

Deadly comrades: war and infectious diseases

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Throughout history, the deadly comrades of war and disease have accounted for a major proportion of human suffering and death. Infectious diseases ruthlessly exploit the conditions created by war, affecting both armies and civilians. During the Napoleonic wars, eight times more people in the British army died from disease than from battle wounds. In the American civil war, two-thirds of the estimated 660 000 deaths of soldiers were caused by pneumonia, typhoid, dysentery, and malaria, and this death toll led to a 2-year extension of the war. These diseases became known as the “third army”.

Among civilians, conflict promotes factors that lead to increased incidence of infectious diseases, including mass movement of populations, overcrowding, lack of access to clean water, poor sanitation, lack of shelter, and poor nutritional status. In addition, the collapse of public health infrastructure and the lack of health services hampers control programmes such as vaccination or vector control.

More than 25 countries are affected by conflict needing humanitarian assistance, mostly in sub-Saharan Africa, in which respiratory tract infections, diarrhoeal diseases, measles and, in endemic areas, malaria are major causes of death and disease. It is estimated that infectious diseases cause up to 70% of all deaths in these countries. Epidemics of cholera, dysentery, meningitis, relapsing fever, and typhus have caused high mortality, and tuberculosis and HIV/AIDS are becoming increasingly important. This burden of preventable death and disease affects not only the estimated 40 million refugees and internally displaced people worldwide but also non-displaced populations living in war-torn countries.

During conflict, populations are often suddenly displaced and relocated to temporary settlements or

camp. Crude mortality rates over 60 times higher than baseline rates have been recorded after such displacement. To reduce human death and suffering, several targeted prevention and control measures (eg, measles vaccination, provision of safe water) need to be implemented. Where these interventions have not been agreed and implemented, there have been many preventable deaths. For instance, the outbreak of cholera and dysentery in Goma, former Zaire, in June, 1994, killed more than 12 000 Rwandan refugees in just 3 weeks.

However, the context of conflict situations has changed over the past decade—camp scenarios are no longer the norm since populations are often dispersed among local communities. In many conflict situations, ongoing war has led to “chronic emergencies” affecting entire countries and with long rehabilitation phases—eg, Afghanistan, Angola, Somalia, and the Democratic Republic of the Congo. Very often, populations are dependent in the long term on non-governmental organisations for the most basic health services—in Afghanistan, over 70% of health-care services are provided by such organisations. Rebuilding the public health infrastructure in these countries might be seen as a priority but it rarely receives the long-term investment required from the international community.

Prevention and control programmes deteriorate in war-torn areas, with a consequent increase in vector-borne diseases such as malaria, trypanosomiasis (sleeping sickness), yellow fever, and Lassa fever; tuberculosis and AIDS; and vaccine-preventable diseases such as measles. In Afghanistan, malaria was well controlled before civil strife began in 1979. However, in the past 20 years the disease has resurged, with 2–3 million cases per year, an increasing proportion of which is due to the more severe *Plasmodium falciparum*. In the Democratic Republic of the Congo, trypanosomiasis has dramatically resurged as a direct consequence of the conflict. In 1930, more than 33 000 cases were recorded, falling to fewer than 1000 cases in 1959 after active case finding and treatment. Then, conflict in the 1960s led to collapse of the control programme and in 2001, the number of cases was estimated at 40 000, with a prevalence of more than 70% in some villages.

The increasing prevalence of HIV/AIDS in conflict situations from poor injection safety, lack of treatment for sexually transmitted infections, increased incidence of sex work, and lack of condoms are also major threats to the long-term health of these populations.



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The high excess mortality and morbidity from infectious diseases in war-affected populations results from the lack of availability of even the most basic health protection and care. If the humanitarian imperative is not sufficient to convince the international community that these health needs need to be addressed, then there are several others that illustrate the importance of controlling infectious diseases in these countries.

First, globalisation and increased travel have made previously remote threats relevant to health security worldwide. In 2001, more than half of outbreaks of international importance occurred in conflict zones. International humanitarian workers, if they are not adequately protected, may be infected while working in these situations. Delays in detection, response, and containment of epidemics in countries affected by conflict are a constant threat to surrounding countries and to countries worldwide.

Second, conflict-affected countries are potential zones of new disease emergence such as Ebola in Uganda or resurgence of old or rare diseases. Detection and characterisation of new pathogens may be delayed, and diseases may then spread before control measures are implemented. In addition, improper and incomplete use of antibiotics and lack of regulatory controls can drive emergence of drug resistance in conflict-affected areas.

Third, the continued presence of diseases targeted for eradication or elimination in conflict-affected countries greatly threatens global goals such as polio eradication in Angola, Afghanistan, and the Democratic Republic of the Congo; and Guinea worm eradication in southern Sudan (see article by Hopkins and Withers, p 21).

Finally, after the anthrax incidents in the USA in October, 2001 (see article by Barbera and Macintyre, p 33), there are growing concerns that infectious diseases could be used as biological weapons. If this were to happen, the toll on already highly vulnerable civilian populations in conflict situations would be great.

Prevention and control of infectious diseases are key pillars of public health action and major opportunities to reduce the suffering of populations affected by war. However, the task is not easy, in view of the destruction of infrastructure; continued instability; fragility of peace agreements; potential for anarchy, corruption, and weak governance; and, some would argue, the unpredictability of international humanitarian responses.

Prevention and control interventions exist for the major high mortality infectious diseases. Provision of oral rehydration solutions, measles immunisation, antibiotics, effective antimalarials, and bednets in malaria endemic regions can substantially reduce disease morbidity and mortality. These interventions need to be widely implemented but also need to have long-term plans that address issues of availability, access, training, and community involvement. New tools are needed, such as rapid diagnostics, insecticide-treated materials like blankets and plastic sheeting,



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Health workers combating Ebola in northern Uganda in 2000

new heat-stable vaccines, and improved surveillance, mapping, and learning tools. Use of standard diagnostic and treatment protocols in health facilities with agreed first-line drugs is necessary to ensure effective diagnosis and treatment. Implementation of effective early warning systems to detect and rapidly control epidemics (whether deliberate or natural in origin) is also crucial. Above all, better coordination is needed between all partners—local and national authorities, UN agencies, non-governmental organisations, the military, and the private sector.

To strengthen implementation of infectious disease control interventions in conflict-affected countries, WHO has established a programme of Communicable Diseases in Complex Emergencies. This programme focuses on providing technical and operational support to partners, setting standards, developing new tools, providing technical co-ordination at the field level and holding training courses for non-governmental organisations, UN agencies, and national health workers.

There is a need for a renewed international commitment to basic health protection and care of war-affected populations and recognition of the importance of infectious diseases as major killers. There is also a need to better address all people affected by conflict with a long-term perspective, and not only refugees and internally displaced people. The progress being made in peace building and reconstruction in Afghanistan, Angola, Democratic Republic of the Congo, and East Timor offers hope for the future. It is crucial that the international community seize the opportunity to assist governments and partners in these countries to rebuild their health-care systems. By focusing assistance on delivery of key interventions for infectious diseases, preventable death and disease could be greatly reduced while putting in place the health systems necessary for these and other disease interventions in the long term.