Nutrition and Health Needs in Drought-Stricken Africa

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THE MAJOR HEALTH EMERGENCIES, that is, the chief causes of death or serious disability, appeared depressingly similar in the various countries. They were relatively more frequent in the areas of greatest food deprivation, particularly in refugee and other displaced populations. The most seriously affected group was the young children. In three new refugee camps in Sudan which I visited, more than half of all deaths during the first 6 weeks of camp operation were of children less than 5 years of age (465 of 916). The actual risk of dying (death rate) for children less than 5 was more than 4½ times as high as for older children or adults.

Initially, the major killer among the refugees and displaced persons has been malnutrition. Protein-energy malnutrition (less than 80 percent of the reference median weight-for-height) affected 25 to 52 percent of refugee children in Sudan in the period from January to March 1985. Malnutrition rates from 8 to 67 percent were found among displaced populations in Chad, while rates ranged from 8 to 18 percent in other surveyed areas in the Sahel.

The terminal episode in malnutrition is usually an infectious disease, but the fundamental cause of death is acute malnutrition. Those who are severely malnourished (less than 70 percent of the reference median weight-for-height or otherwise clinically diagnosed) are at highest risk of dying. In one refugee camp I visited in March, nearly one-quarter of the children (93 out of 408) classified as severely malnourished had died in the previous 2 months.

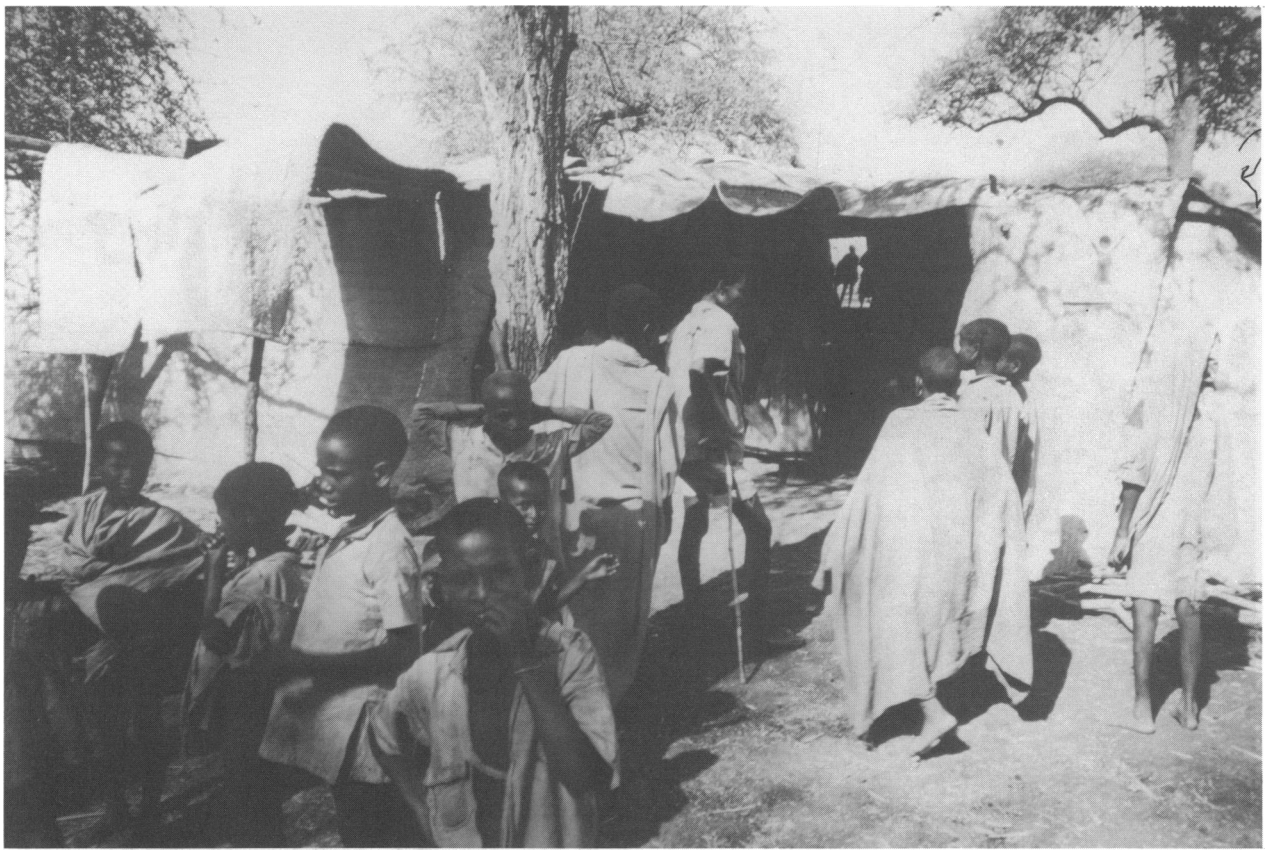
Though less clearly life-threatening, vitamin A deficiency has been extremely important in Sudan and probably in Ethiopia. Surveys among newly arriving Ethiopian refugees in Sudan found from 2 to 7 percent of the children to have clinical vitamin A deficiency. If untreated, this condition leads to permanent blindness. An insidious aspect of this deficiency for refugees is that blindness can be provoked by an infection, such as measles, which is more likely to be acquired under crowded camp conditions. Even more disturbing, blindness can be brought on by feeding the vitamin A deficient person a diet not containing that vitamin, since the increased metabolism resulting from the feeding causes the body's demand for the vitamin to increase rapidly.

Aside from malnutrition, two other risk factors have been extremely important in the displaced populations: crowding and poor sanitation. Both foster the rapid spread of infectious diseases, which more seriously affect malnourished persons.

The infectious diseases causing death were best identified in refugees in Sudan, but these illnesses have probably had similar relative importance in the other drought-affected populations. Indeed, they are the same few groups of diseases that cause the majority of deaths in developing countries in the absence of drought, although these diseases have been more frequent under famine and refugee conditions.

Diarrheal disease appears to be the major infectious disease killer, particularly of children. Watery diarrhea, of various infectious causes, has been the most common. In addition, in Sudan, bloody dysentery has also been important, perhaps more so than in some of the other countries. Diarrheal disease is both more prolonged and more severe in malnourished persons and leads to death more rapidly.

In several countries in the Horn of Africa, as well as in the West African Sahel, cholera has been an important killer. Cholera, despite its fearsome name, is a watery type of diarrhea and responds to the same management with oral fluids as do other watery diarrheas.



East African refugee camp in the spring of 1985

A very serious preventable killer in December and January 1985 was measles, a well-recognized, high-risk disease in malnourished persons. Precise figures are not available, but estimates by reasonable observers suggest as many as 40 percent of refugee children who contracted the disease in the border camps in Sudan died. In addition to the acute complications of the disease, measles often precipitates a vicious cycle of prolonged diarrhea and increased malnutrition. Even under nonfamine conditions, measles is a serious disease in Africa, killing from 2 to 8 percent or more of infected children.

Respiratory disease, particularly pneumonia and probably whooping cough, has been another important cause of death in refugees in Sudan, as it is in malnourished persons (and even in better nourished children) in other developing countries.

Malaria appeared to be less of a problem in the drought-affected populations than in other parts of Africa, at least before the rains began. I do not have information on this disease from the last 2 months. Presumably, the risk has increased in those areas where the rains have come and mosquito populations have increased. Where refugees have come from nonmalarious areas, such as the highlands of Ethiopia, to malaria-endemic areas, the risk of severe, even fatal, infection is increased.

There are several other noteworthy diseases which have had either a more localized or a quantitatively smaller impact but which have caused special concerns and management problems. Among these has been meningitis in Sudan, which was controlled very promptly by an effective vaccination campaign organized by the Sudanese authorities. Typhus and relapsing fever have been significant problems in camps in Ethiopia. Several specific vitamin deficiency diseases, other than vitamin A deficiency, have also appeared. Scurvy (vitamin C deficiency) in particular has been a problem in some areas. Tuberculosis has been a nagging management problem in many camps because of its lengthy treatment regimen. Fewer cases of tuberculosis are involved than are other life-threatening diseases, and the clinical requirements of managing individual cases makes tuberculosis treatment a lower priority in the emergency phase of famine and refugee relief.

These various diseases were the major causes of death or serious disability, listed in the order of estimated importance, at least for Sudan. Most of

Refugee camp children in eastern Sudan, March 1985

the conditions are preventable or treatable. In the current emergency, several of the conditions with the most serious impact may not have received the priority at the beginning which, in retrospect, they deserved from the international relief community. Several lessons can be learned.

Emergency Health Requirements

The first and foremost health requirement during the emergency phase of the famine and refugee crisis is food: appropriate food in adequate quantities, equitably delivered in a timely manner. Physicians, nurses, medicines, and hospitals are distinctly not the first priority for a starving population. Food is the specific "drug" against malnutrition.

There are three components of the food response to severe malnutrition: the general ration, supplementary feeding, and therapeutic feeding.

The basic emergency relief intervention is the general food ration of at least 1,800 calories per person per day for maintenance, more than that for recovery. Beyond mere calories, the ration must contain adequate proportions of fats and protein. The basic ration will help sustain those who are not already severely malnourished.

Supplementary feeding (additional high-energy prepared food provided directly to the person at a feeding station) is required for those already somewhat malnourished. Intensive therapeutic feeding (a full balanced diet of prepared high-energy food fed to the individual throughout the day at a feeding station) is required for those who are severely malnourished. Both of these special feeding programs require the allocation of considerable resources, an experienced nutritionist, and a significant level of organization and coordination. But they are lifesaving measures and must be considered among the top relief priorities for malnourished populations. The need for these feeding services can be anticipated in advance if there is some idea of the prevailing level of malnutrition.

For reasons discussed previously, measles prevention through immunization is an absolute top priority for children in malnourished populations, especially for those in refugee camps or displaced person settlements. Immunization of all previously unvaccinated children 9 months to 59 months of age (or sometimes older, depending on the local

epidemiologic conditions) is critical, and should be done as soon as possible after arrival at a camp, in order to avoid the type of measles epidemic experienced by the new refugees in Sudan this year. In addition to the actual immunization, a record of the procedure must be provided to the individual to facilitate followup immunization programs. The need for measles vaccine, vaccination equipment, cold chain (appropriate storage and transport equipment for vaccine), and the necessary logistical support must be anticipated in relief efforts.

Another of the top priorities in the current refugee and displaced person emergency, at least in eastern Africa, has been vitamin A prophylaxis on nearly a population-wide basis. Convenient to use, vitamin A capsules of 200,000 IU should be given to all children on admission to a camp and subsequently distributed every 6 months in order to prevent blindness from vitamin A deficiency. (Actual clinical cases detected during screening need larger, therapeutic doses.) If symptoms of vitamin A deficiency are known to exist in even as few as 2 percent of the population of the drought-affected area, the need for vitamin A, and a system for its mass distribution must be anticipated.

The other major emergency health requirement which is essential in virtually all drought and refugee emergencies, is control of deaths due to diarrheal disease through oral rehydration therapy (ORT). This simple treatment is the principal diarrheal disease control measure and is aimed at preventing dehydration and death caused by diarrhea rather than the diarrhea itself. Supplies of prepackaged Oral Rehydration Salts (ORS) are required, as is a system for ORT implementation. The need for an ORT program can be anticipated and supplies of ORS can be pre-positioned.

In addition to the four most basic emergency health requirements, food plus feeding programs, measles immunization, vitamin A prophylaxis, and oral rehydration therapy, there are three other essential provisions for refugees and displaced persons: water of adequate quantity and quality, shelter, and sanitation. To assure the best application of these various requirements, two management factors are essential: first, early rapid nutritional and health needs assessment and, second, commitment by the "hands on" relief agencies of sufficient human resources to assure the emergency preventive and control services. In addition, all relief activities must conform to, or at least not conflict with, national policy.

Early rapid assessment by experienced public health professionals is necessary to determine the size and composition of the population at risk, to identify special high-risk subgroups, and to determine the level of malnutrition, the major local health risks, the water and sanitation needs, and the types of health activities most required. This information is essential for setting priorities; for assuring that the most critical needs are addressed first; for estimating the quantities of food, supplies, and services required; and for reducing the amount of inappropriate relief activities. In short, the rapid assessment, followed by continued monitoring, is needed to improve management of the relief efforts.

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In drought-affected areas without refugee or displaced person camps and where the level of famine impact is unknown, early rapid assessment of the nutritional status and the health needs of the population is critical to estimating the degree of current and impending problems and to instituting timely and appropriate interventions.

The other requirement is the commitment by the "hands on" relief agencies of a sufficient proportion of their health resources to the major lifesaving preventive and control activities. There has been a tendency to respond to the refugee and displaced person emergencies with clinical services, doctors and nurses, field hospitals, outpatient clinics, medicines and so forth, at the expense of the more vitally needed and more effective preventive and control activities.

In two of the refugee camps I visited, which at the time were still seriously understaffed, and in which malnutrition was at about the 30 percent level, approximately two-thirds of the expatriate health professionals worked in either hospital or outpatient care. Yet after 2 months of camp operations, 74 percent of all deaths still occurred outside the hospital. Meanwhile, the supplementary and therapeutic feeding services had insufficient facilities. The camps had more than 1,500 malnourished children each but had only one feeding specialist per camp. Only about half of the registered, severely mal-

nourished children, the group at highest risk of death, participated in the feeding program. At the same camps, the public health services were also relatively understaffed but were responsible for immunizations, disease and death surveillance, communicable disease control activities, home visits and followup, bringing defaulters back for therapeutic feeding, and so on. These camps were not unique. In fact, they were rather typical in terms of the excessive emphasis on clinical, curative medicine.

Summary

Many of the conditions no doubt have already improved in those areas where international relief efforts are under way. The comments made here are based on observations by my colleagues and myself during the emergency phase of the famine and refugee crises and perhaps should be considered more as lessons learned that are better applied to newly emerging situations than to those relief efforts already in progress. In summary, the highest priority emergency health requirements identified during the current crisis have been, in my opinion, the provision of food and supplementary and therapeutic feeding, measles immunization, vitamin A prophylaxis, and oral rehydration therapy, plus the two management issues—rapid needs assessment with continued monitoring and adequate allocation of resources to prevention and control activities.

One final note—from discussions with colleagues who were involved in the 1973–74 drought and famine in Africa, this crisis appears to be a repeat. A comprehensive, long-term approach would be beneficial so that these emergency responses are no longer necessary.

Introduction of a Microcomputer for Health Research in a Developing Country—the Bangladesh Experience

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Synopsis

In November 1984, a powerful microcomputer was taken to Dhaka, Bangladesh, to aid health professionals at the National Institute for Preventive and Social Medicine (NIPSOM) in processing and analyzing locally derived health data. It was anticipated that this installation and an accompanying workshop on the analysis of health, population, and family planning data by microcomputer would enable the faculty at NIPSOM to share the results of their research with other public health and medical colleagues, provide administrators with timely analyses for policy or program implementation, and assist with internal management of information essential to the workings of the institute.

This paper provides (a) a brief overview of NIPSOM and its recognized need for computing assistance, (b) a brief description of the 2-week workshop, (c) a description of the assembled software and hardware, and (d) a summary of the experience and the various problems encountered in bringing the computer to Dhaka and in teaching its use to educated health professionals with no prior computer contact.

WHEN ATTEMPTING TO UNDERSTAND the etiology of some disease condition, medical researchers in technologically less developed nations often find that accumulated data cannot be properly analyzed by available manual methods. Computers for automated processing and analysis of data have generally not been available to health workers in many of the poorer nations. When researchers in these countries have had funds available to buy a computer, they have often found the computer to be difficult to