

**OLIVE VIEW-UCLA MEDICAL CENTER  
DEPARTMENT OF NEPHROLOGY  
POLICY & PROCEDURE**

**NUMBER: 11774  
VERSION: 1**

**SUBJECT/TITLE: DIALYSIS: DIALYSIS: INITIATION AND TERMINATION OF HEMODIALYSIS**

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

1. The Written physician's order should state:
  - Dialyzer (type and size)
  - Treatment modalities (Hemodialysis, Dry Ultrafiltration, Hemodialysis with Dry Ultrafiltration)
  - Dialysate concentrations of sodium, potassium, bicarbonate, and calcium
  - Duration of dialysis
  - Blood flow rate & dialysate flow rate
  - Ultrafiltration volume
  - Pre and post-dialysis weight when clinically indicated
  - Blood work to be drawn
  - Type of volume replacement fluid to be given in event of hypotension (e.g. albumin, normal saline)
  
2. Before the first (newly initiated) hemodialysis treatment, a *signed* Informed Consent must be obtained and witnessed by the physician.
  
3. Use Standard Precautions throughout entire procedure.

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

**DEPARTMENTS:** ALL

**DEFINITIONS:**

**PROCEDURE:**

STEPS:	RATIONALE:
<ol style="list-style-type: none"> <li>1. Perform hand hygiene and don PPE.</li> <li>2. Obtain 'pre-dialysis' vital signs and record in the dialysis medical record.</li> </ol>	

<p><b><i>Patients with Intravenous Dialysis Catheter</i></b></p> <ol style="list-style-type: none"><li>1. Place a sterile drape under catheter</li><li>2. Clamp the catheter (Note: Always clamp the catheter before removing cap. Never leave an uncapped catheter unattended.)</li><li>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.</li><li>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.</li><li>5. Flushed each port with sterile 10 ml NS</li><li>6. Connect dialysis line to catheter and unclamp.</li><li>7. Turn on blood pump and start dialysis at 150mL blood flow rate (BFR). Slowly increase up to desired BFR, as ordered.</li></ol> <p><b><i>Patients with Intravenous Dialysis Catheter with TEGO connector</i></b></p> <ol style="list-style-type: none"><li>1. Place a sterile drape under catheter</li><li>2. Remove Tego Curos Cap from Tego</li></ol>	

<p>connector.</p> <ol style="list-style-type: none"><li>3. Disinfect with antiseptic pad/applicator each Tego connector. Scrub the sides (threads) and at the end of the hub thoroughly with friction.</li><li>4. Attached 10 mL sterile syringe, unclamped and withdraw 3.0 mL blood from each port.</li><li>5. Flushed each port with sterile 10 ml NS</li><li>6. Connect dialysis line to catheter and unclamp.</li><li>7. Turn on blood pump and start dialysis at 150mL blood flow rate (BFR). Slowly increase up to desired BFR, as ordered.</li></ol>	
<p><b><i>Patients with A-V Fistula and Gortex Grafts</i></b></p> <ol style="list-style-type: none"><li>1. Cleanse skin thoroughly over area where needles are to be placed and apply sterile 4x4 gauze over site.</li><li>2. Inject approximately ¼ cc Xylocaine (as needed) underneath the skin into the proposed needle site.</li><li>3. If patient has a fistula, apply a tourniquet <u>just prior to inserting dialysis needle</u>. Remove and reapply just prior to inserting the second dialysis needle.</li><li>4. <u>After inserting needle</u>, securely tape wings of butterfly needle.</li><li>5. Draw blood work as required and re-clamp fistula needle<ul style="list-style-type: none"><li>• Blood work, including blood gases may be drawn from the arterial needle just as with the arterial side of the shunt.</li></ul></li><li>6. Connect dialysis line to catheter and unclamp.<ul style="list-style-type: none"><li>• Make sure saline line is clamped.</li></ul></li><li>7. Tape tubing to extremity.</li><li>8. The fistula or graft connections or</li></ol>	<p>Gauze provides temporary protection from contamination. Xylocaine will alleviate discomfort of inserting #16 g needle. A tourniquet is usually not necessary with various types of grafts.</p>

<p>the catheter connections must be visible to nursing staff during dialysis.</p>	
<p><b><i>Saline Prime</i></b></p> <ol style="list-style-type: none"><li>1. Determine the kind of hemodialysis access the patient has.</li><li>2. Proceed with steps in initiating hemodialysis but clamping arterial line before saline line.</li><li>3. Turn blood pump on to a low flow rate and proceed with dialysis.<ul style="list-style-type: none"><li>• In the event that the patient’s BP does not increase, give other means to increase BP as ordered and page house staff or renal fellows.</li></ul></li><li>4. Proceed until desired BP is obtained. Unclamp arterial line, then clamp saline line.</li></ol>	
<p><b><i>Self-Prime or “Dry Prime.” Given if patient is in severe volume overload</i></b></p> <ol style="list-style-type: none"><li>1. Proceed as above, connecting arterial line to arterial side of shunt or needle, turn tubing back to form a “U” shape and tape well.<ul style="list-style-type: none"><li>• In this case, leave the venous tubing from the machine in the container that was used for priming.</li></ul></li><li>2. Remove shunt and line clamps from arterial side.</li><li>3. 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.</li><li>4. Turn the blood pump off, clamp venous line, remove protective cover, connect to venous side of shunt or venous needle and proceed with dialysis.</li><li>5. If the physician has ordered <b><i>“maximum ultrafiltration”</i></b> <u>and if the patient’s blood pressure remains</u></li></ol>	<p>“Maximum ultrafiltration” may only be done with a Crit-line.</p>

<p><u>normal</u> check the insert accompanying the artificial kidney to determine the amount of pressure that can be safely applied without rupturing the kidney.</p> <ol style="list-style-type: none"> <li>6. <u>If the patient's blood pressure drops significantly</u>, immediately stop the ultrafiltration, and bolus 100-200 mL of normal saline.</li> <li>7. After 2 minutes, repeat the blood pressure. If the patient is still hypotensive, turn the blood flow rate down to 100-150 mL/minute, repeat the blood pressure.</li> <li>8. Notify physician immediately if the patient does not respond to treatment.             <ul style="list-style-type: none"> <li>• If the BP drops dangerously low, discontinue the dialysis and contact the physician for further orders.</li> </ul> </li> </ol>	<p>Many patients will be volume overloaded before going on dialysis and any further fluid infusion would be contraindicated.</p>
<p><i>*Throughout the dialysis treatment, the vascular access (fistula, graft or catheter) must be exposed and visible to the dialysis nurse.</i></p>	
<p><b><i>Terminating Dialysis</i></b></p> <p><b>Equipment/Supplies</b>          PPE          4x4          Tape          2-10cc syringe with normal saline</p> <p><b>Disconnecting Treatment from patient (Open System)</b></p> <ol style="list-style-type: none"> <li>1. Perform hand hygiene and don PPE.</li> <li>2. Turn off blood pump.</li> <li>3. Clamp arterial needle. Clamp arterial side of dialysis line.</li> <li>4. Disconnect arterial dialysis line from arterial needle.</li> <li>5. Flush arterial needle with 10 mL NS.</li> <li>6. Connect arterial dialysis line to extra</li> </ol>	

<p>NS port. Make sure primary NS line is clamped.</p> <ol style="list-style-type: none"><li>7. Unclamp arterial dialysis line.</li><li>8. Turn on blood pump to 150-200 mL/min. (Make sure that 500 mL of NS in the bag needed to return blood).</li><li>9. Continue to return blood with blood pump on until dialysis line clear.</li><li>10. Turn off blood pump. Clamp venous fistula needle; clamp return line; disconnect.</li><li>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.</li><li>12. For patients with fistula or graft, put pressure at the needle site until bleeding stops.</li><li>13. For patients with catheters, place Curo Cap for Tego connectors over each port. <b>Change Tego connectors once a week and Curo Cap after every treatment.</b></li></ol> <p><b>Disconnecting Treatment from patient (Closed System)</b></p> <ol style="list-style-type: none"><li>a. Perform hand hygiene and don PPE.</li><li>b. Turn off blood pump.</li><li>c. Ensure that 500 mL of NS in the bag needed to return blood. Remove clamp on access line located pre-saline line.</li><li>d. 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.</li><li>e. When clear, clamp arterial needle.</li><li>f. Turn on blood pump to 150-200 ml/min to return remaining blood to the venous site until line clear.</li><li>g. Turn off blood pump. Clamp venous</li></ol>	
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<p>fistula needle; clamp return line; disconnect.</p> <p>h. 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.</p> <p>i. For patients with fistula or graft, can put pressure at the needle site until bleeding stops.</p>	
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References:	
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