



# PROVINCIAL STANDARDS & GUIDELINES



## Bedside (Percutaneous) Insertion/ Removal of Chronic Peritoneal Dialysis Catheters

Reviewed and Revised: Aug 2024  
Approved by the BC Provincial PD Committee



# Table of Contents

---

1.0 Scope .....	1
2.0 Rationale .....	2
3.0 Recommendations.....	4
4.0 References.....	10
5.0 Sponsors .....	12
6.0 Effective Date .....	12
7.0 Appendices.....	12
Appendix 1: Self-learning package on bedside insertion/removal of PD catheters .....	13
Appendix 2: Pre-printed orders for bedside PD catheter insertions.....	14

## IMPORTANT INFORMATION

This BC Renal guideline/resource was developed to support equitable, best practice care for patients with chronic kidney disease living in BC. The guideline/resource promotes standardized practices and is intended to assist renal programs in providing care that is reflected in quality patient outcome measurements. Based on the best information available at the time of publication, this guideline/resource relies on evidence and avoids opinion-based statements where possible; refer to [www.BCRenal.ca](http://www.BCRenal.ca) for the most recent version.

**For information about the use and referencing of BC Renal guidelines/resources, refer to [BCRenal.ca/health-info](http://BCRenal.ca/health-info).**



### BC Renal

200-1333 West Broadway  
Vancouver, BC  
V6H 4C1

Phone: 604-875-7340  
Email: [bcrenal@bcrenal.ca](mailto:bcrenal@bcrenal.ca)  
Web: [BCRenal.ca](http://BCRenal.ca)

- Facebook.com/BCRenal
- X.com/BCRenal
- Youtube.com/BCRenal
- LinkedIn.com/company/bc-renal

## 1.0 Scope

Access to timely insertion and removal of chronic peritoneal dialysis (PD) catheters is an important aspect of a successful PD program.

In BC, chronic peritoneal dialysis (PD) catheters are inserted in two ways:

1. As a surgical procedure in the operating room performed by a vascular or general surgeon. These insertions may be done using an open incision and surgical dissection (laparotomy) or a laparoscopic/minimally invasive technique. Both are done as same day or short stay (1 – 2 day post-operative stay) procedures and under a general anaesthetic.
2. As a “bedside” (non-surgical) procedure in a non-surgical setting performed by a physician who has had special training. May be done using a (i) trocar, rigid catheter and guide wire (Seldinger technique), either via anatomical landmarks or under ultrasound guidance; or(ii) preassembled cannula with trocar and a spiral sheath (Quill) and peritoneoscope (Y-Tec technique). Both are done as outpatient procedures and may involve an overnight stay. Procedures are done using a local anaesthetic +/- an oral anti-anxiety agent, narcotic or conscious sedation.

The removal of a chronic PD catheter is performed for either an acute situation such as PD peritonitis or as a planned procedure, following a modality switch to hemodialysis. The catheter removal can be done as a surgical procedure in a surgical setting or as a bedside procedure in a non-surgical setting. Vascular or general surgeons perform the procedure

in the surgical setting and physicians who have had special training perform the bedside (non-surgical) procedures.

The literature and the BC experience suggests that timely access to PD catheter insertion and removal is easier to achieve in bedside (non-surgical) settings than surgical settings where surgeon and operating time may be scarce. Further, bedside settings have the added benefit that procedures are done under local anaesthetic (+/-an anti-anxiety agent, narcotic or conscious sedation) with similar (and in some cases, better) outcomes for the majority of patients. (10)

### **This guideline was developed to support the bedside insertion and removal of chronic PD catheters.**

The guideline utilizes information in the literature as well as documents and experience from centres currently offering bedside PD catheter insertion/removal in BC.

The desired goal for all PD patients in BC is to have access to timely insertion and removal of peritoneal dialysis catheters through:

- Bedside (non-surgical) PD catheter insertion/removal.
- Alternative service (surgical) for PD catheter insertion/removal for programs not able to offer bedside option.

Related documents include:

- Pre-Printed Orders for Bedside PD Catheter Insertion and Removal (see [Appendix 1](#))
- [Assisting with the Bedside \(Percutaneous\) Insertion of Chronic Peritoneal Dialysis Catheters](#) (nursing procedure under separate cover)

<sup>1</sup> Throughout this document “bedside” procedure refers to a procedure performed in a setting outside the operating room.

- Assisting with the Bedside (Percutaneous) Removal of Chronic Peritoneal Dialysis Catheters (nursing procedure under separate cover)
- “Bedside” Insertion of a Peritoneal Dialysis Catheter: What is it? What Can I Expect? (patient information sheet under separate cover)
- “Bedside” Insertion of Peritoneal Dialysis Catheter: How Do I Prepare? (patient instruction sheet under separate cover)
- After “Bedside” Insertion of a Peritoneal Dialysis Catheter: What Do I Need to Know? (patient information sheet under separate cover)
- After “Bedside” Removal of a Peritoneal Dialysis Catheter: What Do I Need to Know? (patient information sheet under separate cover)

## 2.0 Rationale

The importance of timely and successful placement of PD catheters is well documented in the literature. In many jurisdictions, PD remains an underutilized form of renal replacement therapy. Several factors have been deemed responsible, one of which is timely access to PD catheter insertion and removal. The second variable relates to potential catheter related problems associated with insertion. It is therefore critical for the nephrology team to engage with the process to ensure both timely and appropriate placement of the PD catheter.

Several studies have reported increased rates of PD utilization upon initiation of nephrologist-led bedside catheter insertion programs. (6,7,10,14) Evidence suggests that catheter insertion by nephrologists is correlated to an increased penetration ratio

for PD as compared to hemodialysis (Goh et al, 2008) The safety and success of nephrologist-led catheter insertions have been well documented. (6,10,14,16,17,21) Studies comparing the safety and success of bedside insertion of PD catheters with those surgically inserted report similar or better outcomes with bedside insertion. (19) While studies report the outcomes of PD bedside catheter insertions using the Seldinger technique or the Y-Tec technique, none compare the outcomes of the two bedside procedures.

Other PD procedures in which nephrologists are involved include catheter removal and repositioning of migrated catheters (5).

RCT do not exist to support one method of implantation. The method of catheter insertion is therefore determined by a variety of factors inclusive of patient and program circumstances. It is suggested that positive clinical outcomes for PD catheter insertion is dependent on appropriate patient selection, preparation and peri operative care and training. (19) Successful outcomes are related more to the experience of the operator than to procedure or catheter design. The literature does note that high risk patients and those with prior significant abdominal surgeries may benefit from a technique that involves direct vision such as laparoscopic or open insertion. (12) The 2010 ISPD Clinical Practice Guidelines for Peritoneal Access recommends that local expertise at individual centers should govern the choice of method of PD catheter insertion.

**Benefits** of bedside over surgical PD catheter insertions/removals: (9)

Benefits		Insertions	Removals
1	General anaesthesia is not required.	✓	✓
2	Patient is awake during procedure (patient can provide feedback during the procedure; can also tense abdomen when the peritoneum is entered with a trocar).	✓	✓
3	Allows for planned and timely initiation of PD (no need to wait for surgeon and operating room time) which may avoid the need for short-term hemodialysis.	✓	
4	Small incision site allowing for potential immediate use of the PD catheter if necessary.	✓	
5	Able to control the catheter type and placement location and position.	✓	
6	Smaller incision, thereby promoting a faster recovery and less potential for bleeding and leaks.	✓	✓
7	Similar or better rates of catheter survival.	✓	
8	Similar or reduced incidences of complications.	✓	
9	Better continuity of care.	✓	✓
10	Patients report minimal pain and discomfort and are able to ambulate immediately.	✓	✓
11	Less stress for patients than having an operating room procedure; potentially less pain.	✓	✓
12	Cost effective as operating room is not required.	✓	✓
13	Equipment is simple and relatively inexpensive	✓	✓
14	Can be performed by a physician	✓	✓

**Factors to consider associated with** bedside over surgical PD catheter insertions/removals:

Considerations		Insertions	Removals
1	A “blind technique” does not permit visualization	✓	✓
2	Not suitable if intra abdominal adhesions are suspected - No lysis of adhesions.	✓	
3	Potential loss of surgical expertise within the centre to insert/remove PD catheters.	✓	✓
4	Higher risk of perforation of the bowel or blood vessels, especially if Seldinger technique is used (1% risk, Ash, 2006).	✓	
5	If use peritoneoscopic technique, one-time cost for a peritoneoscope (\$20,000+ per scope) and ongoing costs for consumables (\$200+ per procedure). Ongoing costs for consumables in the operating room are not known.	✓	
6	Appropriate infrastructure/resources are required to support (nurse, equipment, space, back up surgical support)	✓	✓

### 3.0 Recommendations

#### **Recommendation 1: Bedside insertion of PD catheters is appropriate for most patients.**

Patients for which bedside insertion is generally not appropriate (exclusion criteria) include patients who:  
Require another surgical intervention such as a hernia repair;

- Have a colostomy or ileostomy;
- Have severe liver disease;
- Are morbidly obese;
- Have an anxiety or mental health disorder which would preclude cooperation during the procedure; and/or
- Are unable to tolerate a local anaesthetic.

Patients for which bedside insertion may or may not be appropriate (decision to be made on an individual basis after assessment) include patients who:

- Have undergone one or more previous inguinal hernia repairs;
- Have undergone one or multiple previous abdominal surgeries;
- Have had multiple and/or severe peritonitis episodes.

Use of the peritoneoscopic technique may extend the range of patients for which bedside PD catheter insertion is appropriate as the peritoneoscope allows direct visualization of the peritoneal cavity and identification of a suitable site for the intraperitoneal portion of the catheter.

#### **Recommendation 2: Bedside insertion of PD catheters may be done by a physician who has had special training. The training required to perform bedside insertion of PD catheters depends upon the level of relevant procedural experience of the physician.**

Optimal long term peritoneal catheter function and exit site healing are directly related to the skills and competence of the catheter insertion team. Attention to detail and commitment to excellence should be foremost in goals for success. Peritoneal catheter insertion procedures should meet the standards of any surgical procedure reflecting known best demonstrated practices. (13)

For physicians with limited relevant procedural experience (e.g., a nephrologist that has not performed PD catheter insertions/removals as part of their training), the following is suggested as the minimum standard<sup>2</sup>:

- Review the self-learning package on bedside insertion/removal of PD catheters – see [Appendix 1](#).
- Observe one PD catheter insertion and assist with one (gloved).
- Perform 6 insertions under the supervision of an experienced procedural physician(s). Insertions should be performed within a one-year period.
- Perform 10 catheter insertions independently within 6 months of the supervised insertions (to consolidate skills) with the first one to be done within 2 – 4 weeks of the supervised insertions.
- Keep a log of the first 10 independent catheter insertions, including:

<sup>2</sup> This standard is based on the minimum requirements outlined by the American Society of Diagnostic and Interventional Nephrology (ASDIN) for insertion of PD catheters. ASDIN also requires placement of at least 2 “practice” catheters on a Dummy Tummy model, anaesthetized dog or pig, or human cadaver.

- Case identification (no patient names).
- Indications for procedure.
- Details of procedure.
- Description of complications encountered (e.g., outflow failure, infection, pericatheter leak).
- Description of management of complication, if encountered.
- Outcome of procedure: Catheter functioning at one week and one month post insertion.
- Forward log to experienced procedural physician. If there are more than 2 procedure-related complications or more than 3 catheter failures by the end of the first month, additional supervised practice and/or monitoring of additional procedures may be requested.

Comfort with the procedure is attained after performing a total of 25 procedures (opinion). After this number, most variations in the procedure and outcomes will have been experienced.

Depending on the availability of equipment and physician experience, imaging modalities including ultrasonography and fluoroscopy can be utilized to avoid injury to the inferior epigastric artery or bowel loops (12).

**Recommendation 3: At least 6 bedside PD catheter insertions are required per year to maintain skills (or if surgeon or radiologist, at least 6 procedures requiring similar skills) (opinion).**

**Recommendation 4: Bedside removal of PD catheters is appropriate for many patients. Bedside /removal of PD catheters may be done by a physician who has had special training.**

Bedside removal of PD catheters is appropriate for many patients although the difficulty of the removal procedure may be impacted by the complexity of the catheter design. Catheters with more cuffs, larger intraperitoneal segments or that require pelvic suturing of the catheter are the most difficult to remove (2, 4). Surgically placed catheters often require larger incisions and may be more difficult and take more time to remove than Tenckhoff-type catheters inserted at the bedside. The appropriateness of these more difficult cases for bedside removal needs to be based on individual assessment. Catheters considered suitable for removal at the bedside can be removed quickly and simply under local anaesthetic. Anti anxiety medication may be offered. Antibiotic coverage should be considered for pre and post catheter removal for transplant patients.

**Recommendation 5: Bedside insertion/removal of PD catheters is done in a dedicated setting which has the following available:**

- Appropriate staffing.
- Room large enough to accommodate stretcher access and sufficient work space for one physician, one nurse, and a PD insertion/removal cart/tray and supplies.
- Recovery area large enough for a stretcher or recliner chair (patient may remain in the procedure room if not required for another patient).
- Patient monitoring equipment.
- Oxygen available.
- Suction available.
- Clean sink and work area.
- Peritoneoscope (desirable but not essential).

Note: Fluoroscopy is not required.

Examples of locations that might be considered for PD catheter insertions/removals:

- Room on the renal inpatient unit or in the renal outpatient area.
- Room in an ambulatory care procedure area.
- Room in the gastroenterology procedure suite.

**Back-up from a general surgery service should be available in the event of complications.** This requires a system to be available but does not require notification of the general surgery service each time a bedside catheter is inserted or removed.

**Recommendation 6: Standard Tenckhoff catheters are appropriate for most patients. Location, position and length of the catheter must be considered.**

Ideally a PD catheter would provide reliable, rapid dialysate flow rates without any leaks or infections. Despite the advent of several new catheter designs, the curled and straight Tenckhoff catheter (first introduced in 1968) continue to be the most commonly used (curled Tenckhoff catheter is most commonly used in BC). Newer PD catheters are intended to improve hydraulic function, avoid outflow failure, and diminish exit site infections. Variations include:

- The number of cuffs (one vs. two).
- The design of the subcutaneous pathway (permanently bent vs. straight).

- Design of the intra-abdominal portion (straight vs. curled/coiled).

Evidence of the impact of these new designs on catheter outcomes is mixed with literature suggesting that no particular catheter type has been proven to be better than another (12,19). It is suggested that operator and centre characteristics and proper catheter location and position are more important than catheter design.(13). The ISPD Guidelines note that most reporters prefer two-cuff designs and that catheters with “swan neck” designs reduce the risk of early drainage failure via “migration.” Unless a single-cuff catheter is used, catheters with “swan neck” designs, however, require greater planning and technical skill for tunnel construction than a standard Tenckhoff catheter. Evidence exists indicating that single-cuff catheters are as durable as two-cuff designs when the single cuff is correctly placed.

In Ash’s (2006) summary of the literature on various PD catheter designs, he supports continued use of the curled and straight Tenckhoff catheters as the standard. He supports the use of alternative catheter designs for patients that have had complications with standard Tenckhoff catheters.

Proper placement, location of components of the PD catheter, along with the utilization of a catheter of a suitable length has been reported to impact catheter related outcomes. Considerations include: (1, 2, 4, and 11)



- Literature suggests that the peritoneal incision should be either lateral or paramedian for surgical insertions. Review of BC data reflective of bedside peritoneal dialysis catheter insertions over the past 5 years utilizing the midline incision has shown comparable outcomes when compared to the literature. Local expertise suggests that midline is appropriate for beside insertions. (20)
- The intraperitoneal portion should be placed between the parietal and visceral peritoneum with the tip toward the pelvis, to the right or left of the bladder.
- The left side is preferred because migration is more likely on the right side due to upward direction of peristalsis.
- The deep cuff should be within the medial or lateral border of the rectus sheath (free of major blood vessels) abutting the preperitoneal fascia. This reduces the incidence of pericatheter leaks and hernias. Ultrasound can help to determine the exact location of the medial and lateral border of the rectus muscle (also allows a scan of the parietal peritoneal surface for any bulky adhesions).
- The subcutaneous cuff should be approximately 2 cm from the skin exit site.
- Single cuff catheters should be placed within the rectus sheath.
- Position exit site downward or lateral.
- Pre-operative marking of the abdomen prior to catheter placement by the nephrology team should include:
  - Patient preference.
  - Avoid scars, belt line, fat and skin folds, moist areas due to perspiration, pressure points from clothing or areas that cannot be sufficiently visualized during exit site care.
  - Marking of the abdomen with the patient recumbent followed by rechecking the marked position with the patient upright.
  - The location of the skin incision for entry into the peritoneal cavity should be first identified and marked at a point that allows the tip of the catheter to be at the pubic symphysis.
  - The exit site should be marked such that it would be visible to the patient for appropriate exit site care, positioned away from the belt line and is 1 inch from the superficial cuff.
  - Determine whether midabdominal, high abdominal or presternal location is most appropriate.
  - Determine appropriate catheter length to minimize the potential for impaired function and/or pain (Crabtree, 2008).

**Recommendation 7: PD catheter insertion/removal-related infections may be minimized by:**

Action		Insertions	Removals
1	Pre-procedure		
	<ul style="list-style-type: none"> <li>• Patient bathing or showering with antibacterial soap the evening before and/or morning of the procedure.</li> </ul>	✓	✓
	<ul style="list-style-type: none"> <li>• Clipping the abdominal insertion area hair (avoid shaving using a razor)</li> </ul>	✓	
	<ul style="list-style-type: none"> <li>• Assessment of patient to determine optimal placement and length of catheter</li> </ul>		
2	Intra-procedure		
	<ul style="list-style-type: none"> <li>• Washing hands with conventional antiseptic-containing soap and water or with waterless alcohol-based gels or foams prior to donning gloves and after gloves are removed.</li> </ul>	✓	✓
	Using maximal sterile barrier precautions		
	<ul style="list-style-type: none"> <li>• Staff: surgical mask covering mouth and nose, sterile or clean gown, sterile gloves and surgical cap or hood.</li> </ul>	✓	✓
	<ul style="list-style-type: none"> <li>• Patient: gown or pajamas and sterile drapes from head to toe with the abdomen exposed. Mask covering patient's mouth and nose is recommended.</li> </ul>	✓	✓
	<ul style="list-style-type: none"> <li>• Cleansing the insertion/exit site with an appropriate solution and allowing it to dry thoroughly prior to catheter insertion/removal. Preferred solutions in priority order:                             <ul style="list-style-type: none"> <li>• 2% chlorhexidine/70% isopropyl alcohol (tincture)</li> <li>• 2% chlorhexidine with 4% or no alcohol (aqueous) (use one of these if concern re alcohol due to sensitivity or impact on skin or catheter).</li> </ul> </li> </ul>	✓	✓
	<ul style="list-style-type: none"> <li>• Providing a single-dose of intravenous prophylactic antibiotic 30 minutes prior to the procedure. The ISPD Position Statement on Reducing the Risks of PD Related Infections (2011) indicates that a first generation cephalosporin has been most frequently used however a randomized trial found that vancomycin (1 g IV, single dose) at the time of catheter placement is superior to cephalosporin (1 g IV, single dose) The odds ratio of peritonitis without any antibiotic was 11.6 and for cefazolin (compared with vancomycin) was 6.45. The choice of antibiotic should be based upon local guidelines, with consideration given to efficacy, and risk of potential hastening of resistant organisms.</li> </ul>	✓	Transplant patients only
	<ul style="list-style-type: none"> <li>• Positioning the tunnel in a downward directed may decrease the risk of catheter related peritonitis</li> </ul>	✓	
	<ul style="list-style-type: none"> <li>• Ensuring that the exit site is small and round with the tissue fitting as snugly as possible around the catheter</li> </ul>	✓	
	<ul style="list-style-type: none"> <li>• Avoiding use of sutures should at the exit site</li> </ul>	✓	
	<ul style="list-style-type: none"> <li>• Avoiding trauma and hematoma during catheter placement</li> </ul>	✓	
3	Post-procedure		
	<ul style="list-style-type: none"> <li>• Covering the exit site with a suitable non occlusive dressing and do not change for 1 week post insertion</li> </ul>	✓	✓
	<ul style="list-style-type: none"> <li>• Immobilization of the catheter by taping securely to the skin to avoid trauma to the exit site</li> </ul>	✓	
	<ul style="list-style-type: none"> <li>• Dressing changes to be done by a dialysis nurse or by a patient or care provider who has received special instruction in PD exit site care using sterile technique</li> </ul>	✓	✓

**Recommendation 8: PD catheter insertion/removal-related complications may be minimized by:**

Action		Insertions	Removals
1	Pre-procedure		
	<ul style="list-style-type: none"> <li>Stopping anticoagulants and antiplatelet agents 5 days prior to the PD catheter insertion/removal procedure.</li> </ul>	✓	✓
	<ul style="list-style-type: none"> <li>Requesting patients follow a bowel regime to clear the bowel prior to the procedure.</li> </ul>	✓	
	<ul style="list-style-type: none"> <li>Requesting patients have a light breakfast or no breakfast on the morning of the procedure.</li> </ul>	✓	
	<ul style="list-style-type: none"> <li>Requesting patients continue regular medications. If patient has diabetes, their insulin or oral medication dosage may need to be adjusted.</li> </ul>	✓	✓
	<ul style="list-style-type: none"> <li>Requesting patients empty their bladder just prior to the procedure (a foley catheter should be considered if voiding is abnormal – e.g., diabetic neuropathy).</li> </ul>	✓	✓
	<ul style="list-style-type: none"> <li>Assessment of the patient for hernias and abdominal wall weakness</li> </ul>	✓	
	<ul style="list-style-type: none"> <li>Assess of the patient to determine optimal placement and length of catheter</li> </ul>	✓	
2	Intra-procedure		
	<ul style="list-style-type: none"> <li>Testing catheter patency after the intraperitoneal segment has been placed and/or after creation of the subcutaneous tunnel, before the wound is closed.</li> </ul>	✓	✓
3	Post-procedure		
	<ul style="list-style-type: none"> <li>Avoiding use of PD catheter if possible for at least two weeks to allow proper healing.</li> </ul>	✓	
	<ul style="list-style-type: none"> <li>Restricting patient activity when peritoneal fluid is present, especially when fluid volumes are high.</li> </ul>	✓	
	<ul style="list-style-type: none"> <li>Instructing patient to avoid straining and coughing during the break-in period (to minimize intra-peritoneal pressure).</li> </ul>		
	<ul style="list-style-type: none"> <li>Immobilization of the catheter by taping securely to the skin to avoid trauma to the exit site</li> </ul>	✓	

**Recommendation 9: Bedside PD catheter insertion/removal discomfort may be minimized by:**

Action		Insertions	Removals
1	Pre-procedure		
	<ul style="list-style-type: none"> <li>Anti-anxiety medication (patient dependent) or</li> </ul>	✓	✓
	<ul style="list-style-type: none"> <li>Narcotic and anti-nausea medication, in combination</li> </ul>	✓	
2	Intra procedure		
	<ul style="list-style-type: none"> <li>Local anaesthetic Lidocaine (with or without epinephrine is most commonly used</li> </ul>	✓	✓
	<ul style="list-style-type: none"> <li>IV sedation (patient dependent)</li> </ul>	✓	
3	Post-procedure		
	<ul style="list-style-type: none"> <li>Tylenol (most common) or another oral analgesic</li> </ul>	✓	✓

**Recommendation 10: Maintain the patency of a newly inserted PD catheter by flushing:**

- Within 24 hours post-procedure of insertion. (1,12,19)
- One week post-insertion and once weekly PRN until PD is initiated.
  - Consider use of 1 litre 1.5% dianeal with Heparin 1:1000u/ml for flushes.

**Recommendation 11: Yearly (minimum) PD Catheter Insertion audit**

Regular yearly audits measuring various outcomes of catheter insertions should be a part of every PD program with the primary goal of improving practice. Literature suggests that the primary marker of successful outcome is catheter patency of >80% at 1 year (12, 19). However, the target is 95% for laparoscopic placement, due to the ability to perform other procedures that promote catheter patency, such as lysis of adhesions, omentopexy, and colopexy. Data to be considered for audit collection:

- Numbers of insertions/removals.
- If referred to surgeon for insertion, waiting time to referral, from referral to surgical consult, and from surgical consult to procedure.
- If bedside insertion, waiting time to referral and from referral to procedure.
- Catheter-related complications (unable to place, bowel perforation, outflow failure, pericatheter leak, poor drainage/mal-positioned catheter,

malfunctioning catheter, hemorrhage).

- Catheter-related infections within 2 weeks of catheter insertion (exit site and/or peritonitis).
- Dialysate fluid leak.
- Catheter dysfunction at the time of first use that requires catheter manipulation or replacement or results in technique failure.
- Patient satisfaction.

**4.0 References**

1. Access Care Guide: Catheter Insertion and Care: QxMD Medical Apps. <http://www.qxmd.com/references/access-careguide> (accessed July 15, 2013)
2. American Nephrology Nurses' Association. 2008. *Core Curriculum for Nephrology Nursing*, 5th ed, p.p., 768-795.
3. American Society of Diagnostic and Interventional Nephrology: *Placement of Permanent Peritoneal Dialysis Catheters*. 2008. <http://www.asdin.org/Visitors/education/index.cfm> (accessed Dec 2, 2008).
4. Ash, SR, Chronic Peritoneal Dialysis Catheters: Challenges and Design Solutions. 2006. *International Journal of Artificial Organs*, 29 (1), p.p., 85-94.
5. Asif, Arif. 2004. Peritoneal Dialysis Access-Related Procedures by Nephrologists, *Seminars in Dialysis*, 17 (5), p.p., 398 – 406.

6. Asif, A., Byers, P., Gadalean, F., & Roth, D. 2003. Peritoneal dialysis underutilization: The impact of an interventional nephrology peritoneal dialysis access program. *Seminars in Dialysis*, 16(3), 266 – 271.
7. Asif, A., Pflederer, T. A., Vieira, C. F., Diego, J., Roth, D., & Agarwal, A. 2005. Does catheter insertion by nephrologists improve peritoneal dialysis utilization? A multicenter analysis. *Seminars in Dialysis*, 18(2), 157- 160.
8. Berns, JS, O'Neill, WC. 2008. Performance of procedures by nephrologists and nephrology fellows at US nephrology training programs. *Clinical J Am Society Nephrol*, Jul:3(4): :941-7
9. Buffington, M., Sequeira, A., Sachdeva, B., Abreo, K. 2012. Peritoneal Dialysis Catheter Placement Techniques. *The Open Urology and Nephrology Journal*, 5, (Suppl 1: M2) 4 -11
10. Chow, K. et al. 2009. Tenckhoff Catheter insertion by Nephrologists. *Peritoneal Dialysis International*, 30, 524 - 527
11. Crabtree, JH. 2006. Selected best demonstrated practices in PD access. *Kidney international supplement*, Nov (103), S27-37
12. Crabtree JH, Shrestha BM, Chow KM, Figueiredo AE, Povlsen JV, Wilkie M, Abdel-Aal A, Cullis B, Goh BL, Briggs VR, Brown EA, Dor FJMF. (2019). Creating and Maintaining Optimal Peritoneal Dialysis Access in the Adult Patient: 2019 Update. *Perit Dial Int*. 2019 Sep-Oct;39(5):414-436. doi: 10.3747/pdi.2018.00232
13. Flanigan, Michael and Gokal, Ram. 2005. Peritoneal Catheters and Exit-Site Practices Toward Optimum Peritoneal Access: A Review of Current Developments, *Peritoneal Dialysis International*, 25, p.p., 132 – 139.
14. Gadallah, M. F., Ramdeen, G., Torres-Rivera, C., Ibrahim, M. E., Myrick, S., Andrews, G., et al. 2001. Changing the trend: A prospective study on factors contributing to the growth rate of peritoneal dialysis programs. *Advances in Peritoneal Dialysis*, 17, 122 – 126.
15. Kelly, J., McNamara, K., & May, S. 2003. Peritoneoscopic peritoneal dialysis catheter insertion. *Nephrology*, 8, 315 – 317.
16. Maya, I. D. 2007. Ultrasound/fluoroscopy-assisted placement of peritoneal dialysis catheters. *Seminars in Dialysis*, 20(6), 611 – 615.
17. Maya, I. D. 2008. Ambulatory setting for peritoneal dialysis catheter placement. *Seminars in Dialysis*, 21(5), 457 – 458.

18. Piraino, B. et al. 2011. ISPD position statement on reducing the risks of peritoneal dialysis related infection. *Peritoneal Dialysis International*, 31, 614-630
19. Report of the Renal Association Working Party on Peritoneal Access. 2008. <http://www.renal.org/pages/guidelines/peritonealaccess> (accessed July 17, 2013)
20. Singh, S. 2013. Personal communication, December 4, 2013.

## 5.0 Sponsors

This provincial guideline was developed to support improvements in the quality of vascular access care delivered to patients with chronic kidney disease in BC. Based on the best information available at the time it was published, the guideline relies on evidence and avoids opinion-based statements where possible. When used in conjunction with pertinent clinical data, it is a tool health authorities and health professionals can use to develop local guidelines.

Developed by: BC PD Clinicians Working Group of multidisciplinary care providers

Approved by: the BC Provincial PD Committee.

## 6.0 Effective Date

- Effective date: August 1, 2009.
- Reviewed and revised: November 2013, August 2024
- This guideline is based on scientific evidence available at the time of the effective date; refer to [BCRenal.ca](http://BCRenal.ca) for most recent version.

## 7.0 Appendices

[Appendix 1](#): Self-Learning Package on Bedside Insertion of PD Catheters

[Appendix 2](#): Pre-Printed Orders for Bedside PD Catheter Insertion

## Appendix 1: Self-Learning Package on Bedside Insertion/Removal of PD Catheters

### Articles (read all)

1. Access Care Guide: Catheter Insertion and Care: QxMD Medical Apps. <https://static.qxmd.com/calculate/storage/pd-access-guide-2022-complete-11-10-22-interactive.pdf>
2. Asif, Arif (2004, Sept – Oct), Peritoneal Dialysis Access-Related Procedures by Nephrologists, Seminars in Dialysis, 17 (5), p.p., 398 – 406.
3. Ash, SR, Chronic Peritoneal Dialysis Catheters: Challenges and Design Solutions (2006), International Journal of Artificial Organs, 29 (1), p.p., 85-94.
4. Crabtree, JH. 2006. Selected best practices in PD access, Peritoneal Dialysis International supplement, Nov (103), S27-37
5. Figueiredo, A. 2010. Clinical Practice Guidelines for Peritoneal Access, Peritoneal Dialysis International, 30, 424 – 429.
6. Michael and Gokal, Ram (2005), Peritoneal Catheters and Exit-Site Practices toward Optimum Peritoneal Access: A Review of Current Developments, Peritoneal Dialysis International, 25, p.p., 132 – 139.

### DVDs/Videos (select one or two)

1. Dialysis Catheter Insertion Procedure, July 31, 2002 (describes and demonstrates the Seldinger technique), Dr Suneet Singh, 21 minutes; DVD available.
2. Percutaneous Insertion of PD Catheter with Radiological Guidance (Buried and Not Buried), Peter Cordy, London Health Sciences Centre and the University of Western Ontario, website: <http://ukidney.com/pd-basics/video-percutaneous-insertion-of-pd-catheter.html>
3. PD and the Importance of Correct Catheter Placement, Dr M Schlobach, December 2010, Brazil, website: <https://websurg.com/doi/10.3978/j.issn.1674-1445.2010.12.002>

## Appendix 2: Pre-Printed Orders for Bedside PD Catheter Insertions

Add HA/Hospital Logo

### PRESCRIBER'S ORDERS

Refer to Guideline: Bedside Insertion of PD Catheters  
<http://www.bcrenal.ca/about/who-we-are/our-committees>

Add Label/Addressograph

<p><b>DATE AND TIME</b></p>	<p style="text-align: center;"><b>Peritoneal Dialysis: Orders for Bedside Catheter Insertion</b>                  (Items with check boxes must be selected to be ordered)</p> <p><b><u>PRE-PROCEDURE ORDERS</u></b></p> <p><b>DIET:</b></p> <ul style="list-style-type: none"> <li>■ NPO after midnight prior to morning of catheter insertion</li> <li>■ May have light breakfast on morning of catheter insertion</li> <li>■ Other: _____</li> </ul> <p><b>MEDICATIONS:</b></p> <ul style="list-style-type: none"> <li>■ If patient on anticoagulants or antiplatelet agents (including ASA),                         <ul style="list-style-type: none"> <li>• Stop on _____ (recommend 5 days prior to procedure)</li> <li>• INR: _____ (recommend 1-3 days prior to procedure)</li> </ul> </li> <li>■ If patient on calcium or iron,                         <ul style="list-style-type: none"> <li>• Stop on _____ (recommend 7 days prior to procedure)</li> </ul> </li> <li>■ Bowel preparation: _____                          _____</li> <li>■ Insulin or oral diabetes medication on day of procedure: _____</li> <li>■ Stop all diuretics on day of procedure.</li> <li>■ Antibiotic prophylaxis: _____ 60 min prior to insertion</li> <li>■ Sedation: _____ prior to insertion prn</li> <li>■ Nausea management _____ prior to insertion prn</li> </ul> <p><b><u>POST-PROCEDURE ORDERS</u></b></p> <p><b>MEDICATIONS:</b></p> <ul style="list-style-type: none"> <li>■ Resume all pre-procedure medications</li> <li>■ Bowel management _____                          _____</li> <li>■ Acetaminophen 500 - 1000 mg PO q 4-6 hours PRN pain</li> <li>■ Peritoneal dialysis catheter management – flushes: _____                          _____</li> <li>■ Heparinize PD catheter: _____</li> </ul> <p><b>OTHER:</b>                  _____</p> <p>_____</p> <p style="display: flex; justify-content: space-between;"> <span>Printed Name</span> <span>Signature</span> <span>College ID</span> </p>
---------------------------------	--