CRRT Orders in CCTC

1. Speak to CCTC physician to determine whether the patient can be anticoagulated with heparin and to discuss shared goals for fluid removal
2. If heparin is okay, order heparin protocol
3. If heparin is not okay, order CRRT using "no anticoagulation" as shown below
4. Use standard CCTC flow rates for fluid for initiation (shown within each therapy below); higher flow rates should be limited to situations where clearance has been inadequate. Higher flow rates that are not therapeutically indicated are the biggest cost driver of therapy, and dramatically increase the nurses workload through increased bag changes and effluent emptying
5. If a patient's K is persistently high, CCTC physicians should also be aware so that we don't miss a non-renal cause
6. Nurses always set the machine up in the CVVHDF mode with a syringe in the anticoagulant pump. This allows any treatment protocol to be changed partway through the therapy without starting up a new circuit by simply changing the flow rates/changing any anticoagulants.
7. **We do not run < 2 mmol/L of K in dialysate fluid** (or hemofiltration if CVVHF) for safety.
8. You do not need to provide a new order to switch between PrismSOL 4 and 0. Nurses have a standing order to switch back and forth as required to manage potassium levels or available stock.
9. In CCTC, always order the potassium titration protocol (nurses adjust as needed) and critical care electrolyte replacement orders (nurses will maintain serum electrolyte levels as required).

Ordering CRRT Heparin:

- Prime with heparin
- Use the same solution on all 3 pumps (dialysis, predilution and post dilution pumps)
- Unless a modified heparin is desired, bolus with 80 u/kg to a maximum of 5000 u and initiate at 1000 u/hr.
- Solution preference is PrismoSOL 4 unless K is above 5.6 at the start. Nurses have a standing order to change between PrismoSOL 4 and 0 as needed to manage high potassium levels.
- Dialysate flow rate 1000 ml/hr
- Predilution flow rate 1000 ml/hr
- Post dilution flow rate 200 ml/hr
- Nurses have standing order to run blood flow between 150 and 250 ml/min as tolerated
- Nurses have standing order to adjust potassium and heparin

Order for Patient Receiving Systemic Anticoagulation:

- Prime with heparin **(unless patient has HITT**)
- Use the same solution on all 3 pumps (dialysis, predilution and post dilution pumps)
- Choose no anticoagulant/patient on systemic.
- Solution preference is PrismoSOL 4 unless K is above 5.6 at the start. Nurses have a standing order to change between PrismoSOL 4 and 0 as needed to manage high potassium levels.
- Dialysate flow rate 1000 ml/hr
- Predilution flow rate 1000 ml/hr
- Post dilution flow rate 200 ml/hr
- Nurses have standing order to run blood flow between 150 and 250 ml/min as tolerated
- Select standing order to adjust potassium

Ordering "No Anticoagulation":

- **Prime with heparin UNLESS patient has HITT** (the heparin is rinsed out during the priming with normal saline and only adheres to the filter)
- Use the same solution on all 3 pumps (dialysis, predilution and post dilution pumps)
- Solution preference is PrismoSOL 4 unless K is above 5.6 at the start. Nurses have a standing order to change between PrismoSOL 4 and 0 as needed to manage high potassium levels.
- **Dialysate flow rate 0**
- Predilution flow rate 2.5 L (this can be increased to 3 L if needed)
- Post dilution flow rate 250 ml/hr
- Nurses have standing order to run blood flow between 150 and 250 ml/min as tolerated. When no anticoagulation is used, the blood flow rate should be increased quickly to as high as tolerated
- Select standing order to adjust potassium in hemofiltration solutions

Citrate Protocol is rarely used and will necessitate a call to the Educator or CNS for just in time review. Citrate is considered after a failed attempt at no anticoagulation. It is not indicated for clotting problems that are due to line issues. If the filter requires changing every 12 hours twice, citrate may be considered.

Ordering Citrate in CCTC:

- We use a different protocol than used at UH.
- Review liver function; our normal practice for patients who have liver failure or a coagulopathy is to start with no anticoagulation
- **Prime with heparin UNLESS patient has HITT** (the heparin is rinsed out during the priming with normal saline and only adheres to the filter)
- **We do not use a 1500 and 1500 ml/hr flow rates**
- Use Prismo**CAL** solution for dialysis and POST dilution hemofiltration fluids
- PrismoCAL has no *potassium or calcium*; nurses will add potassium as per protocol
- Use citrate as the **PRE** dilution (PBP) pump. We do not run additional predilution hemofiltration fluid.
- Start citrate at 200 ml/hr; nurse has titration orders
- Set dialysate flow rate at 1000 ml/hr
- Set **POST** dilution hemofiltration rate at 1000 ml/hr
- Blood flow rates should be maintained at a constant level once therapy is established to minimize swings in ionized calcium levels
- Order Calcium Chloride infusion in Power Chart as 7 gm in 500 ml of normal saline and start infusion at 30 ml/hr
- Select standing order to adjust potassium, citrate and calcium chloride

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If you have questions, please contact brenda.morgan@lhsc.on.ca extension 55683 or pager 19914. At night, CCTC RNs can also contact Brenda via cell.

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