CV Med Fellow Arrhythmia Service Rotation

The goal of the Arrhythmia Service rotation is provide the CV Med Fellow with a comprehensive experience in the diagnosis and treatment of cardiac arrhythmias.

Learning Objectives: After completing this rotation the Cardiology Fellow should be able to:
- Interrogate and assess function of pacemakers and ICDs.
- Diagnose and treat common arrhythmias such as atrial fibrillation, atrial flutter, SVT, A-V block, and VT acutely and chronically.
- Describe the management of syncope.
- Interpret abnormalities of ECGs, Ambulatory ECGs, and ECG stress tests.
- Supervise and perform ECG stress tests.
- Describe to a physician or patient the basic elements, success rate, and risks of common arrhythmia procedures.

Arrhythmia Service Faculty
Paul J. Wang, MD, Director, Arrhythmia Service and Cardiac Electrophysiology Laboratory
Sung Chun, MD, Director, Pacemaker and ICD Service
Karen Friday, MD
Amin Al-Ahmad, MD

The CV Med Fellow should meet with the Arrhythmia Service Director at the beginning, middle, and end of the rotation and should not hesitate to contact him at any time.

Schedule:
Morning Rounds: 8am Monday, Thursday, Friday; 7:30am Wednesday in the ECG Reading Room
The CV Med fellow should see patients on the Arrhythmia Service prior to rounds. The CV Med fellow will update the inpatient list on the board and on the EP Excel spreadsheet in the ECG Reading Room.

Tuesday Arrhythmia conference: 7:30am-9:00am required attendance

Inpatient Arrhythmia Service and Consultations
Inpatients who have had a procedure/device and are in hospital for the day after the procedure/device will be followed by the responsible EP fellow. For other patients on the Arrhythmia Service, the CV med fellow will see inpatient arrhythmia service patients and arrhythmia consultations with the Arrhythmia Service Attending on Service/Consultation. The CV med Fellow should write an initial admission note or consultation note and daily notes on all patients, and communicate with the housestaff daily to coordinate medical care of these patients.
Heart Station Responsibilities

ECG
The CV Med Fellow will read the ECG’s put in the fellows box. These represent a fraction of the daily ECGs at Stanford University Hospital, those done from from 10pm-10am. The CV med fellow should
- Over-read the computer-generated interpretation,
- Make corrections using the computer code. Remember to include the comparison with the previous ECG even if it is NPR (no prior record available).
- Give the corrected ECGs to the ECG technicians to make the final copy.
- Identify 5 ECGs each day to review with the Arrhythmia Service attending.
- Dr. William Hancock, an internationally known expert in ECGs is also available for any questions. In addition, he usually schedules a regular time to meet with the fellow to go over any interesting ECGs.

ECGs are over-read by the attending on the ECG Service (who is usually not one of the Arrhythmia Service attendings). The CV med fellow should also work with the ECG attending to get feedback on the ECGs they have read.

Treadmill testing
Treadmill tests are done at the treadmill laboratory in the Heart Station or in Nuclear Medicine in the ground floor, and are generally managed by a RN alone. The fellow should be available to supervise high risk patients, which include:
- Recent MI
- ICD
- History of arrhythmia, particularly VT
In order to facilitate the schedule for the Cardiology Fellow, the nurses from the exercise lab will post the known cases for the next day on the board in the ECG room. However, some patients may be scheduled at the last minute, or be not as initially described. Thus, there may be unscheduled requests for physician attendance.

Holter Monitors
- Holter monitors should be read within 48 hours.
- The form used for reading Holter monitors is attached. When reading a Holter, indicate (Circle) the appropriate term. It would facilitate the techs typing the report if you also cross-out the terms you do not wish to use.
- The impression section is optional, and is usually used to provide a clinical summary of the results. Some common impressions for arrhythmias are included. None of these need to be used.

Device Clinics and Device Programming
CV Med Fellows should attend one Device Clinic each week (Monday, Wednesday, and Thursday mornings) and learn to do routine device interrogations and evaluations. Monday may be the best day since Tilts and Cardioversions are not scheduled routinely for that day.
**Arrhythmia Clinics**
The CV Med Fellow is invited but not required to attend one half-day Arrhythmia Clinic session a week (Wednesday morning is open).

**On-call Responsibilities**
During the month, the CV Med Fellow will cover one week of Arrhythmia service call.

**Dictations**
The CV Med Fellow should dictate discharge letters on all patients on the Arrhythmia Service not on the EP fellows service and on all consultation patients receiving arrhythmia devices or arrhythmia procedures. The date of dictation and the dictation number should be entered into the Arrhythmia Service Excel Database.

**EP Procedures**
CV Med Fellows should observe part of at least one of the following procedures during the month rotation: ICD implantation, Pacemaker implantation, Electrophysiologic testing, Radiofrequency Ablation.

**Absences**
The CV Med Fellow should inform the Arrhythmia Service Director and the Arrhythmia Service Attending on Consultation of any absences in advance.

**Head-up Tilt Table Tests and Cardioversions**
CV Med fellows will help perform head-up tilt table tests and elective DC cardioversions.

**Cardioversions**
- Outpatient cardioversions are admitted to B2 the day of the scheduled procedure.
- Use Cath orders and modify as appropriate for cardioversion: ECG monitoring, baseline ECG, electrolytes, INR, NS@TKO.
- Anesthesia should have already been arranged for patient at the time the procedure was scheduled (Sandy, cardiology clinic x 36457)
- The Cardiology fellow is to provide a short H&P and physical exam before the procedure. Laboratory tests, particularly the INR and serum potassium must be reviewed and acceptable before the procedure.
- After the procedure,
  - Discuss with the Arrhythmia Service attending who is to call or page the referring physician and report the outcome.
  - The fellow types the report into the eMedRec database. Delete the name of the attendings not involved in the procedure. A copy is printed out and given to Arrhythmia Service Administrative Assistant.
  - Add the patient information to the Arrhythmia Service Excel Spreadsheet.

**Tilt table tests**
- Patients scheduled for outpatient tilt table tests are admitted to B2 the day of the scheduled procedure.
  - Modify cath orders or write
- The Cardiology fellow is to provide a short H&P and physical exam before the procedure.
- After the procedure,
  - Discuss with the Arrhythmia Service attending who is to call or page the referring physician and report the outcome.
  - The fellow types the report into the eMedRec database. Delete the names of attendings not involved in the procedure for that report. A copy is printed out and given to the Arrhythmia Service Administrative Assistant.
  - Add the patient information to the Arrhythmia Service Excel Spreadsheet.

**EMed Rec database**
- All EP service reports, including tilt table tests and cardioversions are to be entered into the patient database.
- Initial screen should be cvmed log-in. If not, you are in the wrong place.
- Please contact Dr. Karen Friday for a password.
- Search to find patient name.
- If not already in database, add as new patient.
- Templates for cardioversions and tilt reports are available within the database.
HOLTER MONITOR REPORT

Patient name       ID
1. Recording time hrs Minutes  Recording quality: Excellent  Good  Fair  Poor
2. Basic rhythm is Sinus, Atrial Fibrillation  AV paced  VVI paced  A sensed V paced
3. Heart rate ranged from to bpm (mean bm)
4. Maximum HR occurred at . Minimum HR occurred at .
   Mean hourly HR was >100 bpm from to .
5. There were no ____ pauses. The longest was _______ seconds and occurred at ___________.
6. PACs were absent rare occasional frequent. (Mean /hr) (Total in recording were _____)
   Range to /hr.
   There were no ____ episodes of SVT ranging from to _____ beats. The fastest rate was ____ bpm.
   SVT appeared to be atrial fibrillation atrial flutter AVRT/AVNRT atrial tachycardia uncertain.
7. PVCs were absent rare occasional frequent. (Mean /hr) (Total in recording were _______)
   Range to /hr.
   Episodes of bigeminy were rare occasional frequent.
   Episodes of trigeminy were rare occasional frequent.
   There were no ____ couplets.
   There were ____ episodes of VT ranging from ___ to ___ beats with rates up to _____ bpm.
   The longest episode occurred at ___________.
8. The diary was not returned returned without entries with no symptoms reported and reported symptoms of:
    at . Rhythm strips show
    at . Rhythm strips show

9. Impression: Holter monitor demonstrates
   • no remarkable findings.
   • elevated mean hourly heart rate suggesting inappropriate sinus tachycardia, excess
catecholamines, deconditioning, or possible drug effect. Clinical correlation is suggested.
   • tachycardia to bpm with pauses to seconds suggesting the possibility of tachy-brady
   syndrome.
   • Wenckebach (type I second degree AV block) occurring in the setting of slowing of heart rate
   which is consistent with increased vagal tone.
   • that symptoms of ______________ are in excess of ectopy recorded.
   • atrial/ventricular ectopy which appears to be in excess of the symptoms reported.
   • that symptoms of __________________________ appear to be associated with ___________

I have personally reviewed this test result and agree with the findings reported above.