CONTINUOUS RENAL REPLACEMENT THERAPY (CRRT) AND SUSTAINED LOW EFFICIENCY DIALYSIS (SLED) ORDER SET

[] General

- [] Nurse to check vital signs, I/O every 15 minutes for one hour then hourly
- [] Team to notify nurse and ICU team about planned procedures outside of ICU
- [] Nephrology and ICU team to review medication dosages with pharmacist
- [] Weigh patient pre-CRRT and daily
- [] Labs: CBC, Phosphorus, Magnesium daily, Chem 7 and pT/pTT bid

[] Method

- [] SCUF
- [] CVVH
- [] CVVHD
- [] CVVHDF
- [] SLED

[] Dialysate

Prismasate (Gambro)	☐	☐	☐	☐
	BGK4/2.5	BK03.5	BGK4/0	BGK2/0
Calcium (mEq/L)	2.5	3.5	0	0
Magnesium (mEq/L)	1.5	1.0	1.5	1.0
Sodium (mEq/L)	140	140	140	140
Potassium (mEq/L)	4	0	4	2
Chloride (mEq/L)	113	109.5	110.5	108
Lactate (mEq/L)	3	3	3	3
Bicarbonate (mEq/L)	32	32	32	32
Glucose (mEq/dL)	110	0	110	110
Osmolarity	300	287	296	292
Catalog #	**53381**	**23008**	**23007**	**22070**

[]Fluid goal: Net negative _____ mL/hr (consider all IVF given including blood products and medications)

[]Anticoagulation (choose one of the following):

[] No anticoagulation

☐ **Heparin** (100 units/mL) to run into anticoagulant line (use if platelet count >100,000, PT and aPTT normal, and if no evidence of active bleeding or history of HIT)

Heparin bolus:
- ☐ 3,000 units
- ☐ _____ units
- ☐ No heparin bolus

Heparin maintenance:
- ☐ 500 units/hour
- ☐ _____ units/hour

** **Nomogram for adjusting heparin to be written by ICU team.**

Therapeutic aPTT range: _____

Labs for heparin anticoagulation:
- ☐ STAT baseline aPTT and platelets (recommended if not done within last 24 hours)
- ☐ STAT aPTT 6 hours after heparin initiation or rate change, then Q6 hours until aPTT in therapeutic range (see above) on two consecutive readings, then check aPTT once daily.
- ☐ Platelet count every other day.

☐ **Argatroban** (1 mg/mL) to run into anticoagulant line (Note: for severe hepatic impairment, consider other agents)

Initiate argatroban:
- ☐ 0.5 mcg/kg/min continuous infusion into anticoagulant line in **moderate hepatic impairment**
- ☐ 2 mcg/kg/min continuous infusion into anticoagulant line for **all other patients**
- ☐ Other _____

****Subsequent argatroban dosing per ICU team. Order must be written for each dosage change; dosing changes to be written in *mcg/kg/min*.**

Therapeutic aPTT range: _____

Labs for argatroban anticoagulation:

STAT baseline labs (if not already obtained within the past 24 hours)
- ☐ Hematocrit
- ☐ Platelet count
- ☐ PT, aPTT
- ☐ Hepatic function panel

☐ STAT aPTT 4 hours after argatroban initiation or rate change, then Q4 hours until aPTT in therapeutic range (see above) on two consecutive readings, then check aPTT daily.

☐ Platelet count daily.

☐ **Regional Citrate** (sodium citrate and citric acid as solution ACD-A, available from Distribution) to run into anticoagulant line at _____ ml/hour (usually 2% of total blood flow rate per hour, e.g., 180 ml/hour of blood flow rate of 150 ml/minute) to maintain POST-FILTER IONIZED CALCIUM at 0.3-0.4 mM. (Note: decrease rate with hepatic failure and decrease cap on infusion rate)

Adjust CITRATE flow rate according to the sliding scale below based on POST-FILTER IONIZED CALCIUM):

Post-Filter Ionized Calcium (MM)	Citrate Infusion Rate
<0.2	Decrease by 20 ml/hour, redraw ionized calcium, and page renal M.D.
0.2-0.29	Decrease by 10 ml/hour
0.3-0.4	NO CHANGE
0.41-0.5	Increase by 10 ml/hour
0.51-0.6	Increase by 20 ml/hour, redraw ionized calcium, and page renal M.D.

DO NOT decrease the citrate flow rate below 120 ml/hour.
DO NOT increase the citrate flow rate above 300 ml/hour.

Calcium chloride 8 g in 1 L sodium chloride 0.9% (1080 ml) to run into the CENTRAL line at an initial rate of 40 ml/hour for 4 hours, then adjust calcium chloride rate according to the sliding scale below, based on peripheral ionized calcium:

Standard calcium protocol.

Peripheral Ionized Calcium (mM)	Calcium Chloride Infusion Rate
<0.85	Redraw ionized calcium, give 1 g calcium gluconate IV over 10 min, increase rate by 20 ml/hour, and page renal M.D.
0.85-0.94	Give 1 g calcium gluconate IV over 10 min, increase rate by 15 ml/hour
0.95-1.04	Increase rate by 10 ml/hour
1.05-1.09	Increase rate by 5 ml/hour
1.1-1.2	NO CHANGE
1.21-1.3	Decrease rate by 5 ml/hour
1.31-1.45	Decrease rate by 10 ml/hour
>1.45	Decrease rate by 15 ml/hour and notify renal MD

High calcium protocol (for cardiac surgical and severely hypotensive patients)

Peripheral Ionized Calcium (mM)	Calcium Chloride Infusion Rate
<0.85	Redraw ionized calcium, give 1 g calcium gluconate IV over 10 min, increase rate by 20 ml/hour, and page renal M.D.
0.85-0.99	Give 1 g calcium gluconate IV over 10 min, increase rate by 15 ml/hour
1.0-1.09	Increase rate by 10 ml/hour
1.1-1.19	Increase rate by 5 ml/hour
1.2-1.3	NO CHANGE
1.31-1.35	Decrease rate by 5 ml/hour
1.36-1.45	Decrease rate by 10 ml/hour
>1.45	Decrease rate by 15 ml/hour and notify renal MD

Labs for regional citrate anticoagulation:

☐ POST-FILTER ionized calcium at initiation of CRRT, every 4 hours times 24-hours, then every 8 hours times 24 hours then every 12 hours.

☐ Peripheral ionized calcium at initiation of CRRT, every 4 hours for 24 hours, then every 8 hours for 24 hours then every 12 hours.

[] Flow rates

[] Dialysate (up to 8L/hr)

☐ 1,000 mL/hr
☐ 1,500 mL/hr
☐ 2,000 mL/hr
☐ _____ mL/hr

[] Replacement fluid (up to 5L/hr)

☐ PRE-FILTER
☐ POST-FILTER
☐ 0.9% saline
☐ Other: _____
_____
_____
To run at _____ mL/hour

[] Blood flow rate (120 to 180 mL/min)

☐ 150 mL/minute
☐ _____mL/minute

[]Catheter care

[] Inspect site and change dressing as per central line care policy
[] If CRRT stopped, flush each lumen of the dialysis catheter with 10mL 0.9% sodium chloride, then instill into each lumen:
[] Heparin 1000 units/mL at volume of lumen (e.g. 1.2 mL if 1.2 mL lumen)
[] Heparin 5000 units/mL at volume of lumen
[] Other

Renal Fellow/Attending Signature _____Date _____Time _____

ICU Physician Signature _____Date _____Time _____