form of birth control.

## Complementary Therapies

Many people living with HIV use [complementary therapies](#) such as vitamins or herbs. While most of these have not been studied with HIV drugs, St. John's Wort (an herbal anti-depressant) has been shown to affect the levels of some HIV drugs. People taking HIV drugs should **not** take St. John's Wort. Garlic supplements should not be taken with any PIs or NNRTIs. Other supplements, such as calcium or iron, can prevent your body from absorbing integrase inhibitors, such as Vitekta (elvitegravir) or Tivicay (dolutegravir). Both of these drugs are also included in some combination pills. It is important to tell your healthcare provider if you take any vitamins, herbs, or supplements.

## Recreational (Street) Drugs and Alcohol

There have been reports of overdoses, some fatal, caused by taking recreational drugs (also known as street, party, or club drugs) together with HIV drugs. Interactions between the following street drugs and boosting agents – Norvir (ritonavir) and Tybost (cobicistat) – are particularly dangerous:

There have been reports of overdoses, some fatal, caused by taking recreational drugs (also known as street, party, or club drugs) together with HIV drugs.

- Crystal methamphetamine (meth, crystal, speed, crank, no doze)
- MDMA (ecstasy, E, X)
- Mephedrone (meow meow, white magic, m-cat)
- Ketamine (vitamin K, special K, K, kit kat)

[Alcohol](#) affects body processes and is often responsible for drug interactions. Combining alcohol and certain HIV drugs such as Videx (didanosine) can put you at risk for developing pancreatitis (inflammation of the pancreas, an organ that helps digestion and regulates blood sugar). In general, though, it is safe to drink socially and take your HIV drugs.

## Methadone and Buprenorphine

[Methadone and buprenorphine](#), which are used to treat opioid addiction, can interact with many HIV drugs. It is important to tell both the healthcare provider at your opioid treatment program and your HIV healthcare provider what you are taking. This way, they can make sure that you get enough methadone or buprenorphine to prevent withdrawal symptoms, and enough HIV drugs to fight the virus effectively.

## Other Types of Drugs That May Interact with HIV Drugs

There are certain classes of drugs to treat various medical conditions that are more likely to interact with HIV drugs. Not all drugs in these classes will cause problems. If you take any of the following types of drugs, talk to your healthcare provider about the specific drugs you take and whether there are any possible interactions. **Note:** *this is not a complete list; other classes of drugs may also cause interactions.*

- Antianxiety drugs (a class of drugs called benzodiazepines, also known as benzos, and including Valium and Xanax)
- Antifungal drugs
- Antibiotics
- Antacids or prescription heartburn medicines
- Antihistamines and nasal sprays (allergy medications)
- Opioid-based pain killers (narcotics)
- Drugs to treat:
  - Convulsions or seizure disorders
  - [High cholesterol](#)
  - [Depression](#)
  - Problems with heart rhythm
  - Erectile dysfunction (e.g., Viagra, Cialis, Levitra)
  - [Tuberculosis](#)
  - [Hepatitis C](#)
- Drugs that:
  - Increase bowel activity
  - Thin the blood

## Food

Any pills that you take go through your stomach. What you eat can affect how much of your drugs get into your system. Most drugs are absorbed faster if your stomach is empty. For some drugs, this is a good thing, but it can also cause more side effects. Some drugs need to be taken with food so that they are broken down more slowly, or to reduce their side effects. Others should be taken with fatty foods because they dissolve in fat and are absorbed better when there is also fat in the stomach.

Check your drug labels and follow the food instructions carefully. If you have any questions, ask your healthcare provider or pharmacist. If you have trouble getting the right kinds of foods, ask your local social service or AIDS service organization. They may be able to help you apply for assistance or find a food pantry.

## Taking Care of Yourself

People living with HIV often have to take many different drugs. Sometimes taking more than one medication can cause drug interactions. This can lead to the drugs not working as well, or to an increased risk of side effects.

Because there are so many possible drug interactions with HIV drugs, it is very important for you and your healthcare provider to go over all your medications, including over-the-counter, prescription, street drugs, and complementary therapies, even if you only use them occasionally. Your provider may need to adjust the doses of your drugs or change the drugs you currently take.

To get the best results, it is a good idea to:

- Keep a list of all your drugs and ask your healthcare provider to review it for possible interactions
- Give a copy of your drug list to all of your healthcare providers
- Discuss all your medical conditions with your healthcare provider
- Each time you are prescribed a new medication, check with your healthcare provider to see if it can be combined safely with your other therapies
- Read the information that comes with each medication (the "[package insert](#)"); ask for this information for each drug that you are taking
- Have all your prescriptions filled at the same pharmacy

- Learn about all possible [side effects](#) of your drugs
- Learn how, when, and with what to take your drugs
- **Do not stop or change your drugs** without talking to your healthcare provider
- Tell your healthcare provider about any side effects

*The Well Project is a non-profit organization whose mission is to change the course of the HIV/AIDS pandemic through a unique and comprehensive focus on women and girls. We are a recognized leader in the fight against HIV, revolutionizing the availability and accessibility of meaningful and relevant information designed specifically for women and girls living with HIV. The Well Project does not control, promote, distribute, endorse or market prescribed substances associated with the treatment of HIV/AIDS or related diseases and should in no way take precedence over the qualified assessment and diagnosis of a medical professional or certified physician/doctor. The information contained on this website is for educational purposes only.*

## Additional Resources

Select the links below for additional material related to drug interactions.

- [For Providers: Drug-Drug Interactions \(HIV Guidelines: HIV.gov\)](#)
- [Interactions Between HIV Treatment and Recreational Drugs \(aidsmap\)](#)
- [HIV Drug Interaction Checker \(University of Liverpool\)](#)
- [Food Requirements for Anti-HIV Medications \(aidsmap\)](#)
- [Hepatitis Drug Interaction Checker \(University of Liverpool\)](#)
- [HIV Treatment and Drug-Drug Interactions \(aidsmap\)](#)
- [What Is a Drug Interaction? \(HIVinfo\)](#)
- [Interactions With Other Drugs \(Terrence Higgins Trust, UK\)](#)
- [Medication and Drug Interactions: A Training Curriculum for Community Health Wo...](#)
- [For Providers: National Clinician Consultation Center: Pharmacy \(University of ...\)](#)
- [Interactions Between HIV Treatment and Recreational Drugs \(aidsmap\)](#)



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