Table 21b. Drug Interactions Between Non-Nucleoside Reverse Transcriptase Inhibitors and Other Drugs  (Last updated October 25, 2018; last reviewed October 25, 2018)  (page 1 of 10)

This table provides information relating to PK interactions between NNRTIs and non-ARV drugs. For interactions between ARV agents and for dosing recommendations, refer to Tables 21c, 22a, and 22b. Recommendations for managing a particular drug interaction may differ depending on whether a new ARV drug is being initiated in a patient on a stable concomitant medication or if a new concomitant medication is being initiated in a patient on a stable ARV regimen. The magnitude and significance of drug interactions are difficult to predict when several drugs with competing metabolic pathways are prescribed concomitantly.

Note: DLV is not included in this table. Please refer to the DLV FDA package insert for information regarding drug interactions. The term “All NNRTIs” in this table refers to all NNRTIs except for DLV.

<table>
<thead>
<tr>
<th>Concomitant Drug Class/ Name</th>
<th>NNRTIa</th>
<th>Effect on NNRTI and/or Concomitant Drug Concentrations</th>
<th>Dosing Recommendations and Clinical Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid Reducers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antacids</td>
<td>RPV</td>
<td>↓ RPV expected when given simultaneously</td>
<td>Give antacids at least 2 hours before or at least 4 hours after RPV.</td>
</tr>
<tr>
<td>H2 Receptor Antagonists</td>
<td>RPV</td>
<td>↓ RPV</td>
<td>Give H2 receptor antagonists at least 12 hours before or at least 4 hours after RPV.</td>
</tr>
<tr>
<td>PPIs</td>
<td>RPV</td>
<td>With Omeprazole 20 mg Daily:</td>
<td>Contraindicated. Do not coadminister.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• RPV AUC ↓ 40% and C&lt;sub&gt;min&lt;/sub&gt; ↓ 33%</td>
<td></td>
</tr>
<tr>
<td>Alpha-Adrenergic Antagonists for Benign Prostatic Hyperplasia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alfuzosin, Doxazosin, Silodosin</td>
<td>EFV, ETR, NVP</td>
<td>↓ alpha antagonist expected</td>
<td>Consider alternative therapy. If coadministration is necessary, monitor for therapeutic effectiveness of alpha antagonist.</td>
</tr>
<tr>
<td>Tamsulosin</td>
<td>EFV, ETR, NVP</td>
<td>↓ tamsulosin expected</td>
<td>Monitor for therapeutic effectiveness of tamsulosin after 2 to 4 weeks of dosing. May need to increase to tamsulosin 0.8 mg once daily for patients who fail to respond to the 0.4 mg dose.</td>
</tr>
<tr>
<td>Anticoagulants/Antiplatelets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apixaban</td>
<td>EFV, ETR, NVP</td>
<td>↓ apixaban possible</td>
<td>Consider alternative therapy.</td>
</tr>
<tr>
<td>Betrixaban</td>
<td>All NNRTIs</td>
<td>↔ betrixaban expected</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>Clopidogrel</td>
<td>EFV, ETR</td>
<td>↓ activation of clopidogrel possible</td>
<td>ETR may prevent metabolism of clopidogrel (inactive) to its active metabolite. Avoid coadministration, if possible.</td>
</tr>
<tr>
<td></td>
<td>DOR, NVP, RPV</td>
<td>↔ clopidogrel expected</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>Dabigatran</td>
<td>All NNRTIs</td>
<td>↔ dabigatran expected</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>Edoxaban</td>
<td>All NNRTIs</td>
<td>↔ edoxaban expected</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>Prasugrel</td>
<td>All NNRTIs</td>
<td>↔ prasugrel expected</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>Rivaroxaban</td>
<td>EFV, ETR, NVP</td>
<td>↓ rivaroxaban possible</td>
<td>Consider alternative therapy.</td>
</tr>
<tr>
<td>Ticagrelor</td>
<td>EFV, ETR, NVP</td>
<td>↓ ticagrelor expected</td>
<td>Consider alternative therapy.</td>
</tr>
<tr>
<td>Warfarin</td>
<td>EFV, ETR, NVP</td>
<td>↑ or ↓ warfarin possible</td>
<td>Monitor INR and adjust warfarin dose accordingly.</td>
</tr>
</tbody>
</table>

Guidelines for the Use of Antiretroviral Agents in Adults and Adolescents with HIV

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### Table 21b. Drug Interactions Between Non-Nucleoside Reverse Transcriptase Inhibitors and Other Drugs (Last updated October 25, 2018; last reviewed October 25, 2018) (page 2 of 10)

<table>
<thead>
<tr>
<th>Concomitant Drug Class/ Name</th>
<th>NNRTIa</th>
<th>Effect on NNRTI and/or Concomitant Drug Concentrations</th>
<th>Dosing Recommendations and Clinical Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anticonvulsants</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbamazepine, Phenobarbital, Phenytoin</td>
<td>EFV</td>
<td>Carbamazepine plus EFV:  • Carbamazepine AUC ↓ 27%  • EFV AUC ↓ 36%  Phenytoin plus EFV:  • ↓ EFV  • ↓ phenytoin possible</td>
<td>Monitor anticonvulsant and EFV concentrations or, if possible, use alternative anticonvulsant to those listed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ETR</td>
<td>↓ anticonvulsant and ETR possible</td>
<td>Do not coadminister. Consider alternative anticonvulsant.</td>
</tr>
<tr>
<td></td>
<td>NVP</td>
<td>↓ anticonvulsant and NVP possible</td>
<td>Monitor anticonvulsant and NVP concentrations and virologic responses or consider alternative anticonvulsant.</td>
</tr>
<tr>
<td></td>
<td>DOR, RPV</td>
<td>↓ NNRTI possible</td>
<td>Contraindicated. Do not coadminister. Consider alternative anticonvulsant.</td>
</tr>
<tr>
<td>Eslicarbazepine</td>
<td>All NNRTIs</td>
<td>↓ NNRTI possible</td>
<td>Monitor virologic outcomes and consider monitoring plasma concentrations of ARVs, or consider alternative anticonvulsant or ARV drug.</td>
</tr>
<tr>
<td>Oxcarbazepine</td>
<td>DOR, RPV</td>
<td>↓ NNRTI possible</td>
<td>Contraindicated. Do not coadminister. Consider alternative anticonvulsant.</td>
</tr>
<tr>
<td>Ethosuximide, Lacosamide, Tiagabine, Zonisamide</td>
<td>ETR, EFV</td>
<td>↓ anticonvulsant possible</td>
<td>Monitor seizure control and plasma concentrations of anticonvulsants (when available).</td>
</tr>
<tr>
<td>Lamotrigine</td>
<td>EFV</td>
<td>↓ lamotrigine possible</td>
<td>Monitor seizure control and plasma concentrations of lamotrigine.</td>
</tr>
<tr>
<td><strong>Antidepressants</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bupropion</td>
<td>EFV, NVP</td>
<td>Bupropion AUC ↓ 55%  ↓ bupropion possible</td>
<td>Titrate bupropion dose based on clinical response.</td>
</tr>
<tr>
<td>Citalopram, Escitalopram</td>
<td>EFV, ETR, NVP</td>
<td>↓ antidepressant possible</td>
<td>Titrate antidepressant dose based on clinical response.</td>
</tr>
<tr>
<td>Fluoxetine, Fluvoxamine</td>
<td>All NNRTIs</td>
<td>↔ antidepressant expected</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>Paroxetine</td>
<td>EFV, ETR</td>
<td>↔ paroxetine observed with EFV or ETR</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td></td>
<td>DOR, NVP, RPV</td>
<td>↔ expected with DOR, NVP or RPV</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>Nefazodone</td>
<td>EFV, ETR, NVP</td>
<td>↓ nefazodone expected ↑ NNRTI possible</td>
<td>Monitor the antidepressant effect and titrate dose as necessary. Monitor for ARV-related adverse events.</td>
</tr>
<tr>
<td></td>
<td>DOR, RPV</td>
<td>↑ NNRTI possible</td>
<td>Monitor for ARV-related adverse events.</td>
</tr>
<tr>
<td>Sertraline</td>
<td>EFV</td>
<td>Sertraline AUC ↓ 39%</td>
<td>Titrate sertraline dose based on clinical response.</td>
</tr>
<tr>
<td>Trazodone</td>
<td>EFV, ETR, NVP</td>
<td>↓ trazodone possible</td>
<td>Monitor the therapeutic effect of trazodone and titrate dose as necessary.</td>
</tr>
</tbody>
</table>
### Table 21b. Drug Interactions Between Non-Nucleoside Reverse Transcriptase Inhibitors and Other Drugs  (Last updated October 25, 2018; last reviewed October 25, 2018)  (page 3 of 10)

<table>
<thead>
<tr>
<th>Concomitant Drug Class/ Name</th>
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<th>Effect on NNRTI and/or Concomitant Drug Concentrations</th>
<th>Dosing Recommendations and Clinical Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antifungals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluconazole</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EFV</td>
<td>↔ fluconazole or EFV</td>
<td>No dose adjustment necessary.</td>
<td></td>
</tr>
<tr>
<td>ETR</td>
<td>ETR AUC ↑ 86%</td>
<td>No dose adjustment necessary. Use with caution.</td>
<td></td>
</tr>
<tr>
<td>NVP</td>
<td>NVP AUC ↑ 110%</td>
<td>Increased risk of hepatotoxicity possible with this combination. Monitor NVP toxicity or use alternative ARV agent.</td>
<td></td>
</tr>
<tr>
<td>DOR, RPV</td>
<td>↑ NNRTI possible</td>
<td>No dose adjustment necessary.</td>
<td></td>
</tr>
<tr>
<td>Isavuconazole</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EFV, ETR, NVP</td>
<td>↓ isavuconazole possible</td>
<td>Dose adjustments for isavuconazole may be necessary. Consider monitoring isavuconazole concentration and antifungal response.</td>
<td></td>
</tr>
<tr>
<td>DOR, RPV</td>
<td>↑ NNRTI possible</td>
<td>No dose adjustment necessary.</td>
<td></td>
</tr>
<tr>
<td>Itraconazole</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EFV</td>
<td>Itraconazole and OH-itraconazole AUC, C_{max}, and C_{min} ↓ 35% to 44%</td>
<td>Failure to achieve therapeutic itraconazole concentrations has been reported. Avoid this combination if possible. If coadministered, closely monitor itraconazole concentration and adjust dose accordingly.</td>
<td></td>
</tr>
<tr>
<td>ETR</td>
<td>↓ itraconazole possible</td>
<td>Dose adjustments for itraconazole may be necessary. Monitor itraconazole level and antifungal response.</td>
<td></td>
</tr>
<tr>
<td>NVP</td>
<td>↑ ETR possible</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOR, RPV</td>
<td>↑ NNRTI possible</td>
<td>No dose adjustment necessary.</td>
<td></td>
</tr>
<tr>
<td>Posaconazole</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EFV</td>
<td>Posaconazole AUC ↓ 50% ↔ EFV</td>
<td>Avoid concomitant use unless the benefit outweighs the risk. If coadministered, monitor posaconazole concentration and adjust dose accordingly.</td>
<td>Monitor for NNRTI toxicities.</td>
</tr>
<tr>
<td>DOR, ETR, NVP, RPV</td>
<td>↑ NNRTI possible</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voriconazole</td>
<td></td>
<td></td>
<td>Contraindicated at standard doses.</td>
</tr>
<tr>
<td>EFV</td>
<td>Voriconazole AUC ↓ 77% EFV AUC ↑ 44%</td>
<td></td>
<td>Dose Adjustment: • Voriconazole 400 mg BID, EFV 300 mg daily</td>
</tr>
<tr>
<td>ETR</td>
<td>↔ Voriconazole AUC</td>
<td>No dose adjustment necessary.</td>
<td></td>
</tr>
<tr>
<td>NVP</td>
<td>↓ voriconazole possible</td>
<td>Monitor for toxicity and antifungal response and/or voriconazole concentration.</td>
<td></td>
</tr>
<tr>
<td>DOR, RPV</td>
<td>↑ NVP possible</td>
<td>No dose adjustment necessary.</td>
<td></td>
</tr>
<tr>
<td><strong>Antihyperglycemics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canagliflozin, Dapagliflozin, Empagliflozin, Sitagliptin</td>
<td>All NNRTIs ↔ antihyperglycemic expected</td>
<td>No dose adjustment necessary.</td>
<td></td>
</tr>
<tr>
<td>Linagliptin, Saxagliptin</td>
<td>EFV, ETR, NVP</td>
<td>↓ antihyperglycemic possible</td>
<td>Monitor glycemic control.</td>
</tr>
<tr>
<td>Concomitant Drug Class/ Name</td>
<td>NNRTI</td>
<td>Effect on NNRTI and/or Concomitant Drug Concentrations</td>
<td>Dosing Recommendations and Clinical Comments</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------</td>
<td>------------------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td><strong>Antimalarials</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Artemether/ Lumefantrine</td>
<td>EFV</td>
<td>Artemether AUC ↓ 79% DHA AUC ↓ 75% Lumefantrine AUC ↑ 56%</td>
<td>Consider alternative ARV or antimalarial drug. If used in combination, monitor closely for antimalarial efficacy.</td>
</tr>
<tr>
<td></td>
<td>ETR</td>
<td>Artemether AUC ↓ 38% ↔ DHA AUC ↔ Lumefantrine AUC ↔ ETR AUC</td>
<td>Clinical significance of the reduced antimalarial drug concentrations unknown. If used in combination with ETR, monitor for antimalarial efficacy.</td>
</tr>
<tr>
<td></td>
<td>NVP</td>
<td>Artemether AUC ↓ 67% to 72% DHA: • Study results are conflicting. DHA AUC ↓ 37% in one study, no difference in another. Lumefantrine: • Study results are conflicting. Lumefantrine AUC ↓ 25% to 58% in 2 studies but ↑ 56% in another.</td>
<td>Clinical significance unknown. If used, monitor closely for antimalarial efficacy and lumefantrine toxicity.</td>
</tr>
<tr>
<td>Atovaquone/ Proguanil</td>
<td>EFV</td>
<td>Atovaquone AUC ↓ 75% Proguanil AUC ↓ 43%</td>
<td>No dose recommendation. Consider alternative drug for malaria prophylaxis, if possible.</td>
</tr>
<tr>
<td><strong>Antimycobacterials</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bedaquiline</td>
<td>EFV, ETR</td>
<td>↓ bedaquiline possible ↔ bedaquiline AUC</td>
<td>Do not coadminister.</td>
</tr>
<tr>
<td></td>
<td>NVP</td>
<td>↔ bedaquiline expected</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>Clarithromycin</td>
<td>EFV</td>
<td>Clarithromycin AUC ↓ 39%</td>
<td>Monitor for effectiveness or consider alternative agent, such as azithromycin, for MAC prophylaxis and treatment.</td>
</tr>
<tr>
<td></td>
<td>ETR</td>
<td>Clarithromycin AUC ↓ 39% ETR AUC ↑ 42%</td>
<td>Consider alternative agent, such as azithromycin, for MAC prophylaxis and treatment.</td>
</tr>
<tr>
<td></td>
<td>NVP</td>
<td>Clarithromycin AUC ↓ 31% NVP AUC ↑ 26%</td>
<td>Monitor for effectiveness or use alternative agent, such as azithromycin, for MAC prophylaxis and treatment.</td>
</tr>
<tr>
<td></td>
<td>RPV</td>
<td>↔ clarithromycin expected ↑ RPV possible</td>
<td>Consider alternative macrolide, such as azithromycin, for MAC prophylaxis and treatment.</td>
</tr>
<tr>
<td>Rifabutin</td>
<td>DOR</td>
<td>DOR AUC ↓ 50%</td>
<td>Increase DOR dose to 100 mg twice daily. No dose adjustment for rifabutin.</td>
</tr>
<tr>
<td></td>
<td>EFV</td>
<td>Rifabutin ↓ 38%</td>
<td>Dose: • Rifabutin 450–600 mg/day; or • Rifabutin 600 mg 3 times/week if EFV is not coadministered with a PI.</td>
</tr>
<tr>
<td></td>
<td>ETR</td>
<td>↔ Rifabutin and metabolite AUC ETR AUC ↓ 37%</td>
<td>Do not coadminister ETR plus PI/r with rifabutin. Use rifabutin 300 mg once daily if ETR is administered without PI/r.</td>
</tr>
<tr>
<td>Concomitant Drug Class/Name</td>
<td>NNRTI</td>
<td>Effect on NNRTI and/or Concomitant Drug Concentrations</td>
<td>Dosing Recommendations and Clinical Comments</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------</td>
<td>------------------------------------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td><strong>Antimycobacterials, continued</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rifabutin, continued</td>
<td>NVP</td>
<td>Rifabutin AUC ↑ 17% and metabolite AUC ↑ 24% NVP C\text{min} ↓ 16%</td>
<td>No dose adjustment necessary. Use with caution.</td>
</tr>
<tr>
<td></td>
<td>RPV</td>
<td>Rifabutin plus RPV 50 mg Once Daily Compared to RPV 25 mg Once Daily Alone: • ↔ RPV AUC and C\text{min}</td>
<td>Increase RPV dose to 50 mg once daily. No dose adjustment for rifabutin.</td>
</tr>
<tr>
<td><strong>Rifampin</strong></td>
<td>DOR</td>
<td>DOR AUC ↓ 88%</td>
<td>Contraindicated.</td>
</tr>
<tr>
<td></td>
<td>EFV</td>
<td>EFV AUC ↓ 26%</td>
<td>Do not use EFV 400 mg with rifampin. Maintain EFV dose at 600 mg once daily and monitor for virologic response.</td>
</tr>
<tr>
<td></td>
<td>ETR</td>
<td>Significant ↓ ETR possible</td>
<td>Do not coadminister.</td>
</tr>
<tr>
<td></td>
<td>NVP</td>
<td>NVP ↓ 20% to 58%</td>
<td>Do not coadminister.</td>
</tr>
<tr>
<td></td>
<td>RPV</td>
<td>RPV AUC ↓ 80%</td>
<td>Contraindicated.</td>
</tr>
<tr>
<td><strong>Rifapentine</strong></td>
<td>EFV</td>
<td>↔ EFV concentrations</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td></td>
<td>ETR, NVP</td>
<td>↓ NNRTI possible</td>
<td>Do not coadminister.</td>
</tr>
<tr>
<td></td>
<td>DOR, RPV</td>
<td>↓ NNRTI expected</td>
<td>Contraindicated.</td>
</tr>
<tr>
<td><strong>Antipneumocystis and Antitoxoplasmosis Drugs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Atovaquone</strong></td>
<td>EFV</td>
<td>Atovaquone AUC ↓ 44% to 47%</td>
<td>Consider alternative agent for PCP or toxoplasmosis treatment or use alternative ARV drug. If used in combination, monitor therapeutic efficacy of atovaquone.</td>
</tr>
<tr>
<td><strong>Antipsychotics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aripiprazole</strong></td>
<td>EFV, ETR, NVP</td>
<td>↓ aripiprazole expected</td>
<td>Monitor effectiveness of antipsychotic. Consider doubling usual dose of aripiprazole over 1–2 weeks. Refer to aripiprazole prescribing information for dosing recommendations.</td>
</tr>
<tr>
<td><strong>Brexpiprazole</strong></td>
<td>EFV, ETR, NVP</td>
<td>↓ brexpiprazole expected</td>
<td>Monitor effectiveness of antipsychotic. Consider doubling the usual dose of brexpiprazole and making further adjustments based on clinical response. Refer to brexpiprazole prescribing information.</td>
</tr>
<tr>
<td><strong>Cariprazine</strong></td>
<td>EFV, ETR, NVP</td>
<td>↓ cariprazine and ↑ or ↓ active metabolite possible</td>
<td>Coadministration is not recommended.</td>
</tr>
<tr>
<td><strong>Olanzapine</strong></td>
<td>EFV</td>
<td>↓ olanzapine possible</td>
<td>Monitor effect of olanzapine.</td>
</tr>
<tr>
<td></td>
<td>DOR, ETR, NVP, RPV</td>
<td>↔ olanzapine expected</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td><strong>Pimozide</strong></td>
<td>EFV, ETR, NVP</td>
<td>↓ pimozide possible</td>
<td>Monitor therapeutic effectiveness of pimozide</td>
</tr>
<tr>
<td><strong>Lurasidone, Pimavanserin, Quetiapine, Thioridazine</strong></td>
<td>EFV, ETR, NVP</td>
<td>↓ antipsychotic possible</td>
<td>Monitor effect of antipsychotic.</td>
</tr>
</tbody>
</table>
### Table 21b. Drug Interactions Between Non-Nucleoside Reverse Transcriptase Inhibitors and Other Drugs  (Last updated October 25, 2018; last reviewed October 25, 2018)  (page 6 of 10)

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<tr>
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<th>Effect on NNRTI and/or Concomitant Drug Concentrations</th>
<th>Dosing Recommendations and Clinical Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Benzodiazepines</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alprazolam</td>
<td>EFV, ETR, NVP</td>
<td>↓ alprazolam possible</td>
<td>Monitor for therapeutic effectiveness of alprazolam.</td>
</tr>
<tr>
<td>Diazepam</td>
<td>EFV, NVP</td>
<td>↓ diazepam possible</td>
<td>Monitor for therapeutic effectiveness of diazepam.</td>
</tr>
<tr>
<td></td>
<td>ETR</td>
<td>↑ diazepam possible</td>
<td>Decreased dose of diazepam may be necessary. Monitor for diazepam toxicity.</td>
</tr>
<tr>
<td>Lorazepam</td>
<td>EFV</td>
<td>↔ lorazepam AUC</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td></td>
<td>ETR, NVP</td>
<td>↔ lorazepam expected</td>
<td></td>
</tr>
<tr>
<td><strong>Midazolam</strong></td>
<td>EFV</td>
<td>↑ or ↓ midazolam possible</td>
<td>Monitor therapeutic effectiveness and toxicity of midazolam.</td>
</tr>
<tr>
<td></td>
<td>ETR</td>
<td>Midazolam AUC ↓ 31% Midazolam active metabolite C&lt;sub&gt;max&lt;/sub&gt; ↑ 57%</td>
<td>Monitor therapeutic effectiveness of midazolam.</td>
</tr>
<tr>
<td></td>
<td>NVP</td>
<td>↓ midazolam possible</td>
<td>Monitor therapeutic effectiveness of midazolam.</td>
</tr>
<tr>
<td><strong>Triazolam</strong></td>
<td>EFV, ETR, NVP</td>
<td>↓ triazolam possible</td>
<td>Monitor therapeutic effectiveness of triazolam.</td>
</tr>
<tr>
<td><strong>Cardiac Medications</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dihydropyridine CCBs</td>
<td>EFV, ETR, NVP</td>
<td>↓ CCBs possible</td>
<td>Titrate CCB dose based on clinical response.</td>
</tr>
<tr>
<td><strong>Diltiazem, Verapamil</strong></td>
<td>EFV</td>
<td>Diltiazem AUC ↓ 69% ↓ verapamil possible</td>
<td>Titrate diltiazem or verapamil dose based on clinical response.</td>
</tr>
<tr>
<td></td>
<td>ETR, NVP</td>
<td>↓ diltiazem or verapamil possible</td>
<td></td>
</tr>
<tr>
<td><strong>Corticosteroids</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dexamethasone</td>
<td>DOR, EFV, ETR, NVP</td>
<td>↓ NNRTI possible</td>
<td>Consider alternative corticosteroid for long-term use. If dexamethasone is used with NNRTI, monitor virologic response.</td>
</tr>
<tr>
<td></td>
<td>RPV</td>
<td>Significant ↓ RPV possible</td>
<td>Contraindicated with more than a single dose of dexamethasone.</td>
</tr>
<tr>
<td><strong>Hepatitis C Direct-Acting Antiviral Agents</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daclatasvir</td>
<td>EFV, ETR, NVP</td>
<td>Daclatasvir 120 mg Once Daily plus EFV 600 mg Daily Compared with Daclatasvir 60 mg Alone: • Daclatasvir C&lt;sub&gt;min&lt;/sub&gt; ↓ 17%, AUC ↑ 37%</td>
<td>The recommended dose is daclatasvir 90 mg once daily.</td>
</tr>
<tr>
<td></td>
<td>DOR, RPV</td>
<td>No data</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>Dasabuvir plus Paritaprevir/ Ombitasvir/RTV</td>
<td>DOR</td>
<td>↑ DOR possible</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td></td>
<td>EFV</td>
<td>No data</td>
<td>Contraindicated.</td>
</tr>
<tr>
<td></td>
<td>ETR, NVP</td>
<td>↓ DAAs possible</td>
<td>Do not coadminister.</td>
</tr>
<tr>
<td></td>
<td>RPV</td>
<td>RPV AUC ↑ 150% to 225%</td>
<td>Do not coadminister, due to potential for QT interval prolongation with higher concentrations of RPV.</td>
</tr>
</tbody>
</table>
## Table 21b. Drug Interactions Between Non-Nucleoside Reverse Transcriptase Inhibitors and Other Drugs  (Last updated October 25, 2018; last reviewed October 25, 2018)  (page 7 of 10)

<table>
<thead>
<tr>
<th>Concomitant Drug Class/ Name</th>
<th>NNRTI&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Effect on NNRTI and/or Concomitant Drug Concentrations</th>
<th>Dosing Recommendations and Clinical Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis C Direct-Acting Antiviral Agents, continued</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elbasvir/ Grazoprevir</td>
<td>EFV</td>
<td>Elbasvir AUC ↓ 54%</td>
<td>Contraindicated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grazoprevir AUC ↓ 83%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EFV ↔ by grazoprevir</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EFV ↔ AUC by elbasvir</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ETR, NVP</td>
<td>↓ elbasvir and grazoprevir expected</td>
<td>Do not coadminister.</td>
</tr>
<tr>
<td></td>
<td>DOR, RPV</td>
<td>↔ Elbasvir, grazoprevir</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>↔ DOR, RPV</td>
<td></td>
</tr>
<tr>
<td>Glecaprevir/ Pibrentasvir</td>
<td>DOR</td>
<td>↑ DOR expected</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td></td>
<td>EFV</td>
<td>↓ glecaprevir and pibrentasvir expected</td>
<td>Do not coadminister.</td>
</tr>
<tr>
<td></td>
<td>ETR, NVP</td>
<td>↓ glecaprevir and pibrentasvir possible</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RPV</td>
<td>↔ glecaprevir, pibrentasvir</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>RPV AUC ↑ 84%</td>
<td></td>
</tr>
<tr>
<td>Ledipasvir/ Sofosbuvir</td>
<td>EFV</td>
<td>Ledipasvir AUC, C&lt;sub&gt;min&lt;/sub&gt;, and C&lt;sub&gt;max&lt;/sub&gt;</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>↓ 34%, and ↔ sofosbuvir</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ETR, NVP</td>
<td>No significant effect expected</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DOR, RPV</td>
<td>↔ Ledipasvir, sofosbuvir</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>↔ DOR, RPV</td>
<td></td>
</tr>
<tr>
<td>Simeprevir</td>
<td>DOR</td>
<td>No significant effect expected</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td></td>
<td>EFV</td>
<td>Simeprevir AUC ↓ 71%, C&lt;sub&gt;min&lt;/sub&gt; ↓ 91%</td>
<td>Do not coadminister.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>↔ EFV</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ETR, NVP</td>
<td>↓ simeprevir expected</td>
<td>Do not coadminister.</td>
</tr>
<tr>
<td></td>
<td>RPV</td>
<td>↔ simeprevir and RPV</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>No dose adjustment necessary</td>
<td></td>
</tr>
<tr>
<td>Sofosbuvir/ Velpatasvir</td>
<td>EFV</td>
<td>Velpatasvir AUC ↓ 43%, C&lt;sub&gt;max&lt;/sub&gt; ↓ 37% and C&lt;sub&gt;min&lt;/sub&gt; ↓ 47%</td>
<td>Do not coadminister.</td>
</tr>
<tr>
<td></td>
<td>ETR, NVP</td>
<td>↓ velpatasvir expected</td>
<td>Do not coadminister.</td>
</tr>
<tr>
<td></td>
<td>DOR, RPV</td>
<td>No significant effect expected</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>Sofosbuvir/ Velpatasvir/ Voxilaprevir</td>
<td>EFV</td>
<td>Velpatasvir AUC ↓ 43%, C&lt;sub&gt;max&lt;/sub&gt; ↓ 37%, and C&lt;sub&gt;min&lt;/sub&gt; ↓ 47%</td>
<td>Do not coadminister.</td>
</tr>
<tr>
<td></td>
<td>ETR, NVP</td>
<td>↓ voxilaprevir expected</td>
<td>Do not coadminister.</td>
</tr>
<tr>
<td></td>
<td>DOR, RPV</td>
<td>No significant effect expected</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>Concomitant Drug Class/Name</td>
<td>NNRTIa</td>
<td>Effect on NNRTI and/or Concomitant Drug Concentrations</td>
<td>Dosing Recommendations and Clinical Comments</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------</td>
<td>------------------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td><strong>Herbal Products</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>St. John's Wort</td>
<td>EFV, ETR, NVP</td>
<td>↓ EFV, ETR, and NVP expected</td>
<td>Do not coadminister.</td>
</tr>
<tr>
<td></td>
<td>DOR, RPV</td>
<td>↓ NNRTI expected</td>
<td>Contraindicated.</td>
</tr>
<tr>
<td><strong>Hormonal Therapies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hormonal Contraceptives, Oral</td>
<td>EFV</td>
<td>↔ Ethinyl estradiol</td>
<td>Use alternative or additional contraceptive methods.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Etonogestrel (metabolite of oral desogestrel) Cmin ↓ 61%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Levonorgestrel (metabolite of oral norgestimate) AUC ↓ 83%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Norelgestromin (metabolite of oral norgestimate) AUC ↓ 64%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ETR</td>
<td>Ethinyl estradiol AUC ↑ 22%</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No significant effect on norethindrone</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NVP</td>
<td>Ethinyl estradiol AUC ↓ 29%, Cmin ↓ 58%</td>
<td>Based on clinical data demonstrating no change in effectiveness, no dose adjustment necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Norethindrone AUC ↓ 18%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Etonogestrel (metabolite of oral desogestrel) Cmin ↓ 22%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RPV</td>
<td>↔ Ethinyl estradiol</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>↔ Norethindrone</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DOR</td>
<td>↔ Ethinyl estradiol</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>↔ Levonorgestrel</td>
<td></td>
</tr>
<tr>
<td>Depot Medroxyprogesterone Acetate (MPA) Injectable</td>
<td>EFV, NVP</td>
<td>DMPA: no significant change</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>Etonogestrel-Releasing Subdermal Implant</td>
<td>EFV</td>
<td>Etonogestrel AUC ↓ 63% to 82%</td>
<td>Use alternative or additional contraceptive methods.</td>
</tr>
<tr>
<td></td>
<td>NVP</td>
<td>Etonogestrel: no significant change</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>Etonogestrel/ Ethinyl Estradiol Vaginal Ring</td>
<td>EFV</td>
<td>Ethinyl estradiol (intravaginal ring) AUC ↓ 56%</td>
<td>Use alternative or additional contraceptive methods.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Etonogestrel (intravaginal ring) AUC ↓ 81%</td>
<td></td>
</tr>
<tr>
<td>Levonorelstr Releasing Subdermal Implant</td>
<td>EFV</td>
<td>Levonorgestrel AUC ↓ 47%</td>
<td>Use alternative or additional contraceptive methods.</td>
</tr>
<tr>
<td></td>
<td>NVP</td>
<td>Levonorgestrel AUC ↑ 35%</td>
<td>Unintended pregnancies were observed in women who used EFV and levonorgestrel implant concomitantly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>Levonorgestrel For emergency contraception</td>
<td>EFV</td>
<td>Levonorgestrel AUC ↓ 58%</td>
<td>Effectiveness of emergency postcoital contraception may be diminished.</td>
</tr>
</tbody>
</table>

Table 21b. Drug Interactions Between Non-Nucleoside Reverse Transcriptase Inhibitors and Other Drugs (Last updated October 25, 2018; last reviewed October 25, 2018) (page 8 of 10)
### Table 21b. Drug Interactions Between Non-Nucleoside Reverse Transcriptase Inhibitors and Other Drugs (Last updated October 25, 2018; last reviewed October 25, 2018)  
(page 9 of 10)

<table>
<thead>
<tr>
<th>Concomitant Drug Class/Name</th>
<th>NNRTIa</th>
<th>Effect on NNRTI and/or Concomitant Drug Concentrations</th>
<th>Dosing Recommendations and Clinical Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hormonal Therapies, continued</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Menopausal Hormone Replacement Therapy</td>
<td>EFV, ETR, NVP</td>
<td>↓ estrogen possible with estradiol or conjugated estrogen (equine and synthetic)  ↓ medroxyprogesterone possible ↓ micronized progesterone possible ↓ drospirenone possible</td>
<td>Monitor menopausal symptoms. Titrate to the dose of hormonal therapy that achieves menopausal symptom relief.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>See Hormonal Contraceptives for other progestin-NNRTI interactions</td>
</tr>
<tr>
<td>Gender-Affirming Hormone Therapy</td>
<td>EFV, ETR, NVP</td>
<td>↓ estradiol possible ↔ goserelin, leuprolide acetate, and spironolactone expected ↓ dutasteride and finasteride possible</td>
<td>Monitor feminizing effects of estrogen and antiandrogen therapy and titrate dosing as necessary to achieve therapeutic goals.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>↓ testosterone possible</td>
<td>Monitor masculinizing effects of testosterone and titrate testosterone dose as necessary to achieve therapeutic goals.</td>
</tr>
<tr>
<td><strong>HMG-CoA Reductase Inhibitors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atorvastatin</td>
<td>EFV, ETR</td>
<td>Atorvastatin AUC ↓ 32% to 43%</td>
<td>Adjust atorvastatin dose according to lipid response, but do not exceed the maximum recommended dose.</td>
</tr>
<tr>
<td></td>
<td>NVP</td>
<td>↓ atorvastatin possible</td>
<td>Adjust atorvastatin dose according to lipid response, but do not exceed the maximum recommended dose.</td>
</tr>
<tr>
<td></td>
<td>DOR, RPV</td>
<td>↔ atorvastatin AUC</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>Fluvastatin</td>
<td>EFV, ETR</td>
<td>↑ fluvastatin possible</td>
<td>Dose adjustments for fluvastatin may be necessary. Monitor for fluvastatin toxicity.</td>
</tr>
<tr>
<td>Lovastatin, Simvastatin</td>
<td>EFV</td>
<td>Simvastatin AUC ↓ 68% Simvastatin active metabolite AUC ↓ 60%</td>
<td>Adjust simvastatin dose according to lipid response, but do not exceed the maximum recommended dose. If EFV is used with a PI/r, simvastatin and lovastatin should be avoided.</td>
</tr>
<tr>
<td></td>
<td>ETR, NVP</td>
<td>↓ lovastatin possible ↓ simvastatin possible</td>
<td>Adjust lovastatin or simvastatin dose according to lipid responses but do not exceed the maximum recommended dose. If ETR or NVP is used with a PI/r, simvastatin and lovastatin should be avoided.</td>
</tr>
<tr>
<td>Pitavastatin</td>
<td>EFV</td>
<td>↔ pitavastatin AUC</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td></td>
<td>DOR, ETR, NVP, RPV</td>
<td>↔ pitavastatin expected</td>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>Pravastatin</td>
<td>EFV</td>
<td>Pravastatin AUC ↓ 44%</td>
<td>Adjust statin dose according to lipid responses, but do not exceed the maximum recommended dose.</td>
</tr>
<tr>
<td></td>
<td>ETR</td>
<td>↓ pravastatin possible</td>
<td></td>
</tr>
<tr>
<td>Rosuvastatin</td>
<td>EFV, ETR, NVP</td>
<td>↔ rosuvastatin expected</td>
<td>No dose adjustment necessary.</td>
</tr>
</tbody>
</table>
### Concomitant Drug Class/ Name

<table>
<thead>
<tr>
<th>Immunosuppressants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclosporine, Everolimus, Sirolimus, Tacrolimus</td>
</tr>
<tr>
<td>EFV, ETR, NVP</td>
</tr>
<tr>
<td>↓ immunosuppressant possible</td>
</tr>
<tr>
<td>Increase in immunosuppressant dose may be necessary. Therapeutic drug monitoring of immunosuppressant is recommended. Consult with specialist as necessary.</td>
</tr>
</tbody>
</table>

### Narcotics/Treatments for Opioid Dependence

<table>
<thead>
<tr>
<th>Buprenorphine Sublingual or buccal</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFV</td>
</tr>
<tr>
<td>Buprenorphine AUC ↓ 50%</td>
</tr>
<tr>
<td>No dose adjustment recommended; monitor for withdrawal symptoms.</td>
</tr>
<tr>
<td>Norbuprenorphine&lt;sup&gt;b&lt;/sup&gt; AUC ↓ 71%</td>
</tr>
<tr>
<td>ETR</td>
</tr>
<tr>
<td>Buprenorphine AUC ↓ 25%</td>
</tr>
<tr>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>NVP</td>
</tr>
<tr>
<td>No significant effect</td>
</tr>
<tr>
<td>No dose adjustment necessary.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Buprenorphine Implant</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFV, ETR, NVP</td>
</tr>
<tr>
<td>No data</td>
</tr>
<tr>
<td>Clinical monitoring is recommended if NNRTI is initiated after insertion of buprenorphine implant.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Methadone</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFV</td>
</tr>
<tr>
<td>Methadone AUC ↓ 52%</td>
</tr>
<tr>
<td>Opioid withdrawal common; increased methadone dose often necessary.</td>
</tr>
<tr>
<td>DOR, ETR</td>
</tr>
<tr>
<td>No significant effect</td>
</tr>
<tr>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>NVP</td>
</tr>
<tr>
<td>Methadone AUC ↓ 37% to 51%</td>
</tr>
<tr>
<td>Opioid withdrawal is common; increased methadone dose is often necessary.</td>
</tr>
<tr>
<td>No significant effect on NVP</td>
</tr>
<tr>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>RPV</td>
</tr>
<tr>
<td>R-methadone&lt;sup&gt;c&lt;/sup&gt; AUC ↓ 16%</td>
</tr>
<tr>
<td>No dose adjustment necessary, but monitor for withdrawal symptoms.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PDE5 Inhibitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sildenafil</td>
</tr>
<tr>
<td>DOR, RPV</td>
</tr>
<tr>
<td>↔ sildenafil expected</td>
</tr>
<tr>
<td>No dose adjustment necessary.</td>
</tr>
<tr>
<td>ETR</td>
</tr>
<tr>
<td>Sildenafil AUC ↓ 57%</td>
</tr>
<tr>
<td>May need to titrate sildenafil dose based on clinical effect.</td>
</tr>
<tr>
<td>EFV, NVP</td>
</tr>
<tr>
<td>↓ sildenafil possible</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tadalafil</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFV, ETR, NVP</td>
</tr>
<tr>
<td>↓ tadalafil possible</td>
</tr>
<tr>
<td>May need to titrate tadalafil dose based on clinical effect.</td>
</tr>
<tr>
<td>RPV</td>
</tr>
<tr>
<td>↔ tadalafil</td>
</tr>
<tr>
<td>No dose adjustment necessary.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Miscellaneous Drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enzalutamide</td>
</tr>
<tr>
<td>All NNRTIs</td>
</tr>
<tr>
<td>↓ NNRTI expected</td>
</tr>
<tr>
<td>Contraindicated.</td>
</tr>
<tr>
<td>Mitotane</td>
</tr>
<tr>
<td>All NNRTIs</td>
</tr>
<tr>
<td>↓ NNRTI expected</td>
</tr>
<tr>
<td>Contraindicated.</td>
</tr>
</tbody>
</table>

<sup>a</sup> Approved dose for RPV is 25 mg once daily. Most PK interaction studies were performed using 75 mg to 150 mg per dose.

<sup>b</sup> Norbuprenorphine is an active metabolite of buprenorphine.

<sup>c</sup> R-methadone is the active form of methadone.

**Key to Symbols:**

↑ = increase
↓ = decrease
↔ = no change

**Key to Acronyms:**

ARV = antiretroviral; AUC = area under the curve; BID = twice daily; CCB = calcium channel blocker; C<sub>max</sub> = maximum plasma concentration; C<sub>min</sub> = minimum plasma concentration; DAA = direct-acting antiviral; DHA = dihydroartemisinin; DMPA = depot medroxyprogesterone acetate; DOR = doravirine; EFV = efavirenz; ETR = etravirine; HMG-CoA = hydroxy-methylglutaryl-coenzyme A; INR = international normalized ratio; MAC = *Mycobacterium avium* complex; NNRTI = non-nucleoside reverse transcriptase inhibitor; NVP = nevirapine; OH-itraconazole = active metabolite of itraconazole; PCP = *Pneumocystis jirovecii* pneumonia; PDE5 = phosphodiesterase type 5; PI = protease inhibitor; PI/r = protease inhibitor/ritonavir; PK = pharmacokinetic; PPI = proton pump inhibitor; RPV = rilpivirine; RTV = ritonavir

**Guidelines for the Use of Antiretroviral Agents in Adults and Adolescents with HIV**

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