Peritoneal Dialysis: PD Catheter Flush Using a Twin Bag System

Site Applicability

PHC Renal Program, Critical Care Areas

Practice Level

Specialized: Registered Nurses and Licensed Practical Nurses who have completed the required peritoneal dialysis education and who provide care in a PHC Renal Program or Critical Care Areas

Need to Know

The purpose of PD catheter flushing is to:

- Ensure function of the catheter
- Maintain catheter patency
- Cleanse the peritoneal cavity of blood post catheter insertion or as clinically indicated for a healed catheter
- Remove pyrogenic material/fibrin and alleviate abdominal discomfort due to peritonitis

Flushing is performed until the out flowing dialysate return clears.

For newly inserted catheters: flushing is typically done at the time of insertion, the following morning, and one week post insertion. Subsequent weekly flushes are done until the patient begins their PD training in 3 to 4 weeks.

Equipment and Supplies

2 Litre Twin Bag of 1.5% Dianeal solution	Alcohol swabs
4 x 4 gauze or clean towel	10 mL of heparin 1000 units/mL
MiniCap	Medication label
10 mL luer lock syringe	IV pole
Blunt fill needle	2 blue scissor clamps
Red male/female port cap (‘dead-ender’)	Surgical face masks for self and patient

Procedure

Steps

STEPS	RATIONALE
1. Preparation Perform hand hygiene and gather equipment.	
Heat a 1.5% dialysate Twin Bag with outer wrap in the Microwave, with tubing side down. General heating time is 1 min per litre but each microwave will vary. Bag should be warm to touch but not hot. Remove outer wrap and wipe excess perspired fluid from the bag using 4 x 4 gauze or clean towel. Gently squeeze the bag to check for leaks and ensure that solution is clear. Check for expiry date, intact pull-tabs in place, and correct solution concentration and volume present.	Warming the dialysate solution to body temperature provides patient comfort, promotes diffusion and osmosis, and maintains body temperature. If the dialysate solution is too hot, it may scald the peritoneal membrane. This can cause scarring of the membrane, which can lead to loss of peritoneal surface area for adequate dialysis. The system must be intact and sterile. Do not use bag if faulty or expired as this could lead to infection. If defective bag found: inform nurse leader who can report product concern to supplier.
For catheters in intermittent use (i.e. post insertion): Obtain order to draw up 10 mL of 1000 units/mL heparin (follow: PD Procedures: Adding Medication to Dialysate Solution). • Add 2 mL of heparin to the 2L bag of dialysate solution • Remaining 8 mL of heparin: Use this to 'block' the PD catheter at the end of procedure (follow: Peritoneal Dialysis: Blocking of PD Tube with Heparin). For catheters in daily use: Obtain order to draw up 2 mL of 1000 units/mL heparin to add to the 2L bag of dialysate solution (follow: PD Procedures: Adding Medication to Dialysate Solution).	Heparin is used to maintain PD catheter patency by preventing the formation of fibrin or clots without causing systemic heparinization of the patient. Catheters in intermittent use are blocked with heparin to prevent fibrin formation which could block the catheter. Catheters in daily use do not require blocking with heparin.

Hang fill bag on IV pole and separate tubing. Place empty drain bag in drain position (on hook near the base of IV pole, or flat on floor).	

STEPS	RATIONALE
Connection Expose patient's Transfer Set. Ensure clamp is closed.	Ensure clamp is closed to prevent inadvertent draining.
Apply mask to self and patient and perform hand hygiene.	
Remove pull ring from Twin Bag connector. Keep end sterile in one hand while removing MiniCap from Transfer Set in the other hand.	Maintain sterility to prevent infection (No touch technique).
Immediately connect the Twin Bag tubing to the Transfer Set by twisting the Twin Bag connector onto the Transfer Set. Ensure the connection is tight and wipe any excess iodine with 4x4 gauze.	Twisting or turning the patient's catheter may cause trauma to the PD exit site. This may lead to infection.

Flush Process **a. Drain** Open Transfer Set clamp on patient to drain patient of dialysate completely.	Fluid will drain depending how much was previously left in abdomen. If left empty or with little fluid, little to none may drain.
Once fully drained, close Transfer Set clamp. Place blue scissor clamp on drain line.	
Break green plastic seal at base of fill tubing by bending it back and forth until the seal snaps.	
Open the scissor clamp on the drain line for a count of 5 seconds, allowing fluid to prime the line and flush all air into drain bag, and re-clamp. Visually check that no air remains in the fill line.	If air is allowed to enter the peritoneal cavity, the patient may experience pain (to shoulder and abdominal region). The air will slowly be reabsorbed over the next 1 to 2 days. Mild analgesics may be required.

b. Fill Open Transfer Set clamp and fill patient with approximately 500 mL of dialysate. Monitor patient for discomfort. For new catheters, the patient may not be able to tolerate larger volumes of fluid. Proceed as tolerated by patient.	Observe fluid level on fill bag to note rate of fill. If patient is experiencing discomfort, stop or reduce the speed of the flow using the roller clamp on the Transfer Set.
After filling, place second blue scissor clamp on the fill line. Remove scissor clamp from drain line now allowing fluid to drain.	
Observe the colour, clarity, presence of fibrin, and rate of drainage. Monitor for pain and leakage from exit site (new healing catheters). Continue flushing with low volumes of dialysate as patient tolerates. Drain pain may occur.	Any unusual findings re: nature of dialysate or difficulty with the exchange should be reported to the physician. Stop the flush if there is any leaking of dialysis fluid from around the catheter, drain completely, and report to the physician.
Repeat the drain and fill process, until the fluid draining out is clear, then complete final drain so peritoneum is left empty. Close the Transfer Set clamp. Ensure one blue scissor clamp on the fill line and one on the drain line.	
4. Disconnect Apply mask to self and patient and perform hand hygiene. Carefully peel open MiniCap package foil side down on a flat surface, within reach. Maintain sterility by keeping it resting in open package.	
Unscrew the Twin Bag connector from the Transfer Set. Drop Twin Bag connector while keeping patient's Transfer Set in hand.	Twisting or turning the patient's catheter may cause trauma to the PD exit site. This may lead to infection. Keep patients' Transfer Set sterile.

For catheter in intermittent use: If ordered, use remaining 8 mL of heparin to 'block' the PD catheter at the end of procedure (follow: Peritoneal Dialysis: Blocking of PD Tube with Heparin)	Blocking the catheter with heparin helps prevent the formation of fibrin, which could block the PD catheter when not in daily use. Catheters in daily use do not require capping with Heparin.
Attach new MiniCap to the Transfer Set. Secure PD catheter to patient using an immobilizing device (example: PD belt or StatLock).	Securement of PD catheter reduces risk of exit site trauma. Exit site trauma can lead to infection.
Using appropriate PPE, dispose of drained dialysate per unit specific procedure.	There is a potential for body fluid exposure splash injury.

Interventions

Notify Nephrologist if:

a. Bloody dialysate effluent does not clear despite flushing
b. Unable to flush catheter or fill / drain is slow
c. Patient unable to tolerate flush due to pain
d. Dialysate leaking from exit site
e. Any concerns regarding colour or clarity of drained effluent

Documentation

Document per unit-specific practice:

a) Date/time of completed flush
b) Any medications added (i.e.: heparin)
c) Patient tolerance of flush (i.e.: pain on fill and or drain, tolerated flush volume)
d) Colour and clarity of drainage
e) Any unusual findings (nature of dialysate, difficulty with exchange, etc.), interventions, and treatment plan.
f) Care Plan: if applicable, date of next PD catheter flush.

Patient and Family Education

1. Dressing care: should be kept clean and dry, as directed by PD Clinic. Patients are not to have tub baths or submerge catheter in water.
2. Excessive pain, bleeding, or drainage from the exit site should be reported to the PD team.
3. Secure PD catheter using immobilizing device (i.e.; PD belt). Avoid pulling or twisting catheter. Trauma to the catheter exit site may lead to infection.

Related Documents

1. B-00-12-10147 - Peritoneal Dialysis: Continuous Ambulatory Peritoneal Dialysis Twin Bag Exchange
2. B-00-12-10011 - Peritoneal Dialysis: PD Catheter Manual Y System Flush Set-Up and Care of Patient
3. B-00-12-10085 - Peritoneal Dialysis: Blocking of Peritoneal Dialysis (PD) Tube with Heparin
4. BC Renal Provincial Guideline: PD Procedures: Adding Medication to Dialysate Solution

References

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3. BC Renal Agency. After Bedside Insertion of a Peritoneal Dialysis Catheter: What do I need to know? Obtained from internet June 21, 2012 from: http://www.bcrenalagency.ca/NR/rdonlyres/44F5A0C8-6168-41CC-9B66-C5802C291659/40531/PDTBedsideInsertion_Final.pdf
4. Renal Nursing**.** Smith, T. MBE RGN Editor, Harcourt Publishers Ltd., 2000
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Persons/Group Consulted

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