








# Management of AF

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## What are my objectives?

- Effectively apply new guidelines for:
  - rate control for rapid ventricular response
  - identifying and chemically /Electrically cardioverting appropriate patients
  - To urge the need of Anticoagulation for appropriate patients in AF group



## A few stats, as usual

- Prevalence AF - 0.4% to 1%  
 > 8% at Age above 80 yrs
- Incidence - AF increases < 0.1% / year in people < 40 y to over 1.5% / year among women and 2% among men > 80 yrs.
- rate of ischemic stroke among patients with Nonvalvular AF ~ 5% per year, 2 to 7 times that of people without AF

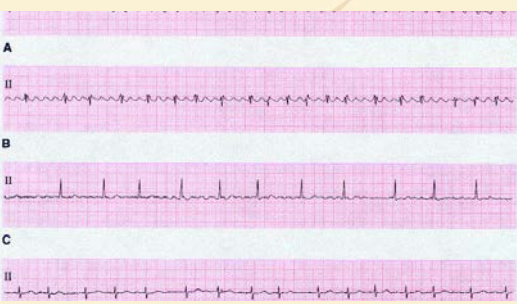





## A few stats, as usual

- stroke Risk increases with age; the annual stroke risk attributable to AF was 1.5% in participants b/n 50 to 59 y and 23.5% in those aged 80 to 89 y
- 5% patients with non-rheumatic AF stroke/ year (1 of 6 strokes)
- rheumatic/valvular AF: 5 times greater risk

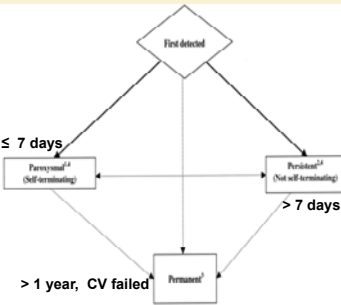



## Various types of ECG



## Classifying A Fib



- Recurrent AF :  
 ≥ 2 episodes
- Lone AF :  
 < 60 yrs, Absent  
 Cardiopulm dse  
 Absent HTN

### Evaluating A fib

- History
- Phys Exam : pulse, JVP, Murmur, S3, Rub pneumonia,
- Thyroid Fn
- CXR
- Holter
- Event recorder
- Echo
- Others : TEE , TMT, EP Study

### BAD outcomes if untreated

- Loss of synchronous mechanical activity
- rapid heart rate  
decreased hemodynamic function
- Tachycardia induced Cardiomyopathy
- Worsening Heart failure
- Thromboembolism – Strokes
- QOL index

### Priorities for Management of AF

*The Patient Care Pathway*

Rhythm Control

Prevention of Thromboembolism

Rate Control

### Treatment plan

- 3 objectives
- 1- Rate control
- 2- Rhythm control
- 3- Prevention of Thromboembolism

### Rate control

- Rate control without attempts at restoration of NSR reasonable in asymptomatics
- If rate control offers inadequate symptom relief restoration of NSR is long term goal
- Before choosing rate control as long term strategy clinician should consider how permanent AF is likely to affect him in future

- RACE & AFFIRM do not apply to younger pts without Heart dse or pts whose dependency on NSR
- In older pts amelioration of symptoms by rate control avoids attempts of CV
- Rate vs rhythm control gives similar symptom relief, less exercise tolerance
- target: 60-80 bpm rest  
90-115 with exercise
- control based on depression AV conduction

### Ventricular Rate control

- Adequate V rate control during AF improve symptoms & avoid Tachycardia mediated CMP
- Control of V rate control is important in Rest and during Exertion
- AFFIRM trial – Rate control Avge HR = 80/mt
- Or avge HR up to 100bpm during Holter or maximum HR 110bpm in 6 mt walk test

### HR control :Drug dosage

Drug	IV dose(load/maint)	Oral dose
Esmolol	500mcg/kg, 60-200mcg/kg/mt	NA
Metoprolol	2-5 mg bolus 2mt	25 – 100mg bid
Atenelol	NA	25 -100 mg /d
Carvedilol	NA	6.25 - 50 mgbid
Diltiazem	0.25 mg/kg bolus , 5-15mg/hr	120 – 480 mg/ d
Verapamil	0.75 – 1.5 mg/kg	120 -480 mg/d
Digoxin	0.25 mg q2hr, 0.125 mg /d	0.125 - 0.375 mg /d

### Rhythm control

- Elective DC cardioversion
- Pharmacological cardioversion
- Catheter ablation

### Cardioversion

- Pharmacological / Shock
- DC CV more effective than pharmacol CV
- More recent AF more effective Pharm CV
- Disadvantage of DCCV is requirement of anaesthesia
- Disadvantage of pharmac CV is risk of torsades
- Risk of Thromboembolism does not differ b/n DCCV and Pharmac CV
- Signif sinus bradycardia is expected after CV in pts on AVN blocking drugs

### DCCV

- Shocks to be delivered synchronous to R wave
- Biphasic defibrillator to be considered
- Rapid Vent response non responsive to drugs in pts with IHD, hypotension,angina, HF– Prompt DCCV recommended
- DCCV is contraindicated in pts with digitoxicity or hypokalemia

### Pharmacological CV

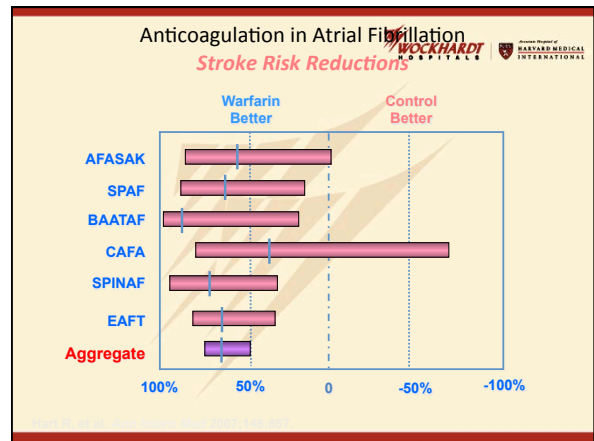
- IV Amiodarone / IV Ibutilide
- Alternative to DCCV who do not have HF
- More effective when AF is recent onset
- Can be used to facilitate DCCV
- Avoid if baseline QTc is prolonged

### Rhythm control – Drugs

Drug	IV load/Maint dose	Oral dose
<b>Class I</b>		
Flecainide	NA	50 -150 mg bid
Propafenone	NA	150- 300mg qid
<b>Class III</b>		
Amiodarone	150 mg +0.5-1 mg/mt	800 mg -1 wk,600mg-1wk 400 mg 4-6 wk, 200 mg /dy
Ibutilide	1 mg over 10mt	NA
Dofetilide	NA	250 -500mcg /day
Sotalol	NA	80 -160 mg bid / max -320 mg

- ### Special considerations
- Post op AF: Preop BB for Cardiac surgery  
Preop Amiodarone for pts at high risk (class IIa)
  - Hyperthyroidism: BB
  - AF + WPW syndrome: IV procainamide/Ibutilide  
Urgent DCCV
  - AF in Pregnancy: Digoxin, BB, CaCB
  - AF in COPD: Dilzem/ Verapamil 1<sup>st</sup> choice

- ### Atrial Fibrillation
- A Substantial Threat to the Brain**
- Affects ~4% of people aged ≥60 years  
~9% of those aged ≥80 years
  - 5%/year stroke rate
  - ~30% lifetime risk of stroke
  - 12%/year for those with prior stroke
  - \$ billions annual cost for stroke care
- AF identifies millions of people with a five-fold increased risk of stroke*



- ### Stroke prevention in AF pts
- **Principles**
  - Antithrombotic Rx is recommended in all AF pts regardless of whether a rate control or rhythm control Rx is chosen except those with lone AF
  - Selection of antithrombotic agent should be based on relative risk of bleed /stroke vs benefit ratio
  - Alternatives for warfarin & percutaneous closure of LAA to prevent stroke are all Investigational

- ### Principles of Anticoagulation
- Pts with AF who have HCM, MS or mechanical valve should be treated with Warfarin
  - CHADS<sub>2</sub> Score can be used to stratify pts with nonvalvar AF to determine the need for warfarin
  - Aspirin + Clopidogrel is not a substitute for warfarin
  - Antithrombotic are recommended for pts with Atrial flutter as for those with AF

### The CHADS<sub>2</sub> Score

Stroke Risk Score for Atrial Fibrillation

	Score (points)	Prevalence (%) <sup>*</sup>
<b>C</b> ongestive heart failure	1	32
<b>H</b> ypertension	1	65
<b>A</b> ge >75 years	1	28
<b>D</b> iabetes mellitus	1	18
<b>S</b> troke or TIA in past	2	10
<b>High risk</b>	>3	22
<b>Moderate risk</b>	1-2	33-50
<b>Low risk</b>	0-1	18-51

\*Prevalence of stroke per 100 patient-years

### Antithrombotic Therapy for Atrial Fibrillation

ACC/AHA/ESC Guidelines 2006

Risk Category	Recommended Therapy
No risk factors <b>CHADS<sub>2</sub> = 0</b>	Aspirin, 81-325 mg qd
One moderate risk factor <b>CHADS<sub>2</sub> = 1</b>	Aspirin, 81-325 mg/d or <b>Or Warfarin</b> (INR 2.0-3.0, target 2.5)
Any high risk factor or >1 moderate risk factor <b>CHADS<sub>2</sub> ≥2</b> or Mitral stenosis	<b>Warfarin</b> (INR 2.0-3.0, target 2.5)
<b>Prosthetic valve</b>	Warfarin (INR 2.5-3.5, target 3.0)

### Anticoag considerations for DCCV

- AF >48 hrs or AF duration Unknown, 3 weeks of Anticoagulation (target INR-2.0) prior to DCCV.
- TEE used to assess LA clot as alternative to 3 weeks Oral anticoagulation
- Even after exclusion of LA clot by TEE, at the time of DCCV they should be anticoagulated with Heparin
- Anticoagulation must be continued 4 weeks after DCCV

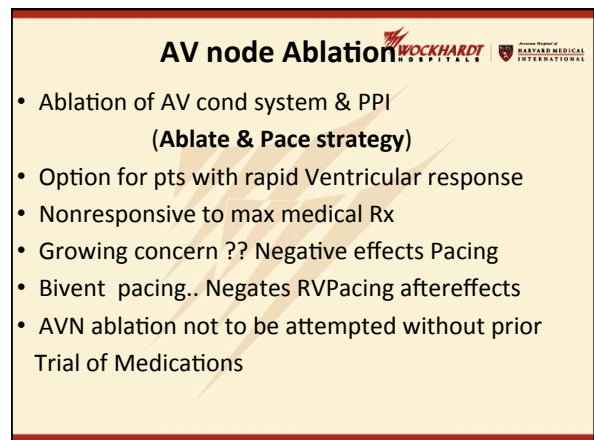
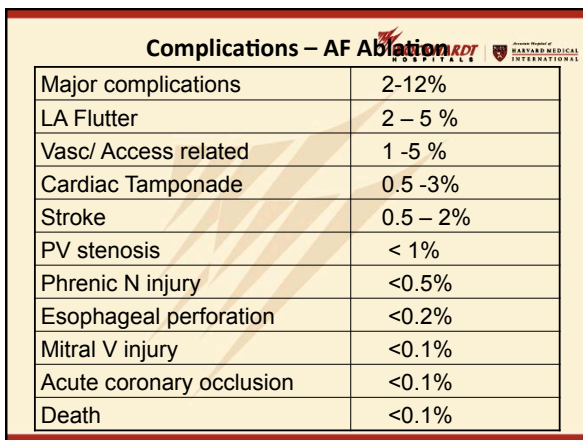
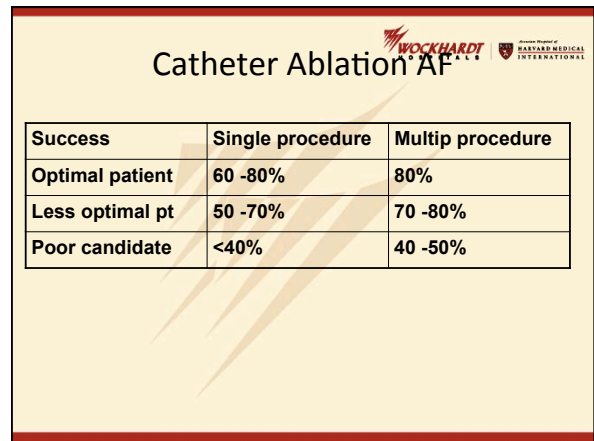
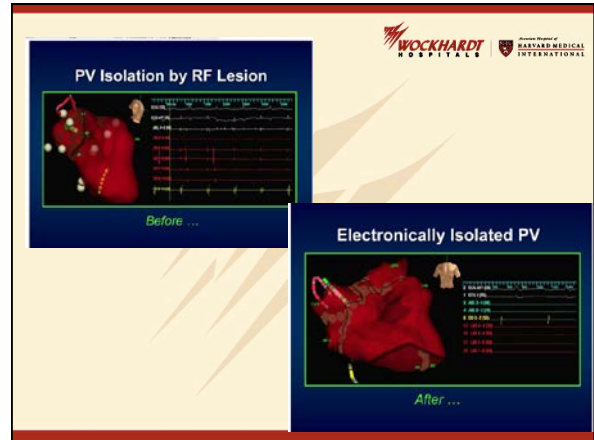
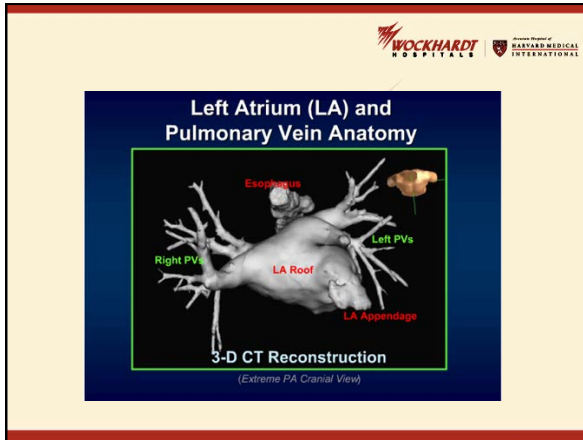
### Catheter Ablation for AF

- Second line Rx in Symptomatic pts in whom one or more Antiarrhythmics have failed
- Younger pts – Preferred Rx over Drugs to maintain Sinus rhythm
- 2 Methodology
  - Target Ectopic Foci in PV
  - Circumferential PV electrical Isolation
- Presence of LA thrombus is Contraindication
- Adequate eval of AF Etiology is mandatory before referring for AF ablation
- Ablation of CTI is 1st line Rx for typical A Flutter

### Catheter ablation

	More Optimal pt	Less optimal pt
Symptoms	Highly symptomatic	Minimal symptoms
Class I & 3 failed	> 1	0
AF type	Paroxysmal	Persistent
Age	Younger < 70 yrs	Older > 70 yrs
LA size	Small < 5 cm	Larger >5 cm
EF%	Normal	Reduced
CCF	Absent	Present
Pulm Dse	absent	Present
Prior TIA	Absent	Present
Obesity	No	yes

**Figure 2. Circumferential Pulmonary-Vein Ablation.**  
A three-dimensional electroanatomical depiction of the left atrium and the pulmonary veins is shown in a right posterior oblique projection with cranial angulation. The two encircling lesions were connected with an ablation line in the roof. Another ablation line was created along the mitral isthmus.



**Case background**

- 46 yr healthy Lady
- 3 yr h/o frequent paroxysmal palpitations
- Paroxysmal AF, increased on exercise
- Recent aggravation, No medical h/o
- ECG- sinus brady, Normal
- Echo- Normal
- Holter – paroxysms AF, symptomatic HR- vary 46 – 148/mt

**Drug h/o**

- Rate control Rx
  - Digoxin
  - BB , Ca C blockers
- Rhythm control Rx
  - Amiodarone tried .....
  - Altered Thyroid Fn , LFT

what next ?

- What do you do to Rx effectively her AF?
- Rx with class Ia drug ?
- AVN ablation & PPI
- Atrial defibrillator
- Catheter Ablation of AF

**Atrial Fibrillation Ablation**

**FOR WHOM?** (Paroxysmal or Persistent)

1. AF w/ "significant symptoms" associated
2. Refractory to AADs
3. Absence of severe structural heart dz.

