

This document contains multiple heparin titration algorithms. Check the orders and choose the correct protocol.

Note: REGULAR Intensity (Anti-Xa goal 0.3 -0.7) should no longer be used for MCS patients

- 1. LOW Intensity (Anti-Xa goal 0.3 - 0.5)**
- 2. ULTRA LOW Intensity (Anti-Xa goal 0.1 - 0.3)**

Mechanical Circulatory Support (MCS) HEPARIN PROTOCOL
ANTI-Xa MONITORING with NURSE-MANAGED INFUSION
 FOR PATIENTS WITH CURRENT/RECENT MCS ONLY

LOW Intensity
(Anti-Xa Goal: 0.3 - 0.5 units/mL)

ANTI-Xa LEVEL (units/mL)	RE-BOLUS	INFUSION HOLD TIME	CHANGE INFUSION DOSE (units/kg/hr)	NEXT ANTI-Xa LEVEL
< 0.1 Notify provider for 2 consecutive Anti-Xa < 0.3	None	None	Increase by 3 units/kg/hr	6 hours
0.1 – 0.19 Notify provider for 2 consecutive Anti-Xa < 0.3	None	None	Increase by 2 units/kg/hr	6 hours
0.2 – 0.29 Notify provider for 2 consecutive Anti-Xa < 0.3	None	None	Increase by 1 units/kg/hr	6 hours
0.3 – 0.5	None	None	NO CHANGE	6 hours
0.51 – 0.6	None	None	Decrease by 1 units/kg/hr	6 hours
0.61 – 0.8	None	30 min	Decrease by 2 units/kg/hr	6 hours
0.81 – 1	None	60 min	Decrease by 3 units/kg/hr	6 hours

Management of Anti-Xa level > 1 unit/mL

Anti-Xa Level	CHECK TIMING OF SAMPLE	INSTRUCTIONS
> 1 units/mL <i>(potentially contaminated or improperly timed sample)</i>	If < 6 hours since most recent bolus or rate change	Continue infusion at current rate, and repeat Anti-Xa at the appropriate time.
	If ≥ 6 hours since most recent bolus or rate change	1) TURN OFF HEPARIN INFUSION. 2) Repeat STAT Anti-Xa immediately using peripheral blood draw. 3) If repeat Anti-Xa ≤ 1 units/mL, resume heparin according to heparin algorithm. If repeat Anti-Xa > 1 units/mL, follow steps below
> 1 units/mL <i>(properly timed, non-contaminated sample)</i>	1) TURN OFF HEPARIN INFUSION, and NOTIFY PROVIDER. 2) Repeat STAT Anti-Xa hourly using peripheral blood draw until Anti-Xa level is ≤ 0.7 units/mL. 3) Then, resume infusion at DECREASED dose that is 4 units/kg/hr lower than previous dose and repeat Anti-Xa in 6 hours.	

Restarting heparin after it is turned off for procedure or surgery

- Confirm with provider that heparin infusion is to be re-started following procedure or surgery
- Confirm with provider the dose and time at which heparin should be re-started (*this should take into account the dose that the patient was receiving prior to procedure or surgery*)
- Confirm with provider the heparin algorithm that the patient should be treated with

Mechanical Circulatory Support (MCS) HEPARIN PROTOCOL
ANTI-Xa MONITORING with NURSE-MANAGED INFUSION
 FOR PATIENTS WITH CURRENT/RECENT MCS ONLY

ULTRA LOW Intensity
(Anti-Xa Goal: 0.1 - 0.3 units/mL)

ANTI-Xa LEVEL (units/mL)	RE-BOLUS	INFUSION HOLD TIME	CHANGE INFUSION DOSE (units/kg/hr)	NEXT ANTI-Xa LEVEL
< 0.1 Notify provider for 2 consecutive Anti-Xa < 0.1	None	None	Increase by 2 units/kg/hr	6 hours
0.1 – 0.3	None	None	NO CHANGE	6 hours
0.31 – 0.4	None	None	Decrease by 1 units/kg/hr	6 hours
0.41 – 0.6	None	None	Decrease by 2 units/kg/hr	6 hours
0.61 – 0.8	None	60 min	Decrease by 3 units/kg/hr	6 hours
0.81 – 1	None	60 min	Decrease by 4 units/kg/hr	6 hours

Management of Anti-Xa level > 1 unit/mL

Anti-Xa Level	CHECK TIMING OF SAMPLE	INSTRUCTIONS
> 1 units/mL <i>(potentially contaminated or improperly timed sample)</i>	If < 6 hours since most recent rate change	Continue infusion at current rate, and repeat Anti-Xa at the appropriate time.
	If ≥ 6 hours since most recent rate change	4) TURN OFF HEPARIN INFUSION. 5) Repeat STAT Anti-Xa immediately using peripheral blood draw. 6) If repeat Anti-Xa ≤ 1 unit/mL, resume heparin according to heparin algorithm. If repeat Anti-Xa > 1 unit/mL, follow steps below
> 1 units/mL <i>(properly timed, non-contaminated sample)</i>	4) TURN OFF HEPARIN INFUSION, and NOTIFY PROVIDER. 5) Repeat STAT Anti-Xa hourly using peripheral blood draw until Anti-Xa level is ≤ 0.5 unit/mL. 6) Then, resume infusion at DECREASED dose that is 5 units/kg/hr lower than previous dose and repeat Anti-Xa in 6 hours.	

Restarting heparin after it is turned off for procedure or surgery

- Confirm with provider that heparin infusion is to be re-started following procedure or surgery
- Confirm with provider the dose and time at which heparin should be re-started (*this should take into account the dose that the patient was receiving prior to procedure or surgery*)
- Confirm with provider the heparin algorithm that the patient should be treated with