Whittington Health NHS

Atrial Fibrillation

Subject:	Atrial fibrillation
Policy Number	N/A
Ratified By:	Clinical Guidelines Committee
Date Ratified:	July 2009, review with no change October 2014, review Nov 2015 and October 2019
Version:	4.0
Policy Executive Owner:	Clinical Director EIM
Designation of Author:	Consultant Cardiologist
Name of Assurance Committee:	As above
Date Issued:	October 2019
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Target Audience:	Emergency Department, Medicine, Surgery
Key Words:	Atrial fibrillation (AF)

Version Control Sheet

Version	Date	Author	Status	Comment
1.0	July 2009	Dr Brull/ Dr Zacharias/Dr Rear	Off line	New guideline ratified at CGC
2.0	October 2014	Dr Brull (Consultant Cardiologist)	Off line	Content reviewed with no changes required at this time (Dr DB)
3.0	Nov 2015	Dr Brull (Consultant Cardiologist) Dr Waddingham	Off line	Reviewed with minor change
4.0	Oct 2019	Dr Brull (Consultant Cardiologist)	Live	No content change required.

➢ Criteria for use

This guideline applies to patients who are found to be in atrial fibrillation (AF) in the Whittington Hospital either at presentation or during their in patient stay.

➢ Background/ introduction

Atrial fibrillation (AF) is common, with an incidence of 0.5% in those aged 50-59 years rising to 9% in those over 80. It is associated with increased cardiovascular morbidity and mortality. AF is characterised by uncoordinated atrial activation with loss of atrial mechanical function. An electrocardiogram (ECG) shows chaotic fibrillatory waves associated with an irregular, ventricular response.

Presentation includes palpitations, breathlessness, chest discomfort, dizziness, collapse, stroke/TIA or systemic embolism. AF can also be asymptomatic.

Classification

(Note that in cases of new onset AF classification can only be made in retrospect)

- Paroxysmal AF - episodes of self-terminating AF (< 7day duration)
- Persistent AF - prolonged AF (>7 days)
- Permanent AF - low likelihood of successful long-term reversion to sinus rhythm

➢ Clinical management

Aims of Management

1. Effective rate control
2. Timely assessment of thromboembolic and bleeding risks in **all patients** with initiation of anticoagulation as appropriate
3. Safe cardioversion (electrical or pharmacological) to sinus rhythm if appropriate
4. Maintenance of sinus rhythm if cardioversion successful

At discharge, the management of all patients with atrial fibrillation should have been reviewed. This should involve consideration for rate vs. rhythm control aiming to achieve good symptom control. In addition there should be a thorough thromboembolic risk assessment with anticoagulation initiation as appropriate. Patients with ongoing symptoms require further cardiology review.

The following need to be assessed to formulate a management plan:

1. Duration of AF at time of presentation
2. Consider possibility of precipitating or predisposing conditions and/or co-existing cardiac disease (see **Table 1**)
3. Probability of spontaneous or successful cardioversion
4. Likelihood of maintenance of sinus rhythm (consider Rate v Rhythm control **Figure 1**)
5. Risk factors for thromboembolism & bleeding (CHA_2DS_2-Vasc and HAS-BLED scores)

Table 1 Predisposing Causes

<u>Cardiac</u>

- Acute coronary syndromes
- Valvular heart disease esp. mitral valve disease
- Congestive cardiac failure
- Hypertension
- Cardiac surgery
- Congenital heart disease esp. atrial septal defect (ASD)
- Wolff Parkinson White (WPW)
- Other structural heart disease

<u>Non-Cardiac</u>

- Pulmonary disease e.g. pneumonia, pulmonary embolism (PE), chronic obstructive pulmonary disease (COPD)
- Endocrine diseases: thyrotoxicosis, phaechromocytoma
- Electrolyte imbalance
- Fever/ sepsis
- Toxins: especially alcohol and cocaine

Assessment of Stroke and Bleeding risk

Assessment of patients' risk for thromboembolic events is vital to allow initiation of appropriate therapy. Bleeding risk should be simultaneously assessed to ensure that the balance of risk and benefit is favorable. This assessment should be performed and documented for each patient during an admission and an awareness of the potential for change of the risk-benefit balance over time is important.

Discuss the benefits and risks of anticoagulation with each patient; for most people the benefit of anticoagulation outweighs the bleeding risk however people with an increased risk of bleeding are likely to require careful monitoring. Do not withhold anticoagulation solely because a person is at risk of having a fall.

The **CHA_2DS_2-Vasc** score uses a range of clinical risk factors to assess stroke risk in patients with atrial fibrillation. This allows a prediction of annual stroke risk through a validated and reproducible system.

This link may be helpful when scoring:
http://www.mdcalc.com/cha2ds2-vasc-score-for-atrial-fibrillation-stroke-risk/

	Risk factors for stroke/VTE in AF	Points
C	Congestive heart failure / LV systolic dysfunction	1
H	Hypertension	1
A	Age 65-74	1
D	Diabetes mellitus	1
S	Stroke or TIA	2
V	Vascular disease (prior MI, PVD or aortic atherosclerosis)	1
A	Age 75 or more	2
Sc	Sex category - female	1
		Max score 9

- **Do not offer** stroke prevention therapy to people aged under 65 years with AF and no risk factors (lone AF) other than gender ie CHA_2DS_2-VASc score of 0 for men or 1 for women
- **Consider** anticoagulation for men with a CHA_2DS_2-VASc score of 1
- **Offer** anticoagulation to ALL people with a CHA_2DS_2-VASc score of 2 or above

Choice of Appropriate Anticoagulant

Offer an oral vitamin K antagonist (warfarin) to all patients qualifying for anticoagulation as determined by CHA_2DS_2-Vasc and bleeding risk, offer heparin/low molecular weight heaprin at initial presentation pending therapeutic anticoagulation.

Do not offer aspirin for stroke prevention regardless of CHA_2DS_2-Vasc score (rarely patients may be continued on aspirin for other indications).

The use of Novel Oral Anticoagulants (NOACs) (eg. Rivaroxaban and Apixaban) is covered by the Whittington Hospital anticoagulation guidelines. These can currently only prescribed by Cardiology and Haematology consultants in conjunction with the Whittington Anticoagulation Service. Specialist Cardiology advice should be sought if considering initiating a NOAC.

Assessment of Bleeding Risk

The **HAS-BLED** score is a helpful tool to quantify bleeding risk with clinical risk factors when assessing the risk of bleeding in patients with AF.

This link may be helpful when calculating the score:
http://www.mdcalc.com/has-bled-score-for-major-bleeding-risk/

	Clinical characteristic	Points
H	• hypertension (uncontrolled; e.g. systolic BP > 160 mmHg)	1
A	• renal disease (dialysis, renal transplant or creatinine > 200 micromol/litre) • liver disease (chronic hepatic disease e.g. cirrhosis or biochemical evidence of significant hepatic derangement [e.g. bilirubin > 2 times ULN in association with ALT or ALP more than 3 times ULN])	1 or 2
S	• Stroke	1
B	• major bleeding event or predisposition to bleeding	1
L	• Labile international normalised ratio (INR) for people taking vitamin K antagonists, unstable or high INRs or poor time in therapeutic range (e.g.. < 60%)	1
E	• Elderly, age > 65 years	1
D	• Drugs or alcohol (1 point each): anti platelets, NSAIDs & or alcohol misuse or harmful excess	1 or 2
		Maximum 9

A **HAS-BLED** score of ≥ 3 indicates “high risk” and should prompt both caution and regular review of anticoagulation in addition to modification and monitoring of the following risk factors:

1. Uncontrolled hypertension
2. Poor control of international normalised ratio (INR) ('labile INRs')
3. Concurrent medication, e.g. aspirin or NSAIDs
4. Harmful alcohol consumption

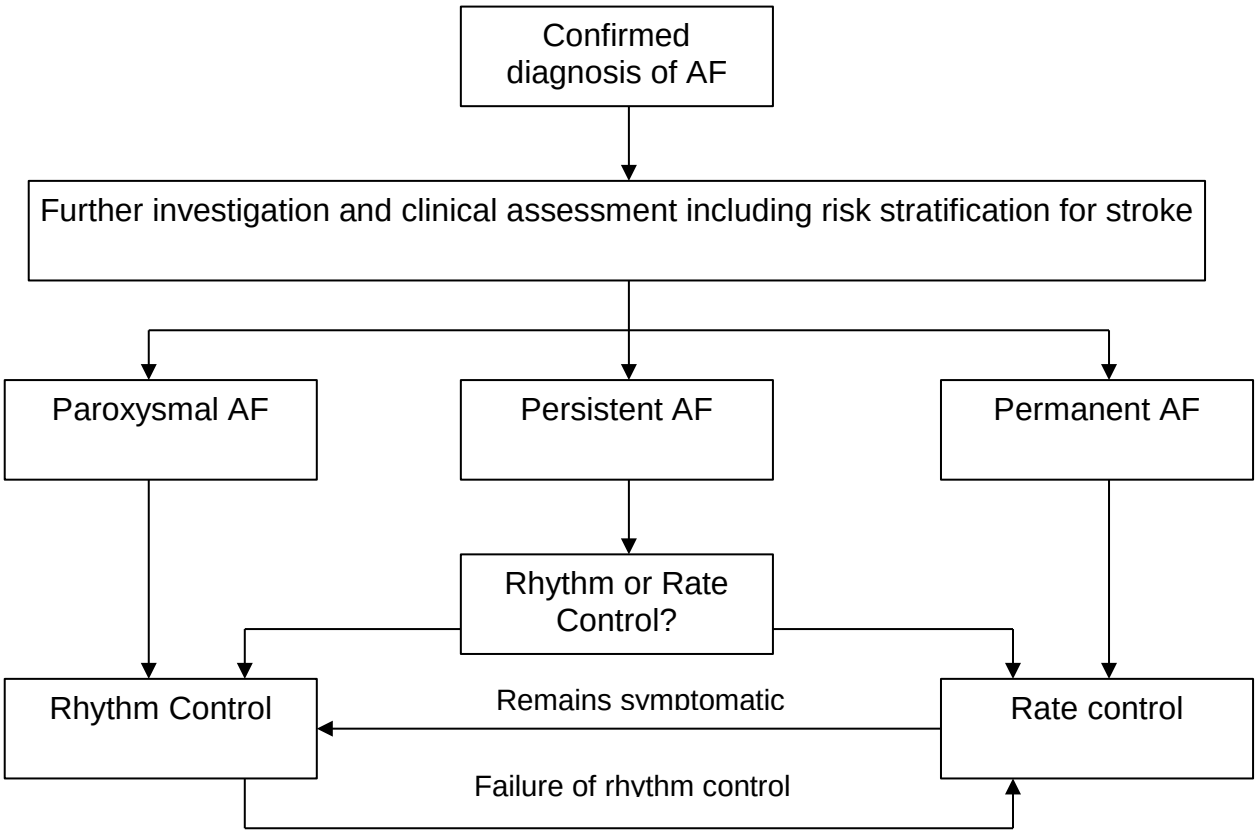
NICE Standards for the Management of AF

1. Adults with non-valvular atrial fibrillation and a CHA_2DS_2-Vasc score of 2 or above should be offered anticoagulation
2. Adults with atrial fibrillation are not offered aspirin for stroke prevention
3. Adults with atrial fibrillation who are prescribed anticoagulation discuss options at least annually with their doctor
4. Adults with atrial fibrillation who have poor anticoagulation control have their anticoagulation reassessed
5. Adults with atrial fibrillation who's symptoms are poorly controlled (EHRA II+) with treatment should be offered specialist referral to cardiology within 4 weeks

Symptomatic assessment can be guided by the European Heart Rhythm Association classification (EHRA):

EHRA I	-	No symptoms
EHRA II	-	Mild symptoms, normal daily activity unaffected
EHRA III	-	Severe symptoms, normal daily activity affected
EHRA IV	-	Disabling symptoms, normal daily activity discontinued

Figure 1: Choice of Strategy Rate vs Rhythm Control



Consider rhythm-control first for patients:

- AF with a clear reversible cause
- Heart failure primarily caused by AF
- New onset or lone AF *
- Rhythm control more appropriate based on clinical judgment e.g. poorly controlled symptoms EHRA II+

*Atrial flutter considered suitable for ablation

Consider rate-control first for patients:

- Over 65
- With coronary artery disease
- With contraindications to anti-arrhythmic drugs
- Unsuitable for cardioversion (See Figure 3)

Paroxysmal AF (within 48 hours of onset)

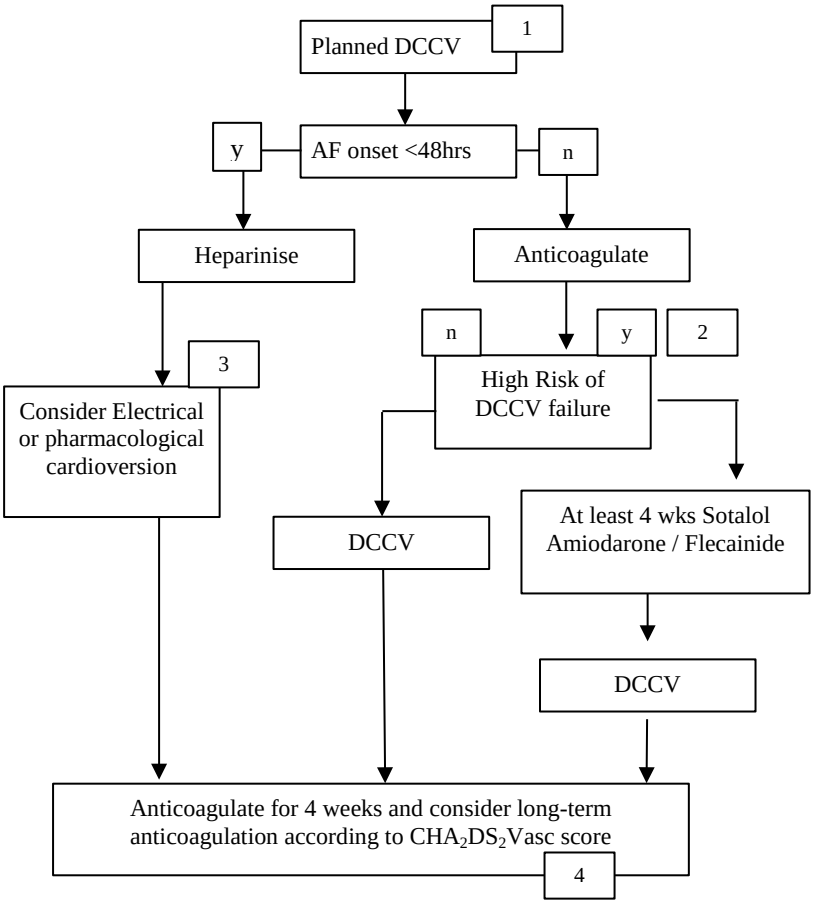
There is a spontaneous cardioversion rate of approximately 50% in the first 24 hours from the onset of AF. International guidelines suggest that chemical or electrical cardioversion **may** be considered up to 48 hours from the onset of symptoms in **selected groups of patients** where the chances of long term Sinus Rhythm (SR) maintenance are good, such as in younger patients with lone AF especially where the thromboembolic risk is low and in those with a treated acute precipitant and no underlying heart disease.

In non-life-threatening situations where there is no haemodynamic compromise:

- Send relevant investigations to exclude predisposing illnesses or conditions (See **Table 1,** eg FBC, U+E, Mg, TFT)
- Commence weight adjusted low molecular weight heparin
- Observe with ECG monitoring
- After correcting electrolyte imbalance consider one of the following:

1. Pharmacological vs Electrical cardioversion (**Figure 2**)
2. Rate control strategy

Figure 2: Cardioversion Treatment Algorithm



y=yes
n=no

TTE= transthoracic echo

Patients with symptomatic AF inadequately controlled in a Primary Care setting require review in Cardiology Outpatients

1.Perform TTE before deciding on rhythm control strategy. This is best performed after establishing rate control in order to accurately assess LV function.

If AF onset >48hrs administer at least 4 weeks' therapeutic anticoagulation prior to cardioversion.

2.High risk of cardioversion failure is suggested by previous failure or AF recurrence.

3.Intravenous Amiodarone as drug of choice in those with structural heart disease; Flecainide in those without structural heart disease or coronary artery disease.

4.As determined by the CHA_2DS_2Vasc score:

If AF is of >48 h, anticoagulation is recommended for at least 4 weeks after emergency cardioversion, as for patients undergoing elective cardioversion.

Long term anticoagulation should be administered to a target INR of 2.5 (range 2.0 to 3.0) in those with a score of 2 or more, consider in men with a score of 1

Pharmacological Cardioversion (*with ECG monitoring*)
Recommended agents include:

Sotalol	80mg orally bd contraindicated in asthma and CCF
Flecainide	- 2mg/kg (max. 150mg) over 30mins IV. - first line for patients without structural or ischaemic heart disease - contraindicated in: ischaemia, clinical LV dysfunction, or HOCM
Amiodarone	-300mg iv over 1hour followed by 900mg over 23 hours via central line (preferable route) or large peripheral IV cannula - full oral loading should be commenced after infusion : 200mg tds for one week, 200mg bd one week then 200mg daily - Baseline TFTs should be measured prior to Amiodarone therapy

Caution using all anti-arrhythmic therapy in patients with slow AF <60bpm

If pharmacological cardioversion is unsuccessful then DC cardioversion may be performed provided the patient is still within 48 hours of symptom onset. This is not advisable in the A+E setting.

Patients with paroxysmal AF require thromboprophylaxis against systemic embolisation in the same way as other AF patients.

Sotalol and Flecainide are frequently used to maintain sinus rhythm in patients without LV dysfunction.

Amiodarone should be reserved for troublesome recurrent symptoms, or presence of significant LV dysfunction. Treatment failure, however, requires specialist cardiology review.

AF of greater than 48 hours duration

Patients presenting >48hours after symptom onset (i.e. beyond the acceptable window for cardioversion) with haemodynamically stable AF should be managed with an initial rate control strategy. The presence of co-existing predisposing conditions where cardioversion is unlikely to be successful or likelihood of early return to AF is high is a clear indication for a long-term rate control strategy. It is important to consider a long-term 'Rhythm control' versus a 'Rate control' strategy based on the individual patient: The figure below from NICE guidelines is a useful guide **(Figure 3)**.

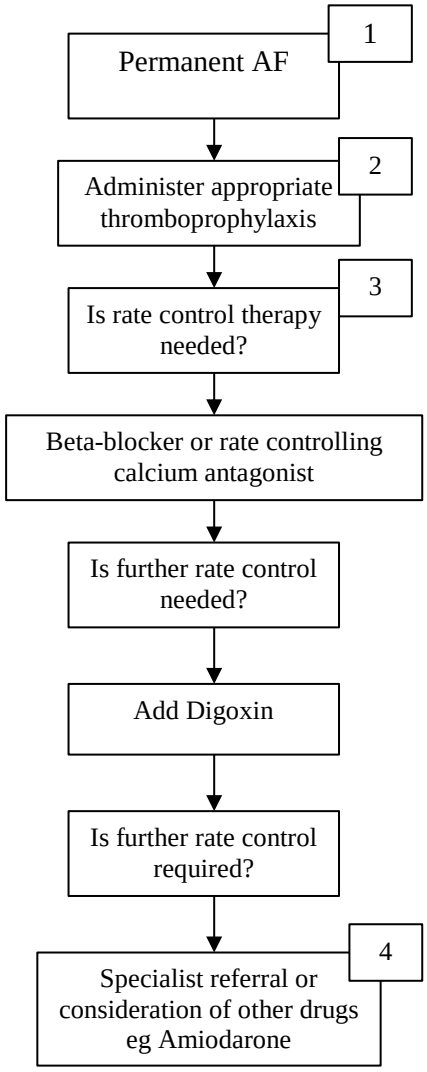
Factors leading to a lower probability of conversion to sinus rhythm include:

- Longer duration of AF (especially >1 year) unless if thyrotoxic.
- Enlarged Left Atrial (LA) size (>5.5cm)
- Mitral valve disease
- Left Ventricular dysfunction, Left Ventricular Hypertrophy (LVH)
- Chronic cardiopulmonary or persisting systemic disease

The aim of drug therapy is to achieve appropriate rate control (<90 bpm at rest, <110 with exercise) with an agent tailored to the patient's co-existing cardiac condition. First line monotherapy is with oral β-blocker therapy eg., Metoprolol 25 mg tds or Bisoprolol 2.5mg od. If contra-indicated a rate-limiting calcium channel antagonists i.e. Verapamil 40mg tds or Diltiazem 60mg tds are appropriate (unless LV impairment suspected). If additional rate-control is required add Digoxin but do not use as monotherapy except in sedentary patients.

Patients experiencing difficulties with adequate symptoms control or those experiencing side-effects should be discussed with Cardiology.

Figure 3 Rate-Control Treatment Algorithm



1. Permanent AF includes patients with persistent AF selected for a rate control strategy

2. According to CHA_2DS_2Vasc score

3. Target a resting heart rate of <90 bpm. Target an exercise heart rate of less than 110 bpm (inactive), 200 minus age (active).

4. Referral for further specialist investigation should be considered especially in those with lone AF or ECG evidence of an underlying electrophysiological disorder (e.g. WPW syndrome) or where pharmacological therapy has failed.

Refer to Heart Failure service if LV dysfunction (cardiology ICE referral).

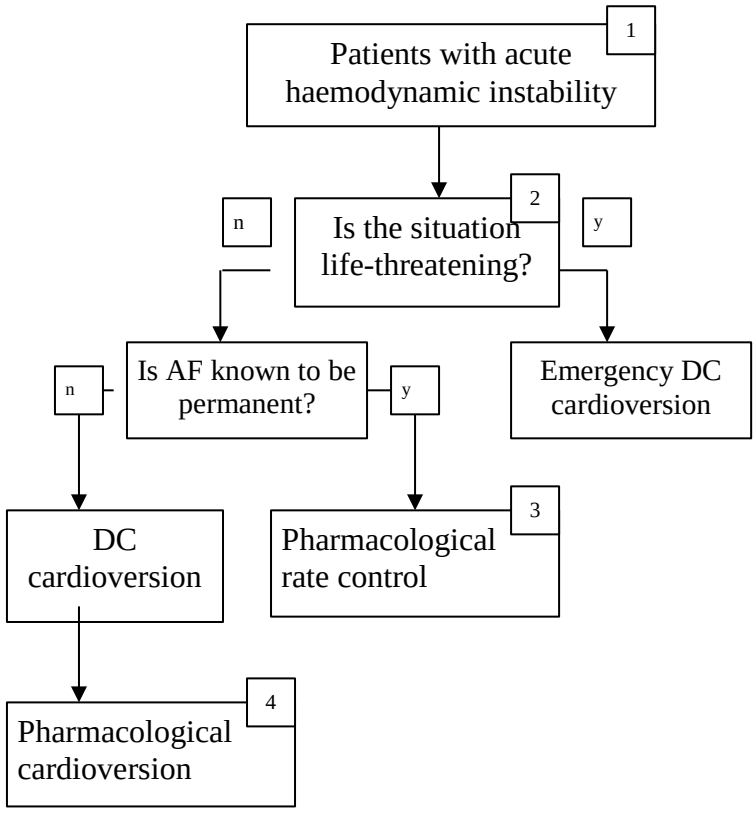
AF with Haemodynamic Compromise

In the presence of haemodynamic instability (systolic BP < 90mmHg that is new for patient), with ongoing chest pain, signs of heart failure and impaired conscious level - **emergency synchronised electrical cardioversion** is required. Seeking cardiology support is advised.

DC Cardioversion Protocol:

- Inform anaesthetist
- Arrange transfer to theatres
- Anti-coagulate with full systemic dose of LMW heparin
- Full resuscitation equipment available
- Emergency external pacing facilities available
- Adhesive pads in anterolateral or antero-posterior position (preferably AP)
- **Synchronised DC shocks** 100J: 150J: 150J (biphasic)

Figure 4 AF with haemodynamic compromise



1. Check UEs and chest X-ray. Attempt to establish aetiology of haemodynamic instability.

2. Emergency treatment should be performed as soon as possible. The initiation of anticoagulation should not delay treatment.

3. Where urgent pharmacological rate-control is indicated, IV treatment should be with

i) beta-blockers or rate limiting calcium antagonists. This should be done with caution as can lead to profound BP drop.

ii) Amiodarone, where beta blockers or calcium antagonists are contraindicated or ineffective.

4. When there is a delay in electrical cardioversion, IV Amiodarone should be used.

In those with known WPW syndrome, Flecainide is an alternative (AV node-blocking agents such as Diltiazem, Verapamil or Digoxin are contraindicated).

➢ Contacts (inside and outside the Trust including out-of-hours contacts)

Urgent cardiology advice is provided by the cardiology registrars (bleeps 3096 and 3038) during working hours. Out of hours advice is provided by the cardiologist on call at Barts which can be contacted via switchboard.

Barts Cardiology Electrophysiology (arrhythmia) SpR: 07810 878450
Barts Cardiology Coronary intervention SpR: 07833 237316

Routine cardiology in-patient referrals should be made using the Anglia ICE system.

➢ References (evidence upon which the guideline is based)

This guideline is based on guidelines provided by the European Society of Cardiology and the National Institute of Clinical Excellence.
These are available online at:

1) NICE AF Guideline
http://guidance.nice.org.uk/CG36/Guidance/pdf/English

2)ESC AF Guideline
http://www.escardio.org/guidelines-surveys/esc-guidelines//Pages/atrial-fibrillation.aspx

➢ Compliance with this guideline (how and when the guideline will be monitored e.g. audit and which committee the results will be reported to)

Compliance with this guideline will be monitored through clinical audits performed by the cardiology department. Results of the audits would be presented through the hospital audit forum.

Appendix A

Plan for Dissemination and implementation plan of new Procedural Documents

To be completed and attached to any document which guides practice when submitted to the appropriate committee for consideration and approval.

Acknowledgement: University Hospitals of Leicester NHS Trust

Title of document:	Atrial fibrillation		
Date finalised:	November 2015	**Dissemination lead: Print name and contact details**	Dr Brull
Previous document already being used?	Yes **(Please delete as appropriate)**		
If yes, in what format and where?	On intranet		
Proposed action to retrieve out-of-date copies of the document:	Clinical Governance Department will remove earlier version from intranet		

To be disseminated to:	**How will it be disseminated/implemented, who will do it and when?**	**Paper or Electronic**	**Comments**
All clinical departments	**Through trust intranet**	**Electronic**	
Is a training programme required?	**No**		
Who is responsible for the training programme?	**No**		

Appendix B

Equality Impact Assessment Tool

To be completed and attached to any procedural document when submitted to the appropriate committee for consideration and approval.

Impact (= relevance) **1. Low** **2. Medium** **3. High**	**Evidence for impact assessment (monitoring, statistics, consultation, research, etc**	**Evidential gaps (what info do you need but don't have)**	**Action to take to evidential gap**
Race	**1**	**None**	**N/A**
Disability	**1**	**None**	**N/A**
Gender	**1**	**None**	**N/A**
Age	**1**	**None**	**N/A**
Sexual Orientation	**1**	**None**	**N/A**
Religion and belief	**1**	**None**	**N/A**

Once the initial screening has been completed, a full assessment is only required if:

- The impact is potentially discriminatory under equality or anti-discrimination legislation
- Any of the key equality groups are identified as being potentially disadvantaged or negatively impacted by the policy or service
- The impact is assessed to be of high significance.

If you have identified a potential discriminatory impact of this procedural document, please refer it to relevant Head of Department, together with any suggestions as to the action required to avoid/reduce this impact.