

*Current Management of Atrial Fibrillation*

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*DISCLOSURES*

- \*I have no financial conflicts to disclose
- \*Book Women: Fit at Fifty. A Guide to Living Long. Available in vendor area

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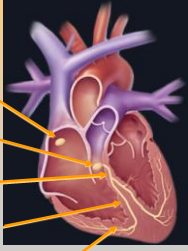
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*Heart Beat Anatomy*



**THE PURKINJE NETWORK**

- Bundle Branches
- Purkinje Fibers
- Moves the impulse through the ventricles for contraction
- Provides 'Escape Rhythm': 20-40 BPM

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## Normal EKG Activation




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## Atrial Fibrillation

- \* Incidence 2-3 per 1000 population btw 55-64. Increases with age
- \* Btw 2010 and 2050 expected to double to 5.6 million adults
- \* 350,000 hospitalizations & 5 million office visits for A Fib (2001)
- \* Underlying etiology in 75,000 strokes per year with 5 fold increased risk of ischemic stroke

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## Fibrillation vs Flutter

- \* Fibrillation is a different beast than atrial flutter
- \* The P waves are referred to as flutter or f waves
- \* Appear in a saw-tooth pattern
- \* Regular atrial rhythm; vent. rhythm may be regular or irregular

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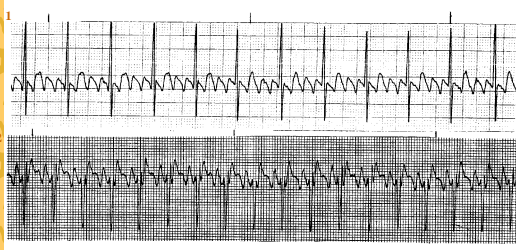
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## Atrial Flutter Strips




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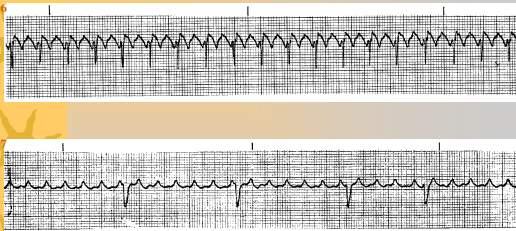
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## Atrial Flutter Strips (cont.)




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## Atrial Fibrillation

- \* Can be extremely challenging to treat
- \* Problematic in patients with HF
- \* Is associated with increased risk of stroke
- \* Three main types
  - Paroxysmal (intermittent)
  - Persistent (greater than 7 day)
  - Permanent (greater than 1 year)
  - Recurrent (2 or more episodes)

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## Atrial Fibrillation

Atria are irritable, no longer beating, just quivering (fibrillating)

No P waves, wavy baseline of fibrillatory or f waves

Random, chaotic conduction through the AVN totally irregular ventricular rhythm, QRS complex <0.12 seconds unless BBB present or aberrant conduction

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## Atrial Fibrillation

If ventricular rate is >100/minute the rhythm is said to have a rapid ventricular response or an uncontrolled response

< 100/min is a controlled ventricular response

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## Atrial Fibrillation Strips



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## Atrial Fibrillation



- \* Substrate is located around the pulmonary veins

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## Consequences of A Fib



- \* Symptoms
- \* Stroke
- \* Cardiomyopathy/heart failure (chicken or egg question)
- \* Consequences of medications
  - Coumadin
  - Antiarrhythmics

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## COMMON SYMPTOMS



- \* Palpitations
- \* Fatigue
- \* Shortness of breath
- \* Fluid retention
- \* Exercise intolerance
- \* Lightheadedness/presyncope
- \* Chest discomfort

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## How to Treat AF

- \* Many approaches to AF, but not all are right for every patient
- \* Pharmacological therapy
- \* Cardioversion
  - Chemical
  - Electric
- \* Radiofrequency (RF) ablation
- \* Surgical approaches
- \* Stepwise approach best starting with stroke risk assessment

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## CHADS2

- \* Cardiac Failure = 1
- \* Hypertension = 1
- \* Age > 75 = 1
- \* Diabetes = 1
- \* Stroke or TIA history = 2
- \* Score >2 = Warfarin
- \* Score of 1 = aspirin or warfarin
- \* Score 0 = aspirin

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CHADS <sub>2</sub> Score	Stroke Risk %	95% CI
0	1.9	1.2-3.0
1	2.8	2.0-3.8
2	4.0	3.1-5.1
3	5.9	4.6-7.3
4	8.5	6.3-11.1
5	12.5	8.2-17.5
6	18.2	10.5-27.4

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## Warfarin

- \* Anticoagulant
- \* INR between 2-3
- \* Consider fall risk and other consequences of bleeding
- \* Frequent monitoring
- \* Other medication interferences

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## Dabigatran

- \* Direct Thrombin inhibitor
- \* Dosed 150mg bid
- \* No INRs required
- \* Less potential for interaction with other medications
- \* Lower dose in renal insufficiency
- \* New finding related to bleeding

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## Rivaroxaban (Xarleto)

- \* New oral factor Xa inhibitor
- \* Approved for nonvalvular atrial fibrillation
- \* First agent approved for prevention of DVT
- \* Noninferior to warfarin
- \* Less intracranial and fatal bleeding
- \* Once daily dose of 20mg. 15mg if Cr Cl 15-50ml/min

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Increased Risk of Stroke After Discontinuation in Nonvalvular Atrial Fibrillation: Discontinuing XARELTO<sup>®</sup>, in the absence of adequate alternative anticoagulation, increases the risk of thrombotic events. An increased rate of stroke was observed during the transition from XARELTO<sup>®</sup> to warfarin in clinical trials in atrial fibrillation patients. If XARELTO<sup>®</sup> must be discontinued for a reason other than pathological bleeding, consider administering another anticoagulant.

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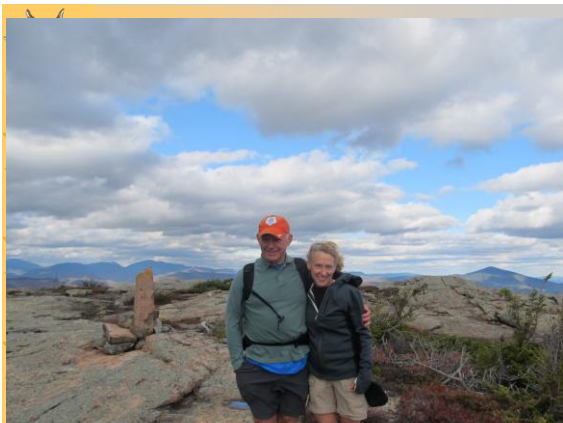
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### Case Study

- \* 57 year old female awakens in the morning from palpitations
- \* After one hour, feeling poorly
- \* Notes heart “fast and pounding”
- \* Feels the irregularity
- \* No cardiac history
- \* No significant medication issues
- \* On no routine medications

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## Case Study

- \* Arrives in ER
- \* Atrial fibrillation with RVR
- \* Diltiazem converts quickly
- \* What might next steps be?

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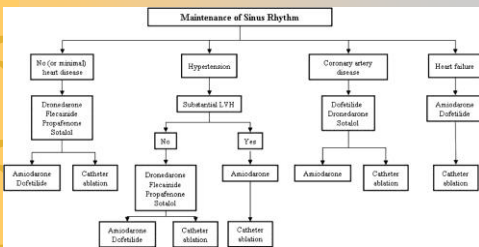
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et al. *Circulation* 2011;123:104-123

American Heart Association  
Learn and Live

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## First tier strategy

- \* First tier strategy
- \* Beta Blockers
- \* Calcium channel blockers

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## CALCIUM CHANNEL BLOCKERS



- \* Cause vasodilatation and reduction of peripheral vascular resistance
- \* Also act on the nodal tissue to slow conduction (verapamil and diltiazem)
- \* Used for hypertension, supraventricular arrhythmias, angina
- \* Caution when combined with other CV agents
- \* Contraindicated in patients with HF due to negative inotropic effect

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## SOTALOL



- \* Mixed class II and III – has antiarrhythmic and beta blocking effects
- \* Useful for ventricular arrhythmias and for a fib/flutter
- \* Can cause prolonged QT – Torsades
- \* Check an EKG after starting and increasing doses
- \* Not a good choice in HF

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## FLECAINIDE



- \* Class IC antiarrhythmic
- \* Used for PSVT, A fib/flutter and ventricular arrhythmias
- \* Can be proarrhythmic
- \* Need to monitor ECG initially

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## AMIODARONE

- \* Mixed Class III antiarrhythmic
- \* Less likely than sotalol to prolong the QT interval
- \* Good drug when LVD exists
- \* Long half life
- \* Interaction with other meds (warfarin)

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## AMIODARONE

- \* Many side effects
- \* Need to monitor for these
- \* Guidelines through the HRS
- \* At baseline- LFTs, TSH, CBC, INR
- \* Evaluate the lungs- CXR vs PFTs
- \* Repeat regularly

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## DRONEDARONE

- \* New drug similar to amiodarone – without iodine group
- \* Properties of all 4 antiarrhythmic categories
- \* Inhibits calcium, sodium and potassium channels and has alpha and beta blocking properties

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## *DRONEDARONE*



- \* Dosed as 400mg bid
- \* Do not use with other antiarrhythmic or QT prolonging drugs
- \* Contraindicated in patients with Class 4 HR or Class 2-3 with recent exacerbation
- \* Monitoring of side effects (as with amiodarone) not necessary

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## *Dofetilide (Tikosyn)*



- \* Must be hospitalized to initiate.
- \* Monitor QRS duration

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## *Radiofrequency (RF) Ablation*



- \* Application of RF energy directly to cardiac tissue to destroy or alter conduction pathways involved in arrhythmias
- \* Catheter technique
- \* Not appropriate for all patients or all arrhythmias
- \* Often used when other therapies fail or are not desired
- \* A curative procedure—for the right candidates

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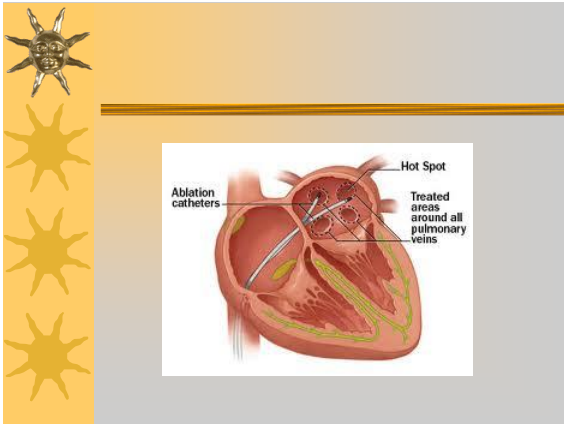
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### Atrial Flutter/Fibrillation: Treatment

- \* Indications for synchronized cardioversion
  - Any unstable condition related to tachycardia
  - Chest pain
  - AMI
  - Shortness of breath
  - Pulmonary congestion/CHF
  - Decreased level of consciousness
  - Low blood pressure
  - Shock

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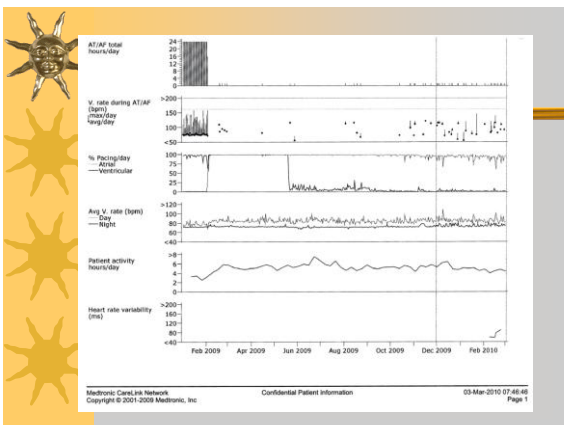
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*QUESTIONS?*



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