

**FLUKE, hermaphroditic, infection**

Drug	Adult dosage	Pediatric dosage
<b>Clonorchis sinensis</b> (Chinese liver fluke)		
Drug of choice: Praziquantel <sup>1</sup>	75 mg/kg/d PO in 3 doses x 2d	75 mg/kg/d PO in 3 doses x 2d
OR Albendazole <sup>2,3</sup>	10 mg/kg/d PO x 7d	10 mg/kg/d PO x 7d
<b>Fasciola hepatica</b> (sheep liver fluke)		
Drug of choice: <sup>4</sup> Triclabendazole*	10 mg/kg PO once or twice <sup>5</sup>	10 mg/kg PO once or twice <sup>5</sup>
Alternative: Bithionol*	30-50 mg/kg on alternate days x 10-15 doses	30-50 mg/kg on alternate days x 10-15 doses
OR Nitazoxanide <sup>2,6</sup>	500 mg PO bid x 7d	1-3yrs: 100 mg PO q12h x 7d 4-11yrs: 200 mg PO q12h x 7d >12yrs: 500 mg PO q12h x 7d
<b>Fasciolopsis buski, Heterophyes heterophyes, Metagonimus yokogawai</b> (intestinal flukes)		
Drug of choice: Praziquantel <sup>1,2</sup>	75 mg/kg/d PO in 3 doses x 1d	75 mg/kg/d PO in 3 doses x 1d
<b>Metorchis conjunctus</b> (North American liver fluke)		
Drug of choice: Praziquantel <sup>1,2</sup>	75 mg/kg/d PO in 3 doses x 1d	75 mg/kg/d PO in 3 doses x 1d
<b>Nanophyetus salmincola</b>		
Drug of choice: Praziquantel <sup>1,2</sup>	60 mg/kg/d PO in 3 doses x 1d	60 mg/kg/d PO in 3 doses x 1d
<b>Opisthorchis viverrini</b> (Southeast Asian liver fluke)		
Drug of choice: Praziquantel <sup>1</sup>	75 mg/kg/d PO in 3 doses x 2d	75 mg/kg/d PO in 3 doses x 2d
<b>Paragonimus westermani</b> (lung fluke)		
Drug of choice: Praziquantel <sup>1,2</sup>	75 mg/kg/d PO in 3 doses x 2d	75 mg/kg/d PO in 3 doses x 2d
Alternative: <sup>7</sup> Bithionol*	30-50 mg/kg on alternate days x 10-15 doses	30-50 mg/kg on alternate days x 10-15 doses

\* Availability problems. See table below.

1. Praziquantel should be taken with liquids during a meal.
2. Not FDA-approved for this indication.
3. Albendazole must be taken with food; a fatty meal increases oral bioavailability.
4. Unlike infections with other flukes, *Fasciola hepatica* infections may not respond to praziquantel. Triclabendazole (*Egaten* - Novartis) appears to be safe and effective, but data are limited (DY Aksoy et al, Clin Microbiol Infect 2005; 11:859). It is available from Victoria Pharmacy, Zurich, Switzerland (www.pharmaworld.com; 41-1-211-24-32) and should be given with food for better absorption. Nitazoxanide also appears to have efficacy in treating fascioliasis in adults and in children (L Favennec et al, Aliment Pharmacol Ther 2003; 17:265; JF Rossignol et al, Trans R Soc Trop Med Hyg 1998; 92:103; SM Kabil et al, Curr Ther Res 2000; 61:339).
5. J Keiser et al, Expert Opin Investig Drugs 2005; 14:1513.
6. Nitazoxanide may be effective against a variety of protozoan and helminth infections (DA Bobak, Curr Infect Dis Rep 2006; 8:91; E Diaz et al, Am J Trop Med Hyg 2003; 68:384). It was effective against mild to moderate amebiasis, 500 mg bid x 3d, in a recent study (JF Rossignol et al, Trans R Soc Trop Med Hyg 2007 Oct; 101:1025 E pub 2007 July 20). It is FDA-approved only for treatment of diarrhea caused by *Giardia* or *Cryptosporidium* (Med Lett Drugs Ther 2003; 45:29). Nitazoxanide is available in 500-mg tablets and an oral suspension; it should be taken with food.
7. Triclabendazole may be effective in a dosage of 5 mg/kg PO once/d x 3d or 10 mg/kg PO bid x 1d (M Calvopiña et al, Trans R Soc Trop Med Hyg 1998; 92:566). See footnote 4 for availability.

Information provided by The Medical Letter. For a copy of the entire **Drugs for Parasitic Infections** article, go to: [www.medicalletter.org/parasitic\\_cdc](http://www.medicalletter.org/parasitic_cdc)

**MANUFACTURERS OF DRUGS USED TO TREAT PARASITIC INFECTIONS**

- albendazole – *Albenza* (GlaxoSmithKline)
- Albenza* (GlaxoSmithKline) – albendazole
- Alinia* (Romark) – nitazoxanide
- Ambisome* (Gilead) – amphotericin B, liposomal
- amphotericin B – *Fungizone* (Apothecon), others
- amphotericin B, liposomal – *Ambisome* (Gilead)
- Ancobon* (Valeant) – flucytosine
- § *Antiminth* (Pfizer) – pyrantel pamoate
- *Aralen* (Sanofi) – chloroquine HCl and chloroquine phosphate
- § artemether – *Artenam* (Arenco, Belgium)
- § artemether/lumefantrine – *Coartem, Riamet* (Novartis)
- § *Artenam* (Arenco, Belgium) – artemether
- § artesunate – (Guilin No. 1 Factory, People's Republic of China)
- atovaquone – *Mepron* (GlaxoSmithKline)
- atovaquone/proguanil – *Malarone* (GlaxoSmithKline)
- azithromycin – *Zithromax* (Pfizer), others
- *Bactrim* (Roche) – TMP/Sulfa
- § benznidazole – *Rochagan* (Brazil)
- *Biaxin* (Abbott) – clarithromycin
- § *Biltricide* (Bayer) – praziquantel
- † bithionol – *Bitin* (Tanabe, Japan)
- † *Bitin* (Tanabe, Japan) – bithionol
- § *Brolene* (Aventis, Canada) – propamidine isethionate
- chloroquine HCl and chloroquine phosphate – *Aralen* (Sanofi), others
- clarithromycin – *Biaxin* (Abbott), others
- *Cleocin* (Pfizer) – clindamycin
- clindamycin – *Cleocin* (Pfizer), others
- Coartem* (Novartis) – artemether/lumefantrine
- crotamiton – *Eurax* (Westwood-Squibb)
- dapsone – (Jacobus)
- § *Daraprim* (GlaxoSmithKline) – pyrimethamine USP
- † diethylcarbamazine citrate (DEC) – *Hetrazan*
- *Diflucan* (Pfizer) – fluconazole
- § diloxanide furoate – *Furamide* (Boots, United Kingdom)
- doxycycline – *Vibramycin* (Pfizer), others
- eflornithine (Difluoromethylornithine, DFMO) – *Ornidyl* (Aventis)
- § *Egaten* (Novartis) – triclabendazole
- Elimite* (Allergan) – permethrin
- Ergamisol* (Janssen) – levamisole
- Eurax* (Westwood-Squibb) – crotamiton
- *Flagyl* (Pfizer) – metronidazole
- § *Flisint* (Sanofi-Aventis, France) – fumagillin
- fluconazole – *Diflucan* (Pfizer), others
- flucytosine – *Ancobon* (Valeant)
- § fumagillin – *Flisint* (Sanofi-Aventis, France)
- *Fungizone* (Apothecon) – amphotericin
- § *Furamide* (Boots, United Kingdom) – diloxanide furoate
- § furazolidone – *Furozone* (Roberts)
- § *Furozone* (Roberts) – furazolidone
- † *Germanin* (Bayer, Germany) – suramin sodium
- § *Glucantime* (Aventis, France) – meglumine antimonate
- † *Hetrazan* – diethylcarbamazine citrate (DEC)
- Humatin* (Monarch) – paromomycin
- § *Impavido* (Zentaris, Germany) – miltefosine
- iodoquinol – *Yodoxin* (Glenwood), others
- itraconazole – *Sporanox* (Janssen-Ortho), others
- ivermectin – *Stromectol* (Merck)
- ketoconazole – *Nizoral* (Janssen), others
- † *Lampit* (Bayer, Germany) – nifurtimox
- Lariam* (Roche) – mefloquine
- § *Leshcutan* (Teva, Israel) – topical paromomycin
- levamisole – *Ergamisol* (Janssen)
- lumefantrine/artemether – *Coartem, Riamet* (Novartis)
- Malarone* (GlaxoSmithKline) – atovaquone/proguanil
- malathion – *Ovide* (Medicis)
- mebendazole – *Vermox* (McNeil), others
- mefloquine – *Lariam* (Roche)
- § meglumine antimonate – *Glucantime* (Aventis, France)
- † melarsoprol – *Mel-B*
- † *Mel-B* – melarsoprol
- Mepron* (GlaxoSmithKline) – atovaquone

(continued)

- metronidazole – *Flagyl* (Pfizer), others
- § miconazole – *Monistat i.v.*
- § miltefosine – *Impavido* (Zentaris, Germany)
- § *Monistat i.v.* – miconazole
- § *NebuPent* (FujiSawa) – pentamidine isethionate
- § niclosamide – *Yomesan* (Bayer, Germany)
- † nifurtimox – *Lampit* (Bayer, Germany)
- nitazoxanide – *Alinia* (Romark)
- Nix* (GlaxoSmithKline) – permethrin
- *Nizoral* (Janssen) – ketoconazole
- § ornidazole – *Tiberal* (Roche, France)
- Ornidyl* (Aventis) – eflornithine (Difluoromethylornithine, DFMO)
- Ovide* (Medicis) – malathion
- § oxamniquine – *Vansil* (Pfizer)
- § *Paludrine* (AstraZeneca, United Kingdom) – proguanil
- paromomycin – *Humatin* (Monarch); *Leshcutan* (Teva, Israel; topical formulation not available in US)
- Pentam 300* (FujiSawa) – pentamidine isethionate
- pentamidine isethionate – *Pentam 300* (FujiSawa), *NebuPent* (FujiSawa)
- † *Pentostam* (GlaxoSmithKline, United Kingdom) – sodium stibogluconate
- permethrin – *Nix* (GlaxoSmithKline), *Elimite* (Allergan)
- § praziquantel – *Biltricide* (Bayer)
- primaquine phosphate USP
- § proguanil – *Paludrine* (AstraZeneca, United Kingdom)
- proguanil/atovaquone – *Malarone* (GlaxoSmithKline)
- § propamidine isethionate – *Brolene* (Aventis, Canada)
- § pyrantel pamoate – *Antiminth* (Pfizer)
- pyrethrins and piperonyl butoxide – *RID* (Pfizer), others
- § pyrimethamine USP – *Daraprim* (GlaxoSmithKline)
- Qualaquin* – quinine sulfate (Mutual Pharmaceutical Co/AR Scientific)
- quinacrine
- \* quinidine gluconate (Eli Lilly)
- § quinine dihydrochloride
- quinine sulfate – *Qualaquin* (Mutual Pharmaceutical Co/AR Scientific)
- Riamet* (Novartis) – artemether/lumefantrine
- *RID* (Pfizer) – pyrethrins and piperonyl butoxide
  - *Rifadin* (Aventis) – rifampin
- rifampin – *Rifadin* (Aventis), others
- § *Rochagan* (Brazil) – benznidazole
- \* *Rovamycine* (Aventis) – spiramycin
- † sodium stibogluconate – *Pentostam* (GlaxoSmithKline, United Kingdom)
- \* spiramycin – *Rovamycine* (Aventis)
  - *Sporanox* (Janssen-Ortho) – itraconazole
- Stromectol* (Merck) – ivermectin
- sulfadiazine – (Eon)
- † suramin sodium – *Germanin* (Bayer, Germany)
- § *Tiberal* (Roche, France) – ornidazole
- Tindamax* (Mission) – tinidazole
- tinidazole – *Tindamax* (Mission)
- TMP/Sulfa – *Bactrim* (Roche), others
- § triclabendazole – *Egaten* (Novartis)
- § *Vansil* (Pfizer) – oxamniquine
- *Vermox* (McNeil) – mebendazole
  - *Vibramycin* (Pfizer) – doxycycline
  - *Yodoxin* (Glenwood) – iodoquinol
- § *Yomesan* (Bayer, Germany) – niclosamide
- *Zithromax* (Pfizer) – azithromycin

\* Available in the US only from the manufacturer.

§ Not available commercially. It may be obtained through compounding pharmacies such as Panorama Compounding Pharmacy, 6744 Balboa Blvd, Van Nuys, CA 91406 (800-247-9767) or Medical Center Pharmacy, New Haven, CT (203-688-6816). Other compounding pharmacies may be found through the National Association of Compounding Pharmacies (800-687-7850) or the Professional Compounding Centers of America (800-331-2498, [www.pccarx.com](http://www.pccarx.com)).

† Available from the CDC Drug Service, Centers for Disease Control and Prevention, Atlanta, Georgia 30333; 404-639-3670 (evenings, weekends, or holidays: 770-488-7100).

• Also available generically.