Refugees from Africa are at risk for infection with soil-transmitted helminths, *Strongyloides stercoralis*, *Schistosoma*, and *Plasmodium* species. The following guidelines are intended to help Refugee Health Assessment Program (RHAP) clinicians to care for African refugees arriving from areas endemic for these infections. This document does not apply to refugees processed in Egypt and other North African countries who come mainly from the Middle East.

**OVERSEAS (PRE-DEPARTURE) PRESUMPTIVE THERAPY OF PARASITIC INFECTIONS**

**As of February 2017**, all eligible refugees whose medical examination is completed in Sub-Saharan Africa (except Chad) by the International Organization for Migration (IOM) receive presumptive treatment with:

- **Albendazole** for soil-transmitted helminths (*Ascaris lumbricoides* [Ascaris], whipworm [*Trichuris trichiura*], and hookworm [*Ancylostoma duodenale* and *Necator americanus*])
- **Ivermectin** for *Strongyloides stercoralis*
- **Praziquantel** for *Schistosoma* species

Refugees who have contraindications due to age or pregnancy do not receive presumptive treatment.

Refugees who are in or came from countries where *Loa loa* infection is endemic do not receive ivermectin.

Refugees processed or originating in Chad may receive an extended course of albendazole instead of ivermectin or no treatment for *Strongyloides*. Clinicians should carefully review overseas documentation in the latter cases.

In addition, all refugees without contraindications from **African** countries receive presumptive treatment with:

- **Artemether-lumefantrine** for *Plasmodium falciparum* (malaria).

The Centers for Disease Control and Prevention (CDC) maintains an up-to-date table of treatment schedules for presumptive parasitic infections for US-bound refugees. Check [here](https://www.cdc.gov/immigrantrefugeehealth/guidelines/overseas/intestinal-parasites-overseas.html) for the schedule and a full description of overseas presumptive therapy.
1. Intestinal and Tissue-Invasive Parasitic Infections:
   The RHAP protocol requires universal screening of *Giardia lamblia* antigen by direct immunofluorescent detection procedure of a single stool sample.

Summary of management of other intestinal and tissue-invasive parasitic infections is as follows:

- **Symptomatic**: Microscopic examination of a single stool specimen for ova & parasites (O&P) and serologic testing for invasive species as appropriate. Treat accordingly based on results. This testing is done regardless of receipt of overseas pre-departure treatment.

- **Asymptomatic**:
  
  **A. No Pre-Departure Treatment** due to contraindications to presumptive treatment or departure from location where presumptive treatment is currently not implemented. If due to location, treat presumptively according to CDC guidelines as noted above. If due to contraindications that still exist:

  - Microscopic examination of one single stool specimen for Ova & Parasites:
    - **Positive O & P test without peripheral blood eosinophilia**\(^1\) (>400 cells/µL): Provide appropriate treatment if/when no contraindications. Otherwise have follow-up for further evaluation.
    - **Positive O & P with eosinophilia**: Provide appropriate treatment if/when no contraindications. Have follow-up to assess for persistence of eosinophilia and/or evaluation for other causes.
    - **Negative O & P without eosinophilia**: No treatment or follow-up needed.
    - **Negative O & P test with eosinophilia**: Options of management include:
      - Treat for 1) *Strongyloides* if from a country without *Loa loa* infection. Serologic testing is preferred if the refugee is from a region with endemic *Loa loa* infection; and 2) *Schistosoma* species; **OR**
      - Further evaluation as per targeted testing protocol (i.e., *Strongyloides* titers; *Schistosoma* titers for refugees from Sub-Saharan African countries and have hematuria or hepatosplenomegaly; and/or filarial titers for those with suspicious skin lesions); **OR**
      - Referral to infectious disease specialist or primary care physician for further evaluation.

  **B. Incomplete Pre-Departure Treatment** i.e., did not receive all of the recommended overseas presumptive treatment for parasites prior to departure:

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\(^1\) Peripheral blood eosinophilia could be also due to other helminthic parasites, other infections/infestations, allergies, autoimmune and related disorders, immunodeficiency states, neoplastic diseases or other conditions.
Africa

- If not treated overseas for soil-transmitted helminths with albendazole due to contraindications, treat presumptively.
- Assume all refugees without contraindications and coming from the African countries of processing have received albendazole (for soil-contaminated helminths).
- Treat for 1) *Strongyloides* if from a country without *Loa* *loa* infection. Screening is preferable for refugees from *Loa* *loa* endemic areas; and 2) *Schistosoma* species; OR manage infection according to the eosinophil count:
  - **Normal eosinophil count (<400 cells/µL):** No further evaluation is required.
  - **Eosinophilia (>400 cells/µL):** This could be residual due to an already treated parasitic infection or due to ongoing infection with *Strongyloides stercoralis* or *Schistosoma* species; treat as above, OR
    - Further evaluation as per targeted testing protocol (Strongyloides titers, Schistosoma titers for refugees from the Sub-Saharan African countries and have hematuria or hepatospleno-megaly, and/or filarial titers for those with suspicious skin lesions), OR
    - Repeat eosinophil count in 3-6 months. If elevated, further diagnostic evaluation is suggested.

C. Complete Pre-Departure Treatment documented, eosinophilia is most likely residual and repeating eosinophil count in 3-6 months after arrival is warranted. If elevated, further diagnostic evaluation is suggested.

2. Malaria:
   - Assume all refugees without contraindications and departing from the Sub-Saharan African countries have received artemether-lumefabtrine for *Plasmodium falciparum* (malaria). For refugees with clinical symptoms only:
     - Laboratory screening to detect *Plasmodium falciparum* infection.
     - Treat with:
       - Atovaquone-proguanil (trade name Malarone) or artemether-lumefantrine (trade names Coartem, Riamet). For children ≥5 kg in weight and adult [It is not recommended for children <5 kg in weight, pregnant women, or breastfeeding women]
       - Alternative medications are either a combination of quinine sulfate and clindamycin (or doxycycline), or mefloquine (for those <45 kg in weight).

Medications:

- **Albendazole** (for infection with soil-transmitted helminths): Recommended for children ≥12 months old and adults who are NOT pregnant and do NOT have neurocysticercosis (either confirmed cases or individuals with unexplained seizures or subcutaneous nodules consistent with cysticercosis).
• **Ivermectin** (for infection with *Strongyloides stercoralis*): For children $\geq 15$ kg in weight and $\geq 90$ cm in height as well as adults who are not pregnant or lactating during the first week postpartum.

  o **Loa loa-endemic areas** (Angola, Cameroon, Central Africa Republic, Chad, Republic of Congo, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Nigeria, Republic of the Congo, and South Sudan): Either screen for *Strongyloides stercoralis* (preferable) or presumptively treat with albendazole.

• **Praziquantel** (for infection with *Schistosoma* species): For children $\geq 4$ years old (or $\geq 94$ cm in height) and adults who do NOT have neurocysticercosis (either confirmed cases or individuals with unexplained seizures or subcutaneous nodules consistent with cysticercosis).

• **Artemether-lumefantrine** (for infection with *Plasmodium* species malaria): For children $\geq 5$ kg in weight and adults who are not pregnant or lactating.

Full information on indications, dosing, and precautions for these medications can be found in Table 1 of the [CDC’s summary of treatment of intestinal parasites in refugees](https://www.cdc.gov/malaria/diagnosis_treatment/parasites.html).

**Countries in Africa with active processing for U.S.-bound refugees:**

<table>
<thead>
<tr>
<th>Processing Country</th>
<th>Refugee Country of Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chad</td>
<td>Central African Republic, Sudanese Darfuri</td>
</tr>
<tr>
<td>Burundi, Djibouti, Ethiopia, Kenya, Rwanda, South Africa, Tanzania, Uganda, others</td>
<td>Somalia, Democratic Republic of Congo, Ethiopia, Eritrea, Sudan, South Sudan (other than Sudanese Darfuri)</td>
</tr>
</tbody>
</table>

For more information visit [www.mass.gov/dph/refugee](http://www.mass.gov/dph/refugee)