

University Health System Anticoagulation Safety Committee

Subject: Anticoagulation Management Program

Purpose: To reduce the likelihood of patient harm associated with the use of anticoagulation therapy, and to fulfill the Joint Commissions National Patient Safety Goal on anticoagulation, the UHS Anticoagulation Safety Committee has established an Anticoagulant Management Program. The program includes the monitoring of patients receiving therapeutic dosing of unfractionated heparin (UFH), low molecular weight heparins (LMWHs), fondaparinux, warfarin and the direct thrombin inhibitors (DTIs) to individualize the care provided to each patient.

Procedures: Listed below are the components of the Anticoagulant Management Program:

- 1) The pharmacy will dispense only oral unit dose products, pre-filled syringes, or pre-mixed infusion bags when available from the manufacturer.
 - Pediatric doses < 20mg will be prepared in IV lab from a 20mg/mL dilution. 30mg and 40mg pre-filled syringes may be dispensed for those exact doses. For other doses, calibrated prefilled syringes (60mg, 80mg, 100, 120mg, 150mg) may be dispensed. Pediatric nurses will be in-serviced on enoxaparin and trained to administer proper doses from pre-filled syringes. See Inpatient Pediatric Enoxaparin Dispensing Policy 3.0117b.
- 2) Approved protocols for UFH, LMWHs, fondaparinux, warfarin, and the DTIs will be used for the initiation and maintenance of therapy. The individual protocols and policies address recommended monitoring for each agent.
 - a) UFH: A baseline complete blood count (CBC) is required prior to initiation of therapy. Upon initiation of therapy, a heparin concentration (Anti Xa level) will be drawn every 6 hours until 2 consecutive therapeutic levels are obtained at a constant rate of infusion. Thereafter, heparin concentrations may be monitored every 12 hours or once daily. A CBC will be obtained at least every other day and patients will be monitored for signs and symptoms of Heparin Induced Thrombocytopenia (HIT).
 - b) LMWHs (Enoxaparin and Dalteparin) and Fondaparinux: CBC and serum creatinine should be monitored at baseline and periodically. Patients on LMWHs will be monitored for signs and symptoms of HIT. The dosing table includes guidelines for Anti-Xa monitoring.
 - c) Warfarin: Baseline and current INRs are required. While hospitalized, patients being initiated on warfarin should have an INR at least 48 hours prior to initiation. INR monitoring will start after the 2nd or 3rd dose, on days 3, 4, 5, and 6. Thereafter, INR should be drawn at least every other day, until 2 consecutive therapeutic levels are obtained. Monitoring can then be changed to no less than twice weekly. Patients with stable INRs in therapeutic range, on a stable warfarin dose should have INRs checked upon admission and then at least twice weekly. For outpatient warfarin therapy, a

baseline INR should be available within 24 hours of the initial clinic visit. After 2 consecutive INR values within the therapeutic range, follow up observations may be scheduled at least monthly. Patients with stable therapeutic INRs may have telephone visits for a maximum of 3 consecutive months before mandatory return to clinic is required.

- d) DTIs (Lepirudin and Argatroban): Baseline CBC, aPTT, PT/INR, BMP, LFTs are required. aPTTs should then be checked every 4 hours for lepirudin or every 2 hours for argatroban, until consecutive values are in range, then at least daily thereafter. CBC will be checked at least once daily.
- 3) A designated anticoagulation pharmacist will monitor hospitalized patients receiving therapeutic doses of the medications listed above and contact the physician as indicated to make therapeutic recommendations based on approved protocols and current literature.
- 4) The dietary service will be notified of patients on warfarin and will provide the appropriate patient diet. Patients receiving warfarin therapy will have their diet order flagged "Patient on Coumadin". The dietary service has helped create the diet portion of the UHS Warfarin brochure.
- 5) Programmable infusion pumps will be used to administer IV continuous heparin to provide consistency in dosing. A weight based protocol has been approved for use and is posted on the clinical intranet.
- 6) Education on anticoagulant therapy will be provided to prescribers, nurses and pharmacists in the form of newsletters, lectures, in-services, Sunrise alerts, and postings to the UHS clinical intranet.
- 7) Education on anticoagulant therapy is provided to patients/families. Education material can be used to stress the importance of follow-up monitoring, compliance issues, dietary restrictions, and potential for adverse drug reactions and interactions.
- 8) Anticoagulation safety practices will be evaluated regularly through the use of drug utilization analyses, collection of adverse drug reaction data, and review of a database of patients with out-of-range INRs and diagnosis codes for various thrombotic or bleeding events.