

Parasitic Infections at a Glance

Minnesota Initial Refugee Health Assessment

Intestinal Parasite Screening:

1. Was screening for parasites done? (✓ one) Yes No If No, why not? _____

2. Serology Test Done Results Pending Not done

Schistosoma Negative Positive; treated: ___yes___no Indeterminate Results Pending Not done

Strongyloides Negative Positive; treated: ___yes___no Indeterminate Results Pending Not done

3. Stool Test No parasites found Results Pending

Non-pathogenic parasites found Blastocystis; treated: ___yes___no Not done

Pathogenic parasite(s) found

(If positive for pathogenic parasite(s) by O&P, check all that apply)

<input type="checkbox"/> Schistosoma Treated? <input type="checkbox"/> Yes <input type="checkbox"/> No Species: _____	<input type="checkbox"/> Strongyloides Treated? <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Ascaris Treated? <input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Giardia Treated? <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Entamoeba histolytica Treated? <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Dientamoeba Treated? <input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Trichuris Treated? <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Hymenolepis Treated? <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Clonorchis Treated? <input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Hookworm Treated? <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Paragonimus Treated? <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Other, (specify): Treated? <input type="checkbox"/> Yes <input type="checkbox"/> No

If not treated, why not? _____



In 2009, 27 percent of refugees screened in Minnesota had at least one intestinal parasite, with the highest rates among Southeast Asians (35 percent) and sub-Saharan Africans (22 percent).

- All refugees should be screened for parasitic infection whether or not they appear symptomatic.
- Assess for pre-departure presumptive treatment; screen per protocol based on whether or not such treatment was received and type of treatment administered overseas.
- The most commonly found pathogenic parasites are *Trichuris* (whipworm), *Giardia*, *Entamoeba histolytica*, *Schistosoma*, hookworm, and *Ascaris*.
- If results are positive for either *Strongyloides stercoralis* (all refugees) or *Schistosoma spp.* (sub-Saharan African refugees), the refugee should be treated.
- Parasites may obstruct the intestine, bile ducts, lymph channels, and capillaries of the brain and other organs, with serious medical consequences.
- Lice and scabies mites are two common arthropod parasites often found in refugee populations.

Key Resources

Minnesota Department of Health
Acute Disease Investigations and Control
651-201-5414
877-676-5414 (toll free)
www.health.state.mn.us/divs/idepc/adic.html

CDC, Division of Parasitic Diseases
www.cdc.gov/ncidod/dpd/
CDC, Domestic Intestinal Parasite Guidelines
www.cdc.gov/immigrantrefugeehealth/guidelines/domestic/intestinal-parasites-domestic.html



Parasitic Infections

Purpose

To detect and treat parasitic infections in Minnesota's refugee populations.

Background

The worldwide prevalence of parasitic infections is staggering. Over one billion persons worldwide are estimated to be carriers of *Ascaris*. Approximately 480 million people, or 12 percent of the world population, are infected with *Entamoeba histolytica*. At least 500 million carry *Trichuris*. At present, 200 to 300 million people are infected with one or more of *Schistosoma* species and it is estimated that more than 20 million persons throughout the world are infected with *Hymenolepis nana*. In the United States, an estimated 65 million people are infected with intestinal parasites. The enormous morbidity from parasitoses reflects the number of people infected. Consequences of parasitic infection can include anemia due to blood loss and iron deficiency, malnutrition, growth retardation, invasive disease, and death.

Decisions concerning the management of a parasitic infection require experience with the differing clinical characteristics. The usual sites of the parasite infection in the host are often apparent, but certain parasites' life cycles will take them to other parts of the human body where they may or may not cause symptoms.



Parasitic infections are frequently detected in refugees; however, the types of organisms found vary with the geographic origin of the refugee.

The geographic distribution of specific parasitic infections is varied. All information such as country of origin, refugee migration, food habits, lack of shoes, lack of safe drinking water, quality of sanitation, and history of insect bites may be helpful in ruling in or ruling out certain parasitic infections. Tissue invasion may produce fever, headache, pain, chills, nausea, and vomiting. Pressure from growing parasites may give rise to pain. In the brain, parasitic infection might cause various motor and sensory abnormalities, including seizures. Parasites may obstruct the intestine, bile ducts, lymph channels, and capillaries of the brain and other organs causing serious problems. Extensive anemia may be produced by red cell destruction, blood loss, or suppression of hematopoiesis.

Information Summary

The following summary is designed to assist the provider in screening for parasites on the *Minnesota Initial Refugee Health Assessment*, and in diagnosing and treating parasitic infection, in the event that the screening test is positive.

Screening

All refugees should be screened for parasitic infections. Some refugees may have received **pre-departure presumptive treatment** for parasites overseas. Note protocol differences indicated below for **specific types of documented pre-departure treatment** and **no documented treatment**.

Typically documentation of overseas pre-departure parasitic treatment will be located among medical papers which the new arrival carries. Treatment is provided just several days prior to departure to the U.S. and documentation is not consistently available electronically.

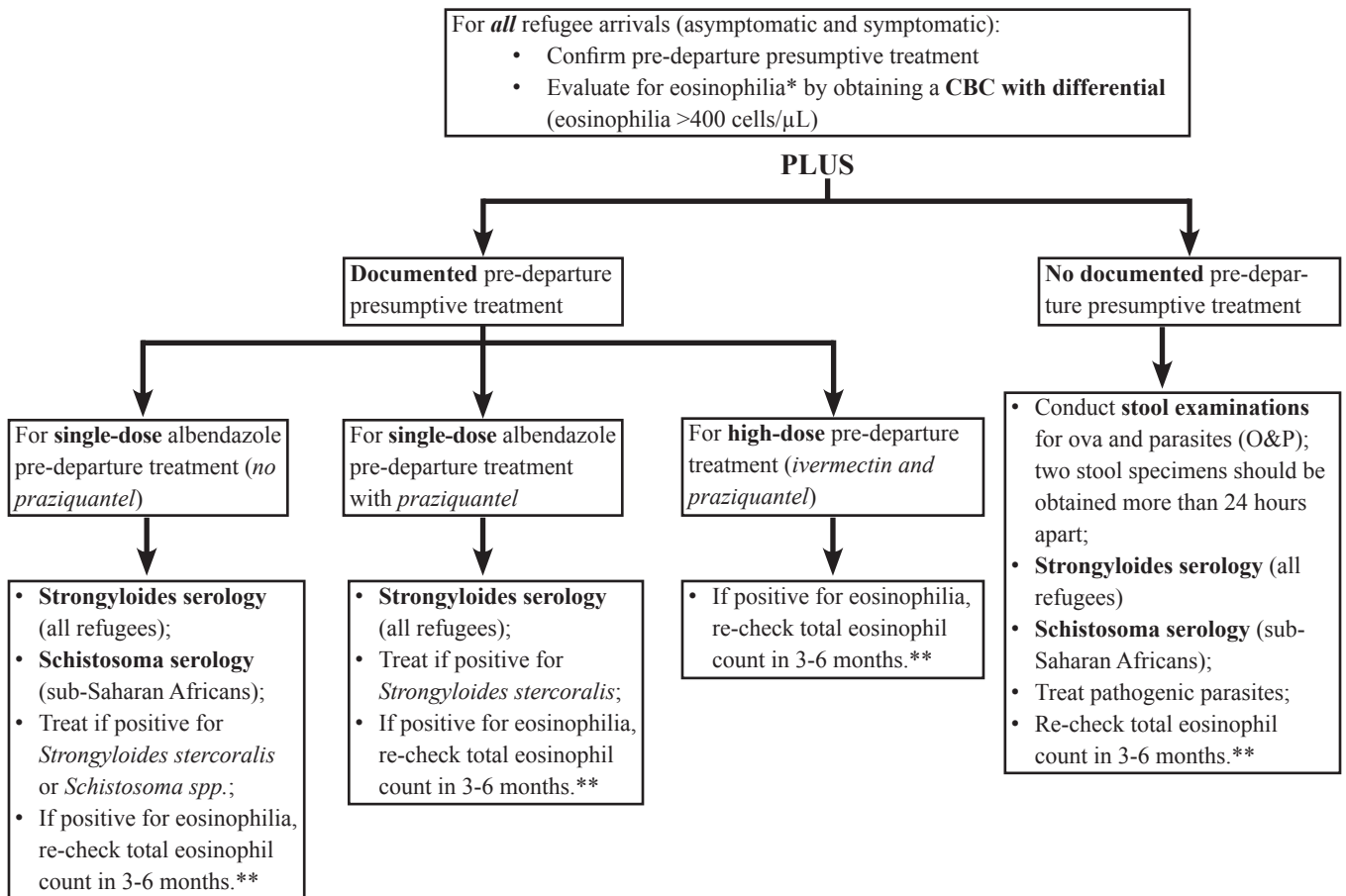
- Treatment algorithm, see Figure 1.
- For in-depth background information and treatment guidelines see CDC's Domestic Intestinal Parasite Guidelines (www.cdc.gov/immigrantrefugeehealth/guidelines/domestic/intestinal-parasites-domestic.html), as well as *The Medical Letter on Drugs and Therapeutics: Drugs for Parasitic Infections** (<http://medicalletter.org>).
- For stool collection instruct all refugees to submit two stool specimens obtained more than 24 hours apart. Provide detailed instruction about specimen collection and give kits to patients. If convenient, suggest that your patient bring back the stool specimen in two to three days, when s/he is returning for the tuberculosis skin test (TST) reading. Some clinics offer patients the option of mailing stool specimens directly to the lab. Treat pathogenic parasites. A repeat total eosinophil count should be performed

one to three months following treatment.

- For positive results, discuss treatment with your patient. Describe how to get the prescription filled and how to take the medications. Prescribe through a pharmacy affiliated with your clinic to ensure that the patient is not billed for anti-parasitic medications.
- If clinical history indicates, also test for bacterial enteric pathogens and treat appropriately.
- The Refugee Health Program requires listing the identified parasites on the screening form. If parasites other than those listed on the form are identified, please list by name under “Other.” It is not necessary to list non-pathogenic parasites. (See *Common Non-Pathogenic Parasitic Infections* in the appendix at end of this section).

*Although *The Medical Letter On Drugs and Therapeutics* recommends ivermectin as the drug of choice for strongyloidiasis, in general, it is considered safer to utilize high-dose albendazole in individuals from Loa Loa endemic areas.

Figure 1. (Protocol updated as of August 5, 2010)



* Eosinophilia may or may not be present with parasitic infection; an absolute eosinophil count provides supplemental diagnostic information.

** **Persistent eosinophilia or symptoms requires further diagnostic evaluation.**

Eosinophilia

Eosinophils are one type of granulocytic white blood cell (other granulocytes are neutrophils and basophils) that helps in the body's defense against certain types of infectious agents. Eosinophils express receptors for a certain class of antibody called IgE. The immune response mediated by eosinophils is particularly effective against invasive infections with certain types of parasites called helminths (roundworms). Eosinophils are also seen in the body in association with certain types of allergic reactions and other diseases.

The differential diagnosis for eosinophilia, particularly in a refugee, other immigrant, or returning traveler, should include parasitic infection. The primary cause of parasite-related eosinophilia is infection with certain helminths (e.g., roundworms). Intestinal parasites which do not invade the intestinal mucosa and remain in the bowel lumen may cause little or no eosinophilia. In contrast, parasites associated with tissue invasion (including parasites with a larval migration phase) can cause marked eosinophilia. Examples of helminthic infections in which eosinophilia may be seen include trichinosis, visceral larva migrans, filariasis, strongyloidiasis, onchocerciasis, hookworm infection, schistosomiasis, and liver fluke infection. Certain protozoal infections (such as *Isospora*) have also been occasionally reported with eosinophilia, although this is not true for most protozoal infections such as malaria. Complete lists of parasitic and nonparasitic causes of eosinophilia are available in most internal medicine and infectious disease textbooks.

The evaluation of eosinophilia includes a consideration of the complete history (including allergies, other medical problems, medications used, and symptoms such as abdominal pain or diarrhea), physical examination, and results of other hematologic and laboratory tests. Determine whether pre-departure treatment was administered overseas, as even after successful treatment for parasitic infection (e.g., ascaris treated with pre-departure albendazole), eosinophilia generally lasts for months. Although two stool examinations for ova and parasites represent an important initial study, ***negative stool examinations do not exclude a parasitic cause of infection.***

Parasite eggs and larvae may be excreted intermittently, and helminths can invade a variety of tissues. A variety of other tests may be ordered to evaluate eosinophilia, depending on the initial clinical evaluation. These tests could include specific serologic tests, urine examinations, radiographic studies, duodenal aspirate, and tissue biopsy or other invasive studies.

Evaluation of eosinophilia should be conducted by an experienced clinician to ensure that the appropriate diagnosis is made and treatment is provided. Eosinophilia may be the only initial clue to a parasitic infection that could result in significant morbidity and even mortality.

Conversely, it is also important to note that a normal eosinophil count does not rule out a serious parasitic infection such as strongyloidiasis or schistosomiasis, thus the importance of performing serologies for these two infections (see Figure 1).

Other Common Parasites

Lice and scabies mites are two common arthropod parasites often found in refugee populations. Preferred treatment of lice is pyrethrin 1 percent cream rinse (“Nix” or “Rid”) with manual removal of nits. Scabies should be treated with pyrethrin 5 percent lotion (“Elimite”) in a single overnight application with instructions about careful hygiene and simultaneous household cleaning. Symptomatic treatment of pruritus is essential for relief from the allergic response to scabies, with antihistamines and/or topical steroids for up to two weeks after pyrethrin treatment.

