

A summary of the ESC 2010 Atrial Fibrillation guidelines for physicians

Atrial fibrillation (AF) remains the most common sustained cardiac arrhythmia affecting around 1-2% of the population. Its prevalence is estimated to double over the next 50 years. The major risk of AF is stroke. In addition, AF is associated with several other clinical outcomes; hospitalisations are more frequent, there can be a substantial impact on exercise capacity and quality of life and, there may be an association with cognitive decline due to vascular dementia. Overall death rates are doubled, independently of other known predictors of mortality.

Natural progression

AF progresses from short, rare episodes, which can be asymptomatic to longer, and more frequent attacks. The risk of AF related complications is no different between short AF episodes and sustained forms of the arrhythmia. Anti-coagulation is therefore required throughout this course, but other treatments are indicated for different stages along this path. Paroxysmal AF is self-terminating, usually within 48 hours. Persistent AF is present when an episode lasts longer than seven days or requires cardioversion. Long-standing AF has lasted for more than one year when rhythm control is adopted. Permanent AF is said to exist when the presence of the arrhythmia is accepted by the patient (and physician).

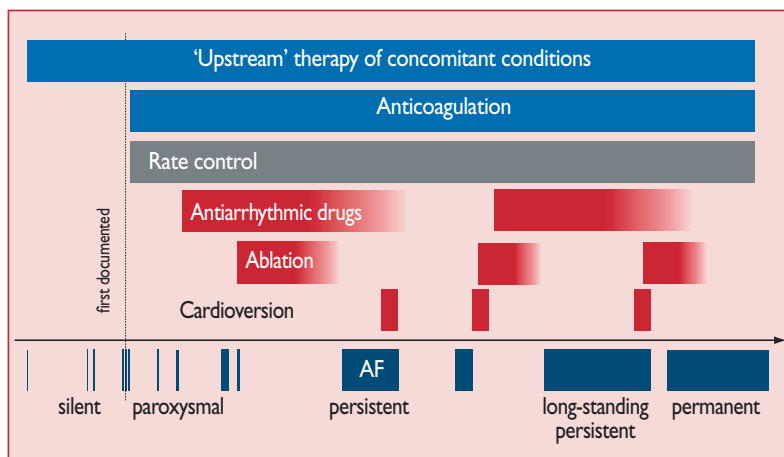


Figure 1. Natural progression of AF

Diagnosis:

Symptoms of palpitations or dyspnoea, or the finding of an irregular pulse should always raise suspicion of atrial fibrillation but a 12 lead ECG is required for the diagnosis. More intense and prolonged monitoring may be required in highly symptomatic patients with a normal 12 lead ECG. When taking the history, particular reference should be made to the severity, frequency and duration of symptoms, precipitating factors and the presence or absence of any co-morbidity. The 2010 guideline introduces the European Heart Rhythm Association (EHRA) scoring system to quantify severity of symptoms; class I – no symptoms; class II – mild symptoms, daily activity not affected; class III – severe symptoms, daily activity affected; class IV – disabling symptoms, daily activity discontinued.

Classification of AF-related symptoms (EHRA score)	
EHRA class	Explanation
EHRA I	'No symptoms'
EHRA II	'Mild symptoms'; normal daily activity not affected
EHRA III	'Severe symptoms'; normal daily activity affected
EHRA IV	'Disabling symptoms'; normal daily activity discontinued

Figure 2. EHRA Symptom Score

AF can occur in the absence of other pathology but is often associated with other conditions including hypertension, valvular heart disease, coronary artery disease, obesity, diabetes mellitus, COPD, sleep apnoea. The presence of these should be documented at the time of diagnosis.

Management

Antithrombotic management

The principal risk of AF is stroke. There is a five-fold increased risk of stroke in patients with AF and 20% of all strokes are attributed to this arrhythmia. Stroke secondary to AF also tends to have a worse outcome. Therefore, anti-coagulation is the mainstay of treatment. The latest guideline suggests a more aggressive attitude to anti-coagulation, developing the well-known CHADS2 score to encompass more known risk factors for stroke. Physicians are challenged to think not who qualifies, but rather who is exempt from the norm that is formal anticoagulation.

Identification of various stroke clinical risk factors has led to the publication of various stroke risk schemes. The simplest risk assessment scheme is the CHADS2 score. The CHADS2 [**C**ardiac Failure, **H**ypertension, **A**ge, **D**iabetes, **S**troke (doubled)] is based on a points system in which 2 points are assigned for a history of stroke or TIA and 1 point each is assigned for age > 75 years, a history of hypertension, diabetes, or recent cardiac failure. There is a clear validation between CHADS2 score and stroke risk. The CHADS2 score should be used as an initial rapid, easy to remember means of assessing stroke risk. In patients with a score ≥ 2 , chronic oral anticoagulant therapy (OAC) with a vitamin K antagonist (VKA) such as warfarin is recommended.

Previously this scheme classified a score of 0 as 'low' risk, 1-2 as 'moderate' risk and >2 as 'high' risk. The present ESC guideline has tried to de-emphasise the use of the 'low', 'moderate' and 'high' risk categorisations and recognise that risk is a continuum. Thus, it is encouraged that a risk factor-based approach is used for more detailed stroke risk assessment where necessary.

'Major' risk factors are now recognised as prior stroke, TIA or thromboembolism, and older age (≥ 75 years). The presence of some types of valvular heart disease (mitral stenosis, prosthetic heart valves) would also categorise such 'valvular' AF patients as 'high' risk.

'Clinically relevant non-major' risk factors are heart failure (especially moderate-severe left ventricular impairment, LVEF $\leq 40\%$), hypertension, diabetes mellitus, female sex, vascular disease [especially prior myocardial infarction, complex aortic plaque and peripheral arterial disease (PAD)] and age 65-74 years.

This risk factor based approach can be expressed as an acronym CHA2DS2VASc [**C**ongestive Heart Failure, **H**ypertension, **A**ge (doubled), **D**iabetes, **S**troke (doubled), **V**ascular Disease, **A**ge 65-74 and **S**ex **C**ategory (female)]. The scheme is based on a points system in which 2 points are assigned for a history of stroke or TIA, or age ≥ 75 years; and 1 point is assigned for age 65-74 years, a history of hypertension, diabetes, recent cardiac failure, vascular disease (myocardial infarction, complex aortic plaque, PAD), and female sex. This, thus, extends the CHADS2 scheme by considering additional stroke risk factors that may influence the decision to anticoagulate.

The guidelines recommend that for patients with a CHA2DS2VASc score of ≥ 2 , chronic oral anticoagulant therapy (OAC) with a vitamin K antagonist (VKA) such as warfarin be recommended. Patients with a single 'clinically relevant non-major' risk factor can be anticoagulated with either OAC or aspirin 75mg daily, although OAC is preferred.

Those patients with no risk factors can receive either aspirin 75mg daily or no antithrombotic therapy with no antithrombotic therapy preferred. This reflects the relative paucity of evidence for the use of aspirin alone in prevention of stroke in meta-analyses.

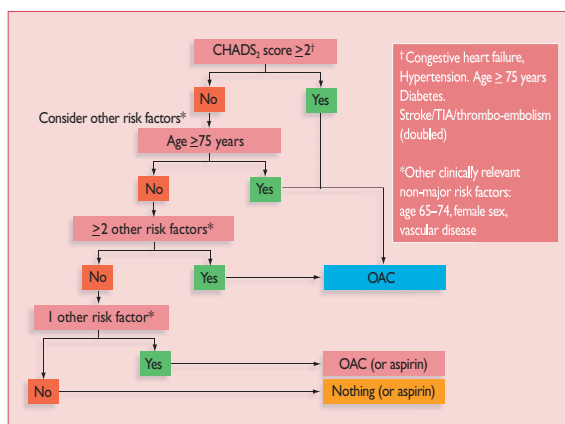


Figure 4. Choice of anticoagulation

Bleeding Risk

An assessment of bleeding risk should be part of the patient assessment before starting anti-coagulation. Various risk factors may increase the risk of bleeding in the anti-coagulated patient. These include hypertension, abnormal liver or renal function, previous stroke, previous bleeding, labile INRs, age > 65 years, and other drugs or high alcohol intake. It is reasonable to assume the risk of major bleeding with aspirin is similar to that with the vitamin K antagonists, particularly in the elderly. The fear of falls in the elderly may be overstated as a patient may need to fall around 300 times per year for the risk of an intracerebral bleed to outweigh the benefits of oral anticoagulation in stroke prevention.

Acute onset AF

Acute onset AF is defined as that of less than 48 hours duration. This is an important distinction as it allows the possibility of acute cardioversion without the need for prolonged anti-coagulation. The acute management of AF is driven by acute protection against thrombo-embolic events and acute improvement in cardiac function. The severity of associated symptoms should drive the decision for acute restoration of sinus rhythm or management of the ventricular rate.

Many episodes of AF terminate within the first few hours. Rapid ventricular rates and irregularity of rhythm can cause symptoms and haemodynamic distress. Acute reduction in ventricular rate is often required. In stable patients this can be achieved by oral administration of beta-blockers or non-dihydropyridine calcium channel antagonists. In severely compromised patients, I.V. verapamil or metoprolol can be useful to slow the ventricular rate rapidly. The target rate should be 80 – 100 bpm. Particular patients such as those with severe LV dysfunction may require amiodarone for rate control.

In patients who remain symptomatic despite optimal rate control or in whom rhythm control is pursued, pharmacological cardioversion may be achieved with a bolus administration of an anti-arrhythmic drug.

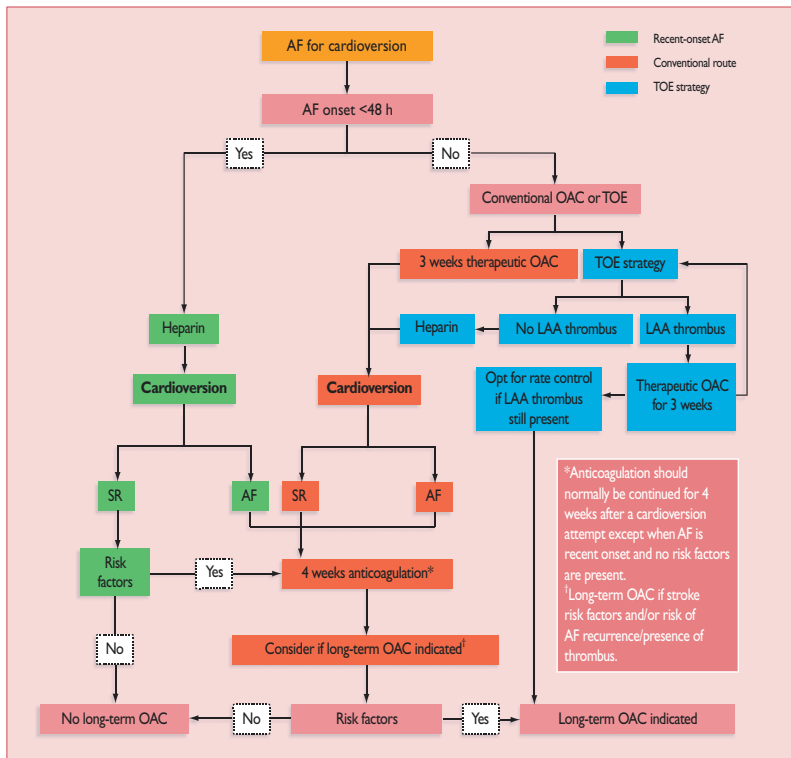
Flecainide given intravenously to patients with AF of short duration, have a 60-90% chance of achieving sinus rhythm within six hours. It is rarely effective in the termination of atrial flutter or persistent AF and is contra-indicated in patients with underlying heart disease including abnormal LV function and ischaemia.

Cardioversion with amiodarone occurs several hours later than with flecainide but is safe in those with structural heart disease.

Digoxin has no effect on restoration of sinus rhythm.

DC cardioversion is an effective method of restoring sinus rhythm. If AF is of more than 48 hours duration documented anticoagulation is required for four weeks before undergoing DC cardioversion. Otherwise a trans-oesophageal echocardiogram (TOE) is required to exclude left atrial thrombus.

Conscious sedation or general anaesthesia is required. Patients who are not already anti-coagulated should receive a dose of low-molecular weight heparin before the procedure. Those patients who would require formal anti-coagulation based on their stroke risk should receive OAC for at least three weeks following the procedure. Biphasic defibrillators are preferred as is the antero-posterior position of the electrodes. A synchronised shock must be used to minimise the risk of ventricular tachycardia or fibrillation. The procedure is associated with a 1-2% chance of thromboembolism, which can be reduced by adequate anticoagulation or exclusion of left atrial thrombus. Minor skin burns are a common complication.



(Long-term) Rate control

A rate control strategy will be appropriate for the majority of patients presenting to primary care with AF. There is no evidence that rhythm control is superior to rate control in terms of reducing mortality or

complications from AF. It should be noted that anticoagulation is required regardless. If rate control does not adequately control a patient's symptoms, a rhythm control strategy should be considered.

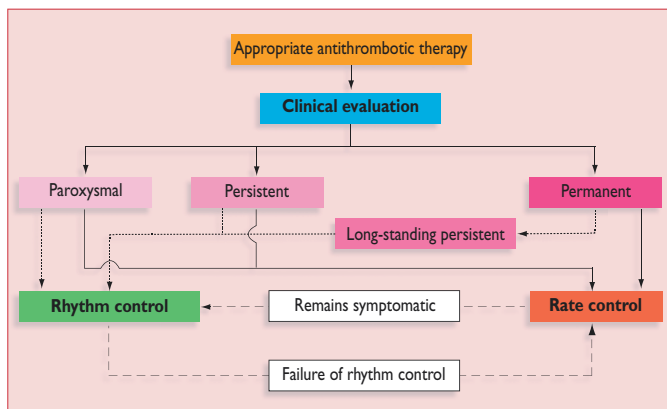


Figure 5. Choice of rate and rhythm control strategies

Recent evidence suggests a lenient rate control, with a target resting heart rate of less than 110/min is acceptable for patients without severe symptoms due to rapid ventricular rates. For those patients in whom symptoms persist, a stringent rate control should be adopted with a target resting heart rate of less than 80/min.

There are several choices of drug for rate control. Beta-blockers are recommended as first choice and are particularly useful in the presence of exercise-induced symptoms or symptoms of associated myocardial ischaemia.

Digoxin is effective for control of heart rate at rest but not during exercise and therefore may be useful for more sedentary patients. In combination with beta-blockers, digoxin may be useful for rate control in patients with or without heart failure. Non-dihydropyridine calcium channel antagonists such as diltiazem are effective, especially in patients who cannot tolerate beta-blockers. They should be avoided in patients with systolic heart failure due to their negative inotropic effects.

(Long-term) Rhythm control

A rhythm control strategy should only be adopted in patients who remain symptomatic despite adequate rate control. There is no mortality benefit in rhythm control over rate control. Safety rather than efficacy considerations should primarily guide the choice of anti-arrhythmic agent.

Beta-blockers are a logical first attempt to prevent AF when the arrhythmia is clearly related to mental or physical stress (adrenergic AF). Since beta blockers are not very effective in other sorts of AF, other agents should be considered for maintenance of sinus rhythm. This decision would usually be made after consultation with a cardiologist. Since the presence of structural heart disease and LV dysfunction will influence the choice of anti-arrhythmic agent all patients should have an echocardiogram before pursuing rhythm control.

Possible drug choices for rhythm control include:

- **Flecainide** approximately doubles the chance of maintaining sinus rhythm but is contra-indicated in structural heart disease and coronary artery disease due to the risk of pro-arrhythmia. Concomitant use of atrio-ventricular node blocking drugs is recommended due to the risk of conversion of AF to atrial flutter which may then be conducted rapidly to the ventricles.
 - **Sotalol** has class III effects as well as a beta-blocker effect and is therefore more useful for maintenance of sinus rhythm. It is safe in patients with coronary artery disease but may cause prolongation of the QT interval. Therefore careful monitoring of the QT interval is mandatory.
 - **Dronedaron** has recently been developed and proven to be useful in maintaining sinus rhythm with fewer side effects than amiodarone. There is clear guidance from NICE as regard in which patients dronedaron should be considered. It should be avoided in patients with unstable class III-IV heart failure.
 - **Amiodarone** is effective in maintaining sinus rhythm but it's long-term use can be associated with significant side-effects affecting the thyroid, liver, skin and other organs. It may prolong the QT interval. However, it has a role in patients who cannot be
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controlled with other anti-arrhythmic agents or who have heart failure where other drugs are contra-indicated.

Patients whose symptoms are not controlled with optimal drug therapy may be considered for left atrial catheter ablation.

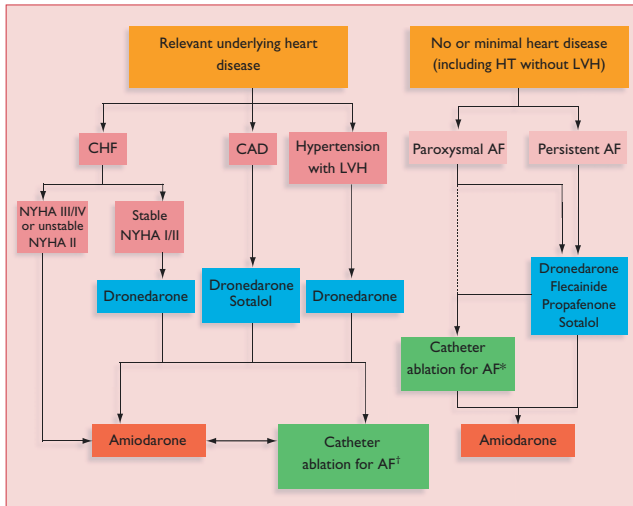


Figure 12 from original ESC document

Upstream therapy

Upstream therapy to prevent or delay myocardial remodelling associated with hypertension, heart failure or inflammation may deter the development of new onset AF (primary prevention) or, once established it's rate of recurrence or progression to permanent AF (secondary prevention).

ACE-Inhibitors or Angiotensin Receptor Antagonists (ARBs) reduce the incidence of new onset AF in patients with significant underlying heart disease (e.g. LV dysfunction and hypertrophy). The evidence is less robust in secondary prevention and they are not recommended for patients without other heart disease in primary prevention.

Statins may be useful in preventing new onset AF in patients with other cardiovascular disease. Research is ongoing into the benefit of other agents such as aldosterone antagonists and poly-unsaturated fatty acids, but no definite benefit has been proven thus far.

Further resources

AFA Tool Kit CD for Clinicians

Download from www.afa.org.uk or order, free of charge, from info@afa.org.uk



Information for Clinicians including membership, fact sheets, international news, translations and patient information booklets www.afa-international.org

Heart Rhythm Congress and AF Symposium

www.heartrhythmcongress.com

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