CRITICAL CARE PRACTICE

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Foreword

Critical Care Practice sponsored by the American Society of Critical Care Anesthesiologists, has been prepared primarily for anesthesiologists. Many undoubtedly will gain valuable information from this book, and hopefully, some will be motivated by it to become more involved in critical care medicine (CCM). This book offers a detailed knowledge base on a wide spectrum of topics, from life-support techniques via the pathophysiology of organ systems failure to special life-threatening diseases. Therefore, it will also be a valuable source of information for physicians from other disciplines who are embarking on work in CCM.

There is no uniform definition for CCM in the United States or abroad. The book's contents reflect the scope of critical care practice as extending beyond prolonged life-support of hospitalized intensive care unit (ICU) patients. This comes as no surprise, since one of the editor-authors is an alumnus and faculty member of the University of Pittsburgh CCM program. The Department of Anesthesiology of the University of Pittsburgh School of Medicine, which was initiated in 1961, "fathered" care, teaching and research programs in cardiopulmonary-cerebral resuscitation (CPCR), prehospital emergency medical services (EMS), respiratory therapy, and multidisciplinary intensive care. Thus, in this text CCM encompasses all three phases of CPCR (basic, advanced, and prolonged life-support) and their application to critically ill or injured patients throughout the life-support chain—from the prehospital scene (or anywhere inside the hospital where deterioration of vital organ systems begins) via transportation, through hospital emergency room, operating room, and ICU.

Before the 1950s the basic, advanced, and prolonged life-support methods available for use outside the operating room were largely unphysiologic and ineffective. Organized concentrations of patients in need of continuous monitoring and life-support were limited to a few specific medical problems. Examples were Cushing's and Dandy's neurosurgical recovery rooms and poliomyelitis wards stocked with iron lungs. Before and during World War II a few anesthesiologists in the United States and Great Britain created special recovery rooms where they could observe and provide life-support to still unconscious patients after anesthesia. I left surgery for anesthesia training in 1950, inspired by the belief that the development of modern surgery would depend on improved life-support. Other anesthesiologists at that time also recognized the importance of applying the life-support expertise gained in anesthesia to all of medicine and surgery.

In the early 1950s Scandinavian anesthesiologists were the first to apply the anesthesiologic skills of airway control and artificial ventilation on a large scale outside the operating room. They cared for patients paralyzed with poliomyelitis and patients in coma from barbiturate poisoning. Scandinavian cardiothoracic surgeons and anesthesiologists applied prolonged artificial ventilation to postop-

erative patients. The first physician-staffed ICU in the United States was initiated in 1958 by anesthesiologists of the Baltimore City Hospital. This was, however, a multidisciplinary medical-surgical ICU, where multiple-organ-systems support was provided jointly by resident and staff physicians of anesthesiology, medicine, and surgery and by specially trained nurses. In 1963 the first formal CCM physician fellowship training program was initiated at the University of Pittsburgh as a third year of anesthesiology residency training, which was supported in part by the National Institutes of Health. In the late 1960s it began to attract internists, surgeons, and pediatricians as well. The first two pediatric ICUs in the United States were also initiated by anesthesiologists in the 1960s.

Most of the early anesthesiologists who became intensivists did not abandon the operating room. Their skills and their willingness to provide continuous life-support to patients for long periods gained them the respect of their peers in other disciplines. In the late 1960s we anesthesiologists-intensivists discovered that the frustrations and obstacles we encountered in attempting to replace standard treatment by "rounds and prescription" with life-supporting treatment by "continual titration" were experienced also by some pioneering intensivists from medicine and surgery. This common understanding led in the early 1970s to the founding of the multidisciplinary Society of Critical Care Medicine (SCCM) and to the first guidelines for ICU organization and ICU physician training.

In the mid-1960s, under the aegis of then President Dr. John Bonica, the American Society of Anesthesiologists (ASA) established its first committee on acute medicine. This committee not only was to represent and promote the role of the anesthesiologist as intensivist but also was to lead the resuscitation-oriented organization of prehospital EMS throughout the community. The nation's first community councils on EMS, introduced in Pennsylvania, were spearheaded by anesthesiologists who were supported by some members of other disciplines. Previously, prehospital EMS either had been ignored or had been promoted by orthopedic surgeons who focused on fractures. Through the National Research Council (NRC), the American Medical Association (AMA), the American Heart Association (AHA), and other organizations, anesthesiologists helped to give EMS a multidisciplinary base.

Why in the 1980s did large numbers of U.S. anesthesiologists give up their involvement in prehospital and intrahospital CCM while European anesthesiologists remained active leaders in these fields? Numerous factors contributed to this trend. These probably include economics (earnings from anesthetic practice are higher than those from staffing of ICUs), frustration with the limits placed on their role in ICU patient care by internists and surgeons, new emphasis in academic anesthesiology on laboratory research rather than CCM, the fragmentation of all disciplines including anesthesiology, and a lack of commitment to EMS and CCM on the part of U.S. anesthesiology societies and boards. Abroad, socialized medicine made it easier for anesthesiologists to remain in EMS and CCM.

At present, the knowledge bases and techniques for resuscitation and multidisciplinary intensive care are established and are being continuously updated. Some of these anesthesiologists who had withdrawn into the operating room and who had become increasingly sophisticated in life-support of the anesthetized patient are returning to CCM. This is particularly true in the management of trauma cases and neurosurgical anesthesia and intensive care. Because of the mutual trust and respect gained during the collaboration of surgeons and anesthesiologists in the operating room, anesthesiologists have again become increasingly welcome in surgical hospital ICUs. The fact that few are eager or invited to work in medical ICUs is unfortunate for patients. Many internists-intensivists

have not acquired life-support skills from rotation through operating room anesthesia or ambulance work. Anesthesiologists can and should provide more than airway control. As clinical physiologists, they should be experts in monitoring. As clinical pharmacologists, they should be experts in the care of drug overdose. Their anesthesia experience makes them particularly suited to teach and practice titrated life-support.

The founders of the SCCM had a multidisciplinary superspecialty in mind—the interaction of anesthesiologist, surgeon, internist (or pediatrician), and now also emergency physician, those with special interest and similar expertise in resuscitation and life-support—to jointly provide, guide, or supervise the "emergency and critical care medicine continuum" from scene through ICU. These specialists would share the fulltime emergency coverage of hospital ICUs, of resuscitation services in emergency departments and throughout the hospital, and for the guiding of prehospital resuscitation. In the subacute or long-term management of ICU patients their varied base specialty knowledge and expertise can contribute to the common purpose. The ideal of this multidisciplinary EMS-CCM continuum was fragmented by territorial, economic, and other disputes.

The forces that might rejoin this interdisciplinary continuum in the near future could be (1) the return of the anesthesiologist to acute medicine fulltime or part-time to act as coordinator, leader, or team member and (2) the joint pursuit of research in resuscitation medicine—in the laboratory, in patients, and in the community—by CCM physicians of various base disciplines and emergency physicians with additional CCM training. Thus, the science of emergency and critical care medicine, called resuscitology or reanimatology, could become a catalyst. To achieve this, emergency physicians in the United States who control the life-support services in the emergency department and outside the hospital, anesthesiologists, trauma surgeons, and intensivists of all base specialties, must work together not only in close cooperation but also with mutual respect, collegiality, and friendship where possible. This goal will undoubtedly be fostered through use of *Critical Care Practice*, edited by Drs. Hoyt, Tonnesen, and Allen.

PETER SAFAR MD

Preface

Anesthesiologists have played a major role in the development of critical care medicine from its earliest beginnings in treating life-threatening respiratory failure. To this day critical care has remained an important aspect of the practice of anesthesiology, with many anesthesiologists involved in various phases of the discipline. In recognition of its importance to the specialty, the American Board of Anesthesiology requires that candidates fulfill a minimum ICU rotation in the practice of critical care medicine under the direction of critical care–trained anesthesiologists.

Perhaps no anesthesia textbook has had the impact on the education of residents as has the *Introduction to Anesthesia* by the late Dr. Dripps and Drs. Eckenhoff and Vandam. The abiding usefulness of this book is due in part to its conciseness and readability. The text has gone through multiple editions, and its popularity remains undiminished.

One goal of our work has been to provide anesthesia residents fulfilling their critical care requirement with a text that is as readable and concise as the Dripps' book. This text is not meant to be a definitive reference; rather, it is an introduction to the essential knowledge of the subspecialty. A second goal is to provide a survey whereby the fellow starting critical care training can become oriented to the scope of its practice. We hope that this text can be digested during the first few months of fellowship training, to be followed by more in-depth reading.

Extremely ill patients are frequently admitted to the critical care unit with little advance notice and an incomplete history but with immediate, life-threatening problems. The organization of this book attempts to reflect this clinical reality. Thus, the most vital elements of maintaining major organ function are addressed in the first section. Following the discussion of stabilizing vital signs, more specific diagnoses and treatments are described in the next section. The third section handles specific aspects of critical care practice.

A major attraction of critical care to many intensivists is the enthusiastic involvement of physicians from many specialties who share their perspectives and ideas. This book, written largely by anesthesiologists, is an attempt to present our perspective. The practice styles of intensivists vary greatly. However, there is a basic core of information, presented in this book, with which every critical care practioner should be familiar.

The practice of critical care involves resuscitation and titration of life support in its most basic form. This text is presented in a format that we hope will benefit all physicians, as full or part time intensivists, from whatever specialty, as they utilize the technologies of life support to save lives.

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