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# CONSULTATION ON EMERGENCY MEDICAL SERVICES (EMS) ORGANIZATION

Report on a WHO Meeting

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## 1. Introduction: The meeting and its purpose

A special consultation was convened in Washington, D.C., on 12-15 September 1983, to consider problems related to planning for the health consequences of accidental injury, disability and sudden illness, the implementation of emergency medical services (EMS) systems and the requirements of mass casualty incidents.

The welcome and opening remarks were presented by Dr Ramon Alvarez-Gutierrez, Assistant Director, Pan American Health Organization (AMRO/PAHO) representing the Director of AMRO/PAHO, Dr Carlyle Guerre de Macedo; Dr C.J. Romer, Manager, Global Programme for Accident Prevention, World Health Organization (WHO); and, Dr C. de Ville de Goyet, Pan American Health Organization, Director, Emergency Relief and Disaster Preparedness Programme.

In their remarks the speakers discussed developments in the field of accident prevention, emergency medical care and disaster preparedness and charged the consultation participants with the formulation of recommendations for future courses of action.

The format and procedures for the Washington consultation were designed specifically for the purpose of stimulating discussion of the above issues. Specialists from nineteen countries and a representative of the International Services, American Cross, were invited to participate in the Consultation which had as its purpose:

(1) To review current basic components of EMS systems.

(2) To receive reports from several developing countries on their experience in implementing day to day emergency medical services.

(3) To undertake analysis of major problems faced in establishing emergency care according to the type of socioeconomic settings and the level of development of the health infrastructure.

(4) To suggest alternative strategies in terms of infrastructure (hospitals and referral services versus primary care), manpower and training development of health infrastructure.

(5) To consider the linkages between EMS planning and management and disaster preparedness giving special consideration to the training element.

(6) To discuss strategies for EMS involvement in prevention.

(7) To prepare a set of recommendations for further development of WHO activities to support EMS implementation in countries.

## 2. Status reports

Representatives from several countries provided the participants with a verbal report on the current situation in their country. In several cases, there was clear evidence of the efforts which have been made to improve existing programmes and emergency care. Some reports reflected the concern with disaster preparedness as opposed to the development of emergency medical services systems. A number of countries indicated that considerable work must still be done to develop and implement a satisfactory response and care for the sick and injured. Additionally, all representatives provided information on the current state of the art in EMS in their country including legislation, information and education programmes, equipment and disaster preparedness.

The responsibility for the EMS system in most countries appears to be vested in the Ministry of Health with other Ministries and agencies participating to varying degrees. The involvement of other Ministries and agencies, however, is not always coordinated and in some countries this has led to confusion and lack of system development. Existing legislation related to EMS is limited with few countries indicating they have current legislation. Where regulations exist they vary depending on the jurisdiction, both between Ministries responsible for delivery of health care and between urban and rural centres.

Information and education programmes on a variety of accident prevention and road safety programmes are provided by most countries present at the consultation. However, first aid and cardio-pulmonary resuscitation were taught primarily to nursing and medical students. Those countries teaching first aid to the general public use a number of groups/organizations to

disseminate the information but make little use of mass media to promote awareness and stimulate attendance at such courses. Several countries indicated the main thrust of their public education programmes was disaster preparedness information.

When discussing emergency communication arrangements between ambulances, hospitals and other public or emergency response agencies the linkages were more prevalent in the urban than the rural setting. The Ministry of Health in most countries appears to be in radio contact with hospitals but there was infrequent evidence of any ambulance to hospital communication capability. Some countries indicated they are entirely dependant upon telephone communication which may be interrupted, limited or non-existent in rural areas. Mountainous terrain also presents particular problems in several countries as does system maintenance. Some countries depend on police radio communications, especially in rural areas, but this is usually limited to obtaining an ambulance for the injured person.

Emergency transportation capabilities also varied between and within countries and ranged from private vehicles to mobile intensive care units. Many countries do not have regulations or specifications for emergency vehicles, therefore, these differed in characteristics, capability, equipment and markings. Helicopter and fixed wing aircraft are used selectively in most countries and are usually police or military owned craft. One country indicated that a special aircraft is available for medical transportation of infants and children.

Personnel involved in delivery of emergency medical care included ambulance drivers/attendants, physicians, nurses, technicians of various types as well as volunteer firemen and police. Some countries indicate that training programmes are conducted in emergency care techniques, however, personnel belonging to different hospital services are often given training by their hospital without formally developed courses. Several countries indicated that some continuing education programmes are provided which include inter-institution experience and exposure.

Data collected on emergencies appear to be related primarily to morbidity, mortality, hospitalization, time, place and type of event. Information is collected primarily by national health authorities, police and hospitals but varies depending on the orientation of the agency. Thus far, there is little evidence that countries have attempted to use the data to modify or improve the emergency system or to conduct research. The limited number of projects which have been carried out were funded through external sources, such as World Health Organization.

Disaster planning guidelines, policies and plans have been developed by most countries and a responsible agency/ministry identified for the national plan. In several countries there is some evidence that larger hospitals have developed hospital disaster plans but little evidence of disaster planning in the smaller or more outlying hospitals. There is also little indication that regular practices of plans or simulation exercises are held. Many agencies appear to be involved in development of disaster plans and response to disasters. These include Red Cross, St. John Ambulance, service clubs and civil defense to give only a few examples. Community response to planning efforts and disaster assistance appears to be positive, however, there still appears to be a need for better coordination at country level between the various Ministries, agencies and private efforts if the disaster plans and response are to be truly effective.

3. Accident prevention programme

Accidents are among the leading causes of death and disability and since the inception of the Global Programme for Accident Prevention, the problem of accidental injury has been of increasing concern. Because of the high incidence of accidents, especially early in life, they also constitute a major cause of hospitalization (in some countries trauma causes 20-30% of all admissions). Additionally, accidents are a major contributor to "potential years of life lost". Their economic impact cannot be fully assessed because data to estimate indirect costs (attributable to productivity lost due to disease, disability or premature death) are not readily available. Data related to morbidity, disability and other aspects are seldom available and not always comparable between countries. Indicators used to measure road safety vary from country to country making comparisons difficult, however, the problems appear to be most critical in developing countries. Prospective studies have been conducted in an attempt to foresee the problem and these studies indicate that there will be double the current number of cars by the year 2000. However, in industrialized countries the increase is expected to be much lower. Therefore, ways must be found to improve injury control by developing measures and promoting the application of scientific data to appropriate prevention programmes.

During the plenary sessions of the Consultation a general description of the road accident prevention programmes in the Region of the Americas was presented. Emphasis was placed on the

importance of a multisectoral national programme addressing the principal aspects, such as legislation, organization, information, alcohol and drugs, training and education, highway and vehicle improvements as well as need for international cooperation. The difficulty of measuring the problem was also discussed. Countries have determined their accident rates using different definitions, for example, per 100 000 inhabitants or per 10 000 registered vehicles. PAHO has now proposed providing technical assistance to countries in the region in order to help them establish appropriate data collection systems. Strong links must also be established between related national agencies (police, health and transportation authorities) in order to adequately address the situation. It will also be necessary for governments to formulate and execute broad policies on road accidents and road accident control. It was also suggested that a review and update of the present traffic laws should be undertaken as a first step and that special attention should also be given to the problems created by drinking and drug use and their association with the accidents and injuries.

Early investigation should be encouraged in order to evaluate these specific problems and develop a methodology to carry out appropriate educational programmes. Maximum attention should also be devoted to vehicle design characteristics and to safety features as well as mandatory use of seat belts and helmets.

The accident prevention programme was also discussed in terms of its worldwide basis and the extent of the problem was described by looking at three categories of countries. First, countries where road safety is high. These tend to be the more industrialized countries such as the United States, Japan and Northern Europe. Secondly, countries where there has been an identifiable improvement over the past ten years such as Canada, France, Australia and the Federal Republic of Germany. Finally, developing countries where the number of cars are increasing and traffic injury rates are among the worst in the world. As mentioned previously, indicators used to measure road safety vary from country to country. However, if one measures the number of fatalities by unit of cars these are significant differences - Sweden has 2.5 fatalities per 10 000 vehicles, Federal Republic of Germany 5.5 per 10 000 vehicles and Kenya 60 per 10 000 vehicles to give but a limited indication of the situation in the three above categories. In one developing country, Saudi Arabia, in 1973, there were approximately 90 000 cars, four years later the number had increased to 230 000. This indicates not only a sharp increase in cars but statistics available also indicate a corresponding increase in relation to injuries and deaths due to motor vehicle accidents.

In North America and many European countries, recognition of the extent of the problem being experienced led to a review of ways of preventing injuries and reducing disabilities. This review included consideration of various alternatives in delivery of emergency medical care as well as improvement in medical services provided at the scene of the accident, en route to hospital and within the hospital itself.

4. Emergency medical services system

In attempts to develop appropriate means of dealing with the consequences of sudden illness and injury, the problems of planning and implementing day-to-day emergency medical services (EMS) have been addressed by many countries.

A viable emergency medical services system should include at least four essential elements or subsystems. Such a system can be adapted to any level of government organization - local, regional or national. These four subsystems are:

(a) detection - recognition and assessment of unforeseen events;

(b) notification and coordination - this entails the call for help and communication with an ambulance service and hospital;

(c) organization of the EMS system - this includes the participation, performance, and training of all key persons involved in the system;

(d) emergency medical treatment - the provision of emergency medical treatment that will increase the chance of survival and minimize the effect of injury or illness.

In designing the EMS system, many factors must be taken into consideration, such as population density, geographic variances, existing transportation facilities and the economics of the region. Delivery of prompt, efficient emergency medical care is dependent on the functioning of the system to care for all emergency patients, with special emphasis on development of the process for the care of the life-threatening or critical care patient.

A functioning EMS system is the arrangement of a series of planning and operational components established in such a manner as to provide high quality, rapidly available care to a variety of acutely ill and injured patients in the multiple environs of a large geographic area.

Ideally, plans for an EMS system should include the following components:

4.1 Legal and legislative requirements

Legislation should be passed at the national level to establish and implement the EMS system and the legal concerns of participants of the system should be addressed.

4.2 Personnel requirements and training

Based on data collected to determine the need for an emergency medical services system, personnel and other resources can be determined. The major manpower elements to be considered include:

- first responders - fire, police, and other public safety elements,
- communicators - EMS/resources dispatcher
- emergency medical technician - ambulance (EMT-A)
- emergency medical technician - advanced
- registered nurses - emergency department
- registered nurses - critical care units
- physicians - critical areas (medical, surgical, pediatric, burns, psychiatry, etc.)
- EMS systems director - physician, administrator
- personnel manning primary health care stations

Sufficient numbers of all types of personnel should be provided EMS on a 24 hour a day basis, 7 days a week, within the service area of the system.

4.3 Training

Provides for appropriate training (including clinical training) and continuing education programmes. The training programmes should qualify personnel on a continuing basis and be organized to provide on-going review as an insurance against loss of emergency care skills.

4.4 Communications

Provides for linking the personnel: facilities and equipment of the system through a communications network. Communications provides for the mobilization, management and coordination of EMS resources and other emergency response resources which may be required.

4.5 Facilities

An adequate number of easily accessible emergency medical facilities which are collectively capable of providing service on a continuous basis. These facilities should have appropriate standards relating to capacity, location, personnel, and equipment which are coordinated with other health care facilities in the system.

4.6 Critical Care Units

Access (including appropriate transportation) to specialized critical medical care units should be provided. The units may include: trauma intensive care units, burn centres, spinal cord centres, detoxification centres, coronary care units, high risks infant units, drug overdose centres, psychiatric centres and others as appropriate.

4.7 Public Safety Agencies

Integration of public safety agencies (police, fire) into standard EMS and disaster operating procedures on an areawide basis should be considered. Public safety agencies are most frequently

the first responders to an emergency patient. The EMS system must therefore work with these agencies to ensure the use of special equipment, proper training of staff, linked communications and the development of cooperative operating procedures, so that public safety personnel take the necessary action to sustain life until professional EMS personnel arrive. This action includes crowd control, protection of property and movement of traffic.

4.8 Consumer Participation

The system should allow for persons (consumers) residing in the area to participate in the decision making process for systems development, particularly in problem identification. Thus, the users of the services have a voice in how services provided for their benefit are organized.

4.9 Accessibility to Care

The system should provide measures to monitor for restrictive practices that may eliminate any person or group of people from equal quality of services within the region. The system should provide for the same quality of services regardless of the patient's ability to pay or social status.

4.10 Transfer of Patients

In development of the system, provision for transfer of patients to facilities and programmes which offer the follow-up care and rehabilitation necessary to affect the maximum recovery of the patient should be planned. The transfer of emergency patients from the emergency site to the emergency department, critical care unit, and to follow-up care and rehabilitation centre are all within the scope of a total EMS system.

4.11 Standardized Medical Record keeping

The system should provide for a standardized medical record keeping subsystem which should cover the treatment of the patient from initial entry into the system through his discharge, and should be consistent with patient records used in follow-up care and rehabilitation.

4.12 Public Information and Education

Programmes of public education and information for all people in the area should be provided so they are aware of the system, how to access it, and how to use it properly. The information programme should take into account the needs of visitors, as well as residents of the area, to know or be able to learn immediatly the means of obtaining emergency medical care. Programmes should stress the general dissemination of information regarding appropriate methods of medical self-help and first aid and the availability of first aid training programmes in the area.

4.13 Evaluation

The development of the system should provide for periodic, comprehensive review and evaluation of the extent and quality of emergency health care provided within the service area. The evaluation component should be adapted to specifications taking into account local characteristics.

4.14 Disaster linkage

A plan should be developed to assure that the system will be capable of providing emergency medical services in the service area for mass casualties resulting from natural disasters or national emergencies. This entails working with civil defense and the military forces, and the integration of EMS resources with other emergency services.

4.15 Mutual aid agreements

The system should provide for appropriate arrangements with systems serving adjacent areas within countries for provision of medical services on a reciprocal basis where access to such services would be more appropriate and effective in terms of the service available, time and distance.

5. EMS and disaster

While not all disasters, for example, floods, produce large numbers of casualties, appropriate health management following disaster is essential in order not only to solve problems but prevent them from occurring. Epidemiological assessment and surveillance, effective use of supplies and

personnel, coordination of international relief efforts, adequate environmental health measures must all be considered. Presently, increasing attention is being paid to the need to develop the capability of government at regional and country level, to deal effectively with the health consequence of disaster. The medical aspects of emergency management of large scale disasters causing mass casualties is also being addressed.

In multiple casualty situations, all the patients are injured at the same time and are located in the same place, thus the multiple casualty level of operations will temporarily stress the system's availability of resources. In rural areas or areas with minimal emergency medical resources, these situations may have a disastrous effect on the ability to respond to additional requests for assistance. Multiple (mass) casualty incidents clearly stress the capability of the responding emergency medical services system and the emergency capabilities of the various hospital facilities. In some disaster situations, the full ability of the EMS system may be exhausted by the number, location and accessibility of the casualties overwhelming even the best organized emergency medical services and the equipment capability.

The need for a relationship between the EMS and other emergency agencies, such as fire, civil defence, law enforcement, military, etc. is also evident, since these agencies and their personnel must work together in stress filled disaster situations. The EMS system should be capable of expanding in order to meet the needs of the patient(s) following disaster events, such as mass casualties resulting from tornadoes, vehicular accidents, aircraft accidents, building collapses, fires, etc... Expanding the day-to-day EMS system to meet these additional needs in disaster requires pre-planning and coordination with other agencies of the health care system (eg. public health, environmental health). Joint planning and training would therefore help to bring about a coordinated and efficient response to the disaster situation.

The management of mass casualty situations may be divided into three stages:

- search, rescue and first aid
- triage and transport to health facilities
- redistribution of patients between hospitals, if required.

5.1 Search, rescue and first aid

In many disasters this need will be so great that the relief services will be able to address only a fraction of the medical problem. Most help will come from uninjured survivors, thus the need for training the general public in first aid, cardio-pulmonary resuscitation, etc., is important to the provision of care in disaster.

5.2 Triage and transport to health facilities

The possibility of a large number of injured persons resulting from disaster requires that a different approach be taken to provision of medical care. This approach is based upon triage or sorting of casualties into priorities for transport and treatment.

Whenever possible, casualties should receive treatment as close as possible to their own homes in order to reduce the amount of social confusion and disruption and to avoid an added drain on resources for transporting them to other health facilities.

Following reception at the hospital, redirecion or expansion of resources may be required to meet the needs of the disaster, for example, bed capacity and surgical facilities.

5.3 Redistribution of patients between hospitals

The redistribution of patients between hospitals may occur because the facilities of the region are overtaxed, because hospitals lack specific capabilities or because hospital facilities in the area are destroyed or damaged severely by the disaster. Patterns of redistribution of patients and resources will emerge from analysis of hospital bed capability, resources (personnel and equipment) and external hazards still existing.

To assist in the above noted stages of a mass casualty incident, consideration should be given to:

- Consumer involvement, information and education programmes which contribute to a level of self-help, and give an appreciation of the need for disaster plans. A well-informed public is much more likely to respond when the need arises.

- Increase the EMS resources and availability of trained personnel. This includes consideration of the means to increase physical resources (number of ambulances, identification of alternative means of transporting patients).

- Improve the operational capability of the system. Lack of adequate communications is one of the main problems encountered in disasters and compounds other problems and provision of care.

- Hospitals and critical care units must have plans to permit the reception of mass casualties and evacuation should the facility itself become a victim of disaster.

- Adequate records must also be kept during disaster situations so that disaster reports may be prepared to allow for a response and evaluation of programmes. This will also permit disaster response personnel to improve performance should they be called upon to respond in future disasters.

- Mutual aid programmes and agreements should also be developed during the disaster planning phase to ensure cooperation and coordination between countries and communities when disasters occur.

Four main problems occur repeatedly in disaster medical response. These are communications, control, coordination and convergence. Poor coordination and lack of control at the disaster site frequently occurs when role definition of persons or agencies is unclear or when the disaster plan is unknown to responders. Communications capabilities may be reduced or become non-existent following disaster, making it difficult to identify areas of need, equipment and personnel requirements and requests for help.

Convergence of supplies, equipment and personnel, especially in large scale disasters, will add to confusion and involve already scarce resource personnel in trying to sort through the mass of material. It is therefore important that needs be clearly identified and requests for assistance be coordinated and communicated through appropriate channels.

Optimal disaster preparedness in mass casualty incidents includes planning and implementation of a coordinated and integrated EMS system capable of meeting the type of urgent medical problem involving simple or multiple casualties. The most cost-beneficial method is to expand the day-to-day EMS resources in sufficient numbers, with appropriate levels of training to meet the additional requirements that disaster may place on the systems.

6. Recommendations:

On the basis of the special presentations, general discussions and reports on the current situation in countries, the participants discussed in small groups the various agenda items. These discussions took place in light of the following:

(a) The need to strengthen and develop national emergency medical services systems to cope with the growing requirements for this type of service.

(b) To consider the difference between countries in terms of the organization of the health care systems, geographic variations and availability of resources between countries and within the same country.

(c) The recognition that medical disaster preparedness includes medical services planning in general, as an integral part of disaster preparedness, and is not confined to hospital preparedness plans.

In addition, participants identified some areas of deficiency which impact on development of EMS systems and appropriate mass casualty care plans. These deficiencies included:

(a) lack of coordination

(b) lack of work plans and development programmes

(c) lack of relationship between EMS, general health systems and services to the community

(d) inadequate financial distribution or budgetary constraints

6.1 Emergency medical services system

The following recommendations were made as an overall organization and management concept for an emergency medical services system.

6.1.1 Definition of emergency medical services system:

An emergency medical service system (EMSS) is an integral part of the comprehensive health system, which provides for the organization of personnel, facilities, logistics, and equipment for the effective and coordinated delivery of urgent health care services covering all geographic areas of the country.

6.1.2 Management of the system:

Emergency medical services have sound management through administrative coordination and functional integration of all health activities and resources at all levels, to plan, implement and operate a successful programme: the major goal of the system is to provide prompt medical care to the patient from the site of occurrence of the emergency event until he receives adequate definitive medical care for this emergency and to ensure continuity of care between the pre-hospital and hospital phases. This goal can be achieved through intrasectoral/intersectoral cooperation at different levels, in policy determination, planning strategies, implementation, and continuing evaluation of the system.

The following components are recommended for this purpose:

- plans to coordinate and implement the different phases of the system, with adequate study of the country's needs
- intra/inter/extra-hospital emergency plans, which must be drawn up, perfected, approved, put into practice and kept up to date
- frequent casualty simulation exercises
- study, collect and adequately analyze data from emergency medical services
  train and educate emergency personnel
- regionalize hospitals.

6.1.3 Legal requirements

Although almost all countries have laws, regulations and standards governing health care in general, emergency situations must be addressed. It is therefore recommended that:

- suitable legislation be drawn up at the national level, to be enacted and enforced, setting up and implementing a programme of emergency medical services
- adequate emergency care be supported, preserved and promoted in all countries
- the "Law of the Good Samaritan" be universally practiced.

6.1.4 Accessibility

The system must provide for the same quality of services available in the community regardless of the patient's ability to pay, social status, or geographical locality.

6.1.5 Medical facilities

- An adequate number of easily accessible emergency medical installations be set up, which are collectively capable of providing continuous emergency services.
- Standards be formulated governing the appropriate design of said installations, location, equipment and personnel, and coordination with other health care installations in the system.
- Sufficient staff be employed in emergency medical installations taking into account the fact that these services must operate 24 hours a day, 7 days a week within the system.

6.1.6 Communications

Through solid planning and specific legislation, a suitable communications network can be set up. The purpose is to establish appropriate links between staff, installations and equipment so that emergency medical service resources and other required emergency resources can be mobilized and managed to provide patients with access to the system.

It is recommended that:

- All communication channels, radio and telephone systems, be centralized and assigned a single emergency telephone number and common frequency to allow access to emergency care.

6.1.7 Transportation

Vehicles must meet appropriate standards relating to location, design, performance, and equipment; and the operators and other personnel for such vehicles must have appropriate training and experience.

It is recommended that:

- Equipment be adequate to meet the nation's specific requirements, taking into account geography and environmental conditions.
- Personnel be properly supervised, qualified, and under medical control.
- General coordination and centralization is especially recommended, through continuous control of the location and distribution of vehicles.

6.1.8 Manpower and training

Adequate numbers of health professionals, allied health professionals and other health personnel, including ambulance personnel, with appropriate training and experience are required. Whenever possible the major manpower categories to be considered are:

- first responders - fire, police, and other public safety elements,
- communicators - EMS/resources dispatcher
- ambulance/technician/driver
- emergency medical technician - advanced
- nurses trained in emergency and critical care units
- physicians - emergency
- specialist physicians in clinical areas (medical, surgical, pediatrics, burns, psychiatry, etc.)
- EMS systems director
- administrative staff
- personnel manning primary health care stations

Training must provide suitable education, skills and professional development programmes. Training programmes must offer initial and continuing education for personnel, and must be organized in such a way as to permit updating of information on emergency care, so that skills will not become outdated.

It is recommended that:

- The personnel involved in communications, transport, assistance and specific care be specialized staff.
- Qualified specialists participate continually in decision-making processes, especially in regard to organizing, planning and providing health services in general, and specifically in emergency situations.

- On-going training is not only recommended, but should be a requisite for all personnel working in the emergency medical service system.

- Training and development programmes for emergency care be given to medical students as well as the staff involved in emergency services.

6.1.9 Public information and education

It is recommended that:

- The system provide programmes of public education and information for all people in the area so they know about the system, how to access it, and how to use it properly.

- The information programme take into account the needs of visitors as well as residents of the area to know or be able to learn immediately the means of obtaining emergency medical care.

- Programmes stress the general dissemination of information regarding appropriate methods of medical self-help, first aid and CPR.

- The availability of first aid training programmes be promoted with special emphasis on schools, industrial settings, vehicle drivers and other high risk groups.

6.2 Mass casualty management

In discussing mass casualty management the participants addressed the following:

(a) the existence of an organized EMS system as a prerequisite for disaster preparedness;

(b) the importance of triage and tagging for developing countries;

(c) the need for a regional or global survey of medical disaster preparedness;

(d) preparation of disaster plans by medium and large hospitals;

(e) the plan of action for study of hospital preparedness in Central America;

(f) promotion of the concept of the emergency medical technician.

6.2.1 The existence of an organized EMS system as a prerequisite for disaster preparedness

The existence of an organized EMS system is considered desirable, useful and advantageous in developing and implementing disaster plans. Participants did not, however, feel that it should be a prerequisite, nor should lack of such a system be used as an excuse for not developing disaster preparedness plans. Improving and/or implementing an EMS system with appropriately trained personnel should strengthen and reinforce disaster medical care as well as reduce the loss of life and severe disability resulting from both day-to-day emergencies and mass casualty incidents.

6.2.2 Triage and tagging

Triage is of paramount importance in disaster medical care justifying its promotion and utilization. Triage is seen as an essential tool for efficient casualty management. It avoids panic, unorganized referrals and ensures establishment of priorities in handling casualties and rationalizes the use of resources of hospitals and referral centres.

Therefore, it is recommended that:

- Triage be a continuing process from the scene of the incident throughout the different levels of emergency medical care.

- Trained physicians be sent to the scene of mass casualty emergencies to carry out the triage function.

Tagging of casualties was indentified as an equally important function which supports triage. Casualty tagging facilitates the proper identification of casualties, even if unconscious; is an essential tool in continuity of medical care; and, aids in establishing priorities identified for referral and evacuation of casualties.

It was recommended that:

- tags be designed to provide brief, concise information and be standardized nationally (preferably internationally) using s standard colour-coding system;

- basic information to be entered on the tag should be specified;

- individual countries consider the use of tags in day-to-day emergency services activities.

6.2.3 Regional or global survey of disaster medical preparedness

A survey of disaster medical preparedness, if carefully planned, would be of great assistance in stimulating decisions and supporting disaster preparedness. It would also provide the basic information necessary for strengthening disaster medical preparedness.

The criteria recommended for such a survey were:

- the existence of policies, strategies, and detailed plans of action for comprehensive management of disasters, including emergency medical care services;

- assessing the organizational structure of the planning and operational units and agencies involved;

- assessing the adequacy and appropriateness of the different components of a disaster medical service using the same components of the emergency medical care system;

- study the frequency and degree of activation of these plans and periodic drills;

- evaluate appropriateness and adequacy of information gathered to plan, implement and evaluate disaster preparedness, and its operational application in cases of drills or actual disasters.

6.2.4 Disaster planning by medium and large hospitals

Participants considered that hospitals required disaster plans in order to cope with internal situations and mass casualty events. These plans are important regardless of the level of sophistication or development of the hospital, since the role assigned to each hospital would be based on existing resources and capability.

It was recommended that:

- each hospital develop a disaster plan for both internal emergencies and external mass casualty events, as part of a comprehensive medical plan. These plans should become part of an overall regional and national disaster plan.

6.2.5 The plan of action for study or hospital preparedness in Central America

Participants agreed in principle on the plan of action presented, if it fulfills the following:

- carefully planned on a representative sample of hospitals expected to have a role in disaster medical care;

- optimizes the use of data gathered to assess hospital preparedness and operational management, using sound criteria and measurements;

- implement as a pilot study in other parts of the regional office, and possibly in other WHO regions.

6.2.6 Promotion of the concept of the emergency medical technician (EMT)

There was essentially common agreement on the need to develop health manpower to serve as technical assistants for medical emergencies.

It was recommended that:

- the concept be encouraged and promoted through development of specific training courses and programmes for persons with appropriate educational background, or, through existing courses for health manpower and civil service personnel, such as members of the police and fire services;

- the concept be sufficiently flexible to cope with manpower available for training and financial support to train and recruit staff;

- an estimation of manpower required in such categories be calculated on the basis of full-time equivalents for each community, both urban and rural.

7. General issues

In addition to specific recommendations made by the participants, several common areas of concern were identified which may be addressed by WHO/PAHO and by individual countries as a follow-up to this consultation. These concerns include:

(a) A perceived need for closer coordination and/or integration of the three (3) components addressed - accident prevention, emergency medical services systems and disaster medical care - within the overall health care system.

(b) Means of identifying low cost improvements which may be possible through better organization, planning and management of existing emergency care systems.

(c) Training and education programmes for personnel within the system were also a major topic of concern, although no clear definition of programme/curriculum guidance was developed.

(d) Problems of rural areas were briefly discussed but should be addressed in more detail.

(e) The function and role of the primary health care worker and the link to the emergency medical services system was also discussed but should be more clearly defined. The personnel working in primary health care form the main element in minimum basic care for the population as a whole. In some cases, professionals working within this system are called upon to provide final treatment in emergency situations. In other cases, primary health care staff can provide care and monitor the stabilization of patients in critical condition and arrange their transport to appropriate centres for final treatment or rehabilitation.

(f) The need to place more emphasis on the preventive aspects of all three programmes was also recommended as a means of reducing the number of serious injuries and deaths resulting from accidents.

It was also recognized that WHO/PAHO could not solve all the problems, nor will one single system or approach be appropriate because of differences between and within countries. Assistance provided in the form of helping to identify priorities in the health care system; improving resource utilization; provision of technical assistance; development of guidelines; identification of resource personnel and information would be beneficial. Finally, assistance in development of short and long term plans was suggested as a concrete means of helping to improve accident prevention, emergency medical services systems and mass casualty management.

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