Immediate care of the SICK AND INJURED CHILD

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To our parents

Preface

Emergency room services are being increasingly utilized not only for acute problems, but also for nonacute situations. The president of the American Hospital Association, J. Alexander McMahon, stated that the "hospital emergency room might be dubbed 'the department of available medicine.'" Because of this trend, it is becoming quite apparent that community physicians must now keep up with increasing demands for up-to-date acute care. This manual has been prepared to help the busy practitioner attend to pediatric emergencies in a practical, uncomplicated manner.

In this manual, the pathophysiology of each disease has been included whenever possible, since we believe that this background is necessary for one to be able to understand the emergency problem and to manage the patient.

Many sources in the literature have been tapped to prepare this manual; a few of them have been indicated by appropriate references. The more accepted mode of therapy has been mentioned whenever possible, to avoid confusing the reader.

Part One of this manual deals with some of the general aspects of emergency services. Part Two outlines suggestions for the workup of some of the more common symptoms in children who are brought to the emergency room. Part Three discusses some specific surgical and medical emergency situations encountered in pediatrics and gives the etiology, pathophysiology, and management of these emergencies. Laboratory values (in children), drugs used frequently in the emergency room, and procedures are included in the appendixes.

Grateful acknowledgment is extended to all who have participated in the preparation of this manual. Special thanks are due to Ms. Ida M. Greenberg, Assistant Librarian, The Jewish Hospital and Medical Center of Brooklyn and to Ms. June M. Rosenberg and Dr. Charles King of the State University of New York, Downstate Medical Center for their unabated help in searching the literature. For their typing assistance, we extend thanks to Ms. D. Wynter, Ms. K. Waldron, Ms. G. Davis, and Ms. C. Torman. For the preparation of the illustrations we would like to acknowledge the work of Henry Iwanicki and Marvin Ehlin. The encouragement of our colleagues, Dr. F. Tunick (Director of the Children and Youth Program) and members of the Department of Pediatrics at the Jewish Hospital and at the Downstate Medical Center, is also deeply appreciated.

Finally, we warmly thank our family members, Mrs. Promila Dube, the Pierogs, and the Fanellis, for their abiding patience, which has sustained us through the preparation of this manual.

Shiv K. Dube
Sophie H. Pierog

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PART ONE

INTRODUCTION

1 Emergency services for children

EUGENE GARROW
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Emergency services for a community are usually established within a hospital and are prepared to cope primarily with patients arriving with medical and surgical emergencies. In many urban settings, a hospital emergency room may even act as the primary physician, delivering care to the walk-in patient with real or imaginary medical problems. In the planning for or expanding of emergency room services, broad representation may be necessary from the community consumers as well as from hospital providers (physicians and administrators) and community providers such as the police and fire departments. The size, geography, population density, and availability and ease of transport in the areas involved, along with consideration of the state of existing facilities, should determine whether emergency services can be regionalized. Political considerations may also have some influence, especially because of the expense and difficulty in maintaining these facilities at optimal functional levels. The geographic location and the social milieu of the emergency room services change the character of emergency admissions. For example, in an inner city setting, trauma may be caused by problems in social interaction (such as stabbings and other violent crimes); whereas in a rural area, trauma may be caused by high speed (highway accidents) or may be related to farm work.

Children are frequent patients of emergency services and require treatment for a variety of problems. Since childhood is a period of growth and development spanning from the newborn to the adolescent, the problems presented in the emergency room by the various age groups are different. The most frequent emergency of a child from infancy to 1 year of age is fever, along with respiratory distress (as in croup) and dehydration from diarrhea and/or vomiting. The toddler comes with similar problems. In exploring his world, however, he is more accident-prone and may ingest poisons or may fall and sustain injuries. Once the child begins to attend school, he is usually involved in athletic activities, has a bicycle, and may be injured in a variety of ways. The adolescent, who is experiencing a greater freedom of movement, engaging in sports activities, becoming more sexually aware, and conforming to the mores of his "pack," may also be prone to injury, may be more sexually active, and may even begin to use drugs to "turn on."

The American College of Emergency Physicians (ACEP) and the University Association for Emergency Medical Services were formed in response to the need of physicians practicing emergency medicine. In July 1973, the American Medical Association Council on Medical Education developed standards for residency training programs in emergency medicine; after approval by the AMA House of Delegates, these standards were recommended to the two organizations for implementation in such training programs. In 1974, the Committee on Public Policy of the ACEP prepared an article, "Emergency Medical Services: Problems, Programs, and Policies."

Emergency services must be equipped for delivery of critical care and should be staffed by competent personnel. These services should be easily accessible to the community and should have adequate space to provide the facilities needed for a particular area based on demographic studies. According to

the American Hospital Association, there has been a 103% rise in the use of out-patient facilities; thus, hospital facilities, including the emergency room, have probably developed space problems in attempting to accommodate an increased number of patients in a limited area. Though there are no definite standards yet promulgated for the type of facilities that are needed in an emergency room, the emergency department should at least be accessible to all local forms of transportation and coordinated with freestanding first-aid facilities and satellites.

Within the emergency room, special care units or areas may need to be developed, such as burn units, trauma units, pediatric emergency care centers, and "holding" areas. Thus, when a patient is "triaged," his immediate needs are assessed and met in these areas, which are specially equipped for a particular problem.

Transportation of the patient is an extremely important consideration. Many types of conveyances can be used depending on the area, terrain, density of the population, and so on. Whatever transport vehicles are used, hospitals and community agencies (such as police and fire departments) should coordinate their efforts to avoid costly duplication of services. These transport vehicles will need to be well equipped to provide critical care on the spot, if necessary; they will need qualified personnel to man the vehicles; and they will need a good two-way communications system for any problems that may arise during transport.

There is no doubt that emergency services (as a critical care area) will need highly specialized and skilled personnel in adequate numbers to service the injured and ill patients arriving for emergency care. Physicians, nurses, emergency medical technicians (EMTs), social service workers, and other paramedical personnel may be integrated into a cohesive group to plan for community emergency services and to render good medical care to those people who need emergency care.

In most hospitals, a physician is usually assigned to the emergency room as his primary responsibility. Large regional and/or teaching hospitals often delegate responsibility for the emergency room to a department of community medicine. This is highly appropriate, since emergency care is a service to the community. A director or chief of community medicine may also designate a physician to take charge of administering and coordinating the services of the emergency room. Although the emergency room has previously been in the jurisdiction of surgery (since so many emergencies are surgical in nature), the physician in charge of the emergency room should have broad experience, including administrative experience, to coordinate this complex "acute care" unit. Hopefully, as more and more physicians are trained in emergency medicine, emergency rooms can avail themselves of such physicians to take charge of these services. Provision can then be made by the physician in charge for 24-hour physician coverage based on patient demands (in that demographic area) and hospital capabilities.

The personnel in the emergency room, as in any intensive care unit, should all have specific training for their work. Critical care courses should be prerequisites for nursing jobs in these units. The recommended curriculum may be found in a handbook sponsored by the American Association of Critical Care Nurses. Courses are usually offered by the regional centers that have critical care units. A certificate of competence is given on the successful passing of an examination sponsored by the national organization. Additional training and refresher courses are desirable for all personnel. Critical care nursing associations foster dissemination of additional knowledge.

The current standard for "first responders" to emergency calls is anyone with basic cardiopulmonary resuscitation (CPR) knowledge. The base of individuals with this knowledge may be increased by training the public and persons in charge of athletics, physical education, and recreation facilities in addition to all nurses and hospital personnel. Courses for the public are available

through local fire departments, the American Red Cross, the American Heart Association, local medical schools, the ACEP, emergency departments, and nurses' associations. Ambulance personnel should have EMT training. The standard of training for EMTs presently accepted by the National Registry of EMTs includes passing a written examination and a test of practical skills in airway maintenance, artificial ventilation, external cardiac massage, hemorrhage control, treatment of shock, immobilization of suspected fractures, wound care, emergency childbirth, and initial care of burns and poisonings. As an example of adequate training, in Massachusetts a candidate must successfully complete an 81 hour course that includes at least 26 hours in lectures by local physicians, 40 hours in supervised practice of skills, and 10 hours of observation and instruction in a hospital.

As in all hospital clinical services, education plays an important role. The emergency room staff should be responsible not only for their own on-going education but also for the education of the community. Emergency physicians and staff should be encouraged to participate in community health education programs. Assessment of the quality of care in the emergency room should also be a responsibility of the emergency room staff. Minimal standards of care should be developed and evaluation done periodically by peer groups to assess the level of care being given in the hospital emergency services as well as that being given by other community services such as the police and fire departments. The AMA Commission on Emergency Medical Services has developed a categorization of emergency services:

I. Comprehensive emergency service
II. Major emergency service
III. General emergency service
IV. Basic emergency service

These categories can be used as guidelines to establish standards for a specific area.

The survival of a critically injured person or child and the decrease in morbidity and debilitating sequelae of an acute illness or accident depend on the emergency service agencies of a particular community. Close coordination and cooperation between the staffs of these agencies (police officers, ambulance attendants, and hospital emergency room staff) are imperative to deliver quality care to the community.

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