

## ***Electrophysiology: The Shocking Truth***

*From lightening and tempest,  
From plague, pestilence and famine,  
From battle and murder  
And from sudden death, Good Lord, deliver us.*  
(The Litany, Book of Common Prayer, circa 16<sup>th</sup> Century)

Nowhere in medicine have the advancements in delivered care been more spectacular than in the field of clinical cardiac electrophysiology. From conceived ideas at the cellular level to clinical applications at the bedside, academia has provided clinicians with novel and stellar approaches to meet the challenges of an array of cardiovascular diseases both new and old. Atrial fibrillation, sudden cardiac death, and heart failure continue to present significant challenges as our population ages. And yet, these are not new diseases and have been known to man from time immemorial, as witnessed by the passage above from the sixteenth century.

Atrial fibrillation has been euphemistically referred to as the “*low back pain of cardiology*”. It is the most common form of a sustained cardiac arrhythmia and the most frequent arrhythmia presenting to the emergency room requiring hospitalization. Approximately 2.5 million people in the U.S. are diagnosed with atrial fibrillation. As the leading edge of the baby boom population ages, this number is predicted to balloon to 5.6 million by 2050. Given the 5-fold increased risk of stroke, with its attending morbidity, it is not difficult to grasp the significant economic burden to society this disease imposes. Thus, the zeal and dynamism currently in vogue to achieve a cure via ablation techniques and/or surgical intervention can be appreciated.



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Guest Editor

Despite innumerable technological and medical advances that have occurred since the 16th Century, it remains clear that “*sudden death*” is as real a problem today as it appears to have been in the days of the writing of *The Litany*. Each year, more than 400,000 persons in the U.S. die of sudden cardiac death, usually as a result of ventricular arrhythmias. Most people have underlying coronary artery disease and many have a history of myocardial infarction complicated by left ventricular dysfunction. The two principle prophylactic modalities for prevention of fatal arrhythmias are anti-arrhythmic drug therapy and use of the implantable cardioverter defibrillator. The former display relatively limited efficacy, while the latter continues to be prohibitively expensive. Therein lies the current present day challenge.

Similarly, heart failure (HF) is a polemic public health issue in the U.S. Nearly 5 million have diagnosed heart failure with a staggering 550,000 new patients diagnosed annually. Despite substantial advances in drug therapy, HF results in approximately 287,000 deaths and 1 million hospitalizations per year. This has prompted the search for new therapeutic modalities to improve symptoms, and to positively impact quality of life and longevity.

The series of articles presented in this issue of the Journal highlight these common problem complexes in the field of clinical cardiology in general and electrophysiology in particular.

The first series of articles focus on Atrial Fibrillation: “Medical Management of Atrial Fibrillation” is a timely review done by Dr. Steven Hsu of University of Florida/ Shands Jacksonville; Dr. Michael Bluett, cardiothoracic surgeon, Memorial Hospital, gives a surgical overview “Surgical Approach for Atrial Fibrillation”; and finally, an alternative Electrophysiology interventional approach to atrial fibrillation is presented in “Radiofrequency Ablation of Atrial Fibrillation” by Dr. Fred Kusumoto of the Mayo Clinic, currently a hot topic as interventional electrophysiologists strive to achieve a cure for atrial fibrillation.

The second series of articles focuses on sudden cardiac death. Sudden death in any age group is devastating but none more so than in the pediatric population. Dr. Randolph Bryant, pediatric electrophysiologist at Wolfson Childrens’ Hospital, Jacksonville provides an excellent review of this topic in “Pediatric Sudden Cardiac Death”. Extending this to the adult population Dr. Robert Luke, electrophysiologist, Baptist Hospital, brings us up-to-date on the latest advances in the literature in “Sudden Cardiac Death”.

The third series of articles focuses on heart failure which remains a considerable challenge, as witnessed by the fact that heart failure remains the number one reason for hospital admission in the over 65 age group. Critically important concepts are summarized expertly in “Medical Management of Heart Failure” by Dr. Thomas Wolford an attending cardiologist at Memorial Hospital, Jacksonville. An evolving therapeutic modality, Cardiac resynchronization therapy has now established a role in the management of heart failure and sudden cardiac death. In essence, it is an amalgamation of basic cardiac physiology, embryology of the heart and fundamentals of electrical pacing, coordinated by echocardiography, to deliver a precise therapeutic intervention with impressive effects on morbidity and mortality. The current literature was review by the Guest Editor in “Cardiac Resynchronization Therapy”

What is clear is that successful management of these problems is not confined to any one particular specialty but span several fields of endeavor in both the clinical and academic arenas. Therefore, presenting this material to a broad physician forum is not only timely, but prudent and mandatory.