



PRACTICAL PARAMEDIC PROCEDURES

JONATHAN WASSERBERGER
DAVID H. EUBANKS

SECOND EDITION

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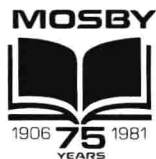
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PRACTICAL PARAMEDIC PROCEDURES

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Formerly, Jonathan Wasserberger was the principal instructor in the Paramedic Training Program of Miami-Dade Community College while riding as an emergency physician with the Mobile Emergency Medical Service of the Miami Beach Fire Department. Presently he is an assistant professor in the Emergency Medicine Residency Training Program of the new Charles R. Drew School of Medicine. He is a practicing emergency physician in Los Angeles. He also holds a faculty position in the Trauma Service of Martin Luther King, Jr., General Hospital and is Codirector of Paramedic-Base Station Operations at that institution. He is a member of the American College of Emergency Physicians, the Society of Teachers of Emergency Medicine, and the American Academy of Clinical Toxicology. He is eligible to take the American Board of Emergency Medicine.

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As the dean of Emergency and Critical Care Technologies at Miami-Dade Community College, he, in cooperation with local EMS agencies, was instrumental in developing and instructing college-based emergency medical technician and paramedic training programs.

He has served with the National Registry of Emergency Medical Technicians as a member of the Ad Hoc Committee on Advanced Training and as a program reviewer for Dunlap and Associates of Darien, Connecticut, in their work on EMS education. He served as the Director of Education for Bird Corporation in Palm Springs, California, where he was involved as a consultant and instructor in emergency medical equipment.

He is past president of the American Association of Respiratory Therapy and currently

V

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He was coordinator and co-writer for the publications *Emergency Medical Technician II Modulator Curriculum* and *The Role of Respiratory Therapists as Emergency Medical Technicians*.

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To my professor

Kenneth F. Lampe

JON

To my grandmother

Margie Hudson

DAVE

FOREWORD

The need for more and improved emergency care was not clearly seen by health care professionals until recently. Before that realization, emergency care providers had to labor on their own with little or no support from the mass of doctors, nurses, and administrators. Their task was primarily one of locating the ill and injured and delivering them to a facility capable of rendering definitive care. The addition of basic and advanced levels of care, properly structured and coordinated, forms the basis for prehospital emergency care systems.

The present era is characterized by a high level of activity, especially at the planning and implementation level. It is still early in the development of evaluation and research into improved and new methods for delivering appropriate therapy in the field.

Instruction appropriate to the needs of these new health technicians is important. This textbook is designed to provide practical but in-depth instruction for the paramedic as a new student or for continuing education purposes. I am particularly pleased that the text is authored by persons who are both knowledgeable and experienced. It reminds me of my words spoken to a recent graduating class of paramedics in Los Angeles:

“When will this new specialty come of age? In my view, the maturing process will be signaled by the EMT’s entering the supervision, administration, design, and training phase of emergency health delivery system operation. Note my use of the word ‘enter’ as distinguished from ‘dominate.’ Emergency health care should always be a partnership or cooperative effort among many groups, of which the EMT is an obviously important contributor. The important fact is the EMT’s involvement in more than just operations. This clearly means that some EMTs will have to acquire additional training in other aspects of health care delivery, administration and management systems, and the acquisition of supervisory skills. The entry of significant numbers of EMT trained individuals into the higher echelons of emergency health delivery systems marks significant progress. If they were not only trained, but experienced, that would be even better!”

It is to the paramedic, for whom this book is written, that I look for increasing input, meaningful redesign, improvement, and leadership.

Eugene Nagel, M.D.

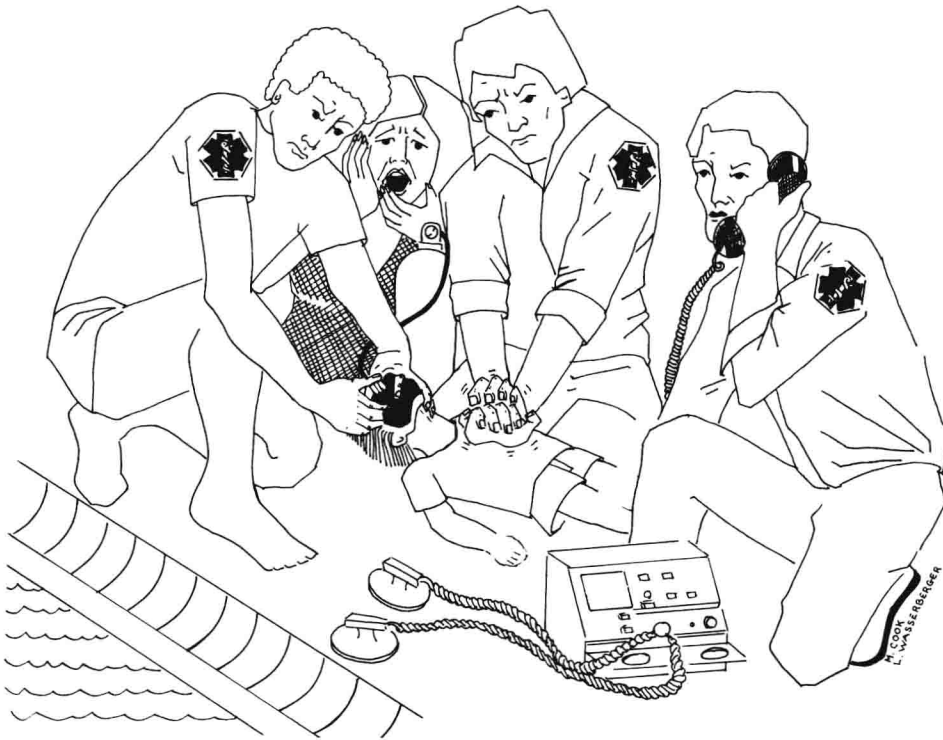
PREFACE

Paramedic 1 to general hospital. "We are working a cardiac arrest in a 6-year-old boy. He is apparently a drowning victim. He is cyanotic, his pupils are dilated, and he has no carotid pulse. CPR has been started. Stand by for an EKG."

Emergency physician to paramedic 1. "The EKG shows ventricular fibrillation. Start an

IV with D5W, then give 0.2 milligram of epinephrine IV, followed by 20 milliliters of sodium bicarbonate. Defibrillate with 40 watt-seconds. Then send another EKG."

The purpose of this text is to introduce paramedic trainees to the techniques of pre-hospital emergency medicine as part of an effort to try to prevent premature sudden death—the ultimate crisis.



The material in this text is designed to be taught to practicing, registered emergency medical technicians (EMTs) as an introduction to a paramedic curriculum that can be presented in approximately 100 hours of additional instruction following a course that meets the requirements for the National EMT-A Registry. As such, its intention is to supplement the knowledge and skills presented in most level 1 EMT textbooks.

The paramedic procedures described herein are primarily aimed at maintaining and restoring adequate circulation of oxygenated blood to the brain of a victim of major illness or injury in the prehospital environment. The patient stabilization methods detailed by the following pages emphasize:

- Recognition of common life-threatening disease processes.
- Evaluation of the patient's pulmonary and cardiac function.
- From-the-scene communication techniques to enable the paramedic to achieve maximum assistance from emergency department personnel.
- Establishment of effective ventilation and circulation using patient positioning, mechanical devices, intravenous lifelines, drugs, and solutions, and MAST.

It is mandatory that paramedics using the medical information in this text:

- Function under the supervision of a physician, on the scene, by direct radio communication, or from preauthorized written orders.
- Function within the confines of the laws of their community.
- Adhere to the standards of personal ethics and skills that will reflect credit upon the profession.
- Provide prehospital emergency services with respect for human dignity.

- Work closely with other health professionals in efforts to facilitate a community-wide plan for instructing citizens when to use a rescue system and how to effectively perform cardiopulmonary resuscitation before the arrival of the paramedic team on the scene.

We do not claim originality for the material presented, for we are indebted to the many persons who have devoted a major portion of their lives relieving suffering in the prehospital phase of illness and injury.

For initiating ideas herein expressed, we are particularly indebted to rescue fireman Randolph Boaz, Capt., Miami Fire Department; James Healy, R.N., Miami Dade Community College; Kenneth McCoullough, Chief, Miami Fire Department; Dwight Ponsell, Jacksonville Fire Department; Alvin Ridgway, Chief, Miami Beach Fire Department; and Manuel Padron (deceased), Capt., Miami Fire Department; to educators Gaylord Ailshie, Col., U.S. Army, Retired, and Kenneth Lampe, Ph.D., Department of Pharmacology, University of Miami School of Medicine; to nurses Linda Centore, Langley Porter Neuropsychiatric Institute, San Francisco; June Rosario, Health Program Specialist, Florida Division of Health and Rehabilitative Services; and Jeanine Solomon, R.N.; and to physicians Clifford Findeiss, Advisor, Dade County Fire Rescue Department; James Hirschman, Advisor, Coral Gables Fire Rescue Department; Laurence Malmuth, Department of Anesthesia, University of Miami School of Medicine; Eugene Nagel, Chairman, Department of Anesthesia, Johns Hopkins University School of Medicine; Clyde Schoenfeld, Department of Cardiology, Mt. Sinai Hospital, Miami; David Wagner, Director, Acute Care Training Program, Medical College of Pennsylvania;

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tin Luther King, Jr., General Hospital; John A. Williams, Codirector, Paramedic Operations, Martin Luther King, Jr., General Hospital; and M. Alfred Haynes, Dean of the Charles R. Drew School of Medicine.

To Trudi Neiverth, who spent many patient hours typing this manuscript; to David Spilver, who nursed this project through its infancy; and to many others, especially our students whose individual contributions are too numerous to be detailed here, we express the deepest gratitude and hope that this manual may be useful in their continued efforts to improve emergency patient care through education.

For the emotional support we both needed during the endless hours and over the infinite miles it took to rewrite the first edition, we are indebted to the tolerance of Jacquelyn Eubanks and Judith Ann Scharfenberger.

Jonathan Wasserberger
David H. Eubanks

PRACTICAL PARAMEDIC PROCEDURES

CONTENTS

1 Assessment and communication, 1

Assessing the patient, 1
Telemetry, 9
EKG rhythm strip interpretation, 13

2 Prehospital treatment of major medical emergencies, 26

Acute myocardial infarction (MI), 26
Angina pectoris, 28
Pulmonary embolism, 28
Cardiac syncope, 28
Pulmonary edema, 29
Congestive heart failure (CHF), 33
Near drowning, 33
Asthma, 33
Emphysema, 35
Stroke, 36
Seizures, 36
Shock, 39
Respiratory arrest, 42
Cardiac arrest, 51
Resuscitation of the brain, 63

3 Paramedic equipment and skills, 71

Gas-powered compressor/ventilator, 71
Portable defibrillators, 73
Pulmonary resuscitators, 75
Airways, 79
Pediatric resuscitation: equipment and techniques, 94

4 Oxygen therapy equipment, 102

5 General pharmacology, 110

Intravenous solutions, 110
Indications and contraindications for use of specific IV solutions, 117
Drug terminology and packaging, 120
Sedatives, analgesics, and narcotic antagonists, 124

6 Cardiovascular pharmacology, 128

7 Pharmacologic approach to ventricular fibrillation and cardiac arrest, 148

Ventricular fibrillation in an adult, 148

Sodium bicarbonate, 149

Intracardiac injection, 151

Postresuscitation care of the cardiac arrest victim, 152

8 Treatment of atrial tachycardia, 154

9 Pacemaker failure, 158

10 Trauma, 162

Evaluation of the trauma victim, 162

Triage, 165

11 Toxicology, 176

Appendix A Pharmacology review, 189

B Emergency medical technician II rescue practicum performance evaluation record, 191

C Self-evaluation exercises, 199

Selected bibliography, 213

Chapter 1

ASSESSMENT AND COMMUNICATION

■ ASSESSING THE PATIENT

Upon completion of this discussion, the student will be able to . . .

- rapidly report a patient's condition via telemetry radio
- define what constitutes a good radio report
- establish the relationship between EKG monitoring, electrical activity of the heart, and cardiac output
- explain the physical and clinical signs presented by various medical emergency victims

Many mobile intensive care units have been developed under the assumption that the paramedic on the scene will be administering medication under the supervision of a physician via radio or standing orders. For the physician to give the paramedic the best possible assistance over the radio, it is essential for the paramedic to rapidly, accurately, and *concisely* relay information to the physician about the patient and the surrounding circumstances. Slow, haphazard reporting of data wastes critical minutes and can result in the physician's receiving an inadequate verbal picture of the situation. All radio reports should include the following basic information about the patient and emergency. Each category will be subsequently explained in more detail.

1. Approximate age of the patient
2. Nature of the problem (why the paramed-

ic was called—the “chief complaint”) and the duration of the complaint

3. Mental status (level of consciousness)
4. Vital signs, including EKG rates and rhythm
5. Other information, such as the patient's current prescriptions, known allergies, and the estimated time of arrival (ETA) at the receiving hospital

AGE

Determination of the patient's age helps the physician to categorize the disease process and to determine the proper dose of any medications that may be needed. Elderly patients and children usually need smaller doses of medication than do middle-aged or younger adults.

PROBLEM

Determine the “chief complaint” (what is bothering the patient), for example, chest pain, abdominal pain, difficulty breathing, bleeding, or unconsciousness. Report how long the patient has had the complaint, for example, “chest pain for past half-hour.” If the patient is unable to respond, useful information may be gathered from others present.

MENTAL STATUS

The patient's level of consciousness may be reported as (1) awake, (2) drowsy, or (3) unconscious. If the person is awake, behavior can be classified as appropriate or inappropriate. The drowsy person responds to vocal commands. The unconscious person either responds to minimal pain or to deep pain, or does not respond to pain. In any disease, the patient with a decreased level of consciousness is more seriously ill than the patient whose level of consciousness is not affected. A change in mental status from "awake" to "sleepy" may be the first subtle sign of hypoxia, significant head trauma, internal bleeding, heart failure, drug overdose, or carbon dioxide retention.

VITAL SIGNS

Respirations

As the patient is approached, lip color and approximate rate of respiration are observed. If the patient's lips are cyanotic (bluish) or pale (white), the patient may need oxygen or ventilation before any further evaluation is made. A blue color of the patient's skin or lips suggests that the blood present is not being oxygenated satisfactorily. A pale white color of the lips indicates severe hemorrhage, hypovolemia, or shock. A patient who is not breathing is said to be apneic. Apnea is treated by immediate artificial ventilation. The same is true of unconscious patients with shallow respirations, for example, breathing rates of less than ten breaths per minute.

Victims of crushing chest injuries are observed for symmetry of respirations. Normally the chest expands equally on both sides during inspiration. However, if one side collapses on inspiration while the other side inflates, the patient is said to have para-

doxical respiration. This indicates that the patient has a life-threatening flail chest, which requires supplemental oxygen and possibly positive pressure ventilation to stabilize the chest if the patient is not adequately ventilating on his own.

Tachypnea (rapid respiration) is present in many disease states, such as heart failure, asthma, pneumonia, shock, aspirin poisoning, and the hysterical response known as hyperventilation syndrome (Fig. 1-1). In hy-

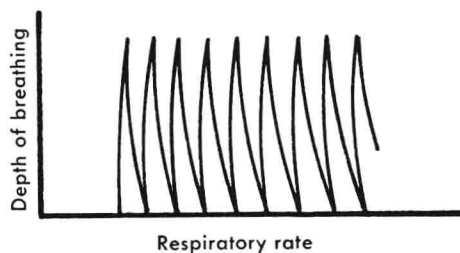


Fig. 1-1. Hyperventilation syndrome.

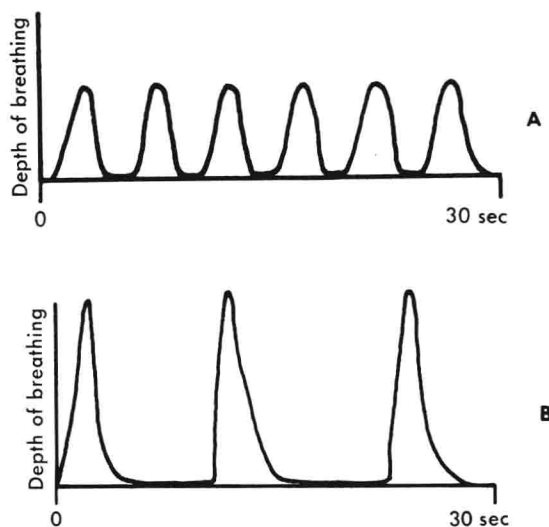


Fig. 1-2. A, Normal breathing pattern. B, Kussmaul's respiration.

perventilation syndrome the patient's lips are usually pink with numbness of the mouth and hands, possibly combined with cramps of the extremities.

Kussmaul's respiration is heavy, deep breathing with signs of air hunger (Fig. 1-2). Usually this is a sign of diabetic ketoacidosis.

A person who stops breathing for a few seconds and then establishes a continuous pattern of first deep, then shallow, respirations with regularly occurring pauses demonstrates Cheyne-Stokes respiration. This is seen in acute diseases involving the heart, lungs, or brain (Fig. 1-3).

Biot's respiration is an irregular pattern of apnea followed by alternating periods of four or five breaths of identical depth (Fig. 1-4). This breathing pattern is similar to Cheyne-Stokes respiration and is seen in patients with increased cranial pressure from trauma or disease.

Adequate ventilation is based on a proper

balance between rate and depth of breathing for a given patient. If in doubt as to the effectiveness of ventilation for a given patient, the paramedic should give oxygen and assist the patient's ventilatory efforts with intermittent positive pressure breathing.

In emergency situations, patient evaluation and treatment often take place simultaneously, with the primary concern being patency of the patient's airway and adequacy of ventilation. Respiratory assistance must precede blood pressure determinations, electrocardiographic analysis and telemetry communications, and intravenous fluid and drug therapy.

Pulse

In the unconscious patient, assessment of skin color, determination of the presence or absence of respirations, and palpation of the carotid pulse are performed simultaneously. If there is no carotid pulse, the paramedic may wish to check for a femoral pulse to con-

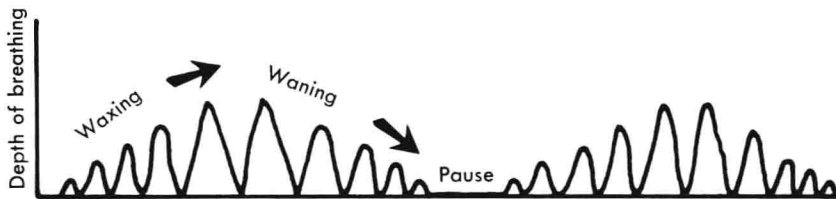


Fig. 1-3. Cheyne-Stokes respiration.

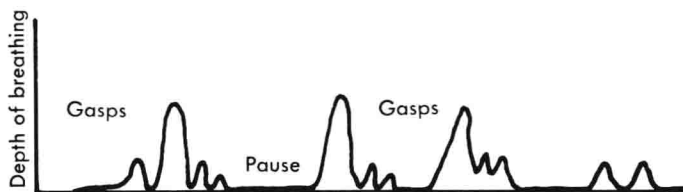


Fig. 1-4. Biot's respiration.