Complex humanitarian emergencies: A major global health challenge

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Abstract

Complex humanitarian emergencies have been a major political, security and public health feature of the post-Cold War world. These man-made disasters account for more morbidity and mortality than all natural and technological disasters combined. In order to deliver effective aid during complex humanitarian emergencies, international relief agencies must have a solid understanding of the political and social climates in which they are operating. In addition, they should base their health interventions on objective epidemiological data, especially standardized rates of morbidity and mortality. Most deaths during complex humanitarian emergencies are due to preventable causes, especially increased rates of infectious diseases, malnutrition and violent trauma. The most appropriate health interventions are therefore based on the models of public health and primary health care, emphasizing disease prevention and health promotion. The field of humanitarian assistance has become increasingly professionalized in recent years, with its own professional standards, literature, research agenda and training opportunities. It is an unfortunate reflection on the current state of international affairs that the number of complex humanitarian emergencies and the enormous levels of suffering associated with them are unlikely to decline in the foreseeable future. See Commentary, page 143. Key words: complex humanitarian emergency, conflict, disasters, humanitarian assistance, infectious diseases, internally displaced persons, malnutrition, refugees, violent trauma, war.

Introduction

In the lexicon of disaster management the term ‘complex humanitarian emergencies’ (CHE) is relatively new. It was first introduced during the early 1990s to describe humanitarian crises characterized by political instability, armed conflict, large population displacements, food shortages, social disruption and collapse of public health infrastructure.1-3 Recent examples include the crises in Afghanistan, Bosnia, Rwanda, Kosovo, the Democratic Republic of Congo and East Timor.

For the health professional, CHE represent true public health catastrophes.4 Rates of mortality may be elevated as much as 60 times baseline, due to a combination of disease, malnutrition and violent trauma.4,5 Importantly, CHE currently cause more death, disease and disability than all other types of disasters combined.5,6

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Most emergency physicians will be familiar with the health consequences of natural disasters, technological disasters and major vehicular crashes. Few, however, have had experience or training to address the medical and public health needs associated with CHE. The goals of this paper are to introduce emergency physicians to the global context, characteristics and health issues associated with CHE.

**Context and characteristics of CHE**

In order to respond appropriately to the humanitarian needs of these crises, it is important for health professionals and other humanitarian workers to have a clear understanding of the broader context in which CHE occur. It is difficult to separate the enormous public health needs associated with CHE from the political, social, economic and historical settings in which they develop.

Complex humanitarian emergencies have been a major feature of the international landscape since the end of the Cold War. Many countries that had previously enjoyed political, economic or military support from the world’s two super powers discovered that such support was no longer as readily available after the demise of communism in the early 1990s. The resulting political and economic uncertainties of the this period contributed to instability in many countries that already had weakened governments. Increasing political, economic and social tensions frequently gave way to nationalism, lawlessness, civil conflict and State collapse. Identifying and targeting certain ethnic or tribal groups as scapegoats for the emerging problems became a common political ploy in many countries.

The wars that emerged from this chaos have several distinctive features that have major public health implications. First, most of the conflicts of the past 10 years have been civil wars, occurring within the borders of sovereign states. This has frequently presented difficulties for the international community in providing humanitarian assistance to affected populations, especially if the national government has failed to cooperate with the relief effort. During recent crises in places such as Chechenya, Kosovo, and East and West Timor, for example, sovereign governments significantly restricted the access that humanitarian agencies had to populations in need. A recent study by the International Rescue Committee (IRC) demonstrated that an estimated 1.7 million excess deaths had occurred over a 22-month period due to the war in the eastern region of the Democratic Republic of Congo. Only 11% of these excess deaths were due to violent trauma, with the remainder attributed to preventable diseases such as malaria, diarrhoea and malnutrition. Most of the deaths could have been averted by relatively straightforward public health interventions. But ongoing insecurity and poor government cooperation have led to restricted access to these at-risk populations by humanitarian agencies.

Second, civilians are increasingly targeted in today’s conflicts in order to kill, terrorize or ‘ethnically cleanse’ entire populations. Epidemiological data, individual testimonies and evidence collected by human rights organizations demonstrate that warring parties make little distinction between military and paramilitary organizations, and civilians in today’s conflicts. An estimated 80% of the victims of violent trauma during the siege of Sarajevo, Bosnia-Herzegovina, were civilians as were 64% of the victims killed during the war in Croatia. Warring parties may also attempt to subdue or inflict harm on civilian populations through the manipulation of relief supplies, especially food aid. In addition, the deliberate damaging, looting and destruction of civilian health facilities frequently reduces the access that populations have to even basic health care.

Third, major population displacements are a prominent feature of most of today’s CHE. This is an important issue because forced displacement from one’s home is associated with distinct and increased health risks. Forcibly displaced persons frequently must walk for days, weeks or even months to escape insecurity in their home regions, leaving them physically exhausted and exposed to difficult environmental conditions. During the period of flight, they usually have limited access to shelter, food, water and health care. They are then generally settled in overcrowded, unsanitary camps or buildings. The risks of violent trauma, environmental exposure, malnutrition and infectious diseases are, therefore, significantly increased among displaced populations.

When discussing the issue of forced displacement, it is important to make the distinction between the terms ‘refugee’ and ‘internally displaced person’ (IDP). As defined by international law, a refugee is an individual who has fled one’s own country because of a well-founded fear of persecution based on race, religion, nationality, membership of a particular social group, or political affiliation. An IDP is someone who has been forced from one’s own home for similar reasons, but remains within the internationally
recognized borders of one's own country. The rights of
refugees are clearly defined by the 1951 United Nations
Convention Relating to the Status of Refugees. The status
of IDPs under international law, however, is less well
established than that of refugees. Currently, they are
not strictly guaranteed the same rights to protection
under the Refugee Convention. It is, therefore, often
more difficult to meet the humanitarian needs of IDPs
than refugees due to a combination of access, security
and unclear international mandates.

Fourth, widespread human rights abuses are a com-
mmon feature of most of the world's conflicts at the turn
of the century. Unfortunately, it is extremely difficult
to quantify the scale of human rights abuses and war
crimes, because of issues related to security and access
to populations at risk. But retrospective surveys and
human rights literature provide strong evidence that
genocide, summary executions, systematic rape and
torture are all common features of CHE. The challenge
for humanitarian workers, including health profes-
sionals, is that they frequently witness or respond to
the health consequences of human rights abuses and
atrocities. They are, therefore, increasingly encour-
aged to take steps that will promote the protection of the
populations with which they work. In addition, there
is the difficulty of providing culturally appropriate
services for victims who have been physically and
psychologically traumatized by human rights abuses.

Finally, humanitarian workers themselves are increas-
ingly at risk during present-day relief operations. The
number of murders, death threats, abductions and
assaults involving humanitarian workers has risen over
recent years. During the 1970s and 1980s, the major
cause of death and injury among humanitarian staff
was reportedly motor vehicle crashes. But data from
a variety of agencies were recently summarized in a
study that demonstrated that humanitarian workers
themselves are increasingly targeted by belligerents. The
commonest cause of death was violent trauma, includ-
ing gun shot wounds, shrapnel wounds and land
mines. Such insecurity naturally presents difficulties
in terms of the delivery of humanitarian aid.

**Frequency and scale of CHE**

According to the International Committee of the Red
Cross (ICRC), between 1975 and 1985 there were on
average five humanitarian emergencies worldwide per
year. However, by 1998 the number had reportedly
increased to 40, with an additional eight 'critical cases.'
Based on United Nations definitions, more than 310 million
people live in countries that are currently experiencing
CHE. Complex humanitarian emergencies are distrib-
uted widely over four continents, with only Australia
and North America free of the direct impact of these
crises.

It has been claimed that CHE cause between 320,000
and 420,000 deaths worldwide each year. These
published figures are, however, almost certainly an
underestimation of the true scale of the problem. The
1.7 million excess deaths over a 22-month period docu-
mented by the IRC survey in the Democratic Republic
of Congo (DR Congo) indicates that a re-evaluation of
the published data is required. It notable that
previously reported data for DR Congo placed the death
toll at 100,000, representing only 6% of what is now
believed to be the most accurate estimate available. But
collecting accurate health statistics in the setting of
CHE is often extremely difficult because of insecurity,
lack of access to affected populations and the collapse
of health systems. The true scale of death due to violence
and disease in places such as Sierra Leone, Angola,
Sudan, Chechenya and Afghanistan is almost impos-
sible to determine accurately.

To place the available data in perspective it is
important to note that between 1990 and 1999, an
average of 59,200 people died worldwide per year due
to all natural and human-generated disasters com-
bined. The number of deaths in eastern DR Congo
between 1998 and 2000 is, therefore, almost three-fold
that attributed to all other types of disasters docu-
menced across the globe during the decade of the 1990s.

In terms of the burden of war, population displace-
ment, famine and disease, the most severely impacted
countries are DR Congo, Afghanistan, Burundi and
Angola. During 1999, the two humanitarian crises that
received the most international publicity were those in
Kosovo and East Timor. In spite of widespread physical destruction and major population
displacements, the public health impact of these
crises was relatively less than many other less well
publicized emergencies. Mortality rates were not elevated
to the levels seen in many other humanitarian emer-
gencies over recent years. This was in large part
due to the scale of the political, military and humani-
itarian response by the international community.
Unfortunately, many more serious crises received far
less international attention during the same period.

It is estimated that there are today approximately
14.1 million refugees and asylum seekers worldwide.
It is much more difficult to determine numbers for
internally displaced persons, but the general estimate is 21 million.\textsuperscript{29} This may actually be a significant underestimate of the true figure because of limited data from many countries, especially those in sub-Saharan Africa.

**Epidemiology**

**Epidemiological indicators**

Since the early 1990s, public health surveillance systems have been initiated among most refugee populations to collect morbidity and mortality data on an ongoing basis. These data are essential in assisting United Nations and relief agencies to monitor the population’s health status, to determine public health priorities and to detect emerging health problems. Often, the data collected from these systems have been supplemented by population-based surveys.

During the emergency phase of a humanitarian crisis, the most specific and valuable indicator of the population’s health is the crude mortality rate (CMR).\textsuperscript{20} During the emergency phase, the CMR is reported as the number of deaths/10,000 persons per day. Baseline mortality rates in sub-Saharan African and Asian communities are approximately 0.5 death/10,000 persons per day. In general, a public health emergency is considered to have occurred when this rate doubles to 1 death/10,000 persons per day. A major crisis has occurred when the CMR is elevated to 2 deaths/10,000 persons per day. Among many refugee communities, mortality rates have been elevated more than 10-fold from baseline rates.\textsuperscript{1,20} In these settings, a coordinated international response is critical in order to reduce the mortality rates to normal. The highest mortality rates ever documented during a CHE were among Rwandan refugees in Zaire in 1994 when the CMR reached as high as 60-fold the baseline rate.\textsuperscript{4}

Other important public health data during humanitarian emergencies include age-specific mortality rates, malnutrition rates and morbidity rates. The under-5 mortality rate is the most useful indicator of the general health status of young children, who represent one of the most vulnerable groups during CHE. Rates of acute malnutrition are generally determined for children under the age of 5 years, although there is an increasing recognition to include adolescent and adults in nutritional monitoring. Morbidity rates, especially the incidence of infectious diseases, are useful for prioritizing health interventions and for detecting epidemics.

**Patterns of morbidity and mortality**

The health consequences of armed conflict have been described as both direct and indirect.\textsuperscript{1} The direct health consequences include violent death, injury, disability, psychological trauma and sexual violence. The indirect health consequences of armed conflict are attributed to social disruption and the collapse of health systems and services. These include increased rates of infectious diseases, malnutrition and complications of chronic disease. It is important to note that both the direct and indirect health consequences occur in every conflict. But different patterns of morbidity and mortality can be discerned between CHE in the developing world and in Europe.

The majority of CHE over the past decade have occurred in developing countries in Africa and Asia. But several CHE have also occurred in developed or transitional countries in eastern Europe, notably Bosnia-Herzegovina, Kosovo (Yugoslavia), Chechenya (Russian Federation) and Azerbaijan. In general, it can be said that the direct health consequences of conflict, especially violent trauma, have been the major causes of morbidity and mortality during CHE in eastern Europe.\textsuperscript{10,14,22,30,31} However, the indirect health consequences of conflict, especially infectious diseases and malnutrition, have predominated during the CHE in the countries of Africa and Asia.\textsuperscript{1,4,8,19,20} Complications of chronic disease, another indirect health consequence of conflict, are more common in eastern European countries.\textsuperscript{16,19}

**Violent trauma**

It has been difficult to obtain accurate population-based data on the impact of violent trauma during CHE. Trauma deaths usually have occurred in zones of ongoing conflict to which relief organizations have limited access and are not, therefore, able to document the scale of the problem accurately. Trauma deaths due to summary executions and massacres, and those deaths that occur in detention centres are even less likely to be documented. In addition, many persons who are recorded as ‘missing’ are likely to have died due to trauma, although they may never formally be classified as trauma deaths.

As discussed, violent trauma has been the major cause of mortality during CHE in eastern Europe. Violent trauma was the major public health problem during the war in Bosnia-Herzegovina, with approximately 57% of the deaths in Sarajevo attributed to trauma during the first 12 months of the conflict.\textsuperscript{14}
Similarly, a population-based survey sponsored by the IRC following the war in Kosovo demonstrated that 64% of deaths during the war were due to violent trauma. Data from Chechenya are far more limited, but it is estimated that up to 90,000 people have died during that conflict, with most deaths due to war-related violence. 

In contrast, proportional mortality due to violent trauma has been relatively less during wars in Africa and Asia. During conflicts in Northern Iraq, Somalia and DR Congo, mortality rates due to trauma have been consistently between 4% and 13%. Infectious diseases and malnutrition have been the major causes of morbidity and mortality in these settings. The major exception to this pattern has been the genocide in Rwanda during 1994, which resulted in between 500,000 and 1 million trauma deaths. Relatively little information is available regarding trauma morbidity during CHE. The Bosnian government claims that over 175,000 individuals sustained non-fatal injuries during the war, including 35,000 children. Bosnian government estimates suggest that 7.6% of the pre-war population of Bosnia sustained either fatal or non-fatal injuries between 1992 and 1996.

Adult males have been the most frequently targeted individuals in the conflicts of eastern Europe, consistently accounting for approximately 90% of war trauma deaths. The majority of these victims have been men of fighting age, usually 19-50 years of age. There is ample evidence to demonstrate that women and children have also been specifically targeted by belligerents. For example, a survey by UNICEF during 1993 demonstrated that 55% of children interviewed in Sarajevo had been shot at by snipers. Forty-seven per cent of trauma deaths occurring in DR Congo were among women and children less than 15 years of age.

Infectious diseases

Preventable infectious diseases have been consistently the major causes of morbidity and mortality during most CHE in Africa and Asia. The increased rates of infectious diseases can be attributed largely to mass population displacements, with the associated problems of poor water supplies, inadequate sanitation, overcrowding, malnutrition, disruption of public health programs, and limited access to basic health care. Although incidence rates of infectious diseases have increased during CHE in eastern Europe, major epidemics have been uncommon and cause-specific mortality rates have not been elevated. The four infectious diseases most commonly associated with morbidity and mortality during CHE are diarrhoeal diseases, acute respiratory tract infections, measles and malaria.

Diarrhoeal diseases have been identified as the most lethal public health threat to refugees and IDPs. Approximately 90% of the deaths among Rwandan refugees in and around Goma, Zaire in July-August 1994 were attributed to diarrhoeal illnesses. The most serious epidemic causes of diarrhoea among displaced populations are cholera and dysentery due to Shigella dysenteriae. Major outbreaks of these diseases have occurred among refugee and IDP populations in Somalia, Sudan, Ethiopia, Tanzania, Angola and DR Congo. The case management of dysentery has been complicated by increasing rates of antibiotic resistance in recent years. The strain of Shigella that ravaged the Rwandan refugee population in Zaire was resistant to all major antibiotics except ciprofloxacin.

In the developed countries of the Western world, measles is regarded as a self-limiting viral infection of children that is uncommonly associated with complications. But among malnourished and physically exhausted populations, measles epidemics may be highly lethal. In fact, outbreaks of measles have been the leading cause of mortality in several humanitarian emergencies. During the 1980s, high measles-specific death rates were reported among refugee populations in several African countries. Measles outbreaks became much less common during the 1990s, however, measles immunization is now a routine intervention by relief organizations during most CHE. Nevertheless, measles remains a potentially significant problem among refugees and IDPs, especially if there is a high prevalence of malnutrition. A major measles epidemic in eastern DR Congo claimed approximately 1400 lives during 1998-1999, representing what was probably the second most lethal epidemic in the world during that period.

Other infectious diseases of concern during CHE include acute respiratory infections (ARI), malaria and meningitis. ARI account for 30-50% of paediatric consultations and 30-40% of paediatric admissions among CHE-impacted communities. Pneumonia was the second leading cause of death among Kurdish refugees in Northern Iraq in 1991. It caused 25% of deaths in unaccompanied children centres in the Rwandan refugee camps in Zaire in 1994. Malaria has been reported as a major cause of morbidity and mortality among refugee and IDP populations in many
countries in Africa and Asia.\textsuperscript{1,8,20,44} It is currently the
leading cause of mortality in the eastern region of DR Congo\textsuperscript{8} and among Sudanese refugees in northern
Uganda. Malaria-specific mortality rates have been
especially high when refugees from areas of low malaria
density have fled to areas of high endemicity. Outbreaks of meningococcal meningitis are always a
concern during CHE. A major outbreak in Sudan during
1999 resulted in over 33,000 cases and 2,375 deaths.\textsuperscript{8}

The contribution of HIV/AIDS to morbidity and
mortality during CHE has not yet been determined,
but it may well be large. It is estimated that 23 million
people in Africa are currently infected with the HIV
virus. Many countries impacted by CHE also have
high prevalence of HIV infection, including Rwanda, DR Congo, Tanzania, Kenya and Burundi.\textsuperscript{28} Communities
with a low prevalence of HIV may be forced to mix
with others where the prevalence is high, placing them
at greater risk of transmission. During CHE, women
and children are often forced to trade sex in order to secure
basic needs such as shelter, food and security,\textsuperscript{40} thereby
being placed at increased risk of contracting HIV. In
addition, the high incidence of sexual violence during
CHE can potentially increase the spread of HIV infection.

Malnutrition

Acute protein-energy malnutrition is a significant
cause of morbidity and mortality among displaced
populations. Young children are the most at-risk group
during CHE and nutritional assessments generally
target children under the age of 5 years. Rates of acute
malnutrition have been particularly high among
children during crises in Africa and Asia, reaching
80\% among internally displaced Somalis in the early
1990s.\textsuperscript{4} Although food scarcity is the major cause of
malnutrition during most CHE, concurrent illnesses,
especially chronic or recurrent diarrhoeal disease, may
also be a significant factor.\textsuperscript{40}

Interestingly, the patterns of acute malnutrition
during CHE in eastern Europe and the former Soviet
Union have differed somewhat from those in Africa and
Asia. During the conflicts in both Bosnia-Herzegovina
and Tajikistan, rates of acute malnutrition were
highest among adults, especially the elderly, while
rates among children were relatively low.\textsuperscript{31,47} The
reasons for this are not certain, but may be in part
due to preferential feeding practices by families and
due to abandonment of some elderly by their families.
The relevance of these patterns of malnutrition to
the international community is that humanitarian
agencies must identify those groups that are most
vulnerable to acute malnutrition during CHE and
target feeding programs accordingly.\textsuperscript{31,45,47,48}

Although protein-energy malnutrition is the
commonest form of malnutrition during CHE, micro-
nutrient deficiencies may also contribute significantly
to morbidity and mortality. Scurvy, xerophthalmia,
pellagra, beriberi and iron deficiency anemia have all been
reported among displaced populations since 1984.\textsuperscript{12,23}

Mental health issues

Psychological trauma is common during all CHE,
although the epidemiology has been poorly defined.
Epidemiological assessments of psychiatric and
psychological conditions during CHE have used
inconsistent methodologies and have had problems in
developing case definitions. It is particularly difficult
to apply Western diagnoses of psychopathology to
refugees and war-affected populations, because the
traditional psychiatric criteria have not been specifically
developed to address the extreme forms of
trauma experienced during CHE. For example, it has been
difficult for mental health professionals to determine
what constitutes an appropriate psychological reaction
among persons from diverse cultural backgrounds
who have endured atrocities such as torture, genocide
and mass rape.

A review of 11 studies suggests that psychiatric or
psychological disorders may be detected in approximately
50\% of refugees.\textsuperscript{40} In spite of study limitations,
the commonest types of pathology include depression,
post-traumatic stress disorder (PTSD), anxiety
states, psychosomatic complaints, dissociative
disorders and behavioural problems.\textsuperscript{50-53} In addition,
multiple diagnoses appear to be the rule rather than the
exception in these settings. Children are at the greatest risk
of psychological trauma,\textsuperscript{54} especially if they have been
forced to witness or commit atrocities. Adults, of
course, are also subject to the psychological stresses
associated with CHE, including violence, displacement,
loss of family members and deprivation. Incredibly,
doctors working among internally displaced
persons from the enclave of Srebrenica during the war
in Bosnia-Herzegovina were quoted as stating that
suicide was their major public health concern.\textsuperscript{55}

Sexual violence

Violence against women, especially sexual violence, is
an increasingly recognized problem in wars and CHE.
Sexual violence has probably occurred to some degree during almost every military conflict throughout history. But one of the most chilling features of several CHE during the past decade has been the use of systematic rape as a specific war strategy.\textsuperscript{24,50–58} When used in this manner, rape serves to humiliate and demoralize the enemy, thereby destabilizing family and community ties. There can be few more haunting experiences for a woman than to be trapped in sexual enslavement or to be forcibly impregnated by belligerents from an enemy force.

Unfortunately, the scale of the problem of sexual violence is difficult to document. Many women are understandably reluctant to report an incident of rape because of the fear of retribution, feelings of shame and powerlessness, lack of support and dispersion of families and communities.\textsuperscript{46} To date, no adequate assessment tool or methodology has been developed to determine the extent of violence against women during humanitarian emergencies. Many cultural, ethical and practical considerations preclude the use of traditional epidemiological tools for collecting these data. Despite methodological problems, estimates from recent CHE suggest that as many as 12,000 rapes occurred during the war in Bosnia and approximately 26\% of Burundian refugees in Tanzania had been sexually assaulted.\textsuperscript{46,50} Using this information to develop culturally appropriate protection, public health, and community services for women is a significant challenge for relief organizations.

**Prioritizing health services**

The principles that underlie the prioritization and organization of health services during CHE are not unlike those that apply to the triage of multiple casualties, a process that is familiar to all emergency physicians. In each of these settings, limited resources must be allocated in such a manner that provides the greatest health benefit to the greatest number of people. When dealing with the health consequences of conflict and population displacement, the interventions that provide the greatest health benefit are based on the models of public health and primary care. These models place particular emphasis on disease prevention and health promotion, giving relatively lower priority to curative care. They also highlight the need to target the specific needs of vulnerable groups, especially children, elderly, disabled, and pregnant and lactating women.

![Figure 1. Hierarchy of health services during complex humanitarian emergencies. Priority is given to preventive and public health interventions, which are more effective than curative care in reducing high rates of morbidity and mortality.](image-url)
Children's health services include immunizations, growth monitoring, nutritional programs, basic curative care, and health education for mothers. Reproductive health services promote safe motherhood practices, especially ante-natal, postnatal and emergency obstetric care. Comprehensive reproductive health care also encompasses family planning, control of sexually transmitted diseases and HIV, and the problem of violence against women. When planning the health program, other important elements include pharmaceutical management, basic laboratory services and a referral system to higher levels of care. Lower priority services, such as tuberculosis control and formal mental health programs, are generally phased in during the post-emergency phase.

Trauma services are far less frequently implemented by international relief agencies than public health and primary care services. Even during the CHE of eastern Europe, where violent trauma has been the major cause of morbidity and mortality, the core public health interventions are the most efficient and cost-effective measures to reduce preventable deaths. Most trauma deaths during CHE are not preventable by medical or public health measures because they generally occur in insecure sites, where relief agencies have poor access. For example, the vast majority of the estimated 12,000 trauma deaths during the conflict in Kosovo all occurred after the relief agencies had left the province because of security concerns.

Although several agencies established emergency medical and trauma services during the war in Bosnia-Herzegovina,\(^18,26,60\) most trauma deaths occurred in regions to which these agencies had limited access. In addition, many trauma deaths occur in detention centres, or are due to summary executions or massacres. Emergency medical interventions are unable to assist the vast majority of trauma victims in these settings. Setting up effective emergency medical and war surgery services in conflict zones requires specialized skills and resources that only a limited number of relief agencies possess.

The emphasis on public health interventions and preventive services poses challenges to some Western clinicians who volunteer to work on humanitarian programs. Most Western health professionals are trained to focus on the clinical needs of individual patients, rather than the public health needs of a population. But the field of humanitarian assistance has become increasingly professionalized in recent years and health professionals may now receive training on public health issues in humanitarian emergencies from a variety of short courses and university programs. In addition, the field of humanitarian assistance has developed its own standards and literature. The SPHERE project has clearly defined guidelines and minimum standards for humanitarian programs during the emergency phase of large scale disasters.\(^61\)

**Conclusion**

Complex humanitarian emergencies in Africa, Asia and Eastern Europe have become increasingly frequent over the past decade. The health consequences of CHE can be catastrophic, with high rates of infectious diseases, malnutrition and trauma frequently documented. More deaths occur due to CHE on an annual basis than to all other types of disasters combined. The collapse of local public health and medical systems further exacerbates the problems of providing effective health care to affected populations. Priority health interventions during CHE are based on the models of public health and primary health care, with particular emphasis given to disease prevention and health promotion.

Based on recent political and security developments in places such as west Africa and Asia, it is unlikely that there will be a reduction in the frequency of CHE in the coming years. International relief agencies have been forced to become increasingly professionalized in order to more effectively address these major global health challenges.

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