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Westcliffe Cardiology Service
Guidance on the Management of Atrial Fibrillation in Primary care

Dr Matthew Fay and Dr Andreas Wolff

Foreword

The Westcliffe Cardiology Service, based at the Westcliffe Medical Practice in Shipley has been established for several years. It provides cardiology services in a local primary care setting and has been led by Dr Matthew Fay and Dr Andreas Wolff as GPwSI in cardiology since its formation, with consultant cardiologist provided Dr Steven Lindsay and his colleagues at Bradford Hospitals Teaching Foundation Trust.

In 2010 the Westcliffe Cardiology welcomed Dr Patty Lloret as a futher GPwSI to the team. It also started a locality branch service in Ilkley supported by the Ilkley Moor Medical Practice. To assist practices in the decisions in clinical care the E-Cardiology service started through SystmOne to assist clinicians in test interpretation, patient management and advice on appropriate referral.

Having promoted presented and discussed the management of atrial fibrillation both locally and nationally for sometime now we have struggled to find a simple way to outline the general principals of intervention in AF. In this guide we would like to present the SAFE management of AF:

- **S**ymptom management. This is often achieved by rate control
- **A**ntithrombotic Therapy. AF increases the risk of stroke, anticoagulation of all but those with a low risk of stroke is now the preferred option
- **F**actors that may have caused the AF but also may be increasing the patient' cardiovascular risk should be sort
- **E**nding the arrhythmia may be the only way to relieve a patient of symptoms, success in this area relies on good patient selection

The Guidance on the Management of Atrial Fibrillation in Primary Care has been written by Matt Fay and Andreas Wolff to give a view on how to review, investigate, assess stroke risk and as appropriate when and where to refer people suffering from atrial fibrillation. It is not designed as a comprehensive review of the aetiology, pathology and treatment of Atrial Fibrillation.

Included in the guide is simple advice and well as suggested resources for patient education and further clinician support.

Dr Matthew Fay & Dr Andreas Wolff

Introduction

Atrial fibrillation is the commonest sustained arrhythmia, which can be symptomatic but is not necessarily so. Even if not causing physical symptoms the changes that occur within the heart and circulation in response to the atrial fibrillation increases the individual's stroke risk significantly. This increased risk in stroke can be mitigated with the use of oral anticoagulants following appropriate risk stratification.

The management of atrial fibrillation can be undertaken in a primary care setting with a few exceptions that will be outlined. Appropriate intervention with rhythm management, stroke risk assessment and appropriate management of the other cardiovascular problems commonly seen in the patient with atrial fibrillation can reduce morbidity and mortality and has also been show to be a cost effective intervention.

Definitions

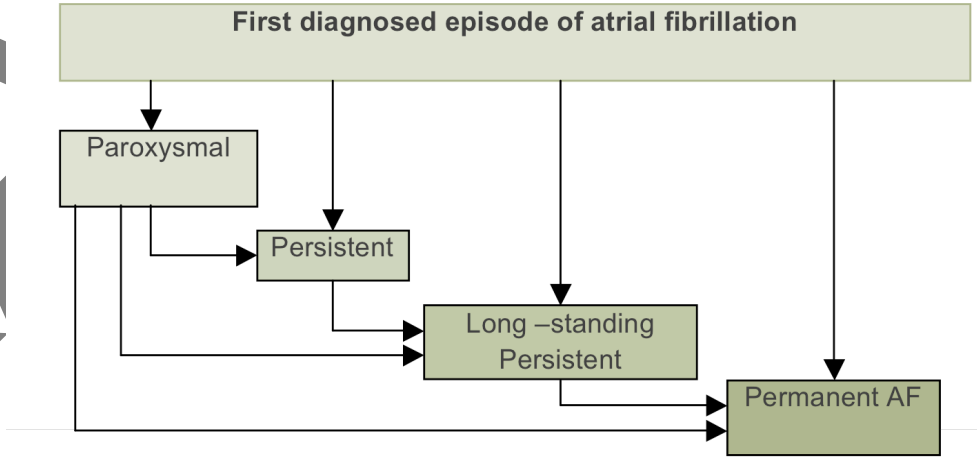
Paroxysmal Atrial Fibrillation: This is an episode of atrial fibrillation that reverts to sinus rhythm either spontaneously within 7 days. The duration of atrial fibrillation that is significant is defined in the European Cardiac Society guidance as 30 seconds

Persistent Atrial Fibrillation: This is an episode of atrial fibrillation lasting over 7 days and less than a year. A person in persistent atrial fibrillation has, by definition, a chance of returning to sinus rhythm.

Long Term Persitent Atrial Fibrillation: This is an episode of atrial fibrillation lasting over 1 year where there still a chance of return to sinus rhythm.

Permanent Atrial Fibrillation: This is the situation where someone is in atrial fibrillation with no prospect of a return to sinus rhythm. A person can move from a state of sinus rhythm to permanent atrial fibrillation without passing through the other classifications.

Lone Atrial Fibrillation: This is commonly used to denote someone with atrial fibrillation, where no underlying cardiovascular problems can be identified.



Stroke Risk: The pathophysiology of atrial fibrillation changes the nature of the endocardium, the anatomy and the function of the atria as well as causing changes in the general constituents of the blood which all lead to an increased risk of thrombus formation. The embolisation of this thrombus to the cerebral circulation explains the increased risk of stroke in people with atrial fibrillation. The risk of the atrial fibrillation is further enhanced with age and co-morbidity and various risk schema have been developed to assist in deciding the nature of intervention to reduce this risk and these will be discussed below.

General Points

Prevalence

Atrial fibrillation is the commonest sustained arrhythmia with 600,000 cases known of in England giving a prevalence of 1.2% however many consider this to be an under estimation. When considering the prevalence of Atrial Fibrillation age needs to be considered as the condition becomes commoner with age. The SAFE study, looking at methods of screening for Atrial Fibrillation the prevalence of Atrial Fibrillation was found to be over 8% in the over 65yr population.

The incidence of atrial fibrillation is increasing; this is partly due to the aging population but also due to the success of interventions in heart disease where people are living longer with damaged hearts. Other aetiological factors are also known to be significant such as obesity.

Case Identification

Work has been done at trying to increase case identification, looking at pulse assessment in seasonal flu vaccination clinics, incidental pulse checks in normal primary care contacts or even performing 6 lead (limb lead only) ECGs. The common factor for success was about the level of population coverage; as long as a large population is screened significant amounts of atrial fibrillation can be found.

If high-risk groups are reviewed however more significant cases can be found. Audit work around patients with ischeamic strokes who are not found to have atrial fibrillation at the time of presentation, where a 7 day event monitor is fitted is suggestive that 1 in 5 are found to have Paroxysmal Atrial Fibrillation

Aetiology

Atrial fibrillation is associated with a range of causes ranging local cardiac issues to systemic cardiovascular disease and metabolic disturbance and these should be sort. Common causes include:

- Ischaemic Heart Disease
- Heart Failure
- Hypertension
- Valvular Heart Disease
- Cardiomyopathies
- Atrial Septal Defects
- Acute Infection
- Thyrotoxicosis
- Carcinoma of the Bronchus
- Endurance Athletes
- Electrolyte Imbalance

There are other associated conditions that do not directly cause the arrhythmia but are commonly seen, such as tall stature, long PR interval, metabolic syndromes. The atrial triggers for Atrial Fibrillation may be caused or just aggravated by these factors, however the mechanism is not well understood.

Examination & Investigation

History

When taking the history from a person with atrial fibrillation try to identify symptoms that may suggest the time of onset, this is important, as there is an opportunity for early cardioversion (see Management) if presenting in the first 24hours. However many people with atrial fibrillation are asymptomatic of the arrhythmia.

The history should also seek symptoms suggestive of a possible underlying aetiology as outlined above. The history should also look for other cardiovascular illness such as diabetes, ischaemic heart disease or symptoms and signs of Transient Ischeamic Attack. These will aid in stroke risk assessment and the decision to use anti-coagulants. People with atrial fibrillation have a reduced life expectancy so a full cardiovascular risk assessment should be undertaken. Although statin medication may not affect the progression of the Atrial Fibrillation it may help reduce the overall vascular risk the patient is carrying.

Examination

If the patient is symptomatic at presentation they should be assessed rapidly for heamodynamic compromise. If marked this may warrant discussion with the secondary cardiology team or assistance from the paramedics. When assessing the cardiac rate assessment at the cardiac apex is required as often the radial pulse does not accurately demonstrate the ventricular rate. Signs of heart failure syndrome or murmurs may point to underlying structural heart disease. Pulmonary examination is required to exclude sinister pathology

Investigations-Bloods and basics

Blood tests should be performed; these should include Full Blood Count to exclude anaemia, Electrolytes, Liver Function Test, Glucose assessment, Thyroid Function Tests and in the over 35 year olds, who have not had a recent cardiovascular risk assessment, cholesterol and lipid assessment. In all patients who are current or previous smokers a Chest Xray may also be requested to exclude a bronchial carcinoma as the underlying cause.

Investigation-ECG

The 12 lead ECG is mandatory in atrial fibrillation to confirm that the irregular pulse is due to atrial fibrillation rather than just frequent ectopy or other dysrhythmia.
The absence of P waves and an irregular rhythm signify atrial fibrillation. However the saw-tooth appearance of the baseline may suggest atrial flutter with variable atrioventricular block. In many instances Atrial Flutter can be considered like atrial fibrillation.

If there is uncertainty about the nature of an ECG then a review of the trace should be arranged

Investigations-Echocardiography

Most experts would suggest that an echocardiogram is performed on all new cases of atrial fibrillation to ensure that the clinical examination and inspection of the ECG has not overlooked underlying structural heart disease. If a patient has a rapid ventricular rate it is advisable to use rate-limiting medication prior to the test to ensure the physiologist can obtain adequate images

Investigations-Ambulatory Rhythm Monitoring

This may be of value if the clinician suspected atrial fibrillation and the subsequent ECG reveals sinus rhythm. It has been shown that in people with a high risk (the group scored as moderate to high risk with the $CHADS_2$ Score can be seen at high risk of AF) of suffering from AF a period of 72hr to 7 day monitoring will find a significant number of cases and it may be advisable to extend the period of monitoring requested to ensure the dysrhythmia is caught.

Symptom Management:-Rate Management

Introduction

Many people with atrial fibrillation will be found incidentally when attending for other health issues, they will be asymptomatic of the dysrhythmia. However approximately 1 in 2 to 1 in 3 will present with symptoms which may be attributable to atrial fibrillation. These symptoms could include palpitations, breathlessness or chest pain, however could be as vague as lethargy.

The AFFIRM study demonstrated that there appears to be little difference in prognosis if a rate control management attitude is adopted over a rhythm control management. This has lead to the much-commented Rate over Rhythm management strategy

Management

Since the publication of the RACE-II there has been a move away from aggressive rate control to improve prognosis however patients with resting heart rates of greater than 110bpm were excluded from the study. Patients, even if asymptomatic, with a resting tachycardia should be actively managed with rate controlling agents.

People with symptoms possibly attributable to atrial fibrillation should be initiated on rate controlling agents such as beta-blockers or rate limiting calcium channel blockers to archive either a resolution of their symptoms or a mean heart rate of 70bpm. If they remain symptomatic at this stage then consideration for a rhythm control strategy should be considered. This is covered later in this guide.

People who are asymptomatic with a bradycardia in atrial fibrillation should under go a medication review to ensure that no rate controlling medications are being prescribed. The thyroid function should have been assessed in the initial assessment but if this was over looked, or was over a year previous this should be reassessed. Following this assessment they should be closely questioned as regards a history of collapse or syncope. If they are truly asymptomatic and euthyroid no intervention is required

People who are symptomatic with a bradycardia in atrial fibrillation should under go a medication review to ensure that no rate controlling medications are being prescribed. The thyroid function should have been assessed in the initial assessment but if this was over looked, or was over a year previous this should be reassessed. If they are euthyroid and on no rate controlling medication then they should be referred to be considered for a pacemaker.

See Appendix 1 for suggestions on rate control in Atrial Fibrillation

Antithrombotic Therapy:-Stroke and Risk Stratification

Introduction

In people with atrial fibrillation there is approximately a five-fold increase in stroke, and one in six of all ischeamic strokes can be attributed to atrial fibrillation. The strokes associated with atrial fibrillation are more disabling and often more leathal. Of people suffering a stroke in Atrial fibrillation 1 in 2 will require long term residential care (compared with 1 in 2 going home if AF is not present) and over 65% die within the first year following the event.

As commented above the cause of the stroke in atrial fibrillation is embolisation of thrombus from the atria. The thrombus forms due to failure of atrial systole causing blood stasis, endocardial dysfunction and changes to the constituents of the blood. This clearly reproduces the factors of Virchow's triad and explains why anti-coagulants provide such excellent protection.

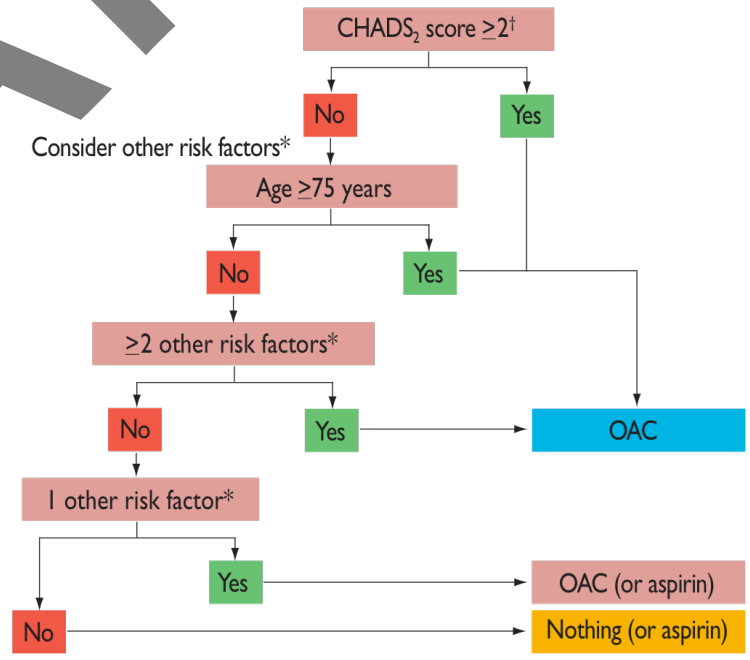
Several schema exist to assist in assessing stroke risk in atrial fibrillation, however we will focus on the simplest of these which is the $CHADS_2$ Score

Risk Stratification

The $CHADS_2$ Score gives a point for Congestive Cardiac Failure, Hypertension, Age of 75yrs or over and Diabetes and 2 points for a previous history of Stroke or TIA

$CHADS_2$ Score	Risk Grading	Adjusted Annual Stroke Rate	Numbers Needed To Treat to prevent 1 event
0	**Low Risk**	1.9%	53
1	**Moderate Risk**	2.8%	36
2	**High Risk**	4.0%	25
3		5.9%	17
4		8.5%	12
5		12.5%	8
6		18.2%	5

People with a score in of 2 or greater would be considered high risk and should be considered for oral anticoagulation. People with a score of 1 would be considered at moderate risk of stroke and could be considered for anti-coagulation or no intervention (or aspirin). To assist in this decision taking other risk factors such as age over 65, vascular disease (ischeamic heart disease or peripheral vascular disease) or female gender may be of value.



Bleeding Risk

The benefits of anticoagulation in atrial fibrillation are well-established however repeated studies and audits show that over half the people who could benefit from this form of therapy actually receive the intervention. The reasons for this are not well understood however the clinician is regarded as a significant factor.

The concern regarding bleeding on therapy is acceptable but often the perceived risk is over estimated. Bleeding Risk schema have been developed but generally mirror the stroke risk schema so that to be a high risk of stroke would indicate high risk of bleeding.

A sensible consideration of a patient's frailty, previous bleeding problems and ability to stabilize on anticoagulants should be taken in to account. However it should be remembered that if there is a fear of bleeding on anticoagulants, this risk is also true in equal measure for anti-platelet agents

Intervention

Oral anticoagualtion is well established to reduce stroke rates in people with a moderate to high risk of stroke and in people treated with oral anticoagulants. The severity of the stroke in anticoagulated patients has also been shown to be reduced, the BAFTA study (Birmingham AF Trial in the Aged) showed that the intervention is warfarin is a useful therapy in the older population; it was significantly more effective than aspirin with similar, if not less complications.

New oral anticoagulants are now coming to the market, inhibiting Thrombin (Dabigatran) or Factor Xa (Rivoroxiban and Apixaban) and these are being shown to be effective in atrial fibrillation. They do not require the regular monitoring of warfarin so seem more convenient for the patient and allows a safe use in dossett boxes and managed medicine systems. None of these are currently licensed for this use.

Aspirin or Aspirin/Clopidogrel combinations can be consider for use to reduce risk in atrial fibrillation however these have never been shown to be as effective as oral anticoagulants. There is evidence to show that any benefit they may confer reduces significantly in the higher risk patients compared with oral anti-coagulants

Factors are significant in the Management of People with AF

Introduction

In people who are found to have atrial fibrillation some consideration should be made of their co-morbidities, which may or may not already be identified.

Investigations

Aetilology of Atrial Fibrillation

When reviewing a person who has presented with atrial fibrillation initial thoughts should be to whether this is as response to a metabolic stimulus or other assault on the body. The initial investigations should include seeking for anaemia, infection or evidence of excessive alcohol consumption. Disruption to the electrolyte balance is also significant not only as a possible cause of arrhythmia but also due to the potential interaction with anti-arrhythmic medication.

In patients who are current or previous smokers a chest Xray should be performed to exclude a pulmonary pathology.

An echocardiogram would be regarded as a gold standard in the assessment of newly identified cases of atrial fibrillation. This will assess for the presence of a cardiomyopathy, valvular disease, ventricular dysfunction or the presence of thrombus. If echocardiography is not freely available or restricted the investigation remains an essential part of the assessment of the young presentation or in those with abnormalities of the QRS, ST or T wave segments of the resting ECG

People should be directly questioned about exertional symptoms such as chest discomfort or dyspnoea in trying to identify those at risk of ischeamic heart disease.

Cardiovascular Risk Assessment

People with atrial fibrillation can also have other evidence of cardiovascular disease or be at risk of cardiovascular disease. In the blood test assessment, if not known to be diabetic a fasting blood sugar and Hba_1c should be assessed and if the blood sugar is greater then 6 or the Hba_1c is greater than 5.6% then a glucose tolerance test should be arranged to assess glucose metabolism and confirm or refute a diagnosis of diabetes. The lipids should also be assessed and then a cardiovascular risk assessment performed using a validated risk assessment tool such as JBS2, Qrisk2 or ASSIGN depending on local and personal preference. For a score of over 20% then Simvastatin 40mg should be commenced with annual assessment of the liver function test in line with national advice. If Simvastatin causes muscular pains then Pravastatin 40mg can be prescribed as an alternative that may not causes these issues. Medications such as Fibrates and Ezetimibe do not have an evidence base for primary prevention

Blood tests should be performed; these should include Full Blood Count to exclude anaemia, Electrolytes, Liver Function Test, Glucose assessment, Thyroid Function Tests and in the over 35 year olds, who have not had a recent cardiovascular risk assessment, cholesterol and lipid assessment. In all patients who are current or previous smokers a Chest Xray may also be requested to exclude a bronchial carcinoma as the underlying cause.

Appendix 2 is an algorithm for the simple assessment of lipids in primary care

End the Arrhythmia

Introduction

Through this document so far we have discussed the primary care management of atrial fibrillation with a view to reducing the **S**ymptoms endured by the patient through rate control, the need for **A**nticoagulation to reduce the stroke risk and the **F**actors that may have provoked the AF or may be co-existing and may affect the person's health and prognosis. Through all these areas we have accepted that the person may remain in atrial fibrillation as a paroxysmal or persistent rhythm.

There is a group of people where we should consider returning them to sinus rhythm, we will briefly discuss this here as this generally requires the involvement of intermediate, secondary or tertiary level cardiac care.

Who should be considered for Rhythm Management?

People who are symptomatic despite adequate rate control should be considered for rhythm management or for intervention to prevent the erratic nature of the atrial dysrhythmia determining the ventricular rhythm and rate (AV node ablation and pacemaker insertion).

People where the atrial fibrillation had a clear, reversible, provoking feature such as thyrotoxicosis, sepsis, cardiac surgery, alcohol binge (Friday night syndrome) or other metabolic assault should be considered for rhythm management when the causative factor has been treated or withdrawn. There should be some consideration to the younger patient with no co-morbidities and an anatomically normal heart where the life time risk of the arrhythmia may be detrimental and advice should be sort.

Who should not be considered for Rhythm Management?

People who are known to have concurrent congestive cardiac failure or ischeamic heart disease are unlikely to be maintained in sinus rhythm post cardioversion. People who are unable to take anti-coagulants would be consider very high risk for cardioversion or an intervention to return them to sinus rhythm

People who are unable to take anti-arrhythmics may not be considered for cardioversion but may be a candidate for alternative techniques such as pulmonary vein isolation.

Anti-arrhythmics and Primary Care

People who have returned to sinus rhythm, or have spontaneously return to sinus rhythm may require long term anti-arrhythmic. This requires monitoring in primary care. This may require ECG assessment and blood tests as outlined below:

Flecainide, Disopyramide and Propafenone should have a routine annual ECG to assess the cQT.
Dronedarone requires LFTs each month for the first 6 months of taking it, then at 9 months, 12 months and then annually
Amiodarone requires 6 monthly TFTs, 12 monthly LFTs and an annual ECG to assess the cQT.

If any of these parameters become protracted or disturbed then advice should be sought from the specialist who commenced it.

Summary and Other Considerations

Atrial fibrillation is a common cardiac dysrhythmia which can be symptomatic or asymptomatic. Whether symptomatic or not is it increases the individuals risk of stroke. There is clearly an under identification of atrial fibrillation in the population and the clinicians of primary care are well placed to find these additional cases. Approximately 1 in 3 people presenting with atrial fibrillation will be found through opportunistic case finding.

The majority of people with atrial fibrillation can be dealt with in primary care by if the management is considered in a logical maner and the SAFE management of atrial fibrillation has been conceived to try and assist with this.

If people remain symptomatic despite rate control then assessment with a cardiologist becomes imperative to consider a return to sinus rhythm or intervention to stop the atrial rhythm disrupting the ventricular rhythm to such a degree.

A person never asks to be a patient and people can feel frightened and alone with atrial fibrillation which can restrict their life style and general health. Support is available for people through the Atrial Fibrillation Association that has many patient and professional advice sheets. These are available together as part of the AFA tool kit available from www.atrialfibrillation.org.uk

Web Links Of Assistance

www.heartrhythmcharity.org.uk	Arrhythmia Alliance, an umbrella charity of other groups dealing with arrhythmia
www.atrialfibrillation.org.uk	The international charity to support patients and clinicians in the area of atrial fibrillation
www.stroke.org.uk	The national stroke association, has information and support for people who have suffered a stroke
www.spafacademy.org.uk	Resources for health care professionals
www.improvement.nhs.uk	NHS Improvement with resources for service development and assistance
www.dvla.gov.uk/medical/ataglance.aspx	DVLA website for medical advice on driving

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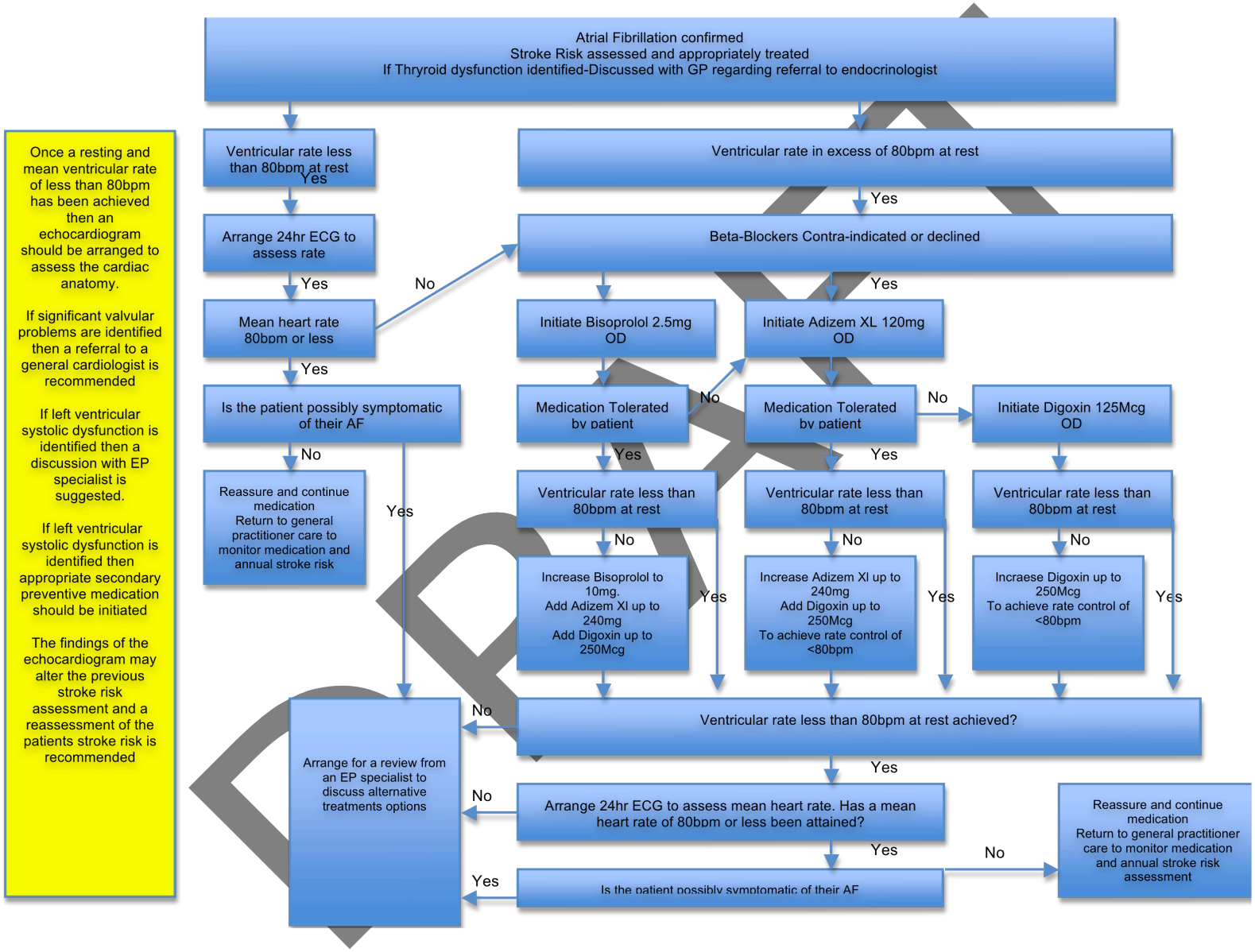
Appendix 1-Rate Control In Atrial Fibrillation



Guidance on the Management of Atrial Fibrillation in Primary care
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Appendix 2-A Simple View on Lipid Management in Primary Care