Table 1: Primary Prophylaxis of Opportunistic Infections in HIV-Exposed and HIV-Infected Children—Summary of Recommendations (Last updated December 9, 2019; last reviewed December 9, 2019) (page 1 of 9)

Indication:	First Choice	Alternative	Comments/Special Issues	Last Reviewed
Bacterial Infections *S. pneumoniae* and other invasive bacteria	• Pneumococcal, meningococcal, and Hib vaccines • Intravenous immune globulin (400 mg/kg body weight every 2 to 4 weeks)	• TMP-SMX 75/375 mg/m^2 body surface area per dose by mouth twice daily	See Figures 1 and 2 for detailed vaccines recommendations. Vaccines Routinely Recommended for Primary Prophylaxis. Additional Primary Prophylaxis Indicated For: • Hypogammaglobulinemia (that is, IgG < 400mg/dL) Criteria for discontinuing primary prophylaxis: • Resolution of hypogammaglobulinemia Criteria for restarting primary prophylaxis: • Relapse of hypogammaglobulinemia	November 6, 2013
Candidiasis	Not routinely recommended	N/A	N/A	January 31, 2019
Coccidioidomycosis	N/A	N/A	Primary prophylaxis not routinely indicated in children.	November 6, 2013
Cryptococcosis	Not recommended	Not recommended	N/A	November 6, 2013
Cryptosporidiosis	ARV therapy to avoid advanced immune deficiency	N/A	N/A	August 29, 2019
Cytomegalovirus (CMV)	• For older children who can receive adult dose (based on their BSA), valganciclovir tablets 900 mg orally once daily with food • For children aged 4 months–16 years, valganciclovir oral solution 50 mg/mL at dose in milligrams = 7 x BSA x CrCl (up to maximum CrCl of 150 mL/min/1.73 m^2) orally once daily with food (maximum dose 900 mg/day)	N/A	Primary Prophylaxis Can Be Considered for: • CMV antibody positivity and severe immunosuppression (i.e., CD4 cell count <50 cells/mm^3 in children ≥6 years; CD4 percentage <5% in children <6 years) Criteria for Discontinuing Primary Prophylaxis: • CD4 cell count >100 cells/mm^3 for children ≥6 years; CD4 percentage >10% in children <6 years Criteria for Considering Restarting Primary Prophylaxis: • CD4 cell count <50 cells/mm^3 in children ≥6 years; CD4 percentage <5% in children <6 years	November 6, 2013
Giardiasis	ART to avoid advanced immunodeficiency	N/A	N/A	August 22, 2019
Hepatitis B Virus (HBV)	• Hepatitis B vaccine • Combination of hepatitis B immunoglobulin and hepatitis B vaccine for infants born to mothers with hepatitis B infection	Hepatitis B immunoglobulin following exposure	See Figures 1 and 2 for detailed vaccine recommendations. Primary Prophylaxis Indicated for: • All individuals who are not HBV infected Criteria for Discontinuing Primary Prophylaxis: • N/A Criteria for Restarting Primary Prophylaxis • N/A	November 6, 2013
Hepatitis C Virus (HCV)	None	N/A	N/A	November 6, 2013

Table 1: Primary Prophylaxis of Opportunistic Infections in HIV-Exposed and HIV-Infected Children—Summary of Recommendations (page 2 of 9)

Indication	First Choice	Alternative	Comments/Special Issues	Last Reviewed
Herpes Simplex Virus Infections (HSV)	None	None	Primary prophylaxis is not indicated.	November 6, 2013
Histoplasmosis	N/A	N/A	Primary Prophylaxis indicated for selected HIV-infected adults but not children. Criteria for Discontinuing Primary Prophylaxis: • N/A Criteria for Restarting Primary Prophylaxis: • N/A	November 6, 2013
Human Papillomavirus (HPV)	HPV vaccine	N/A	See Figure 2 for detailed vaccine recommendations.	November 6, 2013
Influenza A and B	Oseltamivir *Aged <3 Months:* • Not recommended[a] *Aged 3 Months to <1 Year:* • 3 mg/kg body weight/ dose once daily[a] *Aged ≥1 Year to 12 Years; Weight-Band Dosing:*[a] • Weighing ≤15 kg: 30 mg once daily • Weighing >15 kg to 23 kg: 45 mg once daily • Weighing >23 kg to 40 kg: 60 mg once daily • Weighing >40 kg: 75 mg once daily *Aged ≥13 Years:* • 75 mg once daily Zanamivir (Aged ≥5 Years): • 10 mg (2 inhalations) once daily[b]	None	Pre-Exposure Chemoprophylaxis *Indications:* • After careful consideration of risks and benefits, pre-exposure antiviral chemoprophylaxis may be considered for children with HIV with severe immunosuppression while influenza virus is circulating in the community. *Duration:* • When employed, pre-exposure antiviral chemoprophylaxis should continue for the duration of influenza virus circulation in the community. Post-Exposure Chemoprophylaxis *Indications Recommended For:* • Children with HIV with severe immunosuppression regardless of influenza vaccination status. • Children with HIV with moderate to no immunosuppression if • Influenza vaccination is contraindicated or unavailable; *or* • Low influenza vaccine effectiveness is documented in the current influenza season; *and* • Antiviral chemoprophylaxis can be started within 48 hours of exposure to an ill person with confirmed or suspected influenza. *Duration:* **Note:** Duration of chemoprophylaxis depends on the type of exposure, whether influenza vaccination was provided after the exposure, and whether influenza vaccine is anticipated to be effective based on the child's degree of immunosuppression and the degree of match with circulating influenza viruses. • If influenza vaccination is provided after contact, chemoprophylaxis duration should be 2 weeks after vaccination.	July 17, 2018

Table 1: Primary Prophylaxis of Opportunistic Infections in HIV-Exposed and HIV-Infected Children—Summary of Recommendations (page 3 of 9)

Indication	First Choice	Alternative	Comments/Special Issues	Last Reviewed
Influenza A and B, continued			• If exposure is to a household contact, chemoprophylaxis duration should be 7 days. • If chemoprophylaxis is provided in setting of an institutional outbreak, the duration is either 14 days or 7 days after onset of symptoms in the last person infected, whichever is longer.[c] <u>Oseltamivir Dosing Adjustments</u> *Premature Infants:* • Current weight-based dosing recommendations for oseltamivir are not appropriate for premature infants (i.e., gestational age at delivery <38 weeks).[d] *Renal Insufficiency:* • A reduction in dose of oseltamivir is recommended for patients with CrCl <30 mL/min. For patients with CrCl 10–30 mL/min, a reduction in chemoprophylaxis dosing frequency to every other day is recommended. PK data are limited for dosing recommendations for patients with severe renal insufficiency on dialysis. [a] Oseltamivir is FDA-approved for prophylaxis of influenza in children aged ≥1 year. It is not approved for prophylaxis in children aged <1 year. However, CDC recommends that health care providers who treat children aged ≥3 months to <1 year administer a chemoprophylaxis dose of oseltamivir 3 mg/kg body weight/dose once daily. Chemoprophylaxis for infants aged <3 months **<u>is not recommended</u>** unless the exposure situation is judged to be critical. [b] Zanamivir **<u>is not recommended</u>** for chemoprophylaxis in children aged <5 years or for children with underlying respiratory disease. [c] See Fiore 2011 and Influenza Antiviral Medications: Summary for Clinicians for further details. [d] See Acosta et al. *J Infect Dis* 2010; 202:563-566 for dosing recommendations in premature infants.	July 17, 2018
Isosporiasis (Cystoisosporiasis)	There are no U.S. recommendations for primary prophylaxis of isosporiasis.	N/A	Initiation of ART to avoid severe immunodeficiency may reduce incidence; TMP-SMX prophylaxis may reduce incidence.	February 8, 2019

Table 1: Primary Prophylaxis of Opportunistic Infections in HIV-Exposed and HIV-Infected Children—Summary of Recommendations (page 4 of 9)

Indication	First Choice	Alternative	Comments/Special Issues	Last Reviewed
Malaria	For Travel To Chloroquine-Sensitive Areas: • Chloroquine base 5 mg/kg body weight base by mouth, up to 300 mg once weekly (equivalent to 7.5 mg/kg body weight chloroquine phosphate). Start 1–2 weeks before leaving, take weekly while away, and then take once weekly for 4 weeks after returning home • Atovaquone/proguanil once daily started 1–2 days before travel, for duration of stay, and then for 1 week after returning home • 11–20 kg; 1 pediatric tablet (62.5 mg/25 mg) • 21–30 kg, 2 pediatric tablets (125 mg/50 mg) • 31–40 kg; 3 pediatric tablets (187.5 mg/75 mg) • >40 kg; 1 adult tablet (250 mg/100 mg) • Doxycycline 2.2 mg/kg body weight (maximum 100 mg) by mouth once daily for children aged ≥8 years. Must be taken 1-2 days before travel, daily while away, and then up to 4 weeks after returning • Mefloquine 5 mg/kg body weight orally given once weekly (max 250 mg) For Areas with Mainly P. Vivax: • Primaquine phosphate 0.6 mg/kg body weight base once daily by mouth, up to a maximum of 30 mg base/day. Starting 1 day before leaving, taken daily, and for 3–7 days after return For Travel to Chloroquine-Resistant Areas: • Atovaquone/proguanil once daily started 1–2 days before travel, for duration of stay, and then for 1 week after returning home • 11–20 kg; 1 pediatric tablet (62.5 mg/25 mg) • 21–30 kg; 2 pediatric tablets (125 mg/50 mg) • 31–40 kg; 3 pediatric tablets (187.5 mg/75 mg) • >40 kg; 1 adult tablet (250 mg/100 mg) • Doxycycline 2.2 mg/kg body weight (maximum 100 mg) by mouth once daily for children aged ≥8 years. Must be taken 1–2 days before travel, daily while away, and then up to 4 weeks after returning • Mefloquine 5 mg/kg body weight orally given once weekly (maximum 250 mg)	N/A	Recommendations are the same for HIV-infected and HIV-uninfected children. Please refer to the following website for the most recent recommendations based on region and drug susceptibility: http://www.cdc.gov/malaria/ For travel to chloroquine-sensitive areas. Equally recommended options include chloroquine, atovaquone/proguanil, doxycycline (for children aged ≥8 years), and mefloquine; primaquine is recommended for areas with mainly P. vivax. G6PD screening must be performed prior to primaquine use. Chloroquine phosphate is the only formulation of chloroquine available in the United States; 10 mg of chloroquine phosphate = 6 mg of chloroquine base. For travel to chloroquine-resistant areas, preferred drugs are atovaquone/proguanil, doxycycline (for children aged ≥8 years) or mefloquine.	November 6, 2013
Microsporidiosis	N/A	N/A	Not recommended	December 15, 2016

Table 1: Primary Prophylaxis of Opportunistic Infections in HIV-Exposed and HIV-Infected Children—Summary of Recommendations (page 5 of 9)

Indication	First Choice	Alternative	Comments/Special Issues	Last Reviewed
***Mycobacterium avium* Complex (MAC)**	• Clarithromycin 7.5 mg/kg body weight (maximum 500 mg) orally twice daily, *or* • Azithromycin 20 mg/kg body weight (maximum 1200 mg) orally once weekly	• Azithromycin 5 mg/kg body weight (maximum 250 mg) orally once daily • Children aged >5 years: rifabutin 300 mg orally once daily with food	Primary Prophylaxis Indicated for Children: • Age <1 year: CD4 count <750 cells/mm^3; • Age 1 to <2 years: CD4 count <500 cells/mm^3; • Age 2 to <6 years: CD4 count <75 cells/mm^3; • Age ≥6years: CD4 count <50 cells/mm^3 Criteria for Discontinuing Primary Prophylaxis: • **Do not discontinue** in children age <2 years. • After ≥6 months of ART, *and*: • Age 2 to <6 years: CD4 count >200 cells/mm^3 for >3 consecutive months • Age ≥6 years: CD4 count >100 cells/mm^3 for >3 consecutive months Criteria for Restarting Primary Prophylaxis: • Age 2 to <6 years: CD4 count <200 cells/mm^3 • Age ≥6 years: CD4 count <100 cells/mm^3	January 8, 2019

Table 1: Primary Prophylaxis of Opportunistic Infections in HIV-Exposed and HIV-Infected Children—Summary of Recommendations (page 6 of 9)

Indication	First Choice	Alternative	Comments/Special Issues	Last Reviewed
Mycobacterium Tuberculosis (post-exposure)	Source Case Drug Susceptible: • Isoniazid 10–15 mg/kg body weight (maximum 300 mg/day) by mouth daily for 9 months Source Case Drug Resistant: • Consult expert and local public health authorities.	• If adherence with daily isoniazid cannot be ensured, consider isoniazid 20–30 mg/kg body weight (maximum 900 mg/day) by mouth 2 times a week by DOT for 9 months • Isoniazid 10–15 mg/kg body weight (maximum 300 mg/day) and rifampin 10–20 mg/kg/body weight (maximum 600 mg/day) by mouth daily for 3–4 months • Rifampin 10–20 mg/kg body weight (maximum 600 mg/day) by mouth daily for 4–6 months	Drug-drug interactions with cART should be considered for all rifamycin containing alternatives. Indication: • Positive TST (TST ≥5 mm) or IGRA without previous TB treatment • Close contact with any infectious TB case (repeated exposures warrant repeated post-exposure prophylaxis) • TB disease must be excluded before starting treatment. • No indication for pre-exposure and post-treatment prophylaxis. Criteria for Discontinuing Prophylaxis: • Only with documented severe adverse event, which is exceedingly rare. Adjunctive Treatment: • Pyridoxine 1–2 mg/kg body weight once daily (maximum 25–50 mg/day) with isoniazid; pyridoxine supplementation is recommended for exclusively breastfed infants and for children and adolescents on meat- and milk-deficient diets; children with nutritional deficiencies, including all symptomatic HIV-infected children; and pregnant adolescents and women.	November 6, 2013

Table 1: Primary Prophylaxis of Opportunistic Infections in HIV-Exposed and HIV-Infected Children—Summary of Recommendations (page 7 of 9)

Indication	First Choice	Alternative	Comments/Special Issues	Last Reviewed
***Pneumocystis jirovecii* Pneumonia**	• TMP-SMX (Cotrimoxazole): TMP 2.5–5 mg/kg body weight/dose with SMX 12.5–25 mg/kg body weight/dose twice per day. Dosing based on TMP component. • The total daily dose should not exceed 320 mg TMP and 1600 mg SMX. Several dosing schemes have been used successfully— • Given 3 days per week on consecutive days or on alternate days • Given 2 days per week on consecutive days or on alternate days • Given every day (total daily dose of TMP 5–10 mg/kg body weight given as a single dose each day)	Dapsone Children aged ≥1 months: • 2 mg/kg body weight (maximum 100 mg) by mouth once daily or 4 mg/kg body weight (maximum 200 mg) by mouth once weekly Atovaquone *Children Aged 1–3 Months and >24 Months–12 Years:* • 30-40 mg/kg body weight/dose by mouth once daily with food *Children Aged 4–24 Months:* • 45 mg/kg body weight/dose by mouth once daily with food *Children Aged ≥13 Years:* • 1500 mg (10 cc oral yellow suspension) per dose by mouth once daily Aerosolized Pentamidine *Children Aged ≥5 Years:* • 300 mg every month via Respirgard II™ nebulizer (manufactured by Marquest; Englewood, Colorado)	Primary Prophylaxis Indicated For: • All HIV-infected or HIV-indeterminate infants from aged 4–6 weeks to 12 months. regardless of CD4 cell count/ percentage • HIV-infected children aged 1 to <6 years with CD4 count <500 cells/ mm^3 or CD4 percentage <15%; HIV-infected children aged 6–12 years with CD4 count <200 cells/ mm^3 or CD4 percentage <15% Criteria for Discontinuing Primary Prophylaxis: **Note:** Do not discontinue in HIV-infected children aged <1 year *After ≥6 Months of cART:* • Aged 1 to <6 years; CD4 percentage ≥15% or CD4 count is ≥500 cells/mm^3 for >3 consecutive months, or • Aged ≥6 years, CD4 percentage ≥15% or CD4 count is ≥200 cells/ mm^3 for >3 consecutive months Criteria for Restarting Primary Prophylaxis: • Aged 1 to < 6 years with CD4 percentage <15 or CD4 count <500 cells/mm^3 • Aged ≥6 years with CD4 percentage <15% or CD4 count <200 cells/mm^3	November 6, 2013
Syphilis	N/A	N/A	Primary Prophylaxis Indicated for: • N/A Criteria for Discontinuing Primary Prophylaxis: • N/A Criteria for Restarting Primary Prophylaxis: • N/A	November 6, 2013

Table 1: Primary Prophylaxis of Opportunistic Infections in HIV-Exposed and HIV-Infected Children—Summary of Recommendations (page 8 of 9)

Indication	First Choice	Alternative	Comments/Special Issues	Last Reviewed
Toxoplasmosis	TMP-SMX 150/750 mg/m^2 body surface area once daily by mouth	For Children Aged ≥1 Month: • Dapsone 2 mg/kg body weight or 15 mg/m^2 body surface area (maximum 25 mg) by mouth once daily, **plus** • Pyrimethamine 1 mg/kg body weight (maximum 25 mg) by mouth once daily, **plus** • Leucovorin 5 mg by mouth every 3 days For Children Aged 1–3 Months and those >24 Months: • Atovaquone 30 mg/kg body weight by mouth once daily Children Aged 4–24 Months: • Atovaquone 45 mg/kg body weight by mouth once daily, with or without pyrimethamine 1 mg/kg body weight or 15 mg/m^2 body surface area (maximum 25 mg) by mouth once daily, **plus** • Leucovorin 5 mg by mouth every 3 days Acceptable Alternative Dosage Schedules for TMP-SMX: • TMP-SMX 150/750 mg/m^2 body surface area per dose once daily by mouth 3 times weekly on 3 consecutive days per week • TMP-SMX 75/375 mg/m^2 body surface area per dose twice daily by mouth every day • TMP-SMX 75/375 mg/m^2 body surface area per dose twice daily by mouth 3 times weekly on alternate days	Primary Prophylaxis Indicated For: *IgG Antibody to Toxoplasma and Severe Immunosuppression:* • HIV-infected children aged <6 years with CD4 percentage <15%; HIV-infected children aged ≥6 years with CD4 count <100 cells/mm^3 Criteria for Discontinuing Primary Prophylaxis: **Note:** Do not discontinue in children aged <1 year • After ≥6 months of cART, and • Aged 1 to <6 years; CD4 percentage is ≥15% for >3 consecutive months • Aged ≥6 years; CD4 count >200 cells/mm^3 for >3 consecutive months Criteria for Restarting Primary Prophylaxis: • Aged 1 to <6 years with CD4 percentage <15% • Aged ≥6 years with CD4 count <100 to 200 cells/mm^3	November 6, 2013

Table 1: Primary Prophylaxis of Opportunistic Infections in HIV-Exposed and HIV-Infected Children—Summary of Recommendations (page 9 of 9)

Indication	First Choice	Alternative	Comments/Special Issues	Last Reviewed
Varicella-Zoster Virus (VZV) Pre-Exposure Prophylaxis	Varicella vaccine	N/A	See Figure 1 for detailed vaccine recommendations.	December 9, 2019
Varicella-Zoster Virus (VZV) Primary (Post-Exposure) Prophylaxis	VariZIG 125 IU/10 kg body weight (maximum 625 IU) IM, administered ideally within 96 hours (potentially beneficial up to 10 days) after exposure	If VariZIG is not available, IVIG 400 mg/kg body weight, administered once should be considered. IVIG should ideally be administered within 96 hours of exposure. When passive immunization is not possible, some experts recommend prophylaxis with acyclovir 20 mg/kg body weight/dose (maximum dose acyclovir 800 mg) by mouth, administered four times a day for 7 days, beginning 7–10 days after exposure	Primary Post-Exposure Prophylaxis Indicated for: • Patients with substantial exposure to varicella or zoster who have no verified history of varicella or zoster, *or* who are seronegative for VZV on a sensitive, specific antibody assay, *or* who lack evidence of vaccination. • Many experts limit the recommendation for passive immunization to varicella- or zoster-exposed children with HIV considered severely immunocompromised, (i.e., in CDC Immunologic Category 3), especially if severely symptomatic (i.e., CDC Clinical Category C[a]) and experiencing a high HIV RNA plasma viral load. • Some experts start acyclovir at first appearance of rash in children with HIV, rather than providing acyclovir as prophylaxis. **Note:** VariZIG is commercially available in the United States from a broad network of specialty distributers. [a] Centers for Disease Control and Prevention. Revised classification system for human immunodeficiency virus infection in children aged <13 years. Official authorized addenda: human immunodeficiency virus infection codes and official guidelines for coding and reporting ICD-9-CM. *MMWR Morb Mortal Wkly Rep*. 1994;43:1-19. Available at https://www.cdc.gov/mmwr/PDF/rr/rr4312.pdf	December 9, 2019

Key to Acronyms: ART = antiretroviral therapy; BSA = body surface area; cART = combination antiretroviral therapy; CD4 = CD4 T lymphocyte; CDC = Centers for Disease Control and Prevention; CMV = cytomegalovirus; CrCl = creatinine clearance; DOT = directly observed therapy; FDA = Food and Drug Administration; HBV = hepatitis B virus; HCV = hepatitis C virus; HPV = human papillomavirus; HSV = herpes simplex virus; IgG = immunoglobulin G; IGRA = interferon-gamma release assay; IVIG = intravenous immunoglobulin; QID = 4 times a day; TB = tuberculosis; TMP-SMX = Trimethoprim-sulfamethoxazole; TST = tuberculin skin test; VZV = Varicella-Zoster virus