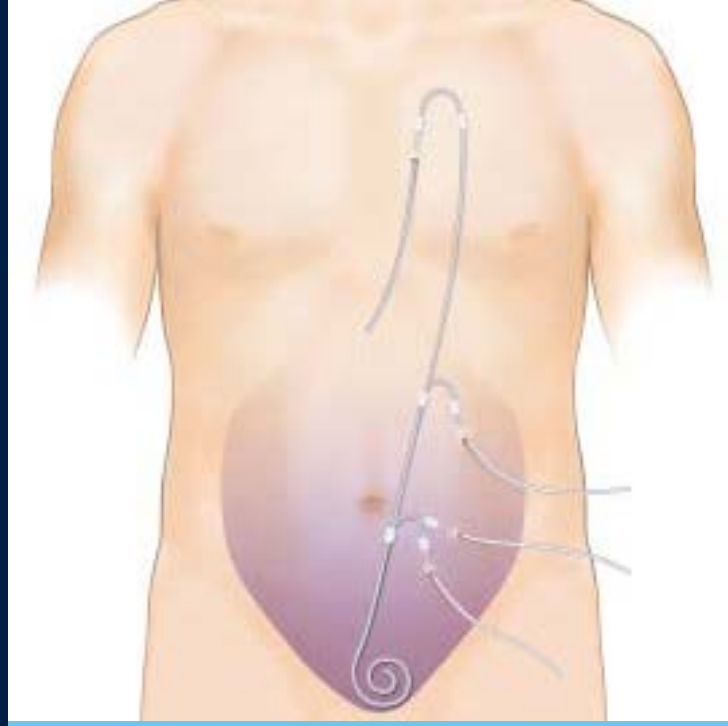
PERITONEAL DIALYSIS PRE-INSERTION PLANNING, PATIENT SELECTION, AND CATHETER SELECTION



PERITONEAL DIALYSIS
TRAINING PROGRAM

Medtronic
Further, Together

OUTLINE

- Patient pathway to PD
- Patient selection
- Pre-op instructions
- Catheter and exit site placement
- Catheter selection

PATIENT PATHWAY[1]

1. Identify all PD candidates
2. Assess patient for PD eligibility
3. Offer PD if elilgibile and obtain patient preference for PD vs HD
4. Attempt/Insert PD catheter
5. Start PD therapy

[1] Blake, et al. 2013.

IDENTIFY PD PATIENTS[1]

- Keep the mindset of, “PD First”
- Consider your potential patient population
  - All ESRD patients (and transfers from other centers)
  - All patients receiving outpatient dialysis
  - All patients with >30 consecutive days of dialysis dependence (including AKI)
  - All patients with a failed transplant on dialysis
- Complete medical history and physical exam
- Convene a multi-disciplinary group to decide on patient selection:
  - Social worker
  - Home RNs
  - Dietician
  - Physicians

[1] Blake, et al. 2013.

ASSESS FOR PD ELIGIBILITY[1]

MOST FREQUENT **CONTRAINDICATIONS TO PD**

- Place of residence does not permit PD
- Prior major abdominal surgery
- Untreated large abdominal hernias
- Morbidly obese
- Active diverticulosis
- Abdominal wall ostomies and conduits
- Large abdominal aortic aneurysm

MOST FREQUENT **BARRIERS TO PD**

- Physical barriers
  - Insufficient strength
  - Insufficient dexterity
  - Poor vision
  - Poor hearing
  - Immobility
  - Overall fragility or poor health
  - Poor hygiene
- Cognitive barriers
  - History of poor compliance
  - Language barrier
  - Unable to read
  - Psychiatric illness
  - Dementia

[1] Blake, et al. 2013.

ASSESS FOR PD ELIGIBILITY
DECISION-MAKING TOOLS: MATCH-D

MATCH – D

- Method to Assess Treatment Choices for Home Dialysis

- Designed to assist clinicians in identifying potential barriers and candidates for home dialysis
- Provides separate criteria for PD and home hemodialysis
- Color coded:
  - Green = strongly encourage
  - Yellow = encourage after addressing potential barriers
  - Red = may not be able to do home dialysis without reliable/willing helper

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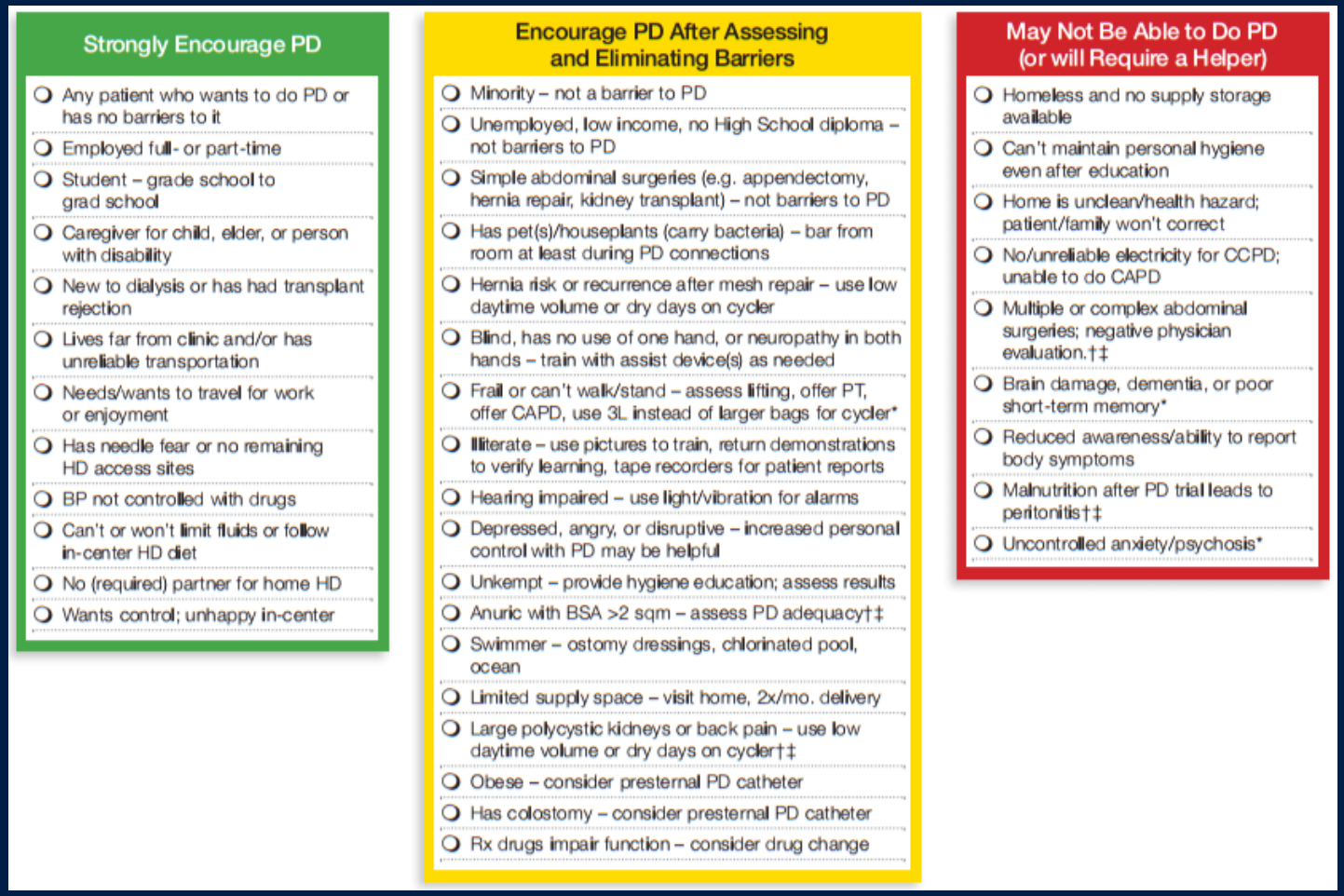
Fine the MATCH-D at www.homedialysis.org/match-d

ASSESS FOR PD ELIGIBILITY
DECISION-MAKING TOOLS: MATCH-D



Strongly Encourage PD

- ❍ Any patient who wants to do PD or has no barriers to it
- ❍ Employed full- or part-time
- ❍ Student – grade school to grad school
- ❍ Caregiver for child, elder, or person with disability
- ❍ New to dialysis or has had transplant rejection
- ❍ Lives far from clinic and/or has unreliable transportation
- ❍ Needs/wants to travel for work or enjoyment
- ❍ Has needle fear or no remaining HD access sites
- ❍ BP not controlled with drugs
- ❍ Can't or won't limit fluids or follow in-center HD diet
- ❍ No (required) partner for home HD
- ❍ Wants control; unhappy in-center

Encourage PD After Assessing and Eliminating Barriers

- ❍ Minority – not a barrier to PD
- ❍ Unemployed, low income, no High School diploma – not barriers to PD
- ❍ Simple abdominal surgeries (e.g. appendectomy, hernia repair, kidney transplant) – not barriers to PD
- ❍ Has pet(s)/houseplants (carry bacteria) – bar from room at least during PD connections
- ❍ Hernia risk or recurrence after mesh repair – use low daytime volume or dry days on cycler
- ❍ Blind, has no use of one hand, or neuropathy in both hands – train with assist device(s) as needed
- ❍ Frail or can't walk/stand – assess lifting, offer PT, offer CAPD, use 3L instead of larger bags for cycler*
- ❍ Illiterate – use pictures to train, return demonstrations to verify learning, tape recorders for patient reports
- ❍ Hearing impaired – use light/vibration for alarms
- ❍ Depressed, angry, or disruptive – increased personal control with PD may be helpful
- ❍ Unkempt – provide hygiene education; assess results
- ❍ Anuric with BSA >2 sqm – assess PD adequacy†‡
- ❍ Swimmer – ostomy dressings, chlorinated pool, ocean
- ❍ Limited supply space – visit home, 2x/mo. delivery
- ❍ Large polycystic kidneys or back pain – use low daytime volume or dry days on cycler†‡
- ❍ Obese – consider presternal PD catheter
- ❍ Has colostomy – consider presternal PD catheter
- ❍ Rx drugs impair function – consider drug change

May Not Be Able to Do PD (or will Require a Helper)

- ❍ Homeless and no supply storage available
- ❍ Can't maintain personal hygiene even after education
- ❍ Home is unclean/health hazard; patient/family won't correct
- ❍ No/unreliable electricity for CCPD; unable to do CAPD
- ❍ Multiple or complex abdominal surgeries; negative physician evaluation.†‡
- ❍ Brain damage, dementia, or poor short-term memory*
- ❍ Reduced awareness/ability to report body symptoms
- ❍ Malnutrition after PD trial leads to peritonitis†‡
- ❍ Uncontrolled anxiety/psychosis*

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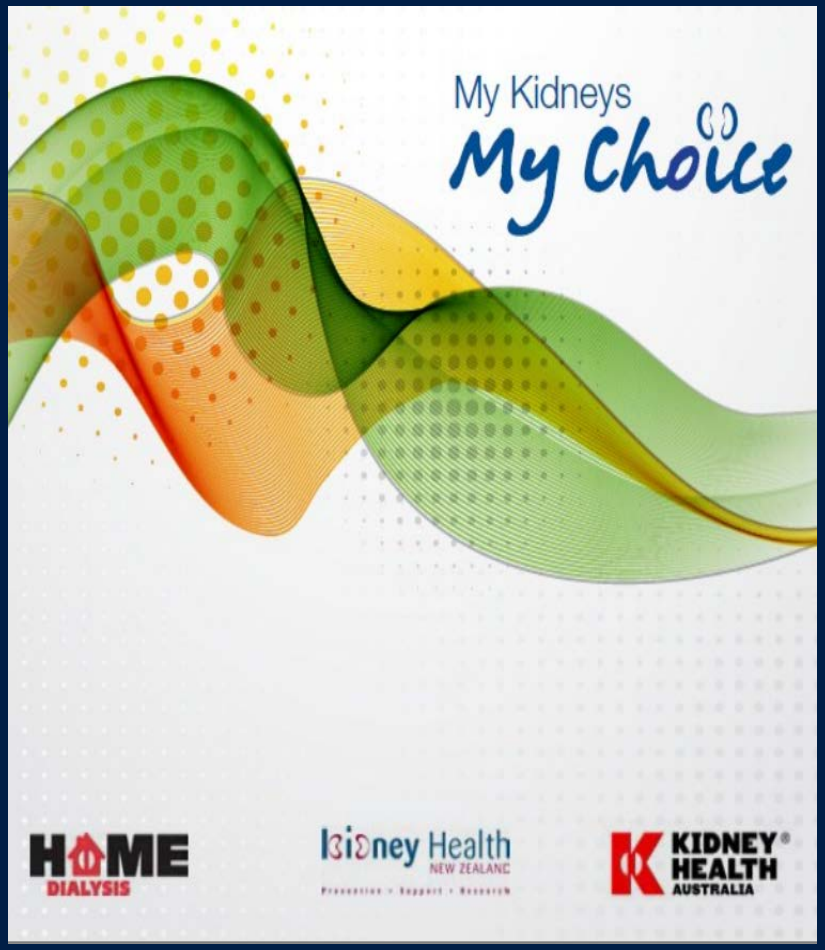
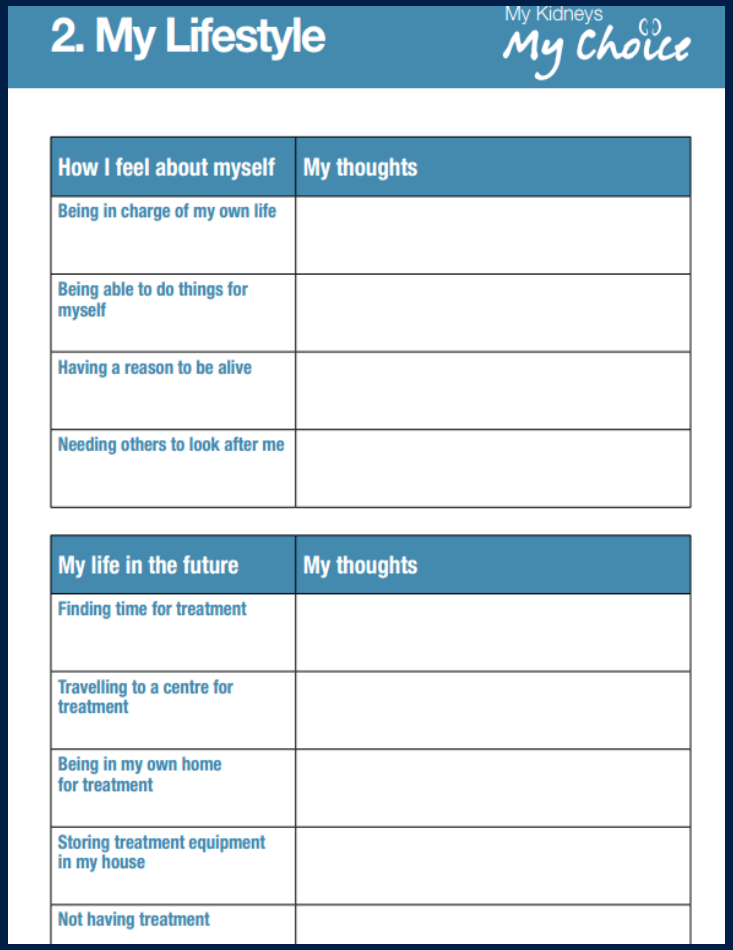
Fine the MATCH-D at www.homedialysis.org/match-d

ASSESS FOR PD ELIGIBILITY
DECISION MAKING TOOLS (CONTINUED)





2. My Lifestyle

My Kidneys My Choice

How I feel about myself	My thoughts
Being in charge of my own life	
Being able to do things for myself	
Having a reason to be alive	
Needing others to look after me	

My life in the future	My thoughts
Finding time for treatment	
Travelling to a centre for treatment	
Being in my own home for treatment	
Storing treatment equipment in my house	
Not having treatment	

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Available at www.homedialysis.org.au

ASSESS FOR PD ELIGIBILITY
DECISION MAKING TOOLS (CONTINUED)

3. How much do you think each dialysis treatment will let you carry on doing the activities that are important to you?

Circle one number for each treatment.

	Not at all						Completely
Haemodialysis - Centre (machine at hospital)	0	1	2	3	4	5	6
Haemodialysis - Home (machine at home)	0	1	2	3	4	5	6
Peritoneal Dialysis - Continuous Ambulatory (bag at home or any clean place)	0	1	2	3	4	5	6
Peritoneal Dialysis - Automated (machine at home or any clean place)	0	1	2	3	4	5	6

	Haemodialysis (HD)		Peritoneal Dialysis (PD)	
	Haemodialysis at a hospital or centre (CHD)	**Haemodialysis at home (HHD)**	**Peritoneal Dialysis Continuous Ambulatory (CAPD)**	**Peritoneal Dialysis Automated (APD)**
Place of dialysis care	People travel to a hospital or specialist centres for dialysis session.	People have dialysis sessions at home.	Most people choose dialysis sessions at home or work. Can be any clean place.	Most people choose dialysis sessions at home or work. Can be any clean place.
How dialysis works	Attaching to a machine for 4 hours per session by the arm or leg.	Attaching to a machine for 4 hours per session by the arm or leg.	Attaching to a bag of fluid for about 40 minutes per session by the belly.	Attaching to a machine for about 9 hours per session by the belly.
Usual number of sessions in a week	3 days in a week	At least 3 times a week (night or day)	Every day	Every night
Usual number of sessions in a day	1 session per day	1 session per day	4 sessions per day (exchanges)	1 session per day
People carrying out dialysis	Staff at the hospital or centre carry out the session.	The person is trained to carry out the session.	The person is trained to carry out the exchange.	The person is trained to carry out the exchange.

Used with permission of Kidney Research UK.
Available at https://www.kidneyresearchuk.org/DialysisDecisionAid

OFFER PD TO ELIGIBLE PATIENTS

- Offer the choice as part of an educational process[1]
  - Multidisciplinary team approach
  - One-on-one sessions
  - Peer education
  - Written materials
  - Videos
  - Websites
- Typically about 50% of patients should select PD[1]
- Education can significantly impact the percentage of patients selecting PD as a treatment[2]

[1] Blake, et al. 2013.
[2] Mehrota, et al. 2005.

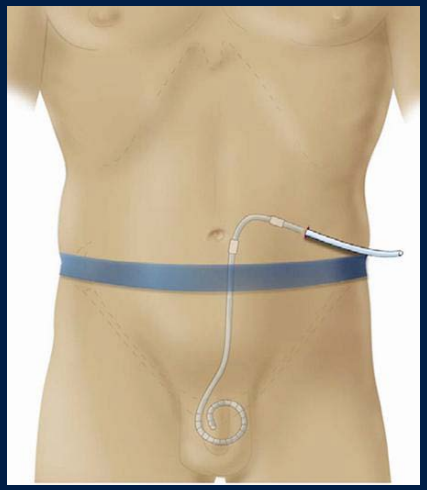
PRE-INSERTION OF PD CATHETER

- Optimal timing of insertion is at least 2 weeks prior to the expected use of the catheter[3]
- Confirm lifestyle considerations to comply with PD[3]
- Full medical history[4]
- Abdominal exam, history of prior abdominal surgeries/catheter placement, hernias, any weakness of abdominal wall should be repaired prior to PD catheter insertion[4]
- Abdominal scarring is not a contraindication to PD, but may require video-guided laparoscopic placement[5]

[3] Figueiredo, et al. 2010.
[4] Flanigan and Gokal. 2005.
[5] Amici, et al. 2013.

EXIT SITE POSITION[6]

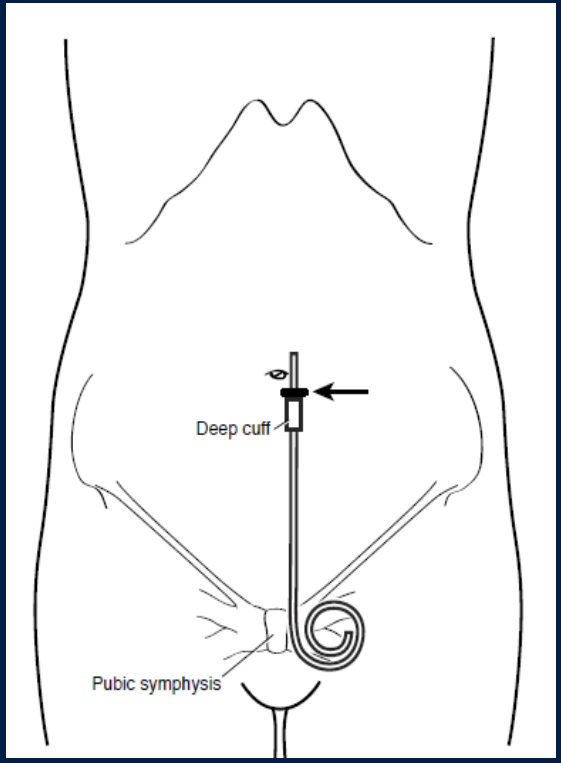
- Consider patient preference
- Locate to maximize self-care skills
  - Clearly visible to patient
  - Considers patient handedness, motor skills, and strength
- Above or below the belt line?
- Direct laterally and facing downwards
- Avoid moist areas or those subject to pressure (consider incontinence)
- Avoid scars, creases, abdominal skin folds, and ridge of an abdominal pannus



[6]Crabtree. 2006

MARKING THE EXIT SITE[6]

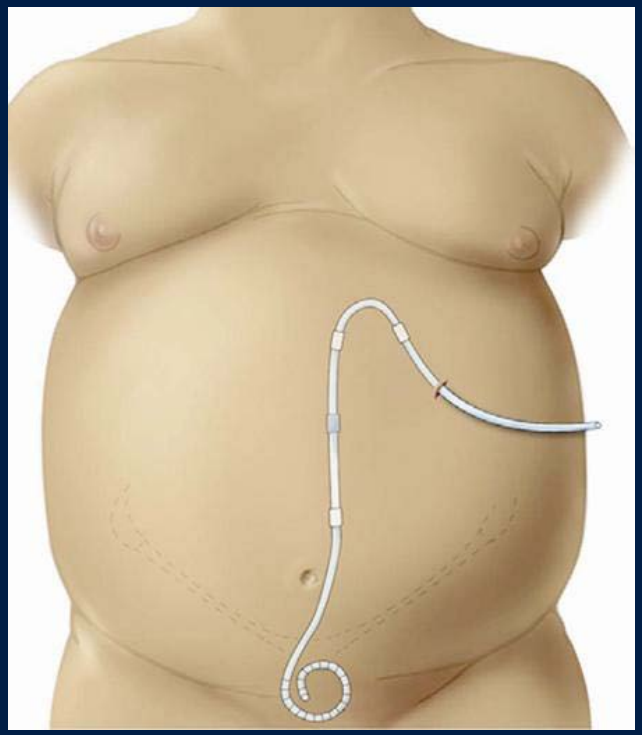
- Identify belt line with patient in supine position/dressed
- With the patient still in supine position, mark the catheter entry at deep cuff
- Ensure that catheter length takes catheter coil to symphysis pubis
- Exit site is now located 2-3cm from the external cuff in line with external catheter limb
- Confirm exit site is above/below belt line with patient in a seated position



[6]Crabtree. 2006

PRE-OP EXAM
CONSIDERATIONS FOR SELECTION OF PD CATHETER TYPE[5,6]

- Some factors may require consideration of extended catheters or pre-sternal catheters:
  - Weight/obesity
  - Floppy skin folds
  - Stomas
  - Incontinence
  - Requirement/desire for deep tub baths
  - Colostomies



[5]Amici, et al. 2013.
[6]Crabtree. 2006

PRE-OP WORK-UP

- CBC, BMP, PT, PTT, Type & Screen
- Consider use of mechanical bowel preparation with 1 gallon of polyethylene glycol, although this is not always necessary[7,8]
- Patient appropriateness for administration of conscious sedation[9]
  - Examples
    - Midazolam 1-4 mg
    - Fentanyl 50-200 mcg

[7]Contant, et al. 2007.
[8]Guenaga, et al. 2011.
[9]Javid, et al. 2011.

INFECTION PROPHYLAXIS AND SKIN PREPARATION

- Consider screening for MRSA and nasal carrier status[4,5]
- Morning of the operation: Shower with soap or detergent[4]
  - e.g. Chlorhexidine abdominal wash
- Clip/shave abdominal hair (if present)[4]
- Pre-operative antibiotic prophylaxis[4]
  - Single i.v. dose of first or second generation cephalosporin
  - Vancomycin only for penicillin-allergic patients
- Catheter insertion performed under sterile conditions

[4]Flanigan and Gokal. 2005.
[5]Amici, et al. 2013.

CATHETER SELECTION
CHARACTERISTICS OF AVAILABLE PD CATHETER CONFIGURATIONS[10]

- Shape of intraperitoneal segment
  - Straight
  - Coiled
- Number of cuffs
  - Single cuff
  - Double cuff
- Subcutaneous configuration
  - Straight (Tenckoff)
  - Prefabricated bend (Swan Neck)

[10]Hagen, et al. 2014.

CATHETER SELECTION
CHARACTERISTICS OF AVAILABLE PD CATHETER CONFIGURATIONS[10]

Systematic Data Review of Catheter Type		
Intraperitoneal Segment **Straight vs. Coiled**	▪ Exit site infection ▪ Peritonitis ▪ Migration, leakage, removal ▪ Wound/tunnel infection, drainage dysfunction, interventions ▪ 1 year survival	No significant difference
	▪ 2 year survival	Significant difference – favors straight catheters
Subcutaneous Segment **Straight vs. Swan Neck**	▪ Exit site infection ▪ Peritonitis ▪ Migration, leakage, removal ▪ Catheter dysfunction (one-study only) ▪ 1 year survival ▪ 2 year survival	No significant difference
Number of Cuffs **Single vs. Double**	▪ Exit site infection ▪ Peritonitis ▪ Obstruction, removal ▪ 1 year survival ▪ 2 year survival	No significant difference

[10]Hagen, et al. 2014.

CATHETER SELECTION
CHARACTERISTICS OF AVAILABLE PD CATHETER CONFIGURATIONS[10]

In summary, according to current evidence, catheter selection based on characteristics of catheter configurations plays only a small role in PD outcomes.

[10]Hagen, et al. 2014.

IF NOT CATHETER SELECTION
THEN WHAT DOES IMPACT PATIENT OUTCOMES?[11]

- Choose the catheter that is a proper "fit" for the patient.
  - Allows for pelvic location of the distal catheter
  - Provides an appropriate exit location that is accessible for the patient and away from belt lines, skin creases, and folds.
- Abdominal site markings are critically important for proper placement.
- Evidence suggests insertion technique has more impact on patient outcomes than type of catheter.

[11]Abdel-Aal, et al. 2014.

THE UW EXPERIENCE

- Multidisciplinary team
- Due to the expense of home set-up, training, staff commitment, we assume patients will be dialyzing for at least 6 months
- Home visit will occur after initial preliminary acceptance into program

THE UW EXPERIENCE
CRITERIA FOR ACCEPTANCE FOR PD

- Pre-authorization of insurance coverage
- Clean home environment
- Running water, indoor plumbing, phone service and electricity
- Storage for 30-40 boxes of fluid and supplies
- Able and willing to come for monthly f/u visits
- Able and willing to lift 11lbs over head for CCPD and 5 lbs for CAPD
- Able and willing to keep home treatment records and provide to team
- Able to place supply orders and be available for deliveries
- Must have working phone and voicemail and able to respond within 24hrs

THE UW EXPERIENCE

PRE-OP INSTRUCTION FOR PERCUTANEOUS INSERTION OF PD CATHETER

1. Hold anticoagulants and anti-platelet medications for 5 days prior to procedure

2. Nothing to eat or drink after midnight prior to procedure

3. May take AM pills with minimal water

4. Bowel prep evening before procedure
   a) Drink 1 quart of polyethylene glycol electrolyte solution—8oz every 10-15 min.

5. Day of surgery, peripheral IV started and prophylactic antibiotics started prior to procedure

REFERENCES

1. Blake PG, Quinn RR, Oliver MJ. Peritoneal dialysis and the process of modality selection. Perit Dial Int. 2013 May-Jun;33(3):233-41.
2. Mehrota, R., Marsh, D., Vonesh, V, Peters, V. & Nissenson, A. (2005). Patient education and access of ESRD patients to renal replacement therapies beyond in-center hemodialysis. Kidney International, 68, 378-390.
3. Figueiredo A. et al. Clinical practice guidelines for peritoneal dialysis. Perit Dial Int. 2010; 30:424-429.
4. Flanigan M, Gokal R. Peritoneal catheters and exit-site practices toward optimum peritoneal access: a review of current developments. Perit Dial Int. 2005; 25:132-139.
5. Amici, et al. The peritoneal dialysis catheter. J Nephrol. 2013; 26(Suppl 21): S4-S75.
6. Crabtree JH. Selected best demonstrated practices in peritoneal dialysis access. Kidney Int Suppl. 2006; 70:S27–S37.
7. Contant CM, Hop WC, van't Sant HP, et al. Mechanical bowel preparation for elective colorectal surgery: a multicentre randomised trial. Lancet. 2007; 370:2112-2117.
8. Guenaga KK, Matos D, Wille-Jørgensen P. Mechanical bowel preparation for elective colorectal surgery. Cochrane Database Syst Rev. 2011) CD001544.
9. Javid MJ, Rahimi M, Keshvari A. Dissociative conscious sedation, an alternative to general anesthesia for laparoscopic peritoneal dialysis catheter implantation: a randomized trial comparing intravenous and subcutaneous ketamine. Perit Dial Int. 2011; 31:308-314.
10. Hagen SM, Lafranca JA, IJzermans JN, Dor FJ. systematic review and meta-analysis of the influence of peritoneal dialysis catheter type on complication rate and catheter. Kidney Int. 2014 Apr;85(4):920-32.
11. Abdel-Aal et al. Best practices consensus protocol for peritoneal dialysis cathteter placement by interventional radiologists. Perit Dial Int. 2014; 34(5):481-493.