



The Rapid Assessment of Health Problems in Refugee and Displaced Populations

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An epidemic of population displacements resulting from an increasing number of regional conflicts has resulted in massive burdens for host countries and relief organizations. During the 1990s, the number of refugees and internally displaced persons has risen from 30 million to more than 47 million. Rapid assessment of the health status and health needs of refugee populations from the outset of a crisis is essential for organizing an effective response with appropriate supplies of emergency foods and medicines. Examples of rapid assessments in recent crises affecting Rwandan, Iraqi, and Somali refugees suggest a need for standardization of assessment methods, for more reliable interpretation of collected data, and for greater security for assessment personnel. [M&GS 1994;1:200-207]

During the past several years a large number of ethnic conflicts in diverse regions of the world have forced millions of civilians to flee their homes and seek refuge in other areas of their country or in neighboring countries. This "epidemic" of population displacement has placed great burdens on both host countries and the international community as they struggle to provide protection and assistance. More than ever before, there is an urgent need to develop and implement appropriate methods of rapidly assessing the public health needs of displaced populations.

Prior to the end of the cold war, most acute public health emergencies created by mass population movements involved per-

sons who crossed international borders to escape political persecution or civil war. Once safely in the country of asylum, these refugees were usually afforded the protection and assistance of the international community through the Office of the United Nations High Commissioner for Refugees (UNHCR).

Since 1990, however, acute mass population migrations have occurred in increasingly complex and dangerous environments where the displaced populations often remain trapped in their own countries and the traditional international conventions on the rights of refugees do not apply. In many countries, such as Liberia (1990), Somalia (1992), southern Sudan (1992-94), Angola (1992-94), Bosnia and Herzegovina (1992-94), Afghanistan (1993-94), Burundi (1993), and Rwanda (1994), governance has collapsed, resulting in widespread anarchy, banditry, and violence.

Nevertheless, the number of dependent refugees under the protection and care of UNHCR has steadily increased from approximately 3 million in 1975 to more than 22 mil-

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lion in October 1994, and the increase shows no sign of abatement [1]. For example, during a 24-hour period during the last days of April 1994, an estimated 250,000 Rwandan refugees crossed the border into Tanzania. Almost one million Rwandans fled into eastern Zaire between July 14-17, 1994.

In addition to those under the protection of UNHCR in this same 20-year period, at least another 25 million people are estimated to have fled their homes for the same reasons as refugees, but remain in their countries of origin and are thus described as internally displaced. Since 1990 the number of refugees and internally displaced persons has grown by 40%, from approximately 30 million to more than 47 million today.

Modern civil wars have tended to target civilians intentionally. Consequently, civilian populations trapped in areas of conflict have increasingly suffered severe public health consequences, even if they have not been displaced from their homes. For example, death rates have increased fourfold since the beginning of the war in Sarajevo and other Bosnian cities due to a combination of direct violence, food shortages, the destruction of public utilities and health facilities, and severe disruption of preventive health services [2]. The assessment of public health needs in war-affected, relatively developed, industrialized countries such as the former Yugoslavia, Georgia, Armenia, and Azerbaijan poses new technical and operational challenges, especially during harsh and cold winters.

The Need for External Assessments

Refugees are often dependent on external assistance because countries of asylum are unable to provide relief on the necessary scale. Despite the recent increase in the number of European refugees, most of the world's refugees still seek asylum in developing countries, many of which are among the world's poorest -- for example, Malawi, Guinea, Zaire, Pakistan, Burundi, Ethiopia, and Tanzania. In addition, many internally displaced communities are perceived by their governments as sympathetic to rebel forces and may be intentionally deprived of access to relief assistance, increasing the need for external aid. An external evaluation is often indicated in order 1) to alert the international community to the severity of the situation; 2) to accurately characterize the needs of the affected population; 3) to ensure that the type of assistance provided is appropriate; and 4) to enable relief assistance to be targeted toward the most vulnerable groups in the population.

Rapid public health needs assessments

evaluate the extent and magnitude of the emergency, the current and potential public health impact, the availability of local human and material resources, the need for external resources, and ongoing information needs. In truly sudden population displacements, such as the Kurdish exodus from northern Iraq in 1991, the location and mapping of affected communities and the rapid estimation of population size and composition, mortality rates, and nutritional status are high priorities. Malnutrition, measles, diarrhea, acute respiratory infections, malaria, and injuries have invariably been documented as the most critical public health problems that result from acute population displacement. The relative importance attached to each condition has varied in different circumstances.

Needs assessments should ideally be performed by those agencies that will implement relief programs. Relief agencies need to ensure that their staff are adequately trained in the collection of accurate and representative information on displaced populations. In many cases, however, international organizations, such as UNHCR and UNICEF, or donor government agencies, such as the U.S. Office for Foreign Disaster Assistance, will seek independent assessments to help them allocate resources in an appropriate manner. These organizations often request assessments by technical agencies, such as the U.S. Centers for Disease Control and Prevention (CDC), which has developed standardized assessment methods based on extensive experience over the past 20 years. CDC assessments are conducted in close collaboration with local government and relief agency personnel.

One of the major constraints to performing timely public health assessments is the delay within the international community in recognizing humanitarian emergencies as they evolve. In many cases, requests for assessments come at a time when significant increases have already occurred in mortality rates and malnutrition prevalence rates, which are late indicators of stress in a population. Therefore, it is critical that public health assessments be performed early in the evolution of a crisis in order to measure trends in early public health indicators.

In Armenia, for example, a system of surveillance was established in 1992 that focused on trends in market food prices, consumer purchasing power, household food reserves, birth weights, rates of weight loss in the elderly, communicable disease incidence, and other early public health indicators, as well as late indicators such as childhood nutritional status and mortality rates [3]. In addition, a national population survey of

food and heating reserves was conducted prior to the winter of 1993-94. The results of this survey enabled the Armenian government and international aid agencies to focus on the populations most at risk and the most acutely needed commodities.

Assessment Methods

Rapid epidemiologic assessments are essential to prioritize relief measures in remote, isolated settings where resources and logistic support are severely limited. Rapid assessments should be performed by an interdisciplinary team with skills in nutrition, epidemiology, water and sanitation, logistics, and social and behavioral sciences. Members of the assessment team should include host country nationals, although government officials may not always be appropriate in situations of civil conflict. Local non-government organizations, such as the Red Cross, churches, universities, and human rights groups may be sources of assessment team members. Much useful information on the affected population may be gathered in the capital city from government, United Nations, and non-governmental organizations prior to commencing the field assessment. At least some team members should be fluent in the language of the affected population, and the majority should be fluent in the national language. If interpreters are used, special care should be taken to ensure that they have the necessary translation skills.

Initial assessments rely on observation, key informant interviews, record reviews, and limited community surveys. Systematic observation should follow a predetermined checklist of characteristics such as population density and composition, family size, environmental conditions (e.g., water supply, sanitation, shelter, drainage, and possible vector breeding sites), food availability, and morbidity (e.g., malnutrition, dehydration, febrile illnesses, and injuries). Critical issues related to access, security, community organization, sexual violence, and human rights abuses need to be carefully evaluated.

Community leaders (formal and informal), health workers (traditional and modern), and religious leaders should be interviewed to assess the degree and nature of pre-displacement deprivation, pre-existing health problems, beliefs and behaviors, pre-displacement health service coverage (e.g., vaccination coverage), and relevant cultural attitudes to health services. For example, in the assessment of the public health needs of Rwandan refugees in Zaire, the high measles immunization coverage in pre-war Rwanda was useful information and allowed measles immunization to take second place to diar-

rheal disease control in prioritizing public health interventions. On the other hand, the low immunization coverage in Somalia indicated that mass measles immunization campaigns were a top priority during the famine in that country in 1992 [4].

Local health facilities may provide useful information on prevalent morbidity, death rates, and availability of medical supplies. In a rapid assessment, surveys are usually conducted on convenience samples that attempt to avoid obvious sources of bias. Convenience surveys may provide information on population composition (age and sex), family size, nutritional status (measuring mid-upper arm circumference), prevalence of diarrheal disease, and vaccination coverage. Maps indicating population density, water points, health facilities, roads, storage facilities, markets, vector breeding sites, and other relevant environmental features are useful assessment tools.

After two to three weeks, when time and appropriate expertise are available, population surveys of nutritional status (measuring weight and height), mortality, and access to relief supplies may be conducted on probability samples of the affected community. If adequate trained personnel and measuring equipment are available, a thirty cluster sample survey¹ of 600 to 900 households may be conducted in a well-defined camp population in two to three days [5].

An important element of a rapid assessment is the identification of vulnerable groups, which might include particular ethnic or religious minorities, unaccompanied children, and households headed by women. For example, in the Rwandan refugee population that fled to eastern Zaire in 1994, more than 12,000 unidentified children required specialized care. In the same population, households headed by women were found to have less access to relief items, such as food and shelter material, than households headed by men [5].

Assessments are only useful if the findings affect program planning and implementation. Assessment missions need to have authority and credibility among relief agencies, and should be coordinated by a desig-

1. The 30-cluster survey is a common method of probability sampling used in population surveys where there are no detailed lists of households available and where the distribution of households is haphazard. The overall population being surveyed (e.g., camp or district) is divided into geographic segments based on population size. The proportion of the 30 clusters assigned to each segment is based on the relative population sizes of the segments. The number of households sampled in each cluster is equal to one-thirtieth of the overall sample size.

nated lead agency such as UNHCR, UNICEF, or the International Committee of the Red Cross. Essential interventions (e.g., provision of potable water, food rations, and vitamin A supplementation) should be established immediately and usually need not await the completion of the assessment.

The time needed to perform a rapid assessment will depend on the remoteness of the location, security, ease of access, and the degree of cooperation of local authorities. Rapid assessments may fail if appropriate arrangements for transport, travel permits, and communications are not carefully planned. In most situations, important base line information may be gathered during a 7 to 10 day period.

Rapid needs assessments should include the establishment of an ongoing public health surveillance system, focusing on mortality (crude, age-, sex-, and cause-specific), nutritional status, morbidity of significance for public health concerns, and diseases of epidemic potential. Data generated by public health surveillance should be used to evaluate the effectiveness of relief interventions and to plan or redirect future public health programs. Periodic population surveys may provide important complementary information on nutritional status and coverage by relief programs.

Specific Information Needs

Mortality

Death rates are the most specific indicators of the health status of a population; a community with high death rates cannot be deemed healthy. By the time they arrive in the country or region of asylum, most refugees and displaced persons have suffered extensive periods of deprivation and food scarcity. Documenting the death rate early in an emergency will establish a baseline against which later trends may be measured and the effectiveness of assistance programs may be evaluated (Fig 1). In a displaced population, the crude mortality rate (CMR) may be measured by designating a burial area and employing guards to count burials and, if possible, to administer simple questionnaires on the age, sex, and probable cause of death. Other means of monitoring deaths might include the distribution of burial shrouds to the family of the deceased or the training of community reporters.

In an emergency situation, the CMR is usually expressed as deaths per 10,000 population per day. The usual CMR in a developing country is between 15 and 24 per 1,000 per year, which is equivalent to approximately 0.4 to 0.6 per 10,000 per day. A CMR of

more than 1 per 10,000 per day is considered elevated, and a rate of more than 2 per 10,000 per day is considered critical. CMRs among newly arrived refugees in Thailand, Somalia, and Sudan during the 1980s ranged as high as 30 times the baseline death rates in their country of origin [6]. During the first month after the influx of Rwandan refugees into eastern Zaire, the average daily CMR was between 20 and 35 per 10,000 per day, or 40-60 times the normal rate in Rwanda [5]. This was the highest death rate recorded among refugees in the past 20 years. Death rates among internally displaced populations have been more difficult to evaluate, relying on rapid surveys conducted often under dangerous conditions. Among displaced persons in Somalia in 1992 and in southern Sudan in 1993, CMRs ranged between 7 and 25 times the normal baseline rates (Table 1) [4,7].

Where possible, rapid assessments should attempt to identify the age groups most at risk of dying. In most situations, children less than 5 years of age are at greatest risk and death rates in this age group are usually 4-5 times the death rate in older age groups (Fig 2). An exception to this rule occurred among Rwandan refugees in eastern Zaire, however, where death rates were relatively similar in all age groups. This was due to the fact that cholera and bacillary dysentery were the main causes of death and these diseases affect all ages equally.

Morbidity

Most deaths in displaced populations have been caused by preventable conditions such as diarrheal disease, measles, malaria, and acute respiratory infections, exacerbated often by malnutrition (Fig 3). Through interviews with health workers, reviews of clinic

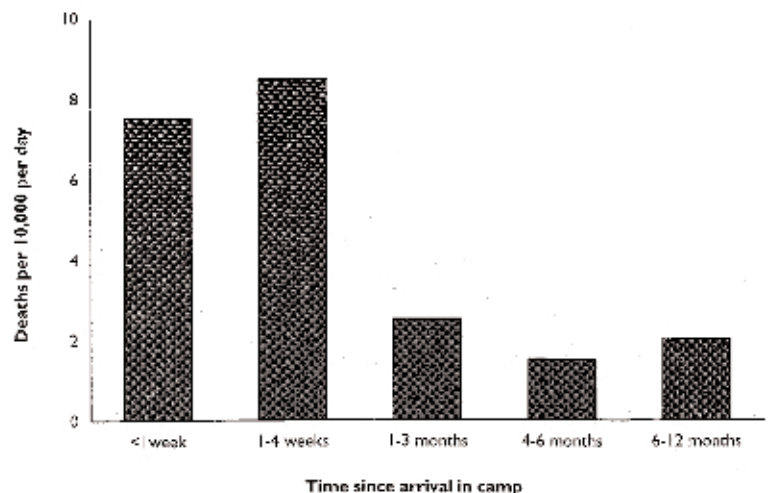


Figure 1. Crude mortality rate by time after arrival in camp, Chambuta camp, Zimbabwe, August 1992. (Source: UNHCR, 1992)

records, and direct observation, rapid assessments should seek to identify those health problems that are most likely to cause high death rates. In particular, the relative importance of measles, bacillary dysentery, cholera and other diarrheal diseases, meningitis, and malaria should be established. It may be necessary to confirm the diagnosis of these conditions with appropriate laboratory tests; therefore, assessment teams need to be adequately prepared to transport the relevant samples of blood, stool, or cerebrospinal fluid to the nearest laboratory.

In northern Iraq, the major problem among the 450,000 Kurds displaced on or near the Turkish border in March 1991 was acute diarrheal disease (including cholera) associated with lack of clean water and sanitation facilities [8]. In Somalia during late 1992, when food supplies were improving, the need to vaccinate children against measles and to provide appropriate treatment for diarrhea and dehydration were the most critical public health priorities; up to

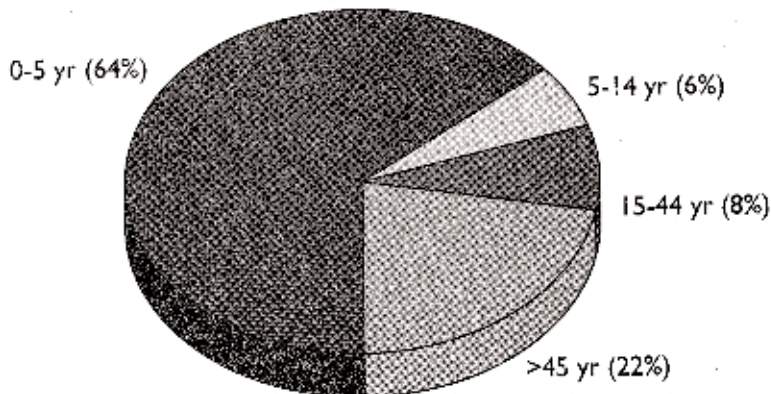


Figure 2. Deaths by age, Kurdish refugees, March 29-May 24, 1991, Turkey-Iraq border. (Source: CDC, 1991)

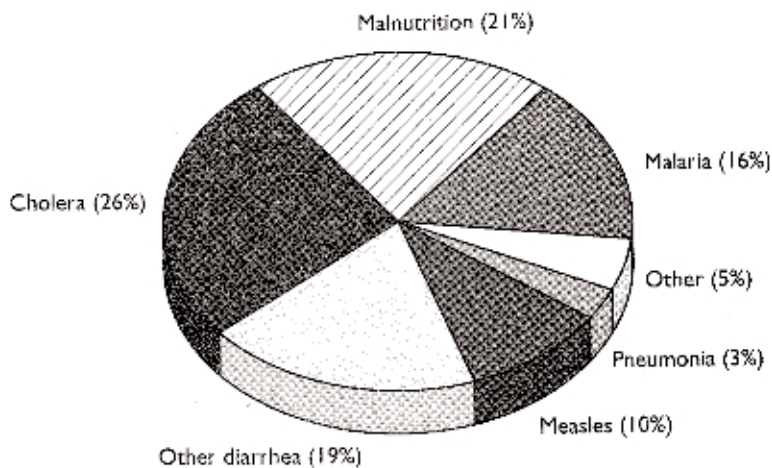


Figure 3. Causes of death, Mozambican refugees. All ages, Lisungwe Camp, June 1992, Mwanza District, Malawi. (Sources: Médecins sans Frontières, UNHCR, 1992)

Table 1: Crude mortality rates, selected refugee and displaced populations, 1992-94.

Country of Origin	Country of Asylum	Year	CMR*
Somalia	Kenya	1992	7.4
Somalia	internally displaced	1992	17.0
Myanmar	Bangladesh	1992	1.6
Sudan	internally displaced	1993	7.6
Burundi	Rwanda	1993	3.0
Rwanda	Burundi	1994	9.0
Rwanda	Zaire	1994	25.0

* crude mortality rate as deaths per 10,000 per day

Sources: UNHCR, CDC, 1992-94

75% of deaths at this time were caused by measles and diarrhea [4]. Among Cambodian refugees who passed through endemic areas on their way to camps in eastern Thailand in late 1979, malaria was the overwhelming cause of death [9]. Among refugees in Rwanda, Tanzania, Burundi, and Zaire, bacillary dysentery has been the most important health problem (Fig 4) [5]. Among Somali refugees in Kenya, in 1991, a massive hepatitis E epidemic caused many deaths, especially among pregnant women [10].

Nutritional status

Acute malnutrition prevalence rates among refugees during the early, post-influx phase have been unusually high, reaching 50% in the case of Eritrean refugees in eastern Sudan in 1985 [6]. In Somalia and southern Sudan, acute malnutrition rates among displaced persons were as high as 80% between 1991 and 1993 (Table 2) [4,7]. In addition to acute protein energy malnutrition, outbreaks of relatively rare micronutrient deficiency diseases have occurred in certain African refugee populations. Several scurvy epidemics have occurred in refugee populations in Ethiopia, Somalia, and Sudan; one of the largest outbreaks of pellagra since World War II occurred among Mozambican refugees in Malawi in 1990; and an outbreak of beriberi was reported among Bhutanese refugees in Nepal during 1993 [11,12].

Rapid assessment should include evaluation of acute protein-energy malnutrition among children between 6 months and 5 years of age either by measuring the mid-upper arm circumference or weight-for-height [13]. Children with edema should be classified as severely malnourished. It is important, however, to perform this evaluation on a representative sample of children. If a mass screening of all children is feasible, this will provide the most reliable estimate of malnutrition prevalence. A thirty cluster random sample survey of children in this age group should be conducted if the necessary

time and expertise is available. Normally, an acute malnutrition prevalence of greater than 8% is considered severe, greater than 10% is critical [6].

Impact of disrupted health services

Assessments in Bosnia have attempted to evaluate the impact of the war on health services. For example, in Zenica, in central Bosnia, the proportion of all surgical cases caused by war-related trauma increased from 22% to almost 80% in 1992 [21]. Childhood vaccination rates have decreased from 90-95% before the war to less than 40% in late 1993 [2]. Inadequate pre-natal care services in Sarajevo between April 1992 and July 1993 contributed to increases in spontaneous abortions (64%) and perinatal mortality (70%) and to a 19% decrease in average birthweight [2].

Problems with Assessments

Safety of Assessment Personnel

During recent emergencies, CDC has struggled to balance the need for sound methodology (including representative sampling and reliable survey instruments) with the need for timely information and -- more than ever -- to protect the safety of personnel. Somalia, southern Sudan, Bosnia-Herzegovina, and Angola have been dramatic examples of how precarious this balance can be. In Somalia, attempts were made to evaluate mortality rates and nutritional status in displaced populations with reasonable scientific precision by conducting population surveys using probability sampling techniques [4,14]. Surveys were curtailed mid-stream by security incidents, and several epidemiologists had close encounters with

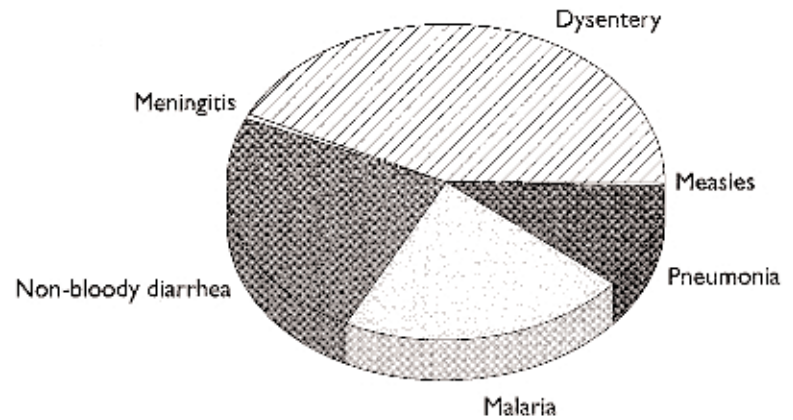


Figure 4. Outpatient morbidity, by diagnosis. August 8-14, 1994, Rwandan refugees, North Kivu camps, Zaire. (Source: UNHCR, 1994)

armed bandits. Statisticians were faced with difficult calls on the validity of findings by field staff.

Extrapolation Difficulties

In addition, the findings of field surveys are often poorly understood, and need to be explained carefully to program managers, policy-makers, and the media. Despite efforts to explain the limitations of the surveys and the difficulties in extrapolating results to large populations, survey results are sometimes misquoted in the media. In assessing the validity of findings, it is useful to compare trends revealed in population surveys with those detected from surveillance data. In southern Sudan, nutrition and mortality assessments have been intrinsically biased because they took place in areas where food distribution acted as a magnet for the displaced and the most severely affected segments of the population. Given the insecurity in many areas such as southern Sudan, it is impossible to collect data that are representative of the whole population.

In Angola, the Ministry of Health, UNICEF, non-governmental organizations (NGOs), and CDC have established an emergency surveillance system that attempts to synthesize information collected by other agencies, to establish sentinel sites for facility-based information gathering, to provide quality control and technical advice to agencies, and to help develop effective methods of data compilation, analysis, interpretation, and dissemination. A similar approach has been taken in Bosnia Herzegovina by the World Health Organization, working closely with UNHCR, NGOs, and the Bosnian Institute of Public Health.

The Need for Standardization

There is a growing need for expertise in rapid health and nutrition assessment meth-

Table 2: Acute malnutrition prevalence rates, children 6-59 months of age, selected refugee and displaced populations, 1991-94.

Country of Origin	Country of Asylum	Year	Acute malnutrition prevalence rate (%) [*]
Somalia	Kenya	1991	29
Iraq	Turkey/Iraq border	1991	4 (13 in children aged 12-23 months)
Somalia	internally displaced	1992	47-75
Sudan	internally displaced	1993	75-81
Rwanda	Burundi	1994	13-20
Rwanda	Zaire	1994	18-23

^{*}defined as weight-for-height at least 2 standard deviations below the CDC/INCHS/WHO reference median (Z-score less than -2)

Sources: CDC, UNHCR, ICRC, MSF, Save the Children Fund (UK), 1991-94.

ods. This need, however, might not be so great if early warning systems were in place in areas where emergencies are likely to arise and if the information generated by those systems were acted upon early in the evolution of disasters. There is little standardization of assessment and survey techniques. For example, 22 surveys conducted by different agencies in southern Somalia in 1992 and early 1993 employed multiple methods for selecting samples, estimating mortality, measuring nutritional status, and defining acute malnutrition [14]. In contrast, the relief program for Rwandan refugees in eastern Zaire, in 1994, demonstrated a high level of standardized information collection [5]. This experience suggests that health and nutrition data carefully collected in evolving emergency situations can allow the public health community to play a crucial role of advocacy in bringing to the attention of key decision-makers the plight of the ever-growing numbers of civilians affected by war, population displacement, and hunger. There is room for improvement in both the collection and application of such data.

The nature of modern conflicts and the increasingly common targeting of civilians by warring factions has profoundly changed the role of relief agencies and their workers. Communities in war-affected areas are more than ever being forced to flee their homes to save their lives; however, they are often trapped in areas close to the fighting and are unable to seek refuge in safer neighboring countries. Clearly, the prevention or early resolution of these conflicts is the most pressing global priority today, and requires a higher level of political commitment and diplomatic energy.

If the international community is unable to develop effective mechanisms to prevent civilian populations from the violence of wars, the least that should be done is to protect civilians who flee those wars from preventable conditions such as communicable diseases and malnutrition. If promptly implemented and well targeted, a number of public health interventions will prevent the common causes of death that have been documented in past disasters. The timely collection of accurate, representative information on affected communities is essential for planning, implementation, and evaluation of these programs. Good information will lead to accountability and responsibility; without it, many relief programs will be more show than substance.

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