Chapter 8
Nutritional emergencies

Purpose of assessment

The purpose of a rapid nutrition assessment is to:

- establish that a nutritional emergency or the risk of a nutritional emergency exists;
- identify the main causes of the emergency, estimate its severity and geographical extent;
- assess its likely evolution and impact on health and nutritional state;
- identify the areas and the socioeconomic groups most affected or at risk;
- assess existing response capacity and identify the most effective measures to prevent or minimize the nutritional emergency; and
- establish or expand existing surveillance, so that the effectiveness of measures taken can be monitored over time.

Background

The existence of a nutritional emergency should be considered whenever a population has reduced access to food, associated with actual or threatened increases in morbidity and mortality.

In most instances, a food emergency is not an acute event, but one that develops over time. Early signs ("leading indicators") such as decreased rainfall can appear before access to food is reduced. At a later stage, there are indications of diminished access to food (for example, low food supplies and an increase in prices "intermediate indicators"). Actual weight loss, mortality, and population migration usually occur at a relatively late stage in a nutritional emergency ("trailing indicators").

For the rapid assessment to be useful in a response, it must be sensitive to the signs of the famine's various stages: for example, occurrence of precipitating factors, implementation of coping strategies, destitution, migration, and epidemic mortality and morbidity

Patterns of work and climate such as exposure to cold also affect food requirements and related mortality, and should also be considered in the assessment.

Information on a potential nutritional emergency may come from a range of sources: a famine early warning system, health or other government officials, and nongovernmental organizations. Therefore, it is essential to carry out a rapid assessment to confirm or refute these initial reports.

The rapid assessment should not take longer than four to seven days. By comparison, a more thorough assessment requires between two and three weeks, because it includes large-scale, population-based surveys. It is most effectively carried out as a team effort, with specialists' input on food logistics, agriculture, and health.

Preparedness

This type of assessment must always be carried out, or at least closely supervised by a professional nutritionist, who should be identified in advance. Health workers should be routinely trained to carry out a rapid nutrition assessment according to standard guidelines which should be ready for use by all organizations. They should specify such information as anthropometric indicators, reference standards, cut-off points, and intervention criteria.

Essential equipment should be easily available (e.g. weighing scales, height boards, MUAC tapes, and pocket calculators).

Conducting the assessment

The rapid assessment consists of:

— confirming the first information (is there a nutritional emergency?),
— identifying the main causes;
— assessing the severity of the problem;
— identifying measures to minimize or prevent the emergency; and
— ensuring monitoring and surveillance.

Confirming the first information: is there a nutritional emergency?

Look for any of the signs listed below.

- Indications of ongoing nutritional emergency:
  — problems with access to food;
  — deteriorating nutritional status; and
  — obviously elevated mortality.
- Indications of nutritional risk:
  — rumours of famine and malnutrition;
  — drought or flooding;
  — information on excessive sale of animals, household items, and wood;
  — consumption of crisis food;
  — major pests affecting crops or livestock;
  — seasonal stress (e.g. pre-harvest gap, "lean season");
  — declining food stocks at household, district, and national levels;
  — rising market prices;
  — disruptive conflicts;
  — major displacements of population; and
  — history of previous famines

Identifying the main causes

The points below should be considered when identifying the main causes:

- types and quantities of food available at household, community and district (or national) level;
- availability of staple foods in local markets and prices (What staple foods are available? Have prices increased or decreased or stayed the same?);
- current and predicted availability of local crops;
- existence and size of household food stores, household gardens;
- purchasing power (e.g. income from labour or sales of assets);
- employment;
- availability and cost of other key commodities (e.g. water, fuel);
- access to land;
- availability of seed, fertilizers, etc.;
- recent migrations (inwards, outwards);
- food distribution (how frequent, date of last distribution, how much food, estimated caloric content per person, what types?); and
- inaccessible areas, logistic bottlenecks.

Assessing the severity of the problem, the geographical extent, and the socioeconomic groups at risk

In making this assessment, the following information should be gathered:

- occurrence of epidemics or endemic diseases;
- coverage by health systems and programmes;
- environment, water, sanitation and food safety;
- patterns of settlement; displacement, shelter, and clothing;
- changes in work patterns and sources of household food supplies: percentage of household income being used on food; and
- signs of family disruption, violence, abandoned children and elderly, interruption of breast-feeding, and decrease in school attendance.

Assessing children's nutritional status

Increased mortality in nutritional emergencies is most likely related to malnutrition, an expected outcome of acute food deficits, communicable diseases, and environmental exposure. Because these effects are more readily detected in children, rates of acute or recent child malnutrition can be used to indicate mortality risk.

Clinical assessment

Always assess for kwashiorkor (oedema) which is classified as "severe malnutrition". If sufficient expertise is available, assess for signs of deficiency of vitamin A (xerophthalmia), B1 (beriberi), niacin (pellagra), iron, and other micronutrient deficiencies, as these frequently occur in famine-affected populations. These may require biochemical (laboratory) confirmation.

Anthropometric assessment

Child malnutrition can be most easily assessed by measuring weight-for-height, of a representative group of children. Mid-upper-arm-circumference (MUAC)

and arm circumference for height (QUAC) can also be used. Weight-for-age should not be used because it may reflect the low height-for-age associated with chronic malnutrition.

Weight-for-height is used extensively and is more accepted as an indicator of acute malnutrition, but it requires both weight and length measurements, and the equipment is heavy.

Mid-upper-arm-circumference is quick to measure, relates well to mortality risk and is appropriate for identifying severely thin children. However, it is poorly related to weight-for-height, requires care in measurement, and is a poor tool for surveillance and monitoring of nutritional change over time.

Arm circumference for height directly relates to the nutritionally significant tissues, lean body mass, and fat mass. It is quick and easy to perform. It is usually parallel to weight-for-height but the correlation may vary according to ecological conditions.

Assess adult nutrition in a subsample

While assessing adult nutrition along with child nutrition is still not widely practised, it makes it possible to distinguish communities with an overall chronic dietary energy deficit (where generalized feeding is necessary) from ones in which only young children are affected. In the latter case the deficit may be due to widespread infections or to young child feeding practices (therefore, nutrition education is needed). Adult nutrition is measured in terms of the body mass index, i.e. weight in kilograms/(height in metres)^2. The accepted lower limit of normal in terms of the body mass index for adult men and women is 18.5.

Strategies for collection

Review existing data, consult hospital registers, etc. Interview community leaders, etc. (see Chapter 1).

One approach for gathering information is to carry out a nutrition survey of a sample of children between six months and five years of age (between 65 centimetres and 110 centimetres in height). Depending on the time available, and the size and dispersion of the population, this is also an opportunity to collect baseline data on immunization status and childhood mortality in the past month. Annex 2 shows reference values for rapid health assessment in developing countries.

Care should be taken when interpreting anthropometric survey findings. Although a malnutrition rate may be useful in confirming the severity of a food emergency, it must be complemented by other data (see above).

Assess child mortality and morbidity

Information on the recent mortality of young children (e.g. in the past month) is a useful indicator of the severity and duration of food shortfalls.

Mortality and morbidity information is also helpful for targeting immediate public health interventions. For instance, if deaths have been due to diarrhoea or measles, what proportion of mortality is in neonates?

Information on mortality and morbidity is essential for correct interpretation of the findings of a nutrition survey. If high mortality among nutritionally vulnerable children occurred in the preceding month(s), then it is quite possible that many of the more malnourished children have died and a low malnutrition prevalence will be observed in a survey of the survivors.

This information can be gathered from community leaders, burial records, and cemeteries, or collected during a survey of households.

Measuring the nutritional status of a population

Anthropometric surveys allow us to quantify the severity of the nutritional situation at one point in time, which is essential to help plan and initiate an appropriate response.

The prevalence of malnutrition in the 6–59-month age group is used as an indicator for nutritional status of the entire population, because:

— this subgroup is more sensitive to nutritional stress; and
— interventions are usually targeted to this group.

To ensure that the estimate will be representative of the whole population, random, systematic or cluster sampling procedures must be used.

During the survey, the nutritional status of individual children is assessed, prevalence of malnutrition is then expressed as the percentage of children moderately and severely acutely malnourished. It is very important to mention:

— the indicator (weight-for-height, oedema, MUAC, QUAC);
— the method of statistical description (% of the median, Z-score); and
— the cut-off points used.

Results should always be expressed as the percentage of children Z-score <-2 and Z-score <-3 and/or with oedema, to allow international comparisons as well as for statistical reasons.

However, it also might be necessary to express the results using a different classification system, if that is the method generally used in the area in which you are working.

The definitions of malnutrition for the different indicators are shown in Table 6.

The preferred method of assessment in children is by weight-for-height, and in adults by body mass index (see above).

Mid-upper-arm-circumference (MUAC) is an often-used anthropometric indicator. Formerly one cut-off level was considered usable for children aged from six or twelve months up to five years. But there is an average increase of about 3 centimetres in arm circumference over this time. WHO and the Centers for

Table 6. **Definitions of malnutrition**

	Malnutrition	*Moderate malnutrition*	*Severe malnutrition*
Children aged 0.0–59.9 months	WFH Z-score < -2 or $<80\%$ median WFH or MUAC <12.5 cm and/or nutritional oedema	WFH $-3 \leq$ Z-score < -2 or 70–79% median WFH or 11.0 cm $\leq$ MUAC <12.5 cm	WFH Z-score < -3 or $<70\%$ median WFH or MUAC <11.0 cm and/or nutritional oedema
Children aged 5.0–9.9 years	WFH Z-score < -2 or $<80\%$ median WFH and/or nutritional oedema	WFH $-3 \leq$ Z-score < -2 or 70–79% median WFH	WFH Z-score < -3 or $<70\%$ median WFH and/or nutritional oedema
Adults aged 20.0–59.9 years	BMI <17 and/or nutritional oedema	$16 \leq$ BMI <17	BMI <16

WFH = weight-for-height.
MUAC = mid-upper-arm circumference.
BMI = body mass index.

Disease Control and Prevention, Atlanta, USA, have prepared reference values for mid-upper-arm circumference for age, and also for height. In the field, it is sometimes difficult to determine age precisely and therefore determining approximate nutritional status by arm circumference for height is more feasible. A QUAC stick that gives reference values for arm circumference in terms of height is available for the management of nutrition in major emergencies.

However, the risk of measurement error is very high; therefore MUAC is used only for quick screening and rapid assessments of the nutritional situation of the population to determine the need for a proper weight-for-height random survey.

Assessing local response capacity

In order to respond promptly to food emergencies, it is important to identify local programmes and services that can be expanded quickly, and those technical, managerial and logistic gaps that need to be filled to support these efforts.

It is essential to identify a full range of response options, including supportive public health interventions, such as improved access to clean water and strategies that increase purchasing power if food is available but too costly for the affected population.

In many situations, a community will temporarily extend assistance to those who have migrated from other areas. The information collected should help guide the decision as to whether to extend food or other assistance to both settled and displaced populations, or to target only the displaced who can be expected to be the most vulnerable. Care should be taken to avoid discrepancies in food supply or access to health services between the displaced and settled host populations.

General response

A rapid assessment should gather at least enough information from the affected community to answer the following questions.

- Are the affected communities able to cope with their own resources, considering the access to food and the prevailing health situation?
- If not, what would be the possible interventions (for the immediate, medium, and long term)?
- What would be the key technical, managerial, logistic, and material requirements for each approach?
- What are the main constraints? What is needed to overcome them?
- What nutrition-supportive health measures should be implemented immediately?

Technical capacity

- What is the national-level capacity for deciding on food distribution requirements and rations?
- Are there experienced people locally available to carry out food distribution?
- Can health coverage be expanded to offset the increased hazards? Are there outpatient or mother and child health (MCH) clinics whose nutrition functions could be expanded?
- If so, are local health workers trained to detect and manage malnourished children, including those with important vitamin or mineral deficiencies?
- Are there trained health workers or traditional birth attendants who could take a role in ensuring MCH or nutrition coverage or both of the affected population?
- Is there a person or organization experienced in setting up MCH or nutrition outreach programmes or both in the past who could assist in establishing them in the affected communities?
- Is any selective feeding being undertaken? (Are guidelines being followed? What is the caloric content of meals provided?)

Availability of food stocks

- What is the food availability (amount and types) at central and subnational levels?
- Which food commodities are in the pipeline?

Logistics and managerial capacity

- What is the condition of road, rail, and boat access to the affected population (e.g. sealed roads, access in rainy season, air access, and security)?
- Are there facilities that could serve as warehouses? (What is the storage capacity? Is there adequate physical infrastructure?)
- What can be done to identify and register families in need of food assistance (e.g. through community leaders, church groups, and official registration procedures)?
- What access is there to radio communication between local, subnational, and central levels?

Public health response capacity

(See Chapter 7)

- Have the people left their home? Have they gathered in camps?
- How congested is the settlement? How many people per shelter?

- Is water available? In what quantity and quality? What is the source? How much does it cost?
- What are the sanitation arrangements?
- Are there trained water or sanitary engineers locally available?
- Where is the nearest vaccine store? Is it easily accessible? Are there trained vaccinators in the area? Is cold chain equipment available?

Identifying measures to minimize or prevent the emergency

Having identified the causes of the suspected famine, assessed its severity, and determined the local response capacity, it should be possible to identify measures to minimize or prevent the emergency.

- Determine the need for food distribution, e.g. what would be the type and quantity required for general or selective food distribution.
- Identify other non-ration options that would improve the nutritional status in areas where food is available but too costly for the population, e.g. create jobs through public works and improve access to water.
- Identify options for technical support (e.g. a qualified organization or individual to assist health workers in the affected population to improve the quality of selective feeding and early detection of malnourished children).
- Outline possible public health responses. These responses should benefit both the local population and possible displaced persons (e.g. by strengthening immunization and cold chain capacity of the affected area).

Ensuring monitoring and surveillance

It is necessary to ensure monitoring and surveillance of both the situation and any actions taken to remedy it.

- Collect information on existing systems for famine early warning, including nutritional status and epidemiological surveillance or surveys.
- Make recommendations for improvement ("filling the gaps").

In carrying out monitoring and surveillance, remember to:

— compare results of nutritional status surveys (using same criteria);
— look at data on nutritional deficiencies (morbidity data) in hospitals, health centres, and communities;
— monitor food distribution programmes, including number of calories per person per day (food basket surveys);
— monitor the number of admissions in the therapeutic feeding centre per week or month;
— monitor the percentage of children discharged from the therapeutic feeding centre: % of cured, % of dropouts, and % of deaths; and
— monitor the root causes identified by the assessment.

Implementing the selective feeding programme

Even if the overall food needs of a population are adequately met, inequities in the distribution system, disease, and other social factors may cause high degrees of malnutrition in certain vulnerable groups. Vulnerable groups may be targeted to receive a food supplement to upgrade their diet to a level that responds to their

Table 7 **Deciding on nutritional needs**

Finding	*Action required*
Food availability at household level below 2100 kcal (8.79 MJ)	Unsatisfactory situation • Improve general rations until local food availability and access can be made adequate
Malnutrition rate[a] 15% or over or 10–14% with aggravating factors[b]	Serious situation • General rations (unless situation limited to vulnerable groups), plus: – supplementary feeding generalized for all members of vulnerable groups (especially children, and pregnant and lactating women), – therapeutic feeding programme for severely malnourished individuals.
Malnutrition rate[a] 10–14% or 5–9% plus aggravating factors[b]	Risky situation • No general rations, but – supplementary feeding targeted to individuals identified as malnourished in vulnerable groups; – therapeutic feeding programme for severely malnourished individuals
Malnutrition rate[a] under 10% with no aggravating factors[b]	Acceptable situation • No need for population interventions. • Attention to malnourished individuals through regular community services.

Notes
The above are only general indications. The best way to ensure that the nutritional needs of young children and other vulnerable groups are met is on a case-by-case basis, taking account of the particular local (including sociocultural) circumstances.
[a] Malnutrition rate: proportion of child population (aged six months to three or five years) who are below median −2 SD or 80% of reference value of weight-for-height.
[b] Aggravating factors:

- — general food ration below the country-specific mean energy requirement,
- — crude death rate >1 per 10 000 per day;
- — epidemic of measles or whooping cough;
- — high prevalence of respiratory or diarrhoeal diseases.

increased needs. Those that are already acutely malnourished must receive medical and nutritional attention to rehabilitate them to a healthy state. Table 7 can be used to help interpret the seriousness of the situation (it is intended as a guide, not as a set of rules).

Presenting results

In presenting the results of your assessment, indicate the following information:

Analysis and presentation of results

- — definition of population and areas affected and at risk,
- — identification of main causes;
- — information on current food access and projected food availability in the future,

- — information on child and adult nutritional status, including micronutrient deficiencies;
- — information on recent child mortality (including causes); and
- — summary of existing response capacity, identifying gaps and possible areas to build on quickly, including immediate institutional strengthening and training.

Conclusions and recommendations

- — possible response options, including food, water and sanitation measures, immunization and vitamin A distribution;
- — recommended procedures for setting up health and nutrition surveillance of the at-risk populations and programme monitoring; and
- — suggestions for further field investigations, to better estimate the size of the affected population, to improve possible targeting of food assistance, and to provide a better quality of baseline data for monitoring the effectiveness of response