

Background on Potential Health Issues for Liberian Refugees by Office of Global Health Affairs

Updated Version (1/30/2004)

This document has been updated with new information. Please see the following sections:

- **Scabies**
- **Chicken Pox**
- **Measles**
- **O'nyong-nyong Fever**

Introduction

This document is intended to better prepare and inform state refugee coordinators, state refugee health coordinators, local resettlement organizations and health care providers about the types of health concerns that may potentially affect the incoming Liberian refugees. The document focuses on the most likely health problems these refugees might face.

Clinical information for this document is largely based on the National Institutes of Health MEDLINE plus Web site <http://www.nlm.nih.gov/medlineplus/medlineplus.html>, and the CDC website at www.cdc.gov. Cultural and region information is taken from the Refugee Health ~ Immigrant Health Web site http://www3.baylor.edu/~Charles_Kemp/africa.htm.

Historical Background

Liberia has a long history of conflict and instability. Tensions began in the early 1800's when freed American slaves, called the Americo-Liberians, settled in the region. The Americo-Liberians quickly assumed political and economic power over the 16 indigenous ethnic groups from the region (i.e., Kpelle, Bassa, Gio, Kru, Grebo, Mano, Krahn, Gola, Gbandi, Loma, Kissi, Vai, and Bella).

Conflict erupted in 1980 when Samuel Doe, a Krahn junior officer in the army, staged a coup and took control of the government. Doe's government was brutal and used armed members of the Krahn and Mandingo groups to repress the general population. Doe was overthrown in 1989 by Charles Taylor – the leader of the National Patriotic Front of Liberia (NPFL). Anyone suspected of being loyal to Doe, principally those who were ethnically Krahn and Mandingo were subject to targeted violence. Nigerian-led peace keeping forces occupied Monrovia in an attempt to create a safe zone from the widespread violence that had erupted in the rest of the country. In 1991, a third faction formed of Liberians living in Sierra Leone, the United Liberation Movement for Democracy (ULIMO).¹ There are presently several Liberian factions fighting in and around Liberia.

The Liberia health infrastructure has completely disintegrated and most Liberians have had little or no access to health services for at least a decade. As a result, Liberia's Disability Adjusted Life Expectancy (DALE) has dropped to 34 years, which ranks the

nation 181 out of 191 (1). In 2001, the infant mortality rate was 157 per 1,000 live births and the under-five mortality rate was 235 per 1,000 live births.ⁱⁱ ***Given their limited access to health care, it is important to note that the immunization rate for this population is likely to be very low. Providers should focus efforts on bringing everyone, adults and children, up-to-date on their immunizations.***

Refugee Population

Due to the continuing instability and violence, Liberia has the largest percentage of refugees and internally displaced people in the world with more than 2.5 million people forced to flee their homes.ⁱ According to 2003 estimates from ReliefWeb, Côte d'Ivoire is presently the host nation for almost 65,000 refugees with over 63,000 originating from Liberia.ⁱⁱⁱ The majority of the Liberian refugee in Côte d'Ivoire had been living there for over 11 years. Many of these refugees had integrated into their host communities. However, when the conflict in Côte d'Ivoire started in September 2002, the unrest and violence dramatically affected the well-being of Liberian refugees hosted in Côte d'Ivoire. Local communities started seeing Liberian refugees as liabilities and threats. Many of the Liberian refugees were forced out of the region or cut off from international agencies, often violently.

Composition

While we do not have conclusive information about all the incoming refugees, we have pulled together some preliminary information. UNHCR refugee registration information from the camps indicates that women and children comprise more than 70% of the population with the majority being ethnic Krahn and Grebos. General information about the Liberian population indicates that children under the age of 15 make up almost 50% of the population.ⁱⁱ Initial information from resettlement site on recent arrivals of Liberians shows that there are broken families (e.g., single mothers and fathers with several small children) and multigenerational households (e.g., small number of bread earners with a large number of dependents such as small children, elderly, and disabled adults).

Language

Resettlement agencies should be aware of that while Liberians speak English it is a form of "pigeon" English. The grammar, sentence structure, and vocabulary of Liberian English are very different from American English, and there may be translation issues. Appropriate translation is particularly important during the medical examination and follow-up.

Literacy rates vary a great deal by gender. Estimates from 2000 indicate that among individuals over 15 years old, about 54% of men were literate compared to only 22% of women.ⁱⁱ

Traditional medicine

Liberians make a distinction between the physical cause of the illness (e.g., bacterial infection, virus, etc.) and the "reason" they have the illness (e.g., "why did this occur to me"). As with many African cultures, it is common for Liberians to believe that illnesses

are the result of being cursed, targeted by evil spirits, sorcery, and/or taboo violation. They may believe that they were contaminated with the illness by contagions such as breezes, cold, water or dreaming. In many cases they will seek to combine "Western" forms of treatment and indigenous cures. Liberians have several providers they may seek indigenous treatment from (e.g., herbalists, bone specialists, faith healers, holy men, etc.).^{iv} Typical traditional treatments for illnesses can include the ingestion or external application of herbal remedies, scarification or application of chalk/paint over symptomatic areas, and tying the wrists, neck or abdomen with ropes.^v It is recommended that physicians be sensitive to this practice. They should ask the patient or family members what other forms of treatment they are receiving in order to determine if they might be dangerous or interfere with their treatment plan.

Special Health Needs

- 1) **Sickle Cell:** Although, we do not have an exact measure, the prevalence the sickle cell gene within the Liberian population is estimated to be high. Most states do not test for sickle cell as part of their basic health examination for incoming refugees. While it is probable there will be a high rate of nutrition-based anemia, sickle cell should also be explored as a cause or contributing factor given the estimated high prevalence of this condition.

Sickle cell anemia (also called Hemoglobin SS disease (Hb SS); Sickle cell disease) is a disease, which occurs in someone who has inherited hemoglobin S from both parents. Unlike normal red blood cells, which are disc-shaped, individual with sickle cell anemia have crescent-shaped red blood cells. The crescent-shaped cells function abnormally and cause small blood clots. These clots can cause recurrent painful episodes called "sickle cell pain crises." Some patients have one episode every few years, while others have many episodes per year, and can be severe enough to require admission to the hospital for pain control and intravenous fluids. This condition may become life-threatening. Symptoms for sickle cell anemia can include joint pain, bone pain, fatigue, breathlessness, rapid heart rate, delayed growth and puberty, susceptibility to infections, ulcers on the lower legs (in adolescents and adults), jaundice, bone pain, abdominal pain and fever. Other symptoms associated with this disease include bloody urine (hematuria), excessive urination, excessive thirst, unwanted painful erection, chest pain, and poor eyesight/blindness.

There are two other forms of the sickle cell gene. 1) Someone who inherits hemoglobin S from one parent and normal hemoglobin (A) from the other parent will have sickle cell trait. 2) Someone who inherits hemoglobin S from one parent and another type of abnormal hemoglobin from the other parent will have another form of sickle cell disease, such as sickle cell-b⁰ thalassemia, hemoglobin SC disease, or sickle cell-b⁺ thalassemia. Someone with sickle cell trait or these forms of sickle cell disease will usually have no symptoms or only mild ones. However, some of these conditions can cause symptoms similar to sickle cell anemia, including anemia.

- 2) **Chronic Conditions:** Results from health exams of recent Liberian arrivals point to a high number of elderly with severe hypertension and diabetes. In order to control these conditions, providers will need to develop an appropriate treatment plan that may include medications and dietary changes. Providers will need to work closely with the family to outline, monitor and reinforce the need for vigilance in both food preparation and consumption. For example, an elderly gentleman with severe hypertension was ordered to stop eating salt. His health continued to decline. The family insisted that he was not using salt on his food. After discussing the preparation of food, they found that the family used large quantities of salt while cooking, and they thought that only salt that was added to food after it was cooked was a health issue.
- 3) **Amputations:** Amputation was one of the many tools used by the combatants in the conflicts in and around Liberia. It became a common practice to arbitrarily amputate the hand or arm of civilians, principally women and children. It is possible some of the Liberian refugees coming to the United States will have survived an amputation. These individuals will need additional assistance in obtaining prostheses, rehabilitation and/or specialized vocational training.

Malnutrition

Malnutrition is a common problem among refugees and is a major contributor to a variety of health problems. Malnutrition is the result of decreased intake of one or all food groups or to decreased absorption of nutrients due to illness. Diseases and malnutrition often form a vicious cycle where malnutrition contributes to a diminished immune system, which makes individuals more susceptible to diarrheal illnesses, that in turn leads to decreased absorption of nutrients.

Information on the recent Liberian arrivals in the US indicates that many are suffering, in varying degrees, from malnutrition. Some Liberian refugees from camps have been cut off from aid for several months due to the conflict. Liberians in urban areas have been targeted for violence and may not have had access to resources.

Culture and Food

The cultural context of food and eating is relevant in this society. Rice is the staple food. The literal translation of "food" is "rice" and "to eat" is "to eat rice." In many cases, they may consider themselves starved if they have not eaten rice recently. Therefore, when discussing nutrition it is important to phrase questions appropriately and using the most general terms possible. An example from a nutritional survey is, "Tell me everything you have given the baby from the time the baby woke up yesterday morning until the time the baby woke up today."^{vi}

- 1) **Acute or Severe Malnutrition:** Acute malnutrition or wasting is a result of a relatively recent decline in nutritional intake. Acute or severe malnutrition is generally characterized by the following illnesses.^{vi}
 - Marasmus is due to inadequate caloric intake and is characterized by failure to gain weight, weight loss with resultant emaciation. Indications of the condition

include the loss of subcutaneous fat, which causes poor turgor¹ and wrinkling of skin.

- Kwashiorkor or protein-calorie malnutrition (PCM) may be due to inadequate intake or absorption of protein in children. Kwashiorkor is most commonly seen in children around 2 years old and/or who have recently been weaned. Initial symptoms are lethargy or irritability and progress into anorexia, increased weakness, decreased muscle tissue, and retarded growth. If untreated, the child develops hepatomegaly,² kidney function decreases, and cardiac function is impaired. Indications of the condition include pitting edema in the legs and feet. Skin changes include dermatitis, changes in pigmentation, and changes in hair. Typically, hair is sparse, thin, and often streaked with red or gray color. The condition impairs the immune function leaving the child vulnerable to infection.
- Cachexia is a metabolic disorder marked by general ill health and malnutrition, with weakness and emaciation; and is common in cancer, AIDS and other severe illnesses. In cachexia, there is approximately equal loss of fat and muscle, significant loss of bone mineral content, and it does not respond to nutritional supplements or increased intake.

- 2) **Chronic malnutrition:** Chronic malnutrition is generally a result of perinatal, childhood malnutrition or prolonged periods with insufficient intake. While many individuals who experience childhood malnutrition survive and reach adulthood, these individuals are more likely to have specific, long-term, developmental problems such as loss of intellectual potential, incomplete physical (stunting) or mental development. The greatest concern with chronically malnourished individuals is their increased vulnerability to illness due to an impaired immune system.
- 3) **Micronutrient deficiency:** Micronutrient deficiency is another form of malnutrition that is potentially a significant issue for most refugees. This is particularly common in groups with little or limited diversity in diet. Children and women are severely affected by deficiencies in iron, vitamin A, iodine, and folate that can lead to low-birth weight, stunting, blindness, mental and developmental delay, and birth defects.^{vii} In particular, iron deficient anemia is common.

Infectious Diseases^{viii}

- 1) **Chickenpox (varicella):** There have been several reported cases of chickenpox from the refugee camps among Liberian children. As mentioned earlier, the immunization rate for this group is very low. Several cases of varicella have been reported in the U.S. in recently arrived Liberians. Most of the cases have occurred in children, however, adults have been affected as well. Varicella vaccination is not available in Côte d'Ivoire, and therefore, none of the refugees have received varicella vaccine. If vaccine can be procured, vaccination of eligible refugees may be implemented in the future.

¹ Skin turgor is an abnormality in the skin's ability to change shape and return to normal (elasticity). Skin turgor is the skin's degree of resistance to deformation and is determined by various factors, such as the amount of fluids in the body (hydration) and age.

² Hepatomegaly is the enlargement of the liver beyond its normal size.

Chickenpox is a highly contagious viral disease usually effecting children, and is spread from person-to-person by contact with infected respiratory droplets, or by contact with articles freshly soiled by discharge from the lesions. The incubation period is 10 to 21 days. There is universal susceptibility to the virus in those not vaccinated or previously infected. The onset of the chickenpox is a fever and general malaise followed by itching and a skin rash with fluid-filled blisters that burst and form crusts. It is contagious from two days before the onset of the rash, until all of the lesions are crusted over. The rash begins with a few small, reddish bumps that fill with fluid to form small blisters. The blisters appear in small groupings, first on the trunk then spreading to the extremities, face, and scalp over a period of two to four days. The rash may spread into the mouth and other internal parts of the body. After infection, individuals generally are immune for life. However, a person with a history of chickenpox may develop shingles (herpes zoster) later in life.

- 2) **Dengue Fever:** Dengue Fever is a flavivirus (several serotypes) infection transmitted by mosquitoes. Dengue is usually a self-limited illness characterized by abrupt onset high (biphasic) fever, chills, headache, rash, signs of bleeding, changes in taste, sore throat, nausea, vomiting, diarrhea, anorexia, severe aching muscle spasms and joint pain, and depression. Complications include dengue hemorrhagic fever (DHF), and dengue shock syndrome (DSS).
- 3) **Hepatitis:** Hepatitis refers to syndromes or diseases causing liver inflammation, including inflammation due to viruses and chronic alcohol abuse. Viruses causing hepatitis include Hepatitis A, B, C, E and D (delta factor). Each virus causes a distinct syndrome, though they share some symptoms and consequences. Symptoms for hepatitis include jaundice, fatigue, loss of appetite, nausea and vomiting, low-grade fever, pale or clay colored stools, dark urine, and generalized itching.
 - **Hepatitis A:** Hepatitis A is transmitted by contaminated food or water, or contact with a person who is currently ill with the disease. The Hepatitis A virus is shed in the stools of an infected person during the incubation period of 15 to 45 days before symptoms occur and during the first week of illness. Blood and other bodily secretions may also be infectious. The virus does not remain in the body after the infection has resolved, and there is no carrier state (i.e., a person who spreads the disease to others but does not become ill). The symptoms associated with Hepatitis A are similar to the flu, but the skin and eyes may become yellow (jaundiced). Risk factors include having a family member who recently had Hepatitis A, and intravenous drug use. Hepatitis A is the least serious and most mild of the hepatitis diseases. Both of the others can become chronic illnesses, but hepatitis A does not.
 - **Hepatitis B:** The majority of people infected with Hepatitis B get rid of the virus within 6 months. However, approximately 10% of people infected with the Hepatitis B virus develop a chronic, life-long infection. Domestic health exams of recent arrivals have identified several individuals who are chronic Hepatitis B carriers in this population. People with chronic infection may have symptoms, but

many of these patients never develop symptoms. These patients are sometimes referred to as "carriers" and can spread the disease to others. Hepatitis B surface antigen carrier rates in the tropics are > 40 times greater than in the West. Having chronic hepatitis B increases your chance of permanent liver damage, including cirrhosis (scarring of the liver) and liver cancer. Perinatal transmission is common. Typically only pregnant women are tested for or vaccinated against Hepatitis B before resettlement. This is an area of concern and refugees should be tested once they are resettled.

- **Hepatitis C:** Hepatitis C is sometimes referred to as non-A or non-B and causes inflammation of the liver. Many infected individuals do not have symptoms and the disease is detected during blood tests for a routine physical or other medical procedure. Individuals at risk for the disease include those who have injected street drugs or shared a needle with infected person, had sex with multiple partners, had sex with a person who has hepatitis C, shared personal items (e.g., toothbrushes and razors) with someone who has hepatitis C, and infants born to hepatitis C infected mothers.
- **Hepatitis D (delta agent):** Hepatitis D infection involves a defective viral agent that causes symptoms only in individuals with the hepatitis B infection. Hepatitis D virus may increase the severity of an acute hepatitis B infection, or cause symptoms in previously asymptomatic hepatitis B carriers. Prompt recognition and treatment of hepatitis B infection can help prevent hepatitis D.

4) **HIV/AIDS:** HIV/AIDS is considered a class A, excludable condition for entry into the United States and refugees 15 years or older are tested for the disease prior to entering the country. Refugees younger than 15 are only tested if there is reason to suspect they may have HIV, such as a parent who is HIV positive. HIV positive refugee are frequently given waivers and are allowed to resettle in the United States. There are a few cases of HIV-positive Liberians in this group. Results from overseas exams indicated that approximately 4% of those screened are HIV-positive. Most of those infected with HIV are women, some of whom are pregnant. Given the complexity of treatment for HIV/AIDS, individuals with the disease will need a great deal of guidance, education and monitoring.

Pregnant and Breastfeeding Mothers: Pregnant HIV positive women need to be advised about the use of antiretroviral drugs as means to prevent passing the disease onto their child, and HIV positive mothers should be advised about the dangers of breastfeeding for the same reason. The CDC states that most of the risk factors regarding perinatal HIV transmission were identified before the recommended use of Zidovudine (ZDV/AZT) or nevirapine to prevent perinatal transmission. Most infections transmitted through breast-feeding probably occurred during the first few weeks to months of life. Risk factors during breast-feeding include viral load in breast milk, subclinical or clinical mastitis, maternal seroconversion during the lactation period and breast abscesses. It would be important information to know if the HIV-infected woman or infant ever received ZDV and/or nevirapine. The following information regarding breast-feeding and HIV/AIDS may be useful:

<http://www.hawaii.edu/hivandaids/FAQ%20on%20Breastfeeding%20and%20HIVAIDS.pdf>.

HIV infection is a viral infection caused by a virus (HIV) that gradually destroys the immune system, resulting in hard to fight secondary infections. Acute HIV infection may have symptoms resembling mononucleosis or the flu and typically occurs within 2 - 4 weeks of exposure. Infected individuals generally convert from HIV negative to HIV positive within 3 months of exposure. While infected individuals may have no symptoms for up to 10 years, they can still transmit the infection to others. As their immune system gradually weakens until they are diagnosed with AIDS. Most individuals infected with HIV will progress to AIDS if not treated. However, there is a tiny subset of patients, called non-progressors, who develop AIDS very slowly, or never at all. Any symptoms of illness may occur, since infections can occur throughout the body. Special symptoms relating to HIV infection include sore throat, mouth sores (including candidal infection), muscular stiffness or aching, headache, diarrhea, swollen lymph glands, fever, fatigue, various types of rashes (including seborrheic dermatitis) and frequent vaginal yeast infections.

As mentioned above, the principal issue with HIV/AIDS is the susceptibility of infected individuals to secondary opportunistic infections. The most common secondary infections with this disease are pneumocystis carinii pneumonia, candidiasis, cytomegalovirus infection, toxoplasmosis, cryptococcus, cryptosporidium enterocolitis and mycobacterium avium complex (MAC). Infected individuals may also develop HIV dementia, HIV lipodystrophy and chronic wasting from HIV infection.

HIV Type 2: HIV Type 2 is prevalent in both Liberia and Côte d'Ivoire effecting 1% of the population. The mode of transmission and associated illnesses are the same for HIV-1 and HIV-2. However, HIV-2 the development of immunodeficiency appears to be slower and milder than HIV-1. Compared with HIV-1, HIV-2 also seems to be less infectious early in the course of infection, but as the disease advances, the duration the increased infectiousness is shorter. There is little clinical information about the best treatment options for patients with HIV-2. Given the differences in the progression of the diseases, it is not clear if antiretroviral therapy significantly slows progression. Not all of the drugs used to treat HIV-1 infection are as effective against HIV-2.

While the prevalence of HIV-2 is comparatively lower than HIV-1 in most populations, given the prevalence of the disease among Liberians, it is recommended that it be discussed with health care providers. Testing for HIV-2 antibodies is generally available through private physicians or state and local health departments. For more information on HIV-2, please refer to the CDC's Web site: <http://wonder.cdc.gov/wonder/prevguid/m0038078/m0038078.asp>.

- 5) **Measles:** As noted before, the baseline immunization rates for this population is likely to be very low. Beginning in January 2003, several cases of clinical measles were reported in children from the refugee camps and UNHCR mobilized a measles vaccination campaign to vaccinate all children ages 9 months to 5 years. The vaccine used in Côte d'Ivoire is monovalent measles vaccine only and does not contain rubella or mumps vaccine. In October 2003, another outbreak of fever and rash disease was reported and initially thought to be due to measles. Measles vaccination was extended to all refugees (including all adults and children regardless of age) that were residing in camps with reported measles cases. Laboratory testing later demonstrated that the outbreak was due to O'nyong-nyong fever (see below). The expanded vaccination began in November and ended in December. Starting in January 2004, only children between 9 months and 5 years were routinely vaccinated. Refugees who do not have documentation of measles vaccination should be considered unvaccinated and should either be tested for immunity or be vaccinated.

Measles is a highly contagious viral illness and is spread by contact with droplets from the nose, mouth, or throat of an infected person. The virus incubates for 8 to 12 days before symptoms typically appear. Symptoms include sore throat, runny nose, cough, muscle pain, fever, bloodshot eyes (conjunctivitis), tiny white spots inside the mouth (called Koplik's spots), light sensitivity, and a itching rash. The rash appears around the 5th day, starts at the head progressing downward, and can last 4 to 7 days. The rash appears as both flat discolored areas and solid red elevated areas that eventually merge together. The period between the appearance of the earliest symptoms and the appearance of a rash or fever is usually 3 to 5 days.

- 6) **O'nyong-nyong Fever:** In late fall 2003, an outbreak of O'nyong-nyong fever was identified among refugees who had been in the Nicla refugee camp, which is located in Guiglo along the border with Liberia, which is in proximity to bodies of fresh water, which can be breeding grounds for the mosquitoes. O'nyong 'nyong is an infection caused by an alphavirus that is transmitted by the bite of mosquitoes, most commonly Anopheles mosquitoes found in tropic and subtropic regions. It is characterized by fevers, generalized maculopapular or macular rash, headaches, joint and muscle pains. It is generally self-limited and most individuals recover within 2 weeks, although occasionally, continued joint pain occurs. There is no known treatment for the infection. To date, this disease has not been reported in the Americas.
- 7) **Shigellosis (bacillary dysentery):** Acute diarrheal illness from *Shigella sp.* transmitted via fecal-oral route. Shigellosis is especially common in children and is particularly prevalent in malnourished populations with inadequate sanitary conditions. Treatment is focused on prevention of dehydration.
- 8) **Syphilis:** Preliminary results from domestic and overseas exams indicated that there is a high rate of syphilis in this population. There are also reports of cases that were not diagnosed overseas, indicating that they were either not tested or that they

contracted the disease after the overseas exam. It is important to note that there are reports of cultural/personal conflicts with testing ex-wives/husbands.

The most common form of syphilis is the venereal disease. There are several stages of the disease. The first generally occurs about 2 - 3 weeks after the initial exposure and is characterized by painless sores, called chancres. The sores typically disappear within 4 – 6 weeks. Some individuals may not notice the sores particularly if they are located in the rectum or cervix. If the disease goes untreated, a third of those infected progress to the second stage about 2 - 8 weeks after the appearance of the original chancre, and is the most contagious stage of the disease. In the second stage, the bacteria have spread into the bloodstream causing symptoms such as skin rashes primarily on the palms and soles, as well as lesions in the mouth, vagina, penis (mucous patches), swollen lymph nodes, and fever. This stage can last just a few weeks or a year and is followed by a latent phase, which may last for years and is characterized by the absence of symptoms. The final stage of syphilis is called tertiary syphilis and is characterized by brain or central nervous system involvement (neurosyphilis), cardiovascular involvement with inflammation of the aorta (aortitis or aneurysms), and gummatous syphilis (destructive lesions of the skin and bones).

- 9) **Trachoma:** Trachoma is caused by infection with the bacteria *Chlamydia trachomatis* and has an incubation period of 5 to 12 days. Trachoma is passed by direct contact with the eye or nose-throat secretions from infected individuals, but can also be spread by objects contaminated with these secretions, such as towels or clothes. The condition begins as conjunctivitis (commonly known as "pink eye"), which if untreated may become chronic and lead to scarring. The eyelids can become severely irritated, causing the eyelashes to turn in and rub against the cornea, which causes eye ulcers, further scarring, visual loss, and even blindness. Although the disease generally affects children, the consequences may not be evident until later in life.
- 10) **Tuberculosis:** Overseas exams indicate relatively high rates of tuberculosis (TB) among the Liberian refugees in Côte d'Ivoire. Among the 2,000 refugees screened so far, 9 have infectious TB (smear positive, i.e., Class A TB), and 38 have clinically active, smear negative TB (Class B1 TB). Most of the cases appear to be in young adults ages 20-32. All diagnosed Class A and symptomatic Class B1 TB cases are being treated with a full course of directly observed therapy (DOT) for at least six months. There are also cases of TB and HIV co-infection. A notation of the health assessment and treatment received overseas will be entered on the U.S. Department of State medical examination forms (DS-2053, DS-3024, and DS-3026) that will accompany the refugees.^{ix}

Because of relatively high rates of TB and HIV reported among Liberian refugees, and the high risk of developing TB disease once infected, the CDC has recommended that the refugees be evaluated for active TB and tested for latent TB infection (LTBI) - upon arrival to the United States. However, because live virus

vaccines, such as measles vaccine, can temporarily suppress tuberculin reactivity, if a tuberculin skin test is indicated and cannot be performed at the same time as the live virus vaccine, the tuberculin skin test should be deferred for 4-6 weeks.

TB is a chronic infection - most commonly pulmonary. The infection is usually acquired through inhalation of infected droplets expelled by cough from a person with active disease. Most cases (85%) of TB are pulmonary. Pulmonary symptoms include cough, chest pain, and spitting up blood. Constitutional symptoms are often present in pulmonary disease, and include fever, chills, night sweats, fatigue, decreased appetite, and weight loss. Symptoms of extra pulmonary TB depend on the site(s) of infection. Nonpulmonary TB should not be ignored when screening African refugees. The treatment of TB is complex and rapidly evolving. Treatment is according to (a) classification of disease, e.g., exposure without infection, infection without disease, current TB disease, previous TB disease, or TB suspected; (b) whether disease is drug-resistant; (c) immune status of the patient; and (d) other factors. Information about testing and treatment for LTBI may be obtained at the CDC's Division of TB Elimination Web sites:

- Targeted testing and treatment:
<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4906a1.htm>
- Fact Sheets: Treatment of LTBI:
<http://www.cdc.gov/nchstp/tb/pubs/tbfactsheets/250110.htm>
- Revised recommendations against the use of Rifampin and Pyrazinamide for treatment of LTBI: <http://www.cdc.gov/mmwr/PDF/wk/mm5231.pdf> or <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5231a4.htm>
- Broader guidance on diagnosing and treating TB:
<http://www.cdc.gov/mmwr/PDF/rr/rr5211.pdf> or <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5211a1.htm>

11) **Typhoid and paratyphoid fever (or enteric fever):** Typhoid fever is an acute systemic febrile illness. Typhoid is usually spread by feces-contaminated food or water. A vaccine is available but is not completely effective. Incubation is highly variable, ranging from 3-60 days. The illness starts with the gradual onset of steadily increasing and then persistently high fever. However, children may experience abrupt onset. Early symptoms are fever, chills, malaise, headache, sore throat, cough, and abdominal pain and constipation or diarrhea. As the illness progresses, prostration, abdominal distension, enlarged liver, anorexia, and weight loss are common. Untreated typhoid may result in complications in any of the body systems. The severity of illness varies according to immunocompetence, infectious dose of microorganisms, and other factors. Early effective treatment results in increased frequency of (usually mild) relapse.

12) **Yellow fever:** Yellow fever is a viral infection transmitted by mosquitoes and characterized by fever, jaundice, kidney failure, and bleeding. Symptoms usually develop three to six days after the individual is bitten by the infected mosquito. There are three stage of the illness. The early stage can include headaches, muscle aches, fever, loss of appetite, vomiting, and jaundice. In the second stage or period of

remission, the fever and other symptoms stop and most individuals will recover. However, as many as 15% of individuals may move onto the third, most dangerous stage – Period of intoxication. This stage is characterized by multi-organ dysfunction (e.g., liver and kidney failure, bleeding disorders/hemorrhage, brain dysfunction including delirium, seizures, coma, and shock). Almost 30% individuals who go through this stage result in death. There have been several outbreaks of yellow fever in Côte d'Ivoire recently.

Parasites

Refugees are treated for worm parasites, but not other forms, before coming to the US. In some states, refugees are only tested if they show symptoms during the health examination. As a result, there have been cases of refugees going untreated for parasites. We highly recommend that all Liberian refugees be tested for parasites regardless of the presence of symptoms.

- 1) **Ascariasis:** Ascariasis is a nematode or roundworm infection with *Ascaris lumbricoides* causing transient respiratory symptoms initially and chronic gastrointestinal symptoms. The adult worms are more than 20 cm. in length, hence are easily seen in stool and may also emerge from the nose or mouth as a result of coughing or vomiting.
- 2) **Enterobiasis or pinworm infection:** Enterobiasis is a nematode infection of the intestinal tract caused by *Enterobius vermicularis* eggs, which are ingested in contaminated food or dirty hands. Manifestations/associated problems include itching around the anus, inflammation of genitals in prepubertal girls, and secondary enuresis and urinary tract infection.
- 3) **Filariasis:** The filarial parasites are roundworms that live in tissue. Their microfilarial (mf) larvae can be transmitted by several species of mosquitoes or flies. Problematic forms of filariasis include 1) Bancroftian filariasis and Malayan filariasis which effect the lymphatic system and result in elephantiasis; 2) loiasis or loa loa in which worms live in subcutaneous tissue; and 3) Onchocerciasis causes river blindness and skin disorders. In most cases, treatment is effective only against the microfilarial. Therefore, it may be necessary to repeat the treatment if the infection continues.
- 4) **Giardia:** An infection of the small intestine caused by a protozoa which is common in areas where the water supplies are contaminated with raw sewage. The most common means of contracting the parasite is by drinking water from lakes or streams near water-dwelling and/or domestic animals. It can also be spread by direct person-to-person contact, unprotected anal sex, exposure to a family member with giardiasis. The acute phase last 7 – 14 days. The symptoms include diarrhea, abdominal pain and/or fullness (gaseous or bloated sensation), swollen or distended abdomen, nausea, loss of appetite, vomiting, headaches, and a low grade fever. Although it is common that the illness resolve itself,

persistent infections are not uncommon and require further antibiotic treatment. In some cases, symptoms continue after the infection is gone.

- 5) **Guinea worm (Dracunculiasis):** Guinea worm disease is caused by the nematode (roundworm). Humans become infected by drinking unfiltered water containing copepods (small crustaceans), which are infected with larvae. Following ingestion, the copepods die, release the larvae into the host's stomach and intestinal wall and enter the abdominal cavity. Approximately one year after infection, the worms are matured and reproduce. The females migrate in the subcutaneous tissues towards the skin surface forming a blister on the skin - generally on a lower extremity, which eventually ruptures. While the blister is localized it is generally incapacitating. Once the worm emerges from the ulcer the site is inflamed and open to secondary infections.^x

- 6) **Leishmaniasis:** The *Leishmania* is a protozoa parasite species transmitted by sandflies and the parasite migrates to the bone marrow, spleen, and lymph nodes. There are several forms of the disease. The first affects the mucous membranes and typically causes ulcers on the skin. Another form is a systemic (visceral) and attacks the immune system, resulting in increased risk to other infections. Incubation is usually 2-6 months or longer and relapse may occur as many as 10 years after first episode. Systemic infection in children usually begins suddenly with vomiting, diarrhea, fever and cough. In adults, the fever can last for 2 weeks to 2 months and is accompanied by fatigue, weakness and loss of appetite. The skin can become grayish, dark, dry, and flaky. Death often occurs within 2 years due to other infections.

- 7) **Malaria:** Initial results from domestic health exams of recent Liberian arrivals indicate a high number of individuals exposed to malaria. Malaria is caused by the protozoas (*Plasmodium falciparum*, *P. vivax*, *P. ovale* and *P. malariae*) and is generally transmitted by mosquito bite. Malaria is usually characterized by sudden onset of high fever, sweating, chills, uncontrollable shaking, headache, and enlargement of the spleen. Fever tends to wax and wane in 48-72 hour cycles, though cycles may be irregular. Onset may also be insidious, with less dramatic symptoms such as fever, headache, difficulty breathing, abdominal pain, nausea, diarrhea, muscle pain, and enlargement of the spleen. Cerebral malaria, which is life-threatening, is characterized by gradual onset of severe headache, drowsiness, delirium, and coma. Seizures may also occur and are most common in children. Children are at higher risk of dying from malaria. Treatment depends on the organism, immune status of the patient, and severity of the attack.

The Liberian refugees will have received empiric treatment for malaria prior to resettlement. Because of concerns about increasing resistance of malaria parasite to sulfadoxine-pyrimethamine (SP or Fansidar), a combination of SP and artesunate was recommended for pre-departure treatment. Persons with allergies to these antimalarials or sulfa drugs, all pregnant women, and children less than 6

months of age were treated with alternate regimens, such as mefloquine or quinine.

Some types of malaria can relapse up to several years after an individual has left a malarious area. Therefore, if any refugee should present with a febrile illness suggestive of malaria, evaluation should include an examination of thick and thin blood smears for malaria parasites.

- 8) **Scabies (*Sarcoptes scabiei*):** Scabies is a contagious skin disease caused by very small mites. The mites that cause scabies burrow into the skin and deposit their eggs forming a characteristic burrow that looks like a pencil mark. Eggs mature in 21 days. The itchy rash is an allergic response to the mite. Mites may be more widespread on a baby's skin causing pimples over the trunk, or small blisters over the palms and soles. In young children, the head, neck, shoulders, palms, and soles are involved. In older children and adults, hands, wrists, genitals, and abdomen are involved. It is spread by direct contact with infected individuals and less often by sharing clothing or bedding. Symptoms include itching (especially at night), thin, pencil-mark lines on the skin, rashes, and/or abrasions of the skin from scratching and digging. The objective of treatment is to eliminate the infestation. There is no known home remedy. Prescription creams and lotions are applied all over the body. It may be necessary to treat the whole family or sexual partners of infected individuals, even if no symptoms are present. Many prescription products are available. The most commonly used cream is Elimite (permethrin). In difficult cases, an oral antibiotic called ivermectin may be used. Itching may persist after treatment begins, but will disappear if treatment continues exactly as your health care provider prescribes. Itching can be minimized by cool soaks and calamine lotions. Your doctor may additionally recommend an oral antihistamine.

- 9) **Schistosoma:** There have been several cases of schistosoma infections in domestic health exams of recently arrived Liberian refugees. Schistosoma infections are caused by a worm that is contracted through contact with contaminated water and swims freely in open bodies of water. The parasite burrows into the skin, matures into another larval stage (schistosomula), and then migrates to the lungs and liver (where it matures into the adult form). The adult worm then migrates to various parts of the body such as the bladder, rectum, intestines, liver, portal venous system, spleen, and lungs. Symptoms vary with the species of worm and the phase of infection and include; itching, rashes, fever, chills, lymph node enlargement, liver and spleen enlargement, frequent and painful urination (dysuria), blood in urine (hematuria), abdominal pain and diarrhea (which may be bloody). It is also common for a salmonella infection to be concurrent with the schistosomiasis and is resistant to treatment unless the schistosomiasis is also treated. There are two types of the worm that are common in Africa, *S. mansoni* (primarily affects the liver and intestines) and *S. haematobium* (primarily affects the urinary tract). Regardless of whether there is

blood in the urine test, refugees should be tested for schistosoma, indicated by if history or clinical symptoms.

In cases with a prolonged infection, insoluble protein fibers are deposited in tissues and organs, impairing their function. Although the acute and early chronic lesions regress under antiparasitic treatment, chronic sequelae are irreversible. *S.hematobium* infection causes fibrosis and calcification of the ova in the tissue of the lower urinary tract. This leads to obstruction, reflux, infection, and stone formation in the kidneys. The interstitial nephritis may appear to be tubular dysfunction syndrome before progressing to end-stage renal disease. It is common for precancerous lesions to form on the bladder.

- 10) **Strongyloidiasis:** Strongyloidiasis is a nematode or roundworm infection by *Strongyloides stercoralis* following larval penetration of the skin. A small number of infected persons are asymptomatic. Symptoms on the skin may occur at the site of penetration (often feet), and include inflammation, serpiginous or urticarial tracts, and itching. Intestinal manifestations follow those on the skin, and include abdominal pain, nausea, flatulence, and diarrhea. Larval migration to lungs results in a variety of pulmonary symptoms, ranging from cough to pneumonia, pleural effusion, and miliary abscesses. Hyperinfection syndrome causes life-threatening CNS, cardiac, and wide-ranging gastrointestinal problems.
- 11) **Trichuriasis (trichocephaliasis or whipworm):** Trichuriasis is a nematode or roundworm infection with *Trichuris trichiura*. Severe infections may result in abdominal cramping, nausea, vomiting, flatulence, diarrhea, painful bowel movements, and weight loss. Mild infections are usually asymptomatic.

Oral Health Care

Most of the refugees have never had any dental health care and as a result one of the most prevalent personal health problem faced by refugees are oral and dental health conditions such as periodontal disease, caries, gingivitis and calculus, and tooth decay.

Reproductive health

- 1) **Pregnancy:** The Liberians have a high fertility rate with an average of almost 7 per woman. The number of pregnancies is exacerbated by the frequency with pregnant women still breastfeeding infants. This depletes the mother's nutritional status, leaving her more susceptible to disease, increases the risk of low birth weights, and can lead to early weaning of older children.
- 2) **Female genital cutting (FGC, also called female circumcision, or female genital mutilation):** It is estimated that 95% of Liberian women practice FGC. Within Liberian culture the practice is highly significant and is closely linked to the Sande or the women's secret society. Within this culture, women are not perceived as adults, not eligible for marriage, not able to join the Sande, or bear children unless they have had the procedure. The procedure is typically performed when the girls are prepubescent but may be done as early as 3 years old. There are typically two types

of FGC practiced within Liberia. The first is the removal of the clitoris and the labia minora but leaving the labia majora intact. The second is called clitoridectomy, where only the clitoris is removed, leaving the labia major and minora intact. There are several health risks associated with this practice. Immediate or short-term issues include severe pain, shock, haemorrhage, urine retention, ulceration of the genital region and injury to adjacent tissue. The procedure is often performed as a group using the same razor blade or knife for all the girls, which could spread blood born diseases. Some of the longer- consequences can include cysts and abscesses, keloid scar formation, damage to the urethra resulting in urinary incontinence, painful sexual intercourse, sexual dysfunction, and difficulties with childbirth.

FGC and HIV: New research also indicates that women who have had FGC are at an increased risk of contracting HIV during intercourse. For additional information on FGC, please refer to the World Health Organization's Web site <http://www.who.int/inf-fs/en/fact241.html>.

FGC and Delivery: Because of the high prevalence of FGC within this population, it is recommended that resettlement agencies work closely with health care providers, specifically those providing delivery services.

Mental Health

Refugee epidemiology of infectious and parasitic diseases, psychiatric disorders, and chronic diseases can be said to proceed in stages based on the context of the forced migratory experience. Infectious and parasitic diseases are associated with pre-migration experiences and exposure to risk factors in the country of origin. Chronic diseases are associated with pre-migration experiences and exposure to risk factors on the host country. Forced displacement and torture constitutes two of the most extreme forms of traumatic stress, with the potential for long-term psychological and physical suffering. Mental health problems, and some psychiatric disorders, can be thought of as linking pre and post-migration experiences with the experience of migration itself^{xi}.

Link between migration & resettlement health burden

Pre-migration: exposure to infectious & parasitic diseases, physical & psychic trauma

During flight & refugee camps: malnutrition, exposure to the elements, exposure to infectious & parasitic diseases, physical & psychic trauma

Post-migration/Resettlement: increasing susceptibility to chronic diseases, problems & stressors of resettlement (racism, unemployment, ESOL, crime, etc.)

Psychosocial resettlement concerns for Liberians can be linked to the decades of conflict and instability. Seven years of a protracted civil war, ending in 1997, resulted in massive human rights abuses. After a coup, torture, disappearances, extra-judicial executions, imprisonment of opposition leaders, and restriction of freedom expression were all common-place practices.^{xii} High rates of violence in the refugee camps have probably also contributed to a decreased sense of security and well-being. After the civil war, in a random sample of 205 women and girls between the ages of 15 and 70 years, one hundred (49%) participants reported at least 1 act of physical violence by a soldier or fighter.^{xiii} Similar observations have been made in reference to violence against Liberian refugee women in Nigeria.^{xiv}

From a psychological perspective, resettlement professional and health care providers should understand that:

- 1) The Liberians will be struggling with the after-effects of violence and psychic and physical trauma.
- 2) The Liberians have complex historical, cultural, religious and political backgrounds that need to be understood in their current context of resettlement in the United States. Special care should be taken in assessing and drawing conclusions about the cultural norms, social customs, and religious practices of Liberian refugees. The Liberian people are genetically and culturally linked to multi-ethnic groups in Sierra Leone, Guinea, Ivory Coast, Ghana, and Nigeria. This diverse ethnic link makes Liberia one of the most multi-cultural and multi-ethnic societies in Africa.^{xv}
- 3) Liberians, like other populations throughout the world, have a general prevalence of certain psychiatric disorders. For example, the world-wide prevalence of

schizophrenia is about 1%. Therefore, an expected 1 out of every 100 refugees may suffer from a major psychotic illness. Individuals with symptoms of major psychiatric illness (e.g., auditory hallucinations) should be referred for evaluation and treatment. However, a word of caution is indicated -- increased attention to cultural variation has made it clear that what is considered delusional (or otherwise pathological) or in one culture may be accepted as normal in another. Often clinicians' training, skills, and views tend to reflect their own social and cultural influences. There is some empirical evidence that such misinterpretations happen widely. For example, the over-diagnosis of psychotic disorders among African Americans is interpreted by some as evidence of clinician bias.^{xvi} The Liberians have many psychological and spiritual assets that should be identified in families and individuals and strengthened. Of course, symptomatic (depression, anxiety, etc.) refugees who are experiencing difficulties in facing and completing day-to-day activities should be referred for specialized psychiatric evaluation and treatment.

- 4) Although their needs are great, refugees should not be approached as over-dependent, hapless victims. For example, it has been observed that the Liberian refugees in Ghana did very well in spite of overwhelming difficulties. It was noted there that the women were especially determined against all odds to work hard and make a home away from home for themselves and their children. A strong spirituality, or "faith in God", was cited as a driving force.^{xvii}
- 5) Like other non-Western populations, the Liberians have traditional explanations for mental health problems and traditional systems for mental health interventions. Given the cultural diversity among Liberians, much needs to be learned about the traditional mental health perspective of the Liberians. Resettlement professionals and health care providers need to carefully take the time to establish an understanding of these variables at the communal, familial and individual levels. However, some general explanations for mental health or psychiatric symptoms or problems in other African refugee groups have included^{xviii}.
 - a. Violation of natural or traditional laws (e.g., inappropriate relations with kin, stealing, etc)
 - b. Not performing expected rituals (e.g., ritual for a deceased elder)
 - c. Mental poisoning by an enemy
 - d. A curse by an aged elder for serious traditional violation (e.g., disrespect, abandonment, etc.)
 - e. Bad luck leading to possession by evil spirit

Some traditional systems of mental health intervention have included:

- a. Consultation with traditional healers (who may offer sacrifices to appease spirits)

- b. Religious and spiritual sources for finding meaning in events, guidance, and hope.³
- c. Acceptance of psychotropics by those who believe in Western type medications.
- d. Family interventions (e.g., urge the disturbed member to control behavior, avoid unpleasant thoughts, or risk isolation).

ⁱ Onishi, N. (12/7/2000). In ruined Liberia, its despoiler sits pretty. *New York Times*, Vol. CL, No51, 595, pp. a1, a18.

ⁱⁱ UNDP – Human Development Report for 2003 http://www.undp.org/hdr2003/indicator/cty_f_LBR.html

ⁱⁱⁱ West Africa – Situation Map, October 2003, *OCHA Regional Support Office – Dakar*. ReliefWeb. October 15, 2003. www.reliefweb.int.

^{iv} Refugee Health ~ Immigrant Health web site http://www3.baylor.edu/~Charles_Kemp/africa.htm

^v Ferenchick, G. (Feb. 24, 1989) Sanitation, Spirits, and Medicine: Health Care in the African Bush. *Jama*. Volume 261, No. 8.

^{vi} Jarosz, L. (1990). Intercultural Communication in Assessing Dietary habits: Liberia as an Example. *Journal of the American Dietetic Association*, 90 (8): 1094-1099.

^{vii} Micronutrient Malnutrition: *Global Elimination of Micronutrient Malnutrition in the Next Century*. CDC web site <http://www.cdc.gov/nceh/globalhealth/GHAR/priorities/micronutrient/mnm.htm>

^{viii} Refugee Health ~ Immigrant Health web site http://www3.baylor.edu/~Charles_Kemp/africa.htm

^{ix} October 16, 2003 letter from Tony Perez, CDC and CDC October 2003 TB Notice.

^x Weekly epidemiological record. WHO 2003, 78, 145-156. no. 18 WHO

^{xi} Palinkas, L.A. et al, The Journey to Wellness: Stages of Refugee Health Promotion and Disease Prevention, *Journal of Immigrant Health*, Vol. 5, No. 1, January 2003.

^{xii} Amnesty International, Liberia: Time to Take Human Rights Seriously, Placing Human Rights on the National Agenda, <http://web.amnesty.org/library/print/ENGAFR340051997>

^{xiii} Swiss, S., et al, Violence Against Women During the Liberian Civil War, *Journal of the American Medical Association*, Vol. 279, No. 8, February 25, 1998

^{xiv} Ugwuegbu, D.E., Commentary: Mental Health Needs of Liberian Refugees in Nigeria, *The Journal of the International Institute*, Vol. 10, No. 2, Winter 2003.

^{xv} The Liberian People, <http://pages.prodigy.net/jkess3/People.html>

^{xvi} U.S. Mental Health: A Report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, National Institutes of Health, National Institute of Mental Health, 1999.

^{xvii} Owusu, M, Reluctant Refugees: Liberians in Ghana, *The Journal of the International Institute*, Vol. 7, No. 3, Summer, 2003.

^{xviii} Wokocho, E.F., African Systems of Care/Mental Health Issues facing African Refugees: Implications for Psychosocial Intervention, paper presented at the Future Directions in Refugee Mental Health Conference, convened by the Immigration and Refugee Services of America, Burbank, CA, July, 2000.

³ The religious profile of the Liberian population includes Christians (about 68%), Muslims (about 14%), and indigenous religions (about 18%). Ethnically, the dominant Christian groups are: Kru (94% Christian), Grebos (92% Christian), Bassa (88% Christian), Khran (84% Christian), Belle (83% Christian, Kpelle (80% Christian). Dominant Muslim groups include: Mandingos (94% Muslim) and Vai (77% Muslim). Two ethnic groups who have not been deeply penetrated by Christianity and Islam are: Mano (51% neither Christian or Muslim) and the Loma (43% neither Christian or Muslim). (Source: <http://pages.prodigy.net/jkess3/people.html>)