Baxter

Check list for developing a percutaneous PD catheter insertion service

Action	Responsibility	Date completed
GOVERNANCE		
Introduction of a New Interventional Procedure		
Identify if there is a hospital process for introduction of new procedure		
Complete relevant documentation		
Conscious sedation		
Identify hospital policy for conscious sedation		
Ensure your procedure room is suitably equipped for conscious sedation		
Ensure medical & nursing staff are adequately trained		
Infection Control		
Contact infection control team to ensure agreement with protocols		
Liaise with infection control team regarding the layout of your procedures room		
Discuss prophylactic antibiotics protocol with infection control team		
WORKFORCE PLANNING		
Mentorship for training		
Identify suitable mentor for direct observation & sign off of procedure		
Ensure mentor competent at procedure/can attend PD access academy if required		
Nursing support		
Identify a nurse to assist with the procedure		
Ensure nurse availability to attend PD access academy		
Establish with your colleagues who you are happy to put a catheter in		
Set guidelines for local PD catheter insertions		
Communicate guidelines to relevant colleagues		
PRACTICALITIES		
Equipment & Resources		
Consider the requirement of business case submission		
Obtain surgical equipment PD catheter insertion packs PD Catheter, titanium adapter PD equipment (set, solutions etc)		
Procedures Room		
Identify a suitable area for catheter insertion		
Availability of oxygen & suction		
Availability of monitoring equipment: blood pressure, heart rate & O2 saturation monitoring		
Availability of operating table with ability to tilt head down		
Availability of scrub facilities		
Sufficient space for all the equipment and staff		
Access to post procedure recovery facilities		
Identify regular access to post procedure recovery beds		
Establish with the relevant facility who they are happy to have post procedure		

Clinical Protocol
Percutaneous PD Catheter Insertion

1 Process pathway for percutaneous PD catheter insertions

2 Day Case percutaneous PD catheter insertions

2.1 Cases unsuitable for Day Case catheter insertion
2.2 Pre-admission clerking
2.3 Admission procedure
2.4 Consent
2.5 Post-procedure patient care
2.6 Discharge policy

3 Inpatient percutaneous PD catheter insertions

3.1 Cases unsuitable for inpatient catheter insertion
3.2 Booking cases as inpatients
3.3 Pre-procedure assessment
3.4 Consent
3.5 Post-procedure patient care
3.6 Discharge policy

4 Percutaneous PD catheter insertion

4.1 Setting up ward procedures room
4.2 Equipment required
4.3 Monitoring of the patient during the procedure
4.4 The procedure
4.5 Potential complications and their management

5 Management of the PD catheter post insertion

6 Audit of practice

7 References: ISPD Guidelines

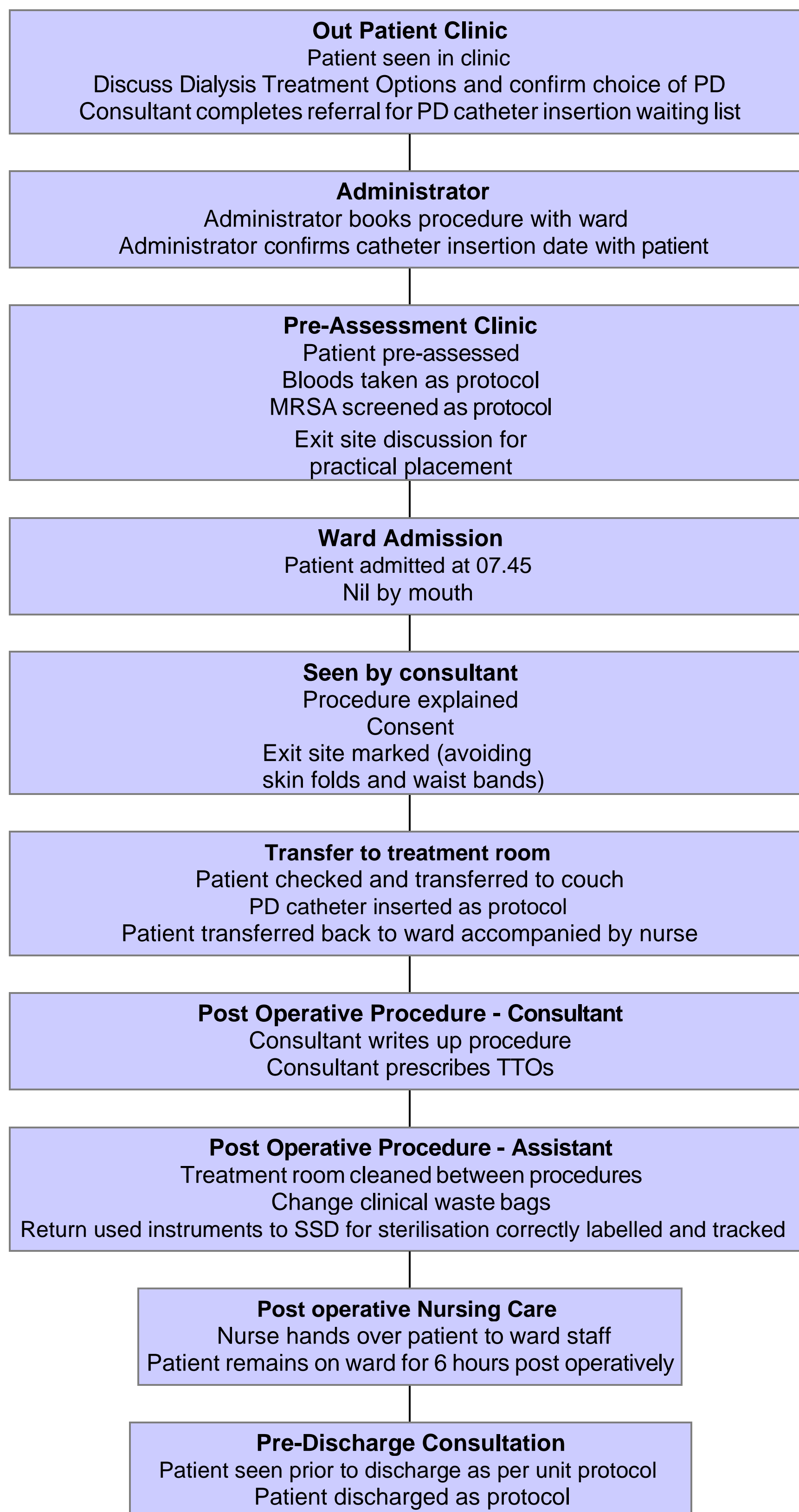
Appendix I **Day Case Proforma**

Appendix II **PD catheter insertion Information leaflet**

Appendix III **Post-PD catheter insertion information leaflet**

Baxter

1 Pathway for Percutaneous PD Catheter Insertion



2 Day Case percutaneous PD catheter insertions

(These are guidelines only and will need adapting to accommodate local policy)

2.1 Cases unsuitable for Day Case catheter insertion*

*(*Cases deemed to be unsuitable may change as competency levels advance and will require reviewing as appropriate)*

Second PD catheter insertions.
Patients with previous abdominal surgery.
Patients on oral anticoagulation.
Patients with insulin treated diabetes.
Patients unwilling to have the procedure under local anaesthetic (± sedation).
Patients with no responsible adult to return home to.

Unsuitable cases may be undertaken as an inpatient – see Section 3.1

2.2 Pre-admission clerking

2.2.1 The following bloods will be taken: Full blood count, PT & APPT, Renal profile. Results should be reviewed by the consultant responsible for the PD catheter insertion (PDI) in the week prior to the procedure. Consultant to confirm the PDI can be performed.

2.2.2 All patients to have nose swab taken for carriage of Staphylococcus and MRSA pre-screen and treatment as required as per local protocol.

2.2.3 The patient will be provided with a prescription for laxatives [as per local unit protocol] and asked to start these in preparation of commencing peritoneal dialysis.

2.2.4 Patients will be provided with a patient information leaflet on PD catheter insertion summarising the procedure [Appendix II].

2.3 Admission procedure

2.3.1 Patients are to arrive at the Day Case Unit/Ward having been nil by mouth as per local policy.

2.3.2 A venflon will be inserted by the on call renal SHO and prophylactic antibiotics commenced as per local policy for pre-op medications.

2.3.3 Patients will be reviewed by the consultant performing the PDI and consent taken.

2.3.4 Patients will be placed in a theatre gown.

2.3.5 Patients will be collected by a member of the catheter insertion procedure team.

2.4 Consent

2.4.1 Consent will be taken by consultant performing the PDI while the patient is on the Day Case Unit/Ward.

2.4.2 Risks to be quoted for the procedure:

Local bleeding and haematoma formation (3.4%)
Catheter related infection (2.6% cases)
Bowel perforation (0.8% of cases)

2.5 Post-procedure patient care

2.5.1 Non-sedated patients

2.5.1.1 On return from the procedures room the patient will have a full set of observations taken [Temp, BP, P, Resp Rate, 0^2 Sats] and these will be repeated half-hourly for 2 hours, hourly for a further 2 hours and then 2 hourly until discharge.

2.5.1.2 The patient will be allowed to sit up immediately if they wish and get out of bed after 60 minutes bed rest.

2.5.1.3 Patients will be allowed to eat and take any due medication on return to the Day Case Unit.

2.5.1.4 Patients will have simple analgesia prescribed on their chart on a PRN basis for post-procedure analgesia if required.

2.5.1.5 Patients will be observed for 6 hours before being allowed home after review by consultant performing the PDI

2.5.1.6 If there are any problems during the post-procedure period Day Case staff should immediately inform the consultant performing the PDI or the Renal Specialist Registrar on call for that day.

2.5.2 Sedated patients

2.5.2.1 On return from the procedures room the patient will have a full set of observations taken [Temp, BP, PR and oxygen saturation] and these will be repeated every 15 minutes for 1 hour, every 30 minutes for 2 hours and then hourly thereafter until discharge.

2.5.2.2 The patient will be allowed to sit up immediately if they wish and get out of bed after 2 hours bed rest.

2.5.2.3 Patients will be allowed to eat and take any due medication on return to the Day Case Unit once they are deemed to have recovered fully from the sedative.

2.5.2.4 Patients will have simple analgesia prescribed on their chart on a PRN basis for post-procedure analgesia if required.

2.5.2.5 Patients will be observed for 6 hours before being allowed home after review by consultant performing the PDI

2.5.2.6 If there are any problems during the post-procedure period Day Case staff should immediately inform the consultant performing the PDI or the Renal Specialist Registrar on call for that day.

2.6 Discharge policy

2.6.1 All patients will be reviewed 6 hours post-procedure by the consultant performing the PDI. If there are no problems the patient will be discharged home in the care of a responsible adult.

2.6.2 If required a prescription for simple analgesia will be provided.

2.6.3 The patient will be provided with a post-PD catheter insertion information leaflet [Appendix III] which will give information on catheter exit site care and the dates for their exit site review and training date.

2.6.4 The consultant responsible for performing the PDI will confirm that the patient has a suitable outpatient review date and that the MDT meeting has the patients details for the Resting Patient list.

2.6.5 The consultant responsible for performing the PDI will generate a discharge summary/TTO for the referring Consultant Nephrologist, detailing the insertion and a date for PD training.

2.6.6 If for any reasons the patient cannot go home admission to the renal unit Arranged.

2.6.7 Those patients who received sedation are unable to drive themselves home, must return home with a responsible adult, and must have a responsible adult at home with them for the next 24 hours.

3 Inpatient percutaneous PD catheter insertions

3.1 Cases unsuitable for inpatient catheter insertion

Second PD catheter insertions.
Patients with previous abdominal surgery.
Patients unwilling to have the procedure under local anaesthetic (± sedation).

Cases unsuitable for inpatient percutaneous catheter insertion must be referred to the relevant surgical team for assessment and surgical placement of PD catheter.

3.2 Booking cases as inpatients

3.2.1 All cases must be discussed with the consultant responsible for performing PDI before being booked.

3.2.2 Cases must be put at the beginning of the morning procedures lists.

3.2.3 It is the responsibility of the referring doctor to ensure that the procedures room team know in advance that a PD catheter insertion has been placed on the list so that they can ensure the correct equipment is available.

3.2.4 The referring doctor will provide the patient with a patient information leaflet on PD catheter insertion summarising the procedure [Appendix II].

3.3 Pre-procedure assessment

3.3.1 The referring doctor must inform the PD Nursing team of the PD catheter insertion so that they can arrange training date planning.

3.3.2 The following bloods must be taken 24 hours before procedure: Full blood count, PT & APPT, Renal profile. Results will be reviewed by the consultant responsible for performing PDI prior to the procedure to confirm the PDI can be performed.

3.3.3 All patients to have nose swabs taken for carriage of Staphylococcus and MRSA screening. If required commence treatment as per local protocol.

3.3.4 The patient will be provided with a prescription for laxatives [as per local unit protocol] and asked to start these in preparation of commencing peritoneal dialysis.

3.3.5 A venflon will be inserted by the on call renal SHO and prophylactic antibiotics commenced as per International Society of Peritoneal Dialysis recommendations

3.4 Consent

3.4.1 Consent will be taken by the consultant responsible for performing PDI on the ward.

3.4.2 Risks to be quoted for the procedure:

Local bleeding and haematoma formation (3.4%)
Catheter related infection (2.6%)
Bowel perforation (0.8%)

3.5 Post-procedure patient care

3.5.1 Non-sedated patients

3.5.1.1 On return from the procedure room the patient will have a full set of observations taken [Temp, BP, PR] and these will repeated half-hourly for 2 hours, hourly for a further 2 hours and then 2 hourly for further 4 hours.

3.5.1.2 The patient will be allowed to sit up immediately if they wish and get out of bed after 60 minutes bed rest.

3.5.1.3 Patients will be allowed to eat and take any due medication on return to the ward.

3.5.1.4 Patients will have simple analgesia prescribed on their chart on a PRN basis for post-procedure analgesia if required.

3.5.1.5 Patients will be observed for 6 hours before being allowed home after review by the consultant responsible for performing PDI.

3.5.1.6 If there are any problems during the post-procedure period staff should immediately inform the consultant responsible for performing PDI or the Renal Specialist Registrar covering the ward.

3.5.2 Sedated patients

3.5.2.1 On return from the procedures room the patient will have a full set of observations taken [Temp, BP, P, Resp rate **and** O^2 sats] and these will repeated every 15 minutes for 1 hour, every 30 minutes for 2 hours and then hourly for a further 4 hours.

3.5.2.2 The patient will be allowed to sit up immediately if they wish and get out of bed after 2 hours bed rest.

3.5.2.3 Patients will be allowed to eat and take any due medication on return to the ward once they are deemed to have recovered fully from the sedative.

3.5.2.4 Patients will have simple analgesia prescribed on their chart on a PRN basis for post-procedure analgesia if required.

3.5.2.5 Patients will be observed for a minimum of 6 hours before being allowed home after review by the consultant responsible for performing PDI.

3.5.2.6 If there are any problems during the post-procedure period staff should immediately inform the consultant responsible for performing PDI or the Renal Specialist Registrar covering the ward.

3.6 Discharge policy

3.6.1 All patients will be reviewed 6 hours post-procedure by the consultant responsible for performing PDI. If there are no problems the patient may be discharged home in the care of a responsible adult.

3.6.2 If required a prescription for simple analgesia will be provided.

3.6.3 The patient will be provided with a post-PD catheter insertion information leaflet [Appendix III] which will give information on catheter exit site care and the dates for their exit site review and training date.

3.6.4 Where appropriate the consultant responsible for performing PDI will confirm that the patient has a suitable outpatient review date and that the MDT meeting has the patients details for the "resting patient" list.

3.6.5 Ward staff will generate a discharge summary/TTO for the referring Consultant Nephrologist, detailing the insertion and training date if the patient is discharged home within 24 hours of the procedure.

3.6.6 Those patients who received sedation are unable to drive themselves home, must return home with a responsible adult, and must have a responsible adult at home with them for the next 24 hours.

4 Percutaneous PD catheter insertion

4.1 Setting up ward procedures room

Ensure procedure room clean and well equipped (see 4.2)

4.2 Suggested Equipment required

- PDI sterile pack: to include: drapes, Verres needle, artery forceps, scissors, scalpel holder, 6" Debakey forceps
- Skin prep as per local surgical practices, razor
- PD catheter stylet
- Gown, gloves, theatre cap and theatre mask
- Lidocaine with 2% adrenaline, sterile gel, 100ml bag of normal saline
- PD catheter: See ISPD guidelines re double cuff catheters
- PD catheter implantation pack.
- Suture pack as per local policy.

4.3 Monitoring of the patient during the procedure

All patients to have pulse rate, oxygen saturation and cardiac rhythm monitored continuously throughout the procedure. Blood pressure to be measured every five minutes. If diabetic, a blood glucose to be checked prior to commencement of procedure.

4.4 The procedure

4.4.1 Background. Traditionally the placement of a peritoneal dialysis catheter has been accomplished by a surgeon and using general anaesthesia. Recent data have emphasised that interventional nephrologists can safely and successfully perform PD access procedures. Prospective randomised and nonrandomised studies have shown that PD catheters percutaneously placed by nephrologists have fewer complications (infection, exit site leak) and longer catheter survival rates than those inserted surgically (Ash, S. Interventional Nephrology 2003 pp 323 – 334 and Gadallah et al Am. Journal Kidney Disease Vol. 33 No 1 1999 pp 118 – 122).

4.4.2 Principle. Percutaneous insertion of CAPD catheters under local anaesthesia is a well-tolerated, rapidly performed day case procedure, which enables timely initiation of PD and provides permanent dialysis access.

4.4.3 The Procedure. For percutaneous insertion, the entire abdomen is prepped and draped in sterile fashion. A small skin incision (2–3 cm) is made over the desired location under local anaesthesia. Dissection is carried down only to the subcutaneous tissue. The anterior rectus sheath is identified, but not incised. A preassembled cannula with trocar and a spiral sheath (Quill) is then inserted into the abdominal cavity through the rectus muscle. Either the medial or lateral border of the rectus muscle can be used to gain access to the peritoneal cavity. The cannula with the spiral sheath wrapped around it is then advanced to an identified location (usually in the pelvis). The cannula is then removed, leaving the spiral sheath in place. The spiral sheath is dilated to 6 mm diameter and the catheter is advanced into the desired location through the spiral sheath using an internal stylet. The deep cuff is implanted into the rectus muscle using an Implanter Tool, without dissection of the anterior rectus sheath or the muscle. Some nephrologists secure the deep cuff into the rectus muscle using a purse-string suture at the anterior rectus sheath. The superficial cuff is implanted into the subcutaneous tissue and a tunnel and an exit site are created. The tunnel and exit site are routinely directed inferiorly. The subcutaneous tissue is sutured using absorbable material and the skin is closed with nylon. No sutures are placed on the external rectus sheath or at the skin exit site.

4.5 Potential complications and their management

4.5.1 The most frequent reported complications are post-operative bleeding, wound infection and PD leak. Rarely (0.8% cases) bowel perforation may complicate abdominocentesis. In reported series this can usually be managed conservatively with bowel rest and broad spectrum intravenous antibiotics. To minimise this risk only patients with virgin abdomens will be considered for percutaneous PD catheter insertion.

4.5.2 In the event of bowel perforation during the procedure the procedure will be abandoned. The local renal unit policy for such episodes will be followed.

4.5.3 In the event of a significant intra-procedural haemorrhage uncontrollable with local pressure and administration of lidocaine with adrenaline local renal unit policy for such episodes will be followed.

4.5.4 Surgical back-up for percutaneous PD catheter insertion should be agreed with the relevant team to ensure adequate support is available.

5 Management of the PD catheter post insertion

5.1 The patient will be returned to either the Day Case Unit or the ward with a mepore dressing over the insertion site and the PD catheter exit site, and the PD catheter will be secured with micropore tape and have a titanium cap fitted and be anchored. The tube is anchored to prevent trauma and to keep it immobilised at all times.

5.2 **NO** PD fluid will be in the abdomen and there will be **NO** PD bag attached.

5.3 The abdomen will be rested for a minimum of 2 weeks and **NO** PD exchanges are to undertaken immediately post-insertion. Unless there is a clinical indication to flush the catheter.

5.4 The patient will be provided with a post-PD catheter insertion information leaflet [Appendix III] which will give clear information on catheter exit site care and the dates for exit site review and PD training.

5.5 Prior to discharge the patient should be taught how to secure the catheter and a roll of tape and 3 x spare mepore dressings should be given to the patient for this purpose.

5.6 The incisional site dressing should be changed at day 3 at the GP surgery and the sutures removed on day 10 either at the time of exit site review or by local district nurses. These appointments will be arranged by the PD Nursing Team.

5.7 The exit site will be reviewed weekly by the PD Nursing Team until the patient has been trained.

5.8 The patient should continue to be followed up by their usual Nephrologist in outpatients until trained.

5.9 Patients with PD catheters *in situ* must appear on the "resting patients" list at the MDT meeting.

6 Audit of practice

6.1 All percutaneous PD catheter insertions performed by Nephrologists and Transplant Surgeons will be audited annually. An interim audit at 6 months will be conducted by the consultant responsible for PDI during the first year of introduction of this technique.

6.2 The following outcomes will be audited:

Incidence of:
- viscus perforation
- significant procedural haemorrhage
- exit site infection
- PD catheter leaks
- peritonitis episodes
- PD catheter malposition and primary failure

6.3 Results will be compared to contemporaneous surgical PD insertion complication rates over the same period, historical renal unit data and published rates. This data will be presented as part of the annual multidisciplinary PD audit.

7 Reference: ISPD Guidelines

Szeto C, Li P, Johnson D, Bernadini J, Dong J, Figueiredo A, Ito Y, Kazancиouglu R, Moraes T, van Esch S, Brown E. **ISPD Guidelines/Recommendations: ISPD Catheter related infections recommendations: 2017 Update**. *Perit Dial Int.* 2017; 37(2):141–154
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Figueiredo A, Goh B, Jenkins S, Johnson D, Mactier R, Ramalakshmi S, Shrestha B, Wilkie M. **Clinical Practice Guidelines for Peritoneal Access**. *Perit Dial Int*. 2010; 30:424–429
Available online at http://www.pdiconnect.com/content/30/4/424.full.pdf+html

Figueiredo A, Bernadini J, Bowes E, Hiramatsu M, Su C, Walker R, Brunier G. **ISPD Guidelines/Recommendations: A syllabus for teaching peritoneal dialysis to patients and caregivers.** *Perit Dial Int* 2016; 36(6):592–605
Available online at http://www.pdiconnect.com/content/36/6/592.full.pdf+html

Appendix I

Day Case Proforma

Percutaneous PD catheter insertion

Blood tests:

- Full Blood Count
- Clotting Screen
- Renal Profile
- Liver Function Test
- Bone
- Group & Save

Other information:

- Check the patient has had no previous abdominal operations or hernia
- Check if patient has a history of excessive bleeding (e.g. dental treatment)

Contra -indications to Day Case percutaneous PD catheter insertion

- Second PD catheter insertions.
- Patients with previous abdominal surgery.
- Patients on oral anticoagulation.
- Patients with insulin treated diabetes.
- Patients unwilling to have the procedure under local anaesthetic (+ sedation).
- Patients with no responsible adult to return home with.
- Low platelet count <100

Day Case Unit
Pre-assessment Clinic
Percutaneous PDI

Patient ID label

DATE: ……………………...
FOR PDI: ……………….

BASELINE OBSERVATIONS:
BP…………………………….
PULSE……………………….
BMI………………………….

BLOOD RESULTS:

WCC ………………………..
HB……………………………
PLATELETS…………………
INR …………………………..
APPT…………………………
GROUP & SAVE ……………

SODIUM ……………………..
POTASSIUM………………..…
UREA …………………………
CREATININE …………………
BICARB………………………..
ADJ. CALCIUM………………..
INORG. PHOSPHATE…………
CRP…………………………….

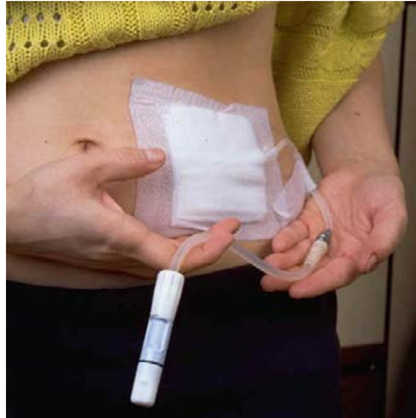
ADDITIONAL INFORMATION:

SIGNATURE…………………………..

Appendix II

PD catheter insertion Information leaflet

Peritoneal dialysis (PD) is one of the two methods of dialysis that may be used to treat people with kidney failure. In PD, the process of dialysis takes place inside the patient"s body, using the peritoneum (the natural lining of the abdomen) as the dialysis membrane (or artificial kidney).



To receive PD, you will first need to have a small operation. During the operation (which is performed using either a local or a general anaesthetic), a plastic tube will be permanently inserted into your abdomen (see diagram). This tube is called a PD catheter. It is about 30 centimetres (12 inches) long and as wide as a pencil. The PD catheter will be placed through your lower abdominal wall, into your peritoneal cavity. Half of the catheter lies inside your abdomen, and half lies outside. It will come out on the right or the left, under your navel (tummy button). The PD catheter acts as a permanent pathway into your peritoneal cavity from the outside world. Without it, you won't be able to perform PD, so it is important you look after it.

Before the operation
A doctor or a nurse will see you in the clinic before you have the operation. At this appointment, the doctor will have a look at your abdomen and talk to you about the operation in more detail. You will have plenty of opportunity to ask questions at this appointment.
You will need to have some tests before the operation can take place. These will include

- Blood tests
- Urine tests
- Blood pressure and pulse check

At the clinic you will also be given advice about what you need to do before the operation and what you can expect immediately afterwards

- Eating and drinking before and after the operation
- Wearing make up
- Wearing contact lenses
- What to bring to hospital such as an overnight bag and reading material
- How long you can expect to stay in hospital

Day of the operation

On the day of the operation you will be admitted to hospital and shown to your bed. A doctor will come to talk to you and ask you questions to make sure you understand what is going to happen. You will be asked to sign a form consenting to the operation. The doctor will put a small plastic tube (like the ones used for an intravenous drip) into a vein on the back of your hand or your arm. You will be given a dose of antibiotics before the procedure, which will help to prevent you from picking up any infections after the operation. You will then be taken to the procedures room for the PD catheter insertion.

The operation

During the operation you will be given some medication to make you feel a little drowsy, however you will not be put completely to sleep. The doctor will cover your abdomen with sterile drapes and clean the area with antiseptic solution. You will be given injections of local anaesthetic to make sure that you don't feel any pain during the operation.
The doctor will put the PD catheter into your abdomen and check that the PD fluid is able to run in and out easily. The operations site will then be covered with a dressing and you can be transferred back to the ward. The whole procedure will take about 30 – 45 minutes.

After the operation

You will stay on the ward for 4-6 hours following your operation. The nurses will monitor your blood pressure and pulse regularly. You can have painkillers if you need them. Ask the nurses for them regularly
Before you go home the nurse will give you advice about

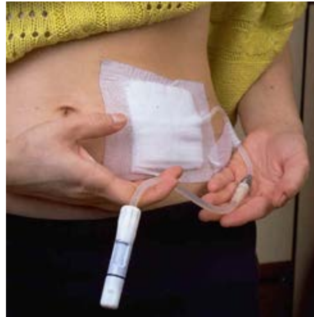
- Looking after your dressings and PD tube
- Pain control
- Preventing infections
- What to do in case of emergency

You will probably need to take some time off from work after the operation. The length of time off will depend on your job and you will need to discuss this with your doctor or PD nurse when you are admitted to the ward. You will be given a sick note if you are going to be off work for more than 7 days.

You will be seen in the outpatient clinic about a week after the operation. This appointment may be arranged before you go home or sent to you in the post.

Appendix III

Post-PD catheter insertion information leaflet



You now have a Peritoneal catheter, or „tube" in your abdomen. The area where the tube comes out of your abdomen is called the „exit site". This tube is vital for you to be able to have Peritoneal Dialysis so it is important that you look after it.

- You need to keep the exit site dressing clean and dry for 4 weeks after the operation. This is to allow for the skin to heal and grow around the tube and create a water-tight seal. Please do not shower, have deep baths or go swimming for the first 4 weeks at least after your operation. Shallow baths that do not soak the dressing are OK.
- If the dressing does get wet, or fall off it will need replacing with a new dressing. You will be given 4 large sticking plasters called "mepore dressings" before you leave hospital. The nurse who arranges your discharge from hospital will explain how to re-apply a dressing if needed.
- The tube should always be taped to your abdomen to avoid any pulling or unnecessary damage to the exit site. You will be given a roll of tape before you leave the ward and taught how to tape the tube to your abdomen.
- The PD nurse will change your dressing once a week for the first 2 weeks after the operation
- When you start your training for dialysis, you will also be taught how to change the dressing yourself
- Sometimes the exit site does become infected and needs treatment. An exit site infection can be recognised by any or all of the following
    - yellow or green fluid on the dressing
    - redness around the area
    - pain and discomfort around the exit site, the area feels hot to touch, or you may feel „feverish"

  If you experience any of these or are worried at all, please contact a nurse for advise on the numbers below.
- Extremely rarely, the exit site may ooze blood, which soaks the dressing. If this happens please contact a nurse for advice on the numbers below.

Monday – Friday 0830 – 17.30 ring
Evenings / Overnight
Weekends / Bank holidays