

Quick reference guide

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Atrial fibrillation

The management of atrial fibrillation

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This guidance is written in the following context

This guidance represents the view of the Institute, which was arrived at after careful consideration of the evidence available. Healthcare professionals are expected to take it fully into account when exercising their clinical judgement. The guidance does not, however, override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Patient-centred care

Treatment and care should take into account patients' individual needs and preferences. Good communication is essential, supported by evidence-based information, to allow patients to reach informed decisions about their care. Carers and relatives should have the chance to be involved in discussions unless the patient thinks it inappropriate.

Key priorities for implementation

The following recommendations have been identified as priorities for implementation.

Identification and diagnosis

• An electrocardiogram (ECG) should be performed in all patients, whether symptomatic or not, in whom atrial fibrillation (AF) is suspected because an irregular pulse has been detected.

Treatment for persistent AF

- As some patients with persistent AF will satisfy criteria for either an initial rate-control or rhythm-control strategy (for example, age over 65 but also symptomatic):
 - the indications for each option should not be regarded as mutually exclusive, and the potential advantages and disadvantages of each strategy should be explained to patients before agreeing which to adopt
 - any comorbidities that might indicate one approach rather than the other should be taken into account
 - irrespective of whether a rate-control or rhythm-control strategy is adopted in patients with persistent AF, appropriate antithrombotic therapy should be used.

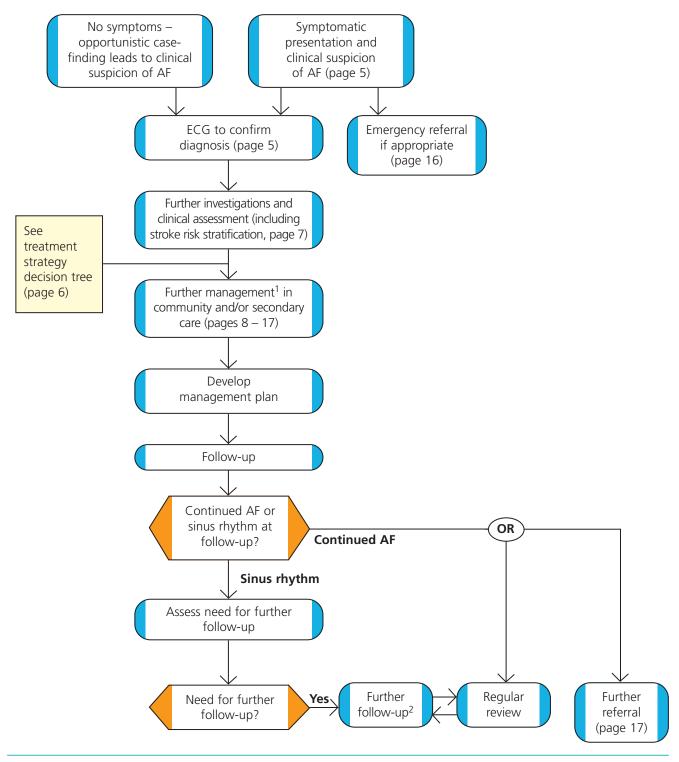
Treatment for permanent AF

- In patients with permanent AF, who need treatment for rate-control:
 - beta-blockers or rate-limiting calcium antagonists should be the preferred initial monotherapy in all patients
 - digoxin should only be considered as monotherapy in predominantly sedentary patients.

Antithrombotic therapy

- In patients with newly diagnosed AF for whom antithrombotic therapy is indicated (see page 8), such treatment should be initiated with minimal delay after the appropriate management of comorbidities.
- The stroke risk stratification algorithm (see page 7) should be used in patients with AF to assess their risk of stroke and thromboembolism, and appropriate thromboprophylaxis given.

Atrial fibrillation care pathway



¹Further management to include rate- or rhythm-control treatment strategy and appropriate antithrombotic therapy based on stroke risk stratification model.

²Further follow-up for coexisting conditions and assessment for ongoing anticoagulation.

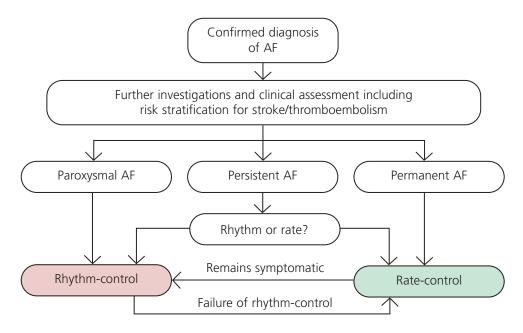
Case finding and ECG diagnosis

- Perform manual pulse palpation to assess for an irregular pulse indicating underlying AF in patients who present with breathlessness or dyspnoea, palpitations, syncope or dizziness, chest discomfort, or stroke/transient ischaemic attack (TIA).
- Perform an ECG in all patients, whether symptomatic or not, with an irregular pulse in whom AF is suspected.
- Where you suspect paroxysmal AF that has not been detected by standard ECG recording:
 - use a 24-hour ambulatory ECG monitor where you suspect asymptomatic episodes or where episodes are less than 24 hours apart
 - use an event recorder ECG where symptomatic episodes are more than 24 hours apart.

Echocardiography

- Perform transthoracic echocardiography (TTE):
 - if a baseline echocardiogram is important for long-term management (such as in younger patients)
 - if you are considering a rhythm-control strategy that includes electrical or pharmacological cardioversion
 - if you suspect underlying structural or functional heart disease (failure or murmur) that would influence management, such as choice of antiarrhythmic drug
 - where needed to help with stratifying stroke risk for antithrombotic therapy, but only where clinical evidence is needed of left ventricular (LV) dysfunction or valve disease.
- Do **not** routinely use TTE for further stroke risk stratification when you have already established the need for anticoagulation therapy using appropriate clinical criteria.
- Perform transoesophageal echocardiography (TOE):
 - when TTE has shown an abnormality such as valve disease that needs further assessment
 - where you need to exclude cardiac abnormalities and TTE is technically difficult or of poor quality
 - if you are considering TOE-guided cardioversion.

Treatment strategy decision tree



Try rhythm-control first for patients with persistent AF:

- who are symptomatic
- who are younger
- presenting for the first time with lone AF
- secondary to a treated or corrected precipitant
- with congestive heart failure.

Try rate-control first for patients with persistent AF:

- over 65
- with coronary artery disease
- with contraindications to antiarrhythmic drugs
- unsuitable for cardioversion³.

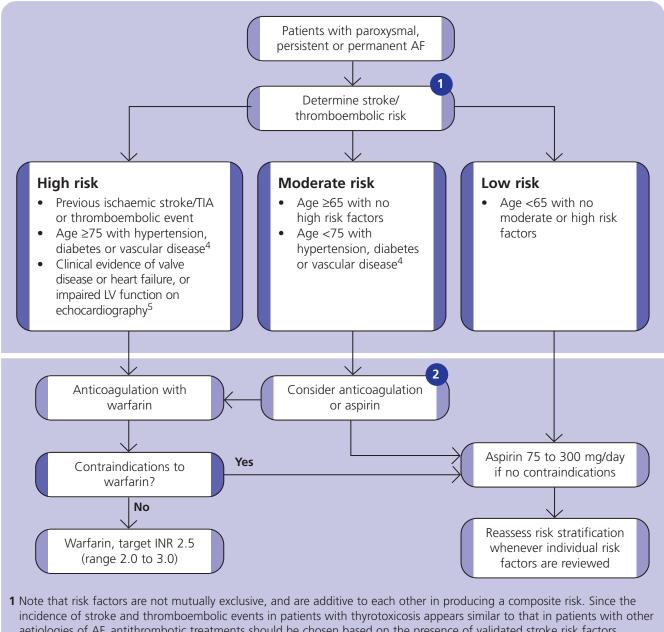
In all cases:

- explain the advantages and disadvantages of each strategy to the patient before you decide which
- take into account comorbidities when deciding which to use
- use appropriate antithrombotic therapy.
- For rhythm-control, see pages 11 and 15.
- For rate-control, see page 14.

³Patients unsuitable for cardioversion include those with: contraindications to anticoagulation; structural heart disease (e.g. large left atrium >5.5 cm, mitral stenosis) that precludes long-term maintenance of sinus rhythm; a long duration of AF (usually >12 months); a history of multiple failed attempts at cardioversion and/or relapses, even with concomitant use of antiarrhythmic drugs or non-pharmacological approaches; an ongoing but reversible cause of AF (e.g. thyrotoxicosis).

Stroke risk stratification and thromboprophylaxis

Stroke risk stratification



- aetiologies of AF, antithrombotic treatments should be chosen based on the presence of validated stroke risk factors.
- 2 Owing to lack of sufficient clear-cut evidence, treatment may be decided on an individual basis, and the physician must balance the risks and benefits of warfarin versus aspirin. As stroke risk factors are cumulative, warfarin may, for example, be used in the presence of two or more moderate stroke risk factors. Referral and echocardiography may help in cases of uncertainty.

⁴Coronary artery disease or peripheral artery disease.

⁵An echocardiogram is not needed for routine assessment, but refines clinical risk stratification in the case of moderate or severe LV dysfunction and valve disease.

Thromboprophylaxis

In all cases

- Use the stroke risk stratification algorithm to assess stroke and embolism risk in patients with AF, and give appropriate thromboprophylaxis.
- Reconsider stroke risk stratification whenever reviewing individual risk factors.
- Where it is indicated by stroke risk stratification, begin antithrombotic therapy with minimal delay in all patients with newly diagnosed AF, after comorbidities have been appropriately managed.
- Explain to and discuss with patients both the antithrombotic benefits and the potential bleeding risks of long-term anticoagulation.
- Assess bleeding risk as part of clinical assessment before starting a patient on anticoagulation therapy.
 Pay particular attention to patients:
 - over 75
 - taking antiplatelet drugs (such as aspirin or clopidogrel) or non-steroidal anti-inflammatory drugs
 - on multiple other drug treatments
 - with uncontrolled hypertension
 - with a history of bleeding (such as peptic ulcer or cerebral haemorrhage)
 - with a history of poorly controlled anticoagulation therapy.

Antithrombotic therapy for persistent AF

- Before cardioversion, maintain patients on therapeutic anticoagulation with warfarin (INR 2.5, range 2.0 to 3.0) for at least 3 weeks.
- After successful cardioversion, maintain patients on therapeutic anticoagulation with warfarin (INR 2.5, range 2.0 to 3.0) for at least 4 weeks.
- If cardioversion cannot be postponed for 3 weeks:
 - give heparin before cardioversion
 - give warfarin for at least 4 weeks after cardioversion.
- After cardioversion, continue anticoagulation long term in patients with a high risk of AF recurrence or where it is recommended by the stroke risk stratification algorithm (see page 7). Factors indicating a high risk of AF recurrence include:
 - a history of failed cardioversion attempts
 - mitral valve disease, LV dysfunction or enlarged left atrium.
- Anticoagulation is not required when cardioversion successfully restores sinus rhythm in a patient with AF of confirmed duration of less than 48 hours.
 - Give patients with atrial flutter or asymptomatic AF the same antithrombotic therapy as those with symptomatic AF.

Antithrombotic therapy for permanent AF

- When deciding whether or not to give antithrombotic therapy for permanent AF, perform a risk–benefit assessment in discussion with the patient.
- Where antithrombotic therapy is given:
 - the most effective treatment is adjusted-dose warfarin (target INR 2.5, range 2.0 to 3.0)
 - where warfarin is inappropriate, give aspirin (75 to 300 mg/day)
 - if warfarin is appropriate, do not coadminister aspirin purely for thromboprophylaxis, as it provides no additional benefit.

Antithrombotic therapy for paroxysmal AF

• Do not base decisions on the need for antithrombotic therapy for paroxysmal AF on the frequency or duration of symptomatic or asymptomatic paroxysms. Perform appropriate risk stratification, as for permanent AF (see algorithm on page 7).

Antithrombotic therapy for acute-onset AF

- In patients with acute AF who are receiving no, or only subtherapeutic, anticoagulation therapy:
 - start heparin at initial presentation, unless contraindicated
 - continue heparin until a full risk assessment has been made and appropriate antithrombotic
 therapy started, based on risk stratification (see algorithm on page 7).
- In patients with a confirmed diagnosis of acute AF (less than 48 hours since onset), use oral anticoagulation if:
 - stable sinus rhythm is not restored within the 48-hour period following onset or
 - there are other risk factors for AF recurrence⁶ or
 - it is recommended by the stroke risk stratification algorithm (see page 7).
- Where the precise time since the onset of acute AF is uncertain, use oral anticoagulation for acute AF, as for persistent AF (see page 8).
 - Where a patient with acute AF is haemodynamically unstable, begin emergency treatment as soon as possible. Do not delay emergency intervention in order to begin anticoagulation treatment first.

⁶ Risk factors include: a history of failed cardioversion attempts; structural heart disease (mitral valve disease, LV dysfunction or enlarged left atrium); prolonged history of AF (greater than 12 months); previous recurrences of AF.

Antithrombotic therapy for acute stroke/TIA in patients with AF⁷

- For acute stroke in patients with AF:
 - manage any uncontrolled hypertension before starting antithrombotic therapy
 - perform CT or MRI to exclude cerebral haemorrhage:
 - where there is haemorrhage, do not give anticoagulation therapy
 - where there is no haemorrhage, begin anticoagulation therapy after 2 weeks
 - delay anticoagulation therapy where there is a large cerebral infarction.
- For acute TIA in patients with AF:
 - perform CT or MRI to exclude recent cerebral infarction or haemorrhage
 - in the absence of either, begin anticoagulation therapy as soon as possible.

Antithrombotic therapy following stroke/TIA in patients with AF

- Give warfarin as the most effective thromboprophylactic agent.
- Do not give aspirin or dipyridamole as thromboprophylactic agents unless indicated for comorbidities or vascular disease.
- Only begin warfarin treatment after treating relevant comorbidities such as hypertension and assessing the risk–benefit ratio.

Self-monitoring for long-term anticoagulation

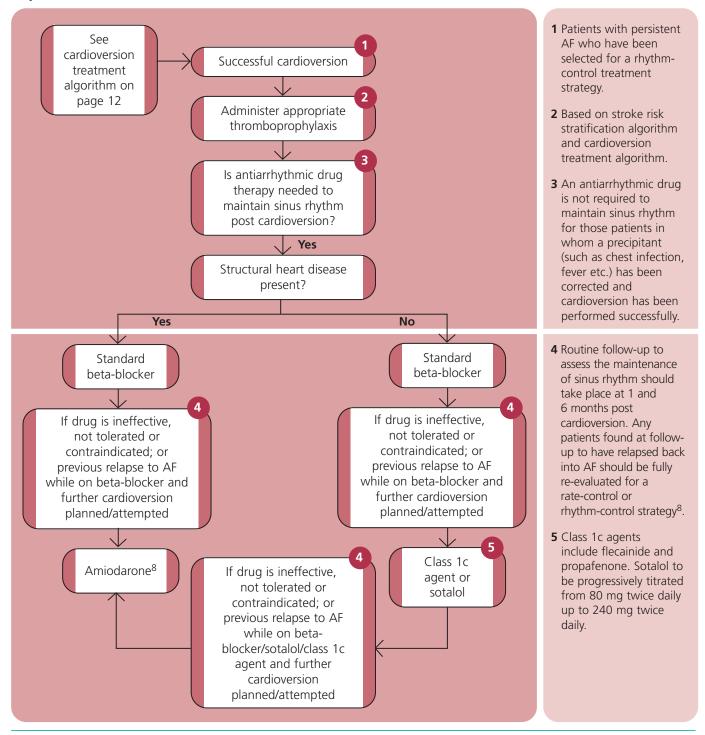
- Consider self-monitoring for patients with AF who require long-term anticoagulation if they would prefer it and the following criteria are met:
 - the patient (or a designated carer) is physically and cognitively able to perform the self-monitoring test
 - there is an adequate supportive educational programme to train patients and/or carers
 - the patient's ability to self-manage is reviewed regularly
 - the equipment is checked regularly using a quality-control programme.

⁷ NICE is developing a clinical guideline on the diagnosis and management of stroke (publication expected 2008).

Treatments for AF

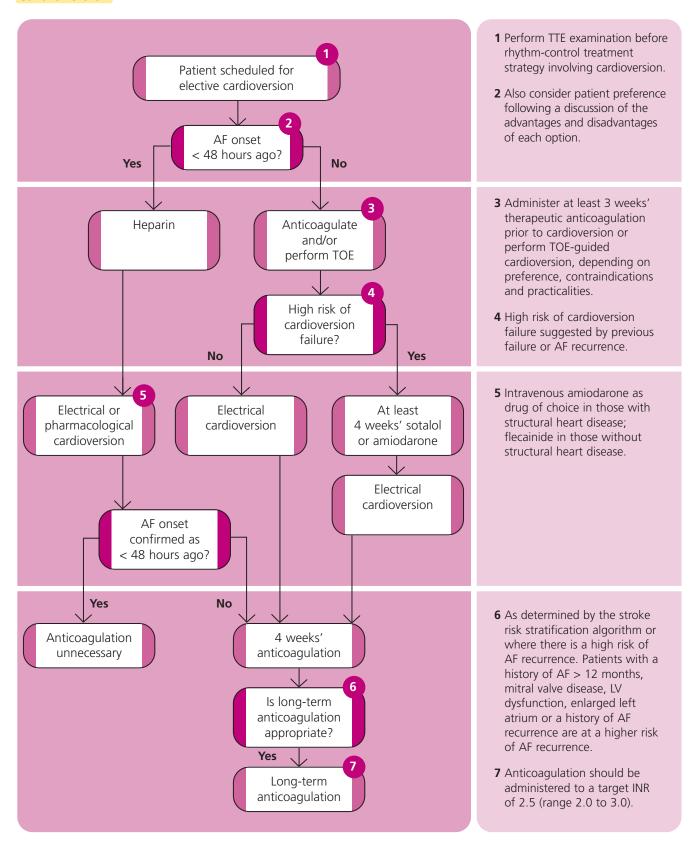
Rhythm-control for persistent AF, including cardioversion

Rhythm-control treatment



⁸ If rhythm-control fails, consider the patient for rate-control strategy, or specialist referral for those with lone AF or ECG evidence of underlying electrophysiological disorder (e.g. Wolff–Parkinson–White [WPW] syndrome).

Cardioversion



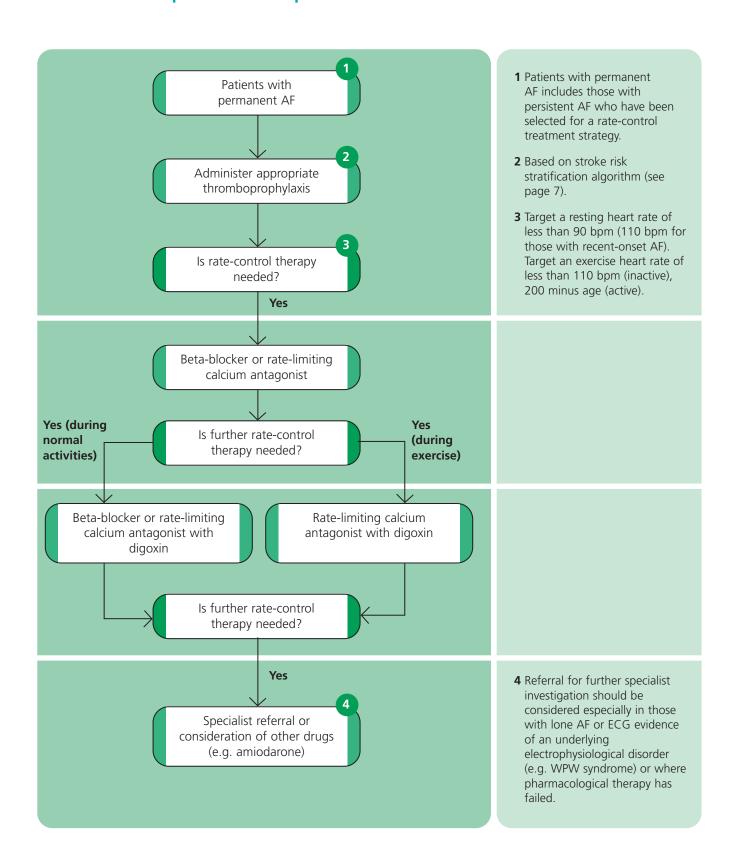
Thromboprophylaxis

• See 'Antithrombotic therapy for persistent AF' on page 8 for recommendations on thromboprophylaxis before and after cardioversion.

Follow-up after cardioversion

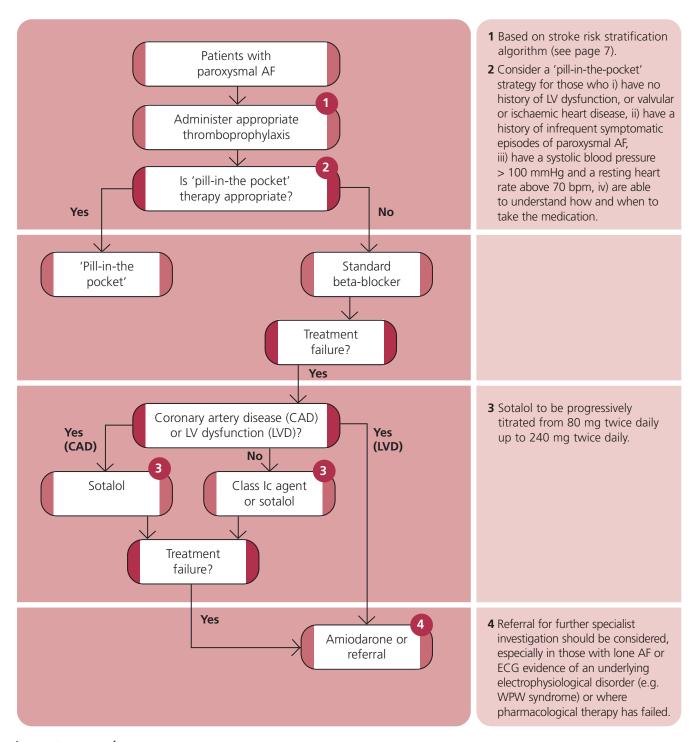
- After successful cardioversion of AF, arrange routine follow-up at 1 month and 6 months to assess maintenance of sinus rhythm.
- At the 1-month follow-up, tailor the frequency of subsequent reviews to the individual patient, taking into account comorbidities and concomitant drug therapies.
- At each review, take the opportunity to reassess the need for, and the risks and benefits of, continued anticoagulation.
- If a patient has relapsed into AF at follow-up, fully re-evaluate their need for a rate-control or rhythmcontrol strategy.
- If patients remain in sinus rhythm at 6 months and have no other need for hospital follow-up, discharge from secondary care and arrange an appropriate management plan with their GP.
- Advise patients to seek medical attention if their symptoms recur.

Rate-control for persistent and permanent AF



Rhythm-control for paroxysmal AF

Treatment

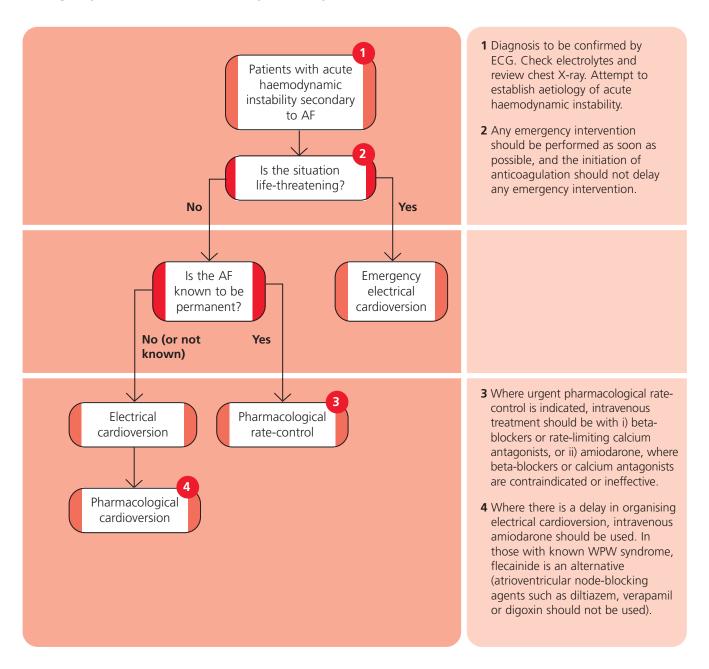


Long-term review

• Keep patients who are on long-term medication for paroxysmal AF under review to assess the need for continued treatment and the development of any adverse effects.

Haemodynamically unstable and acute-onset AF

Emergency treatment for haemodynamically unstable AF



Antithrombotic therapy for acute-onset AF

• See section on 'Antithrombotic therapy for acute-onset AF' on page 9.

Post-operative AF

Drug prophylaxis

- In patients undergoing cardiothoracic surgery:
 - reduce the risk of post-operative AF by giving one of:
 - amiodarone
 - a beta-blocker
 - sotalol
 - a rate-limiting calcium antagonist
 - do not use digoxin.
- Patients undergoing cardiac surgery who are on pre-existing beta-blocker therapy should continue this treatment unless contraindications develop (such as post-operative bradycardia or hypotension).

Treatment

- For post-operative AF after cardiothoracic surgery, use a rhythm-control strategy as the first management option, unless contraindicated.
- Manage post-operative AF after non-cardiothoracic surgery in the same way as acute-onset AF with any other precipitant.
- When preventing and managing post-operative AF, use antithrombotic therapy as appropriate, and correct identifiable causes such as electrolyte imbalance or hypoxia.

Referral for specialist intervention

- Consider referral for further specialist intervention (such as pulmonary vein isolation, pacemaker therapy, arrhythmia surgery, atrioventricular junction catheter ablation or use of atrial defibrillators) for patients:
 - in whom pharmacological therapy has failed
 - with lone AF
 - with ECG evidence of any underlying electrophysiological disorder such as Wolff–Parkinson–White syndrome.
- Explain and discuss the reasons for such referral with the patient.

Implementation

The Healthcare Commission assesses the performance of NHS organisations in meeting core and developmental standards set by the Department of Health in 'Standards for better health' issued in July 2004. Implementation of clinical guidelines forms part of the developmental standard D2. Core standard C5 says that national agreed guidance should be taken into account when NHS organisations are planning and delivering care.

NICE has developed tools to help organisations implement this guidance (listed below). These are available on our website (www.nice.org.uk/CG036).

- Slides highlighting key messages for local discussion.
- Costing tools
 - Costing report to estimate the national savings and costs associated with implementation.
 - Costing template to estimate the local costs and savings involved.
- Implementation advice on how to put the guidance into practice and national initiatives which support this locally.
- Audit criteria to monitor local practice.

Further information

Quick reference guide

This quick reference guide to the Institute's guideline on atrial fibrillation contains the key priorities for implementation, summaries of the guidance, and notes on implementation. It has been distributed to healthcare professionals in England (see www.nice.org.uk/CG036distributionlist).

It is also available from www.nice.org.uk/CG036quickrefguide

For printed copies, phone the NHS Response Line on 0870 1555 455 and quote reference number N1054.

NICE guideline

The NICE guideline, 'Atrial fibrillation: the management of atrial fibrillation', is available from www.nice.org.uk/CG036NICEguideline

The NICE guideline contains the following sections: Key priorities for implementation; 1 Guidance; 2 Notes on the scope of the guidance; 3 Implementation in the NHS; 4 Research recommendations; 5 Other versions of this guideline; 6 Related NICE guidance; 7 Review date. It also gives details of the grading scheme for the evidence and recommendations, the Guideline Development Group and the Guideline Review Panel, and technical detail on the criteria for audit.

Full guideline

The full guideline includes the evidence on which the recommendations are based, in addition to the information in the NICE guideline. It is published by the National Collaborating Centre for Chronic Conditions. It is available from www.rcplondon.ac.uk/ncc-cc, from the website of the National Library for Health (www.nlh.nhs.uk), and from www.nice.org.uk/CG036fullguideline

Information for the public

NICE has produced a version of this guidance for people with atrial fibrillation, their families and carers, and the public, which is available from www.nice.org.uk/CG036publicinfo

For printed copies, phone the NHS Response Line on 0870 1555 455 and quote reference number N1055.

Related guidance

- Radiofrequency ablation for atrial fibrillation in association with other cardiac surgery. NICE interventional procedure guidance no. 121 (2005). Available from www.nice.org.uk/IPG121
- Cryoablation for atrial fibrillation in association with other cardiac surgery. NICE interventional procedure guidance no. 122 (2005). Available from www.nice.org.uk/IPG122
- Microwave ablation for atrial fibrillation in association with other cardiac surgery. NICE interventional procedure guidance no. 123 (2005). Available from www.nice.org.uk/IPG123
- Percutaneous radiofrequency ablation for atrial fibrillation. NICE interventional procedure guidance no. 168 (2006). Available from www.nice.org.uk/IPG168
- High-intensity focused ultrasound for atrial fibrillation as an associated procedure with other cardiac surgery. NICE interventional procedure guidance no. 175 (2006). Available from www.nice.org.uk/IPG175

For information about NICE guidance that has been issued or is in development, see the website (www.nice.org.uk).

Review date

The process of reviewing the evidence is expected to begin 4 years after the date of issue of this guideline. Reviewing may begin before this if significant evidence that affects the guideline recommendations is identified. The updated guideline will be available within 2 years of the start of the review process.

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