GP Small Group Education

NMDHB August 2017

Pre-reading

Difficult Decisions - communicating risk

Aims of this Small Group Education round

The Small Group meetings will focus on difficult decisions and how we communicate risk.

We will illustrate the points using a case based around an elderly man who develops atrial fibrillation. Issues include balancing management around anticoagulation choices, risk assessment, extrapolation of benefit, and patient priorities.

We will look at shared decision making (SDM) and decision aids and the part they can play in helping to communicate risk, and advise on management.

Included in this pre-reading

This pre-reading includes information on:

- Atrial Fibrillation
    - Epidemiology, risk factors, consequences
- Symptom management
    - Rate vs rhythm control
    - Left atrial appendage closure and catheter ablation
- Prevention of thromboembolism
    - Warfarin, dabigatran, rivaroxiban, aspirin, clopidogrel
- Shared decision making/communicating risk
- Warfarin point of care (POC) testing
- Warfarin interaction with NSAIDs

Acknowledgements

This material was prepared in consultation with:

Topic preparation team

Mark Cohen	Small Group Leader, GP
Joy Harding	Small Group Leader, Practice Nurse
Chris Wilkinson	Small Group Leader, Community Pharmacist

Pegasus staff

Bianca McKinnon-Gee	Senior information Analyst, Pegasus Health
Paul Bridgford	Team Leader, Reporting and Analysts, Pegasus Health

Others consulted

Joan Leighton	GP, Cardiology Liaison
Paul Chin	Research Fellow, Clinical Pharmacology, CDHB

Cover image [Pixabay 2017]

Atrial fibrillation

Atrial fibrillation (AF) is the most common cardiac arrhythmia. It occurs when the electrical activity becomes irregular in the atria and overrides the sinus node that normally controls the sinus rhythm [AFA and ACE 2012]. The irregular signals cause the atria to contract in an uncoordinated way.

People with AF may experience: palpitations, chest pain, dizziness, light-headedness, shortness of breath, exercise intolerance or fatigue [Health Navigator 2014, UpToDate 2015a]. Occasionally AF may result in fainting or collapse. However, some people have no symptoms at all and AF may not be detected until they present with a more serious complication such as stroke [AFA and ACE 2012]. This raises the question of if it is appropriate to do opportunistic screening.

ECG screening of atrial fibrillation (adapted from the Pegasus Health Preventive Care Manual)
Electrocardiographic screening for AF in high risk individuals may be beneficial to reduce the risk of stroke [Camm 2012, Lowres 2013, Stott DJ 2012].

AF can occur in up to 25% of the population during their lifetime. The presence of AF increases the risk of stroke fivefold. AF is associated with stroke in 7% in patients aged 50-59 years increasing to 36% in those aged 80-89 years [Stott DJ 2012].

There is increasing support to consider AF screening programmes in primary care.

- The Royal College of Physicians of Edinburgh recommends assessing all patients over 65 years for AF with a pulse check then proceeding to an ECG in those with an irregular pulse [Stott DJ 2012]. However, this approach would be unlikely to detect intermittent AF

- An Australian systematic review found screening with pulse palpation or ECG could identify 1.4% of the population aged 65 years or older with previously undiagnosed AF [Lowres 2013]

- The European Society of Cardiology also support opportunistic screening for AF either by pulse check or ECG rhythm in patients over 65 years [Kirchhof 2016]

- A recent Cochrane review looked at systematic (ECG offered to all patients) versus opportunistic (ECG offered to patients found to have irregular pulse) screening for AF in patients aged over 65 years. Both screening interventions were found to increase the rate of AF detection more than routine practice (where patients are diagnosed subsequent to investigating symptoms) [Moran 2016]

- The AF-SCREEN International Collaboration (which includes physicians, nurses, allied health professionals, health economists and patient advocates from all over the world) recently produced a white paper further advocating AF screening in patients over 65 years. They acknowledge that large, randomized outcomes trials of AF screening would be helpful to further strengthen the evidence base [Freedman 2017]

Classification
The classification of AF has recently been updated from ‘acute’ and ‘chronic’ to: paroxysmal, persistent, permanent and nonvalvular AF [January 2014]:

- Paroxysmal AF terminates spontaneously or with intervention within 7 days of onset, and may reoccur with variable frequency
- Persistent AF is continuous i.e. sustained for more than 7 days

- Nonvalvular AF occurs in the absence of rheumatic mitral stenosis, a mechanical or bio-prosthetic heart valve, or mitral valve repair
- Permanent AF is a clinical term used when the patient and clinician jointly decide to stop further attempts to restore and/or maintain sinus rhythm

Epidemiology

In New Zealand, AF affects around 35,000 people (around 1% of the population) [Health Navigator 2014]. It is nearly twice as prevalent in Māori, with prevalence in those aged 40-60y being 1.8 times more than non-Māori of the same age [National Health Committee 2013].

The Framingham Heart Study suggests the lifetime risk of developing AF at age 40yr is approximately one in four for both men and women (26% and 23%, respectively) [Lloyd-Jones 2004]. AF occurs more frequently in older people, with an incidence of up to 5% and 10% in those aged over 65y and 80y respectively [Go 2001, Health Navigator 2014].

Potential consequences of AF include: stroke, congestive heart failure, depression and anxiety, and dementia.

- Approximately one third of AF patients have elevated levels of depression and anxiety which persist at 6 months [Thrall 2007]. There is evidence that depression and depressed mood impacts on AF symptom severity. In a study of 400 patients, those with depressed mood were three-fold more likely to have severe AF symptoms [von Eisenhart Rothe 2014]
- Potential mechanisms by which AF increases dementia risk are: micro-emboli, micro-bleeds, cerebral perfusion defects, and unmasked cerebral microvascular disease [Jacobs 2015]

AF and dementia share many common risk factors, most of which (except advancing age and genetics) may be modified at an earlier age by lifestyle changes and disease management. These modifiable risk factors include: diabetes, chronic kidney disease, vascular disease, heart failure, inactivity, sleep apnoea, hypertension, and alcohol consumption [Jacobs 2015].

The overall prevalence of AF is increasing with the number of affected people projected to double by 2050 (see figure below) [Go 2001]. This has significant implications for managing the medical burden of AF sequelae, as well as the social and economic costs [Camm 2012, Magnani 2011].

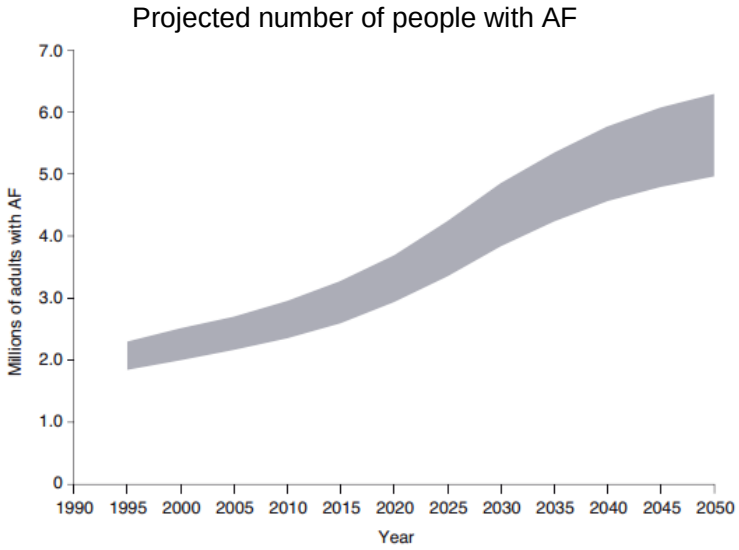

Figure from [AFA and ACE 2012]

Causes and risk factors

The electrical disturbances of AF are caused by a diverse range of pathophysiological mechanisms. The key risk factors for AF are: older age, hypertension, and coronary heart disease [AFA and ACE 2012, UpToDate 2015a]. Other risk factors include: male gender, smoking, obesity, diabetes, myocardial infarction, heart failure and valvular heart disease [Go 2001, Magnani 2011]. Twenty years ago rheumatic fever was a key risk factor for AF, as it causes mitral stenosis. However, as the incidence of rheumatic fever has reduced in European patients valvular AF is seen less frequently [AFA and ACE 2012].

In New Zealand, the highest rates of rheumatic fever occur in Māori and Pacific children and young adults (aged 4-19 years), with most cases occurring in the North Island. Overall data shows the rates of rheumatic fever are falling: 177 cases in 2012 vs. 136 cases in 2016. There is further work being done in 11 DHBs with the higher rates of rheumatic fever to reduce this incidence further [MOH 2017].

Some people appear to be at a higher genetic risk of developing AF. Genome-wide association studies into AF have identified three novel genetic loci [Magnani 2011].

Secondary (or potentially reversible) causes of AF occur in approximately one-third of all cases and may include: surgery (cardiac or other), acute infection, and myocardial infarction [Lubitz 2015]. Other secondary causes include: acute alcohol consumption, thyrotoxicosis, acute pericardial disease, and acute pulmonary embolism.

A longitudinal study (a continuation of the Framingham study) [Lubitz 2015] found:

- in contrast to what was previously thought, AF recurs in most individuals including those diagnosed with secondary causes
- nearly two-thirds of individuals with a secondary cause of AF had recurrence within 15 years
- long-term AF-related stroke and mortality risks were similar between individuals with and without secondary AF causes
- AF occurring as a result of a secondary cause indicates a need for long term monitoring

Echocardiography

Echocardiography should be considered for patients with first diagnosis of AF if they have not had an echo within the previous 12 months. It is not indicated where knowledge of the structure and function of the heart will not change management e.g., patients unsuitable for anticoagulation. If the patient has a fast heart rate, achieve rate control before referring for echo to maximise utility of this test [NM HealthPathways 2017a, NM HealthPathways 2017b].

Treatment and management of nonvalvular AF

The two main goals of treatment are symptom control and the prevention of thromboembolism, as described below [UpToDate 2014].

1. Symptom control

Rate control

HealthPathways recommends for the majority of patients with asymptomatic AF, rate control and anticoagulant therapy is preferable to rhythm control because [NM HealthPathways 2017a]:

- Cardioversion can control rhythm but has a high recurrence rate, and may have complications
- Antiarrhythmic medications have significant side effects

Rate control is used to treat symptoms and to relieve stress to the cardiovascular system. It involves slowing an excessively fast pulse with sustained drug treatment.

- The aim is a resting heart rate <80 beats per minute (bpm) [Camm 2012, January 2014] but a rate of 80-110 bpm may be acceptable in some people [NM HealthPathways 2017a]
- If attempts at rate control fail, refer to cardiology for further assessment [NM HealthPathways 2017b]

Rate control may be the only treatment required in patients with minor symptoms, or when attempts to control rhythm by cardioversion or antiarrhythmic therapy have failed [NM HealthPathways 2017a].

Documenting rate control

Rate control can be documented in Medtech in 2 ways:

- In the body of the typed notes
- In the screening tab (heart rate) - a free text can also be added to this e.g. regular/irregular/AF

Cardioversion / rhythm control

Cardioversion involves resetting the heart rhythm suddenly either with an electric current or by antiarrhythmic medications. It is most useful in new onset atrial fibrillation. If the onset of AF is fewer than 48 hours, patients may be referred to the Emergency Department (Nelson or Wairau) for **urgent** cardioversion. Patients suitable for **routine** cardioversion should be referred to Cardiology Outpatients (Nelson) or Medical Outpatients (Wairau). See HealthPathways "Atrial Fibrillation" for further details [NM HealthPathways 2017a].

Catheter ablation

Catheter ablation involves returning the heart to a normal rhythm permanently by surgically blocking chaotic electrical activity in the atria. Many different techniques exist but the most common uses radiofrequency (RF) energy to isolate pulmonary veins. Due to the risks involved in the procedure, current guidelines recommend its use only in patients who remain symptomatic with AF after more than one anti-arrhythmic drug [January 2014, Kirchhof 2016, Verma 2014]. A retrospective observational study in Christchurch also supports this targeted approach to use of catheter ablation [Daly 2011].

Left atrial appendage closure

The left atrial appendage (LAA) is considered one of the main sites that thrombi form in people with AF. Closure or removal of the LAA has been performed for years during concomitant open heart surgery, however the results have been mixed and difficult to interpret as sinus rhythm is often achieved by other surgical techniques used at the time [January 2014, Lip 2015].

The use of occlusion devices has been in the news [TVNZ 2015] but they are not currently publicly funded, which is in line with current guidelines:

- The National Health Committee in New Zealand and the Canadian guidelines do not support the use of LAA occlusion devices [National Health Committee 2015a, Verma 2014] (although the funding decision for LAA occlusion devices is due for review in approximately 2018 [National Health Committee 2015b])
- Interventional, percutaneous LAA closure may be considered in those patients with a high stroke risk and contraindications for long-term oral anticoagulation (level of evidence: B) [Kirchhof 2016, Lip 2015]
- Surgical excision of the LAA may be considered in patients undergoing cardiac surgery (level of evidence: B) [January 2014, Kirchhof 2016]

Current evidence is based on retrospective or observational studies. Studies with long-term follow-up, comparing different types of LAA closure with OAC therapy to allow for adequate assessment of the techniques is required before these techniques will be more widely available.

2. Prevention of thromboembolism

Oral anticoagulation

Oral anticoagulation aims to reduce the risk of clotting and is recommended for:

- Patients with a CHA_2DS_2-VASc score 2 or higher (but consider bleeding risk) [Kirchhof 2016, NICE 2014]
- Men with a CHA_2DS_2-VASc score of 1 [NICE 2014]

Truly low risk patients who do not require oral anticoagulation include those <65yr with a CHA_2DS_2-VaSc score of 0 for men, and 1 for women [Kirchhof 2016, Lip 2015, NICE 2014]

CHA_2DS_2-VASc and HAS-BLED calculators are on HealthPathways.

Assessment of bleeding risk should be done when prescribing oral anticoagulation (Evidence Class 1, Level A) [Kirchhof 2016].

A HAS-BLED score ≥3 should not exclude patients from oral anticoagulation, rather it should be used to caution the clinician that regular review is useful and to assess for and minimise potentially reversible bleeding risk factors e.g. uncontrolled blood pressure, use of aspirin / NSAIDs, labile INRs [Kirchhof 2016, NICE 2014].

Anticoagulant and antiplatelet comparisons

Table One: Comparison of stroke risk reductions

NB. these risk predictions vary slightly in different sources as they are taken from different data – further illustrating the challenges of trying to give an individual patient an individual risk assessment.

Medicine	**Reduction of stroke risk in AF** * Baseline risk of stroke in AF is 5% per annum	**Risk of serious bleeding event**
Warfarin [Connolly 2009]	Risk reduced to 1.7%	3.36%
Dabigatran [Connolly 2009] 150mg 110mg	Risk reduced to: 1.1% (11 per 1000) 1.5%	 3.1% 2.7%
Rivaroxiban [BPAC 2015]	Risk reduced to 1.7%	3.6%
Aspirin alone vs clopidogrel + aspirin (dual therapy) [UpToDate 2015b]	Risk reduced from 3.3% (aspirin alone) to 2.4% (dual therapy)	1.3% (aspirin alone) 2.0% (dual therapy)

Other references: [Camm 2009, Chang 2015, NICE 2014, optiongrid 2014, patient.co.uk 2015]

Table Two: Comparison of pharmacokinetics

Pharmacokinetic properties of warfarin and novel oral anticoagulants				
	Warfarin	**Apixaban**	**Dabigatran**	**Rivaroxaban**
Licensed indications	AF, VTE, valvular heart disease, valvular and nonvalvular AF	Non-valvular AF, VTE	Non – valvular AF, VTE	Non- valvular AF, VTE
Funding	Fully funded	Not funded	Fully funded	Funded on SA for post op VTE only. Not funded for AF.
Dosing frequency	Daily	Twice daily	Twice daily	Daily
Oral bioavailability (healthy individuals)	100%	50%	7%	80-100%
Renal clearance	0	27%	85%	30%
Time to maximum concentration	4h	3-4h	0.5-2h	2-4h
Half-life	20-60h	10-12h	12-14h	5-9h in young 11-13h in elderly

Adapted from [Chin 2015a, Crowther 2015]

Bear in mind that all of these anticoagulants may interact with other medications to affect plasma levels – check possible interactions with existing medications before prescribing.

Warfarin

- Inhibits synthesis of vitamin K dependent coagulation factors (VII, IX, X, II)
- Has no direct effect on thrombus
- Half-life 2.5 days; metabolised in the liver; inactive metabolites are excreted in urine [NZF 2015]
- Loading dose required; blood test monitoring every 1-2 days when initiating and once established, approximately every 4-6 weeks if the INR is stable

Dabigatran

- Direct thrombin inhibitor
- Dose is either 110mg bd or 150mg bd (lower dose in renal impairment, contraindicated in patients with creatinine clearance <30mL/min)
- Half-life 12-14hours (longer in renal impairment – up to 20-35 hours) [Medsafe 2015]
- Contraindicated in patients with mechanical heart valves, because of increased risk of stroke, MI, valve thrombosis and major bleeding compared to patients treated with warfarin [FDA 2012]
- Renal function should be checked before starting therapy, and monitored regularly thereafter in patients with renal impairment (3-6 monthly in those with renal impairment and annually in those with normal renal function) [BPAC 2015]

Of patients prescribed dabigatran, 64% had baseline creatinine checked and 82% had creatinine checked in the 12-month period Oct 2013-Sept 2014. You can access practice and personal data on this at www.bpac.org.nz/Report/2015/March/dabigatran.aspx (registration/login required) [BPAC 2015].

Dabigatran controversies

In 2014 it was revealed there had been internal correspondence at Boehringer Ingelheim (manufacturer of dabigatran) regarding a sub-analysis of the RE-LY trial, which showed plasma concentrations of dabigatran were correlated with risk (low levels with increased risk of stroke and higher levels with increased risk of bleeding). This seemed to contradict the marketing of dabigatran as a medication needing no plasma monitoring [McCarthy 2014]. Some data showed a 5-fold difference in plasma concentration [Medicinewise 2014]. It has been suggested that direct measurement of plasma concentrations of dabigatran and similar medications would enhance dosing, decrease risk variation and therefore result in fewer strokes and bleeds [Chin 2015a].

It has also been suggested that measuring TT (thrombin time) or dTT (dilute thrombin time) may be a substitute for measuring plasma concentrations of dabigatran. A normal TT means that there is no clinically significant amount of the drug present (i.e. it can also be good for measuring compliance). APTT (activated partial thromboplastin time) and TT may be measured before surgery to check there is no residual drug effect after dabigatran has been stopped for a few days. Local specialist opinion is that these tests play no other role in monitoring [NM HealthPathways 2016].

Idarucizumab is licensed for reversal of dabigatran anticoagulation before emergency surgery or urgent procedures or in life-threatening or uncontrolled bleeding [NZF 2017]. It is given parenterally and restricted to secondary care [NM HealthPathways 2016]. There are no widely available antidotes for rivaroxaban or apixaban; in patients with normal renal and hepatic function drug concentrations should decrease over 90% after stopping treatment for 48 hours [Chin 2016].

Rivaroxaban

- Factor Xa inhibitor
- Funded (on Special Authority) for prophylaxis of venous thromboembolism following hip or knee replacement
- Licensed for non-valvular AF (but not funded)
- Similar efficacy and risk to warfarin: stroke risk decreased to 1.7% and bleeding risk 3.6% [Abraham 2015, Chang 2015]

Aspirin (antiplatelet)

- Not used for stroke prevention in AF unless comorbidities such as ischaemic heart disease exist
- Risk of bleeding is higher with anticoagulant + aspirin combination than with either agent alone
- Aspirin may be used in patients with non-AF ischaemic stroke for secondary prevention
- If aspirin and warfarin are used together, the INR should be kept at 2-2.5 [Brandes 2014]

A 2015 systematic review and the 2016 European Society of Cardiology guidelines advise against using aspirin for stroke prevention [Kirchhof 2016, Lip 2015]. If a patient in AF has a CHA_2DS_2-VASc score of zero then aspirin is not recommended (neither is any other anticoagulant) [BPAC 2015].

Clopidogrel (antiplatelet)

- Potent inhibitor of platelet aggregation
- Mainly used in patients with IHD, but is also used in *secondary prevention* of stroke

Triple therapy

- Aspirin and clopidogrel may be added to existing anticoagulation therapy in AF patients who suffer an acute MI or have coronary artery disease requiring a stent
- Used short term – up to 3 months, followed by oral anticoagulant plus one antiplatelet drug for 3 - 11 months [UpToDate 2015a]

Risk communication

Paling proposes the CARE model:

Cite basic risk data in general terms
Add estimated probabilities for positive and negative outcomes to descriptive terms such as “Low risk”
Reinforce effectiveness by using visual/decision aids – show the risk in perspective
Express encouragement and hope – reassure that help is available [Paling 2003]

The way we communicate risk can have an effect on a patient’s perception of risk. Some aspects of risk communication can be confusing. Discussion of absolute rather than relative risk is best practice as relative risk is often misunderstood (even by doctors). How to explain **absolute risk** will be discussed in more detail during the Small Group meeting.

Shared decision making

Shared decision making (SDM) is an important aspect of anticoagulation use in atrial fibrillation. We will be discussing this further with a case history during the Small Group meeting.

We know from clinical practice guidelines what is considered to be best practice but guidelines are produced looking at a population level and can be difficult to adapt/conform to an individual patient level. There are situations where there is low uncertainty about a clinical course of action and therefore a strong recommendation to pursue that course (e.g. aspirin in myocardial infarction). This means that a consultation and the information given at the consultation is supporting a behaviour (sometimes a behaviour change e.g. lifestyle in type 2 diabetes).

In other clinical areas there is higher uncertainty about a clinical course of action and therefore recommendation to pursue that course is more conditional, especially where there may be individual factors specific to a patient that could change the decision. This means the consultation and information given are supporting a decision or deliberation, explaining that there is more than one option (including the option of doing nothing) and the potential benefits and risks of each option [van der Weijden 2012].

For SDM to be successful there must be several steps:

1. **Choice/planning:**
    - Explaining that there is more than one option
    - Giving information on what those options are
    - Explicitly discussing personal preference and uncertainty

2. **Options:**
    - Find out what the patient knows about the condition already
    - List the options
    - Describe the options, including harms and benefits of each option
    - Provide a decision aid (if one exists and health literacy allows)

3. **Decision:**
    - Patient preference - “What matters most to you?”
    - Has a decision been reached? - More time may be needed
    - Offer review – explain that a decision can be changed if needed/wanted [Elwyn 2012]

Warfarin point of care testing

Warfarin INR point of care testing (POCT) is currently provided by accredited pharmacists in a small number of pharmacies across the Nelson Marlborough area. The pharmacist works under a Standing Order from the GP, with the GP retaining clinical responsibility for the patient.

Warfarin POCT involves a finger-prick sample being taken with the results being transferred to INR Online (an approved on-line computer decision-support system) where an algorithm recommends a dose. The pharmacist uses the recommendation in combination with their clinical judgement to make a decision on the actual dosage required for the patient.

The result and dose are sent automatically to the PMS Provider's Inbox. In addition, the GP is alerted by the pharmacist (by phone or fax) and email if any results are outside the set range of 1.5 – 4, so the GP has the opportunity to make adjustments.

More detailed information on warfarin POCT can be found on HealthPathways (under starting and monitoring warfarin), including a list of the participating pharmacies.

Warfarin and NSAID interaction

A key modifiable bleeding risk factor for patients on warfarin is the concurrent use of an NSAID.

- NSAIDs are known to irritate the stomach lining and to interfere with platelet aggregation
- Some NSAIDs may also interfere with warfarin metabolism
- Concurrent use of an NSAID and warfarin can increase the risk of a GI bleed and, to a lesser extent non-GI bleeds [Stockley's 2013]
- Patients prone to NSAID-induced GI bleeds, or those prone to warfarin related bleeding will be at greater increased risk [Stockley's 2013]
- It is advised to avoid use of NSAIDs for routine treatment of pain or fever, and to use paracetamol instead for those at increased risk [UpToDate 2015c]
- When concurrent use is deemed necessary it is advised to avoid NSAIDs known to have higher GI bleeding risk, and to use them for the shortest possible duration [UpToDate 2015c]. It is also suggested the use of prophylactic mucosal protection may be useful [Stockley's 2013] and it may be prudent to keep the patient's INR at the lower end of the therapeutic range.

References

- Abraham NS, Singh S, Alexander GC, et al. Comparative risk of gastrointestinal bleeding with dabigatran, rivaroxaban, and warfarin: population based cohort study. BMJ (Clinical research ed). 2015;350:h1857.
- AFA and ACE. The AF Report. Atrial Fibrillation: Preventing a Stroke Crisis. 2012.
- BPAC. Dabigatran - an update. BPAC [Internet]. 2015. Available from: http://www.bpac.org.nz/Report/2015/March/dabigatran.aspx.
- BPAC. An update on antithrombotic medicines. BPAC. 2015;67.
- Brandes A. Combined anticoagulation and antiplatelet therapy in AF patients: why do we not follow guidelines? Heart (British Cardiac Society). 2014;100(20):1565-6.
- Camm AJ. The RE-LY study: Randomized Evaluation of Long-term anticoagulant therapY: dabigatran vs. warfarin. European heart journal. 2009;30(21):2554-5.
- Camm AJ, Lip GY, De Caterina R, et al. 2012 focused update of the ESC Guidelines for the management of atrial fibrillation: an update of the 2010 ESC Guidelines for the management of atrial fibrillation. Developed with the special contribution of the European Heart Rhythm Association. European heart journal. 2012;33(21):2719-47.
- Chang H-Y, Zhou M, Tang W, et al. Risk of gastrointestinal bleeding associated with oral anticoagulants: population based retrospective cohort study. BMJ (Clinical research ed). 2015;350.
- Chin PK. Which patients may benefit from dose adjustment of non-vitamin K antagonist oral anticoagulants? Semin Thromb Hemost. 2015a;41(2):195-207.
- Chin PK, Doogue MP. Long-term prescribing of new oral anticoagulants. Australian Prescriber. 2016;39(6):200-4.
- Connolly SJ, Ezekowitz MD, Yusuf S, et al. Dabigatran versus Warfarin in Patients with Atrial Fibrillation. New England Journal of Medicine. 2009;361(12):1139-51.
- Crowther M, Crowther MA. Antidotes for Novel Oral Anticoagulants: Current Status and Future Potential. Arteriosclerosis, thrombosis, and vascular biology. 2015;35(8):1736-45.
- Daly M, Melton I, Crozier IG. Pulmonary vein ablation for atrial fibrillation: the Christchurch, New Zealand experience. The New Zealand Medical Journal (Online). 2011;124(1343):39-47.
- Elwyn G, Frosch D, Thomson R, et al. Shared Decision Making: A Model for Clinical Practice. Journal of general internal medicine. 2012;27(10):1361-7.
- FDA. FDA Drug Safety Communication: Pradaxa (dabigatran etexilate mesylate) should not be used in patients with mechanical prosthetic heart valves. 2012.
- Freedman B, Camm J, Calkins H, et al. Screening for Atrial Fibrillation: A Report of the AF-SCREEN International Collaboration. Circulation. 2017;135(19):1851-67.
- 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(18):2370-5.
- Health Navigator. Atrial Fibrillation. New Zealand: 2014.
- Jacobs V, Cutler MJ, Day JD, et al. Atrial fibrillation and dementia. Trends in cardiovascular medicine. 2015;25(1):44-51.
- January CT, Wann LS, Alpert JS, et al. 2014 AHA/ACC/HRS guideline for the management of patients with atrial fibrillation: executive summary: a report of the American College of Cardiology/American Heart Association Task Force on practice guidelines and the Heart Rhythm Society. Circulation. 2014;130(23):2071-104.
- Kirchhof P, Benussi S, Kotecha D, et al. 2016 ESC Guidelines for the management of atrial fibrillation developed in collaboration with EACTS. European heart journal. 2016;37(38):2893-962.
- Lip GY, Lane DA. Stroke prevention in atrial fibrillation: a systematic review. Jama. 2015;313(19):1950-62.
- Lloyd-Jones DM, Wang TJ, Leip EP, et al. Lifetime risk for development of atrial fibrillation: the Framingham Heart Study. Circulation. 2004;110(9):1042-6.
- Lowres N, Neubeck L, Redfern J, et al. Screening to identify unknown atrial fibrillation. A systematic review. Thrombosis and haemostasis. 2013;110(2):213-22.
- Lubitz SA, Yin X, Rienstra M, et al. Long-term outcomes of secondary atrial fibrillation in the community: the framingham heart study. Circulation. 2015;131(19):1648-55.
- Magnani JW, Rienstra M, Lin H, et al. Atrial fibrillation: current knowledge and future directions in epidemiology and genomics. Circulation. 2011;124(18):1982-93.
- McCarthy M. Drug company staff fretted when in-house paper's conclusion clashed with marketing claims. BMJ (Clinical research ed). 2014;348:g1505.
- Medicinewise N. Dabigatran doubts 2014. Available from: http://www.nps.org.au/publications/health-professional/health-news-evidence/2014/dabigatran-doubtshttp://www.nps.org.au/publications/consumer/medicinewise-living/2014/worried-about-dabigatran-pradaxa.
- Medsafe. Dabigatran Data Sheet. 2015.

- MOH. Rheumatic Fever 2017 [updated July]. Available from: http://www.health.govt.nz/our-work/diseases-and-conditions/rheumatic-fever.
- Moran PS, Teljeur C, Ryan M, et al. Systematic screening for the detection of atrial fibrillation. Cochrane Database of Systematic Reviews. 2016(6).
- National Health Committee. Percutaneous left atrial appendage (LAA) occlusion for the treatment of atrial fibrillation (AF) to prevent stroke: Technology note. 2013.
- National Health Committee. Percutaneous left atrial appendage occlusion for the prevention of stroke in non-valvular atrial fibrillation: Evidence Update. 2015a.
- National Health Committee. Percutaneous left atrial appendage occlusion for the prevention of stroke in nonvalvular atrial fibrillation: Evidence Update Consultation Feedback Summary. 2015b.
- NICE. National Institute for Health and Care Excellence. Atrial fibrillation: the management of atrial fibrillation. NICE guideline CG180, June 2014. Available from: https://www.nice.org.uk/guidance/cg180 (accessed 20 February 2015).
- NICE. Patient decision aid: Atrial fibrillation: medicines to help reduce your risk of a stroke – what are the options? June 2014. Available from: http://guidance.nice.org.uk/CG180/PatientDecisionAid/pdf/English (accessed 12 February 2015).
- NM HealthPathways. Dabigatran 2016 [updated Aprilaccessed on 27/07/2017]. Available from: https://nm.healthpathways.org.nz/.
- NM HealthPathways. Atrial Fibrillation 2017a [accessed on 25/07/2017]. Available from: https://nm.healthpathways.org.nz/.
- NM HealthPathways. Atrial Fibrillation Flow Chart 2017b [accessed on 25/07/2017]. Available from: https://nm.healthpathways.org.nz/.
- NZF. New Zealand Formulary (NZF) 2015 [updated 01/03/2015]. v33:[Available from: http://www.nzf.org.nz/.
- NZF. New Zealand Formulary 2017 [updated July]. v61:[
- optiongrid. Oral anticoagulants and atrial fibrillation 2014. Available from: http://optiongrid.org/.
- Paling J. Strategies to help patients understand risks. BMJ2003 2003-09-25 21:58:31. 745-8 p.
- patient.co.uk. Atrial fibrillation medication 2015. Available from: http://patient.info/decision-aids/atrial-fibrillation-medication.
- Stockley's. Stockley's Drug interactions. Tenth ed. Baxter K, Preston, C, editor. China: Pharmaceutical Press; 2013.
- Stockley's. Stockley's Drug interactions. Tenth ed. Baxter K, Preston, C, editor. China: Pharmaceutical Press; 2013.
- Stott DJ, Dewar RI, Garratt CJ, et al. RCPE UK Consensus Conference on “Approaching the comprehensive management of Atrial Fibrillation: Evolution or revolution?”2012 1-2 March 2012. Available from: http://www.rcpe.ac.uk/sites/default/files/documents/pressreleases/rcpe-af-consensus-statement-2012.pdf.
- Thrall G, Lip GY, Carroll D, et al. Depression, anxiety, and quality of life in patients with atrial fibrillation. Chest. 2007;132(4):1259-64.
- TVNZ. One Tiny Device that could save the lives of Stroke Patients 2015 [accessed on 21/07/2015]. Available from: https://www.tvnz.co.nz/one-news/new-zealand/exclusive-one-tiny-device-could-save-the-lives-of-stroke-patients-6343932?autoPlay=4312158610001.
- UpToDate. Rhythm control versus rate control in atrial fibrillation 2014 [23/06/2015]. Available from: http://www.uptodate.com/contents/rhythm-control-versus-rate-control-in-atrial-fibrillation?source=see_link.
- UpToDate. Paroxysmal atrial fibrillation 2015a [09/06/2015]. Available from: http://www.uptodate.com/contents/paroxysmal-atrial-fibrillation?source=see_link.
- UpToDate. Atrial Fibrillation:Anticoagulant therapy to prevent embolisation 2015b. Available from: http://www.uptodate.com/contents/atrial-fibrillation-anticoagulant-therapy-to-prevent-embolization?source=see_link&sectionName=POTENTIAL+ALTERNATIVES+TO+ANTICOAGULANT+MONOTHERAPY&anchor=H124800782#H124800782.
- UpToDate. Management of warfarin-associated bleeding or supratherapeutic INR 2015c. Available from: http://www.uptodate.com/contents/management-of-warfarin-associated-bleeding-or-supratherapeutic-inr?source=see_link&sectionName=BLEEDING+RISK&anchor=H624013#H624013.
- van der Weijden T, Boivin A, Burgers J, et al. Clinical practice guidelines and patient decision aids. An inevitable relationship. Journal of clinical epidemiology. 2012;65(6):584-9.
- Verma A, Cairns JA, Mitchell LB, et al. 2014 focused update of the Canadian Cardiovascular Society Guidelines for the management of atrial fibrillation. The Canadian journal of cardiology. 2014;30(10):1114-30.
- von Eisenhart Rothe AF, Goette A, Kirchhof P, et al. Depression in paroxysmal and persistent atrial fibrillation patients: a cross-sectional comparison of patients enroled in two large clinical trials. Europace: European Pacing, Arrhythmias, And Cardiac Electrophysiology: Journal Of The Working Groups On Cardiac Pacing, Arrhythmias, And Cardiac Cellular Electrophysiology Of The European Society Of Cardiology. 2014;16(6):812-9.

GP Small Group Education

Difficult Decisions

NMDHB August 2017

Hand Out

Difficult Decisions - communicating risk

How do we know if are engaging well in SDM in our own practice?

Different aspects of shared decision making (SDM) can be observed with patient involvement and whether the clinician:

- Draws attention to an identified problem as one that requires SDM
- States that there is more than one way to deal with the identified problem
- Assesses the patient's preferred approach to receiving information to assist decision making (e.g. discussion, reading printed material, assessing graphical data, using videotapes or other media)
- Lists 'options', which can include the choice of 'no action'
- Explains the pros and cons of options to the patient (taking 'no action' is an option)
- Explores the patient's expectations (or ideas) about how the problem is to be managed
- Explores the patient's concerns (fears) about how the problem is to be managed
- Checks that the patient has understood the information
- Offers the patient explicit opportunities to ask questions during the decision making process
- Elicits the patient's preferred level of involvement in decision-making
- Indicates the need for a decision making (or deferring) stage
- Indicates the need to review the decision (or deferment)

[Elwyn 2004]

A link for a SDM assessment tool based on degree of the presence of the components listed above is included at the end of the handout.

Examples of comments with respect to shared decision making (SDM)

- **Honesty** – "There are risks and benefits for each decision about taking anticoagulants"
- **Emotions/non-logical thinking** – "It seems like you are very nervous about the possibility of a stroke because your father/brother/sister had a stroke"
- **Hope and support** - "Whatever other decision you make, it will be important to keep active and eat healthily – the practice can help you with this"
- **Review** – " The decision you make now can always be changed if circumstances change"
- **Respect** – "While we are sharing the process of making the decision, you should feel free to make a decision which is right for you"
- **No decision** – "You don't have to make a decision right now" and "Doing nothing is also an option"

Adapted from [Berger 2015]

Anticoagulation and surgical procedures

In patients with AF, a decision to interrupt antithrombotic therapy for an invasive procedure must be made based on the balance of the risks of a thromboembolic event with those of a bleeding event. Local guidance for patients having elective surgery are outlined in the 'NMDHB guidelines for anticoagulation and elective procedures' available on HealthPathways [NMDHB 2015] . For those on dabigatran it is also important to plan ahead as there is no treatment available to immediately reverse its effects. Details on

perioperative management of patients on dabigatran undergoing surgery are also included in the NMDHB guidelines.

If AF is the only indication (patient has no prior embolic stroke or valvular heart disease), the patient is classified as low thrombosis risk and bridging anticoagulation is not recommended [NMDHB 2015]. Evidence suggests that the risk of bleeding complications in these circumstances with the use of bridging exceeds the risk of embolic stroke [Douketis 2015b, Douketis 2015a]. Instead, the patient should be given advice on either continuing their anticoagulant or discontinuing for a number of days prior to procedure dependent on the bleeding risk from the procedure itself [NMDHB 2015].

The final decision on what prophylaxis to use (if any) is taken by the Surgeon caring for that patient.

The decision to not use bridging anticoagulation is based on recent evidence. Two studies of patients with AF suggest bridging therapy may actually be associated with an **increased** risk of a major bleed:

- The BRIDGE trial was an RCT of 1884 patients with AF, on warfarin, who were assigned to receive bridging therapy with dalteparin or placebo prior to a surgical procedure. The incidence of major bleeding was 1.3% in the no-bridging group and 3.2% in the bridging group (relative risk 0.41; 95% CI 0.20 to 0.78; p= 0.005 for superiority), with minimal difference in incidence of arterial thromboembolism [Douketis 2015a].
- In a sub study of the RE-LY trial, in patients who interrupted dabigatran or warfarin therapy for a surgery/procedure, use of bridging anticoagulation appeared to increase the risk for major bleeding irrespective of dabigatran or warfarin interruption [Douketis 2015b]

A recent systematic review also supports this view that bridging therapy may increase the risk of bleeding for some patients without reducing the risk of thrombosis [Daniels 2015]. As uncertainties surrounding optimal anticoagulation management remain, a decision on bridging therapy must be individualised to the patient and must include explicit discussion of the risks and benefits of each treatment option by medical and surgical providers involved. Clinical trials continue to try to optimise guidelines.

Low risk procedure

As a common procedure, dental extractions are considered a low risk procedure. For patients on warfarin, it is recommended that an INR is done within 24hrs of the procedure and may proceed if it is <3.5, and should be deferred if it is more than this [NM HealthPathways 2014a]. For patients on dabigatran, there are limited clinical data on excess bleeding following extraction, and advice is to take a similar approach as with warfarin (i.e. simple extractions, continue treatment) [NM HealthPathways 2014b].

Warfarin adjustment

Warfain adjustment – BPAC provides a protocol for warfarin initiation and monitoring:
www.bpac.org.nz/resources/campaign/inr/bpac_inr_poem_2006_appendix.pdf

Dosage Adjustments for Patients on Warfarin Maintenance Therapy, Target 2.0 - 3.0	
INR	Dosage Adjustment
< 1.5	Increase weekly dose by 20% and give one time top-up additional amount equal to 20% of weekly dose
1.5 - 1.9	Increase weekly dose by 10%
2.0 - 3.0	No change
3.1 - 3.9	No change - recheck in one week. If persistent, decrease weekly dose by 10-20%
4.0 - 5.0	Omit 1 dose; decrease weekly dose by 10-20% and recheck in 2-5 days
> 5.0	See guide for Treatment of Patients Overanticoagulated with Warfarin (see section 3d)

Another BPAC resource is:
www.bpac.org.nz/BT/2010/November/docs/best_tests_nov2010_inr_pages14-20.pdf

HealthPathways also lists a protocol "Starting and monitoring warfarin" https://nm.healthpathways.org.nz

For information on Point of Care testing (including the pharmacies offering this service) see 'community pharmacies' section on HealthPathways: https://nm.healthpathways.org.nz

Patient information sites

To register for access to HealthOne:
https://users.healthone.org.nz/as-a-nelsonmarlborough-user

www.healthinfo.org.nz

www.healthnavigator.org.nz/health-topics/atrial-fibrillation-2

www.aa-international.org/au/home

www.nhlbi.nih.gov/health/health-topics/topics/af

www.stopafib.org

www.saferx.co.nz/patient-guides
Patient leaflets on warfarin (available in English, Traditional Chinese, Korean, Niuean, Samoan and Tongan) and dabigatran (available in English).

Decision aids and shared decision making (SDM)

Decision aids come in different forms and some include background information on the evidence for the content of the decision aid.

http://decisionaid.ohri.ca/AZsearch.php?criteria=atrial+fibrillation – links to several decision aids with assessment of their content, development and effectiveness:

- Atrial fibrillation decision support tool (HealthDecision)
- Atrial Fibrillation: Should I Have Catheter Ablation? Healthwise
- Atrial Fibrillation: Should I Take an Anticoagulant to Prevent Stroke? Healthwise
- Atrial Fibrillation: Should I Try Electrical Cardioversion? Healthwise
- Atrial Fibrillation: Which Anticoagulant Should I Take to Prevent Stroke? Healthwise

http://medical.cdn.patient.co.uk/decision-aid/instructions-for-using-the-af-bda.pdf - this has a summary of steps advised for discussing the SDM process with a patient. There is also a clinician checklist: http://medical.cdn.patient.co.uk/decision-aid/noacs-checklist.pdf. These specifically refer to the patient.co.uk decision aid at: http://patient.info/decision-aids/atrial-fibrillation-medication

http://personcentredcare.health.org.uk/resources?f%5b0%5d=field_resource_type%3A345 – resources for clinicians on using decision aids including explaining absolute risk, using decision aids, encouraging self-management as well as clinical skills and key phrases to use.

www.sparctool.com - Stroke Prevention in Atrial Fibrillation Risk Tool – online tool for calculation of stroke risk in AF.

www.thennt.com the number needed to treat (NNT) decision aid – states benefits and harms in terms of NNT, NNH (number needed to harm) and percentage

https://www.nice.org.uk/guidance/cg180/resources/patient-decision-aid-pdf-243734797 – NICE decision aid for anticoagulation in AF with Cates (visual smiley faces) plots for risk. This is 36 pages long and has several sections for patients to complete including a "How do you feel about the options" page (page 13) which covers how important all aspects of the decision are for the patient.

http://patient.info/decision-aids/atrial-fibrillation-medication-options - UK option grid plus detailed information for patients.

https://www.youtube.com/watch?v=FnS3K44sbu0&app=desktop
A communication tool "Best case/worst case" developed by researchers at the University of Wisconsin to help surgeons discuss difficult treatment decisions. (this video is just under 11 mins long)

www.optioninstrument.org/uploads/2/4/0/4/24040341/english_version_rev.pdf - SDM assessment tool.

References

- Berger Z. Navigating the Unknown: Shared Decision-Making in the Face of Uncertainty. Journal of general internal medicine. 2015;30(5):675-8.
- Daniels PR. Peri-procedural management of patients taking oral anticoagulants. BMJ (Clinical research ed). 2015;351:h2391.
- Douketis JD, Healey JS, Brueckmann M, et al. Perioperative bridging anticoagulation during dabigatran or warfarin interruption among patients who had an elective surgery or procedure. Substudy of the RE-LY trial. Thrombosis and haemostasis. 2015b;113(3):625-32.
- Douketis JD, Spyropoulos AC, Kaatz S, et al. Perioperative Bridging Anticoagulation in Patients with Atrial Fibrillation. New England Journal of Medicine. 2015a;0(0):null.
- Elwyn G. OPTION - Observing patient involvement 2004. Available from: http://www.optioninstrument.org/uploads/2/4/0/4/24040341/english_version_rev.pdf.
- NM HealthPathways. Warfarin - Dental Extractions 2014a [accessed on 12/07/2017]. Available from: https://nm.healthpathways.org.nz/.
- NM HealthPathways. Dabigatran and minor oral surgery 2014b [accessed on 12/07/2017]. Available from: https://nm.healthpathways.org.nz/.
- NMDHB. NMDHB guidelines for anticoagulation and elective procedures 2015 [cited 2017]. Available from: https://nm.healthpathways.org.nz/.

Cover image from Pixabay

CHA2DS2-VASc and HAS-BLED calculators [http://chadsvasc.org/ Dr J DeJong]

Chadsvasc risk factors [click on present risk factors]

RISK FACTORS	SCORE
Congestive heart failure	1
Hypertension	1
Age ≥ 75	2
Age 65-74	1
Diabetes mellitus	1
Stroke/TIA/thrombo-embolism	2
Vascular disease	1
Sex Female	1
Your score	0

view results

CHADSVASC clinical risk estimation. Adapted from Lip et al.

CHA_2DS_2VASc SCORE	PATIENTS (n=7329)	ADJUSTED STROKE RATE (% year)
0	1	0%
1	422	1,3%
2	1230	2,2%
3	1730	3,2%
4	1718	4,0%
5	1159	6,7%
6	679	9,8%
7	294	9,6%
8	82	6,7%
9	14	15,2%

HASBLED clinical characteristic [click on present risk factors]

CLINICAL CHARACTERISTIC	POINTS AWARDED
Hypertension	1
Abnormal liver function	1
Abnormal renal function	1
Stroke	1
Bleeding	1
Labile INRs	1
Elderly (Age >65)	1
Drugs	1
Alcohol	1
Your score	0

view results

HASBLED clinical risk estimation. Adapted from Pisters et al.

HAS BLED SCORE	NUMBER OF PATIENTS	NUMBER OF BLEEDING	BLEEDS PER 100 PATIENT YEARS
0	798	9	1,13
1	1286	13	1,02
2	744	14	1,88
3	187	7	3,74
4	46	4	8,70
5	8	1	12,50
6	2	0	0
7	---	---	---
8	---	---	---
9	---	---	---