MEDICAL EMERGENCY MANUAL

THIRD EDITION

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Medical Emergency Manual

Differential Diagnosis and Treatment

Third Edition

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Medical Emergency Manual

Differential Diagnosis and Treatment

Third Edition

Dedicated to all those
physicians-in-training
who have ever shared the feelings
of a certain fourth-year medical student
we once queried.
When asked how he would cope
with a specific emergency
he replied anxiously and without hesitation
"I would call a doctor!"

Preface to the Third Edition

A major change in the organization of Emergency Medical Services at Temple University Hospital has taken place since the publication of the second edition of this manual. A full-time Emergency Department Director and his staff of attending physicians now supervise all emergency care and serve as the catalysts of an active teaching program. With this resource in mind, I asked Dr. Morris A. Swartz, a former Chief Medical Resident and first Director of Emergency Medical Services, to head the team to revise the *Medical Emergency Manual.* He selected all of the contributors from the Emergency Department attending staff, instead of from the residency staff as was done in the past. Thus, the perspective of the manual has shifted to reflect the actual practice of individuals engaged in full-time emergency medicine. Dr. Mary E. Moore, editor of the first two editions of the Manual and now Professor of Medicine, has continued as co-editor. Her help has been invaluable in bridging the gap between the sophisticated approach of the professional emergency medicine physicians and the basic needs of the senior medical student and intern to whom this manual is directed.

The popular format of the previous editions has been retained. Each of the first seven chapters (Part 1) focuses on the patient's presenting problem and works through a differential diagnosis. The next eleven chapters (Part 2) detail the management of more specific medical emergencies. The text has been almost entirely rewritten with addition of more pertinent pathophysiology and updating of management principles. A new chapter, "Thermal Illness," has been added. Recently introduced therapeu-

tic options, such as thrombolytic therapy, MAST trousers, peripheral intravenous vasopressin, and calcium-channel blocking drugs are detailed. New diagnostic techniques such as computerized tomography have been included. Despite its compact nature and size, the book remains very readable and is well cross-referenced. With the publication of this third edition, it appears that *Medical Emergency Manual* has become a Temple tradition.

SOL SHERRY, M.D.

Preface to the Second Edition

One of the criticisms leveled at the highly successful first edition of this manual was that much of the advice offered was arbitrary and the material written in a cookbook style. We would readily agree with this assessment. However, our view is that such features are desirable in an emergency manual. Accordingly our medical residents who, from the vantage of the "firing line," authored this manual have attempted to present clearly and succinctly at least one acceptable approach to the major medical emergencies. They thus offer our readers, their colleagues in other institutions, a practical, reasonable approach to most of the medical problems encountered in an active Emergency Room. We assume that after the "crisis" is over, the readers will have the time to peruse other literature (selected references have been provided at the end of each chapter) and to consult their own local authorities for alternative approaches and the pros and cons of choosing among them.

The present volume preserves the format of the first edition. The first seven chapters (Part I) approach the emergency situation in terms of the patient's presenting problem and stress differential diagnosis. The last nine chapters (Part II) deal with the situation at a stage when the problem has been specifically identified and emphasize treatment. Changes in the second edition involve primarily an updating of the drugs, choice of therapeutic and diagnostic procedures, and the literature references. In addition, some new discussion has been added to the topics previously covered. For example, Chapter 2 on shock includes "Heat Stroke"; the chapter "The Patient with Chest Pain" includes unstable angina as part of the

differential diagnosis; the chapter "The Drug-Intoxicated Patient" discusses intoxication with the tricyclic antidepressants. The small dose, intramuscular treatment of ketoacidosis has been added to the chapter on diabetes. Nitroprusside has been included as an agent to be used in the treatment of hypertensive crises. The section on gastrointestinal bleeding makes mention of selective intra-arterial vasopressin therapy.

The revisions which comprise the second edition have been the work of our Chief Medical Residents for the years 1974–75 and 1975–76; for this edition, these residents served as junior editors under the supervision of Dr. Mary E. Moore. Dr. Moore, a resident when she was the editor of the first edition of the manual (begun in 1968 and published in 1972), is now an Associate Professor.

In addition to all those who assisted in putting this edition together, thanks also go to the faculty advisors who reviewed the present manuscript as it pertains to their subspecialty areas; these include Drs. Marc A. Flitter, William Hammer, Alfred A. Bove, Charles Egoville, Michael T. McDonough, Robert S. Fisher, A. Rab Chowdhury, Kenneth Kessler, Howard Warner, Allen B. Cohen, Mordecai M. Popovtzer, Joseph U. Toglia, Charles Shuman, C. P. Bastl, Morris A. Osborn, and Richard A. Kern.

Preparation of the manuscript was under the direction of Mary Elizabeth McKeen, whose skill and patience are very much appreciated.

SOL SHERRY, M.D.

Preface to the First Edition

In 1968, upon assuming the Chairmanship of the Department of Medicine at Temple University School of Medicine, I instituted a daily Morning Report with the medical residents. In addition to discussing their most interesting diagnostic problems, the residents who had been "on call" presented for review the emergency cases of the previous evening. It soon became apparent that many emergency problems recurred time and again, giving rise to similar therapeutic considerations; as a result, it was deemed advisable to crystallize our discussions into a series of written guidelines. From such a beginning, this manual was born. The medical residents who expressed interest in the project were assigned topics and each prepared a chapter; these were reviewed by members of the attending staff and senior residents and revised by a house staff Editorial Committee headed by Dr. Mary E. Moore as Editor and including Drs. Richard Berman, Robert Fisher, David Lowenthal, Leon Malmud, and Kenneth Maurer.

The virtues and limitations of this manual are related to its authorship, i.e., a house staff who man the medical "firing line." They have stressed, quite practically, one or two acceptable approaches to each problem rather than attempting to survey and evaluate all available modes of diagnosis and therapy. They may be accused of being dogmatic but rarely of being indecisive. When they call attention to certain pitfalls and precautions, it is because they themselves have sometimes erred and wish by their warning to save their colleagues from the same fate.

The manual is divided into two parts. Part I approaches the emergency situation in terms of the patient's presenting problem and stresses differential diagnosis. Part II deal with the situation at the stage when the problem has been more specifically identified and emphasizes treatment. This distinction is not always easy to maintain, however, and cross references are provided between the sections where discussions overlap.

The manual is primarily designed to teach the medical student and assist the medical intern, but it should also be of interest to the medical resident, until the time when he has confidence in his ability to manage all types of medical emergencies.

Those house staff members who contributed to chapters included Drs. Fred Bove ("The Comatose Patient"), Robert Wright ("The Patient in Shock"), Walter Janusz ("The Patient with Chest Pain"), Allan Pristoop ("The Dyspneic Patient"), Joseph Brazel ("The Patient with Abdominal Pain"), Robert Fisher ("The Patient with Upper Gastrointestinal Bleeding"), Martin Koutcher ("The Drug-Intoxicated Patient"), Gary Hanovich ("Cardiac Arrest"), John Incarvito ("Cardiac Arrhythmias"), Gerald Giordano and Mark Silverstein ("Respiratory Failure"), David Lowenthal ("Hypertensive Crises"), Leon Malmud ("Seizures"), William Wishner ("Diabetes—Hypoglycemia and Ketoacidosis"), David Spector ("Fluid and Electrolyte Disorders and Acid-Base Imbalance"), Robert Abel ("Delirium Tremens"), and Mary E. Moore ("Anaphylaxis").

Special thanks go to senior residents, fellows, and the attending staff who reviewed various chapters and offered helpful criticism; these include Drs. Carmen Bello, George Blumstein, Felix Cortes, I. W. Ginsburg, Leonard Goldman, Gunter Haase, Emil Lawrence Harasym, Robert Krause, Stanley Lorber, Richard Kern, Gregory Lignelli, Muriel McGlamery, Allan D. Marks, Charles Miller, Albert Niden, Theodore Rodman, Edward Salgado, Leroy Shear, Charles Shuman, Mariah Vassal, Howard Warner, and Herbert Waxman. Preparation of the manuscript was patiently and skillfully supervised by Joan Nitzberg, the secretary of the Department of Medicine.

A final word about future plans. This manual is a first edition of what we hope will be a continuing house staff effort and a Temple University Hospital tradition. As we anticipate not only updating of the material but also correction and revision on a biannual basis, we invite the readers' cooperation and would appreciate suggestion for improving this manual.

SOL SHERRY, M.D.

Acknowledgments

Special thanks go to other faculty members who have critically reviewed the present manuscript as it pertains to their subspecialty area: Drs. Edward Jones, Bennett Lorber, Allan Marks and Elliott Schulman from Temple University, and Dr. Matthew Stern from the University of Pennsylvania.

We owe a debt of gratitude to Angel Howzell, Mitzi McSwain, Mary Racine, and the Department of Medical Communications, who were invaluable in the preparation of the manuscript.

Finally, we thank our respective spouses, without whose encouragement and patience this Manual would never have been completed.

MORRIS A. SWARTZ, M.D.
MARY E. MOORE, PH.D., M.D.

Editors' note

The treatment modalities and drug doses in this book are specifically recommended for adult patients. Those treating children should consult pediatric authorities.

Treatment advocated in this book conforms to the practice of the medical community of Temple University Hospital in Philadelphia and has been reported to be effective in the medical literature. Inclusion here, however, does not necessarily imply approval by the Federal Drug Administration (FDA). Current FDA literature and package inserts should be consulted for the most up-to-date information.

MORRIS A. SWARTZ, M.D.
MARY E. MOORE, PH.D., M.D.

Contents

PART One

STRESSING DIFFERENTIAL DIAGNOSIS

CHAPTER 1

The Comatose Patient

Coma refers to that depressed neurological state in which a patient is unarousable even to noxious stimuli. It, in itself, is not a disease but rather is an end product of various disease processes (see Table 1.1). Coma does not ensue unless there is involvement of *both* cerebral hemispheres or of the reticular activating system of the brainstem. Coma is a true medical emergency in which a rapid approach to diagnosis and treatment is essential to arrest any ongoing central nervous system damage.

Monitor and Support Vital Signs

Restoration of oxygenation and adequate blood pressure may, in themselves, reverse the comatose state.

The patient's airway must be protected. This can often be accomplished by proper head and neck positioning (see Figure 8.1, Chapter 8) in conjunction with oral or nasal airways. In the presence of a depressed gag reflex or hypoventilation, endotracheal intubation is indicated, with mechanical ventilation warranted for the latter. Supplemental oxygen is administered as needed. If there is *any* possibility of a neck injury, the cervical spine must be immobilized until lateral and A-P x-ray views of the

cervical spine rule out fracture; hyperextension of the neck must specifically be avoided until spinal injuries are excluded.

Circulatory support is the next concern. In the absence of a pulse or blood pressure, the patient should be managed as a cardiac arrest (see Chapter 8). If the patient has a pulse but is hypotensive, management should proceed as outlined for shock (see Chapter 2).

Institute Immediate Treatment

1. Administer 50 ml of 50% glucose IV after obtaining a blood sample for glucose. This will frequently reverse hypoglycemic coma and will not adversely affect coma of another etiology. (The beneficial effect of glucose administration far outweighs the risk of slightly worsening a preexistent hyperosmolar state such as that which may occur in diabetic ketoacidosis or hyperglycemia, hyperosmolar, nonketotic coma.) Thiamine 100 mg should be given IV or IM if the patient is an alcoholic or is malnourished. This may prevent the possible precipitation of Wernicke's encephalopathy by glucose supplementation.
2. Administer 1–2 ampules (0.4–0.8 mg) of naloxone IV to reverse a possible narcotic overdose. In the absence of a clinical response, an additional 2–3 ampules should be administered to assure antagonism of weaker narcotic congeners (e.g., propoxyphene, pentazocine).
3. If the patient is having a seizure, follow the evaluation and treatment outlined in Chapter 12.

Obtain Initial Laboratory Studies

Electrolytes, BUN, glucose
CBC and Diff
Serum calcium
ABG
ECG
Urinalysis