

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



Peritoneal Dialysis Guideline

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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) procedure¹ 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); or (ii) preassembled cannula with trocar and a spiral sheath (Quill) and peritoneoscope (Y-Tec technique). Both are done as

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

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outpatient procedures and may involve an overnight stay. Procedures are done using a local anaesthetic +/- an oral anti-anxiety agent, narcotic or conscious sedation.

Removal of chronic PD catheters can be done by 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 (surgeon and operating time is 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.

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 is for all PD patients in BC to have access to bedside PD catheter insertion/removal; for programs not able to offer this service, access to a timely alternative service for PD catheter insertion/removal will be the goal.

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)
- 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

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.

Several studies have reported increased rates of PD utilization upon initiation of nephrologist-led bedside catheter insertion programs (Asif et al, 2005; Asif et al, 2003; Gadallah, 2001). The safety and success of nephrologist-led catheter insertions have been well documented (Maya, 2008; Maya 2007; Asif et al, 2003; Gadallah et al, 1999; Copley et al, 1996; Kelly et al, Zappacosta et al, 1991; Allon et al, 1988). Other PD procedures in which nephrologists are involved include catheter removal and repositioning of migrated catheters (Asif, 2004).

Several studies compare the safety and success of *bedside insertion* of PD catheters with those *surgically inserted*. Most report similar or better outcomes with bedside insertion.

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. Sites performed one or other of the procedures but not both and no attempts were made to compare patient populations across sites (thus making it difficult to draw conclusions).

A review of the literature suggests that no PD catheter insertion method has been uniformly shown to be superior in uncomplicated patients. 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 abdominal surgeries may benefit from visual inspection of the peritoneum during catheter placement (ANNA, 2008).

BC data on bedside PD catheter insertions, although limited, is consistent with that reported in the literature:

- (1) Waiting times at sites that offer bedside PD catheter insertions/removals are shorter than at sites that do not; and
- (2) Outcome data confirms that bedside PD catheter insertions/removals are safe procedures.

Of the nine PD sites in BC, four offer bedside PD catheter insertions. The shortest waiting times are in 3 of the 4 sites that offer bedside insertions (St Paul's, Royal Columbian and Vancouver General). The longest waiting times are in 3 of the 5 sites that do not offer bedside insertions (Kelowna, Royal Jubilee and Prince George) (source: December 2008 survey of PD sites).

Outcome data is available from 2 out 4 sites that offer PD bedside catheter insertions. While outcomes measures are not comparable across the sites and not comparable with sites in the literature (different indicators are used), the data confirms that PD catheter insertions/removals are safe to be done as bedside procedures.

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Bedside (Percutaneous) Insertion and Removal of PD Catheters

Royal Columbian Hospital (Fraser Health)

(source: Dr Victor Chan; presentation at BC Nephrology Days, October 2008)

- 4 physicians perform approximately 85 bedside PD catheter insertions per year. This represents about 85% of the total number of PD catheter insertions performed at Royal Columbian Hospital each year.
- Of the bedside PD catheter insertions between 2005/06 and 2007/08, 16/256 (6%) had short-term complications (bowel perforation, matted bowel, poor drainage/malpositioned catheter, or bled). Of those, at least 7/16 (44%) were successfully reinserted after the first attempt using a bedside procedure and 3/16 (19%) were successfully reinserted in the operating room two days to three months after the initial bedside attempt.
- Of the 256 PD catheter insertions, 24 (9%) were reinsertions. Reasons for reinsertions were both (a) unrelated to the catheter insertion (e.g., peritonitis or catheter malfunction); and (b) related to the catheter insertion (e.g., poor drainage).
- From 1998 – 2005 the median peritonitis-free survival rate for PD patients regardless of method of PD catheter insertion was 27 months (95% CI 21-31). The median patient survival was 50 months (95% CI 40-54). Median technique survival (length of time on PD) was 34 months (95% CI 30-39) if death is included as an event, increasing to 50 months (95% CI 43-83) if death is excluded as an event.

St Paul's (Providence Health Care):

(source: Dr Gary Nussbaumer; presentation at BC Nephrology Days, October 2008)

- 1 physician performs approximately 55 bedside PD catheter insertions per year. This represents about 95% of the total number of PD catheter insertions done at St Paul's Hospital each year.
- PD bedside catheter insertion data for the past several years indicates:
 - 6/217 (3%) were not able to be placed.
 - Viscus was perforated in 1/212 (0.5%) cases.
 - Catheter malfunctioned in 14/211 (7%) cases.
 - Catheter migrated in 2/243 (<1%) cases with swan neck catheters and 33/219 (15%) with straight catheters.
 - There were no cases of infection at <30 days post insert.

Advantages of bedside over surgical PD catheter insertions/removals:

Advantages	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 enter the peritoneum 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 Potential for immediate use of the PD catheter if necessary (no large surgical incision).	✓	
5 Able to control the catheter type and placement location and position.	✓	

Bedside (Percutaneous) Insertion and Removal of PD Catheters

Advantages		Insertions	Removals
6	Smaller incision, thereby promoting a faster recovery and less bleeding.	✓	✓
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.	✓	✓

Disadvantages of bedside over surgical PD catheter insertions/removals:

Disadvantages		Insertions	Removals
1	Visualization is not as good.	✓	✓
2	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.	✓	

3.0 Recommendations

Recommendation 1: Bedside insertion and removal 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.

Bedside removal of PD catheters is appropriate for all 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 (ANNA, 2008; Ash, 2003). 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.

Recommendation 2: Bedside insertion/removal of PD catheters may be done by a physician who has had special training.

Recommendation 3: The training required to perform bedside insertion/removal of PD catheters depends upon the level of relevant procedural experience of the physician.

For those 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:²

- 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:
 - 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.

² 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.

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- 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.

Recommendation 4: At least 6 bedside PD catheter insertions are required per year to maintain skills (or if a surgeon or radiologist, at least 6 procedures requiring similar skills) (opinion).

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

- Room large enough to wheel a stretcher in and out and with 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).
- 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.

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Recommendation 6: Bedside insertion/removal of PD catheters requires the following supplies:

Supplies		Insertions	Removals
1	Peritoneal dialysis insertion/removal tray	✓	✓
2	General supplies: masks, sterile gloves/towel, gowns, soaker pads, antiseptic solution and scrub brush, needles, syringes, sutures, dressing	✓	✓
3	Drugs:	✓	
	• Lidocaine 1% or 2% with or without epinephrine	✓	✓
	• If using conscious sedation, midazolam, fentanyl, and metoclopramide (Maxeran®)	✓	
	• If using pre-operative antibiotic, antibiotic (e.g., ceFAZolin, vancomycin or cloxacillin)	✓	Transplant patients only
4	Rigid introducer	✓	
5	PD supplies: PD catheter with connecting tube and catheter holder, IV pole with Y-Type PD administration set, 2 litre PD drainage bag and 2x2 litre bags of dialysis solution with heparin	✓	
6	BP machine	✓	✓
7	If using conscious sedation, oxygen saturation monitor	✓	

Recommendation 7: Standard Tenckhoff catheters are appropriate for most patients. Location and position of the catheter is more important than design.

Catheter Design

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), and design of the intra-abdominal portion (straight vs curled/coiled). Evidence of the impact of these new designs on catheter outcomes is mixed and most of the literature, including the International Society of PD Guidelines (ISPD, Flanigan and Gokal, 2005), supports the fact that *operator* and *centre characteristics* and *proper catheter location and position* are more important than catheter design. 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. Fortunately, there is evidence that single-cuff catheters are as durable as two-cuff designs when the single cuff is correctly placed.

Bedside (Percutaneous) Insertion and Removal of PD Catheters

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 Location and Position of Chronic Peritoneal Catheters

Proper location of components of PD catheters has been reported to impact the success of the catheter. There is general agreement on the proper location of the component of chronic PD catheters (Ash, 2006; ANNA, 2008):

- The peritoneal incision should be either lateral or paramedian.
- The intraperitoneal portion should be between the parietal and visceral peritoneum with 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.

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

Action		Insertions	Removals
1	Requesting the patient bathe or shower with antibacterial soap the evening before and/or morning of the procedure.	✓	✓
2	Clipping the abdominal insertion area	✓	
3	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.	✓	✓
4	Using maximal sterile barrier precautions.		
	<ul style="list-style-type: none"> • Staff: surgical mask covering mouth and nose, sterile or clean gown, sterile gloves and surgical cap or hood. • Patient: gown or pajamas and sterile drapes from head to toe with the abdomen exposed. Mask covering patient's mouth and nose is recommended. 	✓	✓
5	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"> • 2% chlorhexidine/70% isopropyl alcohol (tincture) • 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). 	✓	✓
6	Providing a single-dose of prophylactic antibiotic 30 minutes	✓	Transplant

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Action		Insertions	Removals
	prior to the procedure. The ISPD Guidelines (2005) reported that the odds ratio of peritonitis without any antibiotics was 11.6 and was 6.45 if ceFAZolin was administered. A recent randomized control study showed better results with vancomycin than ceFAZolin but the benefits need to be weighed against hastening resistant organisms.		patients only
7	Requesting the patient bathe or shower the morning of the procedure.	✓	✓

Recommendation 9: PD catheter insertion/removal-related complications may be minimized by:

Action		Insertions	Removals
1	Pre-procedure:		
	• Stopping anticoagulants and antiplatelet agents 5 days prior to the PD catheter insertion/removal procedure.	✓	✓
	• Requesting patients follow a bowel regime to clear the bowel prior to the procedure.	✓	
	• Requesting patients have a light breakfast or no breakfast on the morning of the procedure.	✓	
	• Requesting patients continue regular medications. If patient has diabetes, their insulin or oral medication dosage may need to be adjusted.	✓	✓
	• Requesting patients empty their bladder just prior to the procedure (a foley catheter should be considered if voiding is abnormal – e.g., diabetic neuropathy).	✓	✓
2	Intra-procedure:		
	• Testing catheter patency after the intraperitoneal segment has been placed and/or after creation of the subcutaneous tunnel, before the wound is closed.	✓	
3	Post-procedure:	✓	
	• Trying not to use the PD catheter for at least two weeks to allow proper healing.	✓	
	• Restricting patient activity when peritoneal fluid is present, especially when fluid volumes are high.	✓	
	• Instructing patient to avoid straining and coughing during the break-in period (to minimize intra-peritoneal pressure).	✓	

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Recommendation 10: PD catheter insertion/removal discomfort may be minimized by:

Action		Insertions	Removals
1	Pre-procedure:		
	<ul style="list-style-type: none"> Lorazepam (most common) or an alternative anti-anxiety medication (patient dependent); or Narcotic and anti-nausea medication, in combination 	✓	✓
2	Intra-Procedure		
	<ul style="list-style-type: none"> Lidocaine (most common) injected locally; may be with or without epinephrine. 	✓	✓
	<ul style="list-style-type: none"> IV sedation (patient dependent): Midazolam (reduces anxiety) and Fentanyl (reduces pain) given in combination (most common). 	✓	
3	Post-Procedure		
	<ul style="list-style-type: none"> Tylenol (most common) or another oral analgesic. 	✓	✓

Recommendation 11: Maintain the patency of a newly inserted PD catheter by flushing:

- Within 24 hours post-procedure of insertion.
- One week post-insertion (sutures are usually removed at one or two weeks post-insertion).
- Weekly until PD is initiated.

Recommendation 12: Measures of success of PD catheter insertions/removals include:

- 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, bleed)
- Catheter-related infections <30 days post-insertion (exit site and/or peritonitis)
- Patient satisfaction

4.0 References

1. American Nephrology Nurses' Association. 2008. *Core Curriculum for Nephrology Nursing*, 5th ed, p.p., 768-795.
2. 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).
3. Ash, SR, Chronic Peritoneal Dialysis Catheters: Challenges and Design Solutions. 2006. *International Journal of Artificial Organs*, 29 (1), p.p., 85-94.
4. Asif, Arif. 2004. Peritoneal Dialysis Access-Related Procedures by Nephrologists, *Seminars in Dialysis*, 17 (5), p.p., 398 – 406.
5. 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.
6. 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.
7. 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.
8. 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.
9. Kelly, J., McNamara, K., & May, S. 2003. Peritoneoscopic peritoneal dialysis catheter insertion. *Nephrology*, 8, 315 – 317.
10. Maya, I. D. 2007. Ultrasound/fluoroscopy-assisted placement of peritoneal dialysis catheters. *Seminars in Dialysis*, 20(6), 611 – 615.
11. Maya, I. D. 2008. Ambulatory setting for peritoneal dialysis catheter placement. *Seminars in Dialysis*, 21(5), 457 – 458.
12. Piraino et al, ISPD Guidelines/Recommendations, PD-Related Infections. 2005. *Peritoneal Dialysis International*, 25, p.p., 07 -131.
13. Zappacosta, A. R., Perras, S. T., & Closkey, G. M. 1991. Seldinger technique for Tenckhoff catheter placement. *ASAIO (American Society of Artificial Internal Organs) Journal*, 37, 13 – 15.

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 a PD Clinicians Working Group of multidisciplinary care providers from across BC, the guideline was approved by the BC Provincial Renal Agency Medical Advisory Committee. It has been adopted by BCPRA as a provincial guideline.

6.0 Effective Date

- Effective date: August 1, 2009.
- This guideline is based on scientific evidence available at the time of the effective date; refer to www.bcrenalagency.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. Asif, Arif (2004, Sept – Oct), Peritoneal Dialysis Access-Related Procedures by Nephrologists, *Seminars in Dialysis*, 17 (5), p.p., 398 – 406.
2. Ash, SR, Chronic Peritoneal Dialysis Catheters: Challenges and Design Solutions (2006), *International Journal of Artificial Organs*, 29 (1), p.p., 85-94.
3. 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 Cather 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, January 2008, Brazil, website: http://www.websurg.com/ref/Peritoneal_dialysis_and_importance_of_correct_catheter_placement-lt01enschlobach001.htm

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

Add HA/Hospital Logo

PRESCRIBER'S ORDERS

Add Label/Addressograph

Refer to Guideline: *Bedside Insertion of PD Catheters*
(<http://www.bcrenalagency.ca/committees>)

<p style="text-align: center;">DATE AND TIME</p>	<p style="text-align: center;">Peritoneal Dialysis: Orders for Bedside Catheter Insertion (Items with check boxes must be selected to be ordered)</p> <p><u>PRE-PROCEDURE ORDERS</u></p> <p>DIET:</p> <ul style="list-style-type: none"> <input type="checkbox"/> NPO after midnight prior to morning of catheter insertion <input type="checkbox"/> May have light breakfast on morning of catheter insertion <input type="checkbox"/> Other: _____ <p>MEDICATIONS:</p> <ul style="list-style-type: none"> <input type="checkbox"/> If patient on anticoagulants or antiplatelet agents (including ASA), <ul style="list-style-type: none"> • Stop on _____ (recommend 5 days prior to procedure) • INR: _____ (recommend 1-3 days prior to procedure) <input type="checkbox"/> If patient on calcium or iron, <ul style="list-style-type: none"> • Stop on _____ (recommend 7 days prior to procedure) <input type="checkbox"/> Bowel preparation: _____ _____ <input type="checkbox"/> Insulin or oral diabetes medication on day of procedure: _____ _____ <input type="checkbox"/> Stop all diuretics on day of procedure. <input type="checkbox"/> Antibiotic prophylaxis: _____ 60 min prior to insertion <input type="checkbox"/> Sedation: _____ prior to insertion prn <p><u>POST-PROCEDURE ORDERS</u></p> <p>MEDICATIONS:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Resume all pre-procedure medications <input type="checkbox"/> Bowel management _____ _____ <input type="checkbox"/> Acetaminophen 650 mg PO q 4-6 hours PRN pain <p>OTHER:</p> <p>_____</p> <p>_____</p>	
<p>Printed Name _____</p>	<p>Signature _____</p>	<p>College ID _____</p>