



## MANITOBA RENAL PROGRAM

<b>SUBJECT</b> <ul style="list-style-type: none"> <li>▪ Peritoneal Equilibration Test (PET)</li> </ul>	<b>SECTION</b> 40.10 Peritoneal Dialysis Procedures
	<b>CODE</b> 40.10.15
<b>AUTHORIZATION</b> <ul style="list-style-type: none"> <li>▪ Professional Advisory Committee, Manitoba Renal Program</li> <li>▪ Nursing Practice Council, St. Boniface Hospital</li> </ul>	<b>EFFECTIVE DATE</b> December 2014
	<b>REVISION DATE</b> November 2017

### PURPOSE:

1. To measure the transport characteristics of the peritoneum to ensure that an appropriate peritoneal dialysis regime is prescribed.

### POLICY:

1. A baseline PET is performed 4-6 weeks after the initiation of peritoneal dialysis. This avoids the initial period where membrane characteristics tend to fluctuate with dialysis.
2. A repeat PET may be ordered if there is a change in the patient's dialysis adequacy.
3. **The patient must be peritonitis free for one month prior to a PET. (4 weeks post completion of antibiotics for peritonitis)**
4. Peritoneal Dialysis Training Nurses and float nurses at St. Boniface Hospital (SBH) perform this procedure in the Peritoneal Dialysis Unit.
5. The timing of all samples is critical to the accuracy of the test results.
  - Overnight dwell must be minimum 6-8 hours of dwell time
  - 0, 2, and 4 hours
6. Record all collection times and results on form W-00714 PET (Peritoneal Equilibration Test) Collection Sheet (40.10.15a *Appendix A*).
7. It is critical that the same dianeal strength and volume be used for the overnight dwell and the morning exchange. **0.5% dextrose, Icodextrin and amino acid based solutions cannot be used.**
  - The gold standard is 2000ml of 2.5% dextrose. If necessary, this may be adjusted to the patient's current regime (i.e. fill of 1500ml instead of 2000ml).
8. The patient is provided with written and verbal instructions prior to the test by the Peritoneal Dialysis Training Nurse.
9. Patients' blood glucose may skew results if greater than 16.5 mmol/L

## **EQUIPMENT:**

- 2000 mL 2.5% dextrose twin bag solution set
  - Effluent sample bag(s) (150mL)
  - 10 mL Syringes
  
  - Alcohol swabs
  - Blunt fill needles
  - Biochemistry tubes
  - (5) Biochemistry requisitions and tube labels
  
  - Hematology requisition (if patient requires monthly bloodwork)
  - PET form W-00714
  - Clean clamps (2)
  - MiniCap Disconnect cap (4)
  
  - Tape
  - Towel/incontinent pad
  - Appropriate volume and % dextrose twin bag for patient's prescription.
- NURSE MUST USE SAME STRENGTH AND VOLUME FOR THE PET AS USED BY PATIENT FOR THE OVERNIGHT DWELL.
  
  - **Critical that all times and volumes are recorded accurately** (refer to 40.10.15a Appendix A – Form W-00714 PET Collection Sheet)
  
  - Overnight dwell, 0 dwell, 2 hr, 4 hr and 2 hr serum collection
  - Include drain volume on requisitions and tubes as requested.
  
  - Check expiry date
  - Extra mini caps in case of contamination
  
  - For exchange once PET is completed.

## **PROCEDURE:**

1. Ensure patient used the 2000mL 2.5% dextrose twin bag solution the evening before. **Record time solution had finished infusing on PET form.**
2. Perform hand hygiene.
3. Gather supplies.
4. Perform twin bag exchange steps 1 – 12 as per 40.10.08 *Peritoneal Dialysis Exchange Utilizing Twin Bag System*.
5. Open transfer set twist clamp to begin drain.
6. **Record start of drain time on PET form**
7. Once drain complete, close transfer set twist clamp and apply clean clamp to drain line.
8. Draw a 10 ml sample from the overnight drain bag. **Record time sample taken.**

## **KEY POINT:**

- 2000ml 2.5% dextrose is the gold standard
- May adjust volume to correspond to patient's usual regime if required.
- **DO NOT USE ICODEXTRIN, 0.5% DEXTROSE OR AMINO ACID BASED SOLUTIONS AS THE PET SOLUTION**
  
- If transfer set is contaminated apply a new minicap and refer to 70.30.05g *Appendix G Decision Tree for Managing Contamination*.
  
- **If the patient has draining problems, the test is void and must be rebooked.**
  
- Number of minutes between the end of the overnight fill time and the start of the morning drain time is necessary for calculation of the PET. Overnight dwell must be a minimum 6 hours.

## **PROCEDURE:**

9. Assess effluent for colour, clarity and presence of fibrin. Measure the volume of the drained effluent.  
**Record the volume on the PET form**
10. Break green seal on fill line.
11. Open clean clamp on drain line for 5 seconds. Reclamp.
12. Open transfer set twist clamp to allow dialysate flow into the peritoneal cavity.  
**Record the fill start time on the PET form.**
13. **Record the fill completion time on the PET form.**
14. Immediately drain approximately 200mL into the effluent sample **bag**.
15. Close twist clamp to stop drain.
16. Mix effluent in sample bag and draw a 10 mL sample utilizing blunt fill needle and syringe. Inject into the biochemistry tube.  
**Record the time of the sample collection on the PET form.**
17. Open twist clamp and re-infuse the effluent sample bag solution.
18. Close transfer set twist clamp once re-infusion of dialysate solution is complete.
19. Clamp fill line with second clean clamp.
20. Perform hand hygiene.
21. Open MiniCap package.
22. Disconnect dialysate solution bag from transfer set and apply sterile mini cap.
23. Immobilize transfer set.

## **KEY POINT:**

- If effluent cloudy: **Stop PET test.**
  - *Refer to 70.30.05 Peritoneal Dialysis Contamination Protocol and 40.10.14 Collection of Peritoneal Dialysis Effluent from a Peritoneal Dialysis Drain/Sample Bag for Peritonitis Investigation.*

Ensure twist clamp is closed to prevent giving the patient air.

- To flush air from the fill line. Do not allow more than 5 seconds before clamping line; otherwise too much dialysate will be lost in the drain bag.
- Flush before fill reduces the risk of contamination.
- Have patient turn side to side as the dialysate infuses to “mix” the solution inside the peritoneum.
- Calculate the number of minutes to complete the fill.
- The 2 hour and 4 hour samples are collected relative to this time.

- This is the “zero” dwell sample.

- Silver side down to prevent cap rolling off of surface.
- Maintain sterility of transfer set end.
- If transfer set is contaminated apply a new minicap and refer to 70.30.05g *Appendix G Decision Tree for Managing Contamination.*
- Transfer set and catheter immobilization prevents trauma and infection to the exit site

## PROCEDURE:

## KEY POINT:

and promotes healing of the exit site.

### **2 HOUR SAMPLE COLLECTION:**

The patient may leave the Peritoneal Dialysis Unit during the 2 hour dwell time. It is **critical that they return to the PD unit 15 minutes prior to the "2 hour" dwell effluent sample**. A serum sample for urea, creatinine, and glucose must be drawn just before or just after the 2 hours effluent sample. (Other bloodwork as required may also be done at this time i.e. if patient is due for monthly bloodwork).

1. Perform hand hygiene
2. Gather:
  - Effluent sample bag(s) (150mL)
  - MiniCap Disconnect cap x 2
  - blunt needle
  - 10 mL syringe
  - biochemistry tube
3. Ensure twist clamp is closed.
4. Open effluent sample bag package. Ensure connector cover is intact.
5. Perform hand hygiene.
6. Remove connector cover from effluent sample bag.
  - Maintain sterility of the luer lock connector. If contaminated, discard bag and use new Effluent sample bag.
7. Holding transfer set securely, remove MiniCap from transfer set and discard cap. Maintain sterility of exposed end.
  - If transfer set is contaminated apply a new minicap and refer to 70.30.05g *Appendix G Decision Tree for Managing Contamination*.
8. Connect Effluent sample bag to transfer set.
  - Use aseptic technique.
9. **At the 2 hour dwell time**, open twist clamp and fill Effluent sample bag (approximately 200 mL).
10. Using alcohol swab, scrub medication port of Effluent sample bag for 15 seconds.
11. Mix effluent in sample bag and draw a 10 mL sample of effluent utilizing blunt fill needle and syringe. Inject into biochemistry tube.
12. Open twist clamp and reinfuse effluent sample bag solution.
13. Close twist clamp. Close clamp on Effluent sample bag.
14. Perform hand hygiene
15. Open MiniCap package
  - Silver side down to prevent cap rolling off of surface.
16. Disconnect Effluent sample bag from transfer set and apply mini cap.
  - Maintain sterility of transfer set end.
  - If transfer set is contaminated apply a new minicap and refer to 70.30.05g *Appendix G Decision Tree for Managing Contamination*.

## **PROCEDURE:**

17. Immobilize transfer set.

## **KEY POINT:**

- Transfer set and catheter immobilization prevents trauma and infection to the exit site and promotes healing of the exit site.

### **4 HOUR SAMPLE COLLECTION:**

*The patient may leave the Peritoneal Dialysis Unit for the next two hours. **It is crucial that the patient returns to the PD unit 15 minutes prior to the 4 hour sample.***

1. Perform hand hygiene
2. Gather:
  - Appropriate volume and % dextrose twin bag for patient's prescription.
  - clean clamps
  - 10 mL syringe
  - blunt fill needle
  - alcohol swab
  - biochemistry tube
3. Perform twin bag exchange steps 1 – 12 as per *40.10.08 Peritoneal Dialysis Exchange utilizing Twin Bag system.*
  - If transfer set is contaminated apply a new MiniCap and refer to 70.30.05g *Appendix G Decision Tree for Managing Contamination.*
4. Open transfer set twist clamp to begin drain.
  - **If the patient has draining problems, the test is void and must be rebooked.**
5. **Record 4 hour drain start time and 4 hour drain complete time on PET form.**
  - The number of minutes of drain time is recorded.
6. Once drain complete, **close transfer set twist clamp** and apply clean clamp to drain line.
7. Mix effluent in sample bag and draw a 10 mL effluent sample from the 4 hour drain bag and inject into biochemistry tube. **Record the collection time of the 4 hour sample.**
8. Complete the twin bag exchange as per *40.10.08 Peritoneal Dialysis Bag Exchange Utilizing Twin Bag System.*
  - If the patient is normally empty during the day, cap off without filling.
9. Assess effluent for colour, clarity and presence of fibrin. Measure the volume of the drained effluent. **Record the volume on the PET form.**
  - If effluent cloudy refer to 70.30.05 *Peritoneal Dialysis Contamination Protocol* and 40.10.14 *Collection of Peritoneal Dialysis Effluent from a Peritoneal Dialysis Drain/Sample Bag for Peritonitis Investigation.*
  - **Stop PET test.**
10. Send all dialysate samples for urea, creatinine, and glucose.
11. Utilize PD Adequest to calculate the patients transport characteristics once results received.
  - Adjust patient's current regime based on the PET result.

## **DOCUMENTATION:**

- Patient Health Record
  - Date of PET and result (High, High Average, Low Average, Low)

## **REFERENCES:**

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