Seminar Title:

“Quantitative T-Wave Alternans Analysis for Sudden Cardiac Death Risk Assessment and Guiding Therapy: Answered and Unanswered Questions.”

Abstract:

Identification of individuals at risk for sudden cardiac death (SCD), the main cause of adult mortality in developed countries, remains a major challenge. The scope of this public health problem is sizeable, as one million SCDs occur annually worldwide. In 30% to 40% of cases, death is the first indication of underlying heart disease. The main contemporary noninvasive marker, left ventricular ejection fraction (LVEF), has not proved adequately reliable, as the majority of individuals who die suddenly have relatively preserved cardiac mechanical function. Monitoring of T-wave alternans (TWA), a beat-to-beat fluctuation in ST-segment or T-wave morphology, on ambulatory electrocardiogram ECG (AECG) is an attractive approach on both scientific and clinical grounds. Exercise stress testing and AECG-based TWA monitoring can be performed in the flow of routine clinical evaluation. This presentation will address: (1) electrophysiologic and ionic mechanisms underlying TWA’s predictivity, (2) principles and practical aspects of TWA monitoring during exercise and daily activity, (3) clinical evidence supporting this approach to SCD risk stratification, and (4) current and potential application in guiding medical therapy as well as the main unanswered questions.