

Rotation Name: Consults – Cardiology - Electrophysiology

Rotation Site Leader: Jay Montgomery

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Goal:

The purpose of this educational unit is to attain understanding and competence in common arrhythmia clinical syndromes in the inpatient setting. It will provide residents with deliberate practice in interpretation of electrocardiograms and telemetry, as well as hands-on experience with pacemakers and defibrillators.

Objectives:

By the end of this educational block, learners in this rotation will be able to:

Patient Care

1. Assess, work-up, and manage new onset atrial fibrillation
2. Assess and manage recurrent/sustained ventricular tachycardia (VT storm)
3. Recognize time critical electrophysiologic conditions
4. Utilize basic cardiac device diagnostics and trouble shooting

Medical Knowledge

1. Demonstrate competence in interpretation of EKGs and telemetry
2. Develop a thorough differential diagnosis and systematic approach to wide complex tachycardias
3. Describe the indications for pacemaker and ICD placement
4. Identify the mechanisms and indications for antiarrhythmic therapy
5. Actively observe cardiac device implant, EP study, and/or ablation

Interpersonal and Communication Skills

1. Effectively communicate electrophysiologic condition to patient
2. Ensure closed loop communication of consultant recommendations to primary team

Professionalism

1. Actively engage in EP rounds
2. Interact with primary team and other consultants professionally and collegially

Systems based practice

1. Document assessment and recommendations effectively
2. Tailor management recommendations to patient's clinical status and course

Practice-based learning and improvement

1. Engage in educational content provided (ex lecture)
2. Incorporate evidence into practice
3. Seek feedback

Educational Strategies:

Educational Strategy	Skills (taught and/or assessed)
Bed side rounds	<ul style="list-style-type: none">- Interpretation of EKGs and telemetry- Clinical Reasoning- Presentation skills- Interpersonal communication skills with patient and family
Didactic lecture - Thursdays, 7am Zoom Conference (prev 5053 MCE)	<ul style="list-style-type: none">- Interpretation of EKGs and telemetry- Management of EP conditions- Clinical Reasoning- Emerging literature
EP lab observation	<ul style="list-style-type: none">- Understanding of EP procedures
Individualized Learning	<ul style="list-style-type: none">- Practice based improvement to master arrhythmia syndromes seen

Required Reading:

Rhythm management of Atrial Fibrillation

[EARLY AF Trial](#). Andrade et al. NEJM. Jan 28;384(4):305-315. PMID: 33197159

--Establishes ablation as more effective than anti-arrhythmic drugs in achieving rhythm control for paroxysmal atrial fibrillation.

[EAST AF Trial](#). Kirchhof et al. NEJM 2020 Oct 1;383(14):1305-1316. PMID: 32865375.

--Early rhythm control for atrial fibrillation leads to a reduction in the composite of stroke/HF hospitalization/acute coronary syndrome. Rhythm control avia a variety of anti-arrhythmic drugs and some ablation.

Stroke Prevention in Atrial Fibrillation

[LAAOS III](#). Whitlock et al. N Engl J Med 2021; 384:2081-2091

--Surgical removal of left atrial appendage reduces embolism risk even compared to those on oral anticoagulation

[AMULET IDE](#). Lakkireddy et al. Circulation. 2021;144:1543–1552

--The amulet device is as effective as the watchman in preventing embolism

Pacemakers

[Cardiac Pacemakers](#): Function, Troubleshooting, and Management: Part 1 of a 2-Part Series. Mulpuru et al. JACC. 2017 Jan 17;69(2):189-210. PMID: 28081829

VT management

[VANISH Trial](#). Sapp et al. NEJM. 2016 Jul 14;375(2):111-21. PMID: 27149033

--For patients with ischemic cardiomyopathy and an ICD having VT despite anti-arrhythmic drug therapy, VT ablation reduces the composite risk of death/VT storm/appropriate shock as compared to escalation of anti-arrhythmic drug therapy (this is especially true among patients already on amiodarone).

Suggested Reading and/or Resources:

Joshua

Cooper

YouTube

Channel:

[josh cooper md - YouTube](#)

--Excellent educational videos prepared by Joshua Cooper, section head of electrophysiology at Temple Medical Center.

Medtronic Academy

www.medtronicacademy.com

--Interactive website which teaches the fundamentals of pacemaker and defibrillator function and programming.

UpToDate Article: Implantable cardioverter-defibrillators: Overview of indications, components, and functions

By Leonard Ganz

--Gives a broad overview of why we place ICDs, their primary functions, and different implant options.

Evaluation:

(Ideally, the evaluation items below resemble the learning objectives above)

Assessment Form:

1. Please identify 3 skills you observed the resident do well? (Text Box)
2. Please identify 3 skills the resident needs to improve or should do differently. How should they do it differently? (Text Box)

(Ideally, limit to 8-10 skills that you ask your faculty to assess)

For the remaining items, please rate 1-5 (or did not observe):

1 = cannot do this skill

2 = can do this skill only with direct supervision (some needs to be there to supervise)

3 = can do this skill with indirect supervision (an attending or fellow is close by or available by phone)

4 = can do this skill unsupervised (they are ready to graduate for this skill)

5 = has achieved mastery of this skill (They can teach others how to do this skill well)

3. Interpret an EKG (PC2, MK3)
4. Describe the differential of wide complex tachycardia (PC3, MK1)
5. Manage new onset atrial fibrillation (PC4, MK2)
6. Identify indications for pacemaker placement (PC4, MK3)
7. Identify indications for ICD placement (PC4, MK3)
8. Utilize basic cardiac device diagnostics and troubleshooting (PC4)
9. Identify mechanisms of antiarrhythmic drug therapy (MK1)
10. Manage a patient with VT storm (PC4, MK2)
11. Observe a cardiac device implant, EP study, and/or ablation (MK4, SBP3)
12. Accurately convey consultant recommendations (ICS2, P1)
13. Seek and respond to feedback (PBL2)