The Health Department of Western Australia in consensus with the Commonwealth Department of Health and Family Services provides a screening service to refugees and migrant people arriving in Australia under some humanitarian resettlement schemes.

All screening procedures and tests will first be initiated by a Medical Officer at the Migrant Health Centre. In most instances, all results of tests undertaken will be interpreted by the Medical Officer of the Migrant Health Centre, who will then prescribe and document treatment if necessary in the client’s record. In some situations, i.e. where repeat tests are undertaken at a later date, the general practitioner may be the Medical Officer responsible for interpreting results and prescribing treatment if necessary.

Community nurses working throughout the State of Western Australia will in most instances be involved in the follow-up care of migrant people, particularly where further treatment or tests need to be conducted.

This document provides community nurses with the Health Department’s recommended treatment protocols for the various parasitic diseases.

The Medical Officer at the Migrant Health Centre will authorise the treatment for parasitic infections. Community nurses should follow the authorised instructions of the Medical Officer as documented in the client’s record, or refer to the recommended operational instruction, in instances where treatment has been recommended. If treatment is requested by a general practitioner at a later date, if no directions are provided, use these instructions.

Any concerns should be discussed with the medical Officer at the Migrant Health Centre, telephone (09) 221 4445 or the Medical Coordinator at the Communicable Diseases Control Program, telephone (09) 388 4999.

**ENTERIC LABORATORY RESULTS** - *When laboratory results are received, community nurses should proceed as follows:*

A. **TREATMENT NOT GIVEN UNLESS CAUSING SYMPTOMS**  
   *(Check with enteric laboratory or doctor if in doubt)*

   Note that some of these organisms, such as cryptosporidia can cause gastroenteritis which may be severe and prolonged in immunodeficient individuals.

   - Blastocystis hominis
   - Entamoeba coli
   - Entamoeba hartmanni
   - Endolimax nana
   - Iodamoeba butschlii
   - Cryptosporidia
   - Sarcocystis
Plesiomonas shigelloides
Dientamoeba fragilis
Chilomastix mesnili
Trichomonas hominis

Any other organism which the laboratory report states is “rarely, if ever, pathogenic” - no further action.

B. NOTIFIABLE - but not treated unless causing serious symptoms - discuss with doctor.

Campylobacter - all varieties
Salmonella - all varieties
Shigella - all varieties

Repeat specimen in two weeks to see if cleared. Refer to general practitioner if necessary.

C. NOTIFY AND TREAT - see treatment protocols

Giardia lamblia (intestinalis)
Schistosoma
Entamoeba histolytica

D. TREAT - as shown in protocols

Ancylostomiasis (Hookworm)
Trichuris trichiura (whipworm)
Hymenolepis nana (dwarf tapeworm)
Strongyloides stercoralis (threadworm)
Ascaris lumbricoides (roundworm)
Taenia species (beef or pork tapeworm)
Enterobius vermicularis (pinworm/threadworm)
Clonorchis sinensis (liver fluke)

Any treatment requires one to ascertain proof of cure with a stool specimen taken two to three weeks after treatment. However, if community-wide treatment is applied as a public health measure such follow-up is not required.

In mixed helminth infections use a broad spectrum drug such as albendazole or mebendazole. The former is preferred if Strongyloides is present. If not cleared after two treatments, refer patient to doctor.

In mixed parasitic infections treat for the parasite considered to be causing symptoms first. For example, if a child is anaemic due to Hookworm infection, but also has giardia, treat for Hookworm first. However, if such a child also has diarrhoea considered to be due to giardia, then treat for both conditions at the same time. Most antiparasitic drugs can be given at the same time, but as there is inadequate data available, praziquantel should be given after the other antiparasitic drugs. An interval of one day between cessation of one drug and the commencement of the next is reasonable.

Thiabendazole (Mintezol) should only be used after Ascariasis has been treated.

In pregnancy, forward laboratory reports to antenatal clinic for obstetrician to follow-up as appropriate.

Note: Diseases marked * are notifiable.
ASCARIASIS

Treatment: Drug of choice is Pyrantel Embonate (Combantrin) to be taken as a stat dose. Syrup 50 mg/ml is available, and tablets 125 mg or 250 mg.

Dosage: 10 mg/kg body weight up to maximum of 750 mg given as a stat dose.

Contraindications: Acute live disease.

Infrequent side-effects: Anorexia, headache, fatigue, etc.

Alternative (1): Mebendazole (Vermox)
Age 2 years and over: 100 mg bd x 3 days
- Not recommended for children under 2 years or whilst breast feeding.

Possible side-effects: Vermox is generally well tolerated but patients with high parasitic burdens may have diarrhoea, vomiting or abdominal pain.

Alternative (2): Albendazole (Zentel)
400 mg as a single dose on an empty stomach - tables may be crushed, chewed or swallowed whole.

Possible side-effects: Zentel is well tolerated although abdominal pain, nausea, diarrhoea, vomiting, headache, dizziness and itching or skin rashes have been reported.

CLONORCHIASIS

Treatment: Praziquantel (Biltricide)

Dosage: 25 mg/kg body weight, in three doses and given at not less than four hourly or more than six hourly intervals on the same day. To be taken with liquid after meals. Tablets taste slightly bitter and should NOT be chewed.
- Mothers should not breast feed on day of treatment or for the next 72 hours.
- Safety in children not established.
- Patients should not drive or operate machinery.

Possible side-effects: Abdominal pain, nausea, headache.

ENTAMOEBA HISTOLYTICA

Treatment only required if diagnosis is confirmed. Amoeba serology should then be requested to establish whether tissue invasion is present. If tissue invasion is present, treatment is urgent and adequate follow-up is required to confirm cure. Therefore, refer to hospital.

Fresh stool specimens are required for amoeba speciation and need to reach the laboratory within one hour of collection. If the organism is confirmed, trophozrites detected, and there is no tissue invasion, treat as follows:
**Treatment:** Metronidazole (Flagyl) taken with water one hour before a meal.

**Dosage:**
- 1 - 2 years: Flagyl 100 mg tds x 7 days
- 3 - 6 years: Flagyl 100 mg qds x 7 days
- 7 - 12 years: Flagyl 200 mg tds x 7 days
- 12 years and older: Flagyl 600 mg tds x 7 days together with Tetracycline 500 mg 6 hourly x 5 days.

- Mothers should not breast feed during treatment.
- Avoid alcohol during treatment - causes severe vomiting.
- Contraindicated in patients with history of blood dyscrasias.
- Enhances activity of Warfarin
- Flagyl is usually well tolerated.

**Possible side-effects:** Metallic taste, nausea, vomiting, headache, diarrhoea.

**TREATMENT OF CARRIERS**

If only cysts are detected and there is no tissue invasion, i.e. carrier status, treatment is with diloxanide furoate (Furamide).

Furamide is not a registered drug in Australia and is only available under the Special Access Scheme (SAS).

**Action/Pharmacology:**

Amoebicide - specific against Entamoeba histolytica: absorbed from the gut after an oral dose - low toxicity.

**Contraindications:**

None known. No special precautions necessary and no interactions stated.

**Use of lactation:**

No information available on the excretion of Furamide in breast milk.

**Dosage:**

- Children under 12 years: 20 mg/kg body weight daily, in three doses for 10 days.
- Adults: 500 mg (1 tablet) three times daily for 10 days.

For clients diagnosed through the Migrant Health Unit the appropriate treatment will be authorised and supplied by the Director, Disease Control.

Clients diagnosed from other sources should be referred to their general practitioner.

**ENTEROBIUS VERMICULARIS**

**Treatment:** Drug of choice is mebendazole (Vermox).

**Dosage:**

- 2 years and above: 100 mg stat and repeat one week later.
  - Not recommended for children under 2 years old.
  - Mothers should not breast feed babies during treatment.
**Possible side-effects:** Vermox is generally well tolerated but patients with high parasitic burdens may have diarrhoea, vomiting or abdominal pain.

**Alternative:** Albendazole (Zentel) 400 mg as a single dose on an empty stomach - tablets may be crushed, chewed or swallowed whole.

*GIARDIA LAMBLIA (Intestinalis)*

**Treatment:** Drug of choice is tinidazole (Fasigyn).

**Dosage:** To be taken as a stat dose after a meal.

50 mg/kg up to a maximum of 2 g.

<table>
<thead>
<tr>
<th>Age</th>
<th>Weight (kg)</th>
<th>Dosage (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 4 years</td>
<td>About 10</td>
<td>500</td>
</tr>
<tr>
<td>5 - 9 years</td>
<td>About 20</td>
<td>1,000</td>
</tr>
<tr>
<td>10 - 14 years</td>
<td>About 30</td>
<td>1,500</td>
</tr>
<tr>
<td>Over 15 years</td>
<td>2,000</td>
<td></td>
</tr>
</tbody>
</table>

**Alternative:** Metronidazole (Flagyl)

<table>
<thead>
<tr>
<th>Age</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 2 years</td>
<td>400 mg daily x 3 days</td>
</tr>
<tr>
<td></td>
<td>Flagyl Suspension 10 ml</td>
</tr>
<tr>
<td>3 - 6 years</td>
<td>600 mg daily x 3 days</td>
</tr>
<tr>
<td>7 - 12 years</td>
<td>1 gm daily x 3 days</td>
</tr>
<tr>
<td>Adults</td>
<td>2 gms daily x 3 days</td>
</tr>
</tbody>
</table>

- To be taken one hour before food.
- Not recommended for breast feeding mothers.

**Possible side-effects:** General malaise, metallic taste, nausea, vomiting, headache, diarrhoea.

**HYMENOLEPIS NANA**

**Treatment:** Niclosamide (Yomesan)

Daily dose to be taken immediately after breakfast. Tablets to be chewed before swallowing and washed down with water. If constipated, a laxative should be given prior to treatment.

**Dosage:**

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Less than 2 years</th>
<th>1 tablet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 2 - 6 years</td>
<td>2 tablets’</td>
<td></td>
</tr>
<tr>
<td>Over 6 years and adults</td>
<td>4 tablets</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Day 2 - 7</th>
<th>Less than 2 years</th>
<th>½ tablet daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 2 - 6 years</td>
<td>1 tablet daily</td>
<td></td>
</tr>
<tr>
<td>Over 6 years and adults</td>
<td>2 tablets daily</td>
<td></td>
</tr>
</tbody>
</table>

- No alcohol should be taken during treatment.

**Alternative:** Praziquantel (Biltricide)

Daily dose to be taken immediately after breakfast. Tablets to be chewed before swallowing and washed down with water. If constipated, a laxative should be given prior to treatment.
**Dosage:** Based on bodyweight - 25 mg/kg once.

To be taken after food and swallowed rapidly with liquid and not chewed. Tablets have a slightly bitter taste.

- Mothers should not breast feed on day of treatment or for the next 72 hours.
- Patients should not drive or operate machinery.
- Safety in children not established. Overseas studies indicate reasonable safety. **When treating children please observe for any side-effects and report to the Director, Disease Control, Health Department of Western Australia.**

**Possible side-effects:** Side-effects are usually mild and transitory. Can cause abdominal pain, nausea and headache.

**HOOKWORM (Ancylostomiasis, Necatoriasis)**

**Treatment:** Drug of choice is Pyrantel Embonate (Combantrin) to be taken as a stat dose.

Available as syrup 50 mg/ml.

Tablets of 125 mg or 250 mg strength.

**Dosage:** Based on bodyweight - 10 mg/kg.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Weight Range</th>
<th>Dosage Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 2 years</td>
<td>10 kg or less</td>
<td>2.5 ml syrup</td>
</tr>
<tr>
<td>Age 2 - 4 years</td>
<td>20 kg</td>
<td>2 x 125 mg or 5.0 ml syrup</td>
</tr>
<tr>
<td>Age 5 - 9 years</td>
<td>35 kg</td>
<td>3 x 125 mg or 7.5 ml syrup</td>
</tr>
<tr>
<td>Age 10 - 14 years</td>
<td>45 kg</td>
<td>4 x 125 mg or 2 x 250 mg</td>
</tr>
<tr>
<td>Adult</td>
<td></td>
<td>4 x 250 mg</td>
</tr>
</tbody>
</table>

**Contraindications:** Acute liver disease.

**Infrequent side-effects:** Anorexia, headache, fatigue, etc.

**Note:** Combantrin has generally been given as a stat dose at Migrant Health Unit three days prior to collection of stool specimen. This dosage can be repeated so long as there has been one week between doses.

**Alternative (1):** Mebendazole (Vermox)

Age 2 years and over: 100 mg bd x 3 days

- Not recommended for children under 2 or whilst breast feeding.

**Possible side-effects:** Vermox is generally well tolerated but patients with high parasitic burdens may have diarrhoea, vomiting or abdominal pain.

**Alternative (2):** Albendazole (Zentel).

400 mg as a single dose on an empty stomach - tablets may be crushed, chewed or swallowed whole.
**Possible side-effects:** Zentel is well tolerated although abdominal pain, nausea, diarrhoea, vomiting, headache, dizziness and itching or skin rashes have been reported.

*SCHISTOSOMIASIS*

**Treatment:** Praziquantel (Biltricide)

**Dosage:** 20 mg/kg body weight, given three times, not less than four hours or more than six hours apart on the same day. Tablets taste slightly bitter and should be swallowed rapidly with liquid after meals and **NOT** chewed.

- Mothers should not breast feed on day of treatment or for the next 72 hours.
- Safety in children not established.
- Patients should not drive or operate machinery.

**Possible side-effects:** Generally well tolerated although can cause abdominal pain, nausea, headache.

Professor Tim Davies at Fremantle Hospital has requested that patients treated for Schistosomiasis with Praziquantel be referred to him for follow-up.

**STRONGYLOIDES**

**Treatment:** Thiabendazole (Mintezol) - tablets to be taken after meals and chewed before swallowing.

**Dosage:**
- Patients less than 60 kg: 20 mg/kg/dose bd x 2 days
- Patients 60 kg and over: 1.5 g/dose bd x 2 days.

**Note:** Maximum dose is 1.5 gms per dose.

**Precautions:**
Do not use in mixed infections with ascaris (may cause worms to migrate).

Avoid tasks requiring mental alertness.

**Refer to Medical Officer:**
- If hypersensitivity reactions occur (cease treatment)
- If other medical conditions are present.
- During lactation and for children less than 15 kg.

**Possible side-effects:** Anorexia, nausea, vomiting, dizziness.

**Alternative (1):** Albendazole (Zentel).

400 mg on an empty stomach x 3 days - tablets may be crushed, chewed or swallowed whole.

**Possible side-effects:** Zentel is well tolerated although abdominal pain, nausea, diarrhoea, vomiting, headache, dizziness and itching or skin rashes have been reported.
TAENIA SPECIES

Treatment: Niclosamide (Yomesan) to be taken as stat dose chewed after breakfast.

Dosage:
- Adults: 2.0 g
- Child more than 34 kg: 1.5 g
- Child 11 kg - 34 kg: 1.0 g

- No alcohol should be taken on day of treatment.

Alternative: Praziquantel (Biltricide)

Dosage: 5 - 10 mg/kg body weight taken once.

To be taken after food and swallowed rapidly with liquid and not chewed. Tablets should have a slightly bitter taste.

- Mothers should not breast feed on day of treatment or for the next 72 hours.
- Patients should not drive or operate machinery.
- Safety in children not established. Overseas studies indicate reasonable safety. **When treating children please observe for any side-effects and report to the Director, Disease Control, Health Department of Western Australia.**

Possible side-effects: Side-effects are usually mild and transitory. Can cause abdominal pain, nausea and headache.

TRICHURIASIS

Treatment: Mebendazole (Vermox)

Dosage:
- Age 2 years and above: 100 mg bd x 3 days

- Not recommended for children under 2 years old.
- Mothers should not breast feed babies during treatment.

Possible side-effects: Vermox is generally well tolerated but patients with many parasites may have diarrhoea, vomiting or abdominal pain.

Alternative (1): Albendazole (Zentel)

400 mg as a single dose on an empty stomach - tablets may be crushed, chewed or swallowed whole.
### DRUGS FOR THE TREATMENT OF PARASITIC INFECTIONS

**(Summary Table)**

<table>
<thead>
<tr>
<th>PARASITE</th>
<th>DRUG</th>
<th>ADULT DOSAGE</th>
<th>PAEDIATRIC DOSAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASCARIASIS:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Drug of choice</td>
<td>Pyrantel Embonate</td>
<td>750 mg stat</td>
<td>10 mg/kg stat</td>
</tr>
<tr>
<td></td>
<td>Alternative (1)</td>
<td>Mebendazole 100 mg bd x 3 days</td>
<td>100 mg bd x 3 days</td>
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<tr>
<td></td>
<td>Alternative (2)</td>
<td>Albendazole 400 mg stat</td>
<td>400 mg stat</td>
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<td></td>
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<tr>
<td>CHLONORCHIASIS:</td>
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<tr>
<td>• Drug of choice</td>
<td>Praziquantel</td>
<td>25 mg divided tds x 1 day</td>
<td>25 mg divided tds x 1 day</td>
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<tr>
<td>ENTAMOEBA HISTOLYTICA:</td>
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<tr>
<td>Drug of choice</td>
<td>Metronidazole 600 mg tds x 7 days plus tetracycline 500 mg qds x 5 days</td>
<td>1-2 years: 100 mg tds x 7 days 3-6 years: 100 mg qds x 7 days 7-12 years: 200mg tds x 7 days</td>
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<tr>
<td>ENTEROBIUS VERMICULARIS:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>• Drug of choice</td>
<td>Mebendazole</td>
<td>100 mg stat Repeat in 1 week</td>
<td>100 mg stat Repeat in week</td>
</tr>
<tr>
<td></td>
<td>Alternative</td>
<td>Albendazole 400 mg stat</td>
<td>400 mg stat</td>
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<tr>
<td>GIARDIA LAMBLIA:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>• Drug of choice</td>
<td>Tinidazole 2 gm stat</td>
<td></td>
<td>1-4 years: 500 mg stat 5-9 years: 1 gm stat 10-14 years: 1.5 gm stat</td>
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<tr>
<td>• Alternative</td>
<td>Metronidazole 2 gm x 3 days</td>
<td></td>
<td>1-2 years: 400mg daily x 3 3-6 years: 600mg daily x 3 7-12 years: 1 gm daily x 3</td>
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<tr>
<td>HYMENOLEPIS NANA:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Drug of choice</td>
<td>Niclosamide 6 years and above: 4 tablets stat and then 2 tablets daily x 5 days</td>
<td>&lt;2 years: 1 tablet stat and then ½ tablet x 5 days 2-5 years: 2 tablets stat and then 1 tablet x 5 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alternative</td>
<td>Praziquantel 25 mg/kg once</td>
<td>25 mg/kg once</td>
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<tr>
<td>HOOKWORM:</td>
<td></td>
<td></td>
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<tr>
<td>• Drug of choice</td>
<td>Pyrantel Embonate 750 mg stat</td>
<td></td>
<td>10 mg/kg stat</td>
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<tr>
<td></td>
<td>Alternative (1)</td>
<td>Mebendazole 100 mg bd x 3 days</td>
<td>100 mg bd x 3 days</td>
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<tr>
<td></td>
<td>Alternative (2)</td>
<td>Albendazole 400 mg stat</td>
<td>400 mg stat</td>
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<td></td>
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<tr>
<td>SCHISTOSOMIASIS:</td>
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</tr>
<tr>
<td>• Drug of choice</td>
<td>Praziquantel 20 mg/kg tds x 1 day</td>
<td></td>
<td>20 mg/kg tds x 1 day</td>
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<td></td>
<td></td>
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<tr>
<td>STRONGYLOIDES:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Drug of choice</td>
<td>Thiabendazole 60 kg and &gt;: 1.5 gm bd x 2 days</td>
<td>&lt;60kg: 20 mg/kg bd x 2 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alternative (1)</td>
<td>Albendazole 400 mg daily x 3 days</td>
<td>400 mg daily x 3 days</td>
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<tr>
<td>TAENIASIS:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>• Drug of choice</td>
<td>Niclosamide 2.0 gms stat</td>
<td>11-34 kg: 1.5 gm stat 34 kg: 1.0 gm stat</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alternative</td>
<td>Praziquantel 5 - 10 mg/kg body weight</td>
<td></td>
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<tr>
<td>TRICHRURIASIS:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Drug of choice</td>
<td>Mebendazole 100 mg bd x 3 days</td>
<td></td>
<td>100 mg bd x 3 days</td>
</tr>
<tr>
<td></td>
<td>Alternative (1)</td>
<td>Albendazole 400 mg stat</td>
<td>400 mg stat</td>
</tr>
</tbody>
</table>