

Entering CRRT Orders in Power Chart

Citrate Anticoagulation

Use these orders for regional filter anticoagulation with citrate.

Citrate is administered as the predilution hemofiltration fluid via the PBP pump. The citrate infusion is titrated to achieve a low post filter ionized calcium. The citrate is reversed with a calcium chloride infusion that is titrated to achieve a normal systemic ionized calcium. It is used when systemic anticoagulation is contraindicated and filter patency cannot be maintained with the No Anticoagulation prescription for > 12 hours after ruling out access problems.

A separate central venous line is required for the administration calcium chloride. The calcium chloride infusion is titrated to the ionized calcium level drawn from an arterial line.

Citrate is contraindicated in severe liver failure. CRRT is usually successfully delivered with No Anticoagulation in liver failure. Liver function and signs of citrate toxicity should be monitored closely during Citrate. It should be used with caution in profound shock where clearance may be impaired. Citrate should be delayed or avoided until serum sodium levels are >130 and < 150 mmol/L to avoid rapid sodium change. Heparin or No Anticoagulation protocols are recommended when sodium levels are abnormal.

Citrate may cause hypernatremia or acid-base disturbances (most frequently metabolic alkalosis, acidosis may be associated with citrate toxicity). The use of hemodialysis fluid can mitigate some electrolyte disturbances, however, close monitoring of all electrolytes including ionized calcium is required. Hypocalcemia and associated cardiac arrhythmias can develop due to increased calcium removal, inadequate replacement or citrate toxicity. Citrate can also chelate magnesium, however, magnesium is somewhat protected because the dialysate contains magnesium.

Search: CRRT | Type: Inpatient

- CRRT Citrate Prescription VH
- CRRT Heparin Prescription VH
- CRRT No/Other Anticoagulant Prescription VH
- CRRT No/Other Anticoagulant Prescription VH**
- CRRT No/Other Anticoagulant Prescription VH
- CRRT Citrate (VH)
- BLOOD TRANSFUSION - Cryoprecipitate (CRY) - Full Protocol
- BLOOD TRANSFUSION - Cryoprecipitate (CRYO) - Product Only
- carboprost
- carboprost (250 mcg, injection, IM, ONCE)
- CardioRespiratory Monitoring (Peds)
- Carrot,Serum (F31)
- CORNERSTONE
- Corvert
- Corvert (0.01 mg/kg, injection, IV, ONCE, infuse over 10 min)

For new orders, always choose the appropriate **Power Plan**. The Power Plan includes the CRRT prescription plus the relevant labwork, nursing instructions and medication orders. The citrate Power Plan contains the orders for calcium chloride.

Use the **stand-alone orders** if you want to make a change to an existing prescription only.

If you want to change a prescription (e.g. from no anticoagulation to citrate), discontinue the old Power Plan and initiate the appropriate new Power Plan.

Critical Care VH, David - 1214 77 13 Done

Orders

Document Medication by Hx | Reconciliation

Reconciliation Status
 Meds History Admission Discharge

Orders Medication List Document In Plan

View

Orders for Signature

- ONCR HAEM IP DHA
- ONCR GU IP PEB 3d
- ONCR SAR IP High C
- ONCR GYN Paclitaxel
- ONCR SAR IP High C
- ONCR GYN Cisplatin
- ONCR HAEM IP DHA
- ONCR MULTI Paclitaxel
- ONCR HAEM Rituximab
- ONCR MULTI Pamidrolol

Plans

- Document In Plan
- Oncology
- Medical
 - NEPH - Continuous Renal Replacement Therapy (CRRT) Citrate (VH) (Planned Pending)
 - DI - Post-Intervention
 - DI - Pre-Intervention
 - ANESTH - PACU
 - NEPH - Continuous Renal Replacement Therapy (CRRT) Citrate (VH) (Planned Pending)
 - NEPH - Continuous Renal Replacement Therapy (CRRT) Citrate (VH) (Planned Pending)
 - NEPH - Continuous Renal Replacement Therapy (CRRT) Citrate (VH) (Planned Pending)
 - PAED ENDO - Lung
 - PAED ENDO - Lung
 - COMMON - IV Heparin
 - ANESTH - Epidural
 - ONC - Chemo

Component Status Dose ... Details

NEPH - Continuous Renal Replacement Therapy (CRRT) Citrate (VH) (Planned Pending)

Patient Care

- CRRT Citrate Prescription VH
- Communication Order
Monitor ionized calcium levels that are not corrected to pH
- Notify Provider
Neph/Crit Care: Daily systemic total calcium:systemic ionized calcium ratio greater than 2.5:1; Systemic ionized calcium less than 0.75 mmol/L post calcium chloride IV bolus
- Notify Provider
Neph/Crit Care: Systemic ionized calcium less than 0.75 mmol/L post calcium chloride IV bolus
- Notify Provider
Neph/Crit Care: Serum sodium greater than or equal to 150 mmol/L
- Notify Provider
Neph/Crit Care: Serum bicarbonate (from electrolyte panel) greater than 36 mmol/L.
- POC Ionized Calcium
ONCE, systemic, prior to starting treatment
- POC Ionized Calcium
per protocol, Post filter (Blue port) 1 hour post initiation of therapy, then q3hours until 2 results obtained within target, then q6hours.
- POC Ionized Calcium
per protocol, Arterial line (systemic) 1 hour post initiation of treatment, then q3hour until 2 results obtained within target, then q6hours.
- Electrolytes (Na/K/Cl/CO2) Nurse order when
q6 hour schedule while on CRRT
- Urea Serum Nurse order when
q12 hour schedule while on CRRT
- Creatinine Serum Nurse order when
q12 hour schedule while on CRRT
- Urea Fluid Nurse order when
q12 hour schedule while on CRRT
- Calcium Serum Plasma Nurse order when
daily schedule while on CRRT
- Communication Order
Nurse to discontinue CRRT Citrate powerplan when CRRT prescription is discontinued

Continuous Infusions

- calcium chloride 7 g in 500 mL sodium chloride 0.9%
IV continuous, 30 mL/hr
Start infusion 15 minutes before initiating dialysis treatment. Adjust as per protocol below to maintain SYSTEMIC ionized Calcium level 1 - 1.2 mmol/L

Medications

- sodium citrate (sodium citrate 4% injectable solution)
2.5 mL, injection, BLOCK, as directed, PRN Other: See Comments
Instill 4% sodium citrate solution into each catheter limb (total volume= limb volume + 0.1 mL)
- calcium chloride (calcium chloride bolus dose)
1,000 mg, injection, IV, as directed, PRN Other: See Comments

Details

Related Results

Orders For Nurse Review Save as My Favorite Plan for Later **Initiate Now**

These are the orders within the Citrate Power Plan. Note that the prescription (first order requiring details) is contained within the Power Plan along with the labwork, nursing instructions and medication orders.

You need to **initiate** this Power Plan **first** to activate the orders. The citrate prescription Power Form will automatically launch as soon as you choose initiate.

This Power Form launches automatically once you select initiate order.

*Performed on: 2020/08/18 1753 EDT By: Morgan, Brenda (RN)

CRRT Citrate VH

Continuous Renal Replacement Therapy Citrate Prescription VH

CRRT Prescription Status Start or update prescription Discontinue

Filter Setup

Prismaflex Mode CVHDF

Blood Flow Rate

Priming Solution

Net Fluid Removal Target

Dialysate Solution

Dialysate Solution Rate mL/hr Recommended rate is 1000 mL/hr

PRE Replacement Solution via pre blood pump (PBP)

PRE Replacement Rate mL/hr Recommended rate to start at 250 mL/hr

Post Filter Ionized Calcium Target (adjust per protocol)

POST Replacement Solution via Replacement Pump

POST Replacement Solution Rate mL/hr Recommended rate is 1000 mL/hr

Add Potassium Chloride to dialysate according to Potassium Titration Protocol?

Calcium Chloride Infusion Adjust Calcium Chloride infusion according to Calcium Titration Protocol to maintain a systemic ionized calcium level of 0.96-1.10 mmol./L

Special Instructions Yes No

Citrate Titration Protocol Potassium Titration Protocol

If entering a free text ionized calcium target, please include "adjust citrate per protocol" in the response.

Choose start or update prescription. If the patient has a previous prescription, it will automatically populate the fields. You will have to modify carefully to make sure the prescription is still correct.

Continuous Renal Replacement Therapy Citrate Prescription VH

CRRT Prescription Status Start or update prescription Discontinue

Filter Setup **ST 150**

Prismaflex Mode

Blood Flow Rate

Priming Solution **ST 150 is the standard filter.**

Do not use heparin if patient is HIT positive

Net Fluid Removal Target mL/hr Start at 0 mL/hr and progress to target as long as MAP is maintained

Dialysate Solution

Dialysate Solution Rate mL/hr Recommended rate is 1000 mL/hr

PRE Replacement Solution via pre blood pump (PBP)

PRE Replacement Rate mL/hr Recommended rate to start at 250 mL/hr

Post Filter Ionized Calcium Target (adjust per protocol)

If entering a free text ionized calcium target, please include "adjust citrate per protocol" in the response.

POST Replacement Solution via Replacement Pump

POST Replacement Solution Rate mL/hr Recommended rate is 1000 mL/hr

Add Potassium Chloride to dialysate according to Potassium Tiration Protocol? Yes

Calcium Chloride Infusion Adjust Calcium Chloride infusion according to Calcium Tiration Prototol to maintain a systemic ionized calcium level of 0.96-1.10 mmol./L

Special Instructions Yes No

*Performed on: 2020/08/18 1753 EDT By: Morgan, Brenda (RN)

CRRT Citrate VH

Continuous Renal Replacement Therapy Citrate Prescription V/L

CRRT Prescription Status Start or update prescription Discontinue

Filter Setup **ST 150**

Prismaflex Mode CVVHDF

Blood Flow Rate

Priming Solution

Net Fluid Removal Target mL/hr Start at 0 mL/hr and pro

Dialysate Solution

Dialysate Solution Rate mL/hr Recommended rate is 1000 mL/hr

PRE Replacement Solution via pre blood pump (PBP)

PRE Replacement Rate mL/hr Recommended rate to start at 250 mL/hr

Post Filter Ionized Calcium Target (adjust per protocol)

POST Replacement Solution via Replacement Pump

POST Replacement Solution Rate mL/hr Recommended rate is 1000 mL/hr

Add Potassium Chloride to dialysate according to Potassium Tiration Protocol? Yes

Calcium Chloride Infusion Adjust Calcium Chloride infusion according to Calcium Tiration Prototol to maintain a systemic ionized calcium level of 0.96-1.10 mmol./L

Special Instructions Yes No

If entering a free text ionized calcium target, please include "adjust citrate per protocol" in the response.

Always order CVVHDF. This is the order for how to set the machine up, not the actual prescription. This allows the delivered CRRT treatment to be modified without changing the filter by adjusting flow rates.

*Performed on: 2020/08/18 1753 EDT By: Morgan, Brenda (RN)

Continuous Renal Replacement Therapy Citrate Prescription VH

CRRT Prescription Status Start or update prescription Discontinue

Filter Setup ST 150

Prismaflex Mode CVHDF

Blood Flow Rate Start at 150 mL/min may increase to 250 mL/min prn to manage access and return pressure

Priming Solution Do not use heparin if patient is HIT positive

Net Fluid Removal T

Dialysate Solution

Dialysate Solution Re

PRE Replacement S

PRE Replacement Re

Post Filter Ionized Cal

POST Replacement S

POST Replacement S

Add Potassium Chlori

Calcium Chloride Infus

Special Instructions

For No Anticoagulation and Heparin orders, we want the blood flow to be as high as possible to minimize the time that blood sits in the filter. This reduces filter clotting.

For Citrate, we want to use a fixed blood flow rate to keep the citrate and calcium chloride requirements as stable as possible. The dropdown menu is being revised to the wording shown below.

Nurse need to adjust the blood flow rate to manage access and return pressures, but the goal with citrate is to keep a steady blood flow rate of ~150 ml/min.

Blood flow 150-200 to optimize access/return pressures. Maintain stable rate to avoid fluctuations in ionized calcium

*Performed on: 2020/08/18 1753 EDT By: Morgan, Brenda (RN)

Continuous Renal Replacement Therapy Citrate Prescription VH

CRRT Prescription Status Start or update prescription Discontinue

Filter Setup ST 150

Prismaflex Mode CWHDF

Blood Flow Rate Start at 150 mL/min may increase to 250 mL/min prn to manage access and return pressure

Priming Solution **5,000 units of heparin sodium in 1 litre of 0.9% sodium chloride then reprime with 1 litre of 0.9% sodium chloride**

Net Fluid Removal Target

Dialysate

Dialysate

PRE Re

PRE Re

Post Filtration

POST Filtration

POST Filtration

Add Potassium

Calcium

Spec

Do not use heparin if patient is HIT positive

entering a free text ionized calcium target, please include "adjust citrate per protocol" in the response.

Prime with heparin (even when using citrate), UNLESS there is a concern of HIT/allergy. The heparin adheres to the filter but is rinsed out of the circuit with the second prime. This helps to reduce filter clotting by providing a layer of heparin.

The patient does not receive a heparin bolus when using an ST 150 filter as this filter requires a 2 L prime. If using a smaller filter such as an ST 100 (rarely used in adults now), a heparin bolus would be given as this filter requires a single prime.

Citrate Titration Protocol

Post-Filter Ionized Calcium Citrate Infusion Adjustment

Less than target Decrease by 10 mL/hour

Potassium Titration Protocol

Add KCl to dialysate and all replacement fluids according to the following protocol. Prismaflex solution contains zero KCl at baseline.

✓ CRRT Citrate VH

Continuous Renal Replacement Therapy Citrate Prescription VH

CRRT Prescription Status Start or update prescription Discontinue

Filter Setup: ST 150

Prismaflex Mode: CWHDF

Blood Flow Rate: Start at 150 mL/min may increase to 250 mL/min prn to manage access and return pressure

Priming Solution: 5,000 units of heparin sodium in 1 litre of 0.9% sodium chloride then reprime with 1 litre of 0.9% sodium chloride Do not use heparin if patient is HIT positive

Net Fluid Removal Target: **100** mL/hr Start at 0 mL/hr and progress to target as long as MAP is maintained

Dialysate Solution

Dialysate Solution Rate

PRE Replacement Solution

PRE Replacement Rate: _____ mL/hr Recommended rate to start at 250 mL/hr

Post Filter Ionized Calcium Target (adjust per protocol): _____

POST Replacement Solution via Replacement Pump: _____

POST Replacement Solution Rate: _____ mL/hr Recommended rate is 1000 mL/hr

Add Potassium Chloride to dialysate according to Potassium Titration Protocol? Yes

Calcium Chloride Infusion Adjust Calcium Chloride infusion according to Calcium Titration Protocol to maintain a systemic ionized calcium level of 0.96-1.10 mmol./L

Special Instructions Yes No

Enter desired net fluid removal. Nurses will start at 0 and then attempt to achieve this target based on hemodynamic stability.

If entering a free text ionized calcium target, please include "adjust citrate per protocol" in the response.

Citrate Titration Protocol	Potassium Titration Protocol
Post-Filter Ionized Calcium Citrate Infusion Adjustment	Add KCl to dialysate and all replacement fluids according to the following protocol. Prismaflex solution

*Performed on: 2020/08/18 1753 EDT By: Morgan, Brenda (RN)

CRRT Citrate VH

Continuous Renal Replacement Therapy Citrate Prescription VH

CRRT Prescription Status Start or update prescription Discontinue

Filter Setup ST 150

Prismaflex Mode CVVHDF

Blood Flow Rate Start at 150 mL/min may increase

Priming Solution 5,000 units of heparin sodium

Net Fluid Removal Target 100 mL/hr

Dialysate Solution **PrismOCAL**

Dialysate Solution Rate

PRE Replacement Solution via pre blood pump (Prismaflex)

PRE Replacement Rate

Post Filter Ionized Calcium Target (adjust per protocol)

POST Replacement Solution via Replacement Pump

POST Replacement Solution Rate

Add Potassium Chloride to dialysate according to protocol

Calcium Chloride Infusion Adjust Calcium Chloride infusion Do not adjust

Special Instructions Yes No

Citrate Titration Protocol Potassium Titration Protocol

Choose PrismOCAL when ordering Citrate

PrismOCAL contains zero potassium, glucose and CALCIUM. Calcium free solution reduces the amount of citrate needed to maintain filter anticoagulation. Potassium is added by the nurse to achieve a minimum 2 mmol/L by protocol.

PrismOCAL contains the same concentration of sodium (140 mmol/L) and bicarbonate (32 mmol/L) as PrismaSOL 0 and 4. It has no glucose which may cause hypoglycemia or normoglycemia (consider DKA for patients with unexplained anion gap acidosis when PrismOCAL is being used).

BEFORE RECONSTITUTION Each 1000 mL contains	Prisma SOL 0	Prisma SOL 4	Prism OCAL
Compartment A			
Sodium bicarbonate			58.8 g
Magnesium chloride, hexahydrate	2.033 g	2.036 g	
Lactic acid	5.4 g	5.4 g	
Calcium chloride dihydrate	5.145 g	5.148 g	
Glucose anhydrous		24.2 g	
Compartment B			
Lactic acid			0.284 g
Magnesium chloride, hexahydrate			0.108 g
Sodium chloride	6.45 g	6.45 g	6.449 g
Sodium bicarbonate	3.09 g	3.09 g	
Potassium chloride		0.314 g	

AFTER RECONSTITUTION		Prisma SOL 0		Prisma SOL 4		Prism OCAL	
		mmol/L	mEq/L	mmol/L	mEq/L	mmol/L	mEq/L
Calcium	Ca ²⁺	1.75	3.50	1.75	3.50		
Magnesium	Mg ²⁺	0.5	1.0	0.5	1.0	0.5	1.0
Sodium	Na ⁺	140	140	140	140	140	140
Chloride	Cl ⁻	109.5	109.5	113.5	113.5	106	106
Lactate		3.0	3.0	3.0	3.0	3.0	3.0
Bicarbonate	HCO ₃ ⁻	32	32	32	32	32	32
Potassium	K ⁺	0	0	4.0	4.0	0	0
Glucose		0	0	6.1		0	0

These are the 3 solutions that are stocked in CCTC. Prism OCAL is a calcium free product used only with citrate.

Note that all 3 solutions contain the same final concentration of bicarbonate and sodium. They all contain 3 mmol/L of lactate which is added for pH adjustment; the lactate is metabolized to bicarbonate. Potassium is added by the nurse to achieve a minimum concentration of 2 mmol/L by protocol.

Each 5 L bag is divided into 2 compartments (250 mL in the upper and 4750 mL in the lower compartments). These must be mixed together at the time the solution is hung (stability is only 24 hours once mixed).

Refer to the "AFTER RECONSTITUTION" for the final concentration of electrolytes.

Failure to break the seal between the bags will change the concentration to that of the lower compartment only. The bag will also run dry, potentially drawing air into the circuit and causing multiple alarms (the machine will identify the 5 L bag but only 4750 mL is accessible).

*Performed on: 2020/08/18 1753 EDT By: Morgan, Brenda (RN)

CRRT Citrate VH

Continuous Renal Replacement Therapy Citrate Prescription VH

CRRT Prescription Status Start or update prescription Discontinue

Filter Setup ST 150

Prismaflex Mode CVVHDF

Blood Flow Rate Start at 150 mL/min may increase to 250 mL/min prn to manage access and return pressure

Priming Solution 5,000 units of heparin sodium in 1 litre of 0.9% sodium chloride then reprime with 1 litre of 0.9% sodium chloride Do not use heparin if patient is HIT positive

Net Fluid Removal Target 100 mL/hr Start at 0 mL/hr and progress to target as long as MAP is maintained

Dialysate Solution PrismoCAL

Dialysate Solution Rate 1000 mL/hr Recommended rate is 1000 mL/hr

When running citrate, the delivered treatment is CVVHDF. Set a dialysis flow rate of 1000 ml/hr This will achieve a delivered prescription of > 25 ml/kg/hr in most patients.

Citrate can increase both the sodium and bicarbonate concentrations in the blood. The administration of hemodialysis solution with a sodium of 140 mmol/L and bicarbonate of 32 mmol/L prevents significant electrolyte derrangments.

If you cannot achieve adequate clearance with the standard dialysis and **post dilution** flow rates, increase the dialysis rate. Any change to the blood flow, dialysis or post dilution flow rates will disrupt the stability of the citrate-calcium chloride infusions.

Target

<< NO CHANGE >>

Serum Potassium Level

Final KCl Concentration in Dialysate

*Performed on: 2020/08/18 1753 EDT By: Morgan, Brenda (RN)

Continuous Renal Replacement Therapy Citrate Prescription VH

CRRT Prescription Status Start or update prescription Discontinue

Filter Setup ST 150

Prismaflex Mode CWHDF

Blood Flow Rate Start at 150 mL/min may increase to 250 mL/min prn to manage access and return pressure

Priming Solution 5,000 units of heparin sodium in 1 litre of 0.9% sodium chloride then reprime with 1 litre of 0.9% sodium chloride Do not use heparin if patient is HIT positive

Net Fluid Removal Target 100 mL/hr Start at 0 ml/hr and progress to target as long as MAP is maintained

Dialysate Solution PrismOCAL

Dialysate Solution Rate 1,000 mL/hr Recommended rate is 1000 mL/hr

PRE Replacement Solution via pre blood pump (PBP) **Citrate ACD-A**

PRE Replacement Rate mL/hr Recommended rate to start at 250 mL/hr

Post Filter Ionized Calcium Target (adjust per protocol) If entering a free text ionized calcium target, please include "adjust citrate" in the response.

POST Replacement Solution via Repl

POST Replacement Solution Rate

Add Potassium Chloride to dialysate e

Calcium Chloride Infusion Adjust Calc

Special Instructions Yes No

Citrate is administered on the PBP pump to provide immediate anticoagulation of the blood where it first enters the access line. We use 2% Citrate ACD-A for adults.

The volume of citrate infused also provides a small amount of predilution hemofiltration.

Commonly available citrate solutions

Components	4% TSC Tri-sodium citrate	2.2% ACDA Anticoagulant Citrate Dextrose Solution-Formula A	0.5% Low concentration citrate solution
Na (mmol/l) Cl (mmol/l)	420	224	140/86
Citrate (mmol/l)	136	113	18
Citric Acid (mmol/l)	0	38.1	0
Dextrose (g/L)		24.5	0
Bag Size (ml)	500 & 1000	1000	5000

We use 2.2% Anticoagulant Citrate Dextrose Solution-Formula A (ACDA) for adults at LHSC.

✓ CRRT Citrate VH

Continuous Renal Replacement Therapy Citrate Prescription VH

CRRT Prescription Status Start or update prescription Discontinue

Filter Setup ST 150

Prismaflex Mode CWHDF

Blood Flow Rate Start at 150 mL/min may increase to 250 mL/min prn to manage access and return pressure

Priming Solution 5,000 units of heparin sodium in 1 litre of 0.9% sodium chloride then reprime with 1 litre of 0.9% sodium chloride

Do not use heparin if patient is HIT positive

Net Fluid Removal Target 100 mL/hr Start at 0 mL/hr and progress to target as long as MAP is maintained

Dialysate Solution PrismOCAL

Dialysate Solution Rate 1,000 mL/hr Recommended rate is 1000 mL/hr

PRE Replacement Solution via pre blood pump (PBP) Citrate ACD-A

PRE Replacement Rate 250 mL/hr Recommended rate to start at 250 mL/hr

Recommended citrate starting rate is 250 ml/hour. This will be titrated by the nurse per protocol to achieve a target post filter ionized calcium. The citrate adds a small amount of predilution hemofiltration.

If entering a free text ionized calcium target, please include "adjust citrate per protocol" in the response.

Post Filter Ionized Ca

POST Replacement

POST Replacement

Add Potassium Chloride

Calcium Chloride Infusion

of 0.96-1.10 mmol./L

Special Instructions Yes No

*Performed on: 2020/08/18 1753 EDT By: Morgan, Brenda (RN)

Continuous Renal Replacement Therapy Citrate Prescription VH

CRRT Prescription Status Start or update prescription Discontinue

Filter Setup ST 150

Prismaflex Mode CWHDF

Blood Flow Rate Start at 150 mL/min may increase to 250 mL/min prn to manage access and return pressure

Priming Solution 5,000 units of heparin sodium in 1 litre of 0.9% sodium chloride then reprime with 1 litre of 0.9% sodium chloride Do not use heparin if patient is HIT positive

Net Fluid Removal Target 100 mL/hr Start at 0 mL/hr and progress to target as long as MAP is maintained

Dialysate Solution PrismOCAL

Dialysate Solution Rate 1,000 mL/hr Recommended rate is 1000 mL/hr

PRE Replacement Solution via pre blood pump (PBP) Citrate ACD-A

PRE Replacement Rate 250 mL/hr Recommended rate to start at 250 mL/hr

Post Filter Ionized Calcium Target (adjust per protocol) If entering a free text ionized calcium target, please include "adjust citrate per protocol" in the response.

POST Replacement Solution via Replacement Pump 0.36-0.45 mmol/L (adjust citrate per protocol)

We use a “medium” target for filter anticoagulation which is sufficient to maintain filter life. A high dose target (0.25-0.35 mmol/L) is usually unnecessary, can be more difficult to maintain and may increase the risk for citrate toxicity. Consider changing to a low dose target (0.46-0.55 mmol/L) if citrate requirements begin to increase after achieving stability (free text in the orders).

Citrate toxicity will bind with systemic ionized calcium to create a calcium-citrate complex. This increases the total calcium and lowers the ionized calcium. Life-threatening systemic hypocalcemia can develop. Consider citrate toxicity (if Total:Ionized Calcium ratio > 2.5 or upward trend, hypocalcemia, increasing calcium chloride (and citrate) requirements and/or anion gap metabolic acidosis develops. Risk increases with shock and liver failure.

*Performed on: 2020/08/18 1753 EDT By: Morgan, Brenda (RN)

Continuous Renal Replacement Therapy Citrate Prescription VH

CRRT Prescription Status Start or update prescription Discontinue

Filter Setup ST 150

Prismaflex Mode CWHDF

Blood Flow Rate Start at 150 mL/min may increase to 250 mL/min prn to manage access and return pressure

Priming Solution 5,000 units of heparin sodium in 1 litre of 0.9% sodium chloride then reprime with 1 litre of 0.9% sodium chloride Do not use heparin if patient is HIT positive

Net Fluid Removal Target 100 mL/hr Start at 0 mL/hr and progress to target as long as MAP is maintained

Dialysate Solution PrismOCAL

Dialysate Solution Rate 1,000 mL/hr Recommended rate is 1000 mL/hr

PRE Replacement Solution via pre blood pump (PBP) Citrate ACD-A

PRE Replacement Rate 250 mL/hr Recommended rate to start at 250 mL/hr

Post Filter Ionized Calcium Target (adjust per protocol) 0.36-0.45 mmol/L (adjust citrate per protocol) If entering a free text ionized calcium target, please include "adjust citrate per protocol" in the response.

POST Replacement Solution via Replacement Pump PrismOCAL

POST Replacement Solution Rate mL/hr

Add Potassium Chloride to dialysate a

Calcium Chloride Infusion Adjust Calc 0 mmol/L

Special Instructions Yes No

Choose PrismOCAL when ordering Citrate for both the dialysis and the post dilution replacement solution.

*Performed on: 2020/08/18 1753 EDT By: Morgan, Brenda (RN)

Continuous Renal Replacement Therapy Citrate Prescription VH

CRRT Prescription Status Start or update prescription Discontinue

Filter Setup ST 150

Prismaflex Mode CWHDF

Blood Flow Rate Start at 150 mL/min may increase to 250 mL/min prn to manage access and return pressure

Priming Solution 5,000 units of heparin sodium in 1 litre of 0.9% sodium chloride then reprime with 1 litre of 0.9% sodium chloride Do not use heparin if patient is HIT positive

Net Fluid Removal Target 100 mL/hr Start at 0 mL/hr and progress to target as long as MAP is maintained

Dialysate Solution PrismoCAL

Dialysate Solution Rate 1,000 mL/hr Recommended rate is 1000 mL/hr

PRE Replacement Solution via pre blood pump (PBP) Citrate ACD-A

PRE Replacement Rate 250 mL/hr Recommended rate to start at 250 mL/hr

Post Filter Ionized Calcium Target (adjust per protocol) 0.36-0.45 mmol/L (adjust citrate per protocol) If entering a free text ionized calcium target, please include "adjust citrate per protocol" in the response.

POST Replacement Solution via Replacement Pump PrismoCAL

POST Replacement Solution Rate 1000 mL/hr Recommended rate is 1000 mL/hr

Set the flow rate to 1000 ml/hr. Avoid changing the blood flow, dialysate and replacement rates if possible, which will alter the citrate:calcium chloride stability. The combined dialysate, post dilution and predilution flow rates (2.25 L) will provide a delivered prescription of > 25 mL/kg/hr in most patients.

This is the only CCTC prescription that uses **post dilution** replacement fluid for clearance vs to maintain the deaeration chamber alone. Predilution hemofiltration during citrate Post dilution provides better clearance by concentrating the blood in the filter (increases diffusion gradient). The trade-off is that filter clotting is higher with post dilution. This is not an issue with citrate.

✓ CRRT Citrate VH

Post Filter Ionized Calcium Target (adjust per protocol). 0.36-0.45 mmol/L (adjust citrate per protocol)

POST Replacement Solution via Replacement Pump PrismOCAL

POST Replacement Solution Rate 1000 mL/hr Recommended rate is 1000 mL/hr

Add Potassium Chloride to dialysate according to Potassium Titration Protocol? Yes

Calcium Chloride Infusion Adjust Calcium Chloride infusion according to Calcium Titration Protocol to maintain a systemic ionized calcium level of 0.96-1.10 mmol/L

If entering a free text ionized calcium target, please include "adjust citrate per protocol" in the response.

Yes auto-populates. This enables the nurse to titrate the potassium concentration by protocol. The minimum final potassium concentration is 2 mmol/L.

<u>Citrate Titration Protocol</u>	
<u>Post-Filter Ionized Calcium</u>	<u>Citrate Infusion Adjustment</u>
Less than target	Decrease by 10 mL/hour
Target	<< NO CHANGE >>
Greater than target	Increase by 10 mL/hour
Notify Nephrology and Critical Care if Citrate Infusion greater than 350 mL/hour	

<u>Calcium Chloride Titration Protocol</u>	
Adjust calcium chloride infusion according to protocol below to maintain SYSTEMIC ionized calcium level 1.0 - 1.2 mmol/L	
<u>Systemic Ionized Calcium</u>	<u>Calcium Chloride Adjustment</u>
less than 0.80 mmol/L**	increase by 20 mL/hr give ordered bolus
0.80 - less than 1.0 mmol/L	increase by 10 mL/hr give ordered bolus
1.0 - 1.2 mmol/L	<< NO CHANGE >>

<u>Potassium Titration Protocol</u>	
Add KCl to dialysate and all replacement fluids according to the following protocol. Prismocal solution contains zero KCl at baseline.	
<u>Serum Potassium Level</u>	<u>Final KCl Concentration in Dialysate</u>
if less than 3.0 mmol/L	* KCl bolus I.V. as per CRIT CARE - Electrolyte Replacement (Module). * Recheck serum Magnesium and treat as per CRIT CARE - Electrolyte Replacement (Module). * KCl to equal 6 mmol/L * Notify Nephrology and Critical Care if repeat potassium level is < 3.0 mmol/L
if 3.0 - 3.4 mmol/L	KCl to equal 5 mmol/L
if 3.5 - 4.5 mmol/L	KCl to equal 4 mmol/L
if 4.6 - 5.0 mmol/L**	KCl to equal 3 mmol/L
if 5.1 - 6.0 mmol/L**	KCl to equal 2 mmol/L
if greater than 6.0 mmol/L**	Notify Nephrology and Critical Care if repeat postassium level > 6.0 mmol/L
If the serum potassium remains above 5 mmol/L with dialysis KCl 2 mmol/L, notify Nephrology and Critical Care to review possible causes for persistent hyperkalemia.	

Sign Form n: 2020/08/18 1753 EDT By: Morgan, Brenda (RN)

CRRT Citrate VH

Post Filter Ionized Calcium Target (adjust per protocol). 0.36-0.45 mmol/L (adjust citrate per protocol)

POST Replacement Solution via Replacement Pump PrismOCAL

POST Replacement Solution Rate 1000 mL/hr Recommended rate is 1000 mL/hr

Add Potassium Chloride to dialysate according to Potassium Titration Protocol? Yes

Calcium Chloride Infusion Adjust Calcium Chloride infusion according to Calcium Titration Protocol to maintain a systemic ionized calcium level of 0.96-1.10 mmol/L

Special Instructions **Adjust calcium chloride infusion auto-populates and must be selected.**

Citrate Titration Protocol

Post-Filter Ionized Calcium	Citrate Infusion Adjustment
Less than target	Decrease by 10 mL/hour
Target	<< NO CHANGE >>
Greater than target	Increase by 10 mL/hour

Notify Nephrology and Critical Care if Citrate Infusion greater than 350 mL/hour

Calcium Chloride Titration Protocol

Adjust calcium chloride infusion according to protocol below to maintain SYSTEMIC ionized calcium level 1.0 - 1.2 mmol/L

Systemic Ionized Calcium	Calcium Chloride Adjustment
less than 0.80 mmol/L**	increase by 20 mL/hr give ordered bolus
0.80 - less than 1.0 mmol/L	increase by 10 mL/hr

Potassium Titration Protocol

Add KCl to dialysate and all replacement fluids according to the following protocol. Prismocal solution contains zero KCl at baseline.

Serum Potassium Level	Final KCl Concentration in Dialysate
if less than 3.0 mmol/L	* KCl bolus I.V. as per CRIT CARE - Electrolyte Replacement (Module). * Recheck serum Magnesium and treat as per CRIT CARE - Electrolyte Replacement (Module) * KCl to equal 6 mmol/L * Notify Nephrology and Critical Care if repeat potassium level is < 3.0 mmol/L
if 3.0 - 3.4 mmol/L	KCl to equal 5 mmol/L
if 3.5 - 4.5 mmol/L	KCl to equal 4 mmol/L
if 4.6 - 5.0 mmol/L**	KCl to equal 3 mmol/L
if 5.1 - 6.0 mmol/L**	KCl to equal 2 mmol/L
if greater than 6.0 mmol/L**	Notify Nephrology and Critical Care if repeat postassium level > 6.0 mmol/L

If entering a free text ionized calcium target, please include "adjust citrate per protocol" in the response.

All titration protocols appear at the end of the Power Form. These are also available on the CCTC website and are printed by nurses for ease of use.

Citrate Titration Protocol

<u>Post-Filter Ionized Calcium</u>	<u>Citrate Infusion Adjustment</u>
Less than target	Decrease by 10 mL/hour
Target	<< NO CHANGE >>
Greater than target	Increase by 10 mL/hour

Notify Nephrology and Critical Care if Citrate Infusion greater than 350 mL/hour

Calcium Chloride Titration Protocol

Adjust calcium chloride infusion according to protocol below to maintain SYSTEMIC ionized calcium level 1.0 - 1.2 mmol/L

<u>Systemic Ionized Calcium</u>	<u>Calcium Chloride Adjustment</u>
less than 0.80 mmol/L**	increase by 20 mL/hr give ordered bolus
0.80 - less than 1.0 mmol/L	increase by 10 mL/hr give ordered bolus
1.0 - 1.2 mmol/L	<< NO CHANGE >>
greater than 1.2 mmol/L	decrease by 10 mL/hr

** Call Nephrology and Critical Care for order for calcium bolus if systemic calcium less than 0.80 mmol/L; repeat systemic IONIZED calcium 1 hour post bolus. If less than target, repeat bolus and notify provider.

Potassium Titration Protocol

Add KCl to dialysate and all replacement fluids according to the following protocol. Prismocal solution contains zero KCl at baseline.

Serum Potassium Level

if less than 3.0 mmol/L

Final KCl Concentration in Dialysate

- * KCl bolus I.V. as per CRIT CARE - Electrolyte Replacement (Module).
- * Recheck serum Magnesium and treat as per CRIT CARE - Electrolyte Replacement (Module)
- * KCl to equal 6 mmol/L
- * Notify Nephrology and Critical Care if repeat potassium level is < 3.0 mmol/L

if 3.0 - 3.4 mmol/L

KCl to equal 5 mmol/L

if 3.5 - 4.5 mmol/L

KCl to equal 4 mmol/L

if 4.6 - 5.0 mmol/L**

KCl to equal 3 mmol/L

If 5.1 - 6.0 mmol/L**

KCl to equal 2 mmol/L

if greater than 6.0 mmol/L**

Notify Nephrology and Critical Care if repeat postassium level > 6.0 mmol/L

If the serum potassium remains above 5 mmol/L with dialysis KCl 2 mmol/L, notify Nephrology and Critical Care to review possible causes for persistent hyperkalemia.



Click the green check box in top left corner to sign the form and complete the prescription order.

Sign Form n: 2020/08/18 1753 EDT

By: Morgan, Brenda (RN)

CRRT Citrate VH

Post-Filter Ionized Calcium Target (adjust per protocol) 0.36-0.45 mmol/L (adjust citrate per protocol)

If entering a free text ionized calcium target, please include "adjust citrate per protocol" in the response.

PrismOCAL

000 mL/hr Recommended rate is 1000 mL/hr

um Tiration Protocol? Yes

According to Calcium Tiration Prototol to maintain a systemic ionized calcium level of 0.96-1.10 mmol./L

Special Instructions

Yes
 No

Citrate Titration Protocol

Post-Filter Ionized Calcium	Citrate Infusion Adjustment
Less than target	Decrease by 10 mL/hour
Target	<< NO CHANGE >>
Greater than target	Increase by 10 mL/hour
Notify Nephrology and Critical Care if Citrate Infusion greater than 350 mL/hour	

Calcium Chloride Titration Protocol

Adjust calcium chorde infusion according to protocol below to maintain SYSTEMIC ionized calcium level 1.0 - 1.2 mmol/L

Systemic Ionized Calcium	Calcium Chloride Adjustment
less than 0.80 mmol/L**	increase by 20 mL/hr give ordered bolus
0.80 - less than 1.0 mmol/L	increase by 10 mL/hr give ordered bolus
1.0 - 1.2 mmol/L	<< NO CHANGE >>
greater than 1.2 mmol/L	decrease by 10 mL/hr

Potassium Titration Protocol

Add KCl to dialysate and all replacement fluids according to the following protocol. Prismocal solution contains zero KCl at baseline.

Serum Potassium Level	Final KCl Concentration in Dialysate
if less than 3.0 mmol/L	* KCl bolus I.V. as per CRIT CARE - Electrolyte Replacement (Module). * Recheck serum Magnesium and treat as per CRIT CARE - Electrolyte Replacement (Module) * KCl to equal 6 mmol/L * Notify Nephrology and Critical Care if repeat potassium level is < 3.0 mmol/L
if 3.0 - 3.4 mmol/L	KCl to equal 5 mmol/L
if 3.5 - 4.5 mmol/L	KCl to equal 4 mmol/L
if 4.6 - 5.0 mmol/L**	KCl to equal 3 mmol/L
If 5.1 - 6.0 mmol/L**	KCl to equal 2 mmol/L
if greater than 6.0 mmol/L**	Notify Nephrology and Critical Care if repeat postassium level > 6.0 mmol/L
If the serum potassium remains above 5 mmol/L with dialysis KCl 2 mmol/L, notify Nephrology and Critical Care to review possible causes for persistent hyperkalemia.	

Medication by Hx | Reconciliation

Reconciliation Status
✓ Meds History | Admission | Discharge

Document In Plan

Start: 2020/08/18 17:53 ... Duration: None ...

Component	Status	Dose ...	Details
NEPH - Continuous Renal Replacement Therapy (CRRT) Citrate (VH) (Initiated Pending)			
CRRT Citrate Prescription VH	Order		
Communication Order	Order		Monitor ionized calcium levels that are not corrected to pH
Notify Provider	Order		Neph/Crit Care: Daily systemic total calcium:systemic ionized calcium ratio greater than 2.5:1; Systemic ionized calcium less than 0.75 mmol/L post calcium chloride IV bolus
Notify Provider	Order		Neph/Crit Care: Systemic ionized calcium less than 0.75 mmol/L post calcium chloride IV bolus
Notify Provider	Order		Neph/Crit Care: Serum sodium greater than or equal to 150 mmol/L
Notify Provider	Order		Neph/Crit Care: Serum bicarbonate (from electrolyte panel) greater than 36 mmol/L.
POC Ionized Calcium	Order		2020/08/18 17:53 EDT, ONCE, systemic, prior to starting treatment
POC Ionized Calcium	Order		2020/08/18 17:53 EDT, per protocol, Post filter (Blue port) 1 hour post initiation of therapy, then q3hours until 2 results obtained within target, th...
POC Ionized Calcium	Order		2020/08/18 17:53 EDT, per protocol, Arterial line (systemic) 1 hour post initiation of treatment, then q3hour until 2 results obtained within target, ...

Details for CRRT Citrate Prescription VH

Details | Order Comments | Offset Details

*Requested Start Date/Time: 2020/08/18 17:53 EDT *Reason/Clinical History:

Special Instructions:

You will be brought back to this page to sign the orders. You will not be able to sign until you enter a reason for initiation of CRRT in the details section. If the highlighted Reason/Clinical History box does not appear, click on the CRRT Citrate Prescription at the top.

Full screen Print 11 minutes ago

Reconciliation Status
 ✓ Meds History Admission Discharge

Start: 2020/08/18 16:57 ... Duration: None ...

Component	Status	Dose ...	Details
NEPH - Continuous Renal Replacement Therapy (CRRT) No Anticoagulation or Other Anticoagulation (Initiated Pending)			
Patient Care			
CRRT No/Other Anticoagulant Prescription VH	Order		
Communication Order	Order		Change filter if urea ultrafiltrate:serum ratio <0.80
Electrolytes (Na/K/Cl/CO2) Nurse order when	Order		q6 hour schedule while on CRRT
Phosphate, Magnesium Nurse Order When	Order		q6 hour schedule while on CRRT
Urea Serum Nurse order when	Order		q12 hour schedule while on CRRT
Creatinine Serum Nurse order when	Order		q12 hour schedule while on CRRT
Urea Fluid Nurse order when	Order		q12 hour schedule while on CRRT Ultrafiltrate
Communication Order	Order		Nurse to discontinue CRRT No anticoagulation powerplan when CRRT prescription discontinued
Medications			
sodium citrate (sodium citrate 4% injectable solution)	Order		2.5 mL, injection, BLOCK, as directed, PRN for Other: See Comments, Start: 2020/08/18 16:57 EDT Instill 4% sodium citrate solution into each catheter limb (total volume= limb volume + 0.1 mL)

Details for **CRRT No/Other Anticoagulant Prescription VH**

Orders For Nurse Review Save as My Favorite Initiate Now Orders For Signature

The detail box may be difficult to view. If you cannot see the details, drag the box up to make it visible.

Document In Plan

Add to Phase + Comments Start: 2020/08/18 17:53 ... Duration: None ...

Component	Status	Dose ...	Details
NEPH - Continuous Renal Replacement Therapy (CRRT) Citrate (VH) (Initiated Pending)			
Patient Care			
⚡ ✖ CRRT Citrate Prescription VH	Order		
⚡ ☑ Communication Order	Order		Monitor ionized calcium levels that are not corrected to pH
⚡ ☑ Notify Provider	Order		Neph/Crit Care: Daily systemic total calcium:systemic ionized calcium ratio greater than 2.5:1; Systemic ionized calcium less than 0.75 mmol/L post calcium chloride IV bolus
⚡ ☑ Notify Provider	Order		Neph/Crit Care: Systemic ionized calcium less than 0.75 mmol/L post calcium chloride IV bolus
⚡ ☑ Notify Provider	Order		Neph/Crit Care: Serum sodium greater than or equal to 150 mmol/L
⚡ ☑ Notify Provider	Order		Neph/Crit Care: Serum bicarbonate (from electrolyte panel) greater than 36 mmol/L.
⚡ ☑ POC Ionized Calcium	Order		2020/08/18 17:53 EDT, ONCE, systemic, prior to starting treatment
⚡ ☑ POC Ionized Calcium	Order		2020/08/18 17:53 EDT, per protocol, Post filter (Blue port) 1 hour post initiation of therapy, then q3hours until 2 results obtained within target, th...
⚡ ☑ POC Ionized Calcium	Order		2020/08/18 17:53 EDT, per protocol, Arterial line (systemic) 1 hour post initiation of treatment, then q3hour until 2 results obtained within target, ...

Details for CRRT Citrate Prescription VH

✖ Details Order Comments ⌚ Offset Details

+ 🗨 📊

*Requested Start Date/Time: 2020/08/18 1753 EDT

*Reason/Clinical History

AKI

Special Instructions:

Orders For Nurse Review

Save as My Favorite

Initiate Now

Orders For Signature

Enter a reason for starting CRRT then choose "order for signature".

Document In Plan

Order Name	Status	Start	Details
NEPH - Continuous R... Initiated ... placing 23 order(s)			
V-C53; C5-3 OF; A VISIT #:411442900 Admit: 2008/05/27 13:41			
Patient Care			
CRRT Citrate Prescription VH	Order	2020/08/18 17:53	Reason: AKI
Communication Order	Order	2020/08/18 17:53	Monitor ionized calcium levels that are not corrected to pH
Notify Provider	Order	2020/08/18 17:53	Neph/Crit Care: Daily systemic total calcium:systemic ionized calcium ratio greater than 2.5:1; Systemic ionized calcium less than 0.75 mmol/L post calcium chloride IV bolus
Notify Provider	Order	2020/08/18 17:53	Neph/Crit Care: Systemic ionized calcium less than 0.75 mmol/L post calcium chloride IV bolus
Notify Provider	Order	2020/08/18 17:53	Neph/Crit Care: Serum sodium greater than or equal to 150 mmol/L
Notify Provider	Order	2020/08/18 17:53	Neph/Crit Care: Serum bicarbonate (from electrolyte panel) greater than 36 mmol/L.
POC Ionized Calcium	Order	2020/08/18 17:53	2020/08/18 17:53 EDT, ONCE, systemic, prior to starting treatment
POC Ionized Calcium	Order	2020/08/18 17:53	2020/08/18 17:53 EDT, per protocol, Post filter (Blue port) 1 hour post initiation of therapy, then q3hours until 2 results obtained within target, then q6hours.
POC Ionized Calcium	Order	2020/08/18 17:53	2020/08/18 17:53 EDT, per protocol, Arterial line (systemic) 1 hour post initiation of treatment, then q3hour until 2 results obtained within target, then q6hours.
Electrolytes (Na/K/Cl/CO2) Nurse ...	Order	2020/08/18 17:53	q6 hour schedule while on CRRT
Urea Serum Nurse order when	Order	2020/08/18 17:53	q12 hour schedule while on CRRT
Creatinine Serum Nurse order when	Order	2020/08/18 17:53	q12 hour schedule while on CRRT
Urea Fluid Nurse order when	Order	2020/08/18 17:53	q12 hour schedule while on CRRT
Calcium Serum Plasma Nurse order when	Order	2020/08/18 17:53	daily schedule while on CRRT
Communication Order	Order	2020/08/18 17:53	Nurse to discontinue CRRT Citrate powerplan when CRRT prescription is discontinued
Continuous Infusions			
calcium chloride -	Order	2020/08/18 17:53	IV continuous 30 ml/hr Total volume (mL): 500 Start: 2020/08/18 17:53 EDT

Details

0 Missing Required Details Orders For Nurse Review

Sign

Sign the Order

Document In Plan

▼	Component	Status	Dose ...	Details
Processing. Please refresh.				

Refresh

Details

Orders For Nurse Review

Save as My Favorite

Orders For Signature

NEPH - Continuous Renal Replacement Therapy (CRRT) Citrate (VH) (Initiated)

Last updated on: 2020/08/18 17:58 by: Morgan, Brenda (RN)

Patient Care			
<input checked="" type="checkbox"/>		CRRT Citrate Prescription VH	Ordered Reason: AKI
<input checked="" type="checkbox"/>		Communication Order	Ordered Monitor ionized calcium levels that are not corrected to pH
<input checked="" type="checkbox"/>		Notify Provider	Ordered Neph/Crit Care: Daily systemic total calcium:systemic ionized calcium ratio greater than 2.5:1; Systemic ionized calcium less than 0.75 mmol/L post calcium chloride IV bolus
<input checked="" type="checkbox"/>		Notify Provider	Ordered Neph/Crit Care: Systemic ionized calcium less than 0.75 mmol/L post calcium chloride IV bolus
<input checked="" type="checkbox"/>		Notify Provider	Ordered Neph/Crit Care: Serum sodium greater than or equal to 150 mmol/L
<input checked="" type="checkbox"/>		Notify Provider	Ordered Neph/Crit Care: Serum bicarbonate (from electrolyte panel) greater than 36 mmol/L.
<input checked="" type="checkbox"/>		POC Ionized Calcium	Ordered 2020/08/18 17:53:00 EDT, ONCE, systemic, prior to starting treatment
<input checked="" type="checkbox"/>		POC Ionized Calcium	Ordered 2020/08/18 17:53:00 EDT, per protocol, Post filter (Blue port) 1 hour post initiation of therapy, then q3hours until 2 results obtained within target, then q6hours.
<input checked="" type="checkbox"/>		POC Ionized Calcium	Ordered 2020/08/18 17:53:00 EDT, per protocol, Arterial line (systemic) 1 hour post initiation of treatment, then q3hour until 2 results obtained within target, then q6hours.
<input checked="" type="checkbox"/>		Electrolytes (Na/K/Cl/CO2) Nurse order when	Ordered q6 hour schedule while on CRRT
<input checked="" type="checkbox"/>		Urea Serum Nurse order when	Ordered q12 hour schedule while on CRRT
<input checked="" type="checkbox"/>		Creatinine Serum Nurse order when	Ordered q12 hour schedule while on CRRT
<input checked="" type="checkbox"/>		Urea Fluid Nurse order when	Ordered q12 hour schedule while on CRRT
<input checked="" type="checkbox"/>		Calcium Serum Plasma Nurse order when	Ordered daily schedule while on CRRT
<input checked="" type="checkbox"/>		Communication Order	Ordered Nurse to discontinue CRRT Citrate powerplan when CRRT prescription is discontinued
Continuous Infusions			
<input checked="" type="checkbox"/>		calcium chloride - additive 7 g + sodium chloride 0.9% 500 mL	Ordered IV continuous, 30 mL/hr, Total volume (mL): 500, Start: 2020/08/18 17:53:00 EDT Start infusion 15 minutes before initiating dialysis treatment. Adjust as per protocol below to maintain SYSTEMIC ionized Calcium lev...
Medications			
<input checked="" type="checkbox"/>		sodium citrate (sodium citrate 4% injectable solution)	Ordered 2.5 mL, injection, BLOCK, as directed, PRN for Other: See Comments, Start: 2020/08/18 17:53:00 EDT Instill 4% sodium citrate solution into each catheter limb (total volume= limb volume + 0.1 mL)
<input checked="" type="checkbox"/>		calcium chloride (calcium chloride bolus dose)	Ordered 1,000 mg = 72 mL, injection, IV, as directed, PRN for Other: See Comments, infuse over 15 min, Start: 2020/08/18 17:53:00 EDT administer from calcium chloride infusion bag, for use with citrate protocol for systemic ionized calcium less than or equal to 0.8 m...
<input checked="" type="checkbox"/>		calcium chloride (calcium chloride bolus dose)	Ordered 500 mg = 36 mL, injection, IV, as directed, PRN for Other: See Comments, infuse over 15 min, Start: 2020/08/18 17:53:00 EDT administer from calcium chloride infusion bag, for use with citrate protocol for systemic ionized calcium less than or equal to 0.81-0....
Laboratory			
Liver Function/Enzymes			
<input checked="" type="checkbox"/>		Alkaline Phosphatase (ALP)	Ordered (Dispatched) Now, 2020/08/18 17:53:00 EDT, Blood, until 2020/08/18 17:58:00 EDT
<input checked="" type="checkbox"/>		Alanine Aminotransferase (ALT)	Ordered (Dispatched) Now, 2020/08/18 17:53:00 EDT, Blood, until 2020/08/18 17:58:00 EDT
<input checked="" type="checkbox"/>		Bilirubin, Total (BILT)	Ordered (Dispatched) Now, 2020/08/18 17:53:00 EDT, Blood, until 2020/08/18 17:58:00 EDT
<input checked="" type="checkbox"/>		Bilirubin, Total (BILT)	Ordered AM Routine, 2020/08/19 3:00:00 EDT, Blood, Frequency: daily.

Orders have been completed