TITLE: Clinical Pharmacy Services:  
INPATIENT ANTICOAGULATION MONITORING PROGRAM

PURPOSE: To reduce the likelihood of patient harm associated with anticoagulation therapy, and to fulfill the Joint Commissions National Patient Safety Goal on anticoagulation, the UHS Anticoagulation Safety Committee and the inpatient pharmacy department has established an Anticoagulant Monitoring Program.

POLICY ELABORATION: Components of the Anticoagulation Monitoring Program are as follows:

1. The program includes the monitoring of patients receiving therapeutic dosing of unfractionated heparin (UFH), low molecular weight heparins (LMWHs), fondaparinux, warfarin, argatroban, rivaroxaban and apixaban.

2. The anticoagulation pharmacist is available on a consult basis at 743-3905 Monday-Friday 800-1600. For anticoagulation related questions after hours or on the weekends, the pharmacy department can be contacted at 358-8416.

3. Approved protocols for UFH, LMWHs, fondaparinux, warfarin, and argatroban will be used for the initiation and maintenance of therapy. Patient on therapeutic does of these anticoagulants will be monitored according to protocols. Guidelines for each medication are available on the Clinical Pathways and Guidelines page in the section titled “Anticoagulation.”

4. A designated anticoagulation pharmacist will monitor hospitalized patients receiving therapeutic doses of the medications listed below to ensure proper therapy.

   a) Labs will be reviewed and the pharmacist will contact physicians as indicated to make therapeutic recommendations based on protocols, current literature, and individual patient factors that could influence therapy.

   b) Laboratory monitoring requirements for each medication are as follows:

   i) UFH drips: 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).

   ii) LMWHs and Fondaparinux: CBC and serum creatinine should be monitored at baseline and periodically to determine if renal dose adjustments or medication discontinuation are necessary. Patients on LMWHs will be monitored for signs and symptoms of HIT. Anti-Xa
monitoring should be done on high risk patients groups according guidelines posted to the Clinical Pathways and Guidelines page.

iii) Warfarin: Patients on warfarin will have INRs monitored according to the INR Policy posted to Clinical Pathways and Guidelines page. (See Inpatient Warfarin INR Monitoring Policy 3.0117d)

iv) Argatroban: Baseline CBC, aPTT, INR, BMP, LFTs are required. aPTTs should then be checked every 2 hours until consecutive values are in therapeutic range, then at least daily thereafter. CBC will be checked at least once daily.

5. Diet and Drug interactions
   a) Patients receiving warfarin therapy will have their diet order flagged “Patient on Coumadin” in the medical record. Drug interactions will be screened for upon medication ordering and verification through the use of the CPOE system drug interaction alerts.
   b) Pharmacists will review drug interactions during the order verification process.
   c) A designated anticoagulation pharmacist will review dietary orders and medication profiles and contact physicians as needed to make recommendations for anticoagulation therapy based on interactions.

6. Education on anticoagulant therapy will be provided to patients/families
   a) Patient education brochures are available on the UHS website under Patient Education, and through the MicroMedex CareNotes database.
   b) Education may be provided by the discharging RN or a pharmacist.
   c) A designated anticoagulation pharmacist is available to provide education Monday-Friday 800-1600 on a consult basis.

7. The pharmacy will dispense only oral unit dose products, pre-filled syringes, or pre-mixed infusion bags when available from the manufacturer.
   a) Pediatric doses < 20mg will be prepared in IV lab from a 20mg/mL dilution. (See Inpatient Pediatric Enoxaparin Dispensing Policy 3.0117b)
   b) Pharmacists will review and select appropriate medication formulations during the order verification process.

8. Documentation of Clinical Pharmacy Medication Discharge Counseling Services
   (Also see Clinical Pharmacy Services: Medication Discharge Education Consults 4.0204d)
   a) A designated anticoagulation pharmacist will accept and complete Anticoagulation Discharge Medication Education Consults.
   b) Completion of the consult will be documented using the Anticoagulation Teaching note in Sunrise (See Appendix 1).
Appendix 1: Anticoagulation Teaching Note