Peritoneal Dialysis: PD Catheter Manual Y System Flush

Site Applicability

PHC Acute Care inpatient units, excluding Critical Care

Practice Level

Specialized: RNs and LPNs who have successfully completed the required peritoneal dialysis education

Need to Know

PD catheters are inserted surgically in the Operating Room, or 'bedside' in the 6B Procedure Room. A newly inserted PD catheter is flushed with small volumes of dialysate in order to:

- Ensure function of the catheter
- Cleanse the peritoneal cavity of blood
- Maintain catheter patency until regular dialysis commences
- Remove any residual air remaining from time of catheter insertion

Y-tubing is preferred for flushing a newly inserted catheter as the inflow and outflow rate can be assessed more accurately than with a twin bag set. Y-tubing is primarily used by the physician inserting the peritoneal dialysis catheter, but can also be used by nursing for post-insertion flushes.

Surgical O.R. insertions: PD Catheters will be flushed in the O.R. by the surgeon. The renal nurse (6B or PD Clinic) will flush the catheter post op day 1 or as otherwise ordered.

Bedside 6B Procedure Room insertions: the nurse is responsible for setting up the Y flush system and ensuring it is ready for the physician to use prior to time of insertion. The renal nurse (6B or PD Clinic) is to flush the catheter the morning following insertion or as otherwise ordered.

Subsequent flushes are normally ordered weekly. The dressing change for a new exit site is not performed until one week post insertion unless the dressing becomes fully saturated. It should be reinforced for mild drainage to avoid exposing the surgical site. The PD clinic will make arrangements for the patients' weekly flushes and dressing changes as an outpatient, or if the patient remains hospitalized, the procedures will be done as an inpatient.

Peritonitis

Dialysate flushes may be performed if clinically indicated to remove pyrogenic material and fibrin from the peritoneal cavity and to alleviate abdominal discomfort. If the catheter is healed and in normal use, *small volume only* flushing is not necessary.

Blood

Flushes can also be used to cleanse the peritoneal cavity when bloody dialysate is noted for a healed catheter.

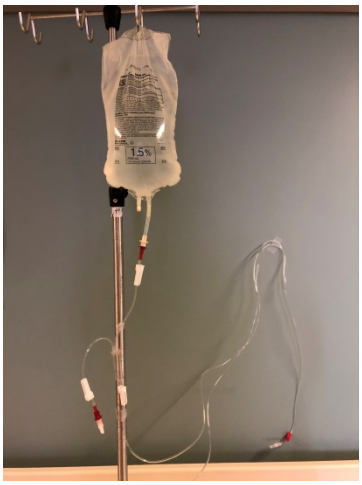
Equipment and Supplies

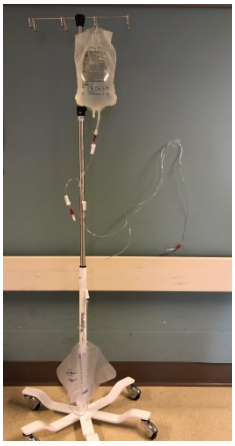
2.5 L Flush Bag of 1.5% Dianeal solution	10 mL luer lock syringe
4 x 4 gauze or clean hand towel	Blunt fill needle
'Y' Tubing Set	Alcohol swab
PD drainage bag	Red male/female port cap ('dead-ender')
IV pole with hook at base	MiniCap
10 mL of heparin 1000 units/mL	Surgical face masks for provider(s) and patient
Medication label	

Procedure

Steps

STEPS	RATIONALE
1. Perform hand hygiene and gather equipment.	
2. Heat a 1.5% 2.5L dialysate bag with outer wrap in the Microwave. • 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. • 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.
3. Check the drainage bag and tubing for holes or defects and close clamp.	

4. Hang drainage bag on low hook of IV pole.	
5. Using needle and syringe withdraw 10 mL of heparin 1000 units/mL and label syringe with medication label. • Add 2 mL of the heparin to the 2L bag of dialysate solution. Label bag with medication label. • With the remaining 8 mL of heparin: remove needle and apply red 'dead-ender'. The inserting physician will use this to 'block' the catheter.	Heparin is used to maintain PD catheter patency by preventing the formation of fibrin or clots without causing systemic heparinization of the patient.
6. Connect drainage bag to single spiked tubing. Hang drain bag low on IV pole. Tape tubing to pole just above drip chamber. 	
7. Connect the 1.5% dialysate flush bag using luer lock to one side of the 'Y' tubing. If a second flush bag is required attach to the other side of the Y. 	

8. Break the seal on the dialysate bag. Prime all lines by opening one clamp at a time until all lines are free of air including the patient line. The drip chamber should be filled approximately halfway.	Introduction of air to the abdomen will cause discomfort e.g. shoulder and abdominal pain.
9. Close all clamps. 	
10. Provide 'Y' tubing set up to physician inserting PD catheter in 6B Treatment Room.	Physician will slowly infuse small volumes of dialysate to assess catheter function post-insertion. Rapid inflow of solution can lead to increased abdominal discomfort in patients with new PD catheters. Patient is in supine position to minimize intra-abdominal pressure and decrease the risk of PD catheter leak. Peri-catheter leak is associated with delayed exit site healing, delayed ingrowth of catheter cuffs, and increases risk of exit-site infection. Patients may report discomfort at the end of drain. This may be due to the sucking of peritoneal membrane and can be due to the position of the PD catheter. Initial effluent drained from new PD catheter may be blood tinged but this should clear as flushing continues. Returns should show no evidence of fecal material.

11. Post procedure: • Secure PD catheter to patient using an immobilizing device (example: PD belt or StatLock). • Discard used effluent, dialysate and tubing according to unit practice.	Securement of PD catheter reduces risk of exit site trauma which can lead to infection.

Documentation

In patient record:

1. Procedure performed.
2. Any medications added (i.e.: heparin).
3. Color and clarity of drained dialysate.
4. Any difficulty instilling or draining solution.
5. Total volume of dialysate required to obtain clear returns.
6. Patient tolerance of procedure including any pain or discomfort experienced on the inflow or outflow.
7. If the physician was notified immediately in the event of bloody or cloudy dialysate and if the cloudy dialysate was sent to the lab.
8. Any peri-catheter leakage.
9. Appearance of exit site drainage (if any) and condition of exit site.

Care Plan:

1. Date of next PD catheter flush. This is usually done 1-week post PD catheter insertion

Patient and Family Education

1. If applicable, provide patient with BC Renal resource handout: After "Bedside" Insertion of a PD Catheter: What do I need to know?
2. Provide patient with details of next PD clinic appointment and/or date of next catheter flush as applicable.
3. Dressing should be kept clean and dry. Patient is not to shower or immerse catheter in water until instructed by PD clinic nurses. Dressing will be changed one week post insertion by PD Clinic or 6B nurse.
4. Report excessive pain, bleeding or drainage to dressing to PD nurse.
5. Secure catheter and avoid pulling on it, as this can cause trauma to the catheter exit site, which may lead to infection.

Related Documents

1. B-00-12-10113 - Peritoneal Dialysis: PD Catheter Flush Using a Twin Bag System
2. B-00-12-10083 - Peritoneal Dialysis: Exit Site Dressing Change for a Healed Exit Site
3. B-00-12-10085 - Peritoneal Dialysis: Blocking of Peritoneal Dialysis (PD) Tube with Heparin
4. Exit Site Care - Post Operative PD Catheter Insertion (BC Renal Agency)
5. PD Procedures: Adding Medication to Dialysate Solution (BC Renal Agency)

References

1. BC Renal. 'After Bedside Insertion of a Peritoneal Dialysis Catheter: What do I need to know?' Obtained July 16, 2019 from: http://www.bcrenalagency.ca/resource-gallery/Documents/PDT-Bedside-Removal_Final.pdf
2. BC Renal. (2013). Assisting with the Bedside (Percutaneous) Insertion of Chronic Peritoneal Catheters. Obtained from:-http://www.bcrenalagency.ca/resource-gallery/Documents/Assisting%20with%20the%20Bedside%20(Percutaneous)%20Insertion%20of%20Chronic%20Peritoneal%20Dialysis%20Catheters.pdf
3. Main, C. (2014). Peritoneal Dialysis. In Thomas, N. (Ed.), Renal Nursing (4th ed.)(pp. 207-248). London: Wiley Blackwell.

Persons/Groups Consulted:

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