PLANNING HEALTH SERVICES FOR EMERGENCY SITUATIONS

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The health sector should be able to rely on emergency plans that clearly define the goals to be pursued at every stage of disaster relief and that cover all types of disaster conditions. This account provides an overview of points that need to be considered in preparing plans of this kind.

Introduction

To prepare a plan for disaster situations implies covering a wide range of complex activities. For this reason, such preparation requires a thoroughgoing analysis of problems that may arise and a study of participation by people trained in the specific disciplines needed to solve these problems. The analysis should be directed at answering certain questions: What disruptions will the disaster cause? Whose job should it be to help prevent the disaster or alleviate its effects? Who should act after the disaster occurs? How far should each person's responsibility extend? Who should make the final decisions and in what manner? Or alternatively, What arrangements should be made for delegating decision-making authority at different levels?

The planning process should start by producing a preliminary draft. This should then be modified and corrected on the basis of suggestions, observations, and experiences resulting from the development of simulated action models. Then the draft, incorporating these additions and modifications, must be carefully coordinated with all other specific and general activities, so as to clearly delineate the areas of activity for each of the agencies involved in carrying out the required actions.

The elements to be considered in developing any emergency plan include: (a) evaluation of situations that exist or may arise, and of the resources that can be used to deal with these situations; (b) determination of the goals to be achieved, and the system to be adopted for assigning relative priority to these goals; (c) allocation of resources available for achieving these goals, within the general framework de-
fined by the priorities; and (d) development of work routines that anticipate contingencies whose nature and demands can be predicted.

It is important that everyone who will have to participate in executing the plan have a good understanding of the plan before any actual emergency arises. Likewise, it is essential to spell out in advance the procedures for achieving coordination, for delegating authority, for assigning functions and tasks to specific people, and for naming qualified substitutes in the event some people are unable to assume their assigned responsibilities—as often happens in disaster situations.

Also, in preparing contingency action plans, it is important to note that omission of key items can lead to a shortage of essential resources, but that excessive detail can reduce flexibility and impair the capacity for “rational improvisation” so vital in times of crisis. Similarly, despite the fundamental importance of available information about the nature and extent of what has happened for purposes of selecting and adapting the best courses of action in the plan, neither incomplete information nor even a total lack of information should serve as a pretext to justify delay in making decisions.

The plan should reflect the nation's true capabilities and should contain provisions to facilitate inclusion of external assistance in the disaster relief effort. The plan should also be reviewed and updated periodically, and should be tested by means of simulated action models that provide a basis for criticism and modification.

Action Planning

When planning the activities to implement in case of disaster, with due consideration to use of local resources, it is advisable to consider three types of calamities:

(a) Limited disasters: These affect only part of the population without damaging the public service infrastructure. Consequently, all types of local resources can be used.

(b) Intermediate disasters: Here much of the public service infrastructure is left relatively unscathed, but the population suffers a severe psychological stress. Hence, while local material resources can be used at once, it is not possible to make good use of local manpower resources in the early stages. Calamities of this kind are apt to confront many local workers with conflicts of responsibility—such as responsibility for family welfare and responsibility for community welfare. People facing such problems will gradually join the disaster relief effort as work progresses, once they recover sufficiently from the emotional blow, and to the extent that they find answers to personal problems stemming from the event.

(c) Overwhelming disasters: These are major catastrophes in which most of the local public service infrastructure is destroyed. Such an event requires that all the resources needed to provide services during the emergency be brought in from outside the affected area. Here again, it is important to seek the gradual and progressive inclusion of local human resources in the relief effort—both to make good use of these resources and to enable the cooperation of the people involved to serve as occupational therapy for them.

In preparing a disaster plan—whether at the national, regional, or local level—it should be foreseen that local resources may be fully available, partly available, or unavailable, depending upon the category of disaster involved. Also, the specific details of regional and local plans should be drafted to conform with specific features of the region or community covered, keeping in mind the relative likelihood of possible
threats against the area and the resources available to deal with such events.

**Availability of Specific Resources**

Many material resources needed to cope with emergency situations—including general supplies, medicines, and medical-surgical equipment—are used routinely by regular health services. However, some of these resources—i.e. many medicaments—have the inconvenient feature of an expiry date, after which their effectiveness declines. It is therefore advisable that medicaments set aside as emergency reserves should be placed in certain hospital stores specified in the plan and should receive special treatment. In normal times the medicaments in these stores should be used to meet ordinary hospital needs; but they should also be replaced at once, so that the types and quantities of medicaments held in reserve are always sufficient to provision a certain number of emergency medical supply packages. For this arrangement to work properly, it is essential to set up some kind of control system that will assure the maintenance and prompt replenishment of these reserves.

Other measures are also needed. Arrangements must be made for proper transport of medicaments in order to avoid breakage. Moreover, some products (such as plasma, vaccines, and other biologicals) require refrigeration; adequate equipment must be provided in order to assure that this requirement is not neglected. Finally, with regard to medical-surgical supplies and equipment, it is advisable to define needs in terms of the three distinct disaster categories previously mentioned, so that the instruments, medicaments, clothing, and accessories required for immediate use and for the most urgent surgical interventions can be made available at once. All this material should be gone over periodically, with a view to appropriate resterilization and to replacement of items before their period of useful life expires.

**Health Sector Response to an Emergency Situation**

To deal effectively with an emergency situation, the health sector should assume direct responsibility in the following areas:

a) **Preparation of specific plans**;

b) **Provision of first aid and urgent medical-surgical care**;

c) **Transfer and evacuation of the sick and injured**;

d) **Reorganization and strengthening of hospitals receiving evacuees**;

e) **Reinstate of regular medical care**;

f) **Execution of basic environmental sanitation measures and epidemiologic surveillance**;

g) **Institution of mental health measures**;

h) **Evaluation of actions taken during the emergency and appropriate modification of existing plans**.

**Preparation of Specific Plans**

The national health sector plan for disaster situations should be geared to the provisions of the overall national emergency plan. This national health plan, in turn, should serve as a frame of reference for preparation of regional and local health sector plans. And these regional and local plans should provide general guidelines to be followed by each hospital in preparing its own plan. But even if national and regional plans are lacking, it is advisable for each hospital to have its own emergency plan. In this case, of course, preparation of the plan and its proper coordination with agencies outside (or even inside) the health sector becomes more difficult.

Both the national and regional plans, as well as those of each hospital, should give attention to the prospects for organizing
working groups in each community that
will be prepared to act as local emergency
committees. Such groups should be able to
participate actively if disaster strikes the
community, and should also be ready to
provide collaboration if a calamity strikes
other communities nearby.

Provision of First Aid and Essential
Medical-Surgical Care

This work is extremely urgent and should
be carried out within six to eight hours of
the disaster. Thus, besides keeping track of
access routes into the affected areas, the
office responsible for organizing transporta-
tion should know about the condition of
landing strips near the affected zone—since
the extreme speed required means that this
type of assistance should generally be sent in
by air. Delay in commencing this activity
must be avoided in order to minimize
fatalities among the seriously injured. For
this same reason, only people well-prepared
to deal with emergencies should be allowed
to congregate in the disaster zone.

It is also important to note that profes-
sionals working in isolation tend to be
unproductive, and that only teamwork can
be expected to produce truly effective
results. Consequently, the emergency plan
should clearly define the possible options
for staffing the first aid teams—so as to
allow for quick selection or modification of
one of these options in accord with existing
needs, should an emergency situation arise.

To the extent possible, members of the
emergency teams should be professionals
with experience in caring for the types of
injuries most likely to occur in these situa-
tions. Another key fact to remember is that
paramedical personnel and diagnostic spe-
cialists will be needed to bolster the staffs of
hospitals receiving evacuees. The latest pre-
disaster census of manpower resources and
whatever information is available about the
magnitude of the event are extremely useful
in helping to determine the proper size and
composition of the emergency teams.

The emergency plan should clearly
establish that a team moving into a zone
affected by a disaster of types b or c should
bring with it a "mobile supply store"
capable or supporting the local hospital or
providing emergency service at whatever
site has best withstood destruction. This
"mobile supply store" should contain instru-
ments, medical-surgical supplies, medica-
ments, clothes, and accessories, all of which
should be ready for immediate use. Also,
forethought should be given to sending
along daily food rations for the emergency
team, so that the team will be self-sufficient
and will not add to the already-existing food
problems in the affected zone. Likewise,
consideration should be given to including
a portable electric generator in the team's
equipment, since electric power will be
needed to perform emergency surgical care.

A basic emergency team function is to
classify the injured in order to determine
those needing immediate care. This should
always be done in a uniform manner, using
the criteria set forth in the health plan. The
criteria generally used in the past have
focused on the extent of the injury, the
patient's condition, the type of care re-
quired, or, alternatively, on the urgency of
the patient's needs.

Those responsible for establishing these
classification criteria, however, should be
alert to the experience of other countries.
This experience clearly indicates a common
initial tendency to overlook traumatized
patients in a severe state of shock, and to lose
time in repeated examination of corpses that
remain openly exposed and without clear
identification.

Care provided in the affected area should
be limited to patients whose needs are
extremely urgent, keeping in mind the
precarious conditions in which such work is
performed. Common first aid measures
generally include proper maintenance of
unconscious patients' breathing passages, control of hemorrhages, and preliminary immobilization of fractures.

Regarding other initial activities, it is very important to specify patient pick-up points, and to see that someone is stationed at each point who is qualified to determine transport priorities in terms of the relative urgency of the cases involved. At these same points—where the injured are concentrated prior to evacuation—a special zone should be set aside for the dead, and for those whose evacuation can be postponed. For the initial evacuations, it is possible to take advantage of whatever transportation was used to deliver the first assistance to the affected zone.

Transfer and Evacuation of the Sick and Injured

The particular hospitals to which patients are evacuated should be chosen in accord with the classification of the patients and the resources available at the various hospitals involved. Therefore, it is of fundamental importance to have information about the material and manpower resources at the relatively unaffected hospitals near the disaster zone.

For this reason, the plan should require each hospital near the affected zone to report as quickly as possible about damages suffered, the extent to which material and manpower resources have been reduced, and the number of beds available for evacuees. This information should be sent immediately to the patient pick-up points.

It is important to emphasize here that the patients should not be evacuated in such a way as to overload a few hospitals, nor should they be sent to facilities without the resources needed to provide the indicated care—since this will require additional movement later on. For these reasons, among others, the plan should require that the person in charge of distributing evacuees among the various receiving hospitals be an experienced physician who knows about the neighboring hospitals' resources, and who will devote himself solely to making decisions of this kind. In addition, it is essential to keep in mind that if the transfer and evacuation of the sick and injured is to be really effective, close coordination must be achieved between health personnel and those in charge of supplies and transportation, damage evaluation, information activities, and telecommunications.

Reorganization and Strengthening of Hospitals Receiving Evacuees

In the event of a type C disaster, hospitals in the disaster zone will be destroyed or forced to curtail their work. Therefore, as previously noted, medical-surgical care for injured patients in the affected zone should be limited to provision of first aid and immediate transfer to nearby hospitals previously indicated for this purpose.

In the event of type A or B disasters, however, the situation is different, and local hospitals should carry out specific activities in accord with previously developed plans. Here a distinction should be made on the basis of size. Small hospitals should adopt the forementioned procedure for evacuating patients whenever feasible and providing care only for urgent cases whose treatment cannot be delayed. Larger hospitals with greater capacity for providing care are those which should provide adequate general health services for the evacuees.

Transport of fresh manpower and material resources to hospitals serving disaster victims is a second-priority task that should be performed between 24 and 48 hours after the event. In this regard, it should be noted that support personnel are often in short supply at hospitals, and that they should therefore be reinforced. It is also worth-
while to observe that type a disasters are likely to require a good deal of material support and relatively little manpower support, while type b disasters are likely to require considerable manpower support as well.

As previously noted, every hospital in the country should develop its own emergency plan of action. Naturally, each plan will differ, depending on the facility's specific features, its size, and the tasks assigned to it by the corresponding national and regional plans. These latter tasks can be either of two general kinds: providing immediate care for patients whose serious condition does not permit them to be transferred elsewhere, and providing care for evacuees.

This hospital plan should be developed by a committee composed of the people who will be in charge of implementing the plan's provisions if a disaster strikes. The overall functions of this committee should be as follows:

- Preparation of the hospital plan;
- Coordination of the plan with existing community plans for disaster relief action;
- Assignment of responsibilities to each hospital department for programming emergency support actions;
- Assignment of the functions, responsibilities, and tasks of each office for implementing the plan;
- Formulation of emergency care standards, with a view to avoiding errors, lost time, and duplicated effort;
- Development and supervision of training programs designed to assure correct action in case of emergency;
- Organization and supervision of mock exercises to test various portions of the plan;
- Periodic review and updating of the plan.

The guidelines should be especially clear and precise regarding designation of authority and the authority structure; relief and replacement of personnel; criteria for deciding which patients should receive immediate care and which should be evacuated, depending on the urgency of their needs; care to be provided for different types of patients; control of existing resources—including their placement and the means used to provide them; and the registries, reports, and other documents needed for adequate coordination of emergency activities and for possible subsequent evaluation.

The plan should also consider the following matters of fundamental importance:

- The hospital should be as earthquake-resistant as possible and should be equipped for independent operation—with resources such as an auxiliary electrical plant, an independent source of water, and an adequate stockpile of supplies.
- Forethought should be given to the options available in case of various sorts of damage to the building's physical structure.
- Availability of a good communications system should be assured.

Should a disaster strike, each employee must know where to report, who to report to, and how quickly to do so. It is also essential to realize that correct execution of an emergency plan depends not only upon the knowledge people have of their own duties, but also upon knowledge of their co-workers' as well. This makes it doubly important that all hospital personnel keep informed about what must be done if a disaster occurs.

There should be emergency working groups, and these should preferably include members of the team responsible for developing the emergency plan. In case of disaster, the members of these groups should go to the hospital at once; each group should then perform an assigned task in a particular field of work—such as care of the injured, communications, supplies, receipt and dissemination of information, maintenance and repair of equipment and installations, etc.
The plan should envisage all the measures needed for the effective functioning of hospital support services—pharmacy, sterilization, laundry and clothing, nutrition, blood bank, laboratory, X-ray, and other services—remembering that in case of emergency these services will probably have to operate 24 hours a day.

Also, many hospital services customarily operate on a three-shift cycle, so that two-thirds of the trained personnel will be off-duty when the disaster occurs. This means an inter-connected notification system should be worked out, whereby each person is responsible for contacting others. In this way most staff members who have not heard of the emergency by chance or been informed of it by means envisaged in the plan can quickly be advised of the situation. In addition, a permanently updated list of the names, addresses, and telephone numbers of all hospital personnel should be kept at the hospital switchboard office.

In emergency situations, where everyone wants to help, the danger exists that staff members' productivity—and even their own health—will suffer from overwork. It is thus important in preparing plans to study the assignment, by shift, of personnel whose pre-assigned tasks cannot be performed by volunteer replacements—so as to provide them with adequate rest and thus obtain the best results from their work.

Volunteer personnel should be used to perform previously defined tasks. In this regard, it is important that a capable official be named to receive all requests for personnel, and to determine the work of the volunteers on the basis of these requests. It is likewise important to remember that if offers of volunteer collaboration are accepted but not used, this seriously prejudices the hospital's public reputation.

The hospital plan should clearly define the procedure for receiving injured persons and should designate a site for ambulance arrivals and departures. Upon arrival, the patients should first be taken to a place that classifies them, and should then be sent to the particular part of the hospital capable of providing the most adequate care. A good practice is to identify each patient by affixing a color-coded adhesive tape to his forehead; this tape should clearly indicate the urgency of the case and the area of the hospital where the patient is to be sent for care. The same colors should also appear on hospital maps affixed to walls and corridors that show the various areas set aside for different types of treatment. Should the hospital be operating at or near full capacity, one of its most experienced physicians should be assigned the task of selecting patients for transfer to other facilities.

It is also important, for implementation of the plan, to remember that an adequate supply of food must be maintained. This should be sufficient to feed more patients than the hospital's customary capacity load, while at the same time meeting the food needs of personnel who will be working more than the customary hours, and who will therefore require more than the usual amount of food.

Reinstatement of Normal Medical Care

Unless the disaster is so overwhelming as to require total evacuation of local residents, regular health needs of the pre-disaster type will continue to arise among people remaining in the affected zone. Consequently, adequate measures must be taken to provide the personnel and other resources needed to supply this care. In particular, such personnel should include obstetricians, pediatricians, and internists assisted by appropriate collaborative personnel.

This reestablishment of regular medical care is important but not extremely urgent. It should therefore be assigned third-level
priority, and should constitute part of the work initiated 48 to 72 hours after the disaster occurs.

**Epidemiologic Surveillance and Basic Environmental Sanitation**

The crowding, impoverishment, and uncleanliness that usually appear after a disaster, together with bad environmental conditions produced by lack of water and failure to remove excreta and solid wastes, necessitate urgent countermeasures. These include steps to prevent the emergence and spread of epidemics, to supply water in the most satisfactory manner possible, to provide for the most hygienic disposal of liquid and solid waste permitted by existing conditions, to control potential rodent and insect vectors of diseases capable of acquiring epidemic proportions, and to control the quality of foods. Since improvisation is unlikely to yield personnel skilled at directing these tasks, teams should be organized which are composed of people experienced in these areas of work.

These various activities should be closely coordinated, not only with personnel from different institutions within the health sector, but also with people working in other related sectors—especially those responsible for technical operations devoted to restoring public services. Following provision of urgent medical-surgical care, these actions should have top priority; accordingly, they should all commence within 24 hours of the time the disaster occurs.

Various vaccines, such as typhoid fever vaccine, are often administered routinely in the wake of a disaster. Nevertheless, there has been a notable lack of reported epidemics resulting from those occasions when countries suffered calamities and were unable to administer vaccines in a timely manner. This means that the actual usefulness of these post-disaster vaccinations deserves serious thought, and that such vaccination efforts should only be recommended in cases where experienced epidemiologists decide that existing conditions make vaccination truly imperative.

Instead of carrying out expensive and ineffective vaccination campaigns, attention should be focused on establishing a good system of epidemiologic surveillance. This should include investigation of potentially epidemic disease cases and adoption of measures to prevent or eliminate such diseases.

The plan should also consider that optimum levels of immunity exist when high levels of protection have previously been achieved through vaccination. This fact is especially relevant for the populations of disaster-prone regions. The indicated vaccinations, especially vaccination against tetanus, should therefore be administered as a preventive measure in normal times.

**Mental Health Measures**

Experience accumulated in countries that have suffered numerous disasters shows that certain psychological reactions often occur among the people affected, while others are rare or exceptional. Knowing the adverse psychological reactions that commonly follow a disaster facilitates their opportune treatment and also helps prevent the development of dangerous mental disorders.

Fear, which can produce both psychological disturbances and organic disorders, is considered a completely normal reaction to a disaster. Experience shows that individuals acting under conditions that inspire fear can behave in an almost automatic way when they have been conditioned by previous training in simulated disaster situations. This training helps them to control their fear and to give an adequate response, thereby preventing unnecessary fatalities.
Sometimes a disaster provokes reactions such as psychosomatic ailments; or conversion reactions may occur which occasion the sudden loss of some important function (such as speech) or cause the patient to forget traumatic experiences—despite the absence of any organic lesion.

Depression, which causes people to act confused or behave indifferently to their surroundings, is also a common response. In this case, however, immediate treatment gives excellent results; in fact, a mere show of interest in the affected individual can often evoke a positive response. Therefore, by way of effective therapy, it is useful to tranquilize depressed subjects and to seek their collaboration in carrying out certain simple tasks relating to their accustomed duties.

Hyperactive responses may also occur which prompt affected subjects to become intensely and abnormally active. This response may seem useful at the time, but it is also true that those affected can become disturbing influences or can serve as nuclei for collective panic. Therefore, those who react to a disaster with excessive activity should be assigned manual tasks; this will turn them into useful collaborators while giving them a good outlet for the energy resulting from their emotionally disturbed state.

Most authors who have studied the psychological effects of public calamities have not observed severe mental disorders (psychoses) among the victims. Those that have been observed were benign and transitory, and were preceded by earlier psychological disturbances in most cases.

To sum up, most people affected by a disaster gain control of themselves in a reasonable time and need no special psychiatric care. Psychological assistance is needed only for those who have clearly lost control of themselves and who show no progress toward achieving normal behavior.

With regard to outsiders, it is essential to realize that large numbers of people on the periphery of a disaster area have a tendency to "converge" toward the center. This phenomenon can have important implications for the proper planning and development of essential transport and supply services. Studies of this tendency have demonstrated that at least five types of people are among those converging on the affected region. These five types have been termed "returnees," "worried persons," "helpers," "curious persons," and "exploiters," in accord with the motivation that generates their movement toward the affected zone.

Because of the psychological considerations involved, it is advisable to deploy at least one mental health team. This team—composed of psychiatrists, psychologists, health educators, and social workers—should be sent into the disaster area on a third-priority basis to assist with mental recovery of the population, to provide reeducation for adjustment to new circumstances, and to help organize the people for a new community life.

Evaluation of Actions Taken

Evaluation of how the plan is implemented in an emergency, or how it is executed in simulated exercises, provides the basis for its improvement. It is therefore desirable to establish methods for studying what happened after the disaster and for making recommendations designed to overcome or correct errors, improve the decision-making process, enhance coordination, and provide for a better organizational response.

It is nearly impossible beforehand to think of all the actions that will be taken in an emergency situation. Nevertheless, some kind of registry should be designed that will permit information about emergency activities to be brought together in the simplest possible manner. Some of this information can be obtained directly from registries of
patients treated, records of supplies received, and other simplified compilations. However, this basic information should be augmented with reports by those responsible for the more critical emergency activities. Here it is very important to realize that the accuracy of such reports will diminish as the length of time between their preparation and the reported event increases.

Finally, it should be remembered that despite the importance of health sector activities, they comprise only one type of action among many others being pursued in order to cope with the situation. And for that reason, their effectiveness will be directly proportional to the coordination achieved with activities in other fields.

SUMMARY

To prepare a health plan for disaster situations implies covering a wide range of complex activities and requires making a thoroughgoing analysis of the problems that may arise. The plan itself—irrespective of whether its scope is national, regional, or local—should clearly define the goals pursued. It should also provide a detailed description of the existing health organization involved, and should indicate the organizational modifications needed to achieve the desired results.

The emergency plan for the whole health sector should of course be coordinated with the provisions of the national emergency plan. Similarly, this overall health sector plan should serve as the frame of reference for regional and local health plans—and these in turn should provide the general guidelines adopted by individual hospitals in preparing their own emergency plans.

For purposes of planning the actions to be executed, three types of disasters should be considered: those that are limited in scope, those that are severe but not overwhelming, and those so catastrophic that they destroy most of the public service infrastructure in the affected region.

In general, the health sector should assume the following disaster-related responsibilities:

a) Preparation of specific health plans;
b) Provision of first aid and urgent medical-surgical care;
c) Transfer and evacuation of the sick and injured;
d) Reorganization and strengthening of hospitals receiving evacuees;
e) Reinstatement of regular medical care;
f) Execution of basic environmental sanitation measures and epidemiologic surveillance;
g) Institution of mental health measures;
h) Evaluation of the actions taken during the emergency and appropriate modification of relevant health sector plans.

Overall, it should be stressed that despite the importance of health sector activities, they do comprise only one class of action among the many needed to deal with the situation. Therefore, their effectiveness will depend heavily upon the coordination achieved with activities in other fields.