ADULT UNFRACTIONATED HEPARIN (UFH) PROTOCOL
GENESIS HEALTH SYSTEM
[ ] GMC – Aledo, IL [ ] GMC - Davenport, IA [ ] GMC - DeWitt, IA [ ] GMC – Silvis, IL

POPULATION:
Patients 18 years of age or older

INCLUSION CRITERIA:
- Deep Vein Thrombosis (DVT)/Pulmonary Embolism (PE)
- Cardiac Indication (e.g., Acute Coronary Syndrome [ACS], Atrial Fibrillation, Valvular Heart Disease)
- Ischemic Stroke
- Other Indications (Peripheral Artery Disease, Arterial Thromboembolism)

EXCLUSION CRITERIA:
History of Heparin-Induced Thrombocytopenia (HIT)

SKILL LEVEL:
Nursing staff with competency in Intravenous Medication Administration

GENERAL CONSIDERATIONS:
Use original admission weight for all adjustments
Document all rate changes based on anti-Xa heparin assay or PTT result
Select the correct indication for heparin (DVT/PE, cardiac, or ischemic stroke)
- If the patient has NOT received an oral factor Xa inhibitor-apixaban, rivaroxaban, edoxaban) in the previous 72 hours, you will use the anti-Xa heparin nomogram
- If the patient HAS received an oral factor Xa inhibitor (apixaban, rivaroxaban, edoxaban) in the previous 72 hours, you will use the PTT heparin nomogram

ORDERS:
1. Order baseline anti-Xa heparin assay, PTT, INR and CBC unless done within previous 24 hours
2. Discontinue all active orders for enoxaparin and heparin (except orders used to maintain parenteral line patency)
3. Heparin concentration = 25,000 units per 250 ml 0.45% sodium chloride (100 units per ml)
4. **Patient Weight in kilograms:** _____
5. **Follow the specific protocol ordered by the provider:**

ADULT IV HEPARIN INITIAL DOSING

[A.] DVT/PE
Round doses to the nearest 100 units for boluses and whole number for infusion rates
- INITIAL IV BOLUS= **80 units/kg** (MAXIMUM= 10,000 units)
- BEGIN INFUSION AT **18 units/kg/hr IV** (MAXIMUM initial rate= 1800 units/hr IV)

No oral factor Xa inhibitor administered in last 72 hours:

Anti-Xa Level (IU/mL)	Give 1 Bolus Dose (Max 10,000 units)	Hold Infusion (minutes)	Dose Change (+ Increase) (- Decrease)	Repeat Anti-Xa
< 0.1	20 units/kg	0	+ 2 units/kg/hr	6 hours*
0.1 – 0.29	0	0	+ 1 units/kg/hr	6 hours
GOAL=0.3 – 0.7	0	0	NO CHANGE: Target Range	6 hours**

0.71 – 0.8	0	0	- 1 units/kg/hr	6 hours
0.81 – 0.99	0	0	- 2 units/kg/hr	6 hours
≥ 1	0	60 minutes	- 3 units/kg/hr	6 hours*

* Notify physician if 2 consecutive anti-Xa levels < 0.1 or ≥ 1.1

** If 2 consecutive anti-Xa levels are 0.3 – 0.7, obtain next anti-Xa level 24 hours later or the next AM (as appropriate)

Oral factor Xa inhibitor administered in last 72 hours:

PTT (seconds)	Give 1 Bolus Dose (Max 10,000 units)	Hold Infusion (minutes)	Dose Change (+ Increase) (- Decrease)	Repeat PTT
< 37	80 units/kg	0	+ 3 units/kg/hr	6 hours*
37-41	40 units/kg	0	+ 1 units/kg/hr	6 hours
GOAL = 42-64	0	0	NO CHANGE: Target Range	12 hours x 1 then daily**
65-69	0	0	- 1 units/kg/hr	6 hours
70-80	0	30	- 2 units/kg/hr	6 hours
> 80	0	60	- 3 units/kg/hr	6 hours*

* Notify physician if 2 consecutive PTTs < 37 or > 80

** If 2 consecutive PTTs are at 42-64, obtain next PTT 24 hours later or the next AM (as appropriate)

[B.] Cardiac Indication (e.g., ACS, atrial fibrillation, valvular heart disease)

Round doses to the nearest 100 units for boluses and whole number for infusion rates

- INITIAL IV BOLUS= **60 units/kg** (MAXIMUM= 5000 units)
- BEGIN INFUSION AT **12 units/kg/hr IV** (MAXIMUM initial rate= 1000 units/hr IV)

No oral factor Xa inhibitor administered in last 72 hours:

Anti-Xa Level (IU/mL)	Give 1 Bolus Dose	Hold Infusion (minutes)	Dose Change (+ Increase) (- Decrease)	Repeat Anti-Xa
< 0.1	20 units/kg	0	+ 2 units/kg/hr	6 hours*
0.1 – 0.29	0	0	+ 1 units/kg/hr	6 hours
GOAL=0.3 – 0.7	0	0	NO CHANGE: Target Range	6 hours**

0.71 – 0.8	0	0	- 1 units/kg/hr	6 hours
0.81 – 0.99	0	0	- 2 units/kg/hr	6 hours
≥ 1	0	60 minutes	- 3 units/kg/hr	6 hours*

* Notify physician if 2 consecutive anti-Xa levels < 0.1 or ≥ 1.1

** If 2 consecutive anti-Xa levels are 0.3 – 0.7, obtain next anti-Xa level 24 hours later or the next AM (as appropriate)

Oral factor Xa inhibitor administered in last 72 hours:

PTT (seconds)	Give 1 Bolus Dose (Max 5000 units)	Hold Infusion (minutes)	Dose Change (+ Increase) (- Decrease)	Repeat PTT
< 37	60 units/kg	0	+ 3 units/kg/hr	6 hours*
37-41	30 units/kg	0	+ 1 units/kg/hr	6 hours
GOAL = 42-58	0	0	NO CHANGE: Target Range	12 hours x 1 then daily**
59-69	0	0	- 1 units/kg/hr	6 hours
> 69	0	60	- 2 units/kg/hr	6 hours

* Notify physician if 2 consecutive PTTs < 37 or > 69

** If 2 consecutive PTTs are at 42-58, obtain next PTT 24 hours later or the next AM (as appropriate)

[C.] Ischemic Stroke

Round doses to the nearest whole number for infusion rates

- **NO BOLUSES**
- BEGIN INFUSION AT **12 units/kg/hr IV** (MAXIMUM initial rate= 1000 units/hr IV)

No oral factor Xa inhibitor administered in last 72 hours:

Anti-Xa Level (IU/mL)	Hold Infusion (minutes)	Dose Change (+ Increase) (- Decrease)	Repeat Anti-Xa
< 0.1	0	+ 2 units/kg/hr	6 hours*
0.1 – 0.29	0	+ 1 units/kg/hr	6 hours
GOAL=0.3 – 0.5	0	NO CHANGE: Target Range	6 hours**
0.51 – 0.6	0	- 1 units/kg/hr	6 hours

0.61 – 0.8	30	- 2 units/kg/hr	6 hours
≥ 0.81	60 minutes	- 3 units/kg/hr	6 hours*

* Notify physician if 2 consecutive anti-Xa levels < 0.1 or ≥ 0.81

** If 2 consecutive anti-Xa levels are 0.3 – 0.5, obtain next anti-Xa level 24 hours later or the next AM (as appropriate)

Oral factor Xa inhibitor administered in last 72 hours:

PTT (seconds)	Hold Infusion (minutes)	Dose Change (+ Increase) (- Decrease)	Repeat PTT
< 37	0	+ 3 units/kg/hr	6 hours*
37-41	0	+ 1 units/kg/hr	6 hours
GOAL = 42-58	0	NO CHANGE: Target Range	12 hours x 1 then daily**
59-69	0	- 1 units/kg/hr	6 hours
> 69	60	- 2 units/kg/hr	6 hours

* Notify physician if 2 consecutive PTTs < 37 or > 69

** If 2 consecutive PTTs are at 42-58, obtain next PTT 24 hours later or the next AM (as appropriate)

6. Laboratory
   A. Anti-Xa heparin assay 6 hours after starting heparin infusion, then follow appropriate titration table
   B CBC every two days
   C. Collect stool and send to Laboratory for occult blood when melena (black, tarry stool) or bloody stool is present
   D. Once Warfarin (Coumadin) is started, order daily INR

7. Monitoring
   A. Assess for bleeding every shift (signs and symptoms, hemoglobin/hematocrit changes, platelet changes, etc)
   B. Notify provider immediately of bleeding
   C. Monitor for HIT (platelet reduction, refer to 4Ts score)

8. Discontinue anti-Xa and CBC protocol orders when heparin protocol is discontinued

_____
Signature of Physician

_____ _____

Date Time