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.

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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
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majority should be fluent in the national lan-
t team members should be fluent in the lan-
language. If interpreters are used, special care
should be taken to ensure that they have the
ecessary translation skills.

Initial assessments rely on observation,
key informant interviews, record reviews,
limited community surveys. Systematic
observation should follow a predetermined
checklist of characteristics such as population
density and composition, family size, envi-
ronmental 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 orga-
nization, sexual violence, and human rights
abuses need to be carefully evaluated.

Community leaders (formal and infor-
mal), health workers (traditional and mod-
ern), and religious leaders should be inter-
viewed 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-
real disease control in prioritizing public
health interventions. On the other hand, the
low immunization coverage in Somalia indi-
cated that mass measles immunization cam-
paigns were a top priority during the famine
in that country in 1992 [4].

Local health facilities may provide use-
ful information on prevalent morbidity,
death rates, and availability of medical sup-
plies. In a rapid assessment, surveys are usu-
ally conducted on convenience samples that
attempt to avoid obvious sources of bias.
Convenience surveys may provide informa-
tion on population composition (age and
sex), family size, nutritional status (measur-
ing mid-upper arm circumference), preva-
ience of diarrheal disease, and vaccination
coverage. Maps indicating population den-
sity, water points, health facilities, roads, stor-
age 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, popula-
tion surveys of nutritional status (measuring
weight and height), mortality, and access to
relief supplies may be conducted on proba-
bility samples of the affected community. If
adequate trained personnel and measuring
equipment are available, a thirty cluster sam-
ples of the affected community. If
adequate trained personnel and measuring
equipment are available, a thirty cluster sam-
ple survey1 of 600 to 900 households may be
conduct ed in a well-defined camp popula-
tion in two to three days [5].

An important element of a rapid assess-
ment is the identification of vulnerable
groups, which might include particular eth-
nic or religious minorities, unaccompanied
children, and households headed by women.
For example, in the Rwandan refugee popu-
lation 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 find-
ings affect program planning and implemen-
tation. Assessment missions need to have
authority and credibility among relief agen-
cies, and should be coordinated by a desig-
1. The 30-cluster survey is a common method of
probability sampling used in population sur-
veys where there are no detailed lists of house-
holds available and where the distribution of
households is haphazard. The overall popula-
tion being surveyed (e.g., camp or district) is
divided into geographic segments based on pop-
ulation 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 baseline information may be gathered during a 7–10 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 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 overwhelling 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 midstream by security incidents, and several epidemiologists had close encounters with 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-
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 in 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.

References