






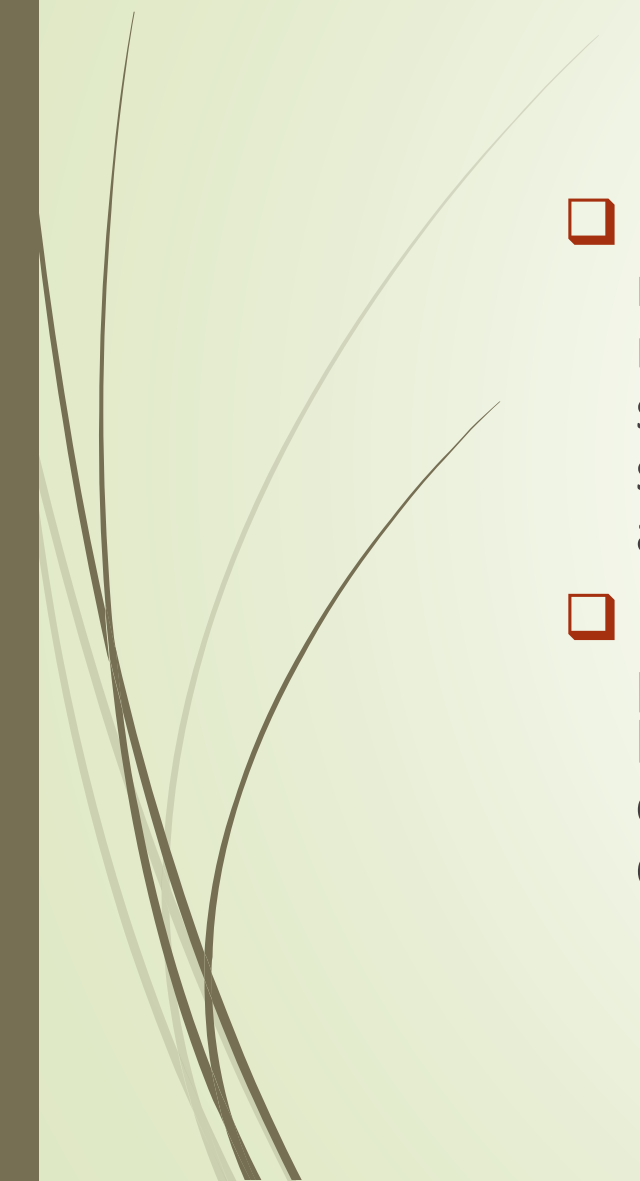
SPECIFIC CLINICAL SYNDROMES



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Postoperative Atrial Fibrillation

- Atrial fibrillation is common after open heart surgery, occurring in 25% to 40% of patients who undergo coronary artery bypass graft (CABG) surgery or valve replacement.
- AF in this setting is associated with a twofold increase in the risk of postoperative stroke and is the most common reason for prolonged hospitalization.
- The incidence of AF peaks on the second postoperative day.
- The pathogenesis of postoperative AF is multifactorial and probably involves various combinations of adrenergic activation, inflammation, atrial ischemia, electrolyte disturbances, and genetic factors.
- Several risk factors for AF after open heart surgery have been identified, including age over 70 years, history of prior AF, male sex, left ventricular dysfunction, left atrial enlargement, chronic lung disease, diabetes, and obesity.

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- ❖ The incidence of AF after open heart surgery can be significantly reduced by prophylactic treatment with amiodarone, sotalol, or beta blockers
 - ❖ Hypomagnesemia is common after open heart surgery and can heighten the risk of AF. Magnesium administration has been reported to decrease the risk of postoperative AF
 - ❖ Right atrial or biatrial pacing using temporary electrodes has been reported to reduce the risk of postoperative AF
 - ❖ A number of other interventions have been assessed for their efficacy in reducing the incidence of AF after cardiac surgery, typically not in large randomized clinical trials.
 - ❖ The use of colchicine, statins, and steroids to address postoperative inflammation have produced variable results in reducing AF burden. These agents should be used with caution since the impact on postoperative AF may not be a class effect and other adverse effects have been reported
 - ❖ Omega-3 PUFAs also have an anti-inflammatory effect, but randomized studies on their efficacy for preventing postoperative AF have reported conflicting results.



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- ❑ Patients who develop postoperative AF can be managed using a rate or rhythm control strategy. In a randomized comparison of rate and rhythm control strategies in patients with AF after cardiac surgery, there were no significant differences between the two strategies in the number of days of hospitalization, mortality, or adverse events.
 - ❑ The decision regarding which type of strategy to employ in these patients should be based on the severity of symptoms, hemodynamic effects of the AF, and the patient specific risk of side effects or adverse reactions to the various rate-and rhythm-control drugs.

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- ❖ AF that occurs after cardiac surgery often resolves within 3 months. In a randomized comparison of rate control versus rhythm control in patients with new-onset AF after cardiac surgery, approximately 95% of patients in both groups were in sinus rhythm at 60 days and had not experienced AF during the prior 30 days.
 - ❖ Treatment with an oral anti- coagulant should be continued after discharge. Because new-onset AF after cardiac surgery often does not recur after 60 to 90 days, rhythm- control medications can be discontinued at that time, and if there is no subsequent evidence of symptomatic or asymptomatic AF, as confirmed by monitoring ,anticoagulation can be safely discontinued unless needed for another indication.

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- ✓ New-onset AF occurs postoperatively in less than 5% of patients undergoing major noncardiac surgery. Some of the possible mechanisms of postoperative AF after cardiac surgery (sympathetic activation, electrolyte abnormalities, hypoxia) most likely also play a role in AF after noncardiac surgery.
 - ✓ Beta blockers have been shown to significantly reduce the risk of AF after major noncardiac surgery, but one must be vigilant for the development of bradycardia and hypotension.



Wolff-Parkinson-White Syndrome


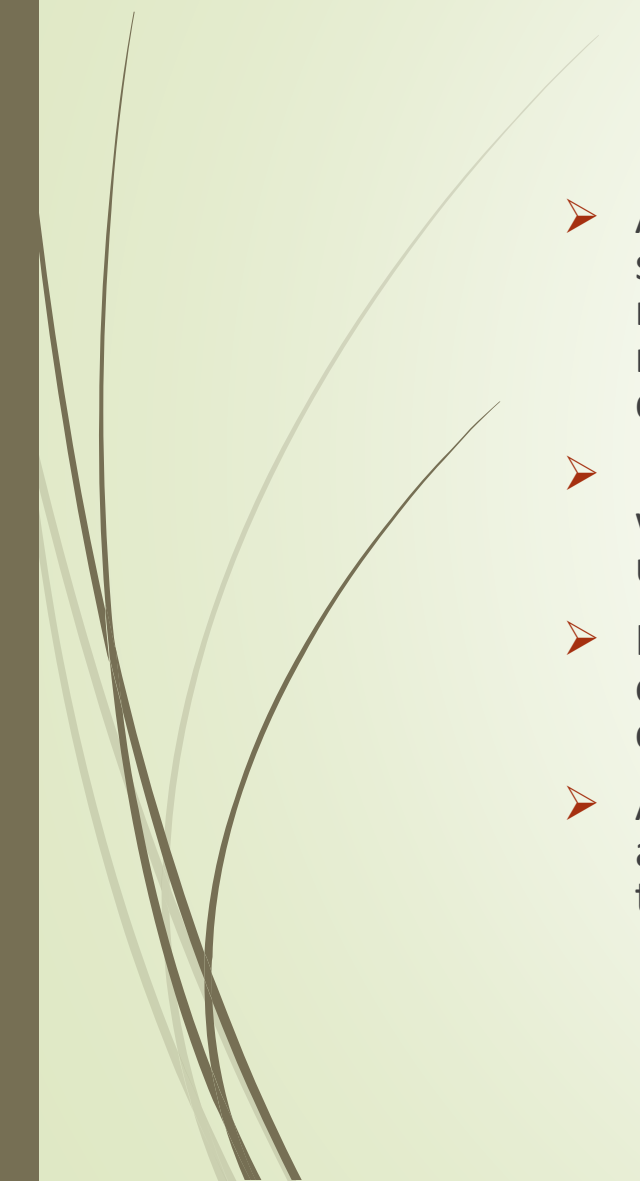
- Patients with the WPW syndrome and an accessory pathway with a short refractory period can experience a very rapid ventricular rate during AF. Ventricular rates greater than 250 to 300 beats/min can result in loss of consciousness or precipitate ventricular fibrillation and a cardiac arrest
- Patients with WPW syndrome who present in AF with a rapid ventricular rate should undergo transthoracic cardioversion if there is hemodynamic instability.
- If the patient is hemodynamically stable, intravenous procainamide or ibutilide can be used for pharmacologic cardioversion. Procainamide may be preferable to ibutilide because it blocks accessory pathway conduction and slows the ventricular rate before AF has converted to sinus rhythm
- Digitalis and calcium channel antagonists are contraindicated in patients with WPW syndrome and AF. These agents selectively block conduction in the AV node and can result in acceleration of conduction through the accessory pathway.

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- ❖ The preferred therapy for patients with WPW syndrome and AF with a rapid ventricular rate is catheter ablation of the accessory pathway.
 - ❖ When performed by experienced operators, the efficacy of catheter ablation is 95% or higher for most types of accessory pathways, and the risk of a major complication is very low.
 - ❖ AF typically no longer recurs after successful accessory pathway ablation, probably because AF in the WPW syndrome often is induced by AV reciprocating tachycardia that degenerates into AF .

Congestive Heart Failure

- ❖ Atrial fibrillation is a common arrhythmia in patients with heart failure, with a prevalence ranging from 10% in patients with NYHA functional Class I up to 50% in Class IV patients .
- ❖ AF may be the cause of heart failure in patients who present with a nonischemic cardiomyopathy and AF with a rapid ventricular rate. It now is recognized that AF can cause left ventricular dysfunction and heart failure even when the ventricular rate is not rapid. In patients with structural heart disease and preexisting left ventricular dysfunction, AF often worsens the heart failure.
- ❖ The deleterious hemodynamic effects of AF are mediated by a rapid and/or irregular ventricular rate and loss of AV synchrony.

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- The most appropriate rate control drugs in patients with systolic heart failure are beta blockers and digitalis. If necessary, amiodarone also can be used for rate control.
 - In patients with diastolic heart failure, nondihydropyridine calcium antagonists can be used safely for rate control
 - Amiodarone and dofetilide are the only two rhythm-control drugs that are not associated with an increased risk of death in patients with heart failure.
 - AV node ablation is appropriate for patients when the ventricular rate during AF is not adequately controlled by drug therapy.
 - Because left ventricular dysfunction and heart failure can be aggravated by right ventricular pacing, biventricular pacing should be instituted after AV node ablation.
 - The decision to implant a biventricular pacemaker versus a biventricular ICD is based on clinical judgment. If it seems likely that the EF will remain less than 30% to 35% after optimal heart rate control, a biventricular ICD is appropriate for primary prevention of sudden cardiac death.
 - It may take 2 to 3 months to evaluate the response of the LVEF to restoration of sinus rhythm. The decision on an ICD can be safely deferred by use of a wearable defibrillator pending reevaluation of the LVEF

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- As in other patients with AF, the decision to pursue a rate-control or a rhythm control strategy in patients with heart failure should be individualized. But it is important to recognize that sinus rhythm is the best type of rate control. It is also important to recognize that AF can cause or aggravate left ventricular dysfunction and heart failure despite adequate heart rate control
 - Because of this, a reasonable approach is to first use a rhythm-control strategy in patients with newly diagnosed AF associated with heart failure. Amiodarone or dofetilide can be used to help maintain sinus rhythm after sinus rhythm is restored by cardioversion.
 - If a patient does not want to be on these AADs long term or if these AADs do not prevent early recurrences of AF, catheter ablation of the AF or rate-control alone should be considered.
 - A rate-control strategy is appropriate for patients who do not respond adequately to amiodarone or dofetilide and either are not suitable candidates for catheter ablation of the AF or have had an unsuccessful outcome from ablation.




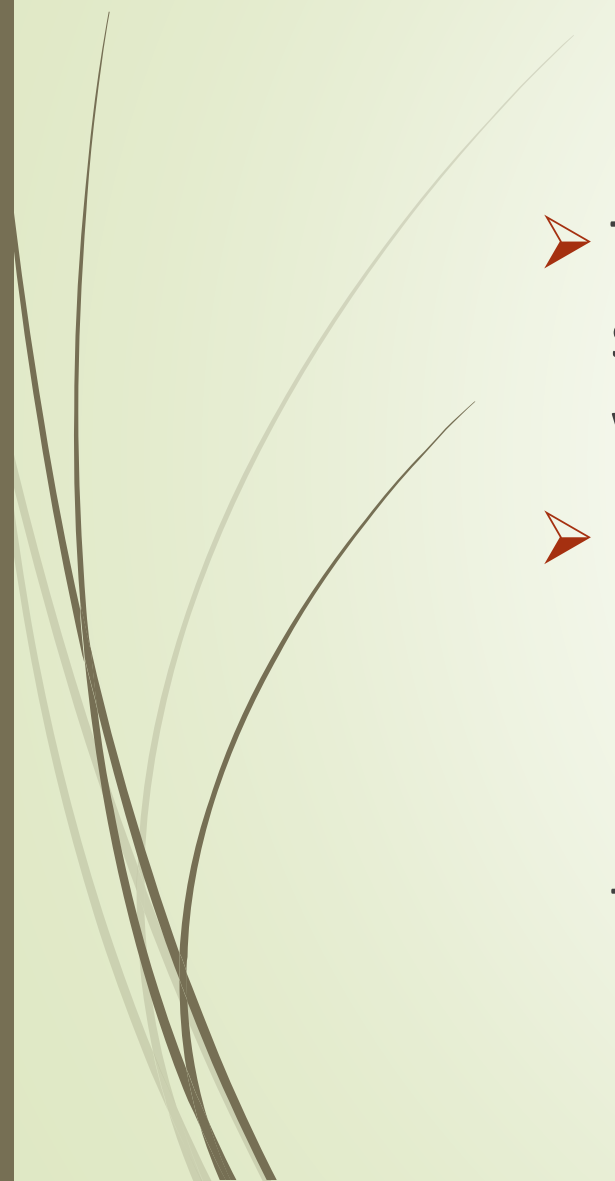
Hypertrophic Cardiomyopathy



- Atrial fibrillation occurs in approximately 25% of patients with hypertrophic cardiomyopathy (HCM) and can cause severe hemodynamic impairment because of an inadequate diastolic filling time and loss of atrial-ventricular synchrony.
- Because of a high risk of thromboembolic complications, anticoagulation is indicated in AF patients with HCM, independent of the CHA2DS2-VASc score
- Severe left ventricular hypertrophy increases the risk of drug-induced torsade de pointes as a complication of AAD therapy
- Catheter ablation of AF also is an option. A large number of studies have reported that catheter ablation in AF is associated with an acceptable efficacy and safety profile



Pregnancy

- ❖ The prevalence of AF during pregnancy is very low, approximately 60/100,000 pregnancies. When it occurs, there often is underlying congenital or valvular heart disease, thyrotoxicosis, or electrolyte abnormalities.
- ❖ Pregnancy is associated with a hypercoagulable state, but there are no data indicating that pregnancy increases the risk of thromboembolic complications related to AF.
- ❖ In women with paroxysmal AF before pregnancy, the frequency of episodes may or may not increase during pregnancy.

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- The decision to anticoagulate a pregnant woman with AF should be made using the same criteria as in nonpregnant women
 - If anticoagulation is deemed necessary, warfarin (not a DOAC) is recommended from the second trimester until 1 month before the due date, and subcutaneous LMWH is recommended during the first trimester and during the final month of pregnancy.

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- ✓ Transthoracic cardioversion is considered safe at all stages of pregnancy
 - ✓ The recommended pharmacologic agents for acute management of AF consist of intravenous metoprolol for rate control and flecainide or sotalol for conversion to sinus rhythm
 - ✓ If ongoing therapy is deemed necessary, the recommended rate-control drug is digoxin.
 - ✓ If ineffective, a beta blocker can be used, but only after the first trimester
 - ✓ If there is no structural heart disease, flecainide and sotalol are recommended for long-term rhythm control
 - ✓ In the patient with structural heart disease, amiodarone is recommended for rhythm control



About post-procedural management of patients with AF and ACS and/ or PCI 

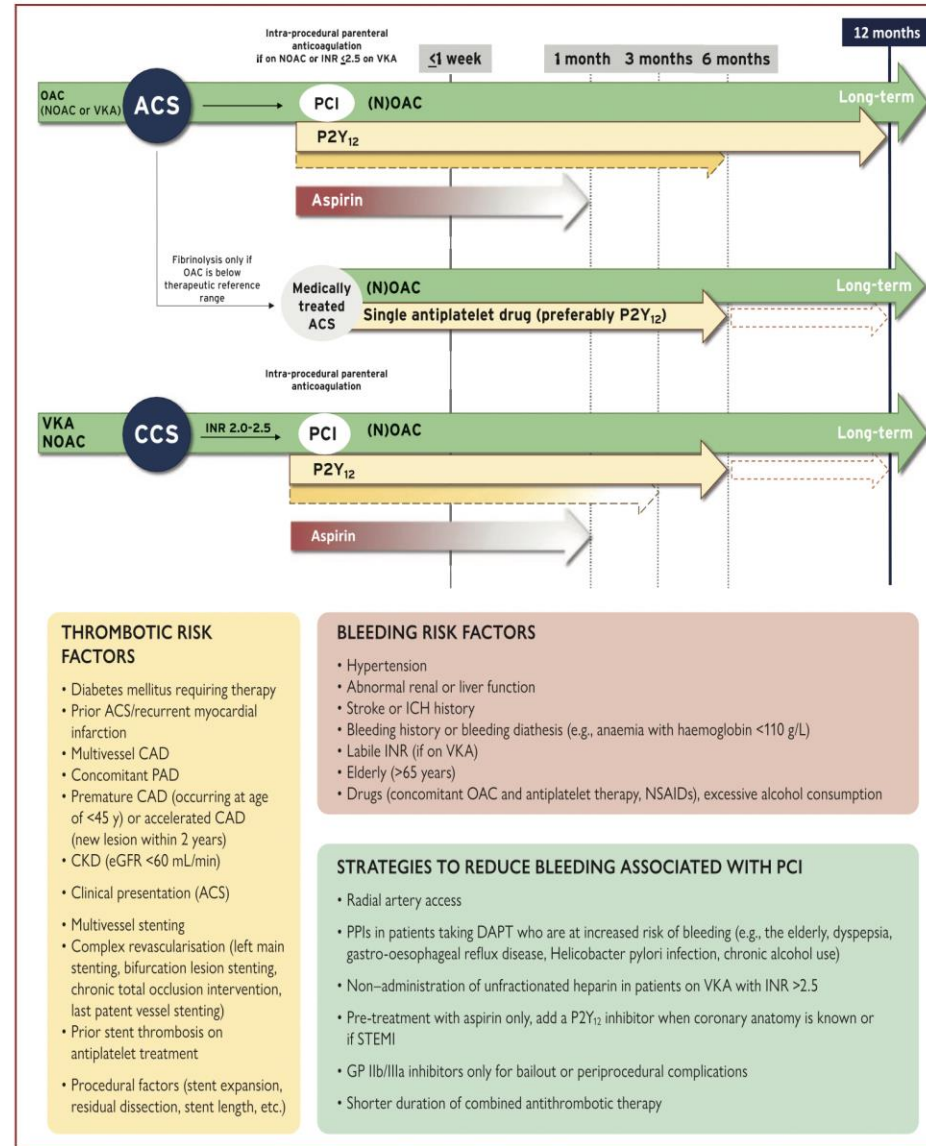


Figure 20 Post-procedural management of patients with AF and ACS/PCI (full-outlined arrows represent a default strategy; graded/dashed arrows show treatment modifications depending on individual patient's ischaemic and bleeding risks).

Pretreatment with a P2Y₁₂ inhibitor is recommended in STEMI patients or when coronary anatomy is known; it should be withheld in non-STEMI ACS

Recommendations for patients with valvular heart disease and AF

Recommendations	Class ^a	Level ^b
NOACs are contraindicated in patients with a prosthetic mechanical valve. ¹¹⁶⁵	III	B
Use of NOACs is not recommended in patients with AF and moderate-to-severe mitral stenosis.	III	C

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AF = atrial fibrillation; NOAC = non-vitamin K antagonist oral anticoagulant.

^aClass of recommendation.

^bLevel of evidence.

