Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (Last updated November 6, 2013; last reviewed November 6, 2013) (page 1 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	**Indicating Need for Medical Attention if Persistent or Bothersome**	
Acyclovir (Zovirax)	Oral Suspension: • 40 mg/mL Capsules: • 200 mg Tablets: • 400 mg • 800 mg IV	More Frequent: • Phlebitis (at injection site when given IV) Less Frequent: • Acute renal failure (parenteral use, more common with rapid infusion) Rare *Parenteral Form Only:* • Encephalopathy • Hematologic toxicity (leukopenia, neutropenia, thrombocytopenia, anemia, hemolysis) • Crystalluria, hematuria • Disseminated intravascular coagulation • Hypotension • Neuropsychiatric toxicity (with high doses) Parenteral and Oral Forms: • Rash (urticarial, exfoliative skin disorders including SJS) • Anaphylaxis • Seizures • Elevated transaminase enzymes • Fever, hallucinations • Leukopenia • Lymphadenopathy • Peripheral edema • Visual abnormalities	More Frequent: • GI disturbances (anorexia, diarrhea, nausea, vomiting) • Headache, lightheadedness • Malaise Less Frequent (More Marked in Older Adults): • Agitation • Alopecia • Dizziness • Myalgia, paresthesia • Somnolence	Requires dose adjustment in patients with renal impairment. Avoid other nephrotoxic drugs. Administer IV preparation by slow IV infusion over at least 1 hour at a final concentration not to exceed 7 mg/mL. This is to avoid renal tubular damage related to crystalluria; must be accompanied by adequate hydration.
Albendazole (Albenza)	Tablets: • 200 mg	More Frequent: • Abnormal liver function tests (LFTs) Less Frequent: • Hypersensitivity (rash, pruritus) • Neutropenia (with high doses) Rare: • Pancytopenia	Less frequent: • CNS effects (dizziness, headache) • GI disturbances (abdominal pain, diarrhea, nausea, vomiting) Rare: • Alopecia	Should be given with food. May crush or chew tablets and give with water. Monitor CBC and LFTs prior to each cycle.

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 2 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	Indicating Need for Medical Attention if Persistent or Bothersome	
Amikacin	IV	More Frequent: • Nephrotoxicity • Neurotoxicity (including muscle twitching, seizures) • Ototoxicity, both auditory and vestibular Less Frequent: • Hypersensitivity (skin rash, redness, or swelling) Rare: • Neuromuscular blockade	N/A	Must be infused over 30 to 60 minutes to avoid neuromuscular blockade. Requires dose adjustment in patients with impaired renal function. Should monitor renal function and hearing periodically (e.g., monthly) in children on prolonged therapy. Therapeutic drug monitoring (TDM). indicated
Amphotericin B Deoxycholate (Fungizone)	IV	More Frequent: • Infusion-related reactions (fever/chills; nausea/vomiting; hypotension; anaphylaxis) • Anemia • Hypokalemia • Renal function impairment • Thrombophlebitis (at injection site) Less Frequent or Rare: • Blurred or double vision • Cardiac arrhythmias, usually with rapid infusions • Hypersensitivity (rash) • Leukopenia • Polyneuropathy • Seizures • Thrombocytopenia	• GI disturbance (nausea, vomiting, diarrhea, abdominal pain) • Headache	Monitor BUN, Cr, CBC, electrolytes, LFTs. Infuse over 1 to 2 hours; in patients with azotemia, hyperkalemia, or getting doses >1 mg/kg, infuse over 3 to 6 hours. Requires dose reduction in patients with impaired renal function. Avoid other nephrotoxic drugs, when possible,because nephrotoxicity is exacerbated with concomitant use of other nephrotoxic drugs; permanent nephrotoxicity is related to cumulative dose. Nephrotoxicity may be ameliorated by hydration with 0.9% saline IV over 30 minutes prior to the amphotericin B infusion. Infusion-related reactions less frequent in children than adults; the onset is usually 1 to 3 hours after infusion, duration <1 hour; frequency decreases over time. Pre-treatment with acetaminophen and/or diphenhydramine may alleviate febrile reactions.

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 3 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	Indicating Need for Medical Attention if Persistent or Bothersome	
Amphotericin B Lipid Complex (Abelcet)	IV	More Frequent: • Infusion-related reactions (fever/chills, nausea/vomiting; headache, nausea and vomiting) Less Frequent: • Anemia • Leukopenia • Respiratory distress • Thrombocytopenia • Renal function impairment	• GI disturbance (loss of appetite, nausea, vomiting, diarrhea, abdominal pain)	Monitor BUN, Cr, CBC, electrolytes, and LFTs. Infuse diluted solution at rate of 2.5 mg/kg/hour. In-line filters should not be used. Use with caution with other drugs that are bone marrow suppressants or that are nephrotoxic; renal toxicity is dose-dependent, but less renal toxicity than seen with conventional amphotericin B. Consider dose reduction in patients with impaired renal function.
Amphotericin B Liposome (AmBisome)	IV	More Frequent: • Fever, chills • Hypokalemia Less Frequent: • Back pain • Chest pain • Dark urine • Dyspnea • Infusion-related reaction (fever/chills, headache) • Jaundice • Renal function impairment Rare: • Anaphylactic reaction	• GI disturbance (nausea, vomiting, diarrhea, abdominal pain) • Headache • Skin rash	Monitor BUN, Cr, CBC, electrolytes, and LFTs. Infuse over 2 hours. Consider dose reduction in patients with impaired renal function.
Artesunate	IV: • Only available from CDC Malaria Hotline; telephone: (770) 488-7788	Rare: • Anaphylactic reaction • Neutropenia • Bradycardia	• GI disturbance (nausea, vomiting) • Headache • Skin rash	Monitor CBC, LFTs, and electrolytes. ~40% less mortality than with quinidine use in severe malaria 50% lower incidence of hypoglycemia than quinidine
Atovaquone (Mepron)	Oral Suspension: • 150 mg/mL	Frequent: • Fever • Skin rash	Frequent: • GI disturbances (nausea, vomiting, diarrhea) • Headache • Cough • Insomnia	Should be administered with a meal to enhance absorption; bioavailability increases 3-fold when administered with high-fat meal.

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 4 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	Indicating Need for Medical Attention if Persistent or Bothersome	
Atovaquone/ Proguanil (Malarone)	Tablets: • Pediatric tablets; 62.5 mg/ 25 mg • Adult tablets; 250 mg/100 mg	Less frequent: • Vomiting • Pruritus	N/A	Pediatric tablets are available to make dosing easier. Side effects requiring discontinuation in ~1%–2% of patients Not recommended for prophylaxis in patients with CrCl <30 mL/min.
Azithromycin (Zithromax)	Oral Suspension: • 20 mg/mL • 40 mg/mL Tablets: • 250 mg • 500 mg • 600 mg IV	More Frequent: • Thrombophlebitis (IV form) Rare: • Acute interstitial nephritis • Allergic reactions/ anaphylaxis (dyspnea, hives, rash) • Pseudomembranous colitis	• GI disturbances (abdominal discomfort or pain, diarrhea, nausea, vomiting) • Dizziness, headache	Administer 1 hour before or 2 hours after a meal; do not administer with aluminum- and magnesium-containing antacids. IV should be infused at concentration of 1 mg/mL over a 3-hour period, or 2 mg/mL over a 1-hour period; should not be administered as a bolus. Use with caution in patients with hepatic function impairment; biliary excretion is the main route of elimination. Potential drug interactions.
Capreomycin (Capastat)	IM	More Frequent: • Nephrotoxicity Less Frequent: • Hypersensitivity (rash, fever) • Hypokalemia • Neuromuscular blockade • Ototoxicity, both auditory and vestibular • Injection site pain, sterile abscess	N/A	Requires dose adjustment in patients with impaired renal function. Administer only by deep IM injection into large muscle mass (superficial injections may result in sterile abscess). Should monitor renal function and hearing periodically (e.g., monthly) in children on prolonged therapy. Monitor LFTs and electrolytes.
Caspofungin (Cancidas)	IV	More Frequent: • Histamine-mediated symptoms (fever, facial swelling, pruritus, bronchospasm) Rare: • Hypokalemia • Anaphylactic reaction	• GI disturbances (nausea, vomiting, diarrhea) • Headache • Skin rash, facial flushing • Elevated liver transaminases • Thrombophlebitis	Requires dose adjustment in moderate-to-severe hepatic insufficiency. IV infusion over 1 hour in normal saline (do not use diluents containing dextrose)

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 5 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	**Indicating Need for Medical Attention if Persistent or Bothersome**	
Chloroquine Phosphate (Aralen)	Tablets: • 500 mg • 250 mg	More Frequent: • Pruritus: Common in individuals of black race (25%–33%) Less Frequent, but More Severe: • Auditory toxicity • Ocular toxicity • Neuropsychiatric disorders • QT prolongation • Hepatitis • Bone marrow suppression • Peripheral neuropathy	• Psoriasis exacerbations • GI disturbances (nausea, vomiting, diarrhea) • Visual disturbances including photosensitivity • Tinnitus • Muscle weakness	Store in child-proof containers and protect from light. Can be toxic in overdose. Bitter tasting, so consider administering with foods that can mask the taste. Solution available worldwide, but not in United States. Caution in patients with G6PD deficiency or seizure disorder. Monitor CBC; periodic neurologic and ophthalmologic exams in patients on prolonged therapy.
Cidofovir (Vistide)	IV	More Frequent: • Nephrotoxicity • Neutropenia Less Frequent: • Fever and allergic reactions Rare: • Vision changes due to ocular hypotony • Metabolic acidosis	• GI disturbances (anorexia, diarrhea, nausea, vomiting) • Headache • Asthenia • Proteinuria	Infuse over 1 hour. Should not be used in patients with severe renal impairment. Nephrotoxicity risk is decreased with pre-hydration with IV normal saline and probenecid with each infusion. Probenecid is administered prior to each dose and repeated for two additional doses after infusion. Additional hydration after infusion is recommended if tolerated. Concurrent use of other nephrotoxic drugs should be avoided. Monitor renal function, urinalysis, electrolytes, and CBC and perform ophthalmologic exams.
Ciprofloxacin (Cipro)	Oral Suspension: • 50 mg/mL • 100 mg/mL Tablets: • 100 mg • 250 mg • 500 mg • 750 mg XR Tablets *Cipro XR:* • 500 mg • 1000 mg *Proquin XR:* • 500 mg IV	Less Frequent: • Phototoxicity Rare: • CNS stimulation • Hepatotoxicity • Hypersensitivity reactions (rash, pruritus, and exfoliative skin disorders including SJS, dyspnea, and vasculitis) • Interstitial nephritis • Phlebitis (at injection sites) • Pseudomembranous colitis • Tendonitis or tendon rupture • QT interval prolongation	More Frequent: • GI disturbances (abdominal discomfort or pain, diarrhea, nausea, vomiting) • CNS toxicity (dizziness, headache, insomnia, drowsiness) Less Frequent: • Change in taste • Photosensitivity	Administer oral formulations at least 2 hours before, or 6 hours after, sucralfate or antacids or other products containing calcium, zinc, or iron (including daily products or calcium-fortified juices). Take with full glass of water to avoid crystalluria. Possible phototoxicity reactions with sun exposure. IV infusions should be over 1 hour. Do not split, crush, or chew extended-release tablets.

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 6 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	Indicating Need for Medical Attention if Persistent or Bothersome	
Clarithromycin (Biaxin)	Oral Suspension: • 25 mg/mL • 50 mg/mL Tablets: • 250 mg • 500 mg	Rare: • Hepatotoxicity • Hypersensitivity reaction (rash, pruritus, dyspnea) • Pseudomembranous colitis • Thrombocytopenia • QT interval prolongation	More Frequent: • GI disturbances (abdominal discomfort or pain, diarrhea, nausea, vomiting) Less Frequent: • Abnormal taste sensation • Headache • Rash	Requires dose adjustment in patients with impaired renal function. Can be administered without regard to meals. Reconstituted suspension should not be refrigerated. Potential drug interactions
Clindamycin (Cleocin)	Oral Solution: • 15 mg/mL Capsules: • 75 mg, 150 mg, 300 mg IV	More Frequent: • Pseudomembranous colitis Less Frequent: • Hypersensitivity (skin rash, redness, pruritus) • Neutropenia • Thrombocytopenia	More Frequent: • GI disturbances (abdominal pain, nausea, vomiting, diarrhea) Less Frequent: • Fungal overgrowth, rectal and genital areas	IV preparation contains benzyl alcohol, not recommended for use in neonates. IV preparation must be diluted prior to administration. Capsule formulation should be taken with food or a full glass of water to avoid esophageal irritation. Reconstituted oral solution should not be refrigerated.
Cycloserine (Seromycin)	Capsules: • 250 mg	More Frequent: • CNS toxicity (including confusion, anxiety) Less Frequent: • Hypersensitivity (skin rash) • Peripheral neuropathy • Seizures • Psychosis Rare: • Cardiac arrhythmias	• Headache, dizziness, drowsiness, confusion Rare: • Photosensitivity	Take with food to minimize gastric irritation. Neurotoxicity is related to excessive serum concentrations; serum concentrations should be maintained at 25–30 mcg/mL. Requires dose adjustment in patients with impaired renal function. Do not administer to patients with severe renal impairment (because of increased risk of neurotoxicity). Should monitor serum levels, if possible. Should administer pyridoxine at the same time. Monitor renal function, LFTs, and CBC.

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 7 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	Indicating Need for Medical Attention if Persistent or Bothersome	
Dapsone	Syrup (available under Compassionate Use IND): • 2 mg/mL Tablets: • 25 mg • 100 mg	More Frequent: • Hemolytic anemia (especially if G6PD deficiency) • Methemoglobinemia • Skin rash Rare: • Blood dyscrasias • Exfoliative skin disorders (including SJS) • Hepatic toxicity • Mood or other mental changes • Peripheral neuritis • Hypersensitivity reaction (fever, rash, jaundice, anemia)	• CNS toxicity (headache, insomnia, nervousness) • GI disturbances (anorexia, nausea, vomiting) • Photosensitivity reactions	Protect from light; dispense syrup in amber glass bottles. Monitor CBC and LFTs.
Doxycycline (Vibramycin)	Tablets and Capsules: • 20 mg • 50 mg • 75 mg • 100 mg Oral Suspension and Syrup: • 5 mg/mL oral suspension • 10 mg/mL oral syrup IV	More Frequent: • GI irritation, pill esophagitis • Photosensitivity Less frequent: • May cause increased intracranial pressure, photosensitivity, hemolytic anemia, rash, and hypersensitivity reactions. • *Clostridium difficile*-associated diarrhea • Pseudotumor cerebri	• Staining of teeth a concern for individuals aged <8 years • Photo-onycholysis • GI disturbances (nausea, vomiting, abdominal cramps)	Swallow with adequate amounts of fluids Avoid antacids, milk, dairy products, and iron for 1 hour before or 2 hours after administration of doxycycline. Use with caution in hepatic and renal disease. IV doses should be infused over 1 to 4 hours. Patient should avoid prolonged exposure to direct sunlight (skin sensitivity). Generally not recommended for use in children aged <8 years because of risk of tooth enamel hypoplasia and discoloration, unless benefit outweighs risk. Monitor renal function, CBC, and LFTs if prolonged therapy.

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 8 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	Indicating Need for Medical Attention if Persistent or Bothersome	
Erythromycin	Erythromycin-Base Tablet: • 250 mg • 333 mg • 500 mg Delayed-Release Tablet: • 250 mg • 333 mg • 500 mg Delayed-Release Capsule: • 250 mg Erythromycin Ethyl Succinate *Suspension:* • 200 mg • 400 mg/5 mL *Oral Drops:* • 100 mg/2.5 mL *Chewable Tablet:* • 200 mg *Tablet:* • 400 mg Erythromycin Estolate *Suspension:* • 125 mg • 250 mg/5 mL Erythromycin Stearate *Tablet:* • 250 mg • 500 mg Erythromycin Gluceptate: • IV Erythromycin Lactobionate: • IV	Less Frequent: • Estolate may cause cholestatic jaundice, although hepatotoxicity is uncommon (2% of reported cases). Rare: • QT prolongation • Hypersensitivity reactions (rash, exfoliative skin disorders including SJS)	• GI disturbances (nausea, vomiting, abdominal cramps) • Rash, urticaria • Increased LFTs	Use with caution in liver disease. Oral therapy should replace IV therapy as soon as possible. Give oral doses after meals. Parenteral administration should consist of a continuous drip or slow infusion over 1 hour or longer. Adjust dose in renal failure. Erythromycin should be used with caution in neonates; hypertrophic pyloric stenosis and life-threatening episodes of ventricular tachycardia associated with prolonged QTc interval have been reported. High potential for interaction with many ARVs and other drugs.

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 9 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	Indicating Need for Medical Attention if Persistent or Bothersome	
Ethambutol (Myambutol)	Tablets: • 100 mg • 400 mg	Less Frequent: • Acute gouty arthritis (secondary to hyperuricemia) Rare: • Hypersensitivity (rash, fever, joint pain) • Peripheral neuropathy • Retrobulbar optic neuritis, decreased visual acuity, loss of red-green color discrimination • Bone marrow suppression • Abnormal LFTs, hepatotoxicity	• GI disturbances (abdominal pain, anorexia, nausea, vomiting) • Confusion • Disorientation • Headache	Requires dose adjustment in patients with impaired renal function. Take with food to minimize gastric irritation. Monitor visual acuity and red-green color discrimination regularly. Monitor renal function, LFTs, and CBC. Avoid concomitant use of drugs with neurotoxicity.
Ethionamide (Trecator-SC)	Tablets: • 250 mg	Less Frequent: • Hepatitis, jaundice • Peripheral neuritis • Psychiatric disturbances Rare: • Goiter or hypothyroidism • Hypoglycemia • Optic neuritis • Skin rash	More Frequent: • GI disturbances (anorexia, metallic taste, nausea, vomiting, stomatitis) • Orthostatic hypotension Rare: • Gynecomastia	Avoid use of other neurotoxic drugs that could increase potential for peripheral neuropathy and optic neuritis. Administration of pyridoxine may alleviate peripheral neuritis. Take with food to minimize gastric irritation. Monitor LFTs, glucose, and thyroid function. Perform periodic ophthalmologic exams.
Fluconazole (Diflucan)	Oral Suspension: • 10 mg/mL • 40 mg/mL Tablets: • 50 mg • 100 mg • 150 mg • 200 mg IV	Less Frequent: • Hypersensitivity (fever, chills, skin rash) Rare: • Agranulocytosis, eosinophilia, leucopenia, thrombocytopenia • Exfoliative skin disorders (including SJS) • Hepatotoxicity • QT prolongation • Thrombocytopenia	More Frequent: • GI disturbances (abdominal pain, constipation, diarrhea, anorexia, nausea, vomiting) Less Frequent: • CNS effects (dizziness, drowsiness, headache) • Alopecia	Can be given orally without regard to meals. Shake suspension well before dosing. Requires dose adjustment in patients with impaired renal function. IV administration should be administered over 1–2 hours at a rate ≤200 mg/hour. Daily dose is the same for oral and IV administration. Multiple potential drug interactions Monitor periodic LFTs, renal function, and CBC.

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 10 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	Indicating Need for Medical Attention if Persistent or Bothersome	
Flucytosine (Ancobon)	Capsules: • 250 mg • 500 mg Oral Liquid: • Extempo-raneous preparation	More Frequent: • Bone marrow suppression (especially leukopenia and thrombocytopenia) Less Frequent: • Hepatotoxicity • Renal toxicity (including crystalluria) Rare: • Cardiac toxicity (ventricular dysfunction, myocardial toxicity, cardiac arrest) • CNS symptoms (hallucinations, seizures, peripheral neuropathy) • Anaphylaxis • Hearing loss	• GI disturbances (abdominal pain, constipation, diarrhea, anorexia, nausea, vomiting) • Elevated liver transaminases • Skin rash Rare: • CNS symptoms (headache, drowsiness, confusion, vertigo) • Crystalluria	Monitor serum concentrations and adjust dose to maintain therapeutic levels and minimize risk of bone marrow suppression. Requires dose adjustment in patients with impaired renal function; use with extreme caution. Fatal aplastic anemia and agranulocytosis have been rarely reported. Oral preparations should be administered with food over a 15-minute period to minimize GI side effects Monitor CBC, LFTs, renal function, and electrolytes.
Foscarnet (Foscavir)	IV	More Frequent: • Nephrotoxicity • Serum electrolyte abnormalities (hypocalcaemia, hypophosphatemia, hypomagnesemia, hypokalemia) Less Frequent: • Hematologic toxicity (anemia, granulocytopenia) • Neurotoxicity (muscle twitching, tremor, seizures, tingling around mouth) • Cardiac abnormalities secondary to electrolyte changes • Phlebitis (at site of injection) Rare: • Sores or ulcers mouth or throat	Frequent: • GI disturbances (abdominal pain, anorexia, nausea, vomiting) • Anxiety, confusion, dizziness, headache • Fever	Requires dose adjustment in patients with impaired renal function. Use adequate hydration to decrease nephrotoxicity. Avoid concomitant use of other drugs with nephrotoxicity. Monitor serum electrolytes, renal function, and CBC. Consider monitoring serum concentrations (TDM) IV solution of 24 mg/mL can be administered via central line but must be diluted to a final concentration not to exceed 12 mg/mL if given via peripheral line. Must be administered at a constant rate by infusion pump over ≥2 hours (or no faster than 1 mg/kg/minute).

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 11 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	Indicating Need for Medical Attention if Persistent or Bothersome	
Ganciclovir (Cytovene)	Capsules: • 250 mg • 500 mg IV	More Frequent: • Granulocytopenia • Thrombocytopenia Less Frequent: • Anemia • CNS effects (confusion, headache) • Hypersensitivity (fever, rash) • Elevated transaminase enzymes • Increase in creatinine, BUN • Phlebitis (at injection sites) Rare: • Retinal detachment • Seizures • Psychosis • Cardiac (hypertension, chest pain)	• GI disturbances (abdominal pain, anorexia, nausea, vomiting) • Rash	Requires dose adjustment in patients with renal impairment. Avoid other nephrotoxic drugs. IV infusion over at least 1 hour. In-line filter required. Maintain good hydration. Undiluted IV solution is alkaline (pH 11); use caution in handling and preparing solutions and avoid contact with skin and mucus membranes. Administer oral doses with food to increase absorption. Do not open or crush capsules. Monitor CBC, LFTs, renal function; conduct ophthalmologic examinations.
Interferon-alfa-2B (IFN-α-2B; Intron)	Parenteral (SQ or IV use)	More Frequent: • Hematologic toxicity (leukopenia, thrombocytopenia) • Neurotoxicity (confusion, depression, insomnia, anxiety) • Injection erythema Less Frequent: • Cardiovascular effects (chest pain, hypertension, arrhythmias, hypotension) • Hypoesthesia/paresthesia Rare: • Abnormality or loss of vision • Allergic reaction (rash, hives) • Hypothyroidism • Development of antinuclear antibodies	More Frequent: • Flu-like syndrome (myalgia, arthralgia, fever, chills, headache, back pain, malaise, fatigue) • GI disturbances (abdominal pain, anorexia, nausea, vomiting, diarrhea, dyspepsia) • Pharyngitis, dry mouth Less Frequent: • Alopecia • Epistaxis • Elevated serum transaminases, serum creatinine and BUN, glucose, triglycerides	Severe adverse effects less common in children than adults. Toxicity dose-related, with significant reduction over the first 4 months of therapy. For non-life-threatening reactions, reduce dose or temporarily discontinue drug and restart at low doses with stepwise increases. If patients have visual complaints, an ophthalmologic exam should be performed to detect possible retinal hemorrhage or retinal artery or vein obstruction. Should not be used in children with decompensated hepatic disease, significant cytopenia, autoimmune disease, or significant pre-existing renal or cardiac disease. If symptoms of hepatic decompensation occur

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 12 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	**Indicating Need for Medical Attention if Persistent or Bothersome**	
Interferon-alfa-2B (IFN-α-2B; Intron), continued				(ascites, coagulopathy, jaundice), IFN-α-2B should be discontinued. Reconstituted solution stable for 24 hours when refrigerated. Monitor CBC, renal function, LFTs, thyroid function, and glucose.
Isoniazid (Nydrazid)	Oral Syrup: • 10 mg/mL Tablets: • 100 mg • 300 mg IM	More Frequent: • Hepatitis prodromal syndrome (anorexia, weakness, vomiting) • Hepatitis • Peripheral neuritis Rare: • Blood dyscrasias • Hypersensitivity (fever, rash, joint pain) • Neurotoxicity (includes seizure) • Optic neuritis	• GI disturbances (abdominal pain, nausea, vomiting, diarrhea) • Elevated liver transaminases • Pyridoxine deficiency	Take with food to minimize gastric irritation. Take ≥1 hour before aluminum-containing antacids. Hepatitis less common in children. Use with caution in patients with hepatic function impairment, severe renal failure, or history of seizures. Pyridoxine supplementation should be provided for all HIV-infected children. Monitor LFTs and periodic ophthalmologic examinations.
Itraconazole (Sporanox)	Oral Solution: • 10 mg/mL Capsules: • 100 mg IV	Less frequent: • Hypersensitivity (fever, chills, skin rash) • Hypokalemia (can be associated with cardiac arrhythmias) Rare: • Hepatotoxicity • Hematologic abnormalities (thrombocytopenia, leukopenia)	More Frequent: • GI disturbances (abdominal pain, constipation, diarrhea, anorexia, nausea, vomiting) Less Frequent: • CNS effects (dizziness, drowsiness, headache) • Rash	Oral Solution: • Give on an empty stomach because gastric acid increases absorption. Capsules: • Administer after a full meal to increase absorption. Itraconazole oral solution has 60% greater bioavailability compared with capsules, and the oral solution and capsules should not be used interchangeably. IV infusion over 1 hour. Multiple potential drug interactions Monitor LFTs and potassium levels. Monitor serum concentrations (TDM) in severe infections.

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 13 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	Indicating Need for Medical Attention if Persistent or Bothersome	
Kanamycin	IV IM	More Frequent: • Nephrotoxicity • Neurotoxicity (including muscle twitching, seizures) • Ototoxicity, both auditory and vestibular Less Frequent: • Hypersensitivity (skin rash, redness or swelling) Rare: • Neuromuscular blockade	N/A	Must be infused over 30 to 60 minutes to avoid neuromuscular blockade. Requires dose adjustment in patients with impaired renal function. Should monitor renal function and hearing periodically (e.g., monthly) in children on prolonged therapy. Monitor serum concentrations (TDM). Monitor renal function; conduct, hearing exams for patients receiving prolonged therapy.
Ketoconazole (Nizoral)	Tablets: • 200 mg Topical: • Shampoo • Cream • Gel • Foam Suspension: • Extempo-raneous preparation	Less Frequent: • Hypersensitivity (fever, chills, skin rash) Rare: • Hepatotoxicity (including hepatic failure)	Frequent: • GI disturbances (abdominal pain, constipation, diarrhea, anorexia, nausea, vomiting) Less Frequent: • CNS effects (dizziness, drowsiness, headache) Rare: • Gynecomastia • Impotence • Menstrual irregularities • Photophobia	Adverse GI effects occur less often when administered with food. Drugs that decrease gastric acidity or sucralfate should be administered ≥2 hours after ketoconazole. Disulfiram-like reactions have occurred in patients ingesting alcohol. Hepatotoxicity is an idiosyncratic reaction, usually reversible when stopping the drug, but rare fatalities can occur any time during therapy; more common in females and adults >40 years, but cases reported in children. High-dose ketoconazole suppresses corticosteroid secretion, lowers serum testosterone concentration (reversible). Multiple potential drug interactions. Monitor LFTs.

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 14 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	Indicating Need for Medical Attention if Persistent or Bothersome	
Mefloquine (Lariam)	Tablets: • 250 mg	More Frequent: • CNS (psychosis, depression, hallucinations, paranoia, seizures) Rare: • Blood dyscrasias • Cholestasis, elevated bilirubin	• Rash • GI disturbances (abdominal pain, constipation, diarrhea, anorexia, nausea, vomiting) • CNS (dizziness, vivid dreams, insomnia) • Tinnitus, blurred vision	Side effects less prominent in children. Administer with food and plenty of water. Tablets can be crushed and added to food; bitter tasting so administer with foods that can mask the taste Monitor LFTs.
Nitazoxanide (Alinia)	Oral Suspension: • 20 mg/mL Tablets: • 500 mg	N/A	More Frequent: • GI disturbances (abdominal pain, nausea, vomiting) • Headache Rare: • Scleral icterus • Rash	Should be given with food. Shake suspension well prior to dosing.
P-Aminosalicyclic Acid (Paser)	Delayed Release Granules: • 4 g per packet	Rare: • Hypersensitivity (fever, skin rash, exfoliative dermatitis, mono-like or lymphoma-like syndrome, jaundice, hepatitis, pericarditis, vasculitis, hematologic abnormalities including hemolytic anemia, hypoglycemia, optic neuritis, encephalopathy, reduction in prothrombin) • Crystalluria • Hemolytic anemia	• GI disturbances (abdominal pain, nausea, vomiting, diarrhea)	Should not be administered to patients with severe renal disease. Drug should be discontinued at first sign of hypersensitivity reaction (rash, fever, and GI symptoms typically precede jaundice). Vitamin B12 therapy should be considered in patients receiving for >1 month. Administer granules by sprinkling on acidic foods such as applesauce or yogurt or a fruit drink like tomato or orange juice. Maintain urine at neutral or alkaline pH to avoid crystalluria. The granule soft "skeleton" may be seen in the stool. Monitor CBC and LFTs.

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 15 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	Indicating Need for Medical Attention if Persistent or Bothersome	
Pegylated Interferon Alfa-2A (Pegasys)	Injection: • Vials and prefilled syringes	More Frequent: • Hematologic toxicity (leukopenia, thrombocytopenia) • Neurotoxicity (confusion, depression, insomnia, anxiety) • Injection erythema Less Frequent: • Cardiovascular effects (chest pain, hypertension, arrhythmias, hypotension) • Hypoesthesia/paresthesia Rare: • Vision abnormalities or loss of vision • Allergic reaction (rash, hives) • Hypothyroidism • Development of antinuclear antibodies	More Frequent: • Flu-like syndrome (myalgia, arthralgia, fever, chills, headache, back pain, malaise, fatigue) • GI disturbances (abdominal pain, anorexia, nausea, vomiting, diarrhea, dyspepsia) • Pharyngitis, dry mouth Less Frequent: • Alopecia • Epistaxis • Elevated serum transaminases, serum creatinine and BUN, glucose, triglycerides	Toxicity dose-related. Dose modifications based on type and degree of toxicity. For non-life threatening reactions, reduce dose or temporarily discontinue drug and restart at low doses with stepwise increases. If patients have visual complaints, an ophthalmologic exam should be performed to detect possible retinal hemorrhage or retinal artery or vein obstruction. Should not be used in children with decompensated hepatic disease, significant cytopenia, autoimmune disease, or significant pre-existing renal or cardiac disease. If symptoms of hepatic decompensation occur (ascites, coagulopathy, jaundice),Peg- IFN-α-2A should be discontinued. Monitor CBC, renal function, LFTs, thyroid function, and glucose. Store vials and syringes in refrigerator. Protect from light. Administer SQ in abdomen or thigh. Rotate injection sites.
Pegylated Interferon Alfa-2B (Pegintron)	Injection: • Vials and prefilled syringes	More Frequent: • Hematologic toxicity (leukopenia, thrombocytopenia) • Neurotoxicity (confusion, depression, insomnia, anxiety) • Injection erythema Less Frequent: • Cardiovascular effects (chest pain, hypertension, arrhythmias, hypotension) • Hypoesthesia/paresthesia	More Frequent: • Flu-like syndrome (myalgia, arthralgia, fever, chills, headache, back pain, malaise, fatigue) • GI disturbances (abdominal pain, anorexia, nausea, vomiting, diarrhea, dyspepsia) • Pharyngitis, dry mouth Less Frequent: • Alopecia • Epistaxis • Elevated serum	Toxicity dose-related. Dose modifications based on type and degree of toxicity. For non-life threatening reactions, reduce dose or temporarily discontinue drug and restart at low doses with stepwise increases. If patients have visual complaints, an ophthalmologic exam should be performed to detect possible retinal hemorrhage or retinal artery or vein obstruction.

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 16 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	Indicating Need for Medical Attention if Persistent or Bothersome	
Pegylated Interferon Alfa-2B (Pegintron), continued		Rare: • Abnormality or loss of vision • Allergic reaction (rash, hives) • Hypothyroidism • Development of antinuclear antibodies	transaminases, serum creatinine and BUN, glucose, triglycerides	Should not be used in children with decompensated hepatic disease, significant cytopenia, autoimmune disease, or significant pre-existing renal or cardiac disease. If symptoms of hepatic decompensation occur (ascites, coagulopathy, jaundice),Peg- IFN-α-2A should be discontinued. Monitor CBC, renal function, LFTs, thyroid function, and glucose. Store vials and syringes in refrigerator. Protect from light. Administer SQ in abdomen or thigh. Rotate injection sites.
Pentamidine (Pentam)	IV Aerosol	IV *More Frequent:* • Nephrotoxicity • Hypoglycemia • Hyperglycemia or diabetes mellitus • Elevated liver transaminases • Hypotension • Leukopenia or neutropenia • Thrombocytopenia *Less Frequent:* • Anemia • Cardiac arrhythmias • Hypersensitivity (skin rash, fever) • Pancreatitis • Phlebitis • Sterile abscess (at site injection) Aresol *More Frequent:* • Sneezing • Cough	IV *More Frequent:* • GI disturbances (anorexia, nausea, vomiting, diarrhea) *Less Frequent:* • Unpleasant metallic taste Aresol *More Frequent:* • Bronchospasm	Rapid infusion may result in precipitous hypotension; IV infusion should be administered over ≥1 hour (preferably 2 hours). Cytolytic effect on pancreatic beta islet cells, leading to insulin release, can result in prolonged severe hypoglycemia (usually occurs after 5–7 days of therapy, but can also occur after the drug is discontinued); risk increased with higher dose, longer duration of therapy, and re-treatment within 3 months of prior treatment. Hyperglycemia and diabetes mellitus can occur up to several months after drug discontinued. Monitor LFTs, renal function, glucose, electrolytes, BP. Inhalation: • A special nebulizer is required for aerosol administration. Medical personnel should be trained in the proper administration of aerosolized pentamidine.

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 17 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	Indicating Need for Medical Attention if Persistent or Bothersome	
Posaconazole (Noxafil)	Oral Solution: • 40 mg/mL	Less frequent: • Hypersensitivity (fever, chills, skin rash) • Anaphylactoid reaction with IV infusion Rare: • Hepatotoxicity (including hepatic failure) • Exfoliative skin disorders (including SJS) • Renal dysfunction • Cardiac arrhythmias (QT interval prolongation, torsades de pointes, hypertension) • Hemolytic uremic syndrome • Pulmonary embolism • Neutropenia	• Bone marrow suppression • Muscular pain • CNS: headache, dizziness, fatigue • Elevated serum transaminases	Must be given with meals. Adequate absorption is dependent on food for efficacy. Monitor LFTs, renal function and electrolytes. Monitor serum drug concentrations (TDM). Shake suspension prior to dosing.
Primaquine	Tablets: • 15 mg (base) = 26.3 mg primaquine phosphate	More Frequent: • Hemolytic anemia (with G6PD deficiency) Less Frequent: • Methemoglobinemia Rare: • Leukopenia	• GI disturbances (nausea, vomiting)	Take with meals or antacids to minimize gastric irritation. Store in a light-resistant container. Bitter taste. Monitor CBC.
Pyrazinamide	Tablets: • 500 mg Oral Suspension: • Extempo-raneous preparation	More Frequent: • Arthralgia Less Frequent: • Hepatotoxicity (dose-related) Rare: • Acute gouty arthritis secondary to hyperuricemia • Thrombocytopenia, anemia • Interstitial nephritis • Porphyria	• Skin rash, pruritus • Photosensitivity • Malaise • GI disturbances (nausea, vomiting) • Arthralgia • Hyperuricemia	Avoid in patients with severe hepatic impairment. Reduce dose in patients with renal or hepatic impairment. Monitor LFTs and uric acid.
Pyrimethamine (Daraprim)	Tablet: • 25 mg Oral Suspension: • Extempo-raneous preparation	Less Frequent: • Neutropenia • Thrombocytopenia • Megaloblastic anemia Rare: • SJS • Seizure	• Skin rash • Photosensitivity • Dry mouth • GI disturbances (nausea, vomiting) • CNS (depression, insomnia	To prevent hematologic toxicity, administer with leucovorin. Monitor CBC.

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 18 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	Indicating Need for Medical Attention if Persistent or Bothersome	
Quinidine	IV	Serious: • Cardiac arrhythmias • QT interval prolongation • Hypoglycemia • Hemolytic anemia (with G6PD deficiency) • Hepatotoxicity	Very Frequent: • Cinchonism—syndrome of tinnitus, reversible high-frequency hearing loss, deafness, vertigo, blurred vision, diplopia, photophobia, headache, confusion, and delirium; dose dependent	EKG monitoring is standard of care. Do not give by bolus infusion. If EKG changes observed, slow infusion rate. Monitor CBC and LFTs.
Ribavirin Virazole *Powder for solution for nebulization* Rebetol *Oral capsules and oral solution* Copegus, Ribasphere, Ribapak *Oral tablets and capsules*	Powder for Solution for Nebulization: • Reconstituted product contains 20 mg/mL Oral Solution: • 40 mg/mL Capsules: • 200 mg Tablets: • 200 mg • 400 mg • 600 mg	• Hemolytic anemia (with associated potential for increase in unconjugated bilirubin and uric acid) Less Frequent: • Neutropenia, thrombocytopenia, anemia • Pancreatitis	• CNS effects (fatigue, headache, insomnia, depression) • GI disturbances (abdominal pain, nausea, vomiting) • Skin rash • Myalgia, arthralgia, weakness	Should not be used in patients with severe renal impairment. Should not be used as monotherapy for treatment of hepatitis C, but used in combination with IFN-α. Intracellular phosphorylation of pyrimidine nucleoside analogues (zidovudine, stavudine, zalcitabine) decreased by ribavirin, may have antagonism; use with caution. Enhances phosphorylation of didanosine; use with caution because of increased risk of pancreatitis/mitochondrial toxicity. Oral solution contains propylene glycol. Teratogenic/embryocidal. Contraindicated in pregnant women and their male partners. Avoid pregnancy for additional 6 months after treatment. Monitor CBC, renal function, LFTs, and thyroid function. Perform pregnancy tests regularly while on therapy.

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 19 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	Indicating Need for Medical Attention if Persistent or Bothersome	
Rifabutin (Mycobutin)	Capsules: • 150 mg Oral Suspension: • Extempo-raneous preparation	More Frequent: • Allergic reaction (rash, pruritus) • Neutropenia Less Frequent: • Asthenia Rare: • Arthralgia, myalgia • Change in taste • Pseudojaundice • Thrombocytopenia • Uveitis	• Headache • Insomnia • Rash, staining of skin • GI disturbances (abdominal pain, diarrhea, nausea, vomiting, anorexia)	Preferably take on empty stomach, but may be administered with food in patients with GI intolerance. The contents of capsules may be mixed with applesauce if patient is unable to swallow capsule. May cause reddish to brown-orange color urine, feces, saliva, sweat, skin, or tears (can discolor soft contact lenses). Uveitis seen with high-dose rifabutin (i.e., adults >300 mg/day), especially when combined with clarithromycin. Multiple potential drug interactions Use with caution in patients with renal or hepatic impairment. Monitor CBC, LFTs; conduct ophthalmologic examinations. Reduce dose in patients with renal impairment.
Rifampin (Rifadin)	Oral Suspension: • Extempo-raneous preparation Capsules: • 150 mg • 300 mg IV	Less Frequent: • Flu-like syndrome Rare: • Blood dyscrasias • Hepatitis prodromal syndrome (anorexia, nausea, vomiting, weakness) • Hepatitis • Interstitial nephritis • Exfoliative skin disorders (including SJS)	• GI disturbances (abdominal pain, diarrhea) • CNS effects (fatigue, headache, insomnia, depression) • Rash • Discoloration of body fluids • Elevated serum transaminases • Visual changes	Preferably take on empty stomach, but can be administered with food in patients with GI intolerance; take with full glass of water. Suspension formulation stable for 30 days. Shake well prior to dosing. May cause reddish to brown-orange color urine, feces, saliva, sweat, skin, or tears (can discolor soft contact lenses). Multiple potential drug interactions Use with caution in patients with hepatic impairment. Administer IV by slow infusion. Extravasation may cause local irritation and inflammation. Monitor CBC and LFTs.

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 20 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	Indicating Need for Medical Attention if Persistent or Bothersome	
Streptomycin	IM	More Frequent: • Nephrotoxicity • Neurotoxicity (including muscle twitching, seizures) • Peripheral neuritis • Ototoxicity, both auditory and vestibular Less Frequent: • Hypersensitivity (skin rash, redness, or swelling) • Optic neuritis • Bone marrow suppression Rare: • Neuromuscular blockade	• CNS effects (headache, ataxia, dizziness)	Usual route of administration is deep IM injection into large muscle mass. For patients who cannot tolerate IM injections, dilute to 12–15 mg in 100 mL of 0.9% sodium chloride; must be infused over 30 to 60 minutes to avoid neuromuscular blockade. Requires dose adjustment in patients with impaired renal function. Monitor renal function and hearing periodically (e.g., monthly) in children on prolonged therapy. Monitor serum concentrations (TDM).
Sulfadiazine	Tablet: • 500 mg Oral Suspension: • Extempo-raneous preparation	Rare: • Crystalluria, renal failure • Bone marrow suppression/ blood dyscrasias • Severe hypersensitivity syndrome • Hemolytic anemia (with G6PD deficiency)	• GI disturbances (abdominal pain, diarrhea, nausea) • CNS effects (headache, dizziness) • Rash • Photosensitivity	Ensure adequate fluid intake to avoid crystalluria. Monitor CBC, renal function, and urinalysis. Monitor serum concentrations (TDM) if serious infection.
Trimethoprim-Sulfameth-oxazole (TMP-SMX) (Bactrim, Septra)	Oral Suspension: • TMP 8 mg/mL and SMX 40 mg/mL Tablets *Single Strength:* • TMP 80 mg and SMX 400 mg *Double Strength:* • TMP 160 mg and SMX 800 mg IV	More Frequent: • Skin rash Less Frequent: • Hypersensitivity reactions (skin rash, fever) • Hematologic toxicity (leukopenia, neutropenia, thrombocytopenia, anemia) Rare: • Exfoliative skin disorders (including SJS) • Hemolytic anemia (with G6PD deficiency) • Methemoglobinemia • Renal toxicity (crystalluria, nephritis, tubular necrosis) • CNS toxicity (aseptic meningitis) • Pseudomembranous colitis • Cholestatic hepatitis • Thyroid function disturbance	• GI disturbances (anorexia, nausea, vomiting, diarrhea) • Photosensitivity • Rash	Requires dose adjustment in patients with impaired renal function. Maintain adequate fluid intake to prevent crystalluria and stone formation (take with full glass of water). Potential for photosensitivity skin reaction with sun exposure. IV infusion over 60 to 90 minutes Monitor CBC, renal function.

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 21 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	Indicating Need for Medical Attention if Persistent or Bothersome	
Valacyclovir (Valtrex)	Tablets: • 500 mg • 1 g **Note:** An oral suspension formulation 50 mg/mL can be prepared in Ora-Sweet or Syrpalta syrups)	Rare: • Renal failure • Bone marrow suppression • Thrombotic microangiopathy/hemolytic uremic syndrome • CNS (psychosis, seizures, delirium)	More Frequent: • Headache, nausea Less Frequent: • Arthralagia • Dizziness, fatigue • GI disturbances (diarrhea or constipation, anorexia, abdominal pain, vomiting) • Dysmenorrhea	Thrombotic thrombocytopenia purpura/hemolytic uremic syndrome has been reported in HIV-infected adults with advanced disease receiving high (i.e., 8 g/day) but not low doses. Monitor CBC and renal function.
Valganciclovir (Valcyte)	Tablets: • 450 mg Oral Solution: • 50 mg/mL	More Frequent: • Granulocytopenia • Thrombocytopenia Less Frequent: • Anemia • CNS effects (seizures, psychosis, hallucinations • Hypersensitivity (fever, rash) • Elevated transaminase enzymes • Increase in creatinine, BUN • Retinal detachment	• GI disturbances (abdominal pain, anorexia, nausea, vomiting) • CNS effects (headache, insomnia)	Requires dose adjustment in patients with renal impairment. Avoid other nephrotoxic drugs. Tablets should not be broken or crushed. Monitor CBC and renal function. Potentially teratogenic and carcinogenic.

Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 22 of 22)

Drug	Preparations	Major Toxicities[a]		Special Instructions
		Indicating Need for Medical Attention	**Indicating Need for Medical Attention if Persistent or Bothersome**	
Voriconazole (VFEND)	Tablet: • 50 mg • 200 mg Oral Suspension: • 40 mg/mL IV	Less Frequent: • Hypersensitivity (fever, chills, skin rash) • Anaphylactoid reaction with IV infusion Rare: • Hepatotoxicity (including hepatic failure) • Exfoliative skin disorders (including SJS) • Renal dysfunction • Cardiac arrhythmias • Pancreatitis • QT prolongation • Electrolyte abnormalities • Optic neuritis, papilledema	More Frequent: • Visual changes, dose-related (photophobia, blurry vision) • CNS effects (dizziness, drowsiness, headache) • GI disturbances (abdominal pain, constipation, diarrhea, anorexia, nausea, vomiting) • Photosensitivity Rare: • Gynecomastia • Elevated serum transaminases	Oral tablets should be taken 1 hour before or after a meal. Shake oral suspension well prior to dosing. Maximum IV infusion rate 3 mg/kg/hour over 1 to 2 hours. Oral administration to patients with impaired renal function if possible (accumulation of IV vehicle occurs in patients with renal insufficiency) Dose adjustment needed if hepatic insufficiency. Visual disturbances common (>30%) but transient and reversible when drug is discontinued. Multiple potential drug interactions Monitor renal function, electrolytes, and LFTs Consider monitoring serum concentrations (TDM).

[a] The toxicities listed in the table have been selected based on their potential clinical significance and are not inclusive of all side effects reported for a particular drug.

Key to Acronyms: ARV = antiretroviral; BP = blood pressure; BUN = blood urea nitrogen; CBC = complete blood count; CDC = Centers for Disease Control and Prevention; CNS = central nervous system; Cr = creatinine; CrCl = creatinine clearance; EKG = electrocardiogram; G6PD = Glucose-6-phosphate dehydrogenase; GI = gastrointestinal; IFN- = interferon alfa; IM = intramuscular; IND = investigational new drug; IV = intravenous; LFT = liver function test; SJS = Stevens-Johnson Syndrome; SMX = sulfamethoxazole; SQ = subcutaneous; TDM = therapeutic drug monitoring; TMP = trimethoprim