ANTI-HIV DRUG INTERACTIONS

a guide to the interactions found between anti-hiv drugs and common hiv-related therapies

With the number of drugs available to treat HIV and with those that prevent or treat opportunistic infections (OIs), the potential for drug interactions increases. Developing a health management plan and deciding which therapies to include in that plan may seem a daunting task. Not only does each therapy have possible side effects, but each might increase or decrease the benefit of the other drugs you take.

Drug interactions can take various forms, occurring immediately or over several weeks. Some drugs simply should not be used together, while others can be combined only if done with careful monitoring to detect emergency problems. Interactions can also occur when one therapy alters the effect of another. This includes how the other is absorbed in the body, broken down (metabolized), distributed or excreted.

A common interaction can occur when two drugs have similar side effect profiles. For example, both ddl and ddC can cause a tingling or pain in the legs, hands or feet (peripheral neuropathy). It’s not recommended that they be used together because the similar side effects may increase the potential for neuropathy. Similarly, AZT and ganciclovir (a treatment for CMV) may both cause bone marrow suppression, resulting in anemia. However, adding a third drug, G-CSF (Neupogen), can help manage this interaction. In addition, higher blood levels of a drug increase the chance of more side effects.
As it has become standard medical practice to prevent multiple OIs with different drugs, drug interactions become more of a concern. In some prevention regimens, drug interactions may even cause more harm than good. For example, one drug might reduce the blood levels of another drug, leading to drug resistance. This could result in a particular disease (like HIV or hepatitis) becoming unresponsive to treatment. The added toxicity of many therapies taken together may also outweigh their hopeful benefit for preventing disease. Therefore, healthcare providers and people with HIV should make informed decisions about combining therapies and OI prevention regimens and should carefully check for drug interactions and other side effects.

Unfortunately, most drug interaction studies have compared only two drugs, although most people with HIV often take many more than two. As a result, very little is known about how all the commonly used drugs interact with each other. In the meantime, it’s important to discuss possible drug interactions with your doctor and pharmacist. Before starting a new therapy (experimental, approved or complementary), consider the possible drug interactions and side effects. Not everyone experiences side effects; and many drug interactions can be managed by monitoring carefully, adjusting the doses, or stopping the therapy as needed.

The following chart should only be used as a guide for possible drug interactions. Remember that these interactions might occur in some people, but not in others. This chart was put together with information from prescription package inserts, anecdotal reports, discussions with pharmacologists and doctors who treat HIV disease, and discussions with drug companies.

glossary and instructions
Throughout the text of drug interactions on pages 3–27, you may find terms and instructions you’re not familiar with. A glossary of these terms and dosing instructions can be found on page 27.
**Abacavir (Ziagen) plus ...**

- **3TC**
  - Decreases 3TC level by 15% in blood. No dose adjustment recommended.

- **Alcohol**
  - Should be used together with caution. Increases abacavir level by 41% in blood. No dose adjustment recommended.

- **Amprenavir**
  - Increases amprenavir level by 29% in blood. No dose adjustment recommended.

- **AZT**
  - Increases AZT level by 10% in blood. No dose adjustment recommended.

- **Chloral hydrate**
  - Should be used together with caution. May increase chloral hydrate level in blood.

- **Methadone**
  - May decrease methadone level in blood. Check for methadone withdrawal symptoms and adjust methadone dose accordingly.

- **Tenoxicam**
  - Should be used together with caution. Although blood levels not affected, tenoxicam and abacavir used in combination may speed the development of resistance to both.

**Acyclovir (Zovirax) plus ...**

- **Probenecid**
  - Increases acyclovir level in blood.

**Adefovir (Hepsera) plus ...**

- **Amikacin**
  - Should not be used together. Increases risk of kidney toxicity.

- **Amphotericin B**
  - Should not be used together*. Increases risk of kidney toxicity.

- **Cidofovir**
  - Should not be used together*. Increases risk of kidney toxicity.

- **Flucytosine**
  - Should be used together with great caution. May increase risk of kidney toxicity.

- **Flucytosine**
  - Should be used together with caution. May increase risk of kidney toxicity.

**Amphotericin B (Fungizone) plus ...**

- **Adefovir**
  - Should not be used together*. Increases risk of kidney toxicity.

- **Amikacin**
  - Should be used together with great caution. May increase risk of kidney toxicity.

**Amprenavir (Agenerase) plus ...**

- **Adefovir plus ... (continued)**

- **Tobramycin**
  - Should not be used together*. Increases risk of kidney toxicity.

**Amphotericin B plus ... (continued)**

- **Miconazole**
  - May interfere with the activity of amphotericin B.

- **Penicillin IV**
  - Should be used together with great caution. May increase risk of kidney toxicity.

- **Tenoxicam**
  - Should not be used together*. May increase risk of kidney toxicity.

- **Clozapine**
  - May increase clozapine level in blood.
Amprenavir plus ... (continued)

- Dapsone
  May increase dapsone level in blood.
- ddI or ddI EC
  Should be taken 1 hour before or after taking ddI tablets. ddI EC may be taken at the same time as ampranavir, but only on an empty stomach.
- Delavirdine
  May increase ampranavir level in blood. No dose adjustment recommended.
- Diazepam
  May increase diazepam level in blood.
- Dihydroergotamine
  Should not be used together*. Increases risk of side effects.
- Dilatiazem
  May increase dilatiazem level in blood.
- Disulfiram
  Should not be used together with ampranavir oral solution*. Increases risk of side effects.
- Efavirenz
  Decreases ampranavir level by 36% and increases efavirenz level by 15% in blood. Ampranavir dose may need to be increased.
- Ergotamine
  Should not be used together*. Increases risk of side effects.
- Erythromycin
  May increase erythromycin and ampranavir levels in blood.
- Ethinyl estradiol
  Should not be used together. Ampranavir may decrease ethinyl estradiol and norethindrone levels in blood. Use another form of contraception.
- Felodipine
  May increase felodipine level in blood.
- Flurazepam
  May increase flurazepam level in blood.
- Food (high fat)
  Decreases ampranavir level in blood and should be avoided.
- Indinavir
  Increases ampranavir level by 33% and decreases indinavir level by 38% in blood. No dose adjustment recommended.
- Itraconazole
  May increase itraconazole and ampranavir level in blood. Check for toxicity.
- Kaletra
  Decreases lopinavir level by 15% and increases ampranavir trough level about 2-fold in blood. Ampranavir dose should be reduced to 750mg twice a day or less. However, optimal dose is unclear.
- Ketoconazole
  Increases ampranavir level by 31% and increases ketoconazole level by 44% in blood. Impact of interaction is uncertain.
- Lidocaine (systemic)
  Should be used together with caution. Requires monitoring concentration of lidocaine.
- Loratidine
  May increase loratidine level in blood.
- Lovastatin
  Should be used together with great caution. May increase lovastatin level in blood.
- Metronidazole
  Should not be used together with ampranavir oral solution*. Increases risk of side effects.
- Midazolam
  Should not be used together*. Increases risk of side effects.
- Nelfinavir
  Increases nefinavir level by 15% in blood. No dose adjustment recommended.
- Nevirapine
  May decrease ampranavir level in blood. Dose of ampranavir may need to be increased.
- Norethindrone
  Should not be used together. Ampranavir may decrease ethinyl estradiol and norethindrone levels in blood. Use another form of contraception.
- Nicardipine
  May increase nicardipine level in blood.
- Nifedipine
  May increase nifedipine level in blood.
- Nimodipine
  May increase nimodipine level in blood.
- Phenobarbital
  Should be used together with caution. May decrease ampranavir level in blood.
- Phenytoin
  Should be used together with caution. May decrease ampranavir level in blood.
- Pravastatin
  Should be used together with great caution. May increase pravastatin level in blood.
- Quinidine
  Should be used together with caution. Requires monitoring concentration of quinidine.
- Rifabutin
  Decreases ampranavir level by 15% and increases rifabutin level by 193% in blood. A lower dose of rifabutin required.
- Rifampin
  Should not be used together*. Significantly decreases ampranavir level in blood.
- Ritonavir
  Increases ampranavir level by 70% in blood. Alternate dosing is ampranavir 600mg + ritonavir 100mg twice a day, or ampranavir 1200mg + ritonavir 200mg once daily.
- Saquinavir (Fortovase)
  Increases ampranavir level by 32% and saquinavir level by 19% in blood. A lower dose of saquinavir required.
- Sildenafil
  Should be used together with caution. May increase sildenafil level in blood.
- Simvastatin
  Should be used together with great caution. May increase simvastatin level in blood.
- St. John's Wort
  Should be used together with great caution. May significantly decrease ampranavir level in blood.
- Tadalafil
  Should be used together with caution. May increase tadalafil level in blood.
- Triazolam
  Should not be used together*. Increases risk of side effects.
- Tricyclic antidepressants
  Should be used together with caution. Requires monitoring concentration of tricyclic antidepressants.
- Vardenafil
  Should be used together with caution. May increase vardenafil level in blood.
- Vitamin E
  Amprenavir capsules contain more than the recommended daily allowance for vitamin E. Additional supplementation, especially when used together with drugs like warfarin could result in hemorrhage.
- Warfarin
  Should be used together with caution. Requires monitoring concentration of warfarin.

Amprenavir plus ... (continued)

Atazanavir (Reyataz) plus...

- Amiodarone
  Increases risk of side effects. Check amiodarone level and use with caution.
- Amprenavir
  Atazanavir may increase ampranavir levels in blood.
- Antacids
  May decrease atazanavir level in blood. Take atazanavir 2 hours before or 1 hour after taking antacids.
- Atonavastatin
  Should be used together with great caution. May increase risk of side effects.
- Bepridil
  Should not be used together*. Increases risk of side effects.
- Calcium channel blockers
  Should be used together with great caution. Decrease dose of calcium channel blockers and check ECG.
- Cisapride
  Should not be used together*. Increases risk of side effects.
- Clarithromycin
  Increases risk of side effects and may decrease effectiveness of clarithromycin. Consider alternatives or reduce clarithromycin dose by at least 50%.
- Cyclosporin
  Should be used together with caution. Check cyclosporine level.
Atazanavir plus … (continued)

> ddI or ddI EC
  ddI buffered tablets can significantly decrease atazanavir level in blood. Take atazanavir (with food) either 2 hours before or 1 hour after buffered ddI tablets. Although ddI EC should not affect atazanavir level, they should be taken at least 1 hour apart. Atazanavir should be taken with food, and ddI EC should be taken on an empty stomach.

> Diltiazem
  Should be used together with great caution. Decrease diltiazem dose by at least 50% and check ECG.

> Ergot derivatives
  Should not be used together*. Increases risk of side effects.

> Efavirenz
  Decreases atazanavir level in blood. Atazanavir should be boosted with ritonavir if used with efavirenz.

> Ethinyl estradiol
  Should be used together with caution. Atazanavir increases ethinyl estradiol level in blood. Use lowest effective ethinyl estradiol dose.

> Food
  High fat meal increases atazanavir by 35% and low fat meal increases atazanavir level by 70% in blood. Atazanavir should be taken with food.

> Indinavir
  Should not be used together*. Increases risk of side effects.

> Irinotecan
  Atazanavir may interfere with irinotecan metabolism. May increase irinotecan side effects.

> Lidocaine (systemic)
  Increases risk of side effects. Check lidocaine level and use with caution.

> Lovastatin
  Should not be used together*. Increases risk of side effects.

> Midazolam
  Should not be used together*. Increases risk of side effects.

> Norethindrone
  Should be used together with caution and decrease norethindrone dose to lowest effective dose. May increase norethindrone side effects, particularly in diabetic women.

> Pimozide
  Should not be used together*. Increases risk of side effects.

> Proton-pump inhibitors
  Should not be used together. May significantly decrease atazanavir level in blood.

> Quinidine
  Increases risk of side effects. Check quinidine level and use with caution.

> Rifabutin
  Increases rifabutin level. Decrease dose of rifabutin to 150mg every other day or 3 times a week.

> Rifabutin
  Should not be used together. Decreases level of most protease inhibitors in blood.

Atazanavir plus … (continued)

> Ritonavir
  Substantially increases atazanavir blood level. If combined, use atazanavir 300mg (with food) + ritonavir 100mg once daily.

> Saquinavir (Fortovase)
  Increases saquinavir level by 5–6 fold in blood. Dose adjustments currently under study.

> Sildenafil
  Increases sildenafil blood level. Decrease sildenafil dose to 25mg every 48 hrs and check for side effects.

> Simvastatin
  Should not be used together*. Increases risk of side effects.

> Sirolimus
  Should be used together with caution. Check sirolimus level.

> St. John’s Wort
  Should not be used together. May reduce atazanavir level in blood.

> Tacrolimus
  Should be used together with caution. Check tacrolimus level.

> Tedalafil
  Should be used together with caution. May increase tadalafil level in blood.

> Tenofovir
  Increases tenofovir level by 24% and decreases atazanavir level by up to 40% in blood. Atazanavir should be boosted with ritonavir if used with tenofovir.

> Triazolam
  Should not be used together*. Increases risk of side effects.

> Tricyclic antidepressants
  Increases risk of side effects. Check antidepressant level and use with caution.

> Vardenafil
  Should be used together with caution. May increase vardenafil level in blood.

> Warfarin
  Should be used together with caution. May increase warfarin level in blood.

Atovaquone (Mepron) plus …

> AZT
  May increase AZT level in blood. No dose adjustment recommended.

> Cyclosporine
  May increase cyclosporine level in blood.

> ddI or ddI EC
  May increase ddI level in blood. No dose adjustment recommended.

> Digoxin
  May increase digoxin level in blood.

> Ergot derivatives
  May increase ergot drug level in blood.

> Food
  Azithromycin may be taken with or without food.

> Hexobarbital
  May increase hexobarbital level in blood.

> Midazolam
  May increase midazolam level in blood. No dose adjustment recommended.

> Nelfinavir
  Should be used together with caution. Increases azithromycin level in blood. No dose adjustment recommended, but check for hearing and liver side effects.

> Phenytoin
  May increase phenytoin level in blood.

> Rifabutin
  May increase rifabutin level in blood. No dose adjustment recommended.

> Theophylline
  May increase theophylline level in blood. No dose adjustment recommended.

> Terfenadine
  May increase terfenadine level in blood.

> Warfarin
  May increase warfarin level in blood.

Azithromycin (Zithromax) plus …

> AZT
  May increase AZT level in blood. No dose adjustment recommended.

Atovaquone plus … (continued)

> Azithromycin (Zithromax) plus …
  Increases TMP/SMX blood level by 17% and 8%, respectively. No dose adjustment recommended.

Birth control pills

See section on Ethinyl estradiol.

Cidofovir (Vistide) plus …

> Adefovir
  Should not be used together*. Increases risk of kidney toxicity.

> Amikacin
  Should not be used together*. Increases risk of kidney toxicity.

> Amphotericin B
  Should not be used together*. Increases risk of kidney toxicity.

> Foscarnet
  Should not be used together*. Increases risk of kidney toxicity.
### Drug Interactions

**Cidofovir plus ... (continued)**

- Gentamicin  
  Should not be used together*. Increases risk of kidney toxicity.
- Kanamycin  
  Should not be used together*. Increases risk of kidney toxicity.
- Pentamidine (IV)  
  Should not be used together*. Increases risk of kidney toxicity.
- Probenecid  
  Needs to be taken together to decrease the risk of kidney toxicity.
- Streptomycin  
  Should be used together with great caution. Increases risk of kidney toxicity.
- Tobramycin  
  Should not be used together*. Increases risk of kidney toxicity.

**Ciprofloxacin (Cipro) plus ...**

- Antacids  
  Needs to be taken 2 hours before or 6 hours after taking ciprofloxacin, otherwise decreases ciprofloxacin level in blood.
- Caffeine  
  May increase caffeine level in blood.
- Cyclosporine  
  May increase risk of elevated serum creatinine.
- ddl or ddl EC  
  Ciprofloxacin needs to be taken 2 hours before or 6 hours after ddl buffered tablets, otherwise ddl may decrease ciprofloxacin level in blood. Ciprofloxacin may be taken at the same time as ddl EC capsules.
- Food  
  May be taken with or without food, but preferred time of dosing is 2 hours after a meal.
- Iron supplements  
  Needs to be taken 2 hours before or 6 hours after taking ciprofloxacin, otherwise decreases ciprofloxacin level in blood.
- Methotrexate  
  May increase blood level of methotrexate. If used together, check for methotrexate side effects.
- Probenecid  
  Increases ciprofloxacin level in blood.
- Sucralfate  
  Needs to be taken 2 hours before or 6 hours after taking ciprofloxacin, otherwise decreases ciprofloxacin level in blood.
- Theophylline  
  Should not be used together*. Increases risk of serious side effects. If concurrent use cannot be avoided, check theophylline level and adjust dose.
- Warfarin  
  May increase warfarin level in blood. Check for warfarin toxicity.

**Ciprofloxacin plus ... (continued)**

- Zinc-containing multivitamins  
  Needs to be taken 2 hours before or 6 hours after taking ciprofloxacin otherwise decreases ciprofloxacin level in blood.

**Clarithromycin (Biaxin) plus ...**

- Alprazolam  
  May increase midazolam blood level. Check for alprazolam side effects.
- Amprenavir  
  Increases amprenavir level by 18% in blood. No dose adjustment recommended.
- Anticoagulants  
  May increase anticoagulants effect. Check prothrombin (coagulation) time.
- Astemizole  
  Should not be used together*. May increase risk of heart problems.
- Atazanavir  
  Increases risk of side effects and may decrease clarithromycin effectiveness. Consider alternatives or reduce clarithromycin dose by at least 50%.
- Atorvastatin  
  May increase risk of atorvastatin side effects.
- AZT  
  Decreases AZT level by 25% in blood. Consider taking at least 2 hours apart.
- Carbamazepine  
  Increases carbamazepine level in blood. Check carbamazepine level.
- Cisapride  
  Should not be used together*. Increases risk of side effects.
- Cyclosporine  
  May increase cyclosporine level in blood.
- Delavirdine  
  Interaction is complex. Clarithromycin dose should be adjusted for people with kidney problems.
- Diclofenac  
  May increase diclofenac level in blood. Check diclofenac level.
- Disopyramide  
  May increase risk of side effects. Check disopyramide level and QTc prolongation.
- Efavirenz  
  Slightly increases efavirenz level but decreases clarithromycin level by 39% (increases 14-OH clarithromycin level by 34%) in blood. No dose adjustment currently recommended.
- Ergot derivatives  
  Should be used together with caution. May increase risk of serious side effects.
- Fluvastatin  
  May increase risk of fluvastatin side effects.
- Indinavir  
  Increases clarithromycin level by 53% and indinavir level by 29% in blood. No dose adjustment recommended.
- Kaletra  
  Increases clarithromycin level in blood. Clarithromycin dose should be decreased for people with kidney dysfunction.

**Clarithromycin plus ... (continued)**

- Loratadine  
  May affect loratadine and clarithromycin levels in blood. No dose adjustment currently recommended.
- Lovastatin  
  May increase risk of lovastatin side effects.
- Midazolam  
  May increase midazolam blood level. Check for midazolam side effects.
- Nevirapine  
  Consider using alternatives to clarithromycin. Decreases clarithromycin level by 30% and increases nevirapine level by 26% in blood.
- Pimozide  
  Should not be used together*. Increases risk of serious side effects.
- Phenytoin  
  May increase phenytoin level in blood.
- Pravastatin  
  May increase risk of pravastatin sides effects.
- Quinidine  
  May increase risk of side effects. Check quinidine level and QTc prolongation.
- Rifabutin  
  Should be used together with caution. May increase rifabutin level and decrease clarithromycin level in blood.
- Rifampin  
  Should be used together with caution. May decrease clarithromycin level in blood.
- Ritonavir  
  Increases clarithromycin level by 77% and increases ritonavir level by 12% in blood. Requires lower dose of clarithromycin and monitoring for kidney toxicity in people with a history of kidney problems.
- Saquinavir (Fortovase)  
  Increases saquinavir level by 177% and increases clarithromycin level by 45% (but decreases 14-OH clarithromycin level by 24%) in blood. No dose adjustments currently recommended.
- Sildenafil  
  May affect sildenafil level in blood. Consider dose reduction.
- Simvastatin  
  May increase risk of simvastatin side effects.
- St. John’s Wort  
  Should be used together with great caution. May decrease clarithromycin level in blood.
- Tedalafil  
  Should be used together with caution. May increase tedalafil level in blood.
- Theophylline  
  Increases theophylline level in blood. Check theophylline level.
- Triamcinolone  
  May increase triamcinolone level in blood. Check for triamcinolone side effects.
- Trimetrexate  
  May affect trimetrexate and/or clarithromycin level in blood.
**Clarithromycin plus ... (continued)**

- Vardenafil
  - Should be used together with caution. May increase vardenafil level in blood.
- Warfarin
  - Check prothrombin (coagulation) time.

**Clindamycin (Cleocin) plus ...**

- Erythromycin
  - Should not be used together*. Causes erythromycin and clindamycin to be less effective.
- Neuromuscular blocking agents
  - May increase neuromuscular blocking effect.

**Clomazineline (Lamprene) plus ...**

- Dapsone
  - May decrease effectiveness of clomazineline.

**Combivir plus ...**

  *Combivir is a single pill containing 2 anti-HIV drugs—AZT and 3TC. If you take Combivir as part of your regimen, refer separately to drug interactions for AZT and 3TC.*

- Alcohol
  - May increase risk of seizures.
- Ethionamide
  - May increase risk of central nervous system related toxicity.
- Isoniazid
  - May increase risk of central nervous system related toxicity.

**Dapsone plus ...**

- Amprenavir
  - May increase dapsone level in blood.
- AZT
  - May increase risk of bone marrow toxicity.
- Clofazimine
  - May decrease effectiveness of clofazimine.
- ddC
  - May increase risk of peripheral neuropathy.
- ddI
  - May decrease effectiveness of ddI buffered tablets and dapsone need to be taken 2 hours apart, otherwise dapsone has no activity.
- Ganciclovir
  - May increase risk of bone marrow toxicity.
- Probenecid
  - Should be used together with caution. May increase dapsone level in blood and increase risk of side effects.
- Pyrimethamine
  - May increase risk of bone marrow toxicity.
- Rifabutin
  - Should be used together with caution. May decrease dapsone level in blood.

**Dapsone plus ... (continued)**

- Rifampin
  - Should be used together with caution. Decreases dapsone level 7-10 times in blood.
- Saquinavir (Invirase)
  - May increase dapsone level in blood. Check for side effects.
- TMP / SMX
  - Increases trimethoprim level by 1.5 times; increases dapsone level by 1.5 times in blood.

**Delavirdine (Rescriptor) plus ...**

- Alprazolam
  - Should not be used together*. Increases risk of side effects.
- Amlodipine
  - Should be used together with caution. May increase amlodipine level in blood. Check for toxicity.
- Amphetamines
  - Should be used together with caution. May increase amphetamine level in blood.
- Amprenavir
  - May increase amnepromavir level in blood. No dose adjustment recommended.
- Antacids
  - Needs to be taken 1 hour apart, otherwise decreases delavirdine level by 44% in blood.
- Astemizole
  - Should not be used together*. Increases risk of side effects.
- Atorvastatin
  - Should be used together with great caution. Use lowest possible dose of atorvastatin. May increase risk of side effects.
- Barbiturates
  - May increase delavirdine level in blood.
- Bepridil
  - Should be used together with caution. May increase bepridil level in blood and side effects.
- Carbamazepine
  - Should not be used together. May significantly decrease delavirdine level in blood.
- Cimetidine
  - Should be used together with caution. May decrease delavirdine level in blood.
- Cisapride
  - Should not be used together*. Increases risk of side effects.
- Clarithromycin
  - Increases delavirdine level by 31% and increases clarithromycin level by 100% (but decreases 14-OH clarithromycin level by 75%) in blood. Clarithromycin dose should be adjusted for people with kidney problems.
- Cyclosporine
  - Should be used together with caution. May increase cyclosporine level in blood. Check cyclosporine level.
- ddI or ddC
  - Needs to be taken 1 hour apart, otherwise decreases delavirdine level in blood.

**Delavirdine plus ... (continued)**

- Dexamethasone
  - Should be used together with caution. May decrease delavirdine level in blood.
- Dihydroergotamine
  - Should not be used together*. Increases risk of side effects.
- Dilatazem
  - Should be used together with caution. May increase diltiazem level in blood. Check for toxicity.
- Ergonovine
  - Should not be used together*. Increases risk of side effects.
- Ergotamine
  - Should not be used together*. Increases risk of side effects.
- Erythromycin
  - May increase delavirdine level in blood.
- Ethinyl estradiol
  - May increase ethinyl estradiol level in blood. Impact of interaction is uncertain.
- Famotidine
  - Should be used together with caution. May decrease delavirdine level in blood.
- Felodipine
  - Should be used together with caution. May increase felodipine level in blood. Check for toxicity.
- Flucainide
  - Should be used together with caution. Check flucainide level.
- Fluoxetine
  - Increases delavirdine level by 50% in blood.
- Fluvoxamine
  - Should be used together with great caution. Use lowest possible dose of fluvoxamine. May increase risk of side effects.
- Fosamprenavir
  - Should not be used together. May significantly decrease fosamprenavir level in blood.
- Indinavir
  - Increases indinavir level 50-100% in blood. Indinavir may be reduced to 600mg 3 times a day.
- Isradipine
  - Should be used together with caution. May increase isradipine level in blood. Check for toxicity.
- Itraconazole
  - May increase delavirdine level in blood.
- Kalastra
  - May increase lopinavir level in blood. Needs further study.
- Ketoconazole
  - Increases delavirdine level by 50% in blood.
- Lansoprazole
  - Should be used together with caution. May decrease delavirdine level in blood.
- Lidocaine (systemic)
  - Should be used together with caution. Check lidocaine level.
- Loratadine
  - Should be used together with caution. May increase loratadine level in blood.
### Delavirdine plus ... (continued)

- **Lovastatin**  
  - Should not be used together*. Increases risk of side effects.

- **Methadone**  
  - Increases methadone level in blood. May require lower dose of methadone.

- **Methylergonovine**  
  - Should not be used together*. Increases risk of side effects.

- **Midazolam**  
  - Should not be used together*. Increases risk of side effects.

- **Nelfinavir**  
  - Increases nelfinavir level about 100% but decreases nelfinavir active metabolite by about 45%. Decreases delavirdine level by about 40% in blood. No data exist to guide dose adjustments.

- **Nicardipine**  
  - Should be used together with caution. May increase nicardipine level in blood. Check for toxicity.

- **Nifedipine**  
  - Should be used together with caution. May increase nifedipine level in blood. Check for toxicity.

- **Nisoldipine**  
  - Should be used together with caution. May increase nisoldipine level in blood. Check for toxicity.

- **Midazolam**  
  - Should not be used together*. Increases risk of side effects.

- **Propafenone**  
  - Should be used together with caution. Check propafenone level.

- **Quinidine**  
  - Should be used together with caution. Check quinidine level.

- **Ranitidine**  
  - Should be used together with caution. May decrease delavirdine level in blood.

- **Rapamycin**  
  - Should be used together with caution. May increase rapamycin level in blood. Check rapamycin level.

- **Rifabutin**  
  - Should not be used together*. Significantly decreases delavirdine level and increases rifabutin level in blood.

- **Rifampin**  
  - Should not be used together*, otherwise significantly decreases delavirdine level in blood.

### Didanosine (ddl, Videx) or (ddl EC, Videx EC) plus ...

**EC stands for Enteric Coated.**

- **Alcohol**  
  - Heavy alcohol intake may increase risk of pancreatitis.

- **Allopurinol**  
  - Should not be used together. Increases ddl level 113–312% in blood.

- **Amphenirin**  
  - Should be taken 2 hours after or 1 hour after taking ddl tablets.ddl EC may be taken at the same time as amphenirin, but only on an empty stomach.

- **Atazanavir**  
  - ddl buffered tablets can significantly decrease atazanavir level in blood. Take atazanavir (with food) either 2 hours before or 1 hour after buffered ddl tablets. Although ddl EC should not affect atazanavir level, they should be taken at least 1 hour apart. Atazanavir should be taken with food and ddl EC should be taken on an empty stomach.

- **Anticancer drugs**  
  - May increase risk of peripheral neuropathy.

- **Amprenavir**  
  - Saquinavir (Fortovase) increases saquinavir level by 5 times in blood. May increase risk of gastrointestinal side effects and liver function tests. Decrease saquinavir dose to 800mg 3 times a day.

- **Dapsone**  
  - Needs to be taken at least 2 hours apart.

- **Delavirdine**  
  - Increases delavirdine level in blood. No dose adjustment currently recommended.

- **Diacerein**  
  - Increases diacerein level about 45%. Decreases delavirdine level by 60% in blood.

- **Dideoxynosine**  
  - Nelfinavir active metabolite may significantly decrease ddl level in blood. Should be used together with caution. May significantly decrease delavirdine level in blood.

- **Diltiazem**  
  - Increases diltiazem level by 31% in blood. Check INR.

- **Doravirine**  
  - Should be used together with caution. Check INR.

- **Erythromycin**  
  - Should be used together with caution. Significantly decreases delavirdine level in blood.

- **Ethosuximide**  
  - Should be used together with caution. Significantly increases risk of side effects.

- **Fosamprenavir**  
  - Requires lower dose of fosamprenavir. Check fosamprenavir level.

- **Ganciclovir**  
  - ddI buffering agents may significantly decrease delavirdine level in blood. ddI EC may be taken on an empty stomach, at least 2 hours apart.

- **Ganciclovir**  
  - Only on an empty stomach.

- **Garlic**  
  - Should be taken with food and ddI EC should be taken with a meal.

- **Grazoprevir**  
  - Saquinavir dose to 800mg 3 times a day.

- **Indinavir**  
  - Should be used together with caution. May increase risk of peripheral neuropathy.

- **Itraconazole**  
  - Should be used with caution. Significant increases risk of peripheral neuropathy.

- **Itraconazole**  
  - Increases saquinavir level by 5 times in blood. Should be used together with caution. May increase risk of peripheral neuropathy.

- **Itraconazole**  
  - Increases risk of pancreatitis, especially in pregnant women.

- **Ketoconazole**  
  - Increases saquinavir level by 5 times in blood. Should be used together with caution. May increase risk of peripheral neuropathy.

- **Ketoconazole**  
  - Increases ddI level by 60% in blood.

- **Lamivudine**  
  - Should be used together with caution. Check lamivudine level.

- **Lovastatin**  
  - Saquinavir increases saquinavir level by 100% but decreases metabolite by 45%. Decreases delavirdine level by about 40% in blood. No data exist to guide dose adjustments.

- **Midazolam**  
  - Should not be used together*. Increases risk of side effects.

- **Methadone**  
  - Increases methadone level in blood. May require lower dose of methadone.

- **Methylergonovine**  
  - Should not be used together*. Increases risk of side effects.

- **Midazolam**  
  - Should not be used together*. Increases risk of side effects.

- **Nelfinavir**  
  - Increases nelfinavir level about 100% but decreases nelfinavir active metabolite by about 45%. Decreases delavirdine level by about 40% in blood. No data exist to guide dose adjustments.

- **Nicardipine**  
  - Should be used together with caution. May increase nicardipine level in blood. Check for toxicity.

- **Nifedipine**  
  - Should be used together with caution. May increase nifedipine level in blood. Check for toxicity.

- **Nisoldipine**  
  - Should be used together with caution. May increase nisoldipine level in blood. Check for toxicity.

- **Midazolam**  
  - Should not be used together*. Increases risk of side effects.

- **Propafenone**  
  - Should be used together with caution. Check propafenone level.

- **Quinidine**  
  - Should be used together with caution. Check quinidine level.

- **Ranitidine**  
  - Should be used together with caution. May decrease delavirdine level in blood.

- **Rapamycin**  
  - Should be used together with caution. May increase rapamycin level in blood. Check rapamycin level.

- **Rifabutin**  
  - Should not be used together*. Significantly decreases delavirdine level and increases rifabutin level in blood.

- **Rifampin**  
  - Should not be used together*, otherwise significantly decreases delavirdine level in blood.

### Drug Interactions - August 2004 - Project Inform
Efavirenz (Sustiva) plus ...

>amprenavir
Decreases amprenavir level by 36% and increases efavirenz level by 15% in blood. Amprenavir dose may need to be increased.

>atorvastatin
Decreases atorvastatin level in blood. Atorvastatin dose may need to be increased.

>Clarithromycin
Slightly increases efavirenz level but decreases clarithromycin level by 39% (increases 14-OH clarithromycin level by 34%) in blood. No dose adjustment currently recommended.

>Fluconazole
Increases efavirenz level by 16% in blood. No dose adjustment currently recommended.

>Fosamprenavir
May significantly decrease fosamprenavir level in blood. Use only boosted fosamprenavir at 1,400mg + 300mg ritonavir once a day.

>Indinavir
Decreases indinavir level by 31% in blood. Indinavir dose should be increased to 1,000mg 3 times a day or 800mg twice daily if boosted with ritonavir.

Efavirenz plus ...

>Kaletra
Decreases lopinavir level by about 25% (trough by about 33%). Kaletra dose should be increased to 4 capsules twice a day.

>Methadone
Decreases methadone level by 52% in blood. Check for methadone withdrawal symptoms and adjust methadone dose accordingly.

>Nelfinavir
Decreases nelfinavir level by 20% and decreases efavirenz level by 22% in blood. No dose adjustments currently recommended.

>Nevirapine
Decreases efavirenz level by 22% in blood. Efavirenz dose may need to be increased to 800mg once a day.

>Rifabutin
Decreases rifabutin level in blood. Increase rifabutin dose by 50% if taken daily or double the dose if taken 3 times a week.

>Rifampin
Decreases efavirenz level by 26% in blood. Impact of interaction is uncertain.

>Ritonavir
Should be used together with caution. Increases efavirenz level by 16% in blood. Should be used together with great caution. Inhibits ritonavir boosting.

>St. John’s Wort
Should be used together with great caution. May decrease efavirenz level in blood.

>Simvastatin
Decreases simvastatin level in blood. Simvastatin dose may need to be increased.

>Voriconazole
Should not be used together. Increases risk of side effects.

Emtricitabine (FTC, Emtriva) plus ...

There are currently no known or suspected interactions between FTC and any other drugs.

Enfuvirtide (T20, Fuzeon) plus ...

There are currently no known or suspected interactions between enfuvirtide and any other drugs, although ritonavir can increase enfuvirtide level in blood somewhat.

Ethinyl estradiol (Ortho-Novum) plus ...

>amprenavir
Should not be used together. May decrease ethinyl estradiol and norethindrone levels in blood. Use another form of contraception.

>Atazanavir
Decreases atazanavir level in blood. Atazanavir should be boosted with ritonavir if used with efavirenz.

>Atorvastatin
Decreases atorvastatin level in blood. Atorvastatin dose may need to be increased.

>Clarithromycin
Slightly increases efavirenz level but decreases clarithromycin level by 39% (increases 14-OH clarithromycin level by 34%) in blood. No dose adjustment currently recommended.

>Fluconazole
Increases efavirenz level by 16% in blood. No dose adjustment currently recommended.

>Fosamprenavir
May significantly decrease fosamprenavir level in blood. Use only boosted fosamprenavir at 1,400mg + 300mg ritonavir once a day.

>Indinavir
Decreases indinavir level by 31% in blood. Indinavir dose should be increased to 1,000mg 3 times a day or 800mg twice daily if boosted with ritonavir.

Ethinyl estradiol plus ...

>Fuzeon
Increases ethinyl estradiol level by up to 38% in blood. No dose adjustments currently recommended.

>Kaletra
Should not be used together. May decrease ethinyl estradiol level by 42% in blood. Use another form of contraception.

>Ritonavir
Should not be used together. May decrease ethinyl estradiol level in blood. Use another form of contraception.

>St. John’s Wort
Should be used together with great caution. Inhibits ritonavir boosting.

>Simvastatin
Decreases simvastatin level in blood. Simvastatin dose may need to be increased.

>Voriconazole
Should not be used together. Increases risk of side effects.

Ethionamide (Trecator) plus ...

>Alcohol
Excessive alcohol consumption while on ethionamide may cause psychosis.

>Cycloserine
May increase risk of central nervous system related toxicity.

<ddC
May increase risk of peripheral neuropathy.

>Ethambutol
May increase risk of side effects from other anti-TB drugs like ethambutol.

>Isoniazid
May increase risk of encephalopathy (dysfunction of brain). May increase isoniazid level in blood.

>Pyrazinamide
May increase risk of side effects from other anti-TB drugs like pyrazinamide.

>Rifabutin
May increase risk of side effects from other anti-TB drugs like rifabutin.

>Rifapentine
May increase risk of side effects from other anti-TB drugs like rifapentine.

>Amphotericin B
Decreases amphotericin level by about 25% (trough by about 33%). Amphotericin dose should be increased to 4 capsules twice a day.

>Rifampin
Increases rifampin level by 20% and decreases efavirenz level by 22% in blood. No dose adjustments currently recommended.
**Fluconazole plus ... (continued)**

- Astemizole
  - Should not be used together*. Increases risk of side effects.
- AZT
  - Increases AZT level by 74% and may increase fluconazole level in blood. Check for toxicity.
- Benzodiazepines
  - May increase benzodiazepine level in blood.
- Cimetidine
  - Decreases fluconazole level by 13% in blood. No dose adjustment recommended.
- Cisapride
  - Should not be used together*. Increases risk of side effects.
- Cyclosporine
  - Should be used together with caution. Increases cyclosporine level by 92% in blood. Check cyclosporine level and serum creatinine.
- Efavirenz
  - Increases efavirenz level by 16% in blood. No dose adjustment currently recommended.
- Ethinyl estradiol
  - Increases ethinyl estradiol level by up to 38% in blood. No dose adjustments currently recommended.
- Glipizide
  - Should be used together with caution. Increases glipizide level by 49% in blood. Closely check blood sugar for hypoglycemia.
- Glyburide
  - Should be used together with caution. Increases glyburide level by 44% in blood. Closely check blood sugar for hypoglycemia.
- Hydrochlorothiazide
  - Increases fluconazole level by 45% in blood.
- Indinavir
  - Decreases indinavir level by 19% in blood.
- Levonorgestrel
  - Increases levonorgestrel level by 25% in blood.
- Loratadine
  - May affect loratadine and/or fluconazole level in blood.
- Phenytoin
  - Increases phenytoin level by 88% in blood.
- Ranitidine
  - May decrease fluconazole level in blood.
- Rifabutin
  - Should be used together with caution. May increase rifabutin level by up to 80% in blood. Increases risk of painful eye inflammation.
- Rifampin
  - Should be used together with caution. Decreases fluconazole level by 23% in blood. May require higher dose of fluconazole.
- Ritonavir
  - Increases ritonavir level by 12% in blood. No dose adjustment recommended; however, check for liver toxicity.
- Saquinavir (Fortovase)
  - May increase saquinavir level in blood. However, no dose adjustment recommended.
- Saquinavir (Invirase)
  - May increase saquinavir level in blood. However, no dose adjustment recommended.

**Fluconazole plus ... (continued)**

- Tacrolimus
  - Should be used together with caution. May increase tacrolimus level in blood and increase risk of kidney toxicity.
- Theophylline
  - Should be used together with caution. Increases theophylline level by 21% in blood. Check theophylline level.
- Tolbutamide
  - Should be used together with caution. Increases tolbutamide level by 26% in blood. Closely check blood sugar for hypoglycemia.
- Trimetrexate
  - May affect trimetrexate and/or fluconazole level in blood.
- Warfarin
  - Should be used together with caution. Check for increases in prothrombin (coagulation) time.

**Flucytosine (Ancobon) plus ...**

- Amphotericin B
  - Increases antifungal activity in test tubes but increases risk of bone marrow and kidney toxicity.
- AZT
  - May increase risk of bone marrow toxicity.
- Cytosine arabinoside
  - Should be used with caution. May decrease antifungal activity.
- Ganciclovir
  - Should be used together with great caution. May increase risk of bone marrow toxicity.
- Interferon-alpha
  - May increase risk of bone marrow toxicity.

**Fosamprenavir plus ... (continued)**

- Cimetidine
  - Should be used together with caution. May decrease fosamprenavir level in blood. No dose adjustment currently recommended.
- Cisapride
  - Should not be used together*. Increases risk of serious side effects.
- Cyclosporine
  - Should be used together with caution. May increase cyclosporine level in blood. Check cyclosporine level if used together.
- Delavirdine
  - Should not be used together. May significantly decrease fosamprenavir blood level.
- Dexamethasone
  - Should be used together with great caution. May significantly decrease fosamprenavir level in blood.
- Diazepam
  - Should be used together with caution. May require decrease in diazepam dose.
- Dihydropyridine
  - Should not be used together*. Increases risk of side effects.
- Efavirenz
  - May significantly decrease fosamprenavir level in blood. Use only boosted fosamprenavir at 1,400mg + 300mg ritonavir once a day.
- Ergonovine
  - Should not be used together*. Increases risk of side effects.
- Ergotamine
  - Should not be used together*. Increases risk of side effects.
- Famotidine
  - Should be used together with caution. May decrease fosamprenavir level in blood. No dose adjustment currently recommended.
- Flecaïnide
  - Should not be used together if boosting with ritonavir*. Increases risk of serious side effects.
- Flurazepam
  - Should be used together with caution. May require decrease in flurazepam dose.
- Itraconazole
  - Should be used together with caution. Increases risk of serious side effects. Do not exceed 400mg of itraconazole if fosamprenavir used alone, or 200mg if boosted with ritonavir.
- Kaletra
  - Significantly decreases fosamprenavir level in blood. Also increases risk of side effects. Appropriate dose adjustments not yet established.
- Ketoconazole
  - Should be used together with great caution. Increases risk of serious side effects. Do not exceed 400mg of ketoconazole if fosamprenavir used alone, or 200mg if boosted with ritonavir.
- Lidocaine (systemic)
  - Should be used together with great caution. May increase serious side effects. Check lidocaine blood concentrations if possible.
### Fosamprenavir plus (continued)

- **Lovastatin**
  - Should not be used together*. Increases risk of serious side effects.

- **Methylprednisolone**
  - Should not be used together*. Increases risk of serious side effects.

- **Midazolam**
  - Should not be used together*. Increases risk of serious side effects.

- **Nizatidine**
  - Should be used together with caution. May decrease fosamprenavir level in blood. No dose adjustment currently recommended.

- **Phenobarbital**
  - Should be used together with great caution.

- **Propafenone**
  - Should not be used together if boosting with ritonavir*. Increases risk of serious side effects.

- **Proton pump inhibitors**
  - Should be used together with great caution.
  - **Quinidine**
    - May significantly decrease fosamprenavir level in blood.

- **Ranitidine**
  - Should be used together with caution. May decrease fosamprenavir level in blood. No dose adjustment currently recommended.

- **Rapamycin**
  - Should be used together with caution. May increase rapamycin level in blood. Check rapamycin level if used together.

- **Ribavirin**
  - Should not be used together*. May decrease anti-HIV effect of fosamprenavir.

- **Ritonavir**
  - Increases fosamprenavir level in blood. Adjust dose to fosamprenavir 700mg + ritonavir 100mg twice a day or fosamprenavir 1,400mg + ritonavir 200mg once a day.

- **Sildenafil**
  - Should be used together with great caution. May increase risk of side effects. Decrease sildenafil dose to 25mg every 48 hours and check for side effects.

- **Simvastatin**
  - Should not be used together*. Increases risk of serious side effects.

- **St. John’s Wort**
  - Should not be used together. May significantly decrease fosamprenavir level in blood.

### Fosamprenavir plus (continued)

- **Tacrolimus**
  - Should be used together with caution. May increase tacrolimus level in blood. Check tacrolimus level if used together.

- **Tadalafil**
  - Should be used together with caution. May increase tadalafil level in blood.

- **Triazolam**
  - Should not be used together*. Increases risk of serious side effects.

- **Tricyclic antidepressants**
  - Should be used together with great caution. May increase risk of side effects. Check tricyclic level if used together.

- **Vardenafil**
  - Should be used together with great caution.
  - **Vincristine**
    - Should be used together with caution.

### Fosamprenavir plus (continued)

- **Adenosine**
  - Should be used together with caution. May increase risk of kidney toxicity.

- **Amikacin**
  - Should not be used together*. Increases risk of kidney toxicity.

- **Amphotericin B**
  - Should be used together with caution. May increase risk of kidney toxicity. Check closely.

- **Adefovir**
  - Should not be used together*. Increases risk of kidney toxicity.

- **ddC**
  - May increase risk of kidney toxicity and peripheral neuropathy. Check for toxicity.

- **ddI or ddI EC**
  - Should be used together with great caution.
  - **Dapsone**
    - May increase risk of bone marrow toxicity.

- **Dextrothyroxine**
  - Should not be used together*. Increases risk of kidney toxicity.

- **Dapsone**
  - May increase risk of bone marrow toxicity.

- **ddI or ddI EC**
  - Should be used with caution. Significantly increases ddI level in blood. May increase risk of pancreatitis.

- **d4T**
  - May increase risk of pancreatitis.

- **ddC**
  - May increase risk of kidney toxicity.

- **Food**
  - Increases oral ganciclovir level in blood.

- **Flucytosine**
  - Should be used together with great caution.

- **Imipenem-cilastin**
  - May increase risk of bone marrow toxicity.

- **Interferon-alpha**
  - May increase risk of bone marrow toxicity.

- **Pentamidine**
  - Should be used together with great caution. May increase risk of bone marrow toxicity.

- **Probenecid**
  - Should be used together with caution. May increase ganciclovir clearance.

- **Tobramycin**
  - Should not be used together*. Increases risk of kidney toxicity.

### Foscarnet plus (continued)

- **Ganciclovir (Cytovene, oral/IV) plus**
  - **Acyclovir**
    - People allergic to acyclovir should not take ganciclovir.

- **Adriamycin**
  - Should be used together with great caution. May increase risk of bone marrow toxicity.

- **Amphotericin B**
  - Should be used together with great caution. May increase risk of bone marrow toxicity.

- **Anticancer drugs**
  - May increase risk of bone marrow toxicity.

- **AZT**
  - Increases AZT level in blood and may increase risk of neutropenia, anemia and bone marrow toxicity. Avoid combination or lower AZT dose.

- **Dapsonic**
  - May increase risk of bone marrow toxicity.

- **ddI or ddI EC**
  - Should be used with caution. Significantly increases ddI level in blood. May increase risk of pancreatitis.

- **d4T**
  - May increase risk of pancreatitis.

- **ddC**
  - May increase risk of kidney toxicity.

- **Food**
  - Increases oral ganciclovir level in blood.

- **Flucytosine**
  - Should be used together with great caution.

- **Imipenem-cilastin**
  - May increase risk of seizures. Check closely.

- **Interferon-alpha**
  - May increase risk of bone marrow toxicity.

- **Pentamidine**
  - Should be used together with great caution. May increase risk of bone marrow toxicity.

- **Probenecid**
  - Should be used together with caution. May increase ganciclovir clearance.

- **Tobramycin**
  - Should not be used together*. Increases risk of kidney toxicity.
### Indinavir (Crixivan) plus ...

- **Amlodipine**  
  Should be used together with great caution. May increase amlodipine level in blood.
- **Amrenavir**  
  Increases amrenavir level by 33% and decreases indinavir level by 38% in blood. No dose adjustment recommended.
- **Asterizole**  
  Should not be used together*. Increases risk of side effects.
- **Atorvastatin**  
  Should be used together with great caution. May increase atorvastatin level in blood.
- **Atazanavir**  
  Should not be used together*. Increases risk of side effects.
- **AZT**  
  Increases AZT level 17–36% in blood. No dose adjustment recommended.
- **Benzodiazepines**  
  May increase benzodiazepine level in blood.
- **Bepridil**  
  Should be used together with great caution. May increase bepridil level in blood.
- **Cisapride**  
  Should not be used together*. Increases risk of side effects.
- **Clarithromycin**  
  Increases clarithromycin level by 53% and indinavir level by 29% in blood. No dose adjustment recommended.
- **DDI**  
  May decrease DDI and indinavir levels in blood. Indinavir should be taken 1 hour before or 2 hours after taking DDI.
- **Divaldine**  
  Increases indinavir level 50–100% in blood. Indinavir may be reduced to 600mg 3 times a day.
- **Dihydroergotamine**  
  Should not be used together*. Increases risk of side effects.
- **Diltiazem**  
  Should be used together with great caution. May increase diltiazem level in blood.
- **Efavirenz**  
  Decreases indinavir level by 31% in blood. Indinavir dose should be increased to 1,000mg 3 times a day or 800mg twice daily if boosted with ritonavir.
- **Ergonovine**  
  Should not be used together*. Increases risk of side effects.
- **Ergotamine**  
  Should not be used together*. Increases risk of side effects.
- **Ethinyl estradiol**  
  Should be used together with caution. Increases ethinyl estradiol level by 24% in blood.
- **Fatty foods**  
  Decreases indinavir level in blood. Indinavir should be taken 1 hour before eating or 2 hours after eating a large or fatty meal. Indinavir may be taken with a small snack such as juice and dry toast.

### Indinavir plus ... (continued)

- **Felodipine**  
  Should be used together with great caution. May increase felodipine level in blood.
- **Flucanazole**  
  Decreases indinavir level by 19% in blood.
- **Fluvastatin**  
  Should be used together with great caution. May increase fluvastatin level in blood.
- **Grapefruit juice**  
  Decreases indinavir level by 26% in blood.
- **Isradipine**  
  Should be used together with great caution. May increase isradipine level in blood.
- **Itraconazole**  
  May affect indinavir and/or itraconazole level in blood. Decrease dose of indinavir to 600mg 3 times a day when combined with itraconazole 200mg twice daily.
- **Kaletra**  
  Increases indinavir trough level by about 4-fold in blood. Currently under study; however, indinavir dose should be reduced to no more than 600mg twice a day if used together.
- **Ketoconazole**  
  Increases indinavir level by 68% in blood. Decrease indinavir dose to 600mg 3 times a day.
- **Lovastatin**  
  Should not be used together*. Increases risk of side effects.
- **Methylergonovine**  
  Should not be used together*. Increases risk of side effects.
- **Midazolam**  
  Should not be used together*. Increases risk of side effects.
- **Nelfinavir**  
  Increases indinavir level by 51% and increases nefilavir level by 83% in blood. There are limited data to support a dose of indinavir 1,200mg + nefilavir 1,250mg twice a day.
- **Nevirapine**  
  Decreases indinavir level by 27% in blood. Indinavir dose should be increased to 1,000mg 3 times a day or 800mg twice daily if boosted with ritonavir.
- **Nicardipine**  
  Should be used together with great caution. May increase nicardipine level in blood.
- **Nifedipine**  
  Should be used together with great caution. May increase nifedipine level in blood.
- **Nimodipine**  
  Should be used together with great caution. May increase nimodipine level in blood.
- **Prolonged-release verapamil**  
  Increases indinavir level by 10% in blood.
- **Quinidine**  
  Increases indinavir level by 10% in blood.
- **Rifampin**  
  Should not be used together*. May increase rifampin level in blood.
- **Rifampicin**  
  Should not be used together. Decreases indinavir level by 80% in blood, even when boosted with ritonavir.
- **Ritonavir**  
  Significantly increases indinavir level in blood. Adjust dose to indinavir 800mg + ritonavir 200mg twice a day or indinavir 400mg + ritonavir 400mg twice a day.
- **Saquinavir (Fortovase)**  
  Increases saquinavir level 3.6–6.2 times in blood.
- **Saquinavir (Invirase)**  
  Increases saquinavir level 4.6–7.2 times in blood.
- **Sildenafil**  
  Should be used with caution. Increases indinavir and sildenafil levels in blood.
- **Simvastatin**  
  Should not be used together*. Increases risk of side effects.
- **St. John’s Wort**  
  Should not be used together. Decreases indinavir level by 57% in blood.
- **Tedalafil**  
  Should be used together with caution. May increase tedalafil level in blood.
- **TMP/SMX**  
  Should be used together with caution. Increases trimethoprim level by 31% in blood.
- **Triazolam**  
  Should not be used together*. Increases risk of side effects.
- **Vardenafil**  
  Should be used together with caution. Increases vardenafil level in blood. Dose of vardenafil should not exceed 2.5mg/day.
- **Verapamil**  
  Should be used together with great caution. May increase verapamil level in blood.

### Interferon-alfa (Intron-A, Roferon-A) plus ...

- **Anticancer drugs**  
  May increase risk of bone marrow toxicity.
- **AZT**  
  Increases anti-HIV activity in test tubes and may increase risk of bone marrow toxicity. Lower AZT dose by 50–75%.
- **Flucytosine**  
  May increase risk of bone marrow toxicity.
- **Ganciclovir**  
  May increase risk of bone marrow toxicity.
Interferon-alfa plus (continued)

- Pentamidine
  May increase risk of bone marrow toxicity.
- Pyrimethamine
  May increase risk of bone marrow toxicity.

Isoniazid (INH) plus ...

- Acetaminophen
  Should not be used together*. Increases risk of side effects.
- Alcohol
  Daily or heavy alcohol use may increase risk of isoniazid-associated hepatitis.
- Carbamazepine
  Should be used together with great caution. Increases carbamazepine level in blood. Check for toxicity and adjust carbamazepine dose accordingly.
- Corticosteroids
  Increases isoniazid metabolism and decreases isoniazid level in blood. Isoniazid dose may require adjustment.
- Cycloserine
  May increase risk of central nervous system toxicity.
- ddC
  May increase risk of peripheral neuropathy.
- Ethionamide
  May increase risk of encephalopathy (disfunction of the brain) and may increase isoniazid level in blood.
- Food
  Should not be used together. Decreases isoniazid level in blood.
- Itraconazole
  Should be used together with great caution. May decrease itraconazole level in blood.
- Ketoconazole
  Should not be used together*. Decreases ketoconazole level in blood.
- Phenytin
  Should be used together with caution. Increases phenytin level in blood. Check for toxicity and adjust dose of phenytin accordingly.
- Rifampin
  Should be used together with caution. May increase risk of liver toxicity.
- Sulfonylureas
  May increase risk of high blood sugar level.
- Theophylline
  Should be used together with great caution. Increases level of theophylline in blood. Check theophylline level closely.

Itraconazole (Sporanox) plus ...

- Alprazolam
  Should be used together with caution. May increase level of alprazolam in blood. Check for side effects.
- Amphotericin B
  May interfere with activity of amphotericin B.
- Amrenavir
  May increase itraconazole and amrenavir levels in blood. Check for side effects.
- Antacid
  Decreases itraconazole level in blood. Should be taken 2 hours apart.
- Astemizole
  Should not be used together*. Increases risk of side effects.
- Atorvastatin
  Should not be used together*. Increases risk of side effects.
- Busulfan
  Should be used together with caution. Increases busulfan level in blood. Check for toxicity.
- Carbamazepine
  Should be used together with caution. Increases carbamazepine level and decreases itraconazole level in blood. Check for side effects.
- Cimeditine
  Decreases itraconazole level in blood. May need to be taken at least 2 hours apart.
- Cisapride
  Should be used together with caution. Increases itraconazole level 75% in blood.
- Cyclosporine
  Should be used together with caution. Increases cyclosporine level in blood and may increase risk of side effects.
- ddI
  Needs to be taken 2 hours apart, otherwise ddI buffering agents may significantly decrease itraconazole level in blood.
- Delavirdine
  May increase delavirdine level in blood.
- Diazepam
  Should be used together with caution. May increase level of diazepam in blood. Check for side effects.
- Digoxin
  Should be used together with caution. Increases digoxin level in blood. Check for side effects.
- Dofetilide
  Should not be used together*. Increases dofetilide level in blood.
- Felodipine
  Should be used together with great caution. Increases risk of felodipine side effects. Check closely.
- Fluvastatin
  Should not be used together*. Increases risk of side effects.
- Food
  May increase itraconazole level in blood.
- Fosamprenavir
  Should be used together with great caution. Increases risk of serious side effects. Do not exceed 400mg of itraconazole if fosamprenavir used alone, or 200mg if boosted with ritonavir.
- Glipizide
  May increase risk of low blood sugar level.
- Glyburide
  May increase risk of low blood sugar level.
- Indinavir
  May affect itraconazole and/or indinavir level in blood. Reduce dose of indinavir to 600mg 3 times a day when combined with itraconazole 200mg twice daily.
- Isoniazid
  Should be used together with great caution. May decrease itraconazole level in blood.
- Kaletra
  Increases itraconazole level in blood. Dose of itraconazole should not exceed 200mg/day.
- Lovastatin
  Should not be used together*. Increases risk of side effects.
- Midazolam (oral)
  Should not be used together*. Increases risk of side effects.
- Nevirapine
  Should be used together with caution. May decrease itraconazole level in blood. Itraconazole dose may need to be increased.
- Nicardipine
  Should be used together with great caution. Increases risk of nicardipine side effects. Check closely.
- Nifedipine
  Should be used together with great caution. Increases risk of nifedipine side effects. Check closely.
- Nimodipine
  Should be used together with great caution. Increases risk of nimodipine side effects. Check closely.
- Nisoldipine
  Should be used together with great caution. Increases risk of nisoldipine side effects. Check closely.
- Nitrendipine
  Should be used together with great caution. Increases risk of nitrendipine side effects. Check closely.
- Omeprazole
  Decreases itraconazole level in blood.
- Phenobarbital
  Should be used together with caution. Decreases itraconazole level and may increase phenobarbital level in blood.
- Phenytoin
  Should be used together with caution. Decreases itraconazole level and may increase phenytoin level in blood.
- Pimozide
  Should not be used together*. Increases risk of side effects.
- Quinidine
  Should not be used together*. Increases risk of side effects.
- Ranitidine
  Decreases itraconazole level in blood.
Rifabutin
- Should not be used together. May increase rifabutin level and may decrease itraconazole level in blood.

Rifampin
- Should not be used together. Decreases rifampin level and may decrease itraconazole level in blood.

Ritonavir
- Should be used together with caution. May significantly increase itraconazole level in blood.

Saquinavir (Fortovase)
- Increases saquinavir level in blood. However, no dose adjustment recommended.

Saquinavir (Invirase)
- Increases saquinavir level in blood. However, no dose adjustment recommended.

Simvastatin
- Should not be used together*. Increases sirolimus level in blood.

Tacrolimus
- Should be used together with caution. Increases tacrolimus level in blood.

Tedalafil
- Should be used together with caution. Increases tedalafil level in blood. Tedalafil dose should not exceed 10mg in a 72 hour period.

Testosterone
- May decrease testosterone level in blood.

Tolbutamide
- May increase risk of low blood sugar level.

Trandolapril
- Increases trandolapril level in blood. Trandolapril dose may need to be reduced.

Triazolam
- Should not be used together*. Increases risk of side effects.

Trimetrexate
- May affect trimetrexate and/or itraconazole level in blood.

Vardenafil
- Should be used together with caution. Increases vardenafil level in blood. If taking 400mg itraconazole per day, dose of vardenafil should not exceed 2.5mg/day. If taking 200mg itraconazole per day, dose of vardenafil should not exceed 5mg/day.

Verapamil
- Should be used together with great caution. Increases risk of verapamil side effects. Check closely.

Vinblastine
- Should be used together with caution. Increases vinblastine level in blood. Check for side effects.

Vincristine
- Should be used together with caution. Increases vincristine level in blood. Check for side effects.

Kaletra (lopinavir/ ritonavir) plus ...

Kaletra is a single pill containing 2 anti-HIV drugs, lopinavir and ritonavir. References below indicate which drug contained in Kaletra is specifically altered in combinations.

Amiodarone
- May increase amiodarone level in blood. Checking amiodarone level in blood is recommended.

Amprenavir
- Decreases lopinavir level by 15% and increases amprenavir trough level about 2-fold in blood. Amprenavir dose may be reduced to 750mg twice a day or less. However, optimal dose is unclear.

Astemizole
- Should not be used together. Increases risk of side effects.

Atorvastatin
- Should be used together with great caution. Increases active atorvastatin level about 6-fold and atorvastatin metabolite by 2.5 times in blood and may increase risk of side effects.

Atovaquone
- Decreases atovaquone level in blood. Atovaquone dose may have to be increased.

Bepridil
- May increase bepridil level in blood. Checking bepridil level in blood is recommended.

Carbamazepine
- Should be used together with great caution. May decrease carbamazepine level in blood.

Cisapride
- Should not be used together. Increases risk of side effects.

Clarithromycin
- Increases clarithromycin level in blood. Clarithromycin dose should be decreased for people with kidney dysfunction.

Cyclosporine
- May increase cyclosporine level in blood. Checking cyclosporine level in blood is recommended.

ddI or ddI EC should be taken 1 hour before or 2 hours after taking Kaletra. ddI and ddI EC should be taken on an empty stomach, and Kaletra should be taken with a meal.

Delavirdine
- May increase lopinavir level in blood. Needs further study.

Dexamethasone
- Should be used together with great caution. May decrease lopinavir level in blood.

Dihydroergotamine
- Should not be used together. Increases risk of side effects.

Discufiram/ metronidazole
- Should be used together with Kaletra oral solution with caution. Alcohol in Kaletra oral solution may increase risk of side effects.

Efavirenz
- Decreases lopinavir level by about 25% (trough by about 33%). Kaletra dose should be increased to 4 capsules twice a day.

Ergonovine
- Should not be used together. Increases risk of side effects.

Erythromycin
- Should not be used together. Decreases erythromycin level by 42% in blood. Use another form of contraception.

Felodipine
- Should be used together with caution. May increase felodipine level in blood. Check for side effects.

Food
- Increases lopinavir level in blood. Kaletra should be taken with food.

Fosamprenavir
- Significantly decreases fosamprenavir level in blood. Also increases risk of side effects. Appropriate dose adjustments not yet established.

Indinavir
- Increases indinavir trough level by about 4 times in blood. Currently under study; however, indinavir dose should be reduced to no more than 600mg twice a day if used together.

Itraconazole
- Increases itraconazole level in blood. Itraconazole dose should not exceed 200mg/day.

Ketoconazole
- Increases ketoconazole level by 3 times in blood. Ketoconazole dose should not exceed 200mg/day.

Lidocaine (systemic)
- May increase lidocaine level in blood. Checking lidocaine level in blood is recommended.

Lovastatin
- Should not be used together. Increases risk of side effects.

Methadone
- Decreases methadone level by 53% in blood. Check for methadone withdrawal symptoms and adjust methadone dose accordingly.

Methylergonovine
- Should not be used together. Increases risk of side effects.

Midazolam
- Should not be used together. Increases risk of side effects.

Nelfinavir
- Decreases nelfinavir level in blood. Kaletra dose may need to be increased. Optimal dose is under study.

Nevirapine
- Decreases nevirapine level in blood. Kaletra dose should be increased to 4 capsules twice a day.

Nicardipine
- Should be used together with caution. May increase nicardipine level in blood. Check for side effects.
### Kaletra plus ... (continued)

- **Nifedipine**
  Should be used together with caution. May increase nifedipine level in blood. Check for side effects.

- **Phenobarbital**
  Should be used together with great caution. May increase lopinavir level in blood.

- **Phenytoin**
  Should be used together with great caution. May decrease lopinavir level in blood.

- **Pimozide**
  Should not be used together. Increases risk of side effects.

- **Pravastatin**
  Increases pravastatin level in blood. No dose adjustment currently recommended.

- **Quinidine**
  May increase quinidine level in blood. Checking for quinidine level in blood is recommended.

- **Rifabutin**
  Increases rifabutin level by 5.7-fold. Rifabutin dose should be changed to 150mg every other day or 3 times a week. Check for side rifabutin effects.

- **Rifampin**
  Should not be used together. Decreases lopinavir level by 75% in blood.

- **Saquinavir (Fortovase)**
  Increases saquinavir trough level by about 3-fold. Saquinavir dose may be reduced to 800mg twice a day. Optimal dose is under study.

- **Sildenafil**
  Should be used together with caution. Increases sildenafil level in blood. Sildenafil dose should be reduced to no more than 25mg every 48 hours.

- **Simvastatin**
  Should not be used together. Increases risk of side effects.

- **St. John's Wort**
  Should not be used together. May decrease lopinavir level in blood.

- **Tacrolimus**
  May increase tacrolimus level in blood. Checking for tacrolimus level in blood is recommended.

- **Tedalafil**
  Should be used together with caution. May increase tedalafil level in blood.

- **Tenofovir**
  Increases tenofovir level by about 30% and decreases lopinavir level 15% in blood. No dose adjustment currently recommended.

- **Tezalamol**
  Should not be used together. Increases risk of side effects.

- **Vardenafil**
  Should be used together with caution. May increase vardenafil level in blood.

### Kaletra plus ... (continued)

- **Warfarin**
  May affect warfarin level in blood. Check INR.

### Ketoconazole (Nizoral) plus ...

- **Alcohol**
  May increase risk of nausea, vomiting and low blood pressure.

- **Alprazolam**
  Should be used together with caution. May increase level of alprazolam in blood.

- **Amphotericin B**
  May interfere with the activity of amphotericin B.

- **Ampranavir**
  Increases ampranavir level by 31% and increases ketoconazole level by 44% in blood. Impact of interaction is uncertain.

- **Antacids**
  Should not be used together*. Increases risk of side effects.

- **Cimetidine**
  Should be used 2 hours apart, otherwise may decrease ketoconazole level in blood.

- **Clonazepam**
  Should not be used together*. Increases risk of side effects.

- **Cisapride**
  Should not be used together*. Increases risk of side effects.

- **Corticosteroids**
  May decrease corticosteroid level in blood. Impact of interaction is uncertain.

- **Cyclosporine**
  Increases cyclosporine level and adjust dose accordingly.

- **Delavirdine**
  Increases delavirdine level by 50% in blood.

- **Diazepam**
  Should be used together with caution. May increase diazepam level in blood.

- **Digoxin**
  May increase digoxin level in blood. Digoxin level should be carefully checked.

- **Famotidine**
  Should be taken 2 hours apart, otherwise may decrease ketoconazole level in blood.

- **Fosamprenavir**
  Should be used together with caution. May increase fosamprenavir level in blood.

- **Glipizide**
  May increase risk of low blood sugar level.

### Ketoconazole plus ... (continued)

- **Glyburide**
  May increase risk of low blood sugar level.

- **Indinavir**
  Increases indinavir level by 68% in blood. Decrease indinavir dose to 600mg 3 times/day.

- **Isoniazid**
  Should not be used together*. Decreases ketoconazole level in blood.

- **Kaletra**
  Increases ketoconazole level by 3 times in blood. Ketoconazole dose should not exceed 200mg/day.

- **Loratadine**
  Increases loratadine level by 300% in blood.

- **Methylprednisolone**
  Should be used together with caution. May increase methylprednisolone level in blood. Check blood level of cyclosporine and adjust dose accordingly.

- **Miconazole**
  Should be used together with great caution. May lead to severe hypoglycemia (low blood sugar).

- **Midazolam**
  Should not be used together*. Increases midazolam level in blood.

- **Nelfinavir**
  Increases nelfinavir level by 35% in blood. No dose adjustment recommended.

- **Nevirapine**
  Should not be used together*. Increases nevirapine level in blood.

- **Phenytoin**
  Should be used together with caution. May affect ketoconazole and phenytoin levels in blood. Check phenytoin and ketoconazole levels and adjust dose accordingly.

- **Prednisolone**
  May increase prednisolone level in blood.

- **Ranitidine**
  Should be taken 2 hours apart, otherwise may decrease ketoconazole level in blood.

- **Rifabutin**
  May decrease ketoconazole level in blood.

- **Rifampin**
  Should not be used together*. Significantly decreases ketoconazole level in blood.

- **Omeprozole**
  Should be used together with caution. Decreases ketoconazole and increases omeprazole level in blood.

- **Phenytoin**
  Should be used together with caution. May affect ketoconazole and phenytoin levels in blood. Check phenytoin and ketoconazole levels and adjust dose accordingly.

- **Prednisolone**
  May increase prednisolone level in blood.

- **Ranitidine**
  Should be taken 2 hours apart, otherwise may decrease ketoconazole level in blood.

- **Rifabutin**
  May decrease ketoconazole level in blood.

- **Rifampin**
  Should not be used together*. Significantly decreases ketoconazole level in blood.

- **Ritonavir**
  Should be used together with caution. Significantly increases ketoconazole level in blood. Ketoconazole dose should not exceed 200mg/day.

- **Saquinavir (Fortovase)**
  Significantly increases saquinavir level in blood. However, no dose adjustment recommended.

- **Saquinavir (Invirase)**
  Significantly increases saquinavir level in blood. However, no dose adjustment recommended.
### Methadone plus ...

- **Abacavir**
  Decreases 3TC level by 15% in blood. No dose adjustment recommended.
- **ddC**
  Should not be used together. Decreases anti-HIV activity.
- **Nelfinavir**
  Increases 3TC level by 10% in blood. No dose adjustment recommended.
- **TMP/SMX**
  Increases 3TC level by 44% in blood. No dose adjustment recommended. Check for 3TC side effects.

### Nelfinavir (Viracept) plus ...

- **3TC**
  Increases 3TC level by 10% in blood. No dose adjustment recommended.
- **Amiodarone**
  Should not be used together*. Increases risk of side effects.
- **Amprenavir**
  Increases nelfinavir level by 15% in blood. No dose adjustment recommended.
- **Astemizole**
  Should not be used together*. Increases risk of side effects.
- **Atorvastatin**
  Should be used together with great caution. May increase atorvastatin level in blood.
- **Azithromycin**
  Should be used together with caution. Increases azithromycin level in blood. No dose adjustment recommended, but check for hearing and liver side effects.
- **AZT**
  Decreases AZT level by 35% in blood. No dose adjustment recommended.
- **Carbamazepine**
  Should be used together with caution. May decrease nelfinavir level in blood.
- **Cisapride**
  Should not be used together*. Increases risk of side effects.
- **ddI or ddI EC**
  Nelfinavir should be taken 2 hours before or after taking ddI or ddI EC. Nelfinavir should be taken with food, and ddI and ddI EC should only be taken on an empty stomach.
- **Efavirenz**
  Decreases methadone level by 52% in blood. Check for methadone withdrawal symptoms and adjust methadone dose accordingly.
- **Kaletra**
  Decreases methadone level by 53% in blood. Check for methadone withdrawal symptoms and adjust methadone dose accordingly.
- **Nelfinavir**
  Decreases methadone level in blood. Check for methadone withdrawal symptoms and adjust methadone dose accordingly.
- **Nevirapine**
  Decreases methadone level by about 60% in blood. Check for methadone withdrawal symptoms and adjust methadone dose accordingly.
- **Ritonavir**
  Decreases methadone level by about 40% in blood. Check for methadone withdrawal symptoms and adjust methadone dose accordingly.

### Dihydroergotamine

- **Dihydroergotamine**
  Should not be used together*. Increases risk of side effects.
- **Delavirdine**
  Increases neflavin level by about 100% but decreases neflavin active metabolite by about 45% in blood. Decreases delavirdine level by about 40%. No data exist to guide dose adjustments.
- **Ergonovine**
  Should not be used together*. Increases risk of side effects.
- **Ergotamine**
  Should not be used together*. Increases risk of side effects.
- **Ethyl estradiol**
  Should not be used together. Decreases ethyl estradiol level by 47% in blood. Use another form of contraception.
- **Fluvastatin**
  May interact somewhat with neflavin. No dose adjustment currently recommended.
- **Food**
  Increases neflavin level in blood. Nelfinavir should be taken with food.
- **Indinavir**
  Increases indinavir level by 51% and decreases neflavin level by 83% in blood. Increase indinavir dose to 1,000mg every 8 hours or boost indinavir with ritonavir.
- **Kaletra**
  Decreases lopinavir level in blood. Kaletra dose may need to be increased. Optimal dose is under study.
- **Ketoconazole**
  Increases neflavin level by 35% in blood. No dose adjustment recommended.
- **Lovastatin**
  Should not be used together. Increases lovastatin level in blood.
- **Methadone**
  Decreases methadone level in blood. Check for methadone withdrawal symptoms and adjust methadone dose accordingly.
- **Methylergonovine**
  Should not be used together*. Increases risk of side effects.
- **Midazolam**
  Should not be used together*. Increases risk of side effects.
- **Naltrexone**
  Should not be used together*. Increases risk of side effects.
- **Nevirapine**
  Modestly decreases neflavin level in blood. No dose adjustment recommended.
- **Norethindrone**
  Should be used together with caution. Increases norethindrone level by 18% in blood. Consider another form of contraception.
- **Nortriptyline**
  Should not be used together*. Increases risk of side effects.
- **Phenobarbital**
  Should be used together with caution. May decrease level of neflavin in blood.
- **Phenoflurane**
  Should be used together with caution. May decrease level of neflavin in blood.
- **Phenylketonurate**
  Should be used together with caution. May decrease level of neflavin in blood.
- **Phenytoin**
  May decrease level of phenytoin. No dose adjustment recommended.
- **Phenylbutazone**
  Should be used together with caution. May decrease level of phenytoin. No dose adjustment recommended.
- **Rifabutin**
  Should be used together with caution. May decrease level of rifabutin. No dose adjustment recommended.
- **Ritonavir**
  Increases neflavin level by 83% in blood. Increase ritonavir dose to 1,000mg every 8 hours or boost ritonavir with indinavir.
- **Rifampin**
  Increases neflavin level by 35% in blood. No dose adjustment recommended.
### Nevirapine plus ... (continued)

- **Pimozide**  
  Should not be used together*. Increases risk of side effects.

- **Quinidine**  
  Should not be used together*. Increases risk of side effects.

- **Rifabutin**  
  Should be used together with caution. Increases rifabutin and decreases nevirapine level in blood. Reduce rifabutin dose by one-half and use nevirapine at 1,250mg twice a day.

- **Rifampin**  
  Should not be used together*. Decreases nevirapine level by 82% in blood.

- **Ritonavir**  
  Increases ritonavir level by 9% and increases nevirapine level by 52% in blood. Alternate doses under study include nevirapine at 500–750mg + ritonavir 400mg twice a day.

- **Saquinavir (Fortovase)**  
  Increases saquinavir level 18% and increases saquinavir level 4 times in blood. Saquinavir dose may be reduced to 800mg 3 times a day or 1,200mg twice a day.

- **Saquinavir (Invirase)**  
  Increases saquinavir level 4 times by 4 times and increases nevirapine level by 18% in blood. Saquinavir dose may be reduced to 800mg 3 times a day or 1,200mg twice a day.

- **Sildenafil**  
  Should be used together with caution. Increases sildenafil level in blood. Sildenafil dose should be reduced to no more than 25mg every 48 hours.

- **Simvastatin**  
  Should not be used together. Increases simvastatin level in blood.

- **St. John's Wort**  
  Should not be used together. May decrease nevirapine level in blood.

- **Tedalafil**  
  Should be used together with caution. Increases tedalafil level in blood. Tedalafil dose should be reduced to no more than 20mg every 4 hours.

- **Simvastatin**  
  Should not be used together. Increases simvastatin level in blood.

- **St. John's Wort**  
  Should not be used together. May decrease nevirapine level in blood.

- **Tedalafill**  
  Should be used together with caution. Increases tedalafill level in blood.

- **Triazolam**  
  Should not be used together*. Increases risk of side effects.

- **Vardenafil**  
  Should be used together with caution. May increase vardenafil level in blood.

### Nevirapine (Viramune) plus ...

- **Amiodarone**  
  Should be used together with caution. May decrease amiodarone level in blood.

- **Amoxicillin**  
  May increase risk of rashes and Stevens Johnson Syndrome. Requires careful monitoring.

- **Amprenavir**  
  May decrease amprenavir level in blood. If boosting amprenavir with ritonavir, increase ritonavir to 200mg twice a day.

- **Carbamazepine**  
  Should be used together with caution. May decrease carbamazepine level in blood.

- **Cimetidine**  
  Should be used together with caution. May slightly increase nevirapine level in blood.

- **Cisapride**  
  Should be used together with caution. May decrease cisapride level in blood.

- **Clarithromycin**  
  Decreases clarithromycin level by 30% and increases nevirapine level by 26% in blood. Consider using alternatives to clarithromycin.

- **Clonazepam**  
  Should be used together with caution. May decrease clonazepam level in blood.

- **Cyclophosphamide**  
  Should be used together with caution. May decrease cyclophosphamide level in blood.

- **Cyclosporin**  
  Should be used together with caution. May decrease cyclosporin level in blood.

- **Dihydroergotamine**  
  Should be used together with caution. May decrease dihydroergotamine level in blood.

- **Dicumarol**  
  Should not be used together*. May increase dicumarol level in blood.

- **Disopyramide**  
  Should be used together with caution. May decrease disopyramide level in blood.

- **Efavirenz**  
  Decreases efavirenz level by 22% in blood. Efavirenz dose may need to be increased to 800mg once a day.

- **Ergonovine**  
  Should be used together with caution. May decrease ergonovine level in blood.

- **Ergotamine**  
  Should be used together with caution. May decrease ergotamine level in blood.

- **Enthionymycin**  
  Should be used together with great caution. May increase risk of liver toxicity.

- **Ethanol**  
  Should not be used together. Decreases ethanol level in blood. Use another form of contraception.

- **Fentanyl**  
  Should be used together with caution. May decrease fentanyl level in blood.

- **Ethosuximide**  
  Should be used together with caution. May decrease ethosuximide level in blood.

- **Fentanyl**  
  Should be used together with caution. May decrease fentanyl level in blood.

- **Indinavir**  
  Decreases indinavir level by 27% in blood. Indinavir dose should be increased to 1,000mg 3 times a day or 800mg twice daily if boosted with ritonavir.

- **Itraconazole**  
  Should be used together with caution. May decrease itraconazole level in blood. Itraconazole dose may need to be increased.

- **Kaletra**  
  Decreases Kaletra level in blood. Kaletra dose should be increased to 4 capsules twice a day.

- **Ketoconazole**  
  Should not be used together. Significantly decreases ketoconazole level in blood.

- **Lidocaine (systemic)**  
  Should be used together with caution. May decrease lidocaine level in blood.

- **Methadone**  
  Decreases methadone level by about 60% in blood. Check for methadone withdrawal symptoms and adjust methadone dose accordingly.

- **Methylprednisolone (methylprednisolone)**  
  Should be used together with caution. May decrease methylprednisolone level in blood.

- **Nelfinavir**  
  Modestly decreases nelfinavir level in blood. No dose adjustment recommended.

- **Nifedipine**  
  Should be used together with caution. May decrease nifedipine level in blood.

- **Norethindrone**  
  Should be used together with caution. May decrease norethindrone level in blood. Use another form of contraception.

- **Prednisone**  
  May increase risk of rash.

- **Rifabutin**  
  Should be used together with caution. May significantly affect rifabutin level in blood.

- **Ritonavir**  
  Should not be used together. Decreases nevirapine level in blood.

- **Saquinavir (Fortovase)**  
  Decreases saquinavir level by 24% in blood. Saquinavir may require ritonavir boosting.

- **Saquinavir (Invirase)**  
  Decreases saquinavir level by 27% in blood. Saquinavir may require ritonavir boosting.

- **Sirolimus**  
  Should be used together with caution. May decrease sirolimus level in blood.

- **Steroids**  
  May increase rate of metabolism of steroids.

- **St. John's Wort**  
  Should not be used together. May decrease nevirapine level in blood.

- **Tacrolimus**  
  Should be used together with caution. May decrease tacrolimus level in blood.

- **TMP/SMX**  
  Should not be initiated together for the first 4–6 weeks. May increase risk of rashes.
**Nevirapine plus ... (continued)**

- Voriconazole
  Should be used together with caution. May increase nevirapine side effects and decrease effectiveness of voriconazole.
- Warfarin
  Should be used together with great caution. Interaction is complex. Warfarin level in blood should be checked carefully.

**Oral contraceptives**

See section on Ethinyl estradiol.

**Pentamidine (Pentam) plus ...**

- Adefovir
  Should not be used together*. Increases risk of kidney toxicity.
- Amphotericin B
  Should be used together with great caution. May increase risk of kidney toxicity.
- Anticancer drugs
  May increase risk of anemia.
- AZT
  May increase risk of anemia.
- Cidofovir
  Should not be used together*. Increases risk of kidney toxicity.
- ddC
  Should be used with great caution. May increase risk of peripheral neuropathy and pancreatitis.
- ddi or ddl EC
  May increase risk of pancreatitis.
- d4T
  May increase risk of pancreatitis.
- Foscarnet
  Should be used with caution. May increase risk of kidney toxicity. Check closely.
- Ganciclovir
  Should be used together with great caution. May increase risk of bone marrow toxicity.
- Interferon-alpha
  May increase risk of bone marrow toxicity.
- Tenofivir
  Should not be used together*. May increase risk of side effects.

**Probenecid (Benemid, ColBenemid) plus ...**

- Acetaminophen
  Should be used together with caution. Increases acetaminophen level in blood.
- Acyclovir
  Increases acyclovir level in blood. Impact of interaction is uncertain.
- Aspirin
  Should be used together with caution. Decreases activity of probenecid.
- AZT
  Should be used together with caution. Increases AZT level by 100% in blood. Check for AZT side effects.
- Benzodiazepines
  Increases benzodiazepine level in blood.

**Probenecid plus ... (continued)**

- Bumetadine
  Should not be used together. Probenecid decreases the effectiveness of bumetadine.
- Captopril
  Should be used together with caution. May increase captopril level in blood.
- Cidofovir
  Needs to be taken together to decrease risk of kidney toxicity.
- Cilastatin
  Should be used together with caution. May increase cilastatin level in blood and increase risk of side effects.
- Ciprofloxacin
  Should be used together with caution. May increase ciprofloxacin level in blood and increase risk of side effects.
- Cisplatin
  Should be used together with caution. May increase cisplatin level in blood and increase risk of side effects.
- Clofibrate
  Should be used together with caution. May increase clofibrate level in blood and increase risk of side effects.
- Dapson
  Should be used together with caution. May increase dapsone level in blood and increase risk of side effects.
- ddC
  Significantly increases ddC level in blood. Check for toxicity and consider lower ddC dose.
- Famotidine
  Should be used together with caution. Significantly increases famotidine level in blood.
- Furosemide
  May increase risk of inner ear poisoning (ototoxicity).
- Ganciclovir
  Should be used together with caution. May increase ganciclovir level in blood and increase risk of side effects.
- Indomethacin
  Should be used together with caution. Increases indomethacin level in blood. May allow for lower indomethacin dose.
- Imipenem
  Should be used together with caution. May increase imipenem level in blood and increases risk of side effects.
- Ketamine
  Should be used together with caution. Increases ketamine level in blood.
- Ketoprofen
  Should not be used together. Increases ketoprofen level in blood and increases risk of side effects.
- Lorazepam
  Should be used together with caution. Increases lorazepam level in blood.
- Meclomenamate
  Increases meclomenamate level in blood.

**Probenecid plus ... (continued)**

- Methotrexate
  Should be used together with caution. Increases methotrexate level in blood and increases risk of side effects.
- Naproxen
  Should be used together with caution. Increases naproxen level in blood.
- Penicillin
  Should be used together with caution. Increases penicillin level 2–4 times in blood and increases risk of side effects.
- Pyrazinamide
  Should be used together with caution. Decreases activity of probenecid.
- Rifabutin
  Should be used together with caution. May increase rifabutin level in blood and increase risk of side effects.
- Rifampin
  Should be used together with caution. May increase rifampin level in blood and increase the risk of side effects.
- Sulfonamide
  Increases sulfonamide level in blood.
- Sulindac
  Increases sulindac level in blood and decreases activity of probenecid.
- Theophylline
  May increase theophylline level in blood.
- Thiopental
  Should be used together with caution. Increases thiopental level in blood.

**Pyrimethamine (Daraprim) plus ...**

- AZT
  Should be used together with caution. May increase risk of bone marrow toxicity.
- Dapsone
  May increase risk of bone marrow toxicity.
- Ethanamide
  May increase risk of side effects from other anti-TB drugs like pyrazinamide.
- Interferon-alpha
  May increase risk of bone marrow toxicity.
- Lorazepam
  May increase risk of liver toxicity.
- Sulfonamides
  Should be used together with caution. May increase risk of bone marrow toxicity.
- TMP/SMX
  Should be used together with caution. May increase risk of bone marrow toxicity.

**Rifabutin (Mycobutin) plus ...**

- Amrenavir
  Decreases amrenavir level by 15% and increases rifabutin level by 193% in blood. Requires lower rifabutin dose.
- Anticoagulants
  Should be used together with caution. May decrease effectiveness of anticoagulants. Check INR.
### Rifabutin plus ... (continued)

- **Atovaquone**
  Should be used together with caution. Decreases atovaquone level by 50% in blood.

- **AZT**
  May decrease AZT level in blood.

- **Barbiturates**
  May decrease effectiveness of barbiturates.

- **Beta-blockers**
  May decrease the effectiveness of beta-blockers. Check response to treatment and adjust dose accordingly.

- **Buspirone**
  May decrease effectiveness of buspirone. Check symptoms and adjust dose accordingly.

- **Clarithromycin**
  Decreases atovaquone level by 50% in blood. Reduce atovaquone dose by half the standard dose and increase rifabutin dose to 1,000mg 3 times a day.

- **Delavirdine**
  Should not be used together*. Significantly decreases delavirdine level and increases rifabutin level in blood.

- **Diazepam**
  May decrease diazepam in blood.

- **Dapsone**
  Should be used together with caution. May decrease dapsone dose by 50% if taken daily or double the dose if taken 3 times a week.

- **Digoxin**
  Should be used together with caution. May significantly decrease effectiveness of digoxin. Check digoxin level in blood, control of heart rhythm and other cardiac symptoms.

- **Disopyramide**
  May decrease effectiveness of disopyramide. Check response to treatment and adjust dose accordingly.

- **Doxycycline**
  May decrease effectiveness of doxycycline. Check response to treatment and adjust dose accordingly.

- **Efavirenz**
  Decreases efavirenz level in blood. Increase efavirenz dose by 50% if taken daily or double the dose if taken 3 times a week.

- **Estrogens**
  Should be used together with caution. May decrease effectiveness of estrogens.

- **Ethinyl estradiol**
  Should not be used together. May decrease ethinyl estradiol level in blood. Use another form of contraception.

- **Ethionamide**
  Ethionamide May increase risk of side effects from other anti-TB drugs like rifabutin.

- **Fluconazole**
  Should be used together with caution. May increase rifabutin level by up to 80% in blood. Increases risk of painful eye inflammation.

- **Fosamprenavir**
  Should be used together with great caution. Increases risk of neutropenia. Check for side effects and lower rifabutin dose by at least 50% if fosamprenavir used alone or by 75% if boosted with ritonavir.

- **Glipizide**
  Should be used together with caution. May decrease glipizide level in blood. Check blood sugar level and adjust dose accordingly.

- **Glyburide**
  Should be used together with caution. May decrease glyburide level in blood. Check blood sugar level and adjust dose accordingly.

- **Indinavir**
  Increases rifabutin level by 204% and decreases indinavir level by 32% in blood. Reduce rifabutin dose by half the standard dose and increase indinavir dose to 1,000mg 3 times a day.

- **Itraconazole**
  Should not be used together. May increase itraconazole level in blood.

- **Kaletra**
  Increases rifabutin level by 5.7-fold in blood. Rifabutin dose should be changed to 150mg every other day or 3 times a week. Check for rifabutin side effects.

- **Ketoconazole**
  Should be used together with caution. May decrease ketoconazole level in blood.

- **Methadone**
  May decrease effectiveness of methadone. Check for methadone withdrawal symptoms and adjust methadone dose accordingly.

- **Mexiletine**
  May decrease effectiveness of mexiletine. May require lower rifabutin dose.

- **Midazolam**
  Should not be used together. Significantly decreases midazolam level in blood. Use alternative to midazolam.

- **Nelfinavir**
  Should be used together with caution. Increases nelfinavir and decreases nelfinavir levels in blood. Reduce nelfinavir dose by one-half and use nelfinavir at 1,250mg twice a day.

- **Nevirapine**
  Should be used together with caution. May significantly affect rifabutin level in blood.

- **Norethindrone**
  Should not be used together. May decrease norethindrone level in blood. Use another form of contraception.

### Rifabutin plus ... (continued)

- **Opiates**
  May decrease effectiveness of opiate drugs. Check pain control and response to treatment and adjust dose accordingly.

- **Phenytoin**
  Should be used together with caution. May increase phenytoin level in blood. Check phenytoin level in blood and seizure activity. Adjust dose accordingly.

- **Probendicid**
  Should be used together with caution. May increase rifabutin level in blood and increase risk of side effects.

- **Progesterone**
  Should be used together with caution. May decrease effectiveness of progesterone.

- **Quinidine**
  May decrease quinidine level in blood. Check response to treatment and adjust dose accordingly.

- **Ritonavir**
  Should be used together with caution. Increases rifabutin level by 4-fold in blood. Increases risk of side effects. Rifabutin dose should be reduced to no more than 300mg once a week or 150mg every 3 days. Further dose reduction may be necessary.

- **Saquinavir (Fortovase)**
  Should be used together with great caution. Decreases saquinavir level by 43% in blood. Consider alternative to rifabutin.

- **Saquinavir (Invirase)**
  Should be used together with great caution. Decreases saquinavir level by 40% in blood. Consider alternative to rifabutin.

- **Tolbutamide**
  Should be used together with caution. May decrease tolbutamide level in blood. Check blood sugar level and adjust dose accordingly.

- **Theophylline**
  May decrease theophylline level in blood. Check theophylline level in blood and adjust dose accordingly.

- **Triazolam**
  Should not be used together. Significantly decreases triazolam level in blood. Use alternative to triazolam.

- **Trimetrexate**
  Should be used with caution. May affect trimetrexate and/or rifabutin level.

- **Verapamil**
  Should not be used together. May significantly decrease effectiveness of verapamil.

- **Zolpidem**
  May decrease effectiveness of zolpidem. Check for response to treatment and adjust dose accordingly.

### Rifampin (Rifadin) plus ... (continued)

- **Amprenavir**
  Should not be used together*. Significantly decreases amprenavir level in blood.

- **Anticoagulants**
  Should be used together with caution. May decrease effectiveness of anticoagulants. Check INR.

### Rifampin plus ... (continued)

- **Amprenavir**
  Should not be used together*. Significantly decreases amprenavir level in blood.

- **Anticoagulants**
  Should be used together with caution. May decrease effectiveness of anticoagulants. Check INR.
Rifampin plus ... (continued)

- Atovaquone
  - Should be used together with caution.*
  - Decreases atovaquone level by 50% in blood.

- Atazanavir
  - Should not be used together. Rifampin decreases level of most protease inhibitors in blood.

- AZT
  - Decreases AZT level by 47% in blood. May require higher AZT dose.

- Barbiturates
  - May decrease effectiveness of barbiturates.

- Clarithromycin
  - Use together with caution. May decrease clarithromycin level in blood.

- Clofibrate
  - May decrease effectiveness of clofibrate. Check response to treatment and adjust dose accordingly.

- Chlamphenicol
  - May decrease the effectiveness of chlamphenicol. Check response to treatment and adjust dose accordingly.

- Corticosteroids
  - May significantly decrease corticosteroid level in blood and require higher doses of corticosteroids.

- Cyclosporine
  - May decrease cyclosporine level in blood. Check cyclosporine blood level and adjust dose accordingly.

- Dapsone
  - Should be used together with caution. Decreases dapsone level 7–10 times in blood.

- Delavirdine
  - Should not be used together*, otherwise significantly decreases delavirdine level in blood.

- Diazepam
  - May decrease effectiveness of diazepam. Check response to treatment and adjust dose accordingly.

- Digoxin
  - Should be used together with caution. May significantly decrease effectiveness of digoxin. Check digoxin level in blood, control of heart rhythm and other cardiac symptoms.

- Disopyramide
  - May decrease effectiveness of disopyramide. Check response to treatment and adjust dose accordingly.

- Doxycycline
  - May decrease effectiveness of doxycycline. Check response to treatment and adjust dose accordingly.

- Efavirenz
  - Decreases efavirenz level by 26% in blood. Impact of interaction is uncertain.

- Estrogen
  - Should be used together with caution. May decrease effectiveness of estrogen.

- Ethinyl estradiol
  - Should not be used together. May decrease ethinyl estradiol level in blood. Use another form of contraception.

Rifampin plus ... (continued)

- Ethionamide
  - May increase risk of side effects from other anti-TB drugs like rifampin.

- Fluconazole
  - Should be used together with caution. Decreases fluconazole level by 23% in blood. May require higher fluconazole dose.

- Food
  - May decrease rifampin level in blood.

- Fosamprenavir
  - Should not be used together*. May decrease anti-HIV activity of fosamprenavir.

- Glipizide
  - Should be used together with caution. May decrease glipizide level in blood. Check blood glucose level and adjust dose accordingly.

- Glyburide
  - Should be used together with caution. May decrease glyburide level in blood. Check blood glucose level and adjust dose accordingly.

- Halothane
  - Should not be used together*. May increase risk of liver toxicity.

- Indinavir
  - Should not be used together*. May increase rifampin level in blood.

- Isoniazid
  - Should be used together with caution. May increase rifampin level in blood.

- Itraconazole
  - Should not be used together. Decreases rifampin level and may decrease itraconazole level in blood.

- Ketoconazole
  - Should not be used together*. Significantly decreases ketoconazole level in blood.

- Kaletra
  - Should not be used together. Decreases lopinavir level by 75% in blood.

- Methadone
  - May decrease effectiveness of methadone. Check for methadone withdrawal symptoms and adjust methadone dose accordingly.

- Mexiletine
  - Should be used together with caution. May significantly decrease effectiveness of mexiletine.

- Midazolam
  - Should not be used together. Significantly decreases midazolam level in blood. Use alternative to midazolam.

- Nelfinavir
  - Should not be used together*. Decreases nelfinavir level by 82% in blood.

- Nevirapine
  - Should not be used together. Decreases nevirapine level in blood.

- Norethindrone
  - Should not be used together. May decrease norethindrone level in blood. Use another form of contraception.

- Opiates
  - May decrease effectiveness of opiate drugs. Check pain control and response to treatment and adjust dose accordingly.

- Phenobarbital
  - Should not be used together. Significantly decreases effectiveness of phenobarbital.

- Phenytoin
  - Should be used together with caution. May decrease phenytoin level in blood. Check phenytoin level in blood and seizure activity. Adjust dose accordingly.

- Probepicid
  - Should be used together with caution. May increase rifampin level and increase risk of side effects.

- Progesterone
  - Should be used together with caution. May increase rifampin level in blood and increase risk of side effects.

- Quinidine
  - May decrease quinidine level in blood. Check response to treatment and adjust dose accordingly.

- Ritonavir
  - Should not be used together. Decreases ritonavir level by 35% in blood. Consider using rifabutin instead.

- Saquinavir (Fortovase)
  - Should not be used together. Decreases saquinavir level by 84% in blood.

- Saquinavir (Invirase)
  - Should not be used together. Decreases saquinavir level by 80% in blood.

- Theophylline
  - May decrease theophylline level in blood. Check theophylline level in blood and adjust dose accordingly.

- Triazolam
  - Should not be used together. Significantly decreases triazolam level in blood. Use alternative to triazolam.

- Trimetrexate
  - Should be used together with caution. May affect trimetrexate and/or rifampin level in blood.

- Verapamil
  - Should not be used together. May significantly decrease effectiveness of verapamil.

- Zolpidem
  - May decrease effectiveness of zolpidem. Check for response to treatment and adjust dose accordingly.

Ritonavir (Norvir) plus ...

- Alfentanil
  - Should be used with caution. May significantly increase alfentanil level in blood. May require lower alfentanil dose.

- Alprazolam
  - Should be used together with caution. Although ritonavir decreases alprazolam level in blood, it may also prolong sedation.

- Amiodarone
  - Should not be used together*. Increases risk of side effects.

- Amitriptyline
  - Should be used together with great caution. May increase amitriptyline level in blood. May require lower amitriptyline dose.
Ritonavir plus ... (continued)

Amlodipine
Should be used together with caution. May significantly increase amlodipine level in blood. May require lower amlodipine dose.

Amoxapine
Should be used together with great caution. May increase amoxapine level in blood. May require lower amoxapine dose.

Amprenavir
Increases amprenavir level by 70% in blood. Alternate dosing is amprenavir 600mg + ritonavir 100mg twice a day, or amprenavir 1,200mg + ritonavir 200mg once daily.

Astemizole
Should not be used together*. Increases risk of side effects.

Atazanavir
Substantially increases atazanavir level in blood. If combined, use atazanavir 300mg once a day (with food) + ritonavir 100mg once a day.

Atorvastatin
Should be used together with great caution. Ritonavir + saquinavir increases atorvastatin level by 343% in blood. Use lowest dose of atorvastatin or consider using pravastatin.

Atovaquone
May decrease atovaquone level in blood.

AZT
Decreases AZT level by 25% in blood. No dose adjustment recommended.

Bepridil
Should not be used together*. Increases risk of side effects.

Bromocriptine
Should be used together with caution. May significantly increase bromocriptine level in blood. May require lower bromocriptine dose.

Buproprion
Should be used together with caution. May significantly increase buproprion level in blood. May require lower buproprion dose.

Buprenorphine
Should be used together with caution. May significantly increase buprenorphine level in blood. May require dose reduction of buprenorphine.

Citalopram
Should be used together with caution. May increase citalopram level by 77% and increases ritonavir level by 12% in blood. Requires lower dose of citalopram and checking for kidney toxicity in people with a history of kidney problems.

Clomipramine
Should be used together with caution. May increase clomipramine level in blood. May require dose reduction of clomipramine.

Clorazepate
Should be used together with caution. In- creases ddI level by 13% in blood. No dose adjustment recommended, but take 2½ hours apart.

Clarithromycin
Increases clarithromycin level by 77% and ritonavir level by 77% in blood. Use lowest dose of clarithromycin and ritonavir.

Clobazam
Should be used together with caution. May increase clobazam level in blood. May require lower clobazam dose.

Diazepam
Should be used together with caution. Increases risk of side effects.

Dihydroergotamine
Should be used together with caution. May significantly increase dihydroergotamine level in blood. May require lower dihydroergotamine dose.

Diphenoxylate
May decrease diphenoxylate level in blood.

Divalproex
Should be used together with caution. May require lower divalproex dose.

Doxepin
Should be used together with caution. May increase doxepin level in blood. May require lower doxepin dose.

Efavirenz
Should be used together with caution. Increase efavirenz level by 21% and ritonavir level by 18% in blood. Check for side effects.

Ergonovine
Should not be used together*. Increases risk of side effects.

Enfuvirtide
Ritonavir used at the full dose increases enfuvirtide level by 22% in blood. Ritonavir at a boosting dose of 100mg twice a day increases enfuvirtide level by 14% in blood. No dose adjustment recommended.

Erythromycin
Should be used together with caution. May increase erythromycin level in blood. May require lower erythromycin dose.

Escitalopram
Should be used together with caution. May increase escitalopram level in blood. May require lower escitalopram dose.

Ethosuximide
Should be used together with caution. May increase ethosuximide level in blood. May require lower ethosuximide dose.

Etoposide
Should be used with great caution. May increase etoposide level in blood and increase risk of side effects.

Ethinyl estradiol
Should not be used together. Decreases ethinyl estradiol level by 40% in blood. Use another form of contraception.

Efavirenz
Should be used together with caution. May increase efavirenz level by 21% and ritonavir level by 18% in blood. Check for side effects.

Erythromycin
Should be used together with caution. May increase erythromycin level in blood. May require lower erythromycin dose.

Ergonovine
Should not be used together*. Increases risk of side effects.

Ergotamine
Should not be used together*. Increases risk of side effects.

Etoposide
Should be used with great caution. May increase etoposide level in blood and increase risk of side effects.

Ethinyl estradiol
Should not be used together. Decreases ethinyl estradiol level by 40% in blood. Use another form of contraception.

Efavirenz
Should be used together with caution. May increase efavirenz level by 21% and ritonavir level by 18% in blood. Check for side effects.

Erythromycin
Should be used together with caution. May increase erythromycin level in blood. May require lower erythromycin dose.

Ergonovine
Should not be used together*. Increases risk of side effects.

Ergotamine
Should not be used together*. Increases risk of side effects.
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<td>Decreases meperidine level in blood, but leads to increased concentrations of the active metabolite normeperidine over time.</td>
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<td><strong>Loratadine</strong></td>
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<td><strong>Mexiletine</strong></td>
<td>Should be used together with caution. May increase mexiletine level in blood and lead to increased concentrations of the active metabolite normeperidine over time.</td>
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<td><strong>Nisoldipine</strong></td>
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<td><strong>Nortriptyline</strong></td>
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<td><strong>Oxycodone</strong></td>
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<td><strong>Paclitaxel</strong></td>
<td>Should be used together with caution. May increase paclitaxel level in blood.</td>
<td><strong>Paclitaxel</strong></td>
</tr>
</tbody>
</table>
Ritonavir plus ... (continued)

Rifampin
Should not be used together. Decreases rifampin level by 35% in blood. Consider using rifabutin instead.

Risperidone
Should be used together with caution. May increase risperidone level in blood. May require lower risperidone dose.

Saquinavir (Fortovase)
Increases saquinavir level by 1,587% in blood. Adjust doses to saquinavir 1,000mg + ritonavir 100mg twice a day.

Saquinavir (Inrirase)
Increases saquinavir level by about 20 times in blood. Adjust doses to saquinavir 1,000mg + ritonavir 100mg twice a day.

Sertraline
Should be used together with caution. May significantly increase sertraline level in blood. May require lower sertraline dose.

Sildenafil
Should not be used together. Ritonavir + saquinavir increases sildenafil level by 1,000mg + ritonavir 100mg twice a day.

Simvastatin
Should not be used together. Ritonavir + saquinavir increases simvastatin level by 3,059% in blood.

St. John’s Wort
Should not be used together. May significantly increase tacrolimus level in blood. May require lower tacrolimus dose.

Tacrolimus
Should be used together with caution. May significantly increase tacrolimus level in blood. May require lower tacrolimus dose.

Tamoxifen
Should be used together with caution. May significantly increase tamoxifen level in blood. Check for side effects.

Tadalafil
Should be used together with caution. Increases tadalafil level in blood. Tadalafil dose should not exceed 2.5mg in a 72 hour period.

Temazepam
May increase temazepam level in blood.

Theophylline
Decreases theophylline level by 43% in blood. Check theophylline level in blood and adjust dose accordingly.

Thioridazine
Should be used together with caution. May increase thioridazine level in blood. May require lower thioridazine dose.

Timolol
Should be used together with caution. May increase timolol level in blood. May require lower timolol dose.

Tipranavir
Increases tipranavir level 12 times and decreases ritonavir level by 75–80% in blood. Other doses now under study.

Tramadol
Should be used together with caution. May increase tramadol level in blood. May require lower tramadol dose.

Saqinavir (Fortovase, sgc) plus ...

SGC stands for soft gel capsule.

Amprenavir
Decreases amprenavir level by 32% and saquinavir level by 19% in blood. No dose adjustment likely required.

Astemizole
Should not be used together*. Increases risk of side effects.

Atazanavir
Increases saquinavir level by 5–6 fold in blood. Dose changes now under study.

Atorvastatin
Should be used together with great caution. Ritonavir + saquinavir increases atorvastatin level by 343% in blood.

Carbamazepine
Should be used together with great caution. May decrease saquinavir level in blood.

Cisapride
Should not be used together*. Increases risk of side effects.
<table>
<thead>
<tr>
<th>Drug Interactions</th>
<th>Saquinavir sgc plus ... (continued)</th>
<th>Saquinavir sgc plus ... (continued)</th>
<th>Saquinavir hgc plus ... (continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarithromycin</td>
<td>Increases saquinavir level by 177% and clarithromycin level by 45% (but decreases 14-OH clarithromycin level by 24%) in blood. No dose adjustments currently recommended.</td>
<td>Should not be used together*. Increases risk of side effects.</td>
<td>Atorvastatin Should be used together with great caution. Ritonavir + saquinavir (soft gel) increases atorvastatin level by 343%.</td>
</tr>
<tr>
<td>Dihydropregamine</td>
<td>Should not be used together*. Increases risk of side effects.</td>
<td></td>
<td>Bepridil Should be used together with caution. May increase bepridil level in blood.</td>
</tr>
<tr>
<td>Delavirdine</td>
<td>Increases saquinavir level by 5 times in blood. Reduce saquinavir dose to 800mg 3 times/day.</td>
<td></td>
<td>Carbamazepine Should not be used together. May decrease saquinavir level in blood.</td>
</tr>
<tr>
<td>Dexamethasone</td>
<td>Should be used together with caution. May decrease saquinavir level in blood.</td>
<td></td>
<td>Clindamycin Should be used with caution. May increase clindamycin level in blood. Check for side effects.</td>
</tr>
<tr>
<td>ddI or ddI EC</td>
<td>Saquinavir should be taken 2 hours before or after taking ddI or ddI EC. Saquinavir is best taken with food, and ddI and ddI EC should only be taken on an empty stomach.</td>
<td></td>
<td>Dapsone May increase dapsone level in blood. Check for dapsone side effects.</td>
</tr>
<tr>
<td>Efavirenz</td>
<td>Decreases efavirenz level by 12% and saquinavir level by 62% in blood. Requires ritonavir boosting.</td>
<td></td>
<td>ddI or ddI EC Saquinavir should be taken 2 hours before or after taking ddI or ddI EC. Saquinavir is best taken with food, and ddI and ddI EC should only be taken on an empty stomach.</td>
</tr>
<tr>
<td>Ergonovine</td>
<td>Should not be used together*. Increases risk of side effects.</td>
<td></td>
<td>Delavirdine Increases saquinavir level by 5 times in blood. May increase risk of GI side effects and LFTs. Reduce saquinavir dose to 800mg 3 times a day.</td>
</tr>
<tr>
<td>Ergotamine</td>
<td>Should not be used together*. Increases risk of side effects.</td>
<td></td>
<td>Diltiazem Should be used together with caution. May increase diltiazem level in blood. Check for side effects.</td>
</tr>
<tr>
<td>Fluconazole</td>
<td>May increase saquinavir level in blood. However, No dose adjustment recommended.</td>
<td></td>
<td>Felodipine Should be used together with caution. May increase felodipine level in blood. Check for side effects.</td>
</tr>
<tr>
<td>Indinavir</td>
<td>Increases saquinavir level 3.6-6.2 times in blood.</td>
<td></td>
<td>Fluconazole May increase saquinavir level in blood. However, No dose adjustment recommended.</td>
</tr>
<tr>
<td>Itraconazole</td>
<td>Increases saquinavir level in blood. However, No dose adjustment recommended.</td>
<td></td>
<td>Food Increases saquinavir level in blood. Should be taken within 2 hours of a meal.</td>
</tr>
<tr>
<td>Kaletra</td>
<td>Increases saquinavir trough level by about 3-fold. Saquinavir dose may be reduced to 800mg twice a day. Optimal dosing is under study.</td>
<td></td>
<td>Grapefruit juice Increases saquinavir level in blood.</td>
</tr>
<tr>
<td>Ketoconazole</td>
<td>Significantly increases saquinavir level in blood. However, no dose adjustment recommended.</td>
<td></td>
<td>Indinavir Increases saquinavir level 4.6-7.2 times in blood.</td>
</tr>
<tr>
<td>Lovastatin</td>
<td>Should not be used together*. Increases risk of side effects.</td>
<td></td>
<td>Itraconazole Increases saquinavir level in blood. However, No dose adjustment recommended.</td>
</tr>
<tr>
<td>Methylergocovine</td>
<td>Should not be used together*. Increases risk of side effects.</td>
<td></td>
<td>Ketoconazole Significantly increases saquinavir level in blood. However, no dose adjustment recommended.</td>
</tr>
<tr>
<td>Miconazole</td>
<td>May increase saquinavir level in blood. However, no dose adjustment recommended.</td>
<td></td>
<td>Lovastatin Should not be used together*. Increases risk of side effects.</td>
</tr>
<tr>
<td>Miconazole</td>
<td></td>
<td></td>
<td>Miconazole May increase saquinavir level in blood. However, No dose adjustment recommended.</td>
</tr>
<tr>
<td>Midazolam</td>
<td>Should not be used together*. Increases risk of side effects.</td>
<td></td>
<td>Nelfinavir Increases neflinavir level 18% and increases saquinavir level 4 times in blood. Saquinavir dose may be reduced to 800mg 3 times a day or 1,200mg twice a day.</td>
</tr>
<tr>
<td>Nevirapine</td>
<td>Decreases saquinavir level by 24% in blood. Saquinavir may require ritonavir boosting.</td>
<td></td>
<td>Nelfinavir Increases neflinavir level 18% and increases saquinavir level 4 times in blood. Saquinavir dose may be reduced to 800mg 3 times a day or 1,200mg twice a day.</td>
</tr>
<tr>
<td>Phenobarbital</td>
<td>Should be used together with great caution. May decrease saquinavir level in blood.</td>
<td></td>
<td>Nelfinavir Increases neflinavir level 18% and increases saquinavir level 4 times in blood. Saquinavir dose may be reduced to 800mg 3 times a day or 1,200mg twice a day.</td>
</tr>
<tr>
<td>Rifamipin</td>
<td>Should not be used together. Decreases saquinavir level by 84% in blood.</td>
<td></td>
<td>Nelfinavir Increases neflinavir level 18% and increases saquinavir level 4 times in blood. Saquinavir dose may be reduced to 800mg 3 times a day or 1,200mg twice a day.</td>
</tr>
<tr>
<td>Ritonavir</td>
<td>Increases saquinavir level by 1,587% in blood. Adjust doses to saquinavir 1,000mg + ritonavir 100mg twice a day.</td>
<td></td>
<td>Nelfinavir Increases neflinavir level 18% and increases saquinavir level 4 times in blood. Saquinavir dose may be reduced to 800mg 3 times a day or 1,200mg twice a day.</td>
</tr>
<tr>
<td>Sildenafil</td>
<td>Should be used together with caution. Increases sildenafil level by 210% in blood. Start sildenafil at no more than 25mg.</td>
<td></td>
<td>Nelfinavir Increases neflinavir level 18% and increases saquinavir level 4 times in blood. Saquinavir dose may be reduced to 800mg 3 times a day or 1,200mg twice a day.</td>
</tr>
<tr>
<td>Simvastatin</td>
<td>Should not be used together*. May significantly increase simvastatin level in blood and increase risk of side effects. Ritonavir + saquinavir (soft gel) increases simvastatin level by 3,059% in blood.</td>
<td></td>
<td>Nelfinavir Increases neflinavir level 18% and increases saquinavir level 4 times in blood. Saquinavir dose may be reduced to 800mg 3 times a day or 1,200mg twice a day.</td>
</tr>
<tr>
<td>St. John's Wort</td>
<td>Should not be used together. May decrease saquinavir level in blood.</td>
<td></td>
<td>Nelfinavir Increases neflinavir level 18% and increases saquinavir level 4 times in blood. Saquinavir dose may be reduced to 800mg 3 times a day or 1,200mg twice a day.</td>
</tr>
<tr>
<td>Tedalafil</td>
<td>Should be used together with caution. May increase tedalafil level in blood.</td>
<td></td>
<td>Nelfinavir Increases neflinavir level 18% and increases saquinavir level 4 times in blood. Saquinavir dose may be reduced to 800mg 3 times a day or 1,200mg twice a day.</td>
</tr>
<tr>
<td>Triazolam</td>
<td>Should not be used together*. Increases risk of side effects.</td>
<td></td>
<td>Nelfinavir Increases neflinavir level 18% and increases saquinavir level 4 times in blood. Saquinavir dose may be reduced to 800mg 3 times a day or 1,200mg twice a day.</td>
</tr>
<tr>
<td>Vardenafil</td>
<td>Should be used together with caution. May increase vardenafil level in blood.</td>
<td></td>
<td>Nelfinavir Increases neflinavir level 18% and increases saquinavir level 4 times in blood. Saquinavir dose may be reduced to 800mg 3 times a day or 1,200mg twice a day.</td>
</tr>
</tbody>
</table>

Saquinavir (Invirase, hgc) plus ...

HGC stands for hard gel capsule.

- Astemizole Should not be used together*. Increases risk of side effects.
Saquinavir hgc plus ... (continued)

> Nelfinavir
Increases saquinavir level by 4 times and increases nelfinavir level by 18% in blood. Saquinavir dose may be reduced to 800mg 3 times a day or 1,200mg twice a day.

> Nevirapine
Decreases saquinavir level 24% in blood. Saquinavir may require ritonavir boosting.

> Nicardipine
Should be used together with caution. May increase nicardipine level in blood. Check for side effects.

> Nifedipine
Should be used together with caution. May increase nifedipine level in blood. Check for side effects.

> Nimodipine
Should be used together with caution. May increase nimodipine level in blood. Check for side effects.

> Nisoldipine
Should be used together with caution. May increase nisoldipine level in blood. Check for side effects.

> Nitrendipine
Should be used together with caution. May increase nitrendipine level in blood. Check for side effects.

> Phenobarbital
Should not be used together. May decrease saquinavir level in blood.

> Phenytin
Should not be used together. May decrease saquinavir level in blood.

> Pravastatin
Ritonavir + saquinavir (soft gel) decreases pravastatin level by 47% in blood.

> Quinidine
Should be used with caution. May increase quinidine level in blood. Check for side effects.

> Rifabutin
Should be used together with great caution. Decreases saquinavir level by 40% in blood. Consider alternative to rifabutin.

> Rifampin
Should not be used together. Decreases saquinavir level by 84% in blood.

> Ritonavir
Increases saquinavir level by about 20 times in blood. Adjust doses to saquinavir 1,000mg + ritonavir 100mg twice a day.

> Simvastatin
Should not be used together*. May significantly increase simvastatin level in blood and increase risk of side effects. Ritonavir + saquinavir (soft gel) increases simvastatin level by 3.059% in blood.

> St. John’s Wort
Should not be used together. May decrease saquinavir level in blood.

> Triazolam
Should be used with caution. May increase triazolam level in blood. Check for side effects.

Stavudine (d4T, Zerit) plus ...

> AZT
Should not be used together. Decreases anti-HIV activity.

> ddl or ddl EC
Should be used together with great caution. Increases risk of pancreatitis, especially in pregnant women.

> ddC
May increase risk of peripheral neuropathy and pancreatitis.

> Ganciclovir
May increase risk of pancreatitis.

> Hydroxyurea
Increases anti-HIV activity in test tubes. May increase risk of pancreatitis.

> Pentamidine (IV)
May increase risk of pancreatitis.

> Ribavirin
Should not be used together. Decreases anti-HIV activity in test tubes.

Sulfamethizine plus ...

> Glipizide
Should be used together with caution. May decrease glipizide level in blood. Check blood sugar level and adjust dose accordingly.

> Glyburide
Should be used together with caution. May decrease glyburide level in blood. Check blood sugar level and adjust dose accordingly.

> Tolbutamide
Should be used together with caution. May decrease tolbutamide level in blood. Check blood sugar level and adjust dose accordingly.

Tenofvir (Viread) plus ...

> Abacavir
Should be used together with great caution. Although blood level not affected, tenofvir + abacavir speeds the development of resistance to both.

> Adefovir
Should not be used together*. Increases risk of kidney toxicity.

> Acyclovir
Should be used together with caution. May increase risk of kidney toxicity.

> Amikacin
Should not be used together*. May increase risk of side effects.

> Amphotericin B
Should not be used together*. May increase risk of side effects.

> Atazanavir
Increases tenofvir level by 24% and decreases atazanavir level by up to 40% in blood. Atazanavir should be boosted with ritonavir if used with tenofvir.

> Cidofovir
Should not be used together*. May increase risk of side effects.

Tenofvir plus ... (continued)

> ddI or ddI EC
Should be used together with great caution. Increases ddI level by 44% in blood. May increase risk of ddI side effects.

> Food (high fat meal)
Increases tenofvir level by 40% in blood. Tenofvir should be taken with food.

> Foscarnet
Should be used together with great caution. May increase risk of kidney toxicity.

> Ganciclovir
Should be used together with great caution. May increase risk of side effects. Check for kidney toxicity.

> Gentamycin
Should not be used together*. May increase risk of side effects.

> Kaletra
Increases tenofvir level by about 30% and decreases lopinavir level 15% in blood. No dose adjustment currently recommended.

> Pentamidine (IV)
Should not be used together*. May increase risk of side effects.

> Tobramycin
Should not be used together*. May increase risk of side effects.

> Valacyclovir
Should be used together with caution. May increase risk of kidney toxicity.

> Valganciclovir
Should not be used together*. May increase risk of side effects.

TMP/SMX (Bactrim, Septra) plus ...

> 3TC
Increases 3TC level by 44% in blood. No dose adjustment recommended. Check for 3TC side effects.

> Anticancer drugs
May decrease number of red blood cells (anemia) and neutrophils (neutropenia).

> AZT
Should be used together with caution. May decrease number of red blood cells (anemia) and neutrophils (neutropenia).

> Dapsone
Increases trimethoprim level by 1.5 times and increases dapsone level by 1.5 times in blood.

> ddl or ddl EC
Slightly decreases trimethoprim level and increases ddl level in blood. No dose adjustment recommended.

> Diuretics
May decrease number of platelets in elderly people.

> Ganciclovir
Should be used together with great caution. May increase risk of bone marrow toxicity.

> Indinavir
Should be used together with caution. Increases trimethoprim level by 31% in blood.
Zalcitabine plus ... (continued)

- Aminoglycosides May increase ddC level in blood and increase risk of peripheral neuropathy. Check for toxicity.
- Amphotericin B May increase ddC level in blood and increase risk of peripheral neuropathy. Check for toxicity.
- Antacids Decreases ddC level by 25% in blood. Take at least 2 hours apart.
- Anticancer drugs May increase risk of peripheral neuropathy.
- Chloramphenicol May increase risk of peripheral neuropathy.
- Cimetidine Significantly increases ddC level in blood. Check for toxicity; consider lower ddC dose.
- Cisplatin May increase risk of peripheral neuropathy.
- Dapsone May increase risk of peripheral neuropathy.
- ddI or ddI EC Should not be used together. Significantly increases ddC level in blood.
- Doxorubicin May decrease anti-HIV activity of ddC.
- d4T May increase risk of peripheral neuropathy and pancreatitis.
- Ethionamide May increase risk of peripheral neuropathy.
- Food May decrease ddC level in blood.
- Foscarnet May increase risk of kidney toxicity and peripheral neuropathy. Check for toxicity.
- Glutethimide May increase risk of peripheral neuropathy.
- Hydralazine May increase risk of peripheral neuropathy.
- Idoxquinol May increase risk of peripheral neuropathy.
- Isoniazid May increase risk of peripheral neuropathy.
- Metoclopramide Decreases ddC level by 10% in blood.
- Metronidazole May increase risk of peripheral neuropathy.
- Nitrofurantoin May increase risk of peripheral neuropathy.
- Pentamidine (IV) Should be used with great caution. May increase risk of peripheral neuropathy and pancreatitis.
- Phenothin May increase risk of peripheral neuropathy.
- Probenecid Significantly increases ddC level in blood. Check for toxicity; consider lower ddC dose.

Ribavirin May increase risk of peripheral neuropathy.
Vincristine May increase risk of peripheral neuropathy.

Zidovudine (AZT, Retrovir) plus ...

- Acyclovir Increases AZT level by 10% in blood. No dose adjustment recommended.
- Ampicillin May increase risk of bone marrow toxicity.
- Amprenavir Increases AZT level by 31% and increases ampronavir level by 13% in blood. No dose adjustment recommended.
- Anticancer drugs May increase risk of bone marrow toxicity.
- Atovaquone Increases AZT level by 35% in blood. No dose adjustment recommended.
- Azithromycin May increase AZT level in blood. No dose adjustment recommended.
- Clarithromycin Decreases AZT level by 25% in blood. Consider taking at least 2 hours apart.
- Dapsone May increase risk of bone marrow toxicity.
- Doxorubicin Should not be used together. Decreases effectiveness and increases toxicity.
- d4T Should not be used together. Decreases anti-HIV activity.
- Fluconazole Increases AZT level by 74% and may increase fluconazole level in blood. Check for toxicity.
- Flucytosine May increase risk of bone marrow toxicity.
- Food Fatty foods may decrease AZT level by 57% in blood.
- Foscarnet Should be used with caution. May increase risk of anemia.
- Ganciclovir Increases AZT level in blood and may increase risk of neutropenia, anemia and bone marrow toxicity. Avoid combination or use lower AZT dose.
- Indinavir Increases anti-HIV activity in test tubes. Increases AZT level by 17–36% in blood. No dose adjustment recommended.
- Interferon-alfa Increases anti-HIV activity in test tubes and may increase risk of bone marrow toxicity. Lower AZT dose by 50–75%.
- Methadone Increases AZT level by 43% in blood. Check for AZT toxicity.
- Nelfinavir Decreases AZT level by 35% in blood. No dose adjustment recommended.
### Glossary of terms:

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anemia</td>
<td>A decrease in red blood cells. Can lead to fatigue, weakness, dizziness, and shortness of breath.</td>
</tr>
<tr>
<td>Anti-coagulant</td>
<td>A drug that thins blood and is used to treat a number of heart conditions.</td>
</tr>
<tr>
<td>ECG</td>
<td>Electrocardiogram.</td>
</tr>
<tr>
<td>INR (International Normalization Ratio)</td>
<td>A standardized way to measure various clotting factors in the blood.</td>
</tr>
<tr>
<td>NSAIDS</td>
<td>Non-steroidal anti-inflammatory drugs.</td>
</tr>
<tr>
<td>Neutropenia</td>
<td>A decrease in blood cells called neutrophils that are helpful in fighting off bacterial infections.</td>
</tr>
<tr>
<td>Pancreatitis</td>
<td>An inflammation of the pancreas. Can be life-threatening.</td>
</tr>
<tr>
<td>Peripheral neuropathy</td>
<td>A disorder affecting the nerves of primarily the feet and hands. Symptoms may include numbness, tingling or burning sensations, pain, abnormal reflexes, weakness and partial paralysis.</td>
</tr>
<tr>
<td>Prothrombin time</td>
<td>A type of test to measure various clotting factors in blood.</td>
</tr>
<tr>
<td>QTc prolongation</td>
<td>QTc is a measurement of the pace of electrical activity of the lower chambers of the heart, which causes them to contract and relax. When the pace is slowed down (prolonged), people can experience abnormal heart rhythms, and in extreme cases spasms or a stopping of the heart.</td>
</tr>
<tr>
<td>Stevens Johnson Syndrome</td>
<td>Dilation of blood capillaries that results in redness and lesions all over the skin. Eyes and mouth may become swollen leading to inability to eat. Sometimes fatal.</td>
</tr>
<tr>
<td>Systemic</td>
<td>Throughout the body. As opposed to medicine that stays in one part of the body.</td>
</tr>
<tr>
<td>Toxicity</td>
<td>Side effects; the degree to which a drug can cause side effects.</td>
</tr>
</tbody>
</table>

### Interpreting directions:

Should be used together with caution
The risk of side effects from a combination is possible, but not highly common.

Should be used together with great caution
The risk of side effects from a combination is possible, and though not common may be serious if they occur.

Should not be used together
The risk of side effects from a combination is too high for the two medications to be used together. An asterisk (*) following this phrase means the side effects may be life-threatening.
Anti-HIV Medications + Street Drugs: Some Cocktails Don’t Mix


For most drugs to be effective and not kill you, they need to be metabolized [broken down] by the liver or kidneys. These organs have limited resources and a set number of chemicals which accomplish this task. Because of this, certain drugs, whether they’re HIV medications or recreational drugs, can affect how other drugs act. This is called a drug interaction—and some of them can be deadly.

There hasn’t been much research on how street drugs and HIV medications interact—because there is little financial incentive for the pharmaceutical companies to do the work, and because the government believes “just say no,” is the only way to deal with drugs. Certainly, your best bet is not to take street drugs at all if you are taking HIV medications. But some interactions are deadlier than others.

Ecstasy (X, MDMA)
There has already been one death in England which resulted from a regular dose of ecstasy (MDMA, X) taken with ritonavir. Ritonavir acts to slow down the liver enzyme that breaks down X — so it makes the dose 5–10 times stronger. In addition, between 3–10% of the white population (the figure for other populations is not known) have a deficiency in this enzyme, which may be why some people overdose on what may be a safe dose for others. If you are taking any protease inhibitor [ritonavir, nevirapine, indinavir, saquinavir (Fortovase)] or NNRTI [nevirapine, delavirdine or efavirenz], X can be extremely dangerous. Of these, ritonavir and delavirdine seem to be the most dangerous, while nevirapine and efavirenz may be less so — although because effects in the test tube have sometimes been opposite to those seen in the body, this is hard to predict.

If you do take X with a protease inhibitor, wait as long as possible after taking the protease inhibitor to take X, and be sure to have someone with you who knows what you’ve done in case you have difficulties. These overdoses are often not reversible, so it’s really better not to mix these drugs!

Recent research has found that X damages serotonin neurons, so avoid it if you have a family or personal history of depression or anxiety disorders.

Alcohol
ddl can increase the risk of pancreatitis (intense stomach pain that feels like it’s going all the way through to your back). So, if you’re using alcohol regularly, don’t use ddl. There are other nucleosides to choose from.

Occasional and light use of alcohol is not known to interact with other HIV medications; however, chronic, heavy use can be destructive to the liver. This can bedangerous because the way drugs are broken down can be hurt. More drugs will stay in your system for the most part, which is likely to cause overdoses and worse side effects.

Alcohol can cause dehydration; so be sure to drink lots of water to help your body deal with any alcohol you drink.

Marijuana
Protease inhibitors may increase THC levels (the active ingredient in marijuana) — so smaller doses may make you more stoned. This is also true of the synthetic version (Marinol) used in the treatment of weight loss. Since THC overdose is impossible, this interaction is not dangerous.

Sedatives
The sedatives Halcion (triazolam), Valium (diazepam), Ambien (zolpidem) and Versed (midazolam) can also be deadly if mixed with protease inhibitors. Norvir has the largest negative effect. At high doses these drugs can stop your breathing. Ativan (lorazepam), Serax (oxazepam) and Restoril (temazepam) are safer with Norvir, and may actually be weakened by it.

Barbiturates
Crixivan may increase blood levels of phenobarbital (Luminal), making overdose more likely. Other protease inhibitor interactions are also possible.

Cocaine (coke, blow)
There are no known interactions between cocaine and HIV medications, but in the test tube, cocaine doubles the speed at which the virus reproduces, meaning it may speed up how sick you get.

Heroin (smack, brown, junk, China White)
Ritonavir seems to reduce heroin levels by 50% making overdose less likely. However, this drug and the other protease inhibitors have sometimes been known to have opposite effects (they cut methadone levels in real life, while test tube experiments predicted they would increase them), so caution is in order. Some synthetics sold as heroin (fentanyl, alpha-methyl-fentanyl) are potent in tiny doses and could be deadly if mixed with another drug.

GHB (gamma-hydroxy-butrate, grievous bodily harm, liquid X)
GHB is potentially dangerous with Norvir and other protease inhibitors.

Amyl nitrite (amyl nitrate/poppers)
Glutathione is used by the liver to process amyl nitrite, and high glutathione is linked with survival. If using amyl nitrite cuts glutathione, it could lead to disease progression.

LSD (acid)
No known interactions.

Ketamine (Special K)
When combined with ritonavir, special K can lead to “chemical hepatitis,” an unpleasant inflammation of the liver resulting in jaundice. A New York HIV doctor has seen two cases of it. Both went away in several weeks. But anything which damages the liver can be a serious problem for people living with HIV.

Amphetamines
(dexedrine, amphetamine, methamphetamine, crystal meth)
Ritonavir is predicted to increase amphetamine levels in the blood by a factor of 2–3. The other protease inhibitors should have less of an impact, but strange opposite results are always possible.

Ritalin
Norvir and other similar drugs can either strengthen Ritalin’s effects or make it weaker.

Beware!
Interactions not listed could be deadly. Street drugs are often not what they are sold as, they are frequently cut with substances that may interact with drugs themselves and their potency can vary wildly, even in the same batch. With the lack of research in this area, it’s better to avoid potential interactions if at all possible.