

## Chapter 62

# Climate Change–Associated Conflict and Infectious Disease

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### **ABSTRACT**

*One of the least appreciated mechanisms by which climate change will affect infectious diseases is via increased violent conflict. Climate change will diminish agricultural and pastoral resources and increase food scarcity in many areas, including already impoverished equatorial regions. Many in the defence and public health fields anticipate that climate change will increase conflict by fuelling competition over scarce resources. Already, some commentators argue that the conflicts in Darfur and Syria were partially caused or exacerbated by climate change. Conflict facilitates a range of conditions conducive to the spread of many infectious diseases, including malnutrition, forced migration, unhygienic living conditions and widespread sexual assault. Flight or killing of health personnel inhibits vaccination, vector control and disease surveillance programs. Emergence of new diseases may go undetected and discovery of outbreaks could be suppressed for strategic reasons. These conditions combine to increase the risk of pandemics.*

### **INTRODUCTION**

This chapter examines the effect of climate change-associated conflict on infectious disease. It first reviews the nexus between climate, conflict and infectious disease historically. It then examines the literature linking resource scarcity and conflict. It argues that climate change will increase resource scarcity in many areas and increase the risk of conflict and subsequent migration. Finally, it examines the consequences of elevated conflict risk on infectious disease. It concludes that the types of conflict made more likely by climate change could be particularly detrimental to efforts to fight infectious disease.

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## **WAR, PEACE, AND INFECTIOUS DISEASE IN HISTORY**

The evolutionary contest between humans and infectious diseases has been waged since the first *Homo sapiens*. Holding other factors constant, the increased population densities and high rates of international travel of recent decades are conducive to the transmission and spread infectious disease. Yet, even accounting for AIDS, the death rate from infectious disease has not risen as might be expected. In the US, the annual death rate from infectious disease was approximately 60 per 100,000 in the early 1990s, compared with approximately 500 per 100,000 in 1900 (Lederberg, 2000). Of course, not all countries fared so well, because the American gains were largely due to advances in nutrition, public health and sanitation infrastructure. In many conflicts, antagonists deliberately push back these advances, facilitating conditions that benefit the spread of infectious disease. Some scholars suggest that war and public health efforts are at odds (Toole, Galson, & Brady, 1993).

Historically, periods of conflict were often associated with infectious disease epidemics. The 1918 influenza pandemic caused 40 million deaths globally. The virus may have emerged on the Western Front in the winter of 1916 or 1917, where conditions would have fostered increasing virulence of the disease (Oxford, Sefton, Jackson, Innes, & Johnson, 2002). Many soldiers had lung irritation from the use of chemical weapons, and were exposed to the elements in conditions that were overcrowded and stressful. Under-nutrition was common in the civilian population, weakening immune response to disease (Erkoreka, 2009; Oxford, et al., 2002). Demobilisation at the end of the war saw massive population movement, which contributed to global disease spread (Erkoreka, 2009; Oxford, et al., 2002).

The conditions of encamped soldiers have long been a fertile ground for illness. Disease killed over 130,000 Allied and Austrian forces during the Crimean war between 1854 and 1856, far more than the approximately 25,000 killed in combat (Smallman-Raynor & Cliff, 2004). The rapid increase of US military personnel in preparation for and during the Spanish American war was concentrated at a number of assembly and training camps erected in the continental United States. While no fighting took place at these sites, massive personnel movements combined with hastily assembled camps and unhygienic conditions led to an epidemic of typhoid fever in 1898 (Smallman-Raynor & Cliff, 2001).

Epidemics also accompanied or followed many of the conflicts during the General Crisis of the seventeenth century (Parker, 2013). Conflict was, however, not the only factor contributing to an increase in disease incidence. The General Crisis occurred during part of the Little Ice Age, a period which experienced prolonged cooling in the Northern hemisphere, diminishing harvests and leading to numerous episodes of famine in Europe and Asia. Malnourished populations were more vulnerable to a range of diseases, especially during times of war.

## **CLIMATE CHANGE, RESOURCE SCARCITY, AND CONFLICT IN HISTORY**

War itself was made more likely by the altered climate during the General Crisis (Parker, 2013). One way of conceptualising the risk of civil conflict is by engaging in a cost-benefit analysis of the status quo and likelihood of participation in civil conflict for members of population (Kahl, 2006). Personal risks that stem from participation in civil conflict tend to be high. Unless there is a high probability of success in the aims of the civil conflict, or the status quo is intolerable, this tends to discourage participation in civil conflict. Populations made hungry by cooler temperatures became less content with their governments, which themselves had fewer resources to pay troops to keep order. At the same

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