NEW JERSEY STATE DEPARTMENT OF HEALTH

EMERGENCY MEDICAL SERVICES

EMS PROGRAM GUIDE VOL. I

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CONTENTS

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Preface:

With the publication today of the Task Force Reports, proposed standards for emergency departments, and an accompanying planning guide, the State of New Jersey has a unique opportunity to improve the emergency health care of its citizens.

We wish to thank the more than 200 participants on the various Emergency Medical Services Critical Care Task Forces and Committees. These persons have combined the collective wisdom of physicians, nurses, first aiders, paramedics, hospital administrators, public safety officials, planners, consumers, and government. More than two years of study and debate were spent on producing these resource documents. Task Force/ Committee members made numerous site visits to working models which had been identified as outstanding examples of components necessary for basic life support, emergency department care, critical care, communications, and education. We are sure you will find the reports comprehensive and thought-provoking.

The challenge to all of us is to take the information and recommendations in these documents and review them, comment on them, and assist one another in their refinement. Once we have reached general agreement on what should be done in New Jersey, it will be vital that we work together in planning, developing, and implementing an Emergency Medical Services system which will link the many components of comprehensive emergency care.

We now have among us the necessary knowledge and resources. In the next few months, we can begin a local implementation process which will lead to a statewide system for Emergency Medical Services.

Please study these documents and make comments. Together, we can establish the finest Emergency Medical Services system in the nation.

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GLOSSARY

Advanced Life Support Services (ALS) - Implementation of the 15 components of an EMS system to a level of capability which provides both noninvasive and invasive emergency patient care designed to optimize the patient's chances of surviving the emergency situation. Services should include use of sophisticated transportation vehicles, a communications capability (two-way voice and/or telemetry) and staffing by Mobile Intensive Care Paramedics providing, onsite, prehospital mobile intensive care under medical direction.

Basic Life Support Services - Implementation of the 15 components of an EMS system to a level of capability which provides pre-hospital non-invasive emergency patient care designed to optimize the patient's chances of surviving the emergency situation.

Critical Care Units (Centers) - Sophisticated treatment facilities in large medical centers and hospitals that provide advanced definitive care for the most critically ill patients. The units are available for the diagnosis and care of specific patient problems including major trauma, burn, spinal cord injury, poisoning, acute cardiac, high risk infant and behavioral emergencies.

Emergency Medical Services (EMS) - Services utilized in responding to an individual's perceived need for immediate medical care to prevent death or aggravation of physiological or psychological illness or injury.

EMS Council - A formally established group representing both providers and consumers which is responsible for reviewing and evaluating the provision of EMS in a defined system's geographical area. Public input into EMS policy may be obtained through this council.

EMS Personnel - Key individual EMS providers. This includes physicians, emergency and critical care nurses, EMT-Ambulance, EMT-Paramedic, central dispatchers, telephonic screeners, first aid responders, project administrators and medical directors, medical consultants and system coordinators.

EMS System - A system which provides for the arrangement of personnel, facilities, and equipment for the effective and coordinated delivery of health care services in an appropriate geographical area under emergency conditions (occurring as a result of the patient's condition or because of natural disasters or similar situations).

EMS System Accountability - Development of a set of standards by which to judge the EMS system and measures to assure those standards are met.

EMS System Coordination - Ensuring the system's integration from the point of first responder identification through communications coordinations, transportation (primary & secondary), the hospital, and critical care facilities, as well as links to rehabilitation centers.

Emergency Medical Technician - Ambulance - Person trained in emergency medical care in accordance with standards prescribed by the Department of Transportation (i.e., basic 81 hour course). This allied health person provides emergency medical services according to his/her level of training and experience.

Emergency Medical Technician Intermediate - An EMT who has been trained in specific advanced life support techniques in an approved training program accredited by the Commissioner of Health and certified by the State Board of Medical Examiners as being qualified to render advanced life support services authorized by the Commissioner.

Health Care Administration Board (HCAB) - The body which has responsibility for approving final promulgations of all NJSDH regulations in the areas encompassed by the Health Care Facilities Planning Act of 1971. It is the appeals board for the certificate-of-need process.

Health Systems Agency (HSA) - A health planning and resources development agency designated under the terms of the National Health Planning and Resources Development Act of 1974, P.L. 93-641. This Act requires the designation of an HSA in each of the health service areas in the United States. Health Systems Agencies are to be nonprofit private corporations, public regional planning bodies, or single units of local government, and are charged with performing health planning and resources development functions listed in Section 1513 of the Public Health Services (PHS) Act. The legal structures, size, composition, and operation of HSAs are specified in Section 1521 of the Act. The HSA functions include preparation of a health systems plan and an annual implementation plan, the issuance of grants and contracts, the review and approval or disapproval of proposed uses of a wide range of Federal funds in the agency's health service area, and review of proposed new and existing institutional health services and making of recommendations respecting them to State health planning and development agencies.

Medical Anti-Shock Trousers (MAST) - Is a garment designed to correct or to counteract internal bleeding conditions and hypovolemia by developing an encircling pressure of approximately 88-120 mm Hg around both legs and the abdomen, thus providing an autotransfusion of blood.

Medical Direction - Directions and advice provided by physicians from a centrally designated medical facility which is staffed by appropriately trained EMS personnel who utilize regional treatment and triage protocols. Facility staff supply professional support through radio or telephonic communication for onsite and in-transit BLS and ALS services given by field personnel.

Medical Directors - Physicians employed at State, regional or area levels to direct and to administer EMS medical program.

Mobile Intensive Care - Paramedic - Persons trained in advanced life support services in accordance with standards prescribed by the Department of Transportation and certified by the New Jersey Board of Medical Examiners.

Patient Census - The patient mix in terms of patient days for a given facility for a definite time period.

Patient Flow - The patterns of movement for given type of patients from one level of care to another.

Patient Mix - The composition of a given patient census for a particular facility with reference to levels of care.

Rural - An EMS area or portion thereof that is not classified as an urbanized area by the U.S. Bureau of Census.

Statewide Health Coordinating Council (SHCC) - A State council of providers and consumers (who shall be in the majority) required by Section 1524 of the PHS Act, added by P.L. 93-641. Each SHCC generally will supervise the work of the SHPDA and review and coordinate the plans and budgets of the HSAs. It will also annually prepare a State health plan from HSA plans and the preliminary plans of the SHPDA. The SHCC will also review applications for HSA planning and resource development assistance.

State Health Planning and Development Agency (SHPDA) - Section 1521 of the Public Health Services Act, added by P.L. 93-641, requires the establishment of a State health planning and development agency in each State. As a replacement for State CHP agencies, SHPDAs prepare an annual preliminary State health plan and the State medical facilities plan (Hill-Burton). The agencies also serve as the designated review agency for purposes of Section 1122 of the Social Security Act and administer a certificate-of-need program.

Systems Evaluation - Assessment of the EMS system using descriptive operational data and impact studies to show program effectiveness.

Transfer Agreements - Formal arrangements between hospitals and physicians concerning acceptance and procedures for inter-hospital transfer of critical patients. Included in these agreements are such things as prior physician consultation, treatment protocols, transportation arrangements and equipment, health professionals who will accompany the patient, and necessary records.

Transfer Protocols - Prearranged regionwide plans for transferring specific critical patients to appropriate, designated treatment facilities.

Treatment Protocols - Written uniform treatment and care plans for emergency and critical patients. These treatment plans must be approved and signed by appropriate physicians and/or medical groups.

Triage Protocols - Regionwide plans for identifying, selecting and transporting specific critical patients to appropriate, designated treatment facilities.

Urban Area - An EMS area or portion thereof that is so classified by the Bureau of Census.

EMS PROGRAM GUIDE

INTRODUCTION

This Emergency Medical Services (EMS) planning guide is meant to assist interested parties at the local, areawide,regional and state levels in planning EMS services. The ultimate goal is a competent, equitable distributed and cost-effective Emergency Medical Services system for New Jersey.

New Jersey is a comparatively small state in terms of surface area. It is, however, the most densely populated state in the nation (953.1 persons per square mile). Nearly two-thirds of the state's population lives in the metropolitan New York City area, while still another sixth is found in close proximity to Philadelphia.

The acute care sector of New Jersey's health care delivery system provides the state with one emergency department for every 70,111 citizens. The pre-hospital phase of emergency care is delivered by over 560 separate providers. These providers vary in regards to their levels of sophistication. Basic life support (BLS) is most often provided by volunteer rescue squads. Advanced life support (ALS) is rendered by mobile intensive care unit (MICUs) which are staffed by trained paramedics.

New Jersey has a long history of commitment and excellence in basic first aid and rescue. In recent years, hospitals have become increasingly sophisticated in delivering emergency care, once the victim has reached the hospital. Mobile Intensive Care (advanced life support) efforts by paramedics have dramatically enhanced the pre-hospital phase of emergency care. The Critical Care Task Force have unequivocally stated that critical care units or special programs should be established in trauma, burn care, spinal cord and head injury, cardiac care, behavorial emergencies, poison control, and neonatology/perinatology.

This guide highlights the information studied and conclusions reached by the seven Critical Care Task Forces. Information pertaining to (1) pre-hospital care, (2) standards for emergency departments, (3) the seven critical care areas themselves, (4) communications, (5) rationales for local involvement in the planning, development and implementation of a regionalized emergency medicine system, and (6) recommended strategies for data collection, research and evaluation are included.

The Office of Emergency Medical Services of the New Jersey State Department of Health, has analyzed the Task Force reports, consulted with scores of national leaders in emergency medicine, made site visits to programs which represent the best examples of each of the components of the system, and compiled this guide.

The goal of integrating all of these elements into a comprehensive EMS system now appears attainable.

SOME BACKGROUND ON EMERGENCY MEDICAL SERVICES

Emergency Medical Services (EMS) typically include those provided at the scene, during transport (either in ambulances or other vehicles) and in hospital emergency rooms or critical care units.

The history of emergency medicine nationally and in New Jersey may be selectively highlighted as follows:

- o 1928 - New Jersey First Aid Council organized.
- o 1960 - First New Jersey emergency department with career physicians (Burlington County Memorial Hospital, Mt. Holly).
- o 1962-65 - Coronary care units reduced in-hospital mortality by 50%.
- o 1966 - Landmark report, "Accidental Death and Disability: The Neglected Disease of Modern Society" prepared by the National Academy of Sciences; National Highway Safety Act.
- o 1968 - Mobile Intensive Care Units (MICUs) further reduce coronary mortality (Belfast, Ireland).
- o Korea and Vietnam - Dramatic decreases in battlefield mortality through rapid evacuation and treatment.
- o 1971 - Central Dispatch Camden - Burlington - Hunterdon.
- o 1972-1977 - National EMS program sponsored by the Robert Wood Johnson Foundation (including projects in Newark and Hunterdon County, N.J.).
- o 1973 - Federal Emergency Medical Services Systems Act (P.L. 93-154; includes standards known as "The 15 points"* and identifies seven critical care groups** as focal points for EMS subsystem development).

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* EMS projects funded by the federal government must take "appropriate actions" on 15 points: manpower, training, communications, transportation facilities, critical care units, public safety agencies, consumer participation, access to care, patient transfer, coordinated patient record-keeping, public information and education, review and evaluation, disaster plans, and mutual aid. Interested persons are referred to the EMS Act and to recent federal EMS program guidelines for specific information on these points.

** The critical groups are: trauma victims, burn victims, spinal cord injury victims, poisoning victims, acute cardiac victims, high risk infants, and persons with behavioral emergencies (alcohol, drug, psychiatric). These areas were addressed by the Critical Care Task Forces sponsored by the New Jersey State Department of Health's Office of Emergency Medical Services. The Task Force findings are summarized later in this guide.

- o 1973 - New Jersey Paramedic Law; pilot MICU projects.
- o 1974 - REMCS Communication Center - College of Medicine and Dentistry of New Jersey - Newark/Elizabeth.
- o 1976 - The New Jersey State Department of Health obtains federal planning grant to establish an EMS system.
- o 1978 - Med-Evac helicopters operational through New Jersey State Police.
- o 1979 - New Jersey's Office of Emergency Medical Services Critical Care Task Forces establish medical necessity for a coordinated EMS system.
- o 1979 - Emergency medicine was designated as the twenty-third medical specialty.

These at first seemingly isolated events, when studied in some detail, indicate that we are at a moment in history when a truly integrated, quickly responsive and life saving system could be established, if emergency care professionals and volunteers pooled their expertise for the common good.

THE PROBLEM

Every year in New Jersey, thousands of people die, are disabled or suffer needlessly. In a recent year, 3,502 New Jerseyans lost their lives through accidents or violence. Thousands more died from heart attacks, burns, poisonings and other causes. Additionally, several hundred infants died before they even had much of a chance to live.

Why were their deaths needless? Because, many of these deaths were preventable:

For instance:

- o The New Jersey Mobile Intensive Care Unit (MICU) Pilot Program treated over 8,000 patients at nine sites around the state. Analysis of the data found:
  - o 226 patients with immediate life threatening problems were saved prior to hospitalization--104 of these people were discharged alive
  - o 1,427 patients with conditions (such as coronary problems, strokes, trauma, burns, drug overdoses, diabetic emergencies, respiratory emergencies, etc.) that would have seriously worsened, and who probably would have died without MICU services, were significantly benefited

- o 5,196 other patients received beneficial precautionary treatment, but MICU did not claim credit for saving their lives.

- o If the MICU pilot program were extended across New Jersey (permanent MICU programs now cover only 25% of the population), annual potential benefits were predicted as:

  . 1,056 patients saved

  . 7,440 patients significantly benefited and

  . 39,312 patients who would receive precautionary treatment.

- o The MICU project also found the "save" rate was twice as good when citizens began cardiopulmonary resusciatation (CPR) than when the victim had to wait until the ambulance arrived for personnel to begin CPR. King County, Washington (the Seattle area), also found a 55% increase in "saves" when citizens initiated CPR. The reason is simple, the citizen can begin CPR immediately while the ambulance is still enroute. This is a major reason why the New Jersey EMS office has stressed the importance of CPR classes for the public.

- o Some experts (e.g., Julian Walker, M.D., University of Vermont) have estimated that 25% of the lives lost through trauma producing accidents could have been saved, if proper immediate emergency care were given. In New Jersey, this means almost 900 additional lives could be saved yearly. Other estimates from the American Trauma Society show the "save" figures may be as high as 60%.

- o In 1977, New Jersey's total perinatal mortality rate was 22.1/1,000 live births. However, national studies have shown that two-thirds of the neonatal deaths and half of the fetal deaths are preventable. The minimum perinatal mortality rate (from causes not yet preventable) is 5.6/1,000 live births. Therefore, in a typical year, about 1,400 additional New Jersey babies might live instead of die, if proper steps were taken.

Proper emergency treatment can also result in better quality care for other patients who are seriously injured.

- o Each year in New Jersey, between 100-120 people sustain an acute spinal cord injury which results in paralysis. These injuries affect the patient's entire future; they also involve tremendous monetary and community costs. Once the medical condition stabilizes, delays in transferring these patients (from an acute care hospital to a rehabilitation center) can lead to many complications.

However, studies from the Midwest Spinal Cord Injury Care System Demonstration Project, Chicago, showed that bringing patients into rehabilitation within the first 72 hours reduced the first year of hospitalization by 55 days per patient (saving about $19,250 in per diem rates per patient). Complications and costs of care were also significantly lessened. In New Jersey, such a coordinated program could improve the patient's quality of life and save several hundred thousand dollars yearly.

THE EMS SYSTEM SHOULD BE MEDICALLY COMPETENT

A common thread running throughout each of the Task Force reports, and all that has been learned through the mobile intensive care pilot projects, is that medical (physician) direction is absolutely essential to assure that the established system is competent and that quality is maintained.

THE POTENTIAL OF EMS

Obviously, coordinated regional emergency medical services have great promise. Outside of prevention, probably no other segment of the health care system offers as great a potential for reducing mortality and morbidity among the people of New Jersey. The following chapters represent ways in which this goal can be reached.

BASIC LIFE SUPPORT (BLS) SERVICES

A Basic Life Support (BLS) system includes all of the 15 components mentioned in the introduction to this guide. BLS can be effectively provided by the integration of accepted standards for ambulance personnel (e.g., emergency medical technicians-ambulance), ambulances in compliance with the General Services Administration (GSA) specification, two-way voice communications and standard equipment as recommended by the American College of Surgeons. Effective placement of these vehicles, staffed by at least two trained EMT-As, can provide emergency medical care with patient stabilization, airway clearance, hemorrhage control, initial wound care and fracture stabilization. Under medical control, specific non-interventive treatment (in which the EMT-A has been previously trained) can be applied. The transportation subsystem must be developed in the context of a sound vertical categorization care program. The categorization and designation of the facilities (hospital emergency departments, critical care units, and rehabilitation centers) is a major aspect of any program and is critical in the initial development of a BLS system. It gives identification and direction to all communications, transportation, and manpower elements at the basic level, and makes possible the sound conceptualization of a delivery system for all emergency patients. It also provides a standard for clinical impact and EMS process evaluation.*

The preceeding paragraph was a brief overview of the topics to be covered in Volume II of the Emergency Medical Services Guide. Each of the 15 components will be further expanded and recommendations will be made. Another colloquium will be held to explore and develop the ideas surrounding basic life support services.

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* Emergency Medical Services Systems Program Guidelines, U.S. Department of Health, Education and Welfare, Public Health Service, Health Services Administration, Bureau of Medical Services, Division of Emergency Medical Services, Washington, D.C.: U.S. Government Printing Office (DHEW (HSA) Publication No. 79-2002, revised August 1979), p.21.

EMERGENCY DEPARTMENT STANDARDS*

INTRODUCTION

In 1978, eighty million people were seen in America's emergency departments, two and a half million of these people visited New Jersey's emergency departments. Although some estimates suggest that as many as 85% of these contacts are judged not to be "true emergencies," it is the emergency department that did the judging. Despite the fact that patient evaluation consumes a major portion of the emergency department's time and resources, its primary responsibility is to provide resuscitation and stabilization for the patient who is suddenly and unexpectedly critically ill or injured. Definitive care should be quickly arranged for by admission or transfer, depending on the required hospital facilities.

Minimum standards for emergency departments seek to address the manpower, facility, equipment and other resources needed to provide appropriate patient evaluation and care. Most categorization schemes properly charge the emergency department of any hospital, regardless of the level of categorization, with this responsibility. Any emergency facility should be able, without prior notice, to immediately provide competent advanced life support. This support should be provided regardless of the patient's age or problem, and despite the concurrent patient load, or usual lack of one. It is not the purpose of this document to suggest category levels for emergency care. Competent support is an all or none capability; it is to this end that these minimum recommendations are made.

HIGHLIGHTS OF RECOMMENDATIONS

The following paragraphs highlight sections of Recommendations for Emergency Department Standards:

- Professional Training and Education recommends that all emergency personnel be certified in advanced life support for both cardiac and trauma emergencies. On-going work experience minimums, in order to maintain proficiency, are also recommended.

- Staffing makes recommendations to insure that qualified personnel are immediately available, regardless of the patient load or lack of it. It also makes recommendations designed to avoid institutional acquiescence to chronic staffing shortages.

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*References are to the document Recommendations For Emergency Department Standards, prepared for the New Jersey State Department of Health, Office of Emergency Medical Services, by Charles F. V. Grunau, M. D.

- Facilities, Equipment and Drugs describes minimum requirements for immediate and optimal response in resuscitation during cardiac and trauma emergencies. Standard requirements for other emergencies are also given.

- Ancillary Services describes immediate diagnostic and therapeutic requirements.

- Emergency Department Patient Records makes recommendations to assure immediate access to necessary patient information.

- Emergency Department Manual and Reference Material makes recommendations to assure that departmental policies and necessary information are available around-the-clock to those who may need them.

- Quality Assurance makes recommendations designed to detect patient care deficiencies, to provide for their review, and to provide notification to the patient of any change in the interpretation of X-rays, EKGs, and diagnostic studies.

- Transfer recommends protocols for rapid transfer of patients with problems which require special facilities.

REVIEW AND COMMENT PERIOD

A review and comment period is planned. Interested persons are asked to comment on these guidelines and the document, Recommendations for Emergency Department Standards, by February 15, 1980. Address all correspondence to Roy W. Nickels, New Jersey State Department of Health, Office of Emergency Medical Services, 129 East Hanover Street, Trenton, New Jersey 08608.

CRITICAL CARE

Emergency Medical Services systems should include provision of care for various patient groups: the general routine nonemergent, emergent, and the critically ill and injured. The critical patient groups represent conditions which are easily identifiable and which lend themselves to effective EMS planning and implementation. The seven critical care patient groups, as mentioned in the federal EMS Act, are: trauma victims, burn victims, spinal cord injury victims, poisoning victims, acute cardiac victims, high risk infants, and behavioral emergencies (alcohol, drug, psychiatric and related victims).

The critical care patient groups are the foci of EMS system development. Consideration of these groups allows EMS to address the needs of all persons who require EMS services. The seven groups represent real and significant emergency medical problems. They have distinct and different medical needs. And, being the most critically ill or injured, they will benefit most from an EMS systems approach.

Over the past two years, seven OEMS Critical Care Task Forces met to explore current practices in and future directions for these emergency care areas. Task Force members are medical specialists, nurses, allied health practitioners, ambulance personnel, health care administrators, consumers, and other knowledgable persons. The consensus of each group was published as an OEMS Critical Care Task Force report (final copies were released December 19, 1979, to accompany this guide). These reports were the basis for the recommendations presented on the following pages.

BEHAVIORAL EMERGENCIES*

INTRODUCTION

A behavioral emergency is defined as "any crisis in which the individual's behavior represents a risk to himself or to others." These behaviors may be of chemical, metabolic, organic, functional or social origin. The Emergency Medical Services (EMS) system should plan for care of alcoholism, drug abuse, psychotic episodes, suicide attempts, physical assault/rape, and other behavioral emergencies. Because mental health treatment is moving towards noninstitutional community care, the number of EMS calls for behavioral emergencies is likely to increase.

When an individual behaves in an abnormal fashion (either publicly or privately), society tends to be repelled and frequently does not react appropriately. A serious system weakness is the almost total lack of coordination between mental health, alcohol, and drug crisis intervention systems, even where the services coexist. (Community Mental Health Center service areas cover less than half of New Jersey, only a few of them have been able to develop mechanisms for combined services.)

The New Jersey EMS system must coordinate, in cooperation with existing institutions and agencies, a comprehensive range of medical and social services for those individuals experiencing psycho-social trauma. It is essential that the program be applicable to all areas of the state. There presently is no method for categorizing behavioral critical care capabilities. Universal protocols or triage criteria do not exist. Currently existing services have developed in a patchwork fashion, based mostly on the availability of funding, rather than on rational state/regional planning efforts.

The sequence of intervention should be: (1) pre-hospital response; (2) referral to an appropriate facility; (3) referral to a definitive facility or service. Many individuals with alcohol, drug, and psychiatric illnesses are admitted to medical-surgical units that are not equipped to provide the appropriate services. In one Mercer County (NJ) study, behavioral emergencies were found to represent 3.6% of the total emergency department admissions. Of those admissions, 81% were referred to other nonbehavioral health service providers. This points to another problem area-lack of training for emergency department and ambulance personnel.

The following components are needed in order to develop a systematic approach to care: (1) training and public education; (2) a system for identifying behavioral emergencies at all levels of response; (3) access to the system for the patient and/or family with a behavioral emergency; (4) transportation of the behavioral patient to the most appropriate facility.

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*References are to the report of the OEMS Task Force on Behavioral Emergencies

HIGHLIGHTS OF GENERAL RECOMMENDATIONS

Highlights of the Task Force recommendations were:

- Develop Behavioral Emergency Management Teams (BEMTs) composed of individuals highly trained in the pre-hospital phase of behavioral emergencies. These regional teams could provide assistance, when requested by the responding ambulance squad.

- Determine hospital capability levels for providing psychiatric evaluation, treatment and referral. All hospitals should provide one of the two levels described (General Hospital-Behavior or Triage Hospital-Behavior). The Task Force report recommended that the majority of hospitals provide comprehensive care (General Hospital-Behavior).

- Develop a coordinated, integrated educational and training program directed to the community at large, the pre-hospital personnel, and the hospital personnel. Protocols and guidelines for these programs would be developed locally (to assure that they met local needs).

- Formulate guidelines for admission to mental health facilities from general acute care hospitals, in cooperation with all providers of mental health services.

PRE-HOSPITAL RESPONSE AND TREATMENT

Pre-hospital response includes: (1) recognition by an initial observer and (2) intervention by local public safety, ambulance squads, and the Behavior Emergency Management Team (BEMT)*. Appropriate pre-hospital management is dependent upon correct identification of the problem. Access to the health care system is also a vital factor. Treatment and triage should occur under protocols developed locally. Medical backup from hospitals and/or community mental health centers is a must.

- Training - education is the key to developing appropriate response.

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*Behavioral Emergency Management Teams (BEMTs) are teams of highly-trained individuals (e.g., local rescue squad personnel, individuals from drug abuse, alcohol and mental health agencies and clergy), who can respond to behavioral emergencies. Teams are assigned on a regional basis and provide assistance when requested by the responding ambulance squad.

- Public Education - should include, but is not limited to, knowledge about behavioral emergencies, system access and resources, and how to make them available to the patient.

- First Responder Training (Police) - should include, but is not limited to, evaluation and recognition at the scene, interim care until second responder arrives, provision of a protective and supportive environment (appropriate behavioral emergency content should be included in all recognized EMS training programs).

- Dispatcher Training - should include recognition of behavioral crisis, basic communications skills in human relations, and knowledge of regional resources.

- Ambulance Squads and Paramedic Training - training should be expanded to a minimum three-hour module on behavioral emergencies, as part of the basic content of all recognized training programs. Refresher courses should also include this module. Advanced training could be provided to trained, interested personnel and to BEMT volunteers. The basic curriculum should include: symptom recognition, evaluation of patient and situation, provision for care and support, transportation and utilization of the BEMT.

- Behavioral Emergency Management Team (BEMT) - these specially trained teams would be strategically located. According to the Task Force, the regional BEMT groups will provide the best way to confront the problem of behavioral emergencies. The BEMT concept is in accordance with the New Jersey Comprehensive Mental Health Services Plan. BEMT group representatives will form an advisory panel which will meet regularly to review and evaluate BEMT calls, to make recommendations for ongoing training, and to provide a conduit for making BEMT recommendations to agencies.

- Transfer and Treatment Protocols - under medical direction and ptotocols, strategies would be developed by the BEMT to route patients/clients expediously within and between agencies. Transfer agreements would be drawn up between squads, the BEMTs and hospitals. Mutual aid agreements would be made on a regionwide basis.

- The Patient Advocate Role of the BEMTs - a member of the responding BEMT would act as an advocate of the patient being transported. The advocate would follow the patient through the health care delivery system and would maintain a written log (to be presented at the next BEMT review/evaluation meeting).

- Run Review and Evaluation Procedure - reviews of behavioral emergency calls and evaluation will be part of each ambulance squad's regular meeting. Patient advocates will present their logs to the BEMT advisory panel for review.

- Communications - the entire system for handling behavioral emergencies necessitates a dispatching system and communications link-ups between agencies and institutions. The linkages should include protocols and transfer agreements.

- Transportation - secondary transportation remains a problem for all agencies involved. Conflicting roles and relationships in primary and secondary transport can be resolved to some degree by utilizing the BEMTs and the Alcohol Treatment and Rehabilitation Act (ATRA) service squads.

FACILITIES/SPECIALIZED CARE

The Task Force did not believe that the usual three-tiered approach to hospital categorization was appropriate for behavioral emergencies. Hospitals should be designated as either General Hospital-Behavior or Triage Hospital-Behavior. Designation is based on the ability and willingness to provide necessary evaluation and initial management and the ability and willingness to implement the most appropriate definitive care (ranging from crisis intervention to commitment proceedings).

- General Hospital-Behavior: this level represents the type of comprehensive care which the majority of hospitals should strive toward.

- Staffing: an emergency department physician and an attending psychiatrist should be available 24 hours a day, other staff should include a registered nurse on each shift, an attendant on each shift, and a mental health clinician twelve hours a day. All staff should be trained to deal with behavioral emergencies.

- Facilities: a variety of facilities are needed -- (1) crisis intervention-observation area for short-term management of the behavioral emergency; (2) an area where medical evaluation and treatment can be provided; (3) medications and physical restraints, as required; (4) an inpatient unit licensed for psychiatric beds or a transfer agreement with a hospital which has licensed psychiatric beds; (5) facilities for managing the substance abusing patient or a transfer agreement with an institution providing such facilities.

- Documentation - all scheduling of duty rosters and on call schedules must be readily available; compliance with training and education requirements must be documented in a permanent log.

- Education - the following programs are necessary: (1) ongoing, regularly scheduled, in-service training for nursing personnel, emergency department physicians, attendants and security guards in behavioral emergencies; (2) an identified educational coordinator will implement and maintain educational training programs for behavioral emergencies, the panel physicians and nurses (listed in the "staffing" section) should commit 20% of their required in-service and continuing education credits to behavioral subjects; (3) when psychiatric residents cover the emergency department, they should be supervised and trained in a structured and consistent manner; (4) there should be written treatment and triage protocols.

- Triage Hospital-Behavior: the Triage Hospital-Behavior represents a desired level that can be achieved by the majority of emergency departments through appropriate education, staffing and training. The facility provides medical evaluation of all behavioral emergency patients for organic disease and/or trauma. It has transfer agreements with a General Hospital-Behavior, with a hospital with licensed psychiatric beds, and with appropriate drug, alcohol and mental health facilities.

  - Staffing - the facility has an emergency department physician on duty 24 hours a day; each shift should have a registered nurse and an attendant on duty.

  - Facilities - patient management takes place in the emergency room. No dedicated area for the management of behavioral emergencies is required (however, a private/secluded area is desirable).

  - Education - the emergency room physicians and other staff must participate in training/educational programs related to behavioral emergencies (10% of the required CME/CEU credit must relate to behavioral emergencies).

  - Protocols - treatment and triage protocols should be written.

OTHER RECOMMENDATIONS

(1) Appointment of a multidisciplinary ad hoc committee for training, education and curriculum development.

(2) Development of written pre-hospital and hospital treatment and transfer protocols and agreements.

(3) Implementation of behavioral emergency services on a statewide basis. The Task Force urged that the mechanisms of "request for proposal" and Health Systems Agency review be applied to the proposed program.

REVIEW AND COMMENT

A review and comment period is planned. If there is general consensus that the levels of care described in this guide and in the report of the OEMS Task Force on Behavioral Emergencies are appropriate, a designation process will begin. This type of process was approved by the Health Care Administration Board in Process and General Criteria for the Certification of Need and Designation of Regional Services (December 12, 1978). See Appendix A in this guide.

Interested persons are asked to comment on these guidelines by February 15, 1980. Address all correspondence to: Roy W. Nickels, New Jersey State Department of Health, Office of Emergency Medical Services, 129 East Hanover Street, Trenton, New Jersey 08608.

BURNS *

Burns are injuries to the skin and/or underlying tissues resulting from contact with heat, chemicals, electricity or radiation. Historically, burn victims in New Jersey have been served by a combination of existing facilities:

- An out-of-state group of burn facilities which, by geographical proximity, serves primarily the southern area of New Jersey (St. Agnes Hospitals and Crozier-Chester Burn Center--Delaware Valley Burn Foundation).
- A public non-profit organization in northern New Jersey which maintains a hot-line tied into a dispatch system, the Regional Emergency Medical Communications System (REMCS), to facilitate burn patient transfer (National Burn Victim Foundation).
- A specialized burn facility having transfer agreements with sending hospitals, which especially involves the northern area of New Jersey (St. Barnabas Medical Center-Burn Unit).

When patients presently require transfer from a local hospital, some loss of efficiency may occur. There is a lack of standardization and coordination among the existing systems. Much of this problem could be eliminated by developing a statewide system for treating burn patients. The life of the burn victim often depends on actions taken in the pre-hospital phase, in the emergency department and in the definitive care hospital. A unified system can save lives.

Burn depth is usually classified as: (1) first degree-these burns are the mildest and involve only the outer layer of the skin (epidermis)-they produce redness, increased warmth, tenderness and mild pain; (2) second degree-these burns extend through the epidermis to the under layer of skin (dermis)-they produce blisters and are characterized by severe pain; (3) third degree-these burns are full thickness (they destroy both the epidermis and the dermis)-pain is usually absent because the nerve endings have been destroyed, color may range from white and lifeless (scalds and steam) to black and charred (oil or gasoline fires). Using these definitions, burn injuries can be identified as (1) major burn injury, (2) moderate uncomplicated burn injury, or (3) minor burn injury. Identification of severity would depend on the classification of burn, the percentage or extent of body surface area (BSA) involved, whether the injury involved any "special areas" (i.e., hands, face, eyes, feet or perineum), and age of the victim.

The Task Force conceptualized burn care taking place in four treatment settings: burn units/centers, burn programs-general hospital, hospital emergency rooms, and pre-hospital (emergency care at the site of the accident and during transport). Only about 10% of all burns

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* References are to the report of the OEMS Burn Care Task Force

coming into hospital emergency rooms require hospital admission (about 2500-3000 New Jersey cases annually). However, the Task Force members were especially concerned about the possibility of accidents which could result in massive numbers of burn casualties. (New Jersey contains processing and storage facilities for large amounts of petroleum products and chemicals; its skies are crossed by the holding and landing patterns of five international airports.)

Overall, the Burn Care Task Force anticipated developing an Emergency Medical Services system plan which was based on patient care needs, known medical technology and the matching of existing resources to those emergency needs, regardless of the patient's ability to pay.

HIGHLIGHTS OF GENERAL RECOMMENDATIONS

(1) The Task Force recommended adoption of a number of existing reports and documents. These included:

- The report of The New Jersey State Department of Health Commissioner's Task Force on Burns (August, 1977)
- The American Burn Association (ABA) Standards--Specific Optimal Criteria for Hospital Resources for Care of Patients with Burn Injury (April, 1976)
- New Jersey Burn Care Plan Element of the State Health Plan, 1978-1982.

Other documents, such as The Management of Burns in the Emergency Room, New Jersey Committee on Trauma (American College of Surgeons) Subcommittee on Burns; Emergency Services, Hospital Accreditation Program, Joint Commission on Accreditation of Hospitals (JCAH), 1979 (See Appendix A in the Task Force report); and Emergency Care and Transportation of the Sick and Injured, U.S. Department of Trans
working criteria.

(2) The Task Force prepared a number of guidelines which were presented in the appendix to the report:

- Guidelines for Pre-Hospital Burn Care (Appendix B)
- Emergency Department Guidelines (Appendix C)
- Guidelines for Inter-Hospital Burn Victim Transfer (Appendix D)

(3) The Task Force recommended maintaining the present system of burn victim transfer until a unified state system is developed and operational. Implicit in future system development is direct personal contact between the sending physician and the receiving physician.

BURN UNIT/CENTER FUNCTIONS

A burn unit/center is a hospital service with indepth expertise

and optimum facilities for burn care. The facility must treat burn patients exclusively and be identifiable physically. It should have a single entrance. It is desirable that a volume of moderate burns be treated by the burn care team. Many of these will not require care in the unit/center, but may be hospitalized in the general care area to provide continuing education for all personnel and training for burn fellows, nurses, physical therapists and others.

BURN UNIT/CENTER CRITERIA

Population Base. Because of relatively low incidence and the high care requirements, burn care regions usually serve large areas. One in-state burn unit/center is proposed for New Jersey. Burn units/centers generally are associated with hospitals of 500 or more beds.

Personnel Needed. The center should have a large staff with a variety of personnel. Personnel should rotate solely in the burn service. Staff includes:

(1) A designated director
- board certified general or plastic surgeon
- one additional year of special training in burn therapy or equivalent experience in burn patient care

(2) A head nurse
- Registered Nurse
- at least one year intensive care experience or equivalent training
- a minimum of three months' burn experience
- six weeks' training in burn care

(3) Fully trained and licensed and/or registered physical therapists and registered occupational therapists

(4) A licensed dietitian

A variety of board certified specialists (Urologists, pathologists, pediatricians, psysiatrists, etc.) must be on the hospital's staff and available to the unit as needed for consultation and service. Social services should be available to the center.

Resources. Specific services which a burn unit must provide include: (1) electrocardiograph-oscilloscope defibrillator, (2) cardiac output monitoring, (3) physical therapy-hydrotherapy, and (4) occupational therapy. In centers, conference rooms are necessary for educational functions; laboratories and other special facilities are needed for research purposes. The unit/center must have Med-Evac helicopter transport capability.

Facilities. The burn unit/center must have a minimum of six burn-dedicated beds. In general, a six-bed unit is expected to treat at least 50 patients yearly, in order to provide quality care, maintain burn team

proficiency and contain costs. In a large unit, where many seriously burned patients are treated, an intensive care section within the burn center is advisable. The center should be capable of delivering all required therapy and rehabilitation, teaching, training of personnel and burn research.

Equipment. A burn unit/center requires: (1) a whole body tank for the exclusive use of the burn unit; (2) vertical adjustable beds, circular rotating beds and conventional beds; (3) bed scales; (4) access to an operating room; (5) 24-hour-a-day laboratory services to perform routine hematological and urine studies, blood gases and pH determinations) and blood bank; (6) renal dialysis capability; (7) angiographic capability; and (8) various additional equipment/supplies (gastric lavage, bronchoscopes, cardiac output monitoring, temperature control devices, etc.).

Communications. The Task Force recommended the development of an EMS communications and transfer resource that would: (1) provide bed availability information throughout the Northeast (updating every 24 hours); (2) identify resources; (3) facilitate transportation; and (4) facilitate communication between referring and receiving physicians. Centralized regional dispatch systems (such as the ones in Hunterdon, Burlington and Camden Counties) were also recommended.

Training/Education. High quality continuing education and training efforts should be aimed at all persons who might affect the care of the burn victim (the general public, EMTs, paramedics, emergency department nurses, physicians). Public education should stress the availability of and accessibility to the burn care system. All education/training programs should be coordinated with the Delaware Valley Burn Foundation, the National Burn Victim Foundation and St. Barnabas Burn Center.

Internal Evaluation. An EMS record system should be established. The system should consist of information about dispatch, ambulance (BLS), paramedic (ALS), emergency department and burn care within facilities. Such a system will assure continuity of medical records and lead to the collection of data sets. This will permit review and evaluation by a committee of burn care providers (to be designated).

BURN PROGRAM FUNCTIONS

A burn program hospital has special expertise in burn care. It is able to provide minor burn care, emergency care, referral of larger burns, complete care of burns of moderate severity and care of some major burns, including rehabilitation. A written plan of burn therapy, including isolation techniques is essential. Burn programs will be able to adequately care for the majority of burn patients. The Task Force modified the definition of "burn care program" originally found in the report of the Commissioner's Task Force on Burn Care. The Task Force felt the revised definition reflected existing burn care and recognized current expertise in treatment of burns in New Jersey.

BURN PROGRAM CRITERIA

A hospital offering a burn program should have an intensive care unit (ICU) or a joint cardiac/ICU which can be used for burn patient care. Burn-dedicated beds are not required. Access to services, such as operating rooms, laboratories and renal dialysis facilities, is necessary. A whole body tank should be close to the ICU to carry out debridement and hydrotherapy. Other equipment (e.g., intravenous catheters, temperature control devices) is also needed.

The burn care team should consist of a physician, a registered nurse and a physical therapist. Qualifications were given in the Task Force report.

OTHER TREATMENT SETTINGS

Pre-Hospital Phase. The Task Force submitted a number of recommendations to assure proper response and treatment. Highlights of these recommendations are:

- Endorsement of the Department of Transportation's EMT-A (emergency medical technician-ambulance) training as the standard level of training for all basic life support (BLS) personnel
- EMT personnel providing care to burn victims are expected to have certified training. Training should include emergency treatment of chemical burns, high voltage injury, and knowledge of wound therapy.
- Endorsement of the New Jersey State Department of Health paramedic training and integration of the mobile intensive care units (MICUs) into the burn care system
- EMT-P (emergency medical technician-paramedic) personnel should provide EMT-A level services, plus basic fluid therapy and other advanced life support measures, as indicated under medical direction received via telecommunication.
- Guidelines for Pre-Hospital Burn Care were prepared and adopted by the Task Force. These guidelines should be integrated into the EMT-A course.

Hospital Emergency Department. The emergency department is a place for minor treatment, emergency care of large burns and appropriate referrals.

The Task Force presented criteria for proper emergency care, including qualification of the physician on duty. The applicable Joint Commission on Accreditation of Hospitals (JCAH) statements (1979) were endorsed (see Appendix A in the Task Force report). The EMS Burn Care Task Force also prepared and adopted Emergency Department Guidelines for care of burn

victims (see Appendix C in the Task Force report).

Transfer arrangements with a burn program and a burn unit/center are desirable. The Task Force prepared suggested protocols for transfer and treatment (see the report's Appendices D and E). Protocols should serve as guides to the physician, but are not binding requirements.

HIGHLIGHTS OF OTHER RECOMMENDATIONS

- Public Safety Agencies: System development must include a close working relationship with the New Jersey State Police to expand the Med-Evac helicopter service. Utilization of the "Red-line" traffic pattern, originated by the National Burn Victim Foundation, should be continued. Fire departments have special expertise and interest in burn care.

- EMS Coordinators: A sufficient number of EMS coordinators should work within the regionalized EMS network. Their responsibilities should include integrating the system, coordinating educational programs, ensuring medical communication, coordinating ground and air physician requested transfers, acting in a community relations role.

- Transportation: The state has sufficient ambulance capability to handle the pre-hospital and inter-hospital transport of burn victims. The Med-Evac helicopters are well suited to effecting secondary transfers of many burn patients.

ADDENDUM TO THE BURN CARE TASK FORCE REPORT

On December 6, 1979, the Office of Emergency Medical Services Burn Care Task Force and the Commissioner's Task Force on Burn Care for New Jersey met. The OEMS Burn Care Task Force received the New Jersey State Department of Health's statement on burn care programs. (See Appendix B in this guide.) The Task Force felt the statement represented a major step toward the recognition of burn care at the program level (as defined by this Task Force), in addition to the unit/center level as previously defined.

The Task Force anticipated that the data collected over the next two years will reflect the efficacy of specialized burn care at all levels.

REVIEW AND COMMENT

A review and comment period is planned. Interested persons are asked to comment on these guidelines by February 15, 1980. Address all correspondence to: Roy W. Nickels, New Jersey State Department of Health, Office of Emergency Medical Services, 129 East Hanover Street, Trenton, New Jersey 08608.

CORONARY CARE*

INTRODUCTION

Cardiac emergencies constitute a major problem in emergency care. Major cardiac presentations include sudden death, chest pain, respiratory distress and sudden collapse. A comprehensive system of emergency cardiac care can help to reduce death or disability from cardiac problems. Emergency cardiac care (ECC) must inlude basic life support (BLS), advanced life support (ALS), public access, provider education and training, and EMS coordination.

Cardiac care from an EMS standpoint is not the same as cardiac care from an in-hospital coronary care unit standpoint. Emergency Medical Services generally view cardiac care from the mobile intensive care unit (MICU) and emergency department (ED) perspective. The Task Force recognized that emergency cardiac care has set the pace in New Jersey emergency medicine. The beginning of a statewide ECC system exists, but the need to plan, implement and coordinate a network of care under medical direction is paramount. A systematic, patient oriented approach to ECC can be the foundation of a comprehensive emergency medical care system. The system should be organized to provide medical direction from the early phases of critical emergencies through hospital and post-hospital care.

HIGHLIGHTS OF GENERAL RECOMMENDATIONS

The goal of a cardiac care system, as given by the Coronary Care Task Force, is to provide optimal care and treatment of cardiac patients throughout New Jersey by means of:

(1) Regionalized pre-hospital and hospital treatment under medical control, and

(2) Regionalized communications, transport and transfer systems, and protocols which provide patients with rapid access to the type of treatment they require.

PRE-HOSPITAL RESPONSE AND TREATMENT

Elements of emergency cardiac care for all major cardiac presentations should include:

- Citizen cardiopulmonary resuscitation (CPR) instruction.
- Basic Life Support (BLS): (1) public awareness of early warning signs and actions for surviving a heart attack; (2) public education, including how to access the emergency care system.

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*References are to the report of the OEMS Coronary Care Task Force

- Advanced Life Support (ALS): (1) trained paramedics who meet the minimum standards promulgated by the Department of Health (trained intermediate level EMTs will most likely work in remote areas where fully trained paramedics are not feasible); (2) fixed and mobile methods of health care delivery; (3) communication and transportation system under medical direction; (4) response occurring within given time limits.

Usual resources required for specialized ECC response and treatment should include:

- Public Education to Reduce Death and Disability: (1) publicize a telephone access number (e.g., 9-1-1); (2) provide public citizen CPR courses (e.g., Cardiac Defender, Heart Saver), coordinate those programs with other agencies; (3) request the New Jersey State Department of Education to mandate CPR in-service for all public school teachers and provide CPR classes for students; (4) provide education on prevention of heart disease and the sequence of events in a heart attack.

- Public Access to the EMS System: (1) provide a simplified public access mechanism (like 9-1-1) which would be linked to a medical resource and information center; (2) establish a resource center to continuously monitor bed availability, transfers, and communications and to facilitate physician-to-physician communication; (3) provide simultaneous dispatch of BLS and ALS ambulance crews and vehicles, with screening to be done at a central dispatching center.

- Provider Training and Certification: (1) dispatchers--training should include symptom recognition and resources and geography of the dispatch area; basic rescue training and experience are desirable; (2) police--training should include the Department of Transportation's Crash Injury Management Course, which includes CPR certification; (3) firemen--same as police; (4) emergency medical technician (basic EMT-A)--training should consist of the Department of Transportation's Emergency Care and Transportation of the Sick and Injured, course should be used to certify ambulance personnel; (5) mobile intensive care unit (MICU)--present certification by the New Jersey State Board of Medical Examiners should continue and should include reciprocity with other MICU projects in and out of the state, the number of MICUs should be increased through a regional approach, MICUs should be under medical coordination of the Area Coordinating Center (ACC) in cooperation with other hospitals in the region, proprietary transport companies should meet the same standards for BLS and ALS as voluntary squads; (6) EMS coordinators--training and function is to facilitate pre-hospital response, hospital response and critical patient care transfers and to maintain the system's integrity and continuity.

HOSPITAL EMERGENCY DEPARTMENT (ED) FACILITIES REQUIRED FOR CORONARY CARE

Hospitals in an areawide emergency coronary care system will interface with other hospitals in the region which also serve critical care patients (e.g., trauma, neonatal, burns). Hospital emergency departments should meet the Joint Commission on Accreditation of Hospitals "Standards on Emergency Departments" (see Appendix E in the Task Force report).

The Task Force also endorsed Standards for Emergency Cardiac Care in Advanced Life Support Units (including Hospital Emergency Departments), April 1976, American Heart Association. It was recommended that: (1) all emergency department physicians be certified in advanced coronary life support (ACLS), (2) all emergency department nurses be certified in BLS and a minimum of one nurse per shift be certified in ACLS, (3) triage personnel should be taught the signs and symptoms of heart attack, (4) and emergency department protocols for coronary care should be written and posted. (Sample protocols were attached as Appendices B and C in the Task Force report.)

All basic and comprehensive hospitals are to be involved in the MICU program. The Task Force recommended that pilot MICU programs developed prior to the permanent legislation may continue to function. However, in the interest of developing a regionalized response to mobile intensive care, they should be encouraged to integrate into the area and regional plan.

REGIONALIZING EMERGENCY CORONARY CARE

The Task Force recommended developing Area Coordinating Centers (ACCs) in various areas around the state. These institutions would be responsive to other hospitals in the designated region. The ACC would be responsible for coordinating Emergency Medical Services within the area (county or multicounty) served by the center, coordinating the area's mobile intensive care hospitals, and coordinating the receiving hospitals in the area. Medical coordination would be effected by the medical director at the ACC. An area Medical Advisory Council would be charged with developing an areawide network of mobile intensive care.

Essential to medical coordination of mobile intensive care for each EMS/HSA region in New Jersey is: (1) the designation of one Area Coordinating Center for each EMS/HSA region, (2) the designation of one medical director for each area, and (3) the designation of the mobile intensive care hospitals (MICH) in the area.

Area Coordinating Center Functions

The Area Coordinating Center has four major responsibilities:

- Appoint a medical director for the area.
- Form a network of MICU hospitals which are coordinated by the ACC.

- Establish at least two committees to develop and monitor the system (e.g., an area Medical Advisory Committee, and EMS Council, a group for public education/public information, a communications frequency coordination group).

- Assure provision of education and training for physicians, nurses and paramedics.

Area Coordinating Center Criteria

The criteria should be based on area demographics, incidence of coronary disease, and the available ratio of BLS to ALS crews and vehicles. The criteria for hospital selection and designation must include factors such as staffing, continuing education and in-service training, and equipment and facilities.

Hospital-based ACCs must: (1) have an emergency department; (2) provide 24-hour-a-day physician coverage in the emergency department, the physicians must be versed in emergency care procedures and MICU medical direction; (3) must be a designated MICU hospital and conform to MICU standards; and (4) must have a functioning intensive care unit and coronary care unit (ICU/CCU).

Mobile Intensive Care Hospital (MICH) Functions

The mobile intensive care hospital is the heart of the emergency coronary care system. Functions include a variety of tasks. For example:

- Orient MICU hospital staff to the MICU/ALS program.

- Provide for medical direction for treatment, triage and transfer of all ALS patients by a designated MICU nurse and/or physician, according to protocols.

- Transfer patient care information on each ALS run to the receiving facility via direct dial or dedicated telephone lines, according to operations protocols.

- Provide for regularly scheduled case review conferences for the pre-hospital and hospital team and regular in-hospital clinical training and retraining experiences.

- Assure that paramedics are trained and meet the minimum standards promulgated by the New Jersey State Department of Health.

- Provide for continuing didactic, clinical, and field education.

Mobile Intensive Care Hospital (MICH) Criteria

In order to carry out the preceding responsibilities, and others, a set of rigid criteria were recommended by the Task Force. Items include:

- Must have an emergency department and an ICU/CCU.
- Must have a New Jersey State Department of Health approved communications system for both voice communication and EKG telemetry between the MICU and the hospital's CCU or ED.
- Must have a medical director responsible for the Mobile Intensive Care system at the MIC hospital.
- Must have a cardiologist or internist as medical director (The current New Jersey paramedic law is explicit in this regard. The law should be modified to include emergency medical specialists).
- Must provide education and training for physicians, nurses and paramedics.
- Must have a recommended population base for MICU of 250,000-500,000. In sparsely settled areas, a population base as low as 125,000 may be considered.
- May operate one MICU vehicle for a population base of 125,000. Where a high volume of calls exists, additional vehicles may be required upon approval of the area's Medical Advisory Council. Recommended criteria should be: volume of calls, simultaneous calls, mutual aid agreements, nature of geographic area, and fluctuating population.

Receiving Hospitals

Receiving hospitals must: (1) have an emergency department; (2) have a licensed physician on duty 24 hours a day; (3) receive patients; (4) use the protocols for treatment and transfer developed by the EMS area Professional Advisory Council; (5) have a functioning ICU/CCU; (6) have telephone communication with the Area Coordinating Center and with other MICU hospitals in the region; (7) work in cooperation with the Area Medical Advisory Council and EMS advisory groups.

CRITICAL CARE UNITS (CCUs)

The Task Force endorsed the Report of the Inter-Society Commission for Heart Disease Resources. Resources for Optimal Care of Patients with Acute Myocardial Infarction, which includes a stratified system of coronary care and mechanisms for rapid entry into the ECC system.

The unit must have a minimum ACLS capability to maintain the acute coronary patient and to provide continuous definitive care of patients with acute myocardial infarction.

Staffing. The coronary care unit nurse must complete a critical care course, including ACLS, following standards recommended by the American Heart Association. The coronary care unit director should be an internist/cardiologist who makes policy decisions. He/she should also meet the AHA standards.

Resources. The architectural design of the CCU should assure maximum visibility and adequate privacy. Policies should assure rapid admission. Standing orders should include capability of a certified nurse to defibrillate the patient and to administer I.V. drugs under protocol. Intubation by nurses is desirable, but not a minimum standard.

Equipment. The Task Force deemed certain equipment to be essential. This included: monitors, nonelectric or grounded beds, two defibrillators, temporary pacing capability, and two volume cycle respirators.

A tertiary center is capable of providing definitive care of advanced heart disease. Resources include: a CCU, hemodynamic monitoring, cardiac catherization laboratory, and a cardiopulmonary bypass team which is available within one hour.

TRANSPORT AND TRANSFERS

Patient transfer to the tertiary care center should be facilitated by the EMS coordinator at the ACC. He/she assures there will be an adequate information flow (including patient demographic data) between the referring and receiving physicians. Transportation arrangements can also be made through the EMS coorindator.

In-transit arrangements should include:

- Medical direction of the patient by means of a radio equipped ALS unit.
- Continuous availability of advanced cardiac life support measures during transfer: (1) continuous ECG monitoring of heart rhythm, telemetry; (2) blood pressure monitoring as needed; (3) maintenance of I.V. lifeline; (4) drugs to maintain cardiac stability should be available for immediate administration.
- Personnel accompanying the patient should include at least one person certified in advanced life support procedures and who is authorized to carry out such procedures under medical direction.

Transfer agreements should be developed between the hospital and the nearest appropriate tertiary hospital in order to ensure maximum care for the patient.

Transfer and treatment protocols should be standardized and approved by the New Jersey Commissioner of Health, in cooperation with the ECC Task Force. This will ensure that the right personnel, equipment and transport vehicles are used (with a minimum of delay in activation of the system). The protocols should include: (1) agreement that the protocols are merely "guides" to the physician on when to transfer, conditions requiring transfer, and where to transfer; (2) name of sending and receiving hospital; (3) signatures of affected parties at both hospitals.

OTHER RECOMMENDATIONS

Additional Task Force recommendations surrounded standardized recordkeeping systems, evaluation of emergency coronary care, disaster linkages and mutual aid agreements. Roles and responsibilities of the New Jersey State Department of Health were also given. A few examples were: (1) perform lead agency functions (e.g., statutory responsibility for public health, approval for program implementation and continuing operation, fiscal coordination); (2) provide certification/re-certification of pre-hospital personnel; and (3) assure input from local and regional planning groups.

REVIEW AND COMMENT

A review and comment period is planned. If there is a general consensus that the levels of care described in this guide and in the Coronary Care Task Force report are appropriate, a designation process will begin. This type of process was approved by the Health Care Administration Board in Process and General Criteria for the Certification of Need and Designation of Regional Services (December 12, 1979). See Appendix A to this guide.

Interested persons are asked to comment on these guidelines by February 15, 1980. Address all correspondence to Roy W. Nickels, New Jersey State Department of Health, Office of Emergency Medical Services, 129 East Hanover Street, Trenton, New Jersey 08608.

HIGH RISK INFANTS*

INTRODUCTION

The most hazardous times in life are the weeks before delivery, the intrapartum period, and the days immediately after birth. Of every 100 twenty-week fetuses, eight or nine will have serious defects or injuries or will die before reaching one month of age.

Statistics show that 25% of all pregnancies are high risk; these pregnancies give rise to 75% of perinatal morbidity and mortality. Some maternal complications are obvious (advanced states of maternal distress, hypertension, or a poor outcome in a prior pregnancy). Other complications are more subtle and require intensive monitoring to detect.

Of all newborn infants, 2-3% require intensive care and another 2-4% require some form of specialized care or management. (The Crippled Children Program of the State Department of Health has drawn up a list of conditions which would require tertiary care for the infant.) The actual maternal-fetal complications which will require transfer to a specialized center will depend on the capabilities of the treating hospital. However, most high risk infants are not born in hospitals which provide newborn intensive care services.

About two-thirds of the neonatal deaths and half of the fetal loss is preventable. Some important factors which can contribute to declines in perinatal morbidity/mortality are regionalization of perinatal care and high risk infant transport services. (For instance, the states of Arizona and Wisconsin significantly reduced their neonatal mortality rates from 1968 to 1973 by regionalizing maternal and neonatal services--Arizona from 45th to seventh nationally and Wisconsin from 38th to third.) Any plan for organization of perinatal care must include maternal and infant consultation, referral and transport services.

New Jersey continues to fall below the U. S. median in infant morbidity/mortality rates. In 1977, New Jersey's total perinatal mortality rate was 22.1/1,000 live births. The minimum perinatal mortality rate (from causes not yet potentially preventable) is 5.6/1,000 live births. Therefore, in a typical year, about 1,400 New Jersey babies are dying needlessly. It is estimated that more than 2,000 critically ill infants are born each year in New Jersey. Without transportation to a regional intensive care center, these infants will have little chance to survive. New Jersey now has 13 hospitals which accept newborn intensive care transfers. However, these centers are concentrated in the urban areas (there are none in rural areas). Further, there are no organized central communications system, no quality standards, nor safety controls for high risk infant transport service.

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*References are to the report of the OEMS Neonatal/Perinatal Task Force

A healthy newborn has a better chance of growing to be a healthy child. And, it is the health of our young people which will determine the overall health of New Jersey's population.

HIGHLIGHTS OF GENERAL RECOMMENDATIONS

(1) Regionalize high risk perinatal care

- The Task Force endorsed the recommendations of the Materal and Infant Care Services Committee of the New Jersey State Health Planning Council

- A regionalized system of neonatal and perinatal care must include:

  - o designated levels of hospital care
  - o mobile neonatal intensive care units at Level III hospitals
  - o communications centers to facilitate transfer of infants and mothers
  - o continuing education for medical personnel and the public

(2) Improve high risk maternal-fetal-neonatal transport service.

LEVELS OF PERINATAL CARE

The Task Force agreed that the current New Jersey regulations for perinatal services provide the basis for a perinatal system. The Task Force recommended developing strong Level II perinatal units with a full-time neonatalogist in every unit. The development of regional perinatal centers, each with its own network of related hospitals, is the first step toward the goal of providing optimal perinatal care to all citizens of New Jersey. A coordinated, cooperative system of maternal and perinatal care can provide: quality care to all pregnant women and newborns; maximal utilization of highly trained perinatal personnel and intensive care facilities; and assurance of reasonable cost effectiveness. Under New Jersey's Levels of Care Criteria for perinatal services, (see Appendices A and B in the Task Force report), the levels of care are defined as:

- Level I Perinatal Unit-----(Community Hospital Unit)

  One which provides services primarily for uncomplicated maternity and newborn patients.

- Level II Perinatal Unit----(Perinatal Care Unit)

  One which provides intermediate care services for the majority of women and newborns with complications, as well as providing services for uncomplicated patients.

- Level III Regional Perinatal Center--(Regional Perinatal Center)

  One which provides care for normal patients and also for complicated fetal, neonatal and maternal cases which require more intensive care than can be provided in a Level II perinatal unit.

The state criteria included detailed recommendations for equipment and services, physical facilities, personnel, consultations, and communication and transport systems. The OEMS Task Force adopted these facility levels as the resources of a perinatal Emergency Medical Service System (see Appendix A in the Task Force report). Since the vast majority of obstetric and newborn care is provided in Level II hospitals, particular emphasis must be placed on upgrading community hospitals to a Level II status. According to the Level of Care Criteria, the backbone of the perinatal service is at a Level II community hospital. However, very few New Jersey community hospitals are presently at this level.

TRANSPORT

Maternal transport is the preferred method over neonatal transport, but it can help to improve the outcome for many high risk infants. (Recent Arizona experience shows infants transported to a center "in utero" had significantly lower mortality than infants transported after birth.)

The Task Force recommended:

- Incorporation of maternal and neonatal transport into one system and one vehicle

- The mobile neonatal intensive care unit should also be designed so it can transport both critically ill newborns and high risk maternity patients (see Appendix D in the Task Force report for Unit specifications).

Since maternal and infant transport is the responsibility of the regional (Level III) centers, these centers should own a specialized vehicle for maternal and infant transport.

Helicopter service (Med-Evac) is provided through the New Jersey State Police. It is useful for long distance transport and during rush hours. All Med-Evac helicopters have been wired to accept a newborn transport isolette. Information on initiating helicopter transport service was given in Appendix L of the Task Force report.

A transport team (physician, nurse, respiratory therapist) should be available at the regional centers on an around-the-clock basis. The team should accompany seriously ill infants throughout transport. The transport team might also attend high risk deliveries in Level I and II hospitals, if an in-house resuscitation team were not available. However, it was recommended that an infant resuscitation team be organized in every hospital which provides obstetrical services.

Transfer and transport procedures and agreements are vital. The initial transport request or consultation should be between physicians. Other responsibilities of the referring hospital, the transport nurse and physician, and the ambulance attendants were outlined by the Task Force. (See Appendices B, G, H, I, J and K in the Task Force report.)

COMMUNICATIONS AND COORDINATION

The Task Force recommended the establishment of an Infant Medical Dispatch Center which has a number of functions (maintaining census of bed availability, providing consultation, etc.). Such a center could easily be integrated in the Regional Emergency Medical Communication Service (REMCS) at the College of Medicine and Dentistry of New Jersey in Newark. The Task Force recommended establishing an infant center, similar to one now operating in California, since there presently is no centralized communication system for infant transport in New Jersey.

Perinatologists, neonatalogists and related nrusing and ancillary personnel from the Level III regional centers should be invited to a meeting to establish a transport coordination center. The center would facilitate the statewide maternal and infant transport system. The transport center would: (1) Keep a daily census of available beds at all Level III receiving centers. Obtain this information by having Level III centers report their available beds to the transport coordination center at least twice a day. (2) Receive transport requests from referring hospitals or physicians and triage the patient to the appropriate receiving center. (3) Serve to activate and facilitate transport by helping communication between the referring hospital and the receiving hospital. An example of how this type of system might work is: A pediatrician and/or an obstetrician wishes to refer a sick infant or a high risk mother to a Level III perinatal center (which has the special expertise and equipment to handle the emergency). However, when the physician calls, the hospital of first choice is full. The physician is referred to the Regional Emergency Medical Communication Service. REMCS would have information on bed availability and special areas of expertise of all perinatal hospitals. It could give the referring physician a choice of suitable alternatives. REMSC would then be able to "patch" (through radio or telephone communications) the referring physician to the receiving physician at the hospital of second choice. The two physicians could converse and make medical arrangements for the transfer. REMCS also could aid in making the physical transfer arrangements. Planning for the coordination center should begin as soon as possible, even if state designation of the Level III centers is delayed.

CONTINUING EDUCATION

Unfortunately, many physicians and nurses are unfamiliar with the clinical aspects of perinatal care. The Task Force devoted considerable effort to recommendations on continuing education for physicians and nurses. It is essential to have an ongoing training program in newborn pulmonary

physiology and resuscitation for the staff of the referring hospitals. Tertiary care centers also have a tremendous need for trained personnel. Outreach and community oriented education programs will become the responsibility of the tertiary centers.

Physicians need (1) seminars or courses held by the tertiary centers; (2) scheduled lectures and workshops at community hospitals; (3) open houses and bedside rounds at tertiary centers; (4) outreach programs. A teaching team, going to the community hospitals for lectures and workshops, is an effective way to reach busy physicians. (Examples are programs based at Children's Hospital of Newark and at Monmouth Medical Center; more such programs are needed.)

There is a critical shortage of perinatal intensive care nurses in New Jersey. This is a critical issue--80-90% of the actual care to mothers and infants in the perinatal period is delivered by a nonphysician member of the perinatal team. All hospitals need to be staffed with experienced nurses. A detailed list of goals and objectives for perinatal nursing education were included in the report. The Task Force recommended continuing state financial support for the existing programs (through the NJSDH's Maternal and Child Health division) and extending support to all the tertiary care centers.

PUBLIC EDUCATION

A large segment of perinatal care consists of prevention, early detection, and early intervention. Knowledgable consumers enter the health care system early and are more active and better participants in their own health care. A knowledgable consumer is also better able to participate in planning perinatal care facilities. Consumer education is vital--most women are unaware of the risks of a poor outcome in pregnancy and are also unaware of the availability or lack of availability of adequate perinatal services. The Task Force recognized the importance of consumer education and recommended the establishment of a consumer education committee. An approach similar to the one in Illinois should be adopted. The Illinois Emergency Medical Service subcommittee on Consumer Education focused on: (1) informing the consumer of the value of optimal care, (2) helping the public understand a perinatal approach to care and urging them to seek out obstetrical care for pregnancy, (3) understanding emotional aspects of high risk pregnancy and offspring, and (4) understanding the regionalization concept. The Illinois program recruits coordinators from each perinatal region for training. When trained, the coordinators return to their respective regions to set up change programs.

EVALUATION

Evaluation includes structure, process and outcome. Some components of the perinatal care system will be evaluated structurally (e.g., numbers and distribution of physical resources, appropriate types and numbers of manpower). Process evaluation can analyze the methods used in perinatal programs. Outcome evaluation looks at measures such as deaths, morbidity,

consumer satisfaction, etc. Program components will be subjected to ongoing examination and review. A searching evaluation will be more fruitful than simply comparing yearly statistics.

Patient tracking (long-term followup of high risk mothers and infants is recommended). Such a method will guarantee continuity of care and provide a method to monitor the results of a coordinated perinatal approach. Methodology for following the critically ill patient has been developed in Illinois, in the Rocky Mountain area and elsewhere.

REVIEW AND COMMENT

A review and comment period is planned. If there is general consensus that the levels of care described in this guide and in the Neonatal/Perinatal Task Force report are appropriate, a designation process will begin. This type of process was approved by the Health Care Administration Board in Process and General Criteria for the Certification of Need and Designation of Regional Services (December 12, 1978). (See Appendix A in this guide.)

Interested persons are asked to comment on these guidelines by February 15, 1980. Address all correspondence to Roy W. Nickels, New Jersey State Department of Health, Office of Emergency Medical Services, 129 East Hanover Street, Trenton, New Jersey 08608.

POISONING*

INTRODUCTION

Every year an estimated five million poisonings occur in the United States. Poisonings account for 10% of all emergency room visits and 5-10% of medical admissions. Various locations (e.g., recreational, industrial, home) produce different potential toxic hazards which require unique resources. Accidental poisonings (primarily involving children) account for 90% of poisoning incidents. However, 90% of hospital admissions and deaths come from intentional or industrial poisonings.

The Task Force categorized patients as Category I, II or III according to the severity of poisoning.

Category I (asymptomatic):

- about 85% of all poisoned patients
- toxic or potentially toxic exposure
- asymptomatic at discovery
- 90% children under 5
- need immediate access to Poison Information Center
- managed by telephone treatment

Category II (symptomatic)

- about 10-15% of all patients
- toxic exposure
- known agents and amounts
- early gastrointestinal, central nervous system and miscellaneous symptoms
- mostly young adults--some children
- need immediate access to Poison Information Center and activation of the EMS system
- managed by "local" hospital in consultation with the Poison Information Center

Category III (critically ill)

- about 3-5% of patients
- toxic exposure
- critically ill-life support, uncontrolled seizures, organ failure, unique toxins
- mostly young adults
- need immediate activation of EMS system, communications with Poison Information Center, on-site advanced life support transport
- managed by regional hospital in most instances

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* References are to the report of the OEMS Poison Control Task Force

A poisoning patient care system reduces the poisoning mortality rate. An effective poison control program decreases the incidence of poisonings. The ultimate goal of a poison control program is to eventually eradicate the problem. However, no organized poison information, consultation, treatment or referral systems currently exists in New Jersey.

Within the field of poison care, there is a distinct manpower shortage. Few New Jersey physicians are trained as clinical toxicologists. Physicians dealing with poisoned patients have no place to turn for clinical toxicology consultation. Expertise in New Jersey's industrial sector (e.g., toxicologists, chemists) has not been tapped. In the present fragmented system, they are not readily accessible (but they could become part of a more centralized system).

The present isolated New Jersey Poison Control Centers generally do not have properly trained poison control personnel. (Emergency room nurses may look up information on cards, on microfiche, or in poison textbooks and recommend treatment. Sometimes the emergency room physician on duty is consulted.) Telephone follow-up is rarely provided. In this new plan, these and other hospitals would still provide treatment, but would no longer be responsible for providing information.

In summary, New Jersey does not have an adequate poison control program. Deficiencies include:

- Lack of an adequate communication system.
- No satisfactory public education program.
- Lack of knowledge on the part of physicians or hospitals (that are not Poison Control Centers) as to where to call in cases of apparent poisoning.
- No designated back-up unit to do adequate toxicological studies (in order to confirm the poisoning agent and for epidemiological purposes).
- No adequate poisoning statistics for the State of New Jersey (figures are probably meaningless because of massive underreporting).

HIGHLIGHTS OF GENERAL RECOMMENDATIONS

(1) Establish a statewide Poison Information Center. The center should be associated with the highest level treatment facility and be able to process approximately 40,000 calls a year.

(2) Hold seminars on poisoning for physicians and nurses to heighten professional awareness.

(3) Establish a toxicology laboratory for clinical back-up and specific poisoning assistance.

(4) Stress prevention through extensive public educational efforts. The Poison Information Center and the hospitals affiliated with the poison control system jointly carry out system functions.

STATEWIDE POISON INFORMATION CENTER FUNCTIONS

The Poison Information Center is a vital part of the poison control system plan. The services of the Poison Information Center include provision of (1) information and consultation to all callers and hospitals; (2) professional education; (3) public education; (4) statewide referral/transferral services and (5) data collection and research.

STATEWIDE POISON INFORMATION CENTER CRITERIA

Population Base. The suggested minimum population base for a Poison Information Center is 2-5 million. Geography is also important. Many centers now operating across the nation serve several EMS or HSA regions, a state or several states. One Regional Poison Information Center is planned for New Jersey.

Personnel Needed. The center's professional staff should include: (1) a medical director (clinical toxicologist), (2) telephone information specialists (trained pharmacists and/or nurses) to answer telephone inquiries, (3) clinical consultants (endoscopists, renologists, dermatologists, etc.), and (4) outside consultants (biochemists, marine biologists, botanists, etc.). The telephone information specialists would be specially trained to provide information about diagnosis and treatment of drug overdose and poison prevention. In a typical case, they would (1) ask the caller about the poisoning event/substance and obtain demographic information on the victim, (2) give information on home treatment, (3) refer the caller to a hospital for follow-up treatment (if necessary), (4) call the hospital to let them know the poisoning victim is on the way, and (5) give the hospital information on the poison and appropriate treatment. If necessary, the telephone information specialists would seek advice from the clinicians and consultants. The clinician/consultant with specialized information on the toxicology of the poison (drugs, household products or biologic poisons) could assist in the clinical diagnosis, analytic confirmation, emergency treatment and ongoing management of the poisoning event.

Resources. Poison Control Centers ideally should have combined operational and administrative space. This is not always possible though. The operational center should have resources which facilitate rapid retrival of clinically significant data and product information. Resources could include on-line computerized hookup with the National Clearinghouse for Poison Control Centers, a microfiche system and other similar systems. All sources should be up-to-date and readily accessible for information and education purposes. A working relationship with a health sciences library (such as those at the College of Medicine and Dentistry of New Jersey and the Rutgers School of Pharmacy) is desirable to provide access to expensive informational resources (e.g., Index Medicus, Toxline, Medline).

A list of toxicology consultants should also be part of the resource center material. Other special resources include those of various state and federal agencies, such as the U.S. Communicable Disease Center, U. S. Food and Drug Administration, U.S. Environmental Protection Agency and the

state departments of agriculture and health. The Poison Information Center should be placed on the mailing lists of these agencies in order to receive up-to-date information.

Facilities. Special facilities are not necessary; however, sufficient space for personnel and resources should be provided. Communications links with EMS communications centers, the public, information resources, and other hospitals are vital. It is desirable, but not necessary, for the information center to be contiguous to an emergency department.

Equipment. Equipment should include dedicated telephone lines and telephone numbers to the Poison Information Center, as well as any special information retrieval systems which may be required. Additionally, the usual office equipment--desks, files, bookshelves, etc.--will be needed.

Communications. Telephone and radio communications links are vital to successful operation of the center. The telephone can be used for providing information for home management of the majority of poisoning cases (i.e., Category I)--removal of poison, first aid and observation. Telephone follow-up should be done on all cases at 1/2 hour, 4 hours and 24 hours to determine that the patient is still symptom-free and has not had to utilize other resources. This type of follow-up (and associated educational efforts) would be difficult if New Jersey merely tied into an existing out-of-state poison information network.

Medical coordination of emergency care is the critical element during pre-hospital care of the poisoning victim. This coordination includes: (1) instructions for care of the poisoned patient and (2) direction of the pre-hospital transport unit to the appropriate facility (usually the hospital of choice of the patient or family). Once a call (which will need transport services) is received, the Poison Information Center notifies the appropriate emergency facility of the impending arrival and provides the physician with the necessary product information and detailed treatment procedures (for field and/or emergency room treatment). Radio communication can be done on a subregional basis with links to the Poison Information Center. Ambulance units should have radios. All radio and telephone emergency calls should be recorded on tape.

Training/Education. The best approach to poisonings is to prevent them. Aggressive, innovative public awareness and prevention programs, as well as state and federal legislation to back them up (proper product labeling, safer packaging, control of hazardous substances), will aid in reducing the incidence of poisoning.

Statewide programs of public education should be initiated. Emphasis should be placed on notifying the public on how to reach the Poison Information Center. The public should also be informed of the dangers of various drugs and household products, how to prevent ingestion of poisons, and the correct use of syrup of ipecac and of safety enclosures.

Information can be sent to the public in many ways: talks to community groups, educational brochures, films, telephone stickers with the Poison Information Center number, television and radio programs, magazine and

newspaper articles. Professional organizations (e.g., medical and pharmaceutical groups) and civic organizations (such as the Jaycees) can actively assist in furthering poison prevention programs.

The Poison Information Center should also establish statewide continuing medical education in toxicology. The Center staff should participate in lectures on subjects of current toxicologic interest during hospital grand rounds or postgraduate teaching courses. Practicing physicians should have the opportunity to spend time at the Center to learn how it functions and to acquire a background in toxicology. The Center staff should also participate in educational programs of professional organizations and help educational institutions to coordinate continuing education programs in toxicology for physicians, nurses, pharmacists and allied health practitioners (EMTs, paramedics).

Each educational curriculum should be based on specific behavioral objectives. In addition to the specific knowledge and skills, training programs must include sections on the EMS system, the poison care system, team approach, responsibilities in the system, communications skills and evaluation. Specific program content was mentioned in the Task Force report (Section IV, Part A, "Manpower and Training").

Internal Evaluation. Evaluation should include: (1) evaluation of the operation of the system (e.g., utilization data, cost effectiveness, increase in syrup of ipecac at home) and (2) evaluation of the impact of a functioning system on the poisoned patient (e.g., morbidity and mortality). Results can be used to assess system effectiveness and to support public and professional educational efforts.

POISON TREATMENT CENTERS

Generally, only Category II (symptomatic) and III (critically ill) poisoning patients will need hospital treatment.

Patients in Category II need immediate assessment and continued life support by emergency room physicians and nursing staff. They may require antidotes, x-rays, blood gas and toxicology studies, and services of an internist or pediatrician who consults with the Poison Information Center's professional staff and consultant experts.

Patients in Category III may need advanced monitoring (e.g., intracranial pressure lines), dialysis, hemoperfusion exchange transfusion, unique antidotes, or managements necessitating transfer, as determined by consultation with the Poison Information Center staff. During transfer between facilities, the patient needs continuous monitoring and advanced life support.

Most poisoning cases can be treated within the local community. Only the complicated cases will need specialized care. While it is not the intention of the New Jersey State Department of Health, Office of Emergency Medical Services, to seek categorization of poison treatment hospitals, the Task Force suggested that the treatment levels might be informally categorized. (See Section III, Part B, "Facilities").

The key to the poison treatment system is the continuum of consultation from the Poison Information Center from the time of poisoning, during pre-hospital care, through hospital entry and into final definitive care. In this way, the patient flow can be designed according to specific local circumstances and can still have expert medical coordination.

EDUCATION/TRAINING

Prevention education of poisoning victims is also needed. In addition to the various educational training programs emphasized under the Poison Information Center section, the Task Force also emphasized follow-up care and behavior changing education for patients. Category I patients need public health and social services, if the event represents a repeat poisoning. Category II and III patients with intentional poisonings (i.e., suicide attempts) need psychiatric assessment and care. Drug abusers need entry into drug rehabilitation programs, methadone maintenance and social services.

OTHER RECOMMENDATIONS

(1) Establish an adequate poison data system. Data should be stored in computer banks and published regularly.

(2) Evaluate the Poison Information Center and participating hospitals continuously. Publish evaluation data regularly.

(3) Involve the Poison Information Center in industrial toxicology.

(4) Make epidemiologists available to the Poison Information Center.

(5) Provide adequate basic life support (trained public and EMT-A) and advanced life support (MICU paramedics) to respond to poisoning emergencies.

(6) Develop, maintain and circulate various protocols for managing poisoning emergencies.

(7) Develop written agreements for patient transfers to area and/or subregional treatment hospitals and participation in area planning.

(8) Most financing for the Poison Information Center should come from outside sources (e.g., industrial contributions; a grant through legislation; a grant from the New Jersey State Department of Health; or pass through of costs, such as staff training, from the hospitals participating in the network).

REVIEW AND COMMENT PERIOD

A review and comment period is planned. If there is general consensus that the levels of care described in this guideline and in

the Task Force report are appropriate, a designation process will begin. This type of process was approved by the Health Care Administration Board in Process and General Criteria for the Certification of Need and Designation of Regional Services (December 12, 1978). See Appendix A to this guide.

Interested persons are asked to comment on these guidelines by February 1, 1980. Address all correspondence to Roy W. Nickels, New Jersey State Department of Health, Office of Emergency Medical Services, 129 East Hanover Street, Trenton, New Jersey 08608.

SPINAL CORD INJURY*

INTRODUCTION

In New Jersey, between 100-120 people yearly sustain an acute spinal cord injury which results in paralysis. However, the care these victims receive depends on where they are when they are injured--levels of care and personnel training vary widely. Effective care begins with the first person who arrives at the scene. Most hospitals are not equipped to adequately handle the severely neurologically impaired patient.

A central nervous system (CNS) emergency is defined as a change in level of consciousness, motor function, sensory perception, coordination and/or hearing, eyesight, respirations, blood pressure, pulse--in combination with the preceding. Goals of emergency care for central nervous system injuries are: emergency evaluation and diagnosis, stabilization of acute symptoms, full range of diagnostic procedures, treatment of the acute and chronic problem, and early referral to a rehabilitation unit where indicated.

Delays in transfer from acute care facilities to rehabilitation centers can result in a deterioration of the patient's physical and mental well being. Early transfer to rehabilitation can save costs of hospitalization (shorter hospital stay, lessened costs of care and fewer complications). Interaction of patients with similar injuries can also have therapeutic value.

HIGHLIGHTS OF GENERAL RECOMMENDATIONS

(1) One regional spinal cord injury center (Category I) should be established in New Jersey until its usage rate justifies an additional Category I facility. (SCI centers are being set up at Jefferson Medical College (Philadelphia) and at New York University. These centers will complement the New Jersey SCI Category I center and may affect its usage rate.) The regional center should be associated with a large (i.e., over 450 beds) hospital. Other hospitals handling neurological damage can be categorized as Category II or III.

(2) A communications network should facilitate access to the system, provide for rapid dispatch of an appropriate rescue vehicle, assure transport of the patient to the nearest appropriate and available emergency department or to the regional spinal cord injury/head injury (SCI/HI) center, as well as provide medical supervision for care rendered during pre-hospital phase. Regional dispatch centers or communications

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*References are to the report of the OEMS Head and Spine Injury Task Force

centers in each region of the state can be used as a central point for receiving calls for help.

(3) Rehabilitation plans are vital; rehabilitation should begin as soon as possible. The spinal cord injured patient should be transferred from the intensive care unit to a subacute neurological unit, once the spine is stabilized and medical problems are controlled. Later, he/she should be transferred to a rehabilitation unit or hospital. A rehabilitation center close to home allows the SCI victim to participate in out-patient physical and vocational training. Funding for rehabilitation is urgently needed. (A list of special rehabilitation hospitals was attached to the Task Force report as Table IX.)

(4) A significant portion of the Task Force report was devoted to outlining protocols for treatment and transfer of SCI/HI patients (e.g., "Protocols for Acute Case Transfer," "Criteria for Transfer," "Suggested Protocol for Management of the Head/Spinal Cord Injury Patient at the Site of Injury and During Initial Transport," "Protocols for Patient Transfer," "Suggested Protocol for Management of the Brain and Spinal Cord Injured Patient at the Local Hospital"). These protocols and arrangements are considered vital to proper operation of an SCI/HI center of any category. Ideally, transfers should be arranged with a single telephone call to a center which has information on bed availability and records of existing transfer agreements. Protocols should be published widely so that physicians can tell when a patient requires transfer.

CATEGORY I FUNCTIONS

A specialized spinal cord center can provide optimal care of the patient. Such a center is needed for patients with acute paralysis with or without fracture and for dislocations of the spine, for example. At local option, patients in coma (with or without paralysis), patients with skull fracture with neurological deficit, and other critical patients can be referred to the center. (See Table IV in the Task Force report.) Its primary goal, however, is the care of patients with spinal cord injury through the prevention of complications and early transfer to a rehabilitation center.

CATEGORY I CRITERIA

The Task Force report contains numerous detailed charts, as well as a narrative describing various criteria for all three levels of care. The following sections merely highlight points of the report, focusing on the Category I information.

Population Base. National statistics suggest that about 50-70 major spinal cord injuries occur yearly per one million population. These figures differ from those for New Jersey (estimates ranged from 120-164 annually in a 1972 New Jersey study). One Category I spinal center appears to be adequate to meet New Jersey's needs at the moment.

The regional spinal cord injury center should be associated with an institution of 450 or more beds. The SCI center might start with ten beds and enlarge as necessary.

Personnel Needed. The designated regional hospital should have a diversified medical staff with board certified competence in all departments. In addition to the neurosurgeon, a urologist, neurologist, orthopedic surgeon, physiatrist, internist, pediatrician and psychiatrist are all frequently involved in patient care. House staff, nurses and ancillary personnel (e.g., chaplains, physiotherapists) are also needed. (See Table VII in the Task Force report.)

Resources. Resources include those of ambulances (both paramedic and first aid squads; detailed in Table VI), emergency departments (which meet certain around-the-clock criteria), licensed physicians adequately trained and experienced, and trained and experienced emergency nurses (at least one RN should be assigned to the emergency department 24 hours a day). The Category I hospital should have (1) in-house services directed by a certified neurosurgeon (also services by neurologist, general surgeon, surgical specialists and basic specialists); (2) in-house on call (within 10 minutes) services (e.g., CPR team, radiologist, internist) and (3) all specialists should be on call (within a reasonably prompt period of time).

Facilities. Around-the-clock x-ray availability is essential, as are specialized studies such as CAT scans and myelography. Nuclear medicine capacity is essential. The operating room should be available 24 hours a day. A dedicated neurosurgical patient care area is necessary. Other services include helicopter landing facilities and various diagnostic capabilities. (See also Table I in the Task Force report.)

Equipment. In addition to the specialized equipment needed by the neurosurgeon, an operating microscope and accompanying specialized "microscopic" surgical instruments are necessary. Emergency department equipment and supplies include airway control and ventilation equipment, I.V. fluids, medications and special apparatus (all categories use virtually the same items; see Table II in the Task Force report). In-hospital equipment and capabilities include a subacute neurosurgical unit, blood bank with rare blood on call, renal dialysis, and pressure monitoring of intracranial spinal fluid. (See Table III of the Task Force report; all categories do not call for the same equipment and capabilities.)

Communications. The Category I hospital needs to participate in a two-way communications system with ambulances and other hospitals. The communications system should facilitate delivery of the patient to the appropriate category of hospital. Voice communication and telemetry can aid in on-line medical coordination of SCI emergencies. Medical screening by phone or radio can be done by experienced personnel.

Training/Education. Collateral benefits occur in the post-graduate training of physicians and allied health personnel. An ongoing post-graduate level conference and education program is essential, although a formal neurosurgical or rehabilitation residency is not necessary in order to care for the SCI/HI patient. The specialty hospital should have residencies in general surgery and/or orthopedics. The Category I hospital should have a reference library for professional and lay use. It might also prepare informational materials for use within the hospital and for distribution elsewhere. A history bank and registry should be maintained on spinal cord and head injured people.

CATEGORY II AND CATEGORY III CENTERS

Categories II (regional neurosurgical centers) and III can treat less seriously injured SCI/HI patients (see Table IV in the Task Force report for details). Generally, Category III can treat head injuries without CNS signs (with consultation when necessary) while Category II can treat more complicated cases, including most cases with coma (provided there is a CAT scanner nearby, for example). Complex problems are reserved for the Category I centers. Transfer between levels is encouraged, when appropriate (see "Protocols for Acute Case Transfer" and "Criteria for Transfer" in the Task Force report), although direct transport to the appropriate level in the beginning can minimize risk of further injury (this will usually mean a Category I or II hospital). Transfer agreements between Category I and II centers and rehabilitation centers are necessary.

Category III hospitals need a full-time emergency staff physician and a general surgeon. Category II hospitals need a variety of in-house and on call physicians, nurses and allied health personnel. (See Table VII in the Task Force report for details.)

A minimal number of facilities are needed for Category III (blood gas analysis, serum electrolyte analysis, routine laboratory work, routine urinalysis). Category II hospitals require most of the facilities needed in Category I. (See Table I in the Task Force report.)

Equipment and supplies needed in the emergency department (for both Category II and III) are almost identical to those needed for Category I (see Table II in the Task Force report.) In-hospital equipment and supplies for Category III are limited to a few items (e.g., blood bank on call, routine radiology, spinal tap trays, oxygen at all beds, fracture tables). In-hospital equipment and supplies for Category II hospitals are more comprehensive and vary only slightly from those needed in Category I. (See Table III in the Task Force report.)

Standardized record forms should be developed for all hospitals. These will aid in long-term patient care and help to establish a baseline for evaluation.

EDUCATION/TRAINING

Public education programs are needed to reach high risk groups for SCI/HI injuries. Most at risk (from sports such as surfing and motorcycling and the influence of drugs and alcohol) are those of high school and college age. Various teacher groups, PTA groups, and employers of high risk workers should be included in preventive programs. Public education can also be used to explain the capabilities of emergency department facilities and hospitals.

Emergency squad personnel should be trained to recognize spinal injury, to examine and describe the neurological patient's condition, and to transmit vital signs to an SCI hospital. The goal should be to effectively stabilize injuries before leaving the accident scene. The level of training required of squad members may depend on length of transit time to appropriate hospitals, frequency of exposure to life threatening events which require advanced life support skills, the level of supervision available, and the nature of the illness or injuries encountered. Training of emergency department or critical care unit nurses and physicians should be adequate to deal with the SCI/HI patient.

OTHER RECOMMENDATIONS

All major trauma victims should undergo neurological testing before being moved. They should be suspected of spinal cord injury until the possibility is ruled out completely. There should be two emergency medical technicians (EMT) on every ambulance. Appropriately trained personnel should be able to render life support long enough to get the patient to a Category I or II hospital. A mobile intensive care vehicle and its personnel or a life support team with necessary equipment should accompany the victim from the accident scene. They should stay with the patient until the hospital's intensive care unit personnel take over.

REVIEW AND COMMENT

A review and comment period is planned. If there is general consensus that the levels of care described in this guide and in the report of the OEMS Head and Spine Injury Task Force are appropriate, a designation process will begin. This type of process was approved by the Health Care Administration Board in Process and General Criteria for the Certification of Need and Designation of Regional Services (December 12, 1978). See Appendix A in this guide.

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TRAUMA*

INTRODUCTION

Trauma is the leading killer of American young persons (ages 1 to 44 years). These included: 19,583 fractures, 9,629 dislocations, 5,073 internal injuries, and 1,147 open wounds.

Currently, the delivery of care to the severely traumatized New Jersey patient is on an incident by incident basis. Usually, the patient is taken to the nearest hospital. However, that hospital may not be equipped and staffed to treat the patient's condition. The trauma victim has a combination of medical problems which require prompt triage, rapid evacuation to an appropriate medical facility, and notification of the facility.

The Task Force classified trauma by the site of injury: (1) maxillofacial (eye, ear, nose and throat injuries); (2) neck injuries; (3) thoracic injuries; (4) abdominal injuries; (5) extremity injuries; (6) injuries to the genitourinary tract; and (7) multiple trauma. (Injuries to the head and spinal cord and burns were addressed by other task forces.) Injuries were classified by level of severity: critical (life-threatening), serious (severe), and moderate (minor).

Multiple trauma is defined as an injury to more than one anatomical part, or which encompasses more than one surgical discipline, as well as any serious injury (such as a gunshot wound to the chest) which would be considered life threatening.

Trauma management is divided into two areas: (1) at the site and in transit and (2) at the hospital.

Organized trauma care can save lives. For instance, a 1971 survey (conducted at the University of Vermont by Julian Waller, M.D.) indicated that 25% of the lives lost accidentally could have been saved, if proper and immediate emergency care were given. Other estimates from the American Trauma Society show a "save" range between 5 and 60%. Obviously, additional New Jersey lives could be saved, if a system of expert trauma emergency care were developed.

The Trauma Task Force's mission was to advise the New Jersey State Department of Health regarding the development of such a system. Problems addressed included: management of the acute incident; transportation to a primary, secondary and/or tertiary treatment center (categorization will be discussed later in this guide); and emergency department facilities, including resources and personnel required to manage the injuries.

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* References are to the report of the OEMS Task Force on Multiple Trauma

HIGHLIGHTS OF GENERAL RECOMMENDATIONS

The Task Force endorsed:

(1) The development of a structured, cost effective system for treatment of the trauma victim and

(2) The development of an organized network of regionalized trauma care in New Jersey and surrounding states.

In more specific terms, these recommendation involve:

- Categorizing New Jersey hospitals in terms of their ability to deal with trauma victims (by modifying the American College of Surgeons Bulletin, Hospital Resources for Optimal Care of the Injured Patient, August, 1979). The three levels are: Level III--local hospital, Level II--areawide trauma center, Level I--regional trauma center.

- Integrating pre-hospital care, emergency department care and inpatient care into a trauma care system.

- Developing transfer protocols and transfer agreements to facilitate definitive trauma care. These agreements should be drawn up before they are needed. (See Appendices B and C in the Task Force report.)

LEVEL I FUNCTIONS

The Level I hospital manages a large volume (probably 1,000 admissions per year or more) of complicated fractures and head, thoracic, visceral and vascular injuries and includes trauma training programs and research. A clearly defined trauma service is mandatory. In the ideal system, the capability of the hospital and its personnel matches the severity of the injury.

LEVEL I CRITERIA

A Level I hospital will have to make a large investment in personnel and equipment, in order to care for trauma patients. At the present time, there are few hospitals in New Jersey which are capable of meeting the regional trauma center (Level I) standards.

In pursuing optimal patient care, due consideration must be given to special problems of geography, population density, community and regional resources, availability of personnel, and the need for cost effectiveness. Optimal care means providing capable personnel, sophisticated (and expensive) equipment and services, priority access to needed facilities, and commitment of the medical staff and administration. The Task Force report contains a detailed chart on hospital resources, facilities and personnel which are needed. The following sections will highlight that chart (Appendix A) and the report's narrative.

Population Base. The resources and personnel required for Level I can only be justified if the center serves an area of approximately three million population. Therefore, Level I centers will most likely be hospitals of over 450 beds and will most likely be located in a metropolitan area. New Jersey probably requires one or two Level I trauma centers.

Personnel Needed. Staff of the trauma service should be directed by a surgeon who understands the trauma problems which may be encountered. Fifteen kinds of surgical specialists are considered to be essential on an around-the-clock basis (e.g., general, microsurgery, orthopedic, vascular, otorhinolaryngologic, plastic and maxillofacial surgeons). Other nonsurgical specialists which are deemed essential include anesthesiologists, endocrinologists, cardiologists, hematologists, neurologists, pathologists, pediatricians, psychiatrists and radiologists. Senior surgical and other residents may be used to fulfill availability requirements, provided staff specialists are on call and promptly available for consultation. Additional medical and nursing personnel, as well as basic life support (BLS) and advanced life support (ALS) personnel, are needed to staff the emergency department, the intensive care unit and other necessary services.

Resources. The Task Force felt that pre-hospital response and treatment was a vital resource for patient welfare. The members concluded there should be four levels of pre-hospital care: (1) first responders; (2) basic life support; (3) New Jersey State Police Med-Evac helicopters; and (4) advanced life support (MICU). Duties of each level, standards for training, personnel qualifications, and necessary equipment/supplies were presented. The goal was to provide appropriate on-site intervention and rapid transport to a definitive care facility. The hospital emergency department was considered to be the focal point for lifesaving measures.

Facilities. A dozen surgical departments/services (including cardiothoracic, general surgery, ophthalmic surgery, vascular surgery, obstetrics/gynecologic surgery) were considered to be essential. Each service must operate 24 hours a day and must be directed by a board certified specialist. Fifteen nonsurgical departments, directed by board certified specialists, were considered to be essential on a 24-hours-a-day basis (such as infectious diseases, nephrology, pathology, physical medicine/rehabilitation). Other departments/services deemed essential on an around-the-clock basis included an emergency department, an intensive care unit, an operating suite, a recovery room, dialysis capability, special radiological services, and clinical laboratory services.

Equipment. The Task Force report included equipment lists for the emergency department, the intensive care unit (ICU) and the operating suites. Essential emergency department equipment/supplies were identical for all hospitals, regardless of treatment level. They included airway control and ventilation equipment, IV fluids and administration devices, drugs and supplies and MAST garment. With a few exceptions, essential ICU equipment was the same. (For example, each level needed a cardiac emergency cart, electrocardiograph, oscilloscope-defibrillator, patient weighing devices and pressure distribution beds.) The Level I ICU also needed intracranial pressure monitoring devices and electroencephalography. The Level I hospital's operating suite has special instrumentation and

monitoring requirements (e.g., immediate availability of an operating room, cardiopulmonary bypass pump-oxygenator, operating microscope, image intensifier, pneumotachograph) which may not be required or be merely "desirable" at Levels II and III.

Communications. Since there are existing statewide communications plans related to medical emergencies, the Task Force did not make additional recommendations. However, it did emphasize the need for a statewide network which would contact facilities for medical coordination and arrange for emergency transport (similar to the existing REMCS system at the College of Medicine and Dentistry of New Jersey). All emergency rooms should have two-way radio communication with ambulances and with essential in-hospital physicians. A system of EMS coordinators, to provide assistance in a variety of emergency health care situations, was also recommended.

Training/Education. Trauma training programs are an indispensable component of trauma care. The nursing service should offer general and specialty in-service trauma training. Formal continuing education programs should be provided for staff physicians, community physicians, and allied health personnel (including EMTs and paramedics). An outreach program could utilize telephone and on-site consultations to bring information to physicians in the community and outlying areas.

It is important to remember that a treatment approach which uses specialists who are not immediately available does not support continuity of patient care. As a consequence, the approach does not support a sound educational and inservice program for the emergency and intensive care physicians, nurses, paramedics and EMTs who share responsibility for patient care. An EMS system would integrate these elements.

Internal Evaluation. Long-term studies to assess trauma patient care should be undertaken. Medical care evaluation should include special audits for trauma deaths, multidisciplinary trauma conferences, morbidity and mortality reviews, nursing audits, utilization reviews, tissue reviews, and review of medical records. Such a system will assure continuity of medical records and lead to the collection of data sets for statewide analysis.

LEVEL II AND LEVEL III CENTERS

Principle differences between Level I and Level II institutions are the availability of staff specialists. The availability of surgical and nonsurgical specialists distinguishes a Level II center from a Level III center. A Level II capability requires a general surgeon, an anesthesiologist, an internist and a cardiologist in-house 24 hours a day. Availability requirements may be fulfilled by residents who are capable of assessing emergent situations in their respective specialties and of providing any immediately indicated treatment. When residents are used to fulfill availability requirements, staff specialists are to be on-call and available for consultation.

The Task Force endorsed the organization of medium and large sized hospitals (300+ beds) into areawide trauma centers (Level II). These

hospitals would be capable of handling most multiple trauma victims.

Essential resuscitative measures should be rendered to the serious trauma victim at Level III hospitals. The hospital will have made a clear commitment to excellence of trauma care. However, its primary role would be to stabilize, then transfer, the patient.

Transfers could be effected either by ground vehicles or the Med-Evac helicopter. Transfer protocols are essential. Patients should be triaged in the field, according to predetermined protocols. Sometimes, a decision may be made to by-pass the Level III and II hospitals and go directly to a Level I center. Medical accountability will ensure that patients are provided appropriate care at the scene, in transport and at a definitive care facility. (Specific criteria for Levels II and III can be found in Appendix A of the Task Force report.)

In urban areas, hospitals are encouraged to form trauma care consortia that would concentrate care in a small number of centers. Trauma surgeons could then take trauma call at the centers.

EDUCATION/TRAINING

Education for the public should include: (1) injury prevention programs emphasizing safety in the home, in industry, on the highway and on the athletic field, (2) first aid classes, (3) finding solutions to problems confronting the public, the medical profession and hospitals regarding optimal care for the injured, (4) providing information on the location of trauma care centers, and (5) making the public realize that critical emergency medical services may be requested or received regardless of ability to pay.

OTHER RECOMMENDATIONS

Other elements, such as accessibility, standard medical record-keeping and disaster linkage were also considered to be important to the trauma care system.

REVIEW AND COMMENT PERIOD

A review and comment period is planned. If there is general consensus that the levels of care described in this guide and in the report of the OEMS Task Force on Multiple Trauma are appropriate, a designation process will begin. This type of process was approved by the Health Care Administration Board in Process and General Criteria for the Certification of Need and Designation of Regional Services (December 12, 1978). See Appendix A to this guide.

Interested persons are asked to comment on these guidelines by February 15, 1980. Address all correspondence to: Roy W. Nickels, New Jersey State Department of Health, Office of Emergency Medical Services, 129 East Hanover Street, Trenton, New Jersey 08608.

REGIONALIZING EMERGENCY MEDICAL SERVICES

INTRODUCTION

EMS services in New Jersey have traditionally been local services. But, many areas across the state do not contain all the resources necessary to meet their total emergency care needs. Further, medical technology and services (such as MICU services) are too expensive for every individual community to afford. Specialized skills can grow "rusty", if provided for a too-small population base (for the skills will be used infrequently).

A plan for coordinating EMS services on a regional basis makes sense medically, organizationally and economically. Regional arrangements for pooling and centralizing resources and for patient transfer and referral (even outside the region, when necessary) can improve patient care and system efficiency. Such a system does not jeopardize local efforts. In fact, planning and implementation is a local function which builds on existing strengths and seeks solutions to deficiencies.

The Office of Emergency Medical Services acknowledges the work of the Coronary Care Task Force in conceptualizing the structure for coordinated emergency medical services delivery in New Jersey. This concept was combined with ideas for regionalization and coordination of services which were contained in other Task Force reports. The plan presented below combines these ideas and the current state-of-the-art in EMS.

REGIONAL EMS PLANNING

There are five Health Systems Areas in New Jersey. These areas have the same boundaries as New Jersey's Emergency Medical Services Regions. The Health Systems agencies (HSAs) which are responsible for these health systems areas must review area health care services, plan for future services, and make recommendations to improve the health of area citizens. Many different types of health care are covered, including emergency medical services. All the HSAs have EMS advisory bodies. In connection with plans presented in this guide, the HSAs will be asked to review current EMS capabilities in their regions. The HSA may wish to divide its region into from one to three EMS service areas, based on such criteria as population, available facilities, seasonal usages, geographic barriers, and referral patterns.

AREAWIDE EMS: HOSPITAL COORDINATING CONSORTIA-EMERGENCY MEDICAL SERVICES (HCC-EMS)

Once the EMS areas have been delineated, all hospitals in the area should be asked to form a consortium for assuring EMS system coordination and accountability. The Hospital Coordinating Consortium-Emergency Medical Services is a network of hospitals which provides a systematic

response to medical emergencies. The HCC-EMS assures accountability for system implementation and medical coordination.

Emergency Medical Services are an integral part of our health and medical delivery system. Medical coordination of the system is vital to ensure that emergency treatment occurs with the guidance and approval of the local physicians (who have the final responsibility for patient care).

The consortium assures that there is an appropriate patient flow within and out of the area. Local physician coordination and agreement assures the patient's right to choose his/her own physician and hospital. The consortium's service area is contiguous with adjoining areas and is large enough (in size and population) to provide definitive care to the majority of general, emergent and critical patients. If specialized services are not available in the area, arrangements are made for obtaining those services elsewhere.

The Hospital Coordinating Consortium-EMS is primarily responsible for developing an advanced life support (ALS) system with emergency care providers in the area. On-going monitoring and evaluation of the Emergency Medical Services system is essential.

The area HCC-EMS will present its plans for approval to the New Jersey Department of Health, Office of Emergency Medical Services, indicating especially how it will integrate all elements, according to planning regulations to be developed. The consortium will probably wish to designate one of its member institutions as the place to house a consortium coordinating center. The consortium representatives would then act as a governing body for the center's activities. The coordinating hospital need not be a hospital which has any special critical care units for patient care (e.g., a burn program or a neurological unit). However, it should be a large hospital (300 beds or more), have a coronary care unit or an intensive care unit, and be an MICU (mobile intensive care unit) hospital. However, consideration could be given to other models, based on local planning efforts. The recommendation for location of the center rests with the area HCC-EMS.

RESPONSIBILITIES OF THE HCC-EMS

The primary function of the consortium is one of coordinating the network of hospitals in the EMS area for the development of medical treatment protocols, triage guidelines and transfer protocols, medical physician on-line medical direction* of MICUs, communications technology, and medical accountability. On-going monitoring and evaluation of the EMS system is essential to document effectiveness, identify problems,

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* On-line medical direction provides the operational framework and justification for field paramedics and other physician extenders to provide emergency and critical care treatment. Area EMS systems must provide on-line, immediate, and direct communication from a supervisory advanced life support (ALS) on-line medical director to physician extender personnel during field patient care. Appropriate care should utilize previously established treatment, triage, and operational protocols that ensure standards and uniformity of care.

point up areas for improvement, provide a coordinated training effort, and provide a forum for providers of emergency care. All levels of emergency providers will cooperatively develop and implement the chosen systems.

Functions of an HCC-EMS

The HCC-EMS has a number of functions:

- Medical coordination of the emergency medical service area.
- Facilitation of patient flow through the system.
- Development and implementation of treatment protocols agreed upon by Emergency Medical Services providers.
- Coordination of patient transfers (especially secondary transfers), when indicated, by triage guidelines.
- Formation of at least three groups: a Consortium Board of Directors (with a physician from each hospital, plus other health professionals appropriate for the area), an Area Emergency Medical Services Council, and a Public Information and Education Committee.
- Collection of data and evaluation of area Emergency Medical Services effectiveness.
- Coordination of training.

Further Consortium Responsibilities

- Designation of a medical director for EMS area medical coordination.
- Designation of an EMS trainer and Emergency Medical Services coordinator for the Emergency Medical Services area.
- Provision of staffing for the Consortium Board of Directors, Emergency Medical Services Council and other committees, as necessary.
- Participation in area, regional and state EMS planning.
- Provision of overall coordination of communications capability (which conforms to the New Jersey State Department of Health's communications plan).
- Provision of clinical facilities and supervision of training for intermediate EMTs, paramedics, nurses, and physicians (at a minimum) within the participating hospitals.

- Provision of data collection and evaluation.

STAFFING

A suggested staffing pattern for the proposed HCC-EMS center is:

Medical Director

Each HCC-EMS center should have a medical director in order for an areawide Emergency Medical Services system to function effectively. The medical director must be accountable to the consortium board and function under the guidelines of the New Jersey State Department of Health (the lead agency responsible for Emergency Services at the state level). The medical director is responsible for all aspects of organization and delivery of Emergency Medical Services, including planning, design, operation, system coordination, training and evaluation in the area. The medical director directs the activities of the Emergency Medical Services coordinators and trainers.

The medical director also has the responsibility of assuring medical accountability through medical off-line direction* of the EMS trainer and the EMS coordinator, and the formation of the Consortium Board of Directors' Professional Advisory Committee (composed of medical and nursing specialists in the area) and an Emergency Medical Services Council (a group of providers and consumers of emergency care).

Qualifications and Responsibilities Medical Director (Part-time):

Qualifications

- Full-time physician employed by the hospital where the HCC-EMS center is located; he/she devotes approximately 15% time to Consortium activities.
- American Heart Association certified as a provider of basic life support (BLS) and advanced coronary life support (ACLS).

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* Off-line medical direction provides sound administration and management of the overall EMS system. The administrative medical director is a physician who is credible and knowledgable in EMS systems planning, implementation and operations. He assures medical soundness and appropriateness of all program aspects and is responsible for the conceptual and systems design and overall supervision of the EMS medical program. He is guided by the policies approved by the system's governing board.

- Emergency department physician or one experienced in Emergency Medical Services operation.

Responsibilities

- Area medical coordination.
- Protocol, triage, and treatment guideline development and implementation.
- Liaison with the New Jersey State Department of Health.
- Convenes Professional Advisory Committee and EMS Council.
- Works with clinical specialists representing the critical care disciplines (burns, trauma, etc.).
- Coordinates training.
- Directs HCC-EMS center staff.
- Introduces and facilitates the use of new technological adaptations and innovations (e.g., MAST garment).
- Works in close liaison with local and state governmental agencies which are involved with Emergency Medical Services.
- Assures medical appropriateness of the program.
- Works with area emergency department medical directors to develop protocols and guidelines for the area.
- Works with area MICU medical directors to develop protocols and guidelines for the area.
- Works with medical directors of other HCC-EMS centers to develop regional coordination.
- Works with the New Jersey State Department of Health to assure the integrity of a statewide system.
- Assures data collection and evaluation to measure system effectiveness.

Emergency Medical Services Coordinator (Full-time): Qualifications and Responsibilities

Qualifications

- A professional nurse--experienced in critical care, administration and EMS systems development.

- He/she works under the direction of the HCC-EMS medical director.
- The primary function of this person is system coordination.

Responsibilities

- Liaison between the HCC-EMS, MICUs, and specialized critical care centers in and outside the area.
- Liaison with public safety officials.
- Liaison with communication and dispatch centers.
- Liaison with local municipal and county officials and agencies.
- Liaison with basic life support providers.
- Implements protocols and triage guidelines developed by the Consortium's Board of Directors and its Professional Advisory Committee.
- Coordinates secondary transfers, when appropriate.
- Staffs EMS committees and councils within the area.
- Provides public information and education regarding system access and availability of resources.
- Works with area **training** coordinators to organize and implement training.

Training Coordinator: Qualifications and Responsibilities

Qualifications

- A professional nurse--experienced in emergency care clinical training and program development.
- Responsible for reviewing paramedic, nurse and physician training needs and recommending training programs to meet those needs.

Responsibilities

- Coordinates citizen cardiopulmonary resuscitation (CPR) courses.
- Coordinates basic life support courses, when appropriate.
- Monitors BLS clinical (10-hour) experience.
- Coordinates, with didactic instructors, the clinical aspect of paramedic training.

- Works with area emergency department staffs to implement intermediate EMT training.
- Works with the New Jersey State Department of Health to implement intermediate EMT training.
- Recommends and coordinates continuing education courses for nurses in emergency departments and critical care units.
- Coordinates advanced coronary life support and advanced trauma life support (ATLS) courses, where needed, throughout the area.
- Works with the Emergency Medical Services coordinator to coordinate educational efforts in the area and the state.
- Orients hospital staff to the role of the HCC.

REVIEW AND COMMENT

A review and comment period is planned. If there is general consensus that the levels of care described in this guide are appropriate, a designation process will begin. This type of process was approved by the Health Care Administration Board in Process and General Criteria for the Certification of Need and Designation of Regional Services (December 12, 1979). See Appendix A to this guide.

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COMMUNICATIONS

INTRODUCTION

Emergency Medical Services communications has been compared with the nervous system in higher organisms. Through communications, messages of varying complexity are transmitted to other components of the EMS system--such as rescue or ambulance services, hospital emergency departments, disaster teams--to guide their response to emergency situations. During the emergency period, the EMS system's response may be augmented or changed in accordance with new information transmitted through the communications system. A well-planned and integrated communications system should have direct radio and/or land line access to all components of the EMS system. Such a system should provide the most rapid message transmittal among components and should result in minimal response times.

EMS COMMUNICATIONS IN NEW JERSEY

EMS services in New Jersey are presently provided by a communications system which utilizes VHF (very high frequency) radios to dispatch ambulances and to connect the hospital-based physician or nurse with the ambulance attendant at the scene. Since May 1976, a UHF (ultra high frequency) telemetry system has been used by the MICUs (mobile intensive care units). The decision to use telemetry* is made by the physician providing on-line direction of patient care, in accordance with statewide medical protocols (presently being developed). Both of these radio systems (VHF and UHF) are workable and will be preserved and expanded as radio technology permits.

Basic life support (BLS) is coordinated by many different forms of dispatch and control. EMS communications are tailored to local custom. 66.4% of New Jersey's rescue squads share dispatchers with police and fire services. Seventy distinct radio frequencies are used to dispatch emergency care vehicles at the local level. 50% of New Jersey's EMS providers avail themselves of the state's designated frequency (155.340 MHz) for two-way voice communications between ambulances and hospitals. The beginning of a BLS communications network exists in the state. However, as yet the network simply does not fulfill its assigned role.

A closer ongoing relationship between the delivery of emergency care and a sound foundation for that care through communications is found at the ALS (advanced life support) level. This is intrinsic to the provision of ALS. New Jersey EMS communications have been adequate for the

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*Telemetry is a type of radio communication which is capable of transmitting an emergency patient's physiological data to a physician. The concept was "borrowed" from the space program, which used radio telemetry to transmit an astronaut's physiological data to earth.

task, but ALS has been rendered only on a pilot basis and only in nine target areas.

A communications plan has been designed for the existing and projected EMS needs of New Jersey. The plan covers techniques employed in the field and in the emergency department. A key objective of the plan is to provide a communication system that will allow physicians and nurses to communicate in the most efficient way possible with ambulance attendants in order to provide prompt and timely delivery of medical services, via medical coordination and supervision, in response to human health emergencies.

ACCESS

Every citizen of New Jersey should be able to obtain emergency care as promptly as possible. National EMS experience suggests that coordinated dispatch with 9-1-1 is the optimum way to deliver emergency services. At the present time, New Jerseyans access the EMS delivery system in a variety of ways (e.g., a single access number like 9-1-1, citizens band radio's channel 9, or a variety of somewhat informal arrangements--such as dialing one of several numbers traditionally identified with rescue squads). Seventy-nine percent of the state's population is confronted by an estimated 1,000 different emergency telephone numbers. Telephone operators receive 3,500 calls each day where a person dials "0" for emergency help.

9-1-1 is a reality for about one sixth of New Jersey's population. Newark's system received 54,105 requests for help in 1977, or 148 requests per day. A full 12.9% of these calls were life threatening. Citizens in Hunterdon County now have 9-1-1 and no longer have a choice of calling any of 61 emergency phone numbers, as they had done as recently as 1976. 9-1-1 in New Jersey has eradicated life threatening delays in delivering emergency care, as it has done elsewhere throughout the nation. The New Jersey Legislature's 1976 County and Municipal Study Commission identified the need for 9-1-1 and recommended:

> "Municipalities throughout the State should strive to place their fire and emergency squad services on the universal 9-1-1 emergency number."

In 1977, the State's Attorney General appointed the Statewide Police Emergency Network Task Force to assess all New Jersey police telecommunications. The Task Force is preparing a report on its findings. Indications are that the Task Force will recommend that:

> "It be the policy of the State of New Jersey that 9-1-1 be implemented as soon as possible and that negotiations be conducted between New Jersey telephone companies and the highest level of state government to establish a plan for the implementation of 9-1-1."

The Office of Emergency Medical Services of the New Jersey State Department of Health encourages implementation of 9-1-1 and supports the efforts of municipal governments in its development. However, the final decision to plain and implement either coordinated dispatch or 9-1-1 must rest squarely with the local citizens and local emergency services providers.

DISPATCH

The Office of Frequency Coordination, within the New Jersey Department of Law and Public Safety, has responsibility for coordinating emergency radio frequencies within the state. It also prescribes the communications linkages for public safety interaction with EMS providers. The New Jersey State Department of Health works closely with this allied agency.

The New Jersey State Department of Health's Office of Emergency Medical Services plans to meet ongoing needs for trained dispatchers and to participate in the development of dispatch protocols.

Dispatch of both basic life support (BLS) and advanced life support (ALS) vehicles is currently done on VHF. ALS vehicles will carry both types of radio and thus will be linked to BLS units in the field. MICU hospitals will have UHF and VHF capability. Hospitals will be able to communicate with BLS units through VHF radio.

MEDICAL COORDINATION

Communications are important to an EMS system from both a medical and legal standpoint. Acceptable medical practices, and controls in pre-hospital and emergency department care, are the ultimate responsibility of the medical profession. To extend medical practice into the field through allied health personnel, necessitates medical direction/supervision--especially for advanced pre-hospital techniques. Supervision can be provided by radio or radio/land line communications, as has already been done in several parts of the nation. From a legal standpoint, both the medical practitioner and the allied health personnel can be protected best if diagnosis and therapies result from supervision (which can include biomedical telemetry) of field personnel.

An emergency service physician at a hospital must be able to serve critical patients before either that physician or another physician actually sees the patient. A medical coordination plan, to be developed and adopted by EMS area committees, will provide the physician with set guidelines for exercising his/her professional judgment. The directors of all emergency services in the area will shape the contents of the plan. The emergency physician managing the critical event will then use the plan and the communications available to him/her to transcend physical distance and to provide on-line medical direction of patient care.

New Jersey has had limited, but highly significant experience, in the area of medical coordination. The nine Mobile Intensive Care Pilot Projects used on-line medical coordination. The OEMS seven Critical Care Task Forces also worked out requisite elements for medical treatment and triage protocols.

RESEARCH AND EVALUATION

WHY IS EVALUATION NEEDED?

Evaluation is necessary to show whether or not an EMS system is functioning effectively. It applies the measurement of "reality" to paper plans. It attempts to answer questions like: Has the system come close to meeting our expectations? Is the prevalent patient mix a justification for the designation of this type of facility? Is reimbursement re readily obtainable for all patients? Is an outreach program needed to maintain patient flow? Is there any significant and positive impact on the quality of emergency care being delivered to patients? Did we save any lives?

Quality of care is the major impetus for setting up an emergency medical services system in New Jersey. If our EMS system is going to be a vital and dynamic one, it must undergo continuous evaluation as it matures.

MEASURING THE SYSTEM

The best way to be sure New Jersey's EMS system works, and will continue to work, is to perform ongoing analysis of its vital critical care networks. A set of objective measures will be used to assess system performance.

EMS patient care is measured through (1) input, (2) process, or (3) outcome studies. As an example--input is the number of trauma, burn, cardiac or other patient types who enter the EMS system in a given time period; process is the sequence of events which these patients experience while they are in the EMS and health care systems; outcome is the final product of that care, usually expressed in terms such as the number of "saves" or reductions in disability or the average length of stay. The tracking of critically injured patients as they journey through the health care system is called a "tracer" study.

At this time, outcome studies would be clearly premature for New Jersey. Critical care networks are just beginning to form. The growth of these networks will act as the base for outcome studies. However, input and process data for all seven critical care groups (e.g., trauma, burns, spinal cord, coronary, high risk infant, poison, behavioral emergencies) are already being gathered. Outcome studies should begin next year.

A vibrant EMS system must be responsive to the changing needs of its service population. Analysis of system data on a regular basis can pave the way toward meeting that need.

APPENDICES

different specialty areas. For example, one HSA may be developing its plan for cardiac surgery while another is concentrating its efforts on perinatal services. It would be in the best interests of the providers and the consumers if all of the State's HSAs were developing their regional plans for the same services at the same time. In this way, overlapping service areas and duplication could be addressed more rationally. Therefore, the Statewide Health Coordinating Council, upon the recommendation of its Plan Development Committee, shall establish a priority order for the HSAs to develop plans for regionalized services and shall establish a time period within which each plan shall be completed.

Some regionalized services may well be planned within an HSA border, but others should be planned either on a statewide basis or located in a few appropriately selected settings. Plans for statewide services are better handled at the State level. It shall be the responsibility of the Statewide Health Coordinating Council to designate which plans should be orginated at the HSA level and then be merged and incorporated into the State Plan and which plans should originate at the State level and be reviewed by the HSAs and incorporated into a State Plan.

C. MINIMUM ELEMENTS OF A SPECIALIZED HEALTH PLAN

The minimum elements of a specialized health plan, whether initiated by the State or HSAs, shall include the following:

a) There must be an approved regulation defining the health service that is subject to regionalization and describing the criteria for the service.

b) A data analysis indicating the need, including cost implications, for the particular specialized service. There should be justification including documentation by the HSA or State regarding the number of needed Regional Centers for the particular service.

c) An inventory of existing resources in the HSA region or statewide as related to the particular specialized health service. The inventory should address the data requirements established in the regulation and whenever possible annualized. For example: number of deliveries, obstetrical units, etc.

d) Relationships with other Health Service Areas and out-of-state areas where appropriate. There must be documentation including patient origin studies, if necessary, indicating the flow of patients into and out of the region for the specialized service.

e) Complete an analysis of the criteria for closing the gaps between need and current supply. The criteria must include all elements identified in the regulation. In estimating the projected costs, careful attention should be paid to maximizing existing resources.

f) A statement of the procedure used by the local HSA in recommending the designation of regional centers. This should insure that all facilities were given due process. One cannot designate regional centers without giving all hospitals an opportunity to apply.

g) A listing of the recommended regional services (all levels) including a statement as to their conformity with the HSA's or State's specialized plan.

h) A statement as to how the HSA's or State's plan conforms with each of the requirements established by State and federal regulations and guidelines. Where exceptions are requested and allowed by the regulation, complete justification must be submitted.

i) An analysis of the needs of health professions education programs in relation to the particular specialized health service. When justified by the analysis, the plan must assure reasonable access of such health professions education programs to the specialzied service. Accessi-

bility to the service for the teaching purposes of CMDNJ must be documented.

These elements will promote consistency among HSA and State plans. At the same time, it will permit the HSAs and the State some degree of flexibility in developing their plans. This flexibility is needed because of the diversity of the State and the possible specialized needs of an area. Once the plans are completed, they will be reviewed and adjusted by the Statewide Health Coordinating Council and shall become part of the State Plan.

D. PROCESS OF DESIGNATION OR GRANTING OF CERTIFICATES OF NEED

It is the position of the Statewide Health Coordinating Council that health facilities be designated or granted certificates of need on the basis that all facilities have equal opportunity to be considered as a regional service. The Department of Health will develop a form that applicants desiring designation will use. The form shall be sufficient for all HSA's to use in the designation process. Under no circumstances should a health facility be recommended for regional designation merely because it was the first to file an application or a request for designation. Therefore, no certificates of need or letters of designation will be honored by the Statewide Health Coordinating Council unless an HSA or State Plan for regional services has been accepted by the Statewide Health Coordinating Council and incorporated into the State Plan. In those unusual cases where an HSA does not submit a plan by the time specified by the Statewide Health Coordinating Council (SHCC), the Department of Health shall prepare a plan for that health service area and submit the plan to the Statewide Health Coordinating Council within 60 days.

HSA's are encouraged to work with potential applicants throughout the entire planning and designating process. Once the plans have been completed and incorporated into the State Plan, the HSA shall notify all health facilities that its plan or a modification thereof has been incorporated into the State Plan and

that applications for regional designation or certification shall be submitted within a 90-day period from the time of notice. If necessary, the HSAs may initiate a request for applications in subsequent years if the needs of the community have not been met as determined by the plan. Those facilities which feel they meet or will meet the criteria and can submit supporting documentation shall submit an application to the State and the appropriate HSA for designation as a regional service.

An applicant for designation or certification must document in its application, and adopt as a formal policy statement by its Board of Trustees, that it will treat all patients referred to it from any physician or other institution on the same basis as it treats its own patients and without any discrimination.

Applications for designation shall follow the same review process at the HSA and State level as do Certificates of Need. Applications for designation as a regionalized service and applications for Certificates of Need to establish a regional service must demonstrate compliance with each of the requirements for that service established by State and Federal regulations and guidelines and must offer the service in the least costly manner.

On recommendation of the Statewide Health Coordinating Council, the State Health Commissioner shall make designation or award certificates of need for regional services. Those who receive such designation or awards shall have the opportunity to submit budget justifications to the State Health Department which would support the cost of these special services. Designation will authorize reimbursement for reasonable costs, as determined by the Department or the Rate-Setting Commission, for the service provided in the regional facility. Conversely, those facilities not receiving designation or the granting of certificates of need shall have the cost disallowed if they continue to operate at a regional service level.

E. EVALUATION

Each facility designated or certified to provide a regionalized special service shall be evaluated by the State Health Department and local Health Systems Agency five years from designation or certification and every five years thereafter. Such evaluation shall be accomplished through a "redesignation" review process which will be performed in the same manner as the "designation" review process described above. The evaluation must consider, but not be limited to, the area's changing health care needs and the facility's conformance with the most recent State standards and criteria for the specialized service, the State Health Plan, and the Health Systems Plan and Annual Implementation Plan of the HSA.

APPENDIX B

STATEMENT OF DEPARTMENTAL INTENT REGARDING BURN PROGRAMS

Background

The New Jersey State Health Plan:

- proposes a regionalized burn care plan for the approximately 2500 burned patients needing hospital admission annually, approximately 600 of whom are severely burned;
- provides severity criteria and considers the patients meeting those criteria to be appropriate admissions for tertiary facilities;
- defines these tertiary facilities as burn units and centers having burn-dedicated beds and meeting specific standards in service capability, equipment, staffing and utilization;
- determines that New Jersey's need for burn-dedicated beds is at present adequately met by the burn units and centers in New York City and Philadelphia, and the 12-bed burn unit in New Jersey at St. Barnabas;
- provides specific standards in service capability, equipment, staffing and utilization for burn programs, which are not tertiary facilities and do not have burn-dedicated beds.

Purpose of this Statement

In providing the service capability, equipment and staffing standards for burn programs, the Plan stated that "any hospital which admits burn patients" should meet these standards. In providing the utilization standard, the Plan stated that "programs should have at least 40 admissions per year in order to maintain proficiency".

The purpose of this Statement of Departmental Intent Regarding Burn Programs is to clarify the following:

(1) Not all hospitals currently admitting burn patients should seek to "upgrade" to become burn programs, rather, hospitals which do not qualify as burn programs, generally, should not be admitting burn patients. Usually, burn patients needing admission can and should be stabilized in an emergency department and then taken to a hospital with a burn program, unit or center.

(2) A few (three to five) of the currently operating burn programs that meet Department of Health criteria will be recognized by the Department to receive appropriate reimbursement for a limited period (approximately two years), during which time they must comply with specific operating and reporting requirements specified by the Department. This interim period will be considered a period of research for the purpose of ascertaining information that may lead to a regionalization regulation and formal designation process of burn programs in future.

(3) There are to be no additional burn units or burn-dedicated beds in New Jersey until the following conditions are met: (a) referral of severely burned patients to existing burn beds in the tri-State area fills those beds beyond their capacity to meet the demand; and (b) the efficacy of tertiary burn care is fully established and the costs justified. The costs incurred by a burn program and the reimbursement authorized by the Department for burn programs will not be comparable to that of a burn unit, neither during the interim research period nor thereafter.

(4) The Department does not wish to encourage the proliferation of burn programs now or in the future but intends only to acknowledge and research the work of a few existing burn programs so that future decisions regarding such programs will benefit.

Criteria to be Met Prior to Selection

1 -- Service capability, equipment and staffing --
as detailed in the State Health Plan 1978-1982, and as certified through site visits by a professional team convened and recognized by the Department of Health.

2 -- Utilization --
at least 120 acute burn admissions (not including reconstructive surgery admissions) in the three-year period 1976-78. Exceptions may be facilities which had slightly less than 120 only because they sent severely burned patients to burn units and centers. Such patients may be "credited" to the sending institution, as the Department has information regarding such referrals and transfers to St. Barnabas and the Philadelphia burn centers and wishes to encourage appropriate referrals and transfers.

Standards to be Met Throughout Interim of Research and Reimbursement

1 -- Service capability, equipment and staffing --
same as above.

2 -- Utilization --
at least 40 acute burn admissions per year, again, exceptions (see above) may be those facilities which have referred severely burned patients to tertiary facilities. The Department of Health will monitor the data (see "3" below) throughout to assure that this 40-patient standard is not met through inappropriate admissions of patients who should be treated and released in the emergency department.

3 -- Data to be reported on each patient admitted --
Age
Sex
Cause and circumstances of burn
Percent body surface area burned
Degree burn
Body parts burned
Secondary diagnoses
Municipality of residence of patient
Referring institution
Type of transport
Dates of admission and discharge (or transfer or death)
Disposition (discharge, transfer or death)
Total charges
Total amounts paid by source of payment

Data to be reported on each patient referred elsewhere --

Age
Percent body surface area burned
Referring source (institution or other source)
Date of referral
Reason for referral
Institution to which patient is referred

Data to be reported on the burn program --

Nursing hours per patient day, by type (RN,LPN, Aides)
Nursing salaries
Salaries of other staff involved in burn care and proportion of their time spent in burn care.

This is the type of data the Department of Health currently requires, receives and analyzes from St. Barnabas and an example of the reporting format of St. Barnabas will be supplied to interested facilities.

4 -- Severity criteria and cooperation in regionalization --

(a) The Department continues to encourage the referral of severely burned patients to burn-dedicated units and centers. However, the efficacy of such costly tertiary facilities has been called into question in other states in recent years, and is currently being researched by comprehensive federally-funded studies. Formal designation of burn programs in New Jersey will be dependent upon these federal findings as well as the results of in-state research. During this interim period no severity criteria will be established for the burn programs in New Jersey, but the efficacy of care in terms of outcome, length of stay and costs will be monitored, statistically controlling for severity. Programs are not encouraged to admit or retain severely burned patients and will not be penalized for appropriately referring and transferring patients elsewhere.

(b) Programs must document in the hospital's long-range plan their cooperation with: dispatchers and ambulance personnel; with other burn programs, units and centers; and the Department of Health's Emergency Medical Services and Planning units. Programs are expected to do their own publicity and outreach and to document such efforts in the hospital long-range plan.

Subsequent Follow-Through of EMS Burn Task Force

At the end of the interim period of research and reimbursement, the EMS Burn Task Force will be reconvened to review the data and to make recommendations to the Department of Health regarding burn care in New Jersey.