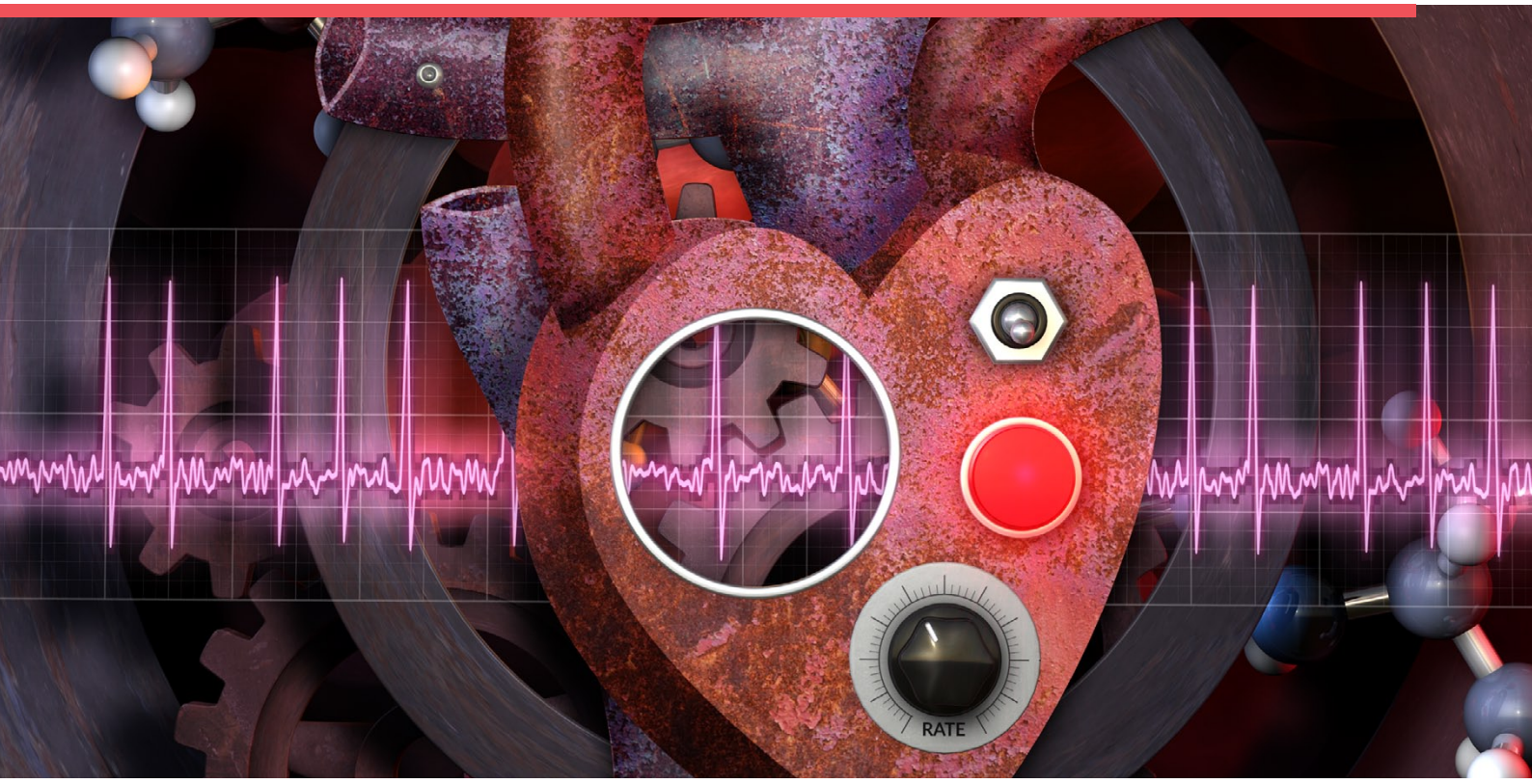

An update on **managing patients with atrial fibrillation**

Most patients with atrial fibrillation can be managed in primary care. Patients should be referred for an initial assessment with echocardiogram. However, this should not delay the initiation of medical treatment. The risk of stroke is increased four to five-fold in patients with atrial fibrillation, but this can be greatly reduced with the use of anticoagulants, if appropriate. Prescribing medicines to control heart rate is the first-line approach for improving symptoms in most patients with atrial fibrillation.

KEY PRACTICE POINTS:

- The aims of management for patients with atrial fibrillation are to:
  - Decrease the risk of stroke with the use of anticoagulants
  - Reduce symptoms by controlling heart rate or restoring sinus rhythm
- The need for anticoagulation can be calculated using the CHA_2DS_2-VASc score; females with a score of ≥ 2 and males with a score of ≥ 1 are likely to benefit from an anticoagulant to reduce their risk of stroke - informed choice is important and benefits and risks of treatment should be discussed with each patient.
- In primary care the preferred approach for managing symptoms is controlling heart rate. Patients should initially be prescribed a beta-blocker (other than sotalol), or alternatively a rate-limiting calcium channel blocker (diltiazem or verapamil).

Patients can present with widely varying symptoms at diagnosis

Atrial fibrillation (AF) affects at least 5% of people in New Zealand aged over 65 years.[1] Patients with AF have a higher risk of mortality, with a four to five-fold increased risk of stroke, a three-fold increased risk of heart failure and two-fold increased risks of myocardial infarction and dementia compared to people without AF.[2]

AF is often an incidental finding, detected by pulse palpation or routine blood pressure measurement and subsequent electrocardiogram (ECG) monitoring.[3] As the incidence of AF increases with age, and the consequences of complications can be severe, clinicians should consider opportunistic assessment for AF in patients aged over 65 years.[4] Patients with AF may also present with palpitations and associated symptoms such as feeling light-headed and dizzy, shortness of breath, chest discomfort, a reduced capacity for exertion or sleeping problems. The range and severity of

symptoms and extent of changes in heart rate and rhythm at diagnosis can vary widely.

Acute cardioversion may be appropriate in patients with new onset AF; consider referral or discussion with a cardiologist for patients presenting within 48 hours of onset of symptoms.[4] Urgent treatment is required in patients with haemodynamic instability.[4]

Prior to initiating treatment

Before initiating treatment for AF, consider if the patient has a reversible underlying non-cardiac condition, such as pulmonary embolism, hyperthyroidism or excessive alcohol consumption, causing their symptoms and changes in heart rate, or clinical evidence of a cardiac condition that may have contributed to the development of AF, e.g. myocardial ischaemia.

Referral for an echocardiogram is recommended

Referral for a transthoracic echocardiogram is generally recommended for all patients diagnosed with AF, as the results may influence the choice of long-term treatment strategies, e.g. if a structural abnormality is identified.[4] In some DHBs general practitioners may be able to refer patients for echocardiogram directly; in others, referral to a cardiologist may be required. The management of stroke risk and initiation of medicines to control heart rate can typically be done on the basis of clinical history and findings, while awaiting the echocardiogram.[3, 4]

Managing stroke risk with anticoagulants

Patients with AF have an increased risk of thromboembolism, including stroke or systemic embolism. In addition, patients with AF typically experience strokes that are more severe than those which occur due to other causes.[5]

Evidence suggests stroke risk is the same regardless of whether patients have infrequent symptomatic episodes (paroxysmal AF) or are persistently or permanently in AF.[6] Management of stroke risk is therefore the same regardless of the underlying pattern of AF.[3, 4] However, for patients with a single episode of AF consider their bleeding risk and expected benefit of anticoagulant use, especially if the patient's symptoms were triggered by an avoidable cause such as a high alcohol intake or energy drinks (which combine caffeine with other stimulants).[2]

The majority of strokes in patients with AF are preventable and the use of anticoagulants reduces the risk of stroke and mortality, with greater benefits expected in patients at higher risk (Figure 1). The use of an anticoagulant should be discussed and decided on in conjunction with the patient, guided by an assessment of the risks and benefits. The CHA_2DS_2-VASc score can be used to assess a patient's stroke risk and expected benefit from using an anticoagulant (Table 1), and the HAS-BLED score to assess bleeding risk (Table 2).[4]

Warfarin and dabigatran are currently subsidised anticoagulants which can be prescribed to reduce the risk of stroke in patients with AF; antiplatelet medicines are no longer recommended (see: "Antiplatelet medicines are no longer recommended for reducing stroke risk in patients with AF").

 For further information on initiating either warfarin or dabigatran in patients with AF, see: "The safe and effective use of dabigatran and warfarin in primary care", available from **www.bpac.org.nz/2017/anticoagulants.aspx**

Use the CHA_2DS_2-VASc score to assess need for an anticoagulant

There are various scoring systems that have been developed to assess the risk of stroke in patients with AF. International guidelines recommend using the CHA_2DS_2-VASc score (Table 1) in clinical practice for identifying patients who could benefit

Antiplatelet medicines are no longer recommended for reducing stroke risk in patients with AF

Oral anticoagulants are superior to aspirin and/or clopidogrel for the prevention of stroke, systemic embolism or myocardial infarction in patients with AF and are associated with similar rates of bleeding.[4] Studies suggest there is a negligible reduction of stroke risk in patients taking antiplatelet medicines alone. Antiplatelet medicines are therefore no longer recommended for reducing stroke risk reduction in patients with AF, even in patients at relatively low risk of stroke.[4] After an acute coronary syndrome (ACS) or coronary stent procedure, patients with AF will have antiplatelet medicines initiated in secondary care. The risk of bleeding is increased with concurrent use of antiplatelets and anticoagulants, and prescribers in primary care should confirm the intended duration of treatment before renewing prescriptions for these medicines.

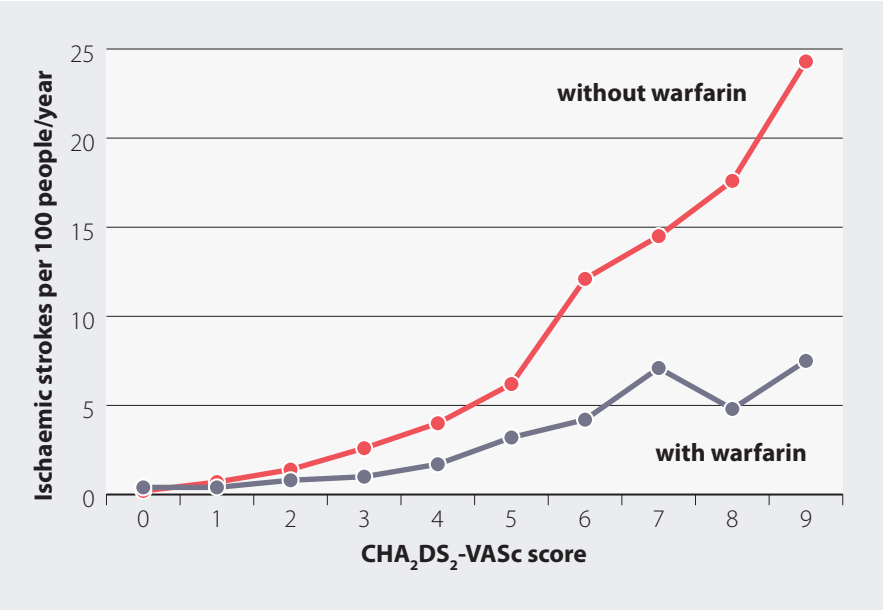

Figure 1: Rates of ischaemic stroke in patients with atrial fibrillation per year with and without the use of warfarin across CHA_2DS_2-VASc scores. Data from Allan *et al*.[7]

Table 1: Using the CHA_2DS_2-VASc score to guide anticoagulant prescribing for patients with atrial fibrillation.[3,4]

Risk factor for stroke	Points
Congestive heart failure	1
Hypertension or current antihypertensive medicine use	1
Aged 75 years or over	2
Diabetes mellitus	1
Stroke, transient ischaemic attack or thromboembolism	2
Vascular disease	1
Aged 65–74 years	1
Sex category – female	1
Total	**0 – 9**
Offer anticoagulation to patients with scores	≥ 1 for males ≥ 2 for females

from using an anticoagulant, as it has a better ability to predict strokes than other scoring tools.[3,4] The rate of ischaemic stroke increases with increasing CHA_2DS_2-VASc score and data from clinical practice show the expected benefits of warfarin use are greater for patients with higher CHA_2DS_2-VASc scores (Figure 1).[7] Similar reductions in ischaemic stroke are expected for patients taking dabigatran.[8,9]

It is generally recommended that anticoagulation should be considered for females with a CHA_2DS_2-VASc score ≥ 2 and males with a score ≥ 1 (Table 1).[3,4]

Females with no risk factors other than their sex (i.e. a CHA_2DS_2-VASc score of one) and males with no risk factors (i.e. a CHA_2DS_2-VASc score of zero) should not use an anticoagulant as their risk of stroke is low, with rates of ischaemic stroke less than 1 per 100 people per year; the benefit from the use of an anticoagulant is unlikely to outweigh the risks of treatment.[7]

For an online CHA_2DS_2-VASc calculator, see: **www.chadsvasc.org**

For a patient decision aid to assist discussions on the risks and benefits of anticoagulation, see: **www.nice.org.uk/guidance/cg180/resources/patient-decision-%20aid-243734797**

Assess bleeding risk using the HAS-BLED score

Patients with an increased risk of stroke are also likely to be at greater risk of experiencing a major bleed when using anticoagulants, as the risk factors for stroke and bleeding largely overlap; e.g. age is a key risk factor for both ischaemic stroke and bleeding in patients with AF.[4]

The HAS-BLED score can identify risk factors for bleeding and help guide management of bleeding risk (Table 2). The

risk of bleeding increases with higher scores (Figure 2).[3, 10] However, there are no specific cut-offs to identify patients who should not initiate an anticoagulant, particularly as the consequences of a stroke are typically much more severe than the consequences of a bleed.[4] The need for anticoagulation should therefore be primarily decided by the CHA_2DS_2-VASc score, and the HAS-BLED score used to:[3]

- Consider the balance of benefits and risks of anticoagulant treatment, e.g. for patients with high HAS-BLED scores and low CHA_2DS_2-VASc scores (≤ 2) the risks of anticoagulation may outweigh benefits
- Identify factors which could potentially be altered to reduce a patient's risk of bleeding, e.g. uncontrolled hypertension, the use of non-steroidal anti-inflammatory medicines, high alcohol intake
- Identify patients at higher risk of bleeding who could benefit from more frequent follow-up or intensive management

Managing symptoms with rate and rhythm control strategies

The two approaches to managing symptoms in patients with AF are rate and rhythm control strategies, which may be used in combination:[4]

- A rate control strategy aims to improve symptoms by reducing heart rate
- A rhythm control strategy attempts to restore sinus rhythm using either electrical cardioversion or pharmacological cardioversion with antiarrhythmic medicines

Randomised controlled trials have found that rate and rhythm control strategies in patients with AF have similar effects on quality of life and result in similar rates of clinical outcomes such as stroke, thromboembolism, bleeding and mortality.[3, 4] Rate control is the preferred treatment approach for most patients managed in primary care as the medicine

Table 2: The HAS-BLED bleeding risk prediction tool.[11]

Clinical feature	Description and examples	Score
Hypertension	Systolic blood pressure > 160 mmHg or uncontrolled blood pressure	1
Abnormal renal or liver function	One point each for renal or liver impairment, e.g. liver disease or aminotransferase levels > 3 times the upper limit of normal	1 or 2
Stroke	Previous history of stroke	1
Bleeding	A previous history or predisposition to bleeding, such as anaemia	1
Labile INR	High INRs or time in therapeutic range < 60%	1
Elderly	Age > 65 years	1
Drugs or alcohol	One point each for concomitant use of medicines that predispose patients to bleeding, e.g. anti-platelets or non-steroidal anti-inflammatory drugs; or alcohol or drug use, e.g. ≥ eight standard drinks per week	1 or 2

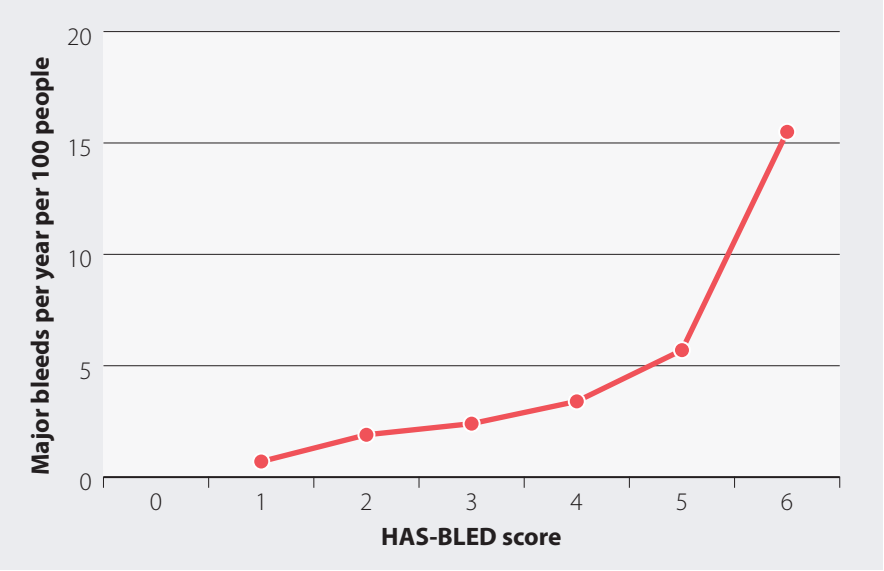

Figure 2: Risk of major bleeding across HAS-BLED scores for patients taking warfarin. Adapted from Friberg *et al*.[10]

regimens are simpler.[4] However, rhythm control strategies may be an appropriate first-line approach for some patients, such as those with symptomatic paroxysmal attacks, heart failure associated with AF, or for acute cardioversion in new onset AF of less than 48 hours duration.[3,4] The results of an echocardiogram performed shortly after diagnosis could indicate that rhythm control or invasive procedures are more appropriate strategies for a particular patient than rate control.[9] Patients with minimal or no symptoms may not require any specific rate or rhythm control.

Rate control strategies

Preferred first-line treatment is a beta-blocker. An alternative is a rate-limiting calcium-channel blocker (Table 3). Prescribing choices can be based on a patient's symptoms, heart rate, co-morbidities and any adverse effects.[3,4] The initial dose of beta-blocker can be determined on the basis of the degree of elevation of the patient's heart rate and other patient characteristics. The beta-blocker sotalol should not be prescribed for rate control in patients with AF as it has the potential to cause arrhythmias.[4,12] It is only used in patients with AF in the context of a rhythm control strategy (see below).

For further information on choosing an appropriate beta-blocker for patients with co-morbidities, see: "Beta-blockers for cardiovascular conditions", available from **www.bpac.org.nz/2017/beta-blockers.aspx**

Treat according to symptoms

The primary goal for heart rate control is relief of symptoms. Most benefit will be obtained if resting heart rate is generally < 110 beats per minute (bpm). While there are concerns that sustained high heart rates may lead to reduced left ventricular systolic function, a clinical trial published in 2010 including over 600 patients randomised to either a target heart rate of less than 110 bpm or less than 80 bpm found that both groups had similar rates of complications.[13] A more intensive approach to treatment, aiming for a greater reduction in heart rate, e.g. < 80 – 90 bpm, is appropriate for patients who have known left ventricular dysfunction and may be considered for those with ongoing symptoms.[4]

Intensifying treatment

For patients who have a sustained increase in heart rate despite previous good control, assess possible temporary or modifiable causes of worsening symptoms, such as postoperative stress or changes in alcohol consumption, prior to intensifying treatment.

A beta-blocker and diltiazem can be used in combination if patients do not benefit sufficiently from one of these medicines alone. Prescribe this combination with caution in patients who have left ventricular dysfunction or cardiac conduction abnormalities as the effects can be difficult to predict.[3,14] Combined use of verapamil with beta-blockers is not recommended due to the risk of hypotension and systole.[3,12]

Digoxin is now used infrequently due to its potential for medicine interactions, lack of effect on heart rate during physical activity and narrow therapeutic index.[3] If a patient's symptoms are not well controlled with combination treatment with a beta-blocker and diltiazem, consider adding

Table 3: Recommended first-line medicines for reducing heart rate in AF.[3,4,12]

Medicine	Typical dose range
A beta-blocker, other than sotalol, e.g.	
Bisoprolol*	1.25 – 20 mg, once daily
Metoprolol succinate	23.75 – 190 mg, once daily
Carvedilol*	3.125 – 50 mg, twice daily
OR a rate-limiting calcium-channel blocker† (only in patients with left ventricular ejection fraction ≥ 40%)	
Diltiazem‡	120 – 360 mg, once daily with a modified release formulation
Verapamil§	120 – 480 mg, once daily with a modified release formulation

* Unapproved indication

† Verapamil or diltiazem are not recommended in patients with left ventricular ejection fraction <40% and should not be used in patients with left ventricular dysfunction or heart failure with reduced ejection fraction due to negative inotropic effects

‡ Different brands of diltiazem may not be interchangeable so the brand should be specified when prescribing

§ Verapamil should not be used in patients who are taking or who have recently taken beta-blockers due to the risk of hypotension and systole[12]

digoxin to their treatment regimen and slowly titrating as tolerated. Maintenance doses of digoxin are typically 62.5 – 250 micrograms, daily. Monitoring of digoxin serum drug concentration may be necessary to optimise treatment and reduce the risks of adverse effects; if this is done, blood samples should be taken at least six hours following the last digoxin dose.[12]

For further information on potential interactions of digoxin, see the NZF interactions checker: **www.nzf.org.nz**

Amiodarone is now regarded as a second-line medicine for rate control.[4] It is, however, used by patients with AF for rhythm control (see below).

Rhythm control strategies are usually initiated in secondary care

Patients who have ongoing symptoms despite optimal use of medicines to control heart rate may benefit from a rhythm control strategy or invasive procedures such as a catheter ablation or surgery.[4] Clinicians are encouraged to discuss these patients with a cardiologist.

Medicines currently recommended for rhythm control in patients with AF include amiodarone*, flecainide*, propafenone*, disopyramide and sotalol.[4,12] The safety of long-term use of antiarrhythmic medicines is a key factor dictating treatment choice.[4,12]

* Amiodarone, flecainide and propafenone must be prescribed, or endorsed, by a specialist for subsidy; this includes vocationally registered general practitioners.

For further information on monitoring patients taking amiodarone, see: www.bpac.org.nz/2016/amiodarone.aspx

When should patients with AF managed in primary care be referred?

Referral to a cardiologist is appropriate at any point during follow-up for patients with:[3]

- Ongoing symptoms or a poorly controlled heart rate despite appropriate escalation of pharmacological treatment
- Symptomatic bradycardia which does not improve after reducing or withdrawing rate control medicines
- Other signs of deteriorating cardiac health, such as any suggestion of heart failure

For further information on managing patients with atrial fibrillation, see the Goodfellow Unit webinar featuring Professor Ralph Stewart: **www.goodfellowunit.org/events/webinar-atrial-fibrillation**

Acknowledgement: Thank you to **Associate Professor Stewart Mann**, Cardiologist, Department of Medicine, University of Otago, Wellington, **Dr Linda Bryant**, Clinical Advisory Pharmacist and Senior Lecturer, School of Pharmacy, University of Otago and **Leanne Te Karu**, Pharmacist Prescriber and Associate Dean, School of Pharmacy, University of Otago for expert review of this article.

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