Preface
Chest Pain Units

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Guest Editors

Although time-dependent therapy is an overarching principle of the management of acute coronary syndromes (ACS), fulfillment of this concept remains incomplete [1]. Delays in recognition of ACS and initiation of therapy entail patient, physician, and systemic factors [2]. This problem is particularly pertinent to the treatment of non-ST elevation (non-STE) ACS in which the history and ECG may be ambiguous. Although the high-risk patient is the primary clinical focus, most patients who present with chest pain have a noncardiac etiology that is frequently benign. The clinical dilemma posed by this situation has often been resolved by unnecessary admissions to avert missed diagnoses of ACS, resulting in suboptimal patient care and resource use [3].

The development and growth of chest pain units (CPUs) is a response to this problem by application of a systematic approach to optimize management of patients presenting with symptoms compatible with ACS by affording: (1) prompt identification and treatment of those with an ischemic syndrome and (2) early and accurate discharge of individuals without evidence of myocardial ischemia.

Through its recently implemented process, the Society of Chest Pain Centers has accredited almost 150 CPUs in this country [4] and, based on the current growth rate, it is anticipated that this number will reach 200 or more by the end of this year. Although these units differ in certain respects, their common basis is a protocol-driven patient evaluation by an accelerated diagnostic strategy, including clinical observation, sequential ECGs, and serial cardiac injury markers. These basic methods are being extended by rapidly emerging technologies with the promise of earlier and more accurate diagnostic capability, thereby further enhancing the use of CPUs. This volume of Cardiology Clinics encompasses these advances in presenting the contemporary status of CPUs and associated methodology from the perspectives of an outstanding group of clinician scientists who have made major contributions to this field.

In his introductory chapter, Cannon synthesizes current understanding of ACS in terms pathophysiology, clinical presentation, and risk stratification. To achieve the latter goal, he considers the roles of basic clinical tools, guidelines, and critical pathways while maintaining focus on the individual patient for optimal management. Blomkalns and Gibler elucidate the rationale of the CPU concept and the practical aspects of its implementation. They relate how these strategies can differ based on institutional variation in methods of staffing, structure, and administration to meet the CPU goals. In the next two articles, Pope and Selker (1) delve further into the diagnostic challenges and current systems for evaluating patients presenting with chest pain and (2)
explore the crucial problem of missed ACS and inadvertent discharge from the emergency department. In the latter context, they identify the principal factors associated with these clinical errors and methods to prevent them. The pivotal role of cardiac injury markers is developed by Jaffe who describes the most recent advances in this area and charts a rational application based on an understanding of the value and limitations of these essential clinical tools. These concepts are extended by Kost and Tran who analyze the rapidly advancing area of point-of-care testing for cardiac injury markers and the remarkably rapid results while maintaining diagnostic accuracy. Wang, Aroudi, and Newby then explore the increased understanding of inflammation in ACS and the growing body of markers that reflect this process, some of which are already being applied clinically.

The next series of articles is devoted to the varieties of cardiac stress testing and imaging as applied in the CPU setting. Our group reviews the extensive clinical experience in multiple centers confirming the utility of treadmill testing as the final element of accelerated diagnostic protocols and we note our results with the immediate exercise test in low-risk patients. The central role of myocardial scintigraphy in many CPUs is addressed by Kontos and Tatum who demonstrate the efficacy of this method in their innovative approach to risk stratification. Rest and stress echocardiography has had substantial application in the assessment of patients who present with chest pain and the indications and accuracy of this technique are evaluated by Lewis. New imaging methods, such as coronary artery calcium scoring and the emergence of noninvasive coronary angiography by computed tomography, are receiving major attention and McCord and Amsterdam provide a perspective on the potential of these techniques.

Because of their unique clinical characteristics, populations such as women, the elderly, and those with documented coronary heart disease, have required specific investigation to determine if the CPU concept applies to their presentations. Diercks and colleagues demonstrate that the CPU strategy is appropriate in these other groups with special clinical features. A large proportion of patients who present to the emergency department with chest pain do not have obstructive coronary artery disease. Yang and Lerman delineate these distinctive syndromes and impart a systematic approach to their etiology, prognosis, and management. A new dimension that has recently been added to the CPU is the management of patients with acute decompensated heart failure, which is detailed by Peacock in his presentation of the rationale, indications, and results of this innovation.

Reduction of medical errors is an imperative of the CPU and Daudelin and Selker clarify current research in this area. Although their clinical utility has been demonstrated, the complex question of whether CPUs are cost-effective has received limited attention. Sieck reviews this issue in terms of its medical and administrative aspects and their relation to the larger framework of the health care system.

This volume provides a current understanding of the implementation and efficacy of CPUs and the integration of new technology into this approach. These results have provided the basis for continuing advances toward the optimal strategy for the management of patients presenting to the emergency department with chest pain.

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References