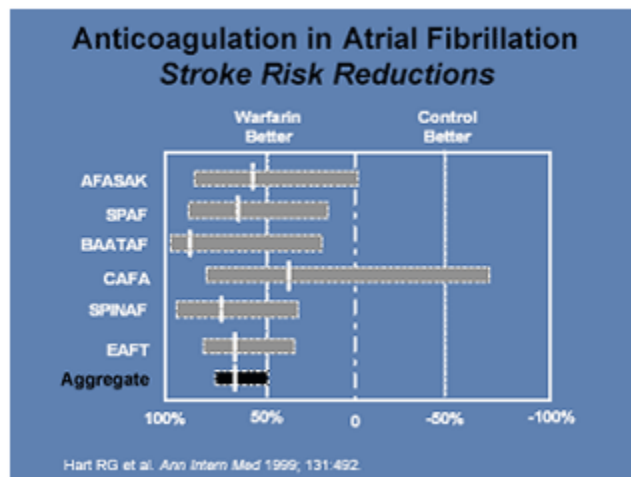


Treatment of Atrial Fibrillation

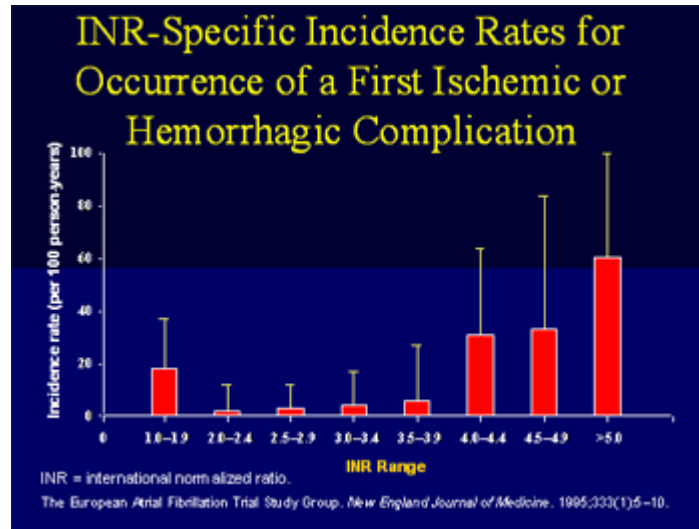
- [Anticoagulation](#)
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Anticoagulation

One of the most important aspects of treating and management of atrial fibrillation is prevention of thromboembolic events. There is a strong association with stroke and atrial fibrillation. A number of studies have demonstrated a significant benefit of warfarin in patients with atrial fibrillation



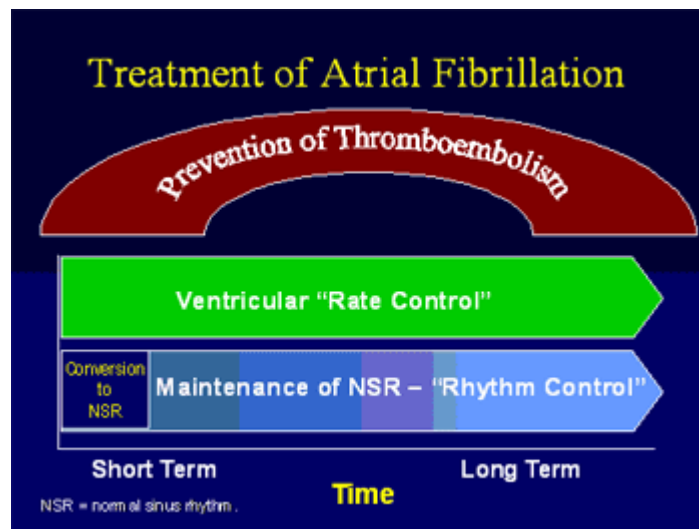
The goal of anticoagulation therapy with warfarin is to achieve an INR between 2.0 and 3.0. At values of greater than 4.0 there is an increase association of hemorrhagic complications. At values below 2.0 there is increased incidence of thromboembolic events. Therefore, a therapeutic range of between 2-3 is the appropriate target of most patients with atrial fibrillation.



For patients with an absolute contraindication to warfarin, aspirin therapy is an option; however, the benefit is only about ½ that of warfarin.

Therapies

The treatment of atrial fibrillation should be individualized. There are two general strategies. One is allowing the patient to remain in atrial fibrillation but controlling the ventricular response with either AV nodal blocking agents or AV junction ablation. The second strategy is a rhythm control strategy either through antiarrhythmic medications or ablation.



The choice of treatment strategy should be individualized and based primarily on the patient's symptoms and whether there is a hemodynamic benefit of maintaining sinus rhythm for that individual patient.

Rate Control

AV nodal blocking agents

There are three medications used for AV nodal slowing: beta-blockers, calcium channel blockers and digoxin. The choice of agent should be again based on the individual patient but in general beta-blocker therapy or calcium channel blockers seem to be most beneficial. Digoxin can be effective for patients who are more sedentary.

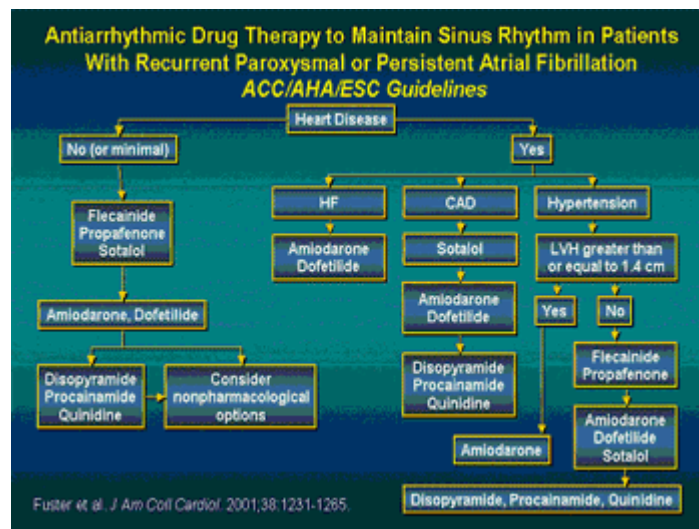
AV junction ablation and pacemaker insertion

This therapy is typically used for patients who have failed AV nodal blocking agents. The ablation of the AV node results in a heart rate that is generally less than 40 bpm and therefore a permanent pacemaker is placed.

Rhythm Control

Antiarrhythmic medications

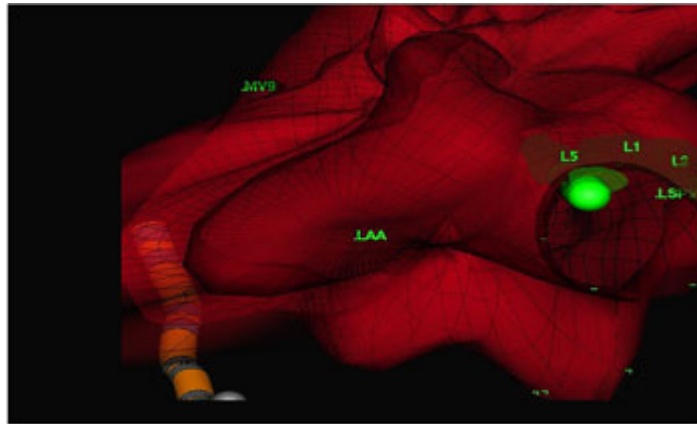
Within the Vaughn-Williams classification scheme, Class IA(quinidine, procainamide, disopyramide), IC (flecainide, propafenone), and Class III (amiodarone, sotalol, dofetilide) agents can be beneficial in either converting or maintaining sinus rhythm. The efficacy of the antiarrhythmic drug ranges between 40% and 70%. The ACC/AHA/ESC guidelines provide a useful guide for selection of antiarrhythmic medication. The selection is based upon underlying heart disease in order to reduce potential drug side effects.



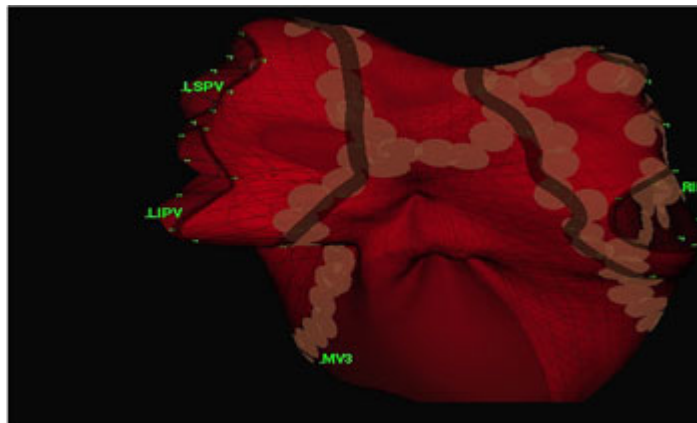
Radiofrequency ablation

Since the late 1990's radiofrequency (RF) ablation of atrial fibrillation has become an increasingly

important strategy for maintaining sinus rhythm. The left atrium and pulmonary veins have played a prominent role in all ablation strategies. Currently there are at least two different ablation strategies for attempting to maintain sinus rhythm. One is electrical isolation of the pulmonary veins—(PVI). In this technique catheters are placed into the left atrium and at the pulmonary vein os. An ablation is performed around the os at the pulmonary vein.



The second approach is an effort to modify the left atrial substrate. Linear ablations are performed around the antrum of the pulmonary veins with additional ablation lines connecting the wide encirclements and from the left vein encirclement to the mitral annulus.



Surgical

Much of today's surgical approaches are done by using radiofrequency ablation or microwave ablation. The ablations can be done on either the endocardial surface or the epicardial surface. If done on the epicardial surface this can be accomplished off cardiopulmonary bypass. A thoroscopic approach with microwave ablation has recently been developed.

Device implants

Studies using pacing therapies to prevent or reduce atrial fibrillation episodes have been mixed. Currently different pacing algorithms and atrial lead placements (septum or bi-atrial) are being actively studied to better define this therapy.

For termination of atrial fibrillation, rapid atrial pacing or 50 Hz pacing has been minimally effective. It can be effective, however, at terminating organized rhythms, such as atrial flutter. The best method of terminating atrial fibrillation is cardioversion.