Resource: ART Drug-Drug Interactions

April 2023

Table 20: Drugs Used as Antihypertensive Medicines (also see drug package inserts)

→ Angiotensin-converting enzyme (ACE) inhibitors [a], angiotensin II receptor blockers (ARBs), calcium channel blockers (CCBs), beta blockers, direct renin inhibitors, diuretics

Class or Drug	Mechanism of Action	Clinical Comments
• NRTIs • Cabotegravir (CAB) • Raltegravir (RAL) • Rilpivirine (RPV) • Doravirine (DOR) • Efavirenz (EFV) • Fostemsavir (FTR)	No significant interactions are expected.	No dose adjustments are necessary.
• Dolutegravir (DTG) • Bictegravir (BIC)	• **Atenolol** is eliminated via OCT2 and MATE1, which are inhibited by DTG and BIC. Coadministration may increase atenolol levels. • **ACE inhibitors, ARBs, CCBs, aliskiren, diuretics:** No significant interactions are expected.	• **Atenolol:** – Start at lower atenolol dose and titrate slowly to achieve clinical effect. – If patient is already using atenolol but starting DTG or BIC, monitor for atenolol-related adverse effects. – Reduce atenolol dose if necessary or switch to another ARV. • **ACE inhibitors, ARBs, CCBs, aliskiren, diuretics:** No dose adjustments are necessary.
Elvitegravir (EVG), boosted	• **Aliskiren:** P-gP inhibitors, including boosted EVG, decrease aliskiren elimination, increasing adverse effects of medication. • **Atenolol:** COBI-boosted EVG may increase atenolol concentrations via inhibition of MATE1 elimination. • **CCBs:** COBI-boosted EVG may increase CCB concentrations by as much as 50%. • **ACE inhibitors, ARBs, beta blockers, carvedilol, diuretics:** No significant interactions are expected.	• **Aliskiren:** Do not coadminister. • **Atenolol:** – Start patient at lowest possible dose and titrate slowly to achieve clinical effect while monitoring for adverse effects. – If patient is already using atenolol but starting COBI-boosted EVG, monitor for atenolol-related adverse effects. Reduce atenolol dose as needed. • **CCBs:** When using with boosted EVG, decrease original CCB dose by as much as 50% and titrate slowly to achieve clinical effect. • **Beta blockers other than atenolol, diuretics:** No dose adjustments are necessary.

Table 20: Drugs Used as Antihypertensive Medicines (also see drug package inserts)

→ Angiotensin-converting enzyme (ACE) inhibitors [a], angiotensin II receptor blockers (ARBs), calcium channel blockers (CCBs), beta blockers, direct renin inhibitors, diuretics

Class or Drug	Mechanism of Action	Clinical Comments
Boosted PIs	• **Aliskiren:** Boosted PIs inhibit Pg-P, which may decrease aliskiren elimination, increasing risk of adverse effects. • **Atenolol:** – COBI-boosted PIs may increase atenolol via inhibition of MATE1 elimination. – Similar interaction is not seen with RTV-boosted PIs. • **CCBs:** Boosted PIs may increase CCB concentrations by as much as 50%. • **ACE inhibitors, ARBs, beta blockers, carvedilol, diuretics:** No significant interactions are expected.	• **Aliskiren:** Do not coadminister. • **Atenolol:** – Start at lowest possible dose and titrate slowly to achieve clinical effect while monitoring for adverse effects. – If patient is already using atenolol but starting COBI-boosted PI, monitor for atenolol-related adverse effects and reduce atenolol dose as needed. – RTV is the preferred PK booster when patient is also using atenolol. • **CCBs:** When using with boosted PIs, decrease original CCB dose by as much as 50% and titrate slowly to achieve clinical effect. • **ACE inhibitors, ARBs, beta blockers, diuretics:** No dose adjustments are necessary.
Etravirine (ETR)	• **Aliskiren:** ETR is minor P-gP inhibitor and may minimally increase aliskiren concentrations, but this has not been studied. • **ACE inhibitors, ARBs, CCBs, diuretics:** No significant interactions are expected.	• **Aliskiren:** When using with ETR, monitor for aliskiren-related adverse effects; switch to alternative antihypertensive medicine or ARV if necessary. • **ACE inhibitors, ARBs, beta blockers, CCBs, diuretics:** No dose adjustments are necessary.

Abbreviations: ARV, antiretroviral; COBI, cobicistat; INSTI, integrase strand transfer inhibitor; MATE, multidrug and toxin extrusion; NRTI, nucleoside reverse transcriptase inhibitor; NSAID, nonsteroidal anti-inflammatory drug; OCT, organic cation transporter; P-gP, P-glycoprotein; PI, protease inhibitor; PK, pharmacokinetic; RTV, ritonavir; TDF, tenofovir disoproxil fumarate.

Note:

a. Although not typically nephrotoxic, ACE inhibitors can, rarely, contribute to renal dysfunction, particularly when combined with high-dose NSAIDs. Clinicians are advised to ask patients who are taking TDF about their use of ACE inhibitors, such as lisinopril, with NSAIDs, such as ibuprofen or naproxen, and to monitor the patient's renal function.