Treatment of Opportunistic Infections

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Department of Health and Human Services Guidelines for the Treatment of Opportunistic Infections have been approved by the guidelines committee; they are in press at the *MMWR* and will available at http://AIDSInfo.nih.gov. These guidelines are a supplement to the existing OI prevention guidelines (2001 USPHS/IDSA Guidelines for the Prevention of Opportunistic Infections in Persons Infected with HIV - November 28, 2001). A summary of the new guidelines is contained in the table below.

Infection/Organism	Treatment	Comment
Bartonella	**Preferred:** • Erythromycin 500 mg qid PO or IV, ***or*** • Doxycycline 100 mg bid PO or IV. **Alternative:** • Azithromycin 600 mg qd PO ***or*** • Clarithromycin 500 mg bid PO	**Duration:** ≥3 months; lifelong if relapse
***Candida* – Thrush**	**Preferred:** • Clotrimazole troches 10 mg PO 5x/d, ***or*** • Nystatin suspension 4-6 mL qid or pastilles 4-5x/d, ***or*** • Fluconazole 100 mg qd PO, ***or*** • Itraconazole oral suspension 200 mg qd	**Fluconazole refractory:** • Itraconazole oral solution 200 mg qd PO, ***or*** • Amphotericin B 0.3 mg/kg/d IV **Relapsing disease:** Chronic fluconazole only if recurrences are frequent or disabling
***Candida* – Esophagitis**	**Preferred:** • Fluconazole 100 mg qd (up to 400 mg) qd PO or IV x 14-21d, ***or*** • Itraconazole oral solution 200 mg qd PO	**Duration:** Continue azole with disabling or recurrent infection **Fluconazole refractory:** • Caspofungin 70 mg x 1, then 50 mg qd IV x 7 d, ***or*** • Amphotericin B 0.3-0.7 mg/kg qd IV
***Candida* – Vaginitis**	**Preferred:** • Topical azole x 7d, ***or*** • Topical naftifine x 7-14d, ***or*** • Topical boric acid x 14d, ***or*** • Itraconazole 200 mg bid x 1d or 3d, ***or*** • Fluconazole 150 mg x 1 PO	
Cryptosporidiosis	HAART	
Cryptococcosis – Meningitis	**Preferred:** Amphotericin B 0.7 mg/kg qd IV plus flucytosine 25 mg/kg qid PO x 2 weeks	**High opening pressure:** Lumbar drainage **Renal failure or amphotericin B intolerance:** Lipid formulation amphotericin 4 mg/kg IV qd + flucytosine 25 mg/kg qid PO x 2 weeks **Consolidation therapy:** Fluconazole 400 mg PO qd x 8 weeks or until CSF cultures sterile **Alternative-consolidation:** Itraconazole 200 mg bid PO **Maintenance therapy:** Fluconazole 200 mg qd PO **Alternative-maintenance:** • Amphotericin B 1 mg/kg/wk IV (if multiple relapses on azole or intolerance to azoles) • Itraconazole 200 mg qd PO (if intolerant or failure with Fluconazole)

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Infection/Organism	Treatment	Comment
Cytomegalovirus - Retinitis	**Preferred:** • Intraocular ganciclovir implant + valganciclovir 900 mg qd PO (preferred for immediate vision threatening lesion), ***or*** • Ganciclovir 5 mg/kg bid IV x 14-21 d, then 5 mg/kg/d IV, ***or*** • Valganciclovir 900 mg bid PO x 14-21 d, then 900 mg qd PO, ***or*** • Foscarnet 60 mg/kg q8h IV or 90 mg/kg q 12h IV x 14-21 d; then 90-120 mg/kg IV qd, ***or*** • Cidofovir 5 mg/kg q 7d IV x 2 then 5 mg/kg q 14d IV.	**Duration:** Implant – change q 6-8 mo. **Systemic:** Continue until inactive disease + CD4 >100 cells/mm^3 x 3-6 mo. **Immune recovery uveitis:** Periocular steroids or short course oral prednisone.
Cytomegalovirus – Colitis, Esophagitis, Pneumonia	**Preferred:** Valganciclovir (oral), ganciclovir (IV), foscarnet (IV) above doses for CMV Retinitis x 14-21d	**Maintenance:** Consider after relapse
Cytomegalovirus – Neurologic Disease	**Preferred:** Ganciclovir + Foscarnet above doses for CMV Retinitis	
Hepatitis B Virus	**Preferred** (No data for recommendation in HBV-HIV co-infection): **HAART plus:** Lamivudine 150 mg bid PO x ≥1 year or 6 mo. post HBeAg seroconversion ± either : • Tenofovir, ***or*** • Adefovir, ***or*** • Interferon alfa 2a (or Peginterferon alfa 2b) 5 mil units SQ qd or 10 mil units 3x (wk x 16-24 wks (HBeAg pos) or ≥12 mo (HBeAg neg).	**No antiretroviral therapy:** Adefovir 10 mg qd PO **Lamivudine-experienced >1 year + HBeAg pos:** • Adefovir 10 mg qd PO added to lamivudine or to replace lamivudine, ***or*** • Tenofovir 300 mg qd PO + ART ± lamivudine/emtricitabine
Hepatitis C Virus	**Preferred:** Peginterferon alfa 2b 1.5 mcg/kg (or peginterferon alfa 2a) 180 mcg/kg SQ q wk + ribavirin 400 mg bid PO x 48 weeks	**Contraindication to ribavirin:** Peginterferon alone
Herpes Simplex Virus – Moderate or Severe Mucocutaneous	**Preferred:** Acyclovir 5 mg/kg q8h IV, then: • Famciclovir 500 mg bid PO, ***or*** • Acyclovir 400 mg 4-5x/d PO when lesions begin to regress and continue until lesions healed.	**Acyclovir-resistant HSV:** Foscarnet 120-200 mg/kg qd IV
Herpes Simplex – Keratitis	**Preferred:** Trifluridine 1% ophthalmic solution q2h up to 9 gtts/d ≤ 21d	

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Herpes Simplex – Encephalitis	**Preferred:** Acyclovir 10 mg/kg q8h IV x 14-21d	
Microsporidia	**Preferred:** HAART	**Enterocytozoon bieneusi:** Fumagillin 60 mg qd PO **Microsporidia other than E. bieneusi:** Albendazole 400 mg bid PO until CD4 >200 cells/mm^3 **Disseminated disease:** Itraconazole 400 mg qd PO + Albendazole with Trachipleistophora or Brachiola
Mycobacterium avium	**Preferred:** Clarithromycin 500 mg bid PO + ethambutol 15 mg/kg qd PO ± Rifabutin 300 mg qd PO for severe disease. **Alternative to clarithromycin:** Azithromycin 500-600 mg qd PO **Third/fourth drug:** Ciprofloxacin 500-750 mg bid PO or levofloxacin 500 mg qd PO or amikacin 10-15 mg/kg qd IV	**Duration:** Lifelong unless: • 12 mo treatment, ***and*** • Asymptomatic, ***and*** • CD4 >100 cells/mm^3 x 3-6 mo.
Mycobacterium tuberculosis	**Preferred:** ***Initial Phase – 8 weeks:*** • INH 300 mg qd PO + pyridoxine 50 mg qd PO, ***and*** • Rifampin 600 mg/qd (or rifabutin), ***and*** • Pyrazinamide < 55 kg: 1 gm/d, 56-75 kg: 1.5 gm/d > 76 kg 2 gm/d, ***and*** • Ethambutol < 55 kg: 800 mg; 56-75 kg: 1.2 gm; > 76 kg: 1.6 g qd ***Continuation phase – 18 weeks:*** • INH 300 mg qd PO or 900 mg 2-3x/week, ***and*** • Rifampin 600 mg qd PO or rifabutin	NOTE: DOT is preferred **Continuation phase:** Rifampin ≥3x/week if CD4 <100 **INH resistance:** • Rif + PZA + EMB x 6 mo • Rif + EMB x 12 mo + PZA x ≥2 mo. **Rif resistance:** INH + PZA + EMB + FQX ≥ 12 mo. **Liver disease with AST >3x ULN pre Rx:** • Standard Rx with careful monitoring, ***or*** • Rif + EMP + PZA x 6 mo, ***or*** • INH + Rif + EMB x 2 mo, then INH + Rif x 7 mo. **Severe liver disease:** Rif + EMB x 12 mo ± FQ 1st 2 mo.
***Pneumocystis jiroveci* (formerly *carinii*)**	**Preferred:** • TMP-SMX 15-20 mg/kg q 6-8h PO or IV, ***or*** • TMP-SMX 2 DS tid x 21 d (14 days with rapid response + toxicity) **Alternative-Severe disease:** Pentamidine 3-4 mg/kg/d IV **Alternative-moderate or mild disease:** • Dapsone 100 mg qd + TMP 5 mg/kg tid, ***or*** • Primaquine 15-30 mg qd + clindamycin 600-900 mg IV q 6-8h (or clindamycin 300-450 mg PO q 6-8hr), ***or*** • Atovaquone 750 mg bid PO	**Hypoxia** ($Pa0_2$ <70 mm Hg or A-a 0_2 gradient >35 mm Hg) • Prednisone: 40 mg bid days 1-5, 40 mg qd days 6-10, then 20 mg qd days 11-21, ***or*** • IV methylprednisolone as 75% prednisone dose.

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Salmonella	**Preferred:** Ciprofloxacin 500-750 mg bid po (or gatifloxacin, moxifloxacin) **Alternative:** • TMP-SMX PO or IV, ***or*** • Ceftriaxone, ***or*** • Cefotaxime	NOTE: **Mild gastroenteritis only:** Treat 7-14d **CD4 <200 cells/mm^3 ± bacteremia:** Treat ≥4-6 weeks **Relapse:** Treat several months or until immune reconstitution
Toxoplasmosis	**Preferred-acute:** Pyrimethamine 200 mg x 1 PO, then 50 mg (<60 kg) or 75 mg (>60 kg) qd PO + sulfadiazine 1 g (<60 kg) or 1.5 g (>60 kg) qid PO + leucovorin 10-20 mg qd PO x ≥6 weeks. **Alternative-acute:** • Pyrimethamine + leucovorin (as above) +: o Clindamycin 600 g q6h PO or IV, ***or*** o Atovaquone 1500 mg bid PO, ***or*** o Azithromycin 900-1200 qd PO • TMP-SMX 5 mg/kg bid IV or PO, ***or*** • Atovaquone 1.5 g bid PO ± sulfadiazine 1-1.5 g q6h PO, ***or*** • Miscellaneous: o Pyrimethamine + leucovorin + clarithromycin 500 mg bid PO o 5 FU + Clindamycin; o Dapsone + Pyrimethamine + leukovorin o Minocycline/doxycycline + either pyrimethamine or sulfadiazine or clindamycin **Preferred-maintenance:** • Continue half dose indicated above for pyrimethamine + sulfadiazine or clindamycin or TMP-SMX, ***or*** • Pyrimethamine 50 mg qd PO + leucovorin 15 mg qd PO + sulfadiazine 1 g q12h] 3x/week.	