CHAPTER 3
Some Notes on General Relief Procedures

3.1. RELIEF NEEDS—AN ESTIMATE OF IMPORTANCE

To contain the effects of disaster, to hasten rehabilitation, and to ensure the success of primary food and health relief efforts, several important supportive services are required, along with the observance of certain general procedures. Table I provides an estimate of the importance of different types of relief needs:

TABLE I

Relief Needs—An Estimate of Their Importance in Different Types of Disasters

(0 to +++ gives grading of importance)

Relief Need	Drought	Flood	Earth-quake	Urban (Fire, etc.)	Epidemic	Refugees Civil Strife
Mass Feeding	+	+++	++	+++	+	++
Rations	+++	++	+	+	+	+++
Nutritional Therapy	+++	++	0	0	+	+/+++
Rescue Service	0/+	++/+++	+++	+++	+	0/++
Trauma Surgery	0	+	+++	+++	0	++
Preventive Health	++	++	+/++	+	+++	++/+++
Curative Health	++	++	++	+++	+++	++/+++
Water	+++	++	+++	+	+	++/+++
Sanitation	++	++	+	++	++	+++
Roads/Communications	0	+++	+++	+	0	+/+++
Homes/Shelter	0	+++	+++	+++	0	+/+++
Agriculture	+++	+++	++	0	0	+/++

The procedures relating to food, nutrition, and medical and health relief are described in the chapters that follow. Below are notes on general procedures and on some of the important supportive services.

3.2. FIELD UNIT

For operational efficiency, a working unit for any particular service (e.g., sanitation, nutrition, medical care) should be kept small, generally with no more than five to ten persons. Depending on the task and size of population served, the service should be provided in multiples of units. Small-sized units greatly facilitate both supervision and coordination.

3.3. ENLISTING LOCAL SUPPORT

Local support is essential for the success of relief efforts. The local coordinator of the relief program should regularly meet with leaders of the community on an informal basis, either in small groups or singly, and explain the progress of activities. He should, in turn, seek whatever support and cooperation that may be required from them.

3.4. INITIAL ASSESSMENT AND SURVEILLANCE

An initial survey is crucial for determining the extent of damage, the numbers affected, and immediate relief needs appropriate to each sector. A surveillance system for measuring both continued requirements and the impact of relief measures should follow the initial assessment. This system will provide the basic input for all decisions and actions that are to be taken during the early weeks. Chapter 4 describes the method of assessing and surveying nutrition and health problems

3.5. MOBILIZATION OF RESOURCES

Resources are the key to any relief operation. A quick initial assessment should help to produce an estimate of the relief requirements. As far as possible, local resources and local personnel should be used. Even before estimates are worked out, essential supplies and equipment should be mobilized and moved towards disaster areas. Personnel and material transport are often major obstacles to rapid mobilization of local resources, unless this activity is well planned and rehearsed ahead of time.

3.6. IMMEDIATE RELIEF REQUIREMENTS

Most rescue work is usually performed by local people within hours of the occurrence. Local efforts, however, require immediate support from rescue teams. Rescue and evacuation operations cover first aid, emergency medical care, and the provision of ready-to-eat food, shelter, clothing, and water supply. Good communications, tightly coordinated, will assure equitable coverage and will reduce duplication.

3.7. SHELTER AND CLOTHING

Shelter and clothing are essential elements in relief assistance. Low resistance and poor vitality of the victims, combined with prolonged exposure, can result in high mortality. Death from exposure to adverse weather conditions can occur long before death from starvation. Victims should be housed in safe places—preferably in the compounds of public institutions; they should be organized in homogeneous groups; and blankets and protective clothing should be provided. Wherever possible, the clothing provided should conform to local habits and living conditions, be suitable and protective against climate. In many tropical lands, particularly hilly areas and arid deserts, the minimum night temperatures are often quite low. Provision for blankets and some warm apparel may be necessary in such places.

Before constructing any shelters, it is important to consider to what extent the need actually exists. Many inhabitants of developing countries can rapidly erect their own simple shelters, and may only need help in the procurement of locally-available building materials. Plastic tarpaulins will come in handy not only in erecting shelters quickly, but also for use in protecting stores.

Should the need arise for constructing emergency shelters, such work should meet the following criteria:

1. Mass care shelters, when constructed, should be easily accessible.
2. Local materials and labor should be used wherever possible; any imported materials should be cheap, light-weight, and compact.
3. The shelters should be quick, easy, and cheap to assemble and dismantle, requiring a minimum of trained personnel and equipment.
4. The structural design should be as similar as possible to indigenous housing. Its utilization should conform with the local practices.
5. The shelter should be suitable for the climate and provide adequate ventilation. Wind resistance should be adequate.
6. The selection of an appropriate site for shelters is important; it should provide adequate water supply, drainage, and space. It should not occupy needed arable land. It should be suitable for all seasons and safe from insects and vermin. In the case of wars, they should be situated away from hostilities. Special attention must be paid to the provision of sanitation facilities, drinking water, and waste disposal.
7. It is important that emergency shelters should not be permanent enough so as to develop into slums. On the other hand they should be sturdy enough so that when the emergency subsides, they can be dismantled and the material reused for other purposes.

3.8. ALTERNATIVES TO CAMPS

Camps and relief shelters that cause a concentration of refugees allow for easy registration and surveillance, easy accessibility for food and medical relief, and ready provision of other services. Camps, however, create problems, the most important of which is the development of a "camp psychology" of excessive dependence. Is there an alternative to camps? One possible solution may be the settling of refugees among local people who were not affected by the calamity.[7] This alternative should, in fact, be the first choice, and only those refugees that cannot be placed with local people should be put in camps. In certain selected areas and situations, large numbers of refugees can be accommodated through local settlement. It is important, however, to group together only people from the same community, clan, or group—or those who speak the same language. Social intercourse between local people and refugees contributes in no small measure to the future rehabilitation

and resettlement and makes it easier for the relief organization to phase out its activities. In settling refugees with villagers, the relief teams must ensure as far as possible that villagers and refugees receive similar treatment insofar as relief support is concerned.

3.9. FINANCIAL AID TO POPULATION

Timely financial assistance to disaster victims will help them to reorient themselves in the direction of rehabilitation The purchase of relief articles should follow the victims' priorities, preferences, and tastes. This approach will provide them with much psychological relief and strengthen their initiative for restarting life As part of planned rehabilitation, arrangements should be made for promptly providing grants, loans, and other subsidies to the distressed population Repayment of loans should be placed under most favorable terms for the victims. Collection of taxes and dues in the disaster-affected areas may have to be postponed. Compensation for loss and damage of property should be calculated in individual cases and paid according to government procedures.

Orders for regulating prices of essential commodities may be necessary. Subsidies may be given for purchase of items such as household equipment, consumer goods, and farm animals. Various incentives and concessions may be offered to those engaged in crafts, business, and industry for resuming their work.

3.10. SOCIAL WELFARE SERVICES

Due consideration should be given to the emotional and psychological needs of the victims. With the help of social welfare personnel, arrangements should be made to restore the family unit, provide family services and counselling, and—if the relief program is prolonged—to organize facilities for educational and recreational activities. Under appropriate supervision, suitable members of the affected population will be of great assistance in running some of the welfare services. To keep the residents of camps occupied, certain types of of productive work may be organized on a self-help basis. The camp residents may be provided with wages for their services in behalf of sanitation, shelter construction, drainage, distribution of rations, supplementary feeding, day care, vaccine campaigns, communal gardening, and similar activities.

3.11. COMMUNICATIONS, TRANSPORT, AND WAREHOUSING

These services play a vital role and constitute the king pin of relief arrangements. A reliable system of local communication facilities should be established. The communications needs are three-fold:

1. From the field to the central, local, or regional organizations and back.
2. To the news media and the public at large.

3. Among staff members engaged in field operations.

Transportation is usually one of the key factors in the overall success of the relief operation. The largest percentage of the costs for a relief operation is normally accounted for by transport. Hence, it is most important that transport is well administered and carefully monitored at each step so that necessary adjustments can be made at short notice. Detailed road and rail maps and information on alternative routes, intermediate storage points, and other facilities should be made available from the report of the assessment and rescue teams. Vehicles made or assembled locally and of the same type are preferable. Uniformity will help in repair work, will promote familiarity among mechanics and easy availability of spare parts. Being in daily use, locally-used vehicle types are found more suitable for local roads. Development of a central pool of vehicles and a system of cooperative use will also facilitate relief.

Warehouses will be required to store various relief materials. Existing physical facilities with appropriate security arrangements should be used for this purpose. Where available, a properly programmed computer can be a great asset in keeping track of the logistics and flow of supplies

3.12. PERSONNEL

In a relief operation, it is wise to keep to the minimum the number of personnel brought in from outside the affected area or country. Conversely, it is of great advantage to make use of as many auxiliary personnel from the affected region as possible. An important reason for this is to avoid the need for providing special accommodations and food for outsiders. The use of local personnel for as many tasks as possible gives training and work to the population, keeps them out of mischief, identifies them with the relief organization, and makes the local people feel associated with the relief work. As locally-employed persons have to find their own housing and food, their employment in turn helps to support the local economy.

3.13. MONITORING AND CONTROL OF RELIEF PROGRAMS

Application of the latest knowledge and tools for the monitoring and control of relief operations will help to facilitate the most efficient deployment of available resources as well as the effective distribution of relief aid. Monitoring is an essential management tool for the operation of relief programs on an efficient and rational basis, and involves preparation of regular reports on surveillance and operations. These reports should be made available on a daily basis to the local relief coordinator. The frequency of reporting to provincial/central coordinators should be daily, weekly, or semi-monthly, depending on the type of data, the magnitude of the disaster, and the size

of relief activity mounted.

Surveillance data should focus, for example, on disease, nutritional conditions, and the disaster condition itself (e g , floodwater levels, refugee movements). In the initial stages, the reporting for some of these should be frequent, often more than once a day. Surveillance of nutrition and health problems are described in the following chapter. Operations reports should include quantitative summaries of all activities undertaken each day, such as curative and preventive health work, data on feeding, stock balances, location of transport and food supplies, deployment of personnel, and other operational problems

Simple uniform reporting forms should have been devised and tested as part of preparedness planning. The tabulated data should be processed manually or, if a computer is used, with programmed printouts issued on a daily or weekly basis to indicate interacting and competing situations. The return of reporting to the field on a daily basis is vital to ensure accurate data collection and to aid in the recommendation of field responses to changing situations. Regular reports should also be made available to the official representatives of the international, voluntary, and other donor agencies.

The basic essentials for success are the maintenance of strong controlling and coordinating authority—at central, provincial, and district/divisional levels; clear delegation of responsibilities to all staff members; and clear routes of communication in both directions.

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During the Nigerian civil war, local communities and families were encouraged to offer refugees accommodations in their family compounds. The refugees collected their food ration once a week from a center. Notably, these refugees soon began to join local families in their own work and received food or money in exchange. An evaulation study showed that the refugees living with villagers were able in this way to obtain a significant amount of extra food and were thus able to feed their families much better than those who were in the few official camps that were set up. Refugees living with villagers were found to be making plans for return to their own areas at the end of the war by saving money and buying a few essentials.

CHAPTER 4

The Assessment and Surveillance of Nutrition and Health Problems

The magnitude of a disaster should be assessed on a quantifiable basis in terms of its immediate and long-term effects on loss of and/or damage to human and animal life, destruction of or damage to public and private property, and disruption of normal activities and services. Such an assessment facilitates easy management of relief operations and also helps in working out the cost-effectiveness of the relief effort.

4.1. THE INFORMATION SYSTEM

The successful management of a food and health relief operation requires an information system with the following components:

1. **Background Information on the Affected Area, Including Updated Social Statistics.**
   This forms part of pre-disaster preparedness planning and has been dealt with in Chapter 2.
2. **Initial Rapid Assessment.**
   Such assessment will help to determine needs and resources so that relief supplies and equipment can be urgently mobilized. Such an assessment should be undertaken in all types of disasters—for acute catastrophes which temporarily disrupt a man-environment relationship, and for disasters superimposed on a deteriorating man-environment relationship, implying long-term effects.
3. **Detailed Assessment.**
   This assessment is an essential step in the management of disasters with long-term effects, where relief and rehabilitation have to be prolonged and tapered off into development programs.
4. **Continuous Surveillance.**
   Herein lies the process of monitoring the disaster effects in relation to the relief response, so that the latter can be adjusted according to need

To be useful, all information should be analyzed and interpreted immediately at local levels to facilitate rapid decision-making.

4.2. INITIAL RAPID ASSESSMENT

Initial assessment is best carried out by a team of trained, experienced nationals working with closely-supervised auxiliary personnel. If a re-

quest for international assistance is contemplated, it is useful to include representatives of international agencies in the initial assessment process. This initial contact between nationals and international staff will facilitate agreement on the extent of the disaster and the priorities for assistance. Although the information collected may not be quantitative in character, it should be gathered as objectively as possible. Local administrative and health authorities and community leaders will be able to provide useful input for this assessment.

4.2.1. The Team. The composition and size of the team will vary with the type of disaster and the magnitude of its effects. The team should be led by a senior official nominated by the Coordinator and should include logistics and supplies experts, a social scientist, and an epidemiologist. In case of disasters with long-term effects and social disruption, a nutritionist, an agriculturist, and an economist will be helpful. In case of floods, a hydrologist may be needed; in case of earthquakes, structural engineers will be required. Locally-recruited auxiliary personnel with prior training should work under supervision. The team should not involve itself in rescue, evacuation, or relief work, although its members may participate in subsequent surveillance.

4.2.2. Briefing. Prior to field work, the team should be briefed thoroughly. The briefing should include:

1. Updated news of disaster, augmented with appropriate maps and illustrations.
2. All available relevant background information.
3. Selection of sites for assessment. Using a grid map of the area, all populated areas should be marked and those to be examined should be chosen by random-number tables. A statistician should participate in the briefing. The goal is to obtain a typically representative segment of the total affected area.

The briefing time should not exceed two days.

4.2.3. A Checklist of Information. The following is *an example* of the types of information that should be obtained:

1. Casualties—the number of dead and with major injuries, preferably according to age groups.
2. Estimates of the number of families/individuals (by age group, if possible) who have lost all possessions and are totally dependent, with their pre-disaster socioeconomic category.
3. Geographical extent of area affected, graded according to mildly, moderately, and severely affected areas.
4. Condition of buildings, markets, and other structures, with notes as to those receiving major damage or totally destroyed; recommendations of relief use to which they can be put.
5. Water supply—sources, estimate of supply, standard of purity, rainfall data.

6. Food supply—standing crops, stored foods, estimate of market prices
7. Damage to sanitation and water facilities.
8. Transportation—inventory of types of vehicles (road, rail, air, and watercraft), categorized as serviceable, repairable, or usable as spare parts; repair facilities, beasts of burden.
9. Communications—condition and types of roads, bridges, railways, radio, telephone, and other facilities, with their location. Sketch maps may be prepared for permanent records.
10. Estimates of severe malnutrition—wherever possible, objective measurements should be used for gauging these levels. However, for the purposes of rapid assessment, it is often appropriate to judge the number of markedly thin children, expressed as a percentage of all young children observed. If facilities are available, it is recommended that measurement of weight and height[9] on a small subsample of young children be taken along with determination of edema rates. If the edema rate is high, the results of anthropometry must be interpreted cautiously. Edema should be detected in the pretibial region by the production of a definite pit as a result of moderate pressure for three seconds with a finger or thumb over the lower end of the tibia.
11. Prevalence of epidemic disease; patterns of medical care actually available in the affected area.
12. The chain of events that caused the disaster as described by local people.

4.2.4. Field Work. Different types of transport may be required for travel. Local transport methods such as bicycles, boats, horses, camels, and the like are very useful. Helicopters or light aircraft allow free access to large inaccessible areas and also help to provide a survey of the affected area. If facilities exist, aerial photographs could be taken for further study. Based on local information, the team should be free to visit additional sites.

In chosen sites, the team should talk to as many people as possible and observe all facilities and resources. Appropriate forms carried by the team should be completed on the spot, and should include special observations made in any of the categories. Field work should not take more than three or four days.

4.2.5. Reporting. On return to local base, a combined report should be prepared, using the rapid assessment and background information already in possession. It is better to have in hand a brief, clear report in a day or two than a complete report a week later. The report should indicate:

-The extent of the problem, expressed in quantifiable terms, in terms of human suffering.

- The immediate needs of the area in order of priority.
- The provisional logistics plan for transport and storage of supplies.
- An estimate of staff requirements (in different categories) for the initial relief operation.
- Local facilities, manpower, and other resources.
- A statement on anticipated changes in the situation and factors determining them.
- Continued data needs, which will require further evaluation (e.g., geographic areas not covered; requirements not surveyed).

This quick, initial report forms the basis for the vital first move of bringing relief assistance to the area. Precise requests for assistance can be formulated from an inventory of resources required, combined with an inventory of resources available to the office of the local coordinator. The total period taken for launching full-scale coordinated relief assistance should not exceed five to seven days.

4.3. DETAILED ASSESSMENT

Where long-term relief and rehabilitation are required, the rapid assessment may be insufficient to identify the disaster's complex causative phenomena. The report may also be inadequate in helping to anticipate possible trends. Hence, it is advisable to follow up the initial survey with a detailed assessment. The subsequent study could obtain more reliable quantitative measurements on nutrition and health status, as well as on related agricultural and socioeconomic variables. Mounting such an undertaking is initially expensive, but the cost could be made up in the long term by specifying and quantifying the needs of the area with greater precision than would otherwise be possible. In addition, such an assessment would help to identify preventive and rehabilitative measures with long-range beneficial effects as well as with potential indicative value for follow-up surveillance.

4.3.1. Pre-Disaster Preparation. Pre-disaster preparation is essential for detailed assessment. Time spent on this endeavor will not only yield high quality data but will also reduce processing time. An interpretive summary of all essential background information, along with a clear description of the prevalent food supply system (subsistence-dependent, mixed, or market-dependent), is an essential element of pre-disaster preparedness.[9] Depending on the nature of the food supply system, a list of useful indicators for measurement should be made readily available.

Table II shows how the list of indicators, when interpreted along with appropriate background data, will identify the problem factors operating in the area. The list is not intended to be all-inclusive.

4.3.2. Questionnaires. Simple, separate *sample* questionnaires should

include each problem factor and the indicators for its assessment; these should be ready for use as part of the preparedness activity.

4.3.3. Factors to be Considered in Selection of Indicators.

1. **Relevance:** For determining relief needs and for development of a monitoring system.
2. **Sensitivity:** Capable of yielding valid, quantitative information.
3. **Accuracy:** The survey instruments should be able to measure these accurately.
4. **Cost:** Low-cost, high-efficiency for the information obtained.

4.3.4. Pretesting. Prior to launching the detailed assessment, a minimum number of indicators should be selected and the available questionnaires appropriately *redesigned* in the context of the local situation and type of disaster being dealt with. *Where resources are limited, the aim should be to restrict the number of indicators to the minimum and collect as much quantitative information as possible.*

The team with appropriate expertise should go to the affected area to pretest the questionnaires and their measurement techniques. Support personnel selected locally should be given necessary training during the pretesting.

4.3.5. Sample Design. A representative sample of population should be selected so that results can be extrapolated to the whole area. The use of relief-camp population as an exclusive source of information should be precluded. The design process involves two steps:

1. The division of the population of the area into groups that are similar (homogeneous) with respect to the information to be collected. Confusion will result if, for example, information from nomads is considered together with data from urban areas. A preferred "stratification" of the population may be accomplished on the basis of ethnic group, occupation, life style, food source, as well as other relevant factors or combinations of factors.
2. In the selection of a "random population sample," "random" does not mean "without plan". The term indicates a highly ordered form of selection designed to eliminate observer bias. Tables of random numbers provide the best basis for selecting villages and households. The choice of every 5th, 10th, or 15th house is, for example, preferable to leaving the choice to the whim of the field team members. If census information is available, random selection is made relatively simple. Villages or other population centers can be selected in a random manner as described earlier (see page 32). Selection of households in a village should be done in the same fashion. If population statistics are not available, it may be necessary to instruct the teams to examine every household in the selected population centers. Alternatively, a map can be made showing all houses. These can be then assigned numbers consecu-

TABLE II: Suggestions

Identifying Factor	Background Data (To be updated regularly)	Initial Rapid Assessment
1. Climate/Temperature/ Water/Pests	Rainfall variations, Temperature variations; Flood - drought cycles, Crop - Livestock diseases, History of past disasters.	Extent of damage by floods, pests, earthquakes, River level, Pest identification.
2 Land-Tenure Systems	Ownership and rental pattern	
3 Labor, Employment, Wages, Migrations	Wage pattern for different types of work, Employment patterns, Normal migrations.	Spot check on migrations; Wage patterns, unemployment.
4 Crop Pattern and Inputs, Crop Production	Acreage by crops and yield, Agricultural seasons; Livestock census; Source/price/availability of various agricultural inputs; Normal import or export levels	Rough estimate of crop losses, Livestock losses, Inputs available in stock
5. Transport Facilities for Movement of Produce and Commodities	Types, density, routes, alternatives, total tonnage moved outward/inward	Description of transport system; Estimates of condition/availability.
6 Wholesale Markets	Normal prices; Volumes sold; Seasonal variations	Estimate of stocks and storage areas.
7 Retail Markets	Price and availability	Stocks of staple prices
8 Family Food Stocks	Amounts commonly stored at homes, Season, area, and socioeconomic group	Estimate of gross homes losses, Home storage facilities
9. Family Food Habits	Common customs/habits; Breast-feeding practices	
10. Nutrition Status: Young/Old	On small samples, wt/age, wt/height, arm circumference/height.	Inspection of vulnerable groups for wasting; If possible, anthropometry on small samples
11 Hygiene and Sanitation	Normal practices.	Estimate of damage to systems.
12. Mortality/Morbidity	Infant mortality, 1-4 year mortality; Disease pattern; Historical epidemics.	Gross estimates of lives lost, and of wounded/sick

on Choice of Indicators

Detailed Assessment	Surveillance
Estimate of water resources/Estimate of crops, Pests; Livestock diseases; Pasture availability.	Water level/table at selected sites; No. of wells repaired; No. of new wells; Effects of pest control measures.
Land use; Indebtedness; Eviction; Land sales.	Land sales, price, interest rates.
Unemployment; Recent migration patterns.	Migration; Wage rates; Employment.
Estimate of losses: –Crops –Livestock; Livestock productivity and number; Availability of inputs; Harvested output, price differential of grain to cattle.	Crop prospects, inputs available; Any ongoing losses.
Details of disruption; Scope for alternatives, including traditional systems.	Selected transport monitoring.
Price, volume, sales; Black market; Storage facilities.	
Price (cost of adequate quantity of staple); Cost of adequate diet both expressed as ratio of minimum-wage rate or as ratio of informal-sector incomes.	Sample retail prices; Black market prices; Buying surges/hoarding.
Home stocks, in a few selected areas.	Periodic inspection in randomly-selected homes.
Qualitative and quantitative changes.	Spot checks on consumption pattern; If possible, consumption survey on sample at semi-annual intervals.
Sample surveys for anthropometric measurements; Edema rate.	Monthly weight of children receiving food, also in sample of others; In general population, once every six months.
Estimate of need for facilities; Availability of water, fitness for use.	To monitor use; Safety testing; Maintenance condition.
Estimate of sickness, types; Immunization status; Age, specific illness, and death—by survey; Reports from hospitals.	Deaths by age/cause; Reported illness; Epidemics; Vaccine/drug use.

TABLE II: Suggestions

Identifying Factors	Background Data (To be updated regularly)	Initial Rapid Assessment
13. Pattern of Medical Care	Existing facilities; Personnel; Patient load; Supply stocks; Replenishment; Use of traditional systems, all as reported.	Functioning health units, including personnel and supplies.

on Choice of Indicators (cont.)

Detailed Assessment	Surveillance
Detailed work-load; Supply and manpower requirements.	Utilization pattern.

tively. Every 10th, 5th, or other interval can be chosen to provide the sample size desired.

4.3.6. Sample Size. The size of a sample must be determined before the final sample design is established. A sample size which provides 30-50 observations for a parameter for each chosen homogeneous area will usually suffice; e.g., weights of 30-50 children in each age group in each social class for each chosen homogeneous area; crop losses of 30-50 farmers in each area; and so on. With increase in sample size, the costs rise faster than improvement of accuracy. More effort should go into choosing a good random sample.

4.3.7. Preparation of Data-Processing Forms. Before the pretesting team has returned from the field, the format of data-processing forms should have been laid out. Supporting forms—tally sheets, summary sheets, and forms to record the results of statistical analysis—should be completed.

4.3.8. "Average" and "Minimum Acceptable" Values. These values should be defined for each indicator to be measured, based on background information. Most international standards are either inappropriate or unacceptable, except to assist in deriving a set of acceptable values for local use when such standards do not already exist.

4.3.9. Management and Supervision. The field assessment should be managed and supervised by nationals of the country concerned. This is a multidisciplinary exercise and all appropriate categories of expertise should be included in the survey's planning, design, and implementation. The necessary orientation and training for field supervisors should be carried out as part of the preparedness program. A minimum of one field supervisor for every three field teams will be required.

4.3.10. Final Preparations. After return of the pretesting team, final necessary adjustments to the survey instruments should be made. The field teams and their supervisors should then be briefed thoroughly. Transport and equipment should be assigned and arrangements made for the collection of data for processing. At this point, the survey is ready to get underway. With adequate pre-disaster preparedness, good management, cooperation from technical agencies, and the instilling of team spirit, the entire pretesting operation should not take more than ten days and the actual survey, not more than four to five weeks.

4.4. SOME NOTES ON ASSESSMENT METHODOLOGY

4.4.1. Tactfulness and Consideration. In a post-disaster period, many questions concerning loss are painful and tend to invade the privacy of those concerned. Tactfulness should form part of the field team's orientation. As an added caution, if it is disclosed that the survey

results will be used to plan the delivery of relief supplies, a bias may occur in the results.

4.4.2. Crop Production Estimates. Information on the crop types planted, the dates of sowing, the dates of harvesting, and estimates of yield will be valuable in assessing the disturbance to the crop calendar. If aerial photogrammetic equipment and expertise are available and the comparable background information exists, an aerial survey may be the preferred approach in some areas. A local agricultural extension staff may be able to provide a useful picture of the extent of crop loss or failure measured against seasonal norms.

4.4.3. Livestock Estimates. This information is particularly important in pastoral societies. The question/answer method is unlikely to produce reliable information as to numbers of animals. Direct observation, if feasible, is preferable and should include estimates of animal numbers by age as well as type. If expertise for an aerial survey is available, this method may be used to acquire accurate information for large parts of the affected area.

4.4.4. Water Availability. Although water shortages can usually be identified readily, reliable estimates of marginal situations and predictive information can be gathered only by careful measurement and comparisons with pre-disaster data for a similar time of year. Index wells can be identified for regular checks of water table and pumping capacity.

4.4.5. Market Prices. Although prices provide a sensitive indicator of supply/demand balance, a number of precautions are required in interpreting the significance of this information. Some of these include:

- –Types and varieties of marketing systems prevalent.
- –Existence of price-control practices.
- –Market arrivals of foods—schedules, quantities, and frequencies.
- –Cash availability among population.
- –Extent of antisocial activities and "black market" practices.

Although price fluctuations generally reflect the severity of food shortages, a falling price at the height of a famine may indicate loss of purchasing power of the general population and may not actually reflect an alleviation of food shortages.

4.4.6. Family Food Stocks. In rural areas, the measurement of food stocks held by families (taking into account the time distance between the last and next harvest) could provide a guide to the area's food supply and expectations. This information is notoriously difficult to obtain accurately and should only be sought if direct measurement of stocks is possible.

4.4.7. Food Consumption. Notwithstanding the great potential of food-

consumption assessments, such surveys require trained staff, time, and resources. Measurements may be attempted on a subsample of the population only if expert facilities exist, but even here approved methodology and careful technique are required. Qualitative information can easily be misleading and inaccurate. However, a change in the staple or secondary staple food may be an important indicator of nutritional deprivation and impending nutritional deficiencies (e.g., cereals replaced by roots, with a resultant decrease in protein intake).

4.4.8. Nutritional Status Measurements. The availability of facilities and trained personnel will dictate the type of measurements to be chosen.

If appropriate facilities exist, it is recommended that body weight and height be measured in small samples of children under five years, and in samples of other age groups if possible. If only one measurement can be taken, body weight is preferred. (In situations where gross edema is widespread, there is no need to weigh the children.) Weight and height should be recorded directly at the time of measurement and data processed at the local NDRO office.

Children who are too young or too weak to stand can be weighed using sturdy hanging-type spring balance graduated into 250 g. The scale can be hung from a tripod or a low tree branch. To seat the child, a hammock made of netting or canvas or a basket can be hung from the hook at the lower end of the scale. Locally-available shop scales can also be used. All scales used should be checked from time to time for accuracy, using a standard weight or a litre of water (1 kg.).

Non-elastic tapes graduated in cms. should be used for measuring height/length. The tape should be fixed to a vertical post standing on a flat horizontal ground at 90°. If length is measured for children, the tape should be fixed on a flat horizontal surface, such as a bench with a fixed headboard and a movable footboard.

If weighing equipment is not available, the midupper arm circumference (MUAC) could be measured in young children (under five years) provided the operative has been trained in this procedure. This method is ideal for screening the child population in determining feeding programs. An arm circumference value below a standard of, say, 11 or 12 cm., may be used in selection (see Figure 4). The MUAC should be measured in mm. on the left upper arm, midway between the tips of elbow and shoulder and with the arm flexed at right angles. This level is determined with a tape. The circumference is measured at the level of this mark with the subject's arm hanging relaxed and just away from the side. The tape is held horizontally in light contact with the skin. There are different models of tapes made of different types of nonexpandable material. One such tape—the insertion tape—is illustrated in Figures 5 and 6.

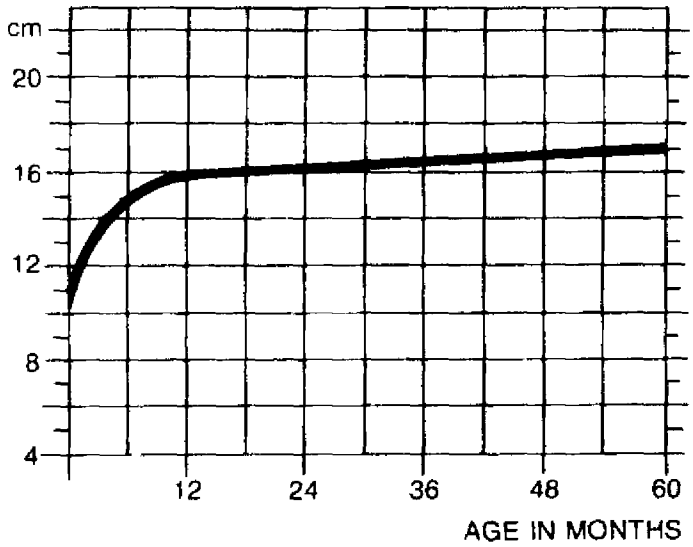

Figure 4. Arm Circumference from Birth to Five Years. Note that from 12 to 60 months it measures 16cm. It is not necessary to know the precise age during this period in order to use this measurement. (From Ref. 14, Appendix I.)

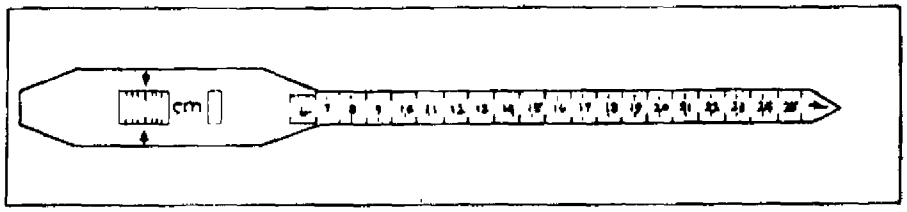

Figure 5*. Insertion Tape. This device allows good control around upper arm, with correct alignment and clear, direct window reading.

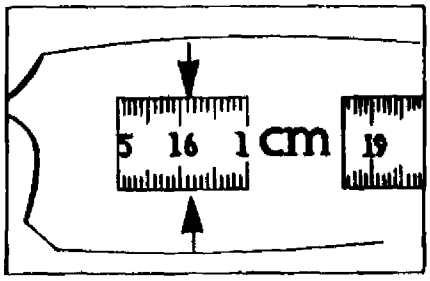

Figure 6*. Insertion

*From, Alfred J. Zerfas, The Insertion Tape. A new circumference tape for use in nutritional assessment, *Am. J. Cl. Nut.* 28, 782, 1975.

Where trained personnel, facilities, and equipment are not available, a clinical judgment of nutritional status by *inspection* alone is adequate. Sufficient numbers of people should be carefully examined with their arms, legs, and chests (as feasible and acceptable) exposed. The subjects should include specific age segments of the community's population—young children under five years, young school-age children, women of child-bearing age, adult men, and women in older age groups. By inspection alone, the extent of wasting should be graded—separately for the subjects of different age groups—into four categories: Grade I, as apparently normal (representative of the community at large), to Grade IV, as severely emaciated. Any gross signs or symptoms of visible illness should be recorded as such without spending time on diagnosis. Although this method of assessment cannot be expected to be thoroughly accurate, it is all that can be usefully done to achieve an estimate of the extent and severity of the nutritional problem. This estimation will be greatly facilitated by the printing in local manuals of good clinical photographs of children and other age groups (both of local ethnic origin), showing the different categories of undernutrition and wasting as mentioned above.

More details on techniques of assessment of nutritional status can be obtained from the WHO Monograph (1966) by D. B. Jelliffe.

4.4.9. Human Morbidity. Any assessment of health and disease prevalence requires epidemiological training. A history of occurrence of "cough", "fever", and "diarrhea" during the previous week can be recorded but is non-specific. Many important diseases can be recognized if local names are used. If resources are available, it is better to examine a subsample and record the clinical findings. Alternatively, the three categories "active", "inactive", and "moribund" can be used to indicate the incidence of severe debility, although they say nothing about the epidemiology of the situation.

4.4.10. Human Mortality. Approached sympathetically, most communities will indicate the loss of children and other family members during a previous set period. It is worth ascertaining when each individual died, and using this information to compile a short history of mortality in the area. This data should then be expressed in terms of age-specific mortality rates against time. Death is the final effect of disaster and, therefore (with the exception of disasters with sudden onset), one of the crudest indicators of the magnitude of the disaster's effect; but time trends of mortality may indicate more clearly the severity of the disaster in human terms.

4.4.11. Population Structure. If the effect of a disaster has been devastating, high mortality rates will be reflected by alterations in population structure.[10] This will only be seen in particularly serious situations and can only be interpreted if valid background data are available. It

should be noted that in prolonged famine, alterations in numbers of the 0-5 years age group can be due to a high death rate and/or a low birth rate

4.5. DATA PROCESSING

The following steps are required to transform raw figures into processed reports

4.5.1. Sorting. Part of the survey design involves the definition of homogeneous population groups. The data from each group should be filed together before processing begins Data forms should have space on the edges for code boxes where information can be directly coded (age, location, sex, occupation, weight for height percentage, food stocks, diseases). The original data sheets can then be sorted directly and even cross-sorted without resort to the laborious transfer of data.

4.5.2. Tallying. The information relevant to each variable must be accumulated on tally sheets for each population group before statistical analysis is possible. It is convenient to allow space on the tally sheets for any special calculations for presenting the data in forms which can be visualized and easily interpreted. All preparatory steps can be completed on data coming from the field during the course of the survey.

4.5.3. Statistical Analysis. The simple statistical procedures required to accumulate mean values and establish limits of confidence for each variable are the most important steps in producing the final report Statistical procedures fall naturally into three categories:

1. **Descriptive.** Here data are presented wherever possible in the form of frequency distribution charts or curves, and with means and standard deviations.
2. **Comparative.** A comparative analysis to indicate significant differences between areas or population groups is valuable in assigning priorities for relief assistance. This may be done by any simple statistical tests of significance.
3. **Quality Control.** It is useful to apply one or two simple tests to ensure that the quality of the data falls within acceptable limits.

4.5.4. Interpretation. The interpretation of data should be prompt and immediate, and preferably done at the local NDRO office. It should be based on previously-assigned criteria for "normality" or "minimum acceptable values." Considerable experience and judgment are required to interpret results accurately. Interpretation should be performed as a collaborative exercise by professionals from technical agencies represented in the survey. Analysis should take into account the latent period or time-lag between the occurrence of the given parameter and its effect on the nutrition and health of the community. It has been found helpful to display as many of the results as possible as frequency distribution curves.

4.5.5. Presentation of Results. Administrators and planners are not interested in the niceties of statistical analysis, but are rightly concerned with tons of relief supplies, numbers of vehicles, and quantities of drugs required. Once a technical consensus has been reached on the interpretation of results, these results must be translated, for the purpose of disaster relief authorities, into a list of areas affected (ranked by order of severity); the immediate needs of each area; and estimates of quantities of food, supplies, and equipment required. As logistic, storage, and other constraints frequently apply, it is advisable to prepare this report in consultation with officials of the appropriate sectors of relief activities. Thus, the "ideal" may be best transformed into a feasible plan of action.

4.6. SURVEILLANCE

The onrush of a disaster situation and the effects of relief and rehabilitation thereupon should be monitored by a system of surveillance. Nutrition and health surveillance will provide a flow of information allowing the response to be adjusted according to need, and also provide predictive information to anticipate changes. A clear distinction should be made between a reporting system emanating from the scene of relief feeding and the reporting from the population in general. Distinct but parallel systems must be established to assess the population receiving assistance on a regular basis along with reporting on the area as a whole.

In general terms, the information required will be of the type obtained in the initial survey operation, but at this stage a smaller number of indicators may suffice to monitor significant changes.

4.6.1. Reporting on the Population Receiving Assistance. The report should concentrate on the assessment of the severity as follows: nutritional status, measurements of disease incidence, mortality rates, numbers receiving assistance, and numbers newly admitted and discharged. Health surveillance and reporting methods are described in Chapter 7.

The frequency with which reports are required depends on the rapidity with which the situation is changing: they may be daily, weekly, or semi-monthly. Information should be complete for the entire population receiving assistance, but nutritional status information on a sample is sufficient. All children who are the recipients of intensive feeding programs should be weighed regularly. A steady influx of severely malnourished children following the inception of the relief operation indicates that general feeding measures are not working. Conversely, an effective program should give rise to a steady improvement in the nutritional status of the most vulnerable groups, as well as a decline in new cases.

If children can be re-identified, repeated weighing alone is a sensitive

monitor when there is no edema. From 30 to 50 children in one feeding area will suffice. This measurement should be processed as:

1. $\frac{\text{Weight gain}}{\text{Last weight}}$ (the results expressed as g /kg.).

   These results may then be displayed as a frequency distribution curve for each center.

2. Average weight gain per child per month

$$= \frac{\text{Sum of weight gains}}{\text{No. of children weighed}}$$

   It is usual to expect a gain of 200 g. per month.

3. Percentage of children who lost weight; gained 0–100 g.; 100–200 g.; over 200 g. during previous month.

In the event that some children cannot be identified, a repeat random sample should be selected. It is important to note that the result of the follow-up sample cannot be compared directly with those of the previous sample since there is no proof that two samples are derived from or representative of the same population. Therefore, a decrease in the number of severely malnourished children in the second sample may reflect either improved nutrition among all children or a high death rate among the malnourished in the previous sample. This fallacy will not occur if reweighing of the same children can be carried out.

The presence of edema should be recorded, although grading of edema is not required.

The reporting officer assigned to each feeding point should be responsible for the completion of forms. Forms should be simple and concise. Only numerical information should be included in the main body of the form, with space left for the reporting officer's comments.

4.6.2. Food and Nutrition Surveillance in the Community. A system for monitoring the food supply system in the affected area is an essential component of surveillance. This surveillance is merely the extension in time of the techniques described earlier. Repeated measurement of previously selected indicators descriptive of the food supply system are analyzed against time.

The expense of maintaining mobile teams in the field for an extended period is considerable. Personnel drawn from the technical infrastructure already in the area could act as reporting agents. If necessary, newly recruited and trained personnel may be assigned to strengthen the existing field staffs. Reporting stations must be positioned carefully to give adequate coverage and to obtain an adequate sample size. It is usually sufficient to obtain monthly returns from reporting stations provided that critical periods such as planting, harvesting, "hungry periods", and other events in the food production calendar are covered.

In summary, food and nutrition surveillance is a valuable management tool in situations of food shortage. However, such surveillance must be planned and implemented carefully and the results obtained subjected to critical scrutiny.

4.6.3. Interpretation. The interpretation and reporting of conclusions of surveillance data should adhere to the principles outlined earlier. "Normal" and "minimum acceptable" levels must be defined carefully and local interpretive guidelines established.

4.6.4. Feedback. The collection of information from disaster areas will be of no use unless a mechanism exists to convert information quickly into plans and programs. On the information system rests the responsibility to produce valid, intelligible reports regularly and promptly. This responsibility can only be discharged if a high level of efficiency is maintained at every step: planning, field work, data-processing, interpretation, and reporting. The data and the interpreted results should be classified according to functional utility and then immediately communicated to appropriate workers at different levels. Such a feedback system will facilitate mid-course corrective measures and enable field workers to review the results of their efforts. Feedback communications with international and voluntary agencies are also essential in planning and organizing for supplies.

On NDRO and its regional or local offices rests the responsibility to work closely with the technical group managing the surveillance system. Regular meetings should be held between key members of the NDRO and the staff of the surveillance system. It is not sufficient to produce paper reports and hope that they are understood. A close dialogue must develop, where questions and answers result in the creation of a flexible planning structure. Technicians and planners should be intimately and mutually aware of the situation in the disaster area and be able to consider intelligently the responses required as a result of identification of trends in the food supply, nutrition, and health of the community.

NOTES TO CHAPTER 4

[8] The main effect of acute food (energy and protein) deprivation is body wasting. This is measured by a comparison of body bulk (weight) to that of a child of the same height (independent of age) from an unaffected neighboring area. Any component of body bulk responsible for stunting in height (a more chronic effect) is thereby removed. Additionally, experience has shown that this measurement—when analyzed on a community basis—is more sensitive to changes across a range of values than other anthropometric indices. Its usefulness in this particular situation (that is, the assessment of communities suffering acute and severe food shortage) is well established.

[9] For details on the importance of the food-supply system and its typology in identifying problem areas and preventive measures, the reader is referred to the report of the Joint FAO/UNICEF/WHO Expert Committee "Methodology of Nutritional Surveillance," WHO Technical Report Series 593, 1976.

[10] The 1970 cyclone in Bengal claimed the lives of the very old and very young—those unable to save themselves through devices such as clinging to a tree. More females died than males. In the aftermath, very little illness was encountered, but this owed to the fact that most of the sick and malnourished had already perished.