

# TEMPLE UNIVERSITY HOSPITAL ADMINISTRATIVE POLICIES AND PROCEDURES

NUMBER:  
TITLE: **WARFARIN GUIDELINES**  
EFFECTIVE DATE: **09/26/2008**  
LAST REVIEWED: **NEW**  
LAST REVISED: **NEW**  
REFERENCES: **NPSG 3E (Anticoagulation Therapy)**

## PURPOSE

This policy and procedure is to establish safe and effective guidelines in the treatment with warfarin.

## DEFINITION OF TERMS:

INR - International Normalized Ratio

N/A - Not applicable

## POLICY

It is the policy of the Temple University Hospital that all healthcare professionals follow clinical practice treatment guidelines in a safe and effective manner.

## SCOPE AND RESPONSIBILITY

This policy is applicable to all healthcare professionals at TUH.

## PROCEDURES

The following guidelines are meant to provide guidance for the safe and effective use of warfarin therapy at Temple University Hospital. However these guidelines are not a substitute for clinical decision-making based on individual patient characteristics.

### I. Initial Dosing Upon Hospital Admission

- a. Patients who are admitted and are prescribed chronic warfarin therapy at home will be continued on their home dose if their INR is therapeutic upon admission. If the INR is sub-therapeutic, and adherence is suspected, patients weekly home dose will generally be increased by 5-20%. Patients admitted with a supratherapeutic INR should follow the separate guidelines for management.
- b. Initiation of warfarin therapy should generally begin with 5mg/day for the first 1-2 days with subsequent dosing based on the INR response
  - i. Clinicians should consider initiation of warfarin 2.5 mg/day in patients who are; malnourished (< IBW or hypoalbuminemia), have signs of congestive heart

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failure, have active liver disease (elevated baseline INR, elevated Alk Phos, ALT, AST), have had recent surgery (especially heart valve replacement or use of cardiac bypass) or are taking medications which increase sensitivity to warfarin therapy (esp amiodarone). Elderly patients with these comorbidities may have increased warfarin sensitivity.

- ii. Clinicians should generally avoid loading doses of >5mg as they have not demonstrated benefit in the in-patient population and may lead to early discontinuation of injectable anticoagulants leading to clot propagation and risk of eventual supra-therapeutic INRs and increased bleeding risk.
- iii. Genetic testing to determine warfarin dosing is not routinely recommended.

**II. Daily Dosage Adjustments for Patients Initiating Warfarin-Days 2-5 Suggested Dosing (round calculated dose to nearest 0.5 mg)**

**INR Goal 2-3**

INR	Day 1	Day 2	Day 3	Day 4	Day 5
<1.5	5 mg or 2.5 mg	Same	↑50%	↑50%	↑50%
1.5-1.99		↓50%	Same	↑50%	↑50%
2-2.49		↓75%	↓50%	Same	Same
2.5-2.99		0mg	↓75%	↓50%	Same
>3		0mg	0mg	↓50% (3-3.5) or 0mg (>3.5)	↓25% (3-3.5) or 0mg (>3.5)

*Adapted from Crowther MA et al. Ann Intern Med 1997;127:333.*

- A. The goal of dosing during warfarin initiation is to achieve a therapeutic INR value in 4-5 days, therefore an average daily INR increase of 0.2-0.3 is optimal. The INR is generally not initially affected by warfarin for 2-3 days. Warfarin does not exert full antithrombotic effects, and clot propagation is possible, during the first 4 days of administration regardless of the INR value.
- B. Warfarin Viewer-A warfarin page will be available in TDS or in the patient chart (added by pharmacy or nursing) which will show daily dosing and INRs and will include the dose adjustment table

**III. Laboratory Testing**

- a. All patients require a baseline PT/INR and CBC prior to initiation of warfarin therapy
- b. In-patient INRs for patients receiving warfarin therapy should be drawn daily and be available for review prior to warfarin administration at 1400.
- c. CBC will be drawn at least every 3 days
- d. Patient should have scheduled appt upon hospital discharge for INR monitoring within 3-7 days of hospital discharge.

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**IV. Overlap with an Injectable Anticoagulant**

- a. Patients with an active clot, those with known protein C or S deficiency, or those at high risk of thromboembolism following an invasive procedure should have warfarin initiated concomitantly with an injectable anticoagulant. The injectable anticoagulant should be continued for a minimum of 4 days and until the INR is therapeutic for 2 separate blood tests at least 24 hours apart to ensure adequate antithrombotic coverage and to prevent clot propagation.

**V. Recommended INR Goals**

Thromboembolic Disorder	Target INR (Range)	Minimum Duration
<b>Venous Thromboembolism</b>		
Provoked (reversible cause) DVT/PE	2.5 (2-3)	3 months
Unprovoked (idiopathic) DVT/PE, initial	2.5 (2-3) (May consider 1.5-1.9 after 3 months)	3 months (Consider longterm for proximal LE DVT, little evidence for UEDVT or distal LE DVT))
Unprovoked DVT/PE, second episode	2.5 (2-3) (May consider 1.5-1.9 after 3 months)	Longterm
DVT and Cancer	2.5 (2-3)	Longterm or until Cancer is resolved  Should use LMWH for first 3-6 months if feasible
<b>Atrial Fibrillation/Atrial Flutter</b>		
Chads <sub>2</sub> Score ≥2*	2.5 (2-3)	Longterm
Chads <sub>2</sub> Score=1*	2.5 (2-3)	Longterm  May choose ASA 81-325mg instead , warfarin is preferred

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Thromboembolic Disorder	Target INR (Range)	Minimum Duration
Chads <sub>2</sub> Score =0*	ASA 81-325 mg/day	N/A
AF: Cardioversion	2.5 (2-3)	Therapeutic ≥3 weeks before and ≥4 weeks after cardioversion
Prosthetic Heart Valves		
High Risk Myocardial Infarction (large anterior MI, significant HF, intracardiac thrombus on TTE, AF, h/o Thromboembolic event)	2.5 (2-3)	3 months Add ASA 81mg
Antiphospholipid Antibody Syndrome, no additional risk factors	2.5 (2-3)	Longterm
Prosthetic Heart Valves		
Bioprosthetic Valve (Mitral position, h/o systemic embolism and/or other indication for warfarin)	2.5 (2-3)	3 months (followed by ASA 81mg/day)
Bioprosthetic Valve (Aortic Position in NSR and no other indication for warfarin)	ASA 81 mg/day	N/A
Mechanical bileaflet (St Jude, Carbomedics) or Tilting Disc (Medtronic Hall) aortic valve in NSR	2.5 (2-3)	Longterm
All other mechanical prosthetic valves	3 (2.5-3.5)	Longterm Add ASA 81 mg if:  -Additional risk factors such as AF, hypercoagulable state, low EF or atherosclerotic vascular disease

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Thromboembolic Disorder	Target INR (Range)	Minimum Duration
		Low bleeding risk-<80 yrs, no h/o GI bleeding
VTE Prophylaxis Following THR, TKR or hip fracture surgery	2.5 (2-3) (per 2008 ACCP Guidelines)  May differ per orthopedic attending depending on patient risk of bleeding versus thrombosis	10 days (>35 days preferred)  Initiate pre-operatively or day of surgery

**\*Chads<sub>2</sub> Score Calculation (add total points)**

Risk Factor	Points
CHF	1
Hypertension	1
Age > 75 years	1
Diabetes	1
History of TIA/CVA	2

**VI. Selected Interacting Medications and Herbals**

Potentiate INR	Decrease INR	Increase Bleeding Risk (No INR Effect)
<b>Meds:</b> Amiodarone Ciprofloxacin Diltiazem Erythromycin/Clarithromycin Esomeprazole Fluconazole Isoniazid Metronidazole Prednisone Propafenone	<b>Meds:</b> Carbamazepine Chlordiazepoxide Nafcillin Rifampin  <b>Herbals:</b> Goldenseal	<b>Meds:</b> Aspirin Clopidogrel Concomitant anticoagulants NSAIDS  <b>Herbals:</b> Feverfew Garlic Gingko Biloba Ginseng

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Potentiate INR	Decrease INR	Increase Bleeding Risk (No INR Effect)
Protease Inhibitors Simvastatin Trimethoprim/Sulfamethoxazole Voriconazole  <b>Herbals:</b> Chamomile Fenugreek Licorice Red or Sweet Clover		Licorice

*Adapted from Coumadin Prescribing Information. Rev August 2007.*

**VII. Dietary**

- a. Currently dietary does not alter patients' diets upon initiation of warfarin therapy. They attempt to simulate normal, consistent vitamin K consumption which will occur as an out-patient.
- b. All patients on warfarin therapy will receive written and verbal dietary education performed by pharmacy or nursing prior to hospital discharge.
- c. Health care providers may consult dietary if patient is receiving warfarin therapy and has complex dietary issues which require more intensive education. A registered dietician will reinforce warfarin education if consulted.

**For additional information, refer to the following guidelines:**

Antithrombotic and Thrombolytic Therapy 8<sup>th</sup> Ed: ACCP Guidelines. Chest 2008;133 (Suppl 6):1S-968S.

**APPROVALS**

*Note: The signed original of this policy is on file with the Hospital Policy Coordinator.*

**RECOMMENDED BY:**

Michael Bromberg, M., PhD  
 Chair, Anticoagulation Therapy Sub-Committee  
 Date:

**APPROVED BY:**

Eun Kim, Pharm.D.  
 Director of Pharmacy, Episcopal Hospital  
 Date:

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Frank Dahl, RPh, MS  
Administrative Director of Pharmacy Services  
Date:

Terry McGoldrick RN, MSN  
Chief Nursing Officer-TUH  
Date:

Susan Freeman, MD, MS  
Chief Medical Officer-TUH  
Date:

Robert E. Pezzoli, BS, MPH  
Interim Chief Executive Officer-TUH  
Date:

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