

## Book Review

# *Cardiopulmonary Bypass: Physiology, Related Complications and Pharmacology*

*Cardiopulmonary Bypass: Physiology, Related Complications and Pharmacology*

Pierre A. Casthely, MD, and David Bregman, MD

Futura Publishing Company Inc.

Mt. Kisco, NY, 1991

Price: \$85

538 pages, 18 chapters, 33 contributing authors

The study of cardiovascular physiology has spanned several centuries, with, arguably, the most significant advances in understanding circulation occurring within the last century. When one reviews the development and evolution of extracorporeal circulation, however, the history can be obtained first hand through conversation with many of the individuals who participated in early applications of the heart lung machine. Such recent emergence of this specialized process of cardiopulmonary bypass has resulted in a paucity of texts on this subject. The publication of *Cardiopulmonary Bypass: Physiology, Related Complications and Pharmacology*, edited by Drs. Casthely and Bregman, has eloquently addressed this deficiency.

The monograph consists of 18 chapters, and the subject content can be broadly split into two general topics. The first seven chapters are devoted to physiologic and technical considerations of cardiopulmonary bypass, while the remainder of the book addresses cardiopulmonary bypass from both pathophysiologic and pharmacologic perspectives. Because of its significant emphasis on postoperative organ dysfunction, this book would be especially valuable to clinicians involved in postoperative management and care of cardiac patients. The general content of the text consists of significant material touching on various areas associated with extracorporeal circulation.

The physiology of cardiopulmonary bypass is superbly reviewed in the third chapter, which contains sections on pulsatile perfusion, hemodilution and monitoring. These brief, well-referenced sections serve as synopses of the applied areas associated with bypass. A chapter on determining the adequacy of flow during cardiopulmonary bypass examines hemodynamic influences on chemical and metabolic processes within various organ systems. There are two chapters that address coagulation management of the patient undergoing extracorporeal circulation, reviewing both pharmacologic principles and alterations in various cellular and acellular mechanisms of hemostasis. Miss-

ing from the chapter on anticoagulation was a discussion of heparin management with dose response and protamine titration methods. Unfortunately, there was an overt lack of discussion on biocompatibility with specific lack of discussion on heparin-coated devices and circuitry. A chapter addressing this important development, which will undoubtedly shape the future of extracorporeal circulation, should become standard in any perfusion text. There are several chapters which examine pharmacologic treatment modalities, dealing with both abnormal cardiac mechanical function and electrical disturbances. These sections offer valuable review information on antiarrhythmic therapy, vasopressor control and inotropic support. The last two chapters are devoted to managing nontraditional cardiac patients, including thoracic aneurysm repair, left heart and partial bypass, and cardiac transplantation.

The editors have successfully combined input from a variety of individuals, representing multiple medical specialties, to emphasize important issues concerning cardiopulmonary bypass. The majority of the authors are anesthesiologists, which undertones the significant portion of the text dealing with pharmacological interactions. Because of these contributions, this book should be especially useful to anesthesiologists who are involved in the conduct of extracorporeal circulation.

In summary, this text would serve as an excellent reference for both perfusion students and practicing perfusionists. The many sections devoted to pathophysiology serve as a grim reminder of the significant morbidity still associated with cardiopulmonary bypass. It is only through continued education, garnered through literature review and references such as this text, that improvements in patient care can be facilitated.

— Al Stammers, BS, CCP  
Manuscript Editor  
Omaha, Nebraska