Training of Ambulance Personnel and Others Responsible for Emergency Care of the Sick and Injured at the Scene and During Transport: Guidelines and Recommendations (1968)

Pages
29

Size
5 x 8

ISBN
0309346053

Committee on Emergency Medical Services; Division of Medical Sciences; National Research Council

Available from the
Information Clearinghouse
Division of Emergency Health Services
Health Services and Mental Health Administration
5600 Fishers Lane, Rockville, Maryland 20852

and

State Health Departments

May be purchased from the
Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Public Health Service Publication No. 1071-C-4
Fourth Printing April 1970

Emergency Health Series C-4

TRAINING

of ambulance personnel and others responsible for emergency care of the sick and injured at the scene and during transport

Guidelines and Recommendations of the
Committee on Emergency Medical Services
Division of Medical Sciences
National Academy of Sciences
National Research Council

Prepared under SA-896-68 and Contract PH 110-68-1 with the
U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Health Services and Mental Health Administration
Division of Emergency Health Services
5600 Fishers Lane, Rockville, Md. 20852

COMMITTEE ON EMERGENCY MEDICAL SERVICES

JOHN M. HOWARD, M.D., Hahnemann Medical College and Hospital, Philadelphia, Pa., *Chairman*
OSCAR P. HAMPTON, JR., M.D., American College of Surgeons, Chicago, Ill.
JAMES B. HARTGERING, M.D., Department of Health, Hospitals, and Welfare, City of Cambridge, Cambridge, Mass.
FRANCIS C. JACKSON, M.D., University of Pittsburgh School of Medicine, Pittsburgh, Pa.
JOHN M. KINNEY, M.D., Columbia University College of Physicians and Surgeons, New York, N. Y.
ROSS A. MCFARLAND, M.D., Harvard School of Public Health, Boston, Mass.
ROBERT M. OSWALD, The American National Red Cross, National Headquarters, Washington, D. C.
J. CUTHBERT OWENS, M.D., University of Colorado Medical Center, Denver
PETER SAFAR, M.D., University of Pittsburgh School of Medicine, Pittsburgh, Pa.
SPENCER T. SNEDECOR, M.D., Hackensack, N. J.
JOHN P. STAPP, COL., USAF, M.C., U. S. Department of Transportation, Washington, D. C.
ALAN P. THAL, M.D., University of Kansas Medical Center, Kansas City

TASK FORCE ON GUIDELINES FOR TRAINING OF AMBULANCE PERSONNEL

JOSEPH D. FARRINGTON, M.D., Minocqua, Wisc., *Chairman*
WALTER A. HOYT, JR., M.D., American Academy of Orthopaedic Surgeons, Akron, O.
WALTER S. HUNT, JR., M.D., The Raleigh Orthopaedic Clinic, Raleigh, N. C.
ROCCO MORANDO, Division of Vocational Education, Ohio State University, Columbus
ROBERT M. OSWALD, The American National Red Cross, National Headquarters, Washington, D. C.
PETER SAFAR, M.D., University of Pittsburgh School of Medicine, Pittsburgh, Pa.
JOSEPH R. TERRITO, LT. COL. M.S.C., U. S. Army Medical Training Center, Ft. Sam Houston, Texas

Liaison Members

ROSWELL K. BROWN, M.D., Committee on Trauma Field Program, New York, N.Y.

OSCAR P. HAMPTON, JR., M.D., American College of Surgeons, Chicago, Ill.

JOHN M. HOWARD, M.D., Hahnemann Medical College and Hospital, Philadelphia, Pa.

LOUIS C. KOSSUTH, COL. M.C., USAF, HQ Air Defense Command, Ent Air Force Base, Colorado

JOSEPH K. OWEN, PH.D., Emergency Health Services Branch, Division of Direct Health Services, U. S. Public Health Service, Silver Spring, Md.

JOHN M. WATERS, JR., CAPT., U. S. Coast Guard, National Highway Safety Bureau, Department of Transportation, Washington, D. C.

THEODORE H. WILSON, JR., CAPT., M.C., USN, U. S. Naval Hospital, Bethesda, Md.

Staff

ROBERT J. FITZSIMMONS, Emergency Health Services Branch, Division of Direct Health Services, U. S. Public Health Service, Silver Spring, Md.

SAM F. SEELEY, M.D., National Academy of Sciences-National Research Council Washington, D. C.

CONTENTS

RESPONSIBILITIES OF AMBULANCE ATTENDANTS AND OTHER LAY PERSONNEL ENGAGED IN DELIVERY OF EMERGENCY HEALTH SERVICES

Employees or volunteer members of public and private organizations having a responsibility for the delivery of health services must be trained in and held accountable for administration of specialized emergency care and delivery of the victims of injury or acute illness to a medical facility. This category of lay persons includes ambulance personnel, rescue squad workers, policemen, firemen, lifeguards, workers in first aid or health facilities of public buildings and industrial plants, attendants at sports events, civil defense workers, paramedical personnel, and employees of public or private health service agencies. Specialized training, retraining, and accreditation of such persons necessitate development of training courses, manuals, and training aids adequate to provide instruction in all emergency care short of that rendered by physicians or by paramedical personnel under their direct supervision.

Ambulance personnel are responsible for all lay emergency care from the time they first see the victim through transportation and delivery to the care of a physician. They must therefore be able not only to appraise the extent of first aid rendered by others, but also to carry out whatever additional measures will make it safe to move the victim and minimize morbidity and mortality. They must operate the emergency vehicle safely and efficiently; maintain communication between the scene of the emergency, traffic authorities, dispatchers, and emergency departments; render necessary additional care en route; and transmit records and reports to medical and other authorities. Although the emphasis on certain subjects will vary with the nature of employment of those who are not ambulance personnel but who have a responsibility for delivery of health services, they should be equally trained so that maximum care can be ensured, whether they transfer responsibility to the ambulance attendant or, in his absence, carry out all functions required of him.

Need for Standardized Training

An analysis of the current courses of training and of state statutes on the regulation of ambulance services reveals that there is no uniformity in the course of instruction and that there are no generally accepted standards of proficiency to be used by those empowered to certify ambulance personnel.

Training courses for ambulance attendants are conducted at hospitals, medical schools, universities, colleges, health departments, police departments, and fire departments. Ironically, ambulance attendants of the small community or the rural area, where the fatality rate from traffic accidents is highest, do not have access to these organizations, and may be trained not at all, or only to the extent that local physicians or small hospital staffs can train them with limited facilities and equipment. Rarely is the isolated ambulance attendant afforded the time or financial means to undergo formal training at a central training site.

A review of more than 70 short courses of instruction, varying from a few hours to 3 days, and of over 20 textbooks related to training of ambulance personnel, reveals a marked lack of uniformity or completeness of instruction, and none includes all the subjects listed in the guidelines recommended in this report. The greatest degree of uniformity is in short courses conducted under the aegis of the Committee on Trauma of the American College of Surgeons and of the Committee on Injuries of the American Academy of Orthopaedic Surgeons. Few courses require either the standard or advanced first aid courses of the American National Red Cross as a prerequisite and, although instruction generally includes emergency childbirth, cardiopulmonary resuscitation, and the management of psychiatric emergencies, little attention is given to the operation of emergency vehicles, safety precautions at the scene of the accident, priorities of care, records, the use of communication systems, the use of equipment and supplies, medicolegal problems, or rescue procedures. Although it is generally stated that courses of more than a few hours are conducted by institutions, local fire or police departments, or individuals who travel periodically to outlying communities, the most complete curriculum of an organized course of instruction of which the Task Force is aware is that of the military forces for the training of enlisted technicians, ambulance attendants, and combat corpsmen.

A recent survey of state statutes reveals that only 18 "regulate" ambulance services, and of these only eight require instruction at the level of the standard or advanced course of the American Red Cross. Six states require "instruction in first aid," but do not prescribe the level of training.

It is recognized that superior ambulance services are rendered to a small segment of the population by well-regulated public and private ambulance and rescue organizations whose personnel are

highly trained, and that in some communities highly motivated volunteers or employees have attained a high level of proficiency. It is apparent, however, that these groups have depended mainly on local medical talent for training and that most often the level of proficiency attained is a reflection of the dedication and extra efforts of individual physicians, rather than of established faculties.

The diversity and incompleteness of courses of training and the lack of guidelines by which to test proficiency or to regulate ambulance services attest to the need for adoption of nationwide standards not only for the training of ambulance personnel, but also for the equipment and the vehicles on which they depend for delivery of emergency care.

The Committee on Emergency Medical Services recognizes that the levels of proficiency to be attained by the course of instruction recommended in this report are goals to be reached in increments in most areas of the country within a reasonable period. Furthermore, it would be reasonable for these levels of proficiency to be used as standards by those empowered to certify ambulance personnel in each state.

Section One—Emergency Care

Anatomy and Physiology

Musculoskeletal system	Gastrointestinal tract
Nervous system	Abdomen
Respiratory system	Skin
Circulatory system	Eye
Genitourinary system	Topographic anatomy

Vital Signs and their Significance

Normal ranges of vital signs and abnormalities related to injuries and other emergencies, to include pulse, respiration, blood pressure, skin temperature, color of skin and mucous membranes, pupils, states of consciousness, paralysis, and reaction to pain.

Life-Threatening Emergencies

Airway maintenance, artificial ventilation and oxygenation
Cardiac arrest and cardiopulmonary resuscitation

Instruction as prescribed by the American Heart Association.

Bleeding

Pressure dressings, pressure points; emphasis on strict limitations on use of tourniquets.

Shock

Include administration of intravenous fluids.

Injuries

Wounds—General

Definition. Open, closed; abrasion, puncture, incision, avulsion; penetrating, perforating.
General Effects. Interference with function; shock.
Local Effects: Hemorrhage, external, internal; interference with blood supply; destruction; foreign bodies; contamination.

Injuries of bones and joints

Under each heading, instructions as appropriate on techniques of handling extremities, methods of moving victim, dressings, splinting, traction, positioning during transport. Emphasis on treating sprains and strains as if they were fractures or dislocations.

Fractures and dislocations of upper extremities
Fractures and dislocations of lower extremities
Fractures and dislocations of spine
Fractures of pelvis

Injuries other than of bones and joints

Under each heading, instructions as appropriate on airway obstruction, cardiac arrest, hemorrhage, techniques of moving, release from impalement, dressings, splints, positioning, preservation of avulsed parts (ear, nose, digits, extremities) and possible complications during transport.

Scalp and skull	Chest
Brain	Abdomen, pelvis
Eye, ear, nose	Genitalia
Face and jaws	Back
Neck	Extremities

Burns

Environmental Emergencies

Instruction as appropriate on prevention of additional injury, methods and hazards of removal from environment, initial care, contamination, possible cardiopulmonary complications during transport.

Exposure to cold	Electrical injuries
Exposure to heat	Near-drowning
Exposure to radiation	Explosions

Acute Poisoning

Medical Emergencies

Fainting; stroke; heart attack; convulsions; acute alcoholism; diabetic states; perforated viscus; hemorrhage; asthma; emphysema; nosebleed; shock; unconscious states; allergic reactions; urinary retention; strangulated hernia; protracted vomiting; drug withdrawal; spontaneous pneumothorax; communicable disease; (special emphasis on pediatric emergencies).

Emergency Childbirth

Management of Emotionally Disturbed and Unruly

Section Two — Ambulance Services

Personnel

Effective service requires proper attitudes and conduct in work; show of responsibility; skills obtained by experience and training; acting within limitations of capabilities.

Attendants and drivers must be equally trained in each other's duties and responsibilities so that they may function interchangeably or independently in caring for multiple casualties.

Duties as an Attendant

Personal attitudes and conduct:

Professional manner. Definition; ethical standards required; control of emotion; courtesy; tone of voice; refrains from smoking while engaged in duties related to care of patients; uses appropriate topics of conversation.

Personal appearance. Hygiene and grooming; proper wearing of uniform; identifying insignia.

General conduct. Shows interest in job; concern for victims; "common sense" care; teamwork efficiency; prevents embarrassment to victim; gives reassurance to victim; uses victim's resourcefulness in helping himself; shows responsibility for safety of victim, self, others; cooperation.

Response to victim's need for religious comfort in face of death. Obligation to notify clergyman when requested by victim; responds to victim's inclination to talk; performs baptismal rites if requested when clergyman is unavailable; administration of last rites.

In cases of apparent death or death. Handling of deceased. Definition of death; examines for signs of death; when death is certain, moves body in accordance with local ordinances or regulations; for ethical and humanitarian reasons, remains with deceased until arrival of police or medical examiner; shows courtesy, respect, and consideration in handling and exposure of the deceased.

Disclosing bad news. Creates proper atmosphere; displays attitude to mitigate bad effects; demonstrates sympathetic air.

Responsibilities to the victim:

Prompt and efficient care. Performs lifesaving measures; provides for safety and protection; gives all possible emergency care when extrication is delayed; undertakes extrication to permit emergency care; avoids undue haste and mishandling; searches for medical identification emblems.

Preparation for transport to hospital. Immobilizes injured parts; prevents disturbance and exhaustion before transport; makes sure of victim's cooperation; ensures optimal preparation before decision to transport; protects victim's valuables.

Continuing care en route, and delivery to hospital emergency department in best possible condition. Rides in compartment with victim; continually observes and protects; administers fluids and other measures as instructed or indicated; reports changes in victim's condition during transport.

Skill in the use of ambulance equipment and supplies.

Cooperation. When a physician or a paramedical person is present at scene of accident, assumes subordinate role and gives full cooperation; in their absence, carries out functions that are the usual responsibilities of police officers, firemen, other ambulance personnel, public utilities personnel, clergymen; cooperates fully with hospital emergency department staffs.

Duties as the Driver

Personal attitudes and conduct.

The same standards of professional manner, personal appearance, and conduct as pertain to the attendant have application for the driver.

Responsibilities to the victim.

Transports victim in such a manner that it minimizes disturbance to affected part and ensures maximum comfort, prevents shock, allows freedom of breathing, avoids further danger to the victim; knows and abides by laws and traffic regulations pertaining to ambulances.

Vehicle operation.

Practices "defensive driving"; exercises emergency privileges properly; prevents accidents; engages in safe driving practices; knows and uses proper operating speeds; knows importance of gentle driving, starting, and stopping; knows the relationships of speed to "reaction distance," "braking distance," and "stopping distance"; makes proper use of lights and sirens.

Transportation of mass casualties.

Drives along assigned routes cleared by police; does not alter routes unless directed by police or central dispatcher; proceeds only to designated areas or hospitals; cooperates in a coordinated, constantly-flowing effort.

Maintenance of vehicle.

Understands principles of engine and can make minor repairs; routinely inspects and services mechanical parts; checks safety equipment; cleans debris from vehicle; decontaminates inside after transport of victim with contagious infection or radiation exposure.

Emergency Vehicles

Ambulances

Regardless of the degree of injury or illness for which the ambulance is dispatched, the ambulance and its equipment must be adequate to cope with the most serious emergencies.

Helicopters

Because helicopters cruise at low altitudes, the medical problems pertaining to transport in a fixed-wing aircraft are not pertinent. At altitudes under 1,000 feet, the indications for oxygen administration are the same and the problems encountered in case of vomiting, sucking wounds of the chest, and injuries to the sinuses, ears, and brain are dealt with in the same manner as during ambulance transportation.

Criteria for use. Accessibility to victim; speed in transport of attendants to accident scene, and of victim to initial emergency care facility, or transfer to a medical center.

Special problems. Dust requires covering of all open wounds; moving rotor blades dictate pattern in approaching and leaving helicopter; air turbulence requires special attention to securing of litter and victim; noise interferes with communication and evaluation of vital signs; vibration may make procedures such as intravenous administration or intubation difficult.

Rescue vehicles

The space requirement for personnel and equipment in rescue vehicles designed for medium and heavy rescue procedures precludes their use as ambulances. Light rescue equipment should be carried on ambulances as well as on rescue vehicles and ambulance personnel trained in its use.

The Use of Equipment and Supplies

Thorough familiarity with the theory of any particular device, indications for its use, the desired effects when it is used, its capabilities and limitations, and its malfunctional problems.

Maintenance, exchange, and periodic inventory.
Efficiency in use, as prescribed in the section on emergency care.

Emergency care

Airway maintenance, artificial ventilation and oxygenation. Suction apparatus, installed and portable; catheters;* airways, mouth-to-mouth and oropharyngeal;* mouth gags; bag-mask resuscitation unit, installed and portable;* oxygen tanks and masks;* manually triggered oxygen-powered ventilation apparatus.*

*Appropriate sizes for adults, children, and infants.

Control of hemorrhage. Compression dressings; tourniquets (emphasis on strict limitations in their use).

Immobilization of spine and extremities. Backboards; half-ring splints; padded boards; inflatable splints; triangular bandages.

Dressings. Large universal dressings; pads; bandages; pins; tape; shears.

Fluids. Intravenous fluids and administration sets.

Emergency childbirth. Obstetrical kits.

Snakebites. Snakebite kit, including antivenin.

Acute poisoning. Medicinal charcoal; syrup of ipecac.

Lighting. Flashlights; floodlights; generator.

Safe and efficient transport

Warning devices; lights; temperature and humidity controls; restraining devices for litters and occupants; litters; blankets; pillows; neck rolls.

Safety equipment

Warning flags and flares; fire extinguishers; helmets; rubber gloves.

Light rescue tools

Lifting, prying, cutting, and battering tools; backboards; ropes; straps.

Communication

Radio equipment.

Elective equipment—for use by physicians or other persons trained in its use

Tracheal intubation kits; mechanical external cardiac compression machine; radiation detection equipment; tracheotomy or cricothyreotomy set; equipment for monitoring of vital signs; cardioscope/defibrillator; pleural drainage set for tension pneumothorax.

Communication

Instruction and demonstration by communication experts on use, regulations, limitations, and maintenance of equipment, and by physicians or paramedical personnel on coordination of care and delivery of victims. Emphasis on importance of day-to-day use as a prerequisite to efficient operation in disaster.

Uses of communication equipment

Dispatch and control movement of ambulances; clear traffic lanes; mobilize rescue equipment; dispatch professional personnel and supplies; advise ambulance personnel on care of victims at scene and during transport; alert emergency departments of expected arrival and condition of victims; distribute victims to appropriate medical facilites; coordinate with local government and civil defense officials and with backup ambulance services.

Design of communication system

Radio communication. Twenty-four hour capability; central dispatching; area to be served; terrain features; flexibility of cross-communication with other systems; system not in parallel with, or isolated from, other networks; compatibility with radio or video transmission of vital signs.

Auxiliary communication. "Walkie-talkie"; telephone; messengers.

Limitations on use of equipment

Federal Communications Commission regulations; standby power essential at fixed installations; telephone systems may be blocked.

Relationships with Hospital Emergency Departments

Thorough familiarity with care rendered in emergency departments to ensure adequacy of measures taken by ambulance personnel.

Problems for ambulance personnel

Delays in delivery of victim. Blocked access; traffic control; inconvenient location of facilities.

Delays in continuation of care. Unavailability of emergency department personnel; inadequacy of examining or treatment facilities; lengthy history taking; lack of triage.

Delays in return or exchange of equipment and supplies.

Rapport

Mutual courtesy and understanding of each other's problems; efficiency of reporting by ambulance personnel; willingness to cooperate and to assist on request.

Cooperation

By emergency department personnel. Assistance in clearing way and moving victim; avoidance of delay; return or exchange of equipment; replacement of supplies; constructive criticism of inadequate or improper care rendered; credit for use of good judgment and proper care; priority of emergency department attention to life-threatening situations; periodic critiques of quality of emergency care.

By ambulance personnel. Optimal emergency care and efficient and safe transport in advance of delivery to emergency department; advance notification of arrival; identification of victims whose conditions might warrant high priority of reception and resuscitation; assistance as needed or requested; compliance with hospital regulations; rendering of reports to hospital personnel and to police, if indicated; retrieval of equipment and supplies; prompt departure from emergency department; participation in disaster drills and critiques.

Control of the Accident Scene

Immediate attention to life-threatening emergencies supersedes any action to control the scene by ambulance personnel.

Needs for control

To permit access, prompt care, extrication, protection from further hazards; clear lanes for departure.

Actions at scene

Anticipate, en route, possible hazards posed by location and type of emergency.

Prevent further accident or hazard by: precaution in parking ambulance; removal from situations threatening to lives of the victim and ambulance personnel, such as spilled gasoline or chemicals, escaping gases, downed power lines, spreading fire, flooding water; warning devices to divert traffic.

Restrain bystanders from crowding, mishandling of victim. Obtain assistance of volunteers and specify tasks.

Manage relatives by allaying hysteria; reassurance; questioning and informing away from presence of victim; prevent mishandling of victim.

Avoid assuming functions of police or other authorities when they are present. Do not permit their actions to compromise care of victim.

Rescue Procedures Applicable to Ambulance Personnel

In urban areas, when specially equipped rescue vehicles may not be readily available, and in rural areas, where such vehicles are nonexistent, or valuable time might be lost in calling from the scene of the accident for equipment, ambulance personnel must be provided such light rescue equipment as may be carried on the ambulance, and they must be trained in its proper use.

When rescue from entrapment or confinement, or removal from poles, water, or other hazardous environments may be delayed, emergency care for life-threatening conditions must be carried out to the extent that access to the victim permits. Short-distance removal from immediate hazards may be necessary before emergency care can be rendered.

Ambulance personnel should not engage in rescue procedures when qualified rescue persons are present.

Short-distance removal.

Drags; manual carries; litters, improvised or standard; backboards; chair carry; ladder rescue; rope sling.

Extrication procedures.

From vehicles; building debris; electrical lines and equipment; water; vats and tanks; caissons, tunnels, wells, and caves; heights; farm and industrial machinery; locked or blocked living or working areas.

Light rescue equipment and its use.

Lifting, prying, battering, and cutting tools for release from entrapment or for forcible entry; backboards, ropes, straps for removal; portable lighting and firefighting equipment.

Medicolegal Problems

Ambulance attendants must be thoroughly informed by appropriate local legal authorities of federal laws, state statutes, and local government ordinances regulating operation of ambulance services and communication systems and standards for personnel, vehicles, and equipment.

Operation of ambulance services

General. Levels of responsibility as apply to a local government operation, a commercial enterprise, or a voluntary organization; subsidy; liability coverage.

Vehicles. Licensure; safety inspections; use of warning devices; traffic regulation compliance and exemptions; sanitation.

Communication. Violations of FCC regulations; coordination with other networks.

Personnel standards

Qualifications for employment; training requirements; certification and licensure; liability insurance; compliance with traffic laws; acts within limits of training and ability; protection under "Good Samaritan" law; abandonment.

Vehicles and equipment

Warning devices; identification symbol; safety specifications; safety devices.

Victim Care Situations

Mentally disturbed or unruly; accompaniment of females; use of restraining devices; requirements for police escort; management of alcoholics; reporting of animal bites and disposition of animal carcass; management of attempted suicide, including search, protection of records and evidence; dying declaration; disposition of dead, including assurance.

of death, authorization for movement, notification of authorities; reporting of accidents involving felonies.

Records and Reports

Adequate reporting and recordkeeping are essential duties of ambulance personnel in transferring responsibility for the victim's care to the personnel in medical facilities, in complying with the requirements of law enforcement and health departments, and in fulfilling administrative needs of the ambulance operator.

Purposes served

Furthers continuity of care; basis for correction of infractions; source of information for determining quality and adequacy of ambulance services; provides data for analysis of causes, types, and degrees of injuries and illnesses requiring emergency care; provides legal evidence.

Procedure

Must not take priority over victim care. Interrogate victim, relatives, bystanders; note pertinent statements of those not available later for full interrogation; collect suicide notes or related papers for legal authorities; note voluntary dying statement; search for emergency medical identification devices; safeguard weapons that may be or may have been involved in suicide or homicide.

Information desired

Medical facilities. Identification of victim; type of accident or nature of illness; location of victim when first seen; rescue measures preceding emergency care; care given at site and during transport; accidents during transport; disposition of victim's valuables.

Law. Information gained in absence of, or ancillary to needs of, officials: circumstances in suicide, homicide, or rape; animal bites; dying statements; statements of victim or others that may serve as testimony.

Health. Identification and circumstances required by coroner or medical examiner in case of death at scene or during transport; animal bites; radiation, chemical, or gas hazards.

Ambulance operator. Administrative records required by ambulance owner, including log of time intervals of accident, dispatch, arrival at scene, departure, and delivery to emergency department.

Section Three — In-Hospital Training Program

In-hospital training consists of observation, demonstration, and participation to the extent permitted by the professional staff. Instruction is designed: (1) to demonstrate the importance and benefits of optimal emergency care, efficient transport, and adequate reporting; (2) to emphasize the penalties of inadequate care or improper procedures; (3) to familiarize the student with the equipment used, staffing, operating policies, and procedures of the department; (4) to have ambulance personnel observe procedures in and develop skills in resuscitation, handling the unconscious, management of the mentally disturbed and unruly, and techniques of delivery and care of both the infant and mother; (5) to keep ambulance personnel abreast of new developments in equipment and emergency care, and (6) to have ambulance personnel engage in disaster drills.

Two consecutive hours of training are required at any one period in order to receive credit toward completion of a course in the assigned department.

Responsibility for conduct of this program should be assigned to the staff of the emergency department. Training areas include the emergency department, operating and recovery rooms, the intensive-care unit, the obstetrical department, and the psychiatric department.

Recommendations on Course of Action to Develop a Nationwide Training Program

The Committee on Emergency Medical Services recommends the following course of action toward implementation of a nationwide program for the training of ambulance personnel and other public servants responsible for the delivery of emergency care:

1. *Publication of a fully comprehensive textbook* that will fulfill requirements for the training of ambulance personnel to

the level of proficiency implied by the guidelines of this report. The text should be in such complete detail that the ambulance attendant can refer to it for answers to any questions that might arise and that it will serve as a basis for testing the knowledge and skills of candidates for certification or periodic recertification, and as a standard by those empowered to certify ambulance personnel in each state.

2. *Establishment of permanent training programs on a regional pattern* at hospitals and medical centers with personnel, equipment, and space sufficient to provide a full teaching faculty, lecture rooms, demonstration areas, hospital departments, and housing accommodations for trainees.

3. *Assignment of responsibility for conduct of training programs and certification of graduates* to a physician who would supervise a teaching faculty to include physicians, medical students, and paramedical personnel for training in specialized care procedures, certified American National Red Cross instructors for refresher training to the level of the advanced Red Cross first aid course; policemen, firemen, and experienced ambulance operators for training in emergency vehicle operation, control of the accident scene, and other duties of the attendant and driver not involving direct victim care; firemen, industrial engineers, and experienced rescue squad instructors for training in rescue procedures; attorneys and medical examiners for training in medicolegal liability; and communication experts for training in the use and maintenance of communication equipment. In addition, representatives of local government, civil defense, Red Cross, and other health-related organizations should provide instruction in coordination and cooperation with local and overlapping agencies in case of natural disasters, civil disorders, or national emergency.

4. *Appraisal of the level of proficiency of current ambulance personnel and institution of an interim program* on a nationwide basis to increase the proficiency of the untrained or partially trained to the level of the Advanced First Aid Course of the American National Red Cross, or its equivalent, and the course in cardiopulmonary resuscitation prescribed by the American Heart Association. Successful

completion of these courses should be a minimal requirement of all who now serve as ambulance personnel and as a prerequisite to the course of training recommended in this report.

5. *Implementation of a national training program.* A number of steps are necessary to the establishment of permanent regional training center programs: (1) preparation of the textbook described in Recommendation 1; (2) on completion of the textbook, testing of methods of instruction by conduct of pilot programs at selected centers; and (3) translation of experience gained through pilot programs into a formal program that prescribes the number of hours and sites of didactic and practical instruction, training aids, references, the format of an instructor's manual and of lesson plans, and methods of testing learning capacity and skills.

   Meantime, statewide surveys should be initiated to determine the number of ambulance personnel and others to be trained and the number and sites of training centers required for advanced and periodic refresher courses.

The Ambulance Attendant of the Future

Although the levels of proficiency to be attained by the course of instruction recommended in this report are goals that can be reached in most areas of the country within a reasonable time, the greatest potential for the saving of life and reduction of preventable disability at the scene of accidental injury or onset of life-threatening illness will not be realized until ambulance personnel are qualified to carry out measures now applied by lay assistants in emergency departments or by medical corpsmen in combat areas. They should be qualified to carry out, independently or with guidance and supervision provided by physicians through voice communication, such procedures as the giving of medication by hypodermic or intravenous routes, transfusion, decompression of tension pneumothorax, tracheal intubation, tracheotomy or cricothyreotomy, defibrillation, mechanical external cardiac compression, and control of hemorrhage.

To attain these goals, accredited hospital training programs must be established that will produce professional ambulance attendants and emergency department assistants of the caliber

of certified x-ray, laboratory, physical therapy, and other medical technicians for whom courses of instruction are accredited by the AMA Council on Medical Education. The ambulance attendant must be fully engaged in emergency care in an established career pattern that provides attractive compensation, prestige, and recognition deserving of his services as a member of the emergency care team. If the needs for ambulance services are such that he is not fully occupied, he should be an employee of a hospital where efficiency, interest, and progress will be maintained by service as an assistant in the emergency department, intensive-care unit, operating room, or other area in which injured or acutely ill patients are treated. This situation is especially applicable in small communities and rural areas, in which ambulance calls are infrequent, but where seventy percent of fatalities from vehicle accidents occur. Where the ambulance attendant is employed by the hospital, ambulances should be stationed and dispatched from the emergency department. Regional communication facilities must be so coordinated that ambulance or helicopter services can be provided to communities without hospitals or isolated areas where proper ambulances or qualified attendants are not available.

REFERENCES

Ad Hoc Committee on Snakebite Therapy, Division of Medical Sciences, NAS-NRC. Statements on first-aid therapy and on hospital care for bites by venomous snakes. 14 Dec. 1960. 8 p. mimeo; also Toxicon 1:81-87, 1963.

American Medical Association. The Wonderful Human Machine. AMA: Chicago, 1967. 56 p.

American National Red Cross. First Aid. 4th Ed. Doubleday & Co.: Garden City, New York, 1957. 249 p.

American National Red Cross. First Aid. 5th Ed. 1968 (in preparation).

American National Red Cross. Life Saving and Water Safety. Doubleday & Co.: Garden City, New York, 1937. 20th Printing 1966. 248 p.

American National Red Cross. Swimming and water safety. American National Red Cross: Washington, D. C. 1968. 152 p. (in press).

Artz, Curtis P., and Eric Reiss. The Treatment of Burns. W. B. Saunders Co.: Philadelphia, 1957. 250 p.

Bowers, Warner F., and Carl W. Hughes. Surgical Philosophy in Mass Casualty Management. Charles C Thomas: Springfield, Illinois, 1960. 204 p.

Cadmus, Robert R., and John H. Ketner. Organizing Ambulance Services in the Public Interest. North Carolina Hospital Education and Research Foundation, Inc.: Chapel Hill, North Carolina, January 1965. Final Report—USPHS Grant CH-35-5. 84 p. and App.

Cardiopulmonary Resuscitation. Statement by the Ad Hoc Committee on Cardiopulmonary Resuscitation of the Division of Medical Sciences, National Academy of Sciences-National Research Council. JAMA 198:372-379, Oct. 24, 1966.

Casualty Services and their Setting. A study in Medical Care. Nuffield Provincial Hospitals Trust. Oxford Univ. Press: London, 1960. 135 p.

Cole, Warren H., and Charles B. Puestow. First Aid. Diagnosis and Management. Sixth Ed. Appleton-Century-Crofts: New York, 1965. 455 p.

Committee on Acute Medicine, American Society of Anesthesiologists. Recommendations on community-wide emergency medical services. JAMA 204:595-602, May 13, 1968.

Committee on Cardiopulmonary Resuscitation, American Heart Association. Cardiopulmonary Resuscitation. A manual for instructors. American Heart Association: New York, 1967. 71 p.

Committee on Cardiopulmonary Resuscitation, American Heart Association. Emergency measures in cardiopulmonary resuscitation. Discussion Guide. American Heart Association: New York, 1965. 17 p.

Committee on Cardiopulmonary Resuscitation, American Heart Association. Emergency resuscitation team manual: a hospital plan. American Heart Association: New York, 1968. 51 p.
Committee on Cardiopulmonary Resuscitation, American Heart Association. Training of ambulance personnel in cardiopulmonary resuscitation. American Heart Association: New York, 1965. 14 p.
Committee on Trauma, American College of Surgeons. The Management of Fractures and Soft Tissue Injuries. Second Ed. W. B. Saunders: Philadelphia, 1965. 232 p.
Committee on Trauma, American College of Surgeons. Minimal equipment for ambulances. Bull. American College of Surgeons. 52:92-96, 1967.
Committee on Trauma and Committee on Shock, Division of Medical Sciences. Accidental Death and Disability: The Neglected Disease of Modern Society. National Academy of Sciences-National Research Council: Washington, D. C., 1966. 38 p.
Curry, George J., Compl. and Ed. Immediate Care and Transport of the Injured. Charles C Thomas: Springfield, Illinois, 1965. 187 p.
Delear, Frank J. The New World of Helicopters. Dodd, Mead & Co.: New York, 1967, 80 p.
Department of the Army, FM 8-35. Transportation of the Sick and Wounded. Headquarters, Dept. Army. U. S. Government Printing Office: Washington, October, 1966. 170 p.
Department of Defense, Office of Civil Defense. Basic Rescue Course Instructor's Guide. IG-14.1. U. S. Government Printing Office: Washington, 1964. approx. 50 p.
Department of Defense, Office of Civil Defense. Emergency Rescue Training. SM 14-1 (Pocket Ed.) (formerly PM-2). U. S. Government Printing Office: Washington, 1961. (reprinted 1963) 53 p.
Department of Defense, Office of Civil Defense. Rescue Skills and Techniques. FG-E-11.1 (formerly TM-14-1). U. S. Government Printing Office: Washington, 1964. 81 p.
Department of Defense, Office of Civil Defense. Light Duty Rescue Course Instructor's Guide. IG-14.2. U. S. Government Printing Office: Washington, 1964. 45 p.
Department of Hospitals and Medical Facilities, American Medical Association, Ed. Proceedings American Medical Association's Conference on Emergency Medical Services. April 6-7, 1967. AMA: Chicago, 1967. 58 p.
Department of National Health and Welfare, Canada. Management of Human Behavior in Disaster. Emergency Health Services, Dept. National Health and Welfare: Ottawa, 1967. 133 p.
Farrington, J. D. Death in a Ditch. Bull. American College of Surgeons. 52:121-130, May-June 1967.
First Aid for Laryngectomees. International Association of Laryngectomees. American Cancer Society: 219 E. 42nd St., New York, N. Y., 1962. 10 p.

Garb, Solomon, and Evelyn Eng. Disaster Handbook. Springer Publishing Co.: New York, 1964. 148 p.

Gordon, Archer S., Ed. Cardiopulmonary Resuscitation. Conf. Proc. May 23, 1966. National Research Council: Washington, 1967. 232 p.

Gowings, Dan D., Ed. Ambulance Attendant Training Manual. Pennsylvania Department of Health Training Manual. (undated, after 1964) 120 p.

Kennedy, Robert H., Ed. Emergency Care of the Sick and Injured. A Manual for Law Enforcement-Officers, Fire-Fighters, Ambulance Personnel, Rescue Squads and Nurses. Committee on Trauma, American College of Surgeons. W. B. Saunders Co.: Philadelphia, 1966. 128 p.

Kossuth, L. C. Aquatic rescue of injured personnel. J. Med. Assoc. Alabama 35:748-755, Mar. 1966.

Kossuth, L. C. Removal of injured personnel from wrecked vehicles. J. Trauma 5:703-708, Nov. 1965.

Lewis, Arnold M., Jr., Ed. Immediate Care of the Sick and Injured. (A course guide). Kansas Medical Society and the Medical Society of Sedgewick County, 1966. 123 p.

McCarroll, James R., and Paul A. Skudder, Eds. The Treatment of Mass Civilian Casualties in a National Emergency. Trauma Research Group, Cornell University Medical College. USPHS, Div. Health Mobilization. Contract SAph 73885. (undated) 108 p.

Medical Self-Help Training Courses, Lessons 1-11, Public Health Service, 1964.

Meerloo, Joost A. M. Mental First Aid Toward Balance in a Dizzy World. Hawthorn Books, Inc.: New York, 1966. 312 p.

Ohio Trade and Industrial Education Service, Div. Vocational Ed., State Department of Education. Emergency Victim Care and Rescue. Textbook for Squadmen. 1965. 327 p.

Owen, Joseph K. Community Emergency Medical Services—A Challenge to the Hospital Staff. Milit. Med. 132:335-340, 1967.

Plaas, Hyrum, Project Director. Services to Emergency Patients in Nevada. A Program for Study and Action. (Final Report—Phase I—Summary) USPHS Contract No. PH 108-164-106. Bureau of Governmental Research, University of Nevada: Reno, June 1965. 74 p.

Raker, John W., Anthony F. C. Wallace, and Jeannette F. Rayner. Emergency Medical Care in Disasters. A summary of recorded experience. Disaster Study Number 6. Committee on Disaster Studies. National Academy of Sciences-National Research Council: Washington, D. C., 1956. Publ. 457. 75 p.

Safar, Peter, and R. A. Brose. Ambulance design and equipment for resuscitation. Arch. Surg. 90:343-348, March 1965.