Yan Yu, 2012 (www.yanyu.ca)

Atrial Fibrillation (A-Fib)

Intrinsic Causes
→Atrial dilation (valve stenoses/ regurge, restrictive cardiomyopathy)
→Can be associated w/ Sick Sinus Syndrome (tachy-brady syndrome)

Extrinsic Causes
→↑ age (5% of 80yr+ have AF)
→Any heart/lung disease
→Hyperthyroidism, Obstructive sleep apnea, surgery, alcohol, HTN

Mechanism: multiple disorganized re-entry loops within atria, triggered by abnormal impulse initiation around pulmonary veins of left atrium

Symptoms:
→Palpitations (overfilled ventricles on some beats)
→Dyspnea , fatigue, syncope (↓ diastolic filling time → ↓ preload, ↓ cardiac output)

Signs:
→Irregularly irregular pulse
→Can NEVER have S4 (no atrial kick at end-diastole)
→Variable S1 loudness (valve flaps can be fully open or almost closed when ventricles force them shut)
→Pansystolic murmur (mitral/tricuspid regurge due to AV valve annulus dilation)

Treatment *(emphasize stroke risk reduction!)*

1. Anti-coagulation
→Thrombi may form due to hemostasis in quivering atria.
→**Tx**: Aspirin (81-325mg), plus Warfarin
→If Afib > 48hr, can't cardiovert (restored atrial activity may cause thrombus to embolize); **Tx**: warfarin for 3+ wks before cardioversion.
→If pt unstable >48hr and needs cardioversion, do trans-esophageal echo to r/o thrombus, or just fuck it and cardiovert if the pt's gonna die.

2. Treat underlying causes
→Screen for causes via Hx, PE, TSH test, echocardiogram
→ Treat for specific assiocated conditions (RAS inhibitors for HTN, Statins for CAD, CPAP for OSA, stop drinking)

3. Rate control
(Make Ventricular rate < 110bpm)

Rate-lowering Drugs:
(↓SA + AV node depol rate)
→**Beta-Blockers** (Class II AAD)
→**Ca2+ channel blockers** (Class IV AAD)
→**Digoxin** (high toxicity, low therapeutic index – 1.5)

If drugs fail in older pts:
Non-pharmacologic Tx:
→AV node ablation w/ pacemaker implantation

4. Rhythm control:
(Re-establish normal sinus rhythm)

Anti-Arrhythmic Drugs:
(Break atrial re-entry circuit)
→**Class I (i.e. Propafenone):** ↓ rate of conduction (block Na+ channels)
→**Class III (i.e. amioderone, sotalol):** ↑ refractory period
→*Variable effectiveness, many side effects*

If drugs fail in older pts:
Non-pharmacologic Tx:
→Catheter ablation (Pulmonary vein isolation)
→Surgical maze procedure

5. Anti-coagulation *(Again!)*
→Calculate CHADS2 score to determine indication for LT anticoagulation

CHADS2
→Congestive Heart Failure: +1
→Hypertension: +1
→Age (>70): +1
→Diabetes: +1
→Stroke (past): +2

Prevent clotting based on score:
→ 0 = ASA only
→ 1 = LT anticoagulation w/ ASA or warfarin
→ ≥2 = indefinite anticoagulation

Contraindications of Rate-control drugs:
→*Can't use BB in asthmatic patients.*
→*Afib with WPW: BB/CBB/Dig promotes conduction down accessory pathway, pathologically ↑ ventricular rate.*

Advise Patients on Responsible ER use:
→Afib has NO immediate threat to life
→Only go to ER if symptoms get so bad that you want the AF stopped.