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The Administration of Albuquerque's Emergency Medical Care System--Problems and Prospects

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THE ADMINISTRATION OF ALBUQUERQUE'S EMERGENCY MEDICAL CARE SYSTEM--PROBLEMS AND PROSPECTS

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BY
Thomas R. Wagner

THESIS

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May 1974

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Graduate Committees have always been perenially known for their constant and helpful guidance in directing students in the writing of their thesis--my Committee was no exception!

Shortly after I began my research on Albuquerque's emergency care problem, the subject was suddenly catapulted to the public's attention by the various agencies and organizations that were directly involved in trying to upgrade the delivery of emergency care. The extensive coverage given to the subject by the local news media and these various organizations resulted in a sudden proliferation of articles and research data that was directly beneficial to this author in the writing of the thesis.

While such a happening may be every student's dream, it also created a tremendous problem in that it became very difficult, indeed almot impossible, to directly acknowledge and give proper credit to all individuals, organizations, and various committees who contributed valuable data to the final product of this paper. However, an effort must be made, and so, a most humble thank you to all of you, and especially to the EMSAC Committee and its chairman, Dr. Frank Hesse, and to the Rescue Task Force and its chairman, Chief Ray Kuhn.

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THE ADMINISTRATION OF ALBUQUERQUE'S EMERGENCY MEDICAL CARE SYSTEM--PROBLEMS AND PROSPECTS

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ABSTRACT OF THESIS

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ABSTRACT

This is a study of the Emergency Medical Services in the City of Albuquerque. That the present services leave a lot to be desired has been demonstrated through the public uproar and irritations that have been evident in daily newspaper articles. The taxpayer has been further irritated by the fact that the city and county governments are subsidizing an ambulance company which doesn't even meet local standards as outlined through city ambulance ordinances, let alone national standards!

How many persons have died in the Albuquerque area because emergency medical services either were too little or too late cannot be documented, yet it is suspected that there have been dozens.

The citizens of Albuquerque get the kind of service they pay for - inadequate! The city subsidizes emergency medical services at a per capita rate of 14¢. In contrast, cities with first class emergency services and programs spend at a per capita rate of between $1.00 and $2.00 and more.

Two past study groups - the Community Protection Task Force and the defunct Emergency Medical Services Advisory Council - have recommended a two-tier system to reduce response time now taken for help to reach a medical emergency. While that won't answer all the shortcomings of the present

system, the plan should help more people survive accidents and other medical emergencies.

This study was undertaken in the belief that the complex problem of emergency ambulance services in the City of Albuquerque can and must be solved! The main goal of this study is to evaluate the present services and make recommendations that will be beneficial to the public at large and to the thousands who will be in need of the efficient and competent life saving services that must be offered from a properly manned and equipped ambulance and rescue service.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER I

INTRODUCTION

National Overview

In our society we have done much to keep ourselves alive and well. We are accustomed to hearing of medical breakthroughs on almost a daily basis. New hospitals have been constructed and life saving equipment within most hospitals now exceed the greatest expectations of only a few years ago. Yet, our society has failed to concern itself with one important aspect of the total patient care concept. We have failed to give attention to the critical problem of getting the victim of a sudden illness or accident to the medical center where such miracles, as mentioned above, can take place. We have worked hard to prevent illness and accidents, but we have somehow failed to concern ourselves with one particular aspect of medical care that would seem to be at the center of the total health services; that of Emergency Medical Services. How many of us have bothered to ask: "What will happen if I become ill or injured?, What are my chances of survival if involved in a serious accident?, Who will come to my rescue?, What are their qualifications?, Will they have the right equipment and know-how to use it properly?, Will they safely and expeditiously transport me to an adequate medical

facility for proper emergency medical care? In New Mexico, as in most states, we find that emergency medical services have not kept pace with the advancements made in other medical fields. A search of the literature nation-wide substantiates this, although recently, in an effort to improve these services, tremendous activity has begun to change this outlook.

Perhaps the first national program that initiated some action in trying to improve emergency medical services was the National Highway Safety Act of 1966. This act grew out of a national concern and a national need to reduce traffic accidents and fatalities. Under the Highway Safety Program Standards of this act, Section 4.4.11, entitled Emergency Medical Services, the importance of emergency medical services are outlined by requiring that all state highway safety programs include coverage of an emergency services program.[1] It further states that many of those injured in highway accidents die needlessly or are permanently disabled because they do not receive prompt and proper emergency medical care at the scene of the accident.[2] Other studies, such as Manegold and Silver, stress the necessity of developing an adequate emergency medical services program. In their study, Manegold and Silver discuss the concept of such a system and present a model containing the principal components of communication, first aid and evaluation, transportation, and emergency facilities.[3] With the objective of a short response time from the onset of the emergency until

delivery of appropriate medical care, they will explore the potential problems of delay in treatment and of inappropriate treatment given to the injured. They also advocate the need for education of the public paramedical and medical personnel, for accreditation of personnel and facilities, for planning facilities locally and regionally, and for increased research into emergency care problems. The Committee on Acute Medicine of the American Society of Anesthesiologists[4] recommends the organization of community-wide emergency care in similar terms but goes into more detail concerning equipment and training of personnel with emphasis on resuscitation. It is of interest to note that they advocate that physicians control emergency transporation and that hospital emergency facilities be categorized into three levels: (1) first aid facilities without a full-time physician, (2) emergency hospitals with 24 hour physician coverage but without sophisticated support facilities, and (3) major emergency hospitals staffed by a team of specialists prepared to give the ultimate in resuscitation services, coronary surveillance and intensive care.[5] This is somewhat similar to the recommendations of the National Academy of Sciences National Research Council for four levels of accreditation for emergency medical care services, adding a fourth level to the previous three; emergency services combined with a trauma research unit.[6]

Although in the late 1950s and along with studies mentioned, the hospitals' emergency rooms were cited as being

the weakest link in the chain of hospital care, the field study group of the American College of Surgeons' Committee on Trauma concluded, after three years of study, that the "ambulances and first aid at the scene (of the accident) are by far the most important and weakest steps to survival".[7] These are not mutually exclusive problems, but point to two weak links in the system for emergency care.

A review of ambulance services in the United States indicates a paucity of firm data, a diversity of standards and equipment which is frequently poorly designed, unnecessarily expensive, and generally inadequate. Few communities provide financial support for ambulance services. When they do provide financial support, it is usually through the fire or police department. Approximately 50% of the country's ambulance services are provided by 12,000 morticians.[8] In many instances, the vehicles are unsuited for active care during transport and the attendants are not properly trained. Communication is seldom possible between the ambulance en route and the emergency department that it approaches. There can be no doubt that the provisions for medical emergencies represent a segment of health facilities which is badly in need of a new and comprehensive approach.

New Mexico Overview

Most New Mexicans who are involved in an accident are many miles from the nearest ambulance, doctor or hospital, and for the most part have marginal or no emergency services at all.

Because the capabilities of hospital emergency rooms are usually unknown, or may be crowded with non-emergency patients, many critically injured patients are transported to these hospitals that are not equipped to handle them. In view of this, many seriously injured patients, who are in need of immediate medical attention, are prevented from receiving adequate emergency care.

As a result of this, New Mexico, along with the rest of the nation, desperately needs to implement an emergency medical program in order to stop this accidental carnage that nationally claims over 120,000 deaths each year, half of which are attributed to auto accidents.[9]

According to the Division of Emergency Health Services, Department of Health, Education and Welfare, less than 10% of ambulances nationwide are equipped to administer oxygen: Less than 15% are equipped with splints that are necessary to safely move patients with broken backs and other injuries: Only 1% can administer intravenous fluids needed to treat shock: Fewer than 2% can communicate directly with hospital emergency rooms: And less than 5% of all ambulance attendants are properly trained.[10]

The American College of Surgeons Committee on Trauma estimated that emergency medical services programs, properly established throughout the United States, could prevent as many as 60,000 deaths each year from cardiac arrests and other cardiopulmonary afflictions and at least 10% of accidental victims could be saved, and effects of non-fatal

injuries and attacks could be sharply reduced as well.[11] An official of the American College of Surgeons has estimated that if knowledge available now were applied to proper treatment and transportation of accidental victims, regardless of the nature of accident, more lives could be saved than in any other area of medicine.

Perhaps the best description of the services offered in New Mexico could be seen by summarizing a statewide survey that was conducted in 1968 by the New Mexico Health and Social Services Department in conjunction with the New Mexico Regional Medical Program.[12]

The purpose of the survey was to establish the level of emergency health services available in New Mexico through the following areas: (1) Physician availability, (2) Ambulance services, ground, (3) Air Ambulance, (4) Hospital facilities, and (5) Hospital emergency departments.

Information was collected during unscheduled visits and through mailed questionnaires.

There were 42 hospitals surveyed, 36 of which had emergency facilities. In the ambulance survey, 50 companies were analyzed, 20 of which had air ambulance capabilities. The following are selected statistics from that survey.

Figure 1

TYPES OF EMERGENCY VEHICLES[13]

1. Regular Ambulances	42.4%
2. Station Wagons	31.7%
3. Light Rescue Ambulances	21.2%
4. Light Rescue Trucks	3.5%
5. Medium Duty Trucks	1.2%

The patient's compartment measured 50 inches from floor to roof in 49.0% of the vehicles, against the standard average of 54 inches set by the National Academy of Science on their report entitled, "Medical Requirements for Ambulance Design and Equipment."

Figure 2

PURVEYORS OF AMBULANCE SERVICE[13]

1.	Funeral Homes	43.2%
2.	Commercial Firms	37.2%
3.	Volunteer Ambulance Companies	7.9%
4.	Volunteer Police and Fire Department Rescue Squads	5.9%
5.	Professional Police and Fire Department Rescue Squads	3.9%
6.	Other	3.9%

The average emergency calls per month, per company, were 18.5, (the range was from 1 to 500 calls per month).

Figure 3

EQUIPMENT WITHIN EMERGENCY VEHICLES[13]

1.	Oxygen tanks and masks	90.2%
2.	Sterile gauze pads	86.5%
3.	Adhesive tape	82.4%
4.	Triangular bandages	78.5%
5.	Two-way resuscitation airways	72.5%
6.	Universal dressing	64.7%
7.	Padded arm splints	53.0%
8.	Oropharyngeal airways	45.1%
9.	Short and long back boards	45.1%
10.	Padded leg splints	45.1%
11.	Suction apparatus	43.1%
12.	Bag-mask resuscitator	43.1%
13.	Half-ring splints	39.0%

The above equipment can be compared with minimal equipment for ambulances, set by the College of Surgeons Committee on Trauma, which will be appended to thisstudy.

Other findings showed that only 47.2% of the ambulances had two-way communications and 58.0% of the ambulance services had vehicles manned by driver and attendant on emergency calls.

While all personnel, attendants and drivers manning the emergency vehicles had some type of training, principally Red Cross Standard First Aid and on the job training, only 35% of the ambulance companies required any advance medical training of their presonnel.

The following tables will compare findings similar with other states that conducted like surveys for similar service during or about the same time period.

TABLE 1

EMERGENCY SERVICES - NEW MEXICO AND OTHER STATES[14]

SUBJECT	STATES AND YEAR SURVEYED						
	N.M. 1968	Ala. 1968	Colo. 1969	Iowa 1968	La. 1969	Okla. 1969	Ore. 1969
Purveyors of Ambulances							
1. Funeral Homes	43.2	41.0	15.0	60.0	68.0	80.1	8.4
2. Commercial Firms	37.2	42.0	16.0	9.0	13.0	9.4	21.1
3. Volunteer Ambulance	7.9	3.5	19.0	*	5.0	3.4	14.7
4. Professional Police Fire Rescue Squads	3.9	3.0	40.0	23.0	8.0	4.5	6.3
5.Other	1.9	7.0	10.0	8.0	6.0	2.6	8.4
Types of Emergency Vehicles							
1.Regular Ambulances	42.4	*	54.0	30.0	32.0	2.7	63.0
2.Station Wagons (modified)	31.7	*	25.0	38.0	20.0	42.7	13.0
3.Light Rescue Ambulance	21.2	*	15.0	17.0	38.0	51.0	4.0
4. Light Rescue Truck	33.5	*	3.1	*	4.0	3.4	13.0
5. Other	1.2	*	3.0	6.0	2.0	*	2.0

* Not available

TABLE 2

EQUIPMENT WITHIN EMERGENCY VEHICLES[14]
(In Percentage)

SUBJECT	STATES AND YEAR SURVEYED						
	N.M. 1968	Ala. 1968	Colo 1969	Iowa 1968	La. 1969	Okla. 1969	Ore. 1969
1-Oxygen tanks & masks	90.0	87.0	69%[a]	86.4	70.0	*	97.9
2-Sterile gauze pads	86.5	57.0	69	-0-	53.0	*	98.6
3-Adhesive tape	82.4	52.0	69	74.6	50.0	*	100
4-Triangular bandages	78.5	42.0	69	60.4	38.0	*	95.8
5-2-way resuscitation	72.5	40.0	69	51.5	29.0	*	90.9
6-Universal dressings	64.7	43.0	69	-0-	35.0	*	89.5
7-Padded arm splints	53.0	20.0	69	40.2	29.0	*	89.5
8-2-way radio communication	47.2	38.6	30.4	44.0	34.0	*	81.9
9-Oranpharyngeal airways	45.1	9.0	69	-0-	25.0	*	52.4
10-Short/long back boards	45.1	4.0	69	-0-	17.0	*	54.6
11-Padded leg splints	45.1	19.0	69	40.2	26.0	*	89.5
12-Suction apparatus	43.1	29.0	69	31.0	27.0	*	-0-
13-Bag-mask resuscitator	43.1	30.0	69	33.9	28.0	*	90.9
14-Half-ring splints	39.0	12.0	69	-0-	-0-	*	79.0

* Not available
a-This was a group total where 69% of ambulances had all of the above items.

While some improvements have been made since this survey was taken in 1968, the State of New Mexico, as a whole, is still somewhat archaic and neglectful when it comes to on the scene emergency care for the accident victim!

Overall Objectives of EMS

> "The fundamental problems facing modern medicine stem from an increasing demand for increased quantity and improved quality of health care for larger numbers of people presenting an expanding spectrum of illness with high expectations from a system which is currently incapable of responding to the needs of the public."[15]

The process of an emergency medical service available in an emergency situation is vital to an individual's life, who may be involved in an accident.

The four basic components of an emergency medical services system are: (1) first aid and rescue, (2) transportation, (3) communications, and (4) medical facilities.

Reference to an emergency medical services system does not imply a monolithic, computerized, mechanical organization of manpower and facilities. But, rather, it is a system in a sense that provision of emergency medical service involves a complex series of interrelationships among a wide variety of autonomous and semi-autonomous units which must be articulated and coordinated if effective services are to be delivered expeditiously. These expeditious services are the key objective of any emergency system. Reference to a system stresses the inherent need to view all aspects of emergency medical services as a totality. An effective system can often reflect common thinking rather than common management.

Although emergency medical services have important national and state aspects, this is essentially a regional or a community problem. The community is where the action is needed.

It is essential that each community have a detailed plan providing rapid and efficient emergency treatment. The plan should provide adequate means of communication, safe and expeditious transportation, and proper emergency treatment at a medical facility. Development of a plan for emergency medical services must begin with careful evaluation of each community's needs and existing services. On the basis of such a study, a planned community program must include an ordinance that will govern operations and standards of a community ambulance system. A Joint Action Committee of the American College of Surgeons, the American Association for the Surgery of Trauma, and The National Safety Council, with the Public Health Service assistance, has prepared a model ordinance which can be used for the guidance of local communities.

Public education is an essential part of any community emergency medical services program. This should include first aid or medical self-help training, universal tetanus toxoid immunization, and emergency medical identification for those medical conditions that could create or aggravate emergencies.

In our enthusiasm to improve each component of an effective emergency medical service system, it is important that each component not be viewed in isolation. The best communication system means little if the transportation resources do not respond effectively. A good transportation system is of little value if the patient cannot be delivered

to a medical facility that can treat him properly. Even more important, we must avoid the trap of viewing emergency medical services as a discreet system, separate from the total health system serving emergency and non-emergency care.

Perhaps the greatest objective of any program, regardless of its nature, is that it be considered by the community as so important a community function, that all groups such as the local medical association, local hospitals, local government, and other related groups, join together and support such a service as an ongoing necessary function vital to that community's growth and well being!

Methodology

Albuquerque is characteristic of many communities in the nation whose ambulance services are below standards for modern emergency medical performance. A preliminary overview of the adequacy of Albuquerque's metropolitan ambulance services clearly demonstrates that this system needs serious changes in order to prevent continual danger to the health of persons requiring emergency medical attention.

This study will evaluate the present emergency ambulance services and make recommendations for improvements using guidelines from the Highway Safety Act of 1966, The Dunlap Studies on Emergency Ambulance Services, standards as outlined by the Departments of H.E.W. and Transporation, and The Commission on Emergency Medical Services of the American Medical Association. In addition, information gathered through extensive interviews with people who are directly

involved with the city's present ambulance service will be used and analyzed,

Comparisons will be made between Albuquerque's present system and other cities such as Jacksonsville and Miami, Florida, who had similar problems that are facing Albuquerque now and how they solved them.

The following areas will be used in evaluating the present ambulance services in Albuquerque:

A. Location of emergency services
B. Equipment standards and design
C. Personnel and training
D. Communications
E. Transportation
F. Financial resources
G. Alternative services

A. Location of Emergency Services

Location of ambulances depends upon a number of factors. In addition to the geographic locale of emergency facilities, location should consider population density, availability of routes for optimum access and movement, barriers to easy access and movement, climate, time of day, and past patterns of demand. Ambulance location may also be dependent upon the availability of backup equipment. The Dunlap Studies provides several methods for determining the number of ambulance locations by such factors as area size, communications, and number of ambulances available.[16]

At any rate, the sophistication of ambulance design, equipment, and training of personnel may determine how rapidly a response time and transport time can be carried out and, hence, have a direct bearing on the number of

ambulance locations needed. This study will recommend several locations for ambulances to be quartered, taking into account the above factors mentioned.

B. Equipment Standards and Design

Ambulance design is the subject of a comprehensive report of the National Academy of Sciences National Research Council[17], which includes recommendations for such factors as speed and acceleration, riding characteristics, collision reinforcing bars, patient compartment design, lights, doors and other related designs. This report should be seriously considered in establishing adequate ambulance standards in equipment and design.

Minimum standards for equipment have been developed by the American College of Surgeons and will be appended to this study. It is recommended that these standards be maintained by emergency vehicles in the Albuquerque community and that additional equipment needs be considered as the services expand and public demand allow.

C. Personnel and Training

The sophistication of equipment and design are meaningless without adequately trained personnel! The State Joint Advisory Committee on Emergency Service, in its report of June 1969, entitled, "Activities and Planning for Emergency Medical Services in the State of New Mexico", concluded that the most serious problem in the state, with regards to ambulance services, was a complete lack of adequately

trained personnel. Currently, private ambulances in the city experience rapid turnover in employees, have very low wages for employees and overall performance and capabilities are substandard.

Variations in personnel utilization are rapidly changing as demands for quality increase. For example, ambulance personnel are increasingly being considered as a functional part of the emergency medical service teams. This concept should be considered for Albuquerque. By way of illustration, Jacksonville, Florida, require 356 hours of training above and beyond regular Advanced First Aid, including extrication from autos, airplanes, and trains, cardiac care, emergency room training and obstetric training of all ambulance personnel.[18]

This study will place a high priority on adequately trained personnel and will recommend that a minimum of Red Cross Advanced First Aid be required by all ambulance personnel, with regular and supplementary training, and that the city explore means of increasing the quality and quantity of training through the University of New Mexico School of Medicine in conjunction with the Bernalillo County Medical Center.

D. Communications

The following principles will be considered in measure to be taken toward building an effective communication system:

1. A comprehensive communcations plan should be established to insure maximum efficiency of a communications network for emergency service.

2. One central communications installation should be developed, tying in police, fire and sheriff departments. This will also be responsible for contacting hospitals of pending arrivals from accidents. (The city has the 911 system, but there are problems along this line that must be solved in order for it to be effective.)

3. Hospitals should provide for emergency communications equipment in each of their emergency departments for the purpose of early contact with field vehicles that are administrating emergency care and for use of notification of incoming emergencies.

E. Transportation

Currently, tranportation is provided either by the emergency ambulance, the fire department rescue squad, or the police cruiser. Patients are transported to the nearest "hospital of their choice". The police cruiser normally transports victims only if their injuries are slight and only if an ambulance is not available or the person is under arrest. Rescue squads generally do not transport patients unless an ambulance is not available.

It is recommended that the means of transportation be considered as part of the overall communications study to insure consistent care of patients.

F. Financial Resources

Cash subsidies, a source of funds for ambulance programs, are available through the Department of Transportation under the Federal Highway Safety Act, and through the Office of Civil Defense. Funds from these sources are to be

used in developing ambulance service communications system and for the purpose of purchasing ambulance equipment and related needs.

Up to now, neither the city nor Superior Ambulance have applied for these funds through submitting a program outline of objectives to be evaluated by the Department of H.E.W., so that funds can be released.

Types of subsidies can include other items than cash. The Dunlap Studies suggest that, "the community can supply monetary equivalents in free goods - vehicles and garage space, and in free services - central dispatching and book-keeping." The study continues by saying, "All types of ambulance service organizations find this revenue source attractive because the amount provided is usually adequate, typically predictable, and administrative procdures are often minimal and limited to the requirements of contract renewal."[19]

G. Alternative Services

One of the basic questions that must be raised is whether or not a level is reached where the cost of operating a quality service is prohibitive to private concerns. Because of this, alternative services should be considered. These may include public-police, public-hospital, public-fire department, and public-autonomous.

All of these different alternatives will be analyzed with the final choice being left to those who are directly involved.

Conclusion

It is becoming more and more likely that where large cities depend exclusively on private ambulance services, that the local government must maintain extensive controls and regulations; provide extensive ancillary services such as communications, training and space facilities; and also must provide a significant amount of monetary subsidy to the private ambulance service.

Regardless of the type of ambulance service delivered to a community, local government must participate to a large degree in the evaluation of revenue needs, cost of the service, and must constantly review the performances and level of training emergency personnel receive, so that it can reassure its citizens that when an emergency does occur, they are getting the best and fastest emergency medical aid available.

FOOTNOTES - INTRODUCTION

[1]U.S., Department of Transportation, Highway Safety Program Standards: Emergency Medical Services (Washington: Goverment Printing Office, 1967), Section 4.4.11, p. 18.

[2]Ibid.

[3]Manegold, R.F., and Silver, M.H., "An Overview of Emergency Care Services: The Emergency Medical Care System," J.A.M.A., 200:4 (April 24, 1967), pp. 300-304.

[4]Recommendations by the Committee on Acute Medicine of the American Society of Anesthesiologists, P. Safar, Chairman, " Community-wide Emergency Medical Services," J.A.M.A., 204:7 (May 13, 1968), pp. 595-602.

[5]Ibid.

[6]"Trauma Report Progress Separate Level of Accreditation for Hospital Emergency Units," Modern Hospital, 107:6 (December, 1966), p. 64.

[7]Wickstrom, J., "Emergency Care of the Ill and Injured," Journal of the Louisiana Medical Society, 119:9 (September, 1967), pp. 362-364.

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[9]National Academy of Sciences and the National Research Council, Division of Medical Services, Accidental Death and Disability: The Neglected Disease of Modern Society (Washington, D.C., September, 1966).

[10]U.S., Department of Health, Education and Welfare, Memorandum concerning Emergency Health Services Program, from the Bureau of Health Services, U.S. Public Health Services (Washington, July, 1967).

[11]Wickstrom, loc cit.

[12]New Mexico Health and Social Services Department and the New Mexico Regional Medical Program: Emergency Health Services in New Mexico in 1968. (Santa Fe, January, 1969).

[13]Ibid., Survey questions number 1, 30, and 34.

[14]Digest of State Surveys, Loc. Cit., pp. 23, 29, 45, 51, 70, 80 and 83.

[15]Robert F. Rushmer, Medical Engineering: Projections for Health Care Delivery. (New York: The Press Inc, 1972), pp. 215-216.

[16]"Economics of Highway Emergency Ambulance Services", The Dunlap and Associates Report, Darien, Conn. July, 1968.

[17]"Medical Requirements for Ambulance Design and Equipment", A Report of the National Academy of Sciences. (Washington, D.C., 1968).

[18]Walters, Capt. John M., Jr. "Comprehensive Ambulance Services for a City". A Report of the Director of Emergency Medical Services, Jacksonville, Florida.

[19]The Dunlap Report. op, cit., p. 135.

CHAPTER II

ALBUQUERQUE'S PRESENT EMERGENCY MEDICAL PROGRAM

City Background

The City of Albuquerque, New Mexico, is a 125 square mile area. Albuquerque has about 1,047 miles of residential streets and roads and about 24.6 miles of interstate highways.[1]

The city has no public rapid transit system as such. It has a public bus system, but basically transportation is dependent on the passenger automobile.

Albuquerque's Metropolitan population, 1970 census, was 315,774, in age groupings as follows:

Figure 4[2]

Age Group	% of Total
0 - 5	9.1
6 - 14	22.9
15 - 24	19.0
25 - 34	13.3
35 - 54	22.5
55 - 74	11.0
75+	2.2

Albuquerque is located on a key east-west transcontinental interstate as well as a major regional north-south highway. It is, and will be, a major collection point for traffic accidents. In addition, it is important to recognize the hard reality that Albuquerque, with its mix of three cultures - Indian, Spanish, and Anglo - and its position as a

regional magnet, must cope with serious problems of alcohol and driving.[3]

Albuquerque's problems with emergency medical services centers around the attempts by local government to upgrade these services through the following manner: (1) by increasing present fire department rescue services, (2) by regulating all local ambulance operations, and (3) by providing a subsidy to an ambulance service to answer indigent and emergency calls within the city area.[4]

In the late 1960s the city and county governments created a study group to write an ambulance ordinance and draw up a contract to provide some subsidy for the operator. This effort was prompted by a short period when the one licensed ambulance company answering emergency calls refused to answer all emergency calls because of monetary losses. The other licensed ambulance company in the city at that time had refused to answer emergency calls for a considerable length of time prior to the crisis.

As a result of this, the city set up an Ad Hoc Committee to look into the problem and make recommendations. The Ad Hoc Committee drafted a new ordinance which set requirements and qualifications for ambulance operators, attendants, and drivers. It also set minimum equipment standards and provided for licensing and inspection. The ordinance administration was put in the City Environmental Health Department.

The city then contracted a local ambulance company (Superior Ambulance Service) to provide emergency ambulance

services when called by city or county agencies. The ambulance is to be manned by fully trained crews, 24 hours a day, seven days a week, and be able to answer any call within the city in 15 minutes, and in the county within a reasonable time period.

Criticisms of the emergency medical services in the city have been directed toward Superior's contract with the city which basically relates to the inadequate equipment and training of their crews. This personnel problem is created by the inability of Superior to retain qualified individuals which can be attributed to low wages, long hours, and few career opportunities. Added to this problem is the poor financial position of the ambulance company which is related to the above problem coupled with cancellation of calls after response is started (this is estimated to be about one in five), and the inability to collect services fees for about 35% of the calls. (This is comparable to the national average.)

Albuquerque's Present Emergency Medical Services

The city's emergency services are provided by the following groups:

The Albuquerque Fire Department Rescue Units which have the essentials of an excellent rescue squad, presently includes three dispersed units. The first unit is located at the main fire station at 8th and Silver. This unit is responsible for the entire north and south valley areas west of the railroad tracks. The second unit is stationed

at the Girard Fire Station and services an area from the railroad tracks east to San Pedro. A third unit is located at the fire station on Indian School Road between Louisiana and San Pedro. This station serves an area from San Pedro east to Tijeras Canyon.

According to a rescue report for the month of October, 1973, the Fire Department rescue squad had an average one way mileage of 3.4 miles and had 226 total responses within one month. Their average response time was 3.5 minutes.[4,5]

The rescue squad was trained approximately five years ago by Dr. Archer Gordon, formerly of Albuquerque and presently Chairman of the American Heart Association on Cardiopulmonary Resuscitation, and has kept up its own inservice first aid training. The Fire Department intends to add two more rescue units in order to increase their coverage over the city.

The County Volunteer Fire Districts, which number 11, presently operate rescue services with volunteer manpower. Each station has one full time truck driver who is on duty from 8:00 am to 5:00 pm, Monday through Friday. Manpower training ranges from Standard First Aid to the Emergency Medical Technician Level.

Present rescue vehicles include one heavy rescue unit, five light rescue vehicles (van-type), five districts utilize sedans and fire trucks. All districts are equipped with resuscitators, splints, dressings, and one heavy rescue unit is equipped with additional heavy extrication, lights,

and power tools.[4]

There are two ambulance services based in Albuquerque. They are Superior and Albuquerque Ambulance Services. Both have come under new management in the early part of 1973.

Superior Ambulance receives a subsidy of $3,250 per month from the city and county governments to answer all indigent and emergency calls.

The ambulance controversy stems around the public's disfavor with Superior's services and the city's continued contract with this ambulance service to administer emergency aid. The following are the key points of the public's criticism toward Superior:

1. Lack of proper and certified training of personnel.
2. Slow response time to emergency calls.
3. Inadequate equipment.

Let us discuss each one of the above criticisms.

1. Lack of proper and certified training of personnel.

The City Ambulance Ordinance requires that an attendant and attendant/driver have 36 hours of training and hold current Red Cross Advanced First Aid Certificate. New personnel will be allowed 30 days following the date of employment to initiate this training. The ordinance further states that a refresher course and examination shall be required of all personnel each 12 months. The refresher course shall consist of a minimum of six hours approved training.[6]

Superior has 23 employees, many of them on a part-time basis. According to current records from the Red Cross,

five Superior employees have received the 52 hour Advanced First Aid and Emergency Care Training, seven had completed the 40 hour Regional Medical Program - Emergency Medical Technician/Ambulance course and held Advanced First Aid Certificates. These seven had not completed the refresher course as required by the city ordinance.[7,4]

In an interview with Mr. Sesario Trujillo, one of the three Trujillo brothers who own and operate Superior Ambulance Service, concerning personnel training, Mr. Trujillo stated that all of his drivers and attendants either have or are receiving the training required by the city. He further stated, "Some of our employees may not have the formal schooling - they may lack the piece of paper that says they have passed a certain aid course - but all of them have the training and experience necessary for the job".[8] (Personnel training will be discussed in detail in Chapter IV).

2. Slow response time to emergency calls.

The ambulance ordinance dictates that all ambulances should respond to all emergency calls within a 15 minute period. Superior Ambulance is averaging 10.2 minutes per call as compared to the 3.5 minutes per call that the Fire Department Rescue Units average.[4,7]

The main difference in response time is that the Fire Department rescue units are dispatched from 3 locations within the city, while Superior has only one location centered at 2421 1st Street, NW.

In reality, if Superior Services is ever going to match

the response time of 3.5 minutes, they need to have a minimum of five ambulance locations which would comply with national standards of one ambulance location per 50,000 population.

3. Inadequate equipment

Equipment is a critical factor in supplying good ambulance service. Quality ambulance services around the country are finding it essential to carry cardiac and coronary equipment as well as have telemetry capability. Superior has seven vehicles, none of which comply with the National Academy of Science - National Research Council guidelines, which are mandatory by the City Ambulance Ordinance.[9] (Two of these seven vehicles were purchased in January 1973 with the city's knowledge!)

While Superior is required, by ordinance, to have equipment that complies with the American College of Surgeons Committee on Trauma, -- and Superior does indeed possess most of this equipment - this equipment is not carried on all of the seven vehicles. This deficiency is not necessarily Superior's fault, for while the ordinance requires that every ambulance service obtain such equipment, it does not specify that every vehicle be so equipped! (This will be discussed further when the ambulance ordinance will be looked at in detail.)

The other private ambulance service is Albuquerque Ambulance which is owned and operated by a cooperative venture of Presbyterian and St. Joseph Hospitals. This

ambulance meets, and at times exceeds, all requirements set by the City Ambulance Ordinance concerning mandatory equipment and vehicle designs.

Albuquerque Ambulance Service operates primarily as a private contract service providing pre and postoperative transportation for a variety of non-ambulatory patients.

Although this ambulance service is the better of the two private companies, it is prevented from automatically responding to 911 emergency calls because of the city's contract with Superior, which does not expire until September 1974. However, if anyone calling for an ambulance through the 911 emergency number specifically requests for Albuquerque Ambulance, it will be dispatched.

Ambulances answer an average of 20 completed emergency responses whithin each 24 hours in the city and country. The Albuquerque Fire Department Rescue Units answers an average of seven calls each 24 hours in the city, and county ambulance and fire rescue units average six calls within each 24 hours.[4]

The heaviest concentration of all emergency medical calls fall in the area bounded by I-40 on the north, Gibson on the south, I-25 on the east, and Rio Grande on the west. Also, emergency medical assistance relating to heart attacks, breathing difficultues, strokes, and epileptic attacks is fairly evenly distributed throughout the area. Calls resulting from auto accidents are focused along East and West Central Avenue, Fourth Street, and the

downtown Off-On ramps of freeways.[4]

Local Hospitals.

The city's ten hospitals emergency facilities appear to be centrally located. Six of the ten emergency facilities are located within 1 1/2 mile radius of the intersection of Interstate 25 and Central Avenue. Of the remaining four, the Veterans and Bataan Memorial Hospitals are located adjacent to each other in the far southeast section of the city, Nazareth Psychiatric Hospital is in the far north valley and Albuquerque General which is located in the south valley.

We can assume that these facilities will be relatively stable in the near future, which suggests that dispersal of ambulances is particularly necessary in view of the probable transport time from the scene of an emergency to any of these hospitals.

Police and Sheriff Departments.

The Albuquerque Police Department and the Bernalillo County Sheriff's Department personnel are trained at varying first aid levels and offer inservice training in the eight hour Red Cross Multimedia Standard First Aid Course. Albuquerque police vehicles are equipped with trauma kits and the Sheriff's vehicles with first aid kits. The personnel of both departments can administer initial emergency aid, since they are often the first available aid to the injured.

City Ambulance Ordinance[10]

On January 12, 1970, the City of Albuquerque adopted an ordinance to regulate all aspects of ambulance services within the city. To state that this was a bad ordinance would be to point fingers when constructive criticism is needed. Without a doubt, however, this is a weak ordinance which has worked to compound the problems of the ambulance service (within Albuquerque) because it permitted Superior Ambulance to stick to the letter of the law rather than conforming with its intent. (See Appendix A for the City Ambulance Ordinance).

The Following Are Key Criticisms Of The City Ordinance:

1. In terms of administration, it appears that the placement ambulance oversight in the Department of Environmental Health was a myopic decision. This department is initially so overburdened by a variety of missions that it must perforce give a low priority to ambulance service. Second, its mission in regard to ambulance oversight was never clearly spelled out. Third, its staff is in no way medically qualified to do a good job of examining ambulance equipment and performance. Fourth, no feedback of evaluative mechanisms were built into the ordinance to facilitate ongoing monitoring of ambulance service. The Department of Environmental Health, in short, was handed a problem it was not equipped to handle, was not told how to handle it, and was not given the criteria for judging or monitoring performance.

2. Section 4 of the ordinance, "Standards for Permit", for example, fails to state exactly what an ambulance must carry in the way of equipment. Instead, it simply states what the minimal requirements for whatever equipment the company shall buy will be.[11] An entrepreneur, especially one in a marginal profit business, must of necessity interpret such a loose language for his own ends.

3. Section 7, "Issuance of Ambulance Drivers and Attendants Permits", is more interested in questions of criminality and moral turpitude (this is not to say that it's not needed but this was emphasized over medical training), than medical training or experience.[12] Indeed, this section of the ordinance is so vaguely worded, and the managerial discretion (Section 7:B is so wide open (to interpretation or misinterpretation) that it would be impossible for a delegated oversight agency to act definitively on it.[13]

4. Section 9, "Personnel", leaves a loophole that explains one of Superior's paradoxes. Part A of this section notes that only <u>one</u> of the two ambulance personnel needs to be trained. The ordinance does not (specifically) say that attendants who care for victims must be trained. It simply states that either the attendant, or attendant-driver must have at least 36 hours Red Cross and Advanced Red Cross training.[14] Thus, a rational economy minded ambulance executive, who must pay in salary, time and extra backup for every hour of training is not likely to push for

full crew training under such a law. It is simply not in his self-interest or legal requirements to do so.

5. Section 10 requires written reports, within 24 hours, on all ambulance service. These reports are to be written in any form the (ambulance) manager may prescribe.[15] Again, enforcement of oversight rests with the city, and the city has been negligent. Indeed, the contract with Superior contains the statement that Superior must "submit quarterly reports to the city listing the names and addresses of the ambulance service calls rendered to persons who have failed to pay for such service," with the notation, "delete after 1/6/71". We would submit that this is not only an inadequate mechanism, but that it puts emphasis on the wrong issue - nonpayment rather than performance. What should be required is a detailed report of all calls so that a monthly random check back could be made to evaluate Superior's performance, not just its bad debts.

In all .... Superior will stand in at least five counts of violation of Section 13, "Violation a Misdemeanor", punishable by a fine not to exceed $300. or imprisonment of 90 days ..."[16]

Problem Analysis

Between 1968 and 1972, 504 people died in traffic accidents in Bernalillo County. Most of these traffic deaths were within the limits of metropolitan Albuquerque. Assuming Albuquerque is like the rest of the United States, most of these dead were young people, for traffic accidents

are the largest single killer of Americans between the ages of one and 37.[17]

Albuquerque has a highway accident problem. Located on a key interstate freeway, as well as a major regional highway, it is a major collecting point for traffic fatalities.

What is human life worth? What is the city's responsibility in protecting and preserving such a life? Most studies beg such questions: But a human life is above any price! If a building burns, the city fire department, and properly so, races to the scene to save property and protect adjoining dwellings. Both at the event and through building codes, inspections, and fire insurance companies, we do our best to make sure the city is spared loss, and we do not like to argue about the cost. If a person is hurt or injured, is it not equally our responsibility to see that they get the best and fastest medical attention possible? Certainly if we feel it is a city's duty for the protection of its property, we must then acknowledge some city obligation to preserve the lives of its citizens!

The American Ambulance Association estimates that 25,000 cases of death and permanent disability are caused annually by inadequately trained ambulance and rescue crews.[18] The American College of Surgeons Committee on Trauma estimates that 50% of the victims of auto and other accidents die needlessly because of deficiencies in emergency services.[19] What this means for Albuquerque is that between the years 1968 and 1972, 252 lives could have been saved if the city

had the best possible system of emergency service. How much is such unrecoverable waste worth?

Most of us, however, do not live in a world of traffic accidents. They are rare events, things that happen to the other guy, shocking tragedies that are blocked as well as searingly remembered. Yet, emergency medical service should not only serve extreme emergencies, but it should serve our daily life-and-death needs. We cannot say whether any individual number of lives could have been saved with proper emergency care, but we can say that 70,000 coronary victims each year could be saved with proper emergency ambulance treatment.[20] Since coronary deaths represent 60% of the total national mortality, one can easily see why it is critical that emergency ambulance and rescue teams must be able to handle this problem. When a first-class ambulance system was adopted in Jacksonville, Florida, for example, 94% of the cardiac cases were delivered alive to hospitals compared with the national figure of 40%.[21] Again, assuming that Albuquerque is representative of the nation as a whole, this means that the lives of more than half of the cardiac victims in the city could be saved if we had a first-class ambulance service. It is estimated that for the price of a movie - that is $2.50 per person a year - Albuquerque could have the finest ambulance and emergency medical service in the United States. (The tax costs per capita for ambulance and related services in Albuquerque in 1972 was fourteen cents ($.14). It is also interesting to note, though, that

the citizens of Albuquerque are willing to spend 57 cents per person for animal control each year!)

The city considers its basic task is to provide protection for its citizens. Thus, fire and police departments are maintained and funded, health and building inspectors hired and trained, and traffic and other municipal agencies developed. All these functions are vital and needed, but it is also believed that life-saving emergency protection is also (or can be) a city responsibility, when and if human lives can best be saved by the collective action of the whole community.

CHAPTER II

FOOTNOTES

[1]Statistical Data, Planning Department Section, City of Albuquerque, Albuquerque, New Mexico (1973 Data).

[2]U.S. Department of Commerce, Bureau of the Census, General Population Characteristics of New Mexico (U.S. Government Printing Press, Washington, 1970), p. 47.

[3]Ambulance Service in Albuquerque, New Mexico, Dr. Peter Lupsha et al. (an unpublished class study report, completed in 1972), p. 1.

[4]Data and Statistical Figures Courtesy of Albuquerque Fire Department, Emergency Rescue Section, with special thanks to Chief Ray Kuhn, Cpt. Peter Garcia, and Lt. Roy Gonzales whose endless cooperation in gathering essential data was indispensable to the writing of this thesis.

[5]Report conducted by the Albuquerque Ambulance Monitor Section, Department of Environmental Health, City of Albuquerque, New Mexico, November, 1973.

[6]Ambulance Ordinance, City of Albuquerque, New Mexico (Adopted January, 1970), Section 9, Part A and B.

[7]Results of Survey conducted by Mr. John Servis, Ambulance Monitoring Section, Department of Environmental Health, City of Albuquerque, New Mexico.

[8]Interview with Mr.Sesario Trujillo of Superior Ambulance conducted by Thomas R. Wagner in November, 1973.

[9]Ambulance Ordinance, op, cit., Section 4, Part A-5.

[10]Since the criticism and the evaluation of the Albuquerque Ambulance Ordinance conducted by Dr. Peter Lupsha was so expertly done, and since the criticisms still apply today, the author felt it necessary to reprint applicable parts of this report, Ambulance Service in Albuquerque, New Mexico, pp. 11 through 14.

[11]Ambulance Ordinance, op. cit., Section 4, Part A-%.

[12]Ambulance Ordinance, op, cit., Section 7, Part A-4.

[13]Ambulance Ordinance, op, cit., Section 7, Part B.

[14]Ambulance Ordinance, op. cit., Section 9, Part A.

[15]Ambulance Ordinance, op, cit., Section 10.

[16]Ambulance Ordinance, op, cit., Section 13.

[17]International City Managers Association, Providing Community Ambulance, A Report, No. 299, December, 1968.

[18]American Ambulance Association, Data cited: Quenton P. Wood, MD. "Mobile Emergency Unit Saves Lives," Hospital, Vol., XLIII, March 16, 1969, p. 59.

[19]Jesse Root, Program Development Specialist, Division of Civil Defense and Traffic Safety, Texas State Health Department Services, at a May, 1972 meeting on Symposium on Emergency Medical Services, Houston, Texas.

[20]Walters, Cpt. John M. Jr., Comprehensive Ambulance Services for a City: A Report of the Director of Emergency Medical Services, Jacksonville, Florida, 1970.

[21]Ibid.

CHAPTER III

TRANSPORTATION AND COMMUNICATION EQUIPMENT IN AN EMS

> An ambulance is defined as a vehicle for emergency care; which provides a driver compartment, and a patient compartment which can accommodate two emergency medical technicians and two litter patients so positioned that at least one patient can be given intensive life-support during transit; which carries equipment and supplies for optimal emergency care at the scene as well as during transport, for two-way radio communication, for safeguarding personnel and patients under hazardous conditions, and for light rescue procedures; and which is designed and constructed to afford maximum safety and comfort, and to avoid aggravation of the patient's condition, exposure to complications, and threat to survival.[1]

Recent advances in emergency care of the victims of accidental injury and life-threatening diseases require that ambulance and rescue attendants be trained to carry out measures on a par with the combat medical corpsman or the emergency department attendant; that more sophisticated equipment be used at the scene and during transport; and that ambulances be designed not only to ensure safe and efficient transport and radio communication, but also to provide space for storage and ready accessability to fix mobile equipment for safe guarding at the scene, during rescue, in giving optimal emergency care, and have adequate room to actively treat any emergency which might arise during transport. These improved capabilities and requirements for facilities to handle emergency cases require new concepts in ambulance design.

For decades the general public and the medical profession passively accepted employment of vehicles sufficent only to provide transportation of an individual in the recumbent position on a litter, with little or no equipment for emergency care, and usually manned by inadequately trained drivers or attendants.

More than 20,000 of the 25,000 ambulances of the nation are of the hearse, limousine, or station-wagon type that are inadequate in space and equipment.[2] Standards for ambulance design and equipment recommended by the Committees of the National Academy of Sciences - National Research Council, and of the American College of Surgeons have been adopted by the National Highway Traffic Safety Administration as the basis for matching fund support toward purchase of ambulances and their equipment.[3] These standards have been widely endorsed by national medical organizations and providers of ambulance services and have stimulated unprecendented competition among ambulance body manufacturers to provide vehicles and equipment suitable to the needs of trained ambulance emergency medical technicians.

Of the standards mentioned above, the most pressing needs expressed in a recent publication by the National Academy of Sciences - National Research Council are: (1) increased space for the administration of cardiopulmonary resuscitation in transit, (2) a ceiling height sufficient for adequate gravity flow of intravenous fluids, (3) installed oxygen and suction devices, (4) two-way radio communications,

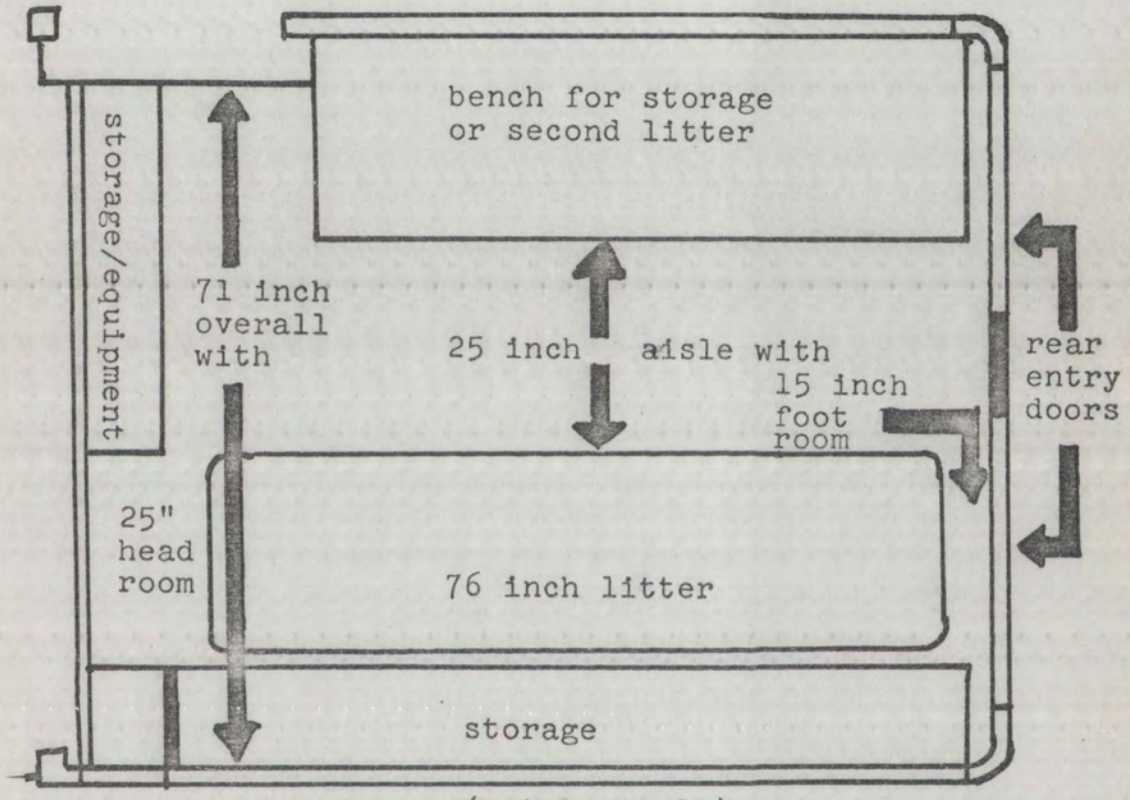
and (5) enough storage room for equipment for optimal treatment and for rescue purposes.[4]

In Figure 5, the need for adequate space, in order to administer necessary emergency aid in transit, is graphically demonstrated through a drawing showing the patient compartment with space dimensions.

A survey of Superior and Albuquerque Ambulances indicate that Superior's ambulances do not meet these national standards in compartment size while Albuquerque's ambulances exceed these national standards. (Appendix B will list equipment and supplies needed in vehicles that are used in administering emergency aid.

Figure 5[5]

Ambulance Patient Compartment
(all measurements in inches)



(not to scale)

Critical Dimensions:

Headroom------minimum of 54 inches, floor to ceiling, preferably 60 inches.

Floor length--116 inches minimum, this will accomodate a 76 inch litter with 25 inches room at the head and 15 inches room at the feet, this is needed for medical technician to administer aid in transit.

Aisle width---25 inches between 2 litters.

Overall width-71 inches minimum.

Audio, Telemetry and 911 Systems

In the organizational structures of emergency medical care, no project is more important than that of seeing that all emergency medical services have adequate communication and use it daily. A well organized communication system not only increases the efficiency of providing aid to anyone in need of immediate medical need, but it also has tremendous educational potential in coordinating emergency medical services.

Because reduction in response time is directly related to saving lives, reducing injuries and suffering, and cutting down unnecessary delays, the key for reducing this response time lies in a communication system which provides:[6]

1. A means of detecting and locating those requiring aid.

2. Transmission of this information to a dispatch center manned continuously by personnel trained in eliciting pertinent information.

3. Further transmission of specific information to the appropriate action agency over an interconnected communication network.

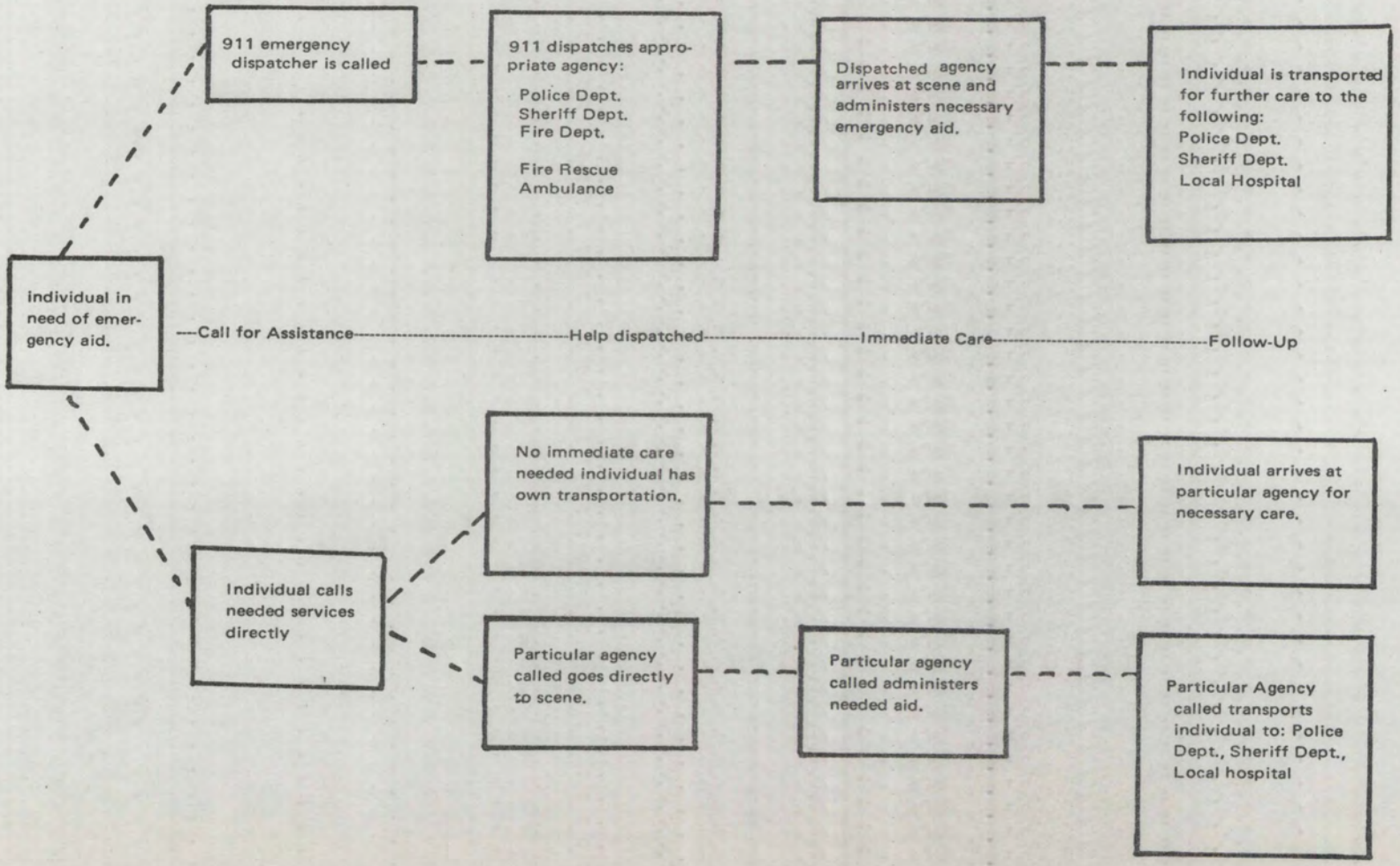
4. Transmitting and receiving, within this interconnected network, information pertinent to the well being of the patient being treated at the scene or enroute to a place of definitive care.

The emergency communication and transportation system, which presently exists in Albuquerque, is depicted

graphically by the author in Figure 6, showing the sequence of events begining from the time the call for help is made and ending with the patient being transported for definitive care.

FIGURE 6

ALBUQUERQUE'S EMERGENCY COMMUNICATION AND TRANSPORTATION SYSTEM



The Albuquerque metropolitan area is characterized by a series of communication systems which are not necessarily connective and often result in duplication, or in some instances, no communications at all. The various agencies which administer emergency aid - the fire department rescue units, the city and county police departments, and the private ambulances - all have communication and dispatching facilities of their own, plus they can be connected to the city's 911 emergency center via "call down" lines.

The Albuquerque 911 system is now two years old and presently covers the entire Bernalillo County. The emergency center has 35 incoming lines with several "call down" lines which are used to connect agencies that administer essential services to the community. Although the system is working beyond expectations, its effectiveness has been greatly jeopardized by the public's misuse of it as an information center rather than an emergency apparatus. Lt. Fred Wagoner, Chief of Communications for the Albuquerque Police Department, states that more than one-third of the estimated 3,000 daily calls are of the non-emergency nature! While officials are careful to state that they do not want to discourage the public from reporting legitimate emergencies, since this is the main purpose of 911 system, they do insist that non-emergency and information seeking callers use other alternate numbers rather than the 911 system. Another problem, which may cause greater headaches than the public's misuse, is that the 911 system has outgrown its present facilities and needs

be expanded and relocated. Also, the present staff of 21 people, which was recently expanded from 16, cannot keep up with the daily increase of incoming calls.

In reference to the 911 system and the emergency medical services, I found that there can be quite a delay between the time a call is received at the emergency center, and when an ambulance is actually dispatched. This is reflected by the fact that when a call is received for an ambulance, and depending on the dispatcher's interpretation of the need, the following can occur:

1. a police unit is dispatched to the scene, or
2. an ambulance is dispatched as requested, or
3. an ambulance, a police unit, and a rescue unit are all dispatched to the scene.

Often a citizen may feel that he needs an extra added assurance that someone will come to his rescue, so he calls the 911 system for aid, as well as a private ambulance company and perhaps even the rescue unit. The confusion and waste of resources that this often leads to is self-explanatory.

Recently, the Rescue Task Force, in its final report to the City Manager concerning the Two-Tier System for emergency care, recommended that the city fire department take over the emergency dispatching responsibilities.[7] (See Appendix D for the detailed report.) It reasoned that since the fire department already dispatches fire and rescue units for emergency use, and since it can be directly connected into the 911 center and with the private ambulances, this would

greatly reduce the response time and would also result in fewer duplications and lower cancellations at the scene of an accident.

Although both the rescue units and the private ambulance companies have some telemetry equipment, this equipment is not being used because there are no definitive state statutes which define the extent of emergency care a rescue or ambulance personnel can administer at the scene of an accident. This refers directly to whether an EKG or IVs and the like can be administered to an injured individual.

However, it should be pointed out that telemetry equipment is necessary in the giving of a total emergency medical care to an injured person. The overall telemetry system consists of four major functional parts which are further depicted in Figure 7. These parts are:[8]

1. Signal transducer and conditioner - this unit detects body conditions and converts them into electrical signals that can be transmitted by radio.

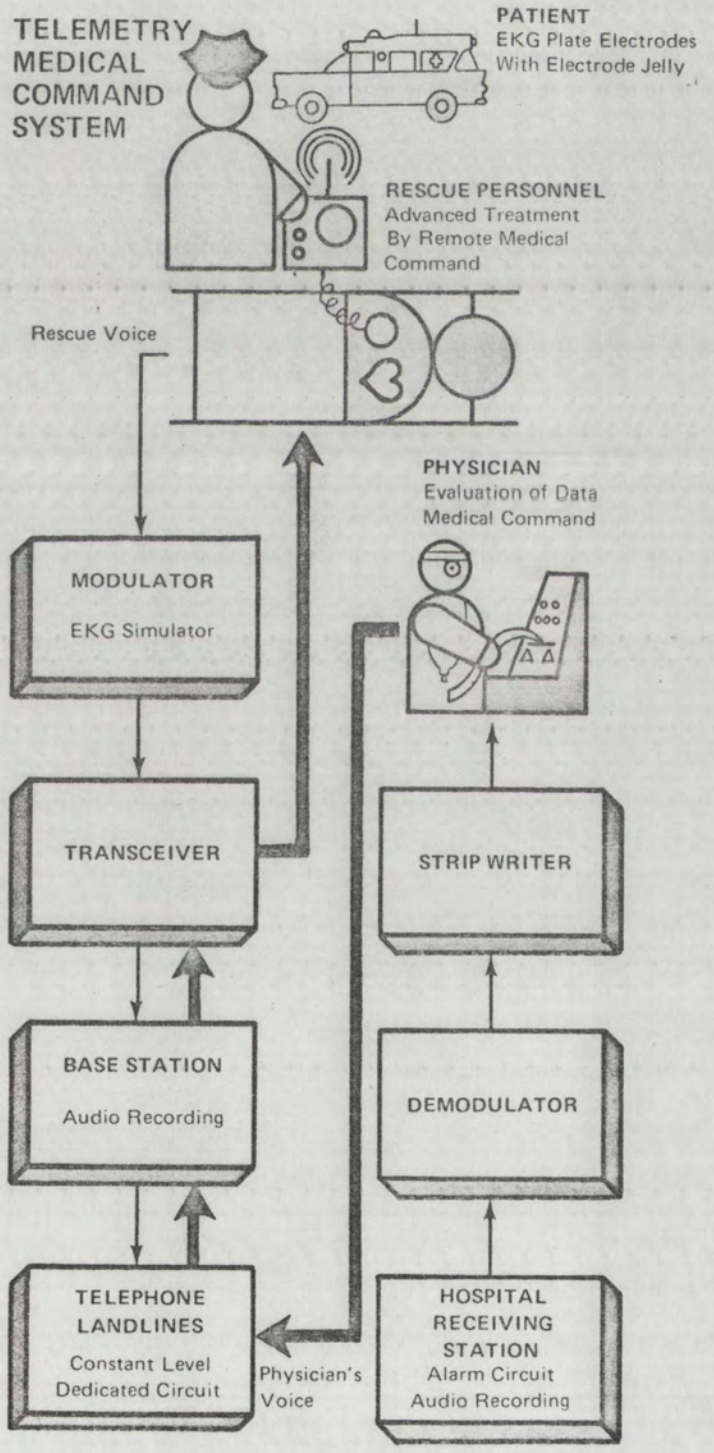
2. Radio transmitter - this unit transmits the output signal from the signal conditioner on a radio frequency. The signal generally is a coded-tone or a series of pulses.

3. Radio receiver - the coded transmission is detected as with voice communications and delivered to the signal converter and display unit.

4. Signal converter and display unit - this unit reconstructs the signal from the patient and displays or records it in a format that can be medically interpreted.

FIGURE 7

TELEMETRY MEDICAL COMMAND SYSTEM[8]



Hospital Link-Up

A community's ability to provide good emergency medical care is dependent in large measure on the effectiveness of its hospitals' communications systems. In general, this network should include inter-hospital radio links; direct hospital-to-ambulance ties; and a control center that regulates all incoming emergency activities, and one that has radio communication with all the city's hospitals, ambulances, rescue units and other public services. The capability for telemetry of physiological data between mobile units and designated hospitals should also be provided.

Audio and telemetry equipment is essential so that hospitals and ambulance/rescue personnel, who administer emergency medical care, have available to them the facilities and medical expertise which are imperative in giving the injured patient the best possible emergency care available.

CHAPTER III

FOOTNOTES

[1]The National Academy of Sciences - National Research Councils, The Committee on Emergency Medical Sciences "Medical Requirements for Ambulance Design and Equiptment"Second Printing, (Washington: NAS, 1969), Section 1.1, Part II.

[2]Division of Emergency Health Services, DHEW, Ambulance Service and Hospital Emergency Departments: Digest of Surveys Conducted 1965 to March 1971 (U.S. Department of Health, Education, and Welfare, May, 1971), p. 128.

[3]Committee on Ambulance Design Criteria, Ambulance Design Criteria. A report to the National Highway Safety Bureau of the Federal Highway Administration, U.S. Department of Transportation, June 30, 1969(Washington, D.C.: National Academy of Engineering, 1969; Washington: U.S. Printing Office, 1970).

[4]Medical Requirements for Ambulance Design and Equipment, op. cit., Section 1.1, Part II.

[5]Compartment Dimensions taken from Medical Requirements for Ambulance Design and Equipment, page 11.

[6]Communications: Guidelines for Emergency Medical Services, U.S. Department of Transportation, National Highway Traffic Safety Administration, (Washington, September, 1972), p. 2.

[7]The Rescue Task Force: A Report to the City Manager concerning The Two-Tier Emergency Medical System, submitted to the City Manager on January 14, 1974, p. 4.

[8]Communications, op. cit., p. 70.

CHAPTER IV

PERSONNEL TRAINING WITHIN AN EMS PROGRAM

In an attempt to reduce suffering and the number of deaths which occur annually as a result of trauma, many groups direct their attention to the critical period of an emergency from that interval between the accident and the time definitive care by a physician is available.

Military experience through the Viet Nam War has shown the importance of the well-trained aidman in initiating effective emergency treatment at the scene and in carrying out prompt evacuation of the combat casualties to a nearby hospital facility. Extensive training of the aidmen has been necessary for them to gain sufficient judgement to perform primary emergency care effectively.

Many of the problems associated with combat casualties are found in civilian accidents. It is important that ambulance attendants and rescue personnel have training commensurate with the medical problems that they may face, and that transportation of the injured be carried out efficiently and expeditiously.

The aim of immediate emergency care is to save lives, reduce suffering, and prevent further serious complications by the use of prompt and effective measures until a physician's definitive treatment is available.[1] This is

particularly true with patients who are bleeding severly, who have interference with breathing, or in cases where the patient has been poisoned. In these situations death can occur in a matter of minutes or be prevented by prompt action on the part of a qualified attendant.

It has been well demonstrated that proper and extensive medical training of individuals involved in administering primary emergency aid is one of the mainstays of any emergency medical program.

Who and what type of training individuals receive who administer emergency medical care is a key question that must be answered in order to assure the public that they are getting proper care in any emergency crisis.

Let us look at the following individuals who are directly involved in giving emergency aid in Albuquerque and see what type of training they now have.

Physicians And Nurses

There is little disagreement throughout the country on the desirability of educating the ambulance attendants and rescue personnel who administer emergency aid. But there is a general lack of understanding by physicians, nurses, and medical administrators of the necessity for training the physicians and nurses to operate within the emergency medical care system. Physicians and nurses, although properly trained within their specialties, are unfamiliar with the ambulance and rescue personnel ability to perform in emergency situations; in understanding their equipment,

language, mission, vehicle, and logistical support, and the field conditions which exist outside of the four walls of their private offices or general hospitals that they may work in. This knowledge is essential if physicians and nurses are to work with and/or direct intelligently any paramedical operations which may involve ambulance and rescue personnel.

All physicians and nurses who are assigned to hospitals' emergency departments should spend a varying number of hours aboard rescue and ambulance vehicles to receive training and get a first hand look at daily emergency crises and how they are handled by these emergency personnel.

In this way physicians and nurses would become acquainted with the other side of the emergency medical care system and through their understanding and training (they) could form a united front in giving the citizens of Albuquerque adequate emergency medical care they presently lack.

Fire Department Rescue Personnel

Training is much the keynote of the fire department rescue units. The rescue units have drawn praise from the community and others involved in emergency services for the capability and training of their rescue personnel.

Rescue units in the city serve two purposes: (1) Response to requests for emergency medical care, and (2) Response to structural fires, to perform rescue, first aid, and fire fighting. Each member of a rescue crew receives advanced

first aid training and instructions along with the regular required 11 weeks' training that all firefighters must go through. They then receive additional advanced paramedical training. Louis Trujillo, Assistant Chief of the Fire Department's Training Division, has stated this advanced training is going on in a continuous stage for all rescue personnel. In an interview, Mr. Trujillo stated, "Along with this advanced training, we will begin another program in early 1974 which will train our rescue teams in handling an unruly patient, delivering an emergency childbirth, and knowing the proper treatment for drug abuse and related problems. This program will be quite extensive in nature, covering many aspects of emergency care. All rescue personnel will also be required to study one and a half hours each day they are on duty."[2]

Trujillo also stated that the fire department is hoping to enroll rescue personnel in an 81 hour course given by the Regional Medical Program at the University of New Mexico. In addition, this course will refresh the training of rescue members on the more sophisticated equipment which ranges from the resuscitator inhalator and heart and lung machine to antidotes for poison and even a common rope.

Ambulance Attendants

The Albuquerque City Ambulance Ordinance requires that an ambulance attendant or attendant/driver have 36 hours of training and hold a current Red Cross Advanced First Aid Certificate. All new personnel will be allowed 30 days

following the date of employment to initiate this training.[3]

Since the ordinance was passed in early 1970, additional training in emergency medical care has become available through the Emergency Health Services Divison of the Regional Medical Program. This is a course for ambulance personnel totaling 81 hours.

The ordinance also requires that a refresher course and examination shall be required of all personnel each 12 months. This refresher course shall consist of a minimum of six hours of approved training which shall be selected and conducted by the city or its designee at least twice a year.[4]

Utilizing these criteria to evaluate the adequacy of training of all ambulance personnel, Mr. John Servis, Ambulance Monitor of the City Environmental Health Department, requested a report of the training status of all ambulance personnel from the Red Cross Office.[5] According to current records from the American Red Cross, five Superior employees had received the 52 hour Advanced First Aid Emergency Care Training, seven had completed the 40 hour Regional Medical Program Emergency Medical Technician/ Ambulance Course and held Advanced First Aid Certificates. These seven had not completed a refresher course as required by the City Ordinance. Albuquerque Ambulance had ten employees who were certified in the Red Cross 52 hour Advanced First Aid and Emergency Care Course. Mr. Servis had found that although both Albuquerque and Superior personnel had prior training, some of them were aidmen/corpsmen in the Armed

Forces - this was not verified through the Red Cross.

At the time this survey was taken, less than 50% of private ambulance employees were trained according to the city ambulance ordinance.

Shortly after the above survey was taken by Mr. Servis, I went to both ambulance companies to check if they had updated any of the personnel training since the above report. I talked to Mr. Sesario Trujillo, one of the three Trujillo brothers who own and operate Superior Ambulance Service. When I discussed the survey that was conducted by Mr. Servis on personnel training, Mr. Trujillo stated that all of his 23 employees (many on a part-time basis) either have or are receiving the training required by the city ordinance, and he added, "Some of our employees may not have the formal schooling - that is, they may lack the piece of paper that says they passed a certain aid course - but all of them have the training necessary for the job, and the experience."[6]

In following the training of personnel of Albuquerque Ambulance, which is owned and operated by the Cooperative Health Services, a joint venture of Presbyterian Hospital Center and St. Joseph Hospital, I was given a recent public news release which indicated that all of the 28 employees had completed the 50 hour American Red Cross course or the 80 hour Emergency Medical Technician/Ambulance course. Several other courses will also be mandatory for the employees such as a 40 hour coronary course, an 8 hour course in

cardiopulmonary resuscitation, a 25 hour pharmacology course, a 40 hour intravenous course, and an 8 hour safety driving course. While none of the above employees had completed all of the above courses, 12 of the 28 employees were in the process of completing the 8 hour cardiopulmonary course.

Public At Large

Emergency life support begins with the actions taken by the first knowledgeable individual who arrives at the scene of the accident.

Frequently this individual is usually a John Doe, private citizen. What he does, and more important, what he doesn't do after he arrives at the scene of an accident, can determine the medical outcome of the injured individual. No matter how effective and highly qualified an emergency medical system is, many lives will be lost if the person(s) who discovers an injured individual does not begin simple and effective efforts to control the bleeding and maintain the airways of the injured.

It is evident, then, that our first line of defense of an emergency medical program is the need of educating the public in the techniques of First Aid.

The Red Cross First Aid program has three specific courses of instruction for the public at large.

1. The Junior Course. This course is the beginning course which can be started at the sixth through eighth grades. The purpose of this training is to improve safety behavior through developing good safety attitudes and to teach basic life-saving skills.

2. The standard course. This is for persons at least 14 years of age. Its objective is to foster interest in safety and to present basic principles of first aid.

3. The Advanced Course. This course is for those holding a standard course certificate and is designed to meet the needs of those individuals who may have occasion to give first aid in their daily routine. This also involves higher levels of first aid training.

This is a basic training in lifesaving techniques and an individual must renew his certificate every three years, which means periodic re-training is required to maintain proficiency and learn new techniques which may have occurred since his last certificate.

It is imperative that local government, local medical associations, businesses, and industry support public education through first aid programs because they are a vital and initial part of the total system of emergency services. It is only through their support and total community involvement that an intensified effort can be made to alleviate a problem as defined as the "neglected disease of modern society."

Training of Rescue and Ambulance Personnel--An Evaluation

Because emergency medical services are essentially an extension of the hospital's emergency department, with one basic difference in that emergency medical services are delivered to the patient at the scene of the accident, it becomes imperative that all individuals who are involved in administering this immediate care be adequately trained in order to successfully carry out their emergency tasks.

Presently Albuquerque can be classified as being in its prenatal stage with regard to the quality and quantity of training that the city ordinance demands of its emergency personnel. The 50 hour Red Cross Advanced Course or the 80 hour Emergency Medical Technician/Ambulance Course, while both are good foundations in emergency training, are simply not thorough enough training to give the emergency personnel the confidence and ability with which to effectively handle any emergency situation.

Mr. Norman Kassoff, a staff member of the International Association of Police, made a study of minimum state training requirements for certain selected professions. He found that "the median minimum is more than 11,000 hours of training for physicians; 9,000 for attorneys; 7,000 for teachers; 5,000 for embalmers; 4,000 for barbers; 1,200 for beauticians; and less than 200 hours for policemen. Yet, of these occupations, only those of physicians and policemen entail split-second decisions that can mean life or death."[7]

The emergency ambulance attendant encounters split-second life saving decisions more often than the police officer. Nevertheless, their training ranges from the very minimal (i.e., Albuquerque's 50-80 hour requirement) to the 450 hour EMT course which is mandatory of all rescue personnel in the Jacksonville, Florida, Emergency Medical Care Program.[8] Many different training programs and curricula are being developed to instruct all categories of health personnel in the elements of emergency medical care. Because personnel

roles are changing and new categories of emergency personnel are evolving, lifesaving measures at the scene of an accident and en route to the hospital are of crucial importance. A major effort nation-wide is under way to improve the training of all emergency personnel. At the request of the U.S. Public Health Service, guidelines on training and recommendations on a course of action were prepared by an expert task force under the aegis of the National Academy of Science-National Research Council Committee on Emergency Medical Services.[9] These guidelines take the position that emergency personnel should be qualified to carry out measures now applied by assistants in emergency departments or by medical corpsmen in combat areas. They should be able to carry out emergency action independently or with guidance and supervision by a physician via voice communication. The emergency measures include medication by hypodermic or intravenous routes, transfusion, tracheal intubation, tracheotomy, mechanical external cardiac compression, defibrillation and control of hemorrhage.

Though training programs are not yet standardized, they are proliferating throughout the country. Pilot programs are training emergency medical technicians (EMTs)--often described as a combination of nurse and medical corpsman--who render patient care in any situation.

One such training program, Emergency Medical Service Tehnician, was developed by the Manhattan Community College, the City University of New York, and inaugurated at the New

York Polyclinic Medical School and Hospital. This two year, four semester program qualifies an individual as a full fledged Emergency Medical Service Technician, capable of handling any emergency situation which may occur at the scene of an accident.

This program, as outlined in Figure VIII, is a 65 credit hour, four semester course of study that can be completed in two consecutive years, or it can be implemented as an in-service training program with one semester of study equivalent to one year of timed interval training.

FIGURE 8

Emergency Medical Service Technician Course[10]
(Curriculum Outline)

COURSE	SEMESTER CREDITS	COURSE	SEMESTER CREDITS
SEMESTER I:		SEMESTER II:	
Medical Emergency Tech I	4	Med. Emergency Tech II	5
Anatomy and Physiology	4	Anatomy and Physiology II	4
Medical Terminology	3	Pharmocology	3
Math for Health Sciences	3	English Composition II	3
English Composition I	4		—
	—		15
	18		
SEMESTER III:		SEMESTER IV:	
Med. Emergency Tech III	7	Med. Emergency Tech IV	7
Microbiology	4	Social or Urban Health Problems	3
Intro. to Sociology	3	Speech	3
P.E.	1	Spanish (or any 2nd local language	2
Music/Art (Elective)	2		—
	—		15
	17		
TOTAL CREDITS —		FOUR SEMESTERS – 65	

Can the City of Albuquerque afford such a program for their ambulance and rescue personnel?

In an interview with Dr. Jarrett Galbreth, Director of Emergency Medical Services at the Bernalillo County Medical Center, Dr. Galbreth stated that this could be accomplished at the Medical Center in conjunction with the UNM School of Medicine and the Regional Medical Program. He also stated that after this program was set up, it could become a regional training center where statewide training of all ambulance/rescue personnel could be done on a continuous basis. The program could also be used for the yearly refresher course that is required by the city ambulance ordinance. He also stated that if this type of program could be implemented and required of all ambulance and rescue personnel within a reasonable training period, the citizens of Albuquerque could have an effective and efficient emergency medical services program that is second to none. This type of program is similar to those in Los Angeles, Chicago, Miami, New York and Jacksonville where medical schools and county health centers combine as a training nucleus not only for their local emergency personnel but for many others throughout the country.

CHAPTER IV

FOOTNOTES

[1]Cole, Warren H., and Pueston, Charles B., Emergency Care: Surgical and Medical (New York: Meridith Corporation, 1972), p. 14.

[2]Albuquerque Tribune: Emphasis Variety of Equipment Aids Rescues. An interview with Lewis Trujillo, Assistant Chief of the Fire Department's Training Division, (Saturday, January 5, 1974, Section A-3).

[3]Ambulance Ordinance, City of Albuquerque, New Mexico (Adopted January 1970), Section 9, Part A.

[4]Ibid., Section 9, Part B.

[5]Survey taken by Mr. Servis in the Fall of 1973 while he served as a member of past EMSAC Co-mittee which was di disbanded by the City Commission in December, 1973.

[6]An interview with Mr. Sesario Trujillo of Superior Ambulance conducted by Thomas R. Wagner in November, 1973.

[7]Fletcher Knebel, "Police in Crisis," Look Magazine, February 6, 1968, Vol. XXXIII, No. 3, p. 17.

[8]Walters, Cpt. John M., Jr., Emergency Medical Care: The Public Crisis of the Seventies. Jacksonville, Florida (July, 1972).

[9]National Academy of Science-National Research Council, Division of Medical Sciences, Training of Ambulance Personnel and Others Responsible for Emergency Care of the Sick and Injured at the Scene and During Transport, 4th printing (Washington, D.C.: Government Printing Office, April, 1967).

[10]Curriculum Outline Courtesy of the Manhattan Community College, the City Universtiy of New York, and the New York Polyclinic Medical School and Hospital. Program was developed in the Fall, 1971.

CHAPTER V

FINANCIAL ASPECTS OF AN EMERGENCY MEDICAL SYSTEM

Plenty of people have made plenty of suggestions for solving Albuquerque's emergency medical problems, but the impetus for any remedy has to come from local, state and federal governments if any substantial headway is to be made.

All of the remedies advanced call for more of something: more staff, more and better training, and more and better equipment. To implement these requirements, the initial need is for a direct input of financial resources, although money is not the ultimate panacea to the problems of emergency medical care.

Let us take a closer look at the financial situation that has existed in the Albuquerque emergency medical system. In 1968, the city paid $350.00 per month ($4,200 a year) in ambulance subsidies. In 1969, Gold Cross Ambulance was granted an increase in subsidy to $1,500 per month ($18,000 a year). In 1970, the contract with Superior Ambulance Service was promulgated with subsidies of $3,250 per month ($39,000 a year). At the present time, Superior is asking for an increase in subsidy to $5,500 per month ($66,000 a year). This gives us a five year differential growth in subsidies of some $61,800.00.[1]

Even assuming a leveling trend for subsidized services over the near future, Figure 9 would indicate and make one wonder why it isn't in the city's long run interest to get into the ambulance business!

Figure 9

Subsidies for Ambulance Services

DATE	YEARLY SUBSIDY	YEARLY INCREASE
1968	$ 4,200.00	---
1969	$18,000.00	$13,800.00
1970	$39,000.00	$21,000.00
1973(est.)	$66,000.00	$27,000.00

Former City Manager, Mr. Herb Smith, has repeatedly emphasized that there is no public ambulance service in Albuquerque; that the city and county governments have attempted to assist, through a monthly subsidy, in the maintenance of a private ambulance company. For the city and county to run an ambulance business would not only place a great burden on local taxpayers, but would also be against the law.[2]

Recently the city and county governments have come under great criticism for their meager financial support of the local emergency medical services. The city subsidizes the emergency medical services at an annual rate of 14 cents ($0.14) per capita, and the county at eight cents

($0.08) per capita. This compares with cities with full fledged public ambulance services as follows: Jacksonville, Florida, with $1.02 per capita expenditure; Houston, Texas, with $2.00 per capita expenditure; and Seattle, Washington, with $2.25 per capita expenditure. Critics of the city's meager per capita expenditure for emergency services like to point out that the city seems to regard animal control as having a higher priority in that it spends a yearly per capita of 57 cents ($0.57) on that program.

But let's get to the heart of Mr. Smith's statement: exactly how much will it cost the local taxpayers if city and county governments take over the emergency medical services?

In February of 1974 the city and county governments approved a new plan to improve the local emergency medical services. This plan, the Two-Tier System, means that on-site emergency care would be administered by city and county rescue squads, and that the transportation of the injured would be done by private ambulance services. (Appendix D has the complete outline of this Two-Tier System as was approved by the two commissions.) Total initial cost to implement this system would be $260,000 for the city and $200,000 for the county. This would put the per capita annual cost at around $1.50, which would raise the city's emergency medical system to one of the best in the nation. It is further estimated that while approximately one-half million dollars is needed to put this plan into operation, another $250,000

is needed to maintain it from year to year.[3]

Can the city or its taxpayers afford this? If not, where will the money come from?

There are several means by which municipal programs like this can be funded. On the federal level a major source of emergency medical service funding is the Department of Transportation under the National Highway Safety Act. This act requires state and local governments to be in compliance with certain standards in order to receive Department of Transportation funds. Among these standards are requirements that all ambulance and rescue services be fully licensed; that all services have and use two-way communications systems; that all personnel be trained and certified according to Department of Transportation specifications; that all states have a centralized administration of EMS programs and program evaluation, data collection and monitoring capabilities; and that all services must be available on a 24 hour a day basis, as a condition for continued funding.[4]

There are three EMS bills now before Congress. They are:

Senate Bill 504--Emergency Medical Services Development Act

This bill authorizes the Secretary of Health, Education and Welfare to provide support to states, counties, cities or multi-county areas to plan, assist in, improve and/or expand the provision of emergency medical services. The program areas include training, communications, transportation, facilities and research. There is a proposed three-year

appropriation of $50 million in 1974, $100 million in 1975, and $150 million for 1976 and a requirement of at least 25% local matching funds.[5]

Senate Bill 654/House Bill 4952--
Emergency Medical Services Systems Act

This bill authorizes the Secretary of HEW to make grants to public and other not-for-profit entities for planning and feasibility studies and for the establishment and operation of EMS systems. Local matching will not exceed 50% for the first year and 75% for the second year. The appropriation for the operations grant will be $100 million for the first year and $40 million for the second.[5]

These bills are making rapid progress in Congress and should be approved by this summer and funds will become available in the later part of 1974.

The city and county governments can qualify for these funds through submitting a program outline of objectives to be evaluated by the Department of HEW so that funds can be released. This should cover the majority of the initial expenses for the EMS as outlined in Table 3.

On the local level, besides having a per capita tax of $1.50 which could raise an estimated yearly revenue of one-half million,[6] a flat service fee could be charged on all emergency calls made, regardless of distance or service rendered. For example, the City of Jacksonville, Florida charges a flat rate of $22.50 per emergency run regardless of the

TABLE 3

LOCAL GOVERNMENT SUBSIDY OF EMERGENCY MEDICAL SYSTEM

ACTUAL COST FY 1974[7]

CITY

3	Rescue units salaries & expenses	$342,915
58%	of use for Rescue responses	198,891
42%	of use for Fire responses	144,024

Per capita cost based on op. of 280,000

Total fire & rescue responses	$1.22 per cap.
Rescue responses only	.71 per cap.
Ambulance subsidy ($2,750 per mo.)	.12 per cap.

$33,000

COUNTY

34% of all fire dept. responses are for rescue

66% of all fire dept. responses are for fire

Rescue response salaries and expenses $29,265

Per capita cost based on population of 75,000

Rescue cost	$.39 per capita
Ambulance subsidy ($500 per month)	.08 per capita

$6,000

services rendered, i.e. EKG, IV's, oxygen, or the distance traveled. This is billed to the patient by the city in much the same fashion as are utilities.[8] This is a lot cheaper than the national average of $40.00 per call plus mileage and services rendered, or the local charge of $30.00 plus $1.00 per mile and service charges. (This service charge could raise $18,000 per month on the present average of 800 completed monthly calls.) This flat rate would become essential once the program is established and federal funds are cut on a matching basis. Again, those who use the system would essentially provide more financial support.

It is interesting to note that in Jacksonville the per capita rate has been lowered twice within the last three years because of the federal funding as well as because the city's method of collecting these services charges is so effective that the collect rates are 10-15% above the national average.[9]

Other types of subsidies can include items other than cash funding. The Dunlap Studies suggest that "the community can supply monetary equivalents in free goods such as vehicles and garage space, or in free services such as bookkeeping and equipment maintenance." The study continues by saying, "all types of ambulance and rescue services find this revenue source very attractive because the amount provided is usually adequate, typically predictable, and administrative procedures are often minimal and limited to the requirements of daily

operations or contract renewal."[10]

In conclusion, it can no longer be an acceptable practice for a community to shrug off responsibility for furnishing emergency medical care on the grounds that it lacks funds or that the crisis is one of individual fault for which the individual must find his own remedy. Emergency medical care is no less a community function than fire-fighting, police protection, or safe water supply. Once a community agrees that it should have some kind of system for delivering emergency medical care, it makes little sense not to provide a thorough and adequate system.

CHAPTER V

FOOTNOTES

[1]Lupsha, Dr. Peter, et al., Ambulance Service in Albuquerque, New Mexico (an unpublished class study report, completed in 1972), p. 23.

[2]The Albuquerque Journal: "Smith Rejects City Blame for Ambulance Delay," Section A, November 7, 1973. Mr. Smith also referred to a 1953 State Law that prevents any municipality from having a public ambulance service if a private ambulance company exists within the municipality. There is a strong move to have this law repealed.

[3]The Rescue Task Force, A Report to the City Manager concerning The Two-Tier Emergency Medical Service System (Submitted to City Manager on January 14, 1974), p.4.

[4]"E.M.S. and Federal Funding Activity," Journal of American Health Association, Vol. XLVII (May 16, 1973) pp. 62-66.

[5]Ibid.

[6]This is based on 1974 census of Albuquerque Metropolitan population of 315,774. A per capita tax of $1.50 would produce a minimum of $473,661.00 of yearly revenue. The per capita rate could be decreased as collection rate of service charge increases.

[7]The Rescue Task Force, op, cit., p. 8.

[8]Walters, Cpt. John M. Jr., "Comprehensive Ambulance Services for a City," A report of the Director of E.M.S. for Jacksonville, Florida, 1971.

[9]Ibid.

[10]"The Economics of Highway Emergency Ambulance Services" The Dunlap and Associates Report, Darion, Conn. (July 1968), p. 135.

CHAPTER VI

ALTERNATIVES AND CONCLUSION

'Emergency Care' is generally defined as the on the scene primary medical care which takes place outside the hospital, doctors' office or clinic. In the past, interest in this aspect of health care has generally been relegated to funeral parlors, volunteer personnel, ambulance and rescue personnel, and lately to paramedics. Only recently has there been any general organized medical interest in the area of emergency medical services. This has been principally under the aegis of the American College of Surgeons, the National Research Council, the American Society of Anesthesiologists' Committee on Acute Medicine and the American College of Cardiology. Suddenly, this part barren area of emergency health care has become a focus for increasing national and local attention due to the public's intensive criticism that they are tired of receiving sub-par emergency medical services. The public is demanding that the medical profession deliver better care in line with optimum human treatment and physical survival!

A good emergency medical services program must consist of subsystems which have the following capabilities: (1) good communications and telemetry networks, (2) expert treatment at the scene of an accident, (3) safe and expedi-

tious transportation of the injured for definitive care at a local in-house medical facility, and (4) optimum coordination and cooperation between all of these subsystems.

Few cities in the nation have an integrated system in which all of these factors are combined in an effort to deliver optimum emergency medical care to the public. In the past, this cooperation and coordination with the City of Albuquerque has been an exception rather than a rule. Recently, however, in an effort to respond to public outcries for better emergency medical services, the county and city commissions have approved a Two-Tier System toward better delivery of emergency medical services (See Appendix D for the full digest of this report).

The Two-Tier System, as outlined by Chief Ray Kuhn of the city Fire Department, is based on the following assumptions:[1]

A. There is a need to increase the effectiveness of emergency medical care in the community.

B. The present field emergency medical treatment and transportation portion of the system are not totally adequate.

C. The local governing bodies, by past actions, have shown their concern and interest in the problem.

D. Providing adequate on-scene care to victims of accidents or illness requires special skills and sophisticated equipment including extrication tools.

E. Emergency care for even one patient can require the efforts of more than one technician, and where multiple patients are encountered, certainly, there is a need for more than two technicians.

Under the Two-Tier System, city and county rescue units would respond to all rescue calls and provide the necessary on-site medical care. The private ambulance companies would have the main responsibility for transporting the stabilized injured patient to a nearby hospital for definitive care. The benefits of this system, as outlined in the report, are:[2]

1. An approximate response time of under five minutes to all calls requiring immediate emergency care.

2. More and better quality care and less duplication in the dispatching of units and the cancellation of calls.

3. A centralized communication system for all incoming emergency calls through the city Fire Department.

4. The assurance of available rescue units for all emergency calls, both for the city and county.

5. The upgrading of training for all personnel manning the rescue units, with the ultimate goal of having total paramedical training for all rescue personnel.

In summary, the Two-Tier System would provide the citizens of Albuquerque with an immediate response of vehicles, equipment and qualified personnel to render immediate aid to anyone in an emergency situation.

Since it's been newly established, it would be hard to effectively evaluate Albuquerque's new system; however, a look at a similar system that has been called one of the finest in the area of emergency medical care may help in guiding the city to follow suit.

The City of Miami, Florida has been operating a two-tier system for the past six years, primarily through the city fire department, a Class I, 750 man, 16 station organization; more specifically, by the 40-man Rescue Division of the Fire Department. Rescue personnel respond to all human emergencies, whether street, factory, home or office, regardless of the injury or illness.[3]

All logistical back-up is provided by combat fire vehicles so that the station nearest the emergency dispatches a vehicle which contains all of the standard resuscitation equipment and first aid modalities. A rescue squad (six units are located throughout the city) consists of an officer and at least two men. It provides all sophisticated levels of emergency care including constant medical consultation via voice communications with a senior medical advisor. Emergency transportation is provided by the county government in the form of a thirty-vehicle franchised ambulance service. While this ambulance service has the responsibility of transporting all injured patients to a nearby hospital, all medical care and stabilization of the injured is carried out by the fire department rescue personnel who have been trained to the paramedical level.

An emergency call may be initiated by a person notifying the telephone operator of an emergency, or by a police unit reporting an emergency, or by calling for help through the many combined police/fire call boxes situated at strategic locations throughout the city. After the call is received,

the Miami Rescue service is sent into action by the fire department central dispatching facility. The alarm goes by radio from that office to a rescue unit nearest the emergency and is simultaneously sent to all stations by teletype over leased lines. Immediately after the alarm is sounded in the rescue quarters, loudspeakers give the address and description of the emergency, such as 'auto accident,' 'heart attack,' or 'man down.' A Rescue Unit is usually on its way in less than 15 seconds.

Because the rescue units are located strategically throughout the city, the Miami Rescue Units have been repeatedly praised for their fast response times to all emergency calls. In about 80% of the cases, the rescue units are on the scene of the emergency within four minutes or less. In 90% of the cases,the arrival time on the scene of an emergency is within six minutes.[4]

The effectiveness of Miami's Rescue System has been attributed to the rescue squad being able to get to the scene of an emergency extremely fast, and rescue personnel administering to the injured medical aid comparable to that available in many hospitals' emergency rooms. This is due primarily to the rescue personnel training, which is carried out to the paramedical level, and to the public and private support and the organizational medical assistance, without which any medical services program would cease to function.

There were three major problems that had to be resolved in the Miami System before that system could reach its present

level of expertise as a rescue operation. These same problems should be looked at closely by the Albuquerque system in order to avoid the same pitfalls and perhaps to draw experience from someone else's mistakes.

One of the problems faced by the Miami rescue units was that its expert personnel were rotated out of the rescue section. When an individual earned the rank of Captain, he was transferred from rescue operations and given command of a fire house. The obvious result was to drain the rescue section of its most expert personnel, leaving a gap that only time, repeated training and experience could refill. This problem was solved by creating career positions within rescue squads, ranging from private to Chief of Rescue Operations, under the Miami Fire Department.

Another problem centered around the control of dispatching operations. Rescue vehicles were dispatched by both city and county fire departments, resulting in vast duplications and waste of manpower. This was resolved by giving the City of Miami overall control of rescue operations while the county government was responsible for ambulance transport of stabilized injured patients to local hospitals.

A third problem dealt with the training of personnel involved in administering emergency care. The city and county fire departments had separate training academies whose extent and type of training often did not coincide; again, all ambulance companies trained their personnel according to their own needs and not necessarily the public's. The Miami-Date

Junior College agreed to help solve this problem by adding courses to its fire service curriculum, including training as Emergency Medical Technicians for all rescue and ambulance personnel. To reinforce this training program, an ordinance was passed stating that no personnel could be licensed in the area of emergency medical services without first being certified by the Miami-Date Junior College as having undergone the above training.

CONCLUSION

Everyday in the U.S. an enormous number of people involved in highway and other injuries are in dire need of immediate medical care. A large percentage of these require care on an emergency basis even before being transported to a hospital--indeed, in order to survive transport!

Emergency medical care is a dynamic art requiring cooperation from many levels of government, medical organizations and public agencies. The cooperation and coordination among these groups is essential for timely and effective emergency care.

Emergencies are sudden, unexpected, panic-laden situations. Management of them is best entrusted to people who are strategically located, who are always available, and whose sole function is to respond to emergencies when they occur. Most physicians do not meet these job requirements. What is needed is a staff specially trained for a lifetime of rescue service which is bound to be more effective than

depending on physicians, whose experience with emergency medicine is often limited. Emergency medical care delivery is fundamentally a team job requiring more than the practiced eye or hand of the physician. It calls frequently for the vigor of youth and usually far more equipment than could be handled by the best-intentioned doctor on the scene. Realistically considered, the cost of such emergency medical services is small and the potential benefit great as compared with the individual and community losses occurring due to unnecessary mortality and excessive morbidity.

In the end, the problem of emergency injury and acute illness should be approached from several levels: the first and foremost is, of course, prevention; the second is in terms of advanced first aid rendered to the injured. A massive long-range educational program, beyond the scope of this paper, is needed for this preventive effort. Emergency medical care is no less a community function than fire-fighting, police protection or safe water supply. Once a community agrees that it should have some kind of system for delivering emergency medical care, it makes little sense not to provide a thorough and adequate system.

At present Albuquerque is on the threshold of developing an emergency medical system which will more than adequately fill the void that has been present in the city's emergency medical care. Let us hope that this beginning will continue to have results so that Albuquerque can become one of the

showplaces in the delivery of emergency medical care services!

CHAPTER VI

FOOTNOTES

[1]The Rescue Task Force, report to the City Manager concerning the Two-Tier Emergency Medical Service System, submitted to the city manager on January 14, 1974 and adopted by the City and County Commissions on February 5, 1974.

[2]Ibid.

[3]The outline of Miami's Two-Tier System was abstracted from Telemetry and Physician/Rescue Personnel Communication, by Eugene L. Nagel, M.D., University of Miami, Miami Florida (U.S. Department of Transportation: Washington D.C., 1971).

[4]Telemetry and Physician/Rescue Personnel, op. cit., p. 39.

APPENDIX A

AMBULANCE ORDINANCE, CITY OF ALBUQUERQUE
ALBUQUERQUE, NEW MEXICO

(ADOPTED AND APPROVED JANUARY, 1970)

APPENDIX A

AMBULANCE ORDINANCE, CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO

(ADOPTED AND APPROVED

JANUARY, 1970)

AN ORDINANCE TO REGULATE THE LICENSING, INSPECTION AND OPERATION OF AMBULANCES, TO PROVIDE STANDARDS FOR THE LICENSING OF AMBULANCES AND OF AMBULANCE DRIVERS, ATTENDANTS, AND ATTENDANT-DRIVERS, TO PROVIDE FOR RENEWAL AND REVOCATION OF LICENSES, TO REQUIRE WRITTEN REPORTS, TO PROVIDE FOR TRAFFIC REGULATIONS OF AMBULANCES, TO ESTABLISH PENALTIES FOR VIOLATION OF ITS PROVISIONS, REPEALING COMMISSION ORDINANCE NO. 1511, AND AMENDING COMMISSION ORDINANCE NO. 2082, AND DECLARING AN EMERGENCY.

BE IT ORDAINED BY THE CITY COMMISSION, THAT IS, THE GOVERNING BODY OF ALBUQUERQUE, NEW MEXICO:

SECTION 1. ADMINISTRATIVE & GENERAL PROVISIONS

A. Definitions. The following definitions shall apply to the interpretation and enforcement of this ordinance:

AMBULANCE means any privately-or publicly-owned motor vehicle that is specially designed or constructed, and equipped, and is intended to be used for and is maintained or operated for the carrying or transporting of any sick or injured person, except any such motor vehicle owned by, or operated under the direct control of, the United States.

ATTENDANT means a trained and/or qualified individual

responsible for the operation of an ambulance and the care of the patients whether or not the attendant also serves as a driver.

ATTENDANT-DRIVER means a person who is qualified as an attendant and a driver.

DRIVER means an individual who drives an ambulance.

PATIENT means an individual who is sick, injured, wounded or otherwise incapacitated or helpless.

PERSON means any individual, firm, partnership, association, corporation, company, society, and every officer, agent or employee thereof. This term shall mean either the singular or the plural, as the case may be.

CITY MANAGER shall mean the City Manager of the City of Albuquerque or his designated representative.

SECTION 2. PERMITS AND PERMIT REVOCATION. It shall be unlawful for any person to be an ambulance operator, driver, or attendant in the City of Albuquerque who does not possess a valid permit issued by the City Manager or his designated agent. Only such persons who comply with the requirements of this ordinance shall be entitled to receive and retain such a permit. Such permit may be temporarily suspended by the City Manager or his designated agent, upon violation of any of the terms of this ordinance or revoked after an opportunity for a hearing by the City Manager or his designated agent. Such revocation may be appealed to the City Commission.

A. No person, either as owner, agent or otherwise, shall

furnish, operate, conduct, maintain, advertise, or otherwise be engaged in or profess to be engaged in the business or service of the transportation of patients upon the streets, alleys or any public way or place of Albuquerque, New Mexico, unless he holds a currently valid permit for an ambulance, issued pursuant to this ordinance. An ambulance operated by an agency of the United States shall not be required to be licensed hereunder.

B. Provided, however, that no such permit shall be required for an ambulance, or for the driver, attendant or attendant-driver of an ambulance, which?

1. Is rendering assistance to licensed ambulances in the case of a major catastrophe or emergency with which the licensed ambulances of Albuquerque, New Mexico, are insufficient or unable to cope, or

2. Is operated from a location or headquarters outside of Albuquerque, New Mexico, in order to transport patients who are picked up beyond the limits of Albuquerque, New Mexico, to locations within Albuquerque, New Mexico, but no such outside ambulance shall be used to pick up patients within Albuquerque, New Mexico, for transportation to locations within Albuquerque, New Mexico, unless the driver, attendant and attendant-driver and the person subject to the provision of Section 2A of this ordinance in respect of such ambulance, hold currently valid permits issued pursuant to this ordinance.

SECTION 3. APPLICATION FOR AMBULANCE PERMIT. Applications

for ambulance permits hereunder shall be made upon such forms as may be prepared or prescribed by the City Manager or his designated agent and shall contain:

A. The name and address of the applicant, or if a firm, partnership, association, corporation, company or organization of any kind, the names and addresses of all persons owning a financial interest therein.

B. The trade or other fictitious name, if any, under which the applicant does business and proposes to do business.

C. The training and experience of the applicant in the transportation and care of patient

D. A description of each ambulance, including the make, model, year of manufacture, motor and chassis number, current state license number, the length of time the ambulance has been in use, and the color scheme, insignia, name, monogram or other distinguishing characteristics to be used to designate the applicant's ambulance.

E. The location and descriptions of the place or places from which it is intended to operate.

F. Such other information as the City Manager shall deem reasonably necessary to a fair determination of compliance with this ordinance.

G. A statement acknowledging the receipt of a copy of, and intended compliance with, this ordinance.

H. Applications hereunder shall be accompanied by a license fee of $25.00 for each ambulance owned, operated or

leased by the licensee. In the event said license is denied, the license fee is to be refunded to the applicant.

I. Renewal of the ambulance permit hereunder, upon expiration for any reason or after revocation, shall require conformance with all the requirements of this ordinance as upon original licensing.

SECTION 4. STANDARDS FOR AMBULANCE PERMIT.

A. Each ambulance shall, at all times when in use as such?

1. Be suitable for the transportation of patients from the standpoint of health, sanitation and safety and be maintained in suitable premises;

2. Contain equipment conforming with the standards, requirements, and regulations provided for herein, which equipment shall be in proper and good condition for such use;

3. Currently comply with all applicable laws and local ordinances relating to health, sanitation and safety;

4. Be equipped with such lights, sirens and special markings to designate it as an ambulance as may be prescribed in reasonable regulations promulgated by the City Manager;

5. Ambulance design shall at all times comply with the National Academy of Science, National Research Council requirements. Ambulance equipment shall at all times comply with the minimal requirements as established by the American College of Surgeons Committee on Trauma. Such requirements

will be available at the office of the City Manager. It is realized that hardship would result to conform to the design standard immediately. Accordingly, as present ambulances are replaced, they will be replaced with ambulances meeting these standards and shall do so no later than January 1, 1973.

B. Any change of ownership of a licensed ambulance shall terminate the license and shall require a new application and a new license and conformance with all the requirements of this ordinance as upon original licensing.

C. Application for transfer of any ambulance license to another or substitute vehicle shall require conformance with all the requirements of this ordinance. No ambulance license may be sold, assigned, mortgaged or otherwise transferred without the approval of the City Manager and a finding of conformance with all the requirements of this ordinance as upon original licensing.

D. Each ambulance, its equipment and the premises designated in the application and all records relating to its maintenance and operation as such, shall be open to inspection by the City Manager during usual hours of operation.

E. No official entry made upon a permit may be defaced, removed or obliterated.

SECTION 5. STANDARDS FOR AMBULANCE PERMIT--LIABILITY INSURANCE.

A. No ambulance permit shall be issued under this ordinance, nor shall such permit be valid after issuance, nor shall any

ambulance be operated in Albuquerque, New Mexico, unless there is at all times in force and effect insurance coverage, issued by an insurance company licensed to do business in the State of New Mexico, for each and very ambulance owned and/or operated by or for the applicant or permittee providing for the payment of damages;

1. For injury to or death of individuals in accidents resulting from any cause for which the owner of said vehicle would be liable on account of liability imposed on him by law, regardless of whether the ambulance was being driver by the owner or his agent, and

2. For the loss of or damage to the property of another, including personal property, under like circumstances, in such sums and under such terms as may be required in regulations promulgated by the City Manager.

B. Said insurance policies shall be submitted to the City Manager for approval prior to the issuance of each ambulance permit. Satisfactory evidence that such insurance is at all times in force and effect shall be furnished to the City Manager, in such form as he may specify, by all permittees required to provide such insurance under the provisions of this ordinance.

C. Every insurance policy required hereunder shall contain a provision for a continuing liability thereunder to the full amount thereof, notwithstanding any recovery thereon, that the liability of the insurer shall not be affected by the insolvency or the bankruptcy of the assured,

and that until the policy is revoked the insurance company will not be relieved from liability on account of non-payment of premium, failure to renew permit at the end of the year, or any act or omission of the named assured. Such policy of insurance shall be further conditioned for the payment of any judgments up to the limits of said policy, recovered against any person other than the owner, his agent or employee, who may operate the same with the consent or acquiescence of the owner.

D. Every insurance policy required hereunder shall extend for the period to be covered by the permit applied for and the insurer shall be obliged to give not less than 30 days' written notice to the City Manager and to the assured before any cancellation or termination thereof earlier than its expiration date and the cancellation or other termination of any such policy shall automatically revoke and terminate the permits issued for the ambulances covered by such policy, unless another insurance policy complying with the provisions of this section shall be provided and be in effect at the time of such cancellation or termination.

SECTION 6. DUTIES OF CITY MANAGER AND INSPECTIONS.

A. The City Manager shall, within 10 days after receipt of an application for an ambulance permit as provided for herein, cause such investigation as he deems necessary to be made of the applicant and of his proposed operations.

B. The City Manager shall issue a permit hereunder for

a specified ambulance, to be valid for a period of two years unless earlier suspended, revoked or terminated, when he finds:

1. That a statement of public convenience and necessity has been issued for the proposed ambulance service.

2. That each such ambulance, its required equipment and the premises designated in the application, have been certified by the City Manager as provided for herein.

3. That the applicant is responsible and proper person to conduct or work in the proposed business.

4. That only duly licensed drivers, attendants and attendant-drivers are employed in such capacities.

5. That all the requirements of this ordinance and all other applicable laws and ordinances have been met.

C. Prior to the issuance of any ambulance permit hereunder, the City Manager shall cause to be inspected the vehicles, equipment and premises designated in each application hereunder, and shall certify his approval in a written report when he finds compliance with the standards prescribed in Section 4A and in Section 7 of this ordinance, and with the regulations promulgated under such sections; provided, however, that under the terms of this ordinance the City Manager shall have no responsibility, and shall exercise no authority, in connection with laws and ordinances of general applicability which deal with motor vehicle inspection.

D. Subsequent to issuance of an ambulance permit here-

under, the City Manager shall cause to be inspected each such licensed vehicle, and its equipment and premises, whenever he deems such inspection to be necessary but in any event no less frequently than twice each year, and shall promptly report his findings in a written report. The periodic inspection required hereunder shall be in addition to any other safety or motor vehicle inspection required to be made for ambulances or other motor vehicles, or other inspections required to be made, under general law or ordinances, and shall not excuse compliance with any requirement of law or ordinance to display any official certificate or motor vehicle inspection and approval nor excuse compliance with the requirements of any other applicable general law or ordinance.

E. A copy of each initial, semi-annual or other ambulance, equipment and premises inspection report submitted by the City Manager under the provisions of this section shall be promptly transmitted to the applicant or permittee to whom it refers.

SECTION 7. ISSUANCE OF AMBULANCE DRIVERS AND ATTENDANTS PERMITS.

A. Any individual desiring to obtain an ambulance drivers' or attendants' permit shall file with the City Manager an application accompanied by a sworn statement setting out the following:

1. Name and address of the person desiring the permit.

2. A statement acknowledging receipt of a copy of, and intended compliance with, this ordinance.

3. Certification from the Police Department of the City of Albuquerque, New Mexico, to show that he has been photographed and fingerprinted.

4. A statement that he has not been convicted of a felony or a crime involving moral turpitude, and if an ambulance driver, a statement that he does not have a record of arrests involving three or more moving traffic convictions within one (1) year of the date of the application. If more than one (1) year has elapsed since such convictions and the City Manager believes the applicant to now be a fit person for such occupations and so determines the applicant to be qualified, he may grant a license.

B. The City Manager shall, within a reasonable time after receipt of an application as provided for herein, cause such investigation as he deems necessary to be made of the applicant for a driver's, attendant's, or attendant-driver's license.

C. The City Manager shall issue a license to a driver, attendant or attendant-driver hereunder, valid for a period of one (1) year, unless earlier suspended, revoked or terminated, when he finds that the applicant driver or attendant-driver shall hold a current New Mexico chauffeur's license and is free of physical defects or diseases which might impair his ability to drive or attend an ambulance.

D. A license as a driver, attendant or attendant-driver issued hereunder shall not be assignable or transferable.

E. No official entry made upon a license may be defaced,

removed or obliterated.

F. The licenses issued under Section 7 above shall expire either one year after issue or concurrently with the expiration of the applicant's New Mexico chauffeur's license.

SECTION 8. REVOCATION OF PERMIT.

A. The City Manager may, and is hereby authorized to, suspend or revoke a permit issued hereunder for failure of a permittee to comply and to maintain compliance with, or for his violation of, any applicable provisions, standards or requirements of this ordinance, or of regulations promulgated hereunder, or of any other applicable laws or ordinances or regulations promulgated thereunder, but only after warning and such reasonable time for compliance as may be set by the City Manager. Within 10 days after a suspension, the permittee shall be afforded a hearing, after reasonable notice. The City Manager shall, within 5 days after conclusion of such hearing, issue a written decision (which shall include written findings) as to the suspension of said permit. Such written decision shall be promptly transmitted to the permittee to whom it refers.

B. The initial, semi-annual or other ambulance, equipment and premise inspection reports of the City Manager herein provided for shall be prima facia evidence of compliance or non-compliance with, or violation of, the provisions, standards and requirements provided herein, and of the regulations promulgated hereunder, for the licensing of ambulances.

C. Upon suspension, revocation or termination of an ambulance permit hereunder, such ambulance shall cease operations as such and no person shall permit such ambulance to continue operations as such.

Upon suspension, revocation or termination of a drivers', attendants' or attendant-drivers' license hereunder, such driver, attendant or attendant-driver shall cease to drive or attend an ambulance and no person shall employ or permit such individual to drive or attend an ambulance.

SECTION 9. PERSONNEL

A. All ambulances must be manned by a crew of at least two persons to consist of a driver and an attendant, or an attendant-driver and an attendant, or two attendant-drivers, at least one of whom must have trained for a period of thirty-six hours and hold current Red Cross First Aid Certificates and Advance First Aid Certificates; together with compliance of Section 7 of this ordinance. New personnel will be allowed thirty (30) days following the date of employment to initiate training or, if no training is available within 30 days, the City Manager will use his descretion regarding the extension of the 30-day period. Information as to such training shall be available at the office of the City Manager or his designated representative.

B. A refresher course and examination shall be required of all personnel each twelve (12) months. Said refresher course shall consist of a minimum of six (6) hours approved training

and will be offered at least two (2) times during each calendar year at a place and by officials designated by the City Manager or his designated agent. It shall be the responsibility of the ambulance owner or his agent to insure that employees attend one of these sessions in order that the employees shal meet the requirements of said refresher course.

SECTION 10. REPORTS.

Within 24 hours after transporting any patient within Albuquerque, New Mexico, or from one place within Albuquerque to another place within or beyond its limits, the permittee of an ambulance hereunder shall file a written report with the City Manager of Albuquerque, New Mexico, upon such form as he may provide or prescribe, giving all information therein required and any other relevant information which such City Manager may require.

SECTION 11. OBEDIENCE TO TRAFFIC LAWS, ORDINANCES AND REGULATIONS.

A. The driver of an ambulance, when responding to an emergency call while transporting a patient, shall be subject to the emergency vehicle laws of the State of New Mexico, County of Bernalillo and City of Albuquerque.

B. The foregoing provision shall not relieve the driver of an ambulance from the duty to drive with due regard for the safety of all persons, nor shall such provisions protect the driver from the consequences of his reckless disregard

SECTION 12. DISEASE CONTROL.

A. Diseased Persons Prohibited from Employment. No person who is affected with any disease in communicable form or who is a carrier of such disease shall work as an ambulance driver or attendant and no ambulance operator shall employ any person as an ambulance driver or attendant who is reasonably believed to have, or to be a carrier of, a communicable disease. Every ambulance operator shall notify the City Manager whenever he has reason to believe that any ambulance driver or attendant has a disease in a communicable form or has become a carrier of a communicable disease.

B. Suspension and Medical Examination Authorized. When any reasonable ground for belief exists as to the possibility of transmission of infection from any ambulance driver or attendant, the City Manager may require any or all of the following?

1. Immediate suspension of the ambulance driver's or attendant's permit;

2. Adequate medical examination of the ambulance driver or attendant with such laboratory examinations as may be indicated.

SECTION 13. VIOLATION A MISDEMEANOR.

Violation by any person of any of the provisions of this ordinance is hereby declared to be a misdemeanor and upon conviction thereof, such person shall be fined not to exceed Three Hundred Dollars ($300.00) or imprisoned for a period of time not to exceed ninety (90) days, or both.

SECTION 14. SAVING CLAUSE.

If any of the sections, subsections, sentences, clauses or phrases of this ordinance are for any reason held to be unconstitutional or invalid, the validity of the remaining portions of this ordinance shall not be affected thereby, since it is the express intent of the City Commission to pass each section, phrase, paragraph and word separately.

SECTION 15. REPEALER.

City Commission Ordinance No. 1511 is hereby repealed.

APPENDIX B

STANDARDS FOR AMBULANCE EQUIPMENT DESIGN CRITERIA

U.S. DEPARTMENT OF TRANSPORTATION, WASHINGTON, D. C.
(JANUARY, 1973)

APPENDIX B

STANDARDS FOR AMBULANCE EQUIPMENT DESIGN CRITERIA

U.S. DEPARTMENT OF TRANSPORTATION, WASHINGTON, D.C.

(JANUARY 1973)

I. Rescue Equipment

A. Equipment for Safeguarding Personnel

Weatherproof compartment space accessible from outside the patient compartment shall be provided for equipment for safeguarding of patients and technicians, controlling traffic and bystanders, and isolating and illuminating work areas. These items are:

1. 12 flares
2. two flashlights
3. one fire extinguisher
4. two self-contained air masks
5. two portable floor lights
6. two units (one pair) portable radio
7. two pairs gauntlets, foam insulated, vinyl coated, fluorescent orange.

B. Equipment for Release from Entrapment or Confinement

Weatherproof compartment space shall be provided outside the patient compartment for equipment for release from entrapment or confinement. These items are:

1. one wrench
2. two screwdrivers
3. one hacksaw
4. one pliers
5. one hammer
6. one fire axe
7. one wrecking bar
8. one combination tool
9. one bolt cutter
10. one crowbar

11. one portable power jack and spreader tool
12. one shovel
13. one double-action tin snip
14. two ropes

C. Power Winch - Optional

II. Resuscitation Equipment

A. Oxygen - Installed
B. Oxygen - Portable
C. Oxygen masks in sizes for adults, children and infants
D. Suction - Piped
E. Suction - Portable

III. Basic Supplies

One pillow, two pillow cases, two spare sheets, four towels, six dosposal emesis bags, two boxes disposable tissues, one stainless bed pan, one thermomenter, disposable drinking cups, two sandbags, four blankets, one aeroid blood pressure manometer and cuff, one stethoscope.

IV. External Cardiac Compression

Short backboard stored with a rolled sheet for insertion under the patient's shoulders, a head stabilizer device and two straps for ready use in performing cardiopulmonary resuscitation.

V. Immobilization of Fractures

One hinged, half-ring, lower extremity traction splint, ring size of 9" and overall length 43", padded ankle-hitch or skin traction device; padded board splints for upper and lower extremitie; 24 triangular bandages; inflatable splints, two each, arm and leg size; and one short and one long backboard with three straps.

VI. Wound Dressing Supplies

Twenty-four sterile gauze pads; 24 universal dressings; one roll aluminum foil; 12 soft-roller, self-adhering bandages; two rolls adhesive tape, plain; one plastic bag of large safety pins; and two sterile burn sheets.

VII. Special Equipment For Use by Physician or Others Trained in its Use

A. one tracheal intubation kit
B. one pleural decompression set
C. one drug injection kit
D. one tracheostomy or cricothyrotome set
E. one portable cardioscope with external defibrillator
F. one venous cutdown kit
G. one mechanical external cardiac compression unit
H. one minor surgical kit
I. sterile urinary catheters

VIII. Emergency Medical Equipment

Each ambulance shall be provided with one wheeled litter, one folding or adjustable litter, and a litter designed to carry a patient over stairways or other narrow areas.

IX. Intravenous Agent Supplies

Four one-liter units, sterile, intravenous agents, preferably in plastic bags, and sterile disposable intravenous administration sets and injection kits.

X. Emergency Childbirth

Kit containing sterile gloves, scissors, umbilical clamps, or umbilical tape, sterile dressings and towels.

XI. Portable Incubator

While a portable incubator is to be dispatched as required, space need not be allocated since this item would be secured to a litter near resuscitation equipment.

XII. Poisoning Treatment Supplies

Syrup of Ipecac, four ounces, one liter drinking water, and activated charcoal, one packet. Snakebite kits should be carried in the ambulance in areas where this need exists.

XIII. Artificial Ventilation Supplies

Two bag masks; hand operated type units with masks in

infant, child and adult sizes; mouth airways, one each in child and adult sizes; oropharyngeal airways, six each in infant, child and adult sizes; two mouth gags, commercial type or two or more tongue blades taped together, padded; one 6" bandage shears; and various sizes of 15 mm male type tacheostomy adapters.

XIV. Communications

Communications shall include two-way radio, intercom, public address, and optional telemetry equipment.

A. Two-Way Radio

1. Mobiles
Two-way radio mobile equipment shall be included which will provide a reliable system operating range of at least a 20-mile radius from the base station antenna. An RF power output of 25-50 watts will usually be required. The mobile installation shall provide microphones for transmitting at both the driver's position and in the patient's compartment. Selectable speaker outputs, singly and in combination, shall be provided at the driver's position, in the patient's compartment, and through the PA system.

2. Portable
Two-way radio portable equipment shall be included. The set shall comprise two units which are capable of providing reliable communication between each other and/or the mobile mounted unit over a range of at least 1,250 feet. The units shall be designed to be conveniently carried by the technicians and to have weatherproof, high impact housings.

B. Intercom

An intercommunication facility shall be provided betwen the driver's position and the patient's compartment. The speaker/microphone unit in the patient's compartment shall stand by in the "talk" mode. Any necessary talk/listen switching shall be done by the driver. The intercom amplifier shall be independent of the mobile radio equipment.

C. Siren-Public Address

Siren and public address systems shall be provided. If a combined electronic siren and public address

system is provided, in siren operation, the power output shall be 100 watts. In voice operation the power shall be 45 watts through exterior mounted speakers, at least one facing forward and one facing rearward.

The public address amplifier shall be independent of the mobile radio unit.

D. Telemetry Equipment

Space should be provided for installing optional physiological telemetry equipment. The estimated approximate space requirements for this equipment are 1.87 cubic feet, weight 50 pounds.

APPENDIX C

FINAL REPORT TO THE EMERGENCY MEDICAL SERVICE ADVISORY COMMITTEE, SUBMITTED TO THE CITY COMMISSION, CITY OF ALBUQUERQUE, NEW MEXICO, ON DECEMBER 23, 1973

PHONE 243-4756

FRANK G. HESSE, M.D., F.A.C.S., P.A.
SUITE 15 MEDICAL ARTS SQUARE
801 ENCINO PL., N.E.
ALBUQUERQUE, NEW MEXICO 87102

GENERAL AND PERIPHERAL
VASCULAR SURGERY

December 26, 1973

Mr. Ray Baca
Chairman
Albuquerque City Commission
400 Marquette NW
Albuquerque, NM 87102

Dear Mr. Baca:

The Emergency Medical Service Advisory Council hereby submits its final report and recommendation as requested by the city and county commission.

We sincerely hope action will be taken to implement these recommendations in order to improve our emergency medical system. Cities such as Seattle, Jacksonville and others have been able to decrease fatalities from accidents, heart attacks, etc., by over 20%. We feel Albuquerque can do the same with the cooperation of the commissioners.

In our opinion, the job of an emergency medical service council has just begun, especially since the passage of the Emergency Medical Services Act of 1973, which requires planning in such a council to obtain the federal funding that has become available.

We appreciate having had the opportunity to plan for a system that may save the life of many of our citizens, and we solicit your help in making these recommendations a reality.

Sincerely,

Frank G. Hesse, M.D.
Chairman, EMSAC

FGH:llh

REPORT OF THE EMERGENCY MEDICAL SERVICE ADVISORY COUNCIL TO THE CITY COMMISSION AND BERNALILLO COUNTY COMMISSION:

Introduction:

While you are reading this, 38 people will die of heart attacks and trauma. Ten of them could be saved. According to statistics published by the National Academy of Sciences, 155,000 Americans die of trauma every year. Frequently described as "the neglected disease of modern society", trauma is the number one killer of Americans under the age of 38 and is listed fourth as the cause of death of Americans of all ages.

It is certain that many thousands of Americans die or are disabled every year for lack of proper care at the scene of an accident or en route to the hospital. No one can measure the numbers with precision but projections from studies that have been made indicate the mortality from accidents alone could be reduced by 20% by proper care at the scene. Dr. Archer Gordon, formerly of Albuquerque and Chairman of the American Heart Association Committee on Cardiopulmonary Resuscitation, believes that if ambulance attendants generally were capable of skilled prophylactic treatment, at least 30% of cardiac deaths could be prevented. The Ambulance Association of America has estimated that 25,000 persons are permanently injured or disabled every year by untrained ambulance attendants and rescue workers. A University of Michigan team headed by Charles Fry, examined the autopsy protocols of 159 patients who died in motor vehicle accidents and found that 18% might have been salvaged and returned to society in much their previous state of health had proper resuscitation been undertaken at the accident scene or en route to the hospital.

"Treatment of trauma in this country is unique in that existing competence is more poorly applied than in the treament of any other disease", says Dr. William T. Fitz, Jr., Professor of Surgery at the University of Pennsylvania. "The gap betwen what could be done and what is being done is wider than for any other disease". Dr. Huntley from the U.S. Public Health Service states that it is a pity that on the basis of our present knowledge that it is probably true that a "dollar spent in this area could bring greater return in the prevention of death and disability than a dollar spent in any other way".

In Jacksonville, Florida; Seattle, Washington and many other cities around the country, rescue teams and ambulance crews have been highly trained and their response times are approximately 3 1/2 minutes. They arrive at the scene, evaluate the patient, and do proper resuscitation, such as

starting intravenous therapy, reviving the cardiac patient, and many complex procedures in direct communication with the physician in the emergency room. In this sophisticated manner of bringing the hospital to the scene, the accident fatality rate in Jacksonville, Florida, has been reduced 30%. Can Albuquerque be careless enough not to duplicate this exercise in reducing the traffic mortality and cardiac death rate of other cities?

In December of 1972, in recognition of these problems, the City and County Commission drafted a resolution concerning the establishment of a joint City/County Emergency Medical Services Advisory Council. The Emergency Medical Services Advisory Council has met eight times since March with an average attendance of more than 20 concerned and interested citizens, and of its nine EMSAC members, had an average attendance of six and one-half members present, and never less than its quorum of five members or their designated representatives. (At EMSAC's second meeting, it was allowed to make its own rules and given the opportunity to select alternate representatives.) EMSAC has looked at the entire Medical Services system, starting from the accident scene to the treatment of the patient in the emergency room and these will be discussed further in detail.

I. Police and Sheriff's Department

Emergency life support begins with the first knowledgeable individual who comes into contact with the victim. These individuals are most frequently police and sheriff officers. In evaluating their capability to respond to victims EMSAC found that a majority of the police and sheriff officers had no current first aid training. They did, however, have first aid kits which were supplied for each vehicle by the Bernalillo County Medical Society Auxiliary. As a result of these findings, the Sheriff and City Police Departments had instructors trained to offer inservice training in the 8 hour Red Cross Multimedia Standard First Aid Course. This training is currently being conducted by both departments.

Recommendations:

1. A change in policy be made to encourage the officers to engage in immediate life support measures at the scene.

2. All personnel be updated yearly in inservice training programs in Emergency Cariopulmonary resuscitation.

3. A specialized course of instruction utilizing the Red Cross Standard First Aid and Personal Safety Course be developed to expand their knowledge of emergency lifesaving measures.

4. Measure be taken to insure the trauma kits in all units are adequately supplied at all times.

II Fire Department Rescue Squad

Albuquerque has the essentials of an excellent rescue squad which presently includes three dispersed units, one located at the main fire station at 8th Street and Silver. It is responsible for the entire north and south valley areas west of the railroad tracks. The second unit is stationed at the Girard fire station and services an area from the railroad tracks to San Pedro. A third unit is located at the fire station on Indian School Road between Louisiana and San Pedro. This station services an area from San Pedro to the mountains. According to a rescue report for the month of October 1973, the rescue squad had an average one way mileage of 3.4 miles and had 226 total responses within one month. The rescue squad was trained approximately five years ago by Dr. Archer Gordon and has kept up its own inservice first aid training. Fifty-two fire personnel have taken EMT/A training by the Regional Medical Program. The American Red Cross 52 hour Advance First Aid Course will become available to all personnel in the spring as part of their inservice training.

Recommendations:

1. The Fire Department rescue squad be expanded to a number of units which would adequately cover the City of Albuquerque and that the County of Bernalillo provide for similar units to cover the county area outside the Albuquerque City limits. The total number of units should be sufficient to provide a response time of five minutes or less to all areas.

2. The rescue squad should respond to all emergency calls in the Bernalillo County area and be linked to hospital-based emergency physicians by direct voice telemetry and radio communications.

3. The rescue squad members should be trained paramedics with in-depth didactic and in-hospital training to allow them to provide advanced life-saving measures on the scene to include administration of intravenous fluids, medications, interpretation of life threatening cardiac arrhythmias by EKG, external cardiac defibrillation, naso-gastric intubation, endotracheal intubation and other sophisticated techniques. This type of training can readily be provided by the UNM School of Medicine, community physicians, and the major Albuquerque hospitals.

4. These units should be manned by fire department officers who are full-time members of the rescue squad and who do not rotate through the combat fire units.

5. Ambulances should be utilized to transfer patients from the scene of the accident or illness to the hospital. These ambulances should be summoned by the rescue squad and be under contract to city and county government. This allows for at least three fire department rescue paramedics, if necessary, to accompany the patient and the ambulance attendants to the receiving hospital.

6. The ambulances should be equipped to receive the patients and the portable equipment utilized by the fire rescue squad so that monitoring and definitive treatment by telemetered physician instruction can be continual in transit.

7. Consideration should be given to stationing one or more of the rescue units at the large emergency rooms in Albuquerque so that continual inservice experience and training could be provided for the paramedics on a rotating basis.

III Communications

The organization of the City-County 911 system and its limitations were discussed. The Albuquerque 911 system is now two years old and presently oovers the entire county. The switchboard at the 911 emergency telephone center has 35 incoming lines with the capability of a "call down" to the Albuquerque Police Department and Sheriff's Department. Some of the major points brought out at the meeting of the subcommittee on communications included the following:

Recommendations:

1. There is need for additional 911 operators. The possibility of fire and ambulance dispatch personnel being located at the center and assisting all 911 calls was discussed.

2. There is need for formal procedures for 911 operators in handling ambulance and fire procedures, and for training in handling of emergency calls.

3. The committee felt that attention should be given to relocating the emergency center since the present available space is quite limited and as the population increases, there will be a need for additional equipment.

4. A central city-county emergency command center was discussed as emergencies do not recognize artificial political boundaries. This would include around-the-clock representation from each of the emergency agencies with central dispatch being a prime function of the center. Communications between each ambulance and each hospital are needed, including provision for consultation with physicians

regarding appropriate treatment at the scene of the accident.

5. Radio communications between each of the emergency rooms is also necessary so that patients are routed to an emergency room which has the time and best capability to care for the respective accident or injury victim.

6. Telemetry should be considered as soon as feasible as this is a requisite for the provision of modern quality, pre-hospital emergency care.

7. EMSAC recommended that the 911 number be made available to all ambulance companies meeting the criteria of the city ordinance.

8. The need for informing the public about 911 was discussed, including when and how to use 911, as well as when not to. It was felt that there should be more information about the 911 through the schools. The telephone included an information page on 911 in their July billings. Continued information to the public about 911 should be explored, as well as ways of disseminating this information. Other areas for further exploration are to improve the communications between ambulances and emergency rooms, to institute communications between the rescue units and emergency rooms, and to institute communications between all the various emergency rooms in the city.

IV Ambulance Companies

There are two ambulance services based in Albuquerque. They are Superior Ambulance Company and Albuquerque Ambulance Service. Both came under new management in the early part of 1973. Superior continued, essentially the same, under private management. In May 1973, Albuquerque Ambulance Service (AA) became a non-profit service owned and operated by the Bernalillo County Health Care Corporation. This corporation is a joint program sponsored by Presbyterian Hospital Center and St. Joseph Hospital.

Recommendations:

1. EMSAC stimulated the initial monitoring of ambulance company logs by city and county government. This should be continued on a regular monthly basis in order to assure an accurate data base for patient distribution and response times.

V. Ambulance Vehicles

Commission Ordinance 172-1969 requires that the ambulance design at all times comply with the National Academy of

Science - National Research Council requirements by January 1, 1973. Superior Ambulance has a total of seven vehicles, two of which were purchased after January 1, 1973. Albuquerque Ambulance Service has four new units now with three more to be delivered by January 1974.

Recommendations:

1. That these design criteria be enforced and that no new vehicle be licensed under any circumstances unless it meets the criteria.

VI Ambulance Equipment

The 1969 City Ambulance Ordinance requires that an ambulance inspection be conducted every six months. Prior to September 1973, no complete inspections of either company were undertaken. Following the managerial stabilization of Superior under Ross Trujillo and the efforts of Cooperative Health Services to enter emergency services with Albuquerque Ambulance, an inspection was scheduled for both services in September 1973. The initial ambulance inspection revealed several major discrepancies which were discussed by EMSAC. These findings were included in written reports submitted to the Committee. Due to some misunderstanding and interpretation of the ordinance requirements, a second inspection was recommended.

Recommendation:

1. A physician, knowledgeable in ambulance equipment and techniques should assist the inspection team.

2. The ordinance requirements be strictly adhered to.

VII Ambulance Personnel

Many traditional problems associated with ambulance operations have been evidenced in Albuquerque. Historically, these problems have included high personnel turnover, low salaries and poor employee benefits. As a result of such problems, it has been most difficult to schedule extensive training and updating courses for such ambulance personnel.

Recommendation:

1. To seek ways of alleviating these problems.

2. To professionalize the ambulance services within the Albuquerque area.

VIII Ambulance Training

The City Ambulance Ordinance requires that an attendant or attendant/driver have 36 hours of training and hold a current Red Cross Advanced First Aid Certificate. New personnel will be allowed 30 days following the date of employment to initiate training. A refresher course and examination shall be required of all personnel each 12 months. The refresher course shall consist of a minimum of six hours approved training.

Utilizing these criteria to evaluate the adequacy of Albuquerque's ambulance services, Mr. John Servis of EMSAC requested a report of the training status of all ambulance personnel from the Red Cross. According to current records from the American Red Cross, five Superior employees have received the 52 hour Advanced First Aid and Emergency Care Training, seven had completed the 40 hour Regional Medical Program EMT/A course and held Advanced First Aid Certificates. These seven had not completed a refresher course as required by the City Ordinance. Albuquerque Ambulance had ten employees who were certified in the Red Cross 52 hour Advanced First Aid and Emergency Care Course in July 1973. Other employees from Albuquerque and Superior Ambulance Services have received other training which was not verified in the request from Mr. Servis.

Recommendations:

1. A training committee be established to develop an ongoing course of instruction for ambulance personnel.

2. All ambulance employees be trained to the 80 hour Regional Medical Program EMT/A or 52 hour Red Cross Advanced First Aid and Emergency Care Course as a minimum requirement prior to working as an ambulance attendant, driver or dispatcher.

3. Enforcement of the City Ordinance refresher training courses be initiated.

4. Consideration should be given to ongoing training programs for ambulance personnel be undertaken by some or all of the major hospitals and that ambulance personnel take calls from various emergency rooms to allow ongoing inservice experience.

IX Location of Ambulance Companies

EMSAC has felt that a study should be conducted to analyze the demand for emergency ambulance service within the City and Bernalillo County. The analysis would identify the

number and location of emergency ambulances required to obtain a reasonable response time. It was recommended that the study be undertaken by James A. Fitzsimmons, Ph.D., who has conducted a similar study in Los Angeles, California and Melbourne, Australia.

The cost of such a study was estimated to be $3,170. The Regional Medical Program offered a contribution of $1,000 toward the cost of this study. However, EMSAC voted to review the data base before a study be undertaken by Dr. Fitzsimmons. EMSAC, in the interim period, has investigated various alternatives which included a base station for Superior Ambulance Company in the northeast heights area, and Albuquerque Ambulance Company announced an intent to station an ambulance at Anna Kaseman Hospital. Superior Ambulance Company received permission to lodge a trailer and ambulance at the New Mexico Army National Guard Armory located on Wyoming.

Recommendations:

1. EMSAC feels that it is extremely important that the response time of the initially dispatched rescue units or ambulance be less than five minutes and that this can only be achieved by utilizing all available ambulances and rescue units and locating the emergency vehicles throughout the City and County area rather than centralized headquartering.

2. That a study be undertaken similar to the one recommended above.

X. HOSPITAL EMERGENCY ROOMS

Albuquerque has four emergency rooms, which are in hospitals, which are manned on a 24 hour schedule with licensed physicians and one emergency room staffed by an on call basis. An emergency room committee has been established by EMSAC, consisting of the physicians in charge of each emergency room and some of their paramedical personnel with the view of expanding training for physicians and paramedical personnel that staff these emergency rooms.

Recommendations:

1. EMSAC acknowledges the need for some type of categorization of the emergency departments which will provide appropriate guidelines for distribution of patients and to minimize expensive duplication of services.

2. Such parameters as physical design of emergency departments, staffing levels and quality of care should be carefully evaluated for all emergency rooms and needed refinements undertaken.

XI. FINANCING

Many of the Emergency Medical Services problems in the Albuquerque area relate directly to inadequate financing. Emergency Medical Services is presently subsidized by the City at an annual rate of 14¢ per capita, and by the County at 8¢ per capita. This compares with per capita expenditures in cities with first class Emergency Medical Services such as Jacksonville at $1.02 per capita, Houston at $2.00 per capita and Seattle at $2.25 per capita. Such comparisons clearly indicate the inadequate funding level in the City and County. For the cost of one movie ticket per capita, citizens of Bernalillo County can receive comprehensive Emergency Medical Services.

Recommendations:

1. The City and County must make a funding commitment far greater than the current level in order to provide the quality emergency health services needed by its citizens.

WHY THERE IS A NEED FOR EMSAC

The development of an emergency care system in any community involves a wide range of medical, municipal, voluntary, industrial, and other community services. Several national groups, including the National Academy of Sciences, have recommended formation of regional emergency medical services councils as a major step toward developing plans and coordinating all emergency medical services. In view of recent federal legislation, such a council is not a luxury--it's a requirement if a community or region expects to receive any federal funding for aid in developing an emergency medical services system.

Despite EMSAC's many accomplishments related to vehicles, equipment, training, communications, public education, and others, much remains to be done. As a ongoing concern, an emergency medical services committee must among other things:

Become the data and information center on emergency services within the county

Identify and act on priorities for emergency medical

services in the county.

Act as liaison among all emergency service agencies within the county and between these agencies and other organizations outside the county.

Represent the provider agencies of emergency services in the county.

Encourage and coordinate training programs for ambulance attendants; encourage and develop hospital-based ambulance training programs; and support all training programs for emergency medical technicians.

Promote a regionally coordinated communications system that will make possible centralized and coordinated dispatch of emergency vehicles, hospital-to-emergency-vehicle communications, and hospital-to-hospital communications as well as voice telemetry.

Provide a program of public education regarding emergency medical services so that the public is well informed about what to do in case of an emergency and understands how to enter the emergency care system.

Develop regional coordination for research relating to emergency medical care systems.

Regardless of the committee's objectives, there is a definite need for participation of individuals representative of several disciplines. Consumer, as well as professional and provider input is essential if we are to insure optimal continued care. By providing a logically developed, well-coordinated system for emergency medical care, the citizens of Albuquerque and Bernalillo County can be assured that their community is prepared to handle any type of emergency--from a single automobile or home accident to a true disaster involving large numbers of casualties.

Recommendations:

1. That the City and County sponsor an Emergency Medical Services Council.

ACCOMPLISHMENTS OF EMSAC

A. Emergency Vehicles
   1. EMSAC examined the ambulance design criteria as established by the National Academy of Science,

National Research Council and compared it with the ambulance design of Superior Ambulance Company and Albuquerque Ambulance Service.

2. The ability and appropriateness of the Albuquerque Police Department, Bernalillo County Sheriff's Department, New Mexico State Police, and Rescue Squad to transport individuals in need of emergency medical care was also examined.

B. Emergency Medical Equipment

1. Members of EMSAC identified the emergency medical equipment now being carried by various emergency resources (Fire Department, Police Department, Ambulance Services, etc.)

2. The curriculum of various courses in emergency care was reviewed by members of EMSAC. The training subcommittee identified some of the strengths and weaknesses associated with various courses in emergency first aid.

D. Communications

1. EMSAC initiated a study which described the number and types of calls processed through the 911 Emergency Telephone System. This study was instrumental in identifying some of the problems associated with the present system.

2. Members of the EMSAC evaluated the training levels and turnover statistics of the 911 switchboard operators. Recommendations were made to upgrade the training, wage and salary schedule, and the number of operators.

3. EMSAC created a communications subcommittee. One of their objectives was to suggest ways by which they could inform and educate the public as to how to effectively utilize the 911 system.

E. Ambulance Inspections

1. EMSAC was instrumental in the inspection of both ambulance services in September and November of this year. Individuals designated by EMSAC assisted in the inspection.

2. Based on the results of the inspections, EMSAC has made recommendations to the City and County Commissions to insure a high level of emergency medical care.

F. Response Times

1. EMSAC reviewed the log sheets of Superior Ambulance Company to determine the average response time.

2. EMSAC studied the feasibility of decentralized ambulance to various sections of the City and County in an effort to reduce the response time.

G. City-County Contract

1. The provisions of the City-County contract were reviewed by EMSAC in an effort to identify ways by which both ambulance services could be better utilized by the public.

H. Federal Legislation

1. EMSAC reviewed Public Law 93-154, the "Emergency Medical Services Systems Act of 1973".

2. EMSAC identified and discussed various elements of federal legislation that might aid the community in its efforts to implement a quality emergency medical services system.

I. Community Involvement

1. EMSAC served as a forum to identify needs, deficiencies and resources to develop adequate Emergency Medical Services for the community.

APPENDIX D

THE TWO TIER EMERGENCY MEDICAL SYSTEM

A RESCUE TASK FORCE REPORT, SUBMITTED TO THE CITY MANAGER OF ALBUQUERQUE, NEW MEXICO, JANUARY 14, 1974

City of Albuquerque

724 Silver Ave., S.W.
P.O. Box 258

FIRE DEPARTMENT
RAY KUHN, CHIEF
TEL: 766-7884
Albuquerque, New Mexico 87103

January 14, 1974

TO: Mr. Frank Horan, Acting City Manager

FROM: Rescue Task Force, Ray Kuhn, Chairman

SUBJECT: Two Tier Emergency Medical System

Attached is a report and recommendation from the Rescue Task Force. We have studied the problem, inventoried the facilities, and have concluded the two tier system is the best solution at this time.

Emergency medical care is not an inexpensive service, but one that the public demands. Emergency medical service consists of rendering field treatment, transportation to hospitals, and the treatment rendered by the hospitals.

Field treatment presently is rendered by rescue units, ambulance personnel, police and sheriff's personnel. Transportation is furnished by private ambulance services. Hospital facilities are dependent on the individual hospital administrators and medical boards.

The only portion of the system under local government control is the field treatment and transportation portion. This is a most critical part of the total emergency care system, and one that local government must give thoughtful consideration.

The attached is the unanimous recommendation of the task force.

CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO

INTER-OFFICE CORRESPONDENCE *December 18, 1973* REF. NO.___

TO: *ALL DEPARTMENTS*

FROM: *HERBERT H. SMITH*

SUBJECT: *RESCUE TASK FORCE*

The City of Albuquerque has been criticized frequently over the last few months because of alleged inadequacies in on-scene emergency treatment and ambulance operations. The City Commission has not indicated any commitment to providing this service city-wide, but I believe it is nevertheless necessary to study further the alternatives and develop a plan for improving such services in the metropolitan area. I'm therefore creating a Rescue Task Force, to be chaired by Fire Chief Ray Kuhn, to study the currently available two-tier service provided by the private and government sectors and to make recommendations including estimated costs of improving the capabilities of the government's emergency rescue operation in the Albuquerque Metropolitan area. Strong consideration should be given to placing the primary responsibility for emergency field treatment to the government sponsored operations.

Members of the Task Force are:

Ray Kuhn, Chairman
John Servise, Ambulance Coordinator
Lt. Henry Taylor, Sheriff's Office
Lt. Alvin Campbell, Police Department
Don Naylor, County Fire Marshall
Pat Kneafsey, Environmental Health Director

The first meeting of the Task Force is scheduled fo: December 18, 1973 at 1:30 p.m.

TWO TIER EMERGENCY MEDICAL SYSTEM

Definition: Initial response to requests for assistance requiring emergency medical services would be made by fire department rescue units. The crews trained and units equipped to perform rescue operations and administer life support systems.

Transportation of the patient to the hospital would be by private ambulance service. Rescue units would not transport, except in extreme emergencies, when a wait for the ambulance would endanger the patinet's life or when an ambulance is not available.

INVENTORY OF FACILITIES

Emergency medical services for the city and county are presently provided by:

1. Albuquerque Fire Department with three rescue units covering 85 square miles.

2. The eleven county volunteer fire districts presently operate rescue service with volunteer manpower, with the exception of one full time fire truck driver in each station, 8:00 a.m. to 5:00 p.m., Monday through Friday. Manpower training ranges from EMT level to standard first aid.

   Present rescue vehicles include one heavy rescue unit, five light rescue vehicles (van-type), five districts utilize sedans and fire trucks.

   All districts are equipped with resuscitators, splints, dressings, and the one heavy rescue unit is equipped with additional heavy extraction, lights and power tools.

3. Superior Ambulance Company with four manned ambulances. This company receives a subsidy of $3,250 per month from the city and county to answer indigent and emergency calls from city and county agencies.

4. Albuquerque Ambulance Company (a cooperative venture of Presbyterian-St. Joseph's Hospitals) with four manned vehicles with three additional

vehicles expected by February, 1974.

5. Six hospitals manning public emergency room facilities with doctors and nursing personnel available 24 hours per day: BCMC, Bataan, Presbyterian, St. Joseph's, University Heights in the city, and Albuquerque General in the south valley.

6. The Albuquerque Police Department and Bernalillo County Sheriff's Department personnel are trained at varying first aid levels. Albuquerque Police Department vehicles are equipped with trauma kits, the Sheriff's vehicles with first aid kits. The personnel can administer initial emergency measures, until more sophisticated equipment and personnel arrive. At times the police units in an area arrive prior to other units and do minister basic initial treatment.

THE PROBLEM:

Attempts by local government to upgrade emergency medical service in the community in the past have been to increase fire department rescue service, regulate ambulance operations, and provide a subsidy to an ambulance service. In the late 1960's the city and county governments created a study group to write an ambulance ordinance and a contract to provide some subsidy for the operator. This effort was prompted by a short period when the one licensed ambulance company answering emergency calls refused to answer emergency calls because of monetary losses. The other licensed company in the city at that time had refused to answer emergency calls for a considerable length of time prior to the crisis.

The new ordinance set requirements for qualifications of the operator and drivers and attendants. It also set minimum equipment standards, provided for licensing and inspection. The ordinance is administered by the Environmental Health Department.

The contract calls for the subsidized ambulance company to provide emergency ambulance service when called by city or county agencies, the ambulances to be manned by fully trained crews, 24 hours a day, 7 days a week, and be able to answer any call within the city in 15 minutes, and in the county within a reasonable time.

Training: The ambulance ordinance calls for a minimum training for attendants or attendant drivers of 36 hours

American Red Cross Advanced First Aid. Since the ordinance was passed additional training in emergency medical care has become available. This is provided by the Emergency Health Services Division of the Regional Medical Program. Their course for ambulance personnel is 81 hours. The ordinance also requires a refresher course, each 12 months, to be scheduled and conducted by the city or its designee at least twice a year.

The American Red Cross has just started a complete new course called Emergency Medical Care requiring 40 to 60 hours of instruction, replacing the old 36 hour advanced course.

Criticism of the emergency medical services in the community have been directed to one ambulance company and basically relate to the qualifications of the crews. The personnel problem is created by inability to retain qualified personnel because of low wages, long hours and career opportunities. This problem is related to finances and the poor financial position is relative to the inability to collect fees for about 35% of the calls. (This is comparable to the national average). Another contributing factor to the poor financial condition is the number of calls cancelled after response is started about one in five.

DEMAND FOR EMERGENCY MEDICAL SERVICE

Ambulances answer an average of 20 completed emergency responses each 24 hours in the city and county. The Albuquerque Fire Department answers an average of 7 calls each 24 hours in the city. County responses each 24 hours by ambulances average 4. County fire rescue units average 2 rescue calls per 24 hours.

the heaviest concentration of all emergency medical calls fall in the area bounded by I-40 on the north, Gibson on the south I-25 on the east, Rio Grande river on the west. This is due to the high incidence of anti-social activities, such as fights, stabbings, shootings, rape, drug overdose and drunkenness in this area.

Emergency medical assistance relating to heart attacks, breathing difficulties, strokes and epileptic attacks is fairly evenly distributed throughout the area. Calls resulting from auto accidents are focused along east and west Central Avenue, Fourth Street, and the downtown off ramps of the freeway.

TWO TIER EMERGENCY MEDICAL SYSTEM

This plan is based on the following assumptions:

1. There is a need to increase the effectiveness of emergency medical care in the community.

2. The present field emergency medical treatment and transportation portions of the system are not totally adequate.

3. The local governing bodies, by past actions, have shown their concern and interest in the problem.

4. Providing adquate on scene care to victims of accidents or illness requires special skills and sophisticated equipment including extrication tools.

5. Emergency care for even one patient can require the efforts of more than one technician, and where multiple patients are encountered, certainly, there is a need for more than two technicians.

DESIGN AND REQUIREMENTS FOR THE TWO TIER PLAN

1. Communications:

Use the fire department communication section to dispatch all units for emergency medical care. Presently, a citizen can call 911 and ask for an ambulance and, depending on the operator's decision, could have a police unit dispatched to check the need, have the ambulance sent as requested, or have the ambulance and a rescue sent. In the case of an auto accident, separate calls by individuals to different services could result in two ambulances, a rescue unit, a police or sheriff's vehicle, all being dispatched. The Albuquerque Fire Department presently dispatches fire and rescue vehicles in both the city and county. The office has the capability to talk to a party on any incoming 911 trunk. The only additional equipment required would be a ring down channel to the sheriff's office that does not exist at the present time. The ambulance companies would have to notify the fire communication office of any emergency run they received as a direct call in order to avoid duplication. This step should result in fewer unnecessary duplicated responses and cancellations.

2. Increase the number of rescue units to provide an approximate 5 minute response to all calls requiring immediate field emergency medical care.

   A. City--One additional rescue unit to be quartered on the west side of the river included in the 1974 C.I.P. One additional unit to be quartered in the far northeast heights.

Personnel cost per year per unit	$126,410(Fy-25)
Operating cost per year per unit	1,800 +
Capital cost per unit equipped	18,000

Rescue units in the city serve two purposes: Response to requests for emergency medical care and response to structural fires to perform rescue, first aid and fire fighting. Rescue responses total 58% of the use and fire responses 42% of the use. None of the engine or ladder companies in the city are manned to the ISO standards of six men per crew per shift. Response to fires by the rescue units, and the three member crew help overcome the manpower deficiency. If ISO requires response to an area of two engine companies, one manned with 5, with other with 4, totalling a deficiency of 3 on the two units, the rescue crew provides the required manning. Therefore, one way of analyzing the additional unit's cost for increased

emergency medical care would mean a total of 58% of the annual operating cost would be chargeable to rescue service, and the other 42% of cost would reduce fire fighting manpower deficiencies.

B. County--

1. Continue to upgrade and improve rescue vehicles, equipment, and volunteer manpower training in the eleven Bernalillo County Fire Districts. Funds have been allocated from Federal Revenue Sharing.

*2. Provide EMT training for present full time drivers. This training is available through RMP.

*3. Provide additional full time drivers for 24 hour coverage in Fire Districts 1, 3, 7, 9, approximate additional cost to the County per year $50,400. This would also improve fire response time in these Fire Districts.

4. Provide three heavy duty rescue vehicles, equipment and full time rescue manpower for units #1 and #2. Unit #1 to be located in the North Valley Fire District #9. Unit #2 to be located in the South Valley Fire District #2 or #3. Unit #3 to be located in Fire District #6, east side of mountains.

Unit #1 is presently in service.
Unit #2 approximate cost would be $18,000.
OEP would possibly allocate matching funds of $9,000, approximate cost to County $9,000.
Unit #3 will be purchased in the very near future.
OEP funds have been allocated $9,250.

*All full time driver's would be qualified in fire fighting and rescue operations.

County funds have been allocated from Federal Revenue Sharing Funds--Unit #3 will be in service after July 1, 1974, at present full time personnel would not be necessary for Unit #3.

It is recommended that Unit #1 & #2 be manned with full time personnel three per unit, total six. The full time personnel would be supplemented by Fire District drivers and volunteer personnel.

Approximate additional salary cost to County per year $37,800.

Total additional cost to Bernalillo County for equipment providing OEP allocates matching funds, $9,000.
Total additional salary cost to Bernalillo County for full time personnel based on $525 per month: $88,200.

This proposal if accepted and completed would provide a rescue service as follows

a. The eleven volunteer fire districts would provide light rescue service at the EMT level with a five minute response time in the heavily populated areas of the county.

b. The three heavy duty rescue units would provide rescue in their fire district and, when needed, back up and supplement all other districts in their assigned area.

3. Increase the training level of the rescue crews.

A. City: Assign a crew and vehicle to the BCMC hospital for a period of time necessary to bring that crew to the Dunlap 81 hour emergency medical technician level. Change crews and units until the total rescue force reaches that level of training. Start the next block of training using the same rotation type of scheduling, etc. The ultimate goal could be a complete para-medic level for all crews requiring a total of 500 man-hours of instruction per man. This level of training would mean field crews would be able to administer drugs and intravenous solutions while in direct communication with a physician in the hospital. This ability in the case of cardiac patients' death rates could be reduced an estimated 30%, auto accident death rate reduced 20%. All area hospitals have indicated a desire to provide in-house training for rescue personnel. The crews could receive the training while on duty and answer calls as necessary. All hospitals should be utilized in order to prevent polarization between the hospitals. There would be no cost for instruction from E.M.S. or the hospitals.

The only costs in excess of the regular salary cost listed previously would be possible overtime costs to crew members, should instructional scheduling require this.

B. County: Increase training level for full time personnel, as well as volunteers. Full time personnel training should be the same as paragraph #3A. Volunteer training should reach the EMT level with volunteers attending evening classes.

Summary:

The two tier system, as described above, could be implemented in part immediately with the longest delay being delivery of additional equipment. This operation in total will result in fewer cancelled and unnecessary calls for ambulances, and therefore should reduce some of the need for ambulance subsidy.

Retention of personnel, and skill levels of personnel on the rescue units would be greater than is possible in the private sector. Total control of the quality of emergency medical care is possible in this system, and as proven in our community in the past, is not possible if the present methods are continued.

Albuquerque and Bernalillo County are unique in that private concerns have very recently invested a large sum of money to go into the emergency ambulance business. The trend across the nation has been an exodus from this type of service by the private sector. References in the problem section of this report, of necessity, describe one ambulance service. Because the other is so new, only incomplete information is available. There is no reason for us to believe that the new service will be able to operate without the same financial and personnel problems in the future.

STATE AND FEDERAL LEGISLATION AFFECTING EMERGENCY MEDICAL SERVICES

The 1974 session of the state legislature will be considering a bill that will provide for licensing of ambulances and certification of personnel by the New Mexico Health and Social Services Department. If the bill passes and is signed, the city and county could get out of ordinance enforcement and inspection if they desired.

The President recently signed a federal bill that will provide

funds for use in providing emergency medical services. Preliminary information indicates the money must be used for regional programs. The exact definition of a region is not known at this time. It could be C.O.G.'s four county region or it could be like the Pilot Cities Albuquerque-Bernalillo County Region. Funding could be used for equipment and training costs, but not salaries for employees.

The heavy rescue type vehicles in use by the Albuquerque Fire Department qualify for 50% reimbursement of initial cost by the Office of Emergency Preparedness.

LOCAL GOVERNMENT SUBSIDY OF EMERGENCY

MEDICAL SYSTEM

ACTUAL COST FY 1974(7)

CITY

3	Rescue units salaries & expenses	$342,915
58%	of use for Rescue responses	198,891
42%	of use for Fire responses	144,024

Per capita cost based on op. of 280,000

Total fire & rescue responses	$1.22 per cap.
Rescue responses only	.71 per cap.
Ambulance subsidy ($2,750 per mo.)	.12 per cap.

$33,000

COUNTY

34% of all fire dept. responses are for rescue

66% of all fire dept. responses are for fire

Rescue response salaries and expenses $29,265

Per capita cost based on population of 75,000

Rescue cost	$.39 per capita
Ambulance subsidy ($500 per month)	.08 per capita

$6,000

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