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A SELECTIVE LITERATURE REVIEW OF DISASTER MEDICAL SERVICES

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"Catastrophes have not been properly studied in a systematic fashion" insofar as the organization and delivery of medical services are concerned. This was reported in 1967 by the Task Force on Medical Disaster Surveys, National Academy of Sciences (1967: 3).

The next five years brought little change. Detailed research about emergency medical services, such as the rather complete description of emergency medical response in Chicago by Gibson et al. (1970), mentions disaster peripherally or as an extreme case of the normal emergency room situation, if at all. (See Committee on Emergency Medical Services 1968, 1970; U.S. Department of Transportation 1969, 1970; Vogt and Braun, 1973.) The medical sociology literature offers little, whether in work on hospitals (e.g., Georgopoulous, 1972; Freidson, 1963), emergency medical services (e.g., Roth, 1972), or the medical care system (e.g., Arnold, Blankenship and Hess, 1971; White and Vlasak, 1972).

A substantial body of literature on disaster medical responses and planning does exist in medical and professional journals, ranging from small regional publications such as Texas Hospital, to national and international journals such as Hospitals or International Surgery. (See references: AMA Committee on Disaster Medical Care, 1966; Task Force on Medical Disaster Surveys, 1967; Garb and Eng, 1969. See also Noble et al., 1974: 141-149). However, most of this literature discusses the technical and specifically medical problems surrounding particular disasters, such as Whittaker's description of casualty types encountered in the Nicaragua earthquake (1973). The remaining articles do focus on larger units of medical responses to disasters, but do so primarily in individual case studies of widely varying quality or in exhortations on planning. Although

undoubtedly useful in their context, these articles contain few generalizations of even a descriptive nature, few quantitative data, and little comparative analysis to aid systematic examination of this important policy area. This paper seeks to update earlier examinations of the medical and professional literature on the delivery of disaster emergency medical services (EMS). It particularly focuses on the last five years because increasing attention was paid to EMS during that period and a parallel focus might have also occurred with respect to disaster EMS.

Articles for close examination and discussion were selected from those listed in the 1970-1975 volume of Index Medicus and the Cummulative Index of Hospital Literature; criteria included length and judgement by title as to whether the article went beyond simple, third-party description. In addition, all articles quoted in other articles were examined and analyzed. The result was that about two dozen articles were looked at in detail and are discussed in what follows.

ANALYTIC LEVEL

The most striking manifest characteristic of the articles examined was their brevity; the average length was four pages, and only two articles extended beyond six pages. Few articles included many references to other sources, and with the notable exception of Rutherford's survey of British disaster medical literature (1973), the references cited usually seemed incidental to the article. The literature failed to produce more than a few authors of more than one article (see Rumage 1970a, 1970b; Savage, 1970, 1972; Bouzarth, 1974; Bouzarth and Mariano 1969; Holloway 1971a, 1971b). No outstanding major figure was apparent. These characteristics were consistent with the overall contents and data sources of the articles, which seemed to fall into two categories: descriptive accounts and policy recommendations.

The first group of articles described, in widely varying styles, individual instances of disaster responses, disaster drills, or disaster plans. Murphy's detailed outline of San Diego's Regional Plan, complete with charts for classification of emergency facilities (1972), represents one pole; the Nursing Times article about a British bombing, which began, "I had finished work at St. Luke's Hospital on the evening of Saturday October 5, 1974..." (1974) represents the opposite pole. These descriptions were even at their best primarily qualitative; the only quantitative data, beyond occasional counts of casualties or pieces of equipment, were presented in Wilson's table of disasters, casualties and hospital use in civil disturbances and disasters in Belfast (1974), and Rutherford's more detailed breakdown of the same data for both Belfast and the United Kingdom (1973), with essentially a descriptive analysis in each case. Rutherford's article was also the only example of a comparative study of disaster response at any level of analysis, the others being restricted to a single organization or cluster of organizations.

A partial explanation of these limits in focus and data sources, is that only a few articles were written by researchers as such. Most articles were written by administrators involved in the incidents or commanding the plans. Allenbaugh and his hospital had received awards from the Hospital Council of Southern California whose radio system he depicted (1972); Holloway was Director of Emergency Medical Services in New York when he detailed its disaster plan (1971b). Thus, even when descriptions extended beyond diary accounts, they were written primarily by people within the situation described, people unlikely to research the situation or to compare it to another situation.

At the other extreme was a second group of articles advocating various principles of disaster planning, or simply exhorting administrators to plan. With the exception of Curry's critique of hospital response to Hurricane Camille (1969), most of these policy-recommendations articles used an "everybody knows..." tone, which required neither illustrative examples nor proof that the recommendations were valid, and so remained comfortably vague on the details of implementing the proposals. Both quantitative and qualitative data were almost completely lacking. The authors, when not health service administrators, were national figures in health services; they included Rumage, Chairman of the AMA Committee on Disaster Medical Care (1970a, 1970b), and Huntley, Chief of the Division of Health Mobilization for the U.S. Public Health Service (1967). Their articles were primarily transcripts of speeches, which came no closer to comparative analysis and systematic examination than did the case studies discussed above.

In sum, these articles ranged from particularistic case studies to abstract discussions of principles, from descriptive quantitative data and excellent journalism to qualitative descriptions and diary-style accounts. The articles were usually brief, with little support from secondary references. And their authors were usually not researchers but involved administrators, further illuminating the tendency toward extremes of case history without context and recommendations without supporting detail.

CONTEXT: DISASTER AGENT AND PLAN DISCUSSION

Beyond the analytic level, the images and ideas presented in these articles were further bounded by the characteristics of the disaster agents and by the context in which any plans were discussed. The initial consideration in the presentation of disaster agents would seem to be the

definition of medical disaster itself, a concept of obvious practical relevance to activation of a disaster plan and yet one rarely mentioned. Among the authors who treated the matter at all, Wilson's (1974) and Rutherford's (1973) conceptualizations approximated Jackson's description:

> From a medical point of view, a disaster is any situation which produces morbidity or threats to health on such a scale that a significant overload is placed on existing medical care and public health facilities. (1968: 3)

Fairly (1969) suggested a more detailed and pragmatic definition: live casualties estimated above 50 or 60, one or more medical teams needed at the scene, and/or involvment of more than one accident hospital.[1] The remaining articles contained neither a conceptual nor an operational, activating definition, but their contents implicitly suggested that the needs versus capabilities idea within the Jackson definition was more relevant than a specific body count, since casualty numbers (when numbers were mentioned at all) varied from twenty or thirty to hundreds.

Related to the number of casualties as were other disaster agent characteristics: cause (man-made or natural), physical scope (focalized or diffuse), and duration. (See Dynes, 1969: 62-66). Most of the articles discussing specific responses to disasters discussed those of limited scope and duration, principally man-made disasters and simulation exercises; a few of the policy articles also limited their discussions to these general type of incidents. The smaller number of articles describing natural disaster agents diffuse in space and less limited in time included accounts of responses to earthquakes, tornadoes, and hurricanes, as well as some general policy discussion. The predominance of localized

disasters may be attributed to the number of articles on British bomb incidents and to the almost exclusive concentration on urban settings; Rutherford (1973) noted that most British disasters are man-made and limited in time and space, and Holloway observed.

> The majority of mass urban injuries are the result of transportation accidents, explosions, building collapses, fires, and weather incidents. It is the planning for these that should receive top priority. (1971a: 592)

However, Holloway added that even an urban plan must define the type of disaster agent it will cover, and must make special plans if diffuse disasters (floods, earthquakes) are probable; in contrast, only two other articles explicitly recognized the potential range of disasters or the limits of their particular plans. (Curry, 1969; Murphy, 1972) Other authors, assuming that electricity and telephone would be inoperative, seemed to expect diffuse disasters even though their articles were about urban settings, in which focused disasters would be more probable.

A final contextual factor essential to interpreting the articles is their treatment of the medical disaster plan. Each article examined did discuss a plan, if only briefly; approximately equal numbers dealt with simulation test of a plan, disaster test of a plan, and particular plan/planning principles in isolation. Articles in the first two categories tended to focus more on the actual event than on the plan itself, or to critique the plan when the reported events varied from it; consequently, expected distinction, such as one between the institutions planned for inclusion and those actually participating, were seldom made if they did occur. Overall, the general aspects of the plans not directly involved in the incident under discussion were ignored, in both simulation

and disaster agent responses. Treatment of plans in the abstract, the third article category mentioned above, seldom was comprehensive or quantitative, and tended especially to omit discussion of processes over time: the planning process, revision of plans with the passage of time, simulations and test provisions. The brevity of the articles and their journalistic style undoubtedly contributed to these gaps; it could be expected also that the proximity of the authors, primarily administrators, to the plans discussed might have obscured issues of interest to a more distant observer.

It was impossible to determine which gaps in the articles reflected gaps in knowledge and which reflected limits of the analysis in the literature itself. In either case, these were the images of disaster perceived by planners and administrators reading the articles. Disaster itself apparently seldom needed to be defined since people recognized it when it occurred. Recognition of the limits of a given plan to certain disaster agent types or geographical situations and planning for variation in disaster agent and numbers of casualties were rare. The range of disaster agents actually mentioned was narrow, not reflecting the variations presented in reality and making this last gap in recognition less apparent. Reader separation of plan from spontaneous reaction was often made difficult by a focus on response alone in case history accounts; plans discussed in isolation ignored processual elements and were predominantly snapshots of plan outlines blurred by the authors proximity.

PLANNING

Within the urban focus of most articles, planning and disaster/simulation reaction occurred at varying organizational levels, through various means of coordination, and with the involvement of a wide range of

organizations. Also examined were the process of planning itself and a single content area of the plans discussed.

The jurisdictional levels discussed in the articles fell primarily into intraorganizational and community groupings, with a few discussions of regional planning as well. The intraorganizational articles exclusively discussed hospitals, either in case histories -- as in the Hospital Progress article "How St. Mary's Hospital Athens, Georgia, Handled a Recent Tornado Disaster" (1973) and in Savage's account (1972) of a British hospital's disaster drill -- or more rarely in policy discussions such as the Medical Association of Georgia Committee on Emergency Medical Services recommendations (1971). Articles like these focused primarily on administrative, staffing, communication and supply problems within the hospital and (particularly in the British articles) with the medical team at a disaster site. In the American articles little discussion of coordination with other emergency organizations -- police, fire, ambulance -- occurred; nor were other hospitals mentioned. Gibson's 1968 survey of 71 Cook County hospitals found that of hospitals making at least one trial run of a disaster plan, 24 percent involved ambulances, 25 percent police, and only 6 percent additional hospitals. (1970)[2]. The plans discussed may have been implemented within some higher level community plan, but it was never mentioned. The small number of policy discussions may be related to the Joint Commission on Accreditation requirement for hospital design and biannual testing of a disaster plan, making the concept presumably a familiar one unnecessary to belabor. However, Gibson's 1968 survey found that almost one half of the 71 Cook County hospitals studied performed fewer than those two drills, a study

not duplicated in other areas or more recently to determine if the apparent complacency expressed in the literature on this subject is warranted (1970).

Accounts of disaster planning and response at community and regional levels were more often policy recommendations or descriptions of plans and simulations; case history accounts of actual disaster responses were few, limited to diffuse disaster types and, as mentioned earlier, focused on occurrence rather than on problems associated with plans or their implementation. (Curry, 1969; Alter, 1970)

At the interorganizational levels there are no external constraints, comparable to the accreditation requirement for hospitals, which would encourage planning or drills. Although the U.S. Public Health Service's Division of Emergency Health Services has made recommendations, they do not carry sanctions. Perhaps the lack of constraints accounts for the many articles dealing with designs for plans and exhortations to plan rather than implementation of plans.

Within each perception of the appropriate physical scope for disaster planning further variation in the type of coordination appropriate was found in the literature. The actions of each organization involved in the task of medical responses to disasters affect not only its own particular task of medical assistance, but the task actions of other organizations as well; other organizations' responses will in turn affect the focal organization's new actions. Thus, this task area is one that strengthens certain existing interorganizational relationships and creates still others for a specific time or incident, in which any action influences others' actions in a way distinct from everyday situations. Here, then, is the potential existence of a system defined

by Buckley as:

> a complex of elements or components directly or indirectly related in a causal network, such that at least some of the components are related to some others in a more or less stable way at any one time. (1968)

For the purposes of this literature review, "system" will refer to such systems with interorganizational elements, recognized as such by participants or authors by explicit use of the word, by explicit recognition of the unity of effort required from the various organizations, or by implicit recognition through establishment of a central control of some sort. System here, then, will not be used as a continuum along which interorganizational relationships are arranged by some measure of unity or systematization, but more narrowly, as a specific case of a recognized system that performs, or is supposed to perform, in a systematized, and to some degree, centralized fashion. Attempts at coordination extending beyond a single organization or pair of organizations, yet falling short of this system concept in recognition, number of relevant organizations perceived, or failure to coordinate, will here be termed "networks."[3]

Recognition of a system in the disaster medical care area was present at least in rhetoric, reflected a growing consciousness in the health services field generally of the system concept. However, use of the term in the literature was varied, and its precise meaning was often unclear. Henry Huntley, when Chief of Public Health Service's Division of Health Mobilization (now Division of Emergency Health Services), advised surgeons, that

> To be realistic, the disaster plan must utilize the on-going systems of the entire community. In both the hospital and the community, the plan for meeting an

> emergency is not a separate service, but a means of extending normal services to meet extreme needs. (1967: 300)

Taking a different tack, William Rumage, Chairman of the Committee on Disaster Medical Care of the American Medical Association, some years later noted:

> You must have the same kind of system which was organized to eradicate smallpox and poliomyelitis, and which you are using to overcome cancer and heart disease--a total community challenge involving medical health and governmental organizations....You improve upon the existing system for greater efficiency at the time of disaster. (1970b)

Though both men seemed to agree that a system is involved here somewhere and that interrelationships do demand joint action, Rumage conceptualized the system as a separate entity, whereas Huntley saw it as an outgrowth of undelineated "on-going systems." The situation that led most community scope articles to treat disaster medical care as a separate area, as well as the interdependencies that encouraged a system perspective, were perhaps most clearly stated with no mention of the word "system" at all:

> The term disaster medicine includes not only the medical profession itself, but the allied health professions, the hospitals, the health departments, all governmental or community agencies, organizations, and services which directly or indirectly contribute to all phases of health care for survivors in a disaster. Therefore, such services as communications, transportation, and police security are vital for medical, as well as non-medical, action during recovery from a disaster. These services are considered an integral part of disaster medicine since experience has shown that without them effective emergency medical and health functions are not possible and chaos frequently results. (Jackson, 1968: 7)

In Jackson's discussion and in policy articles by Holloway (1971) and Hollis and Sapp (1972), the implicit use of the system concept seemed to confirm Rumage's idea of a separate entity rather than Huntley's

suggestion of an entity barely distinguishable from some other larger systems. The unique set of interrelationships found in this task area were further confirmed by the range of organizations included in it, as implied by Jackson above. Organizations of potential involvement included:

Police	Mortuary	Civil Defense
Fire and Rescue	Professional	Public Health
Ambulance	Organizations	Public Works
Hospital	Volunteer Units	Water and Power
Blood Banks	Red Cross	Public Welfare
		Mass Media

(Adapted from Brictson, 1968: Figure 5)

Naturally, few of the plans discussed in the articles captured a large part of the range of the organizations delimited above. Most often omitted were such health organizations as mortuaries and blood banks, and public organizations of public health, water and power, public works, and public welfare. The communities of Cambridge (Massachusetts), London (Ontario, Canada), Baltimore, and New York City, as well as the regions surrounding Philadelphia and San Diego each had plans that included a range of hospital, ambulance, and health organizations; normal emergency organizations (fire, police); disaster emergency organizations (Red Cross, Civil Defense); and varied examples of the other organizations listed above. (Kowal and White, 1969; Sutherland, 1975; Fishel, 1974; Holloway, 1971b; Bouzarth and Mariano, 1969; Murphy, 1972) These articles took a systems perspective in indicating the necessity of a coordinating center. The other articles that discussed disaster at a community level either completely omitted the disaster emergency organizations as well as the public organizations from discussion (Fairley, 1969; Model for Multi-Hospital Preparedness,

1972), or simply discussed a group of similar organizations in isolation (Alter, 1970; Allenbaugh, 1972; Curry, 1969). These articles described networks with either too small a range of organizations to encompass the task area as a system, or with too little emphasis on interdependence to merit use of that holistic term. Those systems-approach articles were limited to descriptions of plans or simulation exercises, with no case histories of actual responses appearing in the time periods examined; however, some of the network articles did include actual responses, together with plans and simulations. (Curry, 1969; Allenbaugh, 1972; Alter, 1970)

In addition to the conception of the coordination exhibited or needed in planning, some peripheral attention was devoted to the process of planning itself. Recognition of the need for planning was mentioned as rising from experiences with urban riots, or from the success of a nearby city's plan. If any plans emerged from past experiences with disasters, they were not mentioned. The ages or the origin dates of the plans were seldom noted; the earliest noted was 1966 (Kowal, and White, 1969). The initiating organizations were varied, including government disaster agencies, hospitals, and professional associations. Despite occasional ascriptions of this initiating authority to the medical profession (Rumage, 1970b) or to government (Jackson, 1968: 41), no clear consensus on the bearer of such responsibility was evident. Within hospitals a Disaster Committee of undefined membership performed the actual planning, whereas in most interorganizational cases the actual planners were administrators of the organizations involved in activation (with the additional representation of professional associations in some instances). Of the articles that discussed the

formation of a permanent coordinating body, all but one discussed a body separate from other medical coordinating bodies; the exception was the Canadian case (Sutherland, 1975). The incidence of such planning/coordinating bodies seemed to occur independently of network or system conceptualizations. Only in San Diego was integration into the emergency medical care system a prominent focus (Murphy, 1972), although a few other authors mentioned the impact of hospital categorization or alternative disaster communications on daily emergency operations. (Allenbaugh, 1972; Holloway, 1971a) In no case were the interorganizational dynamics of planning and cooperation described, beyond a mention of a resistance to hospital categorization; nor were the criteria for choosing relevant organizations or defining the physical domain of the plan more than hinted at. Finally, as described in the articles, few of the plans included even a vague mention of the need for periodic revision or future testing.

The part of the plan characteristically chosen for evaluation was the means of implementation. Several community-scope articles mentioned the use of a twenty-four hour operations center as the site of implementation and later coordination, usually an ambulance dispatcher, however, in other cases events simply "started" after a call to police or a member hospital; it was chiefly the hospital-intraorganizational articles that mentioned implementation as a problem at all. The technology of implementation was of some concern; phone use in implementation was most common both intraorganizationally and interorganizationally, but some community network and system plans did include emergency phone networks, constant-use radios, or special-use radios. (Wilson, 1974; Allenbaugh, 1972; Fairley, 1969; Bouzarth and Mariano, 1969) Here again focus on particular incidents obscured the general outlines of the plans involved.

These articles generally treated region, community or a single organization as the scope of interest in planning. This choice was influenced by often unexpressed conceptualizations of the disaster medical services task area as a network or system, a choice further affecting the range of organizations included. No trends over time were exhibited in these conceptualizations. However since no case history of a system plan use was recorded, this perspective may be rarer than that of network. Slim accounts of the planning process indicated that disasters were a separate task area but offered little information about inter-organizational processes or the assignment of responsibility for implementing plans. Plan implementation, a content area chosen for examination, reflected a fascination for technologies with surprisingly little emphasis on coordination.

PROBLEM AREAS

Despite the admitted inadequacy of most medical disaster plans, relatively little detailed discussion of specific problems was evident. Policy articles tended to dwell on such areas, whereas specific accounts touched them more lightly, perhaps reflecting the close attachment of many authors of the latter articles to the plans discussed. Both coordination and various task areas earned at least some critical attention. The chief problem in coordination at the actual incident or simulation seemed to be allocation of patients and resources to various hospitals, and parallel coordination of disaster-site activities with hospital activities. Many articles within the systems concept recommended central control centers to facilitate these processes. One author noted that simulations often went well due to relative predictability that permitted automatic meshing of plans, these circumstances

would be so unlikely in an actual disaster that the need for central coordination should be evident. (Sutherland, 1975) Other coordination concerns included the decision to send a surgical team to a disaster site, the selection of a coordinator from the various emergency organizations represented at a site, and the coordination of resupply efforts. Coordination in the planning process received as little attention as the planning process itself, though hospital emergency facility categorization and hospital division of injuries by type or area were mentioned briefly as difficulties. In the task area transportation was a potential problem barely touched upon, beyond some expressed concern for helipads and landing areas. Holloway was unusual in that he discussed urban emergency response routes and some alternative to ambulances (1971b). Communication was a prominent focus, with radio systems of some type most frequently recommended to supplement or replace the telephones generally used; use of radio vehicles and walkie-talkies for on-site communication, radio frequency choice, and an Inquiry Bureau for media contacts were additional concerns. Problems in treating patients were the most frequently discussed, and were generally agreed to be primarily adequate triage training and procedure, rapid adequate documentation, and identification of physicians to police crowd control around hospitals and disaster sites. Other problems cited included development of an emergency mortuary, overwhelming numbers of volunteers, and waste disposal. But any policy-maker would need to read a large portion of the published literature to gain any conception of even these potential problems.

CONCLUSION

Overall, these articles reflected the analytic limitations to be expected of non-research literature: brevity, lack of comparative analysis, lack of secondary sources, lack of quantitative data. The

administrative proximity of many authors to the events described was an additional limiting factor. General policy recommendations and particularistic case histories were the type of articles most commonly found.

Although focused on urban settings, the literature reflected little awareness of urban-rural or disaster type differentials as potential variables in planning. Operational or conceptual definitions of medical disaster were a rare concern.

Plans were invariably discussed in the articles, though actual events, when included, became the primary focus. A conceptualization of disaster medical services as a distinct system was implicit in several articles, and was discussed more openly but less clearly in a few others. Other articles discussed less holistic networks of interorganizational or intraorganizational coordination. No trends in time or numbers of these types of conceptualizations were apparent. The planning process itself received brief mention. Planning usually was performed interorganizationally by the organizations involved, and no distinct agent of responsibility for implementation was agreed upon; maintenance and periodic revision were seldom concerns. Implementation of plans was treated principally as a technological rather than a coordination problem.

The problem areas most often discussed were coordination after impact, communication, and medical treatment and records. The range of problems discussed in a single article was usually small.

It is impossible to determine here which of the gaps in knowledge and practice mentioned above reflect limitations of the literature itself and which reflect problems in the reality it attempts to describe; similarly unknown is the correspondence between conceptualizations in the literature of the disaster medical services task area and the conceptualizations of

most administrators. These very doubts, beyond the limits of the literature itself, suggest that planners are not receiving the sort of systematic treatment and applied knowledge of this policy area that would be most useful to them.

Footnotes

1. Their particular concern with defining "disaster" probably arose from the British Isles' principal experiences with disasters involving explosions and disruptions in transportation; such incidents may make disaster-non-disaster boundaries problematic. (See Rutherford, 1973: 1930).

2. Unlike most American discussions British articles on hospital plans explicitly described involvment of police and ambulance services and focused attention on coordination with these organizations.

3. Networks included both the community and the individual organizational scopes, whereas systems were of necessity restricted to community and regional scopes.

References

Allenbaugh, G. E.
1972 "Emergency Radios Restore Order to Chaos," Hospitals, 46: 60-5.

Alter, Amos
1970 "Environmental Health Experiences in Disaster," American Journal of Public Health, 60: 475-480.

American Hospital Association
Cumulative Index of Hospital Literature. Chicago: American Hospital Association.

American Medical Association Committee on Disaster Medical Care
1966 An Index to Literature on Disaster Medical Care: A Guide for the Physician. Chicago: American Medical Association.

Arnold, Mary F., L. Blankenship and John M. Hess (eds.)
1971 Administering Health Systems.

Bouzarth, W. F.
1974 "Flood Revisited -- Lessons 'Unlearned' From Hurricane Agnes," Pennsylvania Medicine, 77: 61-2.

Bouzarth, W. F. and J. P. Mariano
1969 "Philadelphia Regional Emergency Medical Disaster Operations Plan," Archives of Environmental Health, 18: 203.

Brictson, Robert C.
1968 The Organization of Medical Services to Cope With Disaster. Santa Monica, California: System Development Corporation.

Buckley, Walter (ed.)
1968 Modern Systems Research for the Behavioral Scientist. Chicago: Aldine Publishing Company.

Committee on Emergency Medical Services, Division of Medical Sciences
1968 Training of Ambulance Personnel and Others Responsible for Emergency Care of the Sick and Injured at the Scene and During Transport. Washington, D.C.: National Academy of Sciences.

Committee on Emergency Medical Services and the Subcommittee on Ambulance Services, Division of Medical Sciences
1970 Advanced Training Program for Emergency Medical Technicians -- Ambulance. Washington, D.C.: National Academy of Sciences.

Curry, W.
1969 "Camille Revisited. A Critique of Community Response to a Major Disaster," Hospitals, 43, Suppl. 36a-36d.

———
1974 "Disaster Management," Nursing Times, 70: 1880-3.

Dynes, Russell R.
1969 Organized Behavior in Disaster: Analysis and Conceptualization. Washington, D.C.: Office of Civil Defense.

Fairley, J.
1969 "Mass Disaster Schemes," British Medical Journal, 4: 551-3.

Fishel, E. R.
1974 "Exercise 'Med-Ex' 73," Maryland State Medical Journal, 23: 46-8.

Freidson, Eliot (ed.)
1963 The Hospital in Modern Society. Glencoe, Illinois: Free Press.

Garb, Solomon and Evelyn Eng
1969 Disaster Handbook. New York: Springer.

Georgopoulos, Basil S. (ed.)
1972 Organization Research on Health Institutions. Ann Arbor, Michigan: Institute for Social Research, University of Michigan.

Gibson, Geoffrey
1970 Emergency Medical Services in the Chicago Area. Chicago: Center for Health Administration Studies, University of Chicago.

Hollis, T. L. and B. W. Sapp
1972 "Hospital as an Emergency Center: Operational Disaster Plans Required," Hospitals, 46: 38-41.

Holloway, R. M.
1971a "Medical Disaster Planning I. Urban Areas," New York State Journal of Medicine, 71: 591-5.

Holloway, R. M.
1971b "Medical Disaster Planning II. New York City's Preparations," New York State Journal of Medicine, 71: 692-4.

———
1973 "How St. Mary's Hospital, Athens, Georgia, Handled a Recent Tornado Disaster," Hospital Progress, 54: 38.

Huntley, Henry C.
1967 "Disaster Planning," International Surgery, 47: 299-302.

Jackson, Francis C., et al. (eds.)
1968 The Role of Medicine for Emergency Preparedness, Public Health Service Publication No. 1071: 1-8. Washington, D.C.: U.S. Government Printing Office.

Kowar, J. S. and L. White
1969 "Four Hospitals Join in Planning City-Wide Disaster Alert," Hospital Topics, 47: 46-8.

Medical Association of Georgia Committee on Emergency Medical Services
1971 "The Mass Casualty Plan: Some Basic Concepts," Journal of the Medical Association of Georgia, 60: 364-5.

———
1972 "Model for Multi-Hospital Disaster Preparedness," Hospital Forum (California), 14: 7-8.

Murphy, S. P.
1972 "San Diego Plan for Emergency Services," American Journal of Nursing, 72: 1615-1619.

Noble, John H., Jr., et al., (eds.)
1974 Emergency Medical Services: Selected Bibliography. New York: Behavioral Publications.

Roth, Julius A.
1972 "Staff and Client Control Strategies in Urban Hospital Emergency Services," Urban Life and Culture, 1: 39-60.

Rumage, W. T., Jr.
1970a "The Disaster Medical Care Committee of the Council on National Security of the American Medical Association," Journal of Trauma, 10: 515-6.

Rumage, W. T., Jr.
1970b "Your Community Emergency Medical Services Council," Archives of Environmental Health, 21: 211-3.

Rutherford, W. H.
1973 "Experience in the Accident and Emergency Department of the Royal Victoria Hospital with Patients from Civil Disturbances in Belfast 1969-1972, with Review of Disasters in the United Kingdom 1951-1971," Injury, 4: 189-199.

Savage, P. E.
1970 "Disaster Planning: A Major Accident Exercise," British Medical Journal, 4: 168-171.

Savage, P. E.
1972 "Disaster Planning: The Use of Action Cards," British Medical Journal, 3: 42-3.

Sutherland, S.
1975 "'Exercise London' -- A Community Disaster Plan," Hospital Administration in Canada, 17: 16-17.

Task Force on Medical Disaster Surveys
1967 Report on the Feasibility of Establishing a National Research and Information Center for Emergency and Disaster Medical Services. Washington, D.C.: National Academy of Sciences.

U.S. Department of Transportation, Federal Highway Administration, National Highway Safety Bureau
1969 Highway Safety Program Manual, Volume 11. Emergency Medical Services. Washington, D.C.: U.S. Government Printing Office.

U.S. Department of Transportation, Federal Highway Administration, National Highway Safety Bureau
1970 Basic Training Program for Emergency Medical Technician -- Ambulance: Concepts and Recommendations. Washington, D.C.: U.S. Government Printing Office.

U.S. Department of Transportation, National Highway Traffic Safety Administration
1971 Basic Training Program for Emergency Medical Technician -- Ambulance: Instructor's Lesson Plans. Washington, D.C.: U.S. Government Printing Office.

U.S. National Library of Medicine
Index Medicus. Washington, D.C.: U.S. Government Printing Office.

Vogt, F. B. and C. A. Braun
1973 "Does Emergency Medical Services Need a Communications System?" Emergency Medicine Today, 2: 1-6.

White, Paul E. and George J. Vlasak
1972 Interorganizational Research in Health Bibliography. Washington, D.C.: U.S. Government Printing Office.

Whittaker, R., et al.
1974 "Earthquake Disaster in Nicaragua: Reflections on the Initial Management of Massive Casualties," Journal of Trauma, 14: 37-43.

Wildon, R. I.
1974 "The Role of the Hospital in Disasters," Injury, 5: 228-232.