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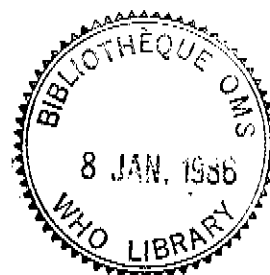
WELTGESUNDHEITSORGANISATION
REGIONALBÜRO FÜR EUROPA



ORGANISATION MONDIALE DE LA SANTÉ
BUREAU RÉGIONAL DE L'EUROPE

ВСЕМИРНАЯ ОРГАНИЗАЦИЯ ЗДРАВООХРАНЕНИЯ
ЕВРОПЕЙСКОЕ РЕГИОНАЛЬНОЕ БЮРО

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HEALTH ASPECTS OF DISASTER PREPAREDNESS

SECRET

Report on a WHO Workshop *on*

Trieste, Italy

15-20 October 1984

Attachments

ICP/COR 003 m01
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1. Introduction

The Regional Office for Europe of the World Health Organization, in collaboration with the Government of Italy, organized a Workshop on the Health Aspects of Disaster Preparedness in Trieste, Italy, from 15 to 20 October 1984. The meeting was hosted by the regional administration of the Regione Friuli-Venezia Giulia.

The meeting was convened in response to resolution EUR/RC33/R5 adopted by the Regional Committee for Europe of the World Health Organization at its Thirty-third Session, Madrid, 1983, urging the Member States to "establish national plans for natural disaster preparedness, including an appropriate health component".

Representatives of 11 countries (Algeria, Belgium, France, Greece, Iceland, Italy, Portugal, Spain, Turkey, USSR, Yugoslavia) attended the meeting, as well as representatives of other UN agencies (UNDP), temporary advisers, observers, and representatives from other WHO regions (the region of the Americas, the Eastern Mediterranean Region, and the region of South-East Asia).

Assessore Renzulli, from the regional administration of Regione Friuli-Venezia Giulia, welcomed the participants. He stressed the particular importance of this meeting for the region of Friuli, devastated by a severe earthquake in 1976.

Dr Leo A. Kaprio, Regional Director of WHO for Europe, was represented by Dr J.E. Asvall, Regional Director elect. In his opening address Dr Asvall emphasized the need for active preparedness, both on the part of governments and the intergovernmental organizations, especially those in the UN system, to face the recurrence of natural disasters in the Region. The growing awareness of the great damage inflicted, in human and economic terms, by disasters, is expressed in the Resolution WHA34.26 of the World Health Assembly, 1981, requesting the Director General to strengthen the Organization's capacity "with a view to promoting the development of approaches to the prevention of adverse health effects of disasters, when possible, and the preparedness of Member States to deal with disasters ...".

In relation to the Seventh Programme of Work and the Regional Strategy, the WHO European intercountry programme on disaster preparedness therefore sets out to:

- make guidelines available to all Member States at risk, to be used by the workers in primary health care, other health areas, and other health-related agencies, setting out the activities required for a satisfactory state of preparedness for dealing with health problems, including immediate care, that arise from natural disasters;

- establish indices and indicators for the rapid assessment of adverse health situations arising from natural catastrophes with a view to protecting the surviving population from additional and unnecessary health risks;

- participate, on request by Member States, in developing national plans for preparedness to cope with the health and social effects of natural catastrophes;

Dr Asvall also stressed that, while this Workshop will focus on natural disasters, these are bound to involve man-made structures such as power and chemical plants, oil and gas pipelines, roads and railways, and nuclear power stations. Accidents can occur involving all these quite independently of natural disasters. The principles and guidelines to be prepared are the same for all types of disasters; preparedness should deal with casualties of all types of disasters.

Professor M. Colombini was elected as Chairman, Dr L. Saenz as Vice-Chairman, and Professor M.F. Lechat as Rapporteur. Dr J.T. Jones acted as Secretary. Mr S.K. Malik and Dr G. Deblock, Professor G.T. Jonsson and Dr S. Tansan, were elected respectively chairmen and rapporteurs of the two working groups.

2. Scope and purpose

Disasters may be defined as a disruption of the human ecology which the affected community cannot absorb with its own resources. Often, although there are exceptions (such as drought), most natural disasters have a sudden onset. The major problem encountered includes public confusion, injuries, disabilities and death, bereavement of families, destruction of living conditions and community facilities (housing, transportation, communication) and collapse of the socioeconomic structure.

Disasters, and more specifically natural disasters, constitute an important health problem: they cause large numbers of deaths, casualties and long-term disablement; they may obliterate or compromise health services and facilities; they affect health and health services provision through jeopardizing economic development.

According to recent data, tropical cyclones, floods and earthquakes alone have affected some 194 millions people in the decade 1970-1979. The Mediterranean basin is one of the areas most exposed to the risk of natural disaster. Their periodic recurrence and the great damage inflicted, in human and economic terms, calls for active preparedness.

During the last two decades, the world has been increasingly alarmed by disasters, which wreak more and more havoc as they affect larger and larger concentrations of population. It is also now

realized that disasters, in particular natural catastrophes, are a threat to economic and social development, especially in developing countries. This has meant that the effects of natural phenomena leading to disasters must be viewed not only broadly in humanitarian and social terms, but also in economic terms. While the response of the international community has in the past been to provide aid following disasters, disasters are so serious that much greater emphasis will have to be given to planning and for preventing their consequences. On the other hand, there is a growing awareness by governments of the need to pay more attention to disaster preparedness and prevention, and to recognize the fact that disaster prevention and pre-disaster planning should be an integral part of national policies and programmes.

As stated at the WHO Workshop on the "Preparedness in facing health problems from natural disaster emergency situations", held in Rabat, Morocco, 1981, first aid should be an integral component of primary health care in disaster prone areas. Planning as well as education at all levels are required to enhance the preparedness of the community.

The meeting decided to consider the subject of disaster preparedness under the following headings:

- (1) information for disaster preparedness and assessment of needs following natural disasters;
- (2) primary health care in disaster preparedness and emergencies;

(3) the health aspects of management and planning for disaster preparedness;

(4) education and training for preparedness.

3. Background

3.1 The objectives of disaster preparedness

Disaster preparedness as related to health has three objectives:

3.1.1 to prevent, reduce and mitigate the effects of disasters on the health of populations;

3.1.2 to protect or re-establish health services and facilities;

3.1.3 to ensure the prompt restoration of health conditions prevailing before the disaster and, whenever possible, bring about an improvement in these conditions;

3.2 The effects of disasters on the health of populations may be expressed in terms of mortality, morbidity, and long-term impairment of health including disablement and psychosocial consequences. They include the following:

- direct mortality due to impact (i.e. in earthquakes or flash floods);

- mortality or irreparable damages due to delay in rescue (i.e. amongst survivors buried under debris after an earthquake);
- mortality associated with the interruption of services for specific conditions (diabetes, renal dialysis, complicated delivery, cardiovascular diseases);
- morbidity and resulting mortality due to the lack of appropriate care (for traumas, burns, etc.);
- effects of adverse climatic and environmental conditions (lack of food and/or safe drinking water, cold, heat, snake bites);
- increased-short term or long-term incidence of communicable diseases potentially due to changes in the ecological conditions (disruption of sanitation, overcrowding in temporary shelters, communal feeding); interruption of control measures, most specifically vector control; occurrence of communicable diseases in resettled population with a low degree of immunity against diseases to which they have not been exposed previously; introduction of diseases imported by relief workers; zoonoses;
- risks due to exposure to environmental hazards (fires, gas leaks, toxic wastes, industrial contaminants including chemicals);

- psychiatric or psychological problems associated with loss of relatives, bereavement, fear, resettlement, community disruption.

Restoration of normal health conditions extends beyond controlling mortality and morbidity. Long after the immediate effects have been overcome, the health of the population may be strongly impaired due to a number of factors, among which are:

- long-term malnutrition due to diseases and mortality of cattle and other domestic animals; disruption of agriculture (loss of tools, loss of seeds, destruction of gardens), the rise in the price of goods;
- proliferation of population groups with a high risk of disease associated with marginalisation (unemployment, loss of lands, or trade, means of revenue, or capital);
- increased dependence of the community on external health resources following aid;
- continued disruption of sanitary facilities (water supply, sewerage), especially in the poorest segment of the population who cannot afford the cost of repairing individual facilities;
- permanent relocation in temporary shelters;

- displacement of the population in areas with insufficient health facilities;

- disruption of community life.

Following a disaster, health facilities may be badly damaged or totally destroyed (for example, hospitals after an earthquake). Health personnel can be killed or injured like anyone else in the population, or even more so, due to their increased exposure to traumas when participating in rescue and first aid. Even if they are not among victims, they will be severely taxed and overburdened by work. For a while, they will have to work in isolation with insufficient supplies and deteriorated equipment. Later, local resources will have to be coordinated with external aid. In a final stage, health facilities will eventually be restored. They should be rebuilt taking into account the lessons learnt from the disaster, for example building antiseismic hospitals in disaster-prone areas. While taking the opportunity to improve facilities and services wherever indicated, caution should however be taken not to reestablish them on a grandiose scale inspired by some forms of transient external aid; in the long-term this could only lead to frustration and managerial difficulties.

3.3 The time frame of disaster preparedness

For planning purposes, it is helpful to consider disasters within a time framework of five successive phases:

A. The silent phase

That is the time for planning, before the disaster has occurred and when there is as yet no premonitory sign of its imminent occurrence. In areas subjected to repeated disasters (such as typhoon, earthquakes or volcanic eruption), it can be termed the inter-disaster phase.

Preventive measures such as community education, training, engineering (antiseismic building, reinforcement of structures, landslide barriers, waterways works for diverting floods) will be implemented during this phase.

B. The predisaster phase

This is the time for warning and taking protective action or escaping behaviour. Warning will depend on the identification of predictive signs. These should be adequately sensitive and specific not only to give enough advance notice but also avoiding unacceptably frequent repeated false alarms. The availability of such indicators is highly dependent on the development of technology. Responsible authorities should convey the warning in such a way that it is clearly understood by the population. The population should be educated to react in the expected manner to a warning when it is given.

C. The isolation phase

This is the time of chaos, death and shambles. The sudden needs exceed the resources by orders of magnitude. The population is isolated. Except in limited disasters occurring in highly organized urban areas, however the prompt the external aid (and it may greatly vary depending on geography), the disaster-struck community will by necessity rely on its own resources for rescue and first aid. Sociologists have however shown that in spite of the apparent confusion, the behaviour of the victims follows some uniform patterns of mutual help. Often, the affected community has a remarkable capacity for organising itself to face the situation. Local people are becoming as it were "coping experts". Recent epidemiological studies have demonstrated that after an earthquake most of the rescue is carried out by the local community, with its local resources, however depleted or destroyed these resources are.

This capacity needs to be exploited and developed. This requires preparedness at the local level, which implies training of the community workers and education of the population.

D. The phase of external assistance

This phase starts with the arrival of external assistance. It includes late rescue and relief. It is the time for organized

efforts and coordination. External resources and personnel will be deployed to supplement whatever is left of the local health facilities and take care of the major casualties not yet evacuated. Most of the broadly publicized erratic responses of external aid occur at this time. In order to respond efficiently and effectively to the actual needs, external aid should be based on accurate information collected locally both in advance of the disaster and as soon as possible after the disaster has occurred.

E. The rehabilitation phase

This phase ends when the situation has returned to the normal pre-disaster situation or ideally to better conditions. It is difficult to state exactly when this phase begins, since it frequently overlaps the preceding phases. Many of the measures taken during the relief phase may have an effect on the long-term rehabilitation of a community affected by a disaster, such as permanent relocation in temporary or shelters or improvised dwellings or continued reliance on external aid.

Each phase will require different types of preparedness measures based on different types of information.

In order to meet the objectives indicated at 3.1, preparedness needs to be planned in advance. It requires:

- (1) identification of the tasks to be carried out before, during and after the disaster;

- (2) adequate information on the resources and the needs;
- (3) definition of the procedures to be activated in case of disasters.

It should be stressed that many of these measures, though related to health, are not the responsibility of the health services (for instance, implementing engineering measures for flood prevention or increasing resistance of structures to earthquakes). Such measures are, however, important for health preparedness. The health services should therefore be involved in the overall advance planning for response to disasters, and kept informed of all planned interventions and relevant information from other sectors. (This is discussed more fully in paragraph 6. page 32).

4. Information for disaster preparedness and assessment of needs following natural disasters

- 4.1 Information is essential for efficient and effective management of disasters. It has three purposes: advance planning of measures for prevention and mitigation of effects; preparation and coordination of rescue, relief and rehabilitation and evaluation. It should deal essentially with: potential risks, needs, resources, utilization of services and evaluation of relief action taken.

The information component of preparedness requires:

- (a) the collection of data in advance;
- (b) the setting up of a mechanism for assessing the needs, to be activated once the disaster has occurred; the same mechanism should be used for collecting data for evaluation;
- (c) the study and use of data collected after the disaster to improve preparedness for future disasters.

Data should therefore be collected before the disaster, in the course of the disaster and in its aftermath, and later when the disaster has subsided.

4.2 Pre-disaster collection of data

4.2.1 Data collected in advance will serve three main purposes:

- indicating possible preventive and mitigating measures for the control of environmental hazards, antiseismic building, evacuation of the population, education of the community, self-protective measures;
- directing rescue and external aid: size of exposed population, location of isolated population group, demographic characteristics, epidemiological patterns of

communicable diseases, location of health facilities,
inventory of facilities, equipment and supplies, operating
capacity of hospitals, resources in health personnel,
communications, alternate roads, other logistic problems;

- to serve as a baseline for the assesment of needs and for
subsequent evaluation.

4.2.2 Some suggested data that this profile should contain are:

Demographic data

- total population
- age and sex distribution of
the population
- crude birth rate
- crude death rate
- infant mortality rate

Health resources

- type, number and location of
facilities including
emergency care
- number and location of health
personnel
- medical supplies
- the normal health referral
system

Health status

- major communicable diseases
- other significant health problems
- nutritional status
- immunization status
- distribution of vectors of communicable diseases

Socioeconomic data

- main staple foods and prices
- main occupations of the population
- average wage rate

Infrastructure and logistics

- transportation (roads, alternate roads)
- communications
- service delivery

In addition, special attention should be given to the mapping of potential environmental hazards, such as dams, industrial plants including chemical, silos, fuel reservoirs, flammable material, gas mains and pipelines, dumping sites of possibly toxic wastes, nuclear plants, storing of dangerous goods. Due to constant changes, mapping of hazards in areas at risk should be regularly updated.

Although generally it is not the responsibility of the health sector to control or monitor these hazards, it is its responsibility to estimate their potential effects on the health of the population and to ensure that country measures are ready should secondary effects occur after a disaster. Recent experience has shown that such risk following floods or earthquakes should not be overlooked.

Advance data on transmission of communicable diseases and epidemiological patterns in disaster-prone areas are essential in order to provide a baseline for epidemiological surveillance once the disaster has occurred. It should be emphasized that no epidemiological surveillance can be improvised in the aftermath of a disaster. It has to be integrated into the current epidemiological surveillance system.

Veterinary problems and their relevance to public health should also be given due consideration. Important data are, among others, the structure of the veterinary services and their coordination with the health services, the number and location of veterinary facilities and personnel, slaughterhouses, facilities related to food inspection and preservation, stray dog control, facilities for destruction of carcasses, synanthropic and wild animals of potential public health importance (vectors of communicable diseases, snakes and other venomous animals); vaccination of animals; zoonoses; food habits of the population; food resources for animals. Basic data should be obtained from or collected jointly with the veterinary services.

4.2.3 There is at present no comprehensive list of the essential data for health preparedness to be collected in advance of disasters. Such a list should be compiled on the basis of the experience gained by personnel in recent disasters, and through the study of the literature. A questionnaire (proforma) should be designed to enable the collection of such advance data.

Primary health care workers are in the best position to collect most of these data, due to their knowledge of the community. In addition, by collecting these data, they will be made more aware of the need for disaster preparedness, and will feel involved.

It is essential that such questionnaires be kept as simple as possible. It should include only data relevant to disaster preparedness and management and the resulting community profiles should be prepared in all countries prone to disasters. The risks will then be highlighted and more specific information can be collected at the local level.

Provision should be made to centralize these data at the level in charge of planning and coordination. The personnel in charge of collecting them should make sure that the information will be put to good use should the necessity arise. This makes it essential that a system be developed for a feedback mechanism to acknowledge this information and to make it available at the community level.

4.3 Assessment of need following a disaster

4.3.1 Time is a vital element in disaster management. Important decisions have to be made immediately or within the hours following the report of a disaster, on the basis of the information that is available. For example, the mobilization of resources for search, rescue and extrication of victims or for emergency medical care of injuries cannot be put off until detailed reports from field surveys on the exact geographical extent of the affected area, number of houses damaged and distribution of injuries by type of lesions, age and other epidemiological determinants, are received and analysed.

While in the immediate aftermath of a disaster the local community will by necessity have to carry out rescue and first aid relying on its own resources, these, by the mere definition of what constitutes a disaster, are insufficient. External aid is required with the shortest possible delay, to supplement overtaxed local resources and provide whatever specialized care is required. A prompt and relevant response requires information, advance planning and constant preparedness. Promptness of response should however, not be confused with indiscriminate action.

4.3.2 With respect to information requirements, it might be helpful to consider two successive phases in the need for external assistance after a disaster. In each of these phases, different types of information are required.

First, there is need for additional rescue and emergency care.
Second, there is a need for relief.

4.3.2.1 Information required for rescue and emergency care

Rescue and emergency care is needed within hours or at most days. The effective deployment of the teams requires (1) immediate reporting of the disaster, its size (population affected, rough estimate of the number of victims) and its location; (2) information on the facilities available for first aid, triage, and evacuation of the victims (health facilities still in operation, site for triage, transportation, communications).

Immediate reporting requires that the authority at the community level, be it a community leader, a health worker, or other responsible member of the community, knows exactly in advance what he/she has to report, how to quickly gather the relevant and essential information, how to transmit this information, and to whom. A minimum data set should be established and tested in various countries in different type of disasters, to be used for the immediate reporting by the local health workers. At the central level, this information will be checked and completed with the information collected in advance (See para 4.2.3) and processed for immediate deployment of the resources. Additional information will then be collected by the already agreed procedure.

This reporting mechanism should be planned in advance and rehearsed.

Special attention should be given to the assessment of the situation in isolated remote communities, often separated from the main focus of the disaster. In a number of earthquakes, it has happened that such communities were left apart from the main stream of assistance for days due to lack of reporting. Assessing the impact in these communities requires a combination of sophisticated means such as aerial surveys together with the interpretation of rumours.

Information reported from the disaster-struck area will often have to be confirmed and verified. It should also be coordinated with information received from other areas. In addition, rumours play a major role in directing the immediate response to disasters. While they often lack basis, rumours may constitute an important source of useful information if verified. This requires that communication be kept open between the central coordinating and planning level and the community affected by the disaster. Information, however reliable, is useless if it cannot be transmitted and processed. The use of two-way radio transmitters is essential; such equipment should be available in all health facilities in areas most exposed to natural disasters. Verification of the information also requires that the central level knows exactly in advance who in the community is likely to provide or confirm information.

4.3.2.2 Information for relief

The need for relief spans over days and weeks, but it is deeply rooted myth that the quickest possible relief is always the best. There is however no standard response in the relief phase; it has to be specific, according to the type of disaster, its effects, and the resources still available in the affected community. A balance should be struck between promptness of relief and its adequacy to the situation. Convergence of well-intentioned but unskilled and unsolicited volunteers, useless goods and irrelevant supplies can only add to the chaos. It has been said that, at times, indiscriminate relief may constitute a second disaster on top of the first.

Rather than rushing in irrelevant supplies, it is necessary to collect prompt and reliable information on what is needed, where and when.

Collecting this type of information involves:

- (a) survey of the areas affected by the disaster to determine the extent of damage and disruption of services. This in turn should indicate the impact of the disaster on the operating capacity of lifeline services and the health of the population. It will then become possible to determine what essential resources are required, in what order, and when;

(b) inventory of the resources (personnel, warehouses, supplies, etc.) available. Comparing the total requirements with the resources available locally or in the adjacent areas, or already pledged, will permit determination of requirements.

This process of assessing outstanding needs seems straightforward. One may therefore wonder why so many appeals for assistance and subsequent relief decisions after sudden impact disasters are open to criticism. The underlying problem is the need to get the right information to the right person on time. In many disasters, timely and accurate technical information does not reach decision-makers in the affected country or at international level. They have therefore to act according to stereotype notions of disasters' effects and respond to the pressures of the prevailing public opinion, however uninformed it might be.

From the point of view of logistics, field assessment requires that multidisciplinary teams have access to transportation and telecommunication. Epidemiologists and other civilian health officials often find themselves in no position to secure the priority support they should receive to carry out their tasks.

Obtaining and mobilizing relief both at national and international level is time consuming. Failure to consider these in-built delays at the time a field assessment is being carried out contributes to the usual result that most health supplies and

hospital personnel arrive long after most patients have received first aid, and when the priority has shifted to the provision of food, shelters, sanitation, and epidemiological surveillance. Instead of only focusing on transitory or short-lived needs that are part of the stereotyped immediate response (rescue, first aid, emergency care), the assessment should attempt therefore to forecast future critical needs upon which the assistance from the rest of the country and from the international community can make a difference.

4.4 Methodology of assessment: there is no standardized, universally accepted method to determine rapidly what the right supplies for a given time and place are. Furthermore, there is no consensus on what minimum information can be realistically gathered in the health field for rapid decision-making after a disaster. The data on damages collected in actual disasters are usually crude estimates based on superficial observations of limited technical and statistical validity.

4.4.1 Assessment requires that a list of key indicators be developed which will make it possible to determine quickly where the crucial issues of any specific disasters lie and how they are likely to evolve. The systems should be geared to practical decisions. As recommended at a recent meeting held in Mexico ("Taller de

Evaluacion de Desastres Naturales", Mexico, May 1984) a list of critical decisions that should be made at each phase serves as the starting point to determine what information is required at that stage and therefore what indicators are called for in the assessment process.

Although each disaster has its own peculiarities, all disasters have general characteristics in common, which in recent years have been increasingly documented through epidemiological studies. A flow chart from indicators to decision can therefore be developed for the major types of disasters and for the various problems which can be encountered such as health care, nutrition, sanitation, communicable diseases.

The indicators should be kept simple and manageable. This is particularly important regarding information to be collected at the local level by the health care workers or other community workers. A proforma should be designed in advance, and the personnel should be trained in how to collect the relevant data for assessment.

The same procedure will be used for the evaluation of disaster control measures. In some countries a check list has been developed to be used by the central level in charge of managing disasters based on specific questions regarding the fulfilment of a number of tasks to be accomplished in the case of drought and floods. Such a list should be available in every health centre. It serves as a constant reminder to the health sector of the necessary preparedness for disasters. Such a list can also be established for epidemics, as shown in a recent epidemics of bacillary dysentery in West Bengal.

4.4.2 The task of collecting the information for assessing health needs after a disaster calls for the cooperation of primary health care workers and more specialized teams. While the first will collect data at the community level, assessment teams will retrieve this information and conduct specific and/or more comprehensive surveys.

More specialized or comprehensive assessments on broader geographical scale calls for skills from several disciplines, including health care, epidemiology, planning, sanitary engineering. These combined skills, already in short supply under normal conditions, are in great demand during emergencies. Few countries or agencies have at the same time teams with the broad multidisciplinary professional expertise, the required knowledge of the local conditions and prior experience in disasters, together with the logistical support required for a rapid assessment of the needs. It is a domain where national and international cooperation could be particularly useful.

4.5 Post disaster studies

Much has been learnt from case studies over the last decade during or after the disaster, on the effects of disasters on, the reaction and the expected needs of the affected community,.

Such studies are of importance to identify (a) the tasks which could be performed by the local community and external personnel,

(b) the decisions involved in the management of disasters, and
(c) the information required at various levels, for decision taking by the different sectors of the society and public services, at the different levels and stages of disasters.

More information should be gathered in order to develop appropriate indicators for the management of disasters and the evaluation of control measures, including the long-term effects and rehabilitation. This will help to develop standard check-lists for the collection of data both by the primary health care workers at the site of the disaster, and by the assessment teams, during and after the disaster.

Post disaster studies are also important to establish a catalogue of the equipment required by the health services for rescue and relief.

5. Primary health care in disaster preparedness and emergencies

5.1 In the immediate aftermath of a disaster, the community has to cope. In the health context the community must be involved using the primary health care approach in the spirit of the Alma Ata Declaration previously mentioned.

Self reliance of the community will therefore be enhanced using this approach.

Primary health care workers should therefore be involved in several aspects as previously mentioned - information gathering, providing rescue and first aid, ensuring environmental sanitation, enabling community participation, checking supplies, coordinating with sanitary, veterinary and other community services. There is a need to agree on the role of primary health care in these items.

In the aspect of information requirements it is suggested that preparation of the community profiles as outlined in paragraph 4.2.2 of this report is part of the normal functions of primary health care.

As regards assessment of need, once the content of the assessment protocol described in paragraph 4.4 above have been agreed, primary health care workers should have the responsibility for ensuring that the community is involved, that it is ready to carry out the assessment and that training programmes are organized.

At the time of the disaster, the primary health care workers have the responsibility to report to the next level of authority, the needs based on the assessment.

5.2 The role of primary health care in rescue and first aid

5.2.1 As mentioned at the Rabat Workshop, disaster management should be part and parcel of primary health care. Before external assistance including specialized emergency care arrives, rescue and

first aid will have to be carried out by the local community, relying on its own resources. For example, in a survey conducted in seven of the most severely affected villages after the Irpinia, Italy 1980, earthquake, it was found that 24% of the victims trapped under debris were extricated within half an hour, 44% within 3 hours, and 55% within 12 hours. The time within which 50% of the trapped victims had been extricated (Time Lib 50) was 8 hours. Within two days, 80% of all the trapped victims were extricated, dead or alive, of all the people extricated alive 93% were rescued within the first 24 hours. 90% of the surviving victims were extricated by the people of the affected community (76% by residents of the same house) using local tools such as spikes, shovels, etc. Similar findings have been made in other earthquakes, particularly in Tengshan, China, 1976.

Self-reliance should however not be confused with self-sufficiency. By definition, a disaster results when the need exceeds the resources of the affected community. Self-reliance is intended to make the community able to cope the best it can with the unexpected situation, while external assistance has not yet been provided.

The role of primary health care will vary greatly according to the country. In some of the countries of the region, especially in urban areas, primary health care will include general practitioners, specialists, and hospitals. In others, particularly in rural areas, the primary health care team may be restricted to health officers, nurses, sanitarians and other health personnel. It may even consist of an isolated auxiliary worker in a health station.

Identifying the role of primary health care workers in first aid should therefore take into account the particular context of each community and country.

The necessity to rely on scarce community resources and existing primary health care personnel will be greater in remote rural areas with difficult access than in densely populated industrial areas with an extended and specialized health infrastructure, and it may be nil in case of limited man-made disasters occurring in cities with specialized hospitals. The issue is that many natural disasters of large magnitude occur in remote areas, far from towns and hospitals; the roads may become impassable, bridges may collapse, winter may add to the difficulties. There are several examples of such situations following earthquakes in recent years. The more remote the area, the longer it will take for external assistance to arrive, and the more the community will have to rely on its own resources.

In the ideal situation, such as in a limited disaster in a metropolis, emergency medical teams representing an extension of the hospital may be deployed to handle the casualties at the site of the disaster.

Generally, however, most of the immediate rescue will be carried out by the affected community, and external teams arrive generally too late to have a significant impact on extricating victims from debris.

There are well documented cases of victims buried under collapsed buildings who were rescued several days after the Bucarest, 1977 and the El-Asnam, 1980, earthquakes. In the Irpinia, Italy, earthquake, 90% of the victims were rescued by inhabitants of the same village, using local tools. (However, it might just denote that there were no other tools). Had skilled rescue teams using more sophisticated means been available, it is likely that many would have been extricated alive instead of dead (17 trapped victims reported as having screamed for help, had died before being extricated). After the 1960 earthquake in Agadir, Morocco, combined lesions such as fractures with crush syndrome were unexpectedly rare among the survivors, which indicates that death might have occurred before possible rescue in the people having suffered this type of lesion.

5.2.2 Role and responsibilities of local health personnel and emergency teams

The issue is to know what could and should be done by the community, what could be done in case external assistance is late, and what should not be done when no outside resources are available.

The problem can be best approached by reviewing in a time-sequence the various tasks of medical care which have to be performed after a disaster. It should be remembered that mass-casualty care is drastically different from routine medical care because of the large number of victims who need

treatment at the same time under strained conditions and with limited resources. These circumstances require the setting up of priorities.

- A. Within the first stage, i.e. the stage of isolation, no additional aid from outside is possible. Only those who are present at the site of the disaster can help. Often minutes decide the chances of survival. During this highly critical period, the rescue and first aid has to be carried out by medically unqualified personnel or even by the general population. In many occasions, even physicians can find themselves hampered in assisting, for lack of the necessary equipment.

First aid and life-saving measures to be provided at the community level should at the minimum include clearing airways (intubation), maintain breathing (artificial respiration) and restoring circulation (arresting haemorrhage and if at all possible administering plasma expanders). Admittedly, in a number of situations, when no qualified health personnel are available, or when they are themselves victims of the disaster, it will be difficult to fulfill these recommendations. Training should, thus, been given to all health workers and related professions in disaster-prone areas in order to prepare them to implement these basic life-saving measures (generally referred to "ABC"). It should also be given to all medically qualified personnel, who often lack adequate training in this field.

The local non-medically qualified personnel should also be informed about the procedures that should not be applied while waiting for specialized help, e.g. consolidation of fractures. Sorting out patients for the above-mentioned life-saving measures, and identifying these victims for which they should better abstain from treatment, is the simplest form of triage which can be performed at the primary health care level.

B. During the second stage, that is when specialized technical assistance is available, the classical procedure for handling mass-casualties is set in motion. It consists of three steps:

- casualty clearing
- emergency surgical stabilization
- medical staging and evacuation

Casualty clearing should be performed on the spot, prior to evacuation, by appropriately trained personnel. It consists essentially of: sorting victims into priority groups for treatment and transport (triage); taking life-saving measures (in addition to those mentioned above, essentially splinting fractures, treating shock with fluid replacement, performing tracheotomy).

Triage consists in setting priorities for treatment and evacuation, according to the chance of recovery having regard to the level of care and the resources available, in order to increase the chances of survival for the greatest number of victims. Scarce resources will have to be concentrated on those for whom specialized care may mean the difference between life and death. It is a delicate procedure, which requires high expertise, authority, and a deep sense of responsibility. The responsible person for triage should be designated in advance. Military physicians are much better prepared for the task of triage than the majority of other physicians.

The purpose of life-saving procedures is to place the patient into such a condition that he can be transferred without suffering further injuries. The first aim therefore is to reestablish or maintain respiration and circulation. There are however also victims who have to be treated immediately because their lesions, according to experience, quickly deteriorate leading to life-threatening conditions, for instance intra-abdominal, intra-thoracic injuries and severe burns.

Emergency surgical stabilization before evacuation may be required for some victims. Although it is infrequent after most natural disasters, with the exception of earthquakes, it is common following man-made or industrial disasters. Emergency surgery generally requires mobile surgical units.

Medical staging is the repetition of the triage process at each stage of the evacuation, where casualties will be sorted out again for continued evacuation, immediate intervention, or made to wait for later transport. Triage is a dynamic procedure which has constantly to be evaluated according to the status of the victim.

- C. The third stage, that is the stage of consolidation, extends to several days. The situation can now be assessed. At the scene of the damage a local control unit is organized, which directs the remaining victims to what is left and still operating of the local health facilities, or evacuates them to hospitals outside the area where relevant treatment, at times specialized treatment, can be provided. Comprehensive coordination ensures that every victim can be given the optimal treatment he/she deserves.

All along the chain of referral, until optimal individual care can be provided, standard procedures should be used, in order to ensure continuity of care. Appropriate tagging of the patient is essential.

In rescue and first aid, the tasks to be performed by the primary health care worker regarding medical care in cases of disaster are most important. He/she must be prepared for it. These tasks may be summarized as follows:

- (1) assuming the whole responsibility, possibly with other members of the population, for rescue and life-saving measures (ABC) in the immediate aftermath of a disaster, when no external emergency care assistance has arrived;
- (2) directing the emergency care teams on the spot of the disasters;
- (3) preparing adequate sites for triage;
- (4) making local health facilities available to the emergency teams;
- (5) taking in coordination with others responsible at community level the necessary measures for prompt and adequate transport and evacuation of the victims;
- (6) participating to the extent of his/her qualification to medical care, including emergency care, provided by the emergency team;
- (7) keeping in contact with the community and assuring liaison between the victims and the external teams.

These tasks require adequate preparation and training.

6. The health aspects of management and planning for disaster preparedness

6.1 If the objectives of a disaster preparedness programme are to be met, several problems will need to be overcome by sound planning and management:

Many sectors are involved; information comes from many sources, the epidemiology of disaster is not well known from the behavioural and environmental aspects; education and training is carried out by many sectors; services, including health services, depend upon high technology and are not based on community participation and primary health care.

Health authorities are not responsible for the overall planning and management of disaster preparedness. They have the responsibility to ensure the maintenance and the protection of the health of the population at the time of the disaster; this carries with it the responsibility for all health aspects of preparedness. They must be part of the team established locally, regionally or nationally.

Health in this context is much wider than health services, much wider than treatment of victims. It includes primary and secondary care of victims, environmental aspects (safe food, water, sewage disposal, solid waste disposal, toxics), control of communicable diseases, maintenance of health services.

The health sector is also responsible for the preparedness of the health services themselves and the provision of these services. They will not actually provide the other health elements, but should indicate the detailed requirements to enable the other sectors plan their inputs.

6.1.1 The scope of the health sector responsibility as it relates to health aspects therefore includes:

Health services

primary health care

- triage

evacuation

- triage

hospitals

- drugs and equipment

The environment

- physical

water

food

shelter

sewage disposal

solid waste disposal

toxics

- psychological

- social

Transportation - evacuation of victims
 - supplies

Communication - normal
 - alternatives

This is not exhaustive and will need to be further considered.

6.2 Some principles for planning emerged during discussions. These included:

Agreed definition and scope: the health sector plan is part of the total plan with an agreement that coordination of all aspects of health is the responsibility of the health sector, but with detailed allocation of responsibility to the health and other sectors;

Agreed standards - e.g. number of calories per person for survival; an emphasis on preparedness; emphasis on community participation and self reliance with the primary health care approach; that multisectoral management is essential; there should be an adequate communication and transportation system.

It is important that these principles and the arrangements made to meet them are part of the normal service provision in the areas at risk.

6.3 The management of mass casualties requires advance planning. It includes (a) the training of primary health care workers, other community workers and the general population, including all physicians, in the basic life-saving procedures; (b) the organization of specialized well-trained mobile medical and surgical teams on a stand-by basis; (c) means of transport, both to reach the disaster area and to evacuate the victims, as well as communications, which will require coordination with other sectors (ministries, army, private sector); (d) hospital planning, including organizing in advance a network of mutually supporting hospitals; (e) coordination between the teams (if there are several) as well as with the authorities in the disaster area; (f) participation of the primary health care workers in the care activities carried out in the affected community.

6.3.1 Hospitals

The activities to be performed by hospitals should be planned in advance. There is a large literature on hospital disaster planning, which are very detailed and cover eventualities such as power failure, loss of a key, risk of outdated register of the personnel, lack of tags for identifying the patients, telephone breakdown, impossibility to locate the switch-board operator on a Sunday, jamming of access roads, a helicopter landing pad used as parking space, convergence of relatives at the entrances. All hospitals in disaster-prone areas should have such plans, which should be part of the health sector plan and which should be periodically rehearsed and updated.

Even in disaster conditions, normal common clinical emergencies will continue to occur. Hospital planning, beyond considering the care of emergencies resulting from the disaster, cannot overlook the need to care for routine emergencies.

It should be stressed that hospital planning and deployment of emergency medical teams is completely different from shipment of a field hospital in a disaster struck area. Experience has shown that, while such field hospitals may, in some cases, be useful, they most generally arrive too late when most of the emergency is over.

6.4 Twinning

As proved after recent earthquakes, twinning of hospitals in disaster-prone areas is often a most useful way to circumvent problems which arise when a hospital located in a disaster-struck area has been itself destroyed or damaged. Plans for such twinning should be established in advance.

The operating capacity of the hospitals, as well as the various specialities represented, should be known in advance by the authorities responsible for disaster health planning at the country level, in order to prevent such documented situations in which an hospital was overcrowded with victims while another hospital nearby was underutilized.

Experiences in the Mediterranean basin have shown that first aid is often provided by health personnel from areas adjacent to the destroyed area which have been unaffected or less severely damaged. In a number of countries, it is also advocated to create networks of mutual help in natural disasters. In other countries, such links have been established on a more personal basis between hospitals or even between primary health care workers, depending very much on the geographic context and communications. Official or casual relationship between adjacent areas should be given particular attention. It is most important that such links be known in advance, to accelerate and improve rescue and relief operation. In isolated border areas these local networks can overlap political frontiers, as demonstrated in case of earthquakes having occurred during the last decade.

7. Education and training for preparedness

7.1 Education on health aspects of disasters should be made available to the entire population, giving special attention in disaster prone areas. The basic content of education will be the same for all disasters, whereas additional and detailed information should depend on the type of disaster most likely to occur in the area. The active participation of the community in education for disaster preparedness is of vital importance. It should involve community workers, local health personnel, leaders and other responsible persons, and teachers. Special attention should be

given to women in the community, in view of the self-reliance concept. Education should encompass prevention, reaction to warning of an imminent disaster, information regarding the potential risks, self-protective measures for local people, basic first aid, access to health facilities, and the local organizational structure. It should be integrated with health education at the community level.

7.2 Training should be targetted at specific workers and population groups. The curricula should include (a) collection of information, both before the disaster and its aftermath; (b) rescue and first aid; (c) public health emergencies; (d) organization of the community immediately after the disaster; (e) participation in emergency care and relief.

Periodic training, including in-service training, is of utmost importance using simulation exercises and rehearsals. Training of the trainers should be given priority, in order to obtain multiple effects. Parts of the first aid measures can and must be carried out by lay persons, since these are frequently the first to reach the scene of the disaster. Training of lay helpers is an urgent problem which should be included in normal education of young people. First aid training in schools may reach a large number of potential helpers. In addition to health professionals, training in basic first aid should, thus, be made available to the entire population, using every opportunity, such as the licencing system for drivers, school curricula, mass media. Training in first aid

should also be reinforced for the health professions, including but not restricted to physicians, in medical schools, dental schools, schools for nursing and midwifery.

These are only general guidelines. They should be considered within the context of the broad objectives of the WHO European intercountry programme on disaster preparedness (Seventh Programme of Work and Regional Strategy) which sets out to:

- organize regional courses for the training of national public health administrators, health workers and health-related personnel with the objective of enhancing the status of preparedness of countries at risk;
- develop models for the training at national level of workers in health and related spheres in matters connected with health problems arising from disasters and their logistics.

8. Conclusions and recommendations

8.1. Information for disaster preparedness and assessment of needs following natural disasters

Adequate and comprehensive data are required at all levels for the planning of preparedness for potential disasters as well as for the assessment of needs when and where disaster strikes.

- 8.1.1. Within Member States, data should be collected at all relevant levels, but priority should be given to disaster-prone areas.
- 8.1.2 Both local and country profiles should be prepared to include data of importance for health planning in disasters. Some data are the responsibility of sectors other than health (such as vulnerability analysis, the prediction of risks, the mapping of environmental hazards (including chemicals), veterinary services, and logistic facilities (mainly transport and communication)). The health authorities must have access to such data.
- 8.1.3 Primary health care workers should have a direct responsibility to collect data not only before a disaster as part of the profile, but also after the disaster has occurred. Community profiles should be regularly updated. They should include the demographic, epidemiological and socioeconomic characteristics of the population; the description of areas that are presumed hazardous; an inventory of personnel; and the location of available health facilities and supplies.
- 8.1.4 In the immediate aftermath of a disaster, primary health care workers should be made responsible for collecting and reporting, in the quickest possible way,

relevant information on damage, operating resources, and needs. Procedures should be developed for the rapid transmission of these data to decision-makers for analysis, circulation and feedback.

8.1.5 Since no system of information can be improvised, this reporting system should be integrated into the national health information system (possibly the epidemiological surveillance service), to be activated in the case of a disaster. The data to be collected after a disaster should be kept as simple as possible.

8.1.6 Primary health care workers should be adequately trained in the collection of relevant data. To achieve this minimum data sets should be developed for the collection of information locally. Forms should be developed both for the advance collection of baseline data and for on-the-spot assessment of needs once a disaster has struck. Primary health care workers should receive training in the basic methods of data collection. Epidemiological surveys and ad hoc post-disaster studies should be conducted on the consequences of disasters for health to improve knowledge about expected needs in the future.

8.2 Primary health care in disaster preparedness and emergencies

Disaster management at the community level, especially in the immediate aftermath of a disaster, should be part and parcel of primary health care as defined at the International Conference on Primary Health Care in Alma-Ata in 1978. The self-reliance of the community should therefore be enhanced by all possible means.

This primary health care approach is essential to enable the local community to prepare itself to reduce the impact of natural disasters on the health of its people, since self-reliance in the community is generally the only way to cope during the phase of isolation. In the subsequent phase of relief, however, primary health care still has an essential role in coordinating activities and preparing for long-term rehabilitation.

This approach requires the tasks of the primary health care workers to be precisely defined. They include at least: assessing and reporting the situation, providing rescue and first aid, ensuring environmental sanitation, enabling community participation, checking supplies, and coordinating with sanitary, veterinary and other community services.

While rescue is the responsibility of everyone in the community, first aid is one of the major responsibilities of the primary health care services. To some extent, it could also be extended to other community workers and to the general population, provided they have received adequate training. In the phase of isolation, where no external assistance has yet arrived or if no such assistance is likely to be provided, it will be left to the local community to cope as best it can with the victims.

8.2.1 Primary health workers and other health workers should work to a predetermined plan. Their first responsibility should be to sort out the dead and the injured, and to provide health care to the survivors.

- 8.2.2 Since a large number of victims need treatment at the same time under strained conditions and with limited resources, it is generally necessary to set priorities at every level of the referral chain, from the site of the disaster to evacuation to specialized treatment facilities when relevant. This should be carried out by the more experienced personnel available, according to their qualifications, and according to standard predetermined procedures.
- 8.2.3 Primary health care workers should be trained to sort out the victims at the site of the disaster according to their needs.
- 8.2.4 Caution should be exerted however not to assign to primary health care workers responsibilities for which they have not been prepared, which could be counterproductive. Rather than to decide on the delicate medical procedure of triage, they should be taught when to refrain from action while waiting for specialized emergency care.
- 8.2.5 The first-aid and life-saving measures to be taken by primary health care workers should at least include care for airways, breathing and circulation through simple procedures.

8.2.6 Simplified procedures for first aid and life saving during the isolation phase should be taught. To achieve this, courses should be developed in cooperation with official agencies and nongovernmental organizations who have experience in providing this basic training.

8.2.7 Further studies should also be conducted to determine the tasks that could be performed by community workers, according to the level of development of primary health care in the various countries and the risk of disasters.

8.3 The health aspects of planning and management for disaster preparedness

Priority should be given in countries exposed to natural disasters, to the preparation of national plans including contingency plans and financial allocations. The national plans should also provide broad guidelines on the preparation of disaster planning at the local, district and regional levels. Because disaster management has important legal implications, it is important that legislation should be enacted to provide legal cover for all planned actions at the time of a disaster.

The planning and management of disaster preparedness is a long and continuous process. Taking place at all levels, starting with the definition of risks and the description of tasks, it should encompass the process of policy-making, the mechanism for active intervention training, evaluation, and the reformulation of plans.

It should involve all concerned bodies, including the army, that may play an essential role in rescue and providing logistic support. All levels within the organizational structure need to have their role and functions clearly described and to be given executive responsibility. Lack of transport and poor communications are likely to impede any response to disasters. Special attention therefore needs to be paid to these two elements. Substitute roads, which can be used for transporting victims and bringing in supplies, need to be identified in advance.

It is essential too that communications should be protected beforehand and reestablished as soon as possible. Efficient alternative methods of communication will often be the only way for the disaster struck community to alert the authorities and to direct rescue operations.

8.3.1 Every Member State should establish intersectoral disaster committees at every level of its administration. The community should be members of, and actively involved in, these committees, especially in the exposed areas.

8.3.2 The health authorities should participate in the overall planning for disasters and be members of the disaster committees. The responsibilities of the health sector should be outlined.

- 8.3.3. To ensure a rapid and effective response during disasters, transport and communication, including alternative methods, should be included in the plans.
- 8.3.4 Hospital planning requires special consideration. Contingency plans should be established and include training personnel and periodic rehearsal exercises. Each hospital should have a standing emergency care committee and a disaster care committee.
- 8.3.5 A network should be established in advance in neighbouring areas to support primary health care functions and hospitals by sharing facilities and personnel.
- 8.3.6 The role and tasks of governmental organizations and volunteers should be clearly specified in advance.
- 8.3.7 Epidemiological surveillance in the widest sense including the investigation and reporting of diseases, the monitoring of health facilities and resources, and environmental control should be organized in advance in such a way that it can accommodate specific surveillance activities in case of disaster.
- 8.3.8 A dossier on legislation relating to the health aspects of disaster preparedness and management should be compiled and made available to Member States.

8.4 Education and training

Since the active participation of the population is most important, education on the health aspects of disasters should be made available to everyone, especially in those areas most prone to disasters. Particular attention should be given to community workers, educators, health personnel, local leaders and other responsible people, particularly women who have an important role in community education. All schools, including those training health and related professionals, should be used to convey this education. The use of the mass media is important.

Training, in general, should be limited to certain functional groups and to groups at risk, and it should be based on the description of the tasks to be carried out in the case of a disaster. Periodic and updated training, including in-service training, are of the utmost importance and should include simulation exercises. To achieve a multiplying effect at the community level, the training of trainers is a priority.

Training in first-aid emergency procedures and hospital treatment should be given, with different priorities, to health workers, health-related professionals and the public.

8.4.1 Curricula emphasizing self-reliance should be drawn up for training the public and policy-makers, in disaster-prone areas on the following subjects:

(a) information on the risk of disasters in the area, on the responsibilities of the health and other community services, and on the role of primary health care workers; (b) preventive and protective measures; (c) basic first aid.

8.4.2 All available means should be used to encourage training in first aid, for example in schools, in connection with the issuing of driving licences, and through the mass media.

8.4.3 These activities should be integrated with the arrangements that are normally carried out in the area.

8.4.4 Member States should support WHO in the preparation of material for the courses that are being arranged to begin in 1985.

Annex 1

LIST OF WORKING PAPERS AND BACKGROUND MATERIAL

Working papers

ICP/COR 003 m01/1	List of working papers and background material
ICP/COR 003 m01/2	Scope and Purpose
ICP/COR 003 m01/3	Provisional agenda
ICP/COR 003 m01/4	Provisional programme
ICP/COR 003 m01/5	Provisional list of participants
ICP/COR 003 m01/6	Disasters: A public health problem, by Professor M.F. Lechat
ICP/COR 003 m01/7	Les soins de santé primaires et l'action de preparation aux situations d'urgence et aux catastrophes, by Dr L. Carrino
ICP/COR 003 m01/8	Health care aspects of disaster preparedness, by Professor W. Spier
ICP/COR 003 m01/9	Assessment of immediate and long-term health care needs, by Dr C. de Ville de Goyet

Background material

ICP/ERO 001	<u>Preparedness in facing health problems from natural disaster emergency situations,</u> Report on a WHO Workshop, Rabat, November 1981
EUR/RC33/13.1	<u>WHO/EURO perspectives on assistance to member states facing health problems from natural disasters.</u> Provisional agenda item 14.2 for the Thirty-third session of the Regional Committee for Europe, Madrid, September 1983.

Annex II

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Annex III

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