Guidelines for the Prevention and Treatment of Opportunistic Infections Among HIV-Exposed and HIV-Infected Children

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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)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Preparations</th>
<th>Major Toxicities&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Special Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Indicating Need for Medical Attention</td>
<td>Indicating Need for Medical Attention if Persistent or Bothersome</td>
</tr>
<tr>
<td><strong>Acyclovir</strong></td>
<td>Oral Suspension: • 40 mg/mL Capsules: • 200 mg Tablets: • 400 mg • 800 mg IV</td>
<td>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</td>
<td>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.</td>
</tr>
<tr>
<td><strong>Albendazole</strong></td>
<td>Tablets: • 200 mg</td>
<td>More Frequent: • Abnormal liver function tests (LFTs) Less Frequent: • Hypersensitivity (rash, pruritus) • Neutropenia (with high doses) Rare: • Pancytopenia</td>
<td>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.</td>
</tr>
<tr>
<td>Drug</td>
<td>Preparations</td>
<td>Major Toxicities</td>
<td>Special Instructions</td>
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<tr>
<td>Amikacin</td>
<td>IV</td>
<td>More Frequent:</td>
<td>Must be infused over 30 to 60 minutes to avoid neuromuscular blockade.</td>
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<tr>
<td></td>
<td></td>
<td>• Nephrotoxicity</td>
<td>Requires dose adjustment in patients with impaired renal function.</td>
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<td></td>
<td></td>
<td>• Neurotoxicity</td>
<td>Should monitor renal function and hearing periodically (e.g., monthly) in children on</td>
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<td></td>
<td></td>
<td>(including</td>
<td>prolonged therapy.</td>
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<td></td>
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<td>muscle twitching, seizures)</td>
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<td></td>
<td></td>
<td>• Ototoxicity, both auditory and vestibular</td>
<td>Therapeutic drug monitoring (TDM). indicated</td>
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<td></td>
<td></td>
<td>Less Frequent:</td>
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<tr>
<td></td>
<td></td>
<td>• Hypersensitivity (skin rash, redness, or swelling)</td>
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<td></td>
<td></td>
<td>• Neuromuscular blockade</td>
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<td></td>
<td></td>
<td>Rare:</td>
<td></td>
</tr>
<tr>
<td>Amphotericin B Deoxycholate (Fungizone)</td>
<td>IV</td>
<td>More Frequent:</td>
<td>Monitor BUN, Cr, CBC, electrolytes, LFTs.</td>
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<tr>
<td></td>
<td></td>
<td>• Infusion-related reactions (fever/chills; nausea/vomiting; hypotension; anaphylaxis)</td>
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<tr>
<td></td>
<td></td>
<td>• Anemia</td>
<td>Infuse over 1 to 2 hours; in patients with azotemia, hyperkalemia, or getting doses &gt;1 mg/kg, infuse over 3 to 6 hours.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hypokalemia</td>
<td>Requires dose reduction in patients with impaired renal function.</td>
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<tr>
<td></td>
<td></td>
<td>• Renal function impairment</td>
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<td></td>
<td></td>
<td>• Thrombophlebitis (at injection site)</td>
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<td></td>
<td></td>
<td>Less Frequent or Rare:</td>
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<td></td>
<td></td>
<td>• Blurred or double vision</td>
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<td></td>
<td></td>
<td>• Cardiac arrhythmias, usually with rapid infusions</td>
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<tr>
<td></td>
<td></td>
<td>• Hypersensitivity (rash)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Leukopenia</td>
<td></td>
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<td></td>
<td></td>
<td>• Polyneuropathy</td>
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<td></td>
<td></td>
<td>• Seizures</td>
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<tr>
<td></td>
<td></td>
<td>• Thrombocytopenia</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• GI disturbance (nausea, vomiting, diarrhea, abdominal pain)</td>
<td></td>
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<td></td>
<td></td>
<td>• Headache</td>
<td></td>
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<td></td>
<td></td>
<td>N/A</td>
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</tr>
</tbody>
</table>

Guidelines for the Prevention and Treatment of Opportunistic Infections In HIV-Exposed and HIV-Infected Children HH-2

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

<table>
<thead>
<tr>
<th>Drug</th>
<th>Preparations</th>
<th>Major Toxicities*</th>
<th>Special Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amphotericin B Lipid Complex</strong> (Abelcet)</td>
<td>IV</td>
<td>More Frequent: Infusion-related reactions (fever/chills, nausea/vomiting; headache, nausea and vomiting)</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Less Frequent: Anemia, Leukopenia, Respiratory distress, Thrombocytopenia, Renal function impairment</td>
<td></td>
</tr>
<tr>
<td><strong>Amphotericin B Liposome</strong> (AmBisome)</td>
<td>IV</td>
<td>More Frequent: Fever, chills, Hypokalemia</td>
<td>Monitor BUN, Cr, CBC, electrolytes, and LFTs. Infuse over 2 hours. Consider dose reduction in patients with impaired renal function.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Less Frequent: Back pain, Chest pain, Dark urine, Dyspnea, Infusion-related reactions (fever/chills, headache), Jaundice, Renal function impairment</td>
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<tr>
<td></td>
<td></td>
<td>Rare: Anaphylactic reaction</td>
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<tr>
<td><strong>Artesunate</strong></td>
<td>IV: Only available from CDC Malaria Hotline; telephone: (770) 488-7788</td>
<td>Rare: Anaphylactic reaction, Neutropenia, Bradycardia</td>
<td>Monitor CBC, LFTs, and electrolytes. ~40% less mortality than with quinidine use in severe malaria 50% lower incidence of hypoglycemia than quinidine</td>
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<tr>
<td></td>
<td></td>
<td>Rare: GI disturbance (nausea, vomiting, diarrhea, abdominal pain)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Headache, Skin rash</td>
<td></td>
</tr>
<tr>
<td><strong>Atovaquone</strong> (Mepron)</td>
<td>Oral Suspension: 150 mg/mL</td>
<td>Frequent: Fever, Skin rash</td>
<td>Should be administered with a meal to enhance absorption; bioavailability increases 3-fold when administered with high-fat meal.</td>
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<tr>
<td></td>
<td></td>
<td>Frequent: GI disturbances (nausea, vomiting, diarrhea)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Headache, Cough, Insomnia</td>
<td></td>
</tr>
</tbody>
</table>
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<th>Major Toxicities^a</th>
<th>Special Instructions</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Indicating Need for Medical Attention</td>
<td>Indicating Need for Medical Attention if Persistent or Botherstone</td>
</tr>
<tr>
<td><strong>Atovaquone/ Proguanil (Malarone)</strong></td>
<td>Tablets:</td>
<td>Less frequent:</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>• Pediatric tablets; 62.5 mg/25 mg</td>
<td>• Vomiting</td>
<td></td>
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<tr>
<td></td>
<td>• Adult tablets; 250 mg/100 mg</td>
<td>• Pruritus</td>
<td></td>
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<tr>
<td><strong>Azithromycin (Zithromax)</strong></td>
<td>Oral Suspension:</td>
<td>More Frequent:</td>
<td>• GI disturbances (abdominal discomfort or pain, diarrhea, nausea, vomiting)</td>
</tr>
<tr>
<td></td>
<td>• 20 mg/mL</td>
<td>• Thrombophlebitis (IV form)</td>
<td>• Dizziness, headache</td>
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<tr>
<td></td>
<td>• 40 mg/mL</td>
<td>Rare:</td>
<td></td>
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<tr>
<td></td>
<td>Tablets:</td>
<td>• Acute interstitial nephritis</td>
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<td></td>
<td>• 250 mg</td>
<td>• Allergic reactions/ anaphylaxis (dyspnea, hives, rash)</td>
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<tr>
<td></td>
<td>• 500 mg</td>
<td>• Pseudomembranous colitis</td>
<td></td>
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<tr>
<td></td>
<td>• 600 mg</td>
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<tr>
<td></td>
<td>IV</td>
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<tr>
<td><strong>Capreomycin (Capastat)</strong></td>
<td>IM</td>
<td>More Frequent:</td>
<td>N/A</td>
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<tr>
<td></td>
<td></td>
<td>• Nephrotoxicity</td>
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<td></td>
<td></td>
<td>Less Frequent:</td>
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<tr>
<td></td>
<td></td>
<td>• Hypersensitivity (rash, fever)</td>
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<td></td>
<td></td>
<td>• Hypokalemia</td>
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<td></td>
<td></td>
<td>• Neuromuscular blockade</td>
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<td></td>
<td></td>
<td>• Ototoxicity, both auditory and vestibular</td>
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<td></td>
<td></td>
<td>• Injection site pain, sterile abscess</td>
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<tr>
<td><strong>Caspofungin (Cancidas)</strong></td>
<td>IV</td>
<td>More Frequent:</td>
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<tr>
<td></td>
<td></td>
<td>• Histamine-mediated symptoms (fever, facial swelling, pruritus, bronchospasm)</td>
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<td></td>
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<td>Rare:</td>
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<td></td>
<td></td>
<td>• Hypokalemia</td>
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<td></td>
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<td>• Anaphylactic reaction</td>
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</tbody>
</table>

^a Special Instructions

- 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.
- Requires dose adjustment in moderate-to-severe hepatic insufficiency.
- IV infusion over 1 hour in normal saline (do not use diluents containing dextrose).
<table>
<thead>
<tr>
<th>Drug</th>
<th>Preparations</th>
<th>Major Toxicities¹</th>
<th>Major Toxicities²</th>
<th>Special Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Aralen)</td>
<td>• 500 mg</td>
<td>Pruritus: Common in individuals of black race (25%–33%)</td>
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<td></td>
<td>• 250 mg</td>
<td>(25%–33%)</td>
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<td></td>
<td></td>
<td>More Frequent:</td>
<td>Indicating Need for Medical Attention if Persistent or Bothersome</td>
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<td></td>
<td></td>
<td>Pruritus: Common in individuals of black race (25%–33%)</td>
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<td>Less Frequent, but More Severe:</td>
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<td></td>
<td></td>
<td>Auditory toxicity</td>
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<td>Ocular toxicity</td>
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<td></td>
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<td>Neuropsychiatric disorders</td>
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<td></td>
<td></td>
<td>QT prolongation</td>
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<td></td>
<td></td>
<td>Hepatitis</td>
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<td></td>
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<td>Bone marrow suppression</td>
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<td></td>
<td></td>
<td>Peripheral neuropathy</td>
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<td></td>
<td></td>
<td>Psoriasis exacerbations</td>
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<td></td>
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<td>GI disturbances (nausea, vomiting, diarrhea)</td>
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<td></td>
<td></td>
<td>Visual disturbances including photosensitivity</td>
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<td></td>
<td></td>
<td>Tinnitus</td>
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<td></td>
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<td>Muscle weakness</td>
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<td></td>
<td>Infuse over 1 hour.</td>
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<tr>
<td></td>
<td>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.</td>
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<td>Possible phototoxicity reactions with sun exposure. IV infusions should be over 1 hour. Do not split, crush, or chew extended-release tablets.</td>
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<tr>
<td>Cidofovir</td>
<td>IV</td>
<td>More Frequent:</td>
<td>Indicating Need for Medical Attention</td>
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<tr>
<td>(Vistide)</td>
<td></td>
<td>Nephrotoxicity</td>
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<td>Neutropenia</td>
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<td></td>
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<td>Fever and allergic reactions</td>
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<td></td>
<td></td>
<td>Rare:</td>
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<td></td>
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<td>Vision changes due to ocular hypotony</td>
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<td></td>
<td></td>
<td>Metabolic acidosis</td>
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<td></td>
<td></td>
<td>GI disturbances (anorexia, diarrhea, nausea, vomiting)</td>
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<td></td>
<td></td>
<td>Headache</td>
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<td></td>
<td></td>
<td>Asthenia</td>
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<td></td>
<td></td>
<td>Proteinuria</td>
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<tr>
<td></td>
<td>Infuse over 1 hour.</td>
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<tr>
<td>Ciprofloxacin</td>
<td>Oral Suspension:</td>
<td>More Frequent:</td>
<td>Indicating Need for Medical Attention</td>
<td></td>
</tr>
<tr>
<td>(Cipro)</td>
<td>• 50 mg/mL</td>
<td>Phototoxicity</td>
<td></td>
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<tr>
<td></td>
<td>• 100 mg/mL</td>
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<td></td>
<td>Tablets:</td>
<td>Rare:</td>
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<tr>
<td></td>
<td>• 100 mg</td>
<td>CNS stimulation</td>
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<td></td>
<td>• 250 mg</td>
<td>Hepatotoxicity</td>
<td></td>
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<tr>
<td></td>
<td>• 500 mg</td>
<td>Hypersensitivity reactions</td>
<td></td>
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<tr>
<td></td>
<td>• 750 mg</td>
<td>(rash, pruritus, and exfoliative skin disorders including SJS, dyspnea, and vasculitis)</td>
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<tr>
<td></td>
<td>XR Tablets</td>
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<td></td>
<td>Cipro XR:</td>
<td>Interstitial nephritis</td>
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<tr>
<td></td>
<td>• 500 mg</td>
<td>Phlebitis (at injection sites)</td>
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<td></td>
<td>• 1000 mg</td>
<td>Pseudomembranous colitis</td>
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<tr>
<td></td>
<td>Proquin XR:</td>
<td>Tendonitis or tendon rupture</td>
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<td></td>
<td>• 500 mg</td>
<td>QT interval prolongation</td>
<td></td>
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<tr>
<td></td>
<td>IV</td>
<td>GI disturbances (abdominal discomfort or pain, diarrhea, nausea, vomiting)</td>
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<td></td>
<td></td>
<td>CNS toxicity (dizziness, headache, insomnia, drowsiness)</td>
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<td></td>
<td>Change in taste</td>
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<td></td>
<td></td>
<td>Photosensitivity</td>
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<td></td>
<td>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.</td>
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<th>Special Instructions</th>
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<tr>
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<td></td>
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<td>Indicating Need for Medical Attention if Persistent or Bothersome</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rare:</td>
<td>More Frequent:</td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>Clarithromycin</td>
<td>Oral Suspension:</td>
<td>Hepatotoxicity</td>
<td>GI disturbances (abdominal discomfort or pain, diarrhea, nausea, vomiting)</td>
</tr>
<tr>
<td>(Biaxin)</td>
<td>• 25 mg/mL</td>
<td></td>
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<tr>
<td></td>
<td>• 50 mg/mL</td>
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<tr>
<td></td>
<td>Tablets:</td>
<td>Hypersensitivity reaction (rash, pruritus, dyspnea)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 250 mg</td>
<td>Thrombocytopenia</td>
<td></td>
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<tr>
<td></td>
<td>• 500 mg</td>
<td>QT interval prolongation</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>More Frequent:</td>
<td>Less Frequent:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GI disturbances</td>
<td>Abnormal taste sensation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(abdominal pain, nausea, vomiting)</td>
<td>Headache</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Rash</td>
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<td></td>
<td></td>
<td>Less Frequent:</td>
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<tr>
<td></td>
<td></td>
<td>Abnormal taste sensation</td>
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<td></td>
<td></td>
<td>Headache</td>
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<tr>
<td></td>
<td></td>
<td>Rash</td>
<td></td>
</tr>
<tr>
<td>Clindamycin</td>
<td>Oral Solution:</td>
<td>Pseudomembranous colitis</td>
<td>GI disturbances (abdominal pain, nausea, vomiting, diarrhea)</td>
</tr>
<tr>
<td>(Cleocin)</td>
<td>• 15 mg/mL</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Capsules:</td>
<td>Hypersensitivity (skin rash, redness, pruritus)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 75 mg, 150 mg, 300 mg IV</td>
<td>Neutropenia</td>
<td></td>
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<td></td>
<td></td>
<td>Thrombocytopenia</td>
<td></td>
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<td></td>
<td></td>
<td>More Frequent:</td>
<td>Less Frequent:</td>
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<tr>
<td></td>
<td></td>
<td>GI disturbances</td>
<td>Fungal overgrowth, rectal and genital areas</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(abdominal pain, nausea, vomiting)</td>
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<tr>
<td>Cycloserine</td>
<td>Capsules:</td>
<td>CNS toxicity (including confusion, anxiety)</td>
<td>Headache, dizziness, drowsiness, confusion</td>
</tr>
<tr>
<td>(Seromycin)</td>
<td>• 250 mg</td>
<td></td>
<td>Rare:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hypersensitivity (skin rash)</td>
<td>Photosensitivity</td>
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<tr>
<td></td>
<td></td>
<td>Peripheral neuropathy</td>
<td></td>
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<td></td>
<td></td>
<td>Seizures</td>
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<td></td>
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<td>Psychosis</td>
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<tr>
<td></td>
<td></td>
<td>Cardiac arrhythmias</td>
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</tr>
</tbody>
</table>
Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities  (page 7 of 22)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Preparations</th>
<th>Major Toxicities&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Special Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Indicating Need for Medical Attention</td>
<td>Indicating Need for Medical Attention if Persistent or Bothersome</td>
</tr>
<tr>
<td>Dapsone</td>
<td>Syrup (available under Compassionate Use IND):</td>
<td>More Frequent:</td>
<td>• CNS toxicity (headache, insomnia, nervousness)</td>
</tr>
<tr>
<td></td>
<td>• 2 mg/mL Tablets:</td>
<td>• Hemolytic anemia (especially if G6PD deficiency)</td>
<td>• GI disturbances (anorexia, nausea, vomiting)</td>
</tr>
<tr>
<td></td>
<td>• 25 mg</td>
<td>• Methemoglobinemia</td>
<td>• Photosensitivity reactions</td>
</tr>
<tr>
<td></td>
<td>• 100 mg</td>
<td>• Skin rash</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rare:</td>
<td>• CNS toxicity (headache, insomnia, nervousness)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Blood dyscrasias</td>
<td>• GI disturbances (anorexia, nausea, vomiting)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Exfoliative skin disorders (including SJS)</td>
<td>• Photosensitivity reactions</td>
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<tr>
<td></td>
<td></td>
<td>• Hepatic toxicity</td>
<td></td>
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<td></td>
<td></td>
<td>• Mood or other mental changes</td>
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<td></td>
<td></td>
<td>• Peripheral neuritis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hypersensitivity reaction (fever, rash, jaundice, anemia)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Special Instructions</td>
<td></td>
</tr>
<tr>
<td>Doxycycline</td>
<td>Tablets and Capsules:</td>
<td>More Frequent:</td>
<td>• Staining of teeth a concern for individuals aged &lt;8 years</td>
</tr>
<tr>
<td>(Vibramycin)</td>
<td>• 20 mg</td>
<td>• GI irritation, pill esophagitis</td>
<td>• Photo-onycholysis</td>
</tr>
<tr>
<td></td>
<td>• 50 mg</td>
<td>• Photosensitivity</td>
<td>• GI disturbances (nausea, vomiting, abdominal cramps)</td>
</tr>
<tr>
<td></td>
<td>• 75 mg</td>
<td>Less frequent:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 100 mg</td>
<td>• May cause increased intracranial pressure, photosensitivity, hemolytic anemia, rash, and hypersensitivity reactions.</td>
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<tr>
<td></td>
<td>Oral Suspension and Syrup:</td>
<td>• Clostridium difficile-associated diarrhea</td>
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<tr>
<td></td>
<td>• 5 mg/mL oral suspension</td>
<td>• Pseudotumor cerebri</td>
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<td></td>
<td>• 10 mg/mL oral syrup</td>
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<td></td>
<td>IV</td>
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</tbody>
</table>
### Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 8 of 22)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Preparations</th>
<th>Major Toxicities^a</th>
<th>Special Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erythromycin</td>
<td><strong>Erythromycin-Base Tablet:</strong> • 250 mg • 333 mg • 500 mg <strong>Delayed-Release Tablet:</strong> • 250 mg • 333 mg • 500 mg <strong>Delayed-Release Capsule:</strong> • 250 mg <strong>Erythromycin Ethyl Succinate Suspension:</strong> • 200 mg • 400 mg/5 mL <strong>Oral Drops:</strong> • 100 mg/2.5 mL <strong>Chewable Tablet:</strong> • 200 mg <strong>Tablet:</strong> • 400 mg <strong>Erythromycin Estolate Suspension:</strong> • 125 mg • 250 mg/5 mL <strong>Erythromycin Stearate Tablet:</strong> • 250 mg • 500 mg <strong>Erythromycin Gluceptate:</strong> • IV <strong>Erythromycin Lactobionate:</strong> • IV</td>
<td><strong>Indicating Need for Medical Attention</strong></td>
<td><strong>Indicating Need for Medical Attention if Persistent or Bothersome</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Less Frequent: • Estolate may cause cholestatic jaundice, although hepatotoxicity is uncommon (2% of reported cases).</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rare: • QT prolongation • Hypersensitivity reactions (rash, exfoliative skin disorders including SJS)</td>
<td>• GI disturbances (nausea, vomiting, abdominal cramps) • Rash, urticaria • Increased LFTs</td>
</tr>
</tbody>
</table>

^a Special Instructions indicating need for medical attention or need for medical attention if persistent or bothersome.
**Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities**

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<thead>
<tr>
<th>Drug</th>
<th>Preparations</th>
<th>Major Toxicities&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Special Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• 100 mg</td>
<td>- Rare: Hypersensitivity (rash, fever, joint pain)</td>
<td>Take with food to minimize gastric irritation.</td>
</tr>
<tr>
<td></td>
<td>• 400 mg</td>
<td>- Peripheral neuropathy</td>
<td>Monitor visual acuity and red-green color discrimination regularly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Retrobulbar optic neuritis, decreased visual acuity, loss of red-green color discrimination</td>
<td>Monitor renal function, LFTs, and CBC.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Bone marrow suppression</td>
<td>Avoid concomitant use of drugs with neurotoxicity.</td>
</tr>
<tr>
<td>Ethionamide</td>
<td>Tablets:</td>
<td>- Less Frequent: Hepatitis, jaundice, Peripheral neuritis, Psychiatric disturbances</td>
<td>Avoid use of other neurotoxic drugs that could increase potential for peripheral neuropathy and optic neuritis.</td>
</tr>
<tr>
<td></td>
<td>• 250 mg</td>
<td>- Rare: Goiter or hypothyroidism, Hypoglycemia, Optic neuritis, Skin rash</td>
<td>Administration of pyridoxine may alleviate peripheral neuritis.</td>
</tr>
<tr>
<td>Fluconazole</td>
<td>Oral Suspension:</td>
<td>- Less Frequent: Hypersensitivity (fever, chills, skin rash)</td>
<td>Take with food to minimize gastric irritation.</td>
</tr>
<tr>
<td></td>
<td>• 10 mg/mL</td>
<td>- Rare: Agranulocytosis, eosinophilia, leucopenia, thrombocytopenia</td>
<td>Monitor LFTs, glucose, and thyroid function. Perform periodic ophthalmologic exams.</td>
</tr>
<tr>
<td></td>
<td>• 40 mg/mL</td>
<td>- Exfoliative skin disorders (including SJS)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tablets:</td>
<td>- Hepatotoxicity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 50 mg</td>
<td>- QT prolongation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 100 mg</td>
<td>- Thrombocytopenia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 150 mg</td>
<td>- CNS effects (dizziness, drowsiness, headache)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 200 mg</td>
<td>- Alopecia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IV</td>
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</tbody>
</table>
### Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities

<table>
<thead>
<tr>
<th>Drug</th>
<th>Preparations</th>
<th>Major Toxicities&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Special Instructions</th>
</tr>
</thead>
</table>
| **Flucytosine** (Ancobon) | Capsules:  
• 250 mg  
• 500 mg  
Oral Liquid:  
• Extemporaneous 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

<table>
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<th>Preparations</th>
<th>Major Toxicities&lt;sup&gt;a&lt;/sup&gt;</th>
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</tr>
</thead>
</table>
| **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)  
**Indicating Need for Medical Attention** | **Indicating Need for Medical Attention if Persistent or Bothersome:** • 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)  
**Hypoaesthesia/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.  
<p>|               |                         |                             | If symptoms of hepatic decompensation occur |</p>
<table>
<thead>
<tr>
<th>Drug</th>
<th>Preparations</th>
<th>Major Toxicities&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Special Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interferon-alfa-2B</strong></td>
<td>(IFN-α-2B; Intron), continued</td>
<td><strong>Indicating Need for Medical Attention</strong>:</td>
<td>(ascites, coagulopathy, jaundice), IFN-α-2B should be discontinued.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• GI disturbances (abdominal pain, nausea, vomiting, diarrhea)</td>
<td>Reconstituted solution stable for 24 hours when refrigerated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Elevated liver transaminases</td>
<td>Monitor CBC, renal function, LFTs, thyroid function, and glucose.</td>
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<tr>
<td></td>
<td></td>
<td>• Pyridoxine deficiency</td>
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<td></td>
<td><strong>Indicating Need for Medical Attention if Persistent or Bothersome</strong></td>
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<tr>
<td></td>
<td></td>
<td>• Hepatitis prodromal syndrome (anorexia, weakness, vomiting)</td>
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<td></td>
<td></td>
<td>• Hepatitis</td>
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<td></td>
<td></td>
<td>• Peripheral neuritis</td>
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<td></td>
<td></td>
<td><strong>Rare</strong>:</td>
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<tr>
<td></td>
<td></td>
<td>• Blood dyscrasias</td>
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<td></td>
<td></td>
<td>• Hypersensitivity (fever, rash, joint pain)</td>
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<td></td>
<td></td>
<td>• Neurotoxicity (includes seizure)</td>
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<td>• Optic neuritis</td>
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<td><strong>More Frequent</strong>:</td>
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<tr>
<td></td>
<td></td>
<td>• GI disturbances (abdominal pain, nausea, vomiting, diarrhea)</td>
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<td>• Pyridoxine deficiency</td>
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<td></td>
<td><strong>Rare</strong>:</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Hepatotoxicity</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Hematologic abnormalities (thrombocytopenia, leukopenia)</td>
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<td></td>
<td><strong>More Frequent</strong>:</td>
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<tr>
<td></td>
<td></td>
<td>• GI disturbances (abdominal pain, constipation, diarrhea, anorexia, nausea, vomiting)</td>
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<td></td>
<td></td>
<td><strong>Less Frequent</strong>:</td>
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<tr>
<td></td>
<td></td>
<td>• CNS effects (dizziness, drowsiness, headache)</td>
<td></td>
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<td></td>
<td></td>
<td>• Rash</td>
<td></td>
</tr>
<tr>
<td><strong>Isoniazid</strong></td>
<td>Oral Syrup: 10 mg/mL</td>
<td><strong>More Frequent</strong>:</td>
<td></td>
</tr>
<tr>
<td>(Nydrazid)</td>
<td>Tablets: 100 mg, 300 mg IM</td>
<td>• Hepatitis prodromal syndrome (anorexia, weakness, vomiting)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hepatitis</td>
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<td></td>
<td></td>
<td>• Peripheral neuritis</td>
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<td></td>
<td><strong>Rare</strong>:</td>
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<td></td>
<td>IM</td>
<td>• Blood dyscrasias</td>
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<td>• Hypersensitivity (fever, rash, joint pain)</td>
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<td>• Neurotoxicity (includes seizure)</td>
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<td><strong>More Frequent</strong>:</td>
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<td>• GI disturbances (abdominal pain, nausea, vomiting, diarrhea)</td>
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<td></td>
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<td>• Elevated liver transaminases</td>
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<td></td>
<td></td>
<td>• Pyridoxine deficiency</td>
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<td></td>
<td></td>
<td><strong>Rare</strong>:</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>• Hepatotoxicity</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Hematologic abnormalities (thrombocytopenia, leukopenia)</td>
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<td></td>
<td></td>
<td><strong>More Frequent</strong>:</td>
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<tr>
<td></td>
<td></td>
<td>• GI disturbances (abdominal pain, constipation, diarrhea, anorexia, nausea, vomiting)</td>
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<td></td>
<td></td>
<td><strong>Less Frequent</strong>:</td>
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<tr>
<td></td>
<td></td>
<td>• CNS effects (dizziness, drowsiness, headache)</td>
<td></td>
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<td></td>
<td></td>
<td>• Rash</td>
<td></td>
</tr>
<tr>
<td><strong>Itraconazole</strong></td>
<td>Oral Solution: 10 mg/mL</td>
<td><strong>Less frequent</strong>:</td>
<td></td>
</tr>
<tr>
<td>(Sporanox)</td>
<td>Capsules: 100 mg IV</td>
<td>• Hypersensitivity (fever, chills, skin rash)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Hypokalemia (can be associated with cardiac arrhythmias)</td>
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<td></td>
<td></td>
<td><strong>Rare</strong>:</td>
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<td></td>
<td></td>
<td>• Hepatotoxicity</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Hematologic abnormalities (thrombocytopenia, leukopenia)</td>
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<td></td>
<td><strong>More Frequent</strong>:</td>
<td></td>
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<td></td>
<td></td>
<td>• GI disturbances (abdominal pain, constipation, diarrhea, anorexia, nausea, vomiting)</td>
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<td></td>
<td></td>
<td><strong>Less Frequent</strong>:</td>
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<tr>
<td></td>
<td></td>
<td>• CNS effects (dizziness, drowsiness, headache)</td>
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<td></td>
<td></td>
<td>• Rash</td>
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<td></td>
<td></td>
<td><strong>Oral Solution</strong>:</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Give on an empty stomach because gastric acid increases absorption.</td>
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<td></td>
<td></td>
<td><strong>Capsules</strong>:</td>
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<td></td>
<td></td>
<td>• Administer after a full meal to increase absorption.</td>
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<td></td>
<td></td>
<td>Itraconazole oral solution has 60% greater bioavailability compared with capsules, and the oral solution and capsules should not be used interchangeably.</td>
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<tr>
<td></td>
<td></td>
<td>IV infusion over 1 hour.</td>
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<td></td>
<td></td>
<td>Multiple potential drug interactions</td>
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<tr>
<td></td>
<td></td>
<td>Monitor LFTs and potassium levels.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Monitor serum concentrations (TDM) in severe infections.</td>
<td></td>
</tr>
</tbody>
</table>

Guidelines for the Prevention and Treatment of Opportunistic Infections In HIV-Exposed and HIV-Infected Children

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

<table>
<thead>
<tr>
<th>Drug</th>
<th>Preparations</th>
<th>Major Toxicities&lt;br&gt;Indicating Need for Medical Attention</th>
<th>Indicating Need for Medical Attention if Persistent or Bothersome</th>
<th>Special Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kanamycin</td>
<td>IV</td>
<td>More Frequent:</td>
<td>N/A</td>
<td>Must be infused over 30 to 60 minutes to avoid neuromuscular blockade.</td>
</tr>
<tr>
<td></td>
<td>IM</td>
<td>• Nephrotoxicity</td>
<td></td>
<td>Requires dose adjustment in patients with impaired renal function.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Neurotoxicity (including muscle twitching, seizures)</td>
<td></td>
<td>Should monitor renal function and hearing periodically (e.g., monthly) in children on prolonged therapy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ototoxicity, both auditory and vestibular</td>
<td></td>
<td>Monitor serum concentrations (TDM).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Less Frequent:</td>
<td></td>
<td>Monitor renal function; conduct, hearing exams for patients receiving prolonged therapy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hypersensitivity (skin rash, redness or swelling)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>Rare:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Neuromuscular blockade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ketoconazole (Nizoral)</td>
<td>Tablets: • 200 mg</td>
<td>Less Frequent:</td>
<td>Frequent:</td>
<td>Adverse GI effects occur less often when administered with food.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hypersensitivity (fever, chills, skin rash)</td>
<td>• GI disturbances (abdominal pain, constipation, diarrhea, anorexia, nausea, vomiting)</td>
<td>Drugs that decrease gastric acidity or sucralfate should be administered ≥2 hours after ketoconazole.</td>
</tr>
<tr>
<td></td>
<td>Topical:</td>
<td></td>
<td></td>
<td>Disulfiram-like reactions have occurred in patients ingesting alcohol.</td>
</tr>
<tr>
<td></td>
<td>• Shampoo</td>
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<tr>
<td></td>
<td>• Cream</td>
<td></td>
<td></td>
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<td></td>
<td>• Gel</td>
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<td></td>
<td>• Foam</td>
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<tr>
<td></td>
<td>Suspension:</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Extemporaneous preparation</td>
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<td></td>
<td>Less Frequent:</td>
<td>Less Frequent:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hepatotoxicity (including hepatic failure)</td>
<td>• CNS effects (dizziness, drowsiness, headache)</td>
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<td></td>
<td></td>
<td>Rare:</td>
<td>Rare:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Gynecomastia</td>
<td>• Gynecomastia</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>• Impotence</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>• Menstrual irregularities</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Photophobia</td>
<td></td>
</tr>
</tbody>
</table>
### Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities

<table>
<thead>
<tr>
<th>Drug</th>
<th>Preparations</th>
<th>Major Toxicities</th>
<th>Special Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Indicating Need for Medical Attention</td>
<td>Indicating Need for Medical Attention if Persistent or Bothersome</td>
</tr>
<tr>
<td><strong>Mefloquine</strong></td>
<td>Tablets:</td>
<td>More Frequent:</td>
<td>• Rash</td>
</tr>
<tr>
<td>(Lariam)</td>
<td>• 250 mg</td>
<td>• CNS (psychosis, depression, hallucinations, paranoia, seizures)</td>
<td>• GI disturbances (abdominal pain, constipation, diarrhea, anorexia, nausea, vomiting)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rare:</td>
<td>• Blood dyscrasias</td>
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<td></td>
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<td></td>
<td>• Cholestasis, elevated bilirubin</td>
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<tr>
<td><strong>Nitazoxanide</strong></td>
<td>Oral Suspension:</td>
<td>More Frequent:</td>
<td>• GI disturbances (abdominal pain, nausea, vomiting)</td>
</tr>
<tr>
<td>(Alinia)</td>
<td>• 20 mg/mL</td>
<td>• GI disturbances (abdominal pain, nausea, vomiting)</td>
<td>• Headache</td>
</tr>
<tr>
<td></td>
<td>Tablets:</td>
<td>• Headache</td>
<td>• Scleral icterus</td>
</tr>
<tr>
<td></td>
<td>• 500 mg</td>
<td>Rare:</td>
<td>• Rash</td>
</tr>
<tr>
<td><strong>P-Aminosalicylic Acid</strong></td>
<td>Delayed Release Granules:</td>
<td>Rare:</td>
<td>• GI disturbances (abdominal pain, nausea, vomiting, diarrhea)</td>
</tr>
<tr>
<td>(Faser)</td>
<td>• 4 g per packet</td>
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</tbody>
</table>
### Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 15 of 22)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Preparations</th>
<th>Major Toxicities</th>
<th>Special Instructions</th>
</tr>
</thead>
</table>
| **Pegylated Interferon Alfa-2A (Pegasys)** | Injection: Vials and prefilled syringes | More Frequent:  
- Hematologic toxicity (leukopenia, thrombocytopenia)  
- Neurotoxicity (confusion, depression, insomnia, anxiety)  
- Injection erythema | 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.  
Administer SQ in abdomen or thigh. Rotate injection sites. |
|                           |                                   | 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 |                                                                 |
| **Pegylated Interferon Alfa-2B (Pegintron)** | Injection: Vials and prefilled syringes | More Frequent:  
- Hematologic toxicity (leukopenia, thrombocytopenia)  
- Neurotoxicity (confusion, depression, insomnia, anxiety)  
- Injection erythema | 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. |
|                           |                                   | 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 transaminases, serum creatinine and BUN, glucose, triglycerides |                                                                 |

Guidelines for the Prevention and Treatment of Opportunistic Infections In HIV-Exposed and HIV-Infected Children

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

<table>
<thead>
<tr>
<th>Drug</th>
<th>Preparations</th>
<th>Major Toxicities&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Special Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pegylated Interferon Alfa-2B (Pegintron), continued</strong></td>
<td></td>
<td></td>
<td>Should not be used in children with decompensated hepatic disease, significant cytopenia, autoimmune disease, or significant pre-existing renal or cardiac disease.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rare:</td>
<td>transaminases, serum creatinine and BUN, glucose, triglycerides</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Abnormality or loss of vision</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Allergic reaction (rash, hives)</td>
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<tr>
<td></td>
<td></td>
<td>• Hypothyroidism</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Development of antinuclear antibodies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IV Aerosol</td>
<td></td>
<td><strong>Indicating Need for Medical Attention if Persistent or Bothersome</strong></td>
</tr>
<tr>
<td><strong>Pentamidine (Pentam)</strong></td>
<td>IV</td>
<td></td>
<td><strong>Indicating Need for Medical Attention</strong></td>
</tr>
<tr>
<td></td>
<td>IV Aerosol</td>
<td></td>
<td><strong>More Frequent:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Nephrotoxicity</td>
<td>• GI disturbances (anorexia, nausea, vomiting, diarrhea)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hypoglycemia</td>
<td>• Unpleasant metallic taste</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hyperglycemia or diabetes mellitus</td>
<td><strong>More Frequent:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Elevated liver transaminases</td>
<td>• Bronchospasm</td>
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<td></td>
<td></td>
<td>• Hypotension</td>
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<tr>
<td></td>
<td></td>
<td>• Leukopenia or neutropenia</td>
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<td></td>
<td></td>
<td>• Thrombocytopenia</td>
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<td><strong>Less Frequent:</strong></td>
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<td></td>
<td></td>
<td>• Anemia</td>
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<td></td>
<td>• Cardiac arrhythmias</td>
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<td></td>
<td></td>
<td>• Hypersensitivity (skin rash, fever)</td>
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<td></td>
<td></td>
<td>• Pancreatitis</td>
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<td></td>
<td>• Phlebitis</td>
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<td></td>
<td></td>
<td>• Sterile abscess (at site injection)</td>
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<td></td>
<td></td>
<td><strong>Aerosol</strong></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Sneezing</td>
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<td></td>
<td></td>
<td>• Cough</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Inhalation:</strong></td>
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<tr>
<td></td>
<td></td>
<td>• A special nebulizer is required for aerosol administration. Medical personnel should be trained in the proper administration of aerosolized pentamidine.</td>
<td><strong>Rapid infusion may result in precipitous hypotension; IV infusion should be administered over ≥1 hour (preferably 2 hours).</strong></td>
</tr>
<tr>
<td></td>
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<td></td>
<td><strong>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.</strong></td>
</tr>
<tr>
<td></td>
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<td></td>
<td><strong>Hyperglycemia and diabetes mellitus can occur up to several months after drug discontinued.</strong></td>
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<td></td>
<td></td>
<td></td>
<td><strong>Monitor LFTs, renal function, glucose, electrolytes, BP.</strong></td>
</tr>
</tbody>
</table>

<sup>a</sup> Special Instructions indicating need for medical attention if persistent or bothersome.
### Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities

<table>
<thead>
<tr>
<th>Drug</th>
<th>Preparations</th>
<th>Major Toxicities&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Special Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Posaconazole</strong></td>
<td><strong>Oral Solution:</strong></td>
<td><strong>Less frequent:</strong></td>
<td>Must be given with meals. Adequate absorption is dependent on food for efficacy.</td>
</tr>
<tr>
<td></td>
<td>• 40 mg/mL</td>
<td>• Hypersensitivity (fever,</td>
<td>Monitor LFTs, renal function and electrolytes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>chill, skin rash)</td>
<td>Monitor serum drug concentrations (TDM).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Anaphylactoid reaction with</td>
<td>Shade suspension prior to dosing.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IV infusion</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Hepatotoxicity (including</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>hepatic failure)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Exfoliative skin disorders</td>
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<tr>
<td></td>
<td></td>
<td>(including SJS)</td>
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<td></td>
<td></td>
<td>• Renal dysfunction</td>
<td></td>
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<td></td>
<td>• Cardiac arrhythmias (QT</td>
<td></td>
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<td></td>
<td></td>
<td>interval prolongation,</td>
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<td>torsades de pointes,</td>
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<td>hypertension)</td>
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<td></td>
<td></td>
<td>• Hemolytic uremic syndrome</td>
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<td></td>
<td></td>
<td>• Pulmonary embolism</td>
<td></td>
</tr>
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<td></td>
<td></td>
<td>• Neutropenia</td>
<td></td>
</tr>
<tr>
<td><strong>Primaquine</strong></td>
<td><strong>Tablets:</strong> 15 mg (base) = 26.3 mg primaquine phosphate</td>
<td><strong>More Frequent:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hemolytic anemia (with</td>
<td></td>
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<td></td>
<td></td>
<td>G6PD deficiency)</td>
<td></td>
</tr>
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<td></td>
<td></td>
<td><strong>Less Frequent:</strong></td>
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<tr>
<td></td>
<td></td>
<td>Methemoglobinemia</td>
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<tr>
<td></td>
<td></td>
<td><strong>Rare:</strong></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Leukopenia</td>
<td></td>
</tr>
<tr>
<td><strong>Pyrazinamide</strong></td>
<td><strong>Tablets:</strong> 500 mg</td>
<td><strong>More Frequent:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Oral Suspension:</strong></td>
<td>Arthralgia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Extemporaneous preparation</td>
<td><strong>Less Frequent:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hepatotoxicity (dose-related)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Rare:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute gouty arthritis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>secondary to hyperuricemia</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thrombocytopenia, anemia</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interstitial nephritis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Porphyria</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Less Frequent:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Neutropenia</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Thrombocytopenia</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Megaloblastic anemia</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Rare:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SJS</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Seizure</td>
<td></td>
</tr>
<tr>
<td><strong>Pyrimethamine</strong></td>
<td><strong>Tablet:</strong> 25 mg</td>
<td><strong>Less Frequent:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Oral Suspension:</strong></td>
<td>Neutropenia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Extemporaneous preparation</td>
<td><strong>Thrombocytopenia</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Megaloblastic anemia</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Rare:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SJS</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Seizure</td>
<td></td>
</tr>
<tr>
<td><strong>Guidelines for the Prevention and Treatment of Opportunistic Infections In HIV-Exposed and HIV-Infected Children</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 18 of 22)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Preparations</th>
<th>Major Toxicities</th>
<th>Special Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Indicating Need for Medical Attention</td>
<td>Indicating Need for Medical Attention if Persistent or Bothersome</td>
</tr>
<tr>
<td>Quinidine</td>
<td>IV</td>
<td>Serious:</td>
<td>Very Frequent:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cardiac arrhythmias</td>
<td>• Cinchonism—syndrome of tinnitus, reversible high-frequency hearing loss, deafness, vertigo, blurred vision, diplopia, photophobia, headache, confusion, and delirium; dose dependent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• QT interval prolongation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hypoglycemia</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hemolytic anemia (with G6PD deficiency)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hepatotoxicity</td>
<td></td>
</tr>
<tr>
<td>Ribavirin</td>
<td>Powder for Solution for Nebulization:</td>
<td>Hemolytic anemia (with associated potential for increase in unconjugated bilirubin and uric acid)</td>
<td>Should not be used in patients with severe renal impairment.</td>
</tr>
<tr>
<td></td>
<td>Reconstituted product contains 20 mg/mL</td>
<td>Less Frequent:</td>
<td>Should not be used as monotherapy for treatment of hepatitis C, but used in combination with IFN-α.</td>
</tr>
<tr>
<td></td>
<td>Oral Solution:</td>
<td>• Neutropenia, thrombocytopenia, anemia</td>
<td>Intracellular phosphorylation of pyrimidine nucleoside analogues (zidovudine, stavudine, zalcitabine) decreased by ribavirin, may have antagonism; use with caution.</td>
</tr>
<tr>
<td></td>
<td>• 40 mg/mL</td>
<td>• Pancreatitis</td>
<td>Enhances phosphorylation of didanosine; use with caution because of increased risk of pancreatitis/mitochondrial toxicity.</td>
</tr>
<tr>
<td></td>
<td>Capsules:</td>
<td></td>
<td>Oral solution contains propylene glycol.</td>
</tr>
<tr>
<td></td>
<td>• 200 mg</td>
<td></td>
<td>Teratogenic/embryocidal.</td>
</tr>
<tr>
<td></td>
<td>Tablets:</td>
<td></td>
<td>Contraindicated in pregnant women and their male partners. Avoid pregnancy for additional 6 months after treatment.</td>
</tr>
<tr>
<td></td>
<td>• 200 mg</td>
<td></td>
<td>Monitor CBC, renal function, LFTs, and thyroid function. Perform pregnancy tests regularly while on therapy.</td>
</tr>
<tr>
<td></td>
<td>• 400 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 600 mg</td>
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</tr>
</tbody>
</table>
Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities  (page 19 of 22)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Preparations</th>
<th>Major Toxicitiesa</th>
<th>Special Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Indicating Need for Medical Attention</strong></td>
<td><strong>Indicating Need for Medical Attention if Persistent or Bothersome</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Special Instructions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rifabutin</strong></td>
<td><strong>Capsules:</strong></td>
<td></td>
<td>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 &gt;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.</td>
</tr>
<tr>
<td></td>
<td>150 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Oral Suspension:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extemporaneous preparation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Less Frequent:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>More Frequent:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Rare:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Special Instructions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Indicating Need for Medical Attention</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Indicating Need for Medical Attention if Persistent or Bothersome</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Special Instructions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rifampin</strong></td>
<td><strong>Oral Suspension:</strong></td>
<td></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Extemporaneous preparation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Less Frequent:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>More Frequent:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Rare:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Special Instructions</strong></td>
<td></td>
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<tr>
<td></td>
<td><strong>Indicating Need for Medical Attention</strong></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td><strong>Indicating Need for Medical Attention if Persistent or Bothersome</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Special Instructions</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 20 of 22)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Preparations</th>
<th>Major Toxicities(^a)</th>
<th>Special Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Streptomycin</td>
<td>IM</td>
<td><strong>More Frequent:</strong></td>
<td>• CNS effects (headache, ataxia, dizziness )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Nephrotoxicity</td>
<td>• CNS effects (headache, ataxia, dizziness )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Neurotoxicity (including muscle twitching, seizures)</td>
<td>• CNS effects (headache, ataxia, dizziness )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Peripheral neuritis</td>
<td>• CNS effects (headache, ataxia, dizziness )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ototoxicity, both auditory and vestibular</td>
<td>• CNS effects (headache, ataxia, dizziness )</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Less Frequent:</strong></td>
<td>• Hypersensitivity (skin rash, redness, or swelling)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Optic neuritis</td>
<td>• Hypersensitivity (skin rash, redness, or swelling)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Bone marrow suppression</td>
<td>• Hypersensitivity (skin rash, redness, or swelling)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Rare:</strong></td>
<td>• Neuromuscular blockade</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• CNS effects (headache, ataxia, dizziness )</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• CNS effects (headache, ataxia, dizziness )</td>
</tr>
<tr>
<td></td>
<td><strong>Special Instructions:</strong></td>
<td></td>
<td>• CNS effects (headache, ataxia, dizziness )</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Universal route of administration is deep IM injection into large muscle mass.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Requires dose adjustment in patients with impaired renal function.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Monitor renal function and hearing periodically (e.g., monthly) in children on prolonged therapy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Monitor serum concentrations (TDM).</td>
</tr>
<tr>
<td>Sulfadiazine</td>
<td>Tablet: 500 mg</td>
<td><strong>Rare:</strong></td>
<td>Ensure adequate fluid intake to avoid crystalluria.</td>
</tr>
<tr>
<td></td>
<td>Oral Suspension: Extemporaneous preparation</td>
<td>• Crystalluria, renal failure</td>
<td>Ensure adequate fluid intake to avoid crystalluria.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Bone marrow suppression/ blood dyscrasias</td>
<td>Ensure adequate fluid intake to avoid crystalluria.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Severe hypersensitivity syndrome</td>
<td>Ensure adequate fluid intake to avoid crystalluria.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hemolytic anemia (with G6PD deficiency)</td>
<td>Ensure adequate fluid intake to avoid crystalluria.</td>
</tr>
<tr>
<td></td>
<td><strong>Special Instructions:</strong></td>
<td></td>
<td>Monitor CBC, renal function, and urinalysis.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Monitor serum concentrations (TDM) if serious infection.</td>
</tr>
<tr>
<td>Trimethoprim-</td>
<td>Oral Suspension: TMP 8 mg/mL and SMX 40 mg/mL</td>
<td><strong>More Frequent:</strong></td>
<td>Requires dose adjustment in patients with impaired renal function.</td>
</tr>
<tr>
<td>Sulfamethoxazole</td>
<td>Tablets: Single Strength: TMP 80 mg and SMX 400 mg</td>
<td>• Skin rash</td>
<td>Maintain adequate fluid intake to prevent crystalluria and stone formation (take with full glass of water).</td>
</tr>
<tr>
<td>(TMP-SMX)</td>
<td>Double Strength: TMP 160 mg and SMX 800 mg</td>
<td><strong>Less Frequent:</strong></td>
<td>Potential for photosensitivity skin reaction with sun exposure.</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>• Hypersensitivity reactions (skin rash, fever)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hematologic toxicity (leukopenia, neutropenia, thrombocytopenia, anemia)</td>
<td>IV infusion over 60 to 90 minutes Monitor CBC, renal function.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Rare:</strong></td>
<td>• Exfoliative skin disorders (including SJS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hemolytic anemia (with G6PD deficiency)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Methemoglobinemia</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Renal toxicity (crystalluria, nephritis, tubular necrosis)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• CNS toxicity (aseptic meningitis)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pseudomembranous colitis</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>• Cholestatic hepatitis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Thyroid function disturbance</td>
<td></td>
</tr>
</tbody>
</table>
Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities  (page 21 of 22)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Preparations</th>
<th>Major Toxicities&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Special Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Indicating Need for Medical Attention</td>
<td>Indicating Need for Medical Attention if Persistent or Bothersome</td>
</tr>
<tr>
<td>Valacyclovir</td>
<td>Tablets:</td>
<td>Rare:</td>
<td>More Frequent:</td>
</tr>
<tr>
<td>(Valtrex)</td>
<td>• 500 mg</td>
<td>• Renal failure</td>
<td>• Headache, nausea</td>
</tr>
<tr>
<td></td>
<td>• 1 g</td>
<td>• Bone marrow suppression</td>
<td>• Arthralgia</td>
</tr>
<tr>
<td></td>
<td>Note:</td>
<td>• Thrombotic microangiopathy/hemolytic uremic syndrome</td>
<td>• Dizziness, fatigue</td>
</tr>
<tr>
<td></td>
<td>An oral suspension formulation 50 mg/mL can be prepared in Ora-Sweet or Syrupalata syrups)</td>
<td>• CNS (psychosis, seizures, delirium)</td>
<td>• GI disturbances (diarrhea or constipation, anorexia, abdominal pain, vomiting)</td>
</tr>
<tr>
<td>Valganciclovir</td>
<td>Tablets:</td>
<td>More Frequent:</td>
<td>• Dysmenorrhea</td>
</tr>
<tr>
<td>(Valcyte)</td>
<td>• 450 mg</td>
<td>• Granulocytopenia</td>
<td>• CNS effects (headache, insomnia)</td>
</tr>
<tr>
<td></td>
<td>Oral Solution:</td>
<td>• Thrombocytopenia</td>
<td>• Arthralgia</td>
</tr>
<tr>
<td></td>
<td>• 50 mg/mL</td>
<td>Less Frequent:</td>
<td>• Dizziness, fatigue</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Anemia</td>
<td>• GI disturbances (abdominal pain, anorexia, nausea, vomiting)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• CNS effects (seizures, psychosis, hallucinations)</td>
<td>• CNS effects (headache, insomnia)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hypersensitivity (fever, rash)</td>
<td>• Retinal detachment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Elevated transaminase enzymes</td>
<td>• Increase in creatinine, BUN</td>
</tr>
</tbody>
</table>

<sup>a</sup> Special Instructions indicating need for medical attention if persistent or bothersome.
### Table 4. Common Drugs Used for Treatment of Opportunistic Infections in HIV-Infected Children: Preparations and Major Toxicities (page 22 of 22)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Preparations</th>
<th>Major Toxicities&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Special Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Indicating Need for Medical Attention</td>
<td>Indicating Need for Medical Attention if Persistent or Bothersome</td>
</tr>
<tr>
<td>Voriconazole (VFEND)</td>
<td>Tablet: 50 mg, 200 mg</td>
<td><strong>Less Frequent:</strong>&lt;br&gt;- Hypersensitivity (fever, chills, skin rash)&lt;br&gt;- Anaphylactoid reaction with IV infusion</td>
<td>Oral tablets should be taken 1 hour before or after a meal.&lt;br&gt;- Shake oral suspension well prior to dosing.&lt;br&gt;- Maximum IV infusion rate 3 mg/kg/hour over 1 to 2 hours.</td>
</tr>
<tr>
<td></td>
<td>Oral Suspension: 40 mg/mL</td>
<td><strong>Rare:</strong>&lt;br&gt;- Hepatotoxicity (including hepatic failure)&lt;br&gt;- Exfoliative skin disorders (including SJS)&lt;br&gt;- Renal dysfunction&lt;br&gt;- Cardiac arrhythmias&lt;br&gt;- QT prolongation&lt;br&gt;- Electrolyte abnormalities&lt;br&gt;- Optic neuritis, papilledema</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td><strong>More Frequent:</strong>&lt;br&gt;- Visual changes, dose-related (photophobia, blurry vision)&lt;br&gt;- CNS effects (dizziness, drowsiness, headache)&lt;br&gt;- GI disturbances (abdominal pain, constipation, diarrhea, anorexia, nausea, vomiting)&lt;br&gt;- Photosensitivity</td>
<td>Monitor renal function, electrolytes, and LFTs. Consider monitoring serum concentrations (TDM).</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Rare:</strong>&lt;br&gt;- Gynecomastia&lt;br&gt;- Elevated serum transaminases</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> 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-α = 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