CLINICAL REVIEW

Health Problems of Refugees

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Background: **The United States has recently seen an increase in the number of refugees and a change in the ethnicity of these refugees. It would be helpful for family physicians providing medical care to these patients to have available health data on the largest groups of new refugees.**

***Methods*: Using the key words "refugee," "Vietnam," "Laos," "former Yugoslavia" (Bosnia-Herzegovina), "former Soviet Union," "Iraq," "Afghanistan," "Somalia," "Sudan," "Ethiopia," "Haiti," and "Cuba," the MEDLINE files were searched from 1991 to the present. Cross-references from these articles were also reviewed, including pertinent information published from 1981-91. Studies and experimental trials were discussed if they had information on conditions of refugees after arrival or on diseases currently reported from the countries of origin.**

Results and Conclusions: **With the exception of studies of Southeast Asian refugees, there are few clinical trials on the health problems of refugees after arrival in the United States. Tuberculosis, nutritional deficiencies, intestinal parasites, chronic hepatitis B infection, lack of immunization, and depression are major problems in many groups. There is great variation in the health and psychosocial issues, as well as cultural beliefs, among the refugees. In addition to a complete history and physical examination, tests for tuberculosis, hepatitis B surface antigen, and ova and parasites, as well as a hemoglobin measurement, are advised for most groups. Ongoing clinical trials are needed to explore more fully not only the medical and psychological problems of these patients but also their health beliefs. (J Am Board Fam Pract 1997;10:337-48.)**

The United States, which in 1995 admitted 131,304 refugees, is currently accepting the greatest number of refugees since World War II.[1] During the last 20 years large groups of refugees have come to the United States, predominantly from Southeast Asia as an aftermath of the Vietnam War. More recently, however, the number of refugees from the former Soviet Union has superseded those from Vietnam and Laos, and other countries—former Yugoslavia (Bosnia-Herzegovina), Somalia, Ethiopia, Sudan, Iraq, Afghanistan, Cuba, and Haiti—now generate many thousands of refugees.[1] For the busy family physician faced with caring for a patient from one of these countries, the task can seem formidable.

Some communities have a great many refugees from a single country (eg, New York City has a large enclave of Soviet Jews, and San Francisco, Vietnamese), whereas other large metropolitan areas absorb refugees from various countries who come with a variety of medical problems and cultural practices. Language and cultural barriers make it imperative for the physician to know which medical problems are common, what laboratory tests should be considered when caring for these patients, and what health views are unique to a given population. Because of the wide variations in religious practices, culture, economics, and geographical subsets within each group, any recommendations or statements must be individualized.

Methods

The MEDLINE files were searched from 1991 to the present using the key words "refugee" and the country names of the largest groups of recent refugees: "Vietnam," "Laos," "former Yugoslavia" (Bosnia—Herzegovina), "former Soviet Union," "Iraq," "Afghanistan," "Somalia," "Sudan," "Ethiopia," "Haiti," and "Cuba." Studies and experimental trials were preferentially included in this review if they had information on refugees af-

Submitted, revised, 14 June 1997.

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Table 1. Content of Visa-Mandated Medical Examination for Refugees.

Test or Examination	Criteria
Chest radiograph	15 y and older; Southeast Asian refugees 2 y and older
Sputum smear for acid-fast bacilli	If abnormal findings on chest radiograph
Human immunodeficiency virus	15 y and older
VDRL	15 y and older
Leprosy	All
Medical history of physical and mental disorders	
Class A	Excludable condition; required to apply for waiver for entry (eg, infectious tuberculosis)
Class B	Serious condition that needs follow-up (eg, clinically active but *not infectious tuberculosis*, hypertension, diabetes)

ter their arrival into the country of resettlement. Because of the dearth of information available, studies and information about endemic diseases in the above countries were also included. Cross-references from these articles were also reviewed, and pertinent information published from 1981 through 1991 was included as well. Background information on the process of refugee entrance into the United States was obtained from the Office of Refugee Resettlement, Texas Department of Health, and resettlement agencies.

Overseas and Domestic Health Assessment

Refugees are distinguished from immigrants in that they fear persecution because of religious or political beliefs or ethnicity. Their entrance into the United States is governed by the Refugee Act rather than immigration quotas. They are required, as are immigrants, to receive an overseas medical examination within 1 year before resettlement into the United States. These criteria are outlined in the Immigration and Nationality Act and amended in the Immigration Act of 1990. This examination is intended to exclude only those aliens who have the following conditions: "communicable diseases of public health significance, current or past physical or mental disorders that are or have been associated with harmful behavior, and drug abuse or addiction."[2] Refugees who have an excludable condition may apply for a waiver that permits their entry into the United States despite the condition.

The medical examination required to obtain a visa is performed in the country where the refugee resides (home country or country of asylum). The examination is conducted by the International Organization for Migration (Southeast Asia and the former Soviet Union) or by panel physicians. Table 1 displays the content of this examination. Conditions detected that require follow-up in the United States are designated class A (excludable, require waiver for entry) or class B (serious condition, needs follow-up).[2]

The quality and comprehensiveness of the visa medical examination vary. Because the examination is valid for 1 year before departure, a refugee can develop infectious conditions after clearance and before departure. Likewise, screening for many infectious diseases (eg, malaria) is not included.[2] Using data from the Hawaii state tuberculosis register to evaluate the effectiveness of the required overseas tuberculosis screening, researchers found that of the 124 refugees and immigrants examined within 1 year of arrival, 63 percent were classified as having active tuberculosis (B_1), 14 percent had inactive tuberculosis (B_2), and 23 percent were normal. These studies emphasized the need for prompt examination of all refugees even after screening, especially those who are classified B_1 and B_2.[3]

The Centers for Disease Control and Prevention (CDC) and the National Center for Prevention Services, Division of Quarantine, are delegated the responsibility of preventing the introduction, transmission, and spread of communicable disease from foreign countries into the United States. Refugees can be detained and medically examined if they are suspected of having any of the following diseases: cholera, diphtheria, infectious tuberculosis, plague, smallpox, yellow fever, and viral hemorrhagic fevers. When they arrive, refugees must pass through the US Public Health Service Quarantine Station at their port of entry, where persons who appear to be ill can be detained.

The domestic health assessment is designed to detect important medical conditions and protect the health of the US population. These programs are managed by state refugee health programs and vary from state to state.[2] Table 2 lists the components that might be included in a domestic health assessment.

Vietnam and Southeast Asia

Refugees from Vietnam and Laos continue to make up a large percentage of the total refugees. In 1994, 34,110 Vietnamese and 2888 Amerasians came into the United States as refugees.[1] In 1995 there was a slight decrease to 32,250 Vietnamese, 948 Amerasians, and 3682 Laotians. Many studies of earlier waves of Southeast Asian refugees reported the usefulness of the purified protein derivative (PPD) tuberculin (Mantoux) test, tests for ova and parasites, hepatitis B screening (hepatitis B antigen [HBsAg] for chronic carriers), and history and physical examination.[4,5] Table 3 displays these and other laboratory examinations to consider. The most common parasites found were (in descending order) *Necator americanus* (hookworm), *Giardia lamblia*, *Strongyloides stercoralis*, *Ascaris lumbricoides*, and *Entamoeba histolytica*.[4] In a 1994-1995 survey conducted in Texas, pathogens were identified in 40 percent of recently arrived Vietnamese refugees.[6]

Southeast Asia has the highest incidence of tuberculosis worldwide: in 1990, 237 cases per 100,000 persons (compared with 10.1 per 100,000 in native-born US citizens). Ever since the 1970s, health assessments described tuberculosis as one of the most important health problems among these refugees.[7] Among early refugees, up to 50 percent had evidence of infection without disease, and 1.5 percent had active disease. Those at highest risk were tuberculin-positive refugees who had abnormal findings on screening chest roentgenograms.[7] Providing prophylactic treatment with isoniazid for those who have positive reactions can decrease the number of these patients who subsequently have active disease. Although resistance to isoniazid is increasingly common, it is still the drug of choice for prophylaxis.

Table 2. Domestic Health Assessment*

Anemia
Health history and physical examination
Hepatitis B infection
Immunization status
Parasitic infection
Pregnancy
Tuberculosis infection and disease
Vision, hearing, and dental abnormalities

*Varies by state and location.

The high incidence of variant delayed reaction to tuberculin activity among these refugees has led some experts to recommend reading the skin test at the routine 48 to 72 hours and again at 6 days, with booster testing at 1 to 2 weeks for those whose response is initially negative. Including those with a positive response for booster testing and prophylactic treatment could help to reduce even further the cases of tuberculosis in this population.[8] Other experts suggest the booster response is associated with reactivity to nontuberculous mycobacterial antigens and a history of bacillus Calmette-Guérin (BCG) vaccination.[9] Current recommendations base treatment on risk factors and the size of reactivity, regardless of BCG vaccination status. Southeast Asians and all foreign-born persons are classified as high-

Table 3. Laboratory Tests Recommended for Refugees According to Country of Origin or Country of Residence During Immigration.

Test	Southeast Asia	Former Soviet Union	Former Yugoslavia	East Africa	Middle East	Haiti	Cuba
Nutritional assessment	+	±	±	+	±	+	+
Stool for ova and parasites	+	-	–*	+	+	±	–
Hepatitis B surface antigen	+	±	+	+	±	±	–
Hemoglobin or hematocrit	+	±	±	+	±	±	±
VDRL	±	–	–	+	–	+	–
HIV	–	–	–	+	–	+	–
PPD	+	+	+	+	+	+	+
Peripheral smear for malaria	–	–	–	±	–	–	–

HIV - human immunodeficiency virus, PPD - purified protein derivative tuberculin.
+ Strongly suggested, ± consider, – not routinely suggested.
*Unless in a concentration camp.

Table 4. Criteria for Determining Need for Preventive Therapy for Persons With Positive Tuberculin Reactions, by Category and Age-Group.

Category	Age-Group	
	< 35 Years	≥ 35 Years
With risk factor*	Treat at all ages if reaction to 5 IU purified protein derivative (PPD) tuberculin ≥ 10 mm (or ≥ 5 mm and patient is recent contact, HIV-infected, or has radiographic evidence of old tuberculosis)	
No risk factor, high-incidence group†	Treat if PPD > 10 mm	Do not treat
No risk factor, low-incidence group	Treat if PPD > 15 mm‡	Do not treat

From MMWR Morb Mortal Wkly Rep.[10]
*Risk factors include human immunodeficiency virus (HIV) infection, recent contact with infectious person, recent skin test conversion, abnormal chest radiograph findings, intravenous drug abuse, and certain medical risk factors.
†High-incidence groups include foreign-born persons, medically underserved low-income populations, and residents of long-term-care facilities.
‡Lower or higher cut points may be used for positive reactions, depending upon the relative prevalence of *Mycobacterium tuberculosis* infection and nonspecific cross-reactivity in the population.

incidence groups and are given prophylaxis if their PPD reactivity is greater than 10 mm and they are younger than 35 years of age. If they have risk factors, prophylaxis is recommended for all ages. Table 4 further outlines these criteria.

Infection with hepatitis B is hyperendemic in Southeast Asia. Fourteen percent of refugees have hepatitis B antigenemia (HBsAg positive).[5] Detecting those who are carriers and immunizing nonimmune family members will decrease further transmission. In addition to immunizing the newborns of mothers with infectious disease, the new recommendation of immunizing all newborns will decrease the child-to-child transmission that can occur in households.[11]

Among children immunizations are usually complete by standards of the World Health Organization (3 diphtheria-pertussis-tetanus, 4 polio, and 1 measles vaccine by the fourth birthday) but might still be incomplete by US recommendations (46 percent incomplete).[12] Malnutrition and various vitamin deficiencies are common among refugees who consume a rice-only diet. Beriberi has been described in a Vietnamese refugee who lived in the United States for 7 years.[13] Iron deficiency anemia (37 percent) and hemoglobinopathies are common. Abnormal VDRL test results overall (12 percent) are reported highest among Cambodians (19 percent).[5]

Up to 70 percent of Southeast Asian refugees have posttraumatic stress disorder or depression. Underreporting symptoms, patient stoicism, and cultural bias against admission of mental illness all lead to a failure to diagnose posttraumatic stress disorder. The symptoms are not obvious, and patients often report major depression or somatic complaints, such as headaches, stomachaches, and poor sleep. Vietnamese mental health needs are best understood in terms of an extended, patriarchal, collectivistic family unit. A careful history from the patient on exposure to combat, torture, or reeducation camp can alert the clinician to a patient at risk. Younger children might have developmental problems, whereas older children often suffer from depression, psychosis, aggressive behavior, and school problems.[14-16]

Attention to tobacco and alcohol abuse, healthy diets, cancer screening, and hepatitis B prevention is virtually unknown among recent Vietnamese immigrants in the United States. Cervical cancer is still a leading cause of death in young Vietnamese women.[17]

As in many Asian cultures, some Vietnamese, Laotians, and Cambodians practice traditional folk healing techniques that might not be mentioned to the physician. A view that suffering is inevitable and a lack of understanding of the benefits of preventive services and other Western health care technologies can cause mistrust and delay in seeking health care. Coining (rubbing a coin on the skin), hair pulling, cupping (filling a cup with burning paper and placing it over the affected area), pinching, scratching, and other traditional practices can lead to inappropriate accusations of child abuse and expensive workups for unusual illnesses. Home remedies, herbal medicines, and healing ceremonies are particularly prevalent among the Mien population (a tribe from Laos).[18,19] The most important factors in overcoming these obstacles are understanding

and respecting the patient's culture and a strong physician-patient relationship.

Former Soviet Union

In 1991 the world's largest and third most populous country, the Soviet Union, broke apart, and ethnic tensions and economic disruptions erupted. As a result, the largest group of refugees to the United States from 1992 to 1994 came from the former Soviet Union. These people are ethnically and linguistically diverse, representing five major national ethnic groups and many minority ones. From 1983 to 1995 the United States admitted 342,650 refugees, the majority of whom resettled in New York.[1] In 1995, the first year refugees were registered according to the individual countries within the former Soviet Union, Ukraine (15,103), Russia (8610), and Uzbekistan (3463) were home countries of the largest groups of refugees.[1]

In 1992 the CDC investigated case studies of the health care and public health in the former Soviet Union. They found that patterns of diseases and other problems approximated those in Western countries, but there were serious shortages of medicine, vaccines, and supplies.[20] Subsequent to this report a cholera outbreak occurred in the Ukraine (1994)[21] and a diphtheria epidemic (1990 to 1994) continued to spread to all the independent states.[22] Additionally, with the disintegration of the government, including the Ministry of Health of the Soviet Union, other public health problems are escalating.

The geographic prevalence pattern of hepatitis B virus infection in the former Soviet Union is classified as intermediate. Hepatitis B surface antigen (HBsAg) has a prevalence of 2 to 7 percent, and hepatitis B surface antibody (anti-HBs positivity) has a prevalence of 20 to 50 percent. The reported prevalence of HBsAg positivity is 4.2 percent among persons living in Moscow and 1.5 percent among refugees from the former Soviet Union who have resettled in the United States. In a study of 496 Jewish Russian refugees, however, HBsAg was detected in only 0.4 percent, suggesting routine screening might not be needed in this population.[23]

Within the former Soviet Union, distribution of measles and mumps vaccines began in the 1970s, and these vaccines continue to be offered at 12 and 14 months. Vaccines against hepatitis B, rubella, and combined measles, mumps, and rubella are not provided. Although immunization rates were high in 1991, measles vaccines have been inconsistently available since late 1991. Children's immunization records should be checked. Seronegativity to measles, mumps, and rubella is common among those who are younger than 30 years. Accordingly measles, mumps, and rubella vaccines are recommended for all Soviet refugees born after 1957.[23]

Although the incidence of active tuberculosis or infection among Russian immigrants has not been reported, tuberculosis is endemic in the former Soviet Union. As a result of the failing economy and civil wars, medication is not readily available. Kazakhstan has the highest rates.[24] For the first half of 1993, a regional referral laboratory found that 20 percent of 467 isolates of *Mycobacterium tuberculosis* from both new and recurrent cases in that area were resistant to isoniazid. The incidence of infection with the human immunodeficiency virus (HIV) is 42.0 per 100,000, and although the number of cases is low, HIV infection has occurred nosocomially as a result of inadequately sterilized needles. Hepatitis A is widespread, and poor public hygiene has led to hepatitis E outbreaks. Pockets of typhoid, brucellosis, anthrax, and malaria exist. Bubonic plague has been reported in Central Asia,[25,26] and a severe influenza epidemic was reported by the CDC in December 1995.[27]

Infant nutrition within the former Soviet Union countries has been compromised because mothers have not been encouraged to breastfeed, and imported formulas are in short supply. Iron deficiency anemia (found in 25 to 50 percent of children) and endemic goiter are affecting growth and development, so that hemoglobin levels should be measured in children.[25,26] Heavy tobacco and alcohol abuse are common, and alcoholism has become accepted as normal social behavior. Table 5 displays these and other conditions to consider when caring for Soviet refugees.

Perhaps the most perplexing medical conditions are those caused by radiation exposure from the Chernobyl nuclear power plant disaster and subsequent clean-up efforts. Approximately 80 percent of all Soviet immigrants to the United States are from the areas that were most affected—Belarus, the southwestern regions of Russia, and the northern part of Ukraine. There has been an in-

Table 5. Medical Problems in Refugees, Based on Country of Origin or Residence.

Problems	Southeast Asia	Former Soviet Union	Former Yugoslavia	East Africa	Middle East	Haiti	Cuba
Malnutrition	×			×			×
Depression	×		×		×		
Intestinal parasites*	×			×	×	×	
Filariasis				×		×	
Leishmaniasis				×	×		
Hepatitis B	×	×	×	×	×	×	
Tuberculosis	×	×	×	×	×	×	×
Posttraumatic stress disorder	×		×		×		
Low immunization rate		×	×	×	×	×	
Diphtheria		×					
Alcohol abuse		×					
Dental caries		×	×	×	×		
Typhoid fever				×		×	
Malaria				×			
Trachoma				×	×		
Syphilis	×			×		×	
Dengue fever				×		×	×
HIV infection				×		×	
Plague		×					
Cholera		×					
Radiation exposure		×					

HIV - human immunodeficiency virus.
× - disease reported in refugees from the country or considered at risk for importation.
*Includes *Enterobius*, *Trichuris*, *Strongyloides*, and *Ascaris*.

crease in thyroid cancer and leukemia in this population, so that physical examination with particular attention to the thyroid gland, thyroid function tests, regular cancer screening, routine blood chemistry tests, complete blood count, and urinalysis would be appropriate. Children's growth should also be examined carefully. In 1993 a US National Chernobyl Registry Coordinating Center was established at Baylor College of Medicine to create long-term prospective analysis of former Soviet Union immigrants living in the United States. Caring for these patients can be challenging, as they often link all of their complaints to radiation exposure, and the long-term health implications are still unclear.[28]

Russian refugees emphasize the social aspects of health and illness, in contrast to the biomedical model used by most American health care workers. The former Soviet Union required the entire family to emigrate as a unit, so that the older Russians often left their homeland for the sake of their children. These older refugees, who were accustomed to having the government provide all basic necessities, have been thrust into an environment where individual incentive is valued. As a result, their expectations of the health system are unrealistically high. Furthermore, many older émigrés do not learn English, and although they were professionals in their country of origin, they are unable to find work in the United States. All these differences can lead to complications with diseases that require self-management, because older Russians might not understand the need for personal involvement in their health care.[29]

Former Yugoslavia (Bosnia-Herzegovina)

The war in the former republic of Yugoslavia has created the largest number of European refugees since World War II.[30] In 1994, 7418 refugees from the former Yugoslavia were admitted as residents into the United States[1]; in 1995, 9872 refugees were admitted from Bosnia and Herzegovina. In the United Kingdom Bosnian medical evacuees were found to be suffering from malnutrition, tuberculosis, and quadriplegia, and those who were not evacuated for medical reasons were in good health but had experienced emotional trauma. The United Kingdom health authorities

recommend checking immunization status (particularly in children younger than 18 months), screening for tuberculosis, offering dental and family planning services, and offering counseling to rape and torture victims. They do not recommend screening asymptomatic refugees for skin and gastrointestinal parasites.[30]

Although the main health impact of the war has been war-related injuries, the effects of the war on public health are pervasive. Production of BCG, diphtheria, pertussis, tetanus, oral polio, measles, mumps, and rubella vaccines has been disrupted, and the in-country immunization rate is falling.[31] It is possible that recent arrivals have enteric infections, such as typhoid and hepatitis A, as well as scabies and head and body lice, but these conditions have not been reported. In 1990, before the war, Bosnia reported 2913 cases of hepatitis B. The increased need for blood donations and a shortage of screening reagents have resulted in a higher rate of hepatitis B transmission. Because the in-country prevalence of hepatitis B is intermediate, refugees should be screened for HBsAg. Other recommended laboratory tests are included in Table 3.

In July 1993 nutrition surveys, the World Health Organization found a mean weight loss of 10 to 12 kg per person among adults in Sarajevo but no increased protein deficiency.[30,31] Malnutrition has not been reported among recent refugees, and there has been preferential feeding of the children.[30] Dental care, limited before the war, now is nearly nonexistent.[32]

In the prewar era the former Yugoslavian countries had a high incidence of tuberculosis compared with the rest of Europe. High and increasing numbers of cases of tuberculous meningitis in Kosovo (Serbia) indicate widespread transmission and low BCG vaccination rates. All areas now have a shortage of antituberculous drugs and laboratory consumables.[33] Because tuberculous infection is common, PPD screening is recommended for Bosnian refugees. Heavy tobacco abuse contributes to respiratory problems among Bosnians.

The greatest problems among Bosnian refugees stem from the psychiatric consequences of ethnic cleansing. In a country that took pride in its multicultural character, former neighbors and friends are looting and murdering one another. Most families have at least one relative who has died in the war or has been a prisoner of war. A recent study of these new refugees found 65 percent with posttraumatic stress disorder and 35 percent with depressive disorders. Posttraumatic stress disorder severity scores correlated with the number and type of traumatic events experienced and seemed to be more severe among older patients.[34] Among children, success in coping with stress corresponded with the mother's coping skills. Sleeping and eating disorders, separation fears, and withdrawal or aggression were common. Children in a collective shelter were at greater risk for mental disorders than those with host families.[35]

East Africa

During the past 10 years, many refugees from three countries on the African continent—Somalia, Sudan, and Ethiopia—have entered the United States. In 1995, 2524 Somalis (a decrease from 3508 in 1994) and 1693 Sudanese (an increase from 1289 in 1994) were admitted. Previously, Ethiopia has been the main country of origin for African refugees; from 1983 to 1995, 26,360 Ethiopians entered the United States.[1]

Somalia, the site of Operation Restore Hope, has been in civil turmoil for years. By far the greatest health problem is malnutrition. During the 1992 famine an estimated 74 percent of children younger than 5 years living in refugee camps died.[36] Iron deficiency anemia, scurvy, and vitamin A deficiency were and still are common. Communicable diseases resistant to antibiotics, particularly respiratory and diarrheal diseases, are major causes of childhood mortality within Somalia. Many Somali and Ethiopian refugee children arriving in Buffalo, NY, lacked immunizations, had intestinal parasites and dental caries, and were anemic.[12]

Malaria is responsible for much of the morbidity and mortality among Somalis. Approximately 90 percent of malaria is caused by *Plasmodium falciparum; P vivax* and *P malariae* have also been identified. Recurrent infections result in anemia and splenomegaly.[37] Among Somali and Ethiopian refugees waiting in Mombasa and Khartoum for resettlement to the United States , 15.0 percent and 0.8 percent, respectively, were parasitemic. Strategies to reduce the risk of imported malaria include treatment at these centers. The threat of imported malaria is quite real.[38]

Historically Somalia has been characterized by low vaccination rates, especially among the no-

madic people. Before the fighting erupted in 1984, only 19 percent of children in Mogadishu were fully immunized. Even Somali children from refugee camps are often inadequately immunized.[12] The very high rates of vaccine-preventable diseases reported during times of stability are now higher. Children are not named until they are 7 days of age, because an estimated 5 percent of all infants are affected with tetanus neonatorum (mortality greater than 90 percent). A high incidence of measles and vitamin A deficiency combine to result in xerophthalmia and blindness.[39]

The reported prevalence of infection with hepatitis B virus is 68 percent, and the rate of chronic carriers (HBsAg positive) in the general population is 11 to 12 percent. Rates as high as 32 percent are reported among pregnant women. Hepatitis A immunity is nearly 100 percent. Hepatitis C prevalence is 1.5 percent in the general population.[39] Syphilis is widespread, its prevalence ranging from 3 percent among pregnant women to 28 to 69 percent among prostitutes. Gonorrhea is common, but the current HIV infection rate is low.[39]

BCG vaccination rate is low. Approximately 50 percent of the population is infected with tuberculosis, which makes tuberculosis screening mandatory[37,39] (Table 3). Both visceral and cutaneous leishmaniasis are endemic. Kala-azar (visceral leishmaniasis) is a chronic disease characterized by lymphadenopathy, anemia, leukopenia, fever, hepatosplenomegaly, and emaciation and has an incubation period of weeks to years. Intestinal parasitosis is common in Somalia, as would be expected in a rural seminomadic population (50 to 88 percent infected). *Trichuris*, *Ascaris*, *Ancylostoma*, and *Giardia* are the most common parasites and protozoa.

Schistosomiasis, a major health problem in Somalia and surrounding regions, is found in 36 percent of the population. In Somalia schistosomiasis is caused by *Schistosoma haematobium*, which is a major cause of bladder cancer, stones, and obstructive uropathy.[39] Although the vectors for dengue and yellow fever are found in Somalia, only dengue fever has been reported. Other endemic diseases include leptospirosis, rickettsial diseases, brucellosis, relapsing fever, filariasis, and echinococcosis.[39] Table 5 displays some medical conditions to consider when examining these patients, although the frequency of most of these conditions among East African refugees living in the United States is largely unstudied.

Certain traditional practices can challenge those caring for female Somali patients. Communities in many parts of Africa practice female circumcision. The Pharaonic type (infibulation), in which the entire clitoris, labia minora, and most of the anterior parts of the labia majora are removed, is the most common (88 percent). Circumcised women experience, in addition to an immediate risk of sepsis, profound long-term psychologic and physical consequences, including painful urination, intercourse, and labor, as well as perinatal difficulties.[39-41] Traditional healers are important providers of health care. Skin burning for pain relief and uvulectomy or tooth removal for upper respiratory infections are common traditional treatments.[39] Whether these practices are continued in the United States has not been studied.

Patriarchal Muslim traditions, which allow women few freedoms, make it difficult for Somali women to assimilate easily into Western culture. In Canada community projects have aided refugees in this difficult transition.[42]

Israel has had extensive experience with Jewish Ethiopian refugees before the migration of Ethiopians to the United States, which peaked with 4085 persons in 1991.[1] In an investigation of 14,465 refugees, the Israelis found typhoid fever, tuberculosis, or malaria in 1.8 to 9.0 percent of immigrants. As many as 93 percent were infested with intestinal parasites. The most common parasites were hookworm, *Schistosoma mansoni*, *Giardia lamblia*, *Ascaris lumbricoides*, *Hymenolepis nana*, and *Entamoeba histolytica*. Ninety-eight percent of adults had serologic evidence of hepatitis B, and extreme malnutrition, syphilis, and chloroquine-resistant malaria were common. An active measles infection was the only disease that appeared to spread from Ethiopian immigrants to the indigenous population. Other diseases found in low numbers included leprosy, louse-borne relapsing fever, and asymptomatic shigellosis.[43]

Tuberculosis in Ethiopian refugees continues to be a major concern in the United States. At least one adult-to-child tuberculosis transmission in a day-care setting has resulted from an active case of tuberculosis in a recent Ethiopian immigrant.[44] Strict compliance with the recommended screening using Mantoux testing in this population is crucial (Table 4).

Cultural differences can make communication with Ethiopian patients difficult. Ethiopian patients consider frank disclosure inappropriate and insensitive. They expect bad news to be communicated to a relative or friend, who will communicate it to the patient. In the American cultural context disclosure is an important aspect of health care and might not be understood by Ethiopian immigrants.[45]

The health profile of Sudan is similar to that of Somalia and Ethiopia. Malnutrition is endemic. Fifty-eight percent of Sudanese refugees surveyed in Ethiopia suffered from acute protein energy malnutrition.[46] Xerophthalmia and trachoma are also endemic.[47,48] The prevalence of malaria is so high in Sudan that many high-risk patients (young children and pregnant women) are routinely treated with antimalarial medications based on fever and clinical symptoms alone in an attempt to decrease mortality.[49] Malaria should be considered in the differential diagnosis if refugees have fever. In the United States splenomegaly and hyperreactive malarial syndrome are found in Sudanese refugees and can be misdiagnosed.[50]

Because most Sudanese have intestinal parasites, Sudanese refugees should be screened for ova and parasites[51] (Table 3). Detection of infections that lead to chronic disease (such as leishmaniasis and schistosomiasis) is an important preventive measure.[52] A survey of sexually active heterosexuals in Sudan (which included some Ethiopian refugees) found serologic markers for hepatitis B and syphilis in 68 percent and 17 percent of the participants, respectively. Antibody to HIV was not detected in any participants. All Sudanese refugees should be screened for HBsAg and syphilis[53] (Table 3).

Iraq and Afghanistan

From 1983 to 1995, 19,848 Iraqi and Kurdish refugees emigrated to the United States,[1] and in 1995, at 3475 refugees, they constituted the largest refugee group from the Middle East. Malnutrition and intestinal parasites are common among Iraqi refugees, and hepatitis B and tuberculosis are endemic. Among Kurdish refugees 6.7 percent of children aged 1 to 4 years and 14.4 percent of adults were HBsAg positive. Certain hereditary diseases, such as familial Mediterranean fever and glucose-6-phosphate dehydrogenase deficiency, are diagnosed more commonly in this population than in the US population.[54-56] Adjustment problems among Iraqi refugees have primarily been related to language barriers and religious practices. Among the Middle Eastern immigrant groups studied, those who perceived themselves to be more traditional had more physical symptoms and lower morale.

Between 1983 and 1995, 22,316 Afghan refugees emigrated to the United States.[1] Although the more than 6 million Afghan refugees worldwide represent the largest single group of refugees, little information is available on their health status. Fourteen years of war have been devastating to the children and women in a country that has the second highest infant mortality rate and second highest mortality rate in the world for children younger than 5 years. Many Afghan women have lost husbands and children to war injuries, gastroenteritis, starvation, or neonatal tetanus. In one study population of Afghan refugee children, 67 percent were seriously undernourished, and only 30 percent were completely immunized.[57]

Health concerns and needs of Afghan refugee families have been studied in California. In a survey of 196 Afghan families, the most pressing problems were the psychologic disorders and stress resulting from trauma and loss, occupational and economic difficulties, and issues related to cultural conflict. Physical problems included diabetes, dental disease, and heart disease.[58] The most frequently reported medical conditions among newly arrived Afghan refugees in San Francisco were (in descending order) dental caries, dermatologic disorders (tinea, scabies), intestinal parasites, gastrointestinal disorders, musculoskeletal complaints, and refractive errors. Common parasites were *Ascaris lumbricoides*, *Giardia lamblia*, *Entamoeba histolytica*, and *Hymenolepis* species.[59]

Post-traumatic stress disorder and major depression are common among young adult and adolescent refugees, particularly those whose parents were subjected to intense psychologic distress and those who experienced a great many traumatic events.[60] Afghanistan has a strong Muslim religious tradition that values the extended family and elders and privacy and modesty among women. As a result, refugee Afghan women encounter many difficulties when making the transition from their traditional patriarchal society to a more egalitarian postindustrial society.[59,60]

The Caribbean—Haiti and Cuba

The number of refugees from Haiti entering the United States decreased from 5043 in 1994 to 2551 in 1995.[1] Haiti has long been plagued with overwhelming poverty. The greatest health burden in Haiti is acquired immunodeficiency syndrome (AIDS), currently the leading cause of death in sexually active adults.[61]

In a report on the health status of Haitian immigrants in 1992, the main health problems were fever, malaria, otitis media, upper respiratory tract infection, active tuberculosis, measles, pneumonia, varicella, cellulitis or abscess, and filariasis.[62] Of the 7315 immigrants older than 15 years who were screened for syphilis, human immunodeficiency virus (HIV), and tuberculosis, 5 percent had evidence of past or present syphilis, 7 percent were HIV positive, and 5 percent had signs of pulmonary tuberculosis, of which 30 percent had active infection. Although 21 percent of the *Mycobacterium tuberculosis* isolates were resistant to isoniazid and 5.4 percent were resistant to two drugs simultaneously, all but 1 patient had a favorable response to a standard four-drug treatment program.[63]

None of the Haitians undergoing nutritional assessment at Guantánamo Bay were suffering from acute malnutrition, but only 6 percent of those surveyed were younger than 9 years old. Immunization rates are low.[62] Because of their low standard of living and poor hygienic conditions, Haitians should be screened for parasites (Table 3). Dengue fever, an arboviral infection, has been imported from Haiti and should be considered in the differential diagnosis of febrile illnesses in recent refugees.[64]

A new wave of refugees has been arriving from Cuba. In 1994 the United States admitted 15,468 Cubans,[1] and in 1995 it admitted a total of 37,037. Poor economic conditions have resulted in micronutrient deficiencies in these refugees, which in turn have been responsible for a recent epidemic of optic neuropathy, sensorineural deafness, peripheral sensory neuropathy, and dorsolateral myeloneuropathy. Multivitamin supplements have curbed the epidemic, but physicians should be alert to possible thiamine, cobalamin, folate, and sulfur amino acid deficits in Cuban refugees. Patients who smoke are at highest risk, particularly those who smoke cigars (possibly because they lack adequate amounts of vitamins and minerals needed for cyanide detoxification) and those who have inadequate intake of vitamin B_{12}, folate, or methionine.[65,66]

The children are in overall good health compared with those in many developing countries. Regular government-sponsored mass immunization campaigns have resulted in high immunization rates.[67] The incidence of tuberculosis has been declining in Cuba since 1979.[68] Even so, the age-adjusted prevalence of tuberculous infections for persons born in Cuba (9.7 percent) is greater than for those of Cuban descent born in the United States.[69] HIV infection is rare in Cuba, and HIV-infected patients are housed in sanitoriums.[70]

Mental illness, including schizophrenia, mental retardation, atypical psychosis, and antisocial personality disorder, has been a serious problem in both Cuban and Haitian refugees. Because they are unfamiliar with the US mental health system and live in unfavorable social environments, they have not been able to take advantage of mental health services. Serious mental illnesses and criminal records have been reasons for detaining Cuban refugees in federal institutions. Of those refugees who appealed psychiatric diagnoses given in immigration proceedings, medical review boards upheld 72 percent of the exclusionary certificates but only 42 percent of the diagnoses of antisocial personality disorder.[71,72]

Summary

The physical and mental problems of refugees are challenging. Nearly all refugees have a higher incidence of tuberculosis, chronic infection with hepatitis B, intestinal parasites, nutritional deficiencies, and depression—although there are marked differences among the various countries. Findings from a complete history and physical examination, knowledge of the physical and mental health problems encountered in these populations, and familiarity with their health and cultural beliefs will enable the family physician to provide complete and compassionate care to new refugees.

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