

TABLE OF CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY	1
I BACKGROUND	2
II EVALUATION PURPOSE AND METHOD	3
III FINDINGS	4
IV LESSONS LEARNED	14
V RECOMMENDATIONS	15
Appendix A - Scope of Work	
Appendix B - Persons Interviewed	
Appendix C - Red Cross Inventory (Metropolitan San Jose)	
Appendix D - Red Cross and Fire Department Run Sheets	
Appendix E - Courses in Progress	

EXECUTIVE SUMMARY

A three person team consisting of Dr. Mitchell (Assistant Professor of Emergency Medicine, University of California, Davis), Dr. Miller (Vice-President of Southwest Ambulance, Inc., Phoenix, Arizona), and Mr. Henry Johnson (Team Leader and a retired A.I.D. Foreign Service Officer) travelled to Costa Rica to evaluate this project from March 19 through March 30.

After discussions with HOPE Center, USAID, and HOPE and Costa Rican program managers in the field, the team determined that focus on progress to date against the original objectives, recommendations for future implementation, and lessons learned with respect to project management would be most beneficial to all concerned. Methods used in the evaluation included interviews, review of documentation, and site visits to Costa Rican implementing agencies and training programs. Debriefing sessions at the end of the evaluation were held with the Costa Rican project managers, USAID, and HOPE Center.

The team's basic finding is that the project is making progress toward its objectives and should be continued and supported. Costa Rican commitment to the project in financial and human resources support combined with currently effective technical inputs being provided through HOPE should give the project reasonable prospects of achieving its objectives and intended impact. A number of specific findings are made with respect to the objectives and outputs in the areas of emergency medical care, training, community education, and project administration.

Principal lessons learned are the importance of adequate advance planning before a project is initiated, the need to include at the outset all institutions with a critical role to play in achieving project objectives, and the priority of insuring effective and efficient project management. Most of the difficulties encountered in reaching project objectives stem from shortcomings in these areas.

The report concludes with a number of specific recommendations on priority areas to be emphasized and steps needed to move the project forward to completion.

I BACKGROUND

In 1986, Costa Rica requested The People-to-People Health Foundation (HOPE) to prepare a proposal for development of an emergency medical services program. USAID/Costa Rica and AID's Office of Disaster Assistance agreed to provide \$600,000 for dollar costs of the program for a three year period beginning in April, 1987. The Costa Rican National Emergency Commission agreed to make available 90 million colones (the equivalent of about \$1.2 million) and HOPE offered to provide the equivalent of \$719,000 in in-kind and other contributions.

The purpose of the program is to reduce morbidity and mortality due to life/limb-threatening illness or injury in the general population in Costa Rica. This goal is to be achieved by developing a model emergency medical services (EMS) training and systems capacity that can serve as both a national and regional resource and can provide more effective medical response to mass casualties as part of national disaster preparedness planning.

Specific objectives are to:

- improve the quality of emergency medical care at the pre-hospital level and in-hospital emergency departments through more rapid coordinated response to emergencies, more efficient transportation, better application of life-saving interventions at the pre-hospital level, and development of better care in the emergency departments.
- train qualified human resources to operate the system including courses directed to emergency medical technicians (EMT), basic life support (BLS), advanced cardiac life support (ACLS), advanced trauma life support (ATLS), emergency nurses (CEN), and paramedics.
- educate the community to activate the system and to know what to do until help arrives through development and use of public service announcements, health education campaigns, and other promotional efforts.
- achieve a self-sufficient and sustainable system.

To implement the program, an Inter-Institutional Agreement was signed by HOPE with the National Emergency Commission, the Ministry of Health, the Social Security Institute, the University of Costa Rica, the College of Physicians and Surgeons, and the Red Cross to spell out respective responsibilities and contributions to the program. Through this document, the National Emergency Medical Program (PRONEM) was created. PRONEM is responsible for development of a self-sustaining and permanent National Emergency Medical System (SINEM).

Recognizing that the original three-year target for the program was unrealistic, the parties amended this agreement in November 1989 to: (1) extend the program until July 30, 1993, (2) include the National Insurance Institute (which has responsibility for the Fire Department - "Bomberos") as a participant in the program, and (3) refine respective responsibilities of the signatory parties. USAID/Costa Rica and OFDA are not making any further financial contributions beyond the funding already committed.

It is important to note that efforts to develop emergency medical systems are relatively new even in the United States and no such effort had been tried before in Costa Rica. It is also important to emphasize that successful development and implementation of such systems wherever attempted are critically dependent on effective, but difficult, coordination among many different institutions.

II EVALUATION PURPOSE AND METHOD

USAID/Costa Rica requested this evaluation to assess progress and benefits against the project's original objectives, to review effectiveness of project implementation, and to determine what lessons might be learned for the benefit of the future of this project and for similar efforts by HOPE and AID. The scope of work for this evaluation is attached in Appendix A.

To carry out this evaluation, a three person team was assembled including Connie Mitchell, M.D., an emergency medical physician from the University of California at Davis who had made a six-week site visit to this project in May, 1989 and prepared a status report with a number of recommendations regarding on-going implementation; Robert Miller, Ph.D., who is Vice President/Medical Services and Director of the Education Department of Southwest Ambulance, Inc., Phoenix, Arizona, and who has had no previous experience with this project; and Henry Johnson, a retired A.I.D. Foreign Service Officer, who served as Team Leader and who also had no previous association with or knowledge of the project. The team was contracted to spend two weeks in Costa Rica from March 19 through March 30 to carry out the evaluation and to prepare a draft report.

Henry Johnson spent one day at HOPE Center before joining the rest of the team in Costa Rica. After discussions with HOPE Center, USAID, and the HOPE and Costa Rican program managers in the field, the team determined that focus of the evaluation on the following key questions would be most beneficial to all concerned:

- what has been progress to date against the original objectives?

- what does the team recommend for future implementation of the project?
- what lessons can be learned especially with respect to management of the project?

Because measurable targets were not established at the outset for project objectives (other than training), the team was not able to evaluate target achievement. Rather the team focused on assessing progress in the project's indicated activity areas and identifying priorities for next steps.

To the extent the team was urged to address the future as much as the past, their report tends to emphasize areas where action is still needed. It consequently does not present a complete record of actions taken.

To facilitate the evaluation and make maximum use of team members' respective expertise, Dr. Mitchell focused on development of the emergency medical services system, Dr. Miller on the training component, and Mr. Johnson on project management. The team, however, coordinated extremely closely throughout the evaluation and all findings and recommendations represent a consensus of the team.

Methods used in the evaluation included interviews, review of documentation, and site visits to the Costa Rican implementing agencies and to training programs in session during the team's visit. A list of persons contacted is attached as Appendix B.

The team wishes to express its appreciation for the excellent support and assistance provided to the team in carrying out this evaluation by HOPE Center and its representatives in the field, USAID/Costa Rica, Dr. Guillermo Rodriguez, and the other key Costa Rican personnel in this program. Two weeks is a short time to try to understand, reach conclusions and make recommendations about a project as complex as this one. Errors of fact and judgment are unavoidable. The team hopes, however, that the process of doing this evaluation and suggestions offered in this report will be helpful to the implementors of this project in the future.

III FINDINGS

The team's basic finding is that the project is now making progress toward its objectives and should be continued. While behind schedule, as a result, in large part, of unrealistic expectations and early implementation difficulties, the project now has a more realistic time frame. The team found impressive evidence of Costa Rican commitment to the project in terms of

financial and human resources support. This commitment combined with the currently effective technical inputs being provided through HOPE should give the project reasonable prospects of achieving its objectives and intended impact. Specific findings and recommendations with respect to each of the project's objectives follow.

EMERGENCY MEDICAL CARE

OBJECTIVE: Improve the quality of emergency medical care at the pre-hospital level and in the hospital emergency departments

OUTPUT #1: An administrative infrastructure

FINDINGS:

- An administrative structure for an emergency medical services (EMS) system is still incomplete. The Inter-institutional Agreement of 1987 created PRONEM to develop a self-sustaining and permanent system (SINEM) for medical emergencies with legislative sanction and budgetary recognition. The PRONEM/SINEM dichotomization continues. PRONEM has expanded its infrastructure, funding and manpower requirements while SINEM consists of a two-hour per week commission meeting whose members still struggle to define the system. Members appear unclear about the Commission's precise scope of work, objectives or timeline for completion. The recent addition of Dr. Manuel Obando as Commission chair seems to have a stabilizing effect and gives direction from the National Emergency Commission.
- Advisory personnel from Project HOPE/University of New Mexico (UNM) participate on the Commission but are hesitant to exercise a directive role in the process. Dr. David Doezema, Project HOPE on-site medical director from UNM developed a draft for the Costa Rican EMS system, which is used by the Commission as a general reference.
- A "system" for emergency services exists much as it did prior to implementation of the project. The public can access assistance through telephone services. The Red Cross, Fire Department or Police will respond where appropriate, and, if required, patients can be transported to emergency departments for care.

OUTPUT # 2: Communications system

- A center for communications for the National Emergency Commission is under construction with expected completion in

October, 1990. It will serve as a reception point for 40 telephone lines for centralized access via phone number 1-2-2 from anywhere in the country. It can then link with 20 land lines direct to the Red Cross, Fire Department, Police, Ministry of Public Security, Poison Center and others. Each access will be identified by the phone number where the call originated from but not the address. The system is being designed through a contractual agreement between the National Emergency Commission and the Electric/Telephone Company.

- Procurement of most of the equipment for use has occurred, some of the radio equipment as a direct result of the technical input by Project Hope advisory personnel (Gilbert and Eehelt) in 1988.
- Dispatch protocols, dispatcher training, operator training, dispatch documentation and review all need to be designed and implemented. Currently, operators and dispatchers function independently at the police, fire department and Red Cross without benefit of training, quality control, or ease of interagency communication.
- This same center will also serve to trigger response to disasters so EMS will be linked to the National Disaster Plan. EMS response in a disaster situation still requires further attention and elaboration.
- Communication between agencies in the field and between the field and destination hospitals remains problematic.

OUTPUT # 3: Transportation (response to scene;
 transport to hospital)

- A coordinated system for transport response needs to be designed. Currently, the Red Cross and Fire Department operate competitively (much like many systems in the U.S. with multiple private ambulance companies), which may be satisfactory if geographic jurisdictions are delineated and standards of operation established. Omission of the INS from the original agreement hindered progress in this area. Further discussion is needed regarding the feasibility of a tiered response, distribution of base stations, and types of vehicles required.
- HOPE has provided enough equipment for two BLS vehicles although only one vehicle is actually equipped and operating. The other equipment is used in classroom training. Another Red Cross vehicle has been equipped for BLS capabilities by the Red Cross.

- The San Jose Fire Department has two operating ambulances at any time, both fairly equipped for advanced life support intervention, although the reliability of either of these vehicles is uncertain. The numbers and types of vehicles operating in the system are essentially unchanged since the project's inception. The difference between "ambulance" versus "transport vehicle" has been clarified somewhat and will enable more realistic procurement planning. An inventory of ambulances, equipment and ambulance personnel in the Red Cross of metropolitan San Jose is attached as Appendix C.
- There are no standards for ambulance operation or equipment although a draft of these has been submitted to the Commission previously.
- Reliable data regarding system cost per unit hour is not readily available from the Red Cross or Fire Department. Data regarding utilization ratio per unit hour is also unavailable. PRONEM, Red Cross and the Fire Department are planning procurement of additional ambulances. Such planning requires a sound understanding of system demands, and system and unit operating costs. Both the Red Cross and Fire Department need additional equipped vehicles. According to system planning figures used in the United States, the greater metropolitan area of San Jose (about 1 million people) could support 20 operating ambulances equipped to BLS standards (1/50,000) and 5 operating ambulances equipped to ALS standards (1/200,000).
- Data is needed regarding process outcomes for pre-hospital care. These include time to dispatch, time to arrival to scene, time at scene, time of transport to hospital. Data is being collected at the Fire Department but it is not being collated, tabulated or utilized in system planning. In 1989 the central base of the Red Cross responded to 7,432 calls and the San Jose Fire Department to 1,560 calls. The number of total calls received is not known, only the numbers responded to. Data collection regarding process outcomes in the Red Cross has been instituted as of March 1990. Run sheets from the Red Cross and the Fire Department are attached as Appendix D. In the United States the standard of care for response time is generally 8 minutes at least 90% of the time. A standard of care in Costa Rica is unknown because this data is not available. Efficiency of transport, standards of care, quality assurance, system planning and development are all dependent upon a satisfactory method of data collection, retrieval and review.

OUTPUT #4: Pre-hospital medical care.

- Protocols for dispatch, communication, triage, treatment, transport and special circumstances all need to be developed for the system as a whole. They constitute the standards for pre-hospital care and thus manifest the existence of medical control. Data collection, standards of care, quality assurance, and continuing education are all intimately linked in a successful system.
- Two physicians currently contribute medical supervision for the Red Cross: Dr. Jimmy Quiros, hired by PRONEM for the central base in San Jose and Dr. Fletas, volunteer physician in the Alajuela Red Cross. Both have designed and implemented medical protocols which include advanced life support techniques. Dr. Carlos Bonilla is employed by the National Insurance Institute as the medical director for the Fire Department. He too has designed and implemented medical care protocols for use by the Fire Department. These protocols need to be reviewed or approved by the College of Physicians and Surgeons. Physicians who practice in the emergency departments of the major hospitals in San Jose have not been involved in the design and implementation of these protocols, although they have expressed an interest in participating more in pre-hospital care.
- The professionalization of EMS has begun. The majority of EMT graduates in the Fire Department have salaried positions. The Red Cross has a volunteer force that constitutes 80% of its personnel but these volunteers have an 80% turnover. Without professionalization of The Red Cross, EMT training will not be cost-effective.

OUTPUT #5: Emergency Department Medical Care

- The nursing shortage in the emergency room presents a considerable strain to the system and appears to have not yet been adequately addressed. Those involved in the project fully recognize the nursing shortage problem and it is hoped that creative solutions, such as using EMT's in the emergency rooms, will be explored.
- In 1989 Dr. Ben Silverman, Project HOPE fellow, surveyed the emergency departments in the four major hospitals and made several recommendations. Some have been implemented at the Children's Hospital, where he spent most of his time. Development of hospital libraries is forthcoming. Acquisition of equipment and supplies, improvement of facilities, hiring of personnel is all dependent on budgeting within the Caja. In the Interagency Agreement, the Caja made no specific commitment of funds to the

achievement of the above objective, and PRONEM has not made this a priority for program development either.

- Horizontal categorization of hospital emergency departments exists in Costa Rica; vertical categorization does not, except in regards to burns and pediatric diseases. Standards for facilities, equipment, and personnel are being written by the Commission for submission to the coordinating committee.
- Specific data regarding numbers of patients or types of cases seen in the emergency department needs to be collected. It is impossible to measure the impact of a system, effectively plan for its improvement or maintain the quality of care without information. A data collection and retrieval system in the emergency department, just as for pre-hospital care, is sorely missed.

TRAINING

OBJECTIVE: Train qualified human resources to operate the system.

FINDINGS:

- The proposed training goals, in terms of the number of students graduated or certified, have not been attained. Figure 1 compares actual numbers trained with the proposed training schedule. Descriptions of the various courses offered during the initial three years of the program are contained in Appendix E.
- The fact that the training goals have not been fully achieved can be tied to several factors: optimistic and unrealistic goals, difficulties in adapting a technical program for EMT's to a university semester format, difficulties and time lags in obtaining Spanish language translation of instructional materials, and unanticipated shortage of personnel trained in educational methodologies. Licenses to translate educational material have not been obtained, putting the Costa Ricans in a tenuous legal position with respect to copyright laws for photocopied material.

FIGURE 1

COMPARISON PERSONNEL TRAINED
WITH PROPOSED TRAINING SCHEDULE

		<u>YEAR 1</u>	<u>YEAR 2</u>	<u>YEAR 3</u>	<u>TOTAL</u>	<u>% TRAINED</u>
EMT	TRAINED	0	73	31	104	38
BLS	PROPOSED	75	150	50	275	
PROVIDERS	TRAINED	37	225	311	573	54
	PROPOSED	300	300	450	1050	
INSTRUCTORS	TRAINED	11	13	21	45	21
	PROPOSED	60	60	90	210	
ACLS PROVIDERS	TRAINED	35	81	27	143	46
	PROPOSED	90	110	110	310	
INSTRUCTORS	TRAINED	11	0	0	11	12
	PROPOSED	20	30	30	80	
ATLS PROVIDERS/ INSTRUCTORS	TRAINED	0	0	34	34	28
	PROPOSED	40	40	40	120	
EMERGENCY NURSES (CEN)	TRAINED	0	0	0	0	0
	PROPOSED	20	20	20	60	
PARAMEDICS	TRAINED	0	0	0	0	0
	PROPOSED	0	0	20	20	

OTHERS TRAINED

EMERGENCY DRIVERS	305
* ASISTENTE PRIMEROS AUXILIOS	43
* PRIMEROS AUXILIOS BASICO	
PROVIDERS	254
INSTRUCTORS	43
MONITORES	<u>21</u>
TOTAL	299
INSTRUCT. EMERGENCY MEDICINE	60
TECNICOS DE ENSEÑANZA	35
INSTRUCT. PRIMEROS AUXILIOS	305

* There is no mention in any of the original agreements or project descriptions of either APA or PAB as a project supported component

- A number of courses have been developed and initiated, and the structural and administrative support for the educational program has been put into place. Assumption of the teaching and administrative functions of the program by Costa Rican personnel has served to strengthen the long term survival prospects of the program. Courses developed and implemented with the Costa Ricans as instructors include:

- Asistente Emergencias Médicas (EMT)
- Advanced Cardiac Life Support (ACLS)
- Advanced Trauma Life Support (ATLS)
- Primeros Auxilios Básicos (PAB)
- Basic Life Support (BLS)
- Advanced Life Support (ALS)

Course preparation and materials appear to be complete, appropriate, and address course objectives.

- While the program has provided BLS, ACLS, and/or ATLS training for approximately 200 physicians, only about 20% work in emergency departments. The HOPE medical director from UNM has begun to participate in teaching rounds at Hospital México as a means of promoting emergency medicine training. This, however, is the only continuing education program currently available for emergency physicians and emergency department nurses. An emergency medicine residency program (proposed May 1989) has been put on hold until other programs are developed.
- Some specific problems identified include:
 - Selection of some students for the Asistente class who will not work in the field. The Red Cross has not always designated personnel as agreed to, leading to problems in filling classes with personnel from the field. For the Asistente classes completed, a total of 30 Red Cross graduates are currently working as field EMTs (17 volunteers, 13 paid), while all 53 of the Fire Department graduates are working in the field (18 volunteers, 35 paid).
 - Teaching the BLS course to non-emergency personnel (pharmacy and odontology students, odontologists, etc.). While done upon request, this practice diverts program resources into areas which are not part of the program scope. Although students are required to work for one year for the CAJA upon graduation, often as the only health care provider in an area, this training may be of questionable long term benefit to the EMS program.

- Lack of coordination with other agencies' educational programs. Both the Fire Department and Red Cross (Alajuela) have on-going pre-hospital training programs. Inter-institutional conflicts appear to have prevented integration of these into the primary programs coordinated by CENDEISSS and the University.
- Lack of any definable continuing education (C/E) or Quality Assurance (Q/A) programs for either pre-hospital or in-hospital personnel. Some case (run) review is being done, but it is in a rudimentary stage.
- Focus on lecture format with less "hands on" practical learning. Much of the material lends itself to an adult education approach, with less emphasis on the teacher/student dichotomy, but little in this vein has been practiced. There is also little instruction in how to teach, including preparation of lectures, course materials and exams, despite the fact that such courses are available through HOPE personnel.

COMMUNITY EDUCATION

OBJECTIVE: Educate the community to activate the system, and to know what to do until help arrives.

FINDINGS:

- Effort has been made by Project HOPE to assist in providing community education programs in basic first aid. The P.A.B. course of the Red Cross has been of benefit in enhancing public knowledge in this area. It has, however, as yet only reached a small number of people.
- Public education efforts are being carried out by other agencies coordinated by the National Emergency Commission (NEC). These have been directed toward increasing awareness of the health risks posed by auto accidents, cigarette smoking, excessive alcohol consumption, and other high risk behaviors. Other than these initiatives stimulated through the NEC, little is being done in this area. PRONEM has indicated that a coordinated public education program will be a priority in the next phase of the project. Topics to be focused on include accident prevention, smoking and its association with cardiac and respiratory problems, and drowning prevention.

PROJECT ADMINISTRATION

As part of the evaluation, the team was also asked to review project administration because of recognized difficulties in this area identified to us by both HOPE and the USAID Mission in Costa Rica. Most of the difficulties arose during the first two years of the project. Since retention of UNM as HOPE's implementing agent in Costa Rica, project administration and progress has noticeably improved.

FINDINGS:

- HOPE has excellent contacts within the Costa Rican medical system and was able to use them effectively both in developing the original concept for the emergency medical services program and gaining needed cooperation from the various Costa Rican institutions involved.
- The needs assessment and original project plan prepared by a team of consultants sent to Costa Rica by HOPE in February 1986 proved to be neither realistic nor fully developed. In part because emergency medical services represented a new area of emphasis for them, HOPE was not able to produce the expertise promised in the time frame indicated. Action plans were not fully spelled out and did not contain measurable targets. This led to confusion and problems in communication during project implementation.
- The original advisors recruited and sent to Costa Rica did not prove to be successful and their contracts were not renewed. There was a gap of one year with no medical director representing HOPE in the field. Project implementation suffered from lack of continuity and lack of project management from someone with training and experience in EMS development and administration. A medical director with appropriate training and experience is now in Costa Rica. He reports directly to HOPE for administrative matters and through UNM for technical matters.
- Delegation and lines of authority have been neither clear nor efficient. Following initial difficulties with the original medical director assigned by HOPE, project management authority in the field was withdrawn and was exercised by Dr. Rodriguez together with HOPE Center. Currently, the Project HOPE Medical Director has the onsite management authority. Many decisions require approval at a high level at HOPE Center.

- Backstopping of HOPE's field personnel by HOPE Center has not been as effective as it could be. Problems identified including slow response to requests and communications, failure to anticipate administrative needs, insufficient attention to detail suggest that HOPE Center may be stretched too thin or may have underestimated the administrative and management requirements of a project of this size and complexity.
- USAID/Costa Rica concerns regarding project administration were not consistently communicated to HOPE in clear and timely fashion.
- HOPE makes a commendable effort to brief and orient personnel before they go to the field. Long-term advisors are brought to HOPE Center for thorough sessions in which objectives and advisory roles are discussed. Because of insufficient planning at the project's outset, this orientation did not achieve clear consensus regarding roles and objectives, and performance of the first set of advisors suffered. The briefings, however, worked more effectively later in the project when UNM was brought on board.
- On the Costa Rican side, Dr. Rodriguez is HOPE's principal counterpart and the person on whom authority for overall project management is centered, but he has a number of other responsibilities as well as a private practice and is able to devote on the average of only four hours a day to the project. It is sometimes difficult to reach him on a timely basis when his decisions or input are needed.

IV LESSONS LEARNED

The team believes the following are the principal lessons learned from experience to date with the project:

- The first is the importance of adequate advance planning before a project is initiated. Some wasted effort, lost time, and additional cost have resulted from the project starting without development, or provision for development, of clear action plans with measurable goals for each of the projects' components. There was also insufficient knowledge of what equipment existed and what was needed (for example, existence of 400 "ambulances" was assumed but they were really little more than vehicles). A clear picture of technical assistance needed or where it could be obtained was also lacking.
- A second lesson is the importance of including in agreements at the outset all institutions with a

critical role to play in achieving project objectives. The Fire Department has equipment and personnel relevant to the project and an on-going role in responding to emergencies, yet it was not brought into the project until the third year. This has delayed needed coordination and risks duplication of services and equipment.

- A third lesson is the need to insure effective and efficient project management especially with a complex, multi-institutional program such as this. HOPE's first medical director in the field brought technical expertise but not effective management. After he left and until the recent agreement with UNM, HOPE did not have a manager in the field and essentially ran the project from afar in HOPE Center. On the Costa Rican side, authority for program management is concentrated with Dr. Rodriguez but he is able to devote only part-time to the project.

V RECOMMENDATIONS

EMERGENCY MEDICAL CARE

1. Administrative infrastructure

- Absorb PRONEM into a permanent SINEM as soon as possible. Dr. Rodriguez, Dr. Obando and Dr. Key need to clarify more clearly among themselves how this should be done and what role the Commission should play. Using someone with expertise in group process management may also be helpful. Describing the general system in terms of lines of authority, general means of financing and areas of responsibility will help to take the project from one that is people-dependent and fragile to one that is sustainable and self-sufficient.
- Begin to think and plan now how the system will be self-supporting in 1993 (i.e. possible new tax revenue from alcohol and tobacco could be funneled into EMS via the National Emergency Commission).

2. Communications

- Train operators and dispatchers for operation of the new communications center. The NHTSA dispatch manual, already available in Spanish, could be purchased and used as a training text.
- Formulate dispatch protocols. This will necessitate designing a coordinated response between the Red Cross, Fire Department, Rescue Units and Police. Coordinating a

response system is urgently needed and will facilitate future training and procurement of vehicles also.

- Perform technical study of field communications capabilities between San Jose Red Cross, Fire Department and Police. Can they talk to each other without going through their bases? If not, why not and how can this be corrected? Interagency communication in the field is particularly important in mass casualty situations.

3. Transportation

- Establish standards for an "ambulance" as opposed to a "transport vehicle" and define the minimum basic equipment required for each.
- Clarify all costs associated with operation of BLS and ALS units (i.e. system cost/unit hour and utilization/unit hour). This may require technical advice regarding fleet management, direct and indirect operation costs, back-up inventory, preventive maintenance schedules, etc.
- Phase in additional units as either the Red Cross or Fire Department demonstrates the ability to support the unit. The Red Cross may need some financial help from PRONEM initially but commitment of the Red Cross to continued professionalization and self-sufficiency should be included in any contracts or agreements.
- Coordinate data collection and data retrieval between the Red Cross and the Fire Department using the same run data sheet for each. This may require additional consultation regarding hardware and software required. After six months of data collection, establish operational standards for the system.

4. Pre-Hospital Care

- Standardize pre-hospital care protocols between the Red Cross and the Fire Department and submit for approval to the College of Physicians and Surgeons.
- Strengthen coordination and cooperation among physicians designated as pre-hospital medical control and support their continued professional development including exchanges and other informal arrangements with U.S. and other universities and institutions.
- Phase in field-to-hospital communication to one hospital that can then direct traffic according to each hospital's bed capacities and capabilities and notify each hospital of patient arrivals by direct land line access. This will

also aid system functioning in case of a mass casualty situation.

5. Emergency Department Care

- Design emergency department medical records and a system for storage and data retrieval. After 6 months collect tracer data (cardiopulmonary arrests, trauma arrests, etc.) and reevaluate emergency department needs.
- Establish 24-hour attending physician coverage trained in ACLS, ATLS, PALS. Add monthly grand rounds and discussion groups for these physicians. Seek specialty status within the Costa Rican system for these physicians in 2-3 years so they can be the teachers of future residents.
- Inventory current equipment in all the emergency departments; establish minimum standards and obtain commitment of Social Security funds to bring all emergency departments to minimum standards. Begin thinking of vertical categorization (i.e. spinal cord center, head trauma care) to avoid duplication of services.
- Consider using EMTs or Paramedics to supplement the nursing shortage with their scope of work clearly defined by the emergency physicians. Be involved in any efforts to ameliorate the shortage.

6. Miscellaneous

- Consider the importance of prevention in reducing morbidity and mortality from trauma and other medical emergencies. Include a SINEM representative on any government agency, task force or council that has anything to do with prevention of trauma or medical emergencies.
- Use goals to give direction but establish specific, observable, measurable objectives for SINEM to facilitate progress monitoring and continuous self-evaluation.

TRAINING

- Establish Quality Assurance (Q/A) and Continuing Education (C/E) programs in all pre-hospital agencies and hospital emergency departments to collect skills performance and patient outcome data. At each agency, appoint a person to serve as pre-hospital coordinator to oversee implementation of the Q/A and C/E programs.
- Establish authority and accountability for coordination of all EMS training programs in one office, with an advisory committee to provide input into the design, structure and

timing of various courses. This office should be responsible for coordinating an annual EMS manpower needs survey which could serve as a guide for prioritizing training programs.

- Give the Emergency Nurse course priority over both the Paramedic "Levelling" and APLS/PALS courses.
- Require all personnel serving as instructors for any program to take the Instructor Training class provided at the University, and give such personnel paid leave time to do so.
- Investigate the feasibility of producing Spanish language texts and educational materials for the Asistente (EMT), Tecnicos (Paramedic) (if pursued as a viable course offering), and ATLS courses, for use both within Costa Rica and regionally in Central and South America.
- Pursue Associate status with the American Heart Association. Such designation will facilitate advancement of the ACLS class and would centralize administrative control of all educational programs in Costa Rica.

COMMUNITY EDUCATION

- Develop a primary first aid course for school teachers and other community services personnel. This could be modelled on the P.A.B. course, but should include instruction and certification in CPR.
- Begin preparations for a multi-media public education campaign to orient citizens to the planned 1-2-2 central emergency services dispatch number, and to provide instruction in appropriate utilization of this number when it becomes available.
- Coordinate with public health officials to determine priorities for a community education campaign targeted at prevention of injuries and health promotion. Appoint a public education coordinator to work with various agencies and the media to design and implement such a campaign. Identify a specific budget for this component, with specific goals and objectives, and time lines, for implementation.

PROJECT ADMINISTRATION

- HOPE should consider for the balance of its administration of this project and/or in future projects:

- ° more thorough assessment of the needs, development of preliminary action plans with measurable targets, and assessment of its capacity to produce the assistance recommended (all the more important in a program with which HOPE has not had extensive prior experience)
 - ° being prepared to invest the management time and effort to get a project back on track when it is clearly in difficulty
 - ° clarifying and clearly communicating lines of authority
 - ° delegating more authority to its field personnel and to their immediate backstop personnel in HOPE Center
 - ° continuing and strengthening its approach to clarifying and reaching consensus with its field representatives on goals, objectives, and roles.
- PRONEM should consider designating as soon as possible a full time manager for this program, with training and experience in emergency medical services and/or health care administration, who can begin to take over Dr. Rodriguez's responsibilities and become the Executive Director of SINEM.
 - Continuing external assistance will be needed in areas identified above especially:
 - ° assisting the Commission to create SINEM
 - ° developing data gathering and information systems for pre-hospital and emergency department care
 - ° professionalizing the hospital emergency departments
 - ° developing community education, accident prevention, and health promotion campaigns
 - ° developing pre-hospital and in-hospital quality assurance (Q/A) and continuing education (C/E) programs
 - Project HOPE, through UNM, should be able to provide and arrange for all this assistance. A full time medical director in Costa Rica may not be necessary to arrange and coordinate this assistance. Intermittent response to specific needs when and as identified by the Costa Ricans in these areas may be sufficient.