INTER-HOSPITAL TRANSPORT

The organization of inter-hospital transport is also one of the SAMU's tasks. Just as the controlling physician chooses the most suitable means of transport, he must designate the medical transport team and contacts the receiving hospital and describes the state of the patient and measures already taken in order to prepare the receiving medical and nursing team and to assure an uninterrupted chain of medical care.

PROMOTION OF RESEARCH

Research is primarily a function of the correct recording of information. At SAMU 94, two cards are filled out. The first one on reception of the call by radio-telephonists and then by the controlling physician. The second card is filled out during the displacement by the transport physician. These two cards form the basis of the patient dossier which will be subsequently fed into a computer.

ASSURANCE OF INSTRUCTION

SAMU also has a role to play in the teaching of emergency medicine at all levels, first aid workers, medical and nursing personnel, already specialized or not.

Disaster medicine is also taught in university programmes. The courses are both theoretical and practical, using exercises that are as realistic as possible.

CONCLUSION

The SAMU, with its involvement in centralization (a single emergency number) and coordination (a controlling physician) is in fact an indispensable tool in first aid medical action and makes the assurance of an unbroken chain of medical care.

Thanks to a small financial sacrifice on the part of everyone, it is available to all and helps reduce inequalities when confronted by emergencies.

BUILDING INTEGRATED EMERGENCY MEDICAL RESPONSE OUT OF DISPARATE COMPONENTS

OVERVIEW

John D Reardon
Health Resources and Services Administration
Rockville, Maryland

The panelists for this session were John D Reardon, Director, Office of Emergency Preparedness, Health Resources and Services Administration, Rockville, MD; Dr. Sheng-Chuan Hu, Director Emergency Services, Taiwan Veterans General Hospital, Shi-Pai, Taipei, Taiwan; Dr. Humberto Novaes, Regional Adviser in Health Care Administration, WHO/PAHO, Washington, DC; and Dr. Hassan J. el Deeb, Under Secretary/Health, Cairo, Egypt.

It was noted that the panelists represented a wide spectrum of interests and their countries were at various stages of development for emergency health care. Mr. Reardon noted that a purpose of the panel was to exchange information, to relate approaches to emergency health care in different countries. He encouraged the Conference participants to pursue these purposes during the Conference.

Dr. Sheng-Chuan Hu reported in Taiwan, there is no national EMS system, but there is a special telephone number used for emergency calls, 119. Persons who are sick or have an accident rushed to the emergency room by: 1) driving by himself or by a family member; 2) call 119 for help, the dispatcher sends an ambulance staffed with 2 firefighters to the scene; 3) call a taxi cab; or 4) call private ambulance company which provides no medical care.

He stated that Taiwan needs a well organized EMS system with knowledgeable and skillful personnel on the ambulance to improve the quality of the prehospital care The initial approach for an EMS system is to improve prehospital care with Emergency Medical Technicians (EMTs) serving on board the ambulances. The reasons for this approach are: 1) easier and less costly; 2) a lower incidence of coronary artery disease and trauma in Taiwan; and 3) there is frequent need for paramedic skills on regular daily runs.

The future framework of EMS in Taiwan will be: 1) firefighters as first responders; 2) EMT personnel will play the most important role in the daily runs of ambulance; and 3) responsible hospitals provide the advanced life-support, if necessary. In conclusion, with different economic, social and epidemiologic situations, in terms of the views of the cost-effectiveness, the best way for the developing countries to approach the EMS is to start out of the basic EMT services rather than the paramedic services.

Dr. Humberto Novas indicated that to achieve the goal of Health for All by the year 2000, significant social and economic changes are needed in most countries. Government and all parts of the public and private sectors must work together to identify the status and needs, to develop and implement strategies based on needs and resources, and set forth policies of definition, priority, resource allocation, and evaluation which build on the local health system. Local health systems should provide control and coordination for an intersectoral approach to improve health care through networking and necessary interrelationship for use of funding and care resources. He reviewed the needs and initiatives that have begun within Latin America and the Caribbean.

He reported on a case study of how the Health Ministry for the Municipality of Cali, Columbia has moved since 1978 to improve emergency health care

through decentralization and improved integration of resources. Primary health centers, health posts, and hospital centers were identified. An administrative structure was established and committees were established and the Municipality established a coordinated ambulance service for the service area, including an organized support structure by the health/medical community.

Dr. Hassan el Deeb provided an overview of the historical development of emergency health care in Egypt from ancient times to the modern emergency medical services provided throughout the country. He discussed the problem of the delivery of services and the economics of an effective system.

He reviewed the sequence of emergency medical care from the initial call for assistance through inhospital care for the serious patient. He discussed the evaluation efforts used in Egypt to measure system needs and performance. Special emphasis was given to a discussion of prehospital training, communications, types of transport and hospital emergency services.

Mr. Reardon stated that about 20 years ago, there was a major national initiative by the US Federal government to improve the delivery of emergency health care. During the period of 1970 to 1981, close to 300 million dollars were spent by the Federal government, together with funds from state and local governments to plan and implement 300 regional EMS regions which integrated the prehospital emergency health care with the emergency and critical care resources of hospital facilities.

Throughout this development process, integration of multiple and diverse interests were joined in such manner as to form a continuum of emergency care from the scene of the emergency to the highest level of medical care required by the patient's emergent condition. The results of these efforts have been positive.

System integration can be defined as the organizing and structuring process by which the constituent units function cooperatively for the purpose(s) of the total system. Such a definition presents the opportunity to improve services and/or conserve resources at the many interfaces or linkages that are present throughout the emergency health care system. These opportunities exist at all stages of planning, development and operations, for the different geographic areas and populations served, and within the socioeconomic structures and capabilities of our respective countries.

In 1981 the EMS program was completed and subsequently combined into another grant program which continues to provide funds to each state. Now the states make the decision as to how much of the available funds will be spent on EMS. Some states have provided more funding than others for EMS.

Twenty years have now passed since that program began. The following changes have taken place:

- All 50 State Health Departments have an EMS office;
- The American Hospital Association reports that 80% of civilian hospitals have an emergency department;
- There are identified tertiary care centers for the treatment of adult and pediatric trauma, burns, spinal cord injury, poisoning and the capability to care for acute medical conditions;
- There are about 17,000 ambulance services in the US and most of these vehicles meet national standards;
- There are about 500,000 volunteer and paid ambulance attendants who have been trained as emergency medical technicians, basic, intermediate and paramedics;
- Eighty-three percent of cities with over 100,000 population now have a single telephone number (911) for calling police, fire and ambulance services.

In summary - we can say that emergency health care is a lot better than it was 20 years ago. An emergency health care system has been established. The resources available for emergency medical services have been increased. The quality of care has been improved. As a result, lives are being saved and suffering reduced.

BUILDING INTEGRATED EMERGENCY MEDICAL RESPONSE IN LOCAL HEALTH SYSTEMS A CASE STUDY - CALI, COLOMBIA

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INTRODUCTION

In September 1986, Resolution XXI of the XXII Pan American Sanitary Conference approved the document "Orientation and programming priorities for PAHO in the quadrennium 1987-1990", in which the programming priorities are defined based on three areas:

- The development of health service infrastructure with emphasis on primary health care;
- Attention to priority health problems found in high-risk human groups with specific programs implemented through the health service system; and

- Administration of knowledge to carry out the first two areas, in accordance with the management strategy for optimum utilization of PAHO/WHO resources.

In an effort to identify an approach that will enable effective progress toward these goals, it appears that the strengthening and developing of local health systems is the most appropriate operational approach for implementation of basic principles in the primary care strategy.

Local health systems can provide the most appropriate setting for achieving community participation, intersectoral action, decentralization, control over decision-making, and the use of more effective methods of planning and management suited to the needs of each population group. The fact that large sectors of the population, in most of the countries of the Americas, still have no real access to health services, and that this deficit in coverage occurs amidst considerable tightening of resources available for the sector, presents a great challenge to the organizational and management capabilities of national health systems. Consequently, it has been pointed out, that in order to reduce the effects of the economic crisis, it is of vital importance that countries make the most rational use possible of their resources for comprehensive health services, and that there also be intensive mobilization of national resources, supplemented by mobilization of external resources, in order to achieve the transformation of health systems to meet the growing needs of this population.

The Member Governments' recent evaluations of the achievements made to date in relation to the goal of Health for All by the Year 2000 have revealed the complexity of the enterprise, as well as the enormous continuing effort that still remains. This makes it necessary to analyze the current situation in greater depth, to reorient national and international resources with more precision, and to translate political discourse into more effective and efficient concrete actions.

In order to attain this goal, significant social and economic changes will be needed, as well as a revision of the orientation, organization, and administration of the national health systems. Each government must give careful consideration to the means and development of activities necessary to achieve those modifications.

A transformation of national health systems in countries of the Region has become necessary due to problems that affect their development, such as: the serious economic, political, and social crisis of this decade; inadequate institutional response to the growth and evolution of problems facing the health sector; and the health debt which has built up and translates into an accumulation of unsatisfied needs of unprotected population groups, as well as a lack of equity, effectiveness, and efficiency in health actions.

As progress has been made in socioeconomic development, there have been changes in the health field, both in the profile of disease that affects populations, and in the organization of health systems to care for them. Most of the countries of Latin America and the Caribbean are, thus, faced with a complex epidemiological picture needing, as a result, complex measures to solve it, including those for emergency medical care.

In response to this situation, and in accordance with the objectives and goals of Health for All by the Year 2000 and the primary care strategy, countries of the Region have initiated a restructuring and expansion of their health systems, in order to better their equity, effectiveness and efficiency.

The countries of Latin America and the Caribbean have approximately 15,000 hospitals with 1 million beds and 65,000 outpatient care units. The health work force is estimated at approximately 2.6 million.

Most of the countries of the Region have a multifaceted health care system in which at least three subsectors can be identified: a) the public or official sector, frequently organized into units with national, provincial or municipal jurisdiction; b) social security, also with different jurisdictions, which makes financial contributions and has its own facilities; and c) the private sector, ranging from the private office of a single professional to hospitals with the most advanced health care technology.

State health services in most countries of the Region do not come close to meeting the needs of their populations, either in terms of quality, quantity, or distribution. The current economic crisis is associated with increased demand, reduced family income, and a smaller percentage of public resources for health and sanitation. For this reason, the sector is faced with enormous challenges in the areas of operations and management.

According to estimates for coverage, of a total of 423 million inhabitants, some 130 million are currently lacking any permanent access to basic health services; if this figure is increased to include the estimated 160 million who will be added to the population from 1986 to the year 2000, the result is a total of 290 million people for whom it will be necessary to assure adequate health care.

The sector financial situation is another cause for concern. Most Latin American and Caribbean countries have not even reached the average world figure (US$100 per capita/year) in government health expenditure. Although social security has made important advances in the definition of policies to achieve the goal of health for all, and to allocate its significant funds for health care, there are persistent structural limitations that hinder adequate utilization of this important financial resource.

The lack of assessment to reach final objectives in the health systems is another factor that limits operations. In order to have a health systems development adapted

to the reality of each country, there must be continuous evaluation of the status of health and not just of the activities.

This capacity to plan and implement strategies and programs based on needs and available resources, as well as the ability to assess the progress of activities and to examine results, especially at the local level, is still very limited in most Latin American and Caribbean countries. Consequently, the entire health field, oriented by a specific national policy, needs to make a comprehensive response to the changing and growing needs of the population.

The concept of local health systems can be built upon different points of view which converge towards the same goal:

From the viewpoint of state development, the local health system answers to the need for decentralization of the state apparatus for greater freedom and efficiency. Therefore, it should be seen as a response to the process of democratic development which orients most of the countries of the Region. Therefore, local health systems can be defined based on the political and administrative divisions of the state, known as municipalities, cantons, etc.

From the angle of community social development, a local health system assumes the existence of a specified population base, whose members have the actual or potential ability to engage in common activities to benefit their own public health. In this context, a local health system should comprise resources from the health sector and other sectors that are integral to social development at the local level.

As has already been pointed out, the health sector must remain alert, organized, and take part in these local development processes. Therefore, when local health systems are defined by the health sector, the object is to achieve greater adaptability and capacity, to respond to the changing and specific requirements of population groups that are affected by common socioeconomic, environmental, and epidemiological problems. Various elements found in the health sector arise which can be observed in two complementary areas: structural reorganization and reorientation of the sector based on decentralization; and, in reorganization of the service network within specified population bases, as in the case of emergency services.

Local health systems should be identified, furthermore, by management responsible for administration of health activities in the population base. This means that it has the capacity to administer directly some resources and to coordinate the entire social infrastructure for health, is located in one geographical area and is large enough to resolve a significant proportion of health problems of individuals, families, social groups, communities, and the environment as well as to facilitate community participation. It is united with the national health system so as to bring vitality and new direction to it.

This reciprocal relationship should be apparent in all aspects of individual and collective health, policy definition, establishment of priorities, allocation and distribution of resources, programming, execution, and evaluation, as well as in individual and group response to health and disease. To the extent that both the population and the area to be served are precisely defined, it will be possible to assess the activities carried out, or which are needed, to respond to local health needs.

To summarize, a local health system should cover a population that is neither so small as to result in inefficient organization nor so large that it hinders adequate control and coordination of resources.

In addition, local health services development should be coordinated with the progress and decentralization in other sectors so that there may be an intersectoral approach at the local level.

Based on the above characteristics, a local health system should reflect the political and administrative structure of a country; be defined within a specified population base; take into account all resources for health and social development available in the area; be a part of the decentralization process at the state level and within the health sector, and respond to the needs of the population and the structure of the health service network; and be organized so as to facilitate comprehensive management of activities.

DEVELOPMENT OF A NEW MODEL OF CARE

As mentioned above, the development of local health systems should not be limited to a simple division of functions as part of a decentralized government pattern, but rather should constitute a fundamental change in technical procedures used to provide services, the use of available technologies, the integration of knowledge, the utilization of resources, and the approach to achieving more broad-based community involvement. These elements can provide the basis to define various methodologies and basic principles to expedite the development of these new models of care.

The development of local health systems should begin with an analysis of the health situation that projects needs, and identifies and qualifies risk factors, to orient priorities and the organization and utilization of available resources.

To facilitate local programming and evaluation of health services, local health systems should be subdivided into minimum geographical units for analysis, considering the structure of health services and the distribution of population groups.

Developing analytical capabilities in local health systems will make it easier to specify required information and to conduct increasingly relevant analyses.

Activities of a local health system must consider the entire population and its priority needs based on participatory programming that includes all available resources and specifies activities to be provided, goals for coverage, and any impact and modifications in these objectives based on continuous strategic evaluation.

All families and population groups must have specific health personnel and resources assigned to their care, either at the institutional or the community level, and these must be organized as a hierarchical network of coordinated services by increasing complexity that can meet the needs of the population, with emergency services 24 hours a day.

This will provide a means of finding the best way to coordinate all resources available from national and local governments, social security, and private sources, in order to achieve a shared strategy of action.

There should be a global approach to activities, emergency or non-emergency, so that they are arranged in accordance with the specific array of problems in a population base and carried out comprehensively by different types of personnel, avoiding classification by isolated pathologies or vertical programs in the process.

A health service should be organized to produce some change in the epidemiological profile of populations considering risks and collective and individual health problems, therefore, there should be continuous assessment of the impact and quality of care.

Local health systems should, within their own territories, delegate authority, and decentralize, as the most appropriate way of distributing responsibilities and fostering technical and administrative management.

The network of services as a whole should take on the responsibility of providing comprehensive care to the entire population. This means that a local health system must find appropriate solutions, either through its own facilities or through development of the necessary interrelationships. All needs should be met; no request for care should be turned down.

CASE STUDY: CALI, COLOMBIA (2)

Brief History of Cali

The city of Cali was founded in the year 1536. Its economy was based on gold mining and commercial activities of the livestock ranches, that supplied the mining center, made up of Popay n, Choc, and Antioquia. During that time, regional development was extremely difficult by the lack of communication channels.

In the 19th century, Cali was already centrally located. To the North, were Roldanillo, Buga, and Cartago; to the South, Popay n; and to the west, Buenaventura. Cali began to be a center for trade; this activity was made possible by the imports and exports from the port of Buenaventura. On 3 July 1810, Cali proclaimed its independence from Spain, becoming the first city in South America to take that step.

Cali has always been a key point between the north and the south, the east and the west, the interior of the country and the ocean. This has resulted in waves of immigration, creating social and cultural mixtures.

The recent history of Cali, as well as of other Colombian cities such as Medellin and Barranquilla, has been marked in the national and regional context by processes accompanying industrial expansion, the transformation of the rural sector, the political violence of the fifties, and migratory movements; such transformations have substantially changed its traditional parochial cities.

Cali's distinct capacity to welcome migrating populations from different regions of the country, and to articulate them organically into its social plan, created today's open and flexible society.

The trend toward slow and gradual expansion was interrupted during the 1940s and 50s. Two phenomena appear to have been responsible: First, there was the establishment of industry of various sizes, in the eastern section of the city. Secondly, there was population growth based largely on migratory movements from neighboring provinces. This continued through the 1970s with entrepreneurs and merchants, who located their investments on one side of the city; and the low-income populations, who settled on the other side of the tracks. These two groups helped to shape modern Cali.

Between 1973 and 1985, the population of the city increased from 990,304 to 1,350,565, which represents an increase of 36.4%. During this Period, the fertility rate dropped from 2.3% to 1.9%; family planning increased from 8.7% to 11.4%, migration slowed, and the average age increased from 23.4 years in 1973 to 26 in 1987. The sex ratio is approximately 102 males to each 100 females at birth. This relationship changes with increasing age because of various causes of mortality as well as migration. The total population ratio is 88 men for every 100 women. (Tables 1, 2, and 3) 98% of the population lives in municipal centers and 2% in rural areas. Life expectancy is 68 years for men and 74 for women.

There are a total of 250,031 occupied dwellings, 83% of which have all public services, with an average of 5.2 persons per dwelling.

Cali health services comprise services provided by the Regional Health Unit-Municipal Health Ministry, whose services cover the population of Cali which lacks private health services, social security, or any other social security agencies. The target population is estimated to be 62.5% of the total population.

Local Health System

The Health Ministry of the Municipality of Cali was made part of the national health plan by proposals

summarized in decree 1499 of 1966 and inspired by national level standards. The Health Ministry was restructured to enforce integration in public health.

In 1967, through agreement 014 of the Municipal Council, Cali was divided into eight health districts for health service delivery; the following year, the Health Ministry adopted the concepts of regionalization, levels of care, and patient referral.

In 1975, a contract for the integration of health services was signed between Cali and the provincial health service of Valle. This contract covered both the administrative and technical delivery of health services in the area of Cali and set up a regional health unit located in the Municipal Ministry, and headed by the Municipal Health Minister, freely appointed by the mayor.

In 1978, a plan was formulated for the development of a health service delivery system in Cali which sought to resolve the most obvious problems, for example: insufficient hospital beds, overburdened outpatient clinics at the University and at San Juan de Dios hospitals, overburdened clinics, and increasing costs for services. The plan included the following objectives:

1. To expand the coverage of existing services;
2. To reduce overcrowding in services at large hospitals;
3. To increase accessibility;
4. To establish a hierarchical health care system; and
5. To provide adequate, timely, continuous, comprehensive, and low-cost medical care.

In 1979 the city was divided into four areas in an attempt to achieve geographical and population homogeneity, as well as self-reliance in services, (in May 1988, a fifth "comprehensive health area" was established). Each area covers approximately 250,000 inhabitants and has a small hospital and several health centers and health posts. Levels of care were defined; at the primary level consisting of health posts, health centers, and the hospital center. The secondary level included general hospitals, and the tertiary-level consisted of the high technology university, and the psychiatric hospital.

The same year, a patient referral system was put into action, and medical and paramedical care in health centers and health posts was standardized. There was also an administrative reorganization of the Health Ministry via decree 1469 of 23 August of 1979, whose objective was to ensure the operation of programs directed by the National Health System.

In January 1981, first steps were taken toward administrative decentralization, and via resolutions 070 and 1381 of 5 December 1980, by the Municipal Health Ministry and the regional health unit respectively, medical directors of the comprehensive health area were delegated the responsibility for administering personnel in their area. During the same year, an assessment was made of the central level management by reviewing objectives and procedures in overall administration, particularly in the divisions of personnel and labor relations, finance, and supplies. As a result of this study administrative procedures were simplified.

Heading the integrated area and serving as its administrative headquarters, was the hospital center on which the health centers and health posts depended. The objective of the comprehensive health area was to carry out programs for individual and group care through participating institutions.

The process of intersectoral coordination in the area is carried out essentially through the intersectoral committee. This committee has a set of guidelines and directions for the short and medium term. The intersectoral committee is made up of representatives from various sectors working in the geographical area, along with community members who use this as a means of participating in the identification of problems and the decision-making.

EMERGENCY MEDICAL CARE SYSTEM

Ambulance Service

In the Municipal Ministry of Public Health the ambulance service dates back to 1985 when it was established according to a decentralized model; in other words, each institution was given an ambulance to be administered and controlled from the hospital center. Each ambulance was provided with a radio-telephone that was part of the municipal government's communications network.

There were many problems with the use of these ambulances before the new system was implemented:

- Lack of opportunity for radio calls;
- Use of ambulances for hospital center matters unrelated to the transport of patients;
- Difficulties with vehicle maintenance leading to their being left in workshops for long periods so that repairs could be made; and
- Refusal to provide service to other hospital centers.

In light of this situation, the Ministry proposed in its 1985 budget that 6 ambulances be purchased and that bases of operation be established for a decentralized "ambulance pool" (AP).

Description of the Program

The Municipality of Cali, for reasons related to prohibitions on ambulance imports, acquired six Chevrolet pick-up trucks, 1986 model, and contracted a local body shop to adapt the vehicles as ambulances.

With the implementation of the comprehensive neonatal care program in 1987 (during the last quarter), the Ministry rebuilt a 1973 Ford ambulance (from those used during the first period) and adapted it for neonatal transport; it is equipped with a mobile incubator in addition to the usual basic ambulance equipment.

The Ministry's ambulance service operates 24 hours a day, 365 days a year. Each ambulance is supplied with the following:

- Removable main stretcher;
- Fixed auxiliary stretcher;
- Rack for intravenous fluids;
- Side storage compartments;
- Emergency first aid kit;
- Portable oxygen tank and plastic mask;
- Sheets and blankets;
- Radio-telephone connected to municipal government;
- Siren; and
- Flashing lights.

The service has three ambulances in service (of a total of 6), working in 12 hour shifts (7am - 7pm), and an ambulance for neonatal transport which is always available. The rotation of ambulances has been set up so as to keep three ambulances in operation at all times, with three in maintenance and reserve.

The service is located at the central level of the Ministry. There are quarters for personnel as well. It takes from 15 - 30 minutes to cover the distance between health centers and one of the hospitals.

The service comes directly under the department of technical coordination and personnel administration and maintenance is handled by the department of general services.

Ambulance service is provided exclusively to the health facilities of the Ministry and the regional health unit of Cali, and it is preferably restricted to the transfer of patients between health institutions at the three levels of care. Under special circumstances (emergencies, disasters, and operations organized by the local committee on emergencies), the ambulances of the Ministry are used as reinforcements for Red Cross ambulances, the metropolitan police department, and the civil defense, which are the first ones called out in such situations.

The neonatal ambulance service is provided to any public or private institution that requests it. It should be noted that this service is the only one available in the city or the province.

Personnel

There are twelve drivers who work in shifts. Each shift includes 4 drivers, three of whom are ambulance drivers while the remaining act as dispatcher and radio operator. The position of dispatcher is a rotating one. It has been established that when the service is being used to capacity, the dispatcher will board an ambulance and continue his work from there.

When needed outside of working hours, one of the drivers may drive the neonatal ambulance.

During working hours the ambulance service is reinforced by an ambulance that handles requests to transport patients from the basic outpatient clinic at the hospital center to their place of residence. The service also has a permanent driver who is in charge of the neonatal ambulance during working hours.

Induction and Training of Personnel

When the program was launched, the Ministry prepared and offered an induction program for the drivers, and every 2 months there is a regular meeting to discuss matters related to the service.

Radio-communications

The program has a radio-telephone for use with alternating current or batteries in case of power outages. This radio-telephone operates at the municipal government's Channel 1 frequency, and as a result is in constant communication with all health institutions. There is also a radio-telephone that operates on the emergency channel of the Cali metropolitan police department.

Location of Radio-telephones

The Ministry has placed radio-telephones in the institutions under its administration, and radio-telephones have been loaned to other health institutions operating in the health service network.

Provision of Ambulance Service

Requests for ambulance service are made by radio-telephone or through the local telephone system.

When the service requested goes beyond the established limits (transport beyond the perimeters of Cali, service to individuals, or special services) the dispatcher communicates with the appropriate staff members who make case-by-case decisions. The hierarchy is as follows:

- Technical Coordinator;
- Chief of Individual Care Section;
- Assistant for Individual Care;
- Assistant for Medical Care;
- Chief of Maternal and Child Care Program.

The standards governing the program's operation are circulated via a letter or memorandum addressed to all users.

For purposes of control of ambulance service provision, a form has been designed to record pertinent data on the caller, the patient, and the ambulance driver.

Data included on the form:

- Data on the caller;
- Service code;
- Requesting institution;
- Institution code;
- Date;
- Time;
- First and last names of the patient;
- Diagnosis (code 1000 causes);
- Institution where patient is sent and code;
- Type of service (institutional or paid);
- Number of receipt for payment;
- First and last names of the requestor;
- Profession (MD, RN, LPN);
- Comments;
- Data on the radio operator or whoever called the central ambulance service;
- Means used;
- Hour of call;
- Whether call was repeated (yes/no);
- Time ambulance arrived;
- Internal number of ambulance;
- Office code (assigned by central control);
- First and last names of who called central control;
- Data on the ambulance driver:
- Time of departure;
- Time of arrival;
- Condition of the patient;
- First and last names of the driver; and
- Comments.

The form is completed with the available data and finally delivered to central control. When the dispatcher has completed his shift he sends the form to Technical Coordination where it is reviewed and then passed on to General Services.

The dispatching of ambulances is controlled by means of a record designed for that purpose containing the following information:

- Data recorded:
- Order number;
- Ambulance number;
- Date;
- Institution where service originated;
- Time of departure;
- Time of return to the service location;
- Mileage at departure;
- Mileage upon return;
- Accompanying person;
- Name of dispatcher; and
- Name of ambulance driver;
- Comments.

At the end of his shift, the dispatcher sends this record to Technical Coordination which reviews it and passes it on to the systems team to be processed by computer. Data on the services provided is gathered based on institution, average time, average number of trips, gasoline consumption, and ambulance use.

- Time of return to the service location;
- Mileage at departure;
- Mileage upon return;
- Accompanying person;
- Name of dispatcher;
- Name of ambulance driver; and
- Comments.

At the end of his shift, the dispatcher sends this record to Technical Coordination which reviews it and passes it on to the systems team to be processed by computer. Data on the services provided is gathered based on institution, average time, average number of trips, gasoline consumption, and ambulance use.

Reference: Pan American Health Organization (PAHO/WHO) Development and Strengthening of Local Health Systems, 1989, Washington, DC Extracts selected by the author.

Note: We would like to thank Dr. Fernando Cruz, Health Minister of Cali, Colombia and Dr. Francisco Yepes of the Javeriana University of Bogota for their help in gathering the information in the Case Study.

TABLE 1

Mortality Ages 15-44, Cali 1977*

RANK	NAME	No.	%	RATE
1	Motor vehicle accidents	154	13.1	30.6
2	Homicides and intentional injuries	136	11.6	27.0
3	Cerebrovascular disease	102	8.7	20.3
4	Injuries of unknown origin	76	6.5	15.1
5	Respiratory tuberculosis	47	4.0	9.4
6	Malignant tumors	36	3.1	7.2
7	Hypertensive disease	33	2.8	6.6
8	Other types of heart disease	33	2.8	6.6
9	Ischemic heart disease	29	2.5	5.8
10	Accidents of clearly industrial origin	19	1.6	3.8
	SUBTOTAL	665	56.6	
	TOTAL	1174		233.5

(*) RATES PER 100,000 INHABITANTS
Source: Municipal Health Ministry of Cali.

TABLE 2

Mortality Ages 15-44, Cali 1987*

RANK	NAME	No.	%	RATE
1	Homicides and intentional injuries	554	37.0	73.4
2	Motor vehicle accidents	141	9.4	18.7
3	Accid. of clearly industrial orig.	71	4.7	9.4
4	Other types of heart disease	46	3.1	6.1
5	Cerebrovascular disease	45	3.0	6.0
6	Respiratory tuberculosis	43	2.9	5.7
7	Ill-defined symptoms and conditions	31	2.1	4.1
8	Suicides and self-inflicted injury	29	1.9	3.0
9	Malignant tumor of qother and ill-defined sites	29	1.9	3.8
10	Ischemic heart disease	26	1.7	3.4
	SUBTOTAL	1015	67.7	
	TOTAL	1499		198.5

* Rates per 100,000 Inhabitants
Percentage variation = - 15.0

Source: Municipal Health Ministry of Cali.

TABLE 3

The Ten Most Common Causes of Morbidity in Emergencies
Cali, 1987

CAUSE	1987 RANK
Wounds and lacerations	1
Other viruses	2
Enteritis and other diarrheal diseases	3
Acute respiratory infections	4
Bronchitis, emphysema, and asthma	5
Ill-defined symptoms and conditions	6
Infections of the skin and cellular tissue	7
Other diseases of the urinary tract	8
Other effects of unspecified external causes	9
Diseases of the genital organs	10

Source: Municipal Health Ministry of Cali.

ISSUES IN DESIGNING A MANAGEMENT SYSTEM TO MEET EHC NEEDS: THE UNITED STATES OF AMERICA EXPERIENCE

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The United States of America has learned much from its experience in management of emergency health care services (EHCS) systems. We have made spectacular gains in delivering these services throughout our nation, but the lessons learned from the past have not been applied at the national level. The result is a mosaic of excellent but uncoordinated EHCS regions and jurisdictions with their own patterns of organization, direction, and control and following their own, individual management plans.

Freedom and the rights of individuals are important and pervasive cultural values in the United States. Our tradition favors competition and a resulting rich variety of solutions to societal needs and problems. Individualism is encouraged, not only at the personal level, but at the community and state level, so that voters and taxpayers generally resist intervention by the federal government in matters they feel can be better handled at the local level. At the same time both management theory and our experience in managing military emergency medical operations from our Civil War to the hostilities in Korea and Vietnam have taught us that the most effective response to managing emergency health care is a para-military organization with extensive preplanning, preparation and coordination, a clear chain-of-command that is effective in inter-agency as well as inter-jurisdictional responses, and a fast, clear communications system with reserved frequencies or channels both within and among responding agencies.

It appeared these lessons were to be transformed into action when in 1966 the National Academy of Sciences, National Research Council published Accidental Death and Disability: The Neglected Disease of Modern Society. This compact publication outlined a plan for creating a systematic approach to reducing accidental death and morbidity through injury prevention, advanced training and certification of ambulance and hospital personnel, setting aside radio frequencies for the exclusive use of emergency medical personnel, establishing systems of records and research for both quality assurance and research, and a command system stressing interagency cooperation. Support for the recommendations of this document prompted Congress to pass The Emergency Medical Services Systems Act of 1973, but the first version of this bill was vetoed by a president in tune with the nations dislike for government intervention in the affairs of local communities. The enacted legislation pumped funds into emergency health care development and thousands went to work across the country to build the first emergency medical services system. David Boyd created the first state wide system in Illinois. R Adams Cowley created another in Maryland which serves as a model for others in the US and around the world. Kings County, Washington created a center of EMS excellence in the Seattle area in which most citizens became trained in cardiopulmonary resuscitation. The effectiveness of having citizen bystanders trained in CPR and the willingness of physicians to develop courses and protocols which allowed Emergency Medical Technicians to serve as the eyes, ears, nose and hands of the physician reinforced the importance of having someone at or near the scene of the emergency who could provide life saving interventions.

In spite of these centers of excellence, and so many others throughout the country, the US remains a mosaic of experiments in emergency medical services management rather than an example of a true emergency health care system. Individual cities may be served by any combination of volunteer, fire department, hospital based, private-for-profit, or government ambulance services as reflected in my handout.[2] Financing of EMS is equally diverse. Most government emergency health care agencies are funded through taxes, but not all political jurisdictions are equal so that frequently suburban counties have more than enough money to support the finest in emergency health care services while EMS in the adjoining cities like Washington, DC, Baltimore, Maryland, Chicago, Illinois, San Francisco, California, etc., are under-financed with over-worked personnel and equipment leading to breakdowns in the system, avoidable morbidity and loss of life and blaring headlines in local

newspapers. Some volunteer companies sell subscriptions for their service to families in the service area, with non-subscribers paying the full cost for the services they use. Private companies, which include most hospital based ambulance services, bill both patients and their health insurance companies. Some innovative states, like Virginia, have instituted special assessments which are added to the cost of motor vehicle registration or to fines assessed by courts for traffic law violations. Many volunteer companies not only seek local contributions, but generate income through ancillary services such as holding bingo nights and summer carnivals, renting out the ambulance station for community meetings, or cooking for and hosting wedding receptions, birthday parties and other social events.

The result is that we may have two neighboring communities, each with skilled and effective Emergency Medical Services (EMS) personnel and response system, but with such different rules, protocols, training standards, equipment and even placement of supplies in ambulances or hospital emergency departments, that even the most skilled personnel cannot transfer easily from one jurisdiction to another and ability to mount a combined response to a mass casualty incident is diminished and patient care suffers. Mobility of nurses, physicians or paramedics across local jurisdictional lines is impaired and a rapid, organized, national emergency medical response to a major epidemic, nuclear accident, disaster or act of war is unlikely. There is not, yet, an Emergency Health Services System for the United States.

EMERGING PROGRESS TOWARD MANAGEMENT OF A NATIONAL EMERGENCY HEALTH CARE SYSTEM

In the absence of unified command and leadership at the national level, progress toward a true system of emergency health care services is emerging from pioneering work of physicians in communications and dispatch and in wilderness medicine. It has long been recognized that both for daily emergencies and disaster responses, communications is essential for the dispatch and control of ambulances and for medical consultation between paramedics and hospital based physicians. The personnel that operate the communications centers, however, have generally taken a back seat to the health care providers. But recently, giant strides have been taken to upgrade the capabilities and effectiveness of communications operators in dispatching the appropriate emergency personnel to the correct location, in providing physician developed and approved triage and "prearrival instructions" to the caller, in facilitating instantaneous on-line medical consultation between medical specialists and ambulance medics, and in the deployment and effective use of limited emergency resources through computer-assisted System Status Management. Two names are closely associated with these developments: Dr. Jeff Clawson, Fire Surgeon with the Salt Lake City Fire Department, Salt Lake City, Utah 84111 for the upgrading of dispatch personnel and protocols in a Medical Priority Dispatch System (MPDS) and Jack Stout for System Status Management. Because the communications center holds the mosaic of medical, government, fire, police, hospital, and other providers together in a system, the communications center may form the key to the creation of a truly effective, national emergency health care delivery system in the next decade, but it will require another large investment of time and effort by physicians and the medical community.

The rapid growth of emergency medical helicopter transport is also helping to create linkages between more and more distant emergency health service regions including development of common terminology, protocols, training standards, etc.

The experience to date with training citizens in CPR and as Emergency Medical Technicians demonstrates that people of average intelligence, given carefully developed and tested training, protocols and medical direction and control, can dramatically extend the physicians ability to save lives and to reduce suffering in remote areas at minimal cost to the community. Our more recent experience with paramedics suggests that where hospitals and specialty centers are available, more expensive training is not only more effective, but may decrease the cost of emergency health care per life saved.

In the rural environment, resources are dispersed and thus not readily available. It may take from half an hour to many hours for the EMS system to reach the scene of the emergency and frequently when they do arrive, the nearest hospital may be additional hours away. Physicians are, however, developing training and protocols designed for emergencies in which immediate transport to a hospital is not a reality. The training and protocols might build on the skills of rural residents with no health care skills, or perhaps EMTs or EMT-Defibrillator or LPNs or Registered Nurses and athletic trainers whose jobs with rural schools serve to maintain their clinical skills. Because immediate, definitive medical care is not a reality in this environment, the new technicians might not be paramedics, but perhaps a combination of community public health technicians and EMT Wilderness. Two physicians are already making progress in this direction for the wilderness environment: Dr. Warren Bowman who is Medical Director for the National Association for Search and Rescue and the National Ski Patrol and Dr. Peter Goth, founder and director of Wilderness Medical Associates, Chairman of the ASTM Committee F-30.02.05 on Wilderness. The combination of their efforts and further input and acceptance of training, protocols, medical direction and control for rural technicians could create a strong and essential link in managing a national emergency health care system.

Urban emergency health care is hampered by dispersion of resources of another nature: the wealth has moved to the suburbs while the emergency health care needs of the poor and the indigent remained behind. Because communication is not as difficult as in the rural/wilderness setting and the hospital is available, nurse/paramedics or paramedics with advanced training in urban medicine could reduce the burden on local hospitals, medical personnel and tax payers while providing faster, effective appropriate care in the field.

The medical community is building on the experience gained from management theory and military EMS as well as the work done by the early pioneers in EMS and the current pioneers like Drs. Warren Bowman, Jeff Clawson, Peter Goth and others. National standards for training and protocols for rural and, perhaps, urban emergency health care technicians, in the United States could be developed by developing the Emergency Medical Services System envisioned in "Accidental Death & Disability: The Neglected Disease of Modern Society". In the absence of national leadership, the burden must fall to our medical leaders, but the system created, no matter how carefully the training and protocols are devised, must have strong and sustained medical direction and control and a commitment to quality assurance, epidemiological research and resulting strategies which reduce the incidence and consequences of health care emergencies in the United States. Only then will we finally have an emergency health care services system.