

Handbook of HIV Drug Therapy

2011 Edition

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Additional information and updates may be found at: www.hivclinic.ca

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Contributors

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Disclaimer

The information in this Handbook is intended for use by and with experienced physicians and pharmacists. The information is not intended to replace sound professional judgment in individual situations, and should be used in conjunction with other reliable sources of information. Due to the rapidly changing nature of information about HIV treatment and therapies, users are advised to recheck the information contained herein with the original source before applying it to patient care. Decisions about particular medical treatments should always be made in consultation with a qualified medical practitioner knowledgeable about HIV-related illness and the treatments in question.

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INTRODUCTION

Since its original conception in 1992, this booklet has undergone many updates and transformations. This 2011 version includes updated sections on antiretroviral pharmacologic and pharmacokinetic properties and additional and expanded drug interaction tables. As principles of HIV therapy evolve, and as new agents continue to emerge, antiretroviral combination regimens become increasingly complex. Now, more than ever, factors such as efficacy, toxicity, drug interactions, medication adherence, and cost need to be carefully considered when designing a particular treatment regimen for an individual patient.

Costs of various treatment protocols are listed in Canadian dollars. Please note that the prices are approximate, and are based on 2009/10 data from sources including the Ontario Drug Benefit Formulary, the Alberta Drug Benefit List, average wholesale prices (for non-formulary drugs, 3%-6% savings may be applied to direct orders where applicable), and the Johns Hopkins HIV Guide (<http://www.hopkins-hivguide.org>). Also, please note that total costs of each regimen do NOT include a dispensing fee. Where drug dosage is on a mg/kg basis, doses have been calculated for an average body weight of 70 kg.

Please note that the treatment protocols described are merely recommendations summarized from currently available practice guidelines. Since the standards of care in HIV are continually changing, and new therapeutic options are constantly emerging, it is the responsibility of each practitioner to stay abreast of new developments. These protocols are not meant to be absolute nor universal, and should always be utilized in conjunction with the informed clinical judgement of the practitioner.

Information in the **pharmacologic and drug interactions** sections are based on currently available data, including product monographs, published references, conference abstracts and posted guidelines (as noted in the Reference section). However, given the rapid pace of developments in this therapeutic area, it is acknowledged that these tables are not all-inclusive. Not all possible drug combinations have been studied for potential interaction, and new drug combinations are continually being developed. Therefore, please use caution whenever adding or modifying therapy, and consult a health care professional when possible. Readers may also refer to the clinic website: www.hivclinic.ca, for additional information and regular updates.

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REGIMEN	COST/ DAY (\$)	LENGTH OF THERAPY	TOTAL COST (\$)	
A) MAINTENANCE THERAPY				
Antiretrovirals				
(to be used in combination; see guidelines in Federal register http://www.aidsinfo.nih.gov/guidelines/ .) In general, a multi-class approach incorporating an NRTI backbone plus an option from any of the following three categories (NNRTI, PI or Integrase Inhibitor) is recommended:				
	NRTI	NNRTI	PI	Integrase Inhibitor
Preferred	Tenofovir + emtricitabine (FTC)	Efavirenz	Atazanavir/ritonavir QD Darunavir/ritonavir QD	Raltegravir
Alternative	Abacavir or zidovudine + 3TC	Nevirapine	Boosted: Fosamprenavir/r QD or BID Lopinavir/ritonavir QD or BID	
Acceptable	didanosine + 3TC		Atazanavir QD Fosamprenavir BID Saquinavir/ritonavir BID	<u>CCR5 Inhibitor:</u> Maraviroc
Preferred for Pregnant Women:				
<ul style="list-style-type: none"> Zidovudine/3TC + lopinavir/ritonavir BID 				
**Please note that the individual agents classified as Recommended or Alternative may change as new data continue to emerge on long-term safety and toxicity. These classifications reflect current guidelines as of early 2011. Clinicians are urged to regularly check the above resources for updates.				
<u>Nucleoside Analogues (Combination products)</u>				
a) Truvada® (tenofovir 300 mg/emtricitabine 200 mg) tablet: 1 tablet daily	25.05	according to factors	751.50/mo	
b) Kivexa® (abacavir 600 mg/lamivudine 300 mg) tablet: 1 tab QD	22.79	including CD4, viral load,	683.84/mo	
c) Combivir® (zidovudine 300 mg/lamivudine 150 mg) tablet: 1 tab BID	20.88	and clinical response	626.47/mo	
d) Trizivir® (abacavir 300 mg/lamivudine 150 mg/zidovudine 300 mg) tablet: 1 tab BID	34.62		1038.61/mo	
<u>Nucleoside Analogues (single agents):</u>				
a) abacavir 300 mg po BID	13.74		412.16/mo	
b) didanosine (ddl) EC (Videx EC):				
>60 kg: 400 mg once daily	10.83		324.90/mo	
<60 kg: 250 mg once daily	6.76		202.80/mo	
c) lamivudine (3TC) 150 mg po BID or 300 mg QD	9.67		290.15/mo	
d) stavudine (d4T):				
>60 kg 40 mg po BID	8.93		268.03	
<60 kg 30 mg po BID	-9.26		-277.83/mo	
e) tenofovir 300 mg QD	16.74		502.13/mo	
f) zidovudine (AZT): 200 mg po TID or 300 mg po BID	10.48		314.26mo	

REGIMEN	COST/ DAY (\$)	LENGTH OF THERAPY	TOTAL COST (\$)
<i><u>Non-nucleoside Reverse Transcriptase Inhibitors (NNRTIs):</u></i>			
a) efavirenz 600 mg daily	14.06		421.75/mo
b) etravirine 200 mg po BID	21.80		654.00/mo
c) nevirapine 200 mg po BID or 400 mg QD	9.88		296.30/mo
d) NB: for first 14 days of therapy, start with 200 mg once daily			
e) delavirdine 400 mg po TID	8.61		258.41/mo
<i><u>Protease Inhibitors (boosted):</u></i>			
a) atazanavir 300mg/100 mg ritonavir QD	22.18		665.33/mo
b) darunavir 600 mg/100 mg BID or 800/100 mg QD	21.61		648.38
	-31.56		-947.09/mo
c) fosamprenavir 700 mg/100 mg BID or 1400/200 mg QD	18.74		562.01/mo
d) indinavir 800/100 or 200 mg po BID	13.67		410.00
	-16.56		-496.81/mo
e) lopinavir/ritonavir 400/100 mg po BID or 800/200 mg QD (for naive patients)	21.60		648.05/mo
f) saquinavir hard gel capsule (Invirase®) 1000 mg/ritonavir 100 mg BID	19.69		590.81/mo
g) tipranavir 500 mg/ritonavir 200 mg po BID	42.09		\$1262.62/mo
<i><u>Protease Inhibitors (unboosted):</u></i>			
a) atazanavir 400 mg QD	20.80		624.00/mo
b) fosamprenavir 1400 mg BID	31.68		950.40/mo
c) indinavir 800 mg po q8h	16.16		484.79/mo
d) nelfinavir 1250 mg BID	18.20		546.00/mo
<i><u>Integrase Inhibitor:</u></i>			
a) raltegravir 400 mg BID	27.00		810.00/mo
<i><u>CCR5 antagonist:</u></i>			
a) maraviroc 150-300 mg BID	33.00		990.00/mo
<i><u>Fusion Inhibitor:</u></i>			
a) enfuvirtide 90 mg SC BID	79.52		2385.60/mo

REGIMEN	COST/ DAY (\$)	LENGTH OF THERAPY	TOTAL COST (\$)
B) PROPHYLACTIC REGIMENS			
Post-Exposure Prophylaxis (PEP):			
NB: May depend upon source and type of exposure.			
See www.aidsinfo.nih.gov for guidelines (last updated Sept 30, 2005).			
<u>Note:</u>			
- Avoid abacavir, didanosine/ stavudine combination, delavirdine, nevirapine in PEP cases			
- Use of efavirenz should be avoided in women of child-bearing age and restricted to patients where protease inhibitor resistance is suspected from source case.			
a) <i>Basic regimen (2 nucleosides):</i>			
• Combivir® (AZT 300 mg/3TC 150 mg) 1 tablet BID	20.88	4 weeks	584.64
• Truvada® (tenofovir 300 mg/FTC 200 mg QD)	25.05		701.40
• Stavudine 40 mg BID + lamivudine 150 mg BID	18.93		530.04
b) <i>Expanded regimen (2 NRTIs + 1 PI):</i>			
• Combivir® (AZT 300 mg/3TC 150 mg) 1 tablet BID	42.48	4 weeks	1189.44
• + lopinavir/ritonavir 400/100 mg BID			
• Truvada® (tenofovir 300 mg/FTC 200 mg) QD + lopinavir/ritonavir 400/100 mg BID	46.65		1306.20
• Combivir® (AZT 300 mg/3TC 150 mg) 1 tablet BID + atazanavir 400 mg QD	41.68		1167.04
• Truvada® (tenofovir 300 mg/FTC 200 mg) QD + atazanavir 300 mg/ritonavir 100 mg QD	48.06		1345.75
c) <i>Other combinations of antiretrovirals may be used in special circumstances, including:</i>			
Combivir® (AZT 300 mg/3TC 150 mg) 1 tablet BID OR Truvada® (tenofovir 300 mg/FTC 200 mg) QD plus:	20.88	4 weeks	626.47
• nelfinavir 1250 mg BID	-25.05		-751.50
• fosamprenavir 1400 mg BID, or boosted fosamprenavir 1400 mg QD/ritonavir 200 mg QD, or 700 mg BID/ritonavir 100 mg BID	18.20		509.60
• saquinavir 1000 mg/ ritonavir 100 mg BID	18.73	4 weeks	524.54
• indinavir 800 mg BID/ritonavir 100 mg BID	-31.68		-887.04
	19.69		551.42
	13.67		382.67

REGIMEN	COST/ DAY (\$)	LENGTH OF THERAPY	TOTAL COST (\$)
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Vertical Transmission:

Consider combination antiretroviral regimens as appropriate to manage mother's HIV condition (refer to U.S. Public Health Service Task Force guidelines regarding use of antiretrovirals during pregnancy and reduction of perinatal transmission). In general, a multi-class approach incorporating the following components is recommended:

	NRTI	NNRTI	PI
Preferred	Zidovudine + lamivudine	Nevirapine*	Lopinavir/r
Alternative	Abacavir Didanosine Emtricitabine Stavudine		Nelfinavir Saquinavir/r Indinavir/r Atazanavir/r
Special circumstances	Tenofovir**	Efavirenz	
Not recommended	Darunavir Fosamprenavir	Delavirdine Etravirine	

NB- individual agents classified as Preferred or Alternative may change as new data continue to emerge on pharmacokinetics in pregnancy, safety and toxicity. These classifications reflect current guidelines as of April 29, 2009. Clinicians are urged to regularly check the above resources for updates.

*Avoid nevirapine if CD₄ count is > 250 cells/ μ L

** Potential for tenofovir to cause fetal bone and renal toxicity is limited- consider other options first. Use efavirenz only after first trimester due to fetal neural tube defects- consider other options first.

AZT pre/postnatal regimen (ACTG076):

i) <i>at 14-34 wks gestation:</i> AZT 500-600 mg po daily	8.95	until labour	268.50/mo
ii) <i>during labour:</i> AZT 2 mg/kg IV over 1 hr, then 1 mg/kg/h IV	16.17/ 200 mg	until delivery	n x 16.17
iii) <i>neonate:</i> 2 mg/kg q6h po syrup (beg. 8-12 hrs after birth)	46.00/ 240 mL	6 weeks	n x 46.00

Intrapartum/neonatal short course regimen (HIVNET 012):

a) Nevirapine regimen:			
• <i>during labour:</i> 200 mg po at onset	4.94	Single dose each	9.88
• <i>neonate:</i> 2 mg/kg within 72 hours of birth	5.37/300 mg dose	until delivery	~48.33/24 hrs
b) short course zidovudine regimen:	46.00/ 240 mL	7 days	n x 46.00
• <i>during labour:</i> AZT 600 mg po at onset, then 300 mg q3h			
• <i>neonate:</i> 4 mg/kg BID po syrup			

Other combinations of antiretrovirals may be used depending on individual circumstances.

C) OPPORTUNISTIC INFECTIONS

REGIMEN	COST/ DAY (\$)	LENGTH OF THERAPY	TOTAL COST (\$)
<i>Bacillary angiomatosis:</i>			
<u>Treatment:</u>			
a) erythromycin 500 mg po q6h	1.44	≥ 3 months; lifelong if relapse	43.20/mo
b) doxycycline 100 mg po BID	1.18		35.40/mo
c) clarithromycin 500 mg po BID	4.40		132.00/mo
d) azithromycin 600 mg po daily	7.63		228.90/mo
<i>Candidiasis, oral/mucosal:</i>			
1. <u>Treatment/Suppression:</u>			
a) clotrimazole 10 mg po troche po 5x/d	8.90	Initial episodes 7-14 day treatment (until symptoms resolve)	62.30-124.60
b) nystatin 5 mL (500 000 U) po S&S qid	1.00		7.00-14.00
c) fluconazole 100 mg po daily	5.55		38.85-77.70
d) itraconazole 200 mg po daily (suspension more effective than capsules)	17.74 (susp)		124.18-248.36
e) posaconazole solution 400 mg bid x 1, then 400 mg daily	94.00		658.00-1316.00
<i>Candidiasis, esophageal:</i>			
1. <u>Treatment:</u>			
a) fluconazole 100-400 mg po daily	5.55 -22.20	14-21 days	77.70 -466.20
b) itraconazole 200 mg po daily (suspension preferred)	17.74 (susp)		248.36 -372.54
c) voriconazole 200 mg po BID	102.12		1429.68 -2144.52
d) posaconazole 400 mg po BID	188.00		2632.00 -3948.00
e) caspofungin 50 mg IV daily	440.00		6160.00 -9240.00
f) micafungin 150 mg IV daily	150.00		2100.00 -3150.00
g) amphotericin B deoxycholate 0.6 mg/kg/d IV	69.00 (50 mg vial)		
2. <u>Suppression:</u>			
a) fluconazole 100 mg po daily	5.55	Indefinite	166.50 /mo

REGIMEN	COST/ DAY (\$)	LENGTH OF THERAPY	TOTAL COST (\$)
b) itraconazole suspension 200 mg po daily	17.74 (susp)		532.20/mo
<i>Cryptococcal Meningitis:</i>			
1. Treatment:			
a) amphotericin B deoxycholate 0.7 mg/kg/d IV + flucytosine 25 mg/kg po q6h x 2/52 (or until clinically improved), then fluconazole 400 mg/d x 8/52	69.00 163.94 17.61	10 weeks total	4247.32
b) amphotericin B lipid formulation 4-6 mg/kg/d IV+ flucytosine 25 mg/kg po q6h x 2/52, then fluconazole 400 mg/d x 8/52	1526.56 163.94 17.61		24653.16
c) amphotericin B (deoxycholate or lipid formulation) + fluconazole 400 mg/d x 2/52, then fluconazole 400 mg/d x 8/52	69.00 17.61		2198.70
d) amphotericin B (deoxycholate or lipid formulation) x 2/52, then fluconazole 400 mg/d x 8/52	69.00 17.61		1952.16
e) fluconazole 400-800 mg/d plus flucytosine 25 mg/kg po q 6h x 4-6 weeks, then fluconazole 400 mg daily x 8/52	17.61 -35.22 163.94 17.61		6069.56 -9350.88
2. Suppression:			
a) fluconazole 200 mg po daily	11.10	Continue until CD4 \geq 200 cells/ μ L x \geq 6 months + completed initial therapy + asymptomatic	333.00/mo
b) itraconazole 200 mg po daily	8.58 (cap)		257.40/mo
<i>Cryptosporidial Diarrhea*:</i>			
* Effective ART (to \uparrow CD4 > 100 cells/ μ L) is associated with resolution of cryptosporidiosis			
a) paromomycin 1g po BID for 4 weeks, then paromomycin 500 mg po BID	12.12 -24.24	To treat symptoms (usually indefinite)	678.72 (1st month) then 339.36/mo
b) nitazoxanide 500 mg po BID	49.90		1497.00/mo
c) paromomycin 1 g po BID + azithromycin 600 mg po daily for 4 weeks, then paramomycin 1 g po BID thereafter	24.24 13.62		1060.08 (1 st month) then 378.72/mo

REGIMEN	COST/ DAY (\$)	LENGTH OF THERAPY	TOTAL COST (\$)
d) azithromycin 600-1200 mg po daily	13.62		408.49
	-27.23		-816.98/mo
e) atovaquone 750 mg po BID	27.50		825.00/mo
<i>Cytomegalovirus Infection (CMV):</i>			
1. Induction:			
a) ganciclovir ocular implant (replace every 6-8 months) plus valganciclovir 900 mg po BID	96.36 (oral valganciclovir)	Treat until disease is stable	1349.04 -2023.56
b) valganciclovir 900 mg po BID	96.36	(14-21 days)	1349.04 -2023.56
c) ganciclovir 5 mg/kg IV BID	44.31 (500 mg vial)		
d) foscarnet 60 mg/kg IV TID or 90 mg/kg IV BID	180.20		2522.80 -3784.20
e) cidofovir 5 mg/kg IV once weekly + probenecid 2 g po pre dose, and 1 g po at 2 hours and 8 hours post dose (4 g total)	988.03 1.51		2968.62
2. Maintenance:			
a) valganciclovir 900 mg po daily	48.18	Continue until CD4 >100 cells/ μ L for \geq 3-6 months + no evidence of active disease	1445.40/mo
b) ganciclovir 5 mg/kg IV daily or 6 mg/kg IV daily Monday to Friday	44.31 (500 mg vial)		
c) foscarnet 120 mg/kg IV daily	180.20		5406.00/mo
d) cidofovir 5 mg/kg IV every 2 weeks + probenecid 2 g po pre dose, and 1 g po at 2 hours and 8 hours post dose (4 g total)	988.03 1.51		1979.08/mo
<i>Herpes Simplex Infection:</i>			
1. Orolabial Lesions and initial or recurrent genital lesions:			
a) valacyclovir 1 g po BID	9.44	Orolabial: 5-10 days	47.20 -132.16
b) famciclovir 500 mg po BID	8.46	Genital: 5-14 days	42.30 -118.44
c) acyclovir 400 mg po TID	5.19		25.95 -72.66

REGIMEN	COST/ DAY (\$)	LENGTH OF THERAPY	TOTAL COST (\$)
2. Severe mucocutaneous HSV infections:			
a) initial therapy acyclovir 5 mg/kg IV q 8 h (after lesions begin to regress, change to PO as above and continue until lesions completed healed)	11.16	until clinical response	55.80 -156.24
b) foscarnet 80-120 mg/kg/day IV in 2 -3 divided doses (acyclovir resistant)	180.20		901.00 -2522.80
3. HSV Encephalitis:			
a) acyclovir 5 mg/kg IV q8h	11.16	21 days	234.36
4. Suppression (patients with frequent or severe genital herpes):			
a) valacyclovir 500 mg po BID	4.72	indefinite	141.60/mo
b) famciclovir 500 mg po BID	8.46		253.80/mo
c) acyclovir 400 mg po BID	3.16		94.80/mo
Herpes Zoster Infection:			
a) valacyclovir 1 g po TID	14.16	7-10 days	99.12 -141.60
b) famciclovir 500 mg po TID	12.69		88.83 -126.90
c) acyclovir 800 mg po 5x daily	14.30		100.10 -143.00
Histoplasmosis:			
1. Treatment:			
a) liposomal amphotericin B 3 mg/kg/d IV x 2 weeks then itraconazole 200 mg po TID x 3/7 then 200 mg po BID	1090.40 15.16	Continue until: ≥ 1 year itraconazole therapy + negative blood cultures	15265.60 (lipo ampho), 454.80/mo (itra)
b) amphotericin B deoxycholate 0.7 mg/kg IV daily for 2 weeks then itraconazole 200 mg po TID x 3/7, then 200 mg po BID	69.00 15.16	+ CD4 count > 150 cells/μL for ≥ 6 months	966.00 (ampho), 454.80/mo (itra)
c) amphotericin B lipid complex 5 mg/kg IV daily for 2 weeks then itraconazole 200 mg po TID x 3/7, then 200 mg po BID	937.13 15.16	+ serum <i>Histoplasma</i> Ag < 2 units	13119.75 (ampho lipid), 454.80/mo (itra)
d) Itraconazole 200 mg po TID x 3/7, then bid (less severe)	15.16 -22.74		454.80/mo

REGIMEN	COST/ DAY (\$)	LENGTH OF THERAPY	TOTAL COST (\$)
2. Long term suppression (patients with severe disease or CNS infection and in patients who relapse):			
a) itraconazole 200 mg po daily	8.58 (cap)	Indefinite	257.40/mo
<i>Microsporidiosis</i>*			
* Effective ART (↑ CD4 > 100 cells/μL) is associated with resolution of symptoms			
a) albendazole 400 mg po BID	7.36	indefinite (continue until CD4 > 200 cells/μL x ≥6 months)	220.80/mo
b) fumagillin 20 mg po TID (for <i>Enterocytozoon bienuesi</i>)	N/A		N/A
<i>Mycobacterium avium complex (MAC):</i>			
1. <u>Treatment</u> (combination of the following, e.g., macrolide + ethambutol +/- rifabutin):			
a) clarithromycin 500 mg po BID	4.40	Treat until complete ≥ 12 months of therapy + CD4 > 100 cells/μL for ≥ 6 months + no symptoms	132.00/mo
b) azithromycin 500-600 mg po daily	7.63		228.90/mo
c) ethambutol 15 mg/kg/d	0.81		24.40/mo
e) rifabutin 300 mg po daily (adjust based on drug interactions)	8.38		251.40/mo
f) ciprofloxacin 500-750 mg po BID	3.16 -5.96		94.80 -178.80/mo
g) levofloxacin 500 mg po daily	5.74		172.20/mo
h) amikacin 10-15 mg/kg/d IV	55.00		1650.00/mo
i) moxifloxacin 400 mg po daily	6.16		184.80
2. <u>Prophylaxis:</u>			

REGIMEN	COST/ DAY (\$)	LENGTH OF THERAPY	TOTAL COST (\$)
a) azithromycin 1200 mg po weekly	15.26/wk	Continue until CD4 > 100 cells/ μ L for \geq 3 months in response to ART	61.04/mo
b) clarithromycin 500 mg po BID	4.40		132.00/mo
c) rifabutin 300 mg po daily (adjust based on drug interactions)	8.38		251.40/mo
d) azithromycin 600 mg po twice weekly	15.26/wk		61.04/mo
<i>Pneumocystis jiroveci pneumonia (PCP):</i>			
1. Treatment:			
a) TMP/SMX: 15 mg/kg/d (TMP) IV/po in 3- 4 divided doses (usual oral dose TMP-SMX DS 2 tablets po TID)	0.72 tabs	21 days	15.12
b) trimethoprim 15 mg/kg/d po (3 div.doses)	2.60 1.44		84.84
d) primaquine 15 mg po daily + clindamycin 300-450 mg po q6h OR 600 mg IV q8h	1.48 3.10-4.65 (po)		96.18-128.73 (po);
e) pentamidine 4 mg/kg/d IV	27.44 (IV) 51.57		607.32 (IV) 1082.97
f) atovaquone 750 mg po BID	27.54		504.00
If PaO ₂ < 70 mm Hg or A-a gradient > 35 mm Hg, add corticosteroids: prednisone 40 mg po BID x 5/7, then 40 mg po daily x 5/7, then 20 mg po daily x 11/7 (or x 5/7, then 10 mg po daily x 6/7)	0.052 -0.416		
2. Prophylaxis:			
a) TMP/SMX i DS po 3-7x/wk, or i SS tablet daily	0.0482 -0.1221	Continue until CD4 > 200 cells/ μ L for \geq 3 months in response to ART	1.45 -3.66/mo
b) dapsone 100 mg po daily	1.44		11.70/mo
c) aerosolized pentamidine 300 mg q month	51.57		51.57/mo
d) pentamidine IV 3-4 mg/kg/month	51.57		51.57/mo

REGIMEN	COST/ DAY (\$)	LENGTH OF THERAPY	TOTAL COST (\$)
e) dapsone 50 mg po daily + pyrimethamine 50 mg po weekly + leucovorin 25 mg po weekly	0.72 2.95/wk 27.20/wk		126.60/mo
f) dapsone 200 mg po weekly + pyrimethamine 75 mg po weekly + leucovorin 25 mg po weekly	2.88/wk 3.75/wk 27.20/wk		126.92/mo
g) atovaquone 1500 mg po daily	27.54		720.00/mo
Syphilis:			
1. <u>Early Disease (primary/secondary):</u>			
a) benzathine penicillin G 2.4 MU IM	84.00	1 dose	84.00
b) doxycycline 100 mg po BID	1.18	14 days	16.52
c) ceftriaxone 1 g IM or IV QD	37.63	8-10 days	301.04
d) azithromycin 2 g po for 1 dose	24.87	1 dose	-376.30 24.87
2. <u>Latent Disease (no CNS involvement)</u>			
a) benzathine penicillin G 2.4 MU IM/wk	84.00/wk	3 weeks	252.00
b) doxycycline 100 mg po BID	1.18	28 days	33.04
3. <u>Neurosyphilis:</u>			
a) Aq. penicillin G 3-4 MU IV q4h +/- benzathine penicillin G 2.4 MU IM weekly for 3 doses after completion of IV therapy	32.40- 43.20 84.00/wk	10-14 days	576.80 -856.80
b) procaine penicillin 2.4 MU IM/d, + probenecid 500 mg po QID +/- benzathine penicillin G 2.4 MU IM weekly for 3 doses after completion of above	N/a 0.75 84.00/wk	10-14 days	
c) ceftriaxone 2 g IM or IV/d	46.90	10-14 days	469.00 -656.60
Toxoplasma gondii infection:			
1. <u>Treatment:</u>			
a) pyrimethamine 200 mg x 1, then 50 mg (<60 kg body weight) or 75 mg (≥60 kg) po daily + sulfadiazine 1g (< 60 kg) or 1.5 g (≥60 kg) po q6h + folinic acid 25 mg po daily	1.95 27.84 11.40	6 weeks	1729.98

REGIMEN	COST/ DAY (\$)	LENGTH OF THERAPY	TOTAL COST (\$)
b) pyrimethamine 200 mg x 1, then 50 mg (<60 kg body weight) or 75 mg (≥60 kg) po daily + clindamycin 600 mg po/IV q6h + folinic acid 25 mg po daily	1.95 6.21 (po)- 27.44 (iv) 11.40	6 weeks	821.52 -1713.18
c) pyrimethamine 200 mg x 1, then 50 mg (<60 kg body weight) or 75 mg (≥60 kg) po daily + folinic acid 25 mg po daily + azithromycin 900-1200 mg po daily	1.95 11.40 27.22	6 weeks	1703.94
d) pyrimethamine 200 mg x 1, then 50 mg (<60 kg body weight) or 75 mg (≥60 kg) po daily + folinic acid 25 mg po daily + atovaquone 1500 mg po BID	1.95 11.40 55.08	6 weeks	2874.06
e) atovaquone 1500 mg po BID and sulfadiazine 1-1.5 g po q 6 h	55.08 27.84	6 weeks	3284.64
f) atovaquone 1500 mg po BID	55.08	6 weeks	2313.36
g) TMP-SMX (5 mg/kg TMP) IV/po BID	0.98	6 weeks	29.30
2. <u>Suppression:</u>			
a) pyrimethamine 25-50 mg po daily + sulfadiazine 2000-4000 mg po daily (in 2-4 divided doses) + folinic acid 10-25 mg po daily	0.65- 1.30 9.28- 18.56 4.56 -11.40	Continue until CD4 >200 cells/μL for > 6 months + no signs and symptoms	434.70 -937.80/mo
b) pyrimethamine 25-50 mg po daily + clindamycin 600 mg q8h + folinic acid 10-25 mg po daily (should add additional agent to prevent PCP)	0.65- 1.30 4.66 4.56 -11.40		296.10 -520.80/mo
c) atovaquone 750 mg po q6-12h +/- [(pyrimethamine 25 mg po daily + folinic acid 10 mg po daily) or sulfadiazine 2000-4000 mg po daily in 2- 4 divided doses]	13.77 -27.54 0.65 4.56 9.28 -18.56		413.10 1383.00/mo
3. <u>Prophylaxis</u>			
a) TMP/SMX DS i daily	0.1221	Discontinue if CD4 > 200 cells/μL for > 3 months in response to ART	3.66/mo
b) TMP/SMX SS i daily	0.0482		1.45/mo
c) dapsone 50 mg daily + pyrimethamine 50 mg/week + folinic acid 25 mg/week	0.72 2.50/wk 32.70/wk		162.40/mo

REGIMEN	COST/ DAY (\$)	LENGTH OF THERAPY	TOTAL COST (\$)
d) atovaquone 1500 mg po daily	27.54		826.20/mo
e) atovaquone 1500 mg po daily + pyrimethamine 25 mg po daily + folinic acid 10 mg po daily	27.54 1.25 13.08		1256.10/mo

Tuberculosis:

NB: Please note that currently, the CDC recommends that persons with HIV-TB and CD4 cell counts <100/mm³ should not be treated with intermittent (i.e., once- or twice-weekly) regimens. These patients should receive daily therapy during the intensive phase, and daily or three doses a week during the continuation phase. In this group of patients, CDC recommends directly observed therapy for both daily and three-doses-a-week regimens. (MMWR 2008;58(RR4)).

Antituberculosis Drug Dosages (Adult)

<u>Drug</u>	<u>Daily Dose (max)</u>	<u>Twice Weekly Dose** (max) (not recommended if CD4<100)</u>	<u>Three times/week Dose (max)</u>
isoniazid	5 mg/kg (300 mg) po/im	15 mg/kg (900 mg) po/im	15 mg/kg (900 mg) po/im
ethambutol			
40-55 kg body weight	800 mg(14.5-20mg/kg)po	2000 mg (36.4-50 mg/kg)	1200 mg (21.8-30 mg/kg)
56-75 kg body weight	1200 mg (16-21mg/kg)	2800 mg (37.3-50 mg/kg)	2000 mg (26.7-35.7
> 75 kg body weight	po 1600 mg(17.8-21mg/kg)	4000 mg (44.4-52.6 mg/ kg)	mg/kg) 2400 mg (26.7-31.6 mg/kg)
pyrazinamide			
40-55 kg body weight	1000 mg(18.2- 25mg/kg)po	2000 mg(36.4-50mg/kg)	1500 mg (27.3-37.5 mg/kg)
56-75 kg body weight		3000 mg (40-53.6 mg/kg)	
> 75 kg body weight	1500 mg(20- 26.8mg/kg)po 2000 mg(22.2- 26.3mg/kg) po	4000 mg (44.4-52.6 mg /kg)	2500 mg (33.3-44.6 mg/kg) 3000 mg (33.3-44.6 mg/kg)
rifabutin plus :			
(w/o PIs or NNRTIs)	5 mg/kg (300 mg) po/iv	5 mg/kg (300 mg) po/iv	5 mg/kg (300 mg) po/iv
with PIs	150 mg po/iv	Not recommended	150 mg po/iv
with efavirenz	450-600 mg	450-600 mg	450-600 mg
rifampin (not recommended with PIs or maraviroc)	10 mg/kg (600 mg) po/iv	10 mg/kg (600 mg) po/iv	10 mg/kg (600 mg) po/iv
streptomycin	15 mg/kg (1 g) im/iv	25-30 mg/kg (1.5 g) im/iv	25-30 mg/kg (1.5 g) im/iv
pyridoxine	50 mg daily	100 mg	

1. Treatment (drug susceptible active TB): (*Caution: check for interactions with PIs/NNRTIs/maraviroc/raltegravir)

REGIMEN	COST/ DAY (\$)	LENGTH OF THERAPY	TOTAL COST (\$)
<u>Initial phase:</u> isoniazid + rifabutin or rifampin + pyrazinamide + ethambutol + pyridoxine		8 weeks	
<u>Continuation phase:</u> isoniazid + rifabutin or rifampin daily or 3x/w [or 2x/w (if CD4 > 100 cells/ μ L)] + pyridoxine		<i>Pulmonary TB</i> – 6 months (up to 9 months if cavitary lung lesions or culture + after 2 months of therapy) <i>Extra – pulmonary TB</i> 6-12 months (depends on site)	
2. Treatment for drug-resistant active TB: (*Caution: check for interactions with PIs/NNRTIs/maraviroc/raltegravir)			
<u>Resistant to isoniazid :</u> d/c isoniazid (and streptomycin, if used) rifabutin or rifampin + pyrazinamide + ethambutol		6 months	
rifabutin or rifampin + ethambutol (preferably with pyrazinamide for first 2 months)		12 months	
<u>Resistant to rifamycins:</u> isoniazid + pyrazinamide + ethambutol + pyridoxine + fluoroquinolone		8 weeks	
followed by: isoniazid + ethambutol + fluoroquinolone		10-16 months	
3. Prophylaxis:			
a) isoniazid 300 mg po daily + pyridoxine 50 mg po daily		9 months	
b) isoniazid 900 mg po 2x/wk + pyridoxine 50 mg po daily		9 months	
c) rifabutin (dose based on concomitant ART)		4 months	
d) rifampin 600 mg po daily		4 months	

REGIMEN	COST/ DAY (\$)	LENGTH OF THERAPY	TOTAL COST (\$)
D) CNS			
<i>AIDS dementia:</i>			
A penetration-effectiveness score of at least 2 is associated with lower CSF viral loads, however it is currently unclear if this corresponds with improved patient outcome. Letendre et al. Arch Neurol 2008;65:65-70.			
Penetration Effectiveness Score	1	0.5	0
NRTIs	abacavir zidovudine delavirdine nevirapine	FTC 3TC stavudine	didanosine tenofovir zalcitabine
NNRTIs	indinavir	efavirenz	
PIs	indinavir-r lopinavir-r	amprenavir-r atazanavir darunavir-r	amprenavir nelfinavir saquinavir saquinavir-r tipranavir-r
Fusion Inhibitors			enfuvirtide
E) DERMATOLOGIC			
<i>Skin Rash:</i>			
a) diphenhydramine 25-50 mg po TID-QID	0.90-2.39	as required	26.91- 71.76/mo
b) hydroxyzine 25 mg po TID-QID	0.42-0.57		12.825 -17.10/mo
c) loratadine 10 mg po daily	0.52		15.51/mo
d) cetirizine 5-10 mg po daily	0.37-0.75		11.21- 22.41/mo
e) fexofenadine 60 mg po BID	1.22		36.60/mo
F) ENDOCRINE/METABOLIC			
<i>Appetite/Weight gain:</i>			
a) megace 80 mg po TID (up to 800 mg/day)	6.05- 20.15	as needed (to desired weight)	181.32 -604.38/mo
b) nabilone 1-2 mg po BID	13.34 -26.68		400.22 -800.45/mo
c) dronabinol (Marionol) 2.5-10 mg po BID	3.82 -15.28		114.60 -458.40/mo
d) nandrolone phenpropionate (Durabolin) 100 mg IM q2wks	92.75/ dose		185.50mo
e) oxandrolone 5-10 mg po BID	33.04 -41.72		991.20 -1251.60/mo
f) recombinant human growth hormone 0.1 mg/kg/day SC (max. 6 mg daily)	342.82	12 weeks	28796.88

REGIMEN	COST/ DAY (\$)	LENGTH OF THERAPY	TOTAL COST (\$)
Hyperlipidemia:			
a) bezafibrate 400 mg daily	1.77	as needed to control hyperlipidemia	53.21/mo
b) fenofibrate micronized 200 mg daily	1.09		32.67/mo
c) gemfibrozil 600 mg BID	1.51		45.12/mo
d) niacin 1.5-6 g/day (BID – QID) (refractory cases only)	0.20-0.80		6.00 -24.00/mo
e) pravastatin 20-40 mg/ day	1.12-1.35		33.74 -40.62/mo
f) atorvastatin 10-20 mg/day	1.79		53.67
	-2.24		-67.08/mo
g) fluvastatin 20-40 mg/day	0.91		27.45
	-1.28		-38.54/mo
h) rosuvastatin 10-40 mg/day	1.46		43.86
	-2.14		-64.18/mo
i) ezetimibe 10 mg/day	1.73		51.74/mo
j) salmon Oil 1000 mg (180 EPA:120 DHA) 2 capsules TID with meals	0.62-1.19		~20-40/mo (price may vary depending on product used)
Osteoporosis:			
a) alendronate 10 mg daily (or 70 mg once weekly)	1.11	Indefinite	33.18/mo
b) etidronate 400 mg po daily x 14 days, then calcium 1000-1500 mg daily for 10 weeks		12 week cycle	19.99/12 week cycle
c) risedronate 5 mg/day (or 35 mg once weekly)	2.00	Indefinite	59.99/mo
d) vitamin D 400-800 IU daily			1.16-2.32/mo
e) calcium 1000-1500 mg/day			3.90-6.00/mo
Testosterone Deficiency:			
a) testosterone cypionate (Depo-Testosterone) 200-400 mg IM q3-4 weeks	5.68 -11.36/dose		4.64-11.36/mo
b) testosterone enanthate (Delatestryl) 200-400 mg IM q4wks	5.25 -10.50/dose	to therapeutic effect	5.25 -10.50/mo
c) transdermal testosterone patch (Androderm) 2.5 mg patch; 2 patches every 24 hours	3.87		116.00/mo
d) testosterone topical 1% gel (Androgel) apply 5-10 g qam (2.5 g and 5 g packets)	3.76-7.52		112.80 -225.60/mo

REGIMEN	COST/ DAY (\$)	LENGTH OF THERAPY	TOTAL COST (\$)
G) GASTROINTESTINAL			
<i>Diarrhea - Protease Inhibitor Associated:</i>			
a) oat bran 1500 mg BID		as required to suppress symptoms	
b) psyllium 1 tbsp or 2 bars daily	0.33		9.79/mo
c) calcium carbonate 500 mg po BID	0.13		3.90/mo
d) pancrelipase (Cotazym ECS 20) for protease-associated diarrhea 1 capsule TID-QID (with each meal or snack)	2.69 -3.59		80.78 -107.70/mo
<i>Diarrhea - general:</i>			
a) loperamide 4 mg po x 1, then 2 mg post loose BM, max. 16 mg/day		as required to suppress symptoms	59.19/mo
b) diphenoxylate 5 mg po TID-QID (max 20 mg/d)	3.75		112.44/mo
c) codeine 15-60 mg po q4-6h	0.28 -1.00		8.27 -29.92/mo
<i>Nausea (opioid-induced):</i>			
1. <u>Drugs that act on CTZ:</u>			
a) haloperidol 0.5-5 mg po daily	0.04 -0.15		1.16 -4.46/mo
b) prochlorperazine 5-10 mg po q4-6h	0.44 -0.81		13.30 -24.39/mo
c) chlorpromazine 10-25 mg po q4-6h	0.67 -1.01		20.10 -30.15/mo
2. <u>To control stomach motility:</u>			
a) metoclopramide 10 mg po TID-QID	0.18 -0.23		5.25 -7.00/mo
3. <u>To control vertigo:</u>			
a) dimenhydrinate 50-100 mg po q4-6h (max 300 mg)	0.38		11.24/mo
b) scopolamine transderm patches q3d	15.99/wk		63.96/mo
4. <u>For severe/intractable nausea:</u>			
a) dexamethasone 16-24 mg daily	6.76 -10.14		202.80 -304.20/mo
b) granisetron 1 mg po BID	38.70		1161.00/mo
c) dolasetron 50-200 mg po QD	15.35 -61.40		460.51 -1842.02/mo
d) ondansetron 8 mg po q8h	34.55		1036.51/mo

REGIMEN	COST/ DAY (\$)	LENGTH OF THERAPY	TOTAL COST (\$)
H) PERIPHERAL NEUROPATHY			
a) amitriptyline 25-75 mg po qhs (target dose 100 mg daily)	0.10 -0.37		2.99 -11.10/mo
b) nortriptyline 10 mg po qhs (target dose 100mg daily)	0.13 -1.02	prn to control symptoms	3.76 -30.57/mo
c) desipramine 25 mg po qhs (target dose 100 mg daily)	0.26 -0.82		7.63 -24.66/mo
d) lamotrigine 25 mg bid (max 300 mg/day)	0.42 -2.51		12.60 -75.19/mo
e) carbamazepine 100-200 mg po TID/QID	0.23 -0.76		6.93 -22.65/mo
f) phenytoin 200-400 mg daily	0.16 -0.31		4.64 -9.28/mo
g) gabapentin 300-1200 mg po TID (max 3600 mg)	1.84 -6.58		55.17 -197.24/mo