CHAPTER 2: OVERVIEW OF EHC AND DISASTER MANAGEMENT

EMERGENCY MEDICAL SERVICES DEVELOPMENT IN THE THIRD WORLD:

Defining the Priorities and the Possibilities

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INTRODUCTION

The vast majority of those in the audience today are at least familiar with Western emergency medical service systems; many of you are experts in those systems - devoting your time and energies to planning, improving, and administering emergency medical services. There is not, therefore, a great deal that I could add to your understanding of emergency care development in the West. Instead, I should like to devote this talk to the needs and priorities for emergency medical services in the so-called Third World, that is, the under-served or unserved 76 percent of the human population.

Before dealing with that rather large issue, I should perhaps tell you a bit about my own background, for I think that my odyssey is illustrative of some of the problems one encounters in trying to translate the Western experience to developing countries. I was born in the United States and received my education here. My graduate training was primarily in internal medicine, with six-month rotations through anesthesiology and surgery. After residency, I did a fellowship in critical care medicine, and after that I became involved in emergency care, both in the prehospital sector and the emergency room. I spent eight years, altogether, working in the planning and operation of EMS systems, both in the US and Israel. So by the time I got to Africa, in 1982, I considered myself somewhat of an expert in my field.

What I discovered very quickly in Africa was that I was an expert in nothing - or nothing useful. The epidemiology that confronted me was nothing like the epidemiology I had been trained to treat; it was the epidemiology of poverty: tuberculosis, leprosy, skin infections, the whole gamut of water borne disease. It was the epidemiology of inadequate housing, inadequate food, inadequate water. No one was dying of acute myocardial infarction. People died of hunger, leprosy, infection, and dehydration. People died of anachronisms, for which CPR was of little relevance. Furthermore, I encountered in Africa a nearly total absence of the medical resources I had taken for granted in the West. I am not speaking only of the fact that I did not have access to a CAT scan. In most of the hospitals in which I worked, we did not have even an x-ray machine. Drugs, intravenous fluids, and even bandages were in chronically short supply.

Perhaps I can best illustrate what I am talking about by telling you about a district hospital in which I worked, in the Kenyan highlands, and about one patient I cared for there.

Laikipia District Hospital, in Nanyuki, serves an area of 10,000 square miles and a population estimated to be around one million. Officially, the hospital has 102 beds. I say 'officially' because more often than not there are two patients to a bed, lying head to foot, so the census usually exceeds the bed count. The hospital comprises several sprawling concrete buildings, all of which have seen better days. There is one building housing a few offices, a primitive lab, a pharmacy, and the maternal/child health clinic. Across a dirt courtyard lie the buildings housing the male and female wards (about 20 beds each), maternity, pediatrics, and "theatre" - a very primitive operating room. In yet another building is the general outpatient clinic - visited by about 400 people a day. There is also a shack called the 'kitchen,' where meals are prepared for patients. Then, about 100 yards away, across a grass plot, is 'isolation,' - a small structure for patients with active TB.

The wards themselves are just long rooms furnished with rickety cots, each of which has a few shreds of crumbling foam rubber as a mattress and is covered with a yellowed, deteriorating sheet. The floors of decaying concrete defy all attempts at cleaning, including the twice weekly 'flooding,' during which all patients and furniture are moved outdoors and gallons of water and disinfectant are swept across the floors. This exercise is only marginally effective, especially in pediatrics, where a few dozen undiapered children in brownian motion leave small rails behind them. Nor could all the disinfectant in the world conceal the smell of illness that clings always to the wards.

The medical officer in charge, who serves as doctor both for the hospital and for the whole district (with its 12 satellite dispensaries) was posted to the hospital three years earlier, immediately upon completion of her internship. She is the only doctor for one million people in the district.

During my first few days at Laikipia District Hospital, we had an interesting case that illustrated some of the constraints under which we worked in that part of the world. The patient was a 35 year old man who was admitted to hospital by the Clinical Officer with a presumptive diagnosis of pneumonia. The patient had a cough, basilar rales, and a slight fever. Over the next two days, the patient's condition did not worsen, but it did not improve either. He started complaining of abdominal pain. There was nothing very impressive in the physical exam of his abdomen, but the district medical officer and I had a 'bad feeling' about the patient. It was nothing we could pin down, and certainly nothing we could document scientifically, for we had no x-ray facilities and only the bare minimum of laboratory tests. But based on our 'bad feeling,' we took the patient to surgery for an exploratory laparotomy. Neither of us was really qualified to do so. Between us we had a total of perhaps a year of surgical training, but there was no option. The nearest referral

hospital was 8 hours away, over roads that were then - during the rainy season - virtually impassable; and anyway, we had no ambulance (the hospital ambulance had broken down six months earlier and had not been repaired, for lack of spare parts). So either we operated on the patient or no one operated on the patient.

The operating room was equipped with an operating table, a light, an instrument tray, and a wastebasket. It also boasted a Boyle's anesthesia machine - a real rarity. The presence of this apparatus was scant consolation, however, since there was no anesthetist. Thus a nurse undertook to do the anesthesia with ketamine - not really the agent of choice for major abdominal surgery in a patient with a full stomach.

After a last look at the surgery textbook, we made a right paramedian incision, in the rather unrealistic hope that we might be dealing with something simple, like an inflamed appendix (appendicitis is almost unheard of in East Africa). The moment we opened the peritoneum, we found ourselves facing an awful mess, for the whole belly was filled with fecal material, pus, and adhesions, and the smell was almost overpowering. Apparently a duodenal ulcer had perforated, and bowel contents were spilled throughout the abdomen.

The operating room was not blessed with a suction apparatus, so cleaning out this mess was a major undertaking - pouring irrigation solution into the wound, then mopping it out again with surgical sponges. This would have been tedious enough, but the hospital possessed only 12 surgical sponges (which were rewashed and resterilized after every case, sometimes a dozen times a day). So it was a process of mop, wring out, rinse, wring out, mop, wring out.

While we were thus engaged in peritoneal housecleaning - a prelude to searching for the hole in the duodenum that had caused all the trouble - the patient's blood pressure suddenly dropped precipitously, probably from too much ketamine. I broke scrub to take over the anesthesia. I started a second intravenous line, but my enthusiasm for pouring in fluids was tempered by the knowledge that there were only 4 bottles of IV solution left in pharmacy, and that we had several children in pediatrics who were severely dehydrated from vomiting and diarrhea. I switched the patient to an ether anesthetic, to try to get some abdominal relaxation, and the district medical officer meanwhile located the hole in the duodenum. She hastily closed it and patched it up with omentum. Then she closed the abdomen as fast as she could. There was no gauze or other material with which to dress the surgical wound, so we dispatched a nurse to fetch some sanitary napkins from the maternity ward, and we used those to dress the wound.

For the next several days, we had to manage the rather complex fluid requirements of this patient guided only by his intake and output, his urine specific gravity, and the needs of other patients for our scarce IV fluids. There was no possibility of measuring serum electrolytes, let alone BUN, creatinine, and all the other numbers in which a Western doctor finds solace.

The patient, by the way, survived. He survived not because of the exemplary medical treatment he received, but because he had already survived childhood - the ultimate process of natural selection in Africa.

I have presented this somewhat lengthy description to give a sense of the experience that has shaped my views, and also to provide a sketch of what hospital care is like in much of the Third World - at least in those areas that have hospitals at all. In my own case, this experience, in and out of hospitals during a time of severe famine in Africa, led me to abandon medicine altogether for a couple of years, in favor of devoting my time to agricultural development. It was a matter of priorities.

I should like now to discuss the matter of priorities - specifically the issue of where emergency care fits into the health priorities of the developing world. I shall then turn my attention to logistics and how appropriate EMS systems can be integrated into primary health care in developing countries. Finally, I should like briefly to consider the EMS needs of the planet earth, and how those needs can be reconciled to the needs of earth's human tenants.

HEALTH PRIORITIES IN THE DEVELOPING WORLD

Any system for delivering health services must take into account the epidemiology of the region served and the resources available to deal with health problems.

In order to get a picture of the most urgent health care needs in the Third World, let us look first at the epidemiology of Gondar Province, Ethiopia. I chose this particular region because I spent some time working there, but I believe it is fairly characteristic of much of the Third World in terms of overall patterns of morbidity. The vital statistics of the Province already tell a story of what can only be considered a health emergency:

Vital Statistics, Gondar Province, 1985

Birth rate: 51.3/1000
Crude death rate: 23/1000
Infant mortality: 227/1000
Infant/child mortality: 318/1000

What these figures tell us, besides signalling a rate of natural increase well over 2% - a time bomb for the future - is that more than 3 out of every 10 children die before the age of five years. If we examine the statistics for outpatient morbidity in the province, we begin to see why they die:

TABLE I

Leading Causes of Outpatient Morbidity
Gondar Administrative Region, Ethiopia (1984)

Diagnosis	Percent
Helmunth infection	11.4
Malaria	11.0
Diarrheal disease	9.3
Skin infections	6.2
Eye disease, including trachoma	6.1
Acute upper respiratory infection	5.4
Pneumonia	5.3
Venereal disease	4.8
Malnutrition and anemia	4.3
Arthritis	3.9

What these statistics tell us is that children in Gondar Province, in fact, die from poverty. This is readily apparent if we present the data a little differently:

TABLE 2

Leading Causes of Outpatient Morbidity
Gondar Administrative Region, Ethiopia, 1984

Cause	Percent
Inadequate water supply	33.0
Inadequate housing & environmental conditions	21.7
Inadequate food	4.3

The situation in Gondar is little different from that in most of the Third World, where access to the most basic prerequisites for health, not to mention development, is mostly absent:

TABLE 3

Rural Populations: Access to Facilities
(by % of households)

Region	Clean Water	Sanit.	Elec.
Lat. America		25	25
Asia	19	6	15
Africa	21	20	4

Furthermore, more than a quarter of the world's children are hungry:

TABLE 4

Malnutrition in Children Under Five

Region	% Moderately Malnourished	% Severely Malnourished	Total %
Asia	31	3.2	34.2
Lat. Amer.	26	4.4	30.4
Africa	19	1.6	20.6

Nor does this situation show any sign of improving. The world is losing agricultural land at twice the rate that new land is cleared for farming An area larger than Great Britain is disappearing every year, through soil erosion and desertification. If current trends continue, there will be only 0.15 hectare of farmland per person by the year 2000 - that is, half the 1975 level. Meanwhile, per capita food production in Africa, for example, has fallen 1 percent per year every year since 1967.

The epidemiology of the Third World then, is the epidemiology of poverty and hunger. The most urgent health needs of those regions derive from that epidemiology. The Third World is indeed in need of emergency care, but not of the sort we usually associate with EMS in the West. The emergency care priorities in the Third World are clean water, sanitation, food, and housing

What resources are available to provide these urgent needs? If we want to consider improvements in emergency health care in the Third World, we need to look at the budgetary constraints under which we have to operate. Consider the total health care budget in a few representative countries:

TABLE 5

Per Capita Budget for Health Care (1977)

Country	Per capita budget ($US)
Malawi	0.50
Upper Volta	0.56
Brazil	0.80
India	0.90
Great Britain	105.16
USA	1343.00
World military outlay	131.00

Cost of providing clean water, sanitation, and full immunization to every person on earth: $12.50/person

Please note, for comparison, that in King County, Washington, the annual cost in 1979 of providing a mobile intensive care system was $3.25 per capita, nearly seven times the total per capita health budget of a country like Malawi

Having taken a brief look at the epidemiology, resources, and priorities of the Third World, let us now consider the logistics of improving emergency medical services in these areas

EMS POSSIBILITIES IN THE DEVELOPING WORLD

The purpose of an emergency medical services system is twofold: First, to serve the day-to-day needs of the population for routine emergency medical care, and second, to provide emergency services in times of disaster. Let us examine these two functions one at a time.

Day-to-Day Emergency Services

In the West, it is customary to regard the EMS system as a chain of responses, a chain that is only as strong as its weakest link. The chain consists of the following links:

1. First aid at the scene by trained bystanders;
2. Initiation of the EMS response system (eg. 911),
3. Treatment at the scene by members of the system (EMTs and paramedics);
4. Transport with advanced life support en route;
5. Treatment in an appropriate hospital emergency department;
6. Treatment in the operating room and intensive care unit;
7. Organization, communication, planning, education, evaluation, and research.

Do the means exist to construct such a chain in the Third World today? Let us, for the moment, disregard the first link in the chain - we shall come back to it - and consider those that come after it:

Link #2

Initiation of the EMS response system: How shall this be done in vast areas of the world where there are no telephones? In East Africa, the Flying Doctors have managed to establish radio links with 103 outlying health facilities in Kenya, Sudan, Tanzania, and Uganda. But consider the residence pattern of most of Africa. The average East African lives at least a day's walk from the nearest health facility. If it takes at least a day to reach help, can this be considered an 'emergency' response system?

Link #3

Treatment at the scene by EMTs and paramedics: Training EMTs and paramedics would not be a formidable problem, although finding funds to pay their salaries might be. But more to the point, how would those EMTs and paramedics reach the patient? In much of the developing world, there are no roads at all; where roads exist, they are often dirt tracks that become impassable with the first rains. Motor vehicles, such as ambulances, are prohibitively expensive to buy and nearly impossible to maintain. Spare parts are chronically in short supply, and petrol is often rationed or simply unavailable.

Link #4

Transport with advanced life support: Suppose, though, that we overcame the problems of communication, that we got roads built, provided suitable vehicles, and ensured that they were fuelled and maintained. Could we really aspire to provide advanced life support in ambulances, when advanced life support is not available anywhere else in the health system? Look at the next link in the chain:

Link #5

Treatment in the emergency department. The EMTs, of necessity, will have to bring their patient to the nearest facility. This is what the nearest facility is apt to look like - a one or two-room dispensary staffed by a dresser and equipped, at best, with a stethoscope, a few essential drugs, and some bandaging materials.

I do not think it is necessary to proceed through the remaining links of the chain, each of them requiring, as they do, greater and greater degrees of infrastructure. What becomes clear is that there is only one link in the EMS chain that is practicable in most of the Third World today, and that is the first link: first aid at the scene by trained bystanders. We will return to these trained bystanders a bit later But first let us consider the second function of an EMS system. preparing to deal with disasters.

Disaster Response

The first necessity, in considering disaster preparedness and response in the Third World, is to redefine the word 'disaster'. We are accustomed in the West to regard the crash of a jumbo jet, in which several hundred people perish, as a disaster. Or perhaps an earthquake that produces several thousand casualties. What do such numbers mean in a part of the world where 40,000 children die every day from hunger? Where 15,000 die every day from diarrheal diseases, and perhaps another 10,000 from respiratory infections? The fact is that by any measure one chooses, much of the Third World is a daily, ongoing disaster. Therefore EMS planning must be directed not toward some hypothetical future calamity. It must be directed to the ongoing disaster that is part of the daily life of much of the world's population. Disaster services must be inseparably linked to day-to-day health services.

INTEGRATING EMS INTO PRIMARY HEALTH CARE

We have seen, then, that the most urgent health priorities in the the Third World have to do with water, sanitation, food, and housing - and that the absence of these fundamental necessities has produced an ongoing disaster for much of the human population. We have also observed that preparedness for this or any other disaster needs to be part of the day-to-day service of a Third World health system. And we have noted that the only link in the EMS chain we can practically consider as viable in the Third World today is the first link - the person on the scene

Already, most developing countries have begun to recognize the pivotal importance of the 'person on the scene' in providing basic health services. That person has come to be known as a community health worker, a person from the village, chosen by his or her neighbors to receive special training in preventive medicine and basic medical care.

In its first stage of development then, any EMS system for the Third World will of necessity consist of isolated community health workers, each serving his or her own village. So we need to consider what emergencies these community health workers should be trained and equipped to handle. To do so, we must return to the epidemiology of the Third World, for the epidemiology defines our priorities.

Overall Tasks of the Community Health Worker

1. To ensure a clean water supply for the village, by organizing the digging of a protected well or the protection of existing streams;
2. To encourage his or her neighbors to dig latrines;
3. To teach mothers how to prepare and administer oral rehydration solution to infants with diarrhea;
4. To monitor the growth of infants and identify those infants who fail to gain weight normally;
5. To organize the mothers in the village for periodic visits of immunization teams;
6. To teach others in the village about sound health practices.

Will any of this make a difference? Consider the impact of only one of the interventions mentioned above: providing clean water:

TABLE 6

Effect of Providing Clean Water to a District in Kenya

Disease	Reduction in Incidence
Cholera	90%
Typhoid	80%
Trachoma	60%
Leprosy	50%

If the aim of an EMS system is to reduce morbidity and premature mortality, the provision of clean water must certainly fall within the scope of EMS.

As to those actions we would regard in the West as 'emergency care' activities, the community health worker can indeed contribute to the two functions of an EMS system we have referred to earlier:

1. Day-to-day emergency care: It is not unreasonable to establish as a goal the training of each community health worker to a level equivalent to emergency medical technician in the West. Emphasis should be on the early treatment of common emergencies - burns, lacerations, animal bites, dehydration, fever, seizures, childbirth - with a minimum of equipment. Training must take into account that in the majority of cases, rapid referral to a medical facility will not be possible. Therefore the community health worker must be given sufficient instruction to enable him or her to deal with most emergencies at the scene. In addition, the community health worker must learn which patients are likely to need further care and refer those patients early, so that the long journey to a medical facility can be undertaken while the patient is still relatively stable.

2. Disaster preparedness: An effective nationwide system for disaster preparedness requires an early warning network, and here again, the community health worker can play a vital role. In the Third World, when we talk of disaster - other than the 'normal' disaster of daily life - we are usually talking about drought, floods, or epidemic disease. Within each village, the community health worker can monitor a few simple parameters that provide early indications of impending famine, flood, or epidemic disease For example:

    - Increasing incidence of growth retardation (as measured by failure to gain weight) among infants;
    - Increase in the prices of staple foods in the local market (indicating growing scarcity);
    - Fall in the price of livestock in the local market indicating that pastoralists can no longer feed their herds);

- Unusual rainfall (that may presage floods); and
- Increasing incidence of gastroenteritis in the village, indicating a possible water-borne outbreak (eg. cholera).

Keeping track of these events does not require a great deal of sophistication or even literacy. In many community-based health care programs in Africa, community health workers monitor the 'health happenings' in their villages by filling in very simple charts, in which each event in question is recorded by making an 'x' or filling in blank circles. Record-keeping forms of this sort could be easily modified to include information like that mentioned earlier, which provides early warning of disaster.

To summarize then, the over-riding emergency health care need of the Third World is not, at this time, a need for mobile intensive care ambulances, defibrillators, demand valves, and the like. The vast majority of people who die prematurely in the Third World do not die of things that a defibrillator would help. They die because of contaminated water; they die because of inadequate shelter; they die from hunger. Nor does the Third World possess the infrastructure or resources to implement an EMS system as we know such systems in the West. Thus both epidemiology and resources dictate that emergency care development in the Third World focus on the setting in which morbidity occurs - the village - and on the skills of the local health care provider: the community health worker.

NEEDS OF PLANET EARTH

Before closing, I should like to add only a few words about the health of the planet on which we reside. Only during the past few years have we begun to be aware of the fact that our planet also needs emergency care. Since the industrial revolution, we have been despoiling the environment in which we live, while advances in health care have enabled the population to increase exponentially. The planet is ailing. What emergency care does it require?

I do not have any answers. I wish only to raise the questions, for laudable efforts at saving lives must always be accompanied by concern for providing a sustainable future to those whose lives we've saved. Scores of relief teams raced to Ethiopia during the 1984 famine and saved hundreds of thousands, perhaps millions, from starvation. To what end? What will prevent the survivors of the 1984 famine from starving in the next famine? In Kenya, where the rate of natural increase is 4 percent, per capita food production has fallen steadily for 20 years. It does not require a prophet to foresee the coming disaster inherent in those statistics. How shall we prepare for that disaster?

Ultimately the health of all who dwell on this planet depends upon the health of the planet itself. Those of us who roam the world saving lives also have an obligation to address ourselves to the consequences of our actions. Whether in King County, Washington or in Wollo Province, Ethiopia, we must examine the real needs and priorities of the people we serve.

LOS SERVICIOS DE URGENICAS UNA NUEVA PRIORIDAD EN SALUD PUBLICA PARA AMERICA LATINA

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INTRODUCCION

La XXII Conferencia Sanitaria Panamericana en 1986 definió la orientación y prioridades programáticas para la OPS en el cuadrienio 1987-1990. En estas definiciones que destacan la equidad, la responsabilidad social y el derecho universal a la atención de salud, la Conferencia solicitó a los Países Miembros y a la Secretaría de la Organización, dar especial atención al fortalecimiento de la infraestructura de los servicios de salud. Asimismo, concentrar esfuerzos en la solución de aquellos problemas con mayor trascendencia en el estado de salud, particularmente de los grupos de población en situaciones de mayor riesgo o desventajas sociales y económicas.

En los países de América Latina, como resultado del rápido crecimiento de la población urbana, de la expansión consiguiente de los medios de transporte, de la violencia, y otras características del desarrollo desequilibrado de las ciudades, especialmente de las grandes urbes, los accidentes y el trauma, así como otras condiciones de salud que requieren atención inmediata, figuran hoy entre las primeras causas de morbilidad y mortalidad. En aplicación de la estrategia global de atención primaria y de los lineamientos anotados de la política regional de salud, el reconocimiento de estos problemas prioritarios plantea la necesidad de un desarrollo apropiado de los servicios de salud correspondientes.

En 1987 la Asamblea General de Naciones Unidas, designó los años 90 como la Década Internacional para la Reducción de los Efectos de Desastres Naturales.

En los países de América Latina que continuamente están sometidos a la amenaza, los azares, y las consecuencias de inundaciones, erupciones volcánicas, terremotos, huracanes, etc., los objetivos de la Década, deberán cubrir una amplia gama de actividades orientadas a mitigar el impacto de esos desastres en las condiciones socioeconómicas de las poblaciones, y mejorar y desarrollar la capacidad nacional para enfrentar estas situaciones. Acordes con la realidad las propuestas

operativas habrán de incluir acciones específicas para reducir las pérdidas de vidas y mejorar las posibilidades de atención de aquellos que como consecuencia de estas catástrofes naturales reciben heridas y traumatismos, o ven de cualquier otra forma comprometido de manera crítica su estado de salud La atención efectiva de estas situaciones requiere en esencia, un desarrollo y un funcionamiento apropiados de los servicios médicos de urgencia.

Las situaciones planteadas y las formulaciones de la política regional de salud citadas concurren a destacar la importancia de las acciones orientadas a atender las urgencias individuales de ocurrencia diaria, así como las situaciones catastróficas resultantes de desastres naturales o provocados. Paradójicamente, los servicios que deben cumplir estos cometidos han recibido, hasta ahora, ninguna o muy limitada consideración tanto en los procesos de planificación de la infraestructura del sector salud, como en los esfuerzos de desarrollo técnico y administrativo de los servicios de salud, en la mayoría de los países de América Latina.

En el panorama actual de la salud pública del continente, el trauma, la violencia, los accidentes, y sus situaciones condicionantes o coadyuvantes son problemas de gran magnitud. El desbalance existente entre una demanda creciente y diversificada de atención por estos conceptos, que afecta a toda la población urbana, pero especialmente a los grupos con menor disponibilidad de recursos, y la baja capacidad organizacional y técnica de los servicios que deben atender y satisfacer dicha demanda, requiere soluciones apropiadas e inmediatas El reconocimiento de estos problemas debe conducir a la definición de políticas y lineamientos de acción que promuevan y orienten un movimiento decidido de planificación y desarrollo prioritarios de los sistemas de atención de urgencias, con su amplia gama de acciones preventivas, restauradoras y de rehabilitación. En los párrafos siguientes se presenta informacian aportada recientemente a un Grupo de Trabajo sobre estos temas convocado por la OPS. Esta información sustenta la necesidad de dar un lugar prioritario a la creación y fortalecimiento de estos servicios en los planes y programas de desarrollo del sector salud. Se hace énfasis en el desarrollo de servicios de urgencias, porque este es el tópico que se desea destacar. Esto no implica una falta de reconocimiento de otras acciones indispensables en la atención de situaciones de desastre, ni invalida la consideración debida a la importancia de desarrollar medidas de diverso orden en el contexto de la Década Internacional de la Reducción de Catástrofes Naturales.

EL PROCESO DE URBANIZACION Y LOS PROBLEMAS DE URGENCIAS

El Crecimiento de la Población Urbana

En el presente siglo, uno de los fenómenos demográficos mundiales de mayor trascendencia, ha sido el crecimiento prácticamente explosivo de grandes concentraciones urbanas en los países en desarrollo.

Según proyecciones de Naciones Unidas, entre 1970 y el año 2000 la población total del mundo se incrementará en un 80%. En ese mismo período la población urbana crecerá en un 145%. Este crecimiento no será uniforme: 1.70% por año en países desarrollados, y por encima del 4% anual en los países en desarrollo. Para el fin del siglo las concentraciones urbanas del mundo en desarrollo habrán absorbido alrededor del 70% del crecimiento de toda la población. En cifras absolutas esto significa aproximadamente 1.300 millones de nuevos habitantes, equivalentes a la diferencia entre los 838 millones observados en 1975, y los 2.1000 millones esperados para el año 2000. Hacia 1975, en los países en desarrollo, las ciudades de más de un (1) millón de habitantes eran alrededor de 90. Para el año 2000 se estima que habrá cerca de 300 de estas ciudades.

En América Latina, la combinación de un rápido descenso de tasas de mortalidad, y la persistencia de tasas de natalidad casi invariablemente altas, dió lugar hacia 1950 al comienzo de un brusco aumento de la población, que de 154 millones en ese año, pasó a 312 millones en 1975. La casi totalidad de este incremento se manifestó en aumento de la población de las ciudades. En 1970, el 79% de la población urbana vivía ya en ciudades de más de 100 000 habitantes. Para 1980 esta proporción se habría acercado al 82%.

En virtud de estas tendencias, para el final del siglo, es decir en diez años más, se espera que tres de cada cuatro latinoamericanos, o sea el 76%, de la población equilavente aproximadamente a 450 millones de habitantes vivirán en áreas urbanas. Del total esperado (613.0 millones), se estima que el 22% (130.0 millones) se localizarán en ciudades de más de 5.0 millones; 12% (73.5 millones) lo harán en concentraciones de alrededor de un millón, y 16% (98.0 millones) vivirán en centros de alrededor de 100.000 habitantes. Estas cifras y proporciones son innegablemente impresionantes. El crecimiento explosivo de las ciudades ha agravado situaciones deficitarias ya existentes, y por supuesto ha generado nuevos y complejos problemas, con exigencias de solución prácticamente inmediatas. Las implicaciones políticas, económicas y sociales de este proceso acelerado de concentración de la población, constituyen necesariamente motivo de especial interés en diversos campos y específicamente en el de la atención de salud.

En general, se ha considerado que la urbanización de la población es un signo de progreso, y que "La

ciudad ha sido la fuerza motriz del desarrollo.... y el lugar de evolución de la civilización". La transición hacia una localización predominantemente urbana de la población, no debería entonces constituir motivo de alarma.

No obstante, en América Latina, lo que resulta preocupante de este fenómeno, ha sido su forma explosiva, y asociada a la acentuación de desigualdades sociales y económicas, que se refleja en grandes carencias de infraestructura física y de equipamiento social de las ciudades, y en muy precarias condiciones de vida para grandes grupos de los habitantes urbanos.

En general se acepta que en América Latina alrededor de la mitad de los nuevos habitantes de las grandes ciudades son migrantes, y la otra mitad nativos. La gran mayoría de los migrantes son pobres. Migran justamente en busca de empleo y mejores ingresos. Pero además, son jóvenes, y en general sin capacitación y carentes de un oficio o una profesión definidas. Estas circunstancias condicionan y acentúan notables desigualdades en la distribución del ingreso. Con las naturales variaciones entre países, se estima entonces que aproximadamente un 50% de la población urbana, vive en, o por debajo del nivel de la extrema pobreza. En algunas ciudades, esta proporción se elevaría al 79%.

Mientras que la población de las ciudades ha aumentado, el sector formal de la economía, por el impacto de la crisis económica ha disminuido su capacidad de generar empleo. Para sobrevivir muchos de los habitantes de las zonas marginadas deben recurrir a actividades informales, usualmente mal remuneradas, cuyo incremento ha dado lugar a la conformación del sector informal urbano de la economía, que en varias de las ciudades mayores de América Latina, constituye más del 50% de la fuerza laboral.

Adicionalmente, las ciudades han crecido en general, anexando territorios vecinos Esta expansión, usualmente no planeada, afecta el sistema ecológico y el ambiente social, y crea serios problemas de organización y administración urbanas. Las grandes metrópolis son en la mayoría de los casos agregados de pequeñas poblaciones una al lado de la otra que conforman en la práctica, zonas multinodales de urbanización, que no llegan a constituir sistemas funcionales bien diferenciados y, por consiguiente son extraordinariamente complejos y difíciles de administrar.

Estas características de desarrollo urbano, incontrolado y en gran medida anárquico, que en mayor o menor proporción comparten las ciudades de América Latina, en el cual el deterioro del ambiente físico, las precarias condiciones de vivienda, el hacinamiento y la pobreza, crean un contexto global de alto riesgo para la salud. La organización y entrega de servicios públicos necesarios para atender a la enorme variedad y cantidad de situaciones de urgencia que se genera en la dinámica de estos grandes conglomerados humanos, ha constituido un enorme desafío a la capacidad de movilizar recursos, y a la iniciativa de las autoridades y de los técnicos para encontrar y ejecutar soluciones que tengan un impacto y una proyección significativas, en un medio en el cual la permanente renovación y ampliación de los problemas y las necesidades es una constante difícilmente modificable.

Incremento de Vehículos Automotores

Dentro de la diversidad de escenarios socio-económicos y culturales que se encuentran en las ciudades de la América Latina, una de las características comunes que ha ido aparejada con los procesos de urbanización, ha sido el incremento muy amplio, y en ocasiones aún masivo de vehículos automotores. Un análisis del número de vehículos registrados en 1969 y en 1980 realizado en 14 países de la Región, incluyendo Estados Unidos, para efectos comparativos, mostró incrementos que oscilaron entre el 13.3 y el 324.4%.

Mientras que en Estados Unidos el aumento comparativo de vehículos en estos dos años fue de un 66.4%, en Costa Rica, México y República Dominicana, las variaciones superaron el 300%. En 4 países más, Colombia, Chile, El Salvador y Guatemala, los incrementos fueron superiores al 200%. Sólo en dos países, Cuba y Uruguay, los incrementos fueron inferiores al 100%.

La relación vehículos/habitantes[1] en esos mismos países, osciló para 1969 entre 0.004 (República Dominicana) y 0.500 (Estados Unidos) y para 1980, osciló entre 0.027 (Guatemala) y 0.728 (Estados Unidos). Comparando los dos años 1969 y 1980, en los 14 países se observaron incrementos porcentuales que oscilaron entre el 12.2% (Uruguay) y el 875.0% (República Dominicana).

En 5 de los 14 países la variación de este índice de motorización fue superior al 150%. En sólo 3 países, el incremento fue inferior al 50%, siendo uno de estos países Cuba, en donde el indicador experimentó una disminución (-8.6%). Estos incrementos en el número de vehículos automotores, junto con las deficiencias de vías, y medios de transporte, y con las restricciones ya planteadas de la infraestructura de las ciudades, han contribuido de manera significativa a aumentar la congestión y los accidentes de tránsito, que en algunos casos han adquirido características de verdaderas epidemias En contraste, se han rezagado el progreso en la legislación del tránsito, la educación vial de los usuarios, y la seguridad de vías, carreteras y vehículos.

DIVERSIDAD Y MAGNITUD DE LOS PROBLEMAS DE URGENCIAS

La gran heterogeneidad de situaciones socio-económicas que generan las condiciones descritas en las áreas urbanas, en especial en las grandes ciudades, condicionan un mosaico epidemiológico de necesidades

extraordinariamente variado, en el cual los problemas característicos de la pobreza y del subdesarrollo se combinan con condiciones propias de las sociedades afluentes, y con manifestaciones derivadas de la congestión, el hacinamiento, y el uso de drogas y alcohol, así como otros efectos de la patología social y el progreso.

Dentro de este cuadro se destaca el aumento de la mortalidad y la morbilidad por accidentes y violencia, y otras condiciones, particularmente cardiovasculares y mentales, que requieren atención en unidades de urgencias. En razón de las características del proceso de urbanización descrito, las ciudades de América Latina, sin haber logrado solucionar o siquiera controlar las diarreas, la enfermedad respiratoria aguda, la desnutrición y otros problemas de salud propios del subdesarrollo, se enfrentan a la necesidad de atender simultáneamente a problemas crecientes derivados del progreso y de la concentración de la población. Los accidentes, el trauma, la violencia, y la patología social derivada del hacinamiento, la pobreza y la promiscuidad, constituyen hoy problemas de salud pública de gran magnitud. También comienzan a tener cada vez más importancia problemas del adulto mayor y de la tercera edad, particularmente afecciones cardiovasculares y condiciones de salud mental que se manifiestan en altas tasas de suicidios y en mayor demanda de atención psiquiátrica crítica.

Las enfermedades cardiovasculares son la causa principal de defunción en 31 países de la Región y los accidentes figuran dentro de las primeras cinco causas de defunción en todos los países. En el grupo de enfermedades cardiovascualres, por sus enormes repercusiones en la mortalidad, se destacan las enfermedades hipertensivas y la enfermedad isquémica del corazón que está considerada en el panorama de morbilidad actual como "una de las llamadas epidemias modernas por su elevada incidencia, prevalencia y subsecuente mortalidad". Aunque los estudios de infarto del miocardio que se realizan en la América Latina son más clínicos que epidemiológicos, los hallazgos han llevado a señalar que "en los servicios hospitalarios (incluídos los de urgencia) se plantea cada vez más la necesidad de servicios especializados para la atención de pacientes coronarios".

Por sus características e implicaciones estas manifestaciones que afectan de manera importante la salud de la población exigen una consideración adecuada en las definiciones de política y en la formulación de los planes de organización y desarrollo de los servicios de salud específicamente de los servicios de urgencias.

La magnitud de estos problemas se expresa tanto en las altas tasas de mortalidad, que revelan un incremento progresivo de la frecuencia de muertes por estas causas, como por las cifras de años potenciales de vida perdidos por esas mismas causas.

Un examen, así sea superficial, de las causas más frecuentes de muerte en los países, muestra un patron más o menos común en el cual, con las naturales variaciones, los primeros lugares corresponden a enfermedades cardiovasculares, accidentes, homicidios y otras formas de expresión de la violencia y el trauma. El análisis de datos hacia 1985 de 23 países de la Región, cuya población de 653.1 millones, equivale a aproximadamente 95% de la población total de la Región, muestra que en 13 países el trauma por accidentes y violencia está entre las primeras 3 causas de muerte en todas las edades. En los 10 países restantes, el trauma se ubica como 4ta. o 5ta. causa de mortalidad, también para todas las edades.

En estos 10 países las enfermedades cardiovasculares ocupan el primer lugar como causa de mortalidad. En 11 de los países restantes estas enfermedades se ubican entre la 2da. y la 5ta. causa de muerte. En sólo 2 países estas enfermedades están más allá del 5to. lugar.

Tanto el trauma, como las enfermedades cardiovasculares, representan una enorme carga en los servicios de urgencias. Sin embargo, en relación a accidentes, como demanda de servicios es aún más significativa la morbilidad. Se estima que por cada persona que muere por accidente hay 15 heridos graves, y de 30 a 40 heridos leves. La muerte por violencia y trauma claramente predomina en los grupos de 15 a 44 años de edad, lo cual, expresado en años potenciales de vida perdidos, pone de presente un tremendo impacto sobre la sociedad. El análisis de datos circa 1981-83 de los 23 países antes anotados, señala con respecto a años potenciales de vida perdidos lo siguiente: en un año el total de defunciones por enfermedades cardiovasculares fue de 1.470.411; con una estimación de años potenciales de vida perdidos de 2.319.178, por año. En contraste los 316.234 defunciones por trauma ocasionaron una pérdida de 6.574.923 de años potenciales de vida. En todos estos países el promedio de años potenciales de vida perdidos por defunción, debido a accidentes y violencia, se ubicó por encima de 30. Aunque es necesario ponerse a cubierto del juicio de valor, extremo y equivocado por supuesto, de que la vida de los jóvenes vale más que la vida de los viejos, que podría desprenderse de esta consideración, es indudable que este tipo de análisis de la mortalidad está señalando la existencia de un problema grave, que tiende a incrementarse como consecuencia del crecimiento vertiginoso del número de automotores, de la mayor complejidad de las concentraciones urbanas y de los estilos de vida que adoptan estas poblaciones, en las cuales el consumo de drogas y alcohol, las altas tasas de suicidios, etc., son situaciones de ocurrencia común compartidos en proporciones importantes por la ciudades latinoamericanas.

Tradicionalmente las expresiones de la violencia, y sus consecuencias, han sido el campo de acción de los

jueces, y las cortes, y de otras agencias afines en la organización de la sociedad. Sin embargo, el enorme impacto que éstas producen en términos de enfermedad, incapacidad y muerte, como lo destacan las cifras anteriores, necesariamente las convierte también en un problema de salud pública, y en un área de acción definida de los servicios de salud.

No obstante, en contraste con esta necesidad, los servicios de urgencias acusan grandes falencias en prácticamente todas las ciudades y conforman un área de la atención de salud con grandes vacios conceptuales y estructurales. Con las salvedades y variaciones propios de casos individuales, esta situación puede ser ilustrada con los datos de la Tabla No. 4 tomados del material presentado al Grupo de Expertos convocados por OPS/OMS al cual se hizo referencia inicialmente.

De 3.140 necropsias en defunciones por trauma en Bogotá el 52.8% de las muertes ocurrieron antes de llegar al hospital. El 90.6% de estas muertes, señaló la autopsia eran prevenibles. Una cifra similar 52.6% de muertes pre-hospitalarias, se observó en Caracas. Aunque no hay datos, se puede asumir que en una alta proporción éstas también pudieran haber sido muertes prevenibles. Estas cifras destacan la inexistencia de los componentes de atención pre-institucional de los sistemas de urgencias.

Continuando con el primer ejemplo, Bogotá, del 47.2% de muertes hospitalarias, aquellas que ocurrieron antes de las primeras 24 horas 21.4% eran prevenibles en un 69% Esto señala también deficiencias en el componente hospitalario, que podrían ser solucionables.

Aunque los datos no son generalizables, estos dos ejemplos pueden ilustrar deficiencias en los sistemas de urgencias, y estimular el debate y las acciones respectivas.

ALGUNOS ENFOQUES DE SOLUCION

La respuesta a las situaciones planteadas como en todos los grandes problemas de la salud pública se inicia y comprende en gran medida acciones de prevención. Esto hoy no se discute, es prácticamente aceptado de manera universal. Es obvio que los esfuerzos en este sentido pueden hacer una gran diferencia en las tasas de morbilidad y mortalidad correspondientes. Hay sin embargo, dos hechos fundamentales que requieren consideración adicional. las posibilidades de medidas de prevención efectivas comprenden diversos campos de actividad, cuya articulación y armonización exigen acciones intersectoriales y abordajes integrales de desarrollo urbano, que a su turno requieren una activa movilización desde los servicios de salud. Es necesario por tanto, desarrollar en el de salud y en los servicios de salud en general esa capacidad de conducción y liderazgo, que permita movilizar la acción y los recursos de otras instituciones y agencias para la prevención de accidentes, la dismunción y control de la violencia en todas sus formas, etc Más allá de los resultados exitosos de las medidas de prevención, habrá siempre una proporción importante de casos que requieren acciones específicas de atención médica, curativa y reparativa.

En las circunstancias actuales, estas situaciones que son la mayoría, exigen un desarrollo apropiado de los servicios de urgencias en sus diferentes componentes y fases de actuación. En este sentido convienen algunas precisiones:

- En la atención de salud de la población urbana en América Latina y el Caribe un problema central es las accesibilidad a los servicios por razones de orden financiero. Estas restricciones afectan primordialmente a los grupos pobres de la población, que además confrontan serias limitaciones en razón de las características de organización de los servicios.

- La introducción de "tarifas", "aranceles", "cuotas de recuperación" u otras formas de compartir costos en los establecimientos del sector público, para efectos de los servicios de urgencias debe ser abolida, reemplazándola por esquemas apropiados de financiación que no hagan depender la atención del pago o contribución que debe hacer el usuario al recibir el servicio. Este tipo de esquemas de financiación ha sido responsable de muchas muertes evitables y por consiguiente deben ser abandonados.

- El sector salud, en las ciudades, usualmente está conformado por múltiples entidades y programas separados, cada uno con propósitos individualizados, y ninguno realmente responsable por la acción armónica del conjunto. La disociación institucional, y la fragmentación de servicios que se derivan de estas situaciones requieren ser conjuradas mediante una planificación apropiada de los servicios de urgencias; que responda a un enfoque de sistemas, y que articule efectivamente el uso de recursos y las acciones en función del objetivo común de dar atención de urgencias, accesible, oportuna y de buena calidad.

Para les personas víctimas de accidentes, o de diversas formas de trauma, o para aquellas que sufren episodios cardiovasculares y otros que amenazan críticamente su vida, estos eventos son catástrofes y desastres individuales que para los afectados tienen una enorme trascendencia. Los servicios de urgencia deben ser entonces, diseñados para atender estas catástrofes ocurren simultáneamente a muchos individuos. Tal es el caso de los desastres naturales, y también de aquellos provocados por el hombre. Esta relación entre el desarrollo apropiado y oportuno de los servicios de urgencia para la atención individual, de ocurrencia diaria,

y su capacidad para responder a situaciones masivas, que no siempre es aceptada, debe ser claramente reconocida y tomada en consideración. No se improvisan servicios médicos de urgencia para atención de situaciones de catástrofe. Se pueden quizá desplazar geográficamente algunos de sus componentes, pero a menos de que exista una sólida organización de base de estos servicios, las consecuencias de actuaciones improvisadas pueden ser aún más desastrosas que la propia catástrofe.

La experiencia en los países desarrollados, particularmente aquella derivada de las situaciones de guerra, ha señalado claramente que la atención de urgencias requiere una organización y un desarrollo intergral, que se inicia en la propia población, y comprende la atención hospitalaria, y se proyecta en las acciones de rehabilitación. Las características de estos componentes y su desarrollo habrán de estar basados en la planificación de un programa integral de atención de situaciones de urgencia que dentro del enfoque de sistemas antes señalado incluya acciones preinstitucionales y hospitalarias para la atención de casos agudos, y también áreas de acciones preventivas, y actividades de rehabilitación.

Estos servicios médicos de urgencia son por supuesto, parte del sistema general de servicios de salud, del país o de los centros urbanos correspondientes, y por consiguiente, su conceptualización y diseño, además de los requerimientos tecnológicos intrínsecos, propios de su característica de servicios especializados, exigen una cuidadosa consideración del contexto socio-económico y político-administrativo en el cual se desarrollan.

Sin pretender cubrir estos diversos campos que son motivo de otras presentaciones en esta reunión, conviene detenerse en un breve señalamiento de dos aspectos que en este sentido parecen fundamentales para la planificación de estos servicios: en primer término, los procesos de descentralización política y administrativa y de fortalecimiento de las organizaciones locales, dentro de las cuales se orienta el desarrollo de los servicios de salud en los países; y en segundo lugar, las implicaciones de estos procesos y de la aplicación de la estrategia de atención primaria en los esquemas de regionalización en que se ha basado tradicionalmente la programación de los servicios hospitalarios.

Dentro de estos marcos generales, la planificación y desarrollo de los sistemas de atención de urgencias, constituyen un elemento esencial de la estrategia de Atención Primaria, en función de SPT/2000, y por supuesto un desafío metodológico y de caracter práctico para los planificadores y administradores de salud del Continente.

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THE CHALLENGE TO DISASTER PREPAREDNESS AND RESPONSE PLANNERS IN LIGHT OF THE INTERNATIONAL DECADE FOR NATURAL DISASTER REDUCTION

Philippe L Boullé, Director
New York Office of the United Nations
Disaster Relief Coordinator (UNDRO)

It is both an honour and a pleasure for me to have the opportunity to address your Conference today on the issue of the forthcoming International Decade for Natural Disaster Reduction.

This Decade is a major initiative of the United Nations and of the 159 sovereign states that form its universal membership. I hope it will also be an important event for the emergency health care community and for your conference too.

Maybe I should begin by making a brief remark on the Disaster Relief Office of the United Nations (UNDRO) which is the focal point in the United Nations System for this International Decade.

UNDRO is the specialized office of the Secretary-General of the United Nations for all emergency related matters. In addition to global information functions on disaster situations which it carries out through its electronic mail network, UNDRO is engaged in two broad series of activities On the one hand, it assists governments of countries affected by natural disasters in mobilizing, directing, and coordinating international relief assistance On the other hand, UNDRO is also involved in coordinating prevention and preparedness activities for the mitigation of disasters.

The United Nations firmly believe in the value and importance of disaster mitigation. The toll on human lives and property can indeed be significantly reduced by improved risk assessment, by early warning systems, and by increased public awareness for disaster through education and training.

We therefore welcomed, two years ago, the efforts of the US Academy of Sciences under the dynamic leadership of its chairman, Dr. Frank Press, to obtain agreement among all nations of the world, through the United Nations, for a concerted effort to reduce the impact of natural hazards. At the end of 1987 the General Assembly of the United Nations adopted by consensus a resolution declaring the 1990's as an International Decade for Natural Disaster Reduction. Preparatory work for the Decade then began, both through a United Nations Steering Committee, and through an International Group of 25 experts designated by the Secretary-General and presided by Dr. Frank Press.

At the end of this year, the 159 member states of the United Nations will make a final decision on the form and contents of the International Decade for Natural Disaster Reduction. But there is already broad agreement on most matters relating to the Decade among member states.

The main objective of the International Decade is not to erase disasters from the face of the world - that would be an impossible goal, - but rather "to reduce through concerted international action, loss of life, property damage, and social and economic disruption caused by disasters". The definition of a disaster for the Decade is "any disruption of the human ecology that exceeds the capacity of the community to function normally." The essence of a natural disaster therefore is not only the hazard itself, ie. the physical event but also and principally the human, economic, and social impact of that particular physical event. Seen through that angle of the vulnerability of a community to disasters, it seems indeed possible to talk about natural disaster reduction, as we do now.

There are 5 overall goals for the Decade:

1. To improve the capacity of each country to mitigate the effects of natural disasters expeditiously and effectively;
2. To devise appropriate guidelines and strategies for applying existing knowledge;
3. To foster scientific and engineering endeavors aimed at closing critical gaps in knowledge;
4. To disseminate information related to the assessment, prediction, prevention, and mitigation of natural disasters; and
5. To develop through technical assistance and technology transfer measures for the assessment, prediction, prevention, and mitigation of disasters.

In addition, there are two specific goals of the Decade which, at the same time, are in themselves mechanisms for action:

1. All governments are called upon to establish national committees in their own country to develop a strategy to attain the goals of the Decade.

2 The United Nations is to become an international center for the exchange of information, the storing of documents, and the coordination of international efforts for the implementation of the Decade's goals. To fulfill these functions, the United Nations needs to work in close cooperation with all interested parties including the non-governmental organizations, scientific groups, universities, not forgetting the EMS community.

The basic approach for mitigation activities during the Decade is one of flexibility There will be no compulsory programme of action for the Decade. there is recognition of the evolving nature of the exercise. Most of the activities would be designed and implemented at national or regional levels by governments, by organizations of the United Nations System as well as by scientific groups and PVOs. Activities would be coordinated through an institutional machinery established within the Untied Nations but with participation of interested groups and PVOs outside of the Untied Nations. This is indeed a wise approach for a decade which will cover all natural hazards, blend international, regional, and national preoccupations and associate scientists, doctors, political leaders, United Nations organizations, and PVOs.

On the threshold of this International Decade, one cannot escape having the feeling that there is today enough scientific and technical knowledge to mitigate the impact of most disasters. Yet there are difficulties in effectively applying this knowledge, as a result of constraints, some of which I am going to enumerate.

1. The Decade is based on the premise that we need to change our attitude about disasters from one of emergency response to one of anticipation of the hazard. This is not so easy to realize. A large part of local officials, of United Nations System officials, as well as the general public are, so to say, programmed to respond to disasters, and it will take a lot of efforts to change their perceptions. In order to realize a change in mentalities a large part of the Decade's activities will have to be devoted to publiceducation, public awareness, especially at the local level in disaster prone countries.

2. The will of the political world to give priority attention to disaster mitigation is not as strong as it should be. The economic and social benefits of disaster mitigation are not yet fully perceived. Resource allocations for disaster mitigation either in national budgets or in the programmes of international organizations are clearly not enough, at present.

3 There is need of a stronger link than at present between scientific research on the causes and manifestations of disasters and the actual response to them when they occur. It is not enough to predict accurately an impending disaster: it is as important to respond effectively when the catastrophe occurs. The link is not as easy to establish as one would think. Disaster prevention is usually undertaken in an orderly, organized set up where high level technology can be used. By contrast, when a disaster strikes, immediate rescue efforts have to be undertaken by local individuals, sometimes unfamiliar with technology and in a typically disorganized set-up.

How, then, can your Conference, or more generally the emergency health care community help to resolve the above constraints, and what role can you plan in this international Decade? Well, I would not like to preempt the conclusions of the debate and discussions you will be having by attempting to provide an answer to this question at this time The agenda for the Conference, with its six tracked workshops, already provides the beginning of an answer. Let me add three specific considerations for your attention.

Firstly, as I have said earlier, the key word in disaster reduction is vulnerability. I should have said vulnerability of populations. When a disaster strikes, the most important aspect of the disaster response for affected populations is the emergency health care aspect How to save lives? How to treat the injured? There are important technological and logistical elements in this question, which will be answered correctly if there has been a preplanned response. The EMS community must therefore ensure that, through the institutional mechanism that would coordinate activities for this Decade, the right approach is taken.

Secondly, the need to fully recognize the importance of the epidemiology of disasters and the contribution it brings to an effective response to disaster situations when they occur. It will therefore be important to ensure that the Decade establishes the right continuity between disaster response and disaster preparedness in the emergency health sector.

Third, the need to educate and train non-medical personnel and rural communities in emergency health care. When a sudden disaster strikes, victims are ususally rescued and treated by other victims or other local people, based on past experience. It is therefore important to develop the necessary programmes of education and training in emergency health care for the populations of disaster prone areas.

I have to mention a fourth point, not a very popular one. No disaster reduction experience will be truly successful unless there is some acceptable degree of coordination between all actors concerned. By definition, when a disaster strikes the community becomes disorganized; to surmount its difficulties, it needs coordination, not a free-for-all rush of assistance. There is therefore need of an immense amount of self-discipline among emergency actors, since to accept coordination means, for all of us, to accept to give in some of our own prerogatives and our mandates...and follow instructions. This is not an easy approach to adopt but it is necessary.

I would not like to end on this negative note In closing, I wish therefore that your conference may find its way for suggesting the necessary inputs and approaches in the emergency health care sector of the International Decade for Natural Disaster Reduction.

This Decade gives us an immense opportunity to change man's historical fatalistic view of natural disasters. There are now alternatives. If a firm commitment is made to apply them, in the next ten years, there is hope that, by the end of the century, mankind will have gone far towards learning to live with natural hazards and not simply to suffer from their violence.

BUILDING INTEGRATED EMERGENCY MEDICAL RESPONSE OUT OF DISPARATE COMPONENTS

John D Reardon

Good afternoon. In keeping with the goals and charge to the participants, it is appropriate that this session on building integration into the emergency medical response comes before we hear and discuss the many excellent papers to be presented over the next day and a half.

I invite you to focus on the variety of opportunities and serious challenges that will be presented by our colleagues from around the world on the issues they have identified and the approaches they have used for integration of the resources and services that exist to provide needed, quality emergency health care.

Within the scope of this conference, we are looking at both the unique and common characteristics of emergency health care in many different countries, with different socioeconomic environs, different cultures, different governments, and different levels of planning, development and operations. This is an enormous challenge for each attendee, but one in which we all can share and benefit.

Our panel today includes:

Dr. Umberto Novaes, Regional Advisor in Health Care Administration, Pan American Health Organization, World Health Organization.

Dr. Sheng-Chuan Hu, Chief of Emergency Medicine, Taipei Veterans General Hospital, Taiwan.

Dr. Sobhy Fahmy, Director General, Emergency Medical Services, Ministry of Health, Egypt.

John D. Reardon, Director, Emergency Preparedness, Health Resources and Services Administration, PHS, United States.

Each panelist will present a short report on how integration is being used to improve emergency health care in their country commensurate with the environment, need, and present stage of development.

Before we begin, let me set the stage with a definition of integration and then relate that definition to the problem area of this panel.

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 system integration and inherent relationships are established by the system participants thus permitting a resultant action that meets the system needs, within the resources and time available for system execution.

Such a definition as applied to the discussions of this conference 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 that we serve, and within the socioeconomic structures and capabilities of our respective countries.

There are many lessons we can learn from each other. Let us participate, learn, share, and meet the challenges we face in the next decade. Without further adieu, I would like to proceed with our panel presentations. In order to provide equal time to all speakers, we shall hear from all four panelists and then have a short period for questions and answers.

I would like to now introduce our first panelist, Dr. Umberto Novaes, from the PAHO/WHO. He will speak of "Building Integrated Emergency Medical Response in Local Health Systems: A Case Study in Cali, Columbia."

Our next speaker is Dr. Sheng-Chuan Hu, from Taiwan. He will speak of "Emergency Medical Services in Taiwan· The Present and Perspective."

Our third speaker is Dr. Sobhy Fahmy, from Egypt. He will speak of the work to build an integrated system in his country.

As the final panelist, I would like to speak briefly to the topic "The Complexities of Integration for Emergency Health Care in the United States."

THE COMPLEXITIES OF INTEGRATION FOR EMERGENCY HEALTH CARE IN THE UNITED STATES

John D Reardon
Director, Office of Emergency Preparedness
Health Resources and Services Administration
US Public Health Service

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 time and 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.

We should emphasize that what took place during the planning and developmental phases was a community effort. The participants were government officials, providers, public safety agencies (like fire departments, police, park, and recreation rangers), communications services, industry, the news media, community action groups, and most important, the people, the individual citizen who wanted to make things better. There was a need to improve care and prevent needless deaths from heart attack, accidental trauma, burns, head and spinal

cord injury, poisoning, and infant deaths and to teach the people how to obtain quality care at the time of need.

The national EMS initiative provided funding to assist states and local communities to make conditions better. National standards were set. Guidance and technical assistance was available, together with meetings and conferences to assist in the exchange of information, direction, and encouragement.

About 1970 the situation can be summarized as follows:

- There was needless death and suffering, primarily from heart attacks, motor vehicle accidents, and other accidental trauma;
- Less than 50 hospitals in the US operated an emergency room which was staffed by physicians 24 hours a day;
- Local physicians were available on call. The specialty of "emergency physician" had not been approved;
- Less than 5 states had a professional staff member designated in the state health department to work on emergency health care,
- Station wagons or funeral hearses were used part time for ambulance vehicles;
- Ambulance attendants were not trained or at best had some first aid training; and
- There was no national "911" emergency telephone number and radio communication was not available for ambulances or hospitals. Some police and fire communications were used.

A few communities were the exceptions to the bleak picture, and these communities provided the demonstration projects upon which the modern new EMS systems were developed.

The EMS initiative was a progressive systems approach to:

First, plan a comprehensive emergency medical service system. The system plan had to contain all of the components of the prehospital phase, including access, radio dispatch, ambulance response (within a reasonable time), care by trained technicians at the scene of the emergency, and transport to the closest appropriate hospital. The system plan also had to include medical direction during the planning and training process, so that when the patient was received at the hospital, a team of physicians, nurses, and technicians could immediately provide the advanced life support required by the patient's condition. Further, the plan had to provide immediate access to surgical care with appropriate specialists. This provided a plan for the continuum of care needed for each EMS system.

Second, each system had to plan and demonstrate an operational capability to provide the prehospital basic life support services and the advanced life support services of the hospital for care of the most critical care patients, to include heart attack, trauma, burns, spinal cord, poisoning, and acute behavioral patients

Third, it was recognized that how services are delivered for all of the critical patients may take on different modes of operation in the urban, suburban, rural, and wilderness areas of our country. So, innovations had to be made to meet these special geographic and environmental needs.

We estimated that it would require about 1.25 million federal dollars on the average to plan and develop the capabilities of the average EMS system. During the 9 years of the program our original estimates proved very close, and the results were most positive for that level of investment. In 1981 the original 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 these grant funds will be spent on EMS. Some states have provided more funds than others for EMS.

By reviewing the past, my purpose is to simply state that a program was undertaken to improve emergency health care. There was a national mandate by the people and the medical community to make things better. Twenty years have now passed since that program began. I can report the following changes:

- All 50 state health departments have an office of EMS with a professional staff and in many instances a medical director;
- Of the 6281 civilian hospitals in the US the American Hospital Association reports that 5016 have emergency departments;
- There are identified tertiary care centers for the treatment of adult and pediatric trauma, burns, spinal cord injury, and poisoning, and most hospitals have the capability to care for the acute myocardial infarction;
- There are about 17,000 ambulance services in the country, and most of these have ambulance vehicles that meet national standards for the vehicle and its equipment;
- There are about 500,000 volunteer and paid ambulance attendants who have been trained as emergency medical technicians. There are 3 levels - basic, intermediate, and paramedic; and
- Eighty-three percent of cities with over 100,000 population now have a single telephone number (911) for calling police, fire and ambulance services. Most ambulances now have radio communications including telemetry with a base station and with a hospital.

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 have been increased.
- The quality of care has been improved.
- Lives are being saved and suffering reduced

We should also take note of the economic impact of EMS. The emergency health care system has provided jobs or volunteer employment for well over 1,000,000 people. Conservatively, these people contribute about 20 billion dollars per year to the economy. We also should add the expenditure contribution of products and other materials associated with emergency health care. These expenditures are estimated at another 30 billion dollars. The health care expenditures for the US in 1987 were estimated at 11.1 Percent of the gross national product or about 500 billion dollars. Let's be very clear, within this total, emergency health care in the US is a major contributor to the health industry and the country.

There are issues to be addressed:

Technology: Technology is being used to develop new products and services which should be introduced into the emergency health care system. Much of the equipment purchased in the 1970 - 1980 decade, especially in the areas of communication and transportation is wearing out and needs to be replaced. New and expanded communications frequencies are needed to reduce the overcrowding of the current radio frequencies Improved access to emergency health care in rural areas of the nation is needed. The bureau of census for the US estimates that 61 percent of the population lives in 1.5 percent of the land mass of the nation. Providing emergency health care to people living in rural and wilderness portion of the country presents a new challenge in terms of balancing the need of an operative approach acceptable to the funding sources.

Economics: The cost of providing emergency health care in the US will be a major issue in the next decade. The costs of care are increasing, there are new demands for more and improved care for special need populations. Insurance does not cover the more expensive care for the critical trauma patients Many patients are uninsured or under insured, there are concerns about emergency health care for the populations living in rural areas and high risks environs. The average age of the population is increasing. There is the patient demand from more violent trauma, AIDS, and drugs. Economics is the most difficult issue facing the continuation and improvement of quality emergency health care. The emergency health care system in the US has improved. The professionals that manage and operate their portion of this system have information to share with you about integration for services and resources. Also they want to share and learn from your experiences. That sharing is the true test of the integration which we want to begin at this conference and continue in the decade ahead.

Thank you for your kind attention.