

Barns Medical Practice

Service Specification

Outline: Anticoagulation



DEVELOPED March 2019

REVIEW DATE 2012

Role of Anticoagulation

Anticoagulant medications are used to reduce the risk of blood clots and to treat blood clots. They are used in the short and long term for a variety of conditions.

There are 5 types of medications used for anticoagulation currently licensed in the UK. Warfarin, Apixaban, Dabigatran, Rivaroxaban and Edoxaban. Warfarin is the only one of these medications which requires dose adjustment due to monitoring of the International Normalised Ratio (INR). The rest of the medications have been classed as DOAC's (Direct-acting, oral anticoagulants). These medications require regular, at least annual monitoring to assess compliance, presence of side-effects or presence of thromboembolic events in addition to blood tests and a height and weight check. If a patient will have difficulty having their Warfarin monitored (eg if they travel a lot or work away) they may benefit from a DOAC as it doesn't require such regular monitoring.

Some conditions requiring clot prevention

Atrial fibrillation

Valvular heart disease including prosthetic heart valves

Some conditions requiring clot treatment

DVT (deep vein thrombosis)

PE (pulmonary embolism)

Recurrent DVT/PE

Some conditions require anticoagulation treatment for only a specific period of time. Others require lifelong treatment.

Before starting anticoagulation

Check: FBC, clotting factors, LFT's and BMI

Clearly state in the notes:

- That the patient is using warfarin or the other anticoagulant medications
- Condition it is treating
- Target INR (if using Warfarin)
- Duration of treatment

At review

Check: FBC, LFT's, UE's and BMI

Assess: compliance to medication

Side-effects-bleeding, bruising

Falls risk

Signs of thromboembolic events - stroke, breathlessness (which may signify a PE)

Using Warfarin

Therapeutic doses of Warfarin

The dose at which a Warfarin level should be maintained varies depending on which condition it is treating. The Warfarin dose needs to be monitored by a blood test to measure the International Normalised Ratio (INR) on a regular basis to make sure that it is used at a dose which is effective but isn't too high as this can cause unwanted bleeding. The maximum time between measuring INR is usually 84 days but most people have more frequent monitoring than this.

Most conditions requiring Warfarin require INR to be maintained between 2-3 and 2.5-3.5.

Initiation

Starting Warfarin should be done carefully with close monitoring.

Low dose initiation - is usually done in general practice for patients who have less risk of clot formation eg. stable atrial fibrillation. It usually takes 3-4 weeks. There are a number of protocols which can be used. Please see appendix 1 for the protocol used by Barns Medical Practice.

Rapid initiation - this is usually done in the hospital because there has been a clot diagnosed, it requires the use of an injection to prevent clots forming until the doses Warfarin gets to a therapeutic level.

Warfarin Monitoring

Monitoring Warfarin is essential for the safe use of this medication.

When the INR is stable, Warfarin should be monitored in accordance to recommendation from the nurses and doctors in the practice with the help of INR Star, a computer system which can calculate doses and review dates.

If a new medication is started, or a patient is unwell for any reason, Warfarin levels can go outwith the therapeutic dose and should therefore be checked sooner than the planned review date (ideally within a week of a new medication and immediately if they are unwell).

Changes to a usually stable INR level can be due to a number of reasons:

- Non-adherence to Warfarin regime
- Starting a new medication or an over the counter medication
- Infection or systemic illness
- Changes to diet or alcohol

A patient should be asked to have their INR checked sooner than planned if there is any reason to believe their INR may have changed.

Starting any new medications may cause a change in INR levels. If a new medication is to continue for longer than 5 days, INR should be checked 7 days after commencing. It should also be checked when any medications are stopped.

If an INR level is out of range for more than 2 INR checks in patients who are using Warfarin to prevent clots in Valvular heart disease (ie too high for >2 checks or too low for >2 checks) then the duty doctor should be informed.

DOAC dose recommendations

Edoxaban is the DOAC recommended in this Health board for the treatment of non-valvular AF although the other 3 DOACs are also used, particularly for treatments of DVT and PE. Dosing recommendations are made depending on the patients kidney function, age and weight, depending on which medication is used. Please refer to the formulary and BNF for dosing recommendations. There may be dose adjustments required to account for renal function, frailty, patients weight and concomitant medications. See the table below for more information.

Patients should have an annual review to ensure they are compliant with medication, taking the correct dose, don't have any symptoms of thromboembolism and haven't started taking OTC medications which may interact. If they have normal FBC, LFT's and creatinine clearance >60ml/min then these should be repeated annually but 6 monthly if creatinine clearance is 30-60ml/min, 3 monthly if less than 30ml/min. At every review it is important to measure their weight and height as this is essential for the calculation of an accurate Creatinine clearance using the Cockcroft-Gault calculator.

Side-effects of anticoagulants

The most common and dangerous side-effect is the risk of bleeding. It is particularly important to tell the patient if they have a fall and hit their head they **MUST** seek medical review. This is usually done at the hospital with close monitoring as most patients will require a CT scan of their head.

Other symptoms of bleeding:

- Red or brown urine
- Black or red stools
- Vomiting or coughing up blood
- Very heavy menstrual bleeding
- Severe headaches
- Unusual bruising, swelling or pain
- Bleeding gums or nose
- Dizziness, lightheadedness or weakness of the limbs

If a patient is taking Warfarin and the effects of this need to be reversed, there is medication that can be prescribed.

It is also important for the patient to inform other medical professionals that they are taking anticoagulants, for example dentists, A+E doctors and doctors who work in hospital clinics. This is particularly important if surgery is being considered.

Pregnancy

Women of childbearing age using anticoagulants should be warned not to become pregnant whilst using these medications due to harmful effects on the development of the baby within the womb. If a pregnancy is being planned there are alternative anticoagulant medications that can be used and the patient should be referred at this stage to Obstetrics and Gynaecology.

Appendix 1

Low dose initiation protocol

Guide for using INR to manage warfarin



A low dose protocol for warfarin initiation (Janes, 2004)			
	INR	Warfarin Daily Dose	Notes
Day 1	Obtain Baseline INR	3 mg	
Day 2 - 7		3 mg	
Day 8	< 1.4	6 mg *	* follow blue guide for 2nd week
	1.4 - 1.5	5 mg	
	1.6 - 1.8	4 mg	
	1.9 - 2.1	3 mg	
	2.2 - 2.5	2.5 mg	
	2.6 - 2.7	2 mg	
Day 15	2.8 - 3.0	Omit 1-2 days, reduce to 1 mg	
	> 3.0	Stop Warfarin. Check causes, high INR protocol and need for warfarin. Repeat INR in 3-5 days. Restart at 1 mg if indicated.	
Day 15	Most patients will have received stable doses on day 8 and others will only need minor dose adjustments		When INR is stable extend dosing interval and transfer to maintenance guide.

Guideline for Over Anticoagulation	
<p>INR 5 - 8 without bleeding</p> <ol style="list-style-type: none"> 1. Stop warfarin 2. Test INR daily until stable 3. Restart in reduced dose when INR < 5 4. Give vitamin K 0.5 - 1 mg oral/sc if INR fails to fall, or if there is high risk of serious bleeding 	
<p>INR > 8 with minor bleeding</p> <ol style="list-style-type: none"> 5. Stop warfarin 6. Consider admission if clinically appropriate 7. Test INR daily until stable 8. Restart in reduced dose when INR < 5 9. Give Vitamin K 1-2 mg oral/sc 	
<p>High INR and major bleeding</p> <ol style="list-style-type: none"> 10. Stop warfarin 11. Give Vitamin K 10 mg sc 12. Admit stat 	

Guide for patients on 6 mg on days 8 to 14			
Day 15	< 1.4		Unusual, check adherence medication etc. Increase to 10mg
	1.4 - 1.6	8 mg	
	1.7 - 1.8	7 mg	
	1.9 - 2.4	6 mg	
	2.5 - 2.9	5 mg	
	3.0 - 4.0	4 mg	Consider omitting 1-2 days
	4.1 - 5.0	reduce dose by 1-2 mg	Omit 2 days, check doses taken
	> 5.0		Check high INR protocol. Check doses taken. Omit 3 days and check INR

The guide is only valid if the patient has taken seven days of warfarin before the day 8 INR. If doses have been omitted or the INR is performed early the dose may be seriously overestimated. Due to the high number of biological and other variables inherent in warfarin therapy its use should be augmented by sound clinical judgement.

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

Appendix 2

Monitoring guidelines for DOAC's (direct-acting oral anticoagulants)

	Dose adjustments (see local guidelines for dosing)	Monitoring: normal renal function	Monitoring: CrCl 30-60ml/min	Monitoring: CrCl 15-30ml/min	Switching from Warfarin	Switching to Warfarin	Switching between DOACs
Apixaban	Reductions may be required if 2 or more of the following are present >80yo, Creatinine >133micromo l/l <weight 60kg	Annual weight, FBC, LFT's and UE's	6 monthly UEs	3 monthly UEs	- INR<2, start same day -INR 2-2.5, start next day -INR >2.5, Recheck INR and start when INR <2	Start Warfarin and continue DOAC until INR is to target	Stop the DOAC and start the other DOAC when next dose is due
Edoxaban	Reductions may be required if: CrCl is 15-50ml/min Weight <60kg Prescribed ciclosporin, Dronedaron, erythromycin, ketoconazole	“ 6monthly UEs if: >75yo frail	“	“	“	“	“
Dabigatran	Reduce if: >80yo CrCl 30-50ml/min High bleeding risk Prescribed Verapamil or amiodarone	“ 6monthly UEs if >75 or if patient is frail	“	Do not prescribe if CrCl <30ml/min	“	“	“
Rivaroxaban	Reduce dose if CrCl <49ml/min	“	“	3 monthly UEs	“	“	“

Appendix 3

<http://athena/adtc/DTC%20%20Clinical%20Guidelines/ADTC290.pdf>

References

<http://www.b-s-h.org.uk/guidelines/guidelines/oral-anticoagulation-with-warfarin-4th-edition/>

<http://www.medicines.org.uk/emc/medicine/24988>

<http://athena/adtc/DTC%20%20Clinical%20Guidelines/ADTC290.pdf>