

## CHAPTER 9.

# FOOD AND NUTRITION

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The nutritional status of a population depends on the availability of food, its consumption, and its biological utilization. A natural disaster may affect the nutritional status of the population by affecting one or more components of the food chain depending on the type, duration, and extent of the disaster, as well as the food and nutritional conditions existing in the area before the catastrophe.

Slow-onset disasters such as drought are more likely to affect long-term nutritional status than sudden-onset disasters such as earthquakes and hurricanes. Not all sudden-onset disasters produce food shortages severe enough to cause harmful changes in the nutritional status of the population. The effect of any type of disaster on the nutritional status of the affected population is never immediate. Large-scale food distribution is not always an immediate relief priority, and its long-term implementation may, in fact, produce undesired effects.

To plan and implement successful food relief operations, nutrition workers responsible for humanitarian operations must be familiar with the possible nutritional outcomes of specific types of natural disasters, as well as the food and nutrition situation in the affected area prior to the disaster. A nutrition officer trained in emergency management must be part of the disaster planning and response teams.

The immediate steps for ensuring that a food relief program will be effective include: (1) assessing the food supplies available after the disaster; (2) gauging the nutritional needs of the affected population; (3) calculating daily food rations and needs for large population groups; and (4) monitoring the nutritional status of the affected population.

### EXPECTED CONSEQUENCES OF DISASTERS ON THE FOOD CHAIN

Hurricanes, floods, land- or mudslides, volcanic eruptions, and sea surges directly affect food availability. Standing crops may be completely destroyed, and seed stores and family food stocks may be lost, especially if there is no warning period. Volcanic eruptions can cause widespread crop destruction: food crops may be burned, defoliated, and buried under ashfall; reduced photosynthesis resulting from ash clouds limits subsequent production.

Earthquakes, on the other hand, generally have little direct impact on the long-term total availability of food. Standing crops are unaffected, and food stocks can often be salvaged from family, wholesale, and retail stores. However, temporary food problems may result as a consequence of the breakdown of the transportation

and marketing systems. If an earthquake strikes during a labor-intensive period such as harvest, the loss of labor from death or its diversion from agriculture may cause short-term scarcities.

The most likely consequence of any kind of sudden-impact disaster will be the disruption of transportation and communications systems and upheavals in routine social and economic activities. Even when food stocks exist, they may be inaccessible due to disruptions in the distribution system or the loss of income with which to buy food. Destruction of cash crops also will have an effect on the economy of families. When destruction of a greater magnitude occurs, leading to the death of livestock and the loss of crops and stored foodstuffs, the short-term dilemma can leave a more severe, long-term crisis in its wake. Moreover, evacuation and resettlement of communities during the post-disaster period are often necessary, creating foci in which total food supplies will have to be provided for the duration of the encampment. Hospitals and other institutions may require emergency food supplies as well. Livestock may have to be sacrificed if they cannot be fed, and they are likely to die when vast tracts of land are flooded for long periods. While the meat can be used immediately for distribution among the affected population, or salted for later distribution, in the long run it results in food and economic shortfalls.

The effect of disasters on the biological utilization of food, that is, intestinal absorption and subsequent utilization of nutrients, is indirect, and dependent on factors such as the impact of the disaster on the environment, particularly on water supply and sanitation. This is an issue of concern, particularly in regard to gastrointestinal infections since they affect the absorption of nutrients. Other infectious diseases increase the demand for nutrients. These effects are more likely to occur among the young and vulnerable groups. If there is an increase in under-nutrition rates among young children soon after a disaster, it will most likely be the effect of gastrointestinal illness rather than actual food shortages. This is something to keep in mind in the implementation of surveillance mechanisms. Outbreaks of infectious diseases are uncommon after natural disasters, especially in the Americas.

## **POSSIBLE ADVERSE EFFECTS OF LARGE-SCALE FOOD DISTRIBUTION**

The decision to distribute large amounts of food, although made at the political level, should be based on the most accurate information available. If unnecessarily large quantities of food are brought into an area, this may hinder recovery. Food distribution requires transport and personnel that may be better employed in other ways, and small farmers may face hardship due to depressed market prices. Perhaps the most serious side effect is that maintaining a population by free food distribution, if not accompanied by essentials such as seeds and tools needed to restart the local economy, may create dependence on relief.

## **SETTING PRIORITIES**

The priorities in alleviating food problems are to: (1) supply food immediately where there appears to be an urgent need, namely to isolated populations, institu-

tions, and relief workers; (2) make an initial estimate of likely food needs in the area, so that steps can be taken toward procurement, transport, storage, and distribution; (3) locate or procure stocks of food and assess their fitness for local consumption; and (4) monitor information on food needs so that procurement, distribution, and other programs can be modified as the situation changes.

## IMMEDIATE RELIEF

During the first, usually chaotic, days after a disaster strikes, the exact extent of the damage is unknown, communications are difficult, and the number of people affected seems to double by the hour. Food distribution must start as soon as possible to keep people fed, rather than prevent clinical malnutrition. Given the large variety and small stocks of commodities sent in as aid by governments, agencies, private organizations, and individuals, however, food distribution is initially a day-to-day exercise. Planning nutritionally sensible food rations during this period is impossible. What matters during this “chaotic stage” is to provide a minimum of 6.7 to 8.4 Megajoules (1,600 to 2,000 kcal) per day, per person.

As an immediate relief step, available food should be distributed in sufficient quantity to any group that is at high risk or appears to be wanting, to ensure survival for one week (3 or 4 kg per person). Food may be included automatically, for example, in supplies sent to communities isolated by earthquake or displaced by flooding. Where fuel shortages are likely, it may be better to distribute cooked food such as boiled rice or bread rather than dry food.

No detailed calculations need be made of the precise vitamin, mineral, or protein content of the food distributed in the initial phase, but supplies should be acceptable and palatable. The most important thing to be provided is sufficient energy. If no other items can be obtained, distribution of a cereal alone will be sufficient to meet basic nutritional requirements. When a population can find some of its own food, it may be possible to supply only part of the ration, or one food item that complements the basic or staple food lacking in their available supplies.

## ESTIMATING FOOD REQUIREMENTS

As soon as possible after a disaster, a rapid assessment of the food and nutrition situation should be made to get a rough estimate of likely bulk food items needed. This is based on the population affected, its composition, distribution (for example, isolated villages, refugee camps), and locally available foods. This will enable managers to take the necessary steps to locate and procure stocks, storage, and transport. Hoarding is not uncommon and leads to over-response.

In the absence of detailed information, an estimate of food requirements must be based to some extent on judgment in the light of the initial assessment, but it should take into account the following factors: (1) the probable effect of the disaster on food availability (e.g., a tsunami may have destroyed all household supplies); (2) the approximate size of the population affected; (3) normal food supply and variations within the area (e.g., the approximate percentages of the population who are subsistence farmers and those who depend wholly on purchased food); and (4) the impact of seasonal factors. In subsistence areas just before the harvest, for instance,

household and traders' stocks may be depleted and the population may be more dependent on the market.

The nutrition officer should prepare estimates of foods on the basis of a family unit (usually considered to consist of five people) for one week and one month. Logistically, food distribution on a family basis for one month may be considered the most practical approach. The nutrition officer also should prepare estimates of commodities required by large population groups, for instance, on the basis of 1,000 people for one month. Two simple and useful rules of thumb are: (1) 16 metric tons of food sustain 1,000 people for one month, and (2) to store one metric ton of food, about two cubic meters of space are needed. Proper storage is extremely important to avoid food losses due to rain, pests, or looting.

When calculating the composition of daily rations, the following points should be kept in mind: (1) the ration should be kept as simple as possible; (2) to facilitate storage and distribution, nonperishable food commodities that are not bulky should be chosen; and (3) substitution of items within food groups should be allowed for.

The food ration should be based on three food groups: a staple, preferably a cereal; a concentrated energy source such as a fat; and a concentrated source of protein, such as salted or dried fish or meat. In practice, the diets will be dictated by the availability of ingredients. A standardized ration may be impractical as availability will change daily and according to areas.

Whenever possible, vulnerable groups should receive a food supplement in addition to the basic diet. Among these groups we include children under 5 years old, who are growing very fast and may suffer permanent damage if malnourished, and pregnant and lactating women, who require more nutrients. Breastmilk is the best food for infants under six months of age, and Health Disaster Coordinators should not allow the emergency situation to become an excuse for flooding the country with infant formula.

## **PROCUREMENT**

If the calculated amount of food required exceeds immediate local availability, and if it is anticipated that food will have to be distributed for several months, steps must be taken to obtain food from elsewhere in the country or abroad. A rough estimate of local food transport requirements should also be made for this contingency.

Food for the initial emergency distribution phase should be obtained from national government or wholesaler stocks, or from bilateral or international development agencies (e.g., World Food Program, NGOs).

If large quantities of food are required from abroad, procurement and shipping may require several months. Approaches to suitable agencies should hence be made at the earliest possible date. It is critical that Health Disaster Coordinators advise potential donors of the eating habits and preferences of their populations. Food not eaten is of no nutritional benefit.

The need for special infant foods ("baby foods") immediately after disasters is often exaggerated. Improving maternal nutrition and assisting mothers economically is more cost-effective and safer than airlifting strained baby foods. Since vitamin requirements are of little concern during the acute emergency phase after

sudden-impact natural disasters, multivitamin tablets should not be requested as a separate relief item. The population's specific vitamin and mineral needs will have to be assessed for the long-term.

## **SURVEILLANCE**

If long-term food supply problems seem likely, as in areas with subsistence agriculture and poor communications, the nutritional status of the community should be monitored. This can be accomplished by making regular physical measurements of a suitable sample of the population. Since young children are the most sensitive to nutritional changes, the surveillance system should be based on them, remembering that the most serious malnutrition results from an acute exacerbation of chronic under-nutrition. In emergency situations, weight-for-height will provide the best indicator of acute changes in nutritional status. If height and weight cannot be measured, arm circumference, which is simple and easy to measure, may be used to gauge changes in communities.

As the results of the first needs assessments become available, more accurate information will make it possible to adjust preliminary estimates of the proportion of the population most in need of long-term food distribution. Surveys of need should make sure to cover not only food availability, but also identify areas where problems of labor, tools, marketing, and other variables affecting distribution have arisen. As soon as an area is able to return to normal consumption patterns, distribution should be phased out.