

An illustration of five diverse people of various ethnicities and ages standing and sitting on a set of stairs. From top to bottom: a man in a white shirt, a woman in a blue dress, a woman in a red top, a man in a green sweater, and a woman in a red top. The background is a textured blue.

A Pocket Guide to Adult HIV/AIDS Treatment:

Companion to *A Guide
to Primary Care of
People with HIV/AIDS*

August 2004
Edition

John G. Bartlett, MD



U.S. Department of Health and Human Services
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**A Guide to Primary Care of
People with HIV/AIDS**

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Important Information for Users of This Pocket Guide

This document is provided as an information resource for physicians and other health care professionals to guide them in the appropriate treatment of patients with HIV/AIDS. Recommendations for care and treatment change rapidly, and opinions can be controversial; therefore, physicians and other health care professionals are encouraged to consult other sources, especially manufacturers' package inserts, and confirm the information contained in these tables. The individual physician or other health care professional should use his/her best medical judgment in determining appropriate patient care or treatment because no single reference or service can take the place of medical training, education, and experience. Although these tables have been carefully prepared and reviewed, the author makes no warranty as to the reliability, accuracy, timeliness, usefulness, or completeness of the information. The data presented herein are for informational purposes only. Determination of appropriate treatment is the responsibility of the treating physician.

Abbreviations Used in This Pocket Guide

Drug Abbreviations

ABC: abacavir (<i>Ziagen</i>)	IVIG: intravenous immune globulin
APV: amprenavir (<i>Agenerase</i>)	LPV/r: lopinavir/ritonavir (<i>Kaletra</i>)
ATV: atazanavir (<i>Reyataz</i>)	NFV: nelfinavir (<i>Viracept</i>)
AZT: zidovudine (<i>Retrovir</i>)	NNRTI: non-nucleoside reverse transcriptase inhibitor
CBV: Combivir (AZT+3TC)	NRTI: nucleoside reverse transcriptase inhibitor
ddl: didanosine (<i>Videx</i>)	NVP: nevirapine (<i>Viramune</i>)
d4T: stavudine (<i>Zerit</i>)	PI: protease inhibitor
ddC: zalcitabine (<i>Hivid</i>)	RBT: rifabutin (<i>Mycobutin</i>)
DLV: delavirdine (<i>Rescriptor</i>)	RTV: ritonavir (<i>Norvir</i>)
EFV: efavirenz (<i>Sustiva</i>)	r: ritonavir in dose <400 mg/day
ENF: enfuvirtide (<i>Fuzeon, T-20</i>)	SQV: saquinavir (<i>Invirase, Fortovase</i>)
FTC: emtricitabine (<i>Emtriva</i>)	3TC: lamivudine (<i>Epivir</i>)
FTV: Fortovase (<i>saquinavir</i> , soft gel cap)	T-20: enfuvirtide (<i>Fuzeon</i>)
FPV: fosamprenavir (<i>Lexiva</i>)	TDF: tenofovir (<i>Viread</i>)
HU: hydroxyurea	TMP-SMX: trimethoprim sulfamethoxazole
IDV: indinavir (<i>Crixivan</i>)	TZV: <i>Trizivir</i> (ABC+AZT+3TC)
INH: isoniazid	VZIG: varicella zoster immune globulin
INV: <i>Invirase</i> (<i>saquinavir</i> , hard gel cap)	ZDV: zidovudine (<i>Retrovir</i>)

Miscellaneous Abbreviations

ART: antiretroviral therapy	q: every
EC: enteric coated	qd: daily
HAART: highly active antiretroviral therapy	qid: four times per day
IV: intravenous	qm: monthly
IM: intramuscular	qod: every other day
VL: viral load	qw: every week
bid: twice per day	soln: solution
biw: twice per week	tid: three times per day
CNS: central nervous system	tiw: three times per week
hs: bedtime (hour of sleep)	TAMS: thymidine analogue assoc. mutations
mo: month	ULN: upper limit of normal
po: by mouth	

Drug Table 1. Antiretroviral Agent Characteristics

(Most common and/or important toxicities are in italics.)

Drug Name	Form	Usual Adult Dose	Food Effects	Renal Failure Dosing			Liver Failure Dosing	Toxicity (main toxicity – italics)
				CrCl 30-59 mL/min	CrCl 10-29 mL/min	CrCl < 10 or dialysis		
Nucleoside Reverse Transcriptase Inhibitors (NRTIs)								
Abacavir (ABC, Ziagen)	300 mg tab; (see also: Trizivir) 20 mg/mL po soln.	300 mg bid	No effect	Standard		Usual	Hypersensitivity- fever, rash, GI sx, dyspnea§¶¶	
		1 bid	No effect	Fixed formulation not recommended		Usual	AZT side effects§	
Combivir (CBV)	AZT 300 mg + 3TC 150 mg (tab)	>60 kg	½ hr before or 2 hr after meal Separate dosing of IDV, RTV, DLV, ATV	>60 kg 200 mg/d	>60 kg 125 mg/d	Usual	Pancreatitis, peripheral neuropathy, GI intolerance §	
		400 mg qd or 200 mg bid		<60 kg 125 mg/d	<60 kg 100 mg/d			
		400 mg qd		250 mg qd	250 mg qd			
		If tabs must take 2 for proper buffering						
Emtricitabine (Emtriva, FTC)	200 mg cap	200 mg qd	No effect	200 mg q72 h	200 mg q96 h	Usual	Minimal§	
Lamivudine (Epivir; 3TC)	150, 300 mg tab (see also: Combivir & Trizivir) 10 mg/mL po soln.	150 mg bid or 300 mg qd	No effect	150 mg x 1 then 100 mg/d	150 mg x 1 then 25-50 mg/kg/d	Usual	Minimal§	
Epizicom	3TC 300 mg + ABC 600 mg	1 qd 1 qd	No effect	Fixed formulation not recommended in renal failure		Usual	ABC hypersensitivity	

Footnotes for Drug Table 1 can be found on page 7

Stavudine (Zerit; d4T) †	15, 20, 30, 40 mg cap; 75, 100 mg XR cap (not available) 1 mg/mL po soln.	Wt > 60 kg: 40 mg bid or 100XR qd Wt < 60 kg: 30 mg bid or 75XR qd	No effect	>60 kg-20 mg q 12 h <60 kg-15mg q 12 h	>60 kg-20 mg q 24 h <60 kg-20 mg q 24 h	>60 kg-20 mg q 24 h <60 kg-20 mg q 24 h [¶]	Usual	Peripheral neuropathy, pancreatitis, lipatrophy, ascending paresis (rare)§
Tenofovir (Viread, TDF)	300 mg tab	300 mg qd	Take with meal	300 mg 48 hr	300 mg 2 days/wk	300 mg q 7 days [¶]	Usual	Minimal. Renal toxicity (rare)§
Trizivir (TZV)	AZT 300 mg + 3TC 150 mg + ABC 300 mg (tab)	1 bid	No effect	Fixed formulation not recommended in renal failure			Usual	Hypersensitivity reaction (ABC), bone marrow suppression (AZT), GI intolerance (AZT)§
Truvada	TDF 300 mg + FTC 200 mg	1 qd	No effect	Fixed formulation not recommended in renal failure			Usual	Minimal. Renal toxicity
Zalcitabine (Hivid; ddC)	0.375, 0.75 mg tab	0.75 mg tid	No effect	Standard	0.75 mg bid	.75 mg qd	Usual	Peripheral neuropathy, stomatitis§
Zidovudine (Retrovir, AZT)	100 cap, 300 mg tab; (see also: Combivir & Trizivir) 10 mg/ mL IV soln. 10 mg/ mL po soln.	300 mg bid 200 mg tid	No effect	300 mg bid	300 mg qd	100 mg tid	200 mg bid	Anemia, neutropenia, headache, asthenia, GI intolerance§

Drug Table 1. Antiretroviral Agent Characteristics – continued

(Most common and/or important toxicities are in italics.)

Drug Name	Form	Usual Adult Dose	Food Effects	Renal Failure Dosing			Liver Failure Dosing	Toxicity (main toxicity – italics)
				CrCl 30-59 mL/min	CrCl 10-29 mL/min	CrCl < 10 or dialysis		
Protease Inhibitors (PIs)								
Amprenavir (APV, Agenerase)	50, 150 mg caps 15 mg/mL po soln **	>50 kg: 1200 mg bid (caps) or 1400 mg bid (po soln.) or APV 600 mg/RTV 100 mg bid or 1200 mg/200 mg qd# <50 kg: 20mg/kg bid (caps) max 2400 mg daily total <50 kg: 1.5mL/kg bid (soln) max 2800 mg daily total	Avoid high fat meal	Standard	No data	CPS* 5-8: 450 mg bid CPS* 9-12: 300 mg bid	GI intolerance, rash, oral paresthesias, hepatitis ††	
Atazanavir (Reyataz, ATV)	100, 150, and 200 mg capsules	400 mg qd; ATV 300 mg/RTV 100 mg qd required if ATV is combined with TDF or EFV and often preferred	Take with food. Avoid concurrent buffered ddl, antacids.	Standard		CPS* 7-9: 300 mg qd CPS* >9*: Avoid	Benign increase in indirect bilirubin, GI intolerance, prolongation of QTc; caution with conduction defects or drugs that do this. ††	
Fosamprenavir (FPV, Lexiva)	700 mg tabs	1400 mg bid or 700 mg/RTV 100 mg bid or 1400 mg/RTV 200 mg qd	No effect	Standard		CPS* 5-8: 700 mg bid CPS* >9: Avoid	Rash, GI intolerance, headache, hepatitis ††	

Indinavir (IDV, Crivivan)	200, 333, 400 mg caps	800 mg q 8h; separate buffered ddl \geq 1 hr IDV 400 mg/RTV 400 mg bid or # IDV 800 mg/RTV 100-200 mg bid #	1 hr before or 2 hr after meal unless with RTV	Standard	600 mg q8h	GI intolerance Nephrolithiasis, benign increase in indirect bilirubin ##
Lopinavir/Ritonavir (LPV/r) (Kaletra)	LPV 133.3 mg + RTV 33.3 mg (cap); LPV 80 mg + RTV 20 mg/mL po soln	400 mg LPV + 100 mg RTV (3 caps) bid Soln: 5 mL bid	Take with food	Standard	##	GI Intolerance (esp. diarrhea), asthenia ##
Nelfinavir (NFV, Viracept)	250, 625 mg tabs 50 mg/g powder	1250 mg bid or 750 mg tid	Take with high fat meal	Standard	##	Diarrhea ##
Ritonavir (RTV, Norvir)	100 mg caps 600 mg/ 7.5 mL po soln	600 mg q12h #; separate ddl \geq 2 h	Food improves GI tolerance	Standard	##	GI intolerance, paresthesia, hepatitis, taste perversion ##
Saquinavir (SQV) Fosvase (FTV) Invirase (INV)	200 mg caps	FTV – 1200 mg tid or with RTV SQV 400 + RTV 400 bid or SQV 1000 mg bid + RTV 100 bid ## SQV 1600 mg qd + RTV 100 mg qd ##	(FTV): Take with large meal unless combined with RTV	Standard	##	GI intolerance, (Invirase preferred) hepatitis ##

Drug Table 1. Antiretroviral Agent Characteristics – continued

(Most common and/or important toxicities are in italics.)

Drug Name	Form	Usual Adult Dose	Food Effects	Renal Failure Dosing			Liver Failure Dosing	Toxicity (main toxicity – italics)
				CrCl 30-59 mL/min	CrCl 10-29 mL/min	CrCl < 10 or dialysis		
Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs)								
Delavirdine (DLV, Rescriptor)	100, 200 mg tabs	400 mg tid Separate buffered ddl or antacid \geq 1 hr	No effect	Standard		§§	Rash, hepatitis	
Efavirenz ††† (EFV, Sustiva)	50, 100, 200 mg caps, 600 mg tabs	600 mg hs	Avoid high fat meal	Standard		§§	CNS x 2-3 wks, Rash, hepatitis, false + cannabinoid test	
Nevirapine (NVP, Viramune)	200 mg tabs 50 mg/5 mL po susp.	200 mg qd x 14 days, then 200 mg bid	No effect	Standard	Standard; give post dialysis	Avoid	Rash, hepatitis; hepatic necrosis esp women with CD4 >250 in first 6 wks	
Fusion Inhibitors								
Enfuvirtide (ENF, Fuzeon, I-20)	90 mg single-use vials to be reconstituted with 1.1 mL H2O	90 mg (1 mL) SQ q12h into upper arm, anterior or abdomen (Rotate sites).	N/A	Standard		Usual Dose	Site reactions, bacterial pneumonia	

<p>† The combination of ddI & d4T “should be used in pregnant women only when the potential benefit clearly outweighs the potential risk.” Efavirenz should be avoided in first trimester of pregnancy and used with caution in women with reproductive potential. Avoid APV liquid in pregnancy.</p>	<p>††</p>	<p>Intraviral generally preferred when taken with ritonavir. Intraviral not recommended as sole PI.</p>
<p>‡ Drug change or dose change could be considered on a case-by-case basis noting the risk of resistance with underdosing.</p>	<p>**</p>	<p>APV caps and solution NOT interchangeable on mg per mg basis. Capsule is the preferred formulation due to high propylene glycol in the po solution; po soln contraindicated in pregnancy.</p>
<p>§ Class adverse reaction - lactic acidosis with steatosis. (see pg 8). Most common with d4T, ddI, and AZT.</p>	<p>#</p>	<p>See Drug Table 4, pg 11 for dosing recommendations when using dual PI, PI plus NRTI, or dual PI plus NNRTI.</p>
<p>¶ Give post dialysis</p>	<p>*</p>	<p>Child Pugh Score</p>
<p>¶¶ Registry for hypersensitivity 800-270-0425</p>	<p>§§</p>	<p>More frequent monitoring required. Drug change or dose change could be considered on a case-by-case basis noting the risk of resistance with underdosing</p>
<p>††† Efavirenz should be avoided in first trimester of pregnancy and used with caution in women with reproductive potential. Avoid APV liquid in pregnancy.</p>	<p>††</p>	<p>Class adverse effects include lipodystrophy with hyperglycemia, fat redistribution, hyperlipidemia, and possible increased bleeding with hemophilia. ATV does not cause Hyperlipidemia. All PIs may cause hepatitis (see pg 8).</p>

**Drug Table 2.
Antiretroviral Agents, Class Adverse Reactions**

Reaction	Lactic acidosis	Hepatotoxicity	Hyperglycemia	Fat redistribution	Hyperlipidemia	Rash
Definition	Lactic acid > 2 mmol/mL usually > 5 mmol/mL	<ul style="list-style-type: none"> Gr III = AST/ALT 5-10 x ULN Gr IV = ADT/ALT > 10 x ULN NRTIs: d4T, ddI, AZT (lactic acidosis) PIs - (15-30%) esp. RTV (dose related) NVP - 11% in first 6 wks in women with baseline CD4 > 250; possible hepatic necrosis and death NNRTI: NVP.hepatotoxicity (15%); EFV (8%) 	Fasting glucose > 126 mg/dL	Fat accumulations, Lipodatrophy	See Adult ART Table 5	
Frequency	1.3% NRTI recipients with median onset at 4 mo.		3-17% with PIs	4-50%		NNRTI: 8-16%
Agents	NRTIs d4T+ddI > d4T > ddI > AZT; rare with 3TC, ABC, FTC or TDF	All antiretrovirals; most common - NVP and RTV	PIs	Fat accumulation: PIs. Lipodatrophy: NRTIs esp. d4T Also occurs without antiretrovirals	PI - esp. RTV; not noted with ATV and reduced frequency with FPV	NNRTI - NVP > EFV & DLV PIs - APV, increased risk with sulfa allergy. NRTI - ABC*
Risk Factors	Prolonged use NRTI (esp d4T) Female, pregnancy, obesity, ritonavir, metformin	HCV or HBV infection, ETOH, male sex NVP - high baseline CD4, female	Pre-existing glucose intolerance	No clear risks defined	Risk for CVD - HBP, smoking, obesity, genes, prior MI/stroke, diabetes, age	NNRTI - 1st 12 wks Female

Sx	GI (abd pain, anorexia, nausea, vomiting), wasting, dyspnea, cardiac arrhythmias	Asymptomatic or sx of hepatitis. Note: ↑ indirect bilirubin with IDV or ATV is inconsequential	Polyuria, polydipsia, polyphagia, weight loss	Fat accumulation -abd (visceral), buffalo hump, breasts, lipomas Fat atrophy - face, extremities, buttocks	Cardiovascular disease with stroke or MI/angina. Triglycerides >2000 mg/dL - pancreatitis	Common - MP rash Severe - Stevens-Johnson synd, TEN, # DRESS *
Lab	Lactate >2 mmol/mL; life-threatening if > 10 mmol/mL	LFTs; liver biopsy is usually not helpful.	Fasting glucose > 126 mg/dL	CT scan, MRI Waist: Hip, Bioelectric Impedence, DEXA, Ultrasound	↑ triglycerides ↑ cholesterol, & LDL cholesterol	Eosinophilia - variable
Treatment	Lactate 2-5 mmol/mL + Sx -D/C NRTI if sx severe Lactate level is 5-10 mmol/mL - D/C NRTIs. Lactate > 10 mmol/mL (medical emergency) - D/C NRTIs + supportive care: ventilator, dialysis, IV HCO3 IV thiamine or riboflavin (?) Post recovery—use low risk NRTIs (3TC, FTC, TDF) or avoid class	Hypersensitivity reactions to ABC or NVP (fever, eosinophilia, rash, systemic response usually in first 6 wks; D/C drug immediately and do not rechallenge Asymptomatic elevations of LFT (<10 X ULN): repeat LFTs q 1-2 wks Symptomatic or elevations of LFT (> 10 X ULN) or hyperlactatemia or hypersensitivity (ABC or NVP): change regimen.	Use standard diabetes treatment with diet and exercise. Preferred hypoglycemics are: metformin or thiazolidinediones. D/C PI only if uncontrolled hyperglycemia	No established Rx Exercise? Change PI to ATV or NNRTI Lipodatrophy- d/c d4T	NECP guidelines (pg 29): • General ↑ • LDL cholesterol ↑ Statins • Triglycerides ↑ Fibrate	Most rashes do not require drug discontinuation. Withdraw NNRTI if severe; may tolerate other NNRTI → EFV).
Monitor During Therapy	None	LFTs at baseline and q 3 mo NVP—LFTs at wks 0,2,4,8,12 then q 3 mo	Fasting glucose baseline, at 3-6 mo, then yearly.	Appearance	Fasting lipid profile at baseline, at 3-6 mo post HAART initiation, then yearly.	Appearance

*DRESS: (Drug Rash, Eosinophilia, & Systemic Symptoms) Life threatening complication that is seen with NVP and ABC - usually in the first 6 weeks of therapy.
 †Lifestyle changes: d/c smoking, diet, weight reduction, exercise, tx HBP and diabetes.
 # TEN: Toxic epidermal necrolysis

**Drug Table 3. Antiretroviral Agents,
Adverse Reactions: "Black Box" Warnings**

Agent	Reaction
Abacavir	<ul style="list-style-type: none"> • Fatal hypersensitivity reactions: Do not restart • Lactic acidosis and steatosis
Amprenavir	Oral soln contains large amounts of propylene glycol - avoid with renal failure, hepatic failure, pregnancy, & with metronidazole
Atazanavir	None
Delavirdine	None
Didanosine	Fatal and nonfatal pancreatitis: Do not restart Lactic acidosis with steatosis Fatal lactic acidosis when combined with stavudine in pregnancy
Efavirenz	None
Emtricitabine	Lactic acidosis w/ steatosis
Enfuvirtide	None
Indinavir	None
Lamivudine	Lactic acidosis with steatosis. Patients with HIV infection should receive only dosage and formulations appropriate for treatment of HIV.
Lopinavir	None
Nelfinavir	None
Nevirapine	Hepatotoxicity including fulminant and cholestatic hepatitis & hepatic necrosis: monitor intensively in first 18 wks of therapy. Severe, life-threatening skin reaction including toxic epidermal necrolysis (TEN), Stevens-Johnsson syndrome, etc. Do not restart if there is serious liver injury or serious drug reaction.
Ritonavir	Potentially serious drug interactions with nonsedating antihistamines, sedative hypnotics, antiarrhythmics, or ergot alkaloids.
Stavudine	Lactic acidosis with steatosis Fatal and non-fatal pancreatitis Fatal lactic acidosis when combined with didanosine in pregnancy
Tenofovir	Lactic acidosis and steatosis; Discontinuation in pts with HBV co-infection may cause exacerbation of acute HBV
Zalcitabine	Severe peripheral neuropathy Pancreatitis (rare) Hepatic failure in patients with HBV infection (rare) Lactic acidosis and steatosis
Zidovudine	Hematologic toxicity - anemia & leucopenia Lactic acidosis and steatosis

**Drug Table 4.
Combination Antiretroviral Therapy, Dose Adjustments***

	RTV	SQV	NFV	APV	LPV/r	ATV	NVP	EFV
IDV	IDV 400+ RTV 400 bid or IDV/r 800/ 100-200 bid	ND	IDV 1200 + NFV 1250 bid	IDV-SD, APV-SD	IDV 600 bid LPV/r-SD	NR	NVP-SD IDV 1000 q8h	EFV-SD IDV- 1000 q8h
RTV	-	SQV/r 1000/100 or 400/400 bid	NFV 500- 750+ RTV	APV/r 600/100 bid or 1200/200 qd	co-form.	ATV/r 300/100 qd	NVP-SD RTV-SD	EFV-SD RTV-SD
SQV	-	-	NFV- SD + SQV 1200 bid	ND	SQV 1000 bid + LPV/r- SD	SQV 1600 + ATV 300+ RTV 100 qd	NVP-SD + SQV/RTV 400/400 bid or 1000/100 bid	EFV-SD + SQV/RTV 400/400 bid
NFV	-	-	-	ND	ND	ND	NVP-SD NFV-SD	EFV-SD NFV-SD
APV	-	-	-	-	APV 600-750 bid + LPV/r 533/133 bid	NR	ND	EFV-SD APV-600 bid + RTV 100 bid
FPV	FPV/r 1400/ 200 qd or 700/100 bid; see EFV	ND	-	-	NR	ND	ND	EFV-SD FPV/r 1400/300 qd or 700/100 bid
LPV	-	-	-	-	-	ND	NVP-SD LPV/r 533/133 bid	EFV-SD LPV/r 533/133 bid
ATV	-	-	-	-	-	-	ND	EFV-SD + ATV/r 300/100 qd

* Doses are in mg; ND = Inadequate data; NR = Not recommended; SD = Standard dose

**Drug Table 5.
Drug Interactions: Contraindicated Combinations**

Class	Contraindicated Agent	ART Agents	Alternatives
Ca++ channel blocker	Bepiridil	RTV, APV, ATV	-
Antiarrhythmics	Flecainide, Propafenone	RTV, LPV/r, FPV	-
	Amiodarone, quinidine	RTV	
Lipid lowering	Simvastatin, Lovastatin	All PIs, DLV	Pravastatin or Fluvastatin, possibly Atorvastatin, Rosuvastatin
	Atorvastatin	NFV, LPV	Pravastatin or Fluvastatin
Antimycobacterials	Rifampin	All PIs except SQV + RTV; all NNRTIs except EFV	Use Rifabutin*
	Rifabutin	DLV, SQV (unless used with RTV)	-
	Rifapentine	All PIs, NVP, DLV, EFV	Rifampin or rifabutin
Antihistamine	Astemizole, Terfenadine	All PIs, DLV, EFV	Loratadine, Fexofenadine, Cetirizine, or Desloratidine
Antineoplastics	Irinotecan	ATV	-
GI	Cisapride	All PIs, DLV, EFV	-
	H2 blockers, proton pump inhibitors	DLV, ATV	
Neuroleptic	Clozapine	RTV	-
	Pimozide	All PIs	-
Psychotropic	Midazolam† Triazolam	All PIs, DLV, EFV	Temazepam, Lorazepam, or Oxazepam††
	Alprazolam	DLV	
Ergot alkaloids	Ergotamine	All PIs, DLV, EFV	-
Herbs	St. John's wort	All PIs & EFV, DLV	Alternative antidepressants

* See Drug Table 7, pg 14 for Rifabutin and antiretroviral dose adjustments

† Midazolam may be used with caution as a single dose given for a procedure.

†† Reviewer opinion

**Drug Table 6.
Drug Interactions: Nucleosides**

Drug	AZT	d4T	ddl	TDF
Methadone	AZT AUC ↑40%; no dose change	d4T ↓27%; no dose change	ddl ↓61% consider ↑ ddl dose or use ddl EC	No data
ddl	-	Magnifies toxicity. Use with caution.	-	ddl ↑44% consider ddl dose reduction.
Ribavirin	Inhibits AZT activation. Avoid if possible	No data	Magnifies ddl toxicity; avoid.	No data
ATV	-	-	Buffered ddl - take ATV 2 hr before or 1 hr after ddl. ddl EC - separate dosing due to food restrictions.	Avoid concomitant use unless ATV combined with RTV.
IDV	-	-	Buffered ddl - take 1 hr apart	-
Cidofovir Ganciclovir Valgancyclovir	-	-	-	Combinations may decrease CrCl

Drug Table 7.
Drug Interactions: Combinations with
PIs or NNRTIs Requiring Dose Modifications

Class	Agent	ART
Antifungal	Ketoconazole	IDV– IDV 600 mg tid
		RTV, LPV/r–Ketoconazole iÜ200 mg/d, FPV ≤ 400 mg/d
		NVP– Not recommended
Antifungal	Voriconazole	Current use with RTV (≥ 400 mg/d) or EFV is contraindicated. No data for NNRTIs, NFV, ATV, APV, FPV, LPV/r; IDV is OK
	Itraconazole	IDV dose + 600 mg tid (unless boosted); Itraconazole dose ≤ 200 mg bid
Oral contraceptives	-	Additional method of contraception recommended with: RTV, NFV, APV, EFV, LPV/r, NVP, FPV. (IDV & ATV are OK)
		No data – SQV. DLV ↓ethinyl estradiol by 20%
Anticonvulsants	Phenobarbital, Phenytoin, Carbamazepine	Avoid carbamazepine + IDV and phenytoin + LPV; all other combinations of NNRTIs or PIs & designated anticonvulsants should be given with caution and monitoring of anticonvulsant levels or consider valproic acid)
Methadone	-	NVP and EFV may decrease methadone substantially; monitor for withdrawal. IDV has no interaction; other PIs may decrease methadone levels and require monitoring for withdrawal. Methadone decreases buffered ddl levels - consider ddl EC (no interaction).
Antibiotics	Clarithromycin	RTV, LPV/r, DLV – Decrease clarithromycin dose in renal failure.
		EFV, ATV – Consider alternative to Clarithromycin (e.g. Azithromycin)
Erectile dysfunction	Sildenafil	PIs + DLV: ≤ 25 mg q48 h
	Vardenafil	PIs + DLV: ≤ 2.5 mg/d
	Tadalafil	PIs + DLV: ≤ 10 mg q48 h

Drug Table 7. – continued
Drug Interactions: Combinations with
PIs or NNRTIs Requiring Dose Modifications

Class	Agent	ART
Anti-mycobacterials	Rifabutin	APV 1200 mg bid + RBT 150 mg/d or 300 mg 3x/wk
		FPV 1400 mg bid + RBT 150 mg/d or 300 mg 3x/wk
		ATV 400 mg/d + RBT 150 mg qod or 150 mg 3x/wk
		EFV 600 mg/d + RBT 450-600 mg/d or 600 mg 3x/wk
		IDV 1000 mg q 8h + RBT 150 mg/d or 300 mg 3x/wk
		LPV/r 400/100 mg + RBT 150 mg qod or 3x/wk
		NFV 1000 mg tid + RBT 150 mg/d or 300 mg 3x/wk
		RTV 600 mg bid + RBT 150 mg qod or 150mg 3x/wk
	RTV (any dose) + PI RBT 150 mg qod or 3x/wk	
Rifampin	All PIs & NNRTIs contraindicated except RTV+SQV, or EFV using standard doses of rifampin; with EFV consider EFV daily dose of 800 mg qd.	
Lipid Lowering	Lovastatin, Simvastatin	Avoid PIs and DLV; no data for EFV and NVP.
	Atorvastatin	PI and DLV: use with caution and monitor.
	Pravastatin	No dose change- RTV, SQV, LPV/r. No data-IDV, NFV, APV, and NNRTIs
Miscellaneous	Theophylline	RTV– Monitor theophylline levels
	Warfarin	RTV, DLV, EFV– Monitor INR closely if given with any PI or NNRTI
	Trazedone	RTV – lowest dose + monitor CNS signs
	Desipramine	RTV– Consider desipramine dose reduction
	Grapefruit juice	IDV↓, SQV↑
	Atazanavir	Antacids + buffered meds – give ATV 1 hr before or 2 hrs after
H2 receptor antagonist – separate dosing by 12 hrs		
Ca channel blockers – dose titration + EKG monitoring		
Diltiazem – Reduce diltiazem dose 50% + monitor EKG		

Antiretroviral Therapy

**Adult ART Table 1.
When to Start Therapy***

Clinical Category	CD4+ Count	Viral Load	Recommendation
Symptomatic (AIDS or severe symptoms)	Any Value	Any Value	Treat
Asymptomatic, AIDS	CD4+ < 200/mm ³	Any Value	Treat
Asymptomatic	CD4+ > 200/mm ³ but < 350/mm ³	Any Value	Offer treatment especially if VL is > 20,000 c/mL, but controversial †
Asymptomatic	CD4+ > 350/mm ³	> 55,000 c/mL	Consider Therapy or Observe † Data inconclusive for either alternative
Asymptomatic	CD4+ > 350/mm ³	< 55,000 c/mL	Defer therapy and observe

* There are special considerations for pregnant women; consult Pregnancy Tables 1-3

† Patient readiness, probability of adherence, and prognosis based on CD4 count and HIV load need to be considered

**Adult ART Table 2.
Suggested Minimum Target Trough Levels**

Drug	Concentration
APV	400 mg/mL
IDV	100 mg/mL
LPV	1000 mg/mL
NFV	800 mg/mL
RTV	2100 mg/mL
SQV	100-250 mg/mL
EFV	1000 mg/mL
NVP	3400 mg/mL

Adult ART Table 3. Starting Regimens for Antiretroviral Naïve Patients

NRTI-Based Regimens		# of pills per day
Preferred Regimens	efavirenz + lamivudine + (zidovudine or tenofovir DF or stavudine) – except for pregnant women or women with pregnancy potential	3–5
Alternative Regimens	• efavirenz + (lamivudine or emtricitabine) + didanosine or abacavir - except for pregnant women or women with pregnancy potential	3–5
	• efavirenz + emtricitabine + (zidovudine or tenofovir or stavudine*) - except for pregnant women or women with pregnancy potential	3
	• nevirapine + (lamivudine or emtricitabine) + (zidovudine or stavudine* or didanosine) (Note: High incidence of symptomatic hepatitis with NVP in women with baseline CD4 > 250 and men with over 400)	4–5
PI-Based Regimens		# of pills per day
Preferred Regimens	lopinavir/ritonavir + lamivudine + (zidovudine or stavudine)	8–10
Alternative Regimens	• atazanavir + (lamivudine or emtricitabine) + (zidovudine or stavudine* or abacavir)	4-5
	• fosamprenavir + (lamivudine or emtricitabine) + (zidovudine or stavudine* or abacavir)	6-8
	• fosamprenavir/ritonavir + (lamivudine or emtricitabine) + (zidovudine or stavudine* or abacavir)	6-8
	• indinavir + ritonavir† + (lamivudine or emtricitabine) + (zidovudine or stavudine* or abacavir)	8-11
	• nelfinavir + (lamivudine or emtricitabine) + (zidovudine or stavudine* or abacavir)	6–7
	• saquinavir (sgc or hcg) + ritonavir + (lamivudine or emtricitabine) + (zidovudine or stavudine* or abacavir)	14-16
	• lopinavir/ritonavir + emtricitabine + (zidovudine or stavudine* or abacavir)	8-9
Triple NRTI Regimen – As Alternative to PI- or NNRTI-based regimens		# of pills per day
Alternative Regimens	• abacavir + lamivudine + (zidovudine or stavudine*)	2-6

* Stavudine is associated with higher rates of lipotrophy and mitochondrial toxicity than other NRTIs.

† Low-dose (100-400 mg) ritonavir

Adult ART Table 4. Advantages and Disadvantages of Antiretroviral Regimens

	Advantages	Disadvantages
NNRTIs	Class— less lipodystrophy Save PI option	Low genetic barrier to resistance Class resistance / Drug interactions
EFV	Potent Low pill burden qd, no food effect	CNS toxicity Teratogenic
NVP	Extensive experience in pregnancy	ADR- hepatotoxicity + rash Contraindicated in women with baseline CD4 count >250
PI	Class— extensive experience Save NNRTI option	ADR— lipodystrophy Multiple drug interactions
ATV	Once daily dosing Low pill burden No hyperlipidemia	ADR-Jaundice + PR prolongation Drug interaction with TDF
LPV/r	Potency Coformulated with RTV	ADR-GT intolerance Food requirement Minimal experience in pregnancy
FPV/r	Low pill burden No food effect Once daily dosing	ADR- skin rash
IDV/r	No food requirement	ADR-Nephrolithiasis Requirement for po fluid
NFV	Substantial experience in pregnancy High	ADR- diarrhea High rate virologic failure Food requirement
SQV/r	No food effect	ADR- GI intolerance High pill burden
NRTIs		
AZT/ 3TC/ ABC	Coformulated No food effect Preserves PI and NNRTI options	Higher rate of virologic failure ADR- ABC hypersensitivity
NRTI pairs		
AZT/ 3TC*	Extensive experience Coformulated No food effect	ADR-GI intolerance + narrow suppression (AZT)
d4T/ 3TC*	No food effect Once daily	ADR of d4T **
TDF/ 3TC*	Well tolerated Once daily TDF + FTC coformulated	Food requirement
ddl/ 3TC*	Once daily	ADR- ddl** Food effect
ABC/ 3TC*	Once daily No food effect Coformulated	ADR- ABC hypersensitivity

* FTC is similar to 3TC; has longer intracellular half life and has less extensive experience

** ADRs- d4T lipodystrophy, lactic acidosis, peripheral neuropathy; ddl- peripheral neuropathy, pancreatitis and lactic acidosis

**Adult ART Table 5.
Antiretroviral Regimens or Components That Are
Not Generally Recommended**

	Rationale	Exception
Antiretroviral Regimens Not Recommended		
Monotherapy	<ul style="list-style-type: none"> • Rapid development of resistance • Inferior antiretroviral activity when compared to combination with three or more antiretrovirals 	Pregnant women with HIV-RNA <1,000 copies/mL using zidovudine monotherapy for prevention of perinatal HIV transmission
Two-agent drug combinations	<ul style="list-style-type: none"> • Rapid development of resistance • Inferior antiretroviral activity when compared to combination with three or more antiretrovirals 	For patients currently on this treatment, it may be reasonable to continue if virologic goals are achieved
ABC + TDF + 3TC as a triple NRTI regimen	High rate of virologic failure and resistance	No exception
TDF + ddI + 3TC	High rate of virologic failure and resistance	No exception
Antiretroviral Components Not Recommended As Part of Antiretroviral Regimen		
Saquinavir hard gel capsule (Invirase) as single PI	<ul style="list-style-type: none"> • Poor oral bioavailability (4%) • Inferior antiretroviral activity when compared to other protease inhibitors 	No exception
d4T + ddI	Reports of serious, even fatal, cases of lactic acidosis with hepatic steatosis	When no other antiretroviral options are available and potential benefits outweigh the risks*
ATV + IDV	Potential for additive hyperbilirubinemia	No exception
FTC + 3TC	No potential benefit	No exception
Efavirenz in pregnancy	Teratogenic in nonhuman primate	When no other antiretroviral options are available and potential benefits outweigh the risks*

Adult ART Table 5. – continued
Antiretroviral Regimens or Components That Are
Not Generally Recommended

	Rationale	Exception
Antiretroviral Components Not Recommended As Part of Antiretroviral Regimen (continued)		
Amprenavir oral solution in: <ul style="list-style-type: none"> • pregnant women; • children <4 yr old; • patients with renal or hepatic failure; and • patients treated with metronidazole or disulfiram 	Oral liquid contains large amount of the excipient propylene glycol, which may be toxic in the patients at risk	No exception
d4T + ZDV	Antagonistic	No exception
ddC + d4T or ddC + ddI	Additive peripheral neuropathy	No exception
ATV + IDV	Additive hyperbilirubinemia	No exception
FTC + 3TC	Similar agents - no potential benefit	No exception
Hydroxyurea	<ul style="list-style-type: none"> • Decreases CD4 count • Augments d4T- and ddI-associated side effects, such as pancreatitis & peripheral neuropathy • Inconsistent evidence of improved viral suppression • Contraindicated in pregnancy (Pregnancy Category D) 	No exception
Not Recommended As Part of Initial Antiretroviral Regimen		
APV as single PI	Pill burden of 16 caps/day.	*
DLV	Modest antiretroviral effect.	*
RTV as single PI	GI intolerance.	*
d4T + ddI	Increased peripheral neuropathy, lactic acidosis, and pancreatitis.	*
NFV + SQV	High pill burden of 16-22 caps/day	*

* Reasonable to use in unusual circumstances.

Laboratory Monitoring

- Baseline tests: CBC, chemistry profile including liver and renal function tests. *Toxoplasma gondii* IgG, VDRL (or RPR), anti-HCV, anti-HBc, PPD (If no prior positive - see TB tables), and PAP smear for female patients.
- Confirm HIV Ab + if not documented
- Viral load at baseline (x2) and 2-8 wks after initiating therapy or new regimen, then every 3-4 months, clinical event, or significant (3x or $> 0.5 \log_{10}$ c/mL) change in VL.
- CD4 count at baseline and then every 3-6 months
- Antiretroviral agent toxicity (see Drug Table 2, pg 8)
- Resistance tests
 - Recommended*
 - Virologic failure
 - Suboptimal suppression
 - Acute HIV infection
 - Consider*
 - Chronic HIV infection, before therapy
 - Not Usually Recommended*
 - After discontinuation of drugs
 - Viral load $< 1,000$ c/mL

Adult ART Table 6. Resistance Mutations*

Drug	Major †	Minor †
Protease Inhibitors		
IDV	46 IL, 82 AFT, 84 V	10 IRV, 20 MR, 24 I, 32 I, 36 I, 54 V, 71 VI, 73 SA, 77 I, 90 M
NFV	30 N, 90 M	10 FI, 36 I, 46 IL, 71 VL, 77 I, 82 AFTS, 84 V, 88 DS
RTV	82 AFTS, 84 V	10 FIRV, 20 MR, 32 I, 33 F, 36 I, 46 IL, 54 VL, 71 VT, 77 T, 90 M
SQV	48 V, 90 M	10 IRV, 54 VL, 71 VT, 73 S, 77 I, 82 A, 84 V
APV	50 V, 84 V	10 FIRV, 32 I, 46 IL, 47 V, 54 LVM, 73 S, 90 M
LPV/r		10 FIVR, 20 MR, 24 I, 31 I, 33 F, 46 IL, 47 VA, 50 V, 53 L, 54 VLAMTS, 71 VT, 73 S, 82 AFTS, 90 M
ATV	50 L	10 IFV, 20 RMI, 24 I, 32 I, 33 IFV, 36 ILV, 46 I, 48 V, 54 V, 71 V, 73CSTA, 82 A, 84 V, 88 S, 90 M
TPV	33 I, 82 AFLT, 84 V, 90 M	10 IV, 20 MLT, 46 I, 54 V
Multi PI resistance	46 IL, 82 AFTS, 84 VAC, 90 M	

* Adapted from IAS-USA Topics HIV Med 2003; 11:215. See <http://www.iasusa.org>.

† **Major** - usually develop first; associated with decreased drug binding; **Minor** - also contribute to drug resistance; may affect drug binding in vitro less than primary mutations. Use of **Major** and **Minor** designations for NRTIs and NNRTIs has been suspended.

**Adult ART Table 6. – continued
Resistance Mutations***

Drug	Codon Mutations
Nucleosides and Nucleotides	
AZT	41 L, 44 D, 67 N, 70 R, 118 I, 210 W, 215 YF, 219 Q
d4T	41 L, 44 D, 65 R, 67 N, 70 R, 118 I, 210 W, 215 YF, 219 QE
3TC	44 D, 65 R, 118 I, 184 VI
FTC	65 R, 184 V/I
ddC	65 R, 69 D, 74 V, 184 V
ddl	65 R, 74 V
ABC	65 R, 74 V, 115 F, 184 V
TDF	65 R
Multinucleoside A- Q 151 M	62 V, 75 I, 77 L, 116 Y, 151 M
Multinucleoside B 69 insertion	41 L, 44 D, 67 N, 69 insert, 70 R, 210 W, 215 YF, 219 QE
Multinucleoside TAMS	41 L, 44 D, 67 N, 70 R, 118 I, 210 W, 215 YF, 219 QE
NNRTIs	
NVP	100 I, 103 N, 106 AM, 108 I, 181 CI, 188 CLH, 190 A
DLV	103 N, 106 M, 181 C, 188 L, 236 L
EFV	100 I, 103 N, 106 M, 108 I, 181 CI, 188 L, 190 SA, 225 H
Multi-NNRTI resistance	103 N, 106 M, 188 L
Multi-NNRTI resistance-accumulation	100 I, 106 A, 181 CI, 190 SA, 230 L

* Adapted from IAS-USA Topics HIV Med 2003; 11:215. See <http://www.iasusa.org>.

Therapeutic Failure

Definitions

Virologic Failure

- Failure to achieve VL < 400 c/mL by 24 wks or < 50 c/mL by 48 wks. Note: Most patients will have a decrease in VL of $\geq 1 \log_{10}$ c/mL at 1-4 weeks.
- Viral suppression followed by repeated positive viral load

Immunologic Failure:

Failure to increase CD4 count 25-50 cells/mm³ during first year. Note: Mean increase is about 150 cells/mm³ in a year with HAART in treatment naïve patients.

Clinical Failure:

Occurrence or recurrence of HIV-related event ≥ 3 months after start of HAART.

Note: Must exclude immune reconstitution syndromes.

Management of Regimen Failure

Assessment

- Adherence: Address cause and or simplify regimen
- Tolerability
 - Change one drug within class
 - Change classes; e.g. PI-based HAART vs NNRTI-based HAART
- Pharmacokinetic Issues

Therapeutic Failure – continued

Virologic Failure

- Resistance tests if VL > 500-1,000 c/mL (see page 22)
- Options for empiric regimen change:

Initial Regimen	New Regimen
NNRTI + 2 NRTIs	2 NRTIs (selected by resistance tests) + PI ± RTV
PI ± RTV + 2 NRTIs	2 NRTIs (selected by resistance tests) + NNRTI
3 NNRTIs	<ul style="list-style-type: none">• 2 NRTIs (selected by resistance tests) + NNRTI or• 2 NRTIs (selected by resistance tests) + PI ± RTV• NNRTI + PI ± RTV• NRTIs (selected by resistance tests) + NNRTI + PI ± RTV

Specific Treatment Scenarios

- Limited prior treatment with VL ≤ 5,000 c/mL: consider intensification
- Limited prior treatment with single drug resistance: consider single drug change or change entire regimen
- Limited prior treatment with and resistance to > 1 drug: consider change of class (PI→NNRTI or NNRTI→PI)
- Prior treatment with no resistance: consider non-adherence; if treatment interrupted – resume regimen and test resistance at 2-4 wks.
- Extensive prior treatment: continue failed treatment if there are few or no alternative treatment options.

Novel Strategies

- Therapeutic drug monitoring (optional; not supported by data)
- Retreating with prior drugs (optional; not supported by data)
- Empiric multidrug regimens (mega-HAART with up to 3 PIs and/or 2 NNRTIs) (not generally recommended)
- Structured treatment interruption (not generally recommended)
- New agents such as enfuvirtide (T20) or drugs available only on treatment IND or therapeutic trials (optional; efficacy supported by data)

Methods to Achieve Readiness to Start HAART & Maintain Adherence

Patient-related

- Negotiate a plan or regimen that the patient understands and to which she or he commits
- Take time needed, >2 visits, to ensure readiness before 1st prescription
- Recruit family, friends, peer and community support
- Use memory aids - timers, pagers, written schedule, pill boxes/ medication organizers
- Plan ahead - keep extra meds in key locations, obtain refills
- Use missed doses as opportunities to prevent future misses
- Active drug and alcohol use and mental illness predict poor adherence; race, sex, age, educational level, income, and past drug use do not.

Provider/Health Team-related

- Educate patient re: goals of therapy, pills, food effects, and side effects
- Assess adherence potential before HAART; monitor at each visit
- Ensure access at off-hours and weekends for answering questions or addressing problems
- Utilize full health care team; ensure med refills at pharmacy
- Consider impact of new diagnoses and events on adherence
- Provide training updates on adherence for all team members and utilize team to reinforce adherence
- Monitor adherence and intensify management in periods of low adherence
- Educate volunteers, patient-community representatives

Methods to Achieve Readiness to Start HAART & Maintain Adherence – *continued*

Regimen-related

- Avoid adverse drug interactions
- Simplify regimen re: dose frequency, pill burden, and food requirements
- Inform patient about side effects
- Anticipate and treat side effects

**Adult ART Table 7.
National Cholesterol Education Program:
Indications for Dietary or Drug Therapy for Hyperlipidemia**

Coronary Heart Disease Risk Status	Goal	Threshold for Diet Rx	Threshold for Drug Rx
No CHD & 0-1 Risks*	LDL <160 mg/dL	LDL ≥160 mg/dL	LDL >190 mg/dL (LDL 160-190 Drug therapy optional)
No CHD & ≥ 2 Risks*	LDL <100 mg/dL	LDL ≥130 mg/dL	10 Yr CHD Risk <10% ‡ LDL > 160 mg/dL
			10 Yr CHD Risk 10-20% ‡ LDL >130 mg/dL
CHD or CHD equivalent: • Clinical ASCVD † • Diabetes mellitus • Multiple Risk Factors conferring 10 Yr risk of CHD of >20% ‡	LDL < 70 mg/dL	LDL ≥100 mg/dL	LDL >130 mg/dL (100-129 mg/dL: drug optional)
<p>Triglycerides are an independent consideration</p> <ul style="list-style-type: none"> • For patients with serum triglycerides >500 mg/dL the primary goal is reduction of triglycerides to prevent pancreatitis and reduce risk of CHD • For patients with serum triglycerides 200 - 499mg/dL reduction of non-HDL cholesterol becomes a secondary goal after reaching LDL goal. 			

Adapted from: JAMA 2001; 285:2486-2497; updated NCEP – *circulation* 2004; 110:227.

Editors Note: This table is a basic condensation of complex guidelines. Readers are encouraged to consult and use the tools available on the NHLBI web site: <http://www.nhlbi.nih.gov/guidelines/cholesterol/>

* CHD Risk Factors: Age (men >45 years; women >55 yrs or premature menopause without estrogen replacement); hypertension, current smoking, history of cardiovascular disease in first degree relative (<55 years for male relative and <65 years for female relative), or serum HDL cholesterol <40 mg/dL. If high HDL (>60 mg/dL) subtract one risk factor.

† Atherosclerotic cardiovascular disease (ASCVD) includes peripheral artery disease, symptomatic carotid artery disease, and abdominal aortic aneurysm.

‡ Calculation of 10 year risk of CHD requires tables which may be found in the JAMA 2001;285:2486 or the NHLBI website: <http://www.nhlbi.nih.gov/guidelines/cholesterol/index.htm>

Adult ART Table 8. Drug Therapy for Hyperlipidemia

(Recommendations of the ACTG [Dube MP et al, CID 2000; 31:1216])

Lipid Problem	Preferred	Alternative	Comment
Isolated high LDL	Statin*	Fibrate†	Start low doses and titrate up. With PIs watch for myopathy
High cholesterol and triglycerides	Statin* or fibrate†	Start one and add other	Combination may increase risk of myopathy
Isolated high triglycerides	Fibrate†	Statin*	Combination may increase risk of myopathy

NOTE:

Optimal management of hyperlipidemia should begin with specific risk factor reduction interventions such as: low-fat diet; regular exercise; moderation of alcohol intake; smoking cessation, blood pressure control, and diabetes control (where applicable). The likelihood of success with drug therapy for hyperlipidemia is substantially reduced in the absence of such interventions.

* Statin: Pravastatin 20 mg/day (max. 40 mg/day), fluvastatin 20-40 mg/day, or atorvastatin 10 mg/day. Use particular caution when giving LPV/r or NFV with Atorvastatin; also see Table 6. **Drug Interactions: Contraindicated Combinations.**

† Fibrate: Gemfibrozil 600 mg bid \geq 30 minutes before meal or Fenofibrate tablets (e.g. Tricor) 160 mg qd Micronized fenofibrate (capsules) 67mg qd to start, max. dose 201 mg qd.

Pregnancy Table 1. Antiretroviral Drugs in Pregnant Women

A. ACTG 076 Protocol (Should be used as part of ART regimen in all pregnant women, if possible)

Antepartum: AZT 300 bid or 200 tid po, wk 14 until delivery

Intrapartum: AZT IV 2 mg/kg over first hr. then 1 mg/kg/hr until delivery

Postpartum: (Infant): AZT syrup 2 mg/kg po q 6h (or 1.5 mg/kg q 6h IV) x 6 wks

B. Regimen for 2nd & 3rd Trimesters

Standard ART, but:

- Include AZT * according to 076 protocol
- Treat based upon maternal clinical/immunologic status but avoid: EFV, HU, AZT & d4T, d4T & ddl, APV solution
- Previously untreated pregnant women with VL <1000 c/mL and CD4 >350 cells/mm³ may be treated with AZT monotherapy, AZT + 3TC, or HAART

C. Choices for Untreated Women Presenting In Labor and Their Infants

NVP: 200 mg po onset labor; Infant: single 2 mg/kg po at 48-72 hrs

AZT: 600 mg po onset labor and 300 mg po q3h until delivery PLUS 3TC 150 mg po onset labor and 150 mg po q12h until delivery; Infant: AZT 4mg/kg po q12h PLUS 3TC 2mg/kg po q12h for 7 days

AZT: 2mg/kg IV bolus then 1mg/kg/hr IV infusion until delivery; Infant: AZT 2mg/kg po q6h for 6 wk (ACTG 076 Protocol)

NVP + AZT: NVP:200 mg po onset labor PLUS AZT 2mg/kg IV bolus then 1 mg/kg/hr IV infusion until delivery; Infant: NVP single 2 mg/kg po at 48-72 hrs PLUS AZT 2mg/kg po q6h for 6 wk

* Unless unacceptable side effects or toxicity or requires d4T-containing regimen

**AZT & d4T: pharm. antagonism; do not use together. APV oral solution (only) is contraindicated in pregnancy because it contains large quantities of propylene glycol, which cannot be metabolized in pregnancy. d4T & ddl: concerns about lactic acidosis; use only when other NRTIs have failed or caused unacceptable side effects/toxicity (*New Engl J Med* 1999; 340:1723). EFV, HU: concerns about teratogenicity or birth defects; EFV: avoid in pregnancy.

Drug Information

A listing of antiretroviral drugs with information pertinent to their use in pregnancy may be found in *Public Health Service Task Force Recommendations for Use of Antiretroviral Drugs in Pregnant HIV-1-Infected Women for Maternal Health and Interventions to Reduce Perinatal HIV-1 Transmission in the United States* (August 30, 2002), Table 2.

Pregnancy Table 2. Pregnancy Issues

Adverse Drug Reactions (ADR)

Generally, pregnant women are at the same risk of ADRs as non-pregnant Individuals, but some ADRs may be more common because of pregnancy-related physiologic changes: anemia (iron & folate deficiency), nausea & vomiting (esp in 1st trimester), amniotransferase elevation. Pls may exacerbate pregnancy-related risk of hyperglycemia and NRTIs (especially d4T/ddI) increase risk of lactic acidosis.

Risk for Perinatal HIV Transmission

Viral load -plasma & genital tract (most significant), primary infection or late stage HIV, low CD4 count, STDs/other co-infections, pre-term delivery, increasing duration of membrane rupture, placental disruption, invasive fetal monitoring or assessment, vaginal delivery, and lack of AZT prophylaxis.

Post-Partum Risk

Breast feeding- not recommended in U.S.

Pregnancy Table 3a. Antiretroviral Agents: Pharmacokinetic and Toxicity Data*

Agent	FDA cat.*	Experience in Pregnancy
Nucleoside/nucleotide reverse transcriptase inhibitors		
ABC	C	No studies. Concern for hypersensitivity
ddl	B	Well tolerated. Usual pharmacokinetics. Concern for lactic acidosis. Avoid ddl + d4T
FTC	B	No studies
3TC	C	Well tolerated. Usual pharmacokinetics
d4T	C	Well tolerated. Usual pharmacokinetics. Concern for lactic acidosis. Avoid ddl + d4T
TDF	B	No studies. Animal studies show bone abnormalities.
ddC	C	No studies. Teratogenic in animals
ZDV	C	Well tolerated. Preferred agent.
Non-nucleoside reverse transcriptase inhibitor		
DLV	C	No studies.
EFV	C	Teratogenic; 4/142 birth defects. Avoid in 1st trimester.
NFV	C	Well tolerated; contraindicated as initial Rx with CD4 > 250; single dose with labor may cause resistance
Protease inhibitors		
APV	C	No studies; oral solution is contraindicated
ATV	B	No studies. Theoretical concern for elevated indirect bilirubin
FPV	C	No studies.
IDV	C	Low levels and theoretical concern for elevated indirect bilirubin
LPV/r	C	No studies.
NFV	B	Well tolerated; extensive experience; Use 1250 mg bid
RTV	B	No data
SQV	B	Levels are low: use SQV: RTV 800/100 mg bid

* June 23, 2004

** Pregnancy categories: A=Controlled studies show no risk
B=No evidence of risk in humans
C=Risk cannot be excluded

**Pregnancy Table 3b:
Antiretroviral Agents: Recommendations for Use***

Class	Recommendation	Drugs
NRTIs	Preferred	AZT, ETC
	Alternatives	ddl, FTC, d4T, ABC
	Inadequate data	TDF
	Not recommended	ddC, d4T, ddl
PIs	Recommended	NFV, SQV/r
	Alternatives	IDV, LPV/r, RTV
	Inadequate data	APV/r, ATV, APV, FPV
NNRTIs	Recommended	NVP (caution with baseline CD4 > 250)
	Not recommended	EFV, DLV

* June 23, 2004

** Pregnancy categories: A=Controlled studies show no risk
 B=No evidence of risk in humans
 C=Risk cannot be excluded

Pregnancy Table 4. Clinical Scenarios and Management of Untreated Pregnant Patients Including C-Section

Time of Presentation	Recommended Management
Early In Pregnancy (<36 Weeks)	<ul style="list-style-type: none"> • Standard clinical, immunologic and virologic evaluation, and resistance testing (same as other pts). • If VL >1,000 or CD4 <350, HAART with AZT (076 Protocol); but consider delaying ART until after 10-12 wks gestation; some authorities delay initiating ART in first trimester due to concerns for antiretroviral agents at the time of organogenesis. This risk is not established with the possible exception of EFV. See also, Pregnancy Table 1 footnotes. • VL <1,000 and CD4 >350, consider AZT monotherapy (076 Protocol), AZT +3TC, or HAART after the first trimester for prevention of perinatal transmission [J Infect Dis 2001; 183:539] • Monitor VL and CD4+ to plan for delivery
Late In Pregnancy (≥36 Weeks)	<ul style="list-style-type: none"> • Standard clinical, immunologic and virologic evaluation, and resistance testing • If VL >1,000 or CD4 <350, HAART with AZT (076 Protocol); see cautions, Pregnancy Table 1 footnotes. • VL <1,000 and CD4 >350, consider AZT monotherapy (076 Protocol), AZT +3TC, or HAART for prevention of perinatal transmission; [J Infect Dis 2001; 183:539] • VL >1,000 copies/mL: Counsel that C-section is likely to reduce the risk of transmission to infant, but counsel about risks and benefits of all choices.
Labor	<ul style="list-style-type: none"> • Initiate therapy (See Pregnancy Table 1C, above for Untreated Women Presenting In Labor) • Postpartum immunologic and virologic evaluation of mother for ART. • Infant should undergo diagnostic testing for HIV to determine need for ongoing ART.
Postpartum	<ul style="list-style-type: none"> • Initiate the 6 wk neonatal AZT protocol preferably within 6-12 hours of delivery. • Infant should undergo diagnostic testing to determine need for ART. • The mother should undergo evaluation to determine indications for ongoing ART.

Pregnancy Table 5. Clinical Scenarios and Management of Treated Pregnant Patients Including C-Section

Time of Presentation	Recommended Management
Early In Pregnancy (<36 Weeks)	<ul style="list-style-type: none"> • Continue ART with standard monitoring, but: <ul style="list-style-type: none"> o May consider discontinuation during 1st trimester: all drugs should be stopped and restarted simultaneously to reduce risk of resistance. o Include AZT if tolerated; see cautions for antiretrovirals, Pregnancy Table 1. footnotes.
Late In Pregnancy (≥ 36 Weeks)	<ul style="list-style-type: none"> • Continue antiretroviral therapy including AZT without interruption during labor and delivery. • VL > 1,000 copies/mL: Counsel that C-section is likely to reduce the risk of transmission to infant, but counsel about risks and benefits of all choices.
C-Section Planned But Presents in Labor or With Ruptured membranes	<ul style="list-style-type: none"> • Initiate ACTG 076 Protocol, Intrapartum in Table 1, above • Rapid progression of labor: vaginal delivery • If long labor anticipated: consider C-section after loading dose of AZT or give pitocin to expedite delivery

Pregnancy Table 6. Delivery Procedures and Therapy

Procedure	Therapy
Cesarean Section	<ul style="list-style-type: none"> • Schedule for 38 wk. • If on ART, IV AZT starting 3 hrs before C-section and continue all other antiretroviral drugs with the exception of d4T. • Infant: Use ACTG 076 Protocol, Postpartum (infant) In Table 1, Above.
Vaginal Delivery	<ul style="list-style-type: none"> • If on ART give IV AZT with initiation of labor and continue all other antiretroviral drugs with the exception of d4T. • Avoid rupture of membranes, fetal scalp electrodes, forceps delivery, and vacuum extractor. • Infant: If TREATED mother, use ACTG 076 Protocol, Postpartum (infant) in Table 1.A., above. <p>If UNTREATED mother use treatment from Table 1.C., above which matches maternal regimen.</p>

Antiretroviral Pregnancy Registry: (www.APRRegistry.com)

1011 Ashes Dr., Wilmington NC 28405

Telephone: 800-258-4263

Fax: 800-800-1052

Prevention of HIV for Providers in Three Steps

Step 1: Screen patients for risk behaviors

- Behaviors and clinical factors associated with HIV, other STDs, and IV drug use (every visit)
- STD symptoms: most are asymptomatic (every visit)
- Pregnancy
- Screening Tests

Patients	Test
<p>Routine</p> <ul style="list-style-type: none">• All patients• All women• All women \leq 25 years and sexually active	<ul style="list-style-type: none">• Syphilis serology - RPR or VDRL*• Trichomonas wet mount or culture• Cervical specimen for <i>C. trachomatis</i>
<p>Consider</p> <ul style="list-style-type: none">• All men and women not included above• Anal receptive sex• Oral receptive sex• Possible pregnancy	<ul style="list-style-type: none">• Screening for GC and <i>C. trachomatis</i> by urethral (men) or cervical (women) specimen or first catch urine for NAAT*• Anal swab for GC culture and, if available, for <i>C. trachomatis</i>• Pharyngeal culture for GC.• Pregnancy test

* Repeat RPR or VDRL annually. Consider repeating screening tests for *N. gonorrhoea* and *C. trachomatis* annually or more frequently if sexually active, if screening previous test positive, or other high risk.

Step 2: Behavioral interventions

- Prevention messages should be provided with each visit
- Communicate factors that influence transmission and risk reduction; i.e. abstinence, sex with condoms, sex exclusively with HIV-infected person(s). If sex with persons with unknown or negative serologic status - stress proper condom use.
- IDU

Stop using drugs

Enter substance abuse treatment

If patient continues to use drugs:

- Never reuse or share needles, water, or drug preparation equipment.
 - Use only syringes from reliable sources (pharmacies).
 - Use new syringe; if not possible-boil or disinfect with bleach (<http://www.cdcnpin.org>)
 - Use sterile water to prepare drugs; otherwise use tap water.
 - Use new or disinfected cooker and new cotton
 - Clean injection site with new alcohol swab.
 - Safely dispose of needle.
- Per act relative risks of HIV transmission
 - Condom vs no condom - 1:20
 - Compared to insertive vaginal sex: receptive vaginal sex 2:1, receptive anal sex 10:1, insertive fellatio 1:10, insertive anal sex 1.3:1, receptive fellatio 1:5 (STD 2002;29:38)
Note: Risks for condom use and acts are multiplicative; e.g, for the ratio for anal sex without a condom vs vaginal insertive sex with a condom is 100:1
 - **Viral load:** each \log_{10} reduction in viral load reduces probability of transmission 2.5 fold.
 - **Non-occupational postexposure prophylaxis:** not endorsed by CDC due to “uncertain effectiveness.”
 - **HAART recipients:** decreases in VL probably reduces but risk transgression in behavior eliminates this benefit. With structured treatment interruption, warn patient that viral load increases as does risk of transmission.

Step 3: Partner counseling and notification

- **Laws:** Follow local and state laws for reporting sex and needlesharing partners.
- **Initial Visit:** Ask if all sex and needlesharing partners have been notified.
- **Follow-ups:** Ask about new sex or needlesharing partners who have not been notified.
- **Referrals:** All contacts should be referred to the Health Department; arrange for notification and testing without identifying source. Patients who elect not to notify partners should be referred to the health department to conduct these activities.

Opportunistic Infections

Adult OI Table 1. 2001 USPHS/IDSA Guidelines for Prevention of Opportunistic Infections

Pathogen	Episode	Indication*	First Choice	Alternatives	Comment
Strongly Recommended					
<i>P. carinii</i>	1 ⁰ & 2 ⁰	<p>Primary</p> <p>CD4 < 200 or</p> <p>CD4 % < 14, thrush, hx AIDS defining illness or FUO</p> <p>Secondary</p> <p>Hx PCP unless immune reconstitution - see comment</p>	<p>TMP-SMX 1 DS/d † or</p> <p>TMP-SMX 1 SS/d †</p>	<p>Dapsone 100 mg/d or</p> <p>Dapsone 50 mg/d + pyrimethamine 50 mg/wk + leucovorin 25 mg/wk or</p> <p>Dapsone 200 mg + pyrimethamine 75 mg + leucovorin 25 mg/wk or</p> <p>Aerosol pentamidine 300 mg/mo or</p> <p>Atovaquone 1500 mg/d or</p> <p>TMP-SMX 1 DS† 3x /wk</p>	<p>Immune reconstitution recommendations:</p> <p>Discontinue primary & secondary prophylaxis if CD4 > 200 cells/mm³ for ≥ 3 mos.</p> <p>Restart Prophylaxis:</p> <p>Restart prophylaxis if CD4 decreases to < 200 cells/mm³</p>
Tuberculosis		See Adult OI Tables 2 and 3			

Footnotes for Adult OI Table 1 are on page 43

Toxoplasmosis	1 ⁰	+ anti-Toxoplasma IgG and CD4 <100 cells/mm ³	TMP- SMX 1 DS † qd	<p>TMP- SMX 1 SST qd, or</p> <p>Dapsone 50 mg/d + pyrimethamine 50 mg/wk + Leucovorin 25mg /wk or</p> <p>Dapsone 200 mg/wk + pyrimethamine 75 mg/wk + Leucovorin 25/wk or</p> <p>Atovaquone 1500 mg/d ± pyrimethamine 25 mg/d + Leucovorin 10 mg/d</p>	<p>Immune reconstitution recommendations:</p> <p>Discontinue if CD4 >200 cells/mm³ for ≥ 3 mos</p> <p>Restart Prophylaxis:</p> <p>CD4 falls to <100-200 cells/mm³</p>
2 ⁰	Toxo tx unless immune reconstitution - see comment	<p>Sulfadiazine 500-1000 mg qid +</p> <p>Pyrimethamine 25-50 mg/d +</p> <p>Leucovorin 10-25 mg/d</p>	<p>Clindamycin 300-450 mg q 6-8 hr + Pyrimethamine 25-50 mg/d+ Leucovorin 10-25 mg/d or</p> <p>Atovaquone 750 mg q 6-12 hr + Pyrimethamine 25 mg/d + Leucovorin 10 mg/</p>	<p>Immune reconstitution recommendations:</p> <p>Discontinue if HAART 6-12 mos, CD4 >200 cells/mm³, and asymptomatic.</p> <p>Restart Prophylaxis:</p> <p>CD4 falls to <200 cells/mm³</p>	
Mycobacterium avium complex	1 ⁰	CD4 <50 cells/mm ³	<p>Azithromycin 1200 mg/wk</p> <p>Clarithromycin 500mg bid</p>	<p>Rifabutin † 300 mg/d or</p> <p>Azithromycin 1200 mg / wk + Rifabutin † 300 mg/d</p>	<p>Immune reconstitution recommendations:</p> <p>Discontinue if CD4 > 100 cells/mm³ for ≥ 3 mo</p>
	2 ⁰	Hx MAC disease	<p>Clarithromycin 500 mg bid +</p> <p>Ethambutol 15 mg/kg/d ±</p> <p>Rifabutin † § 300 mg/d</p>	<p>Azithromycin 500 mg/d +</p> <p>Ethambutol 15 mg/kg/d ±</p> <p>Rifabutin † 300 mg/d</p>	<p>Immune reconstitution recommendations:</p> <p>Discontinue if CD4 > 100 cells/mm³ x >6 mo and Rx 12 mo and asymptomatic</p>

Adult OI Table 1. – continued 2001 USPHS/IDSA Guidelines for Prevention of Opportunistic Infections

Pathogen	Episode	Indication*	First Choice	Alternatives	Comment
Varicella	1 ⁰	Chickenpox /shingles exposure + susceptible (no history of disease and varicella seronegative)	VZIG 5 vials (6.25 mL) IM <96 h post exposure		Acyclovir has been removed from OI prophylaxis guidelines due to lack of documented efficacy
Cryptococcosis	2 ⁰	Hx Cryptococcal meningitis	Fluconazole, 200 mg po qd	Amphotericin B, 0.6-1.0 mg/kg iv qw-3iv. or itraconazole, 200 mg capsule po qd	Immune reconstitution recommendations: Discontinue if CD4 > 100 X 6 mo and completed initial Rx and asymptomatic
Cytomegalovirus	2 ⁰	Prior end-organ disease	Extra ocular: ganciclovir, 5 mg/kg/day iv 5-7 days/wk, valganciclovir 900 mg/d, or foscarnet, 90mg/kg iv q.d. or cidofovir 5 mg/kg q 2 weeks. For retinitis: ganciclovir sustained release implant q 6-9 months plus valganciclovir 900mg/d or ganciclovir or foscarnet (above doses)	Cidofovir, 5 mg/kg iv qow with probenecid 2 grams po 3 hours before the dose followed by 1 gram po 2 hours after the dose, and 1 gram po 8 hours after the dose (total of 4 grams) or Fomivirsen 1 vial (330µg) injected into the vitreous, then repeated every 2-4 wks ¶ or Valganciclovir 900 mg po qd	Immune reconstitution recommendations: Discontinue if CD4 > 100-150 X 6 mo + no active disease + negative ophthalm exam.

Generally Recommended

<i>S. pneumoniae</i>	1 ⁰	All Patients with CD4 > 200	Pneumovax	None	Immune reconstitution: Consider reimmunization if CD4 increases to >200 and initial immunization was given when CD4 <200.	
Hepatitis B	1 ⁰	Susceptible- (anti-HBc negative)	HBV vaccine series	None		
Influenza	1 ⁰	All patients	Influenza vaccine	Rimantidine 100 mg bid Amantadine 100 mg bid Oseltamivir 75 mg qd		
Hepatitis A	1 ⁰	Susceptible- (anti-HAV neg) and anti-HCV positive	Hepatitis A vaccine series	None		

* Indication is separately defined for:

1⁰ = Primary: No prior infection with this pathogen

2⁰ = Secondary: Prior infection with this pathogen

† SS= Single strength tablet, DS=double strength tablet

‡ Dose adjusted for concurrent P/NNRTI

§ Rifabutin reduces levels of clarithromycin by 50% (consider azithromycin if RBT is used)

¶ Added Rx needed to protect the contralateral eye and other organ systems.

Tuberculosis and HIV

Latent TB and HIV Co-infection Candidates For Testing

- All HIV-infected patients without prior positive PPD test upon entry into HIV care.
- Repeat testing annually for HIV-infected patients at risk of acquiring TB who have no prior positive tests.
- All HIV-infected patients with prior negative skin test who are discovered to be contacts of pulmonary cases.

Indications For Treatment of Latent Tuberculosis Infection (MMWR 2000;49 RR-6)

- Positive PPD (≥ 5 mm induration) plus no prior completed prophylaxis or treatment for TB disease.
- Recent contact with TB case (Recent contacts who are initially TST negative should have TST repeated 12 weeks after last exposure to TB case. Those placed on prophylaxis should be discontinued if PPD negative at 12 weeks.).
- History of inadequately treated TB that healed.

Patients meeting skin test positivity criteria should be evaluated to rule out active TB disease before initiating treatment.

Adult OI Table 2. Recommended Drug Regimens for Treatment of Latent TB in HIV Co-infected Adults

	Regimen	Adult Dosage (max)	Criteria for Completion	Comments
Preferred Regimens				
All patients.	INH daily for 9 mos.	300 mg qd + pyridoxine 50 mg qd	270 doses within 9 mos. (Up to 12 mos. with interruptions)	INH may be administered concurrently with NRTIs, PIs, or NNRTIs. Contact w/ provider monthly
	INH twice-weekly for 9 mos.	900 mg + pyridoxine 100 mg 2x/wk	76 doses within 9 mos. (Up to 12 mos. with interruptions)	Acceptable alternative for HIV-infected adults. DOT must be used with twice weekly dosing.
Alternative Regimen				
Contacts of isoniazid-resistant, rifampin-susceptible TB	RIF daily for 4 mos.†	RIF 10 mg/kg (600 mg) RBT is alternative if patient is receiving HAART	120 doses within 6 mos.	
8 week regimen: PZA + RIF	No longer recommended due to excessive hepatotoxicity including 7 deaths (not in persons known to have HIV co-infection) MMWR 2003;52:735.			

Abbreviations: INH = isoniazid, RIF = rifampin, RBT = rifabutin, PZA = pyrazinamide, DOT = directly observed therapy

* See table next page for RBT & PI/NNRTI dose adjustments.

† May not be used with patients taking PI/NNRTI with the exception of RTV/SQV, RTV, or EFV.

Adult OI Table 3. Monitoring of Patients on Latent TB Prophylaxis

Latent TB Regimen	Monitoring
All patients	<ul style="list-style-type: none"> • Initial clinical evaluation. • Educate patients about side effects associated with LTBI treatment. • Advise to stop treatment and promptly seek medical evaluation if these occur.
INH	<ul style="list-style-type: none"> • Contact with patient monthly LFTs at baseline and 3 mo* and with hepatitis sx. • Include careful questioning about side effects and a brief physical examination checking for evidence of hepatitis or other side effects.
Rifampin or rifabutin + PZA	<ul style="list-style-type: none"> • Clinic visits at 2,4,6, & 8 wks. CBC & LFTs at baseline, 2,4, & 6 wks or with symptoms† • Include careful questioning about side effects and a brief physical examination checking for evidence of hepatitis or other side effects.

* INH: D/C if ALT 5X ULN or symptoms plus ALT \geq 3X ULN

† Rifampin/rifabutin + PZA: D/C if ALT \geq 5X ULN or if symptoms plus any abnormal LFTs.

Special Treatment Notes

PREGNANCY: INH regimens preferred for pregnant women. Some experts would use RIF plus PZA as alternate regimen in HIV-infected pregnant women. PZA should be avoided during first trimester.

MDR-TB Exposure

Expert consultation is recommended for persons who are likely to be infected with INH and RIF (multidrug) resistant-TB and at high risk of reactivation.

ART/TB Treatment Interactions

* Rifabutin should not be used with hard-gel saquinavir (as sole PI) or delavirdine.

Rifampin/Rifabutin

See Adult ART Table 6, pg 22

Treatment of Tuberculosis Disease

(American Thoracic Society/Centers for Disease Control and Prevention/Infectious Diseases Society of America: Treatment of Tuberculosis *Am J Respir Crit Care Med* 2003;167(4):603.)

Adult OI Table 4.
Treatment of Drug-Susceptible TB

Drugs	Phase 1 (8 weeks)	Phase 2*: regimen, doses, minimal duration
INH RIF PZA EMB	8 weeks • 7 d/wk for 8 wks (56 doses); or • 5 d/wk for 8 wks (40 doses)	<ul style="list-style-type: none"> • INH/RIF 7 d/wk for 18 weeks (126 doses); or • INH/RIF 5 d/wk for 18 weeks (90 doses); or • INH/RIF 2x/wk for 18 weeks (36 doses).
INH RIF PZA EMB	2 wk/6 week 7 d/wk, for 2 wks (14 doses), then 2x/week for 6 wks (12 doses).	INH/RIF 2x/wk for 18 weeks (36 doses)
INH RIF PZA EMB	8 weeks 3 x/week for 8 weeks (24 doses)	INH/RIF 3x/week for 18 weeks (54 doses)
INH RIF EMB	8 weeks • 7 d/week for 8 wks (56 doses) • 5 d/week for 8 wks (40 doses)	<ul style="list-style-type: none"> • INH/RIF 7 d/week for 31 weeks (217 doses); or • INH/RIF 5 d/wk for 31 week (155 doses); or • INH/RIF 2x/wk for 31 weeks (62 doses).

INH = isoniazide, RIF = rifampin, RPT = rifapentine, PZA = pyrazinamide, EMB = ethambutol

* Patients with cavitation at baseline and positive cultures at 2 months should receive 31 week continuation phase for total of 9 months.

**Adult OI Table 5.
Doses of Antituberculosis Drugs – First-line Drugs**

Drug	Daily	1/wk	2x/wk	3x/wk
INH	5 mg/kg (300)*	15 mg/kg (900)	15 mg/kg (900)	15 mg/kg (900)
RIF	10 mg/kg (600)	-	10 mg/kg (600)	10 mg/kg (600)
RPT	-	-	10 mg/kg (600)	-
PZA (wt)				
40-55 kg	1 gm	-	2.0 gm	1.5 gm
56-75 kg	1.5 gm	-	3.0 gm	2.5 gm
76-90 kg	2.0 gm	-	4.0 gm	3.0 gm
EMB (wt)				
40-55 kg	800 mg	-	2,000 mg	1,200 mg
56-75 kg	1,200 mg	-	2,800 mg	2,000 mg
76-90 kg	1,600 mg	-	4,000 mg	2,400 mg

*Dose in mg/kg and (usual dose in mg).

**Adult OI Table 6:
Special Considerations for TB Treatment with HIV Co-infection**

Identical for general population except:

- CD4 < 100/mm³: Continuation phase should be daily or 3x/week. Once weekly rifapentine regimen should not be used.
- Positive cultures at 2 months: "Strongly consider" 7 month continuation phase (total 9 mo).
- In absence of prior HIV therapy and CD4 < 350/mm³: delay antiretroviral drugs for 4-8 weeks.
- RIF may be used with 2 NRTIs + EFV, RTV + SQV (Invirase or Fortovase) or AZT/3TC/ABC.
- Rifabutin combined with other PIs and NNRTI requires dose adjustment of both.
See: www.cdc.gov/nchstp/tb/ or www.medscape.com/updates/quickguide.
- When starting NNRTI or PI in patient receiving RIF, substitute rifabutin 2 weeks prior to NNRTI or PI to give a 2 week washout period for RIF.
- Paradoxical reaction: Frequency in 7-36%; clinical features - high fever; increased adenopathy, CNS lesions, pulmonary infiltrates and pleural effusions. Treatment is symptomatic; if severe give prednisone 1 mg/kg and reduce dose at 1-2 weeks.

A Pocket Guide to Adult HIV/AIDS Treatment provides treatment information in table format for easy reference in clinical settings:

Drug Tables Pages 2-15

Adult ART Tables Pages 16-30

Pregnancy Tables Pages 31-36

Prevention for ProvidersPage 37

Adult OI Tables Pages 38-48

Recommendations for HIV care and treatment are complex and change rapidly. In addition to the Pocket Guide and *A Guide to Primary Care of People with HIV/AIDS*, which the Pocket Guide supports, consult the following resources provided by the U.S. Department of Health and Human Services for frequently updated HIV treatment information:

AIDSInfo: <http://www.aidsinfo.nih.gov>

National HIV/AIDS Clinical Consultation Center Warmline:

1-800-933-3413

(toll free in the U.S.)

