

## Rotation: Clinical Cardiac Electrophysiology (EP-1)

Rotation Director: Dr. Sunil Sinha

Faculty: Drs. Sinha, Berger, Calkins, Halperin, Henrikson, Marine, and Tomaselli

Rotation Hours: Mon - Fri, 7:30 am to 6 pm; 1 weekend per month on pager coverage.

### A. Electrophysiology, Pacing, and Arrhythmia: Patient Care (see attached “Legend for Learning Activities” for key to learning activities)

	Principal Educational Goals	Learning Activities	Evaluation Methods
1.	Ability to obtain a complete medical history, perform a careful and accurate examination with emphasis on the cardiac exam, and review charts and pertinent records.	DPC, AR	AE
2.	Ability to write a concise evaluation, assess the cardiovascular risk of the patient and make therapeutic decisions and proper interventions based on patient preferences, scientific evidence, and sound clinical judgment.	DPC, AR, CAC, EC, ECG, DSP, MC, FS	AE
3.	Effectively evaluate and manage patients with complex cardiac arrhythmia.	DPC, AR, EP,FS, HR, DSP, CC	AE
4.	Ability to risk stratify patients after being evaluated by EP study.	EP, ECG, IL, CC	AE
5.	Ability to manage patients who have had arrhythmic disorder.	DPC, EP, IL, CC, FS	AE, DSP
6.	Effectively direct the team performing CPR and advance cardiac life support.	DPC, EP, IL, CC	AE
7.	Ability to manage complications from device implantation.	DPC, FS, EP, CC	AE
8.	Ability to understand EP study and perform pacemaker implantation.	DPC, AR, EP, IL, CC	AE
9.	Participation in the interpretation of ECG, 24-hour Holter.	DPC, FS, ECG	AE, PR
10.	Participation in all pacemaker and ICD follow-up and programming using the proper technique and under the supervision of a teaching faculty.	DPC, FS, EP	AE, DSP

### B. Electrophysiology, Pacing, and Arrhythmia: Medical Knowledge

	Principal Educational Goals	Learning Activities	Evaluation Methods
1.	Familiarity with the newest basic science concepts and mechanisms of cardiac electrophysiology.	CC, RC, NC, JC	AE, ECR
2.	Familiarity with current medical literature, clinical trials, and evidence based medicine in cardiac electrophysiology.	JC, CC	AE
3.	Familiarity with the broad spectrum of cardiac electrophysiology	CC, NC, PR	AE, ECR
4.	Familiarity with the pathophysiology of cardiovascular medicine.	AU, EP	AE, DSP

### C. Electrophysiology, Pacing, and Arrhythmia: Interpersonal Skills and Communication

	<b>Principal Educational Goals</b>	<b>Learning Activities</b>	<b>Evaluation Methods</b>
1.	Communicate effectively the consult findings with physician colleagues and other members of the health care team in a timely fashion to assure a comprehensive patient care.	DPC, AR, PC	AE, PR
2.	Present professional findings to patient and family members in a compassionate and informative manner.	DPC, AR	AE, PR
3.	Provide educational instructions and other learning tools to patients to reinforce behavioral modification.	DPC, AR	AE, PR

### D. Electrophysiology, Pacing, and Arrhythmia: Professionalism

	<b>Principal Educational Goals</b>	<b>Learning Activities</b>	<b>Evaluation Methods</b>
1.	Interact professionally with patients, patients' family, colleagues, and other members of the health care team.	DPC, AR, PC	AE, PR
2.	Appreciation of the spiritual and social context of wellness and illness.	DPC, AR, EI	AE

### E. Electrophysiology, Pacing, and Arrhythmia: Practice-Based Learning and Improvement

	<b>Principal Educational Goals</b>	<b>Learning Activities</b>	<b>Evaluation Methods</b>
1.	Commitment to scholarship and the use of evidence based cardiovascular medicine.	JC, RC	FP, PR
2.	Broad reading of the cardiovascular literature and access and research of Medline and Internet tools.	JC, RC	FP, PR

### F. Electrophysiology, Pacing, and Arrhythmia: Systems-Based Practice

	<b>Principal Educational Goals</b>	<b>Learning Activities</b>	<b>Evaluation Methods</b>
1.	Understand the complexities of cardiovascular disease patients and utilize the multidisciplinary resources necessary to care for them.	DPC, AR	AE
2.	Collaborate with other member of the health care team to assure comprehensive cardiac care.	DPC, AR	AE
3.	Understand the system complexities in electrophysiology.	DPC, AR, GR	AE
4.	Willingness to learn by participation in ward rounds, teaching conferences and other educational activities.	DPC, AR	AE
5.	Effective utilization of risk stratification using evidence-based medicine.	DPC, AR	AE
6.	Develop effective communication with referring physician, health care team, patient and their family, regarding purpose and findings of the EP test.	DPC, AR	AE

7.	Expand learning in reading ECG and 24-holter on daily basis.	DPC, AR	AE
8.	Consideration of cost effectiveness and outcome measurements of tests and interventions associated with EP study and device implantation	DPC, AR	AE

## Objectives and expectations of this rotation

Fellows on this rotation are expected to learn the evaluation and management of common arrhythmias;

- Atrial fibrillation
- Atrial flutter
- Atrial tachycardia
- Paroxysmal supraventricular tachycardia
- Ventricular tachycardia
- Bradyarrhythmias

Fellows should develop rationale clinical approaches to common clinical issues unique to this field such as:

- Syncope, near-syncope, and palpitations
- Risk stratification for sudden cardiac death
- Aborted sudden cardiac death
- Rare familial, acquired, and post-surgical disease states that entail arrhythmias
- Unnecessary and necessary ICD shocks

They will also learn the indications for pacemakers, implantable defibrillators, cardiac resynchronization therapy, lead extraction, insertable loop recorders, electrophysiology testing, catheter ablation, tilt table testing, and cardioversion.

## Learning activities

- ECG, SA-ECG, Holter, and Event Recorder interpretation
- Arrhythmia consultations
- Arrhythmia clinic (one-half day per week)
- Antiarrhythmic management
- Performance of tilt table testing
- Performance of cardioversion
- Interpretation of basic intracardiac ECGs
- Interrogation and programming of permanent pacemakers, ILRs, and ICDs
- CXR interpretation (pacemakers/ICDs)
- Pertinent imaging indications/contraindications (echocardiography, CT angiography, MRI)

## Content and methods

- Instruction at the bedside, clinic, and EP lab with the attending electrophysiologist
- Weekly arrhythmia conference
- Weekly ECG conference
- EP reading syllabus (~ 5 review articles)

## Supervision:

The fellows will be supervised directly in the performance of tilt table tests, cardioversions, and device interrogations. All consultations will be reviewed by the attending physician.

**Evaluation Process:** (*fellows will be evaluated on each rotation using a competency-based system on E-Value*).

Following an initial interview at the outset of the rotation the fellows will be evaluated by the applicable service EP attendings at the end of each month with feedback provided periodically during the rotation. They will be specifically assessed on the rotation objectives listed above in addition to their ability to practice evidence-based medicine, maintain professional conduct, demonstrate compassionate care, recognize limitations and improve weaknesses.