

**OUTPATIENT
LMWH DVT Orders**

(addressograph)

- a. **Note:** Algorithm below is intended ONLY for outpatients and ONLY for days 1-6 of therapy. Consider initial inpatient therapy if any of the following *: previous VTE, thrombophilic conditions, significant comorbid illnesses, pregnant patients, patients unlikely to adhere to outpatient therapy. * see Snow V et al below in references

Weight _____ **kg Enoxaparin Dose: Weight x 1.5mg/kg=** _____

1. Draw CBC, PTT, INR on day 1 and days 3 to 6. Record results below and notify family physician (or designate **by fax**) of results and action taken per nomogram below. If family physician or designate unavailable, notify Emergency Physician. **Keep this sheet in STANDING ORDER BINDER.**
2. Inject Enoxaparin 1.5 mg/kg SC OD (should not exceed 180 mg) for a **minimum of 5 days and until the INR is greater than 2.**
3. Caution regarding renal insufficiency.
4. Whenever possible, physician to provide prescription to patient for the remaining 4 days with LU code 186 on script.
5. Give Warfarin 5 mg po on day 1 and 2, then **review dose after INR on day 3** as per the following nomogram to make Warfarin changes:

Initiation of Warfarin Algorithm and Nursing Flowsheet

Date	Day	INR	Warfarin dosage (mg)	INR Today	Dose Warfarin given	Enoxaparin Dose Given	FP faxed	Nurse signature
	1		5 mg		5 mg			
	2		5 mg	No INR	5mg			
	3	< 1.5	10 mg					
	3	1.5 to 1.9	5 mg					
	3	2.0 to 2.9	2.5 mg					
	3	> 3.0	0					
	4	< 1.5	10 mg					
	4	1.5 to 1.9	7.5 mg					
	4	2.0 to 2.9	5 mg					
	4	> 3.0	0					
	5	< 2.0	10 mg					
	5	> 3.0	0					
	6	< 1.5	10 mg					
	6	1.5 to 1.9	7.5 mg					
	6	2.0 to 2.9	5 mg					
	6	> 3.0	0					

INR = International Normalized Ratio adapted with permission from Crowther MA, Harrison L, Hirsh J. Warfarin: less may be better. Ann Intern Med 1997;127:333.

Please addressograph and complete.

DATE _____ MD SIGNATURE _____ TIME _____

RN SIGNATURE _____ RN:

Your signature indicates the initiation and/or transcription of all the above orders.

References:

- Agno, W., Steidl, L., Ultori, C., Dentali, F., Marchesi, C., Mera, V., Squizzato, A. & Venco, A. The initial phase of oral anticoagulation with warfarin in outpatients with deep venous thrombosis. *Blood Coagulation and Fibrinolysis* 2003; **14**: 11-14.
- Crowther, M.A., Ginsberg, J.B., Kearon, C., Harrison, L., Johnson, J., Massicotte, M.P. & Hirsh, J. A randomized trial comparing 5-mg and 10-mg warfarin loading doses. *Archives of Internal Medicine* 1999; **159**: 46-48.
- Gedge, J., Orme, S., Hampton, K.K., Channer, K.S. & Hendra, T.J. A comparison of a low-dose warfarin induction regimen with the modified Fennerty regimen in elderly inpatients. *Age and Ageing* 2000; **29**: 31-34.
- Harrison, L., Johnston, M., Massicotte, M.P., Crowther, M., Moffat, K. & Hirsh, J. Comparison of 5-mg and 10-mg loading doses in initiation of warfarin therapy. *Annals of Internal Medicine* 1997; **126**: 133-136.
- Ramzi, D et al. DVT and Pulmonary Embolism Part II. Treatment and Prevention. *American Family Physician* 2004; 69(12): 2841-2848
- Snow V et al. Management of venous thromboembolism: A clinical practice guideline from the American College of Physicians and American Academy of Family Physicians. *Ann Intern Med.* 2007;146:204-210.
- Hirsh J, Dalen JE, Deykin D, Poller L, Bussey H. Oral anticoagulants: mechanism of action, clinical effectiveness, and optimal therapeutic range. *Chest* 1995;108(4 Suppl):231S-46Merli G et al. **Subcutaneous Enoxaparin Once or Twice Daily Compared with Intravenous Unfractionated Heparin for Treatment of Venous Thromboembolic Disease.** *Ann Intern Med.* 2001;134:191-202.
- Stein PD, Alpert JS, Copeland J, Dalen JE, Goldman S, Turpie AG. Antithrombotic therapy in patients with mechanical and biologic prosthetic heart valves. *Chest* 1995;108(4 Suppl):371S-9S [Published erratum in *Chest* 1996;109:592].
- Levine HJ, Pauker SG, Eckman MH. Antithrombotic therapy in valvular heart disease. *Chest* 1995; 108(4 Suppl):360S-70S.
- Schulman S, Granqvist S, Holmstrom M, Carlsson A, Lindmarker P, Nicol P, et al. The duration of oral anticoagulant therapy after a second episode of venous thromboembolism. *N Engl J Med* 1997; 336:393-8.
- Laupacis A, Albers G, Dalen J, Dunn M, Feinberg W, Jacobson A. Antithrombotic therapy in atrial fibrillation. *Chest* 1995;108(4 Suppl):352S-9S.
- Levine MN, Hirsh J, Gent M, Turpie AG, Weitz J, Ginsberg J, et al. Optimal duration of oral anticoagulant therapy: a randomized trial comparing four weeks with three months of warfarin in patients with proximal deep vein thrombosis. *Thromb Haemost* 1995;74:606-11.
- Majerus PW, Broze GJ, Miletich JP, Tollefsen DM. Anticoagulant thrombolytic, and antiplatelet drugs. In: Hardman JG, Limbird LE, eds. *Goodman and Gilman's The pharmacological basis of therapeutics*. 9th ed. New York: McGraw-Hill, 1996:1347-51.
- Porter RS, Sawyer WT, Lowenthal DT. Warfarin. In: Evans WE, Schentag JJ, Jusko WJ, eds. *Applied pharmacokinetics*. 2d ed. Spokane, Wash.: Applied Therapeutics, 1986:1057-104.
- Harrison L, Johnston M, Massicotte MP, Crowther M, Moffatt K, Hirsh J. Comparison of 5-mg and 10-mg loading doses in initiation of warfarin therapy. *Ann Intern Med* 1997;126:133-6.
- Gurwitz JH, Avorn J, Ross-Degnan D, Choodnovskiy I, Ansell J. Aging and the anticoagulant response to warfarin therapy. *Ann Intern Med* 1992;116:901-4.
- Thomas P, Fennerty A, Backhouse G, Bentley DP, Campbell IA, Routledge PA. Monitoring effects of oral anticoagulants during treatment with heparin. *Br Med J [Clin Res]* 1984;288:191.
- Ansell JE. Oral anticoagulant therapy--50 years later. *Arch Intern Med* 1993;153:586-96.
- Carter BL. Therapy of acute thromboembolism with heparin and warfarin. *Clin Pharm* 1991;10: 503-18.
- Norton JL, Gibson DL. Establishing an outpatient anticoagulation clinic in a community hospital. *Am J Health Syst Pharm* 1996;53:1151-7.
- Wittkowsky AK. Generic warfarin: implications for patient care [Editorial]. *Pharmacotherapy* 1997;17: 640-3.
- Richton-Hewett S, Foster E, Apstein CS. Medical and economic consequences of a blinded oral anticoagulant brand change at a municipal hospital. *Arch Intern Med* 1988;148:806-8.
- Routledge PA, Chapman DH, Davies DM, Rawlins MD. Pharmacokinetics and pharmacodynamics of warfarin at steady state. *Br J Clin Pharmacol* 1979; 8:243-7.
- Levine MN, Raskob G, Landefeld S, Hirsh J. Hemorrhagic complications of anticoagulant treatment. *Chest* 1995;108(4 Suppl):276S-90S.
- Landefeld CS, Beyth RJ. Anticoagulant-related bleeding: clinical epidemiology, prediction, and prevention. *Am J Med* 1993;95:315-28.

Landefeld CS, Rosenblatt MW, Goldman L. Major bleeding in outpatients treated with warfarin: incidence and prediction by factors known at the start of outpatient therapy. *Am J Med* 1989;87:144-52.

Albers GW. Atrial fibrillation and stroke: three new studies, three remaining questions. *Arch Intern Med* 1994;154:1443-8.

Risk factors for stroke and efficacy of antithrombotic therapy in atrial fibrillation: analysis of pooled data from five randomized controlled trials. *Arch Intern Med* 1994;154:1449-57 [Published erratum in *Arch Intern Med* 1994;10:2254].

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Fihn SD, McDonell M, Martin D, Henikoff J, Vermes D, Kent D, et al. Risk factors for complications of chronic anticoagulation: a multicenter study. *Ann Intern Med* 1993;118:511-20.

Launbjerg J, Egeblad H, Heaf J, Nielsen NH, Fugleholm AM, Ladefoged K. Bleeding complications to oral anticoagulant therapy: multivariate analysis of 1010 treatment years in 551 outpatients. *J Intern Med* 1991;229:351-5.

Fihn SD, Callahan CM, Martin DC, McDonell MB, Henikoff JG, White RH. The risk for and severity of bleeding complications in elderly patients treated with warfarin. *Ann Intern Med* 1996;124:970-9.

Stroke prevention in atrial fibrillation study: final results. *Circulation* 1991;84:527-39.

Hylek EM, Skates SJ, Sheehan MA, Singer DE. An analysis of the lowest effective intensity of prophylactic anticoagulation for patients with nonrheumatic atrial fibrillation. *N Engl J Med* 1996; 335:540-6.

Adjusted-dose warfarin versus low-intensity, fixed-dose warfarin plus aspirin for high-risk patients with atrial fibrillation: Stroke Prevention in Atrial Fibrillation III randomised clinical trial. *Lancet* 1996; 348:633-8.