

## (A) Nucleoside/Nucleotide Reverse Transcriptase Inhibitors (NRTI)

Drug	Dosage	Potential side effects	Remarks
Zidovudine (AZT) Retrovir 100mg/cap 250mg/cap	250mg 2 times/day or 300mg 2 times/day	<ul style="list-style-type: none"> <li>➤ Anaemia</li> <li>➤ Neutropenia</li> <li>➤ G I intolerance</li> <li>➤ Headache</li> <li>➤ Insomnia</li> <li>➤ Asthenia</li> <li>➤ Lactic acidosis with hepatic steatosis (rare): fatigue, severe vomiting, dyspnea</li> </ul>	<ul style="list-style-type: none"> <li>➤ If nausea, take after meal</li> </ul>
Stavudine(d4T) Zerit 30mg/cap 40mg/cap	30mg or 40mg 2 times/day	<ul style="list-style-type: none"> <li>➤ Peripheral neuropathy</li> <li>➤ Lipodystrophy</li> <li>➤ Lactic acidosis with hepatic steatosis (rare): fatigue, severe vomiting, dyspnoea</li> <li>➤ Pancreatitis</li> <li>➤ Rapidly progressive ascending neuromuscular weakness</li> </ul>	
Lamivudine (3TC) Epivir 150mg/tab	150mg 2 times/day  Or 300mg/day	<ul style="list-style-type: none"> <li>➤ Minimal toxicity</li> <li>➤ Lactic acidosis with hepatic steatosis (rare): fatigue, severe vomiting, dyspnoea</li> </ul>	<ul style="list-style-type: none"> <li>➤ Rapid emergence of resistant strains if non-adherent</li> <li>➤ Dosage adjustment in renal insufficiency</li> </ul>
Combivir (CBV) 150mg 3TC + 300mg AZT/tab	1 tab 2 times/day	<ul style="list-style-type: none"> <li>➤ Anaemia</li> <li>➤ Neutropenia</li> <li>➤ Headache</li> <li>➤ G I intolerance</li> <li>➤ Insomnia</li> <li>➤ Asthenia</li> <li>➤ Lactic acidosis with hepatic steatosis (rare): fatigue, severe vomiting, dyspnea</li> </ul>	
Abacavir(ABC) Ziagen 300mg/tab	300mg 2 times/day  Or 600mg/day	<ul style="list-style-type: none"> <li>➤ Hypersensitivity reaction (&lt;5% of people) symptoms may include fever, rash, nausea, vomiting, malaise, fatigue or loss of appetite, respiratory symptoms such as sore throat, cough, shortness of breath</li> </ul>	<ul style="list-style-type: none"> <li>➤ If there is fever, rash, report to health care workers at once</li> </ul>

<b>Drug</b>	<b>Dosage</b>	<b>Potential side effects</b>	<b>Remarks</b>
Kivexa (KVA) Epzicom ABC 600mg + 3TC 300mg/tab	1 tablet once daily	<ul style="list-style-type: none"> <li>➤ Hypersensitivity reaction which can be fatal, symptoms may include fever, rash, nausea, vomiting, malaise or fatigue, loss of appetite, respiratory symptoms such as sore throat, cough, shortness of breath</li> </ul>	
Tenofovir (TDF) Viread 300mg/tab	300mg daily	<ul style="list-style-type: none"> <li>➤ Asthenia</li> <li>➤ Headache</li> <li>➤ G I intolerance</li> <li>➤ Flatulence</li> <li>➤ Lactic acidosis with hepatic steatosis (rare): fatigue, severe vomiting, dyspnoea</li> <li>➤ Rare report of renal insufficiency</li> <li>➤ Decrease in bone mineral density</li> </ul>	<ul style="list-style-type: none"> <li>➤ Take with meal</li> <li>➤ Dosage adjustment in renal insufficiency</li> </ul>
Truvada (TRV) FTC 200mg + TDF 300mg/tab	1 tablet once daily	<ul style="list-style-type: none"> <li>➤ Minimal toxicity</li> <li>➤ Lactic acidosis with hepatic steatosis (rare): fatigue, severe vomiting, dyspnoea</li> <li>➤ Rare report of renal insufficiency</li> <li>➤ Decrease in bone mineral density</li> </ul>	
Descovy FTC 200mg + TAF 25mg / tab OR FTC 200mg + TAF 10mg / tab	1 tablet once daily	<ul style="list-style-type: none"> <li>➤ Nausea</li> <li>➤ Diarrhoea, vomiting, abdominal pain, flatulence</li> <li>➤ Headache, dizziness</li> <li>➤ Rash</li> <li>➤ Fatigue</li> <li>➤ Abnormal dreams</li> </ul>	<ul style="list-style-type: none"> <li>➤ Cautions in patients with advanced renal impairment</li> <li>➤ Descovy is not recommended with certain anticonvulsants ( carbamazepine, oxcarbazepine, Phenobarbital and phenytoin), antimycobacterials ( rifabutin, rifampicin, rifapentine), anti-hepatitis c virus medicinal products ( boceprevir, telaprevir ) and herbal products (St. John's wort)</li> </ul>

<b>Drug</b>	<b>Dosage</b>	<b>Potential side effects</b>	<b>Remarks</b>
Trizivir ABC 300mg + AZT 300mg + 3TC 150mg/tab	1 tab 2 times/day	<ul style="list-style-type: none"> <li>➤ Anaemia</li> <li>➤ Neutropenia</li> <li>➤ G I intolerance</li> <li>➤ Headache</li> <li>➤ Insomnia</li> <li>➤ Asthenia</li> <li>➤ Lactic acidosis with hepatic steatosis: fatigue, severe vomiting, dyspnoea</li> <li>➤ Hypersensitivity reaction (ABC)</li> </ul>	

**(B) Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTI)**

<b>Drug</b>	<b>Dosage</b>	<b>Potential side effects</b>	<b>Remarks</b>
Nevirapine (NVP) Viramune 200mg/tab Viramune XR (NVP_XR) 400mg/tab	200mg once daily for 2weeks (lead-in period); then 200mg 2 times/day or 400mg (Viramune XR) once daily	<ul style="list-style-type: none"> <li>➤ Rash</li> <li>➤ Symptomatic hepatitis</li> </ul>	<ul style="list-style-type: none"> <li>➤ Anti-TB drugs and oral contraceptive pills should be used with caution</li> <li>➤ Rapid emergence of resistant strains if non-adherent</li> <li>➤ Repeat lead-in period if therapy is discontinued for more than 7 days</li> <li>➤ Not for CD4&gt;400 (male) or CD4&gt;250 (female)</li> </ul>
Efavirenz(EFV) Stocrin, Sustiva 200mg/cap 600mg/tab	600mg once daily (at or before bed time)  (400mg once daily may be considered for selected patient)	<ul style="list-style-type: none"> <li>➤ Rash</li> <li>➤ CNS symptoms: dizziness, somnolence, insomnia, drowsiness, nightmares, hallucinations, poor concentration (usually better after 2-4 weeks)</li> <li>➤ Increased transaminase levels</li> </ul>	<ul style="list-style-type: none"> <li>➤ Decrease CNS symptoms if take at bed time</li> <li>➤ Consider alternative drug in women with child-bearing potential not on effective contraception as risk of teratogenicity</li> <li>➤ Can be continued in pregnant women who present for antenatal care in the first trimester if already taking drug before pregnancy and VL suppressed</li> <li>➤ Caution: patient with mental illness</li> </ul>

<b>Drug</b>	<b>Dosage</b>	<b>Potential side effects</b>	<b>Remarks</b>
Etravirine (ETR) Intelence 200mg/tab	200mg 2 times/day  400mg/day for selected patient	<ul style="list-style-type: none"> <li>➤ Rash</li> <li>➤ Nausea &amp; Vomiting</li> <li>➤ Diarrhoea</li> <li>➤ Abdominal pain, tiredness, headache, increase blood pressure</li> <li>➤ Tingling or pain in hands &amp; feet, weakness</li> </ul>	<ul style="list-style-type: none"> <li>➤ Take with a meal</li> </ul>
Rilpivirine (RPV) Edurant 25mg/tab	25mg once daily	<ul style="list-style-type: none"> <li>➤ Rash</li> <li>➤ Nausea, vomiting</li> <li>➤ Hepatotoxicity</li> </ul>	<ul style="list-style-type: none"> <li>➤ Take with meal</li> <li>➤ Contraindicated with the following drugs: Carbamazepine, oxcarbazepine, phenobarbital, phenytoin, rifabutin, rifapentine, rifampin, systemic dexamethasone (more than a single dose), esomeprazole, lansoprazole, omeprazole, pantoprazole, rabeprazole and St. John's wort</li> <li>➤ Do not take RPV with antacids or H2-receptor antagonists at the same time</li> <li>➤ Avoid if high baseline viral load &gt; 100,000</li> <li>➤ Small pill size</li> </ul>

**(C) Protease Inhibitors (PI)**

<b>Drug</b>	<b>Dosage</b>	<b>Potential side effects</b>	<b>Remarks</b>
Ritonavir(RTV) Norvir 100mg/tab syrup80mg/ml	600mg 2 times/day	<ul style="list-style-type: none"> <li>➤ Headache</li> <li>➤ G I intolerance</li> <li>➤ Paresthesias–circumoral and extremities</li> <li>➤ Hepatitis</li> <li>➤ Pancreatitis</li> <li>➤ Asthenia</li> <li>➤ Taste perversion</li> <li>➤ Lab.: Triglycerides increase &gt; 200%, transaminase elevation, elevated CPK and uric acid</li> <li>➤ Hyperglycemia</li> <li>➤ Fat redistribution</li> <li>➤ Possible increased bleeding episodes in patients with hemophilia</li> </ul>	<ul style="list-style-type: none"> <li>➤ Take after meal to improve tolerance</li> <li>➤ Need dosage adjustment if take with SQV</li> <li>➤ Avoid self-prescribe drugs because of drug interaction</li> </ul>
Kaletra (LPV/r) Lopinavir (LPV)200mg + Ritonavir (RTV) 50mg/tab	2 tablets 2 times/day Or 4 tablets/day for selected patient	<ul style="list-style-type: none"> <li>➤ Diarrhoea</li> <li>➤ GI Intolerance</li> <li>➤ Pancreatitis</li> <li>➤ Asthenia</li> <li>➤ Elevated serum transaminases</li> <li>➤ Hyperglycemia</li> <li>➤ Fat redistribution</li> <li>➤ Lipid abnormalities</li> <li>➤ Possible increased bleeding episodes in patients with hemophilia</li> </ul>	<ul style="list-style-type: none"> <li>➤ Use additional type of contraception since Kaletra may reduce the effectiveness of oral contraceptives</li> </ul>

<b>Drug</b>	<b>Dosage</b>	<b>Potential side effects</b>	<b>Remarks</b>
Atazanavir (ATV) Reyataz 200mg/cap 300mg/cap	400mg once daily or 300mg once daily + Ritonavir (RTV) 100mg	<ul style="list-style-type: none"> <li>➤ Indirect hyperbilirubinemia</li> <li>➤ Hyperglycemia</li> <li>➤ Fat maldistribution</li> <li>➤ Lipid abnormalities</li> <li>➤ Possible increased bleeding episodes in patients with hemophilia</li> <li>➤ Some patients may experience asymptomatic 1st degree Atrioventricular (AV) block</li> <li>➤ Cholelithiasis</li> <li>➤ Nephrolithiasis</li> <li>➤ Renal insufficiency</li> <li>➤ Skin rash</li> </ul>	<ul style="list-style-type: none"> <li>➤ Take with meal</li> <li>➤ Contraindications: Midazolam, triazolam, dihydroergotamine, ergotamine, ergonovine, methylergonovine, cisapride, pimozide and PPI</li> <li>➤ Caution: Patients with hepatic insufficiency or gastric ulcer</li> <li>➤ ATV without Ritonavir (RTV) should not be coadministered with Efavirenz (EFZ) or Tenofovir (TDF)</li> <li>➤ Avoid taking together with antacid and separate 4 hrs if needed, separate H<sub>2</sub>Blocker (Zantac) by 12hrs</li> </ul>
Tipranvir (TPV) Aptivus 250mg/cap	500mg 2 times/day (with RTV 200mg)	<ul style="list-style-type: none"> <li>➤ Hepatotoxicity</li> <li>➤ Skin rash</li> <li>➤ Hyperlipidemia (esp. hypertriglyceridemia)</li> <li>➤ Hyperglycemia</li> <li>➤ Fat maldistribution</li> <li>➤ Possible increased bleeding episodes in patients with hemophilia</li> </ul>	<ul style="list-style-type: none"> <li>➤ Take both TPV and RTV with food</li> <li>➤ Caution: Patient with hepatitis B or C virus infection or have other liver problem</li> </ul>
Darunavir (DRV) Prezista 600mg/tab 800mg/tab	800mg daily or 600mg 2 times/day	<ul style="list-style-type: none"> <li>➤ Skin rash</li> <li>➤ Diarrhoea</li> <li>➤ Nausea</li> <li>➤ Headache</li> <li>➤ Serum transaminase elevation</li> <li>➤ Hyperlipidaemia</li> <li>➤ Fat maldistribution</li> <li>➤ Hyperglycaemia</li> </ul>	<ul style="list-style-type: none"> <li>➤ Take with food</li> </ul>
Prezcobix DRV 800mg + COBI 150mg/tab	1 tablet once daily	<ul style="list-style-type: none"> <li>➤ Skin rash</li> <li>➤ Hepatotoxicity</li> <li>➤ Diarrhoea</li> <li>➤ Nausea</li> <li>➤ Headache</li> <li>➤ Abdominal pain</li> <li>➤ Serum creatinine elevation</li> <li>➤ Dyslipidaemia</li> <li>➤ Redistribution of body fat</li> <li>➤ Hyperglycaemia</li> </ul>	<ul style="list-style-type: none"> <li>➤ Take with or after meals</li> </ul>

**(D) Entry Inhibitors**

<b>Drug</b>	<b>Dosage</b>	<b>Potential side effects</b>	<b>Remarks</b>
<p><u>Fusion Inhibitor:</u> Enfuvirtide (T20) Fuzeon</p>	<p>90mg (1ml) subcutaneously (SC) 2 times/day</p>	<ul style="list-style-type: none"> <li>➤ Local injection site reactions eg. pain, erythema, induration, nodules and cysts, pruritus, ecchymosis</li> <li>➤ Increased rate of bacterial pneumonia</li> <li>➤ Hypersensitivity reaction (&lt;1%) symptoms may include rash, fever, nausea, vomiting, chills, rigors, hypotension, or elevated serum transaminases</li> </ul>	<ul style="list-style-type: none"> <li>➤ Rechallenge is not recommended if client has hypersensitivity reaction</li> </ul>
<p><u>CCR5 Antagonist:</u> Maraviroc (MVC) Selzentry Celsentri 150mg/tab or 300mg/tab</p>	<p>The recommended dose differs based on concomitant medications because of drug interactions 150mg, 300mg, or 600mg twice daily</p>	<ul style="list-style-type: none"> <li>➤ Abdominal pain</li> <li>➤ Cough</li> <li>➤ Dizziness</li> <li>➤ Musculoskeletal symptoms</li> <li>➤ Fever</li> <li>➤ Rash</li> <li>➤ Upper respiratory tract infections</li> <li>➤ Hepatotoxicity</li> <li>➤ Orthostatic hypotension</li> </ul>	<ul style="list-style-type: none"> <li>➤ Need tropism test before use</li> <li>➤ Concentrations will likely be increased in patients with hepatic impairment</li> <li>➤ Take with or without food</li> <li>➤ Cautions: Anti-convulsants, such as Tegretol, Luminal, Dilantin can decrease the amount of Selzentry in the bloodstream. If these medication are used, the maximum Selzentry dose (two 300mg twice daily) may be necessary.</li> </ul>

## (E) Combination Drugs

Drug	Dosage	Potential side effects	Remarks
Atripla (1 NNRTI + 2 NRTI) EFV 600mg + FTC 200mg + TDF 300mg/tab	1 tablet once daily (at or before bed time)	<ul style="list-style-type: none"> <li>➤ Headache</li> <li>➤ Dizziness</li> <li>➤ Abdominal pain</li> <li>➤ Nausea</li> <li>➤ Vomiting</li> <li>➤ Rash</li> <li>➤ Renal impairment</li> <li>➤ Severe depression or serious psychiatric problems</li> <li>➤ Lactic acidosis</li> <li>➤ Hepatotoxicity</li> </ul>	<ul style="list-style-type: none"> <li>➤ Take with empty stomach</li> <li>➤ Decrease CNS symptoms if take at bed time</li> <li>➤ Consider alternative drug in women with child-bearing potential not on effective contraception as risk of teratogenicity</li> <li>➤ Can be continued in pregnant women who present for antenatal care in the first trimester if already taking drug before pregnancy and VL suppressed</li> <li>➤ Caution: Patients with chronic Hepatitis B infection</li> <li>➤ Contraindications: Astemizole, cisapride, midazolam, triazolam, ergot medications</li> <li>➤ Rapid emergence of resistant strains if non-adherent</li> </ul>
Genvoya EVG 150mg + Cobi 150mg + FTC 200mg + TAF 10mg/tab	1 tablet once daily	<ul style="list-style-type: none"> <li>➤ Nausea, vomiting, diarrhoea, abdominal pain, flatulence</li> <li>➤ Headache, dizziness</li> <li>➤ Rash</li> <li>➤ Fatigue</li> </ul>	<ul style="list-style-type: none"> <li>➤ Not recommended for patients with advanced renal impairment</li> <li>➤ Contraindications: Rifabutin, rifampicin, rifapentine, triazolam, midazolam, methylprednisolone, prednisolone, triamcinolone</li> <li>➤ Take with food</li> <li>➤ Avoid taking together with antacid and separate 2 hrs before &amp; after if needed</li> </ul>



Drug	Dosage	Potential side effects	Remarks
Triumeq (DTG 50 mg + ABC 600 mg + 3TC 300 mg)	1 tablet once daily	<ul style="list-style-type: none"> <li>➤ Hypersensitivity reaction symptoms include: skin rash, fever, shortness of breath, sore throat, cough, nausea, vomiting, diarrhoea, abdominal pain, severe tiredness, achiness or generally feeling ill</li> <li>➤ Insomnia</li> <li>➤ Headache</li> <li>➤ Dizziness</li> <li>➤ Dyspepsia</li> </ul>	<ul style="list-style-type: none"> <li>➤ If allergic reaction occurs, seek medical advice at once.</li> <li>➤ Caution in patients with moderate and severe hepatic impairment</li> <li>➤ Caution in patients with renal impairment</li> <li>➤ Contraindication with Dofetilide</li> <li>➤ Metformin and Rifampicin should be used with caution</li> <li>➤ Avoid taking antacid, calcium or iron supplements and separate minimum 2 hrs after or 6 hrs before if needed</li> </ul>
Biktarvy BIC 50mg + FTC 200mg + TAF 25mg/tab	1 tablet once daily  The tablet should not be chewed, crushed or split	<ul style="list-style-type: none"> <li>➤ Nausea</li> <li>➤ Diarrhoea</li> <li>➤ Headache</li> <li>➤ Insomnia</li> <li>➤ Depression</li> <li>➤ CPK muscle enzyme elevation</li> </ul>	<ul style="list-style-type: none"> <li>➤ Take with or without meals</li> <li>➤ Not recommended for patients with severe hepatic impairment</li> <li>➤ Caution in patient with renal impairment</li> <li>➤ Do not take Biktarvy if you take dofetilide or rifampin</li> <li>➤ Avoid taking Atazanavir, Boceprevir, Carbamazepine, Ciclosporin, Oxcarbazepine, Phenobarbital, Phenytoin, Rifabutin, Rifapentine or Sucralfate</li> <li>➤ Biktarvy should be administered at least 2 hrs before, or with food 2 hrs after antacids containing magnesium and/or aluminium</li> <li>➤ It should be taken at least 2 hrs before iron supplements, or taken together with food</li> </ul>

Drug	Dosage	Potential side effects	Remarks
Odefsey FTC 200mg + RPV 25mg + TAF 25mg / tab	1 tablet once daily  The tablet should not be chewed, crushed or split	➤ Mild side effects include: difficulty sleeping, headache, dizziness, nausea, feeling bloated	➤ <b>*Must be taken with meal            for optimal absorption*</b> ➤ Contraindicated with the following drugs: carbamazepine, oxcarbazepine, phenobarbital, phenytoin, rifabutin, rifapentine, rifampin, omeprazole, esomeprazole, dexlansoprazole, lansoprazole, pantoprazole, rabeprazole, Dexamethasone (oral and parenteral doses), except as a single dose treatment, St. John's wort ➤ Proton-pump inhibitors e.g. omeprazole, esomeprazole, dexlansoprazole, lansoprazole, pantoprazole, rabeprazole should be avoided, as they will severely affect the absorption of the drug & may cause drug resistance in some cases ➤ Avoid taking together with antacid e.g. Triact , separate for 2 hrs before or at least 4 hrs after take; H <sub>2</sub> antagonist e.g. Famotidine at least 12 hrs before or 4 hrs after if needed

## (F) Integrase Inhibitors

Drug	Dosage	Potential side effects	Remarks
Raltegravir (RAL) Isentress 400mg/tab 600mg/tab	400mg 2 times per day or 1200mg (2x600mg) once daily	<ul style="list-style-type: none"> <li>➤ Diarrhoea</li> <li>➤ Nausea</li> <li>➤ Headache</li> <li>➤ Pyrexia</li> <li>➤ CPK elevation</li> <li>➤ Rash</li> </ul>	<ul style="list-style-type: none"> <li>➤ Take with or without meals</li> <li>➤ Used with caution patients with muscle problem</li> </ul>
Dolutegravir (DTG) Tivicay 50mg/tab	50mg Once daily  (50mg 2 times daily if resistant)	<ul style="list-style-type: none"> <li>➤ Rash</li> <li>➤ Pyrexia</li> <li>➤ Headache</li> <li>➤ Jaundice</li> <li>➤ Trouble sleeping</li> <li>➤ Diarrhoea</li> <li>➤ CPK elevation</li> </ul>	<ul style="list-style-type: none"> <li>➤ Take with meals for those with resistance or without meals</li> <li>➤ Caution in patients with chronic Hepatitis B &amp; Hepatitis C infection or other liver disease</li> <li>➤ Contraindication with Dofetilide</li> <li>➤ NNRTI, Metformin and Rifampicin should be used with caution</li> <li>➤ Used with caution patients with muscle problem</li> <li>➤ Avoid taking antacid, calcium or iron supplements, multivitamins and separate minimum 2 hrs after or 6 hrs before if needed</li> </ul>

### Reference:

Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents. Department of Health and Human Services.

Available at <http://aidsinfo.nih.gov/guidelines/html/1/adult-and-adolescent-treatment-guidelines/0>