

2008

MANAGING ADULT PATIENTS

PSYCHIATRIC MEDICATIONS

AND HIV ANTIRETROVIRALS

A GUIDE TO INTERACTIONS FOR CLINICIANS

Psychiatric Medications and HIV Antiretrovirals: A GUIDE TO INTERACTIONS FOR CLINICIANS MANAGING ADULT PATIENTS

Acknowledgements

This guide was developed and prepared by the following staff of the Columbia University HIV Mental Health Training Project and the NY/NJ AETC.

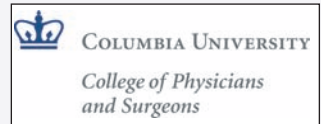
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We would like to acknowledge the American Psychiatric Association, as well as Christine Kubin, Pharm D, for providing expert advice and guidance during the creation of this guide.

Disclaimer:

The data in this guide are intended for use by clinicians and other health care providers as guidance to minimize drug interactions and toxicities among adult patients being treated with psychiatric medications in conjunction with antiretrovirals. This guide is not intended for managing pediatric or adolescent patients. Data were compiled from published studies and anecdotal reports as of January 2008.

Produced and presented by the NY/NJ AETC and the Columbia University HIV Mental Health Training Project



NON-NUCLEOSIDE/TIDE REVERSE TRANSCRIPTASE INHIBITORS

Generic Name	Brand Name	Route of Elimination/Metabolism
Delavirdine, DLV	Rescriptor®	CYP 3A4 inhibitor
Efavirenz, EFV	Sustiva®	CYP 3A4 inducer and inhibitor
Nevirapine, NVP	Viramune®	CYP 3A4 inducer
Etravirine, ETV	Intelece™	CYP 3A4 inducer, inhibitor of 2C9, 2C19

NUCLEOSIDE/NUCLEOTIDE REVERSE TRANSCRIPTASE INHIBITORS

Generic Name	Brand Name	Route of Elimination/Metabolism
Abacavir, ABC	Ziagen®	Metabolized by alcohol dehydrogenase and glucuronyl transferase
Didanosine, ddl	Videx EC®	Renal excretion 50%
Emtricitabine, FTC	Emtriva®	Renal
Lamivudine, 3TC	Epivir®	Renal
Stavudine, d4T	Zerit®	Renal excretion 50%
Tenofovir, TDF	Viread®	Renal
Zidovudine, AZT	Retrovir®	Metabolized to AZT glucuronide, renal excretion

COMBINATION REVERSE TRANSCRIPTASE INHIBITORS

Generic Name	Brand Name	Route of Elimination/Metabolism
Abacavir and lamivudine	Epzicom®	See individual medications
Abacavir, zidovudine, and lamivudine	Trizivir®	See individual medications
Efavirenz, tenofovir, emtricitabine	Atripla®	See individual medications
Tenofovir and emtricitabine	Truvada®	See individual medications
Zidovudine and lamivudine	Combivir®	See individual medications

Black Box Warnings for psychiatric medications are listed in bold in the Caution section.

PROTEASE INHIBITORS

Generic Name	Brand Name	Route of Elimination/Metabolism
Atazanavir, ATV	Reyataz®	CYP 3A4 inhibitor and substrate
Darunavir, DRV	Prezista®	CYP 3A4 inhibitor and substrate
Fosamprenavir, FPV	Lexiva®	CYP 3A4 inhibitor, inducer and substrate
Indinavir, IDV	Crixivan®	CYP 3A4 inhibitor
Lopinavir/ritonavir, LPV/r	Kaletra®	CYP 3A4 inhibitor and substrate
Nelfinavir, NFV	Viracept®	CYP 3A4 inhibitor and substrate
Ritonavir, RTV	Norvir®	CYP 3A4 and 2D6 inhibitor
Saquinavir, SQV	Invirase®	CYP 3A4 inhibitor and substrate
Tipranavir, TPV	Aptivus®	CYP 3A4 and 2D6 inhibitor

FUSION INHIBITOR

Generic Name	Brand Name	Route of Elimination/Metabolism
Enfuvirtide, ENF	Fuzeon®	Catabolism to amino acids

CCR5 INHIBITOR

Generic Name	Brand Name	Route of Elimination/Metabolism
Maraviroc, MRV	Selzentry®	CYP 3A4 substrate

INTEGRASE INHIBITOR

Generic Name	Brand Name	Route of Elimination/Metabolism
Raltegravir	Isentress®	Metabolized by glucuronidation, not CYP 450

Abbreviations: **PK** - pharmacokinetics **NNRTI**- non-nucleoside reverse transcriptase inhibitor **NRTI** - nucleoside/tide reverse transcriptase inhibitor

Abbreviations: **PI** - protease inhibitors **CCR5I** - CCR5 inhibitors **I** - integrase inhibitors

Black Box Warnings for psychiatric medications are listed in bold in the Caution section.

Disclaimer - The information contained in this guide is intended for use in adult patients only.

Additional/Other references should be used when evaluating information for the treatment of adolescents and pediatric patients.

CLASS

Antidepressants

INDICATIONS

Many antidepressants can be used to treat both depressive and anxiety disorders.

Antianxiety drugs, such as benzodiazepines, however, are not a treatment for depression.



CATEGORY

Selective serotonin reuptake inhibitors (SSRIs) fluoxetine (Prozac), sertraline(Zoloft), paroxetine(Pexeva, Paxil), citalopram(Celexa), escitalopram(Lexapro), fluvoxamine(Luvox)*

Tricyclics (TCAs) nortriptyline(Pamelor), desipramine(Norpramin), amitriptyline(Elavil), imipramine(Tofranil), doxepin(Sinequan), clomipramine(Anafranil), protriptyline(Vivactil)

BLACK BOX WARNINGS/ CAUTIONS

Increased suicide risk in those <24 yo. Monitor for serotonin syndrome (diaphoresis, hyperthermia, hypertension, tachycardia, papillary dilatation, nausea, diarrhea, shivering, hyperreflexia, myoclonus, restlessness, tremor, incoordination, rigidity, clonus, trismus, seizures, confusion, agitation, anxiety, insomnia, hallucinations, headache). Fluoxetine is also formulated as a combination with olanzapine (Symbyax); refer to olanzapine (atypical antipsychotics) for further information.

PK Fluoxetine: Inhibitor of CYP 2D6, 3A4, 2C19.
Fluvoxamine: Inhibitor of CYP 3A4, 1A2, 2C19, 2C9.
Citalopram, escitalopram, sertraline, and paroxetine: Inhibitors of CYP 2D6.

NNRTIs Fluoxetine increased trough through levels of delavirdine - 50%

NRTIs No published data about drug interactions specific to this combination.

PIs Fluoxetine and fluvoxamine may lead to increased effects of ritonavir, but no dose adjustment of ritonavir needed when used in combination (Ouellet et al.)
Ritonavir increases levels of fluoxetine, fluvoxamine, paroxetine and sertraline and can lead to serotonin syndrome. Fluvoxamine increases levels of all PIs.
Darunavir/ritonavir decreases sertraline levels by ~50% and decreases paroxetine levels by ~40%; monitor closely for antidepressant effect and increase dose as tolerated.

CCR5I No published data about drug interactions specific to this combination

|| No published data about drug interactions specific to this combination

TCAs are associated with dry mouth, constipation, urinary retention, and blurred vision; toxic levels of TCAs may prolong the PR interval on EKG, and lead to atrioventricular (AV) block and cardiac arrhythmia; patients with an existing AV conduction disturbance are at increased risk.
Note: CNS side effects are more prominent in patients with advanced AIDS. It is best to start with low doses and titrate slowly.

Metabolized by CYP 2D6

No published data about drug interactions specific to this combination.

No published data about drug interactions specific to this combination.

Ritonavir is a CYP 2D6 inhibitor, and decreases desipramine clearance by 50% causing higher blood levels of desipramine (von Moltke, et al); Ritonavir may also increase levels of amitriptyline, doxepin, imipramine, nortriptyline.
When used in combination with ritonavir or ritonavir - boosted protease inhibitors, caution is required. Reduced dosages may be required; monitor EKG and serum TCA levels.

No published data about drug interactions specific to this combination

No published data about drug interactions specific to this combination

*fluvoxamine(Luvox) is generally used for obsessive compulsive disorder.

CLASS

Antidepressants

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CATEGORY	Other bupropion (Wellbutrin, Wellbutrin XL, Zyban)	Other nefazodone
BLACK BOX WARNINGS/ CAUTIONS	Increased levels may induce seizures. Caution should be observed when bupropion is administered concomitantly with drugs that may inhibit its metabolism (e.g., cimetidine, PIs), increasing bupropion levels and increasing the risk of drug-induced seizures.	Cases of life-threatening hepatic failure have been reported with nefazodone; caution is indicated in patients with liver disease, such as hepatitis, or in combination with other potential hepatotoxins. This drug is usually avoided. Associated with somnolence and dizziness, especially at higher doses.
PK	Metabolized by CYP 2D6, 3A4, 2B6.	Metabolized by and potent inhibitor of CYP 3A4
NNRTIs	Efavirenz inhibits CYP 2B6; may increase bupropion levels.	No published data about drug interactions specific to this combination (See Cautions).
NRTIs	No published data about drug interactions specific to this combination.	No published data about drug interactions specific to this combination (See Cautions).
PIs	Nelfinavir and ritonavir inhibit 2B6 and may increase bupropion levels, increasing risk of drug-induced seizures. Lopinavir/ritonavir has been demonstrated to reduce bupropion levels by ~ 60%. (Hogeland et al.) Patients may require increased dosage of bupropion; monitor closely for effect when using these medications concurrently. Avoid with high dose ritonavir.	Caution advised; combination of PI's and nefazodone may increase levels of both drugs.
CCR5I	No published data about drug interactions specific to this combination	When nefazodone is used in combination with maraviroc, the maraviroc dosage should be reduced to 150mg twice daily. No change in nefazodone dosage is necessary. (Product Information on Maraviroc)
 	No published data about drug interactions specific to this combination	No published data about drug interactions specific to this combination

CLASS

Antidepressants

INDICATIONS

Many antidepressants can be used to treat both depressive and anxiety disorders. Antianxiety drugs, such as benzodiazepines, however, are not a treatment for depression.



CATEGORY	Serotonin norepinephrine reuptake inhibitors (SNRIs) mirtazapine (Remeron), venlafaxine (Effexor), duloxetine (Cymbalta)	Other trazodone (Desyrel)
BLACK BOX WARNINGS/CAUTIONS	Mirtazapine: Orthostatic hypotension, drowsiness. Venlafaxine: Hypertension.	Increased plasma levels may cause nausea, hypotension, syncope and drowsiness. Trazodone has been associated with increased incidence of priapism and arrhythmias.
PK	Duloxetine: Metabolized by CYP 2D6, 1A2 Mirtazapine: Metabolized by CYP 2D6, 1A2, 3A4. Venlafaxine: Metabolized by CYP 2D6, 3A4.	Trazodone: substrate of CYP 3A4
NNRTIs	No published data about drug interactions specific to this combination.	No published data about drug interactions specific to this combination.
NRTIs	No published data about drug interactions specific to this combination.	No published data about drug interactions specific to this combination.
PIs	Venlafaxine may decrease indinavir levels. An in vivo study (n=9) showed a 28 % decrease in the AUC and a 36% decrease in the C _{max} of indinavir (Levin et al.). The clinical significance of this interaction is unknown.	Short-term administration of ritonavir (200 mg twice daily, 4 doses) increased the C _{max} of trazodone by 34%, AUC increased 2.4 - fold, half-life increased by 2.2-fold, trazodone clearance decreased by 52%. Lopinavir/ritonavir increased trazodone levels 2.4 fold. (Greenblatt et al.) Potential for drug interactions when trazodone is co-administered with PIs, especially ritonavir boosted PIs. If trazodone is used with CYP 3A4 inhibitor, a lower dose of trazodone should be considered. Use caution when combining; if using concurrently, initiate trazodone at lowest available dosage and monitor for adverse effects as listed in the cautions section.
CCR5I	No published data about drug interactions specific to this combination	No published data about drug interactions specific to this combination
II	No published data about drug interactions specific to this combination	No published data about drug interactions specific to this combination

CLASS

Anxiolytics and Sedative- Hypnotics

INDICATIONS

Anxiolytics
and Sedative-
Hypnotics
can be used
to treat
anxiety
and sleep
disorders.



CATEGORY

Benzodiazepines alprazolam (Niravam, Xanax), clonazepam (Klonopin), clorazepate (Tranxene), diazepam (Valium), flurazepam (Dalmane), lorazepam (Ativan), midazolam (Versed), oxazepam, temazepam (Restoril), triazolam (Halcion)

Non-Benzodiazepine sedative/hypnotics zolpidem (Ambien), zaleplon (Sonata), eszopiclone (Lunesta), buspirone (Buspar), ramelteon (Rozerem)

BLACK BOX WARNINGS/ CAUTIONS

Some caution advised in patients with history of drug dependence, in order to avoid additional dependency.
Note: CNS side effects are more prominent in patients with advanced AIDS. In these patients, start with lower doses and titrate slowly.

Should be only used after sleep hygiene has been established and proves insufficient. Use with caution in patients receiving other CNS depressants or psychoactive medication; effects with other sedative drugs or ethanol may be potentiated.

PK

Alprazolam, flurazepam, clonazepam, and diazepam are also metabolized by CYP 3A4
Midazolam, triazolam extensively metabolized by CYP 3A4
Clorazepate, lorazepam, oxazepam, temazepam are metabolized by glucuronidation and are free of drug interactions with inhibitors of CYP 3A4.
Please look below in the PI section for contraindications and caution with use.

Buspirone: Substrate for CYP 3A4
Eszopiclone: Metabolized by CYP 3A4 and 2E1
Ramelteon: CYP 1A2, minor contribution from CYP 2C family and CYP 3A4
Zaleplon: Metabolized by aldehyde oxidase and CYP 3A4
Zolpidem: CYP 3A4 substrate

NNRTIs

Concurrent etravirine and diazepam may increase diazepam plasma concentrations. A decrease in diazepam dosage may be needed when using with etravirine

No published data about drug interactions specific to this combination.

NRTIs

No published data about drug interactions specific to this combination.

No published data about drug interactions specific to this combination.

PIs

Midazolam and triazolam are metabolized by CYP 3A4, and are **CONTRAINDICATED** in combination with PIs due to the potential for serious and life-threatening reactions such as prolonged or severe sedation or respiratory depression.
Alprazolam, flurazepam, clonazepam, and diazepam are also metabolized by CYP 3A4, and should be used with caution in combination with PIs due to the potential for serious reactions such as prolonged or severe sedation or respiratory depression.
Lorazepam, temazepam, clorazepate and oxazepam are metabolized by glucuronidation and are free of the serious interactions with PIs.

Use zolpidem and zaleplon with caution in combination with PIs due to potential for serious reactions such as prolonged or severe sedation or respiratory depression. With CYP 3A4 inhibitors, such as ritonavir - boosted PIs, use lowest dosage available and monitor for excess CNS depression. Avoid with other CNS-depressants.
Use eszopiclone and PIs with caution, if at all. Monitor for excess sedation and/or respiratory depression. Ketoconazole increases eszopiclone levels by 2.2-fold; similar interactions with PIs and ritonavir - boosted PIs would be expected. Avoid concurrent use if possible. Buspirone is a substrate of CYP 3A4 - Concurrent use with PIs is likely to increase buspirone drug levels.

CCR5I

No published data about drug interactions specific to this combination

No published data about drug interactions specific to this combination

||

No published data about drug interactions specific to this combination

No published data about drug interactions specific to this combination

CLASS

*Mood
Stabilizers*

Anticonvulsants INDICATIONS

*Mood Stabilizers
are used as
monotherapy and
in combination
with other drugs
(e.g. atypical
antipsychotics)
for treatment of
acute mania, and
as maintenance
treatment for
bipolar disorder.*

CATEGORY	Lithium carbonate (Eskalith, Lithobid)	Anticonvulsants carbamazepine (Tegretol), divalproex sodium (Depakote), gabapentin (Neurontin), lamotrigine (Lamictal), levitracetam (Keppra), oxcarbazepine (Trileptal), pregabalin (Lyrica), tiagabine (Gabitril), valproic acid (Depakene)
BLACK BOX WARNINGS/ CAUTIONS	Lithium toxicity occurs above therapeutic serum levels. Long-term use can impair renal or thyroid function; regularly monitor serum lithium levels, creatinine, electrolytes and thyroid function tests.	Divalproex, valproic acid: possible hepatotoxicity. Carbamazepine: possible bone marrow suppression. Monitor LFTs and CBC, and use with caution when prescribing other medications with overlapping toxicities.
PK	Lithium is cleared exclusively by the kidneys; renal impairment requires lower doses to avoid toxicity.	Carbamazepine: CYP 3A4 enzyme inducer, Gabapentin: renal elimination. Lamotrigine: undergoes glucuronidation Topiramate: inhibits CPY 2C19 Valproic acid: inhibitor of glucuronidation
NNRTIs	No published data about drug interactions specific to this combination.	Carbamazepine, phenobarbital, phenytoin: CYP 3A4 inducers, may decrease levels of PIs and NNRTIs. Carbamazepine, phenobarbital, and phenytoin may decrease etravirine drug levels and should not be used together.
NRTIs	No published data about drug interactions specific to this combination.	Valproic acid: inhibitor of glucuronidation; study showed 100% increase in AUC of zidovudine, but dosage adjustment not recommended (Lertora et al.) Monitor for zidovudine toxicity.
PIs	No published data about drug interactions specific to this combination.	Carbamazepine: may decrease levels of PIs; decreases indinavir levels resulting in virologic failure. Ritonavir increases carbamazepine levels (Kato et al.). Phenytoin: Co-administration of LPV/r and phenytoin results in a 2-way drug interaction whereby both LPV/r and phenytoin concentrations are decreased. ~ 30%. (Lim et al.) Co-administration of nelfinavir (NFV) with phenytoin resulted in a 30% reduction in the phenytoin AUC and a 20% reduction in the AUC of the major NFV metabolite, M8, but had no effect on the NFV AUC (Shelton et al). Lamotrigine: When combined with LPV/r, lamotrigine levels were markedly decreased. An increased dosage of lamotrigine may be required.
CCR5I	No published data about drug interactions specific to this combination	Increase maraviroc dosage to 600 mg twice daily when combining with carbamazepine. No change in carbamazepine, phenobarbital or phenytoin required. (Product Information on Maraviroc.)
 	No published data about drug interactions specific to this combination	No published data about drug interactions specific to this combination

CLASS
Antipsychotics
INDICATIONS

Antipsychotics can be used to treat psychotic disorders, mania, and behavioral disturbances, such as agitation, associated with dementia.



<p>CATEGORY First Generation - Typical chlorpromazine (Thorazine), fluphenazine (Prolixin), haloperidol (Haldol), loxapine (Loxitane), mesoridazine (Serentil), molindone (Moban), perphenazine (Trilafon), pimozide (Orap), thioridazine (Mellaril), thiothixene (Navane), trifluoperazine (Stelazine)</p>	<p>Atypical Antipsychotics aripiprazole (Ablify), clozapine (Clozani), olanzapine (Zyprexa), olanzapine/fluoxetine(Symbyax), paliperidone (Invega), quetiapine (Seroquel), risperidone (Risperdal) ziprasidone (Geodon)</p>
<p>BLACK BOX WARNINGS/ CAUTIONS</p> <p>Pimozide side-effects are prominent in patients with HIV illness. In these patients, start with low doses and titrate slowly. Pimozide prolongs the QT interval on EKG, and is CONTRAINDICATED in combination with protease inhibitors. Mesoridazine and thioridazine should not be used in individuals who have known cardiac conduction defects (e.g. AV block, bundle-branch block, cardiac arrhythmia, QT prolongation)</p>	<p>All drugs in class: Elderly patients with dementia-related behavioral disorders are at increased risk of death compared to placebo. Clozapine contains 5 black box warnings, see product insert: seizures, myocarditis, other cardiovascular and respiratory effects, and risk of life-threatening agranulocytosis; avoid with other medications that suppress bone marrow function. Inhibitors of CYP 3A4 and 2D6 may increase plasma levels of clozapine & increase the risks for seizures, orthostatic hypotension & other adverse effects. Ziprasidone: 1) Causes a dose-related prolongation of the QT interval, and is CONTRAINDICATED with prolongation of the QT interval, recent acute myocardial infarction, or uncompensated heart failure. Also CONTRAINDICATED in combination with other drugs that prolong the QT interval, such as pentamidine, mesoridazine, thioridazine, chlorpromazine, droperidol, or pimozide (not a complete list). 2) An in vivo study showed a 35-40% increase in the AUC and Cmax of ziprasidone when co-administered with ketoconazole, a potent inhibitor of CYP 3A4; caution is indicated when ziprasidone is co-administered with drugs that inhibit CYP 3A4.</p>
<p>PK</p> <p>Chlorpromazine: Metabolized by CYP 1A2, 2D6, 3A4; inhibits CYP 2D6. Fluphenazine: Metabolized by CYP 2D6; inhibits CYP 2D6. Haloperidol: Metabolized by CYP 2D6; inhibits CYP 2D6. Molindone: Metabolized by CYP 2D6. Perphenazine: Metabolized by CYP 2D6; inhibits CYP 2D6. Thioridazine: Metabolized by CYP 1A2, 2D6; inhibits CYP 2D6. Trifluoperazine: Metabolized by CYP 1A2.</p>	<p>Aripiprazole: Metabolized by CYP 3A4 and 2D6. Clozapine: Metabolized by CYP 3A4, 2D6, 1A2, 2C19. Olanzapine: Metabolized by CYP 1A2, 2D6. Paliperidone: Not expected to effect CYP 450 in vivo Quetiapine: Metabolized by CYP 3A4 Risperidone: Metabolized by CYP 2D6, 3A4; inhibits CYP 2D6 Ziprasidone: Metabolized by CYP 3A4.</p>
<p>NNRTIs No published data about drug interactions specific to this combination.</p>	<p>No published data about drug interactions specific to this combination.</p>
<p>NRTIs No published data about drug interactions specific to this combination.</p>	<p>No published data about drug interactions specific to this combination.</p>
<p>PIs</p> <p>Pimozide: prolongs the QT interval on EKG, and is CONTRAINDICATED in combination with PIs due to potential for serious and life-threatening reactions, such as cardiac arrhythmia. Ritonavir may increase levels of antipsychotics; caution with other PIs and ritonavir- boosted PIs.</p>	<p>PIs may inhibit CYP 3A4 and 2D6 and may increase plasma levels of clozapine & increase the risk for seizures & orthostatic hypotension. Olanzapine: one study showed an increased clearance of olanzapine, when used in combination with ritonavir, which induces CYP 1A2 but the clinical significance is unclear. Quetiapine: Drug levels may be increased by PIs. Caution when combining these medications. Consider using lower doses of quetiapine. Ziprasidone: caution is indicated when ziprasidone is co-administered with drugs that inhibit CYP 3A4, such as ritonavir.</p>
<p>CCRS1 No published data about drug interactions specific to this combination</p>	<p>No published data about drug interactions specific to this combination</p>
<p>II No published data about drug interactions specific to this combination</p>	<p>No published data about drug interactions specific to this combination</p>

CLASS

Stimulants and Medications for attention deficit disorder

INDICATIONS

Stimulants can be used to treat attention deficit hyperactivity disorder, and as adjunctive/augmentation therapy in depression, cognitive disorders and fatigue.

CATEGORY **Stimulants** amphetamine and dextroamphetamine (Adderall/Dexedrine), atomoxetine (Strattera), methylphenidate (Ritalin), modafinil (Provigil)

BLACK BOX WARNINGS/CAUTIONS All drugs in class except for modafinil: Potential for drug dependency exists; avoid abrupt discontinuation in patients who have received for prolonged periods. Adderall, Dexedrine: Use has been associated with serious cardiovascular events including sudden death in patients with pre-existing structural cardiac abnormalities or other serious heart problems (sudden death in children and adolescents; sudden death, stroke and MI in adults).

PK Amphetamine, dextroamphetamine: CYP 2D6 substrate and weak inhibitor
Atomoxetine: Metabolized via CYP 2D6 and glucuronidation
Methylphenidate: CYP 2D6 inhibitor
Modafinil: Substrate for CYP 3A4

NNRTIs No published data about drug interactions specific to this combination

NRTIs No published data about drug interactions specific to this combination

PIs Use of ritonavir may increase drug concentrations of modafinil, methylphenidate, amphetamine, and dextroamphetamine.

CCRSIs No published data about drug interactions specific to this combination

II No published data about drug interactions specific to this combination

CLASS

Herbal Preparations

Proposed Uses

Self-prescribed by patients for multiple needs. Providers need to be aware of preparations used by their patients.

St. John's Wort (Hypericin, Hyperforin)
Derived from the plant, *Hypericum perforatum*.

St. John's Wort is contraindicated with concurrent PI therapy.

Inducer of CYP 3A4 and p-glycoprotein.

May reduce blood levels of NNRTIs. Induces metabolism of nevirapine; increased clearance ~35%. (deMaat et. al.)
Do not co-administer with NNRTIs.

No published data about drug interactions specific to this combination

May reduce levels of PIs, Indinavir levels reduced by 50-80% in volunteers treated with St. Johns Wort and indinavir (Piscatelli et. al.)
Do not co-administer with PIs.

No published data about drug interactions specific to this combination

No published data about drug interactions specific to this combination

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Note: This education guide is sponsored by the NY/NJ AIDS Education & Training Center (NY/NJ AETC). The NY/NJ AETC is funded by the Health Resources and Services Administration (HRSA) and is part of the National AIDS Education & Training Center Program, a network of 11 federally funded regional centers and 4 national centers that conduct targeted multidisciplinary HIV/AIDS education and training programs for health care providers.