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Planning and Organization of Emergency Medical Services

Report on a WHO Technical Group

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WHO TECHNICAL GROUP ON PLANNING AND ORGANIZATION OF EMERGENCY MEDICAL SERVICES

Toulouse, 24-28 February 1979

1. INTRODUCTION

A Technical Group on the Planning and Organization of Emergency Services was convened in Toulouse from 24 to 28 February 1979 by the Regional Office for Europe of the World Health Organization, in cooperation with the French Government. The meeting was held within the framework of the European medium-term programme on road accident prevention, which forms part of the WHO global programme being conducted by the WHO Regional Office for Europe.

Temporary advisers from 15 countries, together with a representative from the League of Red Cross Societies, met to examine the current status of emergency services and to consider ways of encouraging further progress in this field of medical care.

Although this meeting was very much concerned with road traffic accidents, since they are now a major cause of mortality, morbidity and disability in most countries, it was decided that emergency services for victims of such accidents should not be considered in isolation from other emergency medical services. Equally, while the Technical Group, as its title implied, would be dealing more with services than with prevention, it was recognized that the two subjects were nevertheless closely linked.

In view of the interest shown in emergency medical services by several international bodies, in particular EEC, OECD, and NATO's Committee for the Challenges of Modern Society, one of the aims of WHO in convening the meeting was to provide a focal point for the development of activities in this field.

The participants, who comprised experts in first aid, intensive care, anaesthesiology, surgery and public health, considered the organization of emergency medical services both within and outside hospitals, including aspects related to the development of manpower and research.

In his opening address, Dr J.-C. Sournia, Director-General of Health, welcomed the Group on behalf of the Minister of Health of France. He noted that the problem was an important one, and emphasized the need to adapt emergency medical care systems to the conditions of each country, since

the necessary arrangements would be influenced to a large extent by social and geographical factors. The relationship between primary medical care and hospital care also needed to be examined very carefully.

Dr Leo A. Kaprio, Director, WHO Regional Office for Europe, thanked the French Government for its support in organizing the meeting, which was an important milestone in the development of the WHO programme. He also thanked the regional and local authorities for their hospitality and their contribution to the organization of the meeting.

The Regional Office had been concerned with the problem of emergency services for some considerable time, and the technical discussions on this subject held at the session of the Regional Committee for Europe in Stockholm in 1963 (*1*), followed by a seminar in Leningrad in 1967 (*2*), had resulted in valuable conclusions, many of which were still valid. The present meeting represented a further effort to update information on the subject and promote an exchange of experience on an international basis.

Dr Kaprio also referred to the role of the Regional Office, which had been made responsible for disseminating information on road accident prevention on a worldwide basis. The organization of services for the care of the injured had a crucial place in the programme, especially in relation to the less developed countries, where mortality and disability occurring among the young as a result of traffic accidents were rapidly increasing, partly because of a lack of appropriate emergency services. However, resuscitative and emergency services were part of a system of very high-level medical technology which was subject to major human and financial constraints. If they were not used properly they would fail to meet their objectives, with predictable consequences for the individual and for society as a whole.

Mr Coirier was appointed Chairman and Dr Miskiewicz Vice-Chairman; Dr W.J. Modle acted as Rapporteur. The list of participants is attached as Annex IV.

2. CLASSIFICATION OF MEDICAL EMERGENCY SITUATIONS

2.1 Problems of classification

A tentative classification was presented by Professor Cara (see Annex I) who explained that, when designing the optimum medical service for any particular locality, it was necessary to make some attempt to classify the clinical problems confronting the service in terms which could be related to the response required. He had attempted to improve on the conventional classification of degrees of emergency after accidents which had been employed by some surgeons, based on what needed to be done within different

periods of time. In doing so, he had concluded that a concept which merited special attention was to regard an insult to the body produced by injury as having a parallel with an insult produced by a toxin. In this way the severity of injuries could be standardized by considering the dose of injury where the natural outcome would be death in half the cases (*3*). This might be used as a basis for deducing the benefit accruing from different forms of intervention at varying times after accidents. Additionally, the effect on morbidity was important, but even more difficult to measure. This approach emphasized the importance of the time factor when responding to emergencies.

In the discussion which followed, it was recognized that this classification was a worthwhile attempt to grapple with a very difficult problem. However, while being unable to make any firm recommendation about a classification which might be adopted generally, the Group continued its discussion on the basis of a fairly simple classification, namely:

(1) those who would die in a matter of minutes if no aid is forthcoming and for whom first aid by members of the public is of prime importance;

(2) cases where death would occur during the next few hours and for which the quality of professional aid outside the hospital is important;

(3) less urgent problems.

The points which then emerged were ones to which the Group returned in more detail in subsequent sessions.

2.2 Quality of intervention

In the first few minutes after an accident or other emergency it is always true that the victim is dependent on members of the general public for help. Thus, the ability of the latter to offer appropriate first aid could be vital. In many localities no other help is forthcoming before a considerable time has elapsed, hence the quality of the first aid rendered could be crucial. Similarly, in cases where medical or skilled paramedical help is needed in the first few hours in order to prevent death or serious disability, the quality of such help is an important factor.

There is wide variation in the calibre and level of training of those categories of health personnel to whom the term "paramedical" has been loosely applied in many places, and this factor needs to be taken into account in any studies of the effectiveness of systems of care. Furthermore, all doctors cannot be regarded as equally capable of the most appropriate intervention, particularly in accidents, both because their medical training has often been deficient in this aspect and because special experience in the work is needed. Some participants suggested that the contribution nurses might make in this field had been underestimated. Quality of service could also be affected by the inter-relationships of the staff involved and, in particular, by the degree of supervision exercised by doctors.

2.3 Implications for research

The need for some classification and definition of clinical conditions, the quality of personnel involved and the nature of the interventions undertaken was seen as a necessary prerequisite of research into the effectiveness of various forms of emergency medical services. Such classification, though it presents many problems, is of great importance. Projects need to be sharply delineated, but this is particularly difficult in the field of emergency medical services.

3. ORGANIZATION OF EMERGENCY MEDICAL SERVICES OUTSIDE THE HOSPITAL

3.1 Alarm and communication systems; coordination of emergency services

The alarm system is an extremely important part of any emergency service, yet in the case of emergency medical services it has not everywhere been given the attention it deserves. The need for good communications between medical and nonmedical services is evident, but this raises questions of confidentiality. The coordinating and dispatching arrangements in emergency medical services are also important, particularly the extent to which doctors take an active day-to-day part in them. The need to achieve coordination between the work of primary care doctors and that of hospital doctors was considered in a later session.

In discussion, the importance of having an efficient alarm system was reiterated. In many countries the telephone is the main means of raising the alarm, but in developing countries, particularly in remote areas, other arrangements are necessary, hence the need for inexpensive methods of communication applicable in such circumstances. In all countries, extensive stretches of the road network are remote from towns and villages, so the correct siting of roadside telephones or alarm buttons needs to be given proper consideration. Such facilities are expensive, and therefore the cost and benefits have to be carefully weighed.

In order to keep delays to a minimum, telephone calls to the emergency services should be free of charge. This is not the case at present in all countries. The benefits and problems of having one telephone number for calling any emergency service were discussed. Such a system needs telephone operators who are specially trained to make the appropriate responses to distressed individuals and to route the calls to the right services. For a system to be acceptable, the public and doctors need to have confidence that telephone operators are independent of other services, in particular the police. Hence it

is possible to have this system in some countries but not in others. Where it is adopted, it is important to ensure that the intervention of a telephone operator does not entail any delay in obtaining medical help.

A disadvantage of having a separate telephone number for each emergency service is that some delay might ensue while the person summoning the service identifies the right number. However, the potential delay can be minimized by having only one number for each service throughout the country or, better still, in all countries employing this type of system. A separate call system for medical emergencies helps to ensure that those requiring aid are not inhibited from seeking it through fear that knowledge of their circumstances would fall into the hands of persons outside the medical profession. Nevertheless, in some countries the law places an obligation upon medical staff to notify the police of emergencies in certain circumstances.

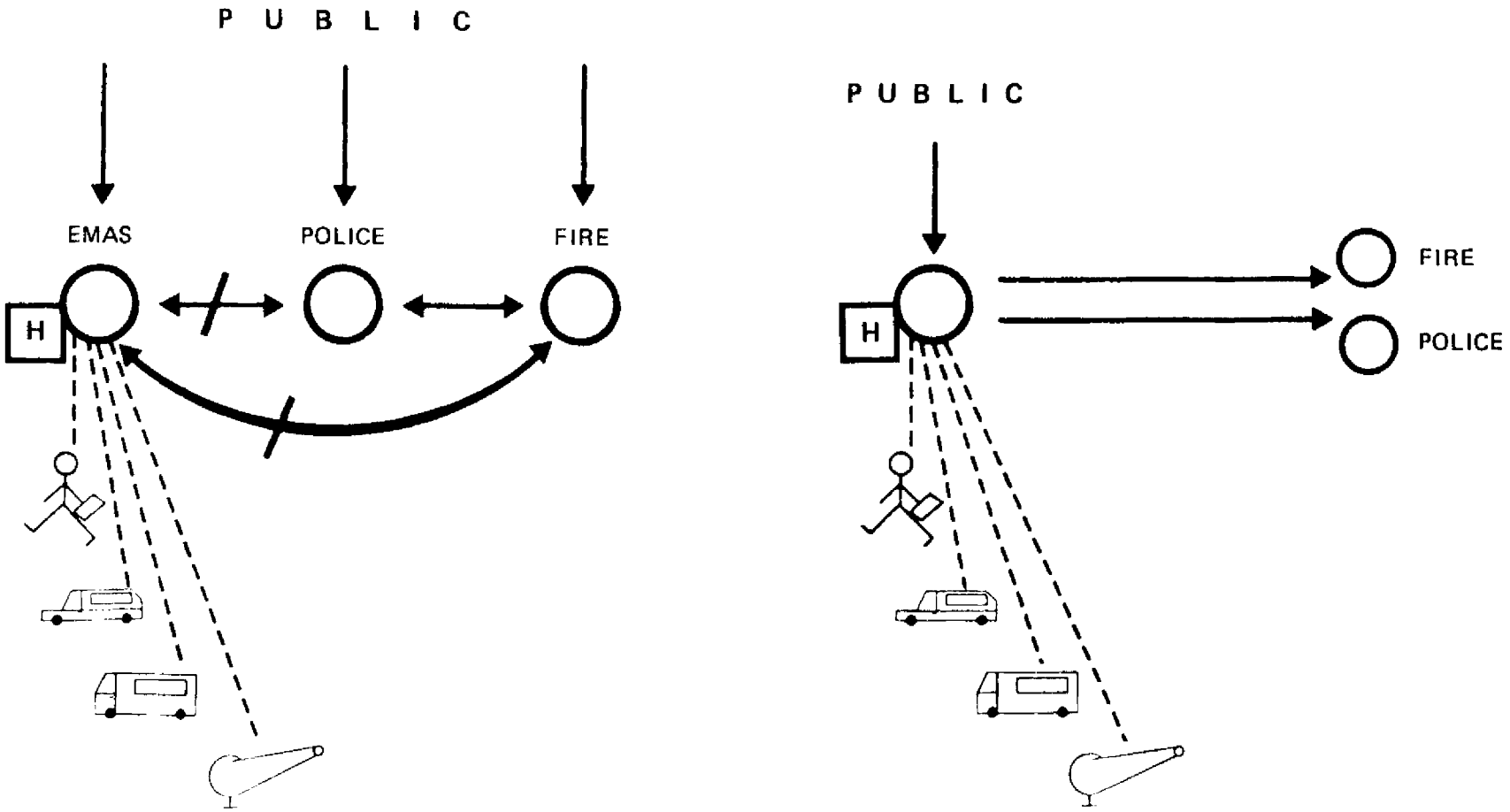
Several participants considered that it was only in non-traffic cases that the question of medical confidentiality was really significant, since in road accidents other services, in particular the police, would normally be involved anyway. Furthermore, some countries which have only one telephone number for all emergency services have experienced no complaints about lack of confidentiality. In the United States it has even proved possible to make recordings of calls as a method of evaluating the performance of the emergency medical service. Modern technology now permits the caller's number to be identified immediately a call has been made to the emergency medical service's number.

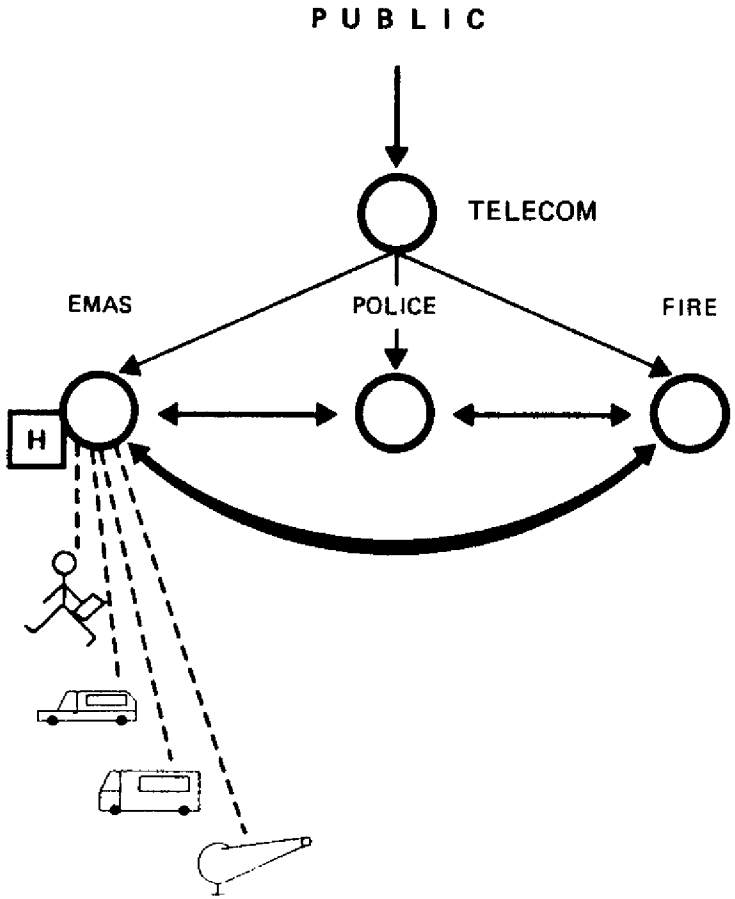
The participants agreed that the close involvement of doctors is beneficial in the day-to-day operation of control centres for emergency medical services. Although doctors do not necessarily have to answer all calls themselves, the efficiency and economy of the service is enhanced where they closely supervise the training and work of the dispatchers/controllers of ambulances. In some countries ambulance control centres have been sited in or adjacent to hospitals for this reason. Such arrangements make it possible to encourage closer coordination between primary care doctors, hospital doctors and the ambulance services. The control and coordination of ambulance services is also greatly facilitated where the services are unified and managed as part of the health services.

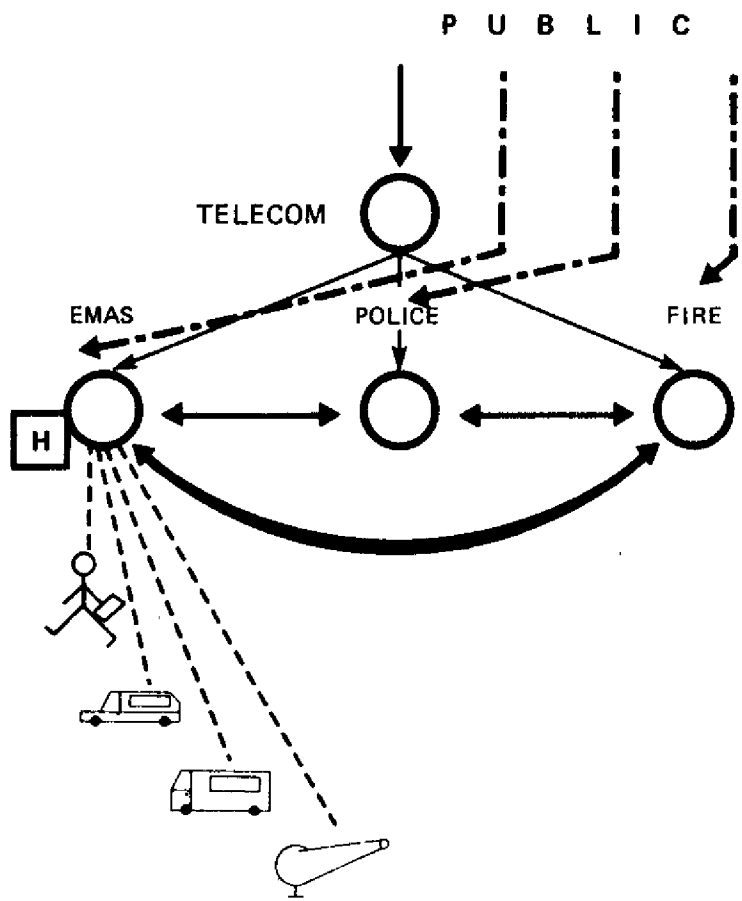
3.2 Transport

In some countries it is considered beneficial to the standard of emergency medical care to have doctors travelling in emergency ambulances. In most circumstances, however, this is not an economical use of medical manpower and high standards can be achieved by specially trained paramedics or nurses working under fairly close medical control. Even so, there are instances when the presence of a doctor on site is essential, and this fact underlines the importance of arrangements for coordinating the dispatch of appropriate personnel (see section 3.1).

Fig. 1. Four models of alarm systems which permit: (1) medical control that provides optimal guarantees of effectiveness and quality through its links with the hospital; (2) medical confidentiality, since the links between the EMAS and other sources are under medical control.







Key:

EMAS	Emergency medical aid service control room
POLICE	Police control room
FIRE	Fire service control room
TELECOM	Telecommunications service
H	Hospital

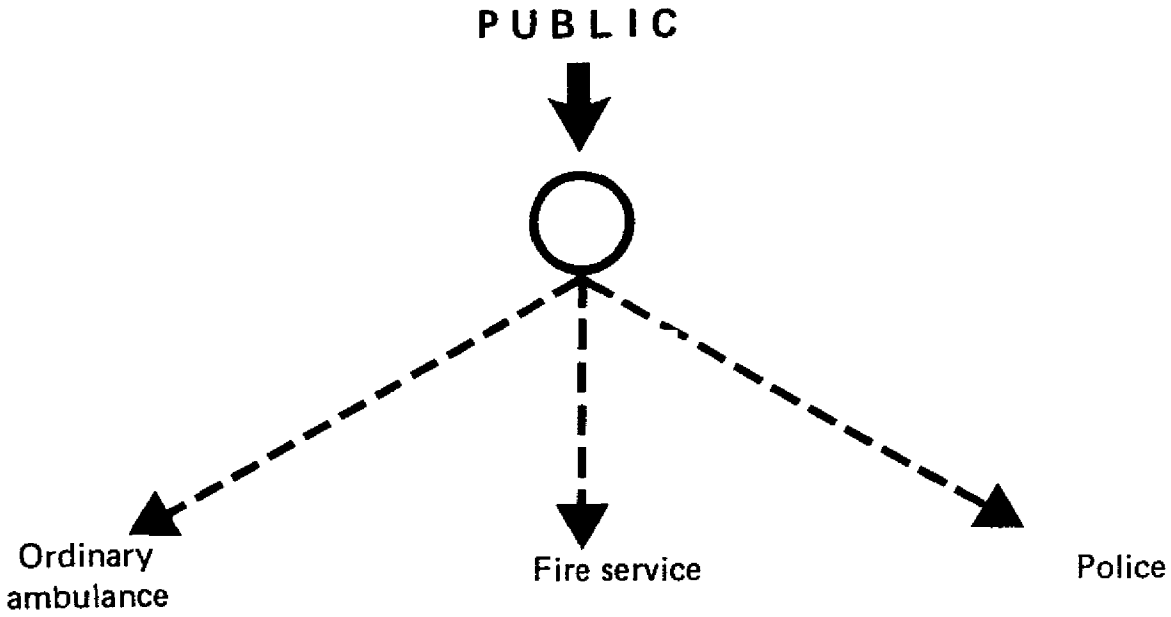
Medical practitioner

Ordinary ambulance

Resuscitation ambulance

Helicopter

Fig. 2. Alarm systems. An alarm system model which provides for elementary medical control only, without regard for medical confidentiality



The Group discussed the vehicles and equipment needed for the transport of emergency patients. There was some measure of agreement that it might be worthwhile for WHO to establish minimum recommended standards for ambulances for particular types of emergency, and also minimum levels of equipment. A number of countries already have minimum standards for both ambulances and equipment, laid down by administrative means where ambulances are managed as part of the health care system and by legislative means elsewhere. The equipment needs to be suitable for coping with all medical interventions, not just patients suffering from trauma. Several countries have experienced a need for two categories of ambulance, one for general emergencies and the other for special intensive care, particularly for interhospital transit.

Opinions differed on the merits of helicopters as a form of emergency medical transport. Certainly there are circumstances when they are invaluable, but the extent to which they are used varies widely. This is due partly to differing views on the benefits gained in relation to the high costs involved and partly to geographical factors.

3.3 First aid

The layman trained in first aid has an important function in bridging the time gap until professional help arrives. In remote areas he may be the

only source of assistance for many hours. Although the nature of his training will vary according to circumstances, it is possible to identify certain core subjects to be included in all training programmes.

The basic premise of such training has to be that no equipment is available, since when first aid is required equipment will not normally be to hand. Members of the public do not need to be taught the physiological background to practical procedures. One problem is that, although practical skills may be acquired, the motivation to apply them may still be lacking. Another difficulty is that those trained in first aid tend to forget much of what they are taught. Thorough revision is therefore required in any programme of training.

The Group discussed the merits of teaching first aid to children. It seems doubtful whether many will retain and apply knowledge of the practical procedures, but it could be argued that children are particularly receptive to ideas and first-aid training could be valuable in fostering an interest in accidents and in the possibilities of preventing them. However, the costs have not been weighed against the benefits, a point which also applies to first-aid training for adults. The Group considered that there was a need for cost-benefit studies in this connexion. Mention was made of a university training programme to degree level in a sociology department in France, which was aimed at producing individuals well fitted to play a role in alerting and educating the public in the field of first aid and accident prevention.

The Group recognized that there was a lack of first-aid training in medical schools, and considered it important that this situation be rectified. Doctors should clearly take a lead in this field, being the ones responsible for training nursing and paramedical staff.

The place of cardiopulmonary resuscitation in first-aid training was then discussed. The Group considered that lethal damage resulting from misuse of the technique by members of the public trained in its use was rare. In Seattle, USA, where some 50% of adult residents had been trained in cardiopulmonary resuscitation, it has been argued that application of the technique is associated with a small reduction in deaths from coronary thrombosis (*4*). However, there are two points to be considered before concluding that general first-aid training should include this technique. First, the costs, including the time of professional personnel, need to be carefully weighed against the benefits. In many places such a massive training programme would not be feasible. Second, skill in the technique diminishes quickly unless it is practised regularly, so the necessary retraining would add considerably to the complexity of a programme. A reasonable case could be made out for training members of the public in cardiopulmonary resuscitation when they are engaged in pursuits involving special hazards such as drowning or electrocution. The conclusion was reached that WHO, along with the Red Cross, should study in greater depth the need to include cardiopulmonary resuscitation techniques in general first-aid training (see Annex II).

4. ORGANIZATION OF EMERGENCY MEDICAL SERVICES INSIDE THE HOSPITAL

4.1 Hospital emergency units

The reception of accident and emergency patients in hospitals is an important interface between primary medical care and specialist medical care. Some of the patients seeking emergency help at hospitals have problems which could be regarded as the proper province of primary care doctors, while others suffer from conditions that require specialist care, consisting of diagnosis, and observation or treatment. In health services where the pattern of the emergency services includes the possibility of specialist doctors attending the scene of accidents or emergencies, this interface is transferred, in those instances, into the community.

In some cases, treatment needs to begin with resuscitative measures. Hospitals dealing with accidents and emergencies require a special unit to cope with the immediate problems of diagnosis and sorting, along with urgent resuscitation. There is a need for a clear definition of medical responsibility in such units. A specialist whose prime responsibility is to serve in the accident and emergency unit and who has close ties with anaesthesiology could be valuable. His expertise would be brought into play in the diagnosis and early management of urgent problems presenting across the whole range of medical and surgical practice. Regarding the physical structure and functioning of such a unit, one participant suggested that emergency patients could be categorized according to four levels of urgency: high-risk patients in vital distress, first-emergency patients with a potential risk of vital distress, second-emergency patients, and perceived emergencies.

4.2 Medical responsibilities

The medical responsibility for emergency cases presenting at hospitals is a problem in many countries. In some countries, specialists from established specialties, particularly surgery, are nominally in charge of this aspect of the hospital service, while in others specialists from a variety of disciplines take on the duty in rotation. However, the result is often far from ideal because these specialists are strongly committed to their own specialty. Patients with psychiatric problems are especially vulnerable.

Such systems are also weak in handling problems that normally fall within the province of primary medical care or social care. In any system there is a need to seek ways of achieving good liaison between doctors working in primary medical care and those working in hospital emergency units. Not only can such links be beneficial to patient care, but they can also help to ensure an economical service.

Links could be further strengthened if primary care doctors worked periodically in hospital emergency units to treat patients with problems of a primary care type presenting there. The question whether there would be any advantage in emergency unit doctors dealing initially with emergencies that arise in respect of hospital inpatients is open to discussion. Although on occasion this might result in medical help being available more quickly, emergencies occurring in inpatients under specialist care should, generally speaking, be handled entirely by the specialist teams concerned.

In some countries intensive care units are integrated with emergency units, whereas in others they are separately sited within the hospital and separately staffed. There is no overwhelming case for one arrangement in preference to the other; the decision seems to be very much a matter of choice according to local circumstances.

4.3 Facilities

Hospital emergency units need reception facilities, accommodation and equipment for urgent assessment and resuscitation of serious cases, accommodation for other diagnostic work and minor treatments, plus links with intensive care facilities. It is essential that there should be adequate investigative facilities, particularly radiological and pathological, while specialist inpatient services also need to be at hand. Some specialist services will usually be concentrated in a few of the hospitals which have emergency units, although the pattern of such services will be heavily dependent upon geographical factors. For that pattern of provision, good secondary transport is required.

An appropriate pattern of hospital emergency units might be established by either legislative or administrative means. The former are particularly applicable where private systems of medical care exist. A description was presented of the way hospitals have been categorized in the United States under the emergency medical services legislation. In the Illinois system 80% of patients are treated locally, 15% in area centres and 5% in regional centres where there are special facilities available for treating burns, spinal injuries, multiple injuries and poisoning, and for patients requiring neurosurgery or vascular surgery. Regional units cover a population of some 500 000. Such a system calls for good communication between all its elements. There is also merit in interchangeable equipment, e.g., stretchers which can be interchanged between ambulances and hospital departments.

It is important to have good radiotelephone communication between ambulances or helicopters on the one hand and hospital emergency units on the other. Further, helicopter landing pads should be provided in the grounds of hospitals which have emergency units, particularly if these are regional centres.

5. THE PERSONNEL OF EMERGENCY MEDICAL SERVICES

5.1 Levels of response

As the role of the usual first responder, mainly the private citizen, has been dealt with in section 3, the functions and training of those at the higher levels of response will be considered here. Aspects of particular importance are the work of paramedics and the role of the primary physician, especially in relation to the emergency medical services as a whole.

Personnel at all levels in an emergency medical service, including doctors and nurses, require special training in this field of work, where training has often been weak in the past. It is now accepted that paramedical personnel who do not hold other professional qualifications in the field of health care can be trained to provide high-quality assistance for emergency patients in the early phase of an emergency. However, for them, as for other staff, refresher training at frequent intervals is essential.

The decision as to which personnel in an emergency medical service are most suited to act in the different phases of an emergency varies widely according to geographical factors and the availablity of the various categories of staff. Although in a small number of selected cases a doctor trained in emergency service work can be valuable at the scene of an incident, it is doubtful whether a very good case exists for doctors routinely manning emergency ambulances. Using doctors in this way means that their special skills are only infrequently put to use.

5.2 The paramedic

The USA has led the way in recent years in the use of paramedics to improve the early care of emergency patients and to assist emergency nurses and physicians in hospitals. Levels of training have been defined and a system of certification established. Nurses are ranked at a higher level than paramedics and the work of the latter is closely monitored by doctors. If paramedics perform "invasive" techniques, this is normally only done when a doctor provides guidance by radio.

Paramedics must be given appropriate status if they are to make their maximum contribution to emergency care. Well-defined training programmes and certification help to ensure this and due attention must be paid to career pathways. There has been a fall in the mortality rate for certain categories of injury in some regions of the United States and those responsible for the services believe that this has been achieved, in part, by the involvement of paramedics in emergency services.

5.3 The primary care doctor

A doctor is not often present when a medical emergency occurs in the community, but if one is available he is obliged to give first aid. Further, since in these circumstances a primary care doctor is usually the first professional to give assistance, his intervention could be of great benefit when urgent medical treatment is required to save life, providing he is skilled in the field of emergency work.

In thinly populated countries, particularly where the terrain is difficult, early medical intervention by primary care doctors adequately trained in this field of work could be a valuable component of an emergency medical service. In some countries the possibility of litigation in the event of an error being made inhibits primary care doctors from involving themselves in this way.

A more important role for the primary care doctor in emergency medical services appears to be to ensure that the more specialized personnel in the service are not overloaded with minor problems. To this end, it is necessary to achieve good integration between primary medical care and emergency medical care based on the hospital. Several hospital emergency units in France have arranged for primary care doctors to participate on a rota basis, so that when emergency calls which can be dealt with by such doctors are received at the control centre, these calls can be appropriately redirected (*5*). This is a valuable development, but negotiations with professional organizations at both the national and the local level are usually necessary in order to bring about such radical changes.

5.4 The emergency "specialist"

The potential value of emergency physicians or emergency "specialists" has been discussed above (section 4). There have already been some developments of this type, but the status of the practitioner varies. In the United States, for example, he is regarded as the sixth responder, while the specialist doctor is the seventh responder.[a] In the United Kingdom the emergency physician is accorded full specialist status, and there is now a specialist training programme in accident and emergency medicine to parallel specialist training programmes in other specialties (see Annex III). The posts are proving useful in improving standards of emergency care, both directly and by encouraging increased interest in emergency care among all health workers.

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[a] The primary responder is the private citizen, the secondary one the police or firemen, the third the so-called emergency technician 1 (EMT 1), the fourth the paramedic (or EMT 2) and the fifth the hospital nurse. (Otten, J. Personal communication)

6. PLANNING AND EVALUATION OF EMERGENCY MEDICAL SERVICES

6.1 Improving emergency medical service systems

Planning in this field is important because medical emergencies are common, because an increasing number of patients can benefit from modern medical techniques and because an emergency medical service is made up of so many different elements. The principal aim of an emergency medical service should be to ensure that a doctor takes responsibility for the care of a patient as soon as possible after the alarm has been raised, although this responsibility will often be exercised indirectly in the early phases of the response. To plan a service it is first necessary to list all the functions it should perform. The components, both personnel and technical, should next be listed. Consideration has to be given to the quality of these components and the way they interact. Finally, any changes aimed at effecting improvement depend on the social framework within which the service operates and may be broadly categorized as either legislative or administrative.

As far as personnel aspects are concerned, it is important to foster the interest of doctors in what goes on at all stages of the response to medical emergencies. Doctors have not always been sufficiently concerned about the potential value of first aid performed by members of the public, nor have they done enough to ensure that the professional personnel usually involved in the early stages of response to a medical emergency are adequately trained in measures to preserve life and alleviate suffering. Current attitudes among doctors towards emergency medical services are the product of their own training, which has been deficient in this aspect.

While in most countries doctors are not available to attend the scene of medical emergencies routinely, it would seem beneficial for them to be closely involved not only with the training but also with the operational supervision of paramedical staff carrying out this function. In addition, paramedical emergency personnel should be able to summon a doctor to the scene on those occasions when they are faced with a clinical problem beyond their capabilities. It is, of course, important that doctors who intervene in this way are adequately trained in emergency work.

The emergence of the paramedic highly trained in emergency work is a useful development. In places there has been some rivalry between paramedics and the nursing profession and there are those who believe that it might be better to train some nurses for the role now increasingly being undertaken by paramedics who, prior to their emergency medical service training, have not held a qualification in the field of health care.

An emergency medical service is particularly difficult to plan because it consists of so many elements, often under disparate management. Further,

close links have to be arranged with other emergency services managed by still other agencies. In most countries coordination has been achieved entirely by administrative means, but there are examples where legislation has played a part. It has proved easiest to ensure coordination, particularly where administrative measures are employed, if the number of agencies managing the various elements of the service is small. One way of simplifying the administrative structure is to ensure that health care is given by health personnel; there is no fundamental medical reason for firemen to provide ambulance services.

The fragmentation of an emergency medical service can prevent it from achieving a high standard and in a system relying on public funds, inadequate financing can result in a lowering of standards due to the appearance of numerous private services working in competition with it. Coordination between the emergency medical services and other emergency services is important, especially when major accidents occur. One way of fostering such coordination is to designate specific health service workers, particularly doctors, to undertake the necessary liaison activity. The consultations required in producing local plans to cope with a major accident could serve to strengthen this bond.

6.2 Evaiuation

It is first necessary to perform an inventory of the elements of the system and compare these with a check-list. In doing so, due account needs to be taken of epidemiological data on the type, frequency and distribution of accidents and other medical emergencies. The check-list should include mention of any specified standards, and one element of comparison with the inventory will be the extent to which the components of the system match up to the standards. It is helpful to quantify information as far as possible, rather than to rely simply on qualitative comparisons. As with other modes of evaluation, it can be beneficial to have some national guidelines on what information should be studied.

The next step in evaluation is to examine the performance, or efficiency, of the system. This means measuring such parameters as the response time of an ambulance service or the delay before definitive treatment of a fracture. It is in this sphere that technological help can be particularly valuable, as, for example, in the logging and analysis of calls and the responses of the emergency medical system – now a part of the evaluative process in parts of the USA.

To date, most evaluation of emergency medical services has followed the lines described above, but there is an increasing need to examine the effectiveness of emergency medical services in terms of mortality and morbidity, and, in particular, to study the costs and benefits associated with particular patterns of service. However, the fact that the emergency medical services

are made up of so many parts makes this a very difficult task. Research into both effectiveness and efficiency can usefully be based on randomized controlled trials (*6*).

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

Ad section 2: Classification of medical emergency situations

(a) Better ways of classifying emergency situations might be developed and would facilitate evaluation of services.

(b) It would be helpful to have measures of the quality of intervention by each type of responder within an emergency medical service.

Ad section 3: Organization of emergency medical services outside the hospital

(a) There is a need for a technically efficient alarm system.

(b) Where telephones are the means of alarm, a single number which can be called free of charge is the ideal.

(c) First-aid training of the public should be encouraged.

(d) For cardiopulmonary resuscitation in particular, cost-benefit studies should be attempted.

(e) The involvement of doctors in the control of ambulance services, as well as in the training of ambulance staff, could be beneficial.

(f) It should be possible to list minimum international standards for ambulances and ambulance equipment.

Ad section 4: Organization of emergency medical services inside the hospital

(a) Hospital emergency units for the assessment and initial treatment of emergencies form an important interface between specialist medical care and primary medical care.

(b) The activities of these units should be integrated with those of primary care doctors in order to achieve an efficient and effective service.

(c) A specialist whose prime responsibility is to the accident and emergency unit could help raise standards of care.

(d) It is important for hospital emergency units to be provided with appropriate accommodation and be backed up by adequate investigative facilities and specialist inpatient services.

(e) Radiotelephone communication between hospital emergency units and ambulances is of value.

Ad section 5: The personnel of emergency medical services

(a) The paramedic with special training in emergency medical service work is becoming a valuable part of the services, particularly in the early phases of response.

(b) Where primary care doctors have undertaken special training in emergency medical work, their skills may be of value in an emergency medical service, particularly in remote areas.

(c) All the professional staff should be adequately trained in first aid.

Ad section 6: Planning and evaluation of emergency medical services

(a) Planning an efficient service is facilitated if all elements of the service are managed by the same authority.

(b) Evaluation of emergency medical services is difficult because they consist of so many different elements, but it is nevertheless necessary.

(c) Epidemiological studies and an inventory of the service are the first steps in evaluation.

(d) Studies of both efficiency and effectiveness are necessary.

7.2 Recommendations

1. Public authorities should guarantee the right of each citizen to be taken care of as rapidly and efficiently as possible in an emergency situation, without infringing the usual codes of practice regarding respect for personal dignity and the protection of individual freedom.

2. Medical aid to sick and injured persons is essentially part of the medical field and the concept of emergency medicine as a component of primary health care should be promoted.

3. A national telephone number should be allotted for medical assistance. Calls made to this number should be free of charge and need no coins or tokens. Moreover, the communication should be terminated only by the operator of the receiving centre, not by the caller. Finally, the caller's number should be identified automatically by the receiving centre wherever possible.

4. The various alarm systems used should be compatible.

5. The organization of emergency medical aid should relate to the existing organization for primary care and should reinforce it whenever required.

6. The organization of emergency medical aid should not be exclusively oriented towards road traffic accidents, but should make it possible to give aid in surgical and medical emergencies.

7. The coordination of emergency medical aid should be regionalized.

8. The functions of the primary care doctor should be integrated in the emergency medical aid system.

9. The call for assistance should reach a single centre for all medical emergencies, where medical involvement in regulation would represent a factor of efficiency and saving.

10. The need for cooperation in the emergency medical aid field between all hospital and extrahospital medical services, public and private, should be underlined.

11. Medical and paramedical staff should be specially trained in emergency care in order to make the best possible contribution to the emergency medical aid service.

12. The emergency medical aid service should be provided with radiotelephone systems to allow communication with ambulances and with general practitioners, especially in rural areas.

13. Hospitals should be given facilities to communicate and work with each other and with all other participants in cases of emergency.

14. Traffic priority regulations for ambulances should be studied.

15. Ambulance design and equipment should also be studied further.

16. The helicopter should be seen as a useful and sometimes indispensable means of transport in emergency medical aid because its use saves time and increases safety.

17. Information on emergency medical aid services, including the results of studies in this field, should be disseminated, especially in the developing countries.

18. Four groups of patients are received in hospital as emergency cases:

(i) high-risk patients in vital distress, i.e., extreme emergency;

(ii) first-emergency patients, i.e., those presenting a potential risk of vital distress (medical, surgical, psychiatric);

(iii) second-emergency patients with less serious afflictions;

(iv) perceived emergencies.

Two main types of patient should thus be considered as far as reception is concerned:

(i) patients who need intensive care or continuous control: these are the real emergencies (patients in vital distress, first-emergency patients);

(ii) patients who first need medical advice and can be treated at home, admitted to a hospital service (medicine, surgery, psychiatry or specialty) or directed to seek sociomedical advice.

Thus the integration of primary and hospital care in the same tem should be favoured.

19. In the planning of new hospital developments, reception services corresponding to the various groups of patients to be treated should be included.

20. The teaching of emergency medical aid should be considered at five levels:

(i) education of the public, education at school: this should be limited to some very simple care to ensure the survival of the patient (safety position, freedom of upper respiratory tract, oral methods of insufflation, external haemorrhage compression), as well as protection and alarm;

(ii) teaching of personnel working in schools (primary and secondary), and of national instructors in first-aid practice who can and should provide the first-level training;

(iii) teaching of professional first-aid rescuers;

(iv) teaching of paramedical professions (nurses for the most part);

(v) teaching of emergency aid and care to doctors in their university and further education syllabuses: this should be given by doctors used to practising emergency care and assistance.

21. Doctors qualified in resuscitation and emergency aid should take the main responsibility regarding the teaching of emergency care and assistance. The teaching profession and the national first-aid instructors could constitute a primary target for such training. The notion of prevention should also be included in this training. Teaching should be given by qualified persons, competent in the pedagogic and scientific fields, particularly in the medical sector.

22. Health services should ensure that paramedical staff can become emergency technicians after specific training.

23. A special effort should be made as regards the continuing education of the general practitioner, who is often the first doctor to be called, especially in rural areas.

24. Auxiliaries play an important part in emergency assistance and care outside the hospital. They should be under the control of an organized emergency medical service, which could direct their work and evaluate their performance on the spot.

25. The coordinating role of health authorities in establishing and organizing emergency services should be strengthened.

26. In research programmes on health services, special attention should be given to research concerning emergency medical aid.

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