

Midlands Atrial Fibrillation Interactive Toolkit



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Introduction

Who is the audience

- ▶ All healthcare professionals
- ▶ Commissioners
- ▶ Patients
- ▶ Carers
- ▶ Public health professionals
- ▶ Health improvement managers
- ▶ Secondary and primary care managers.

Aims of this toolkit

- ▶ Provides quick access to risk-assessment tools and decision making aids
- ▶ All atrial fibrillation (AF) information housed in central location
- ▶ Accessible from any computer or device with no log in necessary
- ▶ Provides tools for local improvement strategies
- ▶ Aims to reduced unwarranted variation across practice
- ▶ Celebrate and promote local areas of excellence.

This toolkit steps you through the end-to-end pathway for the detection, management and treatment of AF. Whether you're a community clinician, patient or manager you should find tools and resources to support.

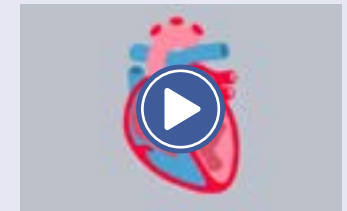
- ▶ [What is AF?](#)
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Useful links



▶ [Watch: What is a stroke?](#)



▶ [Watch: What is atrial fibrillation?](#)



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What is atrial fibrillation?

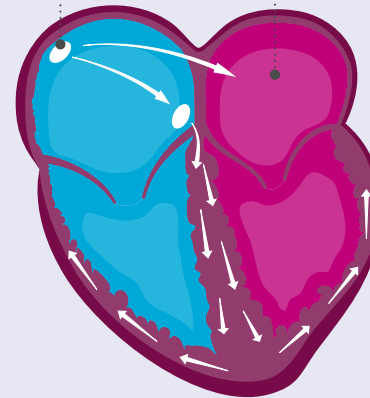
AF is the most common type of abnormal heart rhythm.

An abnormal heart rhythm is also known as an arrhythmia. People with AF have an irregular and sometimes fast pulse, although you may also have a slow pulse rate.

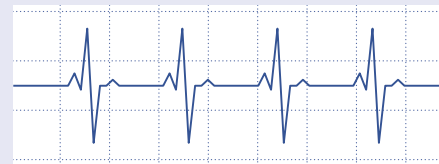
Atrial fibrillation happens because, as well as the sinus node (SA node) sending out regular electrical impulses, different places in and around the atria (the upper chambers of the heart) also produce electrical impulses, in an uncoordinated way. These multiple impulses make the atria quiver or twitch, which is known as fibrillation.

Normal conduction

SA node Normal electrical signals

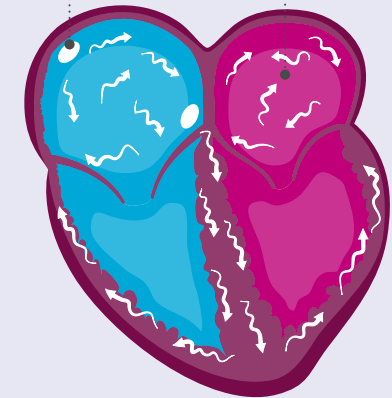


Normal sinus rhythm

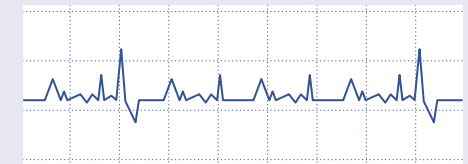


Atrial fibrillation

SA node Disorganised electrical signals



Atrial fibrillation





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Physiology of AF

- ▶ Basic principles of the conduction pathway
- ▶ Sino-atrial node (SA), also known as the 'pacemaker'
- ▶ Atrioventricular node (AV), also known as the AV junction
- ▶ Bundle of His
- ▶ Left and right bundle branches
- ▶ Purkinje fibres.

Normal conduction pathway

- ▶ The electrical impulse begins in the SA node, located in the right atrium. This initiates each cardiac cycle. Its anatomical position within the heart, at the junction of the embryonic sinus venosus and the right atrium, means its situated to ensure the atria are depolarised first. The SA node is supplied by it's own artery arising from either the right coronary artery or the circumflex [which is often why you may see an arrhythmia occurring in someone with a myocardial infarction on the right side].

- ▶ Typically, the SA node will vary the rate of impulses, depending on what the individual may be doing e.g. strenuous activity it will rise.
- ▶ When the SA node fires an impulse, electrical activity spreads through the right and left atria (P-wave), causing them to contract and force blood into the ventricles (QRS complex)
- ▶ The AV node, which is located in the muscular section of the septum (between atria and ventricular). The AV node provides a direct extension leading to the bundle of His, this then leads onto the two bundle branches (left and right). The electrical stimulus which began in the SA node, triggers the AV node which in turn transition to the bundle of His, exciting the myocytes (cardiac cells) between the atria and ventricles. There is a slight delay when signals travel through the AV node, which allows the atria time to empty their content of blood adequately and allows the ventricles time to fill thus stimulating a contraction. [Read more >>>](#)



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Physiology of AF (continued)

- ▶ The Purkinje fibres, smallest structure in the conduction pathway, which is established in the subendocardial region and permits the papillary muscles to contract first followed by a wave of excitation which the ensuing contraction travelling from the apex to the ventricular outflow tract. impulses pass down the bundle of His and across the ventricles via the Purkinje fibres causing a wave of activity (depolarisation) across the ventricles causing them to contract and empty their contents
- ▶ Understanding the normal conduction pathway is important in understanding when there is a failure in the system such as atrial fibrillation, including treatment options such as ablation, rate and rhythm control and pacemaker implantation
- ▶ AF occurs because of an abnormality of the electrical signalling pathway. Instead of the signals following a regular co-ordinated pathway, signals are not systematically triggered via the **SA node**, but instead, are generated from all over the atria, resulting in a quivering or fibrillating uncoordinated atrial activity. In the left atrium of the heart, the area around the pulmonary veins appears to be the site where multiple impulses are generated in most cases of AF. The impulses generated can be fired at a rate of about 300–600 beats per minute. The **AV node** will not be able to filter the number of signals coming from the atria. This is because the signals may be too fast, chaotic and irregular in nature or coming from multiple areas (foci) within the atria. This will lead to inadequate emptying of the **atria**. [Read more >>>](#)



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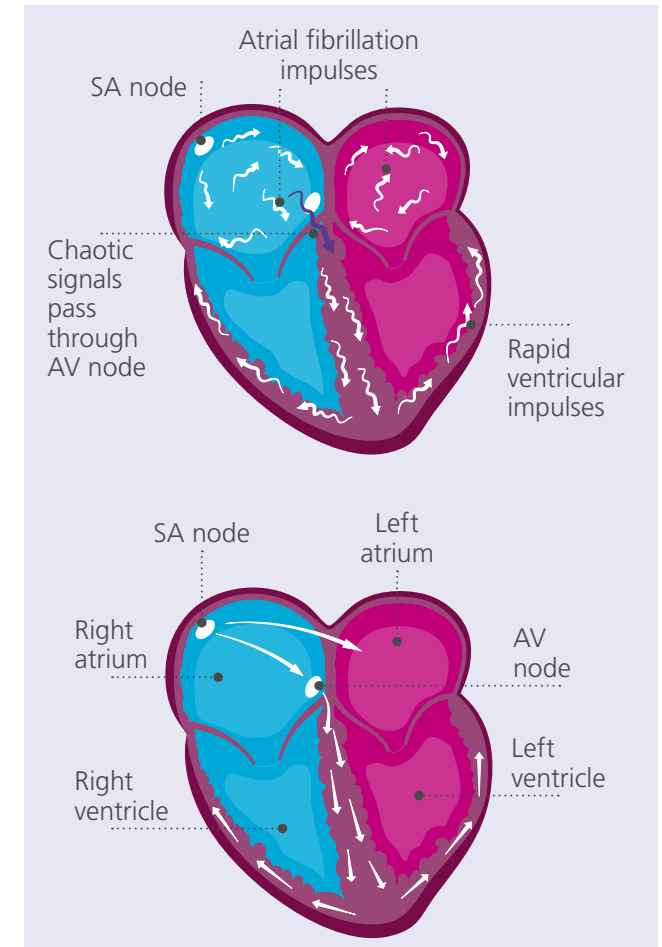
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EXTENDED LEARNING

Physiology of AF (continued)

- ▶ Instead of the impulse traveling in an orderly fashion through the heart, many impulses begin at the same time and spread through the atria, competing for a chance to travel through the **AV node**. The **AV node** limits the number of impulses that travel to the ventricles, but many impulses get through in a fast and disorganised manner. The **ventricles** contract irregularly, leading to a rapid and irregular heartbeat. The rate of impulses in the atria can range from 300 to 600 beats per minute
- ▶ The constant bombardment of atrial impulses creates varying degree of concealed conduction, when most stimuli enter the **AV node** but do not conduct to the ventricle, creating a wake of refractoriness encountered by subsequent impulse
- ▶ In atrial fibrillation the atria fire at chaotic and disorganised rates, this occurs from several foci and have multiple re-entry circuits forming throughout the atria. As a consequence of this there are irregular responses in the ventricles – this is where you see the classic wave formation on an **ECG** of wobbly lines, undefinable p-wave and an irregular spaced QRS complex. The ventricular response is normal therefore this is seen in the QRS complex appearing as a normal in shape and size.





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Types of AF

There are three types of AF:

- ▶ Paroxysmal atrial fibrillation is atrial fibrillation that comes and goes. It usually lasts for less than two days and can last for up to seven days, but it is not there all the time
- ▶ Persistent atrial fibrillation lasts longer than seven days at a time and usually needs treatment with medicines or with a procedure called **cardioversion**
- ▶ Permanent atrial fibrillation is there all the time, and your heart never returns to a normal sinus rhythm.





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Prevalence of AF in the UK and West Midlands

- ▶ AF is the most common sustained cardiac arrhythmia
- ▶ Prevalence in England considered to be ~2%
- ▶ Prevalence increases with age and men tend to be more commonly affected than women
- ▶ 85% of people are diagnosed with AF aged ≥ 65 years
- ▶ AF is becoming more prevalent due to the rising population
- ▶ England population aged ≥ 65 years is predicted to rise by 23.6% between mid-2011 and 2021.

Indicator	Period	England	Midlands (Central) NHS region	NHS Corby CCG	NHS East Leicestershire & Rutland CCG	NHS Leicester City CCG	NHS Lincolnshire East CCG	NHS Lincolnshire West CCG	NHS Nene CCG	NHS South Lincolnshire CCG	NHS South West Lincolnshire CCG	NHS West Leicestershire CCG
Stroke: QOF prevalence (all ages)	2018/19	1.8*	1.8	1.7	2.0	1.2	2.7	1.9	1.6	2.2	2.1	1.8
Atrial fibrillation: QOF prevalence	2018/19	2.0*	2.1	1.7	2.5	1.1	3.0	2.2	2.0	2.7	2.7	2.2
Estimated prevalence of atrial fibrillation	2019	2.5	-	2.0	3.1	1.7	3.5	2.8	2.4	3.2	3.2	2.7
Stroke admissions (Sentinel Stroke National Audit Programme)	2018/19	79,179	-	67	516	405	511	384	771	258	198	518
STIA003: Last BP reading is <=150/90 (den. incl. exc.)	2018/19	83.9	84.5	83.3	83.1	84.8	84.2	85.8	84.7	86.5	86.8	83.3
STIA007: Record that an anti-platelet agent or an anti-coagulant is taken (den. incl. exc.)	2018/19	91.6	92.4	94.8	92.7	91.8	91.9	91.1	93.1	93.2	94.3	91.2
AF007: treated w anti-coag. therapy (CHADS2DS2-VASc >=2) (den.incl.exc.)	2018/19	85.7	89.4	93.1	89.6	88.3	90.5	89.4	89.3	88.9	89.9	88.7
Stroke outcomes on discharge for patients with AF and not on anti-coagulation (mRs = 0)	2018/19	5.5	7.7*	50.0	0.0	0.0	25.0	0.0	9.8	15.0	25.0	2.0
Stroke outcomes on discharge for patients with AF and not on anti-coagulation (mRs = 1)	2018/19	11.2	8.5*	0.0	4.4	3.7	6.3	10.0	8.2	20.0	25.0	6.0
Stroke outcomes on discharge for patients with AF and not on anti-coagulation (mRs = 2)	2018/19	11.7	13.9*	0.0	13.3	22.2	18.8	15.0	14.8	5.0	6.3	14.0
Stroke outcomes on discharge for patients with AF and not on anti-coagulation (mRs = 3)	2018/19	16.7	20.8*	25.0	24.4	29.6	12.5	30.0	21.3	5.0	25.0	16.0
Stroke outcomes on discharge for patients with AF and not on anti-coagulation (mRs = 4)	2018/19	17.7	15.8*	0.0	22.2	14.8	6.3	5.0	18.0	15.0	0.0	22.0
Stroke outcomes on discharge for patients with AF and not on anti-coagulation (mRs = 5)	2018/19	12.2	12.7*	0.0	17.8	18.5	12.5	15.0	8.2	15.0	12.5	10.0
Stroke outcomes on discharge for patients with AF and not on anti-coagulation (mRs = 6)	2018/19	24.9	20.5*	25.0	17.8	11.1	18.8	25.0	19.7	25.0	6.3	30.0
Stroke admissions with history of atrial fibrillation not prescribed anti-coagulation prior to stroke	2018/19	38.9	38.9*	33.3	45.0	49.1	20.3	27.0	38.1	52.6	41.0	46.3
Stroke all age admission trends	2018/19	166.0*	-	182.8*	175.6*	180.1*	181.4*	155.3*	145.0*	150.9*	160.9*	167.2*
Stroke patients who are assessed at 6 months	2018/19	30.6	-	47.7	0.2	0.3	2.3	0.0	49.3	2.9	0.0	0.9
Stroke mortality rates, under 75 years (age standardised)	2018/19	12.8	-	19.5	9.8	19.0	13.8	14.4	11.5	8.3	9.2	9.7
Stroke mortality rates, over 75 years (age standardised)	2018/19	506.3	-	508.9	430.2	501.7	498.2	546.9	469.5	473.2	522.4	437.1

Rate quality: Significant increases, Some concerns, Mixed. * is refer to attached to the table, hover over to see more details

Compared with benchmark: Better, Similar, Worse, Lower, Higher, Not compared

[Download full table here](#)



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> AF prevention

AF prevention

A risk factor is something that increases your risk of developing a disease or condition.

The risk factors for getting AF include:

- ▶ Getting older, particularly being 65 or older
- ▶ Coronary heart disease
- ▶ High blood pressure
- ▶ Heart valve disease
- ▶ Previous heart or lung surgery
- ▶ Myocarditis (inflammation of the heart muscle)
- ▶ Cardiomyopathies (diseases of the heart muscle)
- ▶ Lung infections, such as pneumonia
- ▶ Being overweight, especially if the person also has sleep apnoea (interrupted breathing while sleeping)
- ▶ Substance or alcohol abuse.



Useful links

- ▶ [Cardiovascular disease prevention: action plan](#)
- ▶ [Cardiovascular disease prevention: Risk detection and management in primary care](#)
- ▶ [Check your heart age](#)
- ▶ [NHS Health Check](#)
- ▶ [NHS Long Term Plan - page 62, section 3.67](#)



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Detection

- ▶ Approx 38,500 people across the West Midlands are estimated to have undetected AF
- ▶ Left untreated, AF is a significant risk factor for stroke, heart failure and other morbidities. AF related strokes can lead to death or significant disability
- ▶ There can be a lack of symptoms and some people feel none at all
- ▶ Therefore early detection of AF is vital to ensure prompt initiation of treatment
- ▶ Current recommendations support opportunistic screening in people aged over 65 provides the most cost effective strategy in detecting undiagnosed AF.



Ways to detect an irregular pulse:

1. **Manual pulse checking** - www.bhf.org.uk/informationsupport/tests/checking-your-pulse
2. **Devices - such as Alivcor etc** - www.nice.org.uk/guidance/cg180 (see page 8)
www.nice.org.uk/advice/mib35

Manual pulse checking or use of devices can be incorporated into routine clinical practice and case finding initiatives.





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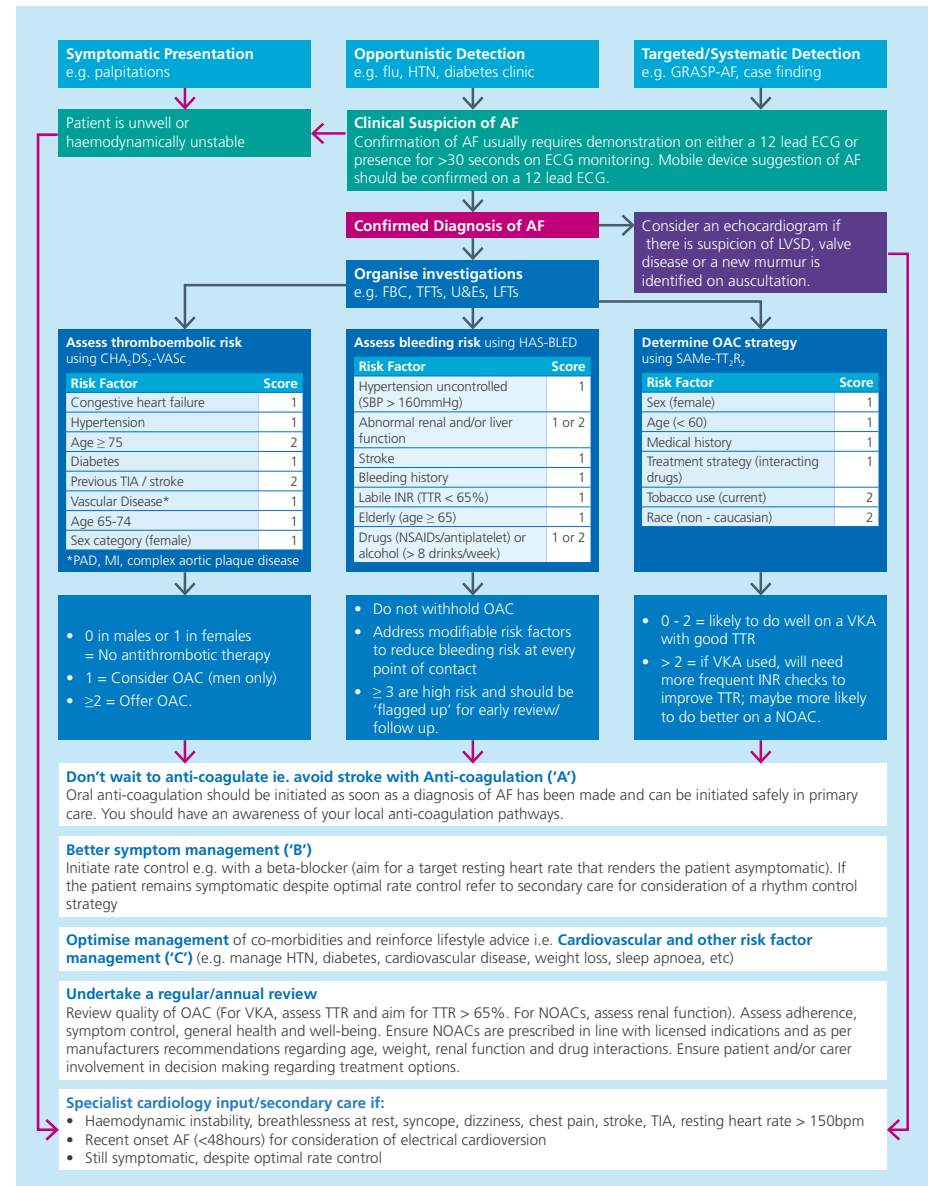
> Evidence for AF screening devices

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West Midlands clinical pathway

The West Midlands Academic Health Science Network, NHS England Clinical Network and Public Health England have created a local pathway to improve consistent detection and management of AF. This AF clinical pathway was developed in 2018 alongside the WMAHSN through an expert working group from across the West Midlands. It can be adopted for use locally to support pathways, commissioning and service specifications.

[Download the pathway here](#)





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Raising awareness

Raising awareness can achieve:

- ▶ Highlight the dangers of AF
- ▶ Empower and educate communities to monitor their own pulse
- ▶ Demonstrate the link between AF and Stroke to the public
- ▶ Provide opportunity for screening AF.



Awareness raising campaigns

- ☐ [Heart rhythm week](#)
- ☐ [Stroke Association - Atrial Fibrillation: Information and Resources](#)





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Pulse check

The simplest intervention to identify undetected AF is a manual check of pulse rhythm. Embed pulse checks in commissioning plans to include them in all routine clinical practice, e.g. flu vaccination clinics, clinic visits whenever blood pressure is taken, clinics for chronic disease management and all prevention related activities, such as the NHS Health Check programme. Alternative opportunities to carry out pulse checks include podiatry, dental services and community pharmacy.



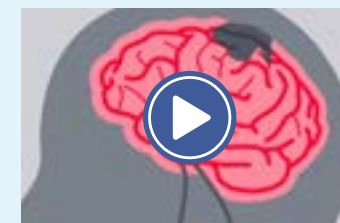
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[Know your pulse downloadable resources](#)



Useful links



[Watch: Check your pulse](#)



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Evidence for AF screening devices

Device	Method of Interpretation	Sensitivity (%)	Specificity (%)	Reference
Pulse palpation		94 (84–97)	72 (69–75)	Cooke et al
Handheld single-lead ECGs				
AliveCor (Kardia) heart monitor	Algorithm only (based on presence of P wave and RR irregularity)	98 (89–100)	97 (93–99)	Lau et al
Merlin ECG event recorder	Cardiologist interpretation	93.9	90.1	Kearley et al
Mydiagnostick	Algorithm only (based on RR irregularity)	94 (87–98)	93 (85–97)	Tieleman et al Vaes et al
Omron HCG-801	Algorithm only (based on RR irregularity)	98.7 (93.2–100)	76.2(73.3–78.9)	Kearley et al
Omron HCG-801	Cardiologist interpretation	94.4	94.6	Kearley et al
Zenikor EKG	Cardiologist interpretation	96	92	Doliwa et al
Modified blood pressure monitors				
Microlife BPA 200 Plus	Algorithm only (based on pulse irregularity)	92	97	Marazzi et al
Microlife BPA 200	Algorithm only (based on pulse irregularity)	97 (81.4–100)	90 (83.8–94.2)	Wiesel et al
Omron M6	Algorithm only (based on pulse irregularity)	100	94	Marazzi et al
Omron M6 comfort	Algorithm only (based on pulse irregularity)	30 (15.4–49.1)	97 (92.5–99.2)	Wiesel et al
Microlife WatchBP	Algorithm only (based on pulse irregularity)	94.9 (87.5–98.6)	89.7 (87.5–91.6)	Kearley et al
Plethysmographs				
Finger probe	Algorithm only (based on pulse irregularity)	100	91.9	Lewis et al
iPhone photo-plethysmograph	Algorithm only (based on pulse irregularity)	97.0	93.5	McManus et al



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ECG

Across the NHS there are different tools available to support AF screening, particularly in the community setting. It is widely recognised that there is a need to ensure the whole pathway is effective to ensure that downstream treatment is accessible beyond screening. Access to the tools, especially [smartphone-based devices](#), have made AF screening in the community more feasible and there have been many programmes running across the West Midlands, including the implementation of the AliveCor™. However, the sensitivities and positive predictive values of the current versions of automated diagnostic algorithms for AF have to be improved further to increase the cost-efficiency of screening programmes.

ECG examples



[Example 1](#)



[Example 2](#)



[Example 3](#)



[Example 4](#)



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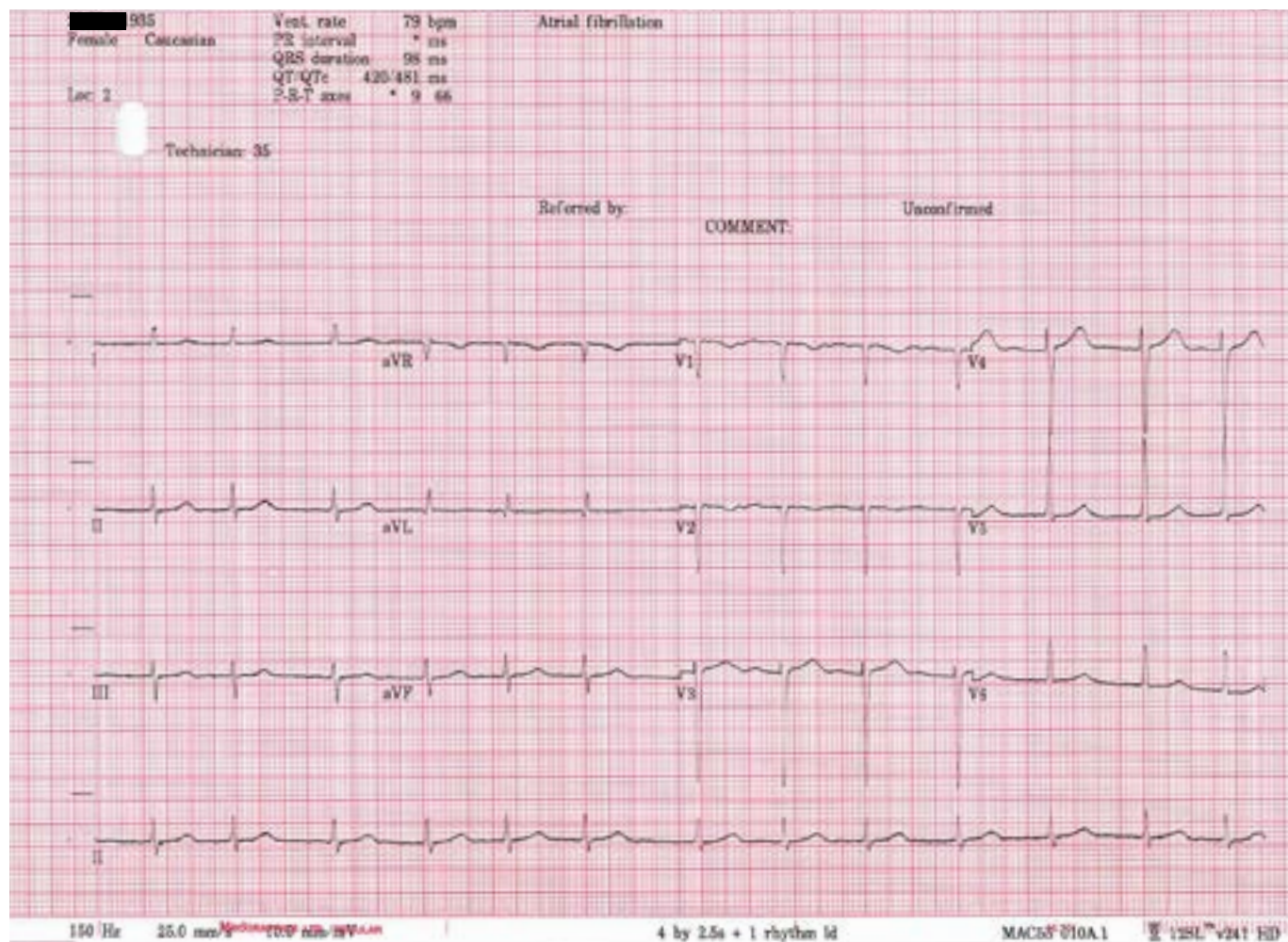
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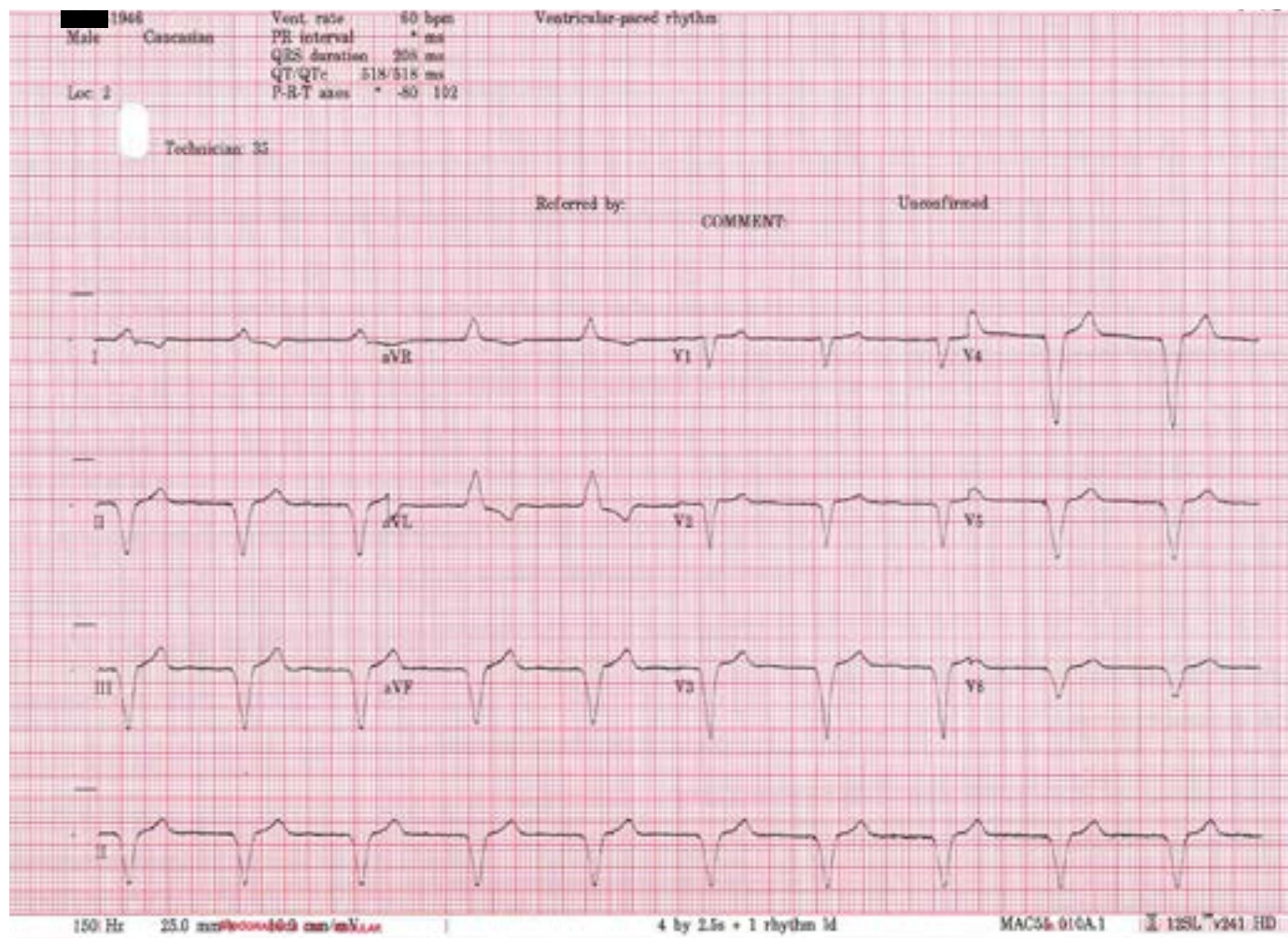
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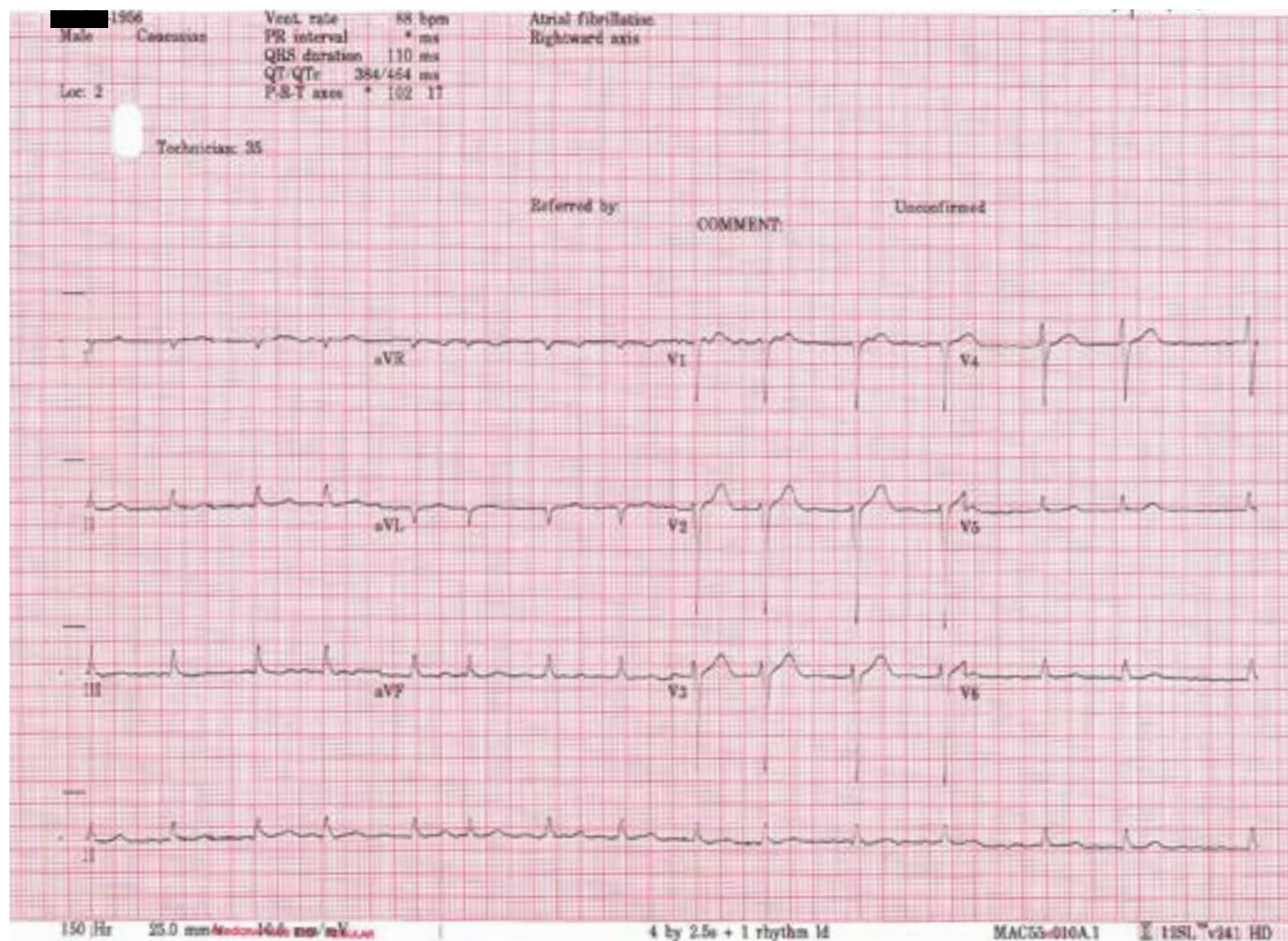
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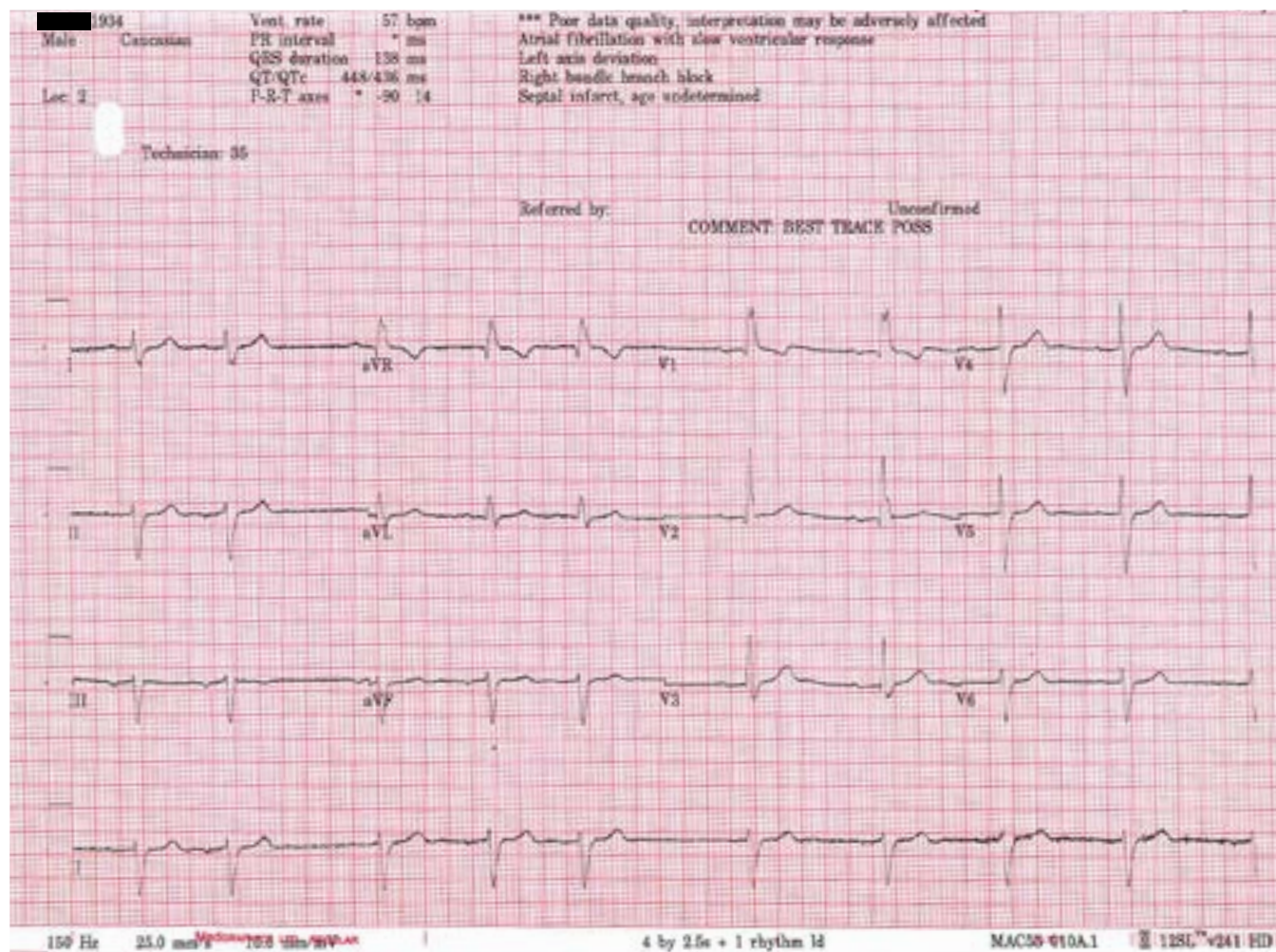
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> **Risk of anti-coagulation associated bleeding**

> Risk stratification

> Assessment of thromboembolic risk

> Assessment of bleeding risk

Risk of anti-coagulation associated bleeding versus the risk of stroke in AF

When discussing the benefits and risks of anti-coagulation, explain to the person that:

1 For most people the benefit of anti-coagulation outweighs the bleeding risk

2 For people with an increased risk of bleeding the benefit of anti-coagulation may not always outweigh the bleeding risk, and careful monitoring of bleeding risk is important.

3 Do not withhold anti-coagulation solely because the person is at risk of having a fall



Useful link

[NICE AF Clinical Guidance CG180 \(2014\)](#)





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> Risk of anti-coagulation associated bleeding

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Risk stratification

- ▶ Support for decision making process for tools
- ▶ Evidence behind them
- ▶ How to use them.



Resources

Assess thromboembolic risk using CHA₂DS₂-VASc

Risk Factor	Score
Congestive heart failure	1
Hypertension	1
Age ≥ 75	2
Diabetes	1
Previous TIA / stroke	2
Vascular Disease*	1
Age 65-74	1
Sex category (female)	1

*PAD, MI, complex aortic plaque disease

- 0 in males or 1 in females = No antithrombotic therapy
- 1 = Consider OAC (men only)
- ≥2 = Offer OAC.

Assess bleeding risk using HAS-BLED

Risk Factor	Score
Hypertension uncontrolled (SBP > 160mmHg)	1
Abnormal renal and/or liver function	1 or 2
Stroke	1
Bleeding history	1
Labile INR (TTR < 65%)	1
Elderly (age ≥ 65)	1
Drugs (NSAIDs/antiplatelet) or alcohol (> 8 drinks/week)	1 or 2

- Do not withhold OAC
- Address modifiable risk factors to reduce bleeding risk at every point of contact
- ≥ 3 are high risk and should be 'flagged up' for early review/follow up.

Determine OAC strategy using SAME-TT₂R₂

Risk Factor	Score
Sex (female)	1
Age (< 60)	1
Medical history	1
Treatment strategy (interacting drugs)	1
Tobacco use (current)	2
Race (non - caucasian)	2

- 0 - 2 = likely to do well on a VKA with good TTR
- > 2 = if VKA used, will need more frequent INR checks to improve TTR; maybe more likely to do better on a NOAC.



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- > Risk of anti-coagulation associated bleeding
- > Risk stratification
- > **Assessment of thromboembolic risk**
- > Assessment of bleeding risk

Assessment of thromboembolic risk

While it is accepted that AF is associated with a five-fold increase in the risk of an ischaemic stroke, this risk is not homogenous among the general population and is very much dictated and driven by risk factors and clinical characteristics.

In order to address this issue and manage the complexity associated with clinical decision making in the context of whether to anti-coagulate a person diagnosed with AF, validated risk stratification tools, namely **CHA₂DS₂VAS** have been validated for use in all populations. [Read more >>>](#)

Treatment decisions

For patients in whom stroke risk factors are not present, oral anti-coagulation medication (OAC) is not recommended.

OAC can be safely omitted only in those patients in whom the likelihood of an event is < 1% per year.

As such, the following principles can be applied when interpreting the CHA₂DS₂VASc score:

Score < 0 men or <1 women
= OAC is not recommended

Score = 1 men or 2 women
= OAC should be considered

Score ≥ 2
= OAC should be offered

Assess thromboembolic risk using CHA₂DS₂VASc

Risk Factor	Score
Congestive heart failure	1
Hypertension	1
Age ≥ 75	2
Diabetes	1
Previous TIA / stroke	2
Vascular Disease*	1
Age 65-74	1
Sex category (female)	1

*PAD, MI, complex aortic plaque disease



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- > Risk stratification
- > **Assessment of thromboembolic risk**
- > Assessment of bleeding risk

Assessment of thromboembolic risk (continued)

All decisions regarding the initiation of OAC should take into consideration the expected risk of an AF related stroke and associated stroke reduction through the initiation of OAC, associated bleeding risk, and patient preferences.

Shared decision making and a patient centred consultation are advocated when decisions regarding the initiation of OAC take place.

Of note, **ESC 2016 AF guidelines** recommend slightly different thresholds for treatment initiation:

CHA2DS2VASc score > 2 males

– OAC should be offered

CHA2DS2VASc score > 3 females

– OAC should be offered

This is to indicate that female sex does not appear to increase stroke risk in the absence of other stroke risk factors.

Assess thromboembolic risk using CHA₂DS₂-VASc

Risk Factor	Score
Congestive heart failure	1
Hypertension	1
Age ≥ 75	2
Diabetes	1
Previous TIA / stroke	2
Vascular Disease*	1
Age 65-74	1
Sex category (female)	1

*PAD, MI, complex aortic plaque disease

Assess bleeding risk using HAS-BLED

Risk Factor	Score
Hypertension uncontrolled (SBP > 160mmHg)	1
Abnormal renal and/or liver function	1 or 2
Stroke	1
Bleeding history	1
Labile INR (TTR < 65%)	1
Elderly (age ≥ 65)	1
Drugs (NSAIDs/antiplatelet) or alcohol (> 8 drinks/week)	1 or 2

Determine OAC strategy using SAME-TT₂R₂

Risk Factor	Score
Sex (female)	1
Age (< 60)	1
Medical history	1
Treatment strategy (interacting drugs)	1
Tobacco use (current)	2
Race (non - caucasian)	2



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Assessment of bleeding risk

The decision for thromboprophylaxis needs to balance the risk of bleeding events, especially, intracranial haemorrhage (ICH), which is one of the most feared complication of OAC therapy, particularly with Vitamin-K antagonists (VKA) and confers a high risk of disability and/or death.

The HAS-BLED tool is the recommended risk assessment criteria that should be used in all patients with AF, and helps to identify those risk factors that can be actively modified to help reduce an individuals bleeding risk. [Read more >>](#)





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Assessment of bleeding risk (continued)

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Bleeding is a major concern when prescribing OAC and is often a major reason why OAC is not initiated in eligible people.

A HAS-BLED score > 3 should not be used as a reason to omit OAC. Unlike stroke risk factors, many of those characteristics that are used to determine bleeding risk following application of the **HAS-BLED score** are modifiable and as such should be proactively addressed to reduce the likelihood of a bleeding event.

The HAS-BLED score will not only identify modifiable risk factors but will also flag up those patients who will benefit from more careful follow up and management of their OAC.

The bleeding risk assessment is a dynamic process that will change over time and as such patients prescribed OAC should undergo **regular review** and follow up.

Note: A history of falls is not a valid reason to withhold OAC; a patient would need to experience approximately **295 falls a year** for the benefits of stroke reduction with an OAC to be outweighed by the potential harm of a serious bleed.

Assess bleeding risk using HAS-BLED

Risk Factor	Score
Hypertension uncontrolled (SBP > 160mmHg)	1
Abnormal renal and/or liver function	1 or 2
Stroke	1
Bleeding history	1
Labile INR (TTR < 65%)	1
Elderly (age ≥ 65)	1
Drugs (NSAIDs/antiplatelet) or alcohol (> 8 drinks/week)	1 or 2



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Anti-coagulation

- ▶ Overview of warfarin and NOACs
- ▶ Myths e.g. aspirin and lack of antidotes
- ▶ Refer to anti-coagulation consensus document
- ▶ Commissioning of [anti-coagulation](#).





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Anti-coagulation

What is an anti-coagulant medicine?

An anti-coagulant medicine makes the blood take longer to clot. It plays a vital part in helping to prevent strokes specifically caused by AF, which is the most common abnormal heart rhythm in the UK.

AF increases the risk of stroke as it can lead to blood pooling in the heart, which increases the risk of clots forming. If these clots are ejected by the heart, they can block a blood vessel in the brain and cause a stroke.

Warfarin is the most commonly prescribed anti-coagulant and, when used appropriately, it's an effective way of significantly reducing the risk of AF-related strokes. But it requires frequent blood tests and careful monitoring.

What are NOACs and who are they recommended for?

The NOACs are a relatively new class of anti-coagulant drug. They can be used in the prevention of stroke for people with non-valvular AF, which is when AF is not associated with a problem in a heart valve.

They can also be used in the management of venous thromboembolism, which is when a blood clot forms in a vein. Non-valvular AF is the type of AF that most people in the UK have and, like warfarin, NOACs can help to prevent clots from forming in the first place and help protect you from certain types of stroke.

[Read more >>>](#)



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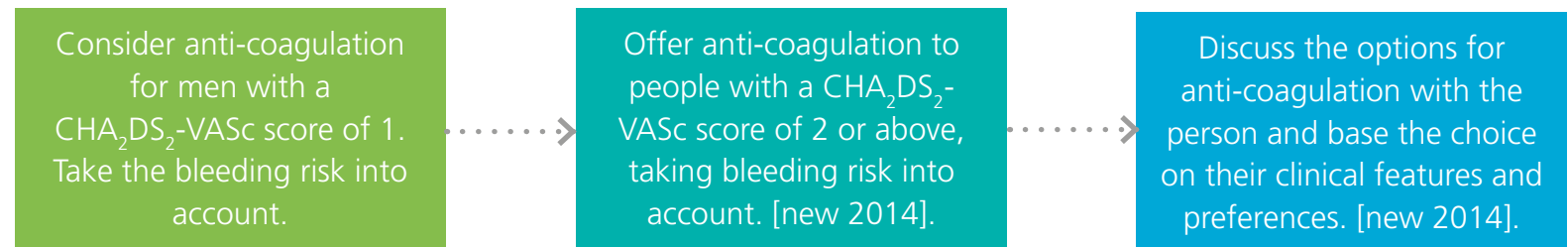
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Anti-coagulation (continued)

Anti-coagulation may be with a variety of different drugs including but not limited to; apixaban, dabigatran etexilate, rivaroxaban or a vitamin K antagonist.



Indication	Apixaban	Dabigatran Etexilate	Edoxaban	Rivaroxaban
Prevention of stroke and systemic embolism is people with non-valvular AF	Recommended as an option in specified circumstances: TA 275	Recommended as an option in specified circumstances: TA 249	Recommended as an option in specified circumstances: TA 355	Recommended as an option in specified circumstances: TA 256



Useful link

- [What are NOACs and what do they do in your body?](#)
- [How do novel oral anti-coagulants \(NOACs\) work?](#)



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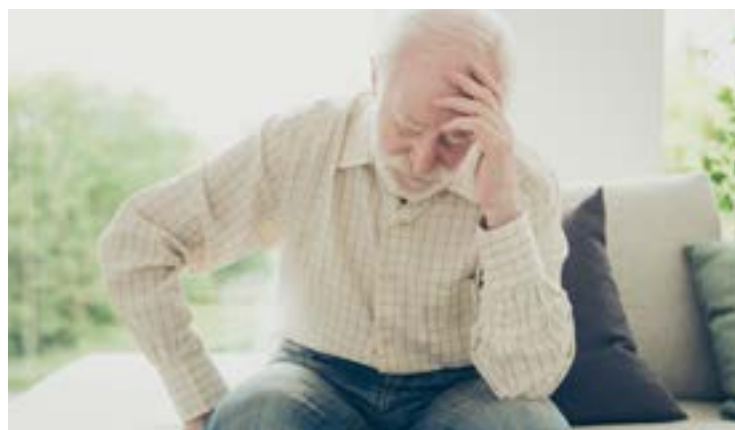
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Why is anti-coagulation so important for stroke prevention?

Stroke prevention in AF

- ▶ AF is associated with a five-fold increase in the risk of ischaemic strokes
- ▶ AF related strokes are often far more debilitating, disabling and sometimes fatal when compared to strokes due to other causes
- ▶ Two-thirds of strokes can be avoided through timely and appropriate initiation of oral anti-coagulation.



Stroke prevention in non-valvular AF

- ▶ Stroke prevention forms the cornerstone of management in non-valvular AF
- ▶ Safe and clinically effective thromboprophylaxis can easily be achieved through the use of oral anti-coagulant medication
- ▶ **Risk stratification** and clinical decision making tools have been developed and validated in order to help:
 - ▶ Determine an individual's thromboembolic risk
 - ▶ Determine whether an OAC is clinically indicated
 - ▶ Determine how best to mitigate against bleeding complications
 - ▶ Decide on which agent would be most suitable e.g. VKA or NOAC.



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Clinical decision making regarding OAC choice: Vitamin-K antagonist (VKA) or novel oral anti-coagulation (NOAC)?

The armamentarium of oral antithrombotic therapies has increased considerably over the last 10 years or so, particularly following the introduction of the NOACs.

However, there is still significant variation in the uptake of these agents within different geographical areas in the UK.

As such VKAs, namely warfarin, are still prescribed for some patients.

Warfarin is supported by a robust body of evidence that spans decades, however, optimal stroke prevention can be derived only from good quality anti-coagulation control as assessed by a time in therapeutic range (TTR)* of 65-70%.

**The TTR describes a patient's "time in therapeutic range" and is a measure of the period of time for which the INR remains at or between 2-3.*

In practice, however, it may be difficult to identify those patients who will achieve good INR control and those who won't.

Therefore, in order to facilitate decision-making regarding whether a VKA or NOAC should be prescribed, the SAME-TT₂-R₂ score has been developed and validated for use in a clinical setting. [Read more >>>](#)

ESC recommends NOAC therapy over VKA due to the significant reduction in intracranial haemorrhage as the ME-TT₂-R₂ score takes into consideration those factors which are known to contribute to a labile INR and are outlined in the table below.

Component	Score
S Sex (female)	1
A Age (<60 years)	1
Me Medical history**	1
T Treatment (interacting drugs, e.g. amiodarone)	1
T Tobacco use (within 2-years)	2
R Race (non-white ethnicity)	2
Maximum total score	8

**≥2 of the following: hypertension, diabetes mellitus, coronary artery disease/myocardial infarction, peripheral arterial disease, congestive heart failure, previous stroke, pulmonary, hepatic, or renal disease.



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Clinical decision making regarding OAC choice: SAME-TT₂-R₂ score

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SAME-TT₂-R₂ is a well-validated scoring system that can be utilised to assess whether based on clinical and/or genetic factors, patients are likely to achieve good quality anti-coagulation control when treated with a VKA.

Patients who score:

0 – 2: will do well on a VKA with a good TTR.

> 2: can be flagged for more frequent review and/or INR monitoring if prescribed a VKA, or alternatively can be prescribed a NOAC.

Decision making algorithm

Deciding on OAC in newly diagnosed AF patient

Calculate SAME-TT₂R₂ score

SAME-TT₂R₂ score 0-2

SAME-TT₂R₂ score >2

VKA with TTR >65-70%

NOAC

Definitions		Score
S	Sex (female)	1
A	Age (<60 years)	1
Me	Medical history	1
T	Treatment (interacting drugs, e.g. amiodarone)	1
T	Tobacco use (within 2-years)	2
R	Race (non-white ethnicity)	2
Maximum total score		8



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Apixaban

Apixaban is recommended as an option for preventing stroke and systemic embolism within its marketing authorisation, that is, in people with non-valvular AF with one or more risk factors such as:

- ▶ Prior stroke or transient ischaemic attack
- ▶ Age 75 years or older
- ▶ Hypertension
- ▶ Diabetes mellitus
- ▶ Symptomatic heart failure.

The decision about whether to start treatment with apixaban should be made after an informed discussion between the clinician and the person about the risks and benefits of apixaban compared with warfarin, dabigatran etexilate and rivaroxaban. For people who are taking warfarin, the potential risks and benefits of switching to apixaban should be considered in light of their level of **international normalised ratio (INR)** control.

These recommendations are from apixaban for preventing stroke and systemic embolism in people with non-valvular atrial fibrillation (NICE technology appraisal guidance 275). [2013]





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Dabigatran etexilate

Dabigatran etexilate is recommended as an option for the prevention of stroke and systemic embolism within its licensed indication, that is, in people with non-valvular AF with one or more of the following risk factors:

- ▶ Previous stroke, transient ischaemic attack or systemic embolism
- ▶ Left ventricular ejection fraction below 40%
- ▶ Symptomatic heart failure of New York Heart Association (NYHA) class 2 or above
- ▶ Age 75 years or older
- ▶ Age 65 years or older with one of the following: diabetes mellitus, coronary artery disease or hypertension.

The decision about whether to start treatment with dabigatran etexilate should be made after an informed discussion between the clinician and the person about the risks and benefits of dabigatran etexilate compared with warfarin.

For people who are taking warfarin, the potential risks and benefits of switching to dabigatran etexilate should be considered in light of their level of **international normalised ratio (INR)** control.

These recommendations are from dabigatran etexilate for the prevention of stroke and systemic embolism in atrial fibrillation (NICE technology appraisal guidance 249).] [2012]





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Rivaroxaban

Rivaroxaban is recommended as an option for the prevention of stroke and systemic embolism within its licensed indication, that is, in people with non-valvular AF with one or more risk factors such as:

- ▶ Congestive heart failure
- ▶ Hypertension
- ▶ Age 75 years or older
- ▶ Diabetes mellitus
- ▶ Prior stroke or transient ischaemic attack.

The decision about whether to start treatment with rivaroxaban should be made after an informed discussion between the clinician and the person about the risks and benefits of rivaroxaban compared with warfarin. For people who are taking warfarin, the potential risks and benefits of switching to rivaroxaban should be considered in light of their level of **INR** control.

This recommendation is from rivaroxaban for the prevention of stroke and systemic embolism in people with atrial fibrillation (NICE technology appraisal guidance 256). [2012]





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Vitamin K antagonists (warfarin)

Assessing anti-coagulation control with vitamin K antagonists

Calculate the person's time in therapeutic range (TTR) at each visit. When calculating TTR:

- ▶ Use a validated method of measurement such as the Rosendaal method for computer-assisted dosing or proportion of tests in range for manual dosing
- ▶ Exclude measurements taken during the first six weeks of treatment
- ▶ Calculate TTR over a maintenance period of at least 6 months. [new 2014.]

Reassess anti-coagulation for a person with poor anti-coagulation control shown by any of the following:

- ▶ 2 **INR** values higher than 5 or 1 INR value higher than 8 within the past six months
- ▶ 2 INR values less than 1.5 within the past six months
- ▶ TTR less than 65%. [new 2014.]



Useful links



▶ **Watch:** How does warfarin work?



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Anti-coagulation side effects

What are the potential side effects?

The side effects depend on exactly which NOAC is being taken and the individual taking them; for example, dabigatran can cause stomach upset. As with all anti-coagulants, however, a serious complication that can happen is having a major bleed. It's uncommon, and the chance of having a major bleed with a NOAC is either the same or less than it is if you are taking warfarin. There are several reversal agents available for someone taking warfarin and there is now a reversal agent available for dabigatran (which is for emergency hospital use only). The other NOACs currently have no reversal agent.

The treatment for a bleed will depend on where you are bleeding from and the extent of it. Some signs and symptoms of unusual bleeding can include unexpected bleeding or bleeding that lasts a long time; severe or unexplained bruising, or bruising that gets bigger without a cause; and red or black (tar-like) bowel motions.

You should call your doctor if you have any signs or symptoms of unusual bleeding. If there are signs of internal bleeding or the bleeding is severe, then call 999. Although there is currently no reversal agent for NOACs (besides dabigatran) that can be given, there are specific reversal agents that are in the final stages of clinical trials, and these can completely reverse the effect of NOACs within minutes. However, the anti-coagulant effect of NOACs fades rapidly, around 12–24 hours after the last dose.

If you are taking anti-coagulant medicine (for example, warfarin or dabigatran) and you suffer a head injury, such as falling and hitting your head, or experience a blow to the head, seek medical help without delay to rule out internal bleeding which may not be immediately obvious.



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Review process

Don't wait to anti-coagulate i.e. avoid stroke with Anti-coagulation ('A')

Oral anti-coagulation should be initiated as soon as a diagnosis of AF has been made and can be initiated safely in primary care. You should have an awareness of your local anti-coagulation pathways.

Better symptom management ('B')

Initiate rate control e.g. with a beta-blocker (aim for a target resting heart rate that renders the patient asymptomatic). If the patient remains symptomatic despite optimal rate control refer to secondary care for consideration of a rhythm control strategy.

Optimise management of co-morbidities and reinforce lifestyle advice i.e. **Cardiovascular and other risk factor management ('C')** (e.g. manage HTN, diabetes, cardiovascular disease, weight loss, sleep apnoea, etc).

Undertake a regular/annual review

Review quality of OAC (For VKA, assess TTR and aim for TTR > 65%. For NOACs, assess renal function). Assess adherence, symptom control, general health and well-being. Ensure NOACs are prescribed in line with licensed indications and as per manufacturers recommendations regarding age, weight, renal function and drug interactions. Ensure patient and/or carer involvement in decision making regarding treatment options.

Specialist cardiology input/secondary care if:

- ▶ Haemodynamic instability, breathlessness at rest, syncope, dizziness, chest pain, stroke, TIA, resting heart rate > 150bpm
- ▶ Recent onset AF (<48hours) for consideration of electrical cardioversion
- ▶ Still symptomatic, despite optimal rate control.



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Secondary care treatment options

In many cases, clinicians from across primary care will be managing patients with AF, however in some scenarios it may be necessary to seek advice and guidance from secondary care clinicians. Cardiologists, clinical nurse specialist and pharmacist from within secondary and tertiary care settings can provide immediate advice which can serve to both educate and support the primary care clinicians but also prevent admissions or avoidable trips to the hospital for the patients.

AF can be treated in a number of ways, but the different types of treatment are not suitable for everyone. Your healthcare professional will tell you which treatment is best for you. [Read more >>>](#)

The following things will influence which type of treatment you have:



Which type of AF you have

How long you have had AF for

How your symptoms affect your quality of life

Which treatments you have already tried any other heart conditions you may have, and your age.

Main aims in treating your AF are

To reduce your risk of developing a **blood clot**

To control your heart rate and rhythm, which should help to control any symptoms



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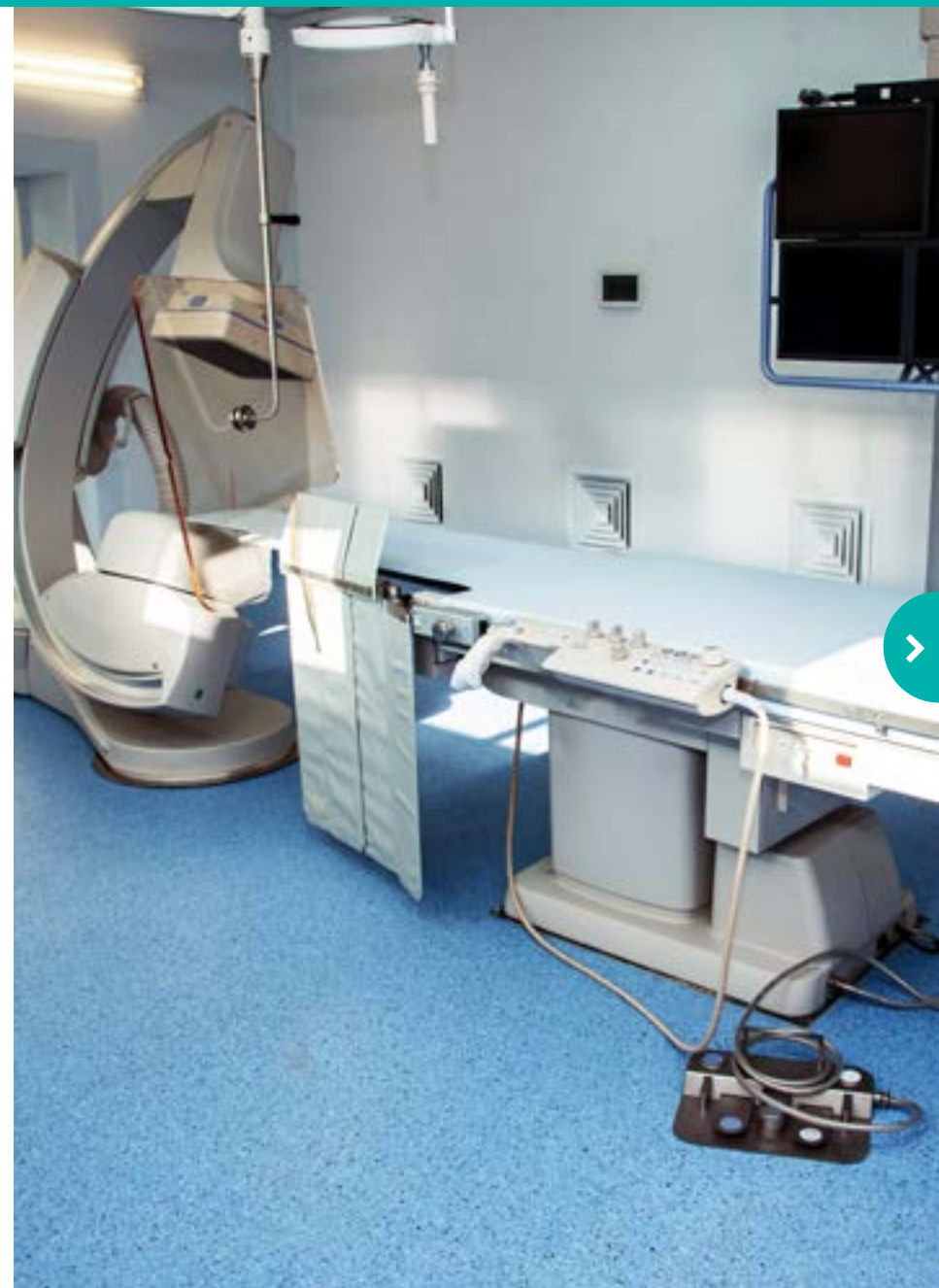
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Controlling your heart rhythm and heart rate

Rhythm control means giving you treatment – such as [cardioversion](#), [pulmonary vein isolation](#), or [ablate and pace](#) – to try to get your heart back to a normal sinus rhythm. The type of rhythm control treatment you have depends on the type of AF you have and how long you have had it.

Rate control means giving you treatment to control the rate of your heartbeat, so that your heart beats more slowly, even if the heartbeat remains irregular. [Read more about this here.](#) [Read more >>>](#)





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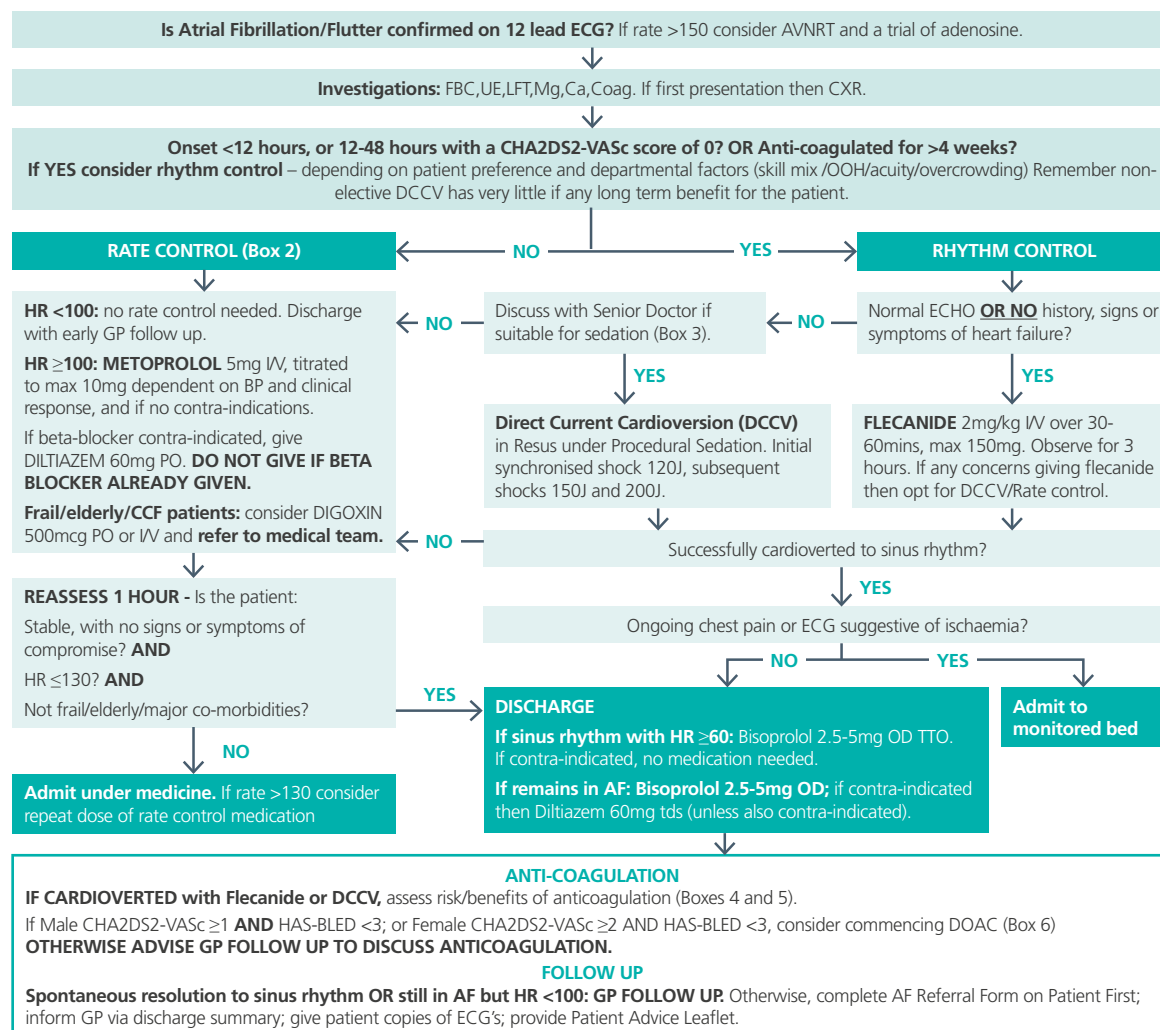
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Treatment options (continued)

Worcestershire Royal Hospital emergency department management of uncomplicated AF/ flutter in adult patients.

This is intended to be used for STABLE patients in whom **AF IS THE PRIMARY CLINICAL CONCERN**, and the arrhythmia is unlikely to be due to a secondary cause (**Box 1**). These patients are to be treated in a designated area of the department, such as majors/resus. If unstable then treat as per ALS principles.





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Treatment options (continued)

Box 1 Secondary causes of AF to consider: Acute infections; dehydration; electrolyte disturbance; thyrotoxicosis; drugs (sympathomimetics); pulmonary embolus, HCOM; non-compliance with medication.

Box 2 Anti-arrhythmic cautions and contra-indications:

Beta-blockers: asthma/COPD, uncontrolled heart failure, hypotension, severe peripheral vascular disease.

Calcium channel blockers: Beta-blocker, heart failure, AF with WPW, pregnancy and breastfeeding

Digoxin: WPW

Flecainide: CCF, structural heart disease.

IF HISTORY OF WOLFF-PARKINSON-WHITE (WPW) DO NOT USE ADENOSINE, VERAPAMIL, DIGOXIN

Box 3 Suitable for sedation and Non-Elective DCCV? Consider Departmental Factors: OOH, clinician skill mix, overcrowded department etc, and Patient Factors: ASA grade, Last ate/drank etc. Use Procedural Sedation Proforma on Patient First.

Box 4: CHA2DS2-VASc (Stroke Risk)

C = history of CCF	1
H = history of Hypertension	1
A = Age >75 years	2
D = Diabetes mellitus	1
S = history of Stroke or TIA	2
V = Vascular disease	1
A = Age 65-74 years	1
S = Sex (female)	1
TOTAL:	

CHA2DS2-VASc Score vs Stroke risk each year

0 = 1.9%	1 = 2.8%
2 = 4.0%	3 = 5.9%
4 = 8.5%	5 = 12.5%
6 = 18.2%	

Box 5: HAS-BLED (Bleeding Risk)

H = history of Hypertension	1
A = Abnormal renal function	1
A = Abnormal liver function	1
S = Stroke	1
B = predisposition to Bleeding	1
L = Labile INR	1
E = Elderly (>65 years)	1
D = Drugs (aspirin/clopidogrel/NSAIDS)	1
Alcohol >8units/week	
TOTAL:	

HAS-BLED Score vs Bleeds per 100 patient years

≤ 1 = Low Risk (1.1%)
2 = Intermediate Risk (1.9%)
≥ 3 = High Risk (4.9%)

Box 6: Contraindications to Rivaroxaban (DOAC): ALL MUST BE TICKED 'NO'

	Yes	No
Active bleeding from any site		
Untreated hereditary bleeding disorders		
Risks outweigh benefits i.e falls risk		
Already on anti-coagulation or DOAC		
≤ 6/52 of major trauma/ eye / CNS surgery		
Known vascular aneurysm		
Hypersensitivity / reaction to DOAC		
Unable to take tablets		
Anti-phospholipid syndrome		
Thrombocytopenia (Platelet count <75x109)		
Recent spinal or epidural surgery or LP		
Concurrent acute CVE or intra cranial bleed last 6 weeks		
Upper GI bleed within weeks or known varices / peptic ulcer		
Severe hypertension >180/110mmHg or uncontrolled hypertension		
Acquired bleeding tendencies or liver failure (INR >1.3)		
Pregnancy, breastfeeding, post-partum (6/52)		
Renal disease CrCl<15mL/min or Cr>400 umol/L		
Drug interactions (see below)		

Rivaroxaban® Drug interactions: Ketoconazole, itraconazole, voriconazole, posaconazole; HIV protease inhibitors (atazanavir, darunavir, fosamprenavir, indinavir, lopinavir, nelfinavir, ritonavir and saquinavir); Cobocistat; Dronadarone; Intravenous NSAIDs; CYP3A4 inducers (including rifampicin, phenytoin, carbamazepine, phenobarbital or St Johns Wort).

IF NO DOAC CONTRAINDICATIONS: Rivaroxaban® dosing as below; use TTO Pack, with GP to provide ongoing prescription.

- Normal renal function: 20mg once daily with food; if GFR <15mls/min then contra-indicated.

IF DOAC CONTRAINDICATED, CrCl <15, OR ANTI-COAGULATION OTHERWISE NOT APPROPRIATE, discharge with aspirin 75mg OD and clopidogrel 75mg OD. If >65 years then add lansoprazole 30mg for GI cover. Ask GP to consider warfarin and ensure cardiology referral completed



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Cardioversion

Electrical cardioversion - this is also called direct current cardioversion, mechanical cardioversion or cardioversion (DCCV) with a defibrillator. If you have been diagnosed with persistent atrial fibrillation and your doctor thinks you are suitable for rhythm control treatment, you may be offered electrical cardioversion as the first form of treatment. This involves using a defibrillator to give you a controlled electric shock to get your heart rhythm back to normal.

If you have had persistent atrial fibrillation for a very long time, electrical cardioversion may not be suitable for you. This is because, the longer you have had AF, the less likely it is that the treatment will be successful. If your AF is caused by an overactive thyroid or by disease of your heart valves, these conditions may need to be corrected before you can have the cardioversion.

You will be asked to take anti-coagulants for some time before you have the treatment. This is to reduce the risk of a blood clot forming and then breaking off during the cardioversion.

If the anti-coagulant you are taking is warfarin, you will need to have regular blood tests while you are taking it, to make sure that your blood is thin enough. You may also be given a medicine to slow your heart rate down. You will be given a light general anaesthetic, which will make you sleep through the whole procedure. [Read more >>>](#)





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Cardioversion (continued)

The doctor or specialist nurse will then use a defibrillator to apply a controlled electrical current across your chest. This aims to shock your heart back into a normal rhythm. The treatment only takes a few minutes. The procedure does not usually cause any serious side effects, although you may experience some soreness on your chest where the shock was applied.

The discomfort will not last more than a couple of days. You might be given a lotion to apply to the sore areas, and pain relief such as paracetamol usually helps too. You will probably need to continue taking anti-coagulants for at least four weeks after the cardioversion, to prevent blood clots from forming. You will have a follow-up appointment after the treatment, and your healthcare professional will then decide if you can stop taking the anti-coagulants.

Cardioversion with medicines

This is also called chemical cardioversion. Medicines which aim to get your heart rhythm back to normal are called anti-arrhythmic medicines. Although these medicines are suitable and effective for many people, some people find it takes a while to get used to them.





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Pulmonary vein isolation

Pulmonary vein isolation (PVI) AF is often triggered by electrical impulses from cells within the pulmonary veins – the veins that take blood from the lungs to the left atrium of the heart. Pulmonary vein isolation aims to stop these triggers from entering the heart and causing the AF. Most people who are offered pulmonary vein isolation treatment have tried several types of medicines first. You are more likely to be offered this treatment if you are getting symptoms with your AF even after being treated with medicines.

This procedure is similar to that of an [ablation](#).





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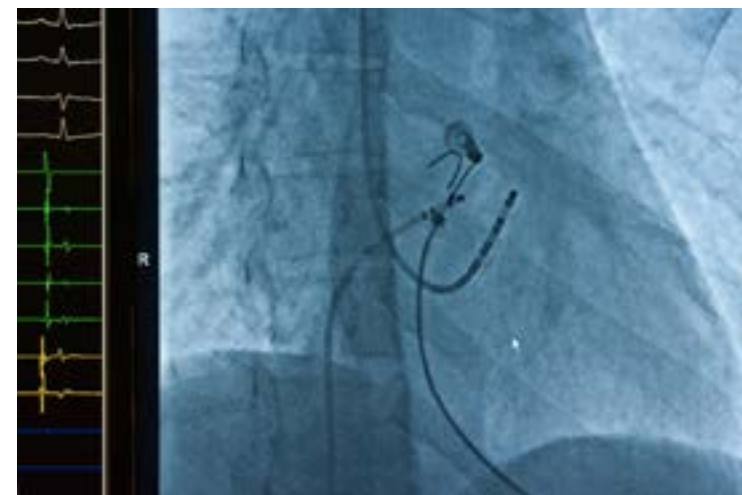
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Ablation

Ablate and pace if your medicines are not controlling your symptoms well but your doctor does not think you are suitable for a pulmonary vein isolation procedure, you may be offered a treatment called ablate and pace or an ablation. You are more likely to be offered this type of treatment if you are in your late 70s or in your 80s, as it provides the most benefits for people in this age group

Ablate and pace involves 'ablation' (destroying) the **AV node** and implanting an artificial pacemaker. You will need to go into hospital for the treatment and will probably have to stay in hospital for one night after the procedure. You will be given a local anaesthetic in your groin. Very thin wires called electrode catheters are then passed into your body through a vein at the top of your leg.

They are then gently moved into position in your heart. The ablation technique involves using radiofrequency waves to destroy the **AV node**. An artificial pacemaker is then implanted immediately afterwards. Or, sometimes the pacemaker is implanted first, and the **AV node** ablation is performed a few days or weeks later.





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Surgical MAZE Procedure

Surgical maze procedure If you have AF and have not responded to any other treatment, you may be offered a surgical maze procedure. In this, the surgeon 'cauterises' (burns) the parts of the left atrium that are responsible for the AF. This procedure is done either with open-heart surgery or using 'keyhole surgery' (surgery carried out through a much smaller cut than with traditional surgery). The surgical maze procedure may be suitable for people who are about to have open-heart surgery anyway – for example, to replace or repair a faulty heart valve. More recently, the maze procedure has been carried out using a catheter approach (similar to the approach described for [pulmonary vein isolation](#)), rather than traditional surgery. However, this procedure can take much longer than pulmonary vein isolation, and often needs to be repeated.





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Data

- ▶ Data sources
 - ▶ SSNAP
 - ▶ QOF
 - ▶ RightCare intelligence packs
 - ▶ PHE CVD packs
- ▶ What level can I access?
 - ▶ National level
 - ▶ Regional level
 - ▶ CCG level
 - ▶ Primary Care Network level.





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Additional health intelligence resources

- ▶ **Atrial fibrillation data intelligence pack:** practical tips to GP practices and CCGs on how they can get better at preventing and treating strokes. Includes intelligence packs for each CCG
- ▶ **CVD primary care intelligence packs** look at prevention, diagnosis, care and outcomes and allow for comparison between CCGs and between GP practices
- ▶ **Cardiovascular disease profiles** for each CCG, looking at coronary heart disease, diabetes, kidney disease and stroke.

RightCare 'where to look packs'

The packs headline opportunities, improvement opportunity tables and pathways on a page showing how CCGs in each STP differ from their peers.

For further information please contact your regional analytical team:

- ▶ South: england.rcsouthanalyst@nhs.net
- ▶ Midlands and East: england.manderightcareteam@nhs.net
- ▶ London: england.rclondonhelpdesk@nhs.net
- ▶ North: england.rightcarenorth1@nhs.net

Useful RightCare pack resources:

- ▶ **Interpreting the STP charts**
- ▶ **Reported prevalence of patients with atrial fibrillation**
- ▶ **Reported prevalence of patients with stroke or TIA**
- ▶ **Patients the CHA2DS2-VASc score**
- ▶ **Patients with a record of a CHA2DS2-VASc score of 2 or more**
- ▶ **Patients in known AF before stroke admitted to hospital who had been prescribed anti-coagulation prior to stroke**



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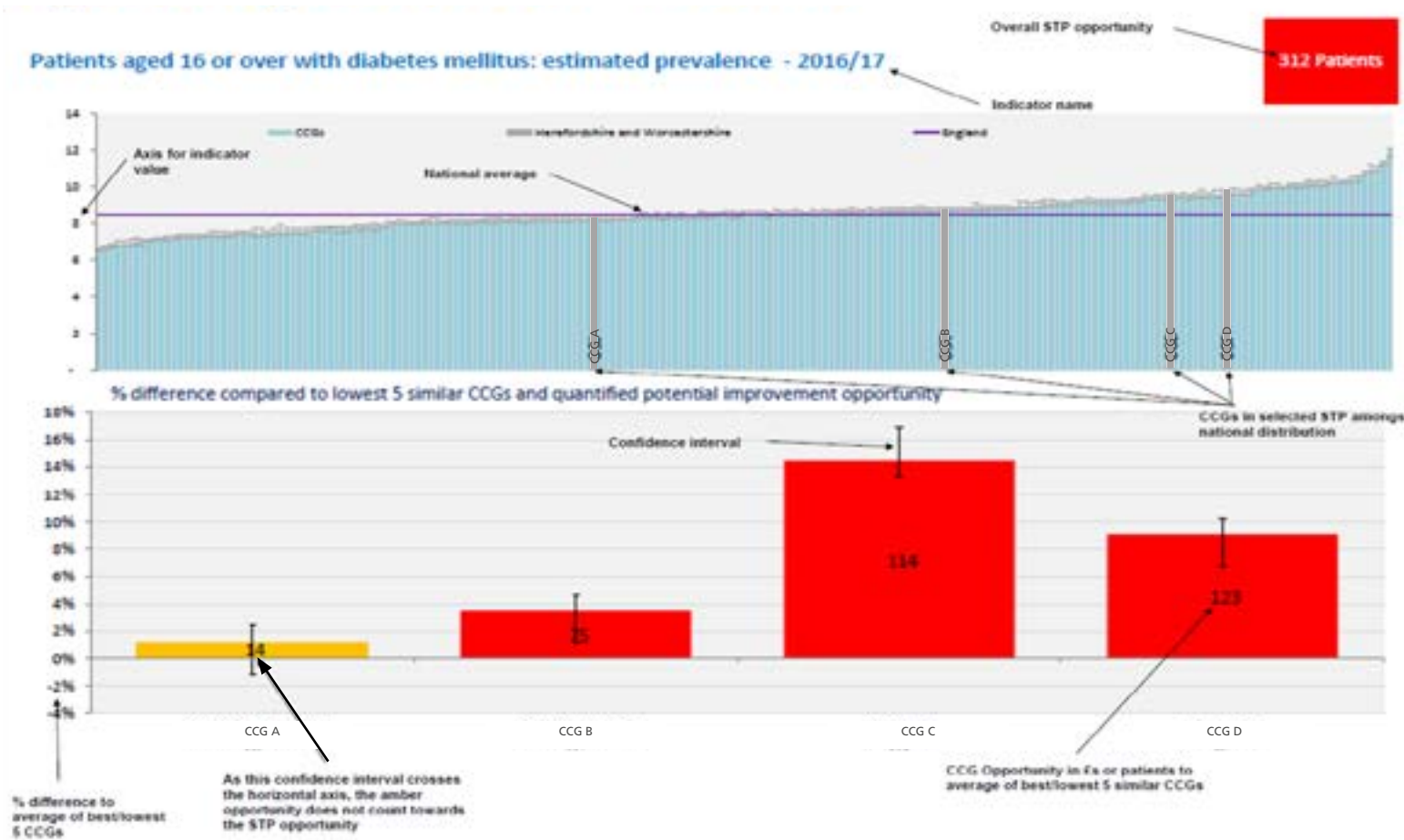


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Interpreting the STP charts



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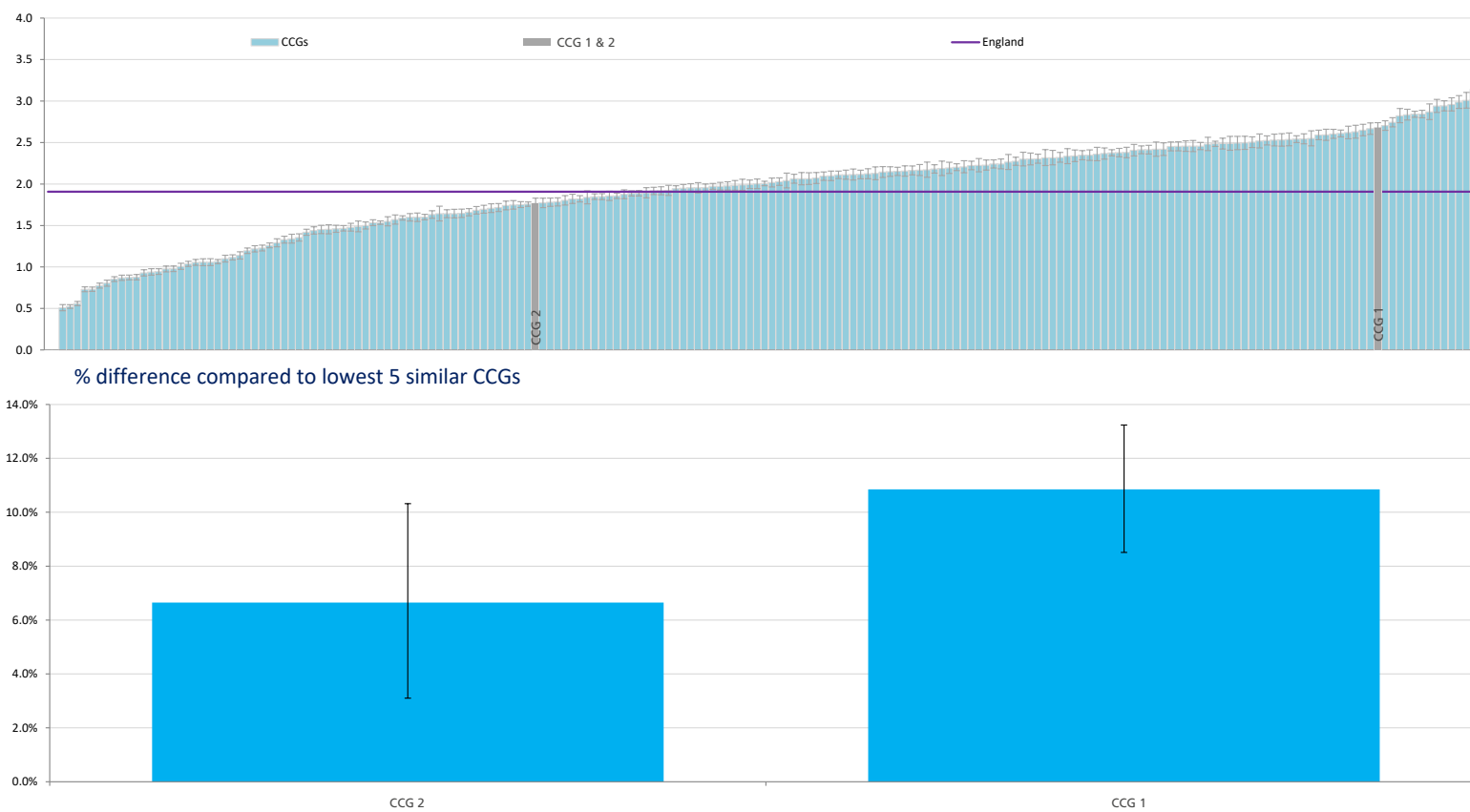


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Reported prevalence of patients with atrial fibrillation - 2017/18



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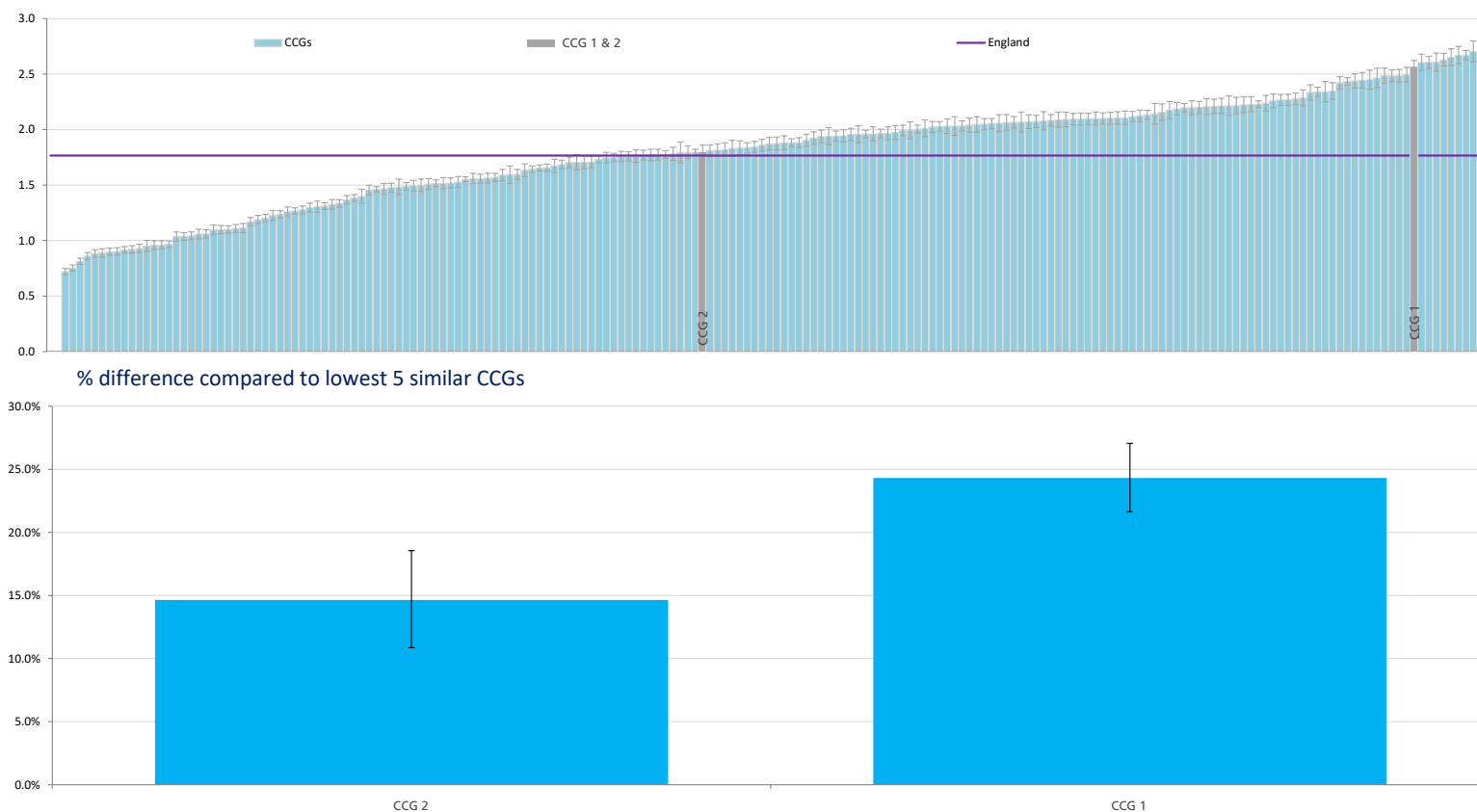


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Reported prevalence of patients with stroke or TIA - 2017/18



Num. Source: Quality and Outcomes Framework (QOF), NHS Digital
Den. Source: Quality and Outcomes Framework (QOF), NHS Digital

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The percentage of patients with atrial fibrillation in whom stroke risk has been assessed using the CHA2DS2-VASc score risk stratification scoring system in the preceding 12 months (excluding those patients with a previous CHADS2 or CHA2DS2-VASc score of 2 or more) - 2017/18



STP Opportunity calculated by summing the CCGs with statistically significant opportunities
 Num. Source: Quality and Outcomes Framework (QOF), NHS Digital
 Den. Source: Quality and Outcomes Framework (QOF), NHS Digital

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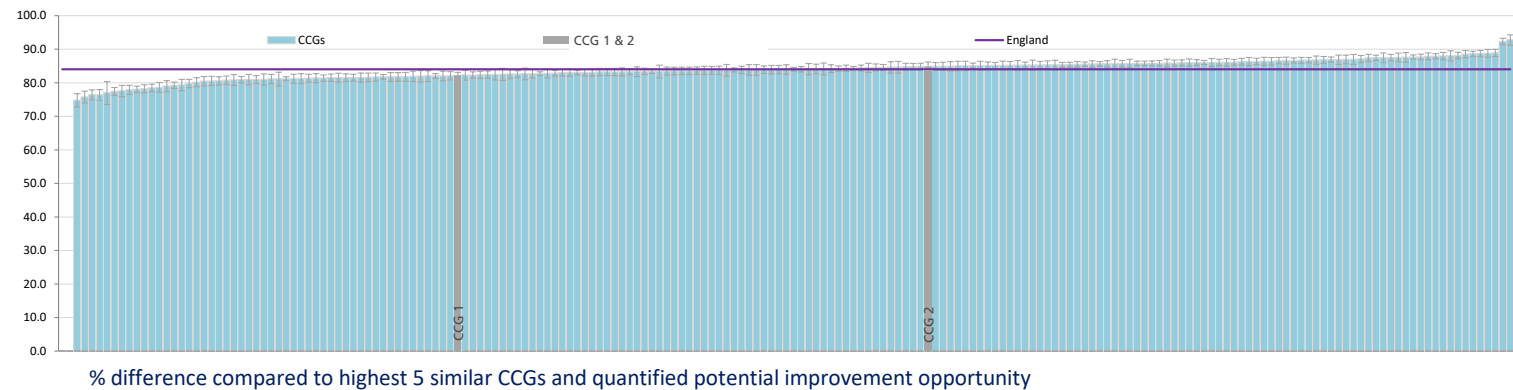
> Data

> **Additional resources**

> What does the evidence say?

In those patients with atrial fibrillation with a record of a CHA2DS2-VASc score of 2 or more, the percentage of patients who are currently treated with anti-coagulation drug therapy - 2017/18

294 Patients



% difference compared to highest 5 similar CCGs and quantified potential improvement opportunity



¹ Opportunity calculated by summing the CCGs with statistically significant opportunities

n. Source: Quality and Outcomes Framework (QOF), NHS Digital

1. Source: Quality and Outcomes Framework (QOF), NHS Digital

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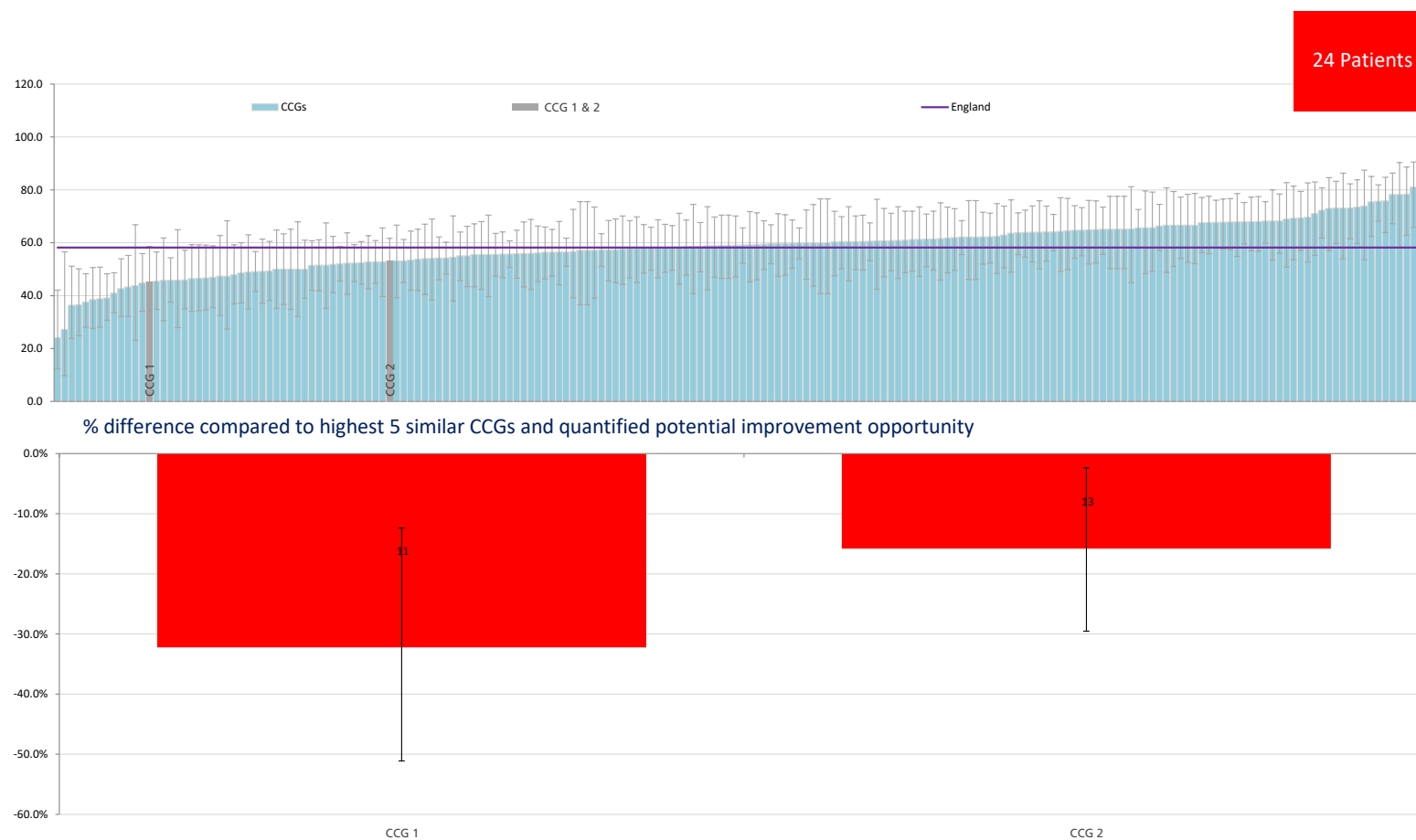


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> What does the evidence say?

Percentage of patients in known AF before stroke admitted to hospital who had been prescribed anti-coagulation prior to stroke - 2017/18



^o Opportunity calculated by summing the CCGs with statistically significant opportunities
^m Source: The Sentinel Stroke National Audit Programme (SSNAP) (King's College London)
ⁿ Source: The Sentinel Stroke National Audit Programme (SSNAP) (King's College London)



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What does the evidence say? - Key NICE guidelines

Anti-coagulation

- ▶ **Guideline:** [Atrial fibrillation management](#) (August 2014) See section 1.5 interventions to prevent stroke
- ▶ **NICE** [Atrial Fibrillation quality standard](#) which highlights high impact areas for improving care or people with AF (with a focus on anti-coagulation)
- ▶ **Diagnostics guidance:** [Atrial fibrillation and heart valve disease: self-monitoring coagulation status using point-of-care coagulometers \(the CoaguChek XS system and the INRatio2 PT/INR monitor\)](#)
- ▶ **Key therapeutic topic:** [Anti-coagulants, including non-vitamin K antagonist oral anti-coagulants \(NOACs\)](#)
- ▶ **NICE AF pathway** sub-section on [preventing stroke](#) pulls together everything NICE has published on anti-coagulation

Atrial fibrillation detection

- ▶ **Guideline:** [Atrial fibrillation management](#) (August 2014) See recommendation 1.1.1 on detection and section 1.1 [diagnosis and assessment](#)
- ▶ **Medtech innovation briefing:** [AliveCor Heart Monitor and AliveECG app \(Kardia Mobile\) for detecting atrial fibrillation](#)
- ▶ **Medical technologies guidance:** [WatchBP Home A for opportunistically detecting atrial fibrillation during diagnosis and monitoring of hypertension](#)
- ▶ **NICE AF pathway** sub-section on [assessment](#) pulls together everything NICE has published on the topic. [Read more >>>](#)



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What does the evidence say? - Key NICE guidelines (continued)

Atrial fibrillation management

- ▶ **Guideline:** [Atrial fibrillation management](#) (August 2014). See section 1.1 [diagnosis and assessment](#)
- ▶ **Diagnostics guidance:** [Atrial fibrillation and heart valve disease: self-monitoring coagulation status using point-of-care coagulometers \(the CoaguChek XS system and the INRatio2 PT/INR monitor\)](#)
- ▶ **Medtech innovation briefing:** [AliveCor Heart Monitor and AliveECG app \(Kardia Mobile\) for detecting atrial fibrillation](#)
- ▶ **Medical technologies guidance:** [WatchBP Home A for opportunistically detecting atrial fibrillation during diagnosis and monitoring of hypertension](#)
- ▶ **Key therapeutic topic:** [Anti-coagulants, including non-vitamin K antagonist oral anti-coagulants \(NOACs\)](#)



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Glossary of NICE terms

NICE guidelines

- ▶ NICE guidelines make evidence-based recommendations on a wide range of topics, from preventing and managing specific conditions to planning broader services and interventions to improve the health of communities.
- ▶ They aim to promote integrated care where appropriate.
- ▶ For more information: www.nice.org.uk/About/What-we-do/Our-Programmes/NICE-guidance/NICE-guidelines

NICE quality standards

- ▶ Quality standards set out the priority areas for quality improvement in health and social care. They cover areas where there is variation in care. Each standard gives you:
 - ▶ A set of statements to help you improve quality
 - ▶ Information on how to measure progress.
 - ▶ For more information: www.nice.org.uk/standards-and-indicators

NICE pathways

- ▶ Everything NICE says on a topic in an interactive flowchart. For more information or to view the pathways: pathways.nice.org.uk. [Read more >>>](#)



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Shared learning

- ▶ A collection of over 500 case studies showing how our guidance and standards have been used to improve the quality of health and social care services around the UK
- ▶ For more information or to browse the collection: www.nice.org.uk/about/what-we-do/into-practice/local-practice-case-studies
- ▶ NICE Evidence is an online search engine that identifies relevant clinical, public health and social care guidance. As part of the service, NICE also provides access to information content purchased on behalf of the NHS. This includes access to a range of bibliographic databases such as MEDLINE and professional journals. www.evidence.nhs.uk
- ▶ NICE Endorsed resources are complementary information not produced by NICE. For more information or to view a list of the resources: www.nice.org.uk/about/what-we-do/into-practice/endorsement



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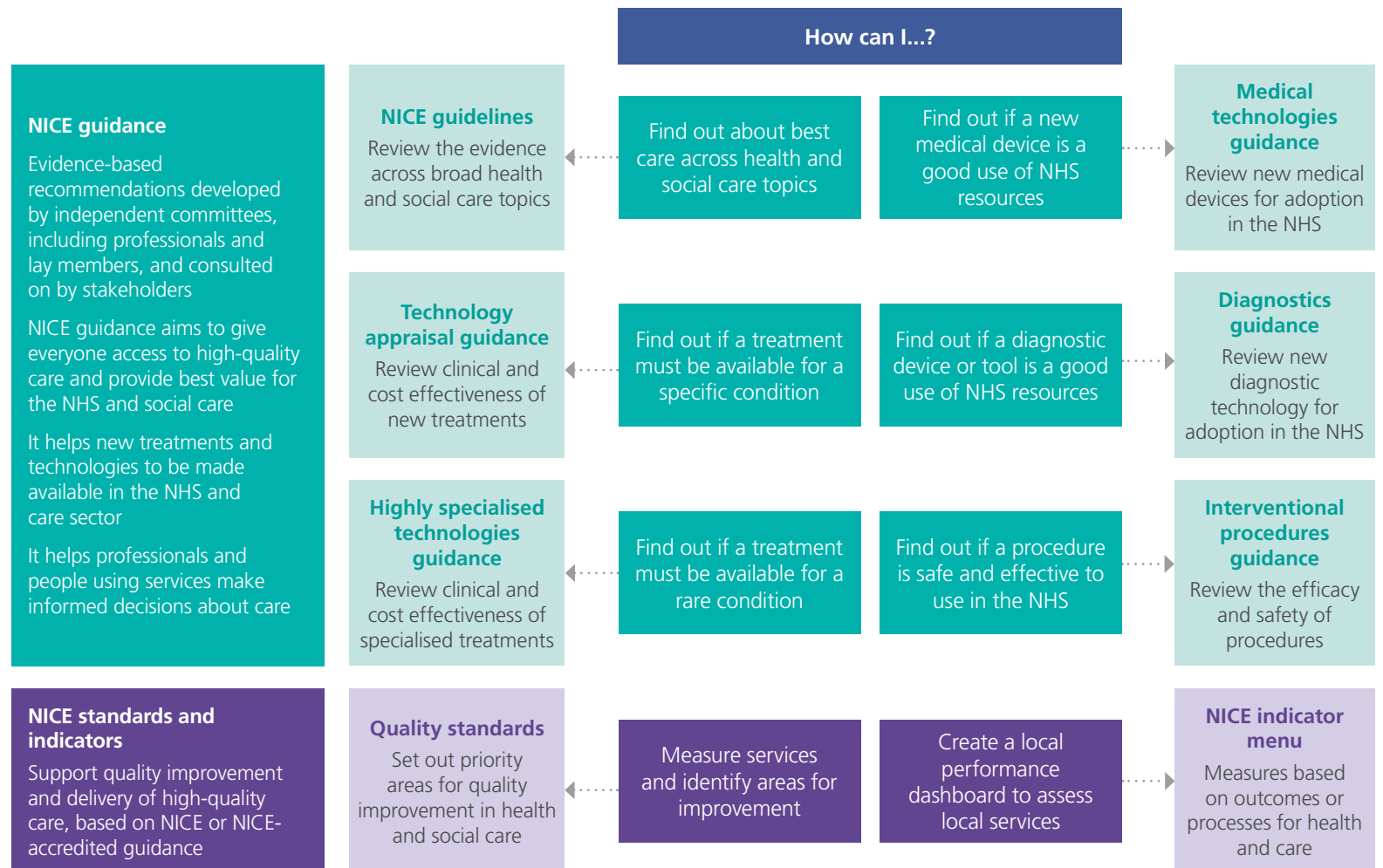
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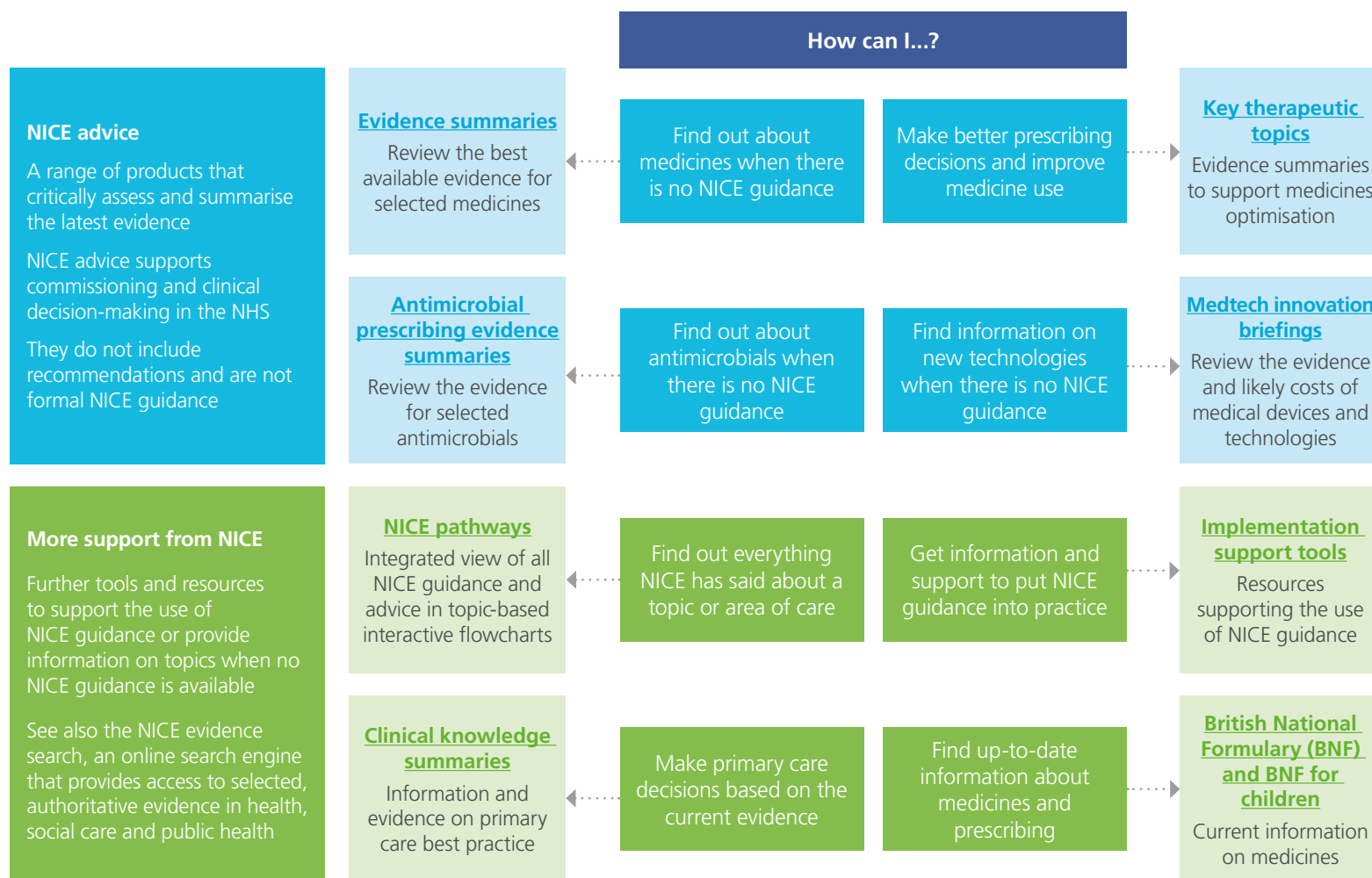
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Case study - Mrs Y



Patient information

75 year old female

History:

- ▶ Chronic kidney disease
- ▶ Fractured NOF
- ▶ Heart attack
- ▶ Cerebral Bleed (1979) HTN
- ▶ Atrial fibrillation persistent
- ▶ Type 2 diabetic
- ▶ HTN - controlled
- ▶ Ischaemic heart disease



During assessment

- ▶ Alert and orientated, GCS – 15
- ▶ Looked well
- ▶ Lived alone
- ▶ Mobile and independent
- ▶ Good family support
- ▶ Medications given in a dosette box by GP
- ▶ BP 138/87 HR 94



Referral

- ▶ Recent hospital admission – chest pain and SOB
- ▶ ECG – atrial fibrillation rate seen 90 BPM
- ▶ Troponin 12 – non significant
- ▶ Referred due to complex history of a previous intracranial bleed



Current medication

- ▶ Aspirin 75mg OD
- ▶ Bisoprolol Fumurate 5mg OD
- ▶ Simvastatin 40mg Nocte
- ▶ Felodipine 10mg OD
- ▶ Losartan 100mg OD
- ▶ Lansoprazole 30mg OM
- ▶ GTN 400mcg PRN

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Case study - Mrs Y

Stroke risk

CHA ₂ DS ₂ VASc	Score	Mrs Y Score
Congestive heart failure	1	0
Hypertension	1	1
Age ≥ 75	2	2
Diabetes	1	1
Previous TIA / stroke	2	2
Vascular Disease	1	1
Age 65-74	1	0
Sex category (female)	1	1
Score	Max 10	8

Annual stroke risk - 6.7% (1 in 15)

HAS-BLED	Score	Mrs Y Score
Hypertension	1	0
Abnormal renal / Renal function	1 or 2	0
Stroke	1	1
Bleeding	1	1
Labile INR	1	0
Elderly (age ≥ 65)	1	1
Drugs (∕ alcohol)	1 or 2	0
Score	Max 9	3

What would you do?

- ▶ Consider warfarin?
- ▶ Consider NOAC?
- ▶ Continue aspirin?
- ▶ Stop aspirin. Do nothing?

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Case study - Mrs Y

What we did!

Consider the risk factors and patient choice:

- ▶ High stroke risk CHA_2DS_2VASc – 8
- ▶ HAS-BLED – 3 (benefit outweighs risk)
- ▶ Risk / benefit of warfarin and NOACs discussed
- ▶ Patient not keen on warfarin monitoring
- ▶ Clinical research suggests that NOACs have a slightly lower major bleeding risk than warfarin
- ▶ No monitoring required for NOACs
- ▶ Can be added to dosette box
- ▶ Able to prescribe a NOAC to reduce risk of bleeding
- ▶ **Check!!** Creatinine Clearance 89ml/min (>29ml/min)
- ▶ RV in 3/12

Outcome

- ▶ Commenced on NOAC– to start the following day
- ▶ Aspirin discontinued
- ▶ GP to check UE in 6/12 time
- ▶ Patient information and alert card given to patient



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What is a stroke? Signs, symptoms, what to do?

FAST

Facial weakness Arm weakness Speech problems Time to call 999

Every second counts when you're having a stroke

A stroke can strike anyone, of any age, at any time.
Do the FAST test.

Don't wait and always call **999** if you see any one of these signs.

Learn it. Share it. You could save a life.

Together we can conquer stroke

Stroke
association



Useful links



▶ Watch: The FAST test



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Patient resources

- ▶ www.bhf.org.uk/information-support/publications/h
- ▶ <https://www.bhf.org.uk/information-support/publications/heart-conditions/atrial-fibrillation---your-quick-guide>
- ▶ www.bhf.org.uk/information-support/publications/heart-conditions/medicines-for-your-heart
- ▶ www.bhf.org.uk/information-support/heart-matters-magazine/medical/ask-the-experts/anticoagulants-and-atrial-fibrillation
- ▶ www.bhf.org.uk/information-support/heart-matters-magazine/medical/living-with-atrial-fibrillation
- ▶ www.stroke.org.uk/resources/atrial-fibrillation-af-and-stroke



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Glossary

Atrial Fibrillation (AF)	Irregular heart rhythm causing the heart to beat fast and erratically
AF Atrial flutter	A condition similar to AF, with a fast but regular heartbeat
Anti-coagulant	A type of blood-thinning medication
Apixaban (Eliquis)	An anti-coagulant medication used to reduce the risk of stroke in people with
Cardioversion	A procedure that returns the heart rate to normal
Catheter ablation	Removal of tissue via a catheter, using an electrical current
Congestive heart failure	When your heart doesn't pump blood around your body as well as it should
Dabigatran etexilate (Pradaxa)	An anti-coagulant medication used to reduce the risk of stroke in people with

Electrocardiogram (ECG)	Electric tracing of the heart to monitor the heart rhythm and rate in detail
Echo	Ultrasound scan of the heart
Edoxaban (Lixiana)	An anti-coagulant medication used to reduce the risk of stroke in people with
EMIS	GP electronic data management system
Heparin	An anti-coagulant medication administered by injection
International Normalised Ratio (INR)	This is a measure of how quickly your blood clots
Long term plan	Strategy released by NHS England and NHS Improvement in 2019 highlighting improvements needed within the NHS
Novel oral anti-coagulation (NOACs)	Medication taken to prevent a blood clot forming

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Paroxysmal atrial fibrillation (PAF)	Intermittent episodes of AF
Rivaroxiban (Xarelto)	An anti-coagulant medication used to reduce the risk of stroke in people with AF
Sustainability and Transformation Partnerships (STP)	Groups of local NHS organisations and councils
Stroke	Blood clot lodging in the brain causing a lack of blood supply

Vascular disease	A wide-ranging term that includes diseases of arteries; veins; and the rest of the body's vasculature system. It can happen when parts of the vasculature system become 'furred up' with fatty deposits, making them more likely to become blocked
Warfarin	An anti-coagulant medication commonly used to reduce the risk of stroke in people with AF



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Contributors

- ▶ Dr Jasper Trevelyan, Clinical Director, West Midlands Cardiac Clinical Network
- ▶ Dr Indira Natarajan Clinical Director, West Midlands Stroke Clinical Network
- ▶ Victoria Millward, Head of CVD and Respiratory Clinical Network
- ▶ Jodie Powell, Senior Quality Improvement Manager, CVD and Respiratory Clinical Network
- ▶ Elizabeth Choney, Quality Improvement Officer, CVD and Respiratory Clinical Network
- ▶ Victoria Meynell, Health Service Engagement Team, British Heart Foundation
- ▶ Dr Will Foster, Consultant Cardiologist, Worcestershire Royal Hospital
- ▶ Dr Saj Sarwar, GP Partner and CVD Lead, West Birmingham Alliance
- ▶ Sarah Adderley, Head of Stroke Services, Midlands Stroke Association
- ▶ Dr Dawn Adamson, Consultant Cardiologist University Hospital Coventry and Warwickshire NHS Trust
- ▶ Dr Nazish Khan, Principal Cardiac Pharmacist and Clinical Advisor, West Midlands Academic Health Science Network
- ▶ Dr Alex Meyer, GP and Clinical Advisor, West Midlands Academic Health Science Network
- ▶ Lucy Chatwin, Head of innovation, Implementation and Adoption, West Midlands Academic Health Science Network
- ▶ Deborah O'Callaghan, Associate Director, NICE Field Team for Midlands and East
- ▶ Jodie Williams, AF Clinical Nurse Specialist, University Hospitals North Midlands NHS Trust
- ▶ Dr Panchal Guarav, Clinical Fellow in Cardiology University Hospitals Coventry and Warwickshire NHS Trust
- ▶ Sudhakar Shinde, Right Care Programme Manager
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Introduction



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Risk stratification



Management



Treatment options



Data and evidence



Tools, resources and case studies



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- > How to use NICE products

- > Case studies

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Our partners

With thanks to all our partners who worked with us to help produce this guide.



NHS England and NHS Improvement



NICE National Institute for Health and Care Excellence



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