

# 28 Update in Intensive Care and Emergency Medicine

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M. R. Pinsky (Ed.)

# Applied Cardiovascular Physiology

With 72 Figures and 24 Tables



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## Preface

This book represents the collective efforts of several excellent clinician-scientists who have devoted many years of their lives and many hours in each day to the application of physiological principles to the bedside care of critically ill patients. The universal challenge of cardiovascular instability confronts all health care providers who treat patients in an acute care setting. Whether that be in the field or Emergency Department, general ward, operating suite or intensive care unit, all patients carry a common theme of potential life-taking processes which must to identified and treated in a timely fashion or severe morbidity and death rapidly follow.

Since the cardiovascular system subserves the body in maintaining metabolic stability through global and regional blood flow at an adequate pressure to insure appropriate autoregulation of blood flow distribution, it would be difficult to describe the mechanisms of cardiovascular instability their diagnosis and treatment without placing them within the context of overall metabolism and tissue viability. Accordingly, this book has been grouped into four arbitrary subsets. First, we address issues of basic cardiovascular physiology. Classic developments of ventricular pump function and arterial resistance are balanced with newer applications of ventriculo-arterial coupling, right ventricular function, and tissue oxygen delivery. Next, new and established aspects of hemodynamic monitoring are presented with in a clinical-physiologic context. This section is unique in critical care textbooks because it presents issues of applications and limitations in a highly focused fashion, beginning with the rationale for hemodynamic monitoring and progressing through exciting aspects of analogues of hemodynamic variables to echocardiography, the latest and very powerful imaging technique used at the bedside. The third section tackles the important issue; now that you have the patient's data, what are you going to do? Goals of resuscitation have been developed and tested in many large clinical trials. Although some controversies exist, and one can ever define in exact terms the proper end-points of resuscitation for all patients certain important guide posts have been validated in the recent past which should aid the care giver on focusing cardiovascular support in a ra-

tional fashion. Finally, to aid in the management of specific disease process, the final section was developed to focus attention on four important aspects of cardiovascular support: hemorrhagic shock, cardiogenic shock, septic shock, and the use of extracorporeal support systems in the management of patients with severe lung injury.

Our goal in this textbook is to comprehensively address the entire area of cardiovascular instability from a pragmatic stand point allowing the clinician at the bedside to deliver care more efficiently and effectively based on recent published data and a firm understanding of cardiovascular pathophysiology.

Pittsburgh, USA, February 1997

*Michael R. Pinsky*

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