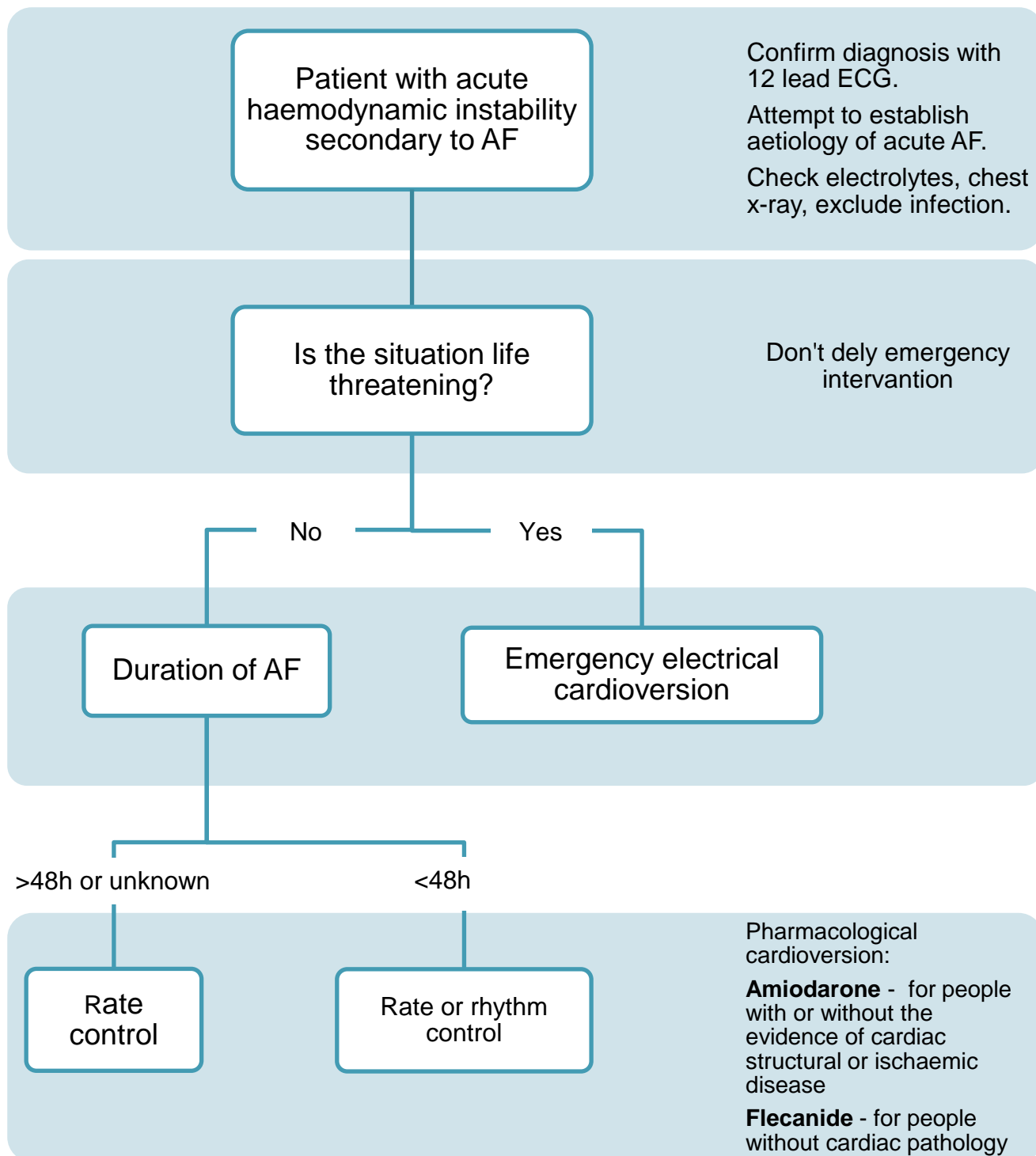


Management of Postoperative Atrial Fibrillation Clinical Guideline

V3.0

September 2019

Summary: Haemodynamically Unstable AF Treatment Algorithm



- Rate control therapeutic options:**
1. Standard beta-blocker: Metoprolol, Esmolol, Propranolol, Bisoprolol
 2. Rate-limiting calcium-channel blocker: Verapamil, Diltiazem
 3. Amiodarone
 4. Combination therapy if monotherapy doesn't control the symptoms which are thought to be due to poor ventricular rate control. Consider combination therapy with any 2 of the following: beta-blocker, diltiazem, digoxin.

1. Aim/Purpose of this Guideline

1.1 The purpose of this document is to provide guidance for management of new onset atrial fibrillation in postoperative period.

1.2 This guideline is not intended to cover management of atrial fibrillation with fast ventricular rate in patients with established diagnosis of atrial fibrillation.

1.3 This version supersedes any previous versions of this document.

1.4 Data Protection Act 2018 (General Data Protection Regulation – GDPR) Legislation

1.5 The Trust has a duty under the DPA18 to ensure that there is a valid legal basis to process personal and sensitive data. The legal basis for processing must be identified and documented before the processing begins. In many cases we may need consent; this must be explicit, informed and documented. We can't rely on Opt out, it must be Opt in.

DPA18 is applicable to all staff; this includes those working as contractors and providers of services.

For more information about your obligations under the DPA18 please see the 'information use framework policy', or contact the Information Governance Team rch-tr.infogov@nhs.net

2. The Guidance

2.1 Background

AF is a common cardiac rhythm disturbance and increases in prevalence with advancing age. Approximately 1% of patients with AF are <60 years of age, whereas up to 12% of patients are 75 to 84 years of age (1). More than one third of patients with AF are ≥80 years of age (2,3). Frequent hospitalizations, hemodynamic abnormalities, and thromboembolic events related to AF result in significant morbidity and mortality. AF is associated with a 5 fold increased risk of stroke (4) and stroke risk increases with age (5). AF-related stroke is likely to be more severe than non-AF-related stroke (6). AF is also associated with a 3-fold risk of HF (7-9), and 2-fold increased risk of both dementia and mortality (4).

2.2 Definition

AF is a supraventricular tachyarrhythmia with uncoordinated atrial activation and consequently ineffective atrial contraction. Electrocardiogram characteristics include: irregular R-R intervals (when atrioventricular [AV] conduction is present), absence of distinct repeating P waves, and irregular atrial activity. Rapid irregular wide QRS complex tachycardia suggests AF with conduction via an accessory pathway or associated with underlying bundle branch block. Extremely rapid rates suggest the presence of an accessory pathway.

2.3 Presentation

Hemodynamic consequences of AF can result from a variable combination of suboptimal ventricular rate control (either too rapid or too slow), loss of

coordinated atrial contraction, beat-to-beat variability in ventricular filling, and sympathetic activation. Consequences for individual patients vary, ranging from no symptoms to fatigue, palpitations, dyspnea, hypotension, syncope, or heart failure.

2.4 Classification:

Paroxysmal AF	Terminates spontaneously or with intervention within 7 days of onset. Episodes may recur with variable frequency.
Persistent AF	Continuous AF that is sustained >7 days
Longstanding persistent AF	Continuous AF >12 months in duration
Permanent AF	The term is used when the patient and clinician make a joint decision to stop further attempts to restore and/or maintain sinus rhythm. Acceptance of AF represents a therapeutic attitude on the part of the patient and clinician rather than an inherent pathophysiological attribute of AF.
Non-valvular AF	AF in the absence of rheumatic mitral stenosis, a mechanical or bioprosthetic heart valve, or mitral valve repair.

2.5 Management

2.5.1 The management of atrial fibrillation aims to prevent complications, particularly stroke, and alleviate symptoms.

2.5.2 Pharmacological treatments include:

- anticoagulants to reduce the risk of stroke,
- antiarrhythmics to restore or maintain normal heart rhythm
- drugs to slow the heart rate in adults who remain in atrial fibrillation.

2.5.3 Non-pharmacological management in postoperative period includes electrical cardioversion.

2.6 NICE guidelines published in 2014 recommendations:

2.6.1 Unless contraindicated, manage postoperative atrial fibrillation following non-cardiothoracic surgery as for new-onset atrial fibrillation with any other precipitant.

2.6.2 In the management of postoperative atrial fibrillation, use appropriate antithrombotic therapy and correct identifiable precipitants (such as electrolyte imbalance or hypoxia).

2.6.3 Carry out emergency electrical cardioversion, without delaying to achieve anticoagulation, in people with life-threatening haemodynamic instability caused by new onset atrial fibrillation.

2.6.4 In people with atrial fibrillation presenting acutely without life threatening haemodynamic instability, offer rate or rhythm control if the onset of the arrhythmia is less than 48 hours, and start rate control if it is more than 48 hours or is uncertain.

2.6.5 Consider either pharmacological or electrical cardioversion depending on clinical circumstances and resources in people with new onset atrial fibrillation who will be treated with a rhythm control strategy.

2.6.6 If pharmacological cardioversion has been agreed on clinical and resource grounds for new-onset atrial fibrillation, offer:

- flecainide or amiodarone to people with no evidence of structural or ischaemic heart disease
- amiodarone to people with evidence of structural heart disease.

2.6.7 In people with atrial fibrillation in whom the duration of the arrhythmia is greater than 48 hours or uncertain and considered for long-term rhythm control, delay cardioversion until they have been maintained on therapeutic anticoagulation for a minimum of 3 weeks. During this period offer rate control as appropriate.

2.7 Management in theatre/recovery

2.7.1 Confirm atrial fibrillation with 12 lead ECG

2.7.2 Offer rate control as the first-line strategy to people with atrial fibrillation, except in people:

- whose atrial fibrillation has a reversible cause
- who have heart failure thought to be primarily caused by atrial fibrillation
- with new-onset atrial fibrillation
- for whom a rhythm control strategy would be more suitable based on clinical judgement.

2.8 Rate control therapeutic options:

- 2.8.1 **standard beta-blocker** (that is, a beta-blocker other than sotalol)
- 2.8.2 **Metoprolol** 2.5–5.0 mg IV bolus over 2 min; up to 3 doses (max dose 15mg)
- 2.8.3 **Esmolol** 500 mcg/kg IV bolus over 1 min, then 50–300 mcg/kg/min IV
- 2.8.4 **Propranolol** 1 mg IV over 1 min, up to 3 doses at 2 min intervals
- 2.8.5 **Bisoprolol** orally 2.5 -10mg once daily
- 2.8.6 **Rate-limiting calcium-channel blocker** (nondihydropyridine calcium channel antagonist)
- 2.8.7 **Verapamil** 5-10mg (0.075-0.15 mg/kg) IV bolus over 2 min, may give an additional 10.0 mg after 30 min if no response, then 0.005mg/kg/min infusion
- 2.8.8 **Diltiazem** 0.25 mg/kg IV bolus over 2 min, then 5-15 mg/h
- 2.8.9 **Consider digoxin monotherapy** for people with non-paroxysmal atrial fibrillation only if they are sedentary (do no or very little physical exercise).
- 2.8.10 **Digixin** 0.25-0.5mg loading dose over 15-30 minutes, repeat dose 8 hours later with repeat dosing to a maximum of 1.5 mg over 24 h. Commence maintenance dose (62.5-500mcg/24 hrs) 8h later.
- 2.8.11 **Amiodarone** 300 mg IV over 1 h, then 10–50 mg/h over 24 h
- 2.8.12 If monotherapy does not control symptoms, and if continuing symptoms are thought to be due to poor ventricular rate control, consider combination therapy with any 2 of the following:
- beta-blocker
 - diltiazem
 - digoxin.

2.9 Pharmacological Cardioversion of AF

Consider pharmacological and/or electrical rhythm control for people with atrial fibrillation whose symptoms continue after heart rate has been controlled or for whom a rate-control strategy has not been successful.

2.10 Recommended Drug Doses for Pharmacological Cardioversion

- 2.10.1 **Amiodarone** 5mg/kg (max 300mg) over 20 minutes with ECG monitoring followed by a further 900mg over 24 hours via a central line. (people with or without evidence of structural or ischaemic heart disease)

2.10.2 **Flecainide** 2mg/kg (max 150mg) over 10-30 minutes with ECG monitoring, followed if required by infusion at a rate of 1.5mg/kg/hour for 1 hour, subsequently reduced to 100-250 micrograms/kg/hour for up to 24 hours. Max cumulative dose in first 24 hours 600mg. (people with no evidence of structural or ischaemic heart disease)

2.11 Electrical Cardioversion

Perform under general anaesthetic using a synchronized DC or AC electrical shock. Indicated in haemodynamic instability but in cases where haemodynamic compromise is not apparent, no evidence has been found to favour electrical cardioversion over pharmacological cardioversion.

3. Monitoring compliance and effectiveness

Element to be monitored	Adherence to RCHT guidelines
Lead	Lead anaesthesia consultant for each case.
Tool	Audit and review of suspected cases of inappropriate care would take place in monthly anaesthesia governance meetings.
Frequency	Will be determined by the incidence of cases.
Reporting arrangements	The committee reviewing the cases will be the anaesthesia directorate. Cases will be discussed at audit meetings and the details will be recorded in the minutes.
Acting on recommendations and Lead(s)	See above.
Change in practice and lessons to be shared	A lead member of the team will be identified to take each change forward where appropriate. Lessons will be shared with all the relevant stakeholders.

4. Equality and Diversity

4.1 This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the ['Equality, Inclusion & Human Rights Policy'](#) or the [Equality and Diversity website](#).

4.2 Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.

Appendix 1. Governance Information

Document Title	Management of Postoperative Atrial Fibrillation Clinical Guideline V3.0		
Date Issued/Approved:	September 2019		
Date Valid From:	September 2019		
Date Valid To:	September 2022		
Directorate / Department responsible (author/owner):	Dr Anna Malik, Consultant Anaesthetist		
Contact details:	01872 258195		
Brief summary of contents	The purpose of this document is to provide guidance for management of new onset atrial fibrillation in postoperative period. This guideline is not intended to cover management of atrial fibrillation with fast ventricular rate in patients with established diagnosis of atrial fibrillation.		
Suggested Keywords:	Atrial fibrillation, Anaesthesia		
Target Audience	RCHT ✓	CFT	KCCG
Executive Director responsible for Policy:	Medical Director		
Date revised:	September 2019		
This document replaces (exact title of previous version):	Guideline and summary for the management of postoperative atrial fibrillation V2.0		
Approval route (names of committees)/consultation:	Anaesthetic and Theatres Business Group Governance Lead Anaesthetics		
Care Group Manager confirming approval processes	Gary Matthews – Clinical Lead		
Name and Post Title of additional signatories	Not Required		
Name and Signature of Care Group / Directorate Governance Lead confirming approval by specialty and divisional management meetings	{Original Copy Signed}		
	Name: Matthew Body		

Signature of Executive Director giving approval	{Original Copy Signed}		
Publication Location (refer to Policy on Policies – Approvals and Ratification):	Internet & Intranet	✓	Intranet Only
Document Library Folder/Sub Folder	Clinical / Anaesthetics		
Links to key external standards	National Institute for clinical excellence (NICE)		
Related Documents:	<p>Reference:</p> <ol style="list-style-type: none"> 1. Wolf PA, Benjamin EJ, Belanger AJ, et al. Secular trends in the prevalence of atrial fibrillation: The Framingham Study. Am Heart J. 1996; 131:790–5. [PubMed: 8721656] 2. Camm AJ, Kirchhof P, Lip GY, et al. Guidelines for the management of atrial fibrillation: the Task Force for the Management of Atrial Fibrillation of the European Society of Cardiology (ESC). Eur Heart J. 2010; 31:2369–429. [PubMed: 20802247] 3. Go AS, Hylek EM, Phillips KA, et al. Prevalence of diagnosed atrial fibrillation in adults: national implications for rhythm management and stroke prevention: the AnTicoagulation and Risk Factors in Atrial Fibrillation (ATRIA) Study. JAMA. 2001; 285:2370–5. [PubMed: 11343485] 4. Kannel WB, Wolf PA, Benjamin EJ, et al. Prevalence, incidence, prognosis, and predisposing conditions for atrial fibrillation: population-based estimates. Am J Cardiol. 1998; 82:2N–9N. 5. Wolf PA, Abbott RD, Kannel WB. 		

Atrial fibrillation: a major contributor to stroke in the elderly. The Framingham Study. Arch Intern Med. 1987; 147:1561–4. [PubMed: 3632164]

6. Miller PS, Andersson FL, Kalra L. Are cost benefits of anticoagulation for stroke prevention in atrial fibrillation underestimated? Stroke. 2005; 36:360–6. [PubMed: 15637326]

7. Wang TJ, Larson MG, Levy D, et al. Temporal relations of atrial fibrillation and congestive heart failure and their joint influence on mortality: the Framingham Heart Study. Circulation. 2003; 107:2920–5. [PubMed: 12771006]

8. Krahn AD, Manfreda J, Tate RB, et al. The natural history of atrial fibrillation: incidence, risk factors, and prognosis in the Manitoba Follow-Up Study. Am J Med. 1995; 98:476–84. [PubMed: 7733127]

9. Stewart S, Hart CL, Hole DJ, et al. A population-based study of the long-term risks associated with atrial fibrillation: 20-year follow-up of the Renfrew/Paisley study. Am J Med. 2002; 113:359–64. [PubMed: 12401529]

Bibliography:

1. Atrial fibrillation: management. (CG180) NICE Clinical guideline. Published: 18 June 2014 (nice.org.uk/guidance/cg180)
2. Managing acute atrial fibrillation.

	http://pathways.nice.org.uk/pathways/atrial-fibrillation . NICE Pathway last updated: 27 November 2018 3. 2014 AHA/ACC/HRS Guideline for the management of patients with atrial fibrillation: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and the Heart Rhythm Society
Training Need Identified?	No

Version Control Table

Date	Version No	Summary of Changes	Changes Made by (Name and Job Title)
January 2015	V2.0	<i>No changes required. Current guideline in line with recent publications and reviewed by Cardiology Dept</i>	Dr Thomas Cope Dr Ann Harvey
September 2019	V3.0	Updated with recent evidence.	Dr Anna Malik

All or part of this document can be released under the Freedom of Information Act 2000

This document is to be retained for 10 years from the date of expiry.
This document is only valid on the day of printing

Controlled Document

This document has been created following the Royal Cornwall Hospitals NHS Trust Policy for the Development and Management of Knowledge, Procedural and Web Documents (The Policy on Policies). It should not be altered in any way without the express permission of the author or their Line Manager.

Appendix 2. Initial Equality Impact Assessment Form

<p><i>Name of the strategy / policy / proposal / service function to be assessed</i></p> <p>Management of Postoperative Atrial Fibrillation Clinical Guideline V3.0</p>						
<p>Directorate and service area: Theatres and Anaesthesia</p>			<p>Is this a new or existing Policy: Existing</p>			
<p>Name of individual completing assessment: Anna Malik</p>			<p>Telephone: 01872 258195</p>			
<p>1. <i>Policy Aim*</i></p>		<p>To inform all anaesthesia staff of the appropriate course of action when treating with perioperative atrial fibrillation.</p>				
<p>2. <i>Policy Objectives*</i></p>		<p>Ensure anaesthesia team are adequately prepared to treat atrial fibrillation</p>				
<p>3. <i>Policy – intended Outcomes*</i></p>		<p>Patients who develop perioperative atrial fibrillation will receive optimal care.</p>				
<p>4. <i>*How will you measure the outcome?</i></p>		<p>Audit and monitoring through incident reporting and case discussion at governance meetings.</p>				
<p>5. <i>Who is intended to benefit from the policy?</i></p>		<p>Patients.</p>				
<p>6a <i>Who did you consult with</i></p>		<p>Workforce</p>	<p>Patients</p>	<p>Local groups</p>	<p>External organisations</p>	<p>Other</p>
		<p>X</p>				
<p>b). <i>Please identify the groups who have been consulted about this procedure.</i></p>		<p>Please record specific names of groups</p> <p>Anaesthetic and Theatres Business Group Governance Lead Anaesthetics</p>				
<p>What was the outcome of the consultation?</p>		<p>No consultation undertaken.</p>				

7. The Impact

Please complete the following table. **If you are unsure/don't know if there is a negative impact you need to repeat the consultation step.**

Are there concerns that the policy could have differential impact on:				
Equality Strands:	Yes	No	Unsure	Rationale for Assessment / Existing Evidence

Age		X					
Sex (male, female, trans-gender / gender reassignment)		X					
Race / Ethnic communities /groups		X					
Disability - Learning disability, physical impairment, sensory impairment, mental health conditions and some long term health conditions.		X					
Religion / other beliefs		X					
Marriage and Civil partnership		X					
Pregnancy and maternity		X					
Sexual Orientation, Bisexual, Gay, heterosexual, Lesbian		X					
<p>You will need to continue to a full Equality Impact Assessment if the following have been highlighted:</p> <ul style="list-style-type: none"> You have ticked “Yes” in any column above and No consultation or evidence of there being consultation- this <u>excludes</u> any <i>policies</i> which have been identified as not requiring consultation. or Major this relates to service redesign or development 							
8. Please indicate if a full equality analysis is recommended.				Yes		No	X
9. If you are not recommending a Full Impact assessment please explain why.							
No negative impact.							
Date of completion and submission	September 2019	Members approving screening assessment	Policy Review Group (PRG) <i>'APPROVED' to be added here once reviewed at PRG.</i>				

This EIA will not be uploaded to the Trust website without the approval of the Policy Review Group.

A summary of the results will be published on the Trust’s web site.