

(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">➤ Anaemia➤ Neutropenia➤ G I intolerance➤ Headache➤ Insomnia➤ Asthenia➤ Lactic acidosis with hepatic steatosis (rare): fatigue, severe vomiting, dyspnoea	<ul style="list-style-type: none">➤ If nausea, take after meal
Didanosine EC (ddIEC) Videx EC 250mg/tab 400mg/tab	250mg or 400mg daily (>60kg)	<ul style="list-style-type: none">➤ Peripheral neuropathy➤ Pancreatitis➤ Nausea➤ Diarrhoea➤ Lactic acidosis with hepatic steatosis : fatigue, severe vomiting, dyspnoea➤ Rapidly progressive ascending neuromuscular weakness	<ul style="list-style-type: none">➤ Take on empty stomach➤ Take with IDV at least 1 hr apart➤ Take with meal if take TDF together
Stavudine(d4T) Zerit 30mg/cap 40mg/cap	30mg or 40mg 2 times/day	<ul style="list-style-type: none">➤ Peripheral neuropathy➤ Lipodystrophy➤ Lactic acidosis with hepatic steatosis (rare): fatigue, severe vomiting, dyspnoea➤ Pancreatitis➤ Rapidly progressive ascending neuromuscular weakness	
Lamivudine (3TC) Epivir 150mg/tab	150mg 2 times/day Or 300mg/day	<ul style="list-style-type: none">➤ Minimal toxicity➤ Lactic acidosis with hepatic steatosis (rare): fatigue, severe vomiting, dyspnoea	<ul style="list-style-type: none">➤ Rapid emergence of resistant strains if non-adherent➤ Dosage adjustment in renal insufficiency
Combivir (CBV) 150mg 3TC + 300mg AZT/tab	1 tab 2 times/day	<ul style="list-style-type: none">➤ Anaemia➤ Neutropenia➤ Headache➤ G I intolerance➤ Insomnia➤ Asthenia➤ Lactic acidosis with hepatic steatosis (rare): fatigue, severe vomiting, dyspnoea	

Drug	Dosage	Potential side effects	Remarks
Abacavir(ABC) Ziagen 300mg/tab	300mg 2 times/day Or 600mg/day	➤ Hypersensitivity reaction (<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	➤ If there is fever, rash, report to health care workers at once
Kivexa (KVA) Epzicom ABC 600mg + 3TC 300mg/tab	1 tablet once daily	➤ 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	
Tenofovir (TDF) Viread 300mg/tab	300mg daily	➤ Asthenia ➤ Headache ➤ G I intolerance ➤ Flatulence ➤ Lactic acidosis with hepatic steatosis (rare): fatigue, severe vomiting, dyspnoea ➤ Rare report of renal insufficiency ➤ Decrease in bone mineral density	➤ Take with meal ➤ Dosage adjustment in renal insufficiency
Truvada (TRV) FTC 200mg + TDF 300mg/tab	1 tablet once daily	➤ Minimal toxicity ➤ Lactic acidosis with hepatic steatosis (rare): fatigue, severe vomiting, dyspnoea ➤ Rare report of renal insufficiency ➤ Decrease in bone mineral density	
Descovy FTC 200mg + TAF 25mg / tab OR FTC 200mg + TAF 10mg / tab	1 tablet once daily	➤ Nausea ➤ Diarrhoea, vomiting, abdominal pain, flatulence ➤ Headache, dizziness ➤ Rash ➤ Fatigue ➤ Abnormal dreams	➤ Cautions in patients with advanced renal impairment ➤ 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)

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

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

Drug	Dosage	Potential side effects	Remarks
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"> ➤ Rash ➤ Symptomatic hepatitis 	<ul style="list-style-type: none"> ➤ Anti-TB drugs and oral contraceptive pills should be used with caution ➤ Rapid emergence of resistant strains if non-adherent ➤ Repeat lead-in period if therapy is discontinued for more than 7 days ➤ Not for CD4>400 (male) or CD4>250 (female)
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"> ➤ Rash ➤ CNS symptoms: dizziness, somnolence, insomnia, drowsiness, nightmares, hallucinations, poor concentration (usually better after 2-4 weeks) ➤ Increased transaminase levels 	<ul style="list-style-type: none"> ➤ Decrease CNS symptoms if take at bed time ➤ Consider alternative drug in women with child-bearing potential not on effective contraception as risk of teratogenicity ➤ Can be continued in pregnant women who present for antenatal care in the first trimester if already taking drug before pregnancy and VL suppressed ➤ Caution: patient with mental illness
Etravirine (ETR) Intelence 200mg/tab	200mg 2 times/day 400mg/day for selected patient	<ul style="list-style-type: none"> ➤ Rash ➤ Nausea & Vomiting ➤ Diarrhoea ➤ Abdominal pain, tiredness, headache, increase blood pressure ➤ Tingling or pain in hands & feet, weakness 	<ul style="list-style-type: none"> ➤ Take with a meal
Rilpivirine (RPV) Edurant 25mg/tab	25mg once daily	<ul style="list-style-type: none"> ➤ Rash ➤ Nausea, vomiting ➤ Hepatotoxicity 	<ul style="list-style-type: none"> ➤ Take with meal ➤ 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 ➤ Do not take RPV with antacids or H2-receptor antagonists at the same time ➤ Avoid if high baseline viral load > 100,000 ➤ Small pill size

(C) Protease Inhibitors (PI)

Drug	Dosage	Potential side effects	Remarks
Indinavir (IDV) Crixivan 200mg/cap 400mg/cap	800mg Q8h (3 times/day) Or 800mg/RTV 100mg twice a day	<ul style="list-style-type: none"> ➤ Nephrolithiasis ➤ G I intolerance ➤ Hepatitis ➤ Increased indirect bilirubinemia ➤ Misc.: headache, asthenia, blurred vision, dizziness, rash, metallic taste, thrombocytopenia, alopecia and hemolytic anaemia ➤ Fat redistribution ➤ Lipid abnormalities ➤ Hyperglycemia ➤ Possible increased bleeding episodes in patients with hemophilia ➤ Ingrowing toenail 	<ul style="list-style-type: none"> ➤ Take with empty stomach ➤ Drink water \geq 1.5 litre/day ➤ Avoid grapefruit juice ➤ Take after meal to improve tolerance if take with RTV together
Saquinavir (SQV) Invirase (hard gel) 200mg/cap 500mg/tab	Invirase 600mg 3 times/day or 1000mg 2 times/day (with RTV 100mg)	<ul style="list-style-type: none"> ➤ Headache ➤ G I intolerance ➤ Elevated transaminase enzymes ➤ Hyperglycemia ➤ Fat redistribution ➤ Lipid abnormalities ➤ Possible increased bleeding episodes in patients with hemophilia ➤ Prolongation of PR and QT intervals on ECG 	<ul style="list-style-type: none"> ➤ Take after meal, preferably fatty to increase absorption ➤ Rifampicin & Rifapentine are contraindicated with SQV ➤ Fortovase (soft gel) should be refrigerated or stored at room temperature < 25°C (up to 3 months)
Ritonavir(RTV) Norvir 100mg/tab syrup80mg/ml	600mg 2 times/day	<ul style="list-style-type: none"> ➤ Headache ➤ G I intolerance ➤ Paresthesias–circumoral and extremities ➤ Hepatitis ➤ Pancreatitis ➤ Asthenia ➤ Taste perversion ➤ Lab.: Triglycerides increase > 200%, transaminase elevation, elevated CPK and uric acid ➤ Hyperglycemia ➤ Fat redistribution ➤ Possible increased bleeding episodes in patients with hemophilia 	<ul style="list-style-type: none"> ➤ Take after meal to improve tolerance ➤ Need dosage adjustment if take with SQV ➤ Avoid self-prescribe drugs because of drug interaction

Drug	Dosage	Potential side effects	Remarks
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"> ➤ Diarrhoea ➤ GI Intolerance ➤ Pancreatitis ➤ Asthenia ➤ Elevated serum transaminases ➤ Hyperglycemia ➤ Fat redistribution ➤ Lipid abnormalities ➤ Possible increased bleeding episodes in patients with hemophilia 	<ul style="list-style-type: none"> ➤ Use additional type of contraception since Kaletra may reduce the effectiveness of oral contraceptives
Atazanavir (ATV) Reyataz 200mg/cap 300mg/cap	400mg once daily or 300mg once daily + Ritonavir (RTV) 100mg	<ul style="list-style-type: none"> ➤ Indirect hyperbilirubinemia ➤ Hyperglycemia ➤ Fat maldistribution ➤ Lipid abnormalities ➤ Possible increased bleeding episodes in patients with hemophilia ➤ Some patients may experience asymptomatic 1st degree Atrioventricular (AV) block ➤ Cholelithiasis ➤ Nephrolithiasis ➤ Renal insufficiency ➤ Skin rash 	<ul style="list-style-type: none"> ➤ Take with meal ➤ Contraindications: Midazolam, triazolam, dihydroergotamine, ergotamine, ergonovine, methylergonovine, cisapride, pimozone and PPI ➤ Caution: Patients with hepatic insufficiency or gastric ulcer ➤ ATV without Ritonavir (RTV) should not be coadministered with Efavirenz (EFZ) or Tenofovir (TDF) ➤ Avoid taking together with antacid and separate 4 hrs if needed, separate H₂Blocker (Zantac) by 12hrs
Fosamprenavir (FPV) or (fAPV) Lexiva 700mg/tab	700mg 2 times/day (with RTV 100mg)	<ul style="list-style-type: none"> ➤ Skin rash (19%) ➤ Diarrhoea, nausea, vomiting ➤ Headache ➤ Hyperlipidemia ➤ Transaminase elevation ➤ Hyperglycemia ➤ Fat maldistribution ➤ Possible increased bleeding episode in patients with haemophilia ➤ Nephrolithiasis 	<ul style="list-style-type: none"> ➤ Dosage adjustment in hepatic insufficiency recommended
Tipranvir (TPV) Aptivus 250mg/cap	500mg 2 times/day (with RTV 200mg)	<ul style="list-style-type: none"> ➤ Hepatotoxicity ➤ Skin rash ➤ Hyperlipidemia (esp. hypertriglyceridemia) ➤ Hyperglycemia ➤ Fat maldistribution ➤ Possible increased bleeding episodes in patients with hemophilia 	<ul style="list-style-type: none"> ➤ Take both TPV and RTV with food ➤ Caution: Patient with hepatitis B or C virus infection or have other liver problem

Drug	Dosage	Potential side effects	Remarks
Darunavir (DRV) Prezista 600mg/tab 800mg/tab	800mg daily or 600mg 2 times/day	<ul style="list-style-type: none"> ➤ Skin rash ➤ Diarrhoea ➤ Nausea ➤ Headache ➤ Serum transaminase elevation ➤ Hyperlipidaemia ➤ Fat maldistribution ➤ Hyperglycaemia 	<ul style="list-style-type: none"> ➤ Take with food

(D) Entry Inhibitors

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

(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"> ➤ Headache ➤ Dizziness ➤ Abdominal pain ➤ Nausea ➤ Vomiting ➤ Rash ➤ Renal impairment ➤ Severe depression or serious psychiatric problems ➤ Lactic acidosis ➤ Hepatotoxicity 	<ul style="list-style-type: none"> ➤ Take with empty stomach ➤ Decrease CNS symptoms if take at bed time ➤ Consider alternative drug in women with child-bearing potential not on effective contraception as risk of teratogenicity ➤ Can be continued in pregnant women who present for antenatal care in the first trimester if already taking drug before pregnancy and VL suppressed ➤ Caution: Patients with chronic Hepatitis B infection ➤ Contraindications: Astemizole, cisapride, midazolam, triazolam, ergot medications ➤ Rapid emergence of resistant strains if non-adherent
Stribild (STB) EVG 150mg+ Cobi 150mg+ TDF 300mg + FTC 200mg / tab	1 tablet once daily	<ul style="list-style-type: none"> ➤ Nausea ➤ Diarrhoea ➤ Renal impairment ➤ Decrease in bone mineral density 	<ul style="list-style-type: none"> ➤ Caution in patients with chronic hepatitis B ➤ Not recommended for patient with baseline renal impairment ➤ Contraindications: rifabutin, rifampicin, rifapentine, triazolam, midazolam, methylprednisolone, prednisolone, triamcinolone ➤ Take with food ➤ Avoid taking together with antacid and separate 2 hrs before & 4 hrs after if needed

Drug	Dosage	Potential side effects	Remarks
Genvoya EVG 150mg + Cobi 150mg + FTC 200mg + TAF 10mg/tab	1 tablet once daily	<ul style="list-style-type: none"> ➤ Nausea, vomiting, diarrhoea, abdominal pain, flatulence ➤ Headache, dizziness ➤ Rash ➤ Fatigue 	<ul style="list-style-type: none"> ➤ Not recommended for patients with advanced renal impairment ➤ Contraindications: Rifabutin, rifampicin, rifapentine, triazolam, midazolam, methylprednisolone, prednisolone, triamcinolone ➤ Take with food ➤ Avoid taking together with antacid and separate 2 hrs before & after if needed
Complera (1 NNRTI + 2 NRTI) RPV25mg + FTC 200mg + TDF 300mg/tab	1 tablet once daily	<ul style="list-style-type: none"> ➤ Common side effects include: nausea, vomiting, headache, dizziness, diarrhoea, tiredness, back or joint pain ➤ More serious side effects include: allergic reaction, kidney failure, hepatotoxicity or osteoporosis 	<ul style="list-style-type: none"> ➤ Must be taken with meal for optimal absorption ➤ 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 ➤ Avoid taking together with antacid and separate 2hrs before or at least 4 hrs after, separate H₂ blocker at least 12 hrs before or 4 hrs after if needed ➤ Avoid in renal insufficiency
Triumeq (DTG 50 mg + ABC 600 mg + 3TC 300 mg)	1 tablet once daily	<ul style="list-style-type: none"> ➤ 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 ➤ Insomnia ➤ Headache ➤ Dizziness ➤ Dyspepsia 	<ul style="list-style-type: none"> ➤ If allergic reaction occurs, seek medical advice at once. ➤ Caution in patients with moderate and severe hepatic impairment ➤ Caution in patients with renal impairment ➤ Contraindication with Dofetilide ➤ Metformin and Rifampicin should be used with caution ➤ Avoid taking antacid, calcium or iron supplements and separate minimum 2 hrs after or 6 hrs before if needed

(F) Integrase Inhibitors

Drug	Dosage	Potential side effects	Remarks
Raltegravir (RAL) Isentress 400mg/tab	400mg 2 times per day	<ul style="list-style-type: none"> ➤ Diarrhoea ➤ Nausea ➤ Headache ➤ Pyrexia ➤ CPK elevation ➤ Rash 	<ul style="list-style-type: none"> ➤ Take with or without meals ➤ Used with caution patients with muscle problem
Dolutegravir (DTG) Tivicay 50mg/tab	50mg Once daily (50mg 2 times daily if resistant)	<ul style="list-style-type: none"> ➤ Rash ➤ Pyrexia ➤ Headache ➤ Jaundice ➤ Trouble sleeping ➤ Diarrhoea ➤ CPK elevation 	<ul style="list-style-type: none"> ➤ Take with meals for those with resistance or without meals ➤ Caution in patients with chronic Hepatitis B & Hepatitis C infection or other liver disease ➤ Contraindication with Dofetilide ➤ NNRTI, Metformin and Rifampicin should be used with caution ➤ Used with caution patients with muscle problem ➤ Avoid taking antacid, calcium or iron supplements, multivitamins and separate minimum 2 hrs after or 6 hrs before if needed
Stribild (STB) EVG 150mg+ Cobi 150mg+ TDF 300mg + FTC 200mg / tab	1 tablet once daily	<ul style="list-style-type: none"> ➤ Nausea ➤ Diarrhoea ➤ Renal impairment ➤ Decrease in bone mineral density 	<ul style="list-style-type: none"> ➤ Caution in patients with chronic hepatitis B ➤ Not recommended for patient with baseline renal impairment ➤ Contraindications: rifabutin, rifampicin, rifapentine, triazolam, midazolam, methylprednisolone, prednisolone, triamcinolone ➤ Take with food ➤ Avoid taking together with antacid and separate 2hrs before & after if needed

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>