NHS
Bedfordshire, Luton and Milton Keynes
Integrated Care Board

Guidelines for oral anticoagulation of patients with non-valvular atrial fibrillation (AF) to prevent stroke in adults.

Introduction

Oral anticoagulation (OAC) therapy, including Direct Oral Anticoagulants (DOACs), is the mainstay for stroke prevention in non-valvular AF, reducing the risk of stroke and systemic embolism. However, the decision to initiate anticoagulation requires careful assessment of the patient's individual risks for bleeding and thromboembolic events. This guide outlines the key considerations when starting DOACs and monitoring in patients with non-valvular AF.

Content

Version	2
Developed and updated by	Medicines Optimisation Team BLMK ICB
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Review Date	March 2029

1. Assessment of stroke and bleeding risk for patients with non-valvular AF

Non-valvular atrial fibrillation (NVAF) refers to atrial fibrillation occurring in the absence of moderate to severe rheumatic mitral stenosis or a mechanical heart valve. Starting DOACs in non-valvular atrial fibrillation requires a thorough evaluation of both thromboembolic and bleeding risks. Using the tools CHA2DS2-VASc for stroke risk and ORBIT for bleeding risk helps guide therapy decisions [(1)].

Use the CHA2DS2-VASc stroke risk score to assess stroke risk in atrial fibrillation [(1)].
A higher score suggests greater risk of stroke and benefits from anticoagulation.

- Score 0: No anticoagulation needed
- Score 1: Consider anticoagulation in males, especially if the patient has other risk factors. Consider bleeding risk.
- Score ≥2: Anticoagulation recommended.

To calculate using the Ardens template press the CHADVASC button on AF template or the clinical tools button.
MDCalc can be used to calculate CHA2DS2-VASc stroke risk score via the following link:
[CHA_2DS_2-VASc Score for Atrial Fibrillation Stroke Risk]

Use the ORBIT bleeding risk score to assess bleed risk in atrial fibrillation [(1)].
NICE guidance 196: Atrial fibrillation: diagnosis and management recommend the use of ORBIT bleeding risk score to assess the bleeding risk when a patient commences, or is under review, regarding anticoagulation therapy in atrial fibrillation.

- Score 0-2: Low bleed risk
- Score 3: Medium bleed risk
- Score 4-7: High bleed risk

MDCalc can be used to calculate ORBIT bleeding risk score via the following link:
[ORBIT Bleeding Risk Score for Atrial Fibrillation]

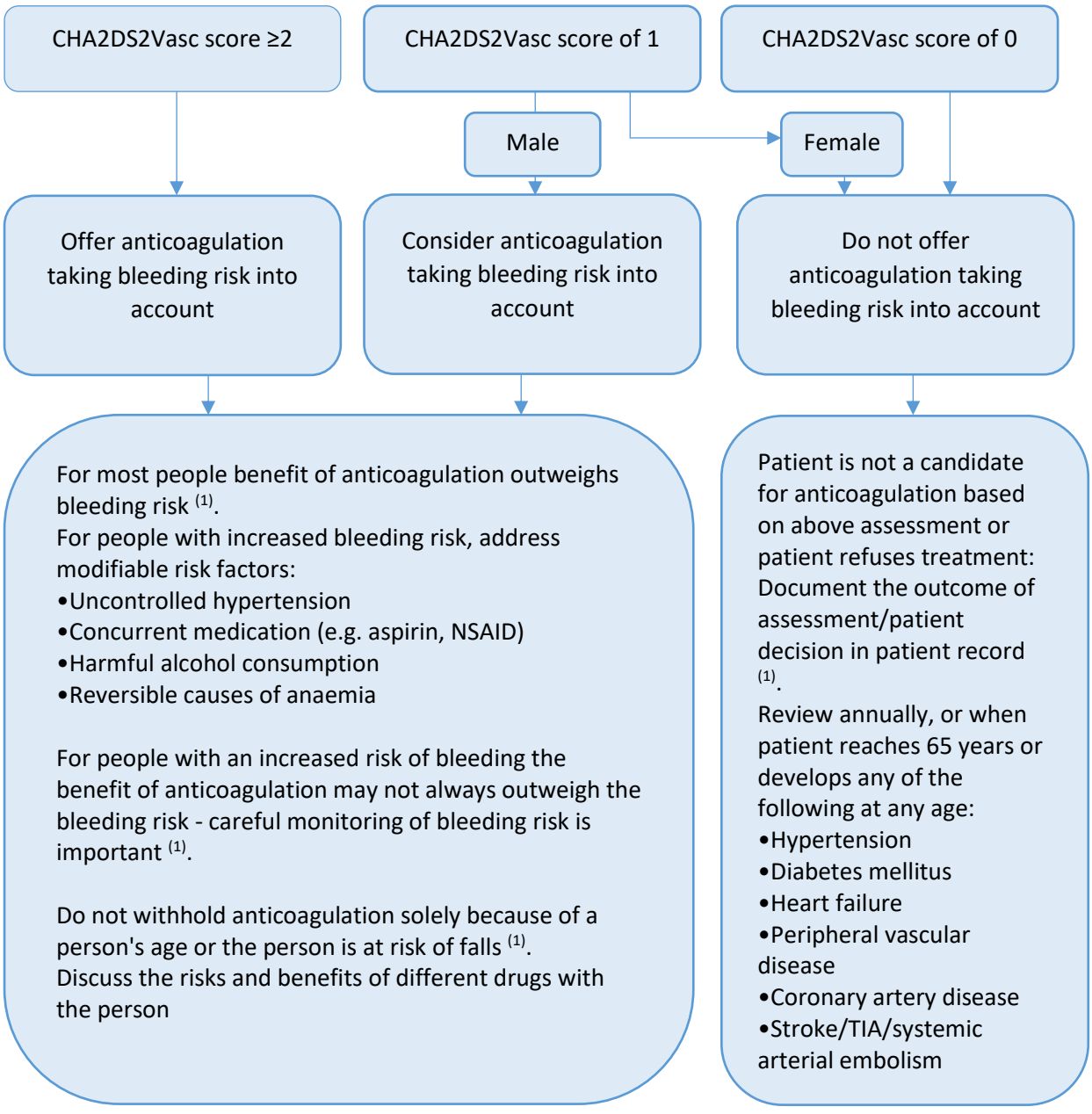
CHA2DS2-VASc stroke risk score		**ORBIT bleeding risk score**	
CHA2DS2-VASc Feature	Score	ORBIT Bleeding Risk Feature	Score
Congestive heart failure/LV dysfunction	1	Males with haemoglobin <130 g/L or haematocrit <40%. Females with haemoglobin <120 g/L or haematocrit <36%.	2
Hypertension	1		
Age = >75 years	2	People with a history of bleeding (gastrointestinal or intracranial bleeding, or haemorrhagic stroke)	2
Diabetes mellitus	1		
Stroke/TIA/systemic arterial embolism	2	Aged over 74 years	1
Vascular disease (previous MI, peripheral arterial disease, aortic plaque)	1	estimated glomerular filtration rate (eGFR) of less than 60 mL/min/1.73m2	1
Age 65 -74	1		
Sex (male 0, female 1)	1	Treatment with antiplatelets	1
Total score (maximum score 9)		Total score (maximum score7)	

Table 1: CHA2DS2-VASc stroke risk score and ORBIT bleeding risk score [(1)]

In line with the 2024 ESC AF guidelines, there is a move away from using bleeding risk scores such as ORBIT or HAS-BLED to determine whether to initiate or withhold oral anticoagulation, as their use may contribute to inappropriate under-anticoagulation. Accordingly, these scores have not been included in the hospital guideline for decision-making purposes. However, they have been added to

the primary care guideline to support safety considerations and to aid clinicians in weighing benefit versus risk. In this context, they should be used as a prompt to identify and address modifiable bleeding risk factors, rather than to guide decisions on starting or stopping anticoagulation.

2. Prescriber decision support for anticoagulating patients with non-valvular AF



As per NICE NG196, first choice anticoagulation is with (1):

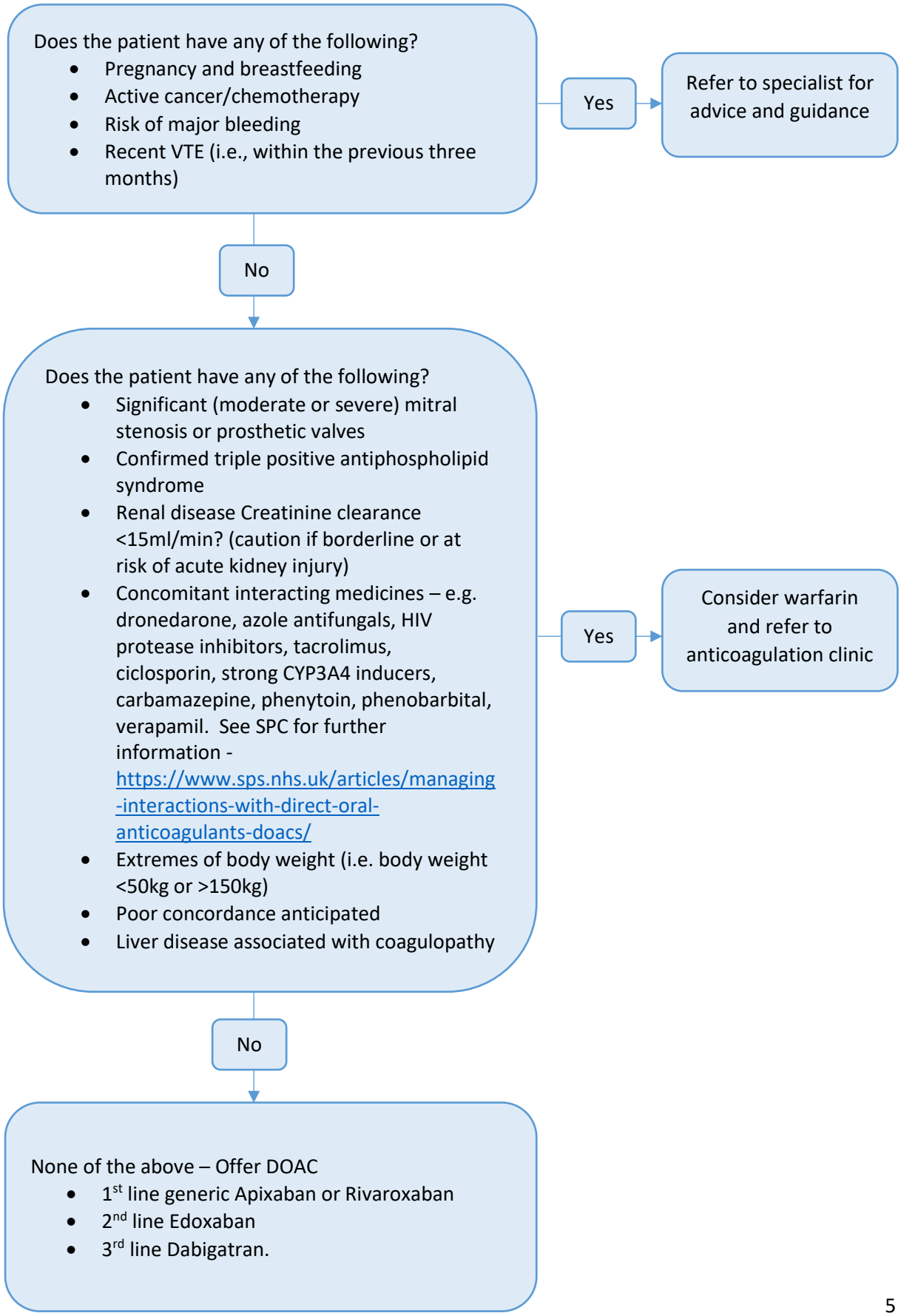
- Direct oral anticoagulant (DOAC)
- If DOAC contraindicated, not tolerated, not suitable offer a vitamin K antagonist.
- Consider referral if anticoagulation contraindicated or not tolerated
- See NHS England » Commissioning recommendations for national procurement for direct-acting oral anticoagulant(s) (DOACs)
- See BLMK formulary for drug choice - Formulary – BLMKICB Medicines Optimisation

3. Base line investigations and assessments for initiation of DOAC therapy

Monitoring	Information	Action Needed
Actual weight	Measured within the last 6 months – ideally at time of screening	< 50kg [2] or >150kg [8] refer to anticoagulant clinic Use warfarin if over 150kg. Between 120kg to 150kg initiate with apixaban or rivaroxaban.
Creatinine clearance (CrCL) It is essential to calculate the patient's creatinine clearance using the Cockcroft-Gault formula for DOAC dosing decisions [9]. DO NOT USE eGFR - it can overestimate renal function and increase the risk of bleeding events with DOACs [9].	Using actual body weight, unless the patient is obese (120kg or BMI ≥ 40 kg/m2/); then use adjusted body weight [10]. ***Take care with GP clinical systems which may default to adjusted body weight*** The MD+CALC online calculator can be used to calculate patients CrCl - MDCALC - Cockcroft-Gault Equation	Avoid DOAC in patients with CrCl<15mL/min due to increased risk of drug accumulation and bleeding [2,3,4,5]. Avoid Dabigatran in CrCl<30mL/min[5]. Refer to anticoagulation clinic. Edoxaban shows decreased efficacy at high creatinine clearance. Patients already established on Edoxaban and later found to have a CrCl >95ml/min, should have their anticoagulation plan reviewed and switched onto an alternative DOAC [3].
Cockcroft and Gault formula - Using actual body weight, unless the patient is obese (120kg or BMI ≥ 40 kg/m2/); then use adjusted body weight [10]. (Renal calculations done on SystmOne automatically and shows ideal, actual and adjusted.) $\text{CrCl (ml/minute)} = \frac{(140\text{-age}) \times \text{weight*}}{\text{Serum Creatinine (micromol/L)}} \times 1.23 \text{ (male) or } \times 1.04 \text{ (female)}$		
Blood results (within the last month) [7,6].	U&Es - serum creatinine FBC – Haemoglobin, platelets LFTs – AST/ALT, bilirubin	Further investigation needed if: -Hb low (<100g/l) with no identifiable cause, platelets <100 units. -LFTs - >2 X ULN -Bilirubin > 1.5 x ULN Abnormal clotting screen use with caution
Bleeding risk ORBIT score [1].	Modify risk factors to reduce bleeding [1]. • Uncontrolled hypertension • Concurrent medication (e.g. aspirin, NSAID) • Harmful alcohol consumption • Reversible causes of anaemia	Gastrointestinal/genitourinary bleed within 3 months - intracranial haemorrhage within 6 months - severe menorrhagia - known bleeding disorders - known cirrhosis Refer to anticoagulation clinic
Blood pressure (BP) mmHg	Address uncontrolled hypertension- systolic BP > 140mmHg	If systolic BP >180mmHg same day review
Concurrent medication [6].	Antiplatelets- review course length and indication NSAIDs- bleeding risk Drug interactions – Refer to SPC, BNF	Dual antiplatelet therapy- cardiologist/ stroke/ vascular team should specify duration for prescription post CVD event/intervention. Consider Gastroprotection. - Antiplatelet – co-prescribing should be avoided unless advised by specialist (cardiologist/ stroke/ vascular team). Consider Gastroprotection. - Contraindications and interactions (ask pharmacist for advice).

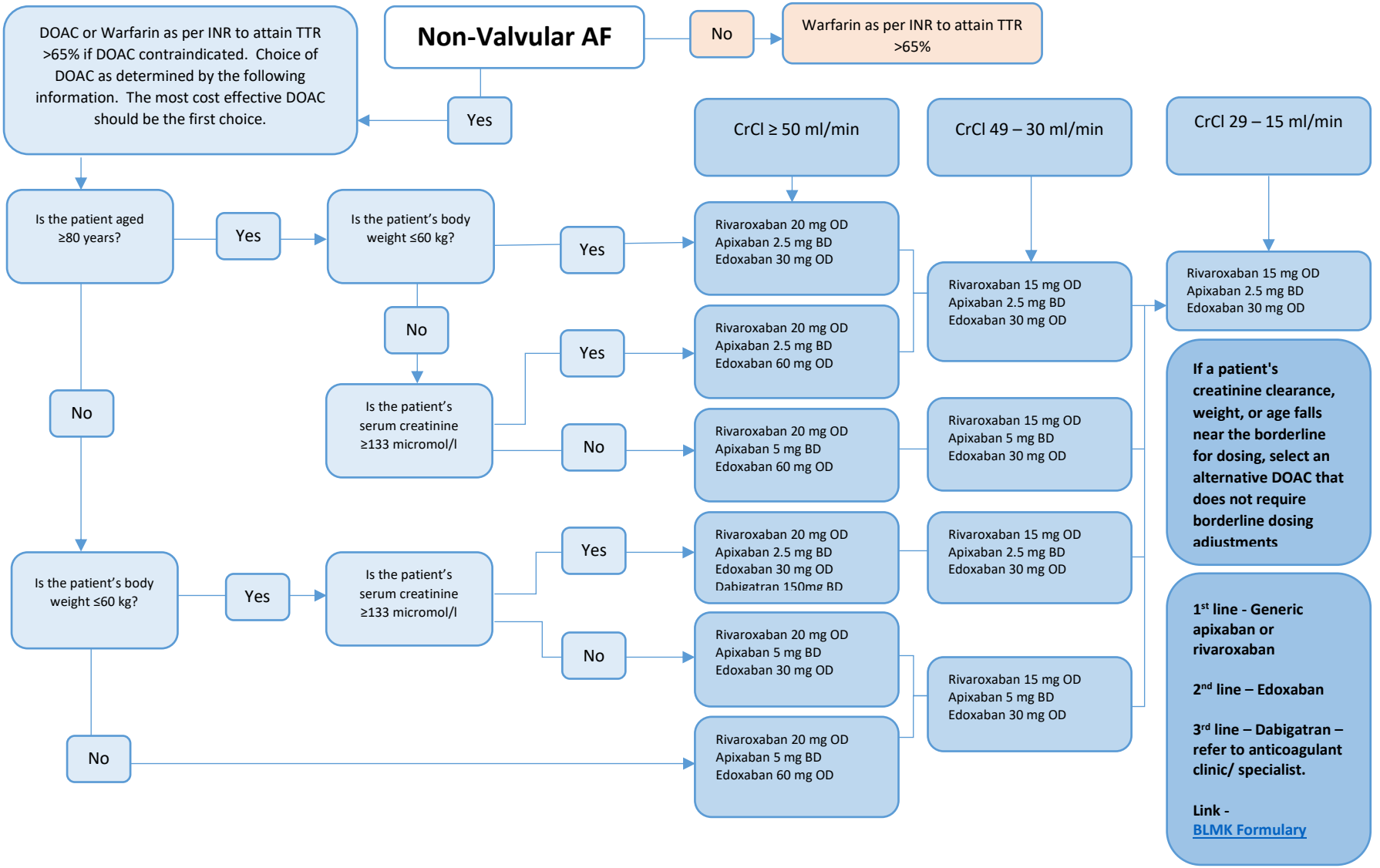
Table 2: Baseline investigations and assessments for initiation of DOAC therapy

4. Contraindications and cautions to DOAC [1,2,3,4,5,6,8]



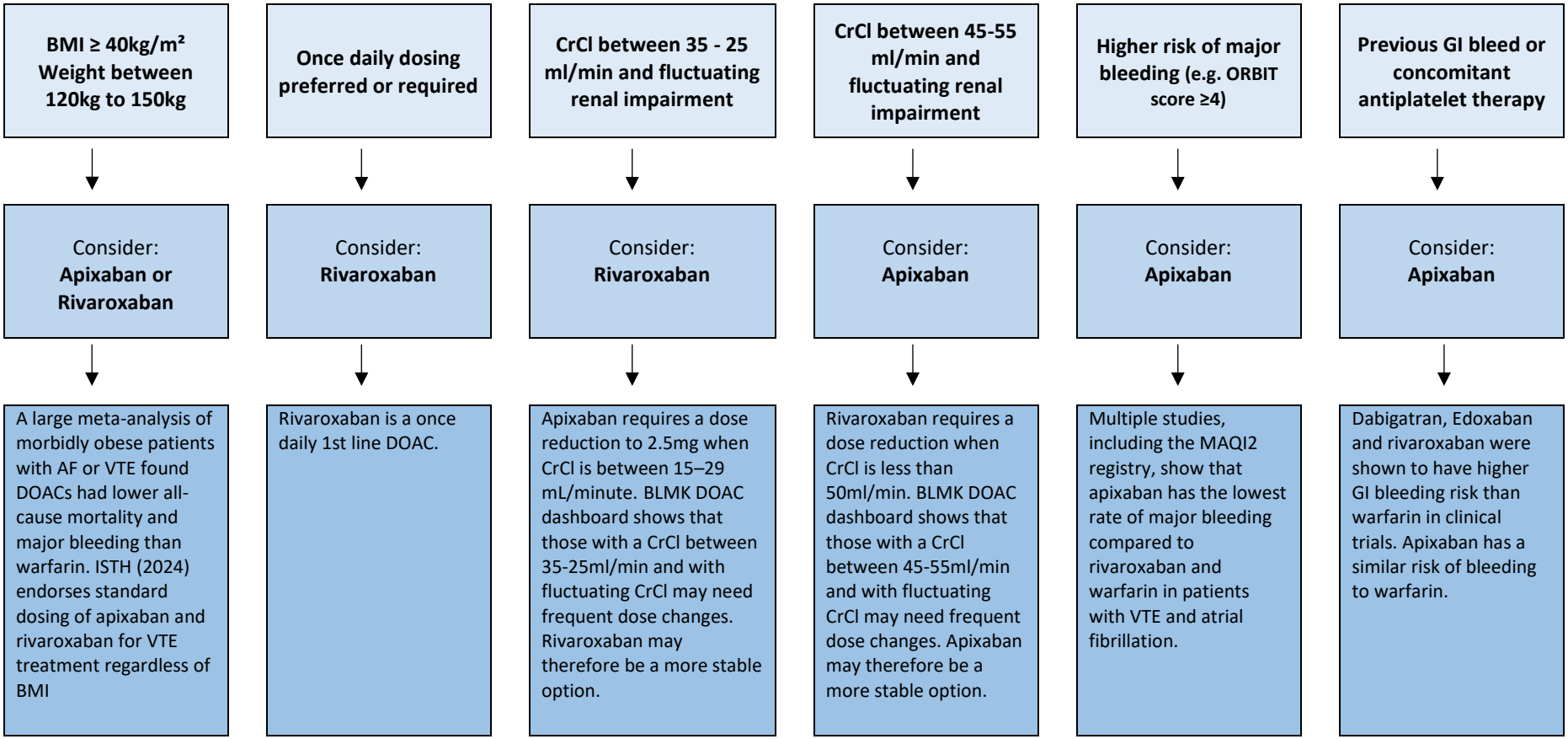
5. Decision making algorithms for oral anticoagulation [2,3,4,5]

- For guidance on crushing tablets and dispersing in water, juice or puree, please refer to Appendix 2
- Patients with weight < 50kg (2) or >150kg (8) refer to anticoagulant clinic. For weight 120kg to 150kg refer to 3. Base line investigations and assessments for initiation of DOAC therapy.
- For CrCl <15ml/min consider warfarin and refer to anticoagulation clinic
- Please look at individual SPC for further information.



6. DOAC Choice Guidance – Atrial Fibrillation

Both **generic apixaban** and **rivaroxaban** are the first line DOACs within BLMK. There has been no direct clinical trials comparison between DOACs, the decision has been designed to support clinicians to identify where generic apixaban or rivaroxaban may be the most appropriate first line choice based on meta-analysis and real-world data:



7. DOAC monitoring and follow up

Patients on anticoagulation require regular review. The current national recommendations, once DOAC treatment is started, are to review patients after 1 month, and at least 3 monthly thereafter. Follow up intervals may vary depending on age, renal function, comorbidities or bleeding risk.

Considerations when reviewing DOACs

- Review adherence to treatment.
- Review any signs of bleeding or anaemia.
- Check if any adverse effects of DOAC experienced. (See SPC for adverse effects)
- Assess / check for signs and symptoms of breathlessness, chest pain and leg swelling (potential signs of PE/DVT and stroke)
- Review use of other medications, including over-the-counter products, and check for potential interactions with the DOAC.
- Review and minimise modifiable risk factors for bleeding, such as uncontrolled hypertension, medication predisposing for bleeding (such as aspirin), and excessive alcohol intake
- If on antiplatelet and anticoagulation, confirm if the decision to continue both has been reviewed and documented by specialist e.g., cardiology, vascular, stroke team.
- Give appropriate information and advice on DOAC treatment.

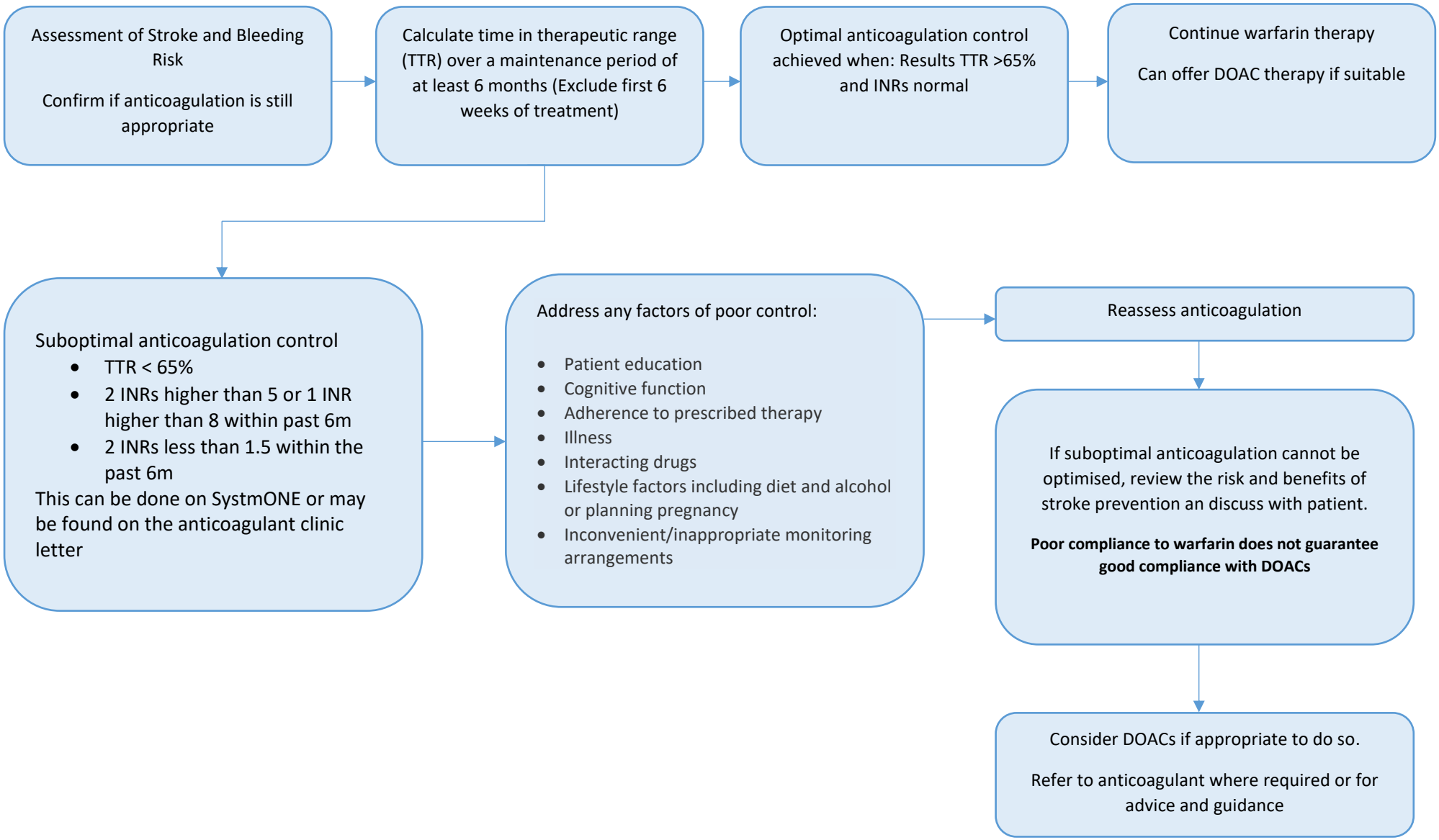
Patient group	U&E	CrCl	FBC	LFTs	BP
CrCl > 60ml/min	Annually	Annually	Annually	Annually	Annually
***CrCl 30-60ml/min**	6 monthly	6 monthly	6 monthly	6 monthly	Annually
	As per UKCPA, PCPA and PCCS Anticoagulation for non-valvular atrial fibrillation (NVAF) following NHSE DOAC commissioning recommendations				
***CrCl <30ml/min or an expected decline in renal function**	3 monthly	3 monthly	3 monthly	3 monthly	Annually
*NICE CKS and SPS recommend that if CrCl <60 mL/min, the frequency of monitoring (in months) can be guided by the CrCl divided by 10. For example, every 3 months if CrCl is 30 mL/minute.					
CrCl <15ml/min	All DOACs contraindicated, refer to specialist (to consider warfarin)				
Conditions or medications that can impact renal or liver function	When required	When required	When required	When required	When required

Table 3: DOAC monitoring and follow up

Weight should be assessed annually to ensure the accuracy of renal function measurements. If the patient has recently experienced significant weight loss or gain, more frequent monitoring may be necessary.

Assess if chosen DOAC remains the best choice and chosen dose is correct.

8. Warfarin monitoring and follow-up



Appendix 1: Switching between oral anticoagulants (Information can also be found under the DOAC monitoring Ardens template on SystmONE.)

From (down) To (across)	Warfarin	Apixaban	Edoxaban	Rivaroxaban	Dabigatran
Warfarin		Discontinue warfarin and start apixaban when INR is <2.0.	Discontinue warfarin and start edoxaban when INR is ≤ 2.5.	Discontinue warfarin and start rivaroxaban when INR is ≤ 3.0 (for AF only).	Discontinue warfarin and start dabigatran when INR is <2.0.
Apixaban	Start warfarin whilst still on apixaban. Apixaban should be continued for at least 2 days, then an INR should be taken prior to each dose of apixaban. Stop apixaban when is ≥ 2.		Discontinue apixaban and start edoxaban at the time of the next dose of apixaban would be due.	Discontinue apixaban and start rivaroxaban at the time of the next dose of apixaban would be due.	Discontinue apixaban and start dabigatran at the time of the next dose of apixaban would be due.
Edoxaban	Patients currently on edoxaban 60 mg dose, administer an edoxaban dose of 30 mg once daily together with warfarin. Patients currently on edoxaban 30 mg dose, administer an edoxaban dose of 15 mg once daily together with warfarin Measure INR daily prior to the edoxaban dose. Once an INR ≥ 2.0 is achieved, edoxaban should be discontinued.	Discontinue edoxaban and start apixaban at the time of the next scheduled dose of edoxaban.		Discontinue edoxaban and start rivaroxaban at the time of the next scheduled dose of edoxaban.	Discontinue edoxaban and start the dabigatran at the time of the next scheduled dose of edoxaban.
Rivaroxaban	Start warfarin whilst still on rivaroxaban. Measure INR daily prior to the rivaroxaban dose. Once an INR ≥ 2.0 is achieved, rivaroxaban should be discontinued.	Discontinue rivaroxaban and start apixaban at the time of the next scheduled dose of rivaroxaban.	Discontinue rivaroxaban and start edoxaban at the time of the next scheduled dose of rivaroxaban.		Discontinue rivaroxaban and start dabigatran at the time of the next scheduled dose of rivaroxaban.
Dabigatran	Dabigatran to warfarin depends on renal function. treatment to Vitamin K antagonists (VKA): • CrCL ≥ 50 mL/min, warfarin should be started 3 days before discontinuing dabigatran • CrCL ≥ 30-<50 mL/min, warfarin should be started 2 days before discontinuing dabigatran Note: Dabigatran can impact INR. INR measurements to be reviewed cautiously until dabigatran has been stopped for 2 days.	Discontinue dabigatran and start apixaban at the time of the next scheduled dose of dabigatran	Discontinue dabigatran and start edoxaban at the time of the next scheduled dose of dabigatran.	Discontinue dabigatran and start rivaroxaban at the time of the next scheduled dose of dabigatran	

Table 4: Table showing how to switch between oral anticoagulants

Appendix 2: Patient requires compliance aid, swallowing difficulties / enteral feeding tubes

Drug	Compliance Aid	Swallowing Difficulties	Enteral Feeding Tubes
Apixaban [2]	Yes	Apixaban should be swallowed with water, with or without food. For patients who are unable to swallow whole tablets, Apixaban tablets may be crushed and suspended in water, or 5% glucose in water (G5W), or apple juice or mixed with apple puree and immediately administered orally. Crushed Apixaban tablets are stable in water, G5W, apple juice, and apple puree for up to 4 hours.	Apixaban tablets may be crushed and suspended in 60 mL of water or G5W and immediately delivered through a nasogastric tube.
Rivaroxaban [4]	Yes	Rivaroxaban tablets may be crushed and mixed with water or apple puree immediately prior to use and administered orally. After the administration of crushed Rivaroxaban 15 mg or 20 mg film-coated tablets, the dose should be immediately followed by food.	The crushed tablet may also be given through gastric tubes.
Edoxaban [3]	Yes	Edoxaban tablets may be crushed and mixed with water or apple puree and immediately administered orally. Crushed Edoxaban tablets are stable in water and apple puree for up to 4 hours.	Edoxaban tablets may be crushed and suspended in a small amount of water and immediately delivered through a nasogastric tube or gastric feeding tube after which it should be flushed with water. Crushed Edoxaban tablets are stable in water and apple puree for up to 4 hours.
Dabigatran [5]	No -Store in the original package to protect from moisture.	No	This medicinal product is not compatible with feeding tubes.
Warfarin	No	The tablets can be crushed and mixed with water or soft food for administration. Without crushing they disperse in two to five minutes	**NJ / PEJ / PEGJ tubes** The tablets can be crushed and mixed with water for administration *Warfarin is absorbed high in the GI tract. There is a risk of reduced absorption if the drug is given through enteral feeding tubes terminating beyond the stomach. When such administration is necessary, monitor the patient closely for effect, and take particular care if the site of delivery is altered (i.e. if the jejunal tube is changed for a gastric one).* **NG / PEG tubes** The tablets can be crushed and mixed with water for administration **Feed guidance** Withhold enteral feeds for one to two hours before and one to two hours after each dose. *Care is necessary when patients are also receiving enteral feeds with a high vitamin K content.*

Table 5: Information for patients with compliance aids, swallowing difficulties and enteral feeding

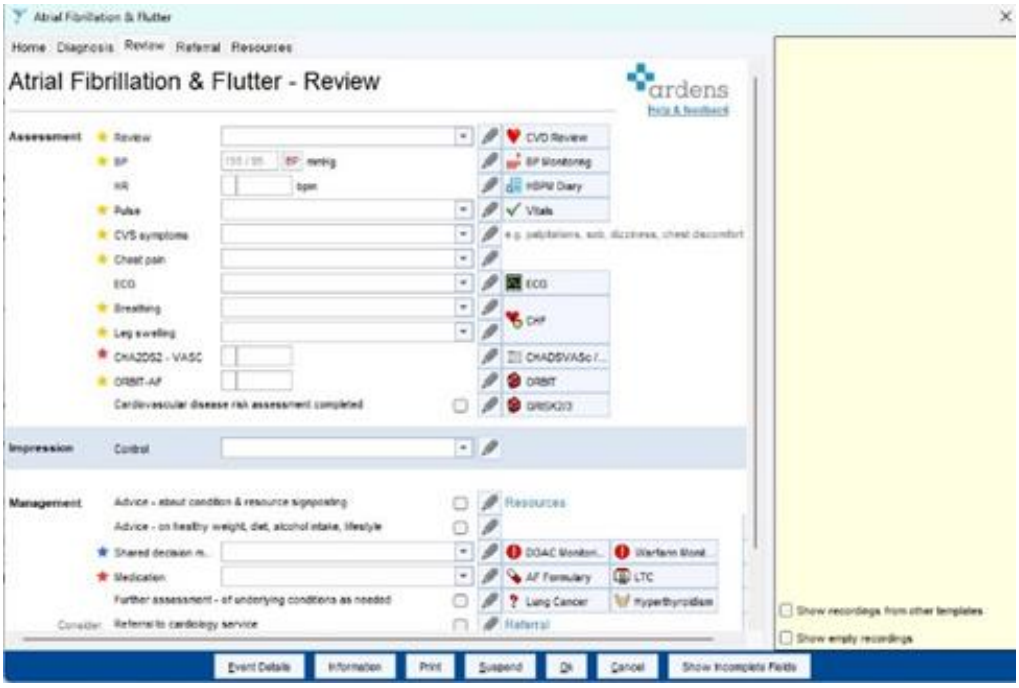
Appendix 3: DOAC in AF Counselling Checklist for healthcare professionals (HCP)

Name of DOAC: ……..…… Date: ……..

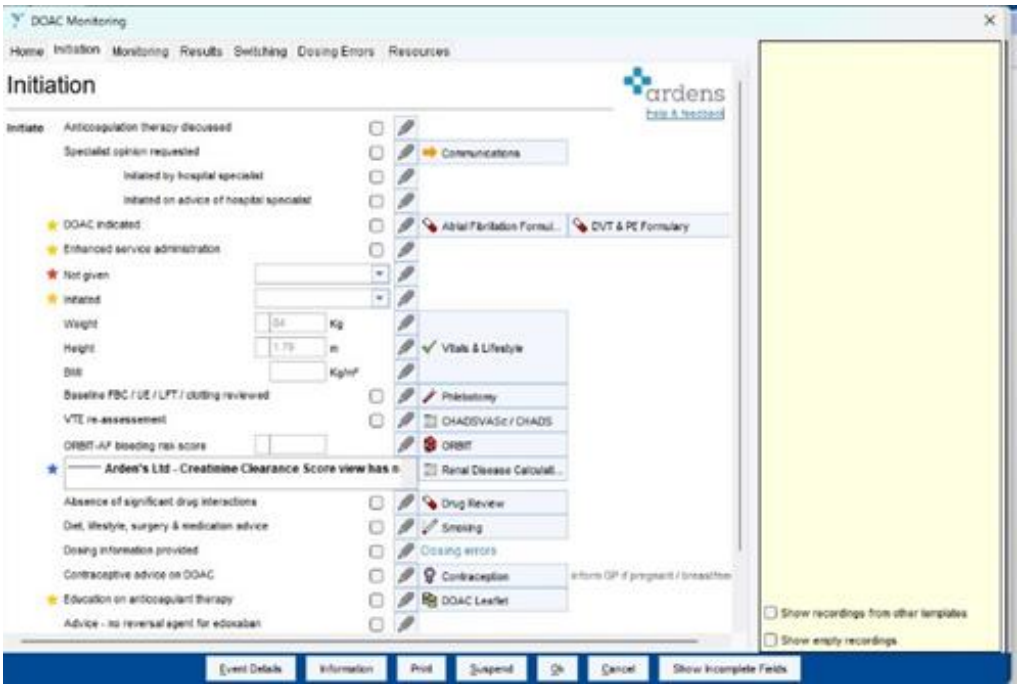
Counselling points (tailor specifics to your patient and record any queries or concerns in medical notes)	**Signature**
Patients Understanding: • Assess patient's understanding of AF: Confirm the patient knows they have atrial fibrillation and the associated stroke risk. • Ensure the patient understands why anticoagulation is necessary: Explain stroke prevention, how the drug works, and why it's important to take it regularly.	
Differences between DOAC and warfarin: (if applicable for patients converting from warfarin to DOAC therapy or offering choice of anticoagulation agent) • No routine INR monitoring • Fixed dosing • No dietary restrictions and alcohol intake permitted (within national guidelines) • Fewer drug interactions	
Name of drug: Confirm which DOAC has been prescribed	
Explanation of dose: strength & frequency • To take with food (dabigatran and rivaroxaban). • Not required for apixaban or Edoxaban.	
Duration of therapy: lifelong (unless risk: benefit of anticoagulation changes)	
Importance of adherence: Emphasize the importance of taking the medication exactly as prescribed and not missing doses.	
Missed doses: Message is to "take the dose as soon as you remember and then at the same time each day" "Do not take a double dose to make up for the missed dose". For further information: • Apixaban and dabigatran can be taken within 6 hours of missed dose, otherwise omit the missed dose. • Edoxaban and rivaroxaban can be taken within 12 hours of missed dose, otherwise omit the missed dose	
Extra doses taken: obtain advice immediately from pharmacist/GP/NHS Direct (111)	
Common and serious side-effects: Avoidance of contact sports Common side effects: • Bleeding risks (minor and major). • Gastrointestinal discomfort (e.g., nausea). Serious side effects: • To Seek urgent medical attention if patient develops severe bleeding, e.g., blood in faeces (dark tarry stools), vomit (coffee ground) or sputum, vaginal bleeding (other than regular period), nose bleeds, bloody urine, severe and spontaneous bruises, or new indigestion type symptoms. • Advise to seek urgent medical attention if they fall or injure themselves during treatment, especially if they hit their head, due to the increased risk of bleeding. • Advise to seek urgent medical attention if they get any unusual headaches.	
Inform all healthcare professionals of DOAC therapy: Explain to patient to inform other health care professionals including GP, nurse, dentist, pharmacist that they are taking a DOAC if prescribed new medications or if surgery/invasive procedures (including dental extractions) are being planned.	
Drug interactions and medication: Explain possible interactions with other drugs including herbal remedies: • Advise patient to read patient information leaflet and discuss with pharmacist or doctor before taking any over the counter remedies. • Avoid aspirin or NSAIDs (including OTC ibuprofen); consider NSAID gel as alternative for musculoskeletal pain if appropriate.	
Pregnancy and breastfeeding: Advise patient to seek advice if planning to become pregnant or breastfeed.	
Storage: • Edoxaban, rivaroxaban or apixaban are suitable for monitored dosage systems. • Dabigatran is hygroscopic outside of the original packaging and should only be taken out of the blister pack immediately prior to taking it orally.	
Information: Issue and discuss relevant patient information AF booklet/leaflet and anticoagulant patient alert card.	
Monitoring and review: advise patient frequency of review of treatment and blood tests: • Annually if CrCl >60ml/min • 6 monthly if CrCl45-60 ml/min or age >75 • 3 monthly if CrCl<45 ml/min or high bleeding risk.	
NMS service: Referral to Community Pharmacy New Medicines Service (NMS) – suitable for patients prescribed anticoagulants for the first time.	

Appendix 4: Ardens template

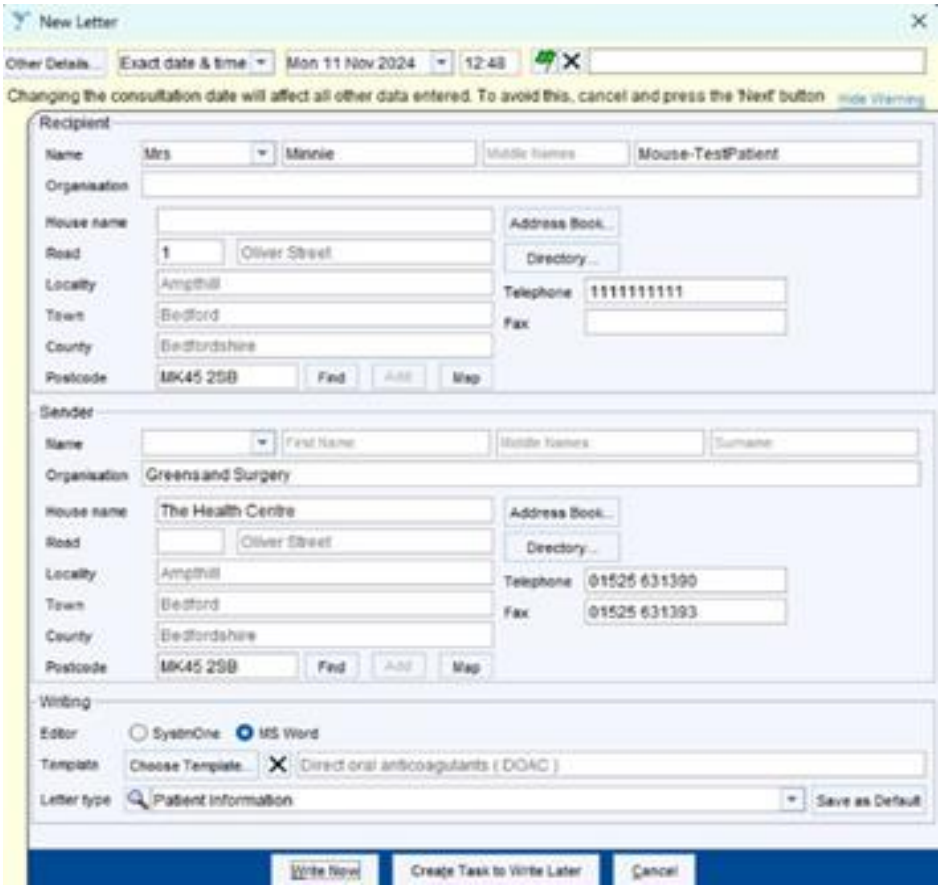
1) Arden template Atrial Fibrillation and Flutter – Review template can be used.



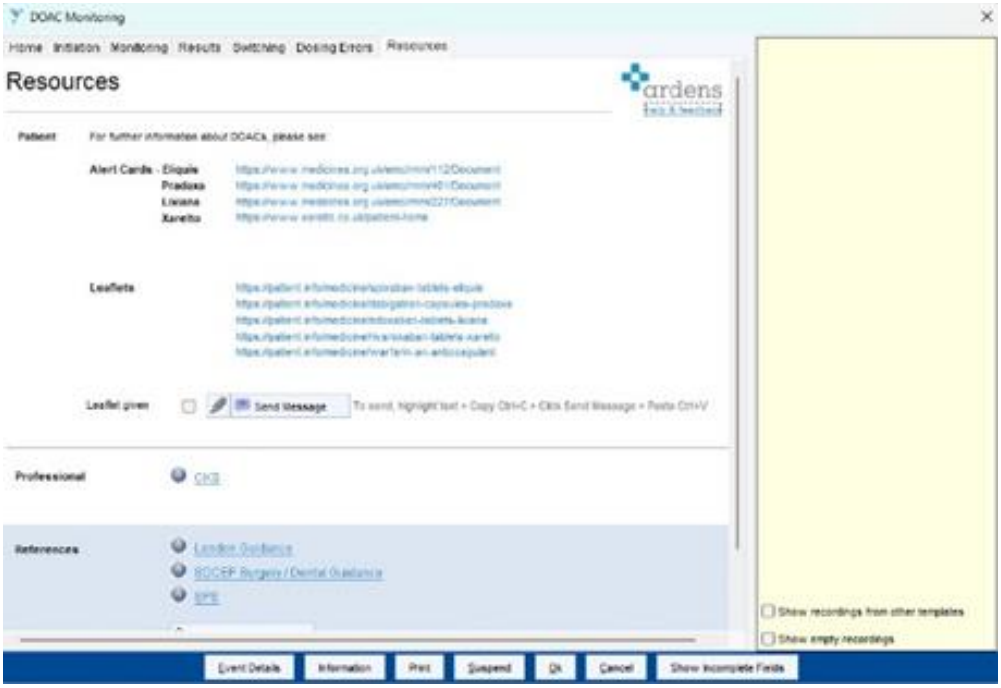
2) Arden template Atrial Fibrillation and Flutter – Initiation.
Click on DOAC monitoring and tab initiation as below. Can be used to support initiation.



3) Arden template Atrial Fibrillation and Flutter – DOAC letter
Letter for patient with a copy of main counselling points can be produced and given to patient or sent via messaging system. Click DOAC leaflet on initiation template.



4) Arden template Atrial Fibrillation and Flutter – Resources



Appendix 5: AF protect, perfect and optimise Toolkit

Link to the toolkit - Atrial Fibrillation – BLMKICB Medicines Optimisation

This AF toolkit is to support the optimisation of patient's medication who have Atrial Fibrillation. This will also support with the QOF targets on AF.

Rational

Atrial Fibrillation is the most common heart rhythm disorder, affecting approximately 2% of the adult population, and estimates suggest its prevalence is increasing. Left untreated, AF is a significant risk factor for stroke. Men are more commonly affected than women. AF prevalence increases with age and in association with heart disease, diabetes, obesity, and hypertension. The NICE guideline on atrial fibrillation recommends that people with symptomatic or asymptomatic paroxysmal, persistent, or permanent AF, atrial flutter, or a continuing risk of arrhythmia recurrence after cardioversion back to sinus rhythm should have an assessment of their stroke risk using the CHA2DS2-VASc risk assessment tool.

The risk of stroke is five times higher for patients with AF than for the general population, and 20–30% of all strokes are attributed to this arrhythmia. Anticoagulation therapy can prevent around two thirds of strokes caused by AF. However, approximately 9% of patients with AF are not on any form of anticoagulant. Likewise, 14% of patients currently receiving anticoagulation therapy are prescribed Warfarin. NICE guidance was updated in 2021 (NG196) to recommend that clinicians prescribe DOACs, rather than Warfarin as first-line treatment for patients with AF.

There is a set of reports which can be run to help identify the patients for the audits above and support with optimising the patient's treatment. These can be found in central reporting under AF Anticoagulation Risk Stratification Searches.

The Toolkit contains:

- CHA2DS2-VASc and ORBIT information
- Audit Instructions
- Searches
- Initial work prior to any audit
- Audit 1 - AF Protect - for patients with CHA2DS2-VASc ≥ 2 on no anticoagulation. Purpose is to identify patients that can be started on anticoagulation.
- Audit 2 - AF Perfect - for patients on warfarin with AF to identify those that can be changed to a DOAC.
- Audit 3 - AF Optimise - for male patients with CHA2DS2-VASc ≥ 1 on no anticoagulation. Purpose is to identify patients that could be started on anticoagulation.
- Monitoring spreadsheet to check which blood tests and body weight / height is needed for each patient prior to initiation.
- Next Steps
- Resources
- Ardens Templates

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