

Current Guidelines for Practice Oral Anticoagulation for Older Adults

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THROMBOEMBOLIC DISORDER	INR	DURATION	CLINICAL COMMENTS
VENOUS THROMBOEMBOLISM			
Prophylaxis (e.g. high risk surgery)		Perioperative	Perioperative use of LMW heparin or adjusted dose unfractionated heparin is appropriate in most patients
	Target 2.5; range 2.0-3.0	≤3 months or until ambulatory	Warfarin may be considered for use until patients become ambulatory
Treatment: Single episode (DVT or PE)	Target 2.5; range 2.0-3.0	Reversible or time-limited risk factor: 3 - 6 mo. Idiopathic DVT/PE ≥ 6 mo.	At or above the knee Initial treatment with LMW heparin or adjusted dose unfractionated IV heparin for at least 5 days and to overlap warfarin at a therapeutic level for 2-4 days
Treatment: Recurrent DVT or PE or continuing risk factor (cancer, congenital thrombophilic states, antiphospholipid antibody, etc.)		Indefinite	
PREVENTION OF SYSTEMIC EMBOLISM			
Atrial Fibrillation (AF)	Target 2.5; range 2.0-3.0	Indefinite	Age <65, no risk factors (i.e., no prior TIA, systemic embolus or stroke, hypertension, poor LV function, rheumatic mitral valve disease): ASA recommended Age 65 - 75 no risk factors: aspirin or warfarin recommended Age 65 - 75 with risk factors or > age 75: warfarin recommended
AF: Cardioversion	Target 2.5; range 2.0-3.0	3 weeks prior for patients in AF > 48 hours; continue until NSR stable for 4 wks	Indefinite Anticoagulation as above for those who do not return to NSR

Acute Myocardial Infarction	Target 2.5; range 2.0-3.0	≤3 mo.	ASA (160 - 325 mg enteric) daily indefinitely. When no thrombolytics given, patients at increased embolic risk (anterior Q-wave MI, severe LV dysfunction, CHF, prior emboli, 2D echo evidence of mural thrombus, AF) give heparin followed by warfarin.
Cardiomyopathy	Target 2.5; range 2.0-3.0	Indefinite	Consider for patient with ejection fraction = 25%.
Recurrent Systemic Embolism	Target 2.5; range 2.0-3.0	Indefinite	Criteria for recurrence: events, temporal and etiologic relationships
Valvular Heart Disease	Target 2.5; range 2.0-3.0	Indefinite	Consider patients with a history of SE, AF, or LA diameter ≥5.5cm If recurrent SE occurs on warfarin, add ASA (80-100 mg/d) or increase target INR to 3.0 (range 2.5 - 3.5)
Tissue Prosthetic Heart Valve	Target 2.5; range 2.0-3.0	3 mo. (absent AF)	Prosthetic mitral or aortic valve or positions without AF; then ASA (162mg/d) If history of SE or LA thrombus at surgery, consider treating indefinitely
Mechanical Heart Valve	Target 3.0; range 2.5-3.5	Indefinite	If high embolic risk, add ASA (81mg/d)

Abbreviations:

ASA Aspirin
CHF Congestive heart failure
LMW Low molecular weight
LV Left ventricular
PE Pulmonary embolus
TIA Transient ischemic attack
AF Atrial fibrillation
DVT Deep venous thrombosis
LA Left atrial
NSR Normal sinus rhythm
SE Systemic embolism

REVERSAL OF ANTICOAGULANTS

INR 2.0 - 5.0	No bleeding or minor bleeding	<p>Withhold warfarin or lower dosage if above the therapeutic range and monitor INR</p> <p>Resume at same or lower dosage as INR approaches the desired range</p>
INR 5.0 - 9.0	No bleeding	<p>Withhold warfarin for one to two doses</p> <p>Monitor INR frequently</p> <p>Restart warfarin at lower dosage when INR falls into therapeutic range</p>
	No bleeding but increased risk	<p>Withhold one dose of warfarin</p> <p>Vitamin K (1.0 - 2.5 mg) po</p>
	Minor bleeding	<p>Withhold warfarin, monitor INR</p> <p>Vitamin K (1.0 - 2.5 mg) po or SC</p>
INR > 9.0	No bleeding or minor bleeding	<p>Withhold warfarin, monitor INR</p> <p>Vitamin K (3 - 5) po or SC</p>
	Severe bleeding	<p>Discontinue warfarin</p> <p>Vitamin K (5 - 10 mg, slow IV infusion as increased risk of anaphylaxis)</p> <p>Administer fresh frozen plasma</p> <p>May repeat Vitamin K q12 hours</p>
	Life-threatening bleeding	<p>Discontinue warfarin</p> <p>Vitamin K (10 mg, slow IV infusion as increased risk of anaphylaxis)</p> <p>Administer fresh frozen plasma (prothrombin complex concentrate can be considered if insufficient time to thaw fresh frozen plasma)</p>

INITIATION AND MONITORING OF ORAL ANTICOAGULANTS

1. A baseline INR (and APTT if on heparin) should be obtained.

- In acute thrombotic episodes, warfarin treatment should be initiated during therapy with unfractionated or low molecular weight heparin. Dosing can begin with an estimated average maintenance dose, often 2.5 to 5.0 mg in the elderly. The two treatments should overlap for 2-4 days following a therapeutic INR.
- In non-urgent situations, such as chronic stable AF, for example, warfarin treatment can begin in the absence of heparin treatment, following the above regimen.

2. The INR should be monitored daily until a stable and therapeutic level is achieved (usually 5 to 7 days).

3. The INR can be monitored 2 - 3 times weekly for 1 - 2 weeks, then weekly for one month, and monthly thereafter. More frequent monitoring may be required in some patients, and is indicated during antibiotic therapy, during diet changes, or during changes affecting medications which interact with warfarin binding or metabolism.

PROCEDURE PLANNED - Hold warfarin for 3 days prior to planned procedure	
INR < 2.0	<p>Consider heparin until 4 hours prior to procedure</p> <p>Procedure at INR < 1.5</p> <p>Post-procedure, consider heparin until INR is therapeutic</p>
INR 5.0 - 9.0	<p>Withhold warfarin, monitor INR until < 2.0</p> <p>Consider Vitamin K (1.0 mg) po if rapid correction of INR required</p> <p>Consider heparin when INR < 2.0 until 4 hours prior to procedure</p> <p>Procedure at INR < 1.5</p> <p>Post-procedure, administer heparin until INR is therapeutic</p>
INR > 9.0	<p>Withhold warfarin, monitor INR until < 2.0</p> <p>Vitamin K (2.0 - 4.0 mg) po; may repeat in 24 hours if INR still high</p> <p>Consider heparin when INR < 2.0 until 4 hours prior to procedure</p> <p>Procedure at INR < 1.5</p> <p>Post-procedure, administer heparin until INR is therapeutic</p>
POST-PROCEDURE - Restart warfarin at regular maintenance dosage	

Geriatric Recommendations adapted by Laurie G. Jacobs, MD with assistance from Milayna Subar, MD and the Clinical Practice Committee of the American Geriatrics Society (AGS).