CHAPTER 9: COMPARATIVE SYSTEMS

INTRODUCTION

One of the basic tenants of the International Conference on Emergency Health Care Development was that each society needs to find its own path to improving its health care system's capability to respond to medical emergencies. Societies differ greatly in terms of the kind and quantity of resources available to build an EHC system and vary equally dramatically in the social, economic, cultural, and political environments in which health care systems operate.

Out of diverse conditions can come equally diverse solutions to similar problems, which can be instructive to us all. In the following 30 pages we find case studies from India (3), Mexico (2), Costa Rica, Indonesia, Japan, Brazil, and Taiwan, each with insightful comments and examples of innovative solution development and the on-going struggle to meet the challenge of responding adequately to emergent medical needs.

The three authors from India equate the status of EHC development in their country to that of the United States in the early 1960s; some system components are coming into place without a strong unified push for a coordinated national system. As was true in the United States, the increasingly important role of trauma in national health statistics has led to focused attention on emergency health care. The tragic accident at Bhopal has added impetus to the development of a nationwide approach to handling medical emergencies. Dr. S M Bhadkamkar outlines the work needed to create a rational EHC system in the State of Maharashtra, Pune-Kolhapur region, using already existing health care personnel. As India struggles to climb out of the status of "developing country" into the ranks of the industrialized nations, it is having to build some new kinds of health manpower and emergency health care facilities in order to meet the challenges of industrial and transportation injuries. Dr. Gautam Sen provides us with a brilliant example of how a properly connected and formulated voluntary agency can play a key role in stimulating government and private agencies to pool their resources for meeting new manpower and facility needs. Interestingly, he also provides a good example of how appropriate sharing of ideas and technological assistance from one country to another can be beneficial. Dr. Murthy's paper provides an instructive and encouraging example of public - private cooperation in building a trauma center in Bangalore in response to the mounting importance of injuries in that population center.

The two examples from Mexico focus on Mexico City, probably the largest urban population in the world. The paper by Drs. Castañon Romo and Chávez Mayol illustrates a jurisdiction that must meet the emergent needs of a population that suffers the diseases of the extremely poor and extremely wealthy concurrently. The current focus is on the coordination, integration, and flexibility of available resources. The paper by Drs. Rojas Enriquez, Suchil Bernal, and García Padilla describes in some detail the work of the Hospital Juarez de Mexico to prepare for disaster service after having suffered greatly in the 1985 earthquake. The paper should serve as an example of how an on-going health care facility can greatly improve its ability to respond to emergency without the expenditure of significant financial or human resources. Using the guidelines provided by the Pan American Health Organization, the hospital not only performed will in two subsequent disaster exercises, but also in Richter Scale 6 earthquake that hit the city in 1989. Readers will find the paper both instructive and encouraging.

Costa Rica is working on developing a nationwide prehospital emergency health care system, integrating resources from the Red Cross, fire departments, National Emergency Commission, Social Security, Ministry of Health, Medical School, and the College of Physicians. The new focus on developing an EHC system resulted from a realization that its health care system, while very effective at preventing and treating the diseases of a developing country, had not reoriented itself to its changing epidemiology, which now resembles that of a typical industrialized country, with injuries and sudden heart disease playing a major role in the country's morbidity and mortality.

Like the two final examples from India, the paper presented by Dr. Pusponegoro from Indonesia describes a significant public-private collaboration to achieve improvement in the handling of emergent medical cases. Preliminary work in this area started in 1969, when the Indonesia Surgeons Association created a system of ambulances and stimulated the development of a universal emergency access phone number. Given scarce government resources and the spread-out, multi-island configuration of Indonesia, the provision of emergency health response has been particularly difficult. While

working to develop more dedicated ambulance resources, the Indonesia Surgeons Association has expended considerable time and energy in training police, fire personnel, civil defense, and security forces as medical first responders, to help make up for the lack of trained ambulance-based medical personnel.

In his presentation of Japan, Dr. Ukai describes a situation that is not limited by financial resources but rather by tradition and legal barriers. He describes the process that Japan took in developing a coordinated out-patient and in-hospital system to respond to medical emergencies, using a three tiered system of 24-hour emergency outpatient services, general hospitals, and specialized trauma and emergency facilities. The system's major problem at present is the lack of training for prehospital personnel, which is limited to basic non-invasive measures by legal restrictions on the practice of medicine. Meanwhile, Japan is looking ahead to the future need to prepare for emergency health care provision to an increasingly elderly society, with resultant clinical, organizational, and monetary implications.

Drs. Claudio Wolff and Fabio Segal present from another large Latin American city, Porto Alegre, the struggle to fashion a coordinated emergency response system out of disjointed resources. The Hospital de Pronto Socorro is playing a leading role in not only rationalizing its own resources for emergency use, but also stimulating coordination between city, state, and medical resources. The city remains at this time without trained prehospital personnel, but is working on forming a system of local first aid stations for patient stabilization. Plans are being made to train fire fighters as ambulance personnel in the near future.

The final paper is from a country that has left the ranks of "developing" countries into the world of industrialized nations, Taiwan. In doing so, its epidemiology now resembles that of other industrialized countries, with high levels of sudden morbidity and mortality caused by injury and coronary conditions. The author had spent some time in San Francisco, California, and provides some first-hand observations as to the applicability of the US model in his own country. At present, the lack of prehospital emergency care and transportation remains the major problem in Taiwan, with in-hospital services having been improved greatly over the past two decades. Plans are being made to train prehospital providers using a model resembling that of the US EMT.

We hope that the reader will be able to gain from the wealth of experience offered in the following pages. In addition, many of the other papers in these proceedings offer stimulating insights into other countries' work to find mechanisms for providing optimal emergency health care in varied environments.

Dr. Richard Bissell

SYSTEM APPROACH FOR EMERGENCY MEDICAL SERVICE FOR THE STATE OF MAHARASHTRA INDIA A CASE STUDY

Dr. SM Bhadkamkar

INTRODUCTION

A significant number of people in our country lose their lives or suffer from permanent disabilities because there is no properly organized emergency medical service. Our records indicate that the number of persons requiring emergency medical care is increasing every day for the following reasons:

- An increase in road and railroad traffic has lead to more accidents;
- An increase in stress and strain, longer life expectancy and a more sedentary life style have caused more people to suffer coronary attacks; and
- An increased incident of acute abdominal pain, renal colic, etc.

A number of lives and limbs which can be saved are unfortunately lost everyday. In order to rectify the deficiency in the health care delivery system, the state of Maharashtra has decided to prepare a state emergency medical services system. It has been decided to develop an Accident Emergency Medical Services system that will cater to coronary attacks and acutely ill patients as a Pilot Project in one of the eight regions of the state. For this purpose, Pune-Kolhapur region has been selected.

CRITICAL ANALYSIS OF THE EXISTING EMERGENCY MEDICAL SERVICES

The following are major deficiencies including, a delay in notification, a lack of prehospital service, a lack of proper equipment, and a lack of skilled man power and team work at various echelons of hospitals. There is also a

lack of a well-organized training system, a lack of coordinated record system and an absence of regular monitoring and evaluation.

OBJECTIVES

The broad objective of the Project is to make optimal care available to critically ill patients within an optimal timeframe to save life and reduce disability.

Specific objectives include the following:

- To provide public information and education;
- To upgrade the facilities as well as to energize the existing infrastructure;
- To ensure the availability of well-trained manpower and an adequate supply of life saving drugs and equipment;
- To train motivated volunteers in First Aid and CPR; and
- To develop an effective central communications system that will reduce the delay in communications.

ORGANIZATION

The GT Hospital in Bombay has been identified as an Apex Institution for emergency medical services. This institution will take responsibility for education and research and also provide referral services.

The State has been divided into 8 regions as follows:

1. Pune - Kolhapur;
2. Greater Bombay;
3. Pune - Ahmednagar, solapur;
4. Thane, Ratnagiri, Raigad, Sindhudurg;
5. Thane, Nasik, Dhule, Jalgaon;
6. Aurangabad Circle;
7. Amaravati, Akola Circle;
8. Nagpur Circle.

Pune-Kolhapur region has been taken as a Pilot Project for developing a regional emergency medical service with a special focus on accidents. The various echelons for emergency care proposed in this region are as follows:

Echelon I - village volunteers;
Echelon II - PHC sub-centers;
Echelon III - rural/cottage hospitals;
Echelon IV - district hospitals;
Echelon V - medical colleges;
Echelon VI - apex institutions.

In addition to emergency medical service, these institutions will extend the facilities for rehabilitation to the extent possible.

TRAINING

The following cadres have been identified for delivery of emergency medical service and appropriate training programs in various emergency medical services are being worked out. The programme prepared for Accident Emergency Service is given below:

TABLE 1

New Item #/ Category	Nomenclature	Nature of Training	Venue	Duration
1. General Surgeons Orthopaedics, Anesthetists, etc.	EMS-I Care, Hosp. Sion, JJ KEM	Trauma	GT	6 weeks
2. Medical Officers	EMT-MO Resusc. and other skills.	Cardiac Hospital Satara/ Kolhapur BJMC, Pune-Krishna Charitable	Dist.	30 days
3. Paramedics	EMT-Paramed.	IV Fluids, ECG, Splintage Admin. of Oxygen, CPR	Dist.	7 days
4. Ward Boys, Cl.IV servants, Ambulance Drivers Drivers.	EMT-Ast.	First-Aid, CPR, Splinting, Stretcher Movement	BJMC, Pune-Krishna Charitable	3 days
5. Community Volunteers	EMT-Volunteer	First-Aid, CPR, Splinting Stretcher Movement	Dist. Hosp. BJMC,Pune-Krishna Charitable	3 days
6. Sarpanchas/ Opinion Leaders	- do -	- do -	Dist HQ	1/2 day

ADDITIONAL SUPPORTIVE SERVICES

It is proposed to have the following additional supportive services.

- A coordinated transportation system that will consist of an intensive care unit ambulance, basic ambulances and private vehicles;

- A centrally maintained communication system that will consist of a network of wireless sets of radios, hot lines and telephone systems; and
- A centrally coordinated record system that will include maintenance of patient records from the time of entry to discharge from the hospital.

PREHOSPITAL SERVICE TO CRITICALLY ILL PATIENTS

This will be provided by a well-equipped ambulance service staffed with physicians. This ambulance will promptly reach the scene of an accident or residence of the critically ill patient and resuscitate and stabilize him and then maintain the stabilization during transport to the appropriate echelon of the hospital.

HOSPITAL CARE

Hospitals will be well equipped and properly staffed to handle any type of critically ill patient. This will include the formation of Mobile and Static Trauma Teams for accident victims available 24 hours a day. Operation theatres and other necessary services will be available for the critically ill patient. If services are insufficient, the patient will be referred to an appropriate institution that has resources available to treat the patient.

MONITORING AND EVALUATION

For monitoring and evaluating EMS development, committees have been proposed as follows:

- High Level Advisory Committee;
- State Level Implementation Committee;
- Regional Committee;
- Sector Committee;
- Village Level Relief Committee;

They will evaluate the work in the following areas:

- Delivery of Emergency Medical Care to the patients;
- Evaluation of the work done by EMTs; and
- Evaluation of the resources, capability and performance of each institution.

SPECIFIC TARGETS

Infrastructural

- To make first level services available within the distance of 2-5 kms;
- Second level within 10 kms;
- Third level within 30 kms;
- Fourth level within 60 kms;
- Fifth level within 80 kms.

Operational

- Notification time - the period of time between occurrance of the accident and when information reaches the health institution should not exceed 15 minutes;
- Activation time - the period of time between receipt of information by the health institution and starting the Mobile Emergency Medical Care Unit should not exceed 15 minutes; and
- Travel time - the time it takes for the Mobile Emergency Medical Unit to reach the accident spot or place of critically ill patient should not exceed 30 minutes.

In summary, the prehospital emergency medical unit should reach the site within the first hour while the First Aid Village Volunteers should arrive within 20 minutes, as they are located nearby.

Expected achievements from a developed EMS within the first two years are as follows:

- Reduction of mortality by 30%;
- Reduction of disability by 30%;
- Reduction of referrals by 50%;
- Delivery of Trauma Care in designated echelons:
  - 85% to be treated up to the fourth level;
  - 10% at the fifth level;
  - 5% at the sixth level.

SCHEDULE FOR DEVELOPMENT OF STATE LEVEL EMS SYSTEM

Pune-Kolhapur Regional EMS System by 1st December 1989;

State Level EMS System by 1995.

CASO: CIUDAD DE MEXICO

Dr. Roberto Castañon Romo
Dr. Jesús Chávez Mayol

RESUMEN

El documento describe las principales características de la Ciudad de México, los Servicios que conforman el Sistema de Salud, haciendo énfasis en el Sistema de Atención Médica de Urgencias. A continuación se presentan los aspectos mas relevantes.

La Ciudad de México esta conformada por 1499 km2 del Distrito Federal y 1821 km2 de los Municipios conurbados del Estado de Mexico, ha incrementado su población en forma exponencial, ya que de 1,962,278 habitantes en 1940 llegó a 13,921,322 habitantes en 1980, y para 1989 se estima una población de aproximadamente 18,000,000 de habitantes; de los cuales el 31.8% es menor de 15 años y la población económicamente activa tiene

como principales ramas de actividad la industrial y de servicios.

En relación a salud se tiene que la morbilidad y mortalidad que presenta la Ciudad se caracteriza por enfermedades infectocontagiosas, propias de poblaciones subdesarrolladas y enfermedades crónico-degenerativas, accidentes y violencias representantes del desarrollo y la industrialización.

El Sistema de Salud cuenta con diferentes tipos de servicios que responden a la estructura social de la ciudad, siendo los siguientes:

- Para población de escasos recursos que no cuentan con seguridad social, los cuales son proporcionados por la Secretaría de Salud, el Departamento del Distrito Federal y el Instituto de Salud del Estado de México;

- Para población trabajadora, que son los servicios que proporcionan el Instituto Mexicano del Seguro Social, el Instituto de Seguridad y Servicios Sociales para los Trabajadores del Estado, la Secretaría de la Defensa Nacional, la Secretaría de Marina, Petroleos Mexicanos, etc;

- Y por último los servicios privados, orientados a un reducido grupo de la población que cuenta con recursos para pagar su atención.

La operación de los servicios se regula por el Plan Nacional de Desarrollo y por el Programa Nacional de Salud, que se diseñan cada seis años con el cambio de Gobierno Federal.

Los principales problemas que afectan los Servicios de Salud son: limitación de recursos, deficiente coordinación entre las instituciones, deficiente educación en salud de la población y baja credibilidad a los servicios institucionales.

Con respecto a la atención de urgencias, en la Ciudad de México se inicia desde 1909, desarrollándose, como respuesta al incremento de los accidentes, violencias y enfermedades que generan urgencias; así como la necesidad de la inmediata atención en una ciudad conflictiva que actualmente es la mas grande del mundo.

Las estrategias que se han marcado para este sistema son: Coordinación - intra e intersectorial, zonificación de los servicios de urgencias y la participación de la comunidad.

El sistema tiene como características básicas la universalidad, eficiencia, integralidad y flexibilidad.

El modelo operativo de este sistema contempla cuatro subsistemas que son: Atención Médica Pre-hospitalaria, Atención Médica Intrahospitalaria, Comunicación y Transporte. En los que intervienen todas las instituciones del Sector Salud, pero principalmente la Dirección General de Servicios Médicos del DDF, el ERUM y la Cruz Roja.

Los progresos alcanzados son: El inicio en la coordinación interinstitucional a través de la firma de convenios entre el DDF, Cruz Roja y ERUM; reforzamiento de las unidades hospitalarias con áreas de choque y trauma; formación de recursos especializados en urgencias; inicio de la operación del Sistema de Urgencias Pre- e Intrahospitalaria.

Para continuar su implantación y mejorar su operación se puede recomendar:

- El integrar un solo mando en la operacion del sistema que permita obtener una adecuada coordinación;
- Instalar un programa general de atención de emergencias con la participación multisectorial, antes de que se rebasen las posibilidades de atención o que se presenten desastres;
- El reforzamiento de la coordinación de servicios;
- Mayor aportación de recursos;
- La coordinación con estados circunvecinos para la atención de áreas conurbadas;
- Conclusión del Hospital de Choque y Trauma del Distrito Federal.

ENGLISH SUMMARY: MEXICO CASE STUDY

This document describes the main characteristics of Mexico City and its health services, giving special emphasis to the emergency medical care system. The more important aspects are the following:

Mexico City is configured as 1499 Km2 of the Federal District and 1821 km2 of the surrounding municipalities of Mexico State. Its population has increased exponentially from 1,962,278 habitants in 1940 to 13,921,322 habitants in 1980. The expected population for 1989 is about 18,000,000 inhabitants, of which 31.8% are under 15 years old, and the working population is focused in industry and services.

Regarding health status, morbidity and mortality are characterized by communicable diseases, typical of underdeveloped populations, and chronic-degenerative diseases. Accidents and violent trauma are often the results of development and industrialization.

The health system is constructed to provide the following types of services that respond to the social structure of the population:

- For low income population without social security, the services are provided by the "Secretaría de Salud" (Health Ministry) the "Departamento del Distrito Federal" (Federal District Department) and the "Instituto de Salud del Estado de México" (Health Institute of Mexico State);

- For the working population, the services are provided by the "Instituto Mexicano del Seguro Social" (Mexican Institute of Social Security), the "Instituto de Seguridad y Servicios Sociales para los Trabajadores del Estado" (Security and Social Services Institute for the Government Workers), the "Secretaría de la Defensa Nacional" (National Defense Secretary), "Petroleos Mexicanos" (Mexican Petroleum), the "Secretaría de Marina" (Navy Secretary), etc.;

- And finally the private services, oriented to a reduced group of the population which has resources to pay for its attention.

The services are regulated by the national development plan and the national health program which are updated every six years by the Federal Government.

The main problems affecting health services are: limited resources, deficient coordination between the institutions, deficient health education of the population, and low confidence in institutional services.

EMERGENCY SYSTEM

The emergency care system was initiated in 1909 in to the increased number of accidents, violence, and diseases that generated emergencies as well as the need for immediate attention in a city that at present is the largest in the world.

The strategies that have been developed for this system are: intra- and intersectorial coordination, zonification of the emergency services, and community participation.

The system's basic characteristics are universality, efficiency, integration, and flexibility.

The operative model of this system contemplates four subsystems, which are: prehospital medical care, intrahospital medical care, communication, and tranfers. Although all the national health institutions participate in this program, the major participants are the "Dirección General de Servicios Médicos del DDF", the "ERUM" and the Red Cross.

Some of the achievements are: the beginning of an interinstitutional, including the organizations just mentioned, improved in-hospital shock trauma care, the formation of human resources specialized in emergencies, and initiation of the operation of a coordinated pre- and intra-hospital emergency system.

To continue the implantation and to improve its operation it is recommended:

- To integrate in one single authority the operation of the system to obtain adequate coordination;
- To implant a general program of emergency care with multisectorial participation;
- To reinforce the services coordination;
- To allocate enough resources;
- To establish a coordination with neighbor states for the care of surrounding areas; and
- To finish the Federal District shock and trauma hospital.

NATIONAL MEDICAL EMERGENCIES PROGRAM

PROGRAMA NACIONAL DE EMERGENCIAS MEDICAS: COSTA RICA

Dr. Daniel E Rodriguez-Guerrero
Comision Nacional de Emergencias

Dr. Guillermo Rodriguez, who was scheduled to give this presentation was not able to come to this conference. Since I was planning to attend the meeting, I was asked, on a very short notice, to give this speech.

I will try to convey to you, in my broken English, and to the best of my knowledge, Dr. Guillermo Rodriquez' thoughts.

First, I would like to stress a few facts about my country. It is not my intention to insult your intelligence and education with these very basic data, but to point out some characteristics of Costa Rica.

Costa Rica is a very small country, some 23,000 square miles, roughly the size of West Virginia, in Tropical Central America. There are just over 2.7 million Costa Ricans, 60% of whom live in or around San Jose, the capital city.

Even though Costa Rica is considered a poor country, the health indices are among the best in Latin America. The life expectancy for Costa Ricans is 74 years. The percentage of illiteracy is less than 10 percent. This is the result of the importance given to education, health and welfare by governments who have assigned 20 percent to 30 percent of their budgets to the Ministries of Health and Education; especially after 1948 when the army was abolished. For many years, Costa Ricans have been proud of having more teachers than soldiers and more hospitals than military forts. These accomplishments caused a paradoxical situation in which the people of a poor country suffer from the same health problems as the people from a wealthy one.

During the last 4 or 5 years cardiovascular diseases (coronary atherosclerotic heart disease), trauma (caused mainly by vehicular accidents), neoplasia and pulmonary diseases have been the main causes of morbidity and mortality. Trauma has become an important cause of death and disability and is the main cause of death for people under 50 years of age. The change in the country's epidemiology and the necessity to treat patients injured in wars fought in neighboring countries prompted

the health authorities of Costa Rica to develop plans for improving the health system's response to this threat.

In the Costa Rican health system the Ministry of Health regulates and controls health care nationwide and is responsible for prevention of diseases, vaccination programs, hygiene and nutritional advice. The Costa Rican Social Security is responsible for treatment of diseases, runs all the hospitals and clinics and employs close to 2300 of the country's 3500 physicians. The University of Costa Rica and the Universidad Autonoma de Centro America train medical students and the Costa Rican College of Physicians authorizes them to practice after they graduate.

Prehospital care and transportation is carried out by the Costa Rican Red Cross and rescue units of the fire departments. It was recognized that one of the improvements to be made in the system in order to treat the cardiovascular and trauma patients more adequately would have to come in the area of prehospital care and transportation.

This presentation tries to explain how Costa Rica put together a training program with emphasis on prehospital care, using and coordinating the activities of several governments, institutions and an international private organization.

The institutions involved in the training program are the following:

1. The National Emergency Commission, which is responsible for most of Costa Rican funds and logistical support for the Program;
2. The Costa Rican Social Security, which provides some funds and logistics and allows the use of its facilities and provides the patients with whom the students acquire experience and develop abilities in the management of the critically ill patient;
3. The University of Costa Rica, School of Medicine and School of Medical Technologies, which provides some of the instructors and supervises the educational aspects and validates the certificates awarded;
4. The Costa Rican Red Cross, which provides most of the students for the prehospital courses and allows the use of its ambulances for the practical teaching;
5. The Ministry of Health, which by law regulates and promotes health care, representing the commitment of the government to the Program; and
6. The Costa Rican College of Physicians sets the standards and the spectrum of practice for the different levels of trainees.

Project HOPE's involvement in Costa Rica started in the early 1980s when a group a physicians that had recently returned from medical centers in the US and Canada asked for help and advice to improve the care of the critically ill patients with pulmonary complications. This led to the signing of an agreement which is still effective and gave birth to the first Respiratory Therapy School in Central America and a new profession that has significantly improved the understanding and care of pulmonary disorders.

The good rapport developed between the Costa Rican health authorities and Project HOPE made it natural to look for their support and advice in a program for improving prehospital care and a new agreement was signed.

Project HOPE has provided funds, equipment, books, and has hired instructors in the US to teach in Costa Rica as well as advisors and evaluators who help maintain high standards of training. The actual agreement will be effective through July 1993 for a total duration of 6 years, during which some 6000 students will be trained and Costa Rican instructors will be qualified to teach and train others. The cost of the program will be approximately $3 million and $2 million will be funded through Project HOPE.

At this moment, I would like to describe briefly the courses that are being taught in the near future "Introduction to First Aid" is offered to the general population, it basically describes how to prevent domestic accidents and how to activate the emergency care system.

"Basic First Aid" is an informative course where basic concepts of hemorrhage control, shock prevention, airway management are described as well as how to properly put bandages in place and how to immobilize fractures. CPR is also demonstrated.

"First Aid Assistant" is the practical version of the previous course. Here trainees are expected to develop skills to control bleeding, assure airway patency, bandaging, fracture splinting, and perform CPR.

It is expected that all applicants to Red Cross ambulance service will have mastered the previously described courses. They will also be required to take more advanced courses. "Rescue in Closed Environments" and "Operation of Emergency Vehicles" are two special courses given at this level.

"Medical Emergencies Assistant" teaches how to properly use MAST, automatic defibrillators, oropharyngeal airways, inflatable splints, and are trained in more advanced rescue operations.

"Medical Emergencies Technician" will be offered in the future. It will require approval of the previous courses and will emphasize invasive procedures such as orotracheal intubation, defibrillation, IV lines, recognition of cardiac arrhythmias, and administration of IV drugs. This course is still under discussion.

"BLS", "ACLS", "ATLS" are offered at the hospital level, "APLS" is not available yet.

Some health authorities are considering a residency in Emergency Medicine and the School of Medicine is already giving an introductory Course on Emergency Medicine.

The results of this training program are not known yet, but an improvement in prehospital health care is foreseen.

In closing, I would like to emphasize that this program was born because of the need to improve prehospital health care and transportation of patients; that the necessity to improve this system was more apparent due to the change in the epidemiology of morbidity and mortality in Costa Rica. The actual training Program has been the result of a joint effort of many Costa Rican institutions and an international private organization.

ROLE OF AUTONOMOUS (NOT FOR PROFIT) INSTITUTIONS IN THE ESTABLISHMENT OF A COMPREHENSIVE TRAUMA CARE UNIT AT BANGALORE, INDIA

Dr. HK Srinivasa Murthy
Director, Sanjay Gandhi Institute of
Accident Rehabilitation and Physical Medicine

Bangalore city is a cosmopolitan city and is the capital for the State of Karnataka. The city is surrounded by a belt of industrial undertakings and occupies an area of nearly 2,191 sq km with a population of about 4.5 million. Being the metropolis and capital there are many commuters and floating populations. Traffic is heavy, and the provision for movement of traffic is not proportionate to the rapid increase in the number of road users and vehicles.

As per the statistics of 1989 the total number of mechanized vehicles is as follows:

Two Wheelers - 344,588
Three Wheelers - 15,348
Four Wheelers - 104,839

The rate at which the number is increasing gives an impression that in another decade there will be a further increase of 4 to 5 times the present number.

The types of vehicles involved in accidents are as follows:

Two wheelers - 1,316
Three wheelers - 303
Buses:
Public -
Private - 378
Factory:
Cars, Jeeps etc - 479
Trains - 7
Heavy vehicles - 339

On an average about 15 to 20 people are injured daily and of these, two of ten die. More than 45% of accident victims are in the age group of 25 to 40. Between 60 and 70% of deaths are due to lack of proper care immediately following the accident.

Health care delivery is provided by the state government and is mostly free of cost to the individual; only those with certain income pay a nominal fee for the hospital stay and treatment. Hospitals managed by industries provide medical care for their employees. Employees State Insurance, also managed by the government, provides medical care for certain categories of employee who come under contributory health schemes.

Private hospitals, missionary institutions, nursing homes, and private medical practitioners also provide health care on payment. The incorporated city of Bangalore has dispensaries all over the city, and they provide maternity and child health care and treatment for minor medical problems.

Ambulances belonging to the government hospitals, the corporation, the private hospitals, the Indian Red Cross Society, the fire brigade, the police department, and some of the nursing homes transport sick people between their homes and the hospital. There are very few ambulances equipped for emergency medical care, and many organizations are ready to use ambulances equipped for emergency medical care.

Communication is mainly by telephones and it is only the police department, which has the radio communication network mostly for law and order and traffic control. Negotiations are going on to use the special channel meant for traffic control to be used for Emergency Medical Care Service also.

The increase in the population and vehicular traffic has brought along with it an increase in traffic accidents. Permanent disability and death as a result of severe injuries due to accidents have increased for lack of immediate care at the location of the accident. Added to this, the crowding in the casualty departments of general hospitals has contributed towards the delay in an injured individual receiving immediate attention.

Recognition of the importance of the first hour after an injury and of the existence of the above gloomy scenario led to the decision to organize and establish a trauma care center in Bangalore.

Consequently a registered autonomous institution under the name "Bangalore Accidents and other Services Society" was started in 1980. A governing council of the Society was constituted in 1980, with the Honorable Chief Minister of the State as President, the Honorable Health Minister as Chairman, the Secretary to Government Health and Family Welfare Department as Vice Chairman. Secretaries of various departments in the government such as Home, Finance, Law, Road Transport, the Commissioner of the Incorporated City of

Bangalore, representatives from the Indian Red Cross Society, Bangalore Surgical Society, and major hospitals in the city were enlisted as members of the governing council.

A Director for the trauma care unit was appointed to develop the Institute and to function as a Member Secretary to the governing council. The government of Karnataka allotted a land for the construction of the trauma care centre. The city of Bangalore permitted the Society to start the hospital in their general hospital building as a temporary arrangement until the new trauma care unit was built.

A munificent donation for purchase of equipment was also sanctioned. The Bangalore branch of the Indian Red Cross Society offered the piece of land in their possession to start the Rehabilitation and Orthotic Center and donated funds for starting construction of the Rehabilitation Center.

Many voluntary organizations like the Rotary Club, Lions Club, Jaycees Round Table, industrial establishments like Bharath Electronics, Road Transport Corporation of Bangalore, contributed their might and even now they are contributing towards the maintenance of the institution.

The hospital unit of the society was named as Sanjay Gandhi Institute of Accident Rehabilitation and Physical Medicine, and began operation in April 1984. This is the first comprehensive trauma care unit in the country. The staff pattern consists of a senior orthopaedic surgeon as Director, a professor of physical medicine, two assistant professors in orthopaedic surgery, one assistant professor in each of the specialties of general surgery, plastic surgery and neurosurgery, eight lecturers with postgraduate qualification in orthopaedics, one in dental surgery, and eight resident trainees. In addition, senior consultants in all the specialties are offering their services as honoraria.

In the limited temporary accommodation there is provision to house 75 inpatient beds, a casualty receiving room, an intensive care ward with eight beds, an observation ward with eight beds, two operation theatres, a radiology section, a blood bank, a physical medicine section, the outpatient department and the administrative offices. The unit works around the clock and every treatment is available under one roof.

The Marwari Youth Federation, a philanthropic organization, has equipped the centre with men and material to manufacture orthotic and artificial appliances and provide the same free cost to patients. The main funding agency is the Government of Karnataka. Periodic donations are received from the Corporation of the City of Bangalore, the Road Transport Corporation of the state, the Housing and Urban Development department, the food corporation and state finance corporation. Other industrial undertakings, philanthropists, and voluntary organizations have donated to equip the Institution. But still the Institution has been under financial constraints to provide sophisticated diagnostic and therapeutic equipment. As the hospital offers free services, there is not much generation of funds in the institution.

On an average, the Institute annually:

- Treats nearly 5,000 accident victims as out-patients;
- Admits nearly 1,500 injured victims for in-patient care; and
- Major operations in the different specialties come up to about 1000.

The above activities do not touch even the fringe of the problem of accident care. Seized with the situation, the desire to provide better care, and need for additional space for treatment the Governing Council authorized the Director to put up a project report to establish a 350 bed trauma care center which, when completed, will act as a model to the rest of the state and the country.

A Project Report prepared by the Director to establish a 350 bed unit at the site already allocated by the Government of Karnataka and at a cost of Rs 2,800 lakhs 280 million has been approved by the Governing Council. The Project has three development phases spread over a period of five years during the eighth Five Year Plan of the Nation commencing from 1989-90 and ending in 1994-95.

The Institute has obtained income tax exemption under 80G. Donations from philanthropists and philanthropic organizations in the country and from outside the country are welcome.

The Plan of Action drawn in pursuance of the aims and objectives of the Society is as follows:

1. Reactivation of the building construction to locate the main trauma care centre;
2. Establish nodal points in different parts of the city with particular reference to the accident zones in consultation with the traffic police;
3. Ambulances equipped with basic and advanced life support equipment and manned by trained emergency medical care technicians would be stationed at these nodal points so that they can reach the spot of the accident without delay;
4. Establish telecommunication network between the nodal point, the trauma units already existing in teaching hospitals, and the main centre as the apex;
5. Wherever necessary use helicopter services for quick transport avoiding the crowded roads;
6. Train emergency medical care technicians in basic as well as advanced life supporting techniques using audio visual equipment and conduct periodic demonstrations at schools and other places, for public, police department personnel, fire fighters, St.

John ambulance members, civil defence volunteers and nurses;

7. Impart knowledge about the care of injured persons, resuscitation techniques etc.;
8. Train doctors to become traumatologists and emergency medical care specialists so as to man the smaller units in districts and taluks;
9. Utilize the already existing infrastructure of the health care units such as the health visitors, primary health unit staff, the family welfare department staff, the staff of district and taluk hospitals and teaching institutions in the state and train them as emergency care technicians;
10. Improve and upgrade the knowledge of individuals who are already trained in first aid to become emergency medical care technicians;
11. Establish a microvascular surgery unit for the reimplantation of severed limbs;
12. Conduct research relating to prevention of accidents and management of accident victims with particular reference to our own cultural and socioeconomic setup;
13. Establish a separate wing in the main trauma care unit for care of paraplegics and tetraplegics;
14. Conduct research in the field of manufacturing and fabrication of equipment for trauma care units;
15. Establish a full fledged rehabilitation unit; and
16. Start programmes of training physiotherapists.

CONCLUSION

- Development of a trauma care unit and emergency medical care unit is an absolute necessity and not a luxury;
- It is a part of the state health care programme;
- Establishment and functioning of an autonomous, not-for-profit comprehensive trauma care unit, the first of its kind in the country, through the coordinated effort of government, corporation of the city, voluntary organizations, industrial establishments, road transport, police and fire force systems and individual philanthropists at Bangalore has been explained;
- A project report for construction of a main trauma care centre at a cost of Rs 28 crores has been brought out;
- Plan of action has been described;
- The existing infrastructure could be utilized and upgraded to meet the requirements of emergency care even in villages and taluks;
- Collaboration with international organizations will help the institution attract more technically qualified medical and paramedical personnel to be trained to provide more manpower needed for the increase in the number of casualties that are seeking relief; and
- International assistance in the form of grants will help to provide the latest equipment for teaching diagnosis and sophisticated treatment of injured victims.

INDONESIA PREHOSPITAL EMERGENCY CARE IN THE CONCEPTS AND PROBLEMS

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INTRODUCTION AND OBJECTIVES

Indonesia is the world's fifth most populous country, comprising more than 600 populated islands with densely populated cities and very isolated rural areas. As a consequence of its geography and stage of development, most of the people live great distances from the nearest health center or hospital, and very few health facilities have the capacity to handle serious injuries and other emergencies. As of 1987, Indonesia has only 1,456 hospitals of different types, with 114,318 hospital beds, and from those only 734 hospitals with 88,413 beds are general hospitals with emergency departments of different qualities. There are 7,817 doctors and 41,654 nurses who are goverment employed working in those hospitals, and from those only around 700 are surgeons compared to Indonesia's 170 million population.(5) Until recently Indonesia concentrated on developing the hospital phase of emergency care while the prehospital emergency care practically does not exist. Unpublished reviews of injury data collected by consultants of the WHO, Professor D Mohan (1984) and Dr. L Berger (1986) clearly document the magnitude, extent, and cost of motor vehicle related (MVR) and other injury problems in Indonesia. Injuries and poisonings account for about 30-50% of outpatients (emergency departments) visits, 9% of hospital discharges, and 11% of hospital bed days, most frequently associated with road traffic related causes. But the source of data which are available in different sectors were not consistent, complete, reliable, or accurate. The Department of Health stated that injuries are the 3rd leading cause of death in Indonesia and traffic accidents are responsible for more than 25% of fatal injuries. In 1988, the Subdirectorate of Traffic Police reported 10,809 people died because of traffic accidents, while 457 of them died in Jakarta. But the morgue reported in the same year that 989 died, in Jakarta alone, because of traffic accidents. And this is because the traffic police only reported those who died on the spot, while about 532 others were still alive when the police arrived and either died on the way to the hospital or in the hospital. These casualties can be saved if we have a good prehospital emergency care.(8) The number of other

emergency cases who died on the way to the hospital is not known. The Indonesian Surgeon Association has been aware of this problem since 1969, when they had their National Conference and realized that 60-70% of the surgical beds are occupied by traffic accident victims. In an effort to improve the survival of injury victims and other emergencies with a low-cost practical and effective technology, in 1971 they started a pilot project of a prehospital telephone based emergency medical system (EMS) in Jakarta, which has now spread to five cities and surrounding areas on the three most populated islands(6). The objective is to have this system all over the country so that we can take the emergency medical facilities to the patient and not the other way around.

METHODS

Because of its geography, population, political and economic development, Indonesia has its share of all kinds of disasters(7):

- Natural (flood, earthquake, volcano eruptions, tsunami etc.);
- Man made technology (fires, gas/food poisoning, amunition dump explosion etc.);
- Social (terrorist activities, social unrest/disturbances etc.);
- War; and
- Daily emergencies (traffic accidents, gunshot/stab wounds, heart attacks etc.).

To cope with these problems, the Indonesian Surgeon Association has set the objective for the 118 emergency ambulance that they must be able to:

- Do CPR and Stop Bleeding;
- Support life;
- Avoid disabilities;
- Evacuate the patient safely; and
- Act as a field hospital in case of a disaster.

To be able to do all that the 118 Emergency Ambulance is actually an emergency department on wheels with a crew of 2 male nurses trained:

- 17 hours in basic emergency ambulance procedures and driving;
- 3 months on critical care and emergency medicine; and
- 1 year in the ICU.

In case of a disaster, 5 ambulances with built in tents conected together can act as a Field Hospital, to triage and treat 100 casualties simultaneously(6). With the small number of 118 Emergency Ambulances, the response time is very poor and that is why we train the community (laymen, police, fire brigade, security forces, civil defense, SAR, etc.) to help themselves before the 118 emergency ambulance arrives. The training consists of (6):

- How to call for help;
- How to do CPR;
- How to stop bleeding,
- How to splint and bandage; and
- How to transport the patient safely.

Access to this system is through the 118 emergency telephone number or Amateur Radio Organization. Communication between medical facilities and the 118 emergency ambulance uses a special medical radio communication. This system as a whole exists in Jakarta with its shortcomings, while in the other cities works partly.

RESULTS

In Jakarta now we have 20 well equipped 118 Emergency Ambulances and 82 trained male nurses, and 30 of them as qualified instructors. Between January 1980 and December 1988, the 118 Emergency Ambulances (8):

- Treated 61,590 emergency cases, of which 671 needed resuscitation and life support;
- Helped take care of:
  - 2 civil disturbances;
  - 2 political rallies during the General Election;
  - Evacuation of a 500 bed hospital during an amunition dump explosion;
  - 1 gas intoxication in a factory;
  - 1 food poisoning in a textile factory with 148 patients;
  - 1 gastroenteritis outbreak in a district of Jakarta;
  - 1 train crash with 152 dead, 517 injured and 22 casualties trapped;
  - 1 plane crash with all passengers dead; and
  - All major sport events with minimal participants of 10,000;
- Has trained:
  - 24,600 laymen;
  - 1,650 scouts and students;
  - 2,700 policemen;
  - 1,000 dentists;
  - 2,100 nurses; and
  - 1,400 doctors.

DISCUSSION

The 118 emergency ambulance has proved itself to be useful in the prehospital management of the daily emergencies, disasters, and training of the community. However, for a city like Jakarta, with a population of 6,472,492, which can swell up to 8,000,000 during daytime, 418 km of road network and 625 sq kms, the 118

emergency ambulance must do better (5). Compared to the number of emergency cases in the emergency departments in Jakarta, only 30% of them are managed and transported by the 118 emergency ambulance (1,8). This situation is caused by:

- The fact that 80% of our ambulances are 10 - 19 years old, which results in frequent breakdowns; and
- A small budget resulting in only 5 ambulances on standby 24 hours a day causing a response time of 15-20 minutes.

The number of persons we had trained was too small for an 8 1/2 year period. This was also affected by a small budget and limited number of manequins and other training aids. These problems exist because this system is a private organization developed and managed by the Indonesian Surgeon Association, while the goverment has limited financial resources for development, so that goverment subsidy for the 118 emergency ambulance is limited. On top of that, the Indonesian people are still not insurance minded, and the insurance company for traffic accidents pays the 118 emergency ambulance only Rp 2500 per emergency case, which is equivalent to US$1.50, while the operational cost of 1 emergency case is US$ 24. All these problems makes it difficult for us to buy new ambulances and training aids or develop this system in Jakarta and throughout the country.

RECOMMENDATION

Last July the Indonesian Surgeon Association, in cooperation with the Indonesian Society for Critical Care Medicine, hosted a National Symposium and Workshop on Disaster Management in Bandung and Semarang which recomended that:

- The police, fire brigade and 118 emergency ambulance should have closer coordination in the management of prehospital emergency care and disasters;
- The 118 emergency ambulance system should be developed throughout the country; and
- This development should be done in a step by step fashion, starting with large cities in Java and Bali, followed by the northern part of Java, because its dense population and high number of traffic accidents, and then the rest of Java, and big cities outside Java. 8,000,000 of the population lives in Java, and after that follows the rest of the country.

References

1. Arini I; Pusponegoro AD; Bennutomo N; Philippi B: Problems of The Cipto Mangunkusumo Hospitals Emergency Department. Jakarta 1989. Unpublshed.
2. Dept.of Health. Directorate for Medical Services: Program for Medical Referral System. 1989.
3. Information Dept for Medical Services: Number of Hospital and Hospital Beds. 1987.
4. Mohan D: Strategies for road traffic injury control: A perspective for developing countries. National Seminar and Workshop on road traffic accidents Jakarta. 1984.
5. National Information Center: Jakarta in Figures. 1987.
6. Pusponegoro AD: Penanggulangan Penderita Gawat Darurat Indonesian Society for Critical Care Medicine 1980.
7. Pusponegoro AD: Natural History of Disasters and Daily Emergencies. WHO/Dept of Health Workshop on Disaster Management. Jakarta Indonesia 1987.
8. Pusponegoro AD: Trauma and its problems. Warta IKABI II; 3,299-3Q4. 1989.
9. Subdirectorate of Traffic Police: Number and Severity of Motor Vehicle Injuries in Indonesia. 1988.
10. Seminar and Workshop on Disaster Management in Bandung/Semarang. Indonesian Surgeon Association and Indonesian Society for Critical Care Medicine. 1989

PLAN HOSPITALARIO PARA CASOS DE DESASTRE HOSPITAL JUAREZ DE MEXICO

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INTRODUCCION

La atención médica de las víctimas ocasionadas por un desastre natural o provocado por el hombre, requiere de una organización institucional capaz de reaccionar con oportunidad y eficiencia a las demandas generadas por una catástrofe interna o externa. Los hospitales, en especial, deben de contar con un plan que responda a las necesidades que derivan de una emergencia, teniendo en cuenta la variedad de los posibles desastres y las contingencias a las que el hospital pueda estar sometido.

La Ciudad de México, capital de la República, por sus características geográficas y por la densidad de su

población es particularmente susceptible a las catástrofes, las cuales han jugado un papel amargo en su historia. El país es uno de los que tienen mayor actividad sísmica en el mundo, cada año se registran más de 90 temblores con una intensidad mayor de 4 grados en la escala de Richter. La Ciudad capital se asienta en gran parte sobre una zona lacustre constituída por depósitos de arcilla blanda de alta compresibilidad, que han ocasionado el hundimiento en algunos puntos. Se encuentra rodeada de tres volcanes, uno de ellos con actividad. A pesar de estos inconvenientes el Area metropolitana ha tenido un crecimiento demográfico exagerado, el mayor en el hemisferio occidental, en la actualidad cuenta con casi 20 millones de habitantes en una superficie aproximada de 3,336 Km2. Esta gran concentración urbana que tiene un aeropuerto internacional prácticamente en su centro y una refinería y varias industrias dentro de sus límites, sufre de problemas con la circulación de casi 4 millones de vehículos, medios de transporte colectivo insuficientes, deficiencias en el abastecimiento de agua y otros servicios y una alarmante contaminación ambiental.

La susceptibilidad de nuestra Ciudad a los desastres quedó demostrada una vez mas en 1985. Aproximadamente a las 7:00 horas del 19 de septiembre un terremoto de 8.1 grados de magnitud en la escala de Richter sacudió a casi la totalidad del país. El epicentro se localizó a unos 400 km al sudeste de la capital, que fue la que sufrió la mayor devastación, tanto por la magnitud de los daños como por sus características. La zona norte de la ciudad fue la más afectada en un área 2. Según cálculos muy conservadores el número de muertos fue aproximada de 40 km2 de 5 000 y el de desaparecidos de 2 000. Más de 10 000 personas sufrieron heridas graves y 30 000 lesiones menores. Se afectaron en mayor o menor grado 50 000 edificios, 400 de estos se colapsaron.

Uno de los edificios derrumbados fue la Torre de Hospitalización de 12 pisos del Hospital Juarez. El día del temblor estaba ocupada en un 80% y el personal médico, de enfermería e intendencia se preparaba a iniciar un día más de trabajo De las ruinas solamente se rescataron 179 personas vivas y 561 cadáveres. Aunque no se sabe con exactitud el número de individuos que se encontraban en el interior del edificio, suponemos que el total de atrapados sobrepasó con mucho a los rescatados con vida y a los muertos.

PLAN HOSPITALARIO PARA CASOS DE DESASTRE

Después de esta triste experiencia se vió claramente la necesidad de que el Hospital se preparara para las situaciones de desastre, tanto entro como fuera de sus instalaciones. El Plan Hospitalario se elaboró siguiendo los lineamientos del Programa de Preparativos para Situaciones de Emergencia y Coordinación del Socorro en Casos de Desastre de la OPS/OMS. Se tuvieron en cuenta las características que deben observarse al diseñar todos los planes, es decir, está basado en la capacidad operativa del Hospital y en sus recursos, se pretende que sea funcional y flexible, establece claramente las lineas de mando, está encadenado al Sistema de Protección Civil, comprende medidas para desastres internos y externos y se actualiza continuamente. Este plan, como otros, comprende 4 fases:

1. Preparativos: Elaboración del plan, organización de la institución y capacitación del personal.
2. Alerta: Sistemas de notificación, preparativos para la acción inmediata, expansión de la capacidad hospitalaria, organización del area de recepción, seguridad, transporte e información.
3. Emergencia: Implementación del plan de acuerdo al tipo y magnitud del desasatre.
4. Restablecimiento· Regreso a la normalidad, crítica de la eficacia del plan y ajustes necesarios para mejorarlo.

PREPARATIVOS

Comite Hospitalario Para Casos De Desastre

Se designara la comisión responsable de elaborar el Plan Hospitalario en Casos de Desastre. Este comité tambien se encargará de:

- Designar al Jefe Operativo y subalternos;
- Convocar reuniones periódicas para evaluar el nivel operativo del Plan;
- Difundir el Plan entre los miembros del Hospital por medio de reuniones y conferencias durante las horas de trabajo;
- Capacitar al personal y a las brigadas establecidas en cursos extrahospitalarios (incendios, rescate, salvamento, accidentes radiactivos, etc);
- Establecer relación directa y frecuente con la Unidad de Protección Civil Delegacional y con la del Distrito Federal, para coordinar las actividades en casos de desastre.

Señalamientos y Diagramas

- Instalar en las diferentes Areas del Hospital señalamientos visibles, aún en circunstancias adversas, de las vías de circulación y evacuación de los edificios, áreas de seguridad y zonas de expansion de la capacidad hospitalaria;
- Colocar en lugares estratégicos diagramas con las rutas de evacuación y los procedimientos a seguir en caso de incendio, terremoto o evacuación;
- Instalar señalamientos visibles para la circulación de ambulancias y otros vehículos;

- Colocar etiquetas de color rojo a todo el equipo y material valioso para que sea evacuado en caso de desalojo de Emergencia
- Mantener reservas de medicamentos y material médico de emergencia en sitios específicos (urgencias adultos, pediatría, gíneco-obstetricia y áreas de seguridad);
- Organizar el material en charolas y cajas facilmente transportables;
- Identificar y clasificar el equipo y el material por categorías (equipo de ventilación, material de curación, instrumental de cirugía, etc.);
- Incluír en las cajas tarjetas de Triage y material de escritorio;
- Verificar periódicamente esta reserva y reponer los productos con fecha de expiración.

Equipos Contra Incendio y Herramientas

- Mantener reservas de equipo portatil contra incendio en los diferentes servicios;
- Identificar hidrantes y señalar su funcionamiento;
- Mantener reservas de herramientas indispensables en los almacenes de los diferentes servicios (hachas, sierras, destornilladores, etc.);
- Verificar periódicamente los equipos.

Comunicaciones Internas y Externas

- Contar con sistemas de comunicación independientes para que funcionen con su propia fuente de energía en caso que fallen las existentes;
- Establecer un sistema interno que comunique las diferentes áreas del Hospital (altavoces portátiles, radios, etc.);
- Establecer la forma de comunicación con el personal que esta involucrado en el plan y que no se encuentra en servicio.

Fuentes Alternas de Agua, Energia Electrica y Combustible

- Conocer el tiempo que el Hospital puede funcionar con su propia fuente de energía y reservas de agua y combustible, en caso de que el suministro normal falle;
- Verificar periódicamente su funcionamiento y nivel de reserva;
- Almacenar fuentes de energía portatiles en sitios cercanos a las zonas de seguridad.

Transporte

- Realizar un inventario periódico de ambulancias y unidades móviles;
- Realizar un inventario de los recursos de movilización de pacientes a camillas y sillas de ruedas.

Manuales y Tarjetas de Accion

- Los jefes de todas las áreas del Hospital deberán colaborar en la elaboración de un Manual de Normas y Procedimientos para cada servicio o departamento;
- Diseñar tarjetas de acción sobre la organización del personal y las actividades a realizar, líneas de mando y líderes alternos;
- Colocar estas tarjetas en sitios visibles en todas las áreas del Hospital.

Adiestramiento de Personal

- Involucrar a todo el personal del Hospital;
- Realizar simulacros cuando menos una vez al año,
- Mantener el adiestramiento y la capacitación constante de los trabajadores.

ALERTA

Notificación del Desastre

- La persona que reciba la notificación deberá solicitar los siguientes datos: naturaleza y magnitud del desastre, localización, hora, número estimado de víctimas, tiempo de llegada al Hospital e identificación de la persona que brinda la información;
- El médico con mayor autoridad en ese momento activará el Plan;
- Se notificará al Director y al Comité de Desastres;
- Se organizará el puesto de comando.

Central Telefonica

- El telefonista o radioperador mantendrá líneas abiertas exclusivamente para las emergencias;
- Seleccionará el ingreso de las llamadas categorizando (las emergencias, solicitudes de información y prensa y familiares);
- Notificará al personal designado en los Manuales para que acudan al Hospital.

Centro de Operaciones de Emergencia (Puesto de Comando)

- Reunirá a los miembros del Comité de Desastres;
- Supervisará y controlará el desarrollo del Plan;
- Encadenará el Plan al Sistema de Protección Civil;
- Mantendrá comunicación directa con todas las Areas del Hospital (recepción de heridos, urgencias, cirugía, seguridad, etc.).

Area de Recepción de Heridos

- Estará en el Servicio de Urgencias;
- El responsable será el Jefe del Servicio que se encargará del Triage;
- Se organizará de acuerdo a la información sobre la naturaleza del desastre y el número probable de víctimas;
- Se utilizarán uno o varios espacios físicos para recibir a los heridos;
- Se considerará la posibilidad de expander la capacidad hospitalaria (egresar pacientes que no ameriten tratamiento inmediato, suspender cirugía electiva, suspender la consulta externa, etc.).

Identificación del Personal

- Todo el personal deberá de portar su gafete de identificación en un sitio visible;
- El Comité de Desastres utilizará un brazalete de color rojo;
- El oficial de Triage y todo el personal del área de recepción de heridos y de los servicios clave, según el Plan, portarán un chaleco específicamente diseñado con este fin.

Asignación de Personal al Area de Recepcion de Heridos

- El personal de urgencias y cirugía serán el recurso humano de primera instancia;
- Se organizará en equipos de atención;
- Los equipos estarán integrados por un médico especialista capacitado para la atención masiva de víctimas, un residente y dos enfermeras;
- El responsable del mando del equipo será el médico de mayor jerarquía;
- Un grupo de anestesiólogos se mantendrá dentro del área para reforzar los equipos en caso necesario.

Suministros Médicos y Equipo

- Los equipos y suministros se transportarán del sitio de almacenamiento al área de atención;
- Se establecerán los sitios de funcionamiento de los aparatos portátiles de Rayos x;
- Se colocarán las camillas y sillas de ruedas en el área de recepción, en los lugares establecidos;
- Se establecerá un sistema para el cambio de camillas y equipo de atención prehospitalario para evitar el congestionamiento del área de recepción (vales por equipo, canjeo, etc.).

Servicios del Hospital

- Los Servicios de Cirugía General y de Urgencias suspenderán la actividad de rutina para dar prioridad a la atención de las víctimas;
- Se tendrán todos los quirófanos disponibles, así como las áreas de recuperación y observación;
- Se asegurará la disponibilidad de ropa de quirófano e instrumental quirúrgico esteril suficiente;
- Se desocuparán las salas de espera;
- Los Servicios de Medicina Interna, Pediatría, Gíneco-obstetricía y de más magnitud del desastre movilice a todo el Hospital;
- En caso necesario todo el personal profesional se pondrá a disposición del Comando de Operaciones, permaneciendo en los Servicios el personal mínimo indispensable para el cuidado de los pacientes internados;
- Rayos x, laboratorios, banco de sangre y farmacia suspenderán el trabajo de rutina;
- De ser necesario en estos Servicios se pondrá en marcha el rol de guardias de emergencia las 24 horas;
- La farmacia asegurará la disponibilidad de medicamentos y suministros en cajas de fácil manipulación bien identificadas y llevará un registro de los despachos y de las nuevas necesidades;
- El laboratorio efectuará todos los exámenes de urgencia;
- El banco de sangre se orientará al abastecimiento de unidades de sangre total y a determinar grupos sanguíneos y Rh;
- Los Servicios Administrativos apoyarán a los Servicios Médicos facilitando la utilización de fondos de emergencia para gastos relacionados con el desastre;
- El Servicio Administrativo se encargará de todo lo relacionado con el transporte y las raciones extra de alimentos;
- Seguridad preservará el orden dentro y fuera del Hospital, resguardará todas las instalaciones y el equipo y organizará la circulación de los vehículos, permitiendo el libre acceso de las ambulancias;
- Seguridad restringirá la entrada a personas ajenas al Hospital y llevará un registro de los trabajadores que abandonen las instalaciones;
- En caso de que el personal de seguridad será insuficiente se solicitará cooperación externa (policía, ejercito, etc.);
- Los Servicios Generales (mantenimiento, lavandería, cocina, etc.) deberán mantener la atención durante la emergencia, de ser necesario se pondrá en marcha el rol de guardias de 24 horas.