WARFARIN INITIATION PROTOCOL ACTION CARD

GUIDANCE FOR MEDICAL AND NURSING STAFF — WAR1

FOR USE BY: All staff involved in the prescribing and initiation of warfarin

LIAISES WITH: Pharmacy staff

Rationale:
The initiation of warfarin is the prescription for a patient that has not previously received warfarin or has temporarily been taken off warfarin such that their INR is now less than1.2. The aims of this protocol are:

- To ensure that evidence-based doses are prescribed for initiation of warfarin to ensure that a therapuetic INR is reached in a timely but safe manner
- To satisfy the requirements of Patient Safety Alert 18 – actions that can make anticoagulant therapy safer
- To reduce the occurrence of INRs greater than 6 which are associated with an increase in bleeding risk (and also delayed discharge)

This regimen is supported by the British Committee for Standards in Haematology (BCSH) guidelines 2011, who state that there is no evidence to support the use of a 10mg loading dose over a 5 mg dose

Why has this changed?
Gedge et al (2000) suggested that the commonly used Fennerty (1984) initiation protocol has been poorly validated in older adults and can result in significant over-anticoagulation of patients over 65 years. This has been supported by in-house audit.
Gedge et al (2000) tested an alternative regimen for patients over 65 years which lead to a reduction in over-anticoagulation (INR more than 4.5), an increased amount of time within the therapeutic INR range and fewer omitted doses of warfarin.

Note:
INR = International Normalised Ratio
APTT = Activated Partial Thromboplastin Time

Prior to initiation of warfarin:

- Ensure no contraindications to anticoagulation
- Ensure patient is not on other oral anticoagulants, i.e. dabigatran, rivaroxaban, apixaban
- Consider discontinuation of anti-platelet drugs, i.e. aspirin, clopidogrel, dipyridamole, prasugrel
- Further information on concurrent anticoagulation and anti-platelets can be found in BCSH guidelines
- Consider discontinuation of drugs that may increase bleeding risk such as non-steroidal anti-inflammatory drugs (NSAIDs)
- Measure full blood count, liver function, INR and APTT

Choice of slow or rapid anticoagulation:
For patients that do not require rapid anticoagulation, a slow loading regimen is safe and achieves therapeutic anticoagulation in the majority of patients within 3-4 weeks (Keeling et al., 2011). This may avoid over-anticoagulation associated with rapid loading and the development of a hypercoagulable state (caused by precipitous decreases in levels of protein C) during the first 36-48 hours of warfarin therapy. **Therefore, slow loading should be considered for all patients with AF.**

Patients with acute venous thromboembolic disease require rapid anticoagulation where dose adjustment is guided by daily INR measurement for at least the first 4 days.

Initiation regimen for SLOW loading:
Consider starting after discharge from hospital unless a long stay is anticipated. Discuss with GP who can make suitable arrangements for monitoring and dosing.

If initiating warfarin in hospital;

- Prescribe 3 mg on days 1 to 4
- Check INR on day 5
- Thereafter adjust dose in **small** increments to ensure avoidance of over-anticoagulation

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Initiation regimen for RAPID loading (for patients with acute venous thromboembolic disease, e.g. PE / DVT):

Day	INR	Warfarin dose (mg)
1	<1.4	Risk factors* = 5mg No risk factors = 10mg
	≥ 1.4	Seek advice
2	< 1.8	5
	1.8 – 2.0	1
	> 2.0	0
3	< 2.0	5
	2.0 – 2.5	4
	2.6 – 2.9	3
	3.0 – 3.2	2
	3.3 – 3.5	1
	> 3.5	0
4	< 1.4	10
	1.4 – 1.5	7
	1.6 – 1.7	6
	1.8 – 1.9	5
	2.0 – 2.3	4
	2.4 – 3.0	3
	3.1 – 3.2	2
	3.3 – 3.5	1
	> 3.5	0

***Risk factors =**

- age > 60 years
- body weight <50kg
- liver disease
- cardiac failure
- serum albumin <35g/L
- known bleeding risk
- taking drugs that enhance the effect of anticoagulants
- previously anticoagulated and maintenance dose <2mg daily

Monitoring:
This protocol will be monitored annually with an audit of 20 patients initiated on warfarin as an in-patient or via Ambulatory Day Unit (ADU).

References:
Fennerty A. et al. (1984) Flexible induction dose regimen for warfarin and prediction of maintenance dose. **BMJ**, 288, pp.1268-1270

Gedge, J. et al. (2000) A comparison of a low-dose warfarin induction regimen with the modified Fennerty regimen in elderly inpatients. **Age and Ageing**, 29, pp.31-34

Keeling, D. et al. (2011) Guidelines on oral anticoagulation with warfarin – fourth edition. **British Journal of Haematology**, 154, pp.311-324

National Patient Safety Alert 18: Actions that can make anticoagulant therapy safer (2007). Available at http://www.nrls.npsa.nhs.uk/resources/?EntryId45=59814, accessed 13/6/12

ALWAYS ENSURE ALL RELEVANT ACTIONS ARE DOCUMENTED!