



# Rancho Los Amigos National Rehabilitation Center

## NURSING POLICY AND PROCEDURE

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**SUBJECT: PERITONEAL DIALYSIS**

**Policy No.: C401**  
**Effective Date: 08/2018**  
**Page: 1 of 9**

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**PURPOSE:** To ensure standards for peritoneal dialysis (PD) are met when utilizing a combination of diffusion and osmosis to remove waste products and re-establish fluid, electrolyte, and acid-base balance for kidneys that are unable to perform these functions

**PHYSICIAN ORDER REQUIRED:** Yes

**PERFORMED BY:** Trained RNs

**POLICY STATEMENTS:**

- A. Physician orders will include:
  - 1. Type of dialysis - continuous ambulatory peritoneal dialysis (CAPD) or automated peritoneal dialysis (APD)
  - 2. Fill volume
  - 3. Total therapy time
  - 4. Number of exchanges per therapy
  - 5. Solution type
  - 6. Medications to be added to dialysate (done by pharmacy)
  - 7. Frequency
- B. Aseptic technique will be utilized when performing any exchange procedure including use of appropriate personal protective equipment (PPE).
- C. Patient will be assigned a private room.
- D. All dialysis solution will be obtained from pharmacy.
- E. Only pharmacy personnel will add medication to dialysate bags.
- F. Only Baxter supplies and solutions will be used for PD procedure during hospitalization.
- G. Patient admitted with personal cyclor will be using to Baxter Cyclor during hospitalization and will resume use of personal cyclor upon discharge.
- H. Waste management will include discarding effluent into a flushing mechanism and PD supplies into regular trash.
- I. A "PD Treatment in Progress" sign will be posted outside the patient's room.
- J. PD catheters to be labeled "For Peritoneal Dialysis treatment only".
- K. Daily weights will be done and documented in the patient's her after each treatment.
- L. The nurse will monitor for s/s of complications.

**POST-PERITONEAL CATHETER PLACEMENT:**

- A. Nursing Considerations upon receiving patient from post anesthesia care unit (PACU), refer to Nursing Policy C211- Care Plan Process and Inpatient Documentation
  - 1. Assess patient's catheter dressing for excess bleeding.  
**Key Point:** It may take up to 2-6 weeks for catheter exit site to heal.
  - 2. Maintain clean, dry, intact dressing
  - 3. Tape dressing securely
  - 4. Minimize catheter manipulation
  - 5. Immobilize catheter
  - 6. Palpate tunnel for induration or swelling

- B. Exit site care will be performed by PD nurse as ordered after the first post-op dressing change is performed by the surgical team.
- C. Optimal timing for peritoneal catheter insertion will be at least 2-3 weeks prior to catheter use to ensure good tissue ingrowth, fixation of the deep and superficial cuffs, and exit-site healing.
- D. The Nephrology attending or fellow will irrigate PD catheter and check for patency post-placement with 500-1000mLs saline or dialysate within 24 hours following catheter insertion removing blood and fibrin that can plug the catheter and/or form obstructing adhesions.
- E. If the catheter is not used for an extended time, irrigation can be ordered periodically, e.g., during weekly dressing changes, to maintain patency and function followed by patient education dialysis training.
- F. Pharmacy may add Heparin 1,000 units/L to irrigant to help prevent blood clots and fibrin plugs.
- G. It is recommended that dressings be changed weekly after the first post-op dressing change until healed and daily once healed.

**TYPES OF PD:**

- A. APD using a cyclor
- B. CAPD

**APD:**

- A. Equipment/Supplies
  - 1. Baxter Cyclor
  - 2. Dialysate solution(s)
  - 3. Baxter disposable cassette
  - 4. Drainage bag
  - 5. 2-Mini-cap
  - 6. PPE: Clean gloves and masks
  - 7. When necessary, convert a Fresenius CAPD Catheter to a Baxter Transfer Set (BTS).

**Key Point:** masks must be worn by everyone in the patient's room e.g., patient, visitors, healthcare providers

- Perform hand hygiene
- Prepare equipment and gather supplies
  - 1 – Baxter transfer set
  - 1 – Universal Adapter
  - 2 – Baxter Mini Caps
  - 1 – Pre-filled 10 mLs normal saline syringe
  - 1-Sterile gloves
- Open BTS, white package side down
- **Key Point:** Wrapper will be utilized as a clean field
- Open Universal Adapter (SSFA) and place on clean field
- Open Baxter Mini Caps silver side down
- Place 10 mLs normal saline syringe on clean field
- Remove blue cap from Luer lock end of the BTS
- Attach the white cap from the luer lock end of the Universal Adapter
- **Key Point:** Keep connecting ends sterile
- Attach normal saline syringe to access end of the BTS and prime
- Once primed, close the twist clamp on the BTS
- Remove syringe and attach Baxter Mini Cap to access end of the BTS (refer to YouTube: <https://youtu.be/VRMvJpyetpY>)



- B. Pre-Procedure
  - 1. Check provider order for accuracy
  - **Key Point:** Only Nephrology attending or fellows can order PD.
  - 2. Provide patient education as needed
  - 3. Obtain supplies and equipment

4. Verify that the dialysate bag received from pharmacy matches provider order (e.g., correct dextrose solution, concentration, and additives)
5. Obtain vital signs

**C. During the Procedure**

1. Monitor vital signs per unit routine
2. Set-up
  - Clean work area
  - Place the cyclor no more than 12 inches higher or lower than patient's PD catheter
  - Turn cyclor "ON"
  - Follow screen instructions, physician's orders, and manufacture's guidelines when setting-up cyclor

**D. After the Procedure**

1. Obtain & document vital signs
2. Weight patient
3. Disconnect
  - Don mask
  - Perform hand hygiene and don gloves
  - Disconnect transfer set from patient line using aseptic technique
  - Change dressing
  - Dispose of effluent in toilet and discard empty bags and tubing in regular trash
4. Shut down cyclor
5. Document information from treatment summary on cyclor in EHR including:
  - Date, time, and exchange numbers
  - Dialysate concentration and any additives/medication
  - Dialysate volume instilled
  - Dialysate volume drained and fluid appearance
  - Any complication(s) and intervention(s)

**CAPD:**

**A. Equipment/Supplies**

1. ULTRABAG solution delivery system
2. Mini-cap
3. Two red ULTRACLAMP tubing clamps
4. PPE: Clean gloves and masks  
**Key Point:** masks must be worn by everyone in the patient's room e.g., patient, visitors, healthcare providers
5. IV pole
6. Scale
7. Warming device

**B. Pre-procedure**

1. Check the provider order for completeness  
**Key Point:** Only Nephrology Attending or fellows can order PD.
2. Provide patient education as needed
3. Obtain supplies and equipment
4. Verify that the dialysate bag received from pharmacy matches provider order (e.g, correct dextrose solution, concentration, and additives)
5. Obtain vital signs
6. Warm the dialysate bag while still in the outer, plastic wrapper. Warm to body temperature.

**C. During the procedure**

1. Monitor vital signs per unit routine
2. Set-up

- Clean work area
  - Remove ULTRABAG system from over pouch and inspect pull ring, tubing, and frangible
  - Inspect solution bag according to SEAL:
    - S- Strength
    - E - Expiration
    - A – Amount
    - L - Leaks. Squeeze the bag to check for leaks or a broken frangible

**Key Point:** Small droplets in the tubing or drain container are acceptable, but if solution flows past the frangible prior to use or leaks into the solution container are noted, do not use and discard the units.

**Key Point:** Discard the bag if the solution is cloudy.
  - Inspect the patient Ultrabag connector to ensure that the pull ring is attached.

**Key Point:** Do not use if the pull ring is detached or if the frangible is broken.
  - Ensure Mini-cap is not expired.
  - Expose transfer set from patient and ensure it is closed
  - Don mask then wash and dry hands thoroughly
3. Connect
- Break blue frangible on patient ULTRABAG connector end
  - Remove pull ring from ULTRABAG patient connector
  - Key Point:** Do not touch the sterile end where the pull ring was attached.
  - Remove mini-cap from patient transfer set and immediately connect ULTRABAG system to transfer set
  - Hold transfer set steady and twist on ULTRABAG system until firmly secured
4. Drain
- Clamp fill line (irrigant or solution) with an ULTRACLAMP
  - Break green frangible
  - Hang solution bag on IV pole
  - Place drainage bag with shiny side up below the level of the abdomen in a basin on the floor
  - Open patient transfer set to drain
  - Observe effluent for cloudiness.
  - Key Point:** If cloudy, notify physician.
  - When drainage is complete, close patient transfer set to prevent air from entering patient's peritoneal cavity
5. Flush
- Ensure patient transfer set is closed
  - Remove the ULTRACLAMP from fill line to flush
  - Count to five slowly and watch new solution flow into drainage bag
  - Clamp drainage line with the ULTRACLAMP
6. Fill
- Open transfer set and allow solution to flow from solution bag
  - When fill is complete, close transfer set
  - Key Point:** When performing an irrigation procedure, the peritoneal cavity will fill with the amount indicated in the order, e.g., 500mLs at a time, until the solution is finished.
  - Clamp fill line with the second ULTRACLAMP
7. Disconnect
- Wash and dry hands thoroughly, don gloves & mask
  - Open mini-cap and examine the sponge to make sure it is wet with povidone-iodine within the cap. Avoid touching the sterile sponge
  - Disconnect the ULTRABAG system from the patient transfer set and cover with mini-cap. Ensure patient transfer set is pointing downward to prevent debris from the air from contaminating the patient transfer set
  - Weigh the effluent and document in mLs in the EHR

**Key point:** 1Kg = 1000mLs

**D. After the Procedure**

1. Obtain & document vital signs
2. Weight patient
3. Disconnect
  - Don mask
  - Perform hand hygiene and don gloves
  - Disconnect transfer set from patient line using aseptic technique
  - Change dressing
  - Dispose of effluent in toilet and discard empty bags and tubing in regular trash
4. Document
  - Date, time, and exchange amount
  - Dialysate concentration and any additives/medication
  - Dialysate volume instilled
  - Dialysate volume drained and fluid appearance
  - Any complication(s) and intervention(s)

**EXIT SITE CARE:**

**A. Supplies**

1. Gloves
2. (2) Sterile 4x4s
3. Tape (paper or plastic as preferred by patient)
4. (2) Chlorhexidine swabs

**B. Procedure**

1. Gather supplies
2. Perform hand hygiene
3. Explain procedure to patient
4. Don clean gloves
5. Remove soiled dressing and discard, minimizing catheter manipulation
6. Inspect exit site for s/s of infection, (e.g., redness, swelling, drainage)
7. Wipe area with chlorhexidine swabs starting at exit site and working outward
8. Allow area to dry
9. Apply antimicrobial ointment/cream at the exit site as ordered (e.g. Gentamicin 0.1% cream daily)
10. Fold 4x4 in half and place under catheter at exit site.
11. Place second 4x4 over folded 4x4 and catheter and secure with tape
12. Anchor catheter to abdomen with tape
13. If drainage is present, obtain culture as ordered before cleaning the exit site
14. Soften crusts and scabs with saline or soap and water never forcibly removing crusts and scabs

**C. Frequency**

1. Perform exit site care as indicated by physician's order.

**D. Documentation**

1. Exit site assessment, site care, and dressing changes
2. Complications noted and interventions

**SPECIMEN COLLECTION:**

**A. CAPD**

1. Disconnect system from patient
2. Transfer some effluent into solution bag

3. Mix effluent
4. Scrub needle port with chlorhexidine per manufacturer's guidelines
5. Obtain sample from port using a 10mL syringe with needle and place in appropriate container as ordered:
  - Blood culture bottles (1 set) 8-10mLs of effluent in each bottle
  - Lavender tube – for cell count
  - Sterile container – 1 mL for gram stain (and aerobic culture if ordered)
6. Label all containers

**B. APD**

1. Mix effluent in drainage bag
2. Scrub needle port with chlorhexidine per manufacturer's guidelines
3. Obtain sample from port using a 10mL syringe with needle and place in appropriate container as ordered:
  - Blood culture bottles (1 set) 8-10mLs of effluent in each bottle
  - Lavender tube – for cell count
  - Sterile container – 1 mL for gram stain (and aerobic culture if ordered)
4. Label all containers

**PATIENT/FAMILY EDUCATION:**

- A. Patient/family education should begin once PD is identified as the treatment of choice.
- B. Case Manager will arrange patient training to be done by dialysis company upon discharge
- C. Education will include:
  1. PD purpose and indication
  2. Post-op care management
    - a. Practice good hygiene
    - b. Keep catheter clean, dry, and secure
    - c. Protect site from gross contamination and wetness
    - d. Shower until site is healed
    - e. Avoid baths which are contraindicated
    - f. Avoid lifting heavy objects, stair climbing, straining and constipation until catheter is healed (2-6 weeks)
    - g. Restrict dressing changes until instructed by health care team to change regularly
    - h. Recognize early s/s of infection e.g., redness, tenderness, and discharge
  3. Exit site care as ordered (see above)
  4. Precautions:

Inspect catheter, exit site, and tunnel site regularly, and contact health care team if signs of infection or other complications are noted
- D. Documentation
  1. Document education provided in the EHR

**POSSIBLE COMPLICATIONS & TROUBLE SHOOTING**

**A. Cycler placement**

1. Placing the cycler more than 12 inches above the catheter can produce higher than normal flow rates during fill, lower than normal flow rates during drain, may cause pain or discomfort during fill extending drain phase duration, dwell time loss or increased slow flow alerts.

2.Placing the cyclor more than 12 inches below the catheter can produce higher than normal negative pressure during drain if the peritoneal membrane is in contact with the catheter, pain or discomfort, or in extreme cases, peritoneal membrane damage.

**B. Peritonitis**

1. Commonly due to dialysate contamination, also may be due to leaking from the catheter exit site as fluid flows back into the catheter tract.
2. Common s/s e.g., cloudy effluent, abdominal pain, fever
3. Interventions: Notify MD

**C. Respiratory distress**

1. Due to excess of dialysate in the peritoneal cavity increasing pressure on the diaphragm
2. Interventions:
  - Encourage turning and deep breathing exercises
  - Position patient for maximum lung expansion
  - Decrease dialysate volume if necessary with provider's order

**D. Abdominal discomfort**

1. Inflow pain can be due to mechanical causes, solution temperature effects, or pH and usually subsides gradually once filling is complete
2. Interventions:
  - Check tubing for kinks, dislodgement, or air entering the abdomen
  - Have patient reposition in bed or chair
  - Ensure the dialysate is not too cold or too hot

**E. Peritoneal Catheter Obstruction**

1. A common early complication of catheter placement which can be due to peritonitis
2. Interventions:
  - Assess for obstruction source
  - Identify the cause of obstruction to assist in determining the appropriate intervention

**F. Pericatheter leakage**

1. Often related to poor catheter implantation, anatomical abnormalities, early use of the recently placed catheter, or trauma
2. Intervention: Notify MD

**G. Exit-site**

1. Presence of catheter site purulent drainage with or without skin erythema
2. Intervention: Notify MD

**H. Tunnel infection**

1. Presence of clinical inflammation or ultrasonic evidence of fluid collection along the catheter tunnel
2. Intervention: Notify MD

**I. Shoulder pain**

1. May be caused by unintentional air infusion during dialysate solution instillation  
Interventions:
  - Notify MD to rule out cardiac pain
  - Assess for other causes of shoulder pain.
  - Infuse full exchange volume then drain dialysate with patient in knee-chest position

- J. Constipation
  - 1. Major cause of inflow-outflow complications
  - 2. Give constipation medication PRN
  - 3. Notify MD
  
- K. Electrolyte imbalance and hyperglycemia
  - 1. Intervention: Notify MD

**CLEANING AND MAINTENANCE (AMIA Baxter Cyclor Patient Guide pgs. 245-250)**

- A. Turn off and unplug cyclor before cleaning
- B. Clean cyclor weekly and PRN when in use
- C. Clean cyclor's exterior surface heater tray using hospital-approved disinfectant (e.g., Sani-cloth, 3 min dwell time)  
**Key Point:** DO NOT WIPE SCREEN WITH Sani-cloth.
- D. Clean with PDI bleach wipes if patient has C-diff (4 min dwell time)
- E. Wipe display screen with a damp paper towel and remove excess moisture. Fold the display screen back into the heater tray before storing it
- F. Clean the patient line holder, cassette interface, and inside the front door using an alcohol wipe and allow to dry completely prior to closing the door.
- G. Remove any dirt or lint from the cassette interface  
**Key point:** To ensure maximum cyclor functionality, the cassette should be free of lint, debris, or accumulated cleaning material.

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**Authors:** Victoria Alvarenga MSN, RN, CNS, CRRN

**Revised By:** Celis Lee Chee RN  
Josefina Marquez BSN, RN  
Victoria Alvarenga MSN, RN, CNS, CRRN

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