Perspective Piece

Partnerships that Facilitate a Refugee's Journey to Wellbeing

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Abstract. The current global refugee crisis involves 65.3 million persons who have been displaced from their homes or countries of origin. While escaping immediate harm may be their first priority, displaced people go on to face numerous health risks, including trauma and injuries, malnutrition, infectious diseases, exacerbation of existing chronic diseases, and mental health conditions. This crisis highlights the importance of building capacity among health-care providers, scientists, and laboratorians to understand and respond to the health needs of refugees. The November 2016 American Society of Tropical Medicine and Hygiene (ASTMH) conference in Atlanta will feature an interactive exhibit entitled “The Refugee Journey to Wellbeing” and three symposia about refugee health. The symposia will focus on tropical disease challenges in refugee populations, careers in refugee health, and recent experiences of governmental agencies and nongovernmental organizations in responding to the global refugee crisis. We invite ASTMH attendees to attend the exhibit and symposia and consider contributions they could make to improve refugee health through tropical disease research or clinical endeavors.

The United Nations High Commissioner for Refugees (UNHCR) states that one of every 113 people in the world has been forcibly displaced within their own country or across international borders as a result of war, famine, or natural disaster. In 2015, the number of refugees, asylum seekers, and internally displaced people exceeded 65.3 million, the largest number in history, largely driven by extended conflicts across the Middle East and sub-Saharan Africa.¹ Internally displaced people and refugees may be excluded from national public health programs, missing opportunities for routine vaccination and preventive care, and placing them at increased risk for infections that may go undetected along their migration pathway.

Human global migration impacts communities worldwide. The current global refugee crisis highlights the urgent need to provide training and education to health-care and public health professionals to build worldwide capacity to meet the diverse health-care needs of refugees. When caring for globally mobile populations, a number of factors, such as provider unfamiliarity or language barriers, can result in delayed diagnoses (e.g., hepatitis B), inappropriate treatment leading to iatrogenic complications (e.g., strongyloidiasis), and overlooked cases of potentially contagious infectious disease (e.g., tuberculosis).

To address this need, the Centers for Disease Control and Prevention (CDC) is partnering with the American Society of Tropical Medicine and Hygiene (ASTMH), with participation from the Department of State Bureau of Population, Refugees, and Migration (BPRM), International Organization for Migration (IOM), International Rescue Committee, UNHCR, Office of Refugee Resettlement, and Médecins

Sans Frontières, to present an interactive exhibit and three symposia on refugee health at the upcoming ASTMH Conference on November 13–17 in Atlanta, GA.

The exhibit, entitled “The Refugee Journey to Wellbeing,” and the accompanying symposia are designed to inspire ASTMH conference attendees to consider ways in which their work may advance public and clinical health research and practice among the world's most vulnerable and disenfranchised populations. The exhibit is intended to provide attendees the opportunity to understand the refugee experience, sense the passion of professionals who serve these populations, and engage attendees' curiosity by having them navigate diagnostic and clinical difficulties encountered in the field of refugee health. The first symposium will be entitled “Refugee Health: Clinical Case Studies,” and will provide attendees the opportunity to explore in-depth and complex clinical cases affecting refugees. The second symposium, “Careers in Refugee Health: Case-Based Perspectives and Descriptions,” will highlight careers in refugee health. In the third symposium, “The Refugee Journey to Wellbeing,” attendees will hear from the world's leading refugee health experts about opportunities and challenges encountered in working with refugee populations.

Conundrums around disease prevention, diagnosis, and clinical management are faced regularly by clinicians and public health professionals working with refugee populations. As many as 100 million persons worldwide are estimated to be chronically infected with *Strongyloides stercoralis*, an intestinal nematode that is endemic in the tropics and subtropics. A 2007 serosurvey found a 44% prevalence rate in Sudanese refugees after their arrival to the United States.² CDC works with partners to administer presumptive treatment of parasitic diseases to refugees before their departure for the United States. Currently, depending on the refugee's country of origin, CDC recommends 2–4 drugs to treat malaria and helminth infections. For example, CDC recommends that refugees from sub-Saharan Africa receive presumptive therapy for strongyloidiasis infection with ivermectin. The drug,

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however, is contraindicated in refugees who originate from, or have resided in, central and west African countries where the parasitic infection *Loa loa* is endemic.³ This is because cases of encephalopathy have occurred when patients from *L. loa*-endemic regions were treated with ivermectin as part of public health campaigns to control onchocerciasis (river blindness) and lymphatic filariasis. Although rare, encephalopathy is thought to be related to high *L. loa* microfilarial loads in patients before their receipt of ivermectin. A current challenge faced by public health practitioners is to consider what could be done before departure to accurately identify patients with high *L. loa* microfilarial loads in their bloodstream and avoid the severe adverse consequences of administration of ivermectin.

Vaccines are not required for refugees who are undergoing resettlement to the United States; this has resulted in multiple cases and some outbreaks of vaccine-preventable diseases among refugees in transit or after U.S. arrival. Past outbreaks have included measles in Burmese from Malaysia and Somalis from Kenya, varicella in Liberians from Cote d'Ivoire, polio and pertussis in Somalis from Dadaab, Kenya, and mumps in Eritreans from Ethiopia. These outbreaks have resulted in at least one case of congenital rubella in an infant born to an unvaccinated mother after her arrival in the United States, numerous resettlement delays and flight cancellations, international and domestic emergency responses, contact investigations, and extended follow-up by health authorities after arrival. In partnership with the BPRM and IOM, CDC implemented a vaccination program for U.S.-bound refugees to reduce the risk of vaccine-preventable disease outbreaks and improve their health. There are, however, challenges to be overcome when instituting an overseas vaccination program for U.S.-bound refugees. Determinations need to be made about which vaccines should be administered and which vaccine formulations are available overseas. Strategies for establishing and preserving the vaccine cold chain, providing staff training on vaccine administration and documentation, and a system for managing adverse events all need to be developed and implemented. For 2017, the United States has agreed to resettle 100,000 refugees. The challenges are monumental, but successful implementation of vaccination before departure would be a much healthier alternative and could prevent future outbreaks.

The resettlement of large numbers of refugees from Africa, Asia, and the Middle East requires that health professionals in receiving communities be familiar with the diagnosis and management of tropical diseases. A U.S. clinician's lack of familiarity with tropical infections can negatively impact the health outcomes of his or her refugee patients. For example, given that patients with strongyloidiasis often present with coughing and wheezing, the symptoms can be mistaken for asthma, an affliction more common among U.S.-born patients for which steroids are frequently prescribed. Untreated strongyloidiasis with concomitant immunosuppression can lead to life-threatening hyperinfection syndrome and death.

U.S. domestic providers may be unfamiliar with tropical hepatosplenomegaly, a common condition affecting certain refugees. Refugees from the Democratic Republic of Congo now represent one of the largest U.S.-bound populations. More than 10,000 Congolese have been

resettled since 2001; many more are expected, as UNHCR announced plans in 2014 to refer 50,000 Congolese to all resettlement countries over the next 5–7 years.^{4,5} Early that same year, CDC began receiving reports from IOM about an unusually high number of Congolese refugees in Uganda with enlarged spleens detected during their predeparture medical examinations (e.g., ~15% prevalence in certain populations). There are striking differences in the possible causes of splenomegaly in patients from developing countries (e.g., malaria, leishmaniasis, schistosomiasis) compared with those from developed countries (e.g., cancer, cystic fibrosis), making diagnosis and case management quite complex and challenging.

We have emphasized the importance of clinician awareness of tropical and vaccine-preventable diseases when working with refugee populations. However, clinicians should be aware that chronic diseases such as diabetes and hypertension are also prevalent in refugee populations. Mental health problems must be considered, as refugees often endure multiple ordeals in their flight from their countries of origin, creating profound and long-lasting psychological trauma. One of the 'Lost Boys' from Sudan presented to a clinic with abdominal pain of sufficient severity that an appendectomy was performed; however, the appendix was normal. The refugee only obtained relief from his pain after visiting a trained psychologist who had the time to listen to his story. The young man, who lost his parents at an early age, had to cross crocodile-infested rivers to go to a refugee camp, only to be turned back; he then walked to another country and was finally accepted into a refugee camp (S. Cookson, personal communication). Astute clinicians in receiving countries need to be cognizant that psychological trauma may also manifest with physical symptoms and be knowledgeable about resources available for referring patients to trained mental health professionals.

At a time of heightened awareness about the global refugee crisis, leveraging CDC's partnership with ASTMH provides a unique opportunity to highlight the role of science and research in refugee health. This is a call to action to spur partnerships, increase research and clinician education, and promote the health of our world's most vulnerable populations. With strong backgrounds in infectious disease and global health, ASTMH attendees have the training and experience to advance refugee health as clinical health professionals, scientists, laboratorians, and epidemiologists. As human mobility continues to increase, we need new diagnostic and treatment options for tropical diseases. We need to better understand the burden of illness and long-term complications and establish and standardize best practices for a variety of communicable and noncommunicable diseases, particularly for populations that have departed from disease-endemic areas.

We invite our ASTMH colleagues to attend the refugee health symposia and visit the interactive exhibit to learn about the experiences of refugees; consider ways to incorporate refugee health into their clinical, research, or public health-care efforts; test their diagnostic and treatment skills in tropical medicine; learn more about best practices for screening and treatment in refugee populations; and learn how governmental and nongovernmental organizations partner to promote health in these populations. With more than 200 million people on the planet living permanently

outside of their country of birth, the world's health problems are our collective responsibility.

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