Atrial Fibrillation and Flutter

Rate Control vs Rhythm Control

Vicki Hayes DNP, FNP-BC, CVNP-BC

Course Objectives

- Classification of Atrial Fib
- Cardiac evaluation- H&P, Labs, ECG, Monitors, Echo/ TEE, Nuclear Stress Test & possible Cath,
- Rate or Rhythm Control
- Pharmacological selection(s) and interventions
- Patient education and options

Scope of the Problem

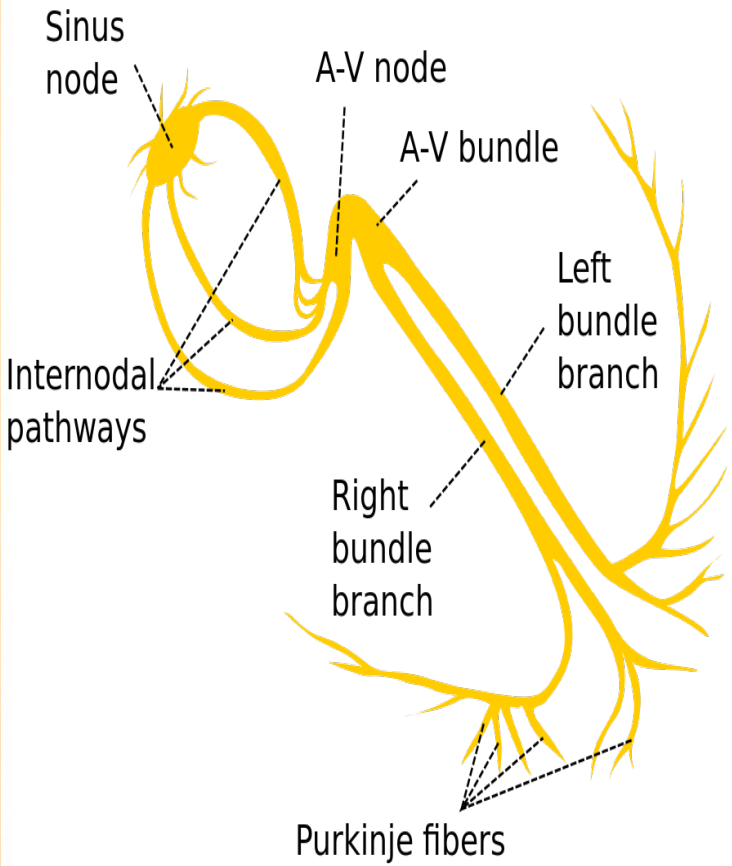
- Most common arrhythmia
- Increased mortality w/ associated conditions:
  - Heart failure/MI/CABG/Stroke/HTN
- Hospitalizations for AF dx- increased 34% 1996 to 2007
- Cost $6 billion to $26 billion

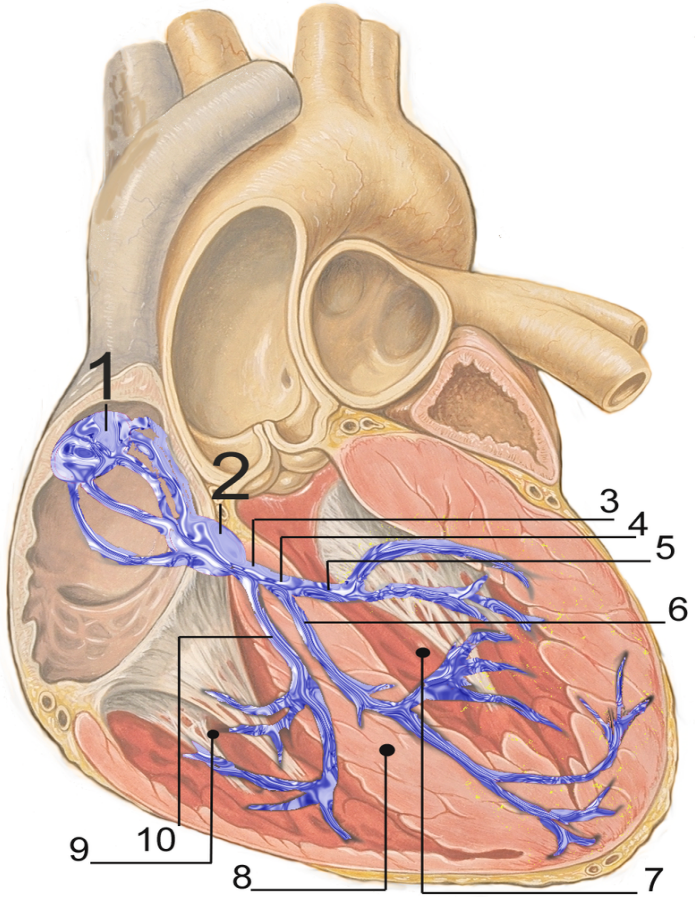
Objective for Arrhythmia Treatment

- Reduce risk of embolic stroke
- Control symptoms
- Improve quality of life
- Prevent long-term cardiovascular sequelae

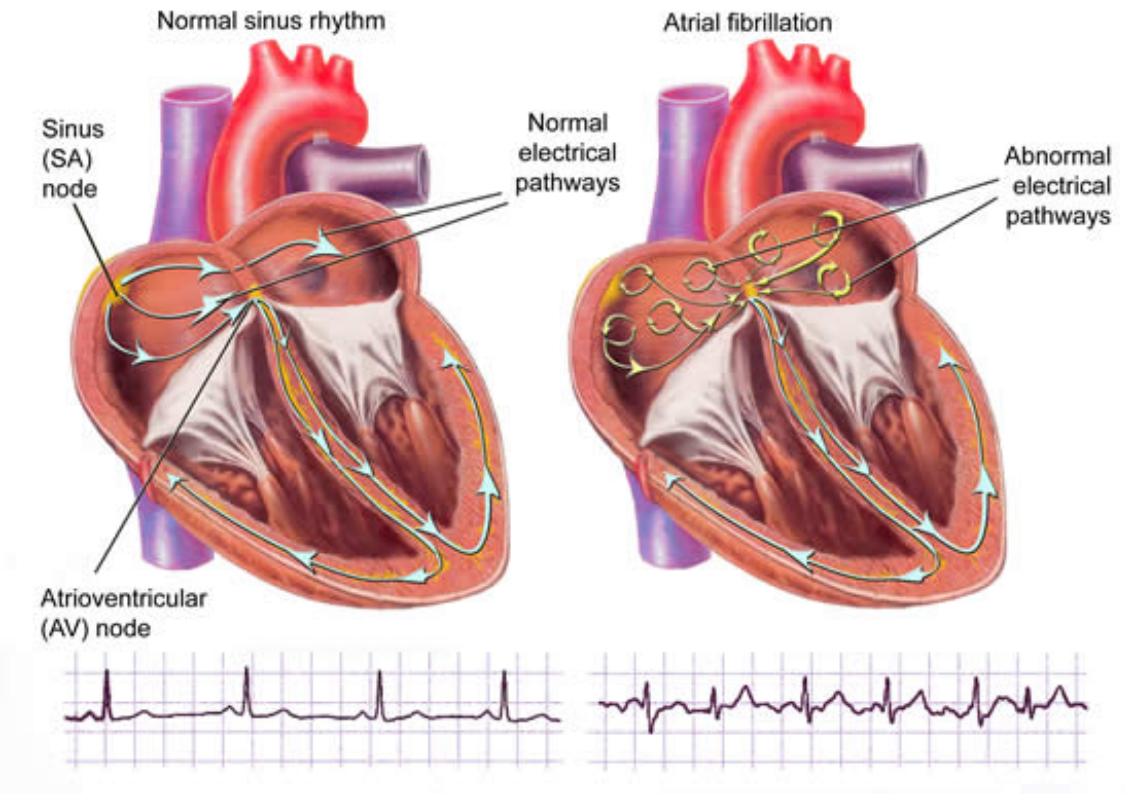
Goals of Arrhythmia Treatment

- Optimum management
- Guidelines - Evidence based
  - Art of applying to the individual
- New and existing knowledge
  - Clinical trial
  - Basic science
  - Provider experience in clinical practice





What is Atrial Fib



- http://medmovie.com/library_id/4979/topic/cvml_0080a/

Who Gets AF?

- Age – rhythm of the mature adult
- Structural Heart Disease
  - Mitral or Tricuspid disorders
- Infections
- Excessive alcohol use (Holiday heart)
- Dehydration
- COPD/ bronchotitis

Secondary Atrial Fibrillation

Secondary Atrial Fibrillation - This type of atrial fibrillation occurs as a consequence of another underlying condition that is reversible if treated. Examples of underlying conditions that may lead to secondary atrial fibrillation include:

• coronary artery disease • heart valve diseases (e.g., rheumatic heart disease) • hypertension (high blood pressure) • pericarditis (inflammation of the lining of the heart) • heart attack • cardiac surgery (e.g., coronary artery bypass graft surgery) • pulmonary embolism (blood clot to the lungs) • hyperthyroidism (overactive thyroid gland)

Definitions of AF

TERM	DEFINITION
• Acute AF /new onset	• On set <48, observed/documented
• Paroxysmal AF	• Terminates spontaneously or intervention within 7 days, can reoccur
• Persistent AF	• Continuous AF sustained >7 days
• Long standing persistent AF	• Continuous AF > 12 months
• Permanent AF	• Joint decision to stop further attempts to restore or maintain SR
• Nonvalvular AF	• AF in absence of rheumatic mitral stenosis, mechanical/bioprosthetic valve or MV repair
• Lone AF	• No identifiable cause, pt < 60yrs

Diagnosis of AF

- Clinical History
- Physical Exam
- EKG / Telemetry / Holter and Event monitoring

Other helpful studies

- Echo –Identify structural heart disease, Identify LVH, Identify LA size, LV systolic function.
  - Would need TEE to - Detect clot in LA, Detect “smoke” in LA
- Stress testing
- Labs

Symptoms of AF

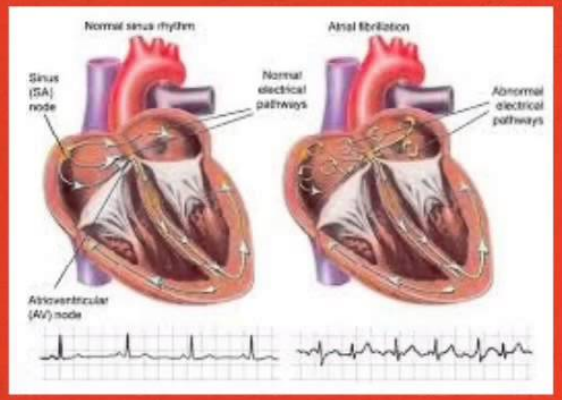
- Palpitations
- Chest pain
- Dyspnea
- Heart failure symptoms
- Stroke / TIA / cryptogenic
- Fatigue
- Syncope

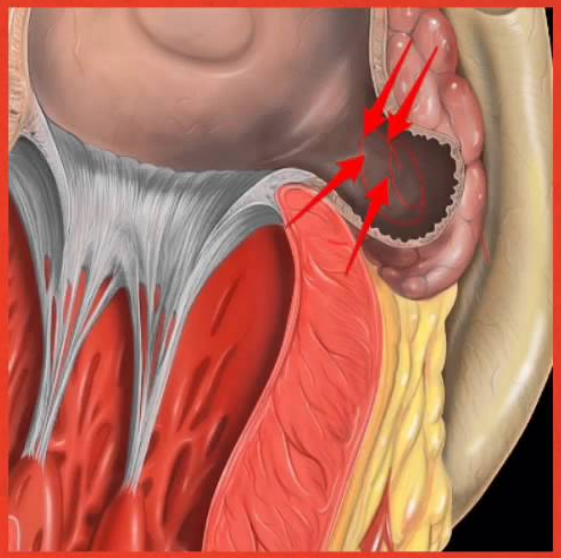
Treatment of AF

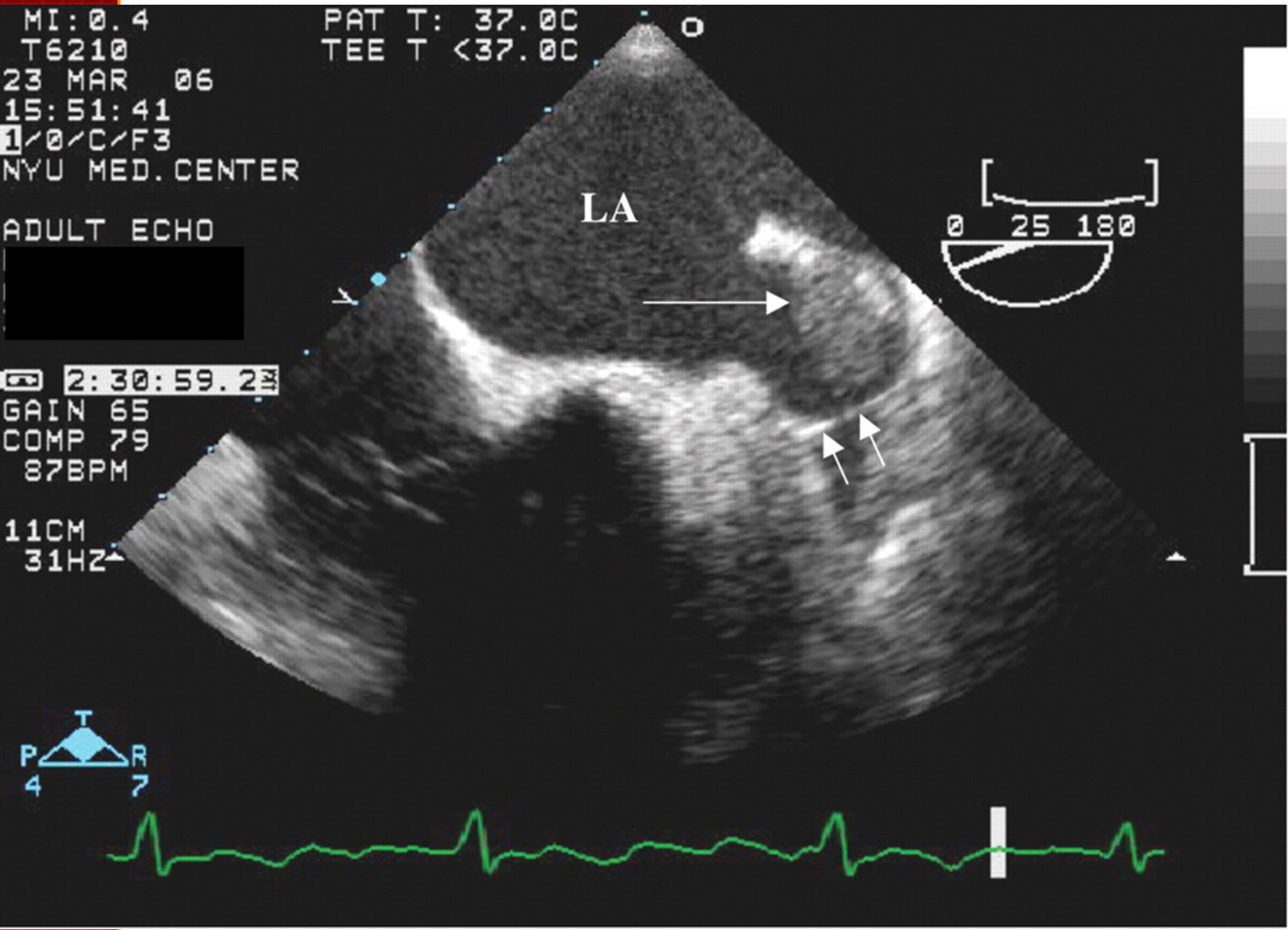
- Rate Control
- Rhythm Control
- Stroke prevention
  - Anticoagulation - risk vs benefits
    - CHADS
    - CHADsVASc
    - HAS BLED

Complications of AF

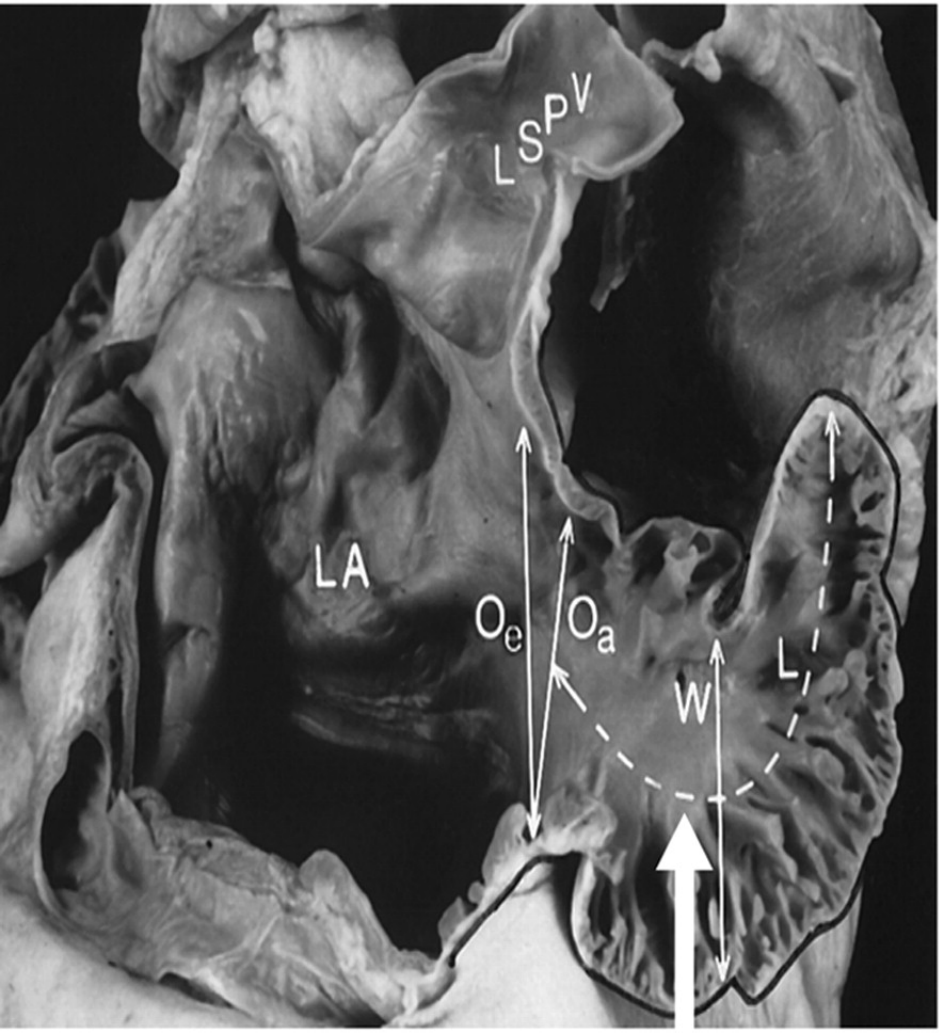
- CVA/TIA
- Heart failure
- Tachycardia induced cardiomyopathy


Normal sinus rhythm
Atrial fibrillation
Sinus (SA) node
Normal electrical pathways
Abnormal electrical pathways
Atrioventricular (AV) node



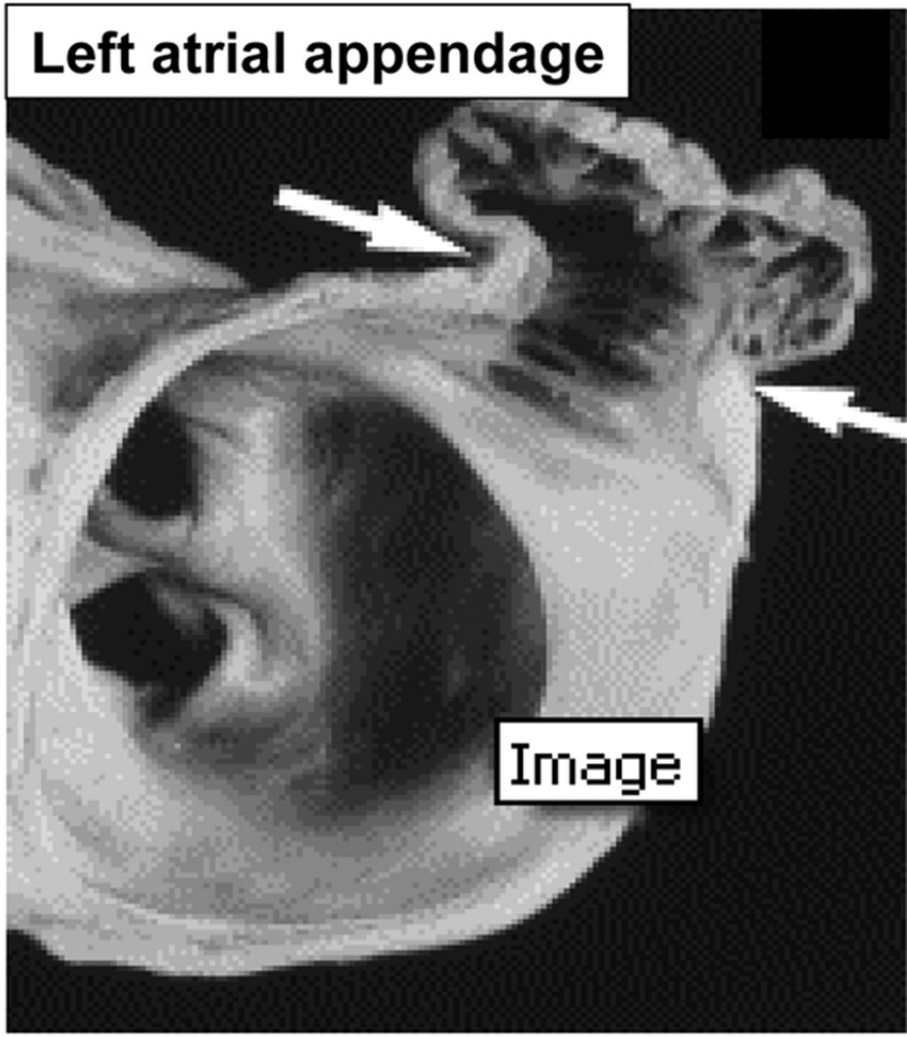

MI:0.4
T6210
23 MAR 06
15:51:41
1/0/C/F3
NYU MED.CENTER
ADULT ECHO
PAT T: 37.0C
TEE T <37.0C
LA
0 25 180
2:30:59.23
GAIN 65
COMP 79
87BPM
11CM
31HZ
T
P
R
4
7

A



Left atrial appendage

B



Applying Classification of Recommendations and Level of Evidence.

SIZE OF TREATMENT EFFECT

ESTIMATE OF CERTAINTY (PRECISION) OF TREATMENT EFFECT

	CLASS I *Benefit >>> Risk* Procedure/Treatment **SHOULD** be performed/ administered	CLASS IIa *Benefit >> Risk* *Additional studies with focused objectives needed* **IT IS REASONABLE** to perform procedure/administer treatment	CLASS IIb *Benefit ≥ Risk* *Additional studies with broad objectives needed; additional registry data would be helpful* Procedure/Treatment **MAY BE CONSIDERED**	CLASS III *No Benefit* or CLASS III *Harm* Procedure/Test / Treatment COR III: No benefit — Not Helpful / No Proven Benefit COR III: Harm — Excess Cost w/o Benefit or Harmful / Harmful to Patients
LEVEL A Multiple populations evaluated* Data derived from multiple randomized clinical trials or meta-analyses	■ Recommendation that procedure or treatment is useful/effective ■ Sufficient evidence from multiple randomized trials or meta-analyses	■ Recommendation in favor of treatment or procedure being useful/effective ■ Some conflicting evidence from multiple randomized trials or meta-analyses	■ Recommendation's usefulness/efficacy less well established ■ Greater conflicting evidence from multiple randomized trials or meta-analyses	■ Recommendation that procedure or treatment is not useful/effective and may be harmful ■ Sufficient evidence from multiple randomized trials or meta-analyses
LEVEL B Limited populations evaluated* Data derived from a single randomized trial or nonrandomized studies	■ Recommendation that procedure or treatment is useful/effective ■ Evidence from single randomized trial or nonrandomized studies	■ Recommendation in favor of treatment or procedure being useful/effective ■ Some conflicting evidence from single randomized trial or nonrandomized studies	■ Recommendation's usefulness/efficacy less well established ■ Greater conflicting evidence from single randomized trial or nonrandomized studies	■ Recommendation that procedure or treatment is not useful/effective and may be harmful ■ Evidence from single randomized trial or nonrandomized studies
LEVEL C Very limited populations evaluated* Only consensus opinion of experts, case studies, or standard of care	■ Recommendation that procedure or treatment is useful/effective ■ Only expert opinion, case studies, or standard of care	■ Recommendation in favor of treatment or procedure being useful/effective ■ Only diverging expert opinion, case studies, or standard of care	■ Recommendation's usefulness/efficacy less well established ■ Only diverging expert opinion, case studies, or standard of care	■ Recommendation that procedure or treatment is not useful/effective and may be harmful ■ Only expert opinion, case studies, or standard of care
Suggested phrases for writing recommendations	should is recommended is indicated is useful/effective/beneficial	is reasonable can be useful/effective/beneficial is probably recommended or indicated	may/might be considered may/might be reasonable usefulness/effectiveness is unknown/unclear/uncertain or not well established	COR III: No Benefit: is not recommended; is not indicated; should not be performed/ administered/ other; is not useful/ beneficial/ effective COR III: Harm: potentially harmful; causes harm; associated with excess morbidity/mortality; should not be performed/ administered/ other
Comparative effectiveness phrases†	treatment/strategy A is recommended/indicated in preference to treatment B treatment A should be chosen over treatment B	treatment/strategy A is probably recommended/indicated in preference to treatment B it is reasonable to choose treatment A over treatment B		

A recommendation with Level of Evidence B or C does not imply that the recommendation is weak. Many important clinical questions addressed in the guidelines do not lend themselves to clinical trials. Although randomized trials are unavailable, there may be a very clear clinical consensus that a particular test or therapy is useful or effective.

*Data available from clinical trials or registries about the usefulness/efficacy in different subpopulations, such as sex, age, history of diabetes mellitus, history of prior myocardial infarction, history of heart failure, and prior aspirin use.

†For comparative-effectiveness recommendations (Class I and IIa; Level of Evidence A and B only), studies that support the use of comparator verbs should involve direct comparisons of the treatments or strategies being evaluated.

Craig T. January et al. Circulation. 2014;130:2071-2104

American Heart Association.

Provider Survival Guide

What does this mean to provider?

Outpatient vs Inpatient

- Safety
  - Stroke prevention – CHADsVASc Score
- Comfort – symptomatic vs asymptomatic
  - Rate Control
  - Rhythm Control

Outpatient Presentation

- Asymptomatic
  - Anti-coagulate
    - Easier w/ newer agents
    - Modify for creatinine clearance
  - Rate Control
    - Beta-blocker
    - Calcium Channel Blocker
    - Digoxin
  - Referral to cardiologist
  - Follow up
- Symptomatic
  - Hospitalization

WWCD – what would cardiologist do?

- Anti-coagulate
- Rate control
- Testing:
  - Holter/event recorder
  - Echo
  - Stress test
  - Cath

WWCD – what would cardiologist do?

- Cardioversion after 4 weeks anticoagulation
- Antiarrhythmic therapy if fail to maintain sinus mechanism
  - Ok to initiate as pt has been anti-coagulated
- EP referral for ablation

Inpatient Presentation

- Onset Unknown
- Asymptomatic:
  - Anti-coagulate 4 weeks and cardiovert
  - Rate control in the interim
- Symptomatic
  - TEE/Cardioversion
  - Anti-coagulation
  - Antiarrhythmics – only after TEE

Inpatient Presentation

Onset known - Observed on Tele

- Anti-coagulation – heparin/lovenox
  - Considerations for long term a/c
    - CHADsVASc Score
- Rate control
- Antiarrhythmics
- Cardioversion

Rate Control

ADVANTAGES

- Reduces symptoms
- No ventricular proarrhythmia
- Reduces tachy-induced CMO
- Low cost

DISADVANTAGES

- Required long-term anticoagualtion
- Impaired hemodynamics
- No long-term prevention of atrial remodeling
- AF becomes permanent

Rate Controlling Medication

- Beta Blockers
  - Metoprolol tartrate/ Lopressor
  - Metoprolol succinate/ Toprol
  - Coreg
  - Zebeta
  - Atenolol
  - Propranolol (Inderal)
  - Nadolol (corgard)
- Bystolic, labetalol
- Calcium Channel Blockers

  Non-dihydropyridine
  - Cardizem
  - Verapamil
- Digoxin
  - Loading
  - Maintenance

Rhythm Control

Advantages

- Maintenance of Sinus mechanism long term
- May not need anticoagulation long term

Disadvantages

- Side effects
- Tikosyn/betapace: 3 days hospitalization
- Flecainide and rythmol should not be use in ischemic heart disease as it is proarrhythmic
- Amiodarone can be proarrhythmic, can affect thyroid and lungs

Rhythm Control

- Ia – procainamide , quinidine, disopyramide
- Ic – flecainide, Rythmol (propafenone)
- III - Amiodarone (Pacerone, Cordarone)

Sotalol (Betapace), Tikosyn (dofetilide)

dronedarone (Multaq)

Rate vs Rhythm

- Rate –
  - Elderly
  - Asymptomatic
- Rhythm
  - Young
  - Symptomatic
- Ablate
  - Young on multiple medications

Other Treatments

- Ablation – treatment, not cure
  - Often need antiarrhythmics
- MAZE
- Hybrid procedures

Special Considerations

- Risk benefit of anticoagulation
  - Anemia
  - GI Bleeding
  - Stroke – hemorrhage conversion
  - Pending procedure or surgery
  - Cryptogenic stroke
- Side effect of OR intolerance to medications
- QRS complexes should be narrow – careful for Wolff-Parkinson-White (WPW)
- Restoration of SR may not eliminate need for long term anticoagulation
- Pacemakers make it safe to treat bradyarrhythmia

Patient Education and Lifestyle Modification

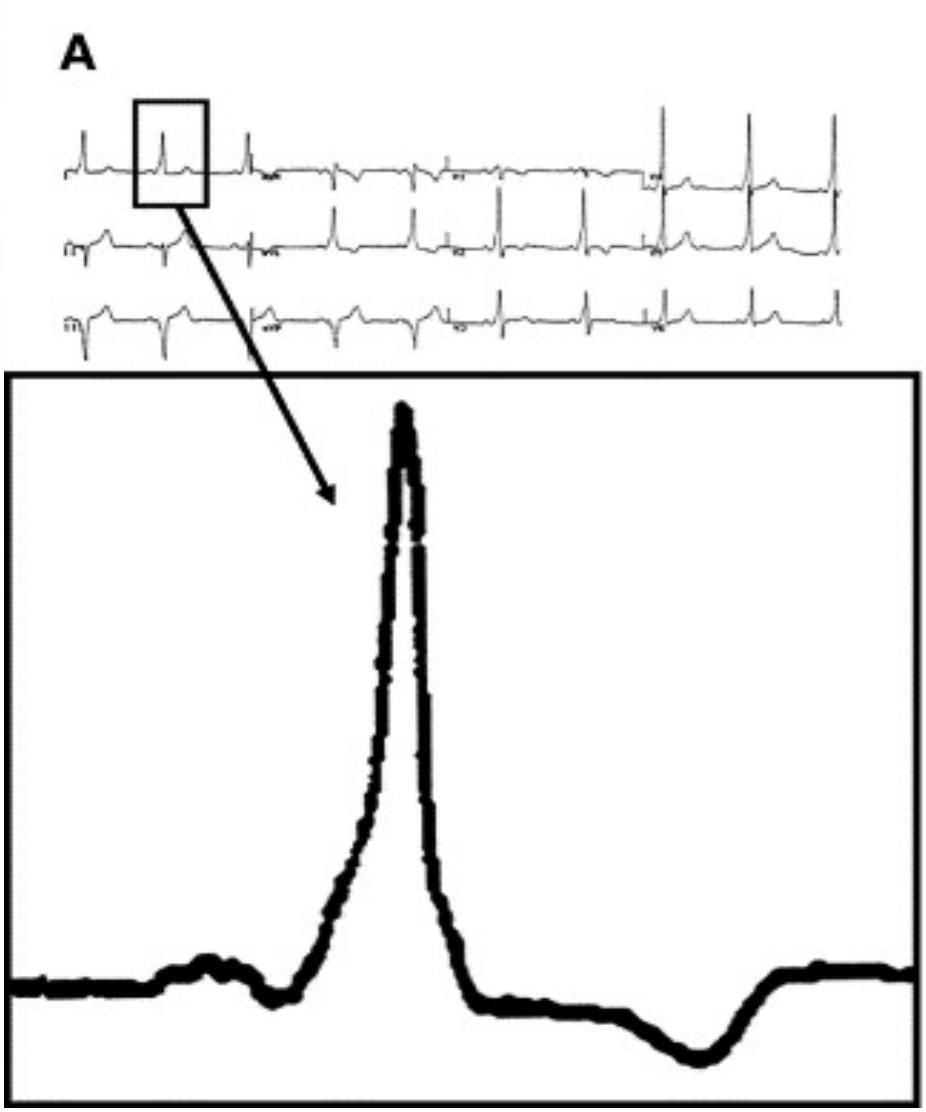
- Diet
  - Especially w/ Coumadin
  - Decrease alcohol
  - Decrease caffeine
- Stop smoking – stimulate that can aggravate arrhythmia
- Caution w/ OTC meds
  - Nasal spray, cold remedies, pseudoephedrine

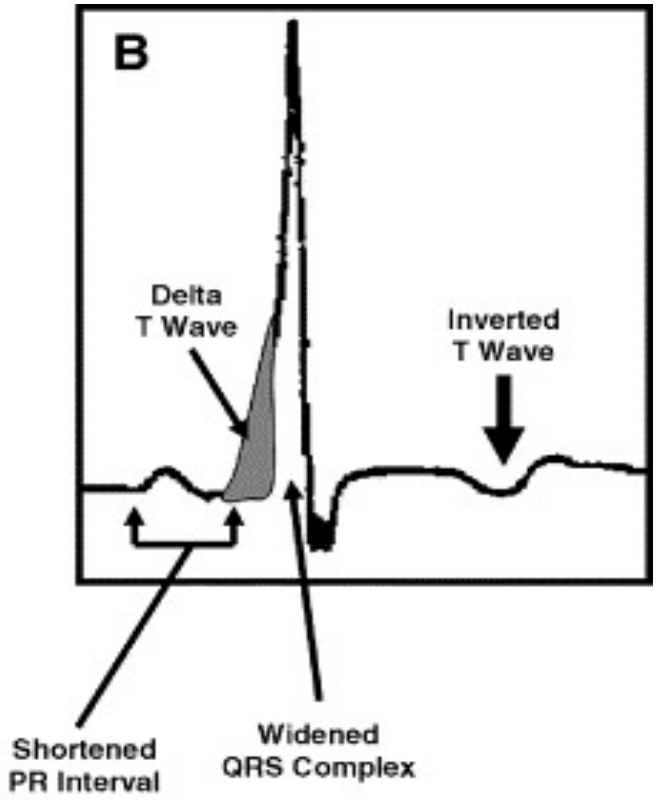
Coping

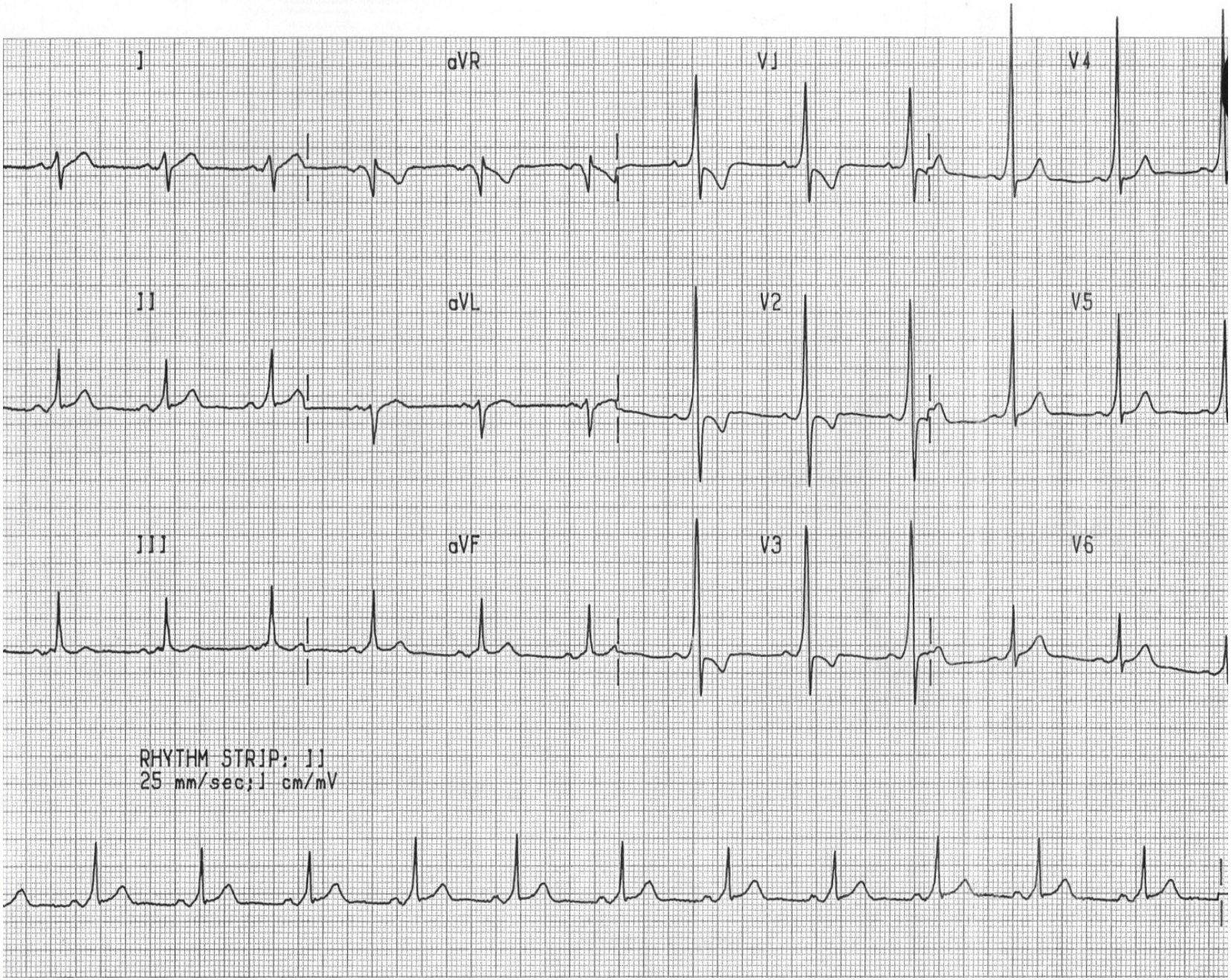
- Know triggers
- Stress reduction (54% w/ PAF) and emotional health
- Understanding disease process

Pearls

- Incidence increases w/ age
- Risk of stroke – CHADsVASc
- Converted safely within 48 hours (chemical or electrical)
- Cardioversion if on 4 weeks a/c or 4 consecutive weekly INR > 2.0
- Rhythm control or ablation does not negate the need for long term a/c
- Wide QRS may indicate Wolff-Parkinson-White Syndrome, use of AV node blockers may be fatal


A


B
Delta
T Wave
Inverted
T Wave
Shortened
PR Interval
Widened
QRS Complex


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
RHYTHM STRIP: II
25 mm/sec; 1 cm/mV

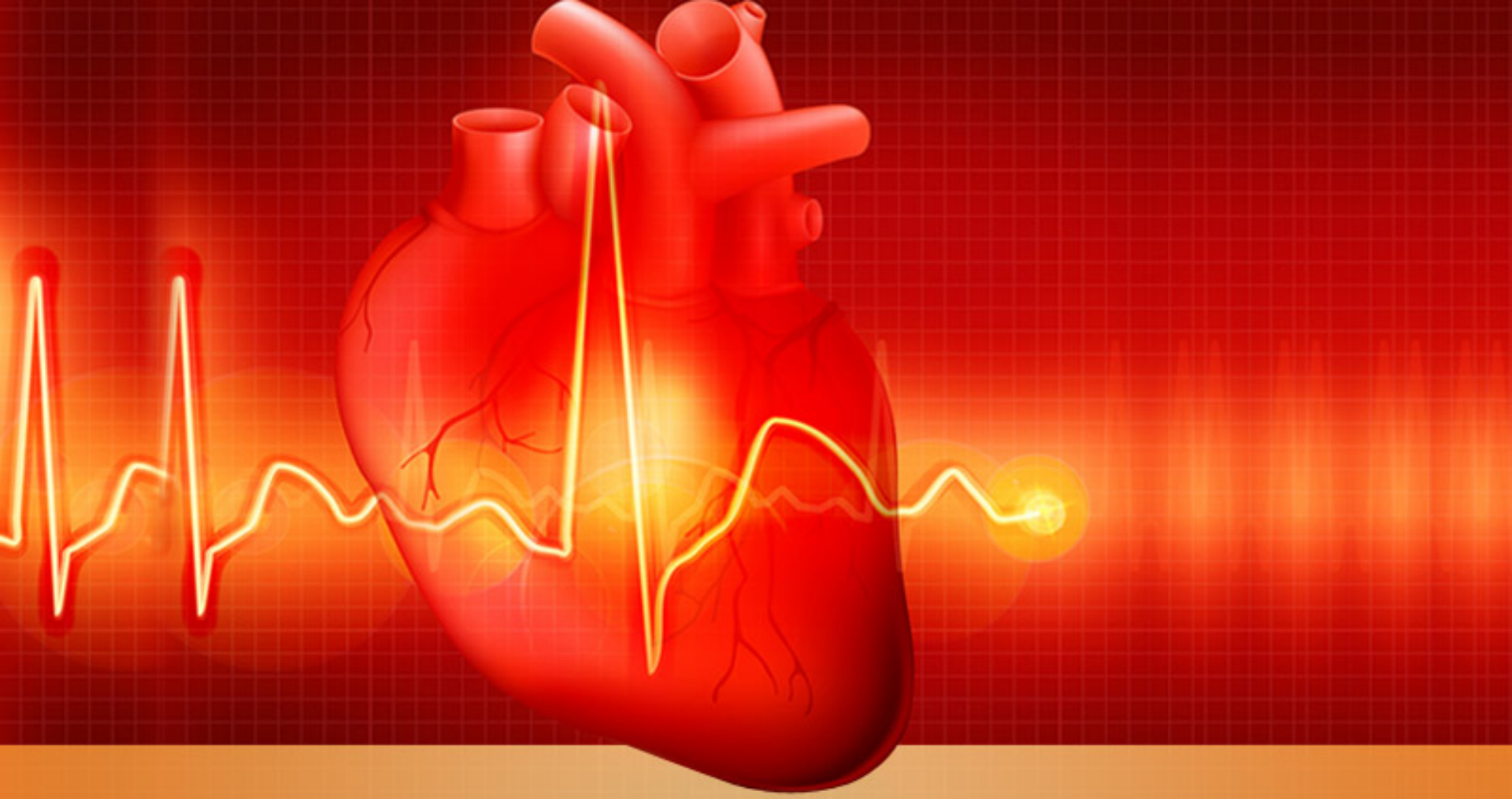
Atrial Fibrillation Studies

Trial Review

- PIAF (2000)
- RACE (2002)
- AFFIRM (2002)
- STAF (2003)
- HOT CAFÉ (2004)

Overall

- Lower mortality in rate control in AFFIRM, no difference with others
- RACE & AFFIRM – did not include young & symptomatic with heart disease
- Rate control is reasonable approach for minimal symptomatic elderly



Thank you

vlhayes8@yahoo.com

References

Please see attached