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Ragavendra R. Baliga and James B. Young

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James F. Neuenschwander II and W. Frank Peacock

Heart Failure and the Emergency Department: Epidemiology, Characteristics, and Outcomes **1**

Gary B. Green

It is widely recognized that the impact of heart failure on society is enormous. The research community has responded, resulting in an ongoing period of rapid advancement across a wide range of fields. The pace of progress is perhaps most apparent in the barrage of new and revised terminology appearing in the heart failure literature. Although sometimes confusing, the complexity of nomenclature directly reflects a growing appreciation that the symptom complex previously labeled “heart failure” is actually a spectrum of complex multisystem pathologies. Accordingly, clinicians must adopt a more sophisticated and more effective approach to evaluation and treatment that is increasingly based on objective measurement of outcome-linked physiologic parameters rather than the subjectively described symptom constellations relied on previously.

Pathophysiology of Acute Decompensated Heart Failure **9**

Richard L. Summers and Ezra Amsterdam

This article provides a comprehensive review of acute decompensated heart failure (ADHF). It begins with a historical review, defines ADHF, and describes the many factors that may precipitate it.

Prehospital Management of Congestive Heart Failure **19**

Amal Mattu and Benjamin Lawner

The evolution of prehospital treatment of decompensated congestive heart failure has in some ways come full circle: rather than emphasizing a battery of new pharmacotherapies, out-of-hospital providers have a renewed focus on aggressive use of nitrates, optimization of airway support, and rapid transport. The use of furosemide and morphine has become de-emphasized, and a flurry of research activity and excitement revolves around the use of noninvasive positive-pressure ventilation. Further research will clarify the role of bronchodilators and angiotensin-converting enzyme inhibitors in the prehospital setting.

- Diagnosis of Heart Failure** 25
Anna Marie Chang, Alan S. Maisel, and Judd E. Hollander
- The approach to the diagnosis of heart failure is complex, but the diagnostic armamentarium has increased significantly in the past decade. Diagnostic markers such as B-type natriuretic peptide and NT pro-B-type natriuretic peptide have proven value for the diagnosis of heart failure over and above the traditional tools that included only the history, physical examination, and chest radiography. Invasive and noninvasive impedance cardiography can be used to diagnose or even predict development of heart failure, but its role in clinical practice still needs to be better defined.
- Emergency Department Stabilization of Heart Failure** 37
Preeti Jois-Bilowich and Deborah Diercks
- Optimizing heart failure management begins in the emergency department. Prompt recognition and treatment of underlying pathophysiology can improve patient outcomes. A review of therapeutic options is provided, with the goal of providing best practices in patient care.
- Pharmacologic Stabilization and Management of Acute Heart Failure Syndromes in the Emergency Department** 43
J. Douglas Kirk, John T. Parissis, and Gerasimos Filippatos
- Effective use of diuretics, vasodilators, and inotropes to stabilize acute heart failure (AHF) relies on matching the most appropriately tailored therapy to specific clinical profiles. Some of the drugs may be harmful, and therefore the emphasis should be on patient safety and the attempt to minimize the deleterious effects of these therapies. To date, successful treatment has been limited because no agent has been shown to reduce postdischarge mortality or readmission rates, and patients frequently remain symptomatic after treatment. Ongoing research is needed to further examine these agents and to develop novel therapies to address the unmet needs of the patient who has AHF.
- Circulatory Assist Devices in Heart Failure Patients** 55
Brian C. Hiestand
- Optimal medical therapy may ameliorate acute cardiogenic shock and long-term congestive heart failure symptoms; however, in certain cases mechanical circulatory assistance may be helpful or even required. Different devices can be considered based on the anticipated duration of need and the acuity of the cardiovascular failure being treated. A working knowledge of balloon pumps and ventricular assist devices, their indications, function, and potential complications, allows the physician to provide optimal care for those patients presenting with such a device.
- Cardiac Devices in Emergency Department Heart Failure Patients** 63
James F. Neuenschwander II
- As more patients have pacemakers and internal cardioverter defibrillators implanted, and live longer with these and other life-extending therapies, the utility of these devices and the potential for malfunction become meaningful to physicians.

This article presents a basic understanding of the reasons for implantation, how the devices function, and what to do to help improve patient care if a problem occurs.

Acute Heart Failure Risk Stratification: Can We Define Low Risk? 75

Sean P. Collins and Alan B. Storrow

The emergency department evaluation and management of patients who have potential acute heart failure syndromes (AHFS) has remained a significant challenge for decades. The emergency physician's diagnostic tools for heart failure have remained limited, and the complexity of the syndrome itself has led to risk-averse practice styles with extremely high admission rates. Recently, new diagnostic markers and technology have become promising and even commonplace to assist emergency physicians in risk prediction for patients who have AHFS. Familiarity with these approaches is essential for improved care for patients who have heart failure and for resource use. This article reviews the available literature and describes patient features that need to be accounted for in disposition decision-making.

Observation Unit Management of Acute Decompensated Heart Failure 85

Jon W. Schrock and Charles L. Emerman

Acute decompensated heart failure (ADHF) is a common illness presenting to the emergency department (ED) that is amenable to observation unit (OU) treatment. As the number of baby boomers continues to grow and the incidence of heart failure increases, the financial implications of ADHF treatment will become more prominent. Obtaining institutional support and developing a good working relationship with cardiology colleagues is vital to creating workable ADHF protocols for whichever type of OU an institution decides to use.

Observation Unit Economics 101

Sandra G. Sieck and Mark G. Moseley

With an aging population, the United States health care delivery system is struggling to handle an onslaught of chronic disease burden. The current process of regulatory oversight and pay-for-performance reimbursement is a reality in today's health care delivery system. To maintain profitability, facilities must be willing to implement new strategies that marry operational redesign, quality care, and cost-effective treatment. As payers increasingly favor outpatient strategies for patient management, inpatient facilities must develop effective strategies to shift inpatient care into ambulatory settings. This article presents a model, based on acute heart failure, that offers a solution that is fixed on process improvement techniques that levy positive economic impact.

Special Cases in Acute Heart Failure Syndromes: Atrial Fibrillation and Wide Complex Tachycardia 113

Peter S. Pang and Mihai Gheorghide

Hospitalization for acute heart failure syndromes (AHFS) results in substantial in-hospital and postdischarge morbidity and mortality. Management of AHFS presents significant challenges, given the heterogeneity of the patient population and the differing etiologies underlying why patients present with acute decompensation. Arrhythmias in the setting of AHFS, such as atrial fibrillation and wide complex tachycardia, present additional challenges. Compounding this challenge is the paucity of evidence on which to base early management. General principles for the

management of atrial fibrillation and wide complex tachycardia in the setting of emergency department AHFS are discussed.

**Nursing Considerations for the Management of Heart Failure in the
Emergency Department** **125**

Elsie M. Selby and Robin J. Trupp

Despite a lack of trials examining the impact of educational interventions in the emergency department and observation unit, there is ample evidence in other health care settings supporting its use in the management of patients with heart failure. The challenge for the emergency department and observation unit nurse is to adapt these interventions to fit realistically within the fast-paced environment. This article addresses nursing considerations for the management of heart failure in the emergency department setting.

**Emergency Department Presentation of Heart Transplant Recipients with
Acute Heart Failure** **129**

Paul Chacko and Shibu Philip

With an increasing number of heart transplants being performed around the world and the improvement in survival rates, more transplant recipients may present to the emergency department with comorbidities unique to the transplanted heart and related immunosuppression, including heart failure. This article is aimed at enabling the emergency department physician identify and better manage this unique group of patients for whom time is life.

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