

**Unapproved Abbreviations**

Patient Label

U or u (for unit) IU (for international unit)  
 MS, MSO4, MgSO4 Trailing zero (X.0 mg), Lack of leading zero (.X mg)  
 Q.D., q.d., QD, or qd / Q.O.D., q.o.d., QOD, or qod (for once daily, every other day)

**UMMC Continuous Renal Replacement Therapy (CRRT)  
 Standard PrismaFlex Order set - Adults**

Treatment Date: mm / dd / yyyy Orders are continuous/rewrite only to modify existing orders

**Preparation for CRRT**

**Access:** Must be approved for use by Nephrology

**Type**  Temporary Dialysis Catheter **Location**  Right Internal Jugular  Other  
 Tunneled Dialysis Catheter  Left Internal Jugular

**Filter set:**  HF 1400

**Machine Prime and Catheter Lock:**

Instructions for ordering provider:

**Standard Priming Protocol:** Prime CRRT circuits with NS 1L with Heparin 10,000 units Re-prime to rinse out the excess heparin prime using the standard CRRT solution ordered as replacement fluid. **Standard Catheter Lock:** 5% Heparin (5000 units/mL). For patients with contraindications to heparin prime, use the Heparin – free priming protocol. **Heparin-Free Catheter-Lock:** 4% Tri-Sodium Citrate.

**Contraindications to heparin prime/flush:** 1) Suspected or diagnosed Heparin-Induced Thrombocytopenia. 2) Heparin allergy.

<input checked="" type="checkbox"/> <b>Nursing Communication: Standard Priming</b>	<input type="checkbox"/> <b>Nursing Communication: Heparin-Free Priming</b>
<input checked="" type="checkbox"/> NS 1L for Standard CRRT Priming	<input checked="" type="checkbox"/> NS 1L for Heparin Free Priming
<input checked="" type="checkbox"/> Heparin 10,000 units PRN each prime	<input checked="" type="checkbox"/> Tri-sodium Citrate-instill volume equal to catheter lumen volume into each lumen (Trisodium Citrate 4%) PRN
<input checked="" type="checkbox"/> Heparin catheter lock-instill volume equal to catheter lumen volume into each lumen (Heparin 5000 units/ml) PRN	

**Continuous Venovenous Hemofiltration (CVVH) Standard Settings**

Instructions for ordering provider:

- Start all CRRT machines at initial total replacement fluid rate of 2500 ml/hour with 50% delivered post Filter. Once CRRT is running and stable, individualize the replacement fluid rate based on patient needs (within 8-12 hours).
- The target CRRT Dose (total replacement fluid rate) is  $\geq 25$  ml/kg/hour (or other individualized rate).
- Always ensure  $\geq 500$  ml/hour of post-filter replacement.

**ACD-A Anticoagulation:** The starting rate for ACD-A citrate is ~1.5 times the blood flow rate but per hour. That is, if the blood flow rate is at the standard rate of 150 ml/min, the ACD-A rate should be 230 ml/hour.

- This rate may be adjusted up (usually in ~10% increments) if the circuit is clotting and the post-filter calcium is  $>0.3$  mmol/liter
- The rate may be adjusted down if citrate retention (refractory decrease in ionized calcium with increased total calcium).
- The ratio of total to ionized Calcium is monitored daily to evaluate clearance and tolerance of Citrate Anticoagulation.
- Post-filter ionized calcium levels are only measured when clinically indicated.
- Replace calcium continuously anytime Citrate anticoagulation is used.

**Blood Pump Speed:**  150 ml/minute

**Replacement Fluid:**  2500 ml/hour - 50% Post Filter.

**Pre-Filter Replacement Fluid (Purple Scale)**

Normal Base (25 mEq/L) with 4 mEq/L K<sup>+</sup>  
 High Base (35 mEq/L) with 2 mEq/L K<sup>+</sup>  
 High Base (35 mEq/L) with 4 mEq/L K<sup>+</sup>

**Post-Filter Replacement Fluid (Green Scale)**

Normal Base (25 mEq/L) with 4 mEq/L K<sup>+</sup>  
 High Base (35 mEq/L) with 2 mEq/L K<sup>+</sup>  
 High Base (35 mEq/L) with 4 mEq/L K<sup>+</sup>

Signature:

Print Name:

Pager#:

Date/Time:

6/2018

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**Anticoagulation**

- Anticoagulant Citrate Dextrose Formula-A (ACD-A 2.2%) Infused via Pre blood pump (PBP/White Scale)
- Initial rate of **230 ml/hour**

**Syringe Pump**

**Instructions for ordering provider:**

Use the syringe pump only as indicated for additional anticoagulation via heparin. Syringe pump heparin requires an additional order - 20ml syringe with heparin mixed 1000units/ml (available in CRRT medications).

- Rate = 0 ml/hour  0.9% Normal Saline in 20 ml syringe
- Rate = \_\_\_ ml/hour  Heparin 1000 units/ml in 20 ml luer-lock syringe

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**Fluid Removal Plan**

- Nursing Communication:** Fluid Removal Plan for CRRT
  - Net Volume Neutral: Match input with output.
  - Net Volume Negative:  
Remove \_\_\_ to \_\_\_ ml/hour. Maximum of \_\_\_ L/24 Hours net volume removal.
  - No Ultrafiltration

**Laboratory Monitoring**

**Instructions for ordering providers:**

1. Labs to monitor during CRRT: CBC, serum or plasma Renal Function Panel (Sodium, Potassium, Chloride, Bicarbonate, Creatinine, BUN, Phosphorus), Serum Magnesium and ionized Calcium. If ABG is available review the results of this (Do not order additional ABGs if they are not being otherwise obtained.).
2. Standard Lab Schedule: At Initiation, Every 8 hours for 48 hours (3 AM, 11 AM, 7 PM), then every 12 hours (3 AM - 3 PM)
3. Do not duplicate lab. If any lab is ordered by another team within +/- 1 hour, do not write additional orders for CRRT labs.

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**Standard monitoring:**

- Initiate Standard CRRT Laboratory Monitoring Protocol**
- Renal Function Panel (serum) once at initiation of CRRT
- Complete Blood Count without differential once at initiation of CRRT
- POCT ionized calcium once at initiation of CRRT
- Serum magnesium once at initiation of CRRT
- Other:**

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**Electrolyte Replacement**

**Instructions for ordering providers:**

1. Order individual Electrolyte Infusions for calcium and magnesium replacement at initiation of CRRT.
2. Initial Calcium dose (and infusion rate) is determined by the protocol chosen. Titrate calcium infusion to maintain ionized calcium 1.0 to 1.3 mmol/dl.
3. Initiate continuous IV phosphorous replacement when serum phosphorous is < 5 mg/dl and titrate to maintain serum phosphorous 3-5 mg/dl.
4. Magnesium is replaced by 4gm IV over 6 hours PRN if Magnesium level falls < 1.8.

**Standard Electrolyte Replacement:**

**Calcium replacement: Consider product availability when choosing electrolyte replacement infusions**

- Calcium gluconate (20gm/500ml) continuous IV infusion while CRRT running- Initial Dose 72 gm/day
- Calcium chloride (10gm/500ml) continuous IV infusion while CRRT running- Initial Dose 24 gm/day

**Phosphate replacement: Consider product availability when choosing electrolyte replacement infusions**

- Potassium Phosphate (30mmol in 250 mL) continuous IV infusion while CRRT running and phosphorous < 5 mg/dL.-Initial Dose 30 mmol/day
- Sodium Phosphate (30mmol in 250 mL) plus Potassium Chloride (add 40mEq to each 250ml infusion) - continuous IV infusion while CRRT running and phosphorous < 5 mg/dL.-Initial Dose 30 mmol/day
- Sodium Phosphate (30mmol in 250 mL) continuous IV infusion while CRRT running and phosphorous < 5 mg/dL.-Initial Dose 30 mmol/day

**Magnesium replacement:**

- Magnesium sulfate 4 grams in 100 mL NS once every 6 hours as needed for magnesium level < 1.8

**Nursing Communication:** CRRT electrolyte infusions Require Titration. Call Nephrology provider if:

- CRRT ionized Calcium target is 1.0 – 1.3 mmol/L
- Goal for Ratio total Calcium:ionized calcium  $\leq 12$
- Notify Nephrology MD/APP if ionized calcium if < 0.9 mmol/L
- Notify Nephrology MD/APP if Ratio of total:ionized calcium is  $\geq 12$
- CRRT phosphorous target is  $\geq 3.0$ , and  $\leq 4.9$  mg/dl
- Notify Nephrology MD/APP if serum phosphorous is  $\leq 2.0$
- CRRT Magnesium goal is  $\geq 1.8$ .
- Notify Nephrology MD/APP if serum magnesium is  $\leq 1.8$  after receiving in total 8 gm IV magnesium

**Pharmacy Consult: CRRT Antimicrobial Dosing**

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