THE DELIVERY OF EMERGENCY MEDICAL SERVICES (EMS)
IN DISASTERS: RECOMMENDATIONS FROM FIELD STUDIES*

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Abstract

Using some of its earlier work as an initial base for developing a research design, the Disaster Research Center in 1975 began a systematic and comparative study of the delivery of emergency medical services (EMS) in relatively large-scale, sudden mass casualty-producing situations in the United States. For comparative purposes, more limited studies on preplanned events with high mass casualty potentials and on the disaster EMS planning and everyday operations in some disaster-prone communities were also undertaken. This paper advances a series of recommendations regarding the policies, planning, practices and research implementations involved in the delivery of EMS in disasters, which were derived from the 28 month study.
In this article, we make a series of recommendations regarding the policies, planning, practices and research implementation involved in the delivery of emergency medical services (EMS) in disasters. These recommendations are derived from a 28-month study of actual and potential large mass casualty situations. Only the implications of the empirical findings are presented here since the general and specific research results are detailed elsewhere (see Taylor, 1977, Quarantelli, forthcoming).

**Background**

Until the last decade, there had been little involvement by federal, state and local governmental agencies as regulators or providers of emergency medical care on a day-to-day basis and even less attention to developing plans to provide EMS in disaster contexts. However, this started to change in 1966 with the National Academy of Sciences report, *Accidental Death and Disability: The Neglected Disease of Modern Society*, and the passage of the Highway Safety Act. These events spurred the passage of the Emergency Medical Services System Act in 1973. This Act, by promoting and funding the development of comprehensive coordinated regional systems, offered a design to organize a community's health facilities and resources into a system aimed at insuring that essential emergency health services will be available to everyone in the system's service area and that unnecessary duplication would be avoided.

The Act also mandates 15 functions to be performed by every EMS system, with one of them being coordinated disaster planning. The legislation implicitly assumes that the everyday EMS system will be the basis for the provision of EMS in extraordinary mass emergencies or, in the language of the act, during "mass casualties, natural disasters or national emergencies". Policy interpretations of the act have further specified that the EMS system must have links to local, regional and state disaster plans and must participate in bi-annual disaster plan exercises. Thus, the EMS systems which have been established in the last few years have been faced with both planning for, as well as providing services in, large-scale disasters.

These recent trends in the EMS area have converged with research and policy interest in the social and behavioral aspects of disasters which has developed since World War II. The oldest and major organization in the United States involved in such research has been the Disaster Research Center (DRC) founded in 1963. DRC has conducted over 375 field studies on the response of groups and organizations to community-wide emergencies; in particular, natural and technological disasters.

While earlier DRC research focused mostly on such emergency groups as fire and police departments, civil defense offices and the Red Cross, the EMS deliverers were also looked at as a part of the overall community response. However, in 1970, the Center began to concentrate its research more directly on hospitals through a study of disaster preparedness in 15 American communities known to be vulnerable to different kinds of natural catastrophes. A major finding from these studies was that the internal workings of hospitals in mass casualty situations could not be fully understood without taking into account the larger
social context which affected their responses. At the same time that DRC was
doing these hospital studies, a thorough survey was undertaken of the medical
area literature on EMS in disasters and mass casualty situations. This survey
found that although the providing of emergency medical care is an essential
aspect of most major disasters, there had not been a single study of any EMS
system response as a system in any disaster. Thus, up to now, despite a bur-
egrowing EMS literature, there are no comparative descriptive or analytical re-
ports on how major providers of EMS respond collectively in disasters.

Research Objectives

Using its earlier work as an initial base for developing a research design,
DRC in 1975 began a systematic and comparative study of the delivery of EMS in
relatively large-scale, sudden mass casualty-producing situations in the Unit-
ed States. For comparative purposes, more limited studies on pre-planned
events with high mass casualty potentials and on the disaster EMS planning and
everyday operations in some disaster-prone communities were also undertaken.

Our research focused on three areas: (1) We examined the characteristics of
disaster-related EMS delivery to identify the relevant features and patterns
of the medical and supporting services delivered in mass emergencies. In times
of disasters, what, where, why, for whom and by whom are EMS provided? (2) We
set out to ascertain the kinds of pre- and post-disaster conditions which af-
fected disaster EMS. Our aim was to discover the general factors or circum-
stances, internal and/or external to the EMS sectors, which could account for
what happened in planning for and providing disaster EMS. (3) We attempted to
determine the consequences of involvement in mass emergencies for health sys-
tems' planning and operations.

Data Gathering and Analysis

Given our research objective of arriving at generalizations about EMS in di-
sasters, we looked at a large number and a wide variety of cases, with some
variability in both disaster agent and EMS system characteristics. Since al-
ost every actual mass casualty incident involving more than several dozen
victims was studied in a 22-month period of field work, the difficulties in-
herent in sampling events was avoided. Of the 29 actual mass casualty events
studied, 11 involved natural and 18 technological disasters. In addition,
there were five on-the-spot studies of potential high mass casualty pre-planned
events, and information was also obtained on EMS normal operations and disaster
planning in six disaster-prone localities. In all, field work was carried out
in 44 communities spanning 17 states, plus Washington, D.C. and the Virgin Is-
lands. Research was done in areas from small towns and metropolitan regions
and caught communities in the full range of EMS development from those with
only the most rudimentary capabilities to those with complex and well-esta-
blished EMS systems.

In-depth, semi-structured interviews with key personnel representing all groups
involved in any aspect of disaster EMS planning and operations were used as the
prime data gathering instrument. Comparability of interview data was insured by asking similar questions of certain job incumbents in every event studied and by employing checklists to insure that the same documentary material and statistical information was obtained for disaster and normal EMS operations. Field work took place in around 200 hospitals and in at least an equal number of other groups. About 600 formal tape recorded interviews were conducted and approximately twice as many informal contacts were made with personnel of emergency organizations. Extensive documentary data, such as disaster plans, afteraction reports, emergency department logs, medical statistics, etc., were also obtained.

Since routine EMS record keeping is nonuniform and uneven in quality and because record keeping is typically neglected or suspended in disasters, little comparable reliable quantitative data usually exists. Therefore, observational data obtained on-site by DRC field teams became invaluable for gathering primary data, for assessing the reliability and validity of information obtained by other means, and for collecting details about the reality as opposed to the ideal of EMS delivery in high demand situations. Hours, therefore, were spent in direct field observations.

All the various data amassed was analyzed both qualitatively and quantitatively in terms of basic theoretical dimensions of the study. The core of the research findings were derived from a highly systematic and coded analysis of 24 of the actual disaster events. In addition, EMS delivery in disaster-prone communities and pre-planned high mass casualty events were comparatively analyzed to isolate what distinguishes EMS planning and response in these situations from that occurring in actual disaster events. Also given special attention were particular questions such as the effects of the EMS law on disaster-related delivery systems, problems of needs assessment in EMS delivery systems, EMS disaster coordination associated with the distribution of victims, jurisdictional difficulties in providing disaster EMS and the impact of different EMS configurations on disaster responses.

Based on the indicated data gathering and analyses, we make a series of recommendations below regarding the future delivery of disaster EMS and EMS disaster systems. For purposes of exposition, these are divided into policy, planning, practice and research implementation recommendations. In fact, such recommendations are now a mandatory part of the final reports on studies funded by the Health Resources Administration (HRA), the prime supporter of our work in this area.

Recommendations

Policy

The policy recommendations are the most important for, if changes are made in this area, there will be consequences in other areas also. The converse is not necessarily true. By their very nature, policy changes are the most difficult to bring about, and they tend to evoke the most resistance. In part, this is because such changes often require modifications in traditional views, the forging of new behaviors and the explicit recognition of something
different.

1. For planning and operational purposes, HRA and other relevant agencies should explicitly recognize that there are qualitative differences between everyday EMS and disaster EMS.

This recommendation runs strongly against a basic assumption in the EMS area; namely, that disaster EMS is but an extension of everyday EMS. There still would be substantial problems in the delivery of disaster EMS even if this were true. As we originally suspected when we started this study, and we found amply confirmed by our research, everyday EMS and disaster EMS are not simply two ends of the same continuum. The difference between the two is not merely one of degree; it is a qualitative difference in kind.

To argue this recognition requires a counterbalancing of the historical thinking and practice in the EMS area. Such counterbalancing can only be achieved if influential and key federal agencies responsible for and heavily involved in EMS planning and operations consciously and explicitly point out this mistaken assumption brought over from the past. Without such leadership, any research findings about what is really involved in disaster EMS will have relatively little effect.

However, if the qualitative difference is accepted and legitimated as policy, it will be possible in the short run to have more realistic planning and practice in the EMS area. In the long run, the policy change will make for substantially greater effectiveness and efficiency in the delivery of disaster EMS. To continue to accept the old view is to mislead legislators, however unintentionally, and to handicap even sincere administrators, weaken worthwhile planning, perpetuate poor practices and otherwise hinder the bringing about of major improvements in the delivery of disaster EMS.

2. Disaster EMS should remain linked to everyday EMS as it is in current basic legislation, but efforts should be made to require consideration of EMS in other disaster legislation and agency policy.

While disaster and everyday EMS are qualitatively different, there is a relationship between them. There would not be any logical, theoretical or practical sense to attempt to develop disaster EMS as a separate and independent area of its own. Apart from the lack of political reality that would be involved in such an attempt, there is little justification for separate disaster EMS legislation. Disaster EMS should continue to be treated as an integral part of the overall EMS program area.

However, disaster EMS can be improved and put in a better position if it were not as isolated from other disaster laws and other federal agencies involved in disaster policy. That is, disaster EMS should be made salient and visible in related legislation and relevant key organizations. In fact, advantage should be taken of the restructuring of U.S. national disaster policies and emergency agency reorganization, so as to make disaster EMS important and part of the decision making process in other disaster-relevant agencies. The time for new linkings is during times of change; thus, the present may be a
better opportunity than has or will exist for a long time.

The value to the disaster EMS area for moving in this direction is that it, like anything else, does not exist in a social vacuum. Any changes in the disaster EMS area are difficult if they are not reinforced and supported outside of the area itself. For example, the delivery of mental health services has been made a part of what can be thought of as the basic disaster law in this country, i.e., Public Law 93-288; in addition, the delivery of such services has been linked to the overall federal disaster response. This has helped the development of the delivery of mental health services in disasters tremendously. The delivery of disaster EMS is nowhere so recognized and, if thought of at all in the overall response to a disaster, is seen as a separate area that is the responsibility and concern of others, since non-EMS areas do not have a very good picture of the everyday or the disaster EMS area. Disaster EMS can only gain by becoming better integrated into the overall federal disaster response: at the very least, it should attempt to become better recognized in policies and plans, especially at the federal level.

3. Preplanned EMS events, instead of everyday EMS, should be taken as the prototype of disaster EMS.

Little thought has been given, other than everyday EMS, to using a different prototype for disaster EMS. Much planning and practice implicitly assumes that the way to develop disaster EMS is to build on what is done by the established EMS system. But our research shows this is a false path to follow. Since, at times of disasters, the established EMS system is replaced by an emergent EMS system, the established system cannot be used as a meaningful prototype. What should be used for disaster EMS planning and practice should be different; that can be found in pre-planned EMS events. The thinking and activities carried out in anticipation of a potential mass casualty event are more similar to what occurs in disaster EMS than everyday EMS. As such, this is a much more meaningful model to use than what is currently assumed.

There should be an explicit recognition of the value of preplanned EMS events for disaster EMS. Preplanned EMS events generally involve community organizations outside of the local EMS system. Such events also tend to be seen as evoking operational demands on the EMS system that are different from everyday demands. Besides activating perceptions of differences in capabilities and demands, preplanned EMS events also generate a belief that traditional ways are not adequate for the EMS problems at hand and that new ways for dealing with them must be developed. These, of course, are also the elements involved in actual disaster situations. However, for preplanned events to be accepted as prototypes for disaster EMS requires that such events be seen not as exceptional cases but as the general principle to be followed. This is only likely to occur if the matter is treated as a policy question rather than a planning or practice issue. At all levels of the EMS area, we think it is necessary that key groups and top officials point out, assert and direct as much as possible that a major change be made in the accepted prototype for disaster EMS. Without explicitly recognizing the change and making it a policy matter, it is likely that preplanned EMS events will continue to be seen as exceptional incidents rather than general models for improving the delivery of EMS in disasters.
If this advocated policy change is accepted, one immediate consequence will be an encouragement and a legitimation, which does not exist now, to use preplanned EMS events to learn and to teach about disaster EMS. They will no longer be seen as special cases. Furthermore, those localities subject to relatively rare natural disaster agents will have real rather than purely hypothetical situations around which to plan. Finally, if our point of view, based on our research, is correct, there will be development of more realistic expectations about disaster EMS. The qualitatively different problems involved in the delivery of EMS in disasters, as compared to those facing everyday EMS, will have to be faced.

Planning

On the surface, planning recommendations in the disaster area would seem to be the easiest to implement. In the main, the values and beliefs of American society are supportive of general planning for almost everything, but especially for emergencies. On the other hand, planning is frequently seen as something too general to be of much use, given the specifics of an actual situation. Thus, while assent is often given to planning in the abstract, its value in the concrete sense is often denied. Therefore, it must be recognized that any recommendations regarding disaster EMS planning will usually encounter an ambiguous reception. Furthermore, indirect positive consequences of planning are not always easy to recognize, and often there is no factual base of knowledge from which to plan.

1. Local disaster EMS planning must be closely linked to community wide and non-EMS disaster planning.

Disaster EMS planning should not be carried out solely as part of an EMS system activity. As we have stressed, the emergent EMS system at times of disaster is different from the established everyday EMS system. Also, the conditions affecting the emergent EMS system often involve factors from outside the system itself. Therefore, to plan as if the EMS system operations at times of disasters is a self-contained entity, independent of anything else, is to ignore the realities that exist. The EMS system is, of necessity, an open system; planning for the delivery of EMS in disasters must take this into account.

Realistic disaster EMS system planning must be a part of overall community disaster planning. This involves more than the EMS sector knowing what other organizations plan to do at the time of a mass emergency, although that itself is important. What is crucial is that the EMS plan must be integrated with and be part of the total community plan. Too often EMS planning for disasters is undertaken independent of other groups, such as the public safety forces which might have some direct role in EMS delivery. Even the latter is not enough. To avoid unnecessary problems, members of the local EMS sector need to know what others are projecting and have their own plans linked to all others likely to be responding in a mass emergency. The overall coordination necessary at times of disasters necessitates such prior knowledge and integration.
But it is not only the possible coordination that is important if our recommendation for integrated community disaster planning were to be followed. Learning about what others are attempting to do and trying to make explicit what one will try often surfaces ambiguities, critical gaps, overlaps, not thought through difficulties, etc. Thus, if the EMS area were to link itself more closely to other local community disaster planning, it would probably help streamline and improve disaster EMS planning itself. Furthermore, attempts to integrate plans with others would also highlight the limits of the control the EMS system has over certain matters at time of disasters, such as the victim flow. There would have to be a recognition that the central components in the system, the hospital personnel, can themselves do relatively little about many of the medical demands that might be placed upon them at a time of disaster. Knowing that a problem exists, even if it cannot be directly solved, is better than a failure to be aware of the problem or its source. Pulling all these payoffs together, it is fairly clear that integrated community planning, incorporating disaster EMS planning, can be only generally beneficial for the EMS area.

2. Plans should reinforce indirect positive aspects of disaster linkages within the EMS system and between EMS and other sectors.

There is an understandable tendency to judge and evaluate disaster planning in terms of its direct consequences at times of mass emergencies. Disaster plans can also be judged in terms of other than their direct effects and whether they have impact on matters with which the plans are not manifestly concerned; plans can have indirect or latent consequences in unintended areas. Looked at in this way, there can be such benefits in disaster EMS planning. Linkages established for disaster purposes can help in everyday EMS system operations. If this is recognized, it can become an added inducement for planning for the delivery of EMS at times of disaster.

The federal legislation creating the EMS program nationwide calls for the establishment of "disaster linkages" within the EMS system and between it and other sectors in society. What is not made explicit, and perhaps was not even recognized when disaster linkages were mandated, was that the more they become fact, the more likely they would feedback positively to the everyday EMS system. Such linkages can lead to increased cooperative interaction during normal times and serve as a corrective for conflictive relations that often exist in everyday EMS systems, e.g., concerning hospital categorization. If our analysis is correct, and our research does tend to support the view we are expressing here, disaster planning should be pushed not only for what it might accomplish at times of mass emergencies, but also because of the indirect consequences for EMS during normal times. In fact, the implication is that what is presently latent should be made manifest, i.e., there should be an explicit acknowledgement that disaster planning is worthwhile for the everyday EMS system in disasters.

To suggest what we have does not imply that coming together for disaster planning necessarily always creates consensus and harmony. But on an everyday basis, the established EMS system in most localities is wracked with disagreement and disputes. There are also differences of opinion between
the EMS sector and other areas of society. However, in many, although not in all, cases, the ongoing conflicts can be ignored where the EMS components are not faced with a situation calling for immediate action, and where inaction is not likely to evoke a hostile public outcry. However, disaster events are somewhat different in that they are situations which do call for immediate response and to which the public is rather attentive. It is also not accidental that in preplanned EMS events, conflicts tend to be muted and played down. Therefore, there is some pressure for disaster planning and development of some agreements within the EMS system and between it and other sectors. We suggest that advantage be taken of this situation by emphasizing to the participants in EMS disaster planning that they should also take into account the positive, non-disaster consequences that can result from cooperative planning. In turn, the better the everyday relationships, the more they could improve projected relationships at times of disasters. On balance, it is difficult to see that a strategy of emphasizing positive indirect effects of disaster linkages would not have more advantages than disadvantages.

3. Mandatory higher priority should be given to systematic EMS record keeping.

Our research effort was considerably handicapped by the lack of adequate and systematic EMS record keeping. However, apart from the complications this lack generated for research, there is the even more important point that lack of records makes it very difficult to accomplish either retrospective evaluation or prospective planning. By this, we mean that it is impossible to look back at an EMS situation and to judge how well it was handled and what could have been done differently if some of the simplest factual pieces of information are lacking, such as the number of injured a hospital received or how many ambulances were involved in transporting casualties, or what first responders did when they initially found disaster victims. Similarly, it is equally difficult to project better disaster plans if the same kind of information is not available. Among other things, the failure to have proper records also makes it easier for EMS personnel not to recognize the qualitative differences between everyday EMS and disaster EMS situations. In particular also, the absence of factual information obscures the total system problems in a disaster compared with the difficulties of particular subcomponents, e.g., a system mobilization that leads to resources not being used at the same time specific subcomponents are seeking those very same kind of resources. It is impossible to evaluate, to plan, to observe differences, to note that the whole is different from the parts, etc., when there is no factual base of knowledge.

Record keeping is a mandated EMS requirement. However, many everyday EMS systems simply fail to have good records. At times of disasters, the recording of information relevant to the situation often all but ceases. It is imperative that strong action be taken to insure the keeping of adequate records, that what should be done will actually be done. No one wants to increase paperwork per se for EMS or other organizations. But, as we have implied, a minimum amount of factual information is absolutely necessary for evaluation, planning, research and other justifiable purposes. Put another way, some of the duties of the EMS system cannot be done unless some systematic data is available. If this is so, it follows that mandatory record keeping should be
given a higher priority in the EMS area.

This is not to ignore the difficulties in getting better information, especially at times of great organizational or system stress. A choice will have to be made: either the current situation, with massive blind spots about many crucial matters, will be continued; or there will be the implementation of a requirement that will insure obtaining information so judgments, plans, studies, etc., can be better made about the delivery of disaster EMS. This is a situation where certain highly valued ends cannot be attained unless some appropriate means are first brought into being to work towards those goals. In our judgment, improved planning for delivery of disaster EMS cannot be achieved unless a way is found to generate a factual base of knowledge about what does and does not happen in mass emergencies.

Practice

EMS practitioners, if they have had any disaster experience, tend to be open to suggestions that might improve delivery services. They recognize, often more intuitively than cognitively, that there might be better ways to do things. However, recommendations as to disaster EMS practices also run against resistance of different kinds. Organizations and people are used to doing many things in habitual ways; they tend to see research findings as at variance with their own personal routines and beliefs. It is a fact that implementation of many recommendations in the area of EMS disaster practices often involve serious practical difficulties, run counter to past views, or require seeing something different from the usual.

1. Needs assessment, on-site triage, and transportation of the injured should be done by appropriately trained regular emergency organizational personnel.

As a principle, the above recommendation has much in support of it. These tasks all need to be performed and would clearly best be done by trained personnel. Also, if possible, EMS participants should be the first responders at the disaster site, thus giving the emergent EMS system a measure of control over input, i.e., patients, into the system.

Implementing the recommendations, however, poses a number of practical difficulties. Substantial numbers of more police and fire officers would have to be given formal EMS training. Such training programs, of course, are well underway nationwide at present, but they would have to be considerably accelerated to insure a sufficient pool of trained personnel. Even if trained personnel were first responders, there would have to be clear understanding who would have the authority to engage in needs assessment and on-site triage. For a chance for this to occur, there would have to be extensive and realistic disaster planning. Appropriate transportation and distribution of victims to hospitals would be necessary. The degree of coordination and kind of community necessary is not easily achieved, although preplanned EMS events show that, with imagination and initiative, the problem is not purely a matter of technology, nor is it insurmountable. Our overall view is that, while any implementation of the recommendation is likely to fall short of the desired
goal, some advances can be made.

2. Convergence on disaster sites and on hospitals cannot normally be stopped, so attempts should focus on channeling it along less disruptive lines.

Elements external to the EMS system often have major effects on the delivery of EMS in disasters. One almost invariable element is the convergence of non-EMS personnel on both impact sites and hospitals. In the vast majority of instances, there are no practical ways of preventing the convergence, even though this can interfere with the delivery of EMS. Major efforts are sometimes expended to or stem or block off this inevitable movement of people, vehicles and messages. Such endeavors are wasteful of time, energy and resources. It would be more useful to try to selectively direct vehicular and pedestrian traffic, for example, to and within hospitals. The attitude expressed here runs counter to the traditional view that takes as obvious that major attempts should be made to block convergence. The best that probably can be achieved is to make the EMS sector well aware that mass convergence will occur, to take the delays and confusion that will result from that convergence into account in the EMS disaster planning, and to try to direct convergence into less disruptive lines.

3. Efforts during disaster should be primarily directed at getting good overall coordination in the EMS response.

Related to the point just discussed is the fact that effectiveness of EMS response in disasters is not a result of swiftness of response or utilization of highly specialized technology. Sophisticated, expensive EMS technologies, such as telemetry, have undoubtedly improved everyday EMS delivery. Likewise, faster response times have improved the life-saving capacity of EMS operations. However, what is far more important in mass emergencies is good overall coordination. Thus, efforts should be directed at achieving or attaining such coordination. Some of the coordination can be pre-planned. During the actual disaster itself, or in the immediate aftermath of impact, coordination can be facilitated by keeping it as a major objective. If overall coordination of the response—among hospitals, between first responders, hospitals and the transportation component, for example—is good, the efficiency and effectiveness of the delivered EMS will, necessarily, be good, too.

**Research Implementation**

The implementation of research in the EMS area requires not more general research, but rather the transfer and translation of what is known to potential users and the examination of specific research questions the answers to which would have direct applicability to policy, planning and practice. Much is known about disasters, and something is known of disaster EMS. What needs to be done is to get that information into the hands of users. There are also some specific questions about focused EMS topics which need to be examined in more detail before attempts are made to implement research findings on those matters.
1. Scientifically-based knowledge about disasters and disaster-related EMS should be diffused within the EMS sector.

There is, after a number of years of empirically-based studies, much understanding about disaster behavior in general (Quarantelli and Dynes, 1977). The literature has grown substantially, and there is a solid, although uneven, knowledge about individual, group, organizational and community behavior at times of mass emergencies (Quarantelli and Dynes, 1977). However, little of this understanding and knowledge has gotten into the EMS sector, where many discredited myths about disaster behavior still prevail. There is also almost no grasp in a general sense within the EMS area about what research has, so far, found about disaster EMS. This should be expected, given that our research constitutes the only major systematic and comparative study undertaken so far.

It is time that scientifically established findings about disaster and disaster EMS be made available to possible users. This diffusion of information should be done, and could be accomplished, through the involvement of knowledgeable disaster researchers in the holding of conferences and workshops, the circulation of publications, the writing of manuals and syllabi, and giving of talks and the building in of material in formal educational and in-service training of EMS personnel. This educational and training effort would probably be most effective if it were spearheaded by such an agency as HPA and involved such organizations as the American Hospital Association and the American College of Emergency Physicians.

A consequence of diffusing the indicated knowledge would be more realistic policies, plans and practices regarding disaster EMS. The range of effects could be substantial. On the one hand, we think stronger cases could be made with legislators and administrators for the institution of different EMS policies. On the other hand, lives of disaster victims probably could be saved if operational EMS personnel knew better what to expect in disaster events.

2. Current gaps in knowledge should be filled by more specifically directed EMS studies.

While the general picture of what happens with respect to EMS in disaster situations is relatively clear, there are a number of more specific questions that have not yet been fully explored. For example, there should be studies such as the following: evaluative medical research on disaster-related EMS, special disaster problems of very large metropolitan areas and widely dispersed rural EMS systems, factors specifically facilitating emergency EMS systems, and more intensive studies of preplanned EMS events. Such research would provide answers with an empirical base that now can be only matters of speculation and guess.

Conclusion

In another study on the increasing attention being paid to the providing of mental health services in the aftermath of disasters, we noted that what was
happening could be seen as part of what has been called the "security orientation" of American society (Taylor, Ross, Quarantelli, 1976: 288-289). According to Meadows, this means that increasingly there are attempts to develop new powerful engines of risk control into ever-new areas and levels of human and environmental hazards—to the collective hazards of illness, unemployment, emotional disturbances, physical hardship, and so on. Thus, there develops what we may call... an age of massive risk reduction institutions and agencies, public and private, collective and public (1971: 63-64).

The expansion of the EMS area itself and the efforts to provide EMS in disasters might be seen as a reflection of this attempt at risk control in the society. However, this same author interestingly goes on to observe:

> These new measures and mechanisms for reducing risks can, and in fact do, in time generate new risks of their own. As in all human history, so now problem solving creates new problems. Indeed, one of the most important aspects of any local community in America today concerns the problems created by its own problem solving agencies (1971: 64).

The disagreements within the EMS area generally, the difficulties associated with disaster EMS, perhaps are a reflection of how the attempt to deal with a problem in turn generates other problems.

Indeed, what is occurring with respect to EMS may simply be indicative of a central point about American society which Meadows phrases as follows:

> One way of phrasing all this is to point out that in America security is indeed a dominant value orientation, that the security value has assumed many new and perhaps as yet many unfamiliar forms, and that the emerging problems of security lie in the frontier circumstances that we do not yet fully understand and, therefore, cannot yet effectively manage the complexities and intricacies of the relationships of our newly developing security forms and security norms to our overriding commitment to security as a dominant social value (1971: 54-55).

If this is the case, our study perhaps throws some light on this larger trend. Possibly this and similar studies will not significantly affect current trends, including manifestation of the security orientation. However, our research may contribute to an understanding of some of the phenomena involved in such trends. In this sense, the scientific knowledge acquired could possibly allow societal members to harness and direct such social processes in the future rather than let themselves be buffeted by and subjected to unknown forces as in the past. At least, that is our hope.
FOOTNOTES

1. There are many reasons why this would be the case, but the basic one is that, as a number of studies have shown, everyday EMS is itself relatively poor.

2. A programatic paper detailing worthwhile future research on disaster EMS is being projected by DRC personnel.

3. It might be objected that the parallel drawn to the delivery of mental health services in disasters is not exactly valid because of two reasons. It could be said that after disasters there have always been efforts to provide EMS, whereas there have not always been attempts to provide mental health services. This objection is valid only if it is not recognized that religion and religious functionaries provided the same kind of mental health service in the past, although under a different name. It might also be objected that if it is granted EMS service were attempted in the past, how is the present effort a reflection of the "security orientation" which presumably is a relatively recent phenomena? The answer here is that, just as in the mental health area, services in the past were delivered in an ad hoc way; now the effort to provide both EMS and mental health services is very explicit, systematic and the specific responsibility of certain institutional components. This does represent, to a degree, a difference from the past.
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