

## ANATOMY & PHYSIOLOGY

### **CARDIAC ANATOMY**

- *Basic anatomy of the cardiac chambers & valves*
- *Basic coronary and venous anatomy*

### **BASICS OF ELECTROPHYSIOLOGY**

- *Myocardial cell action potential*
- *Pacemaker cell action potential*

### **ANATOMY OF THE SA NODE & SURROUNDS**

- *Sinoatrial Node Anatomy & Physiology*
- *Sinoatrial Exit arrhythmias*
- *Crista Terminalis, Eustachian Ridge, Tendon of Todaro, Cavotricuspid isthmus region*

### **ANATOMY OF THE AV NODE & SURROUNDS**

- *AV nodal location, anatomy & functions*
- *Isorhythmic AV dissociation & junctional rhythm*
- *Coronary Sinus*

### **ANATOMY OF THE DISTAL CONDUCTION SYSTEM**

- *His bundle anatomy & physiology*
- *Bundle branches anatomy & physiology*
- *Fascicular anatomy & physiology*
- *Purkinje network anatomy & physiology*

### **QUIZ: ANATOMY & PHYSIOLOGY**

## BASICS OF THE EP STUDY

### **BASICS OF EPS I**

- *Indications for an electrophysiology study (EPS)*
- *Potential complications of EPS*
- *Equipment in the EP lab*

### **BASICS OF EPS II: INTRODUCTION TO EGM'S**

- *Unipolar EGMs*
- *Bipolar EGMs*

### **BASICS OF EPS III**

- *Nomenclature in EPS*
- *Measurements of EGMs*

### **BASICS OF EPS IV: PACING PROTOCOLS**

- *Common pacing protocols for the three or four wire study:*
  - *Threshold testing*
  - *Programmed extra stimulus testing*
  - *Wenkebach protocol example*

### **BASICS OF EPS V**

- *Gap phenomenon*
- *Current of injury*
- *Catheter placement + LBBB*

## QUIZ: BASICS OF EP

# INTRO TO ARRHYTHMIA

## RE-ENTRANT SVT

- *Defining SVT*
- *Focal Atrial Tachycardia*
- *AVJRT*
- *AVRT*
- *Presentation, diagnosis & therapies*

## FOCAL SVT

- *Long RP Tachycardia*
- *Focal Atrial tachycardia - causes, presentation & treatment*
- *Features of Focal AT on the ECG*
- *Practicing ECG interpretation*

## ATRIAL FIBRILLATION & INAPPROPRIATE SINUS TACHYCARDIA

- *Presentation*
- *Diagnosis*
- *Therapy options*

## ATRIAL FLUTTER

- *Risk factors*
- *The CTI circuit*
- *ECG characteristics*
- *Atypical atrial flutter circuits*

## VENTRICULAR TACHYCARDIA

- *Defining Ventricular Tachycardia*
- *Scar related VT pathogenesis, treatments and outcomes*
- *Scar related VT Ablation outcomes*
- *Defining idiopathic VT*
- *Idiopathic VT pathogenesis, treatments and outcomes*

## DIAGNOSTIC EPS: VT INDUCTION

- *Indications for a ventricular stimulation*
- *Programmed extrastimulus testing*
- *Protocols for VT stimulation*
- *Interpreting the results of a VT-stim*

## QUIZ: INTRO TO ARRHYTHMIA

# ABLATION PHYSICS

## **RF ABLATION PHYSICS I**

- *Physics of lesion formation*
- *Power & Lesion size*
- *Ablation duration & lesion size*
- *Return Electrode placement & lesion size*
- *Contact force & lesion size*
- *Dangers of Char formation*
- *Role of Temperature Regulated Ablation*
- *Role of Irrigated power controlled ablation*
- *Role of Temperature regulated irrigated ablation*

## **RF ABLATION PHYSICS II**

- *Steam Pops*
- *Non irrigated vs irrigated lesion profile*
- *Impact of electrode size & lesion formation*
- *Impact of saline concentration on lesion formation*
- *Barriers to lesion formation*
- *Adipose tissue & Scar/fibrous tissue*
- *Primary & secondary determinants of lesion formation*

## **RF ABLATION PHYSICS III**

- *High power short duration vs Low power long duration ablation*
- *Impact of catheter orientation on lesion formation*
- *Indicators of lesion formation*
- *EGM attenuation during ablation*
- *Microelectrode EGM attenuation during ablation*
- *Thermocouple sensed temperature rise during ablation*
- *Global & Local impedance drop during ablation*

## **CRYO ABLATION BIOPHYSICS**

- *Physics of lesion formation*
- *Indications for Cryo ablation*
- *Comparison to RF technology*

## **PULSED FIELD ABLATION BIOPHYSICS**

- *What is PFA*
- *Determinants of effects*
- *What we know so far about PFA and PVI*
- *Future directions*

## **QUIZ: PHYSICS OF ABLATION**

## OTHER 'MUST KNOWS' IN THE EP LAB

### **POTENTIAL COMPLICATIONS IN THE EP LAB**

- *Modifying risk*
- *Using echocardiography*
- *Cardiac tamponade and treatments*

### **INVESTIGATING SYNCOPE**

- *Investigating syncope of an unknown cause*
- *A medical perspective in managing syncope*
- *Special guest lecture by Dr David Whalley, Electrophysiologist*