



Rancho Los Amigos National Rehabilitation Center

DEPARTMENT OF NURSING

ADMINISTRATIVE

POLICY AND PROCEDURE

SUBJECT: Hemodialysis: Initiation and Termination of Hemodialysis

Policy: A190.5

Effective Date: July 3, 2023

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PURPOSE: Hemodialysis is designed to correct electrolyte imbalance and remove unwanted waste products and fluid excess from the vascular system.

POLICY STATEMENTS:

Hemodialysis may be performed by a hemodialysis nurse who has completed the required training and has demonstrated competency in the procedure

- The Written physician's order should state(Dialysis orders are good for 2 weeks):
 1. Vascular access
 2. Dialyzer (type and size)
 3. Treatment duration
 4. Dialysate composition (sodium, potassium, bicarbonate, and Calcium)
 5. Duration of dialysis
 6. Blood & dialysate flow rate
 7. Ultrafiltration rate and profile
 8. Pre and post-dialysis weight when clinically indicated
 9. Labs to be drawn
 10. Type of volume replacement fluid to be given in event of hypotension (e.g. albumin, normal saline)
 11. V/S and weight
- Before the first (newly initiated) hemodialysis treatment, a signed Informed Consent must be obtained and witnessed by the physician.
- Use Standard Precautions throughout entire procedure.

Perform a pre-hemodialysis patient assessment:

1. V/S prior to initiation, upon completion, PRN, and as ordered
2. Weight
3. Edema
4. Fluid balance
5. Pulmonary status
6. Lab results (e.g. sodium, potassium, glucose, calcium...)
7. Mental status
8. GU and GI status

PROCEDURAL STEPS:

1. Verify Dialysis orders and carry out pre-procedure orders (eg. Labs)
2. Verify vascular access (AV fistula, AV graft)
3. Gather and prepare the necessary supplies and equipment
4. Perform hand hygiene and don PPE
5. Obtain and record 'pre-dialysis' vital signs and weight
6. Explain procedure to patient
7. Access vascular port using sterile technique
8. Flush access ports as ordered
9. Prime dialysis lines as ordered

10. Set up HD machines as per the manufacturer's instructions and as per treatment orders
11. Monitor patient continuously throughout the procedure
12. Document in Electronic Medical Records

Patients with Intravenous Dialysis Catheter:

1. Place a sterile drape under catheter
2. Clamp the catheter (Note: Always clamp the catheter before removing cap. Never leave an uncapped catheter unattended.)
3. Remove the caps and disinfect the hub with antiseptic pad/applicator. Scrub the sides (threads) and the end of the hub thoroughly, with friction, making sure to remove any residue (e.g. blood). Note: Appropriate antiseptic applicator/pad is greater than 0.5% chlorhexidine with 70% alcohol or povidone-iodine.
4. Attached 10 mL sterile syringe, unclamped and withdraw 3.0 mL blood from each port to remove Heparin flush solution and re-clamp each port.
5. Flushed each port with sterile 10 ml NS
6. Connect dialysis line to catheter and unclamp.
7. Turn on blood pump and start dialysis at 150mL blood flow rate (BFR). Slowly increase up to desired BFR, as ordered.

Patients with Intravenous Dialysis Catheter with TEGO connector

1. Place a sterile drape under catheter
2. Remove Tego Curoc Cap from Tego connector.
3. Disinfect with antiseptic pad/applicator each Tego connector. Scrub the sides (threads) and at the end of the hub thoroughly with friction.
4. Attached 10 mL sterile syringe, unclamped and withdraw 3.0 mL blood from each port.
5. Flushed each port with sterile 10 ml NS
6. Connect dialysis line to catheter and unclamp.
7. Turn on blood pump and start dialysis at 150mL blood flow rate (BFR). Slowly increase up to desired BFR, as ordered.

Patients with A-V Fistula and Gortex

Grafts

1. Cleanse skin thoroughly over area where needles are to be placed and apply sterile 4x4 gauze over site.
2. Inject approximately ¼ cc Xylocaine (as needed) underneath the skin into the proposed needle site.
3. If patient has a fistula, apply a tourniquet just prior to inserting dialysis needle. Remove and reapply just prior to inserting the second dialysis needle.
4. After inserting needle, securely tape wings of butterfly needle.
5. Draw blood work as required and re-clamp fistula needle
 - Blood work, including blood gases may be drawn from the arterial needle just as with the arterial side of the shunt.
6. Connect dialysis line to catheter and unclamp.
 - Make sure saline line is clamped.
7. Tape tubing to extremity.
8. The fistula or graft connections o

Saline Prime (as per order)

1. Determine the kind of hemodialysis access the patient has
2. Proceed with steps in initiating hemodialysis but clamping arterial line before saline line
3. Turn blood pump on to a low flow rate and proceed with dialysis
 - If the patient's BP does not increase, perform ordered interventions to increase BP and page the nephrologist
4. Proceed until desired BP is obtained. Unclamp the arterial line, then clamp the saline line

Self-Prime or "Dry Prime" will be use depending if the patient is in severe volume overload

1. Notify nephrologist if Self-Prime or "Dry Prime" needs to be used
2. Use same procedural steps as above, and connect arterial line to arterial side of shunt or needle. Turn the tubing back to form a "U" shape and tape well
 - In this case, leave the venous tubing from the machine in the container that was used for priming.
3. Remove shunt and line clamps from arterial side
4. Remove venous line clamp and turn blood pump on to low blood flow rate. Allow blood to displace saline until it reaches the venous drip chamber
5. Turn the blood pump off, clamp venous line, remove protective cover, connect to venous side of shunt or venous needle and proceed with dialysis
6. If the nephrologist has ordered "**maximum ultrafiltration**" and if the patient's blood pressure remains normal, check the insert accompanying the artificial kidney to determine the amount of pressure that can be safely applied without rupturing the kidney
7. If the patient's blood pressure drops significantly, immediately stop the ultrafiltration, and bolus 100-200 mL of Normal Saline (NS) as per order
8. After 2 minutes, repeat the blood pressure. If the patient is still hypotensive, turn the blood flow rate down to 100-150 mL/minute, and re-check the blood pressure
9. Notify nephrologist immediately if the patient does not respond to treatment
 - If the BP drops dangerously low, discontinue the dialysis and contact the nephrologist for further orders

KEY-NOTE: Many patients will be volume overloaded before going on dialysis and any further fluid infusion would be contraindicated. **Throughout the dialysis treatment, the vascular access (fistula, graft, or catheter) must be exposed and visible to the dialysis nurse**

Intra-dialysis Monitoring

1. Assessment should be performed and record at initiation and q 30 minutes during HD.
 - a. VS (B/P, HR, RR). Patient's temperature must be taken prior to initiation and after completing of HD treatment and PRN
 - b. BFR (Blood Flow Rate)
 - c. DFR (Dialysis Flow Rate)
2. Assess for S/S of complications
3. Record patient's condition and response to treatment every 30 minutes and PRN for any change of condition.
4. Monitor access frequently for AV shunt/fistula infiltration, needle dislodgment or disconnection of extracorporeal tubing
5. Rinse extracorporeal tubing and dialyzer with Normal Saline q 30 minutes if ordered to prevent clotting of dialyzer and bloodlines
6. Administer medications, blood/blood products and parental fluids as ordered
7. Notify nephrologist for any significant patient changes
8. Discontinue treatment if patient's condition deteriorates and it is unsafe to continue. Notify nephrologist immediately

Terminating Dialysis Supplies:

PPE 9Mask for patient/visitors)
4x4 gauze
Tape
10ml syringe with normal saline
Antiseptic pads
Syringes
Facility approved disinfectant
Stethoscope

Disconnecting Treatment from patient (Open System)

1. Perform hand hygiene and don PPE
2. Turn off blood pump

3. Clamp arterial needle and arterial side of dialysis line
4. Disconnect arterial dialysis line from arterial needle
5. Flush arterial needle with 10 mL NS
6. Connect arterial dialysis line to extra NS port. Make sure primary NS line is clamped
7. Unclamp arterial dialysis line
8. Turn on blood pump to 150-200 mL/min. **(Using 1L NS bag and ensuring that 500 mL of NS still in the bag, which is needed to return blood)**
9. Continue to return blood with blood pump on until dialysis line clear
10. Turn off blood pump. Clamp venous fistula needle; clamp return line; disconnect
11. Remove arterial needle first, followed by venous needle, and put pressure ensuring that no bleeding at needle site; place needle tip at red needle cap
12. For patients with fistula or graft, put pressure at the needle site until bleeding stops
13. For patients with catheters, place Curos Cap for Tego connectors over each port. Change Tego connectors once a week and Curos Cap after every treatment

Disconnecting Treatment from patient (Closed System)

1. Perform hand hygiene and don PPE (have patient/visitors wear mask)
2. Clamp the catheter lumen to prevent air from entering either lumen of the catheter
3. Turn off blood pump
4. Using 1L NS bag, and ensuring of having 500mls, in the bag which is needed to return blood. Remove clamp on access line located pre-saline line
5. Let NS flow by gravity to clear arterial side. If noted to have back-up of blood because of AVG strong pressure, squeeze saline bag to clear blood on arterial side
6. When clear, clamp arterial needle
7. Turn on blood pump to 150-200 ml/min to return remaining blood to the venous site until line clear.
8. Turn off blood pump. Clamp venous fistula needle; clamp return line; disconnect.
9. Remove arterial needle first, followed by venous needle, and put pressure ensuring that no bleeding at needle site; place needle tip at red needle cap
10. For patients with fistula or graft, can put pressure at the needle site until bleeding stops

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Rancho Los Amigos Infection Prevention and Control Policy number IC100

Rancho Los Amigos Policy C109- *Transfusion of Blood Products and Colloid Solution*

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