PRIMARY CARE GUIDELINES FOR ANTICOAGULATION USING WARFARIN

Waitemata District Health Board
Te Wai Awhina

Innovative Integration for Health

Before Initiating Warfarin Therapy

- Consider if the benefits of anticoagulation outweigh the risks, such as bleeding, for each patient.
- Ensure INR, platelets and liver function tests are all normal. If not, seek senior/specialist advice.

General Points

- Strict INR control is advised in the first month of Warfarin therapy due to higher risk of thrombosis recurrence.
- Once Warfarin is stopped, there is a small thrombosis recurrence rate irrespective of the duration of therapy.
- Once your patient is **stable** on Warfarin, please change to routine, **non-urgent** testing at your chosen interval to reduce costs of testing.
  - When starting patients on Warfarin who are not in Herapin, the initial dose should not exceed 5mg.

Recommended starting Normogram for Warfarin Dose in mg

Day	*INR*	*Adult <65 yrs*	*Adult 65 yrs+*
Day 1	1.0 or less	10	10
Day 2	<1.8	10	5
	1.8 - 2.0	1	1
	>2.0	0	0
Day 3	<2.0	10	5
	2.0 - 2.1	5	4
	2.2 - 2.3	4.5	4
	2.4 - 2.5	4	4
	2.6 - 2.7	3.5	3
	2.8 - 2.9	3	3
	3.0 - 3.1	2.5	2
	3.2	2	2
	3.3	2	1
	3.4	1.5	1
	3.5	1	0
	3.6 - 4.0	0.5	0
	>4.0	0	0
Day 4	<1.4	10	>7
	1.4	8	7
	1.5	7.5	7
	1.6 - 1.7	7	6
	1.8	6.5	5
	1.9	6	5
	2.0 - 2.1	5.5	4
	2.2 - 2.3	5	4
	2.4 - 2.6	4.5	3
	2.7 - 3.0	4	3
	3.1 - 3.2	3.5	2
	3.3 - 3.5	3.5	1
	3.6 - 4.0	3	0
	4.1 - 4.5	Omit dose 1 day then give 2 mg	0
	>4.5	Omit dose 2 days then give 1 mg	0

Recommended Target INR Ranges

Indication	INR
Treatment of venous thrombo-embolism (VTE). **Prevention of systemic embolism:** • Atrial fibrillation • Valvular heart disease • Following MI	2.0 - 3.0
Mechanical and prosthetic heart valves	Consult Specialist

Minimum Recommended Duration

Balance benefit against risks of prolonging therapy	
Distal Deep Vein Thrombosis (DVT)	3 months
Proximal DVT	6 months
Pulmonary Embolus (PE)	6 months
Atrial Fibrillation, Recurrent DVT or PE	Consider long term

Frequency of Testing

Loading	Unstable	Stable
Daily	1-3 days	4-8 weeks

In a stabilised low risk patient, if the INR is just outside the target range, continue the same Warfarin dose, re-test INR 2-3 days later, and adjust the dose accordingly. This is a recommendation only and will depend on your patient's clinical situation.

Air Travel and DVT Prevention

Aspirin may have some benefit as prophylaxis, but there is no research evidence to support this. General advice includes adequate fluids, alcohol restriction, exercise and support stockings.

Previous DVT—Not currently anticoagulated

- Short flights—general measures
- Long flights (12hrs or longer) - consider **enoxaparin (Clexane) prophylaxis** - (consult haematologist for dosing regime)

Vitamin K

Vitamin K is used by the liver to manufacture clotting proteins:

- High Vitamin K intake = more Warfarin required to achieve therapeutic INR.
- Low Vitamin K intake = less Warfarin required to achieve therapeutic INR.
- A change in the amount of Vitamin K in a patient's diet may alter the effect of Warfarin, e.g. dieting, fasting or seasonal food choices - for Vitamin K content of common foods see "Cardiology" on the Waitemata DHB website.
- Consider Vitamin K deficiency if your patient has high and/or fluctuating INRs on small doses of Warfarin. They may stabilise following a single dose of Vitamin K, 0.5 - 1mg oral/sc.*
- Vitamin K amps are available on MPSO in both 2mg/0.2ml and 10mg/ml amps. It can be given orally or subcutaneously and take 8 - 24 hours to work.*

Excessive INR Response

Sometimes a patient with a stable INR shows a marked change. Possible causes are:

- Incorrect dose/script changes
- Hepatic disease
- Gastrointestinal disease e.g. diarrhoea
- Antibiotics
- Drug Interactions
- Congestive heart failure
- Vitamin K deficiency - dietary changes
- Malignancy

Herbal/Complementary Medicines

Some of these products affect INR levels. Patients could be advised to avoid these products while on Warfarin or discuss possible interactions with their pharmacist.

Drugs which may increase INR response

Antibiotics	Anti-inflammatory	Cardiac	Gastrointestinal	Psychiatric	Other
cotrimoxazole	NSAIDs	amiodarone	omeprazole	paroxetine	tramadol
erythromycin	COX II inhibitors	propranolol	cimetidine	fluoxetine	phenytoin
norfloxacin	sulfinpyrazone	clofibrate		citalopram	
tamoxifen	salicylates				
roxithromycin	paracetamol				
cephalosporin					
ciprofloxacin					
azithromycin					
fluconazole					
miconazole					
metronidazole					
isoniazid					

Over Anticoagulation

Risk of bleeding increases with age

Overall Risk

Fatal bleeding	0.25%
Major bleeding	1 - 3%
Minor bleeding	6 - 7%

Managing Over Anticoagulation

INR	Omit dose (days)	% dose
4 - 5	0	25
5 - 6	1	25
6 - 8	2	33
>8	3	50

INR Level vs Bleeding Risk

INR	Events/100 pt yrs	Risk per 48 hrs
2 - 2.9	4.8	1:4000
3 - 4.4	9.5	1:2000
4.5 - 6.9	40	1:500
>7	200	1:100

Guidelines for Severe Over Anticoagulation

Clinical	Guideline
INR 6 - 8 without bleeding	1. Stop Warfarin 2. Restart in reduced dose when INR <5 3. Test daily until stable 4. Give Vitamin K 0.5 - 1mg oral/sc* if INR fails to shorten, or if reversal required within 24-48 hrs
INR >8 with minor bleeding	5. Stop Warfarin **6. Consider admission if clinically appropriate** 7. Restart in reduced dose when INR <5 8. Give Vitamin K 1 - 2mg oral/sc*
High INR and major bleeding	**9. Stop Warfarin** **10. Give Vitamin K 10mg sc*** **11. Admit stat**

References:
1. Diagnostic MedLab Handbook—The Interpretation of Laboratory Tests.
2. Queensland Health: Guidelines for Anticoagulation using Warfarin.

* Current international practice supports these recommendations. New Zealand approval of the injection does not include oral or subcutaneous routes.

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