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RESPONSIBILITY FOR THE DELIVERY OF EMERGENCY MEDICAL SERVICES IN A MASS CASUALTY SITUATION: THE PROBLEM OF OVERLAPPING JURISDICTIONS*

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INTRODUCTION

The delivery of emergency medical services (EMS) to victims of traffic accidents, fires, heart attacks, etc. takes place each day on a routine basis throughout the country. In the vast majority of cases to which an EMS system responds, only one victim, or at most three or four, require treatment simultaneously. There may be busy nights or certain peak hours during which rescue units and ambulances respond to one call after another and hospital staff work continuously, but, for the most part, an EMS system is primarily designed to handle emergencies involving only a handful of victims at any one time.

There are occasions, however, on which an EMS system is called upon to respond to an emergency situation involving a large number of casualties; i.e. 50 or more. Depending upon the nature and extent of the injuries and the availability of resources, a mass casualty situation may temporarily overload an EMS system. Not only are there more victims requiring simultaneous medical attention, there are also more emergency units responding to the situation. The activities of these various agencies and their personnel must be coordinated if the EMS operation is to be carried out smoothly and efficiently.

A number of communities have developed plans for interagency coordination of activities in mass casualty situations. These communities tend to be those in which the potential for various types of mass casualty situations is relatively great. For example, communities in the Midwest tornado belt, the West Coast earthquake belt, and those surrounding major international airports, have developed such plans. However, most of these plans are rather limited in scope, involving the coordination of only two or three emergency agencies, such as police and fire department, or hospital and ambulance company. In addition, the majority of these plans are concerned only with those EMS agencies which normally respond to emergency situations within the political boundaries of a given community.

Mass casualty situations do not always occur conveniently within community boundaries. Occasionally, they may occur at a location which marks the boundary between two communities or between a community and a surrounding unincorporated area of a county or township. When this occurs, several different

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police departments, fire departments, and ambulance companies may respond to the scene, and hospitals in two or more communities may receive patients. Just as there are frequently no plans for extensive interagency coordination at the community level, there are also very few plans for overall coordination at the county or state level in such situations. When a mass casualty incident occurs at a location where the jurisdictions of emergency agencies overlap, coordination of activities more often occurs in an ad hoc fashion, rather than according to some predesigned arrangement.

Since 1975, the Disaster Research Center (DRC) has been engaged in a study of the delivery of EMS to victims of mass casualty incidents throughout the United States. These incidents have included both natural and man-made disasters, such as tornadoes, floods, explosions, and plane crashes. Many of these incidents occurred within the boundaries of a given community; however, some occurred at locations where the jurisdictions of several EMS systems overlapped. The latter cases offer a unique opportunity to examine the ways in which EMS activities are coordinated when multiple emergency agencies respond. In the remainder of the paper we will examine, in some detail, four mass casualty situations which occurred across jurisdictional boundaries and will attempt to determine how coordination of EMS activities was achieved and what problems, if any, were encountered in the process. Finally, we will offer some recommendations concerning how coordination of EMS activities in such situations might be improved in the future.

Before proceeding with the case descriptions, a brief discussion of data collection and analysis is in order. Since its inception in 1963, the Disaster Research Center has employed a qualitative methodological strategy in studying disasters. Such a strategy involves conducting in-depth, semistructured interviews with representatives of the various agencies responding to the disaster, collecting a wide assortment of documents (disaster plans, operations critiques, and agency information brochures), and participant observation of disaster operations. All of the above data collection techniques have been employed during the course of this present EMS study. Most of the information presented in this paper is derived from approximately 40 hours of tape-recorded interviews with representatives of various police departments, fire departments, ambulance companies, and hospitals. Each of the interviews was examined for information pertinent to the coordination of EMS activities, with special attention given to information bearing on direction of rescue and treatment activities at the mass casualty site, control over distribution of patients to area hospitals, and interagency communications.

Having briefly delineated the methods of data collection and analysis used to obtain the information for this paper, we may begin our examination of the four mass casualty situations.

CASE I. PUBLIC TRANSPORTATION MISHAP

This incident occurred on the boundary between a major Northeastern city and a smaller university town. The accident involved a rear-end collision among three rapid transit trains in a tunnel during rush hour. There were no deaths as a result of the accident; however, approximately 130 persons suffered injuries in the mishap and were taken to four hospitals within the city. The most extensive injuries were fractures of the extremities and skull fractures, but most of the injuries were of a minor nature.

A large volume of equipment and manpower responded to the emergency call. Patrol cars from three police departments, two rescue units from the city fire department and a unit from the university town fire department were present at the site. In addition, a total of 19 ambulances representing several public, private, and volunteer ambulance services reported to the scene of the mishap.

Police and fire department personnel were primarily responsible for rescuing the crash victims, many of whom were not seriously injured but required assistance in making their way to the tunnel entrance. Once the victims were removed or assisted from the tunnel, the more seriously injured were placed in ambulances or police squad cars and were taken to the nearest hospital (Hospital A), located several blocks from the crash site. There was little evidence of any effort to triage or treat victims at the scene. City fire department emergency medical technicians (EMT's) did manage to administer first aid to the more seriously injured, but, for the most part, victims were simply transported as soon as they emerged from the tunnel entrance. A large number of the crash victims were ambulatory and, once assisted from the wreckage, made their way to nearby Hospital A.

According to all available accounts, there was no overall coordination of EMS activities at the scene of the incident. Representatives of each of the three police departments present at the scene were unable to provide information concerning which department was responsible for the overall direction of police rescue operations. In addition, there was apparently no one in charge of directing the distribution of victims to the various hospitals in the vicinity.

One result of this lack of coordination was that Hospital A received the majority of the casualties. This overloading of one hospital was due in part to the massive onslaught of ambulatory patients who walked the several blocks to the hospital; however, most of the victims transported by police and ambulance vehicles were also taken to Hospital A. Since the majority of the injuries were minor in nature, the demand placed upon the emergency room was one of volume rather than seriousness. Nevertheless, the very fact that many of the injuries were minor also meant that these victims could easily have been transported to one of the other hospitals in the vicinity.

In addition to the lack of coordination at the crash site, a breakdown occurred in the emergency communications network. According to plan, the city hospitals are to be notified of all mass casualty incidents by means of a central radio network. In this particular incident, the notification system failed to function properly. Hospital A's initial notification of the accident occurred when the first seven patients arrived at the emergency room entrance. Twelve more patients arrived before official notification was received via the central radio network.

Fortunately Hospital A has the staff and equipment to deal with a large volume of emergency cases when the need arises. However, a more effectively coordinated effort at the scene and a more reliable communications network would have allowed the entire operation to flow more smoothly and efficiently.

CASE II. TORNADO

At approximately 5.30 p.m. on a Sunday afternoon, a tornado touched down in a small unincorporated suburb of a major Midwestern city. Roughly 75% of the homes in this suburb were damaged by the storm, 2 persons were killed and 30 others were taken to three area hospitals for treatment. Most of the injuries were minor in nature; lacerations, fractures, and a few head and back injuries. Only eight persons were admitted to a hospital; the remainder were treated and released.

The area in which the tornado occurred is unincorporated, meaning essentially that there is no local police or fire department with undisputed jurisdiction over all emergency situations in the suburb. Ostensibly, the county sheriff's department in normal times has a legal responsibility to protect life and property in the suburb, and the state police are responsible for patrolling the state highways in the area. Fire protection for this area is provided by several nearby fire departments belonging to surrounding small municipalities. There are several hospitals located in surrounding communities but none in the suburb itself. Thus,

the available emergency resources for the community are plentiful, but must be called in from outside the community.

On the night of the tornado, the county sheriff's department, the state police, a unit of forest rangers, and officers from four surrounding local police departments responded to the tornado call sent out over the state-wide police emergency radio network. Fire equipment and ambulances were sent in from two local fire departments and civil defense units from four communities provided assistance in the form of additional manpower for search and rescue operations.

There are several somewhat divergent views concerning the extent of coordination of activities at the scene. According to the representatives of the county sheriff's department, an emergency in an unincorporated area automatically comes under their jurisdiction; hence, they were responsible for directing all police activities at the scene. However, a state police spokesman said that it was the state police who provided overall coordination and direction of activities at the scene. An altogether different view was presented by a regional civil defense coordinator, who felt that there was a total lack of coordination at the disaster site. According to this informant, a multitude of police and fire departments converged on the scene without any clear-cut direction, and although personnel and equipment were plentiful, both were often in the wrong place at the wrong time. In other words, the scene was one of mass confusion. The civil defense coordinator further indicated that one result of the lack of coordination at the site was that five persons were taken to one hospital when they should have been taken to another. In his opinion, without any direct supervision, ambulance drivers were transporting patients to the hospital with which they were most familiar rather than to that hospital closest to the scene or best equipped to handle the patients.

Hospital notification did not appear to be a major problem in this situation. Two of the hospitals were notified via their hospital-ambulance radios that a tornado had touched down in a nearby community. (The third hospital received only one patient by personal request and therefore was not extensively involved in the EMS operation.) However, personnel at the hospital receiving the majority of casualties reported being unable to contact any official at the scene who could provide information concerning numbers of casualties. As a result, the hospital staff prepared for 150 patients and received only 23.

In this situation, as in Case I, there was apparently no overall coordination of EMS activities at the scene. The ranking state police official probably coordinated state police activities, while the ranking sheriff's department official probably coordinated his department's activities. Ambulance personnel apparently transported any victims they were able to locate on their own or to whom they were directed by a police official. Hospitals were notified that a mass casualty incident had occurred, but were left in the dark about the number of casualties involved. As a result, one hospital mobilized more staff and equipment than was needed to handle the emergency.

CASE III. MASS TRAFFIC ACCIDENT

The accident occurred at approximately 11.00 p.m. on an interstate highway near the boundary between a medium-sized Northeastern city and a smaller incorporated town. Slippery road conditions produced a chain reaction pile-up involving a total of approximately 60 vehicles and 120 persons. Most of the injuries resulting from the accident were of a minor nature; i.e. cuts, bruises, and lacerations; however, several of the victims suffered fractures and head injuries, and one victim's leg was amputated. At least 75 persons suffered injuries which were considered serious enough to require some form of hospital treatment. The vast majority of the victims seen by the five hospitals involved were treated and released. Only about a dozen persons were admitted to hospitals.

The various emergency units responding to the scene of the accident included the city police department, the county sheriff's department, the state highway patrol, the city fire department, the privately owned city ambulance company, three volunteer fire departments and three volunteer ambulance companies from the surrounding area. Altogether, several hundred emergency personnel and over 40 emergency vehicles were present at the accident site.

Once again, there is some question as to which agency was in charge of coordinating the overall rescue operations at the site. As previously mentioned, the accident occurred on an interstate highway at the boundary between the city and the small town. From a law enforcement perspective, the state highway patrol is generally considered to have jurisdiction over mishaps occurring on state highways, and, in fact, an on-duty state highway patrolman was involved in the pile-up. However, since the accident occurred at least partially within the city limits, the city police chief defined the situation as one which came under his jurisdiction. According to representatives of most of the EMS agencies contacted, it was the city police chief who formally took charge of the situation. The state highway patrol and sheriff's department personnel present at the scene apparently provided assistance to the city police under the direction of the police chief. According to one informant, however, the county sheriff's department's communications center was responsible for coordinating the activities of the various emergency agencies present at the scene. The sheriff's department has more extensive communications capabilities involving a larger number of city, county, and state agencies than does the city police department. Thus, it would appear that actual coordination of activities at the accident site was under the direction of the city police chief, while the sheriff's department was primarily responsible for relaying messages and alerting various county agencies to respond.

According to a standing agreement between the city police and fire departments, a traffic accident automatically falls under the police department's jurisdiction unless there is a fire at the scene. Since this accident did not result in a fire, although the potential for one was great, the city fire department's responsibilities were limited to aiding in the extrication of victims and being on the alert for the possibility of a fire. The three volunteer fire departments were called to the scene by the county's fire control board following a request for additional manpower and equipment by the sheriff's department. It is not clear who coordinated the activities of the volunteer fire departments or whether their activities were coordinated with those of the city fire department.

While the police and fire departments were primarily responsible for the extrication of trapped victims, ambulance personnel devoted their efforts to victim transportation and the provision of on-site first aid treatment. A division of labor emerged between the city's commercial ambulance company and the county's volunteer ambulance companies. The commercial ambulance company transported approximately 17 victims to hospitals, but once the more seriously injured patients had been removed from the scene, the commercial company's personnel remained at the scene to triage and treat the remaining victims, while the volunteer ambulance companies handled the bulk of the transportation. According to one informant, the personnel of the commercial ambulance company, who are all trained EMT's, were better equipped to handle triage and treatment than the relatively untrained volunteer ambulance personnel.

With respect to the distribution of patients to hospitals, the usual patterns of coordination failed to materialize. Under normal circumstances, the emergency rooms of the five city hospitals receive emergency patients on a rotating basis to prevent overloading any one emergency room. The rotation system, which is controlled by the dispatcher of the commercial ambulance company, broke down on

this occasion, and over half the patients were taken to one hospital. In addition, some of the volunteer ambulance personnel failed to contact the fire control center to report their locations or the nature of the injuries they were transporting. The result of the breakdown in the rotation system was that the hospital receiving the largest number of casualties was in a state of temporary emergency overload for several hours.

In addition to the breakdown in the hospital rotation system, the usual procedure for hospital notification was not strictly followed during this incident. Normal operating procedure calls for the dispatcher of the commercial ambulance company to inform area hospitals of any large-scale emergency. In this case, one of the hospitals was first notified of the accident by the police and only later contacted by the ambulance dispatcher.

Once again, there is little evidence of any general overall coordination of EMS activities at the site of the mass traffic accident or between the site and the receiving hospitals. However, there does appear to have been some degree of coordination among certain clusters of agencies; for example, among the various law enforcement agencies and between the commercial and volunteer ambulance services. What little coordination of activities there was appears to have emerged throughout the course of the incident rather than along the lines of some preestablished plan or design.

CASE IV. CHEMICAL EXPLOSION

This explosion, involving a railroad tank car which contained a highly volatile chemical liquid, occurred at a chemical plant located in a medium-sized Northeastern city. When exposed to air, this liquid is converted into a gas which, if inhaled, produces severe respiratory difficulties. Highly concentrated or prolonged exposure to this gas results in pulmonary edema, congestive heart failure, and death. The explosion occurred on a Sunday evening, when the number of employees present at the plant was at a minimum. However, the chemical vapor cloud produced by the explosion affected persons in an area up to three miles from the explosion site before it dissipated.

Four persons were killed in this incident. Though all four were in close proximity to the tank car at the time of the explosion, they died from gas inhalation rather than from the actual blast itself. The vast majority of the approximately 100 persons who suffered some form of injury as a result of the explosion were taken to two area hospitals where they were treated for gas inhalation. Only 15 persons were injured seriously enough to be admitted to a hospital, while the remainder were treated and released.

This case is different from most in that we are dealing with what might be termed a two-location mass casualty incident. The initial explosion occurred within the city limits and was handled by the city EMS agencies. However, the vapor cloud also produced a large number of casualties in the surrounding county which were handled by the county EMS agencies. Thus, in this case, our primary concern is with the city–county coordination of EMS activities.

Within the city itself, the agencies responding to the explosion included the city police department, the city fire department, and all three of the city's commercial ambulance companies. The city police department was primarily responsible for controlling traffic around the plant area. Unlike in the other three cases presented above, the police department was relatively inactive in rescue operations at the site of the incident. In fact, according to one informant, the city police did not arrive on the scene until one hour after the explosion had occurred. The first agency to respond to the scene was the city fire department. In addition to extinguishing a fire ignited by the explosion, fire department personnel administered oxygen to victims awaiting transportation to the hospital.

Transportation of the injured was handled by the three commercial ambulance companies

in the city which, according to normal operating procedures, receive calls through the city fire department on a rotating basis. In this case, one of these companies did not receive the official call to respond until one hour after the explosion had occurred. However, having heard the initial report of the explosion over the police radio, this company had already dispatched all of its available vehicles to the scene. The three ambulance companies sent a total of seven ambulances to the explosion site. Ambulance personnel established an aid station near one of the plant gates, where, as victims were brought out of the plant, they were given oxygen before being transported to the hospital. According to one informant, cooperation and coordination of activities among the ambulance personnel were extremely good due to pre-existing professional and informal ties among the staff of the three companies. The senior EMT present at the scene was in charge of triage and treatment activities.

All of the victims from the plant itself and those persons in the immediate vicinity of the plant who were overcome by the fumes were taken to the same hospital. This hospital treated a total of 57 persons, 16 of whom were admitted. None of the informants contacted at this hospital was able to provide information concerning how the hospital was notified of the incident. In fact, these informants indicated that the hospital staff was not officially informed of the nature of the incident, nor of the type of gas involved, nor of the number of casualties they might expect to receive. Most of the information the staff did receive came from the victims themselves or through contacts with ambulance personnel during the course of the emergency. The hospital was in a peak emergency situation for approximately three hours.

Twenty minutes after the explosion occurred, the county fire control center received a call for ambulances from a shopping center approximately three miles from the plant. This shopping center was the second site of the mass casualty incident, as persons leaving stores to go to the parking lot were quickly overcome by the gas. Most of the stores in this center were closed; only a food store, a movie theatre, and a bowling alley being open at the time. The county fire control center dispatched rescue trucks and ambulances from four volunteer fire companies to the shopping center and alerted two hospitals in the county, only one of which was actually used.

The county fire control dispatcher was aware of the explosion and the resulting vapor cloud and therefore sent emergency vehicles equipped to handle gas inhalation victims. Victims from the shopping center were taken to a second hospital outside the city, where a total of 38 persons were treated, nine of whom were admitted. The casualties were similar in nature to those within the city, although the respiratory difficulties were generally less severe. While this hospital had been informed by the fire control center that the victims were suffering from gas inhalation, they were not informed of the chemical properties of the gas. Members of the hospital staff recognized the odor of the gas on the victims' clothing, however, and initiated treatment on the basis of their own observations.

Although the EMS agencies in the county were aware of the explosion and emergency situation in the city, the city EMS agencies were generally unaware of the situation in the county. According to one informant, none of the city ambulance personnel had any knowledge of the situation in the county until one of their dispatchers advised them not to take any victims to the county hospital because it was nearly filled to capacity. After the initial emergency period at the plant was over, the seven city ambulances were largely sitting idle at the plant gate for several hours. One informant felt that one or two of the city ambulances could have been sent to the county to provide assistance there after the initial emergency period at the plant was over.

Another informant expressed concern over the lack of ambulance coverage for the re-

mainder of the city during the peak emergency period at the plant. He felt that there was a need for a cooperative agreement between the city and county so that a county ambulance could be moved up to cover the city in the event that all city ambulances were occupied with a mass casualty situation.

In this fourth situation, the lack of a central county-wide communications network and EMS plant meant that the city and county EMS agencies were largely engaged in independent operations when the situation appeared to call for mutual cooperation and assistance. While the county EMS agencies were aware of the problems in the city, representatives of these agencies indicated that they would not respond to a call within the city unless requested to do so. The city EMS agencies, and in particular, the city ambulance companies, would have provided assistance to the county but were largely unaware of the situation.

DISCUSSION

All available information indicates that no serious medical consequences resulted in any of the four situations we have just described. There was no evidence either directly or indirectly suggesting major negative effects on the quality of the medical attention and treatment that almost all disaster victims received. On the other hand, it is not difficult to visualize a variety of complications in medical care and treatment had the nature of the injuries been more serious in all four instances. It is obvious that there was, and probably still is today, considerable potential for various kinds of medical problems in disaster-related EMS in the localities described. In addition, there were unnecessarily strained relations, perceptions that not everyone had acted correctly, and general feelings that something was amiss both within and between various components of the EMS systems involved in all four cases.

Thus, while what occurred in the four specific instances described may not actually have been too bad from a medical viewpoint, the cases can be used to identify those difficulties for which improvements might be instituted. The purpose of this paper has been the identification of existing problems in the delivery of EMS in mass casualty situations occurring across jurisdictional boundaries. In the four cases presented, three analytically separable but empirically interrelated problems stand out as being both recurrent and significant.

Minimal Coordination of On-site EMS Activities

There was no overall coordination of EMS activities at the scene of any of the four incidents. The minimal coordination which did occur tended to develop among certain clusters of agencies, such as between police and fire departments or between commercial and volunteer ambulance services. This limited coordination of efforts generally resulted from previous experience in other situations or emerged spontaneously during the course of the emergency. There was no evidence of on-site coordination following along the lines of any preestablished plan of operations.

Breakdown in the Existing Communications Network

In most cases, the primary on-site EMS response units, police, fire department and ambulance company, were notified of the incident almost immediately and were on the scene within minutes after the initial call. In only one incident, the explosion, did any primary responder report not receiving immediate official notification of the incident. The major problem involving communication was that one of the major components of any EMS system, the hospital, was frequently not informed that a mass casualty incident had occurred. In several instances, the hospital's first notification came when the first patients began arriving for treatment.

Lack of Coordination Between the Mass Casualty Site and the Receiving Hospitals

In those cases in which the receiving hospitals were officially notified that an incident had occurred, they frequently were left in the dark with respect to certain essential information, such as the nature of the incident, the nature of the injuries, and the number of casualties they should expect to receive. Attempts to contact an official at the scene who might have been able to provide the information generally proved to be unsuccessful or pointless, since there was often no one at the scene who possessed such knowledge.

Before offering several general recommendations concerning ways to improve the delivery of EMS in future mass casualty situations, an additional point must be made. The three recurrent major problems discussed above are not restricted to those mass casualty incidents which occur across jurisdictional boundaries. Analyses of numerous other mass casualty incidents, most of which have occurred within a given jurisdiction, indicate that the same problems occur in almost every mass casualty situation. Golec and Gurney (this issue) discuss some of these problems encountered by EMS agencies in 18 mass casualty incidents studied by the Disaster Research Center. Thus, the occurrence of an incident where jurisdictions overlap may merely serve to exacerbate problems which tend to develop no matter where the incident occurs. This indicates that we should focus our attention on improving the coordination of EMS activities generally before we attempt to improve coordination in a multiple agency response situation.

CONCLUSION

There are a number of ways to improve the coordination of EMS activities in a mass casualty situation. First and foremost, there must be some degree of planning for such events – often easier said than done. Planning requires money, time, and concerted efforts on the part of the various EMS agencies in a particular area. Planning should begin at the community level, since the majority of incidents call for a response by EMS agencies located within a particular community. However, since there are occasions on which an incident occurs at a location where community boundaries meet, intercommunity plans or even county-wide plans should also be developed.

EMS plans may vary along a variety of dimensions, but there are several basic elements which should be incorporated into any EMS plan for mass casualty incidents.

Designation of On-site Coordinators of EMS Activities

Decisions must be made about which person or persons will assume responsibility for the overall coordination of on-site EMS activities. In some cases, it may be possible to assign this responsibility to one particular individual who has the position or expertise in the area of EMS to be able to direct rescue, triage, treatment, and transportation activities at the scene. This person might be a police chief, fire chief, or senior EMT of an ambulance company. However, the coordinator should be someone whose authority will be recognized and whose directions will be followed by all EMS personnel responding to the incident. In many cases, one overall coordinator may not be sufficient. This will generally be the case when the incident is diffuse as opposed to focalized and/or when a large number of separate EMS agencies respond to a situation. In such cases, a different coordinator might be designated for each type of agency responding to the situation; that is, a coordinator for all law enforcement personnel, a coordinator for all fire department personnel, and one for all ambulance personnel. If the multiple coordinator option is selected, overall coordination of on-site activities can be accomplished in one of two ways:

(1) Each type of agency can be assigned as specific task area. For example, law enforcement agencies can be assigned to handle traffic control and search and rescue; fire departments can be assigned the task of victim extrication as well as fire control and prevention; and ambulance companies can be assigned the tasks of triage, treatment, and transportation of victims.
(2) The multiple coordinators can establish a central command post so that they can coordinate with each other while directing on-site activities through portable communications equipment.

Establishment of a Central Communications Network and Notification System

In many areas EMS agencies have extremely limited communications capabilities. While most law enforcement agencies have extensive communications networks, most fire departments, ambulance companies, and hospitals are severely limited in their abilities to communicate with other EMS units. Messages must be relayed through several channels, creating confusion, inaccuracy in reporting, and information gaps in the process. There is a desperate need for primary EMS response units to have direct communications links with one another so that each agency may be kept informed of the activities of all other agencies involved in the response.

Even in areas where such a central communications network does exist, special provisions should be made for hospital notification. Many hospitals do not have either the available staff or the desire to constantly monitor a central emergency radio channel. Communications personnel from one of the other EMS agencies can be assigned the task of alerting receiving hospital emergency rooms about the incident by telephone or through a direct line.

Provision for Coordination of Activities Between Site and Receiving Hospitals

By improving coordination of EMS activities at the scene of the incident and by establishing a central communications network and notification procedure, many of the problems involved in site–hospital coordination will be alleviated. More extensive coordination of activities at the scene, especially with respect to the distribution of victims to hospitals will reduce the possibility of any one hospital becoming overloaded with serious casualties. The establishment of a central communications network and notification procedure will alleviate the problem of hospitals suddenly finding themselves in the midst of an emergency situation without prior notification and hence without adequate time to mobilize personnel and equipment. More extensive on-site coordination and better communications capabilities will also facilitate keeping hospitals informed of the nature and number of casualties they will be receiving.

It should be noted at this point that, although EMS planning is important, it is not sufficient in and of itself to insure a coordinated response to a mass casualty situation. Plans must be practiced to be perfected and to familiarize EMS personnel with their respective roles in a given situation. While disaster drills do not possess the urgency of the actual situation, they do provide familiarity with the plan and an excellent opportunity for testing out certain arrangements and for making necessary revisions.

This paper has focused primarily on EMS delivery in mass casualty incidents occurring across jurisdictional boundaries and it is hoped that some of the information provided and recommendations offered may prove useful to EMS agencies and planners at the community level as well as at the county and state levels. EMS delivery is an essential life-preserving task involving a variety of agencies, all of which must work together in order to maintain the provision of high quality emergency medical care to victims of mass casualty incidents throughout the country.

REFERENCE

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