

HIV Antiretroviral (ARV) Medications (Bolded Medications are on MMC Formulary)

Individual Medications by Generic Name (Brand, Abbreviation)						Combination Medications by Brand Name (Generic)	
Nucleos(t)ide Reverse Transcriptase Inhibitors (NRTIs)	Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs)	Protease Inhibitors (PIs)	Pharmacokinetic Enhancers "Boosters"	Integrase Strand Transfer Inhibitors (INSTIs)	Entry & Attachment Inhibitors	Single Tablet Regimen (complete regimen in one tablet for most patients)	Fixed Dose Combination (partial regimen)
Abacavir (Ziagen, ABC)	Delavirdine (Rescriptor, DLV)	Atazanavir (Reyataz, ATV)	Cobicistat (Tybost, c)	Bictegravir (BIC)	Enfuvirtide (Fuzeon, T20)	Atripla (Efavirenz/TDF/Emtricitabine)	Cimduo (Lamivudine/TDF)
Didanosine (Videx, ddl)	Doravirine (Pifeltro, DOR)	Atazanavir/Cobicistat (Evotaz, ATV/c)	Ritonavir (Norvir, r)	Dolutegravir (Tivicay, DTG)	Ibalizumab-uiyk (Trogarzo, IBA)	Biktarvy (Bictegravir/TAF/Emtricitabine)	Combivir (Lamivudine/Zidovudine)
Emtricitabine (Emtriva, FTC)	Efavirenz (Sustiva, EFV)	Darunavir (Prezista, DRV)		Elvitegravir (EVG)	Maraviroc (Selzentry, MVC)	Complera (Rilpivirine/TDF/Emtricitabine)	Descovy (TAF/Emtricitabine)
Lamivudine (Epivir, 3TC)	Etravirine (Intelence, ETR)	Darunavir/Cobisistat (Prezcobix, DRV/c)		Raltegravir (Isentress, RAL)	Fostemsavir (Rukobia, FTR)	Delstrigo (Doravirine/TDF/Lamivudine)	Epzicom (Abacavir/Lamivudine)
Stavudine (Zerit, d4T)	Nevirapine (Viramune, NVP)	Fosamprenavir (Lexiva, FPV)		Cabotegravir (Vocabria, Apretude, CAB)		Dovato (Dolutegravir/Lamivudine)	Trizivir (Abacavir/Lamivudine/Zidovudine)
Tenofovir alafenamide (Vemlidy, TAF)	Rilpivirine (Edurant, RPV)	Indinavir (Crixivan, IDV)				Genvoya (Elvitegravir/Cobicistat/TAF/Emtricitabine)	Truvada (TDF/Emtricitabine)
Tenofovir disoproxil fumarate (Viread, TDF)		Lopinavir/Ritonavir (Kaletra, LPV/r)				Juluca (Dolutegravir/Rilpivirine)	
Zidovudine (Retrovir, ZDV or AZT)		Nelfinavir (Viracept, NFV)				Odefsey (Rilpivirine/TAF/Emtricitabine)	
		Saquinavir (Invirase, SQV)				Stribild (Elvitegravir/Cobicistat/TDF/Emtricitabine)	
		Tipranavir (Aptivus, TPV)				Symfi & Symfi Lo (Efavirenz/Lamivudine/TDF)	
						Symtuza (Darunavir/Cobicistat/TAF/Emtricitabine)	
						Cabenuva (Cabotegravir/Rilpivirine intramuscular)	

All patients living with HIV should start treatment as soon as possible, if willing and able

Preferred treatment: INSTI + 2 NRTIs*

*INSTI + 1 NRTI (DTG/3TC) may be an option if HIV RNA <500,000 copies/mL, no HBV coinfection, and genotype results show no reverse transcriptase resistance

Monitor CD4 count and viral load → Goals: CD4 >200 (14%) and undetectable viral load

Prophylaxis for low CD4 counts:

<200: Bactrim DS or SS 1 tab PO daily – covers PJP and toxoplasmosis

<50 and not receiving ARV treatment: Azithromycin 1200 mg PO once a week – covers MAC

Please note: formulary items are in bold

Montefiore Formulary ARVs

Drug	Adult Dose & Food Considerations	Renal Dosing based on CrCl (mL/min)	Crushable and/or Liquid Available?	1. Drug Interactions 2. Adverse Events 3. Clinical Pearls
Nucleos(t)ide Reverse Transcriptase Inhibitors (NRTIs) Class Adverse Events: lactic acidosis, hepatic steatosis, pancreatitis, myopathy, peripheral neuropathy, lipoatrophy (ddl, d4T, ZDV >> ABC, FTC, 3TC, TAF, TDF)				
Abacavir (Ziagen, ABC)	600 mg q24h or 300 mg q12h	None	Yes, mix with water or food or use oral soln 20 mg/ml	1. No significant drug interactions 2. Possible increased risk of MI, hepatotoxicity (Child-Pugh A: use 200 mg q12h, avoid use if severe hepatic impairment) 3. Must be HLA-B*5701 negative to initiate. Rare but severe, possibly fatal hypersensitivity (nausea, vomiting, diarrhea, fever, rash, malaise, myalgia), rechallenge is NOT recommended
Emtricitabine (Emtriva, FTC)	Capsule: 200 mg q24h Oral soln: 240 mg q24h	30-49: 200 mg q48h (cap) 120 mg q24h (oral soln) 15-29: 200 mg q72h (cap) 80 mg q24h (oral soln) < 15: 200 mg q96h (cap) 60 mg q24h (oral soln) HD: 200mg q24h (cap or soln)	Yes, open up caps and mix with water or use oral soln 10 mg/ml	1. Do not take with 3TC 2. Hyperpigmentation of palms and soles, generally mild. 3. Cross resistance with 3TC especially if M184V mutation present. Active against Hepatitis B virus (HBV) – avoid abrupt discontinuation due to risk of severe HBV exacerbation
Lamivudine (Epivir, 3TC)	300 mg q24h or 150 mg q12h	30-49: 150 mg q24h 15-29: 150 mg q24h x 1, then 100 mg q24h <15 or HD: 100 mg q24h	Yes, mix with water or use oral soln 10 mg/ml	1. Do not take with FTC 2. Cross resistance with FTC especially if M184V mutation present. Active against HBV – avoid abrupt discontinuation due to risk of severe HBV exacerbation 3. Avoid using the liquid formulation since tablet can be crushed
Tenofovir alafenamide (Vemlidy, TAF)	25 mg q24h	< 15 and not on HD: avoid use HD: 25 mg q24h	Yes, mix with water, bitter, burnt taste	1. Avoid adefovir, carbamazepine, fosphenytoin, phenytoin, oxcarbazepine, phenobarbital, rifampin/rifamycins, TDF 2. Minimal renal and bone toxicities compared to TDF 3. TAF is under investigation for pre-exposure prophylaxis (PrEP). Active against HBV – avoid abrupt discontinuation due to risk of severe HBV exacerbation
Tenofovir disoproxil fumarate (Viread, TDF)	300 mg q24h	30-49: 300 mg q48h 10-29: 300 mg q72-96h HD: 300 mg once weekly	Yes for tabs only, mix with water. Do not mix powder formulation with water.	1. Avoid adefovir, TAF and other nephrotoxic agents 2. Nephrotoxicity and decreased bone density with chronic use. 3. TDF is associated with lower lipid levels than ABC or TAF. Active against HBV – avoid abrupt discontinuation due to risk of severe HBV exacerbation
Zidovudine (Retrovir, ZDV or AZT)	300 mg q12h	< 15 or HD: 300 mg q24h	Yes, mix with water or food or use oral soln 10 mg/ml	1. Monitor for hematologic toxicities with methadone, atovaquone, ribavirin 2. Anemia and neutropenia (but not thrombocytopenia), malaise 3. IV formulation is only for intrapartum or postpartum prophylaxis

Montefiore Formulary ARVs

Drug	Adult Dose & Food Considerations	Renal Dosing based on CrCl (mL/min)	Crushable and/or Liquid Available?	1. Drug Interactions 2. Adverse Events 3. Clinical Pearls
Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs) <u>Class Drug Interactions:</u> Many including azole antifungals, anticoagulants, anticonvulsants, HCV drugs, methadone, rifampin/rifamycins, QT _c prolonging agents <u>Class Adverse Events:</u> rash (NFV > EFV > ETR > DOR > RPV), hepatotoxicity <u>Class Resistance Characteristics:</u> low genetic barrier to resistance; significant class cross-resistance (K103N mutation strongly reduces EFV and NVP activity, can affect others)				
Efavirenz (Sustiva, EFV)	600 mg q24h at bedtime Take on empty stomach or without high-fat food	None	Yes for caps only, open up and mix with food	1. Most drug interactions in class. With rifampin: >50kg: EFV 800 mg daily; <50kg: EFV 600 mg daily. Increase in methadone often necessary with EFV 2. Vivid dreams, insomnia, hallucination, depression, suicidal ideation, teratogenic (neural tube defects) 3. Long half-life. High-fat food increases toxicities. Bedtime administration reduces hallucinations.
Etravirine (Intelence, ETR)	200 mg q12h or 400 mg q24h Take after food		Yes, mix with water	1. Use of rifampin is contraindicated. Can use rifabutin 300 mg daily if regimen does not include pharmacokinetic-enhancers. 2. See class adverse events 3. Stronger barrier to resistance than other NNRTIs
Nevirapine (Viramune, NVP)	Newly initiating or interruption > 7 days: 200 mg q24h x 14 days, then 200 mg q12h Chronic: 200 mg q12h		Yes, or use oral soln 10 mg/ml	Non-formulary, contact ID pharmacist 1. Use of rifampin is contraindicated. Dose adjustment with rifabutin is unnecessary but use with caution 2. Severe rash and hepatotoxicity, especially in first 18 weeks 3. Do not initiate if pre-treatment CD4 > 250 in women or > 400 in men due to increased hepatotoxicity
Rilpivirine (Edurant, RPV)	25 mg q24h Take with food		Yes, crush and mix with semisolid food or liquid	1. Needs acidic environment for absorption – avoid PPIs, use H₂RAs and antacids with caution. Rifampin is contraindicated. With rifabutin, increase RPV to 50 mg q24h 2. Depression, suicidal ideation, hyperlipidemia 3. Do not initiate if pre-treatment CD4 <200 and/or HIV RNA >100,000
Doravirine (Pifeltro, DOR)	100 mg q24h		No	1. Avoid use with strong CYP3A4 inducers (e.g., carbamazepine, efavirenz, etravirine, phenytoin, rifampin, St. John's wort) 2. May cause abnormal dreams, nausea, or dizziness 3. Available as complete single tablet regimen with 3TC/TDF

Montefiore Formulary ARVs

Drug	Adult Dose & Food Considerations	Renal Dosing based on CrCl (mL/min)	Crushable and/or Liquid Available?	1. Drug Interactions 2. Adverse Events 3. Clinical Pearls
Protease Inhibitors (PIs) <u>Class Drug Interactions:</u> Significant risk of drug interactions including azole antifungals, antiarrhythmics, anticoagulants, anticonvulsants, HCV drugs, methadone, midazolam, rifampin/rifamycins (rifampin is contraindicated with all PIs, use rifabutin 150mg daily instead), QT _c prolonging agents, sildenafil, statins, inhaled and oral steroids (e.g. fluticasone) <u>Class Adverse Events:</u> Significant metabolic changes; hyperlipidemia, hyperglycemia, lipodystrophy, hepatotoxicity, GI intolerance (ATV, DRV < Other PIs) <u>Class Resistance Characteristics:</u> high barrier to resistance				
Atazanavir (Reyataz, ATV)	300 mg q24h (400 mg q24h if given unboosted or if pregnant) Take with food	HD & treatment-naïve only: 300 mg plus 100 mg ritonavir once daily-	Yes, open caps and mix with food	1. Acidic environment needed for absorption – avoid PPIs, give 2 hrs before or 10 hrs after H₂RAs, use antacids with caution 2. Hyperbilirubinemia, cholelithiasis, nephrolithiasis 3. Least CVD risk of the PIs. Usually boosted with concurrent ritonavir or cobicistat
Atazanavir/Cobicistat (Evotaz, ATV/c)	1 tablet q24h Take with food	< 70: do not initiate as part of TDF-based regimen	No	See atazanavir and cobicistat notes
Darunavir (Prezista, DRV)	800 mg q24h or 600 mg q12h Take with food	None	Yes, mix with water or use oral soln 100mg/ml	1. See class drug interactions 2. See class adverse events 3. Contains sulfonamide moiety, caution with sulfa allergy. Always boosted with concurrent ritonavir or cobicistat
Darunavir/Cobicistat (Prezcobix, DRV/c)	1 tablet q24h Take with food	< 70: do not initiate as part of TDF-based regimen	Yes	See darunavir and cobicistat notes
Lopinavir/Ritonavir (Kaletra, LPV/r)	2 tablets q12h or 4 tablets q24h Take oral soln with food	None	Yes, use oral soln 400/100mg/5ml	1. See class drug interactions and ritonavir notes; see package insert for dose if taking with carbamazepine, efavirenz, or phenytoin 2. Diarrhea, possible increased risk of MI 3. Oral solution is 42% ethanol per volume
Pharmacokinetic Enhancers (“Boosters”) <u>Class Drug Interactions:</u> Many: azole antifungals, antiarrhythmics, anticoagulants, anticonvulsants, HCV drugs, methadone, midazolam, rifampin/rifamycins, QT _c prolonging agents, sildenafil, statins, inhaled and oral steroids (e.g. fluticasone)				
Cobicistat (Tybost, c)	150 mg q24h	< 70: do not initiate as part of TDF-based regimen <hr/> < 50: discontinue use	No	1. See class drug interactions 2. Increase in SCr (typically <0.2 mg/dL) due to decreased creatinine secretion (no impact on GFR) 3. Always use in combination with ATV, DRV or EVG
Ritonavir (Norvir, r)	100-200 mg q12h or q24h	None	No, use oral soln	1. See class drug interactions 2. Hepatotoxicity, taste perversion with horrible-tasting oral solution (chocolate milk, peanut butter, sweet liquids can help) 3. Always use in combination with PIs. Oral solution is 43% ethanol per volume, 27% propylene glycol per volume

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Drug	Adult Dose & Food Considerations	Renal Dosing based on CrCl (mL/min)	Crushable and/or Liquid Available?	1. Drug Interactions 2. Adverse Events 3. Clinical Pearls
Integrase Strand Transfer Inhibitors (INSTIs) <u>Class Drug Interactions:</u> cation-containing antacids or laxatives, iron or calcium containing oral supplements, buffered medications, carbamazepine, oxcarbazepine, phenobarbital, phenytoin, rifampin/rifamycins <u>Class Adverse Events:</u> insomnia, increase in SCr (usually <0.2 mg/dL) from decreasing creatinine secretion (no impact on GFR), depression, weight gain				
Dolutegravir (Tivicay, DTG)	50 mg q24h (50 mg q12h in INSTI- experienced patients)	None	Yes, mix with water or food	1. With rifampin, increase DTG to 50 mg q12h (no adjustment needed with rifabutin or weekly rifapentine). Maximum dose of metformin is 850 mg BID when given with DTG. 2. High genetic barrier to resistance
Raltegravir (Isentress, RAL)	IR tab: 400 mg q12h or 1200 mg q24h Chew tab: 300 mg q12h	HD: no adjustment, on dialysis days give after HD	Yes, mix with water or use chewable tab	1. With rifampin, increase RAL to 800 mg q12h (no RAL dose adjustment needed with rifabutin) 2. Myopathy, rhabdomyolysis 3. Bioavailability is not equivalent among IR tablet and chewable tablet, therefore, dosage formulations are NOT interchangeable
Cabotegravir (Vocabria, Apretude, CAB)	Tab: 30mg q24h IM Injection: 600 mg/3 mL	None	No	1. Avoid use with carbamazepine, phenobarbital, phenytoin, rifampin, or rifapentine 2. Injection site reactions commonly reported with IM product 3. Oral lead-in phase recommended to assess tolerability
Note: Bictegravir and elvitegravir are INSTIs that are only available as part of combination medications. They do not have individualized dosing, safety, or efficacy data as they were studied and approved only as part of combination medications.				
Entry Inhibitors & Others				
Maraviroc (Selzentry, MVC)	Drug interactions determine dose 150-600 mg q12h	< 30 and strong CYP3A4 inhibitors or inducers: avoid use <hr/> < 30 with other medications and postural hypotension: 150 mg q12h	Yes, mix with water	1. Standard dose is 300 mg PO q12h. Use 150 mg q12h if taking with strong CYP3A inhibitors (e.g. itraconazole, clarithromycin, most PIs). Use 600 mg q12h if taking with strong CYP3A4 inducers (<i>without a strong CYP3A4 inhibitor</i>) (e.g. efavirenz, etravirine, rifampin, carbamazepine, and phenytoin) 2. Rash, hepatotoxicity, CNS disturbances, postural hypotension 3. Requires positive tropism test for CCR5 virus before use
Fostemsavir (Rukobia, FTR)	600 mg q12h	<hr/> None	No	1. Avoid use with strong CYP3A4 inducers (e.g., carbamazepine, phenytoin, rifampin, St. John's wort) 2. May cause nausea, fatigue, and diarrhea 3. Extended release tablets, do not chew, crush or split

Montefiore Formulary ARVs

Drug	Adult Dose & Food Considerations	Renal Dosing based on CrCl (mL/min)	Crushable and/or Liquid Available?	<u>Refer to individual medication details. See below for select:</u> 1. Drug Interactions 2. Adverse Events 3. Clinical Pearls
Combination Regimen				
Atripla (EFV/TDF/FTC)	1 tablet q24h at bedtime Take on empty stomach	< 50: Give EFV, TDF, FTC separately. Please see renal dosing for TDF and FTC	No, separate out components	1. Avoid in patients with psychiatric comorbidities (see EFV).
Biktarvy (BIC/TAF/FTC)	1 tablet q24h	< 30: not recommended HD: no adjustment, on dialysis days give after HD	Yes, mix with water, administer immediately	1. Avoid all rifamycins
Complera (RPV/TDF/FTC)	1 tablet q24h Take with food	< 50: Give RPV, TDF, FTC separately. Please see renal dosing for TDF and FTC	No, separate out components	1. Avoid in patients with psychiatric comorbidities (see RPV). 2. Needs acidic environment for absorption – avoid PPIs, use H2RAs and antacids with caution. 3. Do not initiate if pre-treatment CD4 <200 and/or HIV RNA >100,000
Genvoya (EVG/c/TAF/FTC)	1 tablet q24h	< 30: not recommended HD: no adjustment, on dialysis days give after HD	Yes, mix with water	1. Contains cobicistat, so many drug interactions
Odefsey (RPV/TAF/FTC)	1 tablet q24h	< 30: Give RPV, TAF, FTC separately. Please see renal dosing for TAF and FTC HD: no adjustment, on dialysis days give after HD	No, separate out components	1. Avoid in patients with psychiatric comorbidities (see RPV). 2. Needs acidic environment for absorption – avoid PPIs, use H2RAs and antacids with caution. 3. Do not initiate if pre-treatment CD4 <200 and/or HIV RNA >100,000
Stribild (EVG/c/TDF/FTC)	1 tablet q24h	< 70: do not initiate < 50: discontinue use	Yes, mix with water or food	1. Contains cobicistat, so many drug interactions
Triumeq (DTG/ABC/3TC)	1 tablet q24h	< 30: Give DTG, ABC, 3TC separately. Please see renal dosing for 3TC	Yes, mix with water or food	1. Must be HLA*B-5701 negative to initiate
Cabenuva (CAB/RPV)	CAB 600 mg/3 mL with RPV 900 mg/3 mL OR CAB 400 mg/2 mL with RPV 600 mg/2 mL	None	No	1. See individual drug interactions 2. See individual adverse events 3. Not recommended for ARV naïve patients. Residual concentrations may remain in the body for more than 12 months. If stopping injections, initiate alternative ARV regimen within 1 month of last injection.
Combination Medication-Fixed Dose Combination				

Descovy (TAF/FTC)	1 tablet q24h	<div>< 30: Give TAF and FTC separately. Please see renal dosing for TAF and FTC</div> <div>HD: no adjustment, on dialysis days give after HD</div>	Yes, mix with water, bitter, burnt taste	1. TAF is approved by FDA for HIV PrEP in MSM and transgender women.
Truvada (TDF/FTC)	1 tablet q24h	<div>30-49: 1 tablet q48h</div> <div>< 30: Give TDF and FTC separately. Please see renal dosing for TDF and FTC</div>	Yes, mix with water, bitter, burnt taste	1. Preferred regimen for HIV PrEP: CrCl \geq 60 ml/min: no dosage adjustment needed, CrCl <60 ml/min: not recommended.

Pre-Exposure Prophylaxis (PrEP)

All patients must be tested and documented as HIV negative first

Preferred regimen: Truvada (TDF/Emtricitabine) 1 tablet PO once daily

Alternative regimen: Descovy (TAF/Emtricitabine) 1 tablet PO once daily (not indicated for those who have receptive vaginal sex)

Provide a maximum of 90 tablets per refill (or per provider's assessment)

To encourage timely follow-up at least every 3 month

Monitoring:

- Signs and symptoms of acute HIV infection
- Side effects, adherence, acquisition risk behaviors
- Repeat pregnancy testing if at risk
- Consider STI and hepatitis C testing if symptomatic or high risk
- CrCl (<60 mL/min: use is not preferred for this indication)

Oral PrEP regimen can take 1-3 weeks to achieve sufficient protective levels against HIV. Explore Cabotegravir (Apretude, **Vocabria**, CAB) IM injection for PrEP. **Please discuss details with HIV care provider.**

Post-Exposure Prophylaxis (PEP)

Preferred regimen: Truvada 1 tablet PO daily

PLUS

- Preferred: Dolutegravir 50 mg tablet 1 tablet PO daily
OR

- Alternative: Raltegravir 400mg tablet PO q12h, or *non-formulary* Raltegravir XR (Isentress HD) 1200 mg PO once daily

Renal adjustment for Truvada:

CrCl >50 mL/min: 1 tablet daily

CrCl 30-49 mL/min: 1 tablet q48h

CrCl < 30 mL/min: use is not preferred

Total duration: 28 days

Preventing HIV Perinatal Transmission

Viral suppression of mother during pregnancy is critical

Intrapartum prophylaxis: Pregnant Women

Zidovudine - given if HIV RNA >1,000 copies/mL or unknown at delivery

- Begin 3 hours before scheduled delivery
- Load with 2 mg/kg IV over 1 hour, then 1 mg/kg/hr until delivery complete

Postpartum prophylaxis: Neonates

Zidovudine – given to all HIV exposed neonates based on gestational age. Start as soon as possible and continue for 4-6 weeks per OB/GYN and neonatology

- ≥ 35 weeks: 4 mg/kg/dose PO or 3 mg/kg/dose IV q12h
- ≥ 30 to <35 weeks: 2 mg/kg/dose PO or 1.5 mg/kg/dose IV q12h
 - Increase to 3 mg/kg/dose PO or 2.3 mg/kg/dose IV q12h at **age 15 days**
- < 30 weeks: 2 mg/kg/dose PO or 1.5 mg/kg/dose IV q12h
 - Increase to 3 mg/kg/dose PO or 2.3 mg/kg/dose IV q12h at **age 28 days**

Nevirapine – only given if the mother was indicated to receive intrapartum zidovudine as described above

- 3 doses in total, based on birth weight – ≤ 2 kg: 8 mg or > 2 kg: 12 mg
 - 1st dose: within 48 hours after birth, but ideally as soon as possible
 - 2nd dose: 48 hours after 1st dose
 - 3rd dose: 96 hours after 2nd dose

Important Online HIV Treatment and Management References

1. US Department of Health and Human Services AIDSinfo *Guidelines*
2. The University of Liverpool HIV *Drug Interactions* Checker
3. POZ HIV *Drug Chart*
Updated annually, colored pictures of all available HIV medications
4. American Association for the Study of Liver Diseases Practice Guidelines
Guidelines and considerations for co-infections and drug interactions in the setting of HIV and *HBV, HCV, and liver transplantation*
5. CDC *STD* Treatment Guidelines
6. Stanford University *HIV Drug Resistance* Database
7. Toronto General Hospital Oral Antiretroviral Administration: Information on *Crushing and Liquid Formulations*