

**Building the Evidence Base on the Provision of Health Care
To Children in Complex Emergencies**

Report of the Working Group on Child Health in Complex Emergencies

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CIEDRS Working Group on Child Health in Complex Emergencies

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EXECUTIVE SUMMARY

Addressing the health needs of children in complex emergencies is critical to the success of relief efforts and requires effective, coordinated interventions. At the request of the World Health Organization (WHO), the Center for International Emergency, Disaster and Relief Studies (CIEDRS) at the Johns Hopkins Bloomberg School of Public Health brought together a multidisciplinary team to review child health activities in complex emergencies. The purpose was to develop a working document to assist the WHO in preparation for an interagency consultation by presenting a situational analysis of child health activities in complex emergencies, including identification of deficiencies in current knowledge and research needs. The objectives were to review the published literature on child health in complex emergencies, including burden of disease; identify the major organizations providing care to children in complex emergencies and review existing clinical guidelines; identify major gaps in the guidelines non-governmental organizations (NGOs) use to provide health care to children in complex emergencies; and make recommendations to overcome these gaps.

The published literature on the burden of childhood diseases in complex emergencies was reviewed, followed by a summary of the published literature on specific childhood diseases. A review of the published literature is necessarily limited as only a small proportion of the collective experience in caring for children in complex emergencies is published. Many organizations and health care workers do not have the time, resources or incentive to publish their experiences. The literature review is followed by a summary of surveys of a convenience sample of international relief organizations providing care to children in complex emergencies. The first survey provides an overview of the guidelines used by major organizations to care for children in complex emergencies and highlights their limitations. Several comprehensive guidelines for the care of children in complex emergencies were assessed. Because of the vastly different nature of complex emergencies in different settings, surveys were conducted of organizations working in the field in three key countries: Afghanistan, Angola and the Democratic Republic of Congo. These surveys were designed to collect information on important practical issues, including obstacles to providing care to children in complex emergencies, personnel and resource needs, performance monitoring and the roles of the Ministries of Health and the World Health Organization. We conclude by identifying major gaps in promoting child health in complex emergencies, make recommendations to improve the care of children, and suggest areas that require further research.

Much of the published literature on child health in complex emergencies details the burden of disease and the causes of morbidity and mortality. The major causes of child mortality in complex emergencies are known, and are measles, malaria, diarrheal diseases, acute respiratory tract infection and malnutrition. In addition, the published literature documents outbreaks of other communicable diseases and nutritional deficiencies that can contribute substantially to child morbidity and mortality. Little published information exists on the burden of disease and appropriate intervention strategies for diseases of the neonate, and for the prevention and treatment of HIV infection and tuberculosis in children in complex emergencies. Research on innovative

yet simple interventions to prevent disease is exemplified by the studies on reducing diarrheal morbidity and mortality among Mozambican refugee children by distribution of soap (Peterson 1998) and prevention of water contamination (Roberts 2001). Several technical and operational questions need to be answered to best provide care to children in complex emergencies. These include the optimal antibiotic therapy for cholera, shigellosis and acute respiratory tract infections in regions where antibiotic resistance is prevalent; appropriate use of diagnostics to guide antimalarial therapy in regions where chloroquine and sulfadoxine-pyrimethamine resistant *Plasmodium falciparum* is prevalent; appropriate use of oral cholera vaccines; and the integration of nutritional interventions with case management of diarrheal diseases and respiratory tract infection. Questions remain on the burden of disease due to mental health problems in children in complex emergencies, the best methods to assess this burden across different cultures, and effective interventions to prevent and manage these problems.

The surveys of international relief agencies showed that most organizations use World Health Organization, UNICEF and Ministry of Health (MOH) guidelines to provide care to children in complex emergencies. Integrated Management of Childhood Illness (IMCI) guidelines are rarely used to provide care to children in complex emergencies. Limitations of the IMCI guidelines include the requirement for referral services and the reliance on caretakers to bring ill children to a health care facility. Clinical guidelines are lacking for diseases of the neonate, the diagnosis and management of HIV infection and tuberculosis, emergency resuscitation, and the management of trauma, abuse and mental health problems. Various types of health care workers are responsible for child health activities in complex emergencies. Guidelines for the care of children should be adapted for these different types of health care workers. Community-based programs for surveillance, health education and health promotion are important child health activities in complex emergencies. Inadequacies in staffing and referral services, insufficient links with the community, security constraints, poor supervision and coordination, and difficulties in the transition to a sustainable health care system were reported to hinder the provision of care to children in complex emergencies.

Country level surveys of relief organization in Afghanistan, Angola and the Democratic Republic of Congo supported the findings of the surveys of international relief organizations. The country levels surveys identified additional needs for the care of children in complex emergencies and outlined roles for the Ministry of Health and World Health Organization. Obstacles to the provision of health care to children in complex emergencies include limited access, cultural barriers, insecurity, resource limitations (drugs, supplies), and lack of coordination among NGOs. Adequate training and supervision of health care staff were reported to be major needs, especially training in child health. The need for training in IMCI was reported by two NGOs. The MOH should play an important role in coordinating NGO activities and establishing mechanisms to ensure quality of care. These activities need to be strengthened and expanded. A major role for the WHO is to provide technical assistance in supporting the activities of the to the MOH, particularly in training, surveillance, health information systems and coordination. Development of training materials in case management,

particularly for children, for various levels of health care workers is an important of the WHO.

Guidelines exist for the prevention and management of the major causes of child mortality in complex emergencies. Integration of case management and preventive measures is best done in IMCI guidelines. Some guidelines address other important child health activities, including disease surveillance and the use of community health workers for health education and surveillance. Despite the strengths of existing manuals, not all of the guidelines important for the care of children in complex emergencies are located in a single source. Furthermore, the existing guidelines are targeted to different levels of health care workers. Current comprehensive guidelines are not adequate for the management of the diseases of the neonate, HIV infection, tuberculosis, child and sexual abuse, and mental health problems. Guidelines on community-based surveillance and health interventions could be strengthened.

IMCI guidelines were not developed for complex emergencies and their use in complex emergencies has not been evaluated. IMCI guidelines have several limitations that make implementation in complex emergencies difficult: 1) the 11-day training course is too long to be implemented during a complex emergency; 2) the supporting infrastructure (i.e. referral facilities) is frequently not in place to manage severe disease; 3) the time required to complete a single patient encounter is too long for the high case load seen during the acute phase of a complex emergency; 4) disease surveillance is not addressed; 5) and laboratory support for the diagnosis of malaria, cholera or shigellosis is not included. Nevertheless, IMCI guidelines address the major causes of child mortality in complex emergencies, including measles immunization and case management; prevention, diagnosis and treatment of malaria; diagnosis and treatment of pneumonia, diarrhea and dysentery; and the management of malnutrition and vitamin A deficiency. Importantly, IMCI guidelines integrate case management with preventive measures and are targeted to clinical officers and nurses, personnel likely to provide the bulk of child health care in complex emergencies. IMCI guidelines may be enhanced when used in combination with Emergency Triage Assessment and Treatment guidelines (ETAT). ETAT guidelines are designed to train health care workers to rapidly assess signs and symptoms of severe disease, including problems of airway and breathing, shock, convulsions, severe malnutrition, and severe dehydration. For each classification of severe diseases, rapid resuscitation techniques are recommended. The potential usefulness of ETAT guidelines in complex emergencies is that many children present with severe disease and rapid triage and treatment is critical to their successful management. The disadvantages of ETAT guidelines are that they require resources (e.g. oxygen) and skills (e.g. ability to insert femoral or interosseous infusions) not available in many complex emergency settings. Nevertheless, guidelines for triaging critically ill children are needed, and as with other recommendations, ETAT guidelines could be simplified for use by a variety of health care workers.

Based on the above findings, the following recommendations were made to improve the care of children in complex emergencies. Specifically, these recommendations were based on the findings that: 1) most organizations caring for

children in complex emergencies use existing clinical guidelines rather than develop their own guidelines; 2) guidelines for the prevention and management of child health problems in complex emergencies exist but need to be brought together into an accessible, comprehensive package; 3) coordination is essential across the many organizations involved in providing health care during a complex emergency; and 4) planning for the transition out of the emergency phase towards a stable health system is a critical component of emergency care.

- Evidence-based, locally-adapted guidelines for the care of children in complex emergencies should be adopted by Ministries of Health and supported by the World Health Organization as the best means to ensure appropriate, effective and uniform care in most complex emergencies.
- The guidelines should be locally adapted by a working group under the direction of the Ministry of Health and with technical support arranged by the World Health Organization. The working group should include the EPI, surveillance and child health sections of the Ministry of Health.
- The guidelines should detail a preparedness plan for complex emergencies and identify a mechanism for coordinating health activities. Preparedness should include not only guidelines for the prevention and management of disease in children in complex emergencies, but plans for training, human resources management, and drug supply delivery. Available resources should be identified to conduct these activities. Those activities for which local resources are lacking should be specified and assigned to external partners. Training is best conducted prior to emergencies, and must be focused, simplified and of short duration during a complex emergency.
- The guidelines should be adapted from existing clinical guidelines used for the care of children in complex emergencies and stable situations (e.g. IMCI), but should focus on rapidly reducing mortality due to measles, malaria, diarrhea (including cholera and shigellosis), acute respiratory tract infection, and acute malnutrition.
- The guidelines should address the management of severe disease in complex emergencies, and how these cases should be managed in the absence of referral facilities.
- The guidelines should be realistic in terms of the amount of time required for each patient contact.
- Guidelines developed by the Ministries of Health, and adapted from those used in normal situations, will facilitate transition to a functional health care system in the region of emergency. However, there will be areas where guidelines for complex emergencies diverge from those guidelines used in stable situations.

- The guidelines should have provisions for addressing the health needs of special populations of children not addressed in normal situations, including provisions for unaccompanied children and for the mental health needs of children.
- The guidelines should be targeted to the level of health care worker expected to provide the bulk of care to children in a complex emergency. In most cases, these health care workers will be nurses and clinical officers.
- Drugs used within complex emergencies should be consistent with the Ministry of Health guidelines for the care of children in complex emergencies.
- The guidelines should detail a plan for surveillance during complex emergencies, including nutritional and immunization surveys. Surveillance should focus on the major causes of child mortality, nutritional status and immunization coverage. Survey results should be rapidly analyzed and the results distributed to health care workers and planners.
- In extreme situations, trained health care workers may be unavailable. In such situations, simplified IMCI guidelines and training materials should be made available to allow community health workers and village volunteers to provide the minimal basic care to children.
- The important role of community health workers and volunteers should be recognized in complex emergencies, even when trained health care workers are present.

Although much is known about the causes of child morbidity and mortality in complex emergencies and their prevention and management, several areas of research were identified, including: 1) pilot projects to assess the feasibility of developing guidelines for the care of children in complex emergencies by Ministries of Health in several countries at high risk of conflict or famine; 2) development of an Internet repository for unpublished literature on child health issues in complex emergencies; 3) evaluation of the cost-effectiveness of short courses of more expensive antibiotics for the treatment of antibiotic-resistant diarrheal disease; 4) development and field-testing of rapid diagnostic tests for infection with *Vibrio cholera* and *Shigella dysenteriae* and for determination of antibiotic susceptibility; 5) evaluation of the use of intermittent presumptive treatment of malaria in children in complex emergencies; 6) operational research on the prevention of maternal-infant HIV transmission in complex emergencies; 7) research on the prevalence, diagnosis and treatment of tuberculosis in children in chronic complex emergencies; 8) evaluation of guidelines for the care of children with severe disease in the absence of referral facilities; 9) determination of the causes of neonatal deaths in complex emergencies and evaluation of simple guidelines for the prevention of neonatal mortality in complex emergencies; 10) development and evaluation of tools to assess mental health problems and methods to prevent and treat mental health problems of children in complex emergencies.

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ACRONYMS AND ABBREVIATIONS

CIEDRS	Center for International Emergency, Disaster and Relief Studies
DRC	Democratic Republic of Congo
HIV	human immunodeficiency virus
IMCI	Integrated Management of Childhood Illness
MMWR	Morbidity and Mortality Weekly Review
MOH	Ministry of Health
MSF	Medecins Sans Frontieres
NGO	non-governmental organizations
PTSD	post-traumatic stress disorder
TBA	trained birth attendant
UNICEF	United Nations Children’s Fund
WHO	World Health Organization

I Introduction

Much of the burden of disease in complex emergencies is in children. Addressing the health needs of children in complex emergencies is critical to the success of relief efforts and requires coordinated and effective interventions. At the request of the World Health Organization (WHO), the Center for International Emergency, Disaster and Relief Studies (CIEDRS) at the Johns Hopkins University Bloomberg School of Public Health convened a multidisciplinary team to review child health activities in complex emergencies. The purpose was to develop a working document to assist the WHO in preparation for an interagency consultation by presenting a situational analysis of child health activities in complex emergencies, including identification of deficiencies in current knowledge and research needs. The objectives were to review the published literature on child health in complex emergencies, including burden of disease; identify the major organizations providing care to children in complex emergencies and review existing clinical guidelines; identify major gaps in the guidelines NGOs use to provide health care to children in complex emergencies; and make recommendations to overcome these gaps.

Guidelines are necessary but not sufficient to ensure optimal care in complex emergencies. They define the standard and scope of care, and are an important component of preparedness planning for complex emergencies. However, many conditions must be in place for guidelines to be used effectively, including properly trained and supervised health care workers, adequate and appropriate drug supplies, knowledge of local epidemiology, and appropriate health seeking behavior. Human rights and gender issues must also be considered in developing and implementing guidelines for the care of children in complex emergencies. Discrimination by gender and ethnicity may adversely affect the care of some children. Consideration of the broader context in which guidelines are used in complex emergencies is necessary to ensure their potential effectiveness.

Complex emergency is defined broadly for the purpose of this review and refers to a situation of armed conflict, population displacement and/or food insecurity with associated increase in mortality and malnutrition. Child health during the acute phase of an emergency is emphasized, while recognizing the important child health needs in the post-emergency setting. The health of children younger than 10 years of age is addressed, and encompasses primary health care, preventive care and mental health as well as clinical case management. Maternal health, and the health of older children and adolescents, are important but are not a focus of this review.

The published literature on the burden of childhood diseases in complex emergencies is reviewed, followed by a summary of the published literature on specific childhood diseases. A review of the published literature is necessarily limited as only a small proportion of the collective experience in caring for children in complex emergencies is published. Many organizations and health care workers do not have the time, resources or incentive to publish their experiences. Furthermore, much of the published literature consists of anecdotal reports or descriptive epidemiology. Few well-

designed trials have been conducted in complex emergencies. The literature review is followed by a summary of our surveys of child health in complex emergencies. The first survey provides an overview of the guidelines used by major organizations providing care to children in complex emergencies and highlights their limitations. Several comprehensive guidelines for the care of children in complex emergencies are assessed. Because of the vastly different nature of complex emergencies in different settings, we conducted surveys of organizations working in the field in three key countries: Afghanistan, Angola and the Democratic Republic of Congo. These surveys were designed to collect information on important practical issues, including obstacles to providing care to children in complex emergencies, personnel and resource needs, performance monitoring and the roles of the Ministries of Health and the World Health Organization. We conclude by identifying major gaps in promoting child health in complex emergencies, make recommendations to improve the care of children, and suggest areas that require further research.

II Review of the Published Literature on Child Health in Complex Emergencies

Key points from the literature review on child health in complex emergencies

1. The major causes of child mortality in complex emergencies are known, and are measles, malaria, diarrheal diseases, acute respiratory tract infection and malnutrition. Much of the published literature on child health in complex emergencies documents the burden of disease due to these causes.
2. The published literature documents outbreaks of other communicable diseases and nutritional deficiencies that can contribute substantially to child morbidity and mortality. In some situations, these outbreaks can be anticipated, such as outbreaks of meningococcal disease in the “meningitis belt” or seasonal outbreaks of malaria and *Shigella dysenteriae* type 1. Other outbreaks may be less predictable, for example the outbreak of pertussis in Afghanistan.
3. Little published information exists on the burden of disease and appropriate intervention strategies for diseases of the neonate, and for the prevention and treatment of HIV infection and tuberculosis in children in complex emergencies.
4. Research on innovative yet simple interventions to prevent disease is exemplified by the studies on reducing diarrheal morbidity and mortality among Mozambican refugee children by distribution of soap (Peterson 1998) and prevention of water contamination (Roberts 2001).
5. Several technical and operational questions need to be answered to best provide care to children in complex emergencies. These include the optimal antibiotic therapy for cholera, shigellosis and acute respiratory tract infections in regions where antibiotic resistance is prevalent; appropriate use of diagnostics to guide antimalarial therapy in regions where chloroquine and sulfadoxine-pyrimethamine

resistant *Plasmodium falciparum* is prevalent; appropriate use of oral cholera vaccines; and the integration of nutritional interventions with case management of diarrheal diseases and respiratory tract infection.

6. Questions remain on the burden of disease due to mental health problems in children in complex emergencies, the best methods to assess this burden across different cultures, and effective interventions to prevent and manage these problems.

Review of Published Literature

1. Burden of Childhood Disease in Complex Emergencies

The highest mortality rates in refugee populations are in children younger than 5 years of age (MMWR 1992, Toole 1997). Although the absolute death rates are highest in infants less than 1 year of age, the relative increase in mortality is likely highest in children over 1 year of age (Toole 1990, MMWR 1992). Child mortality rates are highest during the acute or early phase of a complex emergency (Toole 1988). One frequently cited example of the high mortality rate among children in complex emergencies was among Kurdish refugees at the Turkey-Iraq border during 1991: 63% of all deaths occurred in children younger than 5 years of age although this age group comprised only 18% of the population (CDC 1991, MMWR 1992, Toole 1997).

Numerous other examples support the conclusion that a high proportion of deaths in complex emergencies are in children. A review of child mortality in refugee camps in Thailand, Somalia and Sudan in the early 1980's reported a mortality rate more than twice as high in children younger than 5 years of age (32.6 per 10,000 per day) than the overall crude mortality rate (Toole 1990). In a Burmese refugee camp in Bangladesh, most deaths occurred among infants (640 per 1000 per year) and children (357 per 1000 per year) (Khan 1983). The overall mortality among Ethiopian refugees in Sudan in February 1985 was 8.9 per 10,000 persons per day, but was 22 per 10,000 per day for children less than 5 years of age (Shears 1987). Among refugees in Honduras between 1984 and 1987, deaths in infants accounted for 42% of all deaths, and deaths in children younger than 5 years for 54% of all deaths (Desenclos 1990). A survey conducted during the 1991 Kurdish refugee crisis found that two thirds of all deaths occurred in children less than 5 years, and half were among infants younger than 1 year (Yip 1993). The Gulf war and trade sanctions were estimated to have caused a threefold increase in mortality among Iraqi children younger than 5 years of age, resulting in an excess mortality of 46,900 children between January and August 1991 (Ascherio 1992). During the 1992 famine in Somalia, an astonishing 74% of children younger than 5 years of age living in displaced person camps were estimated to have died over several months (Moore 1993). Thirty-six percent of children less than 5 years of age died within a 5-month period in one area of Liberia in 1996 (Nabeth 1997). Among Rwandan and Burundian refugees in eastern Zaire in 1996, 54% of all deaths were among children less than 5 years of age (Nabeth 1997). The daily mortality rate for children younger than 5 years was as high as 12.5 per 10,000 persons per day.

In some settings, however, older children and adults suffer mortality rates comparable to or exceeding those of young children. Such excess mortality in older children and adults is most like following outbreaks of cholera or dysentery, or when armed conflict results in many civilian casualties. Among Rwandan refugees in Zaire, the crude mortality rate for children younger than 5 years of age was lower than the overall crude mortality rate (Paquet 1994). Ninety percent of all deaths were due to cholera, dysentery or other diarrheal diseases, and the proportion of diarrhea-related deaths was lower in children younger than 5 years of age than in the rest of the population. In developed country settings, where infectious diseases and malnutrition are less likely to be significant contributors to mortality, war-related trauma and chronic diseases cause a significant proportion of deaths. In a study of displaced and resident populations in Kabul, Afghanistan in 1993, the most common causes of death in children less than 5 years were measles, diarrhea and acute respiratory tract infections. However, the most common causes of death in all age groups were gunshot wounds and other war-related trauma (Gessner 1994). A survey of Kosovar Albanians in 1999 found higher mortality rates in men over 15 years of age than in children younger than 15 years (Spiegel 2000).

The causes of morbidity and mortality in children and adults in complex emergencies have been reviewed (Toole 1988, Toole 1990, MMWR 1992, Toole 1997). During the early phase of an emergency, the most common reported causes of death are diarrheal diseases, acute respiratory infections, measles, malaria, and severe malnutrition (Toole 1997). There is no evidence that the major causes of childhood morbidity and mortality in complex emergencies have changed significantly in the past decade. For example, 80% of deaths in Congolese children younger than 5 years of age in Lugufu camp in Tanzania were due to malaria, diarrhea and pneumonia (Talley 2001). In addition to diarrhea, pneumonia, measles and malaria, outbreaks of other infectious diseases can contribute substantially to childhood morbidity and mortality in complex emergencies. Examples include recent outbreaks of poliomyelitis in Angola (Valente 2002), pertussis (WHO 2003) and leishmaniasis (Rowland 1999, Ahmad 2002) in Afghanistan, meningococcal meningitis in Sudanese refugee camps (Santaniello-Newton 2000), and typhoid fever in Bosnia and Herzegovina (Bradaric 1996). In some settings, injuries may contribute to excess mortality in children. For example, the age-adjusted mortality rates for both diarrhea and injuries increased in Iraqi children after the onset of the first Gulf War (Ascherio 1992)

Malnutrition and micronutrient deficiencies contribute substantially to child morbidity and mortality in complex emergencies (MMWR 1992, Toole 1993, Toole 1997). The median prevalence of acute malnutrition, defined as weight-for-height 2 standard deviations below the reference mean or less than 80% of the reference median, among children less than 5 years of age in internally displaced and conflict-affected populations between 1988 and 1995 was 31% among 11 surveys, and was as high as 80% in the Sudan in 1993 (Toole 1997). More recent surveys have found similar high prevalence rates of acute malnutrition in children in complex emergencies. A nutritional assessment survey of children in the Democratic People's Republic of North Korea,

conducted by the World Food Programme in August 1997, found a prevalence of acute malnutrition as high as 33% in some regions of the country (Katona-Apte 1998). Wasting was estimated to have contributed to 72% of all deaths among children younger than 5 years of age during a famine in Ethiopia in 2000 (Salama 2001). However, not all complex emergencies are associated with high prevalence rates of malnutrition. For example, a survey of Bosnian children found no evidence of malnutrition after the first year of war (Robertson 1995). A nutritional survey of Liberian refugee children in 1990 found the prevalence of acute malnutrition to be similar to rates reported for African populations in non-crisis situations (Centers for Disease Control MMWR 1991).

Some complex emergencies are associated with large numbers of unaccompanied children (Sapir 1993), and these children have special needs that have been addressed in several publications (Ressler 1988, Williamson 1988, UNICEF/UNHCR 1994). Although many unaccompanied minors are older children, in situations such as the Korean War or Nigerian Civil War many were abandoned infants (Sapir 1993). Extremely high mortality rates were documented among unaccompanied Rwandan refugee children after arrival in Goma, Zaire (Dowell 1995). Most deaths (85%) occurred more than 2 days after arrival at the centers, suggesting that early and appropriate care could have significantly reduced mortality in this group of children.

In post-emergency settings, where children have remained in stable refugee camps for prolonged periods, child mortality may be lower in the refugee population than in neighboring, resident children. The annual risk of tuberculosis among eight-year-old boys living in refugee camps in Afghanistan was lower than the annual risk reported in a national survey (Spinaci 1989). The mortality rate for resident children in Prabis, Guinea-Bissau was 4.5 times higher than in refugee children (Aaby 1999). The neonatal mortality rate among Afghan refugees in Pakistan (25 per 1000 live births) was significantly lower than the neonatal mortality rate in Afghanistan (121 per 1000 live births) (Bartlett 2002). A retrospective study of refugees and internally displaced persons living in 52 camps in 7 countries found that the neonatal mortality rates and the proportion of low birth weight infants were lower in the camps than in the host countries (Hynes 2002). The prevalence of acute malnutrition was higher among children in rural non-refugee populations in eastern Democratic Republic of Congo than among refugee children (Porignon 2000).

In complex emergencies, as in non-emergency situations, people may seek care outside the formal health sector. Traditional healers may be important providers of care to children in complex emergencies, especially when the health care system has collapsed or is non-existent. However, few published studies have addressed the role of traditional healers in providing care during complex emergencies. Understanding traditional Khmer health beliefs was found to be important in providing care to Cambodian refugee children (Rosenberg 1986).

2. *Diarrheal disease, cholera and shigella dysentery*

Diarrheal disease is a common cause of child morbidity and mortality in complex emergencies, and in some settings resulted in extremely high mortality rates. A cross-sectional survey of children in mountain camps along the Turkey-Iraq border during the 1991 Kurdish refugee crisis documented high rates of acute malnutrition and diarrhea (Yip 1993). The mortality rate for children under 5 years of age was 15.3 per 1000 children per month over an 8-week period, and diarrheal disease and associated malnutrition were estimated to have caused 75% of all deaths in children younger than 5 years of age.

Few published studies have evaluated preventative or treatment measures aimed at reducing child morbidity and mortality due to diarrheal diseases in complex emergencies, although the importance of clean water, appropriate sanitation and oral rehydration is well established. After a program to distribute soap in a Malawi refugee camp for Mozambican refugees, the presence of soap in the household was associated with 27% fewer episodes of diarrhea compared to households in which no soap was present (Peterson 1998). In the same camps, prevention of household contamination of water with a covered container and spout resulted in a 31% reduction in diarrheal disease in children younger than 5 years of age (Roberts 2001). A field trial among Afghan refugee children found that wheat-based oral rehydration solution was as effective as WHO glucose-oral rehydration salts for home therapy of uncomplicated diarrhea (Murphy 1996).

Outbreaks of cholera in complex emergencies have been reported frequently (Moren 1991, Hatch 1994, Siddique 1995, Swerdlow 1997, MMWR 1998). A study of risk factors for cholera during an epidemic in a Mozambican refugee population in Malawi found an increased risk associated with an increasing number of children less than 5 years of age in the household, suggesting young children may have played a role in cholera transmission (Hatch 1994). Another study of Mozambican refugees in Malawi described the epidemiology of cholera over a three-month period (Swerdlow 1997). Mortality was highest in children less than 4 years of age (relative risk of 4.5, CI = 2.6-7.9), and most deaths occurred within 24 hours of hospital admission. The authors suggest that improved access to care for children and increased use of oral rehydration therapy could have decreased child mortality. However, rapid provision of intravenous fluid therapy is necessary to significantly reduce the mortality rate in severely dehydrated children (RB Sack, personal communication).

The desirability and cost effectiveness of cholera vaccination in complex emergencies has been reviewed and debated (Naficy 1998, Murray 1998, Waldman 1998, Sack 1998), and was the subject of a WHO sponsored meeting in May 1999 (WHO 1999). A trial of a two-dose oral cholera vaccine among Sudanese refugees in Uganda concluded that mass vaccination was feasible as a pre-emptive strategy when conducted in conjunction with other control and treatment strategies, but the cost of the vaccine was a major obstacle to widespread use (Legros 1999). Local production of new oral cholera vaccines may make vaccination cost effective in complex emergencies.

Ciprofloxacin was used to treat children with dysentery due to type 1 *Shigella dysenteriae* during an epidemic in Rwandan refugees in Goma, Zaire in 1994 (Laureillard 1998). Although expensive, the use of ciprofloxacin at the Medecins Sans Frontieres Center was justified by the fact that the epidemic strain was resistant to the antibiotics available from public health authorities. Clinical efficacy was 86% in 285 patients. A 5-day course of ciprofloxacin was provided by Medecins Sans Frontieres to treat patients during an outbreak of *Shigella dysenteriae* type 1 in Sierra Leone (Guerin 2003). The case fatality was significantly lower in high risk patients (0.9%) treated with ciprofloxacin compared to the overall case fatality (3.1%). A recent multicenter study in non-emergency settings showed that a 3-day course of ciprofloxacin was as effective as the standard 5-day course in children with dysentery due to *Shigella dysenteriae* type 1 (Dysentery Study Group 2002).

3. *Measles*

Measles has been a major cause of child deaths in refugee camps and in internally displaced populations, and further contributes to child mortality by exacerbating malnutrition and vitamin A deficiency (Toole 1989, Toole 1997). Many deaths attributed to diarrhea and pneumonia may also be associated with measles. Measles case-fatality rates in children in complex emergencies have been as high as 20-30% (Shears 1987, Porter 1990). During a famine in Ethiopia, measles alone or in combination with wasting accounted for 22% of 159 deaths among children younger than 5 years of age, and 17% of 72 deaths among children aged 5 to 14 years (Salama 2001). Progress in global control has made outbreaks of measles less likely in some regions. Nevertheless, the interruption of measles virus transmission requires a high level of population immunity and measles outbreaks continue to occur in refugee and internally displaced populations with low levels of immunity or in which high vaccination coverage is not maintained.

4. *Malaria*

The epidemiology and control of malaria in refugee camps and complex emergencies were recently reviewed (Rowland 2001, National Research Council 2003). Malaria control in complex emergencies is part of the World Health Organization's Roll Back Malaria initiative, and the handbook on *Malaria Control in Complex Emergencies* is scheduled for publication. Several published studies described the high prevalence of drug-resistant malaria in refugee populations (Leinhardt 1989, Woday 1995, Guthmann 1996), and several report the results of intervention trials to prevent malaria in refugee populations. Indoor residual spraying with malathion in refugee camps in eastern Sudan in 1997 was associated with reduced mortality but not with a reduction in the incidence of clinical malaria (Charlwood 2001). A randomized trial of permethrin-treated *chaddars* and top-sheets in Afghanistan found that the intervention reduced the odds of an episode of malaria by 64% in children younger than 10 years of age, at a cost of US \$0.17 per person protected (Rowland 1999). Advances in technology enable plastic sheeting to be impregnated with pyrethroid during manufacture. A study of deltamethrin-treated plastic tarpaulins in an Afghan refugee camps demonstrated that the impregnated tarpaulins could effectively kill mosquitoes for prolonged periods (Graham 2002). The authors

suggest that widespread use of insecticide-impregnated tarpaulins in refugee camps could greatly reduce the vectoral capacity and thus reduce the incidence of malaria.

5. *Meningococcal disease*

Large outbreaks of meningococcal disease and meningitis have been described in refugee populations, with high attack rates and case fatality ratios in children and young adults (Moore 1990, Haelterman 1996, Heyman 1998, Santaniello-Newton 2000). A latex agglutination test for *Neisseria meningitides* was found to be superior to Gram stain and as effective as culture in identifying the causative agent in an Israeli field hospital in Goma, Zaire (Heyman 1998).

6. *Tuberculosis*

Complex emergencies can disrupt tuberculosis control programs and facilitate the transmission of *Mycobacterium tuberculosis* by exacerbating crowded living conditions and poor nutritional status (Sutter 1990, Barr 1994, Porter 1995). These same factors can contribute to the rapid transmission of multidrug-resistant strains in refugee settings (Guthui 2000, Ibrahim 2002). In the 1980's, successful tuberculosis treatment programs were reported in refugee populations (Miles 1984, Rieder 1985, Suckrakanchana 1992). High rates of tuberculosis in adults are associated with transmission to children. However, in part because of the difficulties in diagnosing tuberculosis in children, little published data exists on the prevalence or treatment of childhood tuberculosis in complex emergencies. Highlighting the potential disease burden of tuberculosis in children in complex emergencies, the average annual risk of infection among internally displaced persons in Tbilisi, Republic of Georgia in 1999 was highest in children less than 10 years of age (5%) (Weinstock 2001).

7. *HIV infection and AIDS*

A report on the impact of war on children states that over “past five years, HIV/AIDS has changed the landscape of conflict for children more than any other factor” (Machel 2001). Conflict fuels the HIV epidemic by worsening poverty, enhancing the transmission of sexually transmitted diseases to and from military personnel through rape and commercial sex, and by the recruitment of orphaned children into the sex industry. However, little has been published on the epidemiology, prevention or treatment of HIV infection among children in complex emergencies. Importantly, no published studies have examined the feasibility of preventing maternal-infant HIV transmission in complex emergencies.

8. *Other communicable diseases*

Examination of stool specimens for intestinal parasites in Barawan Somali refugees in Kenya showed a prevalence rate of 51% in children less than 15 years of age (MMWR 1998). Scabies was found in 77% of children younger than 5 years of age and in 86% of children 5-9 years of age in a displacement camp in Sierra Leone (Terry 2001). Ten percent of 1,051 Kosovar refugees entering the United States were infested with head lice (Manjrekar 2000). Outbreaks of hepatitis A (Kaic 2001) and hepatitis E viruses (Toole 1997) have been reported among refugees. An outbreak of hepatitis A among children in a refugee camp in Croatia was controlled in part through immunization of

seronegative children with hepatitis A vaccine (Kaic 2001). Two outbreaks of typhoid fever were reported in association with the war in Bosnia and Herzegovina (Bradaric 1996). A large outbreak of pertussis among children was recently reported in Afghanistan (WHO 2003).

9. *Neonatal health*

Neonatal health has received scant attention in complex emergencies, in part because of the high mortality rates in older children and adults. Only recently has the burden of disease attributable to neonatal mortality in complex emergencies been measured. A survey of pregnancy outcomes among Burundian refugees in Tanzania in 1998 found that neonatal and maternal deaths accounted for 16% of all deaths during the study period (Jamieson 2000). The neonatal mortality rate was 29.3 per 1000 live births, and 22% of all live births were low birth weight. In a study of Afghan refugees in Pakistan, neonatal mortality accounted for 19% of all deaths and was the single largest “cause” of death (Bartlett 2002).

10. *Trauma*

Pediatric trauma is common during and following armed conflicts and natural disasters. The best-documented pediatric injuries associated with conflicts are those due to landmines (Coupland 1991, Kakar 1996, Jeffrey 1996, Chaloner 1996, Pearn 1996, Machel 2001). In Afghanistan in the early 1990s, 25% of injuries due to antipersonnel mines were in children less than 16 years of age (Jeffrey 1996). Other types of pediatric trauma reported during conflicts or in refugee camps include bomb-blast injuries among Kurdish refugee children (Haddock 1992), hand grenade injuries in a refugee camp on the Thailand-Cambodian border (Coupland 1993), burns in Vietnamese children in refugee camps in Hong Kong (Chan 2000), and injuries due to explosions and projectiles in children in Bosnia and Herzegovina (Jandric 2001). Crush injuries were reported in Turkish children following an earthquake in 1999 (Iskit 2001). Although torture of children is uncommon, 10 Kashmiri boys 5 to 14 years of age in a refugee camp were reported to have been victims of torture (Petersen 1995). An increase in road traffic accidents involving child pedestrians was reported following the humanitarian response to the crisis in Rwanda (Pearn 1996). Children accustomed to receiving small handouts of food and sweets from passing vehicles would run into the roads. Following the large influx of vehicles as part of relief efforts, more children were evaluated for injuries from road traffic accidents than from landmines or interpersonal violence after the genocide stopped in July 1994.

11. *Mental health*

The mental health of children in complex emergencies, particularly following armed conflicts (McCloskey 1996, Southall 1996; Plunkett 1998, Southall 1998), has been the focus of published studies. However, many recent studies were conducted in European cities and countries such as Bosnia and Herzegovina (Stein 1999, Papageorgiou 2000, Yule 2000, Dybdahl 2001, Smith 2001, Smith 2002), Sarajevo (Husain 1998, Allwood 2002) and Croatia (Kuterovac 1994), or assessed the mental health of refugee children seeking asylum in developed countries (Locke 1996, Montgomery 1998, Hodes 1998, Fazel 2002, Rothe 2002). Most studies concluded that children exposed to the

violence of armed conflict or the harsh living conditions of refugee camps have high rates of serious psychiatric problems (Locke 1996, Hodes 1998, Southall 1998, Montgomery 1998, Fazel 2002). Although the majority of studies report high rates of post-traumatic stress disorder (PTSD), other mental health problems such as depression and anxiety may affect larger numbers of children and contribute more to the long-term psychological burden (ML Belfer, personal communication). For example, 21.5% of children in the Gaza strip were reported to have significant anxiety disorders (Thabet 1998). Few studies have assessed the mental health of refugee or internally displaced children who are not exiled, particularly in regions outside of Europe. In a Sudanese refugee camp in northern Uganda, 20% of 56 children were assessed to have chronic post-traumatic stress disorder (Peltzer 1999). In contrast, a study of 58 Guatemalan Mayan Indian children living in refugee camps in Mexico found little evidence psychological trauma (Miller 1996). The authors suggest “there is a resilience among the children that appears to reflect a fundamental capacity for survival and recuperation in their families and in the broader community in which they live” (Miller 1996). A similar conclusion was drawn from a one-year follow-up study of ten Bosnian adolescent refugees, in whom rates of PTSD diminished over the follow-up period and after resettlement in the United States (Becker 1999). Others agree that the psychological consequences of war on children may not be permanent and irreparable, and that family and community support can mitigate the psychological trauma suffered by children (Summerfield 1998). However, a 12-year follow-up study of 27 Khmer adolescents resettled in the United States found that the symptoms of PTSD persisted and can develop years after cessation of trauma (Sack 1999).

12. *Malnutrition and therapeutic feeding*

Numerous published studies have assessed the nutritional status of children in complex emergencies and have documented the high prevalence of acute malnutrition among children. There is a strong association between severe wasting in children and high mortality rates in refugee populations (Mason 2002). Although much of the published literature focuses on severe malnutrition, mild to moderate malnutrition is likely to be a significant underlying cause of death in children in complex emergencies as it is in non-emergency situations (Pelletier 1995, Rice 2000). Several published studies demonstrated the effectiveness of supplementary (Vautier 1999) and therapeutic (Desjeux 1998) feeding programs in complex emergencies. More recently, a program for the outpatient care of severely malnourished Ethiopian children was evaluated (Collins 2002). Inpatient care in a therapeutic feeding center was not available to these children. The recovery, default and mortality rates for children treated as outpatients were acceptable, although rates of weight gain and time to discharge were slow. On the basis of these findings, and the limitations of therapeutic feeding centers, community-based therapeutic feeding has been proposed as a complementary intervention (Collins 2001).

13. *Micronutrient deficiencies*

Micronutrient deficiencies are common in refugee and displaced populations (Toole 1992, Weise Prinzo 2002). Deficiencies found in children in non-refugee settings, such as iron and vitamin A deficiencies, are more common and severe in refugee or displaced children. In addition, uncommon micronutrient deficiencies, such as scurvy

(vitamin C deficiency), pellagra (niacin and/or tryptophan deficiency) and beriberi (thiamine deficiency), may affect large populations in complex emergencies (Weise Prinzo 2002).

Two-thirds of Palestinian children living in refugee camps were found to be anemic in a nutrition survey conducted in 1990 (Hassan 1997). A randomized, double blind study comparing several regimens for the treatment of moderate anemia was conducted among refugee children in Tanzania (Tomashek 2001). All children were treated for malaria and helminth infections, followed by 12 weeks of thrice-weekly oral iron and folic acid. Children were randomized to receive different antimalarial regimens. The mean hemoglobin concentration for all children increased from 6.6 to 10.2 gm/dL; however, the group of children that received supplements of vitamins A and C were more likely to achieve normal iron stores.

Vitamin A supplementation for refugee children has long been recognized as an important public health intervention (Nieburg 1988). Outbreaks of scurvy have been described in complex emergencies (Seaman 1989, Desenclos 1989), most recently in Afghanistan (Ahmad 2002). Although children can be affected, scurvy occurs most commonly in adults and is most severe in pregnant women. Pellagra has also been described in refugee and internally displaced populations. A large outbreak of pellagra occurred among Mozambican refugees in Malawi; more than 18,000 cases (6% of the refugee population) were reported after distribution of groundnuts was stopped (Malfait 1993). However, as with scurvy, pellagra is most severe in pregnant women and is rare in young children (Weise Prinzo 2002). Angular stomatitis, a manifestation of riboflavin deficiency, was found in one-quarter of adolescent Bhutanese refugees in Nepal (Blanck 2002).

III Surveys of Child Health Activities in Complex Emergencies

Surveys were conducted of a convenience sample of international relief organizations that provide care to children in complex emergencies (Appendix II). The list of organizations contacted was generated by the collective suggestions of members of the CIEDRS working group and based on their experiences in the field. The working group identified contact persons in each organization. These contact persons responded to the survey directly or identified another person in the organization to be surveyed. Surveys were usually conducted with a single individual at the central office for the organization. This approach had the advantage of providing an overview of activities but was limited, in some cases, by lack of detailed knowledge in all areas of the survey. Some organizations distributed the questionnaire so that individuals with specific expertise could respond. These surveys, conducted by telephone or email using a standard survey instrument (Appendix III), provide a broad overview of the child health activities engaged in by different organizations and the guidelines used to direct these activities. The survey results, however, are limited by the fact that many organizations function differently in different settings, and the broad results gleaned from the surveys do not always capture these differences.

Key points from the surveys of child health activities in complex emergencies

1. With few exceptions, most organizations use existing WHO, UNICEF and MOH guidelines to provide care to children in complex emergencies.
2. Integrated Management of Childhood Illness (IMCI) guidelines are rarely used to provide care to children in complex emergencies. Limitations of the IMCI guidelines include the requirement for referral services and the reliance on caretakers to bring ill children to a health care facility.
3. Clinical guidelines are lacking for diseases of the neonate, the diagnosis and management of HIV infection and tuberculosis, emergency resuscitation, and the management of trauma, abuse and mental health problems.
4. Various types of health care workers are responsible for child health activities in complex emergencies. Guidelines for the care of children should be adapted for these different types of health care workers.
5. Community-based programs for surveillance, health education and health promotion are important child health activities in complex emergencies.
6. Inadequacies in staffing and referral services, insufficient links with the community, security constraints, poor supervision and coordination, and difficulties in the transition to a sustainable health care system were reported to hinder the provision of care to children in complex emergencies.

Surveys of Child Health Guidelines and Activities in Complex Emergencies

Many organizations surveyed provide direct clinical care to children in complex emergencies, including Action Contre la Faim, Africare, Concern, International Federation of the Red Cross, International Medical Corps, International Rescue Committee, Medecins sans Frontieres and Save the Children – United Kingdom (in special cases). With few exceptions (e.g. Medecins sans Frontieres, World Vision), organizations use existing WHO, UNICEF and Ministry of Health (MOH) guidelines to provide care to children in complex emergencies. Existing guidelines are used for the diagnosis and management of cholera, shigellosis, and meningococcal meningitis; management of severe dehydration, severe malnutrition and micronutrient deficiencies; counseling on infant feeding; and measles case management and immunization. In addition, these organizations rely on existing WHO, UNICEF and MOH guidelines to provide preventive care, including prevention of neonatal tetanus and malaria; routine childhood vaccination; promotion of breast feeding; and routine vitamin A supplementation. Some organizations attempt to integrate nutritional management with routine child health activities. Africare and World Vision, for example, promote early and exclusive breastfeeding and encourage appropriate weaning foods.

Integrated Management of Childhood Illness (IMCI) guidelines are rarely used to provide care to children in complex emergencies. International Medical Corps has used IMCI guidelines in some situations, but has not evaluated the use of these guidelines in complex emergencies. In transitional situations, some organizations reported working with Ministries of Health to implement IMCI in refugee camps as part of a national effort (e.g. International Rescue Committee in Democratic Republic of Congo, Sierra Leone and Rwanda). However, in many complex emergencies the infrastructure necessary to implement IMCI is not in place (e.g. referral hospitals). International Medical Corps refers severely ill children to other NGOs that maintain referral facilities or to private physicians when available and necessary. One organization pointed out that IMCI relies on sick children being brought to a health care facility, although many deaths occur in the community. Potential solutions could be modeled on the use of Health Information Teams by the IFRC to strengthen health care at the community level, or the use of mobile outreach teams by World Vision.

Organizations providing clinical care to children in complex emergencies were least likely to have formal guidelines on the management of asphyxia, prematurity and infection in neonates, the diagnosis and management of children with HIV infection, active case finding and treatment of tuberculosis in children, pediatric trauma (e.g. burns, sexual abuse), emergency resuscitation, and the diagnosis and management of mental health problems in children. Services for the diagnosis and management of mental health problems in caretakers were more commonly reported than those for children. However, Action Contra la Faim has pilot programs to address the mental health of infants and mothers in nutrition centers in Afghanistan and Sudan. Two organizations stated that tuberculosis control efforts in emergency situations were not part of their activities because the duration of therapy exceeded the expected duration of relief activities. Few organizations reported having guidelines that distinguished the management of severe disease (e.g. cerebral malaria, severe pneumonia, severe anemia) from the general management of childhood illness, and few reported the inclusion of nutritional support as part of case management (e.g. for diarrhea, pneumonia, HIV). No organization reported distinct guidelines for the management of children with persistent diarrhea from the management of diarrhea in general. Several organizations reported they were involved in developing guidelines for specific child health activities, including the diagnosis and management of pediatric HIV infection, physical and sexual abuse in children, and mental health problems in caretakers.

Various types of health care worker are responsible for child health activities in complex emergencies. In many situations, nurses and clinical officers provide clinical care to children. Some humanitarian organizations, such as Medecins sans Frontieres, employ doctors. However, many organizations recognize the importance of training community health workers and volunteers in complex emergencies. Africare trained volunteers in Angola to assist with vaccination activities, and the International Federation of the Red Cross regularly trains community health workers. Guidelines on the care of children should be adapted for these different types of health care worker. One organization surveyed noted that the nutritional guidelines, for example, should be

simplified so that they are suitable for health care workers in emergency settings with little or no background in nutrition.

Evidence-based guidelines adapted to different levels of health care worker and for different phases of a complex emergency are only part of the solution to improving child health. Inadequacies in staffing and referral services, insufficient links with the community, security constraints, poor supervision and coordination, and difficulties in the transition to a sustainable health care system were reported to hinder the provision of care to children in complex emergencies.

Many organizations reported some mechanism for surveillance. World Vision collects data on proportional morbidity and mortality at health facilities when alternative surveillance mechanisms are not in place. Africare establishes village health committees and enlists volunteer Community Health Agents to report clusters of unusual diseases. The International Federation of the Red Cross provides a software package to their emergency response units to establish surveillance systems.

Some organizations provide health education and health promotion as part of their child health activities in complex emergencies. Action contra la Faim, Africare and World Vision, for example, provide health education on disease prevention and personal hygiene. The International Federation of the Red Cross establishes volunteer Health Information Teams that provide health education to the community and conduct disease surveillance, analogous to the Community Health Agents trained by Africare. World Vision provides preventive services (e.g. promotion of breast feeding) and care through mobile outreach teams as well as at fixed health centers.

CARE International does not directly provide clinical care to children in complex emergencies, but assists other non-governmental organizations or the Ministry of Health in providing such care. CARE supports a number of activities that impact on child health in complex emergencies, including supplemental and therapeutic feeding and support for nutritional surveillance systems. Catholic Relief Services (CRS) also does not provide clinical care to children in complex emergencies but focuses on community-oriented preventive and public health activities, and supports local partners in these activities. Several other organizations surveyed are less directly involved in the care of children in complex emergencies. World Relief provides support for the building and maintenance of clinics usually run by the Ministry of Health. Mercy Corps attempts to improve the use of health services through community mobilization and behavior change.

IV Country Surveys: Afghanistan, Angola and the Democratic Republic of the Congo

Representatives from organizations providing care to children in complex emergencies in three countries were surveyed to obtain insights from the field on the care of children in complex emergencies. Three countries representing different stages of the progression of humanitarian crises and with recent issues were selected by the CIEDRS

working group. These countries, Afghanistan, Angola, and the Democratic Republic of the Congo (DRC), have different political and social contexts that shape the challenges to providing care to children in complex emergencies. A list of non-governmental organizations (NGO) was generated by members of the working group as being active in the selected countries. As many of these NGO's had been contacted for the first survey, the initial survey respondent was reconsulted to identify a country-specific contact person. All the surveys were sent by email to the country contacts in the field (Appendix VI). Four NGO's responded from the DRC, five from Afghanistan and three from Angola (Appendix V). The survey responses were organized by topics: 1) obstacles to caring for children; 2) human resource development; 3) performance monitoring; 4) the role of the Ministry of Health 5) and the role of the WHO. Common themes are summarized and differences between countries are highlighted.

Key Points from Country Surveys

1. Obstacles to the provision of health care to children in complex emergencies include limited access, cultural barriers, insecurity, resource limitations (drugs, supplies), and lack of coordination among NGOs.
2. Adequate training and supervision of health care staff were reported to be major needs, especially training in child health. The need for training in IMCI was reported by two NGOs.
3. The MOH should play an important role in coordinating NGO activities and establishing mechanisms to ensure quality of care. These activities need to be strengthened and expanded.
4. A major role for the WHO is to provide technical assistance in supporting the activities of the MOH, particularly in training, surveillance, health information systems and coordination. Development of training materials in case management, particularly for children, for various levels of health care workers was identified as an important role of the WHO.

Country Surveys

1. Obstacles to health care

Many of the reported obstacles to the provision of health care in complex emergencies were due to limited access to care. Many dimensions of this problem were described, some of which are not unique to complex emergencies. Cultural factors, such as traditional beliefs about illness, delay appropriate health care seeking by parents. In Afghanistan, three of the five groups reported barriers posed by low educational levels among women. One respondent noted that the low status of women hinders their potential "to be decision-makers in an emergency situation." Limited physical access, due to the absence or remoteness of health care facilities, was another important obstacle. Lack of security restricts access to health care and is a major obstacle in countries

experiencing armed conflict. Lack of security was most commonly cited among respondents from the DRC. Continuing violence makes vulnerable populations inaccessible to relief workers and endangers the safety of these workers. One respondent from Angola described the difficulties of providing routine immunization services in rebel-controlled areas. Many organizations in all three countries described resource limitations, such as “insufficiency of drugs, medical materials and consumables.” Three respondents in the DRC commented on the shortage of drug supplies: “Even if some areas of DRC are reasonably covered, there remains huge part(s) of the country where there isn’t a single drug in health centers.” Securing basic necessities remains an obstacle: food security problems were reported by two groups in Angola, and poor water and sanitation facilities were reported by two groups in Afghanistan and one in Angola. Lack of coordination between NGOs was an issue raised by two respondents from Afghanistan. Poor coordination was most apparent where government health services were weak. Another impact of poor coordination, according to a group in Afghanistan, was the lack of a “systematic process for establishing community-based services.”

2. *Human resources in the health sector*

Many organizations reported the need for more qualified health care workers to care for children in complex emergencies. The level of health worker functioning in primary clinics varies. In the DRC, nurses are the primary care providers in health centers. Similarly in Angola, nurse equivalents (*tecnico medio* and *tecnico basico*) as well as health promoters and traditional birth attendants (TBA) were identified as the main providers of care for children. In Afghanistan one respondent reported that most health centers had doctors, but another reported “the majority of care is provided by nurses.” Clinical guidelines need to target personnel with nursing backgrounds and lower level health care workers. Most organizations mentioned the need to translate guidelines into the local language and to make them more “concise” and “easily transportable”. Two organizations reported that low salaries for local health care workers result in poor motivation and corruption. However, the most important factor limiting the quality of services is the need for appropriate training. In addition to the training of new health workers, several groups reported the need for “refresher” courses for existing health workers. Importantly, case management of children was the training need most frequently reported, cited by seven groups (two in DRC, two in Angola and three in Afghanistan). Priority diseases, according to one group, are “malaria, anemia, ARI, and diarrhea.” One respondent specifically recommended training in the use of essential drugs and rational prescribing practices. Two organizations specifically mentioned the need for training in IMCI. Other training needs included water and sanitation, midwifery and preventive services. In Afghanistan one group responded: “training needs differ at different levels . . . At present (training) is in an ad hoc manner.” On-the-job training was mentioned as a mechanism to train health care workers during a complex emergency. Other groups reported the need to improve supervision and institute quality control at the level of the health center.

All organizations reported conducting community mobilization. Commonly, community health workers are engaged in surveillance. In the DRC, “*relais communautaires*” are trained by the MOH, and in Afghanistan TBAs report neonatal mortality. Mullahs, village organizations and volunteers are other examples of groups that are involved in community mobilization and education. In Angola, home visitors provide health education.

3. *Performance monitoring*

Responses to questions on performance monitoring, from the choice of process and outcome indicators to the compiling of data and analysis, were varied. In all countries, organizations reported collection of data on basic indicators such as morbidity, crude mortality rate and case fatality rate that are compiled and reported, usually on a monthly basis. The MOH was identified as crucial to the process of coordination and analysis, but there were differing opinions as to its effectiveness. One group in the DRC reported that the collected data were “not really analyzed” and the health information system was “embryonic.” In Afghanistan, various methods of surveillance were described, such as active surveillance for acute flaccid paralysis by the MOH and the WHO, as well as sentinel sites for diarrheal disease and early detection of outbreaks. One group, however, felt that the surveillance was not “systematic.”

Some groups reported process indicators and mechanisms for measuring the quality of health care services. In Angola, one group used process indicators such as attendance rate at clinics, staff ratio per 100 new contacts, average hospital length of stay and bed occupancy rate. In the DRC, immunization coverage rates, drug utilization patterns and consultation rates were used to monitor performance. In Afghanistan, clinic staff were observed and provided feedback; however, this method of performance monitoring is dependent upon the quality of the supervising staff.

4. *The role of the Ministry of Health*

For many respondents, the MOH played an important role in coordinating NGO activities. In some countries, MOH offices at the provincial or district level were responsible for monthly coordination meetings. In addition to coordination and planning of activities, the MOH should be responsible for setting policy, establishing minimum standards for services, and adapting training materials to ensure the provision of quality care across the health centers. One group in Afghanistan reported that the MOH should establish “training programmes for all the staff at all levels of the delivery system” as well as “strengthen the central laboratory at Kabul and establish provincial laboratory services.” Other organizations reported the MOH should work with the NGOs in establishing priorities for the provision of health care.

5. *The role of the WHO*

Several groups reported that an important role of the WHO was to support the activities of the MOH. Many groups would like to see the WHO provide technical

assistance to MOH in the areas of surveillance and coordination. As one group in Angola wrote, the WHO should “reinforce the collaboration” between the MOH and NGOs. Other methods of technical assistance are to train MOH staff, as in the establishment of a central epidemiological unit in Afghanistan. The need to provide technical expertise in the establishment or expansion of health information systems also was raised by two groups in the DRC. Training in laboratory service provision and clinical protocols was also a desired role for the WHO. Other groups saw a more active role for the WHO. For example, one group reported that the WHO should be an “implementer” of health programs when no other organization is present. Several groups in the DRC reported that the WHO should participate in coordination meetings. However, other respondents expressed ambivalence about the role of the WHO in complex emergencies. One respondent did not provide an answer to the survey question on the WHO, and another stated that there was no “obvious” role.

V Review of Comprehensive Guidelines for the Care of Children in Complex Emergencies

Comprehensive guidelines for the care of children in complex emergencies were reviewed using a checklist and the results are summarized in Appendix IV. Integrated Management of Childhood Illness guidelines also were reviewed using the same tool. In addition to these comprehensive guidelines, disease specific guidelines developed by the WHO, UNICEF and various NGO’s are applicable to children in complex emergencies.

Key points from the review of guidelines for the care of children in complex emergencies

1. Guidelines exist for the prevention and management of the major causes of child mortality in complex emergencies. Integration of case management and preventive measures is best done in IMCI guidelines. Some guidelines address other important child health activities, including disease surveillance and the use of community health workers for health education and surveillance.
2. Despite the strengths of existing manuals, not all of the guidelines important for the care of children in complex emergencies are located in a single source. Furthermore, the existing guidelines are targeted to different levels of health care workers.
3. Current comprehensive guidelines are not adequate for the management of the diseases of the neonate, HIV infection, tuberculosis, child and sexual abuse, and mental health problems. Guidelines on community-based surveillance and health interventions could be strengthened.

Review of Comprehensive Guidelines

1. **Medecins Sans Frontieres Clinical Guidelines**, Fourth edition (1999) and **Refugee Health: An Approach to Emergency Situations** (1997)

Medecins Sans Frontieres (MSF) has comprehensive guidelines for the provision of health care in complex emergencies, although the most recent (2002) clinical guidelines are not yet available in English. These guidelines are used by organizations other than MSF and address all age groups. The clinical guidelines are targeted to medical professionals, specifically physicians and well-trained nurses. The manual on Refugee Health is targeted to public health officials and planners with a high level of expertise.

The MSF guidelines specifically address each of the major causes of death in children in complex emergencies: measles case management and immunization; prevention, diagnosis and treatment of malaria; diagnosis and case management of pneumonia; diagnosis and case management of diarrheal diseases, including cholera and dysentery; and management of severe malnutrition. In addition to their own guidelines, reference is made to WHO guidelines for the management of children with malaria, pneumonia and diarrhea (including home management). Severe disease (malaria, pneumonia, dehydration) is specifically addressed, and hospital referral is recommended in some cases. Nutritional supplementation is included as part of case management for children with dysentery and pneumonia, but not watery diarrhea. MSF has specific Nutrition Guidelines for the assessment of nutritional problems and the implementation of nutritional programs in complex emergencies.

In addition, the MSF guidelines address many other diseases of children in complex emergencies, specifically the diagnosis and management of meningitis, mild and severe anemia, micronutrient deficiencies (vitamin A deficiency, pellagra, scurvy), skin diseases (e.g. scabies), eye diseases (e.g. vitamin A deficiency, conjunctivitis, trachoma) and burns. The diagnosis of HIV infection and the prevention of opportunistic infections are addressed, but the guidelines refer to WHO documents for the nutritional management of HIV-infected persons and the use of antiretroviral therapy. The diagnosis and management of tuberculosis in children are addressed only under specific circumstances, with guidelines specific to the national tuberculosis control program of the Ministry of Health. Not addressed in the MSF guidelines are the diagnosis and management of persistent diarrhea, trauma, child and sexual abuse, mental health problems, and diseases of the neonate. Routine childhood immunizations and the promotion of breast-feeding also are not specifically addressed.

The MSF guidelines discuss active case finding and home visits, but do not have a community-based component for health education, disease surveillance or case management. MSF guidelines briefly address surveillance for crude mortality and measles. Several disease-specific guidelines require the use of laboratory tests, including blood smears for malaria, microscopic examination of cerebral spinal fluid, detection of pathogenic bacteria (*Shigella dysenteriae*) in stool specimens, and blood typing for transfusions.

2. Catherine Mears and Sue Chowdhury. **Health Care for Refugees and Displaced People**. Oxfam. Oxford, UK. 2001.

The Oxfam guidelines are much less comprehensive than the MSF guidelines and are designed to serve as a reference tool for health workers with “limited experience” in complex emergencies. The Oxfam guidelines address each of the major diseases of children in complex emergencies, but often refer to WHO guidelines (e.g. for the treatment of malaria, pneumonia, diarrhea and dysentery). Unlike the MSF guidelines, the Oxfam guidelines briefly address the mental health problems of children and caretakers, routine childhood immunizations, and the promotion of breastfeeding, although these guidelines are not extensive. The Oxfam guidelines do not address nutritional supplementation as part of case management of pneumonia or diarrhea, nor do they address the diagnosis and management of persistent diarrhea, HIV infection, severe anemia, skin diseases, eye diseases, trauma or neonatal health problems. The guidelines require the use of laboratory tests for the diagnosis of infectious diseases and call for hospital referral when necessary. Sample forms for mortality and disease surveillance are provided. Broadly, the Oxfam manual promotes the training of community health workers and the use of community-based health education and surveillance.

3. **Helping the Children: A Practical Handbook for Complex Humanitarian Emergencies.** Edited by Ana Mandalakas, Kristine Torjesen and Karen Olness. Health Frontiers, Kenyon, MN, 1999.

This handbook, endorsed by the American Academy of Pediatrics, is addressed to medical volunteers who are not “child health specialists”. The strength of these guidelines is in briefly addressing preventive and public health measures, but they are not comprehensive clinical guidelines. For example, the management of children with malaria or pneumonia is not addressed, and the handbook only briefly discusses the management of diarrhea, cholera, dysentery and meningitis. The handbook emphasizes many unusual diseases that are unlikely to be major causes of morbidity or mortality in complex emergencies. For example, when presented with a child with cough and tachypnea, the reader is reminded to think of melioidosis, hydatid cyst or the pulmonary phase of nematode migration. The handbook is more appropriate in addressing mental health problems, the promotion of breastfeeding and routine childhood immunizations.

4. **The Sphere Handbook: Minimum Standards in Disaster Response**

The Sphere Handbook was not designed to provide detailed guidelines on clinical care but to serve as a set of minimum standards for delivering health care during complex emergencies. The focus is on the delivery of health services, management of human resources, health information systems and disease control for all ages. Importantly, the Sphere Handbook addresses the need for capacity building with regard to referral services and emphasizes the need for community-based care.

The Sphere Handbook details several aspects of disease control related to the major causes of child deaths in complex emergencies, including measles immunization, vitamin A supplementation and the treatment of severe malnutrition. Brief mention is made of case management for children with malaria, pneumonia, watery diarrhea,

dysentery and anemia, with references made to WHO and Ministry of Health guidelines. Importantly, the Sphere Handbook addresses neonatal health, specifically guidelines on clean and safe delivery and the prevention of neonatal tetanus. Sphere guidelines are also unique in addressing sexual violence and associated mental health issues. The need for surveillance systems is emphasized and a key indicator is an under-five mortality rate of less than 2 per 10,000 persons per day. Sample surveillance forms are provided in the handbook. Not addressed in the Sphere Handbook are the management of severe disease in children, and the diagnosis and management of persistent diarrhea, meningitis, tuberculosis, HIV, skin diseases, eye diseases, trauma or emergency resuscitation.

5. **Integrated Management of Childhood Illness Guidelines**

IMCI guidelines are for children from 1 week to 5 years of age, and are targeted to nurses and clinical officers at first level health facilities. Laboratory tests are generally not required for implementation of IMCI guidelines, although a blood smear for malaria is recommended in low risk areas. IMCI guidelines refer to Ministry of Health recommendations for the first and second line therapies for malaria. Importantly, IMCI guidelines do not distinguish cholera from other causes of watery diarrhea and severe disease requires hospital referral.

Contrary to other guidelines, IMCI specifically addresses the management of the child with persistent diarrhea. Guidelines for the care of HIV infected children have been developed for inclusion into IMCI and are undergoing validation. Efforts are also underway to include management of the newborn. IMCI includes promotion of breastfeeding, routine childhood immunizations and routine vitamin A supplementation. IMCI guidelines do not include nutritional supplementation as part of case management for pneumonia and diarrhea, and do not specifically address tuberculosis, skin diseases, eye diseases, trauma, burns, child and sexual abuse, emergency resuscitation, and mental health problems. Disease surveillance is not part of IMCI. However, IMCI guidelines do include a less well-developed Community/Family component that emphasizes health education.

VI **Use of IMCI in Complex Emergencies**

IMCI guidelines were not developed for complex emergencies and their use in complex emergencies has not been evaluated. IMCI guidelines have several limitations that make implementation in complex emergencies difficult: 1) the 11-day training course is too long to be implemented during a complex emergency; 2) the supporting infrastructure (i.e. referral facilities) is frequently not in place to manage severe disease; 3) the time required to complete a single patient encounter is too long for the high case load seen during the acute phase of a complex emergency; 4) disease surveillance is not addressed; 5) and laboratory support for the diagnosis of malaria, cholera or shigellosis is not included. Nevertheless, IMCI guidelines address the major causes of child mortality in complex emergencies, including measles immunization and case management; prevention, diagnosis and treatment of malaria; diagnosis and treatment of pneumonia,

diarrhea and dysentery; and the management of malnutrition and vitamin A deficiency. Importantly, IMCI guidelines integrate case management with preventive measures and are targeted to clinical officers and nurses, personnel likely to provide the bulk of child health care in complex emergencies.

The use of IMCI in refugee camps in Tanzania was evaluated by WHO (Robinson 1998). Although the introduction of IMCI in this setting was deemed feasible, several limitations were noted. Because of high mortality within the first 24 hours of presentation, a triage system was recommended to ensure the prompt treatment of severely ill children. Also reflecting the limitation of IMCI guidelines in dealing with severely ill children, the evaluation concluded that “emergency rooms” should be established to manage severely ill children. IMCI guidelines may be enhanced when used in combination with Emergency Triage Assessment and Treatment guidelines (ETAT). ETAT guidelines are designed to train health care workers to rapidly assess signs and symptoms of severe disease, including problems of airway and breathing, shock, convulsions, severe malnutrition, and severe dehydration. For each classification of severe diseases, rapid resuscitation techniques are recommended. The potential usefulness of ETAT guidelines in complex emergencies is that many children present with severe disease and rapid triage and treatment is critical to their successful management. The disadvantages of ETAT guidelines are that they require resources (e.g. oxygen) and skills (e.g. ability to insert femoral or interosseous infusions) not available in many complex emergency settings. Nevertheless, guidelines for triaging critically ill children are needed, and as with other recommendations, ETAT guidelines could be simplified for use by a variety of health care workers.

To provide care to children in complex emergencies where trained health care workers are lacking, IMCI guidelines were simplified for use by village volunteers and community health workers (Beltramello 2002). The guidelines for village volunteers, called Essential Community-based Child Health (ECCHC), contain algorithms for the identification and management of general danger signs, pneumonia, dehydration and malaria by literate persons without any health training. Training of village volunteers takes 7 days. The ECCHC package was effectively introduced into regions of southern Sudan with very limited access to health care (more than 10 hours from a health facility). Guidelines for community health care workers were developed to include algorithms for anemia, malnutrition, intestinal parasites, and dysentery. The development and validation of simplified IMCI guidelines provides an important tool for the care of children in complex emergencies with no access to trained health care workers.

VII Recommendations to Improve Child Health in Complex Emergencies

The provision of health care to children in complex emergencies differs from the care of children in stable situations. The severity and magnitude of childhood diseases is often exacerbated by conflict or disaster, necessitating the rapid assessment and treatment of large numbers of severely ill children. In complex emergencies, health care is often delivered by multiple organizations with different types of health care worker and is

therefore less uniform than in stable situations. Ensuring comprehensive, coordinated and appropriate care is difficult where multiple organizations and different levels of health care worker are operative. In the absence of a functioning health care system, referral services and supply delivery systems are lacking, and health care workers with minimal training are often the primary providers. In such situations, training of lower level health care workers must be rapid, simple and targeted to the diseases causing the greatest morbidity and mortality. Disease surveillance systems must be rapidly established, particularly for diseases known to cause outbreaks with high case fatality, such as measles, cholera, shigellosis, and meningococcal meningitis. The logistics of drug delivery and distribution is made complex by the multiple organizations involved, inadequate communication and transportation systems, and threats to security.

Other factors confound efforts to develop standards and guidelines for the care of children in complex emergencies. The type of emergency, whether an armed conflict, famine or natural disaster, determines specific health risks and each type demands responses sufficiently flexible to adapt to these risks. Children differ in their general health, nutritional status and exposure to communicable diseases prior to the onset of an emergency, and these regional differences persist for the duration of the emergency and into the post-emergency phase. The child health needs of refugee children are not the same as those of internally displaced and internally stranded children, and are different in the acute phase than in the post-emergency setting or in a chronic emergency. Children separated from their families face additional and different health risks. The capacity of the existing health care system to provide care to children during a complex emergency varies across and within regions. When the existing health care system is overwhelmed or is nonexistent, many organizations and many types of health care worker are called upon to care for children. These organizations, and the various types of personnel that comprise them, have different strengths and limitations in meeting the needs of children. High staff turnover in complex emergencies further confounds efforts to ensure uniform delivery of health care.

Despite the complexities of addressing the health needs of children in emergencies, much of the burden of disease is caused by malnutrition and several infectious diseases, diseases that are common to children in many non-emergency settings and for which there exist evidence-based guidelines for prevention and treatment. This body of information and clinical experience serves as the foundation for addressing the health needs of children in complex emergencies. However, child health in complex emergencies encompasses broader issues that are essential to successful relief efforts. The basic human rights of children, which are so easily transgressed in emergencies, must be protected. In conflicts, children can be recruited as soldiers, subject to violence and torture, and sexually or physically abused. And the provision of care and protection to children in complex emergencies, although often overwhelmed with immediate concerns, should maintain a vision of fostering sustainable health care during the transition to the post-emergency situation.

These recommendations are based on the findings that: 1) most organizations caring for children in complex emergencies use existing clinical guidelines rather than

develop their own; 2) guidelines for the prevention and management of child health problems in complex emergencies exist but need to be brought together into an accessible, comprehensive package; 3) coordination is essential across the many organizations involved in providing health care during a complex emergency; and 4) planning for the transition out of the emergency phase towards a stable health system is a critical component of emergency care.

1. Evidence-based, locally-adapted guidelines for the care of children in complex emergencies should be adopted by Ministries of Health and supported by the World Health Organization as the best means to ensure appropriate, effective and uniform care in most complex emergencies.
2. The guidelines should be adapted locally by a working group under the direction of the Ministry of Health and with technical support arranged by the World Health Organization. The working group should include the EPI, surveillance and child health sections of the Ministry of Health.
3. The guidelines should detail a preparedness plan for complex emergencies and identify a mechanism for coordinating health activities. Preparedness should include not only guidelines for the prevention and management of disease in children in complex emergencies, but plans for training, human resources management, and drug supply delivery. Available resources should be identified to conduct these activities. Those activities for which local resources are lacking should be specified and assigned to external partners. Training is best conducted prior to emergencies, and must be focused, simplified and of short duration during a complex emergency.
4. The guidelines should be adapted from existing clinical guidelines used for the care of children in complex emergencies and stable situations (e.g. IMCI), but should focus on rapidly reducing mortality due to measles, malaria, diarrhea (including cholera and shigellosis), acute respiratory tract infection, and acute malnutrition. The guidelines should address the management of severe disease in complex emergencies, and how these cases should be managed in the absence of referral facilities. The guidelines should be realistic in terms of the amount of time required for each patient contact. Guidelines developed by the Ministries of Health, and adapted from those used in normal situations, will facilitate transition to a functional health care system in the region of emergency. However, there will be areas where guidelines for complex emergencies diverge from those guidelines used in stable situations.
5. The guidelines should have provisions for addressing the health and human rights needs of special populations of children not addressed in normal situations, including provisions for unaccompanied children, the mental health needs of children, and to minimize discrimination based upon gender or ethnicity.

6. The guidelines should be targeted to the level of health care worker expected to provide the bulk of care to children in a complex emergency. In most cases, these health care workers will be nurses and clinical officers.
7. Drugs used within complex emergencies should be consistent with the Ministry of Health guidelines for the care of children in complex emergencies.
8. The guidelines should detail a plan for surveillance during complex emergencies, including nutritional and immunization surveys. Surveillance should focus on the major causes of child mortality, nutritional coverage and immunization status. Survey results should be rapidly analyzed and the results distributed to health care workers and planners.
9. In extreme situations, trained health care workers may be unavailable. In such situations, simplified IMCI guidelines and training materials should be made available to allow community health workers and village volunteers to provide the minimal basic care to children.
10. The important role of community health workers and volunteers should be recognized in complex emergencies, even when trained health care workers are present. Volunteers should be trained to provide health education and disease surveillance, as exemplified by the Health Information Teams established by the International Federation of the Red Cross.

VIII Research Needs

1. Several technical issues in the case management of children in complex emergencies require study, and results of these studies should be incorporated into clinical guidelines.
 - a) The cost-effectiveness of short courses of more expensive antibiotics for the treatment of antibiotic-resistant diarrheal disease, specifically additional studies of short courses of ciprofloxacin for the treatment of *Shigella dysenteriae* and macrolides for the treatment of *Vibrio cholera*.
 - b) Studies are needed of the effectiveness of short courses of antibiotics for the treatment of pneumonia in complex emergencies. A 3-day course of amoxicillin was shown to be effective in non-emergency settings (Pakistan Multicentre Amoxicillin Short Course Therapy pneumonia study group 2002).
 - c) Development and field-testing of rapid diagnostic tests (e.g. antigen detection tests) for infection with *Vibrio cholera*, *Shigella dysenteriae* and malaria, and for determination of antibiotic susceptibility.

- d) Optimal antibiotic regimens for the treatment of infections (malaria, diarrhea, pneumonia) in malnourished children in complex emergencies.
 - e) Intermittent presumptive treatment of malaria in children has been evaluated in stable settings (Schellenberg 2001) but requires study in complex emergencies.
 - f) Methods to improve effective community adherence to retreatment of insecticide-treated nets.
 - g) Children in complex emergencies may not return for follow-up health care after an initial evaluation and effective antimalarial regimens that can be administered in a single encounter are highly desirable. The administration single or divided doses of sulfadoxine-pyrimethamine (when susceptible strains are prevalent) or mefloquine to children at high risk of not returning for follow-up requires further evaluation.
 - h) Operational research on the prevention of maternal-infant HIV transmission in complex emergencies.
 - i) Research on the prevalence, diagnosis and treatment of tuberculosis in children in chronic complex emergencies.
2. Guidelines for the care of children with severe disease in the absence of referral facilities should be evaluated.
 3. The development and evaluation of guidelines should be accelerated that address causes of child mortality in complex emergencies for which limited information is found in existing guidelines. For example, guidelines for the management of HIV infection in children should be made available. Importantly, research into the immediate causes of mortality in children in complex emergencies should be conducted, including investigations of the role of hypoglycemia and electrolyte abnormalities.
 4. The causes of neonatal deaths in complex emergencies should be determined. Simple guidelines should be developed and evaluated for the prevention of neonatal mortality in complex emergencies, including the prevention of hypothermia and hypoglycemia, proper skin and umbilical cord care, and recognition and therapy of infections.
 5. Better tools to assess mental health problems in children that can be applied across cultures need development and testing, based on the broad experience in evaluating children for posttraumatic stress disorder (Pfefferbaum 1997). Once valid tools are developed, the effectiveness of specific interventions to improve the mental health of children in complex emergencies should be evaluated. Guidelines for the prevention and detection of serious mental health problems in children in complex emergencies can then be developed. Mechanisms to minimize psychological trauma in children, such as ways to prevent children from being separated from their families and provision of safe play areas in refugee camps, should be part of the guidelines on the care of children in complex emergencies developed by the Ministries of Health.

In addition to the above research questions, several operational issues should be addressed to improve child health in complex emergencies:

1. Pilot projects are needed to assess the feasibility of developing guidelines for the care of children in complex emergencies by Ministries of Health in several countries at high risk of conflict or famine.
2. Much of the experience in caring for children in complex emergencies is not reported in published manuscripts but is found in the gray literature. An Internet repository for unpublished literature on child health issues in complex emergencies would provide access to these reports. A review of the gray literature may provide insights into ways to improve child health in complex emergencies not found in the published literature.

Appendix I

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Appendix II

List of Organizations Surveyed on Child Health Activities in Complex Emergencies

Action Contra la Faim
Aga Khan Foundation
Africare
American Red Cross
American Refugee Committee
CARE International
Catholic Relief Services
Christian Children’s Fund
Concern Worldwide
ECHO Health Services
ICDDR-B
International Committee of the Red Cross
International Federation of the Red Cross/Red Crescent
International Medical Corps
International Rescue Committee
Medecins du Monde
MSF-Belgium
MSF - USA
Mercy Corps
MERLIN
Samaritan’s Purse
Save the Children – UK
UNICEF
World Bank
World Relief
World Vision

Appendix III

Survey of Child Health Activities in Complex Humanitarian Emergencies

Name of Organization _____

Contact Person	Title	Telephone	Email

Activity	Date Completed	Comments
Letter of introduction sent		
Initial contact by phone		
Key informant identified		
Survey completed		
Guidelines received		
Guidelines reviewed		

Use the following codes:

- 1 = written guidelines exist and are implemented in emergencies
- 2 = written guidelines exist but are not implemented in emergencies
- 3 = in emergencies, use guidelines developed by another organization (specify)
- 4 = address condition or issue in emergencies but do not have written guidelines
- 5 = do not address condition or issue in emergencies

Child Health Activity	Code	Comments
Measles in children		
measles immunization		
case management guidelines		
vitamin A therapy		
Malaria in children		
prevention of malaria in children		
diagnostic guidelines		
Rx of uncomplicated malaria		
Rx of cerebral malaria		
Rx of severe anemia 2 ^o malaria		
Pneumonia in children		
diagnostic guidelines		
case management guidelines		
Rx of severe pneumonia		
nutritional supplementation		
Diarrhea in children		
case management guidelines		
home management guidelines		

Rx of severe dehydration		
nutritional management		
Cholera in children		
diagnostic guidelines		
case management guidelines		
Dysentery in children (Shigella)		
diagnostic guidelines		
case management guidelines		
Persistent diarrhea		
diagnostic guidelines		
case management guidelines		
nutritional management		
Meningitis in children		
meningococcal immunization		
diagnostic guidelines		
case management guidelines		
Tuberculosis in children		
BCG vaccination		
active case finding guidelines		
diagnostic guidelines		
case management guidelines		
HIV/AIDS in children		
diagnostic guidelines		
disease management		
prophylaxis against OI		
nutritional management		
Skin diseases of children		
skin diseases in general		
scabies		
Eye diseases of children		
eye diseases in general		
conjunctivitis		
Trauma, Injuries and Abuse		
trauma management guidelines		
burn management guidelines		
child and sexual abuse		
Emergency Resuscitation		
airway/breathing		
rapid fluid resuscitation		
Mental Health		
promotion of mental health		
Dx & management in child		
Dx & management in caretaker		

Malnutrition		
promotion of infant feeding		
Rx of severe malnutrition		
Rx of micronutrient deficiencies		
pellagra (niacin deficiency)		
Neonatal Health		
guidelines on clean/safe delivery		
prevention of neonatal tetanus		
management of asphyxia		
management of prematurity		
management of infection		
Public Health		
promotion of breast feeding		
routine childhood vaccination		
vitamin A supplementation		
Surveillance		
crude mortality in children		
measles in children		
cholera in children		
Tuberculosis in adults		
active case finding guidelines		
case management guidelines		

Appendix IV

Summary of Comprehensive Guidelines on Child Health in Complex Emergencies

Code

1 = detailed guidelines

2 = limited or brief guidelines

3 = refer to other guidelines

4 = not addressed

Child Health Activity	MSF	Oxfam	AAP	Sphere	IMCI
Measles in children					
measles immunization	1	2	1	1	2
case management guidelines	1	2	2	1	2
vitamin A therapy	1	2 & 3	2	1	2
Malaria in children	3				
prevention of malaria in children	2	2	4		2
diagnostic guidelines	2	2	4	2	1
Rx of uncomplicated malaria	1	3	4	3	2 & 3
Rx of cerebral malaria	1	3	4	4	1
Rx of severe anemia 2 ^o malaria	2	4	4	4	4
Pneumonia in children					
diagnostic guidelines	1	2	4	2 & 3	1
case management guidelines	1 & 3	3	4	2	2
Rx of severe pneumonia	1	3	4	4	2
nutritional supplementation	2	4	4	4	4
Diarrhea in children					
case management guidelines	1	3	2	2	1 & 3
home management guidelines	2 & 3	3	2	2	1 & 3
Rx of severe dehydration	1 & 3	3	4	4	1 & 3
nutritional management	3	4	4	2	4
Cholera in children					
diagnostic guidelines	1	2	2	2	4
case management guidelines	2	2 & 3	4	2 & 3	2
Dysentery in children (Shigella)					
diagnostic guidelines	1	2	2	2	2
case management guidelines	1	3	4	2	2
Persistent diarrhea					
diagnostic guidelines	4	4	4	4	1
case management guidelines	4	4	4	4	2 & 3
nutritional management	4	4	4	4	2
Meningitis in children					
meningococcal immunization	4	2	2	4	4
diagnostic guidelines	1	2	2	4	1
case management guidelines	1	2	2	4	2

Tuberculosis in children					
BCG vaccination	3	2	2	4	2
active case finding guidelines	3	2	4	4	4
diagnostic guidelines	3	2	2	4	4
case management guidelines	3	2	4	4	4
HIV/AIDS in children					
diagnostic guidelines	1 & 3	4	4	4	4
disease management	4	4	4	4	4
prophylaxis against OI	1 & 3	2	4	4	4
nutritional management	2 & 3	4	4	4	4
Hepatitis					
diagnosis in children	2	4	4	4	4
Anemia					
mild anemia	1	2	4	2	1
severe anemia	1	4	4	4	2
Skin diseases of children					
skin diseases in general	1	4	4	4	4
lice	4	4	4	4	4
scabies	1	4	4	4	4
Eye diseases of children					
eye diseases in general	1	4	4	4	4
conjunctivitis	1	4	4	4	4
Trauma, Injuries and Abuse					
trauma management guidelines	4	4	4	4	4
burn management guidelines	1	4	4	4	4
child and sexual abuse	4	4	4	1	4
Emergency Resuscitation					
airway/breathing	4	4	4	4	4
rapid fluid resuscitation	1	3	4	4	4
Mental Health					
promotion of mental health	4	2	1	2	2
Dx & management in child	4	2	1	2	4
Dx & management in caretaker	4	2	2	4	4

Malnutrition					
promotion of infant feeding	4	2	1	1	1
Rx of severe malnutrition	2	2	1	1	2
Rx of micronutrient deficiencies					
vitamin A deficiency	1	1	4	1 & 3	2
pellagra (niacin deficiency)	1	1	4	2 & 3	4
scurvy (vitamin C deficiency)	1	1	4	2 & 3	4
Neonatal Health					
guidelines on clean/safe delivery	4	4	1	2	4
prevention of neonatal tetanus	4	4	2	2	2
management of asphyxia	4	4	4	4	4
management of prematurity	4	4	4	4	4
management of infection	4	4	4	4	1
Public Health					
promotion of breast feeding	4	2	1	1	1
routine childhood vaccination	4	2 & 3	1 & 3	3	1
vitamin A supplementation	1	2	2	1	1
Surveillance					
crude mortality in children	2	1	2	1	4
measles in children	2	2	4	2	4
cholera in children	4	2	4	2	4

Appendix V

List of NGO Respondents for the Key Country Surveys

Afghanistan

World Vision International
International Rescue Committee
Medecins sans Frontiers
Aga Khan Development Network
International Federation of Red Cross and Red Crescent Societies

Angola

Action against Hunger
Medecins sans Frontiers
Africare

DRC

International Medical Corps
International Rescue Committee
MERLIN
World Vision International

Appendix VI

CHILD HEALTH IN COMPLEX EMERGENCIES
SURVEY OF KEY COUNTRIES

1. Name of Organization _____
2. Country _____
3. Name of Contact _____
4. Position _____
5. Telephone _____
6. Email _____
7. Additional Contacts within Organization

Name	Position	Telephone	Email

8. What are the child health problems in the emergency situation in which your organization works?
9. What are the major obstacles to improving child health in complex emergencies?
10. What are the strengths of your organization in caring for children in complex emergencies?
11. Is the health infrastructure adequate to implement the child health activities (e.g. referral facilities)?
12. What levels of health care worker are the major providers of care to children?
13. Are the human resources adequate to implement the child health activities?
14. What training is needed for staff to implement the child health activities?
15. What guidelines are used to care for children in complex emergencies? How are these guidelines disseminated and used by field staff?
16. What system of monitoring service performance exists (e.g. standard indicators)?

17. What system of surveillance exists for child health problems in complex emergencies? How is surveillance data shared with other organizations or the Ministry of Health?
18. What mechanisms exist to involve the family and community in improving child health in complex emergencies?
19. What mechanisms exist to coordinate childcare across different organizations in a complex emergency?
20. What is the role of the Ministry of Health in child health in complex emergencies?
21. What is the role of the World Health Organization in child health in complex emergencies?