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Refugee Health and Cholera

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Since ancient times, cholera has been a feared disease. Its symptoms, profuse diarrhea and vomiting, can strike without warning and, if untreated, lead quickly to death. Before the 19th century, cholera was a regional disease in southern Asia. Pandemic cholera's first emergence in 1817, following the advent of modern globalization, demonstrates the sometimes devastating interaction between large-scale movements of people and infectious diseases [1]. Six more cholera pandemics have since occurred. The seventh wave, which began in 1961, continues. Fear of cholera drove the sanitary revolution in North America and Europe more than a century ago [2]; this latest and most persistent wave remains—or is becoming—a threat in the many places still waiting for the revolution to come.

For refugees, the risk of cholera is often amplified. Refugees flee from their home countries under precarious conditions with limited public health safeguards. In host countries, the quality of public health and sanitation services for refugees varies due to a combination of political, financial, social, and national security factors. In camps, overcrowding, unclean water, and inadequate sanitation further increase risk. In all settings, health and hygiene concerns may be overshadowed by more immediate concerns for security, food, and shelter.

Safe water and good sanitation are the definitive solution to cholera in refugee camp settings (and everywhere else), but these interventions may not be adequately achieved in some refugee settings; they require political will and investments in infrastructure that have yet to be realized in many camp settings. A recent example of the risks faced by refugees comes from the largest refugee camp in Thailand, where 45,000 mostly ethnic Karen refugees from Burma live in four square kilometers carved out of the jungle on the northern border. This camp, called Mae La, was established in 1984, but political and financial barriers have blocked the development of proper sanitation infrastructure. As a result, the camp has had four cholera outbreaks since 2005, the first year with accessible surveillance records, resulting in more than 1000 cases; the most recent outbreak, in 2010, involved more than 350 culture-confirmed cases including one fatality in a pregnant woman.

Oral cholera vaccines are increasingly recognized as a supplemental strategy for cholera prevention in cholera-prone areas [3]. Two types of whole-cell killed oral cholera vaccines are currently available: Dukoral (Crucell/SBL Vaccine, Sweden) and Shanchol (Shantha Biotechnics, India). Dukoral has been licensed in about 60 countries for more than 20 years, while Shanchol vaccine was licensed in India in 2009 and prequalified by the World Health Organization in September 2011. Both are safe, two-dose vaccines (Dukoral requires three doses for young children) with a protective efficacy of 66%–86% in children older than five years and adults [4]. Notably, Shanchol costs substantially less than Dukoral, raising the possibility of its use in resource-constrained settings.

It was during the long tail of the 2010 cholera outbreak in Mae La that the Thailand Ministry of Public Health, Première Urgence - Aide Médicale Internationale (a humanitarian organization that provides health services in Mae La), and US Centers for Disease Control and Prevention began to discuss oral cholera vaccination as an additional tool to prevent cholera in Mae La. More than two years later, in January 2013, a campaign was launched to vaccinate Mae La refugees with two doses of Shanchol. Obstacles to speedier implementation included lack of World Health Organization prequalification at the time; cold chain preparations; the flood crisis in Thailand in 2011, which diverted public health resources away from campaign preparations; and securing stakeholder support. In the end, more than 36,000 refugees were vaccinated against cholera in 18 days during three rounds in January, February, and March of 2013.

Beyond demonstrating the successful implementation of a campaign with a relatively new and less expensive oral cholera vaccine in a refugee camp, this example also highlights a shift in the CDC health paradigm for refugees resettling to the United States. Beginning in 1998, the CDC's focus has increasingly widened beyond identifying and treating just those conditions designated inadmissible by regulation, such as infectious tuberculosis, to encompass disease control and health promotion for refugee populations wherever they are in their journey, whenever access exists and enactment is feasible [5]. A resettlement program that focuses solely on inadmissible conditions, and overlooks opportunities to address other health concerns, leaves refugees weaker and less able to adapt to a new environment, while a more comprehensive approach to public health measures for refugees leads to improved health to the benefit of all—individual refugees, host countries, and, in Southeast Asia, ASEAN member states, as well as receiving resettlement communities in the United States.

In the approximately 8 months since the vaccine campaign, no additional cholera cases have occurred; given that there were two preceding cholera-free years, the lack of illness cannot be attributed entirely to the campaign. As part of the post-campaign evaluation process, heightened surveillance for cholera will continue in Mae La through 2015. The effectiveness of oral cholera vaccination in the context of a refugee camp will be determined (if additional cases occur).

Editorial (CB)

Cholera is a highly transmissible disease endemic to parts of Africa, Asia, the Middle East, and South America [6]. WHO estimates there are 3–5 million cholera cases every year but only 178,000–589,000 are reported; an estimated 100,000–120,000 persons die annually [7]. Based on an analysis of cholera reports from the Program for Monitoring Emerging Diseases from 1995 to 2005, it was estimated that Sub-Saharan Africa tended to have larger cholera outbreaks and accounted for 66% of all outbreaks. They identified typical risk factors for cholera with outbreaks often occurring among dislocated populations, particularly where water sources were prone to contamination (8). Although the use of intravenous fluid treatment and oral rehydration solution has dramatically reduced mortality and morbidity, even among severely dehydrated cholera patients in large displaced refugee populations, much remains to be done to prevent the occurrence of disease. In 2008, the UN High

Commissioner for Refugees estimated that more than half of refugee camps worldwide did not provide the recommended daily water requirement of 20 L per person and that 30% of camps did not have adequate waste disposal and latrine facilities [9]. Safe water and good sanitation are the definitive prevention and intervention strategies, but this is often difficult to achieve in the short term after humanitarian crises that lead to the dislocation of populations and their congregation into crowded residential settings. The use of cholera vaccines, especially in countries where cholera is endemic or in vulnerable epidemic prone settings such as refugee camps, is one possible added disease prevention and control strategy as a temporizing role in reducing cholera risk until safe water and sanitation can be established. With new cholera vaccines on the horizon that offer increased efficacy, the toolkit for prevention need not be considered an either/or proposition, but instead a combination of both “safe water and good sanitation programs” and vaccine.

References

1. Lee K. The global dimensions of cholera. *Global Change and Human Health*. 2001; 2(1):6–17.
2. Guerrant RL. Cholera--still teaching hard lessons. *N Engl J Med*. Jun 8; 2006 354(23):2500–2. [PubMed: 16760452]
3. Cholera vaccines: WHO position paper-Recommendations. *Vaccine*. Jul 5; 2010 28(30):4687–8. [PubMed: 20483196]
4. Sinclair D, Abba K, Zaman K, Qadri F, Graves PM. Oral vaccines for preventing cholera. *Cochrane Database Syst Rev*. 2011; 3 CD008603.
5. Ortega, LER., Cetron, M. *Tropical Infections Diseases: Principles, Pathogens & Practice*. In: Guerrant, RLWD., Weller, PF., editors. *Tropical Infections Diseases: Principles, Pathogens & Practice*. 3rd ed. Elsevier Saunders; 2011.
6. Verma R, Khanna P, Chawla S. Cholera vaccine: new preventive tool for endemic countries. *Hum Vaccin Immunother*. May; 2012 8(5):682–4.7. [PubMed: 22634452]
7. WHO. [Accessed 10/21/2013] 10 Facts on Cholera. <http://www.who.int/features/factfiles/cholera/facts/en/index1.html>
8. Griffith DC, Kelly-Hope LA, Miller MA. Review of reported cholera outbreaks worldwide, 1995-2005. *Am J Trop Med Hyg*. Nov; 2006 75(5):973–7. [PubMed: 17123999]
9. United Nations High Commissioner for Refugees. [Accessed 12 November 2013] Water, sanitation and hygiene (WASH): water for life. Available at: <http://www.unhcr.org/pages/49c3646cef.html>