

# Introduction

Cardiovascular emergencies account for at least 30% of all medical emergencies. The impact of cardiovascular disease is felt in every hospital and every community. Whether you are drawn to critical care practice or not, you are bound to be confronted by acute cardiac events.

Responding appropriately to cardiac emergencies requires a basic familiarity with cardiac anatomy and physiology, the ability to mobilize an advanced life support team, and the skills to perform cardiopulmonary resuscitation (CPR).

Advanced competencies in managing cardiac emergencies include ECG interpretation, advanced airway techniques, the appropriate use of electrical therapies and the ability to deliver appropriate intravenous medications.

**A Practical Guide to Managing Cardiac Emergencies** is a workbook and reference tool designed to help you to effectively manage acute cardiac events. Delivered with a no-nonsense candid style, each chapter builds on previous chapters while focusing on timely and appropriate actions. This guidebook, written from thirty years of clinical and classroom experience, includes many practical insights gleaned from our students and colleagues along the way.

## This Book is For You

The management of cardiac emergencies crosses many health care disciplines: nursing, medicine, and respiratory therapy for example. This book is written for health care practitioners who are new to cardiac care and for those who wish to review or polish their skills. It is intended for those who are not fully satisfied with knowing how to respond - you also want to understand why actions are performed. We hope this is you.

## The Authors

Tracy Paul Barill BSN, M.Ed has been a critical care practitioner and educator for the past 16 years. His clinical experience spans intensive care, coronary care, emergency nursing, flight nursing and the community-based care of those with multiple disabilities. He has coordinated over 500 ACLS courses since 1990. Tracy also teaches programs in basic and advanced ECG interpretation. He is currently developing web based learning tools for health care professionals. Many of these web learning tools can be found at [www.skillstat.com](http://www.skillstat.com).

Michael N. Dare RN, BPE, EMT-P has a diverse background in both teaching and clinical practice. Michael's clinical expertise spans most areas of critical care nursing as well as prehospital advanced life support as a paramedic. He facilitates ACLS, PALS and trauma courses on a regular basis. He has also facilitated critical care nursing certification programs.

## How to Use This Book

This book is designed for the busy health care professional. If you are looking for a quick start on how to manage cardiac emergencies, Chapter 4: Triage and Response is a good place to start. The framework that is the core to this chapter is also the core to this book. Otherwise, the book is written with each chapter built on the foundation provided by the preceding chapters.

A general table of contents, an expanded table of contents and an index facilitates rapid location of information. Each chapter begins and ends with a chapter summary. As well, a "quick contents" appears on the first page of each chapter to facilitate a quick and focused navigation to specific topics of interest. With a focus on both understanding and application, concepts are consistently supported with practical exercises, case studies, quizzes and memory aids.

Each chapter is independent and can stand on its own. Read the book from cover to cover or jump around concentrating on what you need. Complete the exercises and quizzes inside each chapter. By all means, make use of the suggested resources mentioned at the end of each chapter. Many of the resources are freely available on the web. The glossary is another resource for most of the terms used.

Certain conventions such as the use of icons and gray text boxes have been used throughout the book to draw attention to tips, trivia, details and important points.



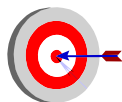
The 'stop' hand signal marks vital information often related to clinical practice.



The symbol of a string tied around the index finger is used as a reminder.



The icon of a magnifying glass marks supplementary explanations on various topics.



A symbol of an arrow on target signifies tips, trivia, and useful short-cuts.



Synonymous with the internet, this icon marks any supplemental resources.

This book was written in a style similar to the spoken word. When medical jargon was not completely necessary, we avoided it. Our intent was a useful handbook that is easy to read and straightforward. We sincerely hope that you will find this book both useful and enjoyable.

## Brief Synopsis

This guidebook is included as part of the course titled "Managing Cardiac Emergencies" (MCE) offered to physicians, nurses and respiratory therapists. Eight chapters make up its contents followed by appendices of the ACLS algorithms, a cardiac glossary of terms, details on what is contained on the CD-ROM and directions on how to use the CD-ROM.

**Chapter 1: The Heart and Cardiac Output** provides an introductory discussion on the parameters that determine the heart's effectiveness as a pump. Case studies examine such issues as cardiac ischemia, heart failure and cardiogenic shock as they relate to cardiac output.

**Chapter 2: Electrical Interventions** outlines defibrillation, cardioversion and transcutaneous pacing (TCP). The automatic external defibrillator (AED) is also introduced. The rationale behind safe and effective delivery of electrical interventions is offered prior to presentation of step-by-step procedures.

**Chapter 3: Oxygenation and Airway Management** explores the many modalities of basic and advanced airway control. The use of the bag-valve-mask, the oral-pharyngeal airway, endotracheal intubation, and the use of alternative airway adjuncts are addressed in this chapter.

**Chapter 4: Triage and Response** identifies vital steps necessary in the management of any cardiac emergency. For those who feel a little shaky around cardiac emergencies, the algorithms and tips included in this chapter may likely ease your anxiety.

**Chapter 5: Managing the Pulseless Patient** addresses the patient who is experiencing lethal dysrhythmias (ventricular fibrillation, pulseless ventricular tachycardia or asystole) or is in the midst of pulseless electrical activity (PEA). For the pulseless patient, a timely response is key. The chapter also includes tips and techniques useful to rapidly identify the various causes of PEA.

**Chapter 6: Managing the Unstable Patient** examines the rationale and procedures necessary to respond to a patient who requires urgent treatment. This chapter deals with hemodynamic compromise and ischemia. Management strategies are established for acute coronary syndromes, symptomatic bradycardias and tachycardias, volume deficiencies, pulmonary edema and cardiogenic shock.

**Chapter 7: Managing the Stable Patient with Rapid Tachycardias** explores several possible tachycardias and related syndromes with a focus on a systematic make-sense care strategy. This chapter provides a practical approach to the full range of potentially stable supraventricular and ventricular tachycardias. Atrial fibrillation and flutter with rapid ventricular response is explored in detail. A section on Wolff-Parkinson-White syndrome rounds out the discussion.

**Chapter 8: Cardiac Pharmacology** presents a simple physiological schema to cardiac pharmacology. Nodal and global antiarrhythmics, vagolytics, anti-platelet agents, fibrinolytics, vasodilators, inotropes and pressure agents are neatly placed within a physiological framework with attention to the latest in medical research outcomes studies.

**Appendix A: AHA Advanced Cardiac Life Support Algorithms** provides a complete set of the revised 2004 ACLS Algorithms as advanced by the American Heart Association (AHA) and the International Liaison Committee on Resuscitation (ILCOR). Detailed notes to each algorithm are also included.

**Appendix B: Cardiac Glossary** provides quick definitions to over 200 cardiac terms.

**Appendix C: Supplemental Resources** is a list of on-line and off-line reference resources.

**Appendix D: About the CD-ROM** outlines the documents and tools contained on the CD-ROM. Directions are included on how to use and install the CD-ROM.

## The CD-ROM

A Microsoft windows compatible CD-ROM is included on the inside back cover. The CD-ROM includes:

- **Managing Cardiac Emergencies** in eBook format. The chapters, cross-references and indexes are hyperlinked, facilitating rapid access to information of interest. The tests are fully interactive with automatic scoring and 'lively' feedback.
- An animated **ECG Simulator** that includes learning and game modes
- The **ACLS STAT** tool, a dynamic tool that randomly generates multiple quizzes across several advanced care specialties (i.e. ECG interpretation, cardiac pharmacology, acute coronary syndromes).

The CD-ROM launches automatically for most computers that use windows operating systems (Windows 98 or later). The learning tools are fun, fast, effective and simple to use. Even if you are a novice to the computer, this is a good CD-ROM to check out.

## Let's Get Started!

Our intentions for writing this book was to share simple useful strategies in the management of cardiac emergencies, to remove some of the mystery, and to ultimately be involved in good clinical decision-making. We hope that you find this book useful and easy to read. We also hope that some of our love for cardiology is reflected here.

We welcome your impressions and suggestions about this guidebook. Please e-mail us [mce@nursecom.com](mailto:mce@nursecom.com).

