ATRIAL FIBRILLATION MANAGEMENT
(Excluding atrial fibrillation in acute coronary syndrome)

Adverse signs?
Heart rate >150/min plus any of:
- Reduced conscious level
- Systolic BP <90mmHg
- Chest pain
- Heart failure

Yes
Seek senior assistance immediately

No
TREAT REVERSIBLE CAUSES

Reversible causes persist

RATE CONTROL

Anticoagulation
1. Acutely use low molecular weight heparin if not already on warfarin.
2. Initiate oral anticoagulation with warfarin when clinically feasible unless very low risk. More guidance overleaf.

Additional rate control options
(more guidance overleaf)

Further therapy
Consider addition of digoxin to either beta blocker or digoxin/Ca-antagonist.

Onset <24h

No reversible causes or Reversible causes treated

Onset >24h (or uncertain)

TREAT REVERSIBLE CAUSES

If cardioversion unsuccessful, See rate control strategy.

ATTEMPT RHYTHM CONTROL

Chemical Cardioversion
- Amiodarone
- Flecainide (for select patient groups - discuss with Cardiology/refer to CCU). More guidance overleaf.

OR

Early DC Cardioversion
- Fasted, under sedation or general anaesthetic.
- Also an option for those in whom chemical cardioversion proved unsuccessful. (refer to CCU)

Beta –blocker — e.g. metoprolol (shorter acting) initially 25mg PO tds (or 2.5mg IV tds if NBM) or bisoprolol 2.5mg PO od initially, uptitrating to max 10mg od.

OR (do NOT use in combination)

Calcium channel antagonist — e.g. Diltiazem 60mg tds
If contra-indications to beta-blockade and LV function normal/mildly impaired (use with great caution in moderate/severe LV systolic dysfunction)

[Digoxin — this remains a 3rd line option if the above contraindicated/not tolerated.]

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Amiodarone is a potent anti-arrhythmic if administered within 24 hours of onset of atrial fibrillation. It carries an immediate risk of extravasation and local irritation so should be administered through a large proximal vein or in the case of a continuous infusion, a central vein, e.g. PICC line, femoral line, internal jugular line. For initial attempts at cardioversion in a stable patient, 300mg should be diluted in 250mls of 5% dextrose and run through new proximal intravenous cannulae in a large peripheral vein. If this is unsuccessful in cardioverting the patient, an infusion of 900mg over the following 23 hours may be commenced. This should be diluted in a 500mL bag of 5% dextrose and administered through a pump at 21.7mls/hr.

Flecainide
Atrial fibrillation is known to increase a person’s risk for stroke lone AF i.e. AF in a structurally normal heart. It should be by up to five times. Long-term thromboprophylaxis should be considered in all patients in atrial fibrillation. This is guided by the CHA2DS2-VASc stroke stratification scheme.

Paroxysmal AF carries the same stroke risk as permanent or persistent atrial fibrillation. The decision for long-term thromboprophylaxis should be guided is the same way as one would in permanent AF.

Anticoagulation for AF in the peri-operative period
The risk of bleeding should be weighed against the risk of thrombembolism prior to the administration of anticoagulant therapy. It is reasonable to undertake surgery or diagnostic procedures that carry a risk of bleeding in the presence of sub-therapeutic anticoagulation for up to 48 hours without substituting heparin in patients at without major risk factors for stroke. Patients who do have major risk factors should be considered for ‘bridging’ anticoagulation with therapeutic doses of subcutaneous LMWH or intravenous unfractionated heparin during the interruption of oral anticoagulation therapy. For further information and advice in the peri-operative management of anticoagulation, consult the Haematology clinical pathways on Staffnet.

Drug therapies and routes of administration

Common Drugs

Beta-blockers are the first line rate control agent for atrial fibrillation. The oral route should be used in stable patients; intravenous beta blockade with an agent like metoprolol should be used when the oral route is compromised or during haemodynamic instability.

Bisoprolol is a good cardio-selective beta-blocker and so is the preferred oral beta-blocker for the rate control of atrial fibrillation. Starting dose is 2.5mg PO od, normally up to 10mg od, although this can be increased up to a maximum of 20mg a day.

Metoprolol is the preferred intravenous beta-blocker given its short half-life. Give an undiluted 2.5mg bolus initially and then reassess the patient in five minutes and repeat if required. Once successful rate control is achieved, three times a day maintenance oral therapy should be instituted (2.5mg IV = 25mg PO).

Amiodarone is a potent anti-arrhythmic if administered within 24 hours of onset of atrial fibrillation. It carries an immediate risk of extravasation and local irritation so should be administered through a large proximal vein or in the case of a continuous infusion, a central vein, e.g. PICC line, femoral line, internal jugular line. For initial attempts at cardioversion in a stable patient, 300mg should be diluted in 250mls of 5% dextrose and run through new proximal intravenous cannulae in a large peripheral vein. If this is unsuccessful in cardioverting the patient, an infusion of 900mg over the following 23 hours may be commenced. This should be diluted in a 500mL bag of 5% dextrose and administered through a pump at 21.7mls/hr. This should be done under continuous ECG monitoring. Regular oral amiodarone therapy should only be initiated after discussion with cardiology, as the patient should be made aware of the risks surrounding long-term amiodarone therapy.

Digoxin is useful for the rate control in sedentary patients. It is not potent enough for rate-control in periods of physical stress or exertion. Digoxin is however, a useful adjunct for rate-control. Intravenous therapy - the rate of onset of rate-limiting effects of oral digoxin is reasonable, and as such the intravenous route should only be used where the oral route is compromised or in patients who require rapid rate control. Time to onset of effect is approximately 10 minutes when given IV. Dose - 500 micrograms over 2 hours via intravenous infusion. This should be followed by either oral or intravenous maintenance therapy. Oral therapy - initiate with 500 micrograms of digoxin followed by 250 to 500 micrograms 6 hours later dependent on body habitus and ventricular rate. Maintenance therapy thereafter using 62.5micrograms to 250micrograms once daily. Digoxin levels should be checked if toxicity is suspected.

Management of atrial fibrillation in adrenergic states
Where adrenergic tone is high (e.g. sepsis, the post-operative period, thyrotoxicosis) digoxin is less effective in the rate control of atrial fibrillation. These patients should receive beta-blockers either orally or should the patient be haemodynamically unstable short-acting intravenous beta-blockers would be the first line rate control therapy.

Specialist Drugs

Flecainide is an effective agent for chemical cardioversion in lone AF i.e. AF in a structurally normal heart. It should be strongly considered as a first line therapy for cardioversion in patients who have no evidence of either coronary artery disease or LV systolic impairment (primarily younger patients). Dosing: 2mg/kg over 10–30 minutes, max. 150 mg; followed if required by infusion at a rate of 1.5 mg/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, 600 mg. Its use must be discussed with a cardiologist and administered in a monitored environment.

Dronedarone is accepted for restricted use within NHS Scotland for the prevention of recurrence of atrial fibrillation in patients in whom conventional first-line anti-arrhythmic drugs are ineffective, contra-indicated, or not tolerated. It should not be used in patients without moderate/severe LV systolic dysfunction. It should not be used in patients with significant liver impairment. Its use should be directed by a cardiologist.

Amiodarone is a useful oral anti-arrhythmic in the long-term management of atrial fibrillation; this should be discussed with a cardiologist as the patient should be made aware of the risks surrounding long-term amiodarone therapy.

Combination therapy for difficult rate-control (resting HR >110bpm in spite of maximal therapy with one agent)
Rate control in patients without acute left ventricular failure/marked hypotension: Digoxin could be added to beta-blocker/calcium channel blocker therapy. Be wary of the side effects of digoxin as well as its interaction with other drugs.

Rate control in left ventricular failure/marked hypotension: Cautious introduction of a beta-blocker can be considered as an adjunct to digoxin. The use of calcium channel blockers in this situation should be avoided because of their negative inotropic effect.