Clinical Practice Guidelines for Peritoneal Access

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Clinical Practice Guidelines for Peritoneal Access

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SUMMARY OF AUDIT MEASURES

1. Catheter patency - more than 80% of catheters should be patent at 1 year (censoring for death and elective modality change)

2. Complications following PD catheter insertion -
   - Bowel perforation < 1%
   - Significant haemorrhage <1%
   - Exit site infection within 2 weeks of catheter insertion <5%
   - Peritonitis within 2 weeks of catheter insertion <5%
   - Functional catheter problem requiring manipulation or replacement or leading to technique failure <20%
INTRODUCTION


The evidence for these recommendations has been assessed using the modified GRADE system. The modified GRADE system defines both the strength of the recommendations of the guideline authors and the level of evidence upon which each of the recommendations is based. This grading system classifies expert recommendations as “strong” (Grade 1) or “weak” (Grade 2) based upon the balance between the benefits and risks, burden and cost. The quality or level of evidence is designated as high (Grade A), moderate (Grade B), low (Grade C) or very low (D) depending on factors such as study design, directness of evidence and consistency of results. Grades of recommendation and quality of evidence may range from 1A to 2D.

The GRADE system has been developed by an international group of guideline developers and methodologists to maximise the usefulness of clinical practice guidelines in the management of typical patients. Most guideline organisations have recognised the need for a standard grading scheme and the GRADE system has been adopted by many leading organisations including NICE, SIGN, KDIGO, ERBP and KDOQI as well as UpToDate.

References:

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<td>1A</td>
<td>Strong recommendation. High quality evidence.</td>
<td>Benefits clearly outweigh risk and burdens, or vice versa</td>
<td>Consistent evidence from well performed randomized, controlled trials or overwhelming evidence of some other form. Further research is unlikely to change our confidence in the estimate of benefit and risk.</td>
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<td>1B</td>
<td>Strong recommendation. Moderate quality evidence.</td>
<td>Benefits clearly outweigh risk and burdens, or vice versa</td>
<td>Evidence from randomized, controlled trials with important limitations (inconsistent results, methods flaws, indirect or imprecise), or very strong evidence of some other research design. Further research may impact on our confidence in the estimate of benefit and risk.</td>
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<td>1C</td>
<td>Strong recommendation. Low quality evidence.</td>
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<td>Evidence from observational studies, unsystematic clinical experience, or from randomized, controlled trials with serious flaws. Any estimate of effect is uncertain.</td>
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<td>1D</td>
<td>Strong recommendation Very low quality evidence</td>
<td>Benefits appear to outweigh risk and burdens, or vice versa</td>
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<td>Weak recommendation. High quality evidence.</td>
<td>Benefits closely balanced with risks and burdens</td>
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FULL CLINICAL PRACTICE GUIDELINES

1. Peritoneal Dialysis Access (PD Access) (Guideline 1.1)

Guideline 1.1 - PD Access: The access team

We recommend that each centre should have a dedicated team involved in the implantation and care of peritoneal catheters (1C).

Rationale

The access team should comprise nurses, nephrologists and surgeons who have experience in peritoneal dialysis. Each member of the team should understand the importance to the patient of successful access placement and the need for attention to detail in the reduction of complications.¹


2. Peritoneal Dialysis Access (PD Access) (Guideline 2.1)

Guideline 2.1 - PD Access: Timing and co-ordination of referral and surgery

We suggest that catheter insertion should be performed, whenever possible, at least 2 weeks before starting peritoneal dialysis. Small dialysate volumes in the supine position can be used if dialysis is required earlier (2B).

Rationale

There are two main patient groups requiring PD access.

(1) Patients with progressive renal failure predicted to need dialysis; for these patients access should be co-ordinated from the CKD low clearance clinic. The objective is that access is placed sufficiently early to enable the patient to train for PD in a timely fashion while residual renal function is sufficient to avoid the need for temporary vascular access for HD if there are problems with catheter function. It is not recommended that patients commencing PD have an arterio-venous fistula formed, unless there is a plan to transfer to HD within a few months.

(2) Patients with stage 5 CKD presenting as uraemic emergencies (late referrals – 23% new patients in the UK¹ ); for these patients there should be a pathway that allows the choice of PD as a modality. This requires adequate patient education to be available to permit choice. The advantage of placing PD access in patients who have not had the opportunity to be prepared for RRT is that the requirement for prolonged use of central venous access can be reduced. This has to be balanced against the potential for complications associated with the early use of PD catheters².
It seems appropriate to adopt the European Best Practice standard for the timing of PD catheter insertion – “Whenever possible, the catheter insertion should be performed at least 2 weeks before starting peritoneal dialysis. Small dialysate volumes in the supine position can be used if dialysis is required during this period”."3.


3. Peritoneal Dialysis Access (PD Access) (Guideline 3.1)

**Guideline 3.1 - PD Access : Implantation protocol**

We recommend that renal units should have clear protocols for peri-operative catheter care including the use of antibiotic prophylaxis (1A).

**Rationale**

The following points should be included in the peri-operative catheter care protocol-

- Pre-operatively – checking for hernias, screening for MRSA and nasal carriage of Staphylococcus Aureus, identifying a catheter of a suitable length and marking the exit site with the patient sitting or standing.
- Pre-implantation – bowel preparation with laxatives, ensuring bladder emptying, administration of prophylactic antibiotics, surgical site preparation according to NICE guidance1.
- Post-procedure – catheter flushed and capped off using suitable dialysate, exit site covered with a suitable dressing and if possible not disturbed for 5 – 10 days, immobilisation of the catheter, discharge home with supply of aperients, with the patient being given advice on recognition of potential complications.

Administration of prophylactic antibiotics is recommended to reduce the risk of catheter site infection, peritonitis and wound sepsis, and there is RCT evidence for the use of vancomycin2. The Cochrane collaboration found 4 trials of iv antibiotics and found the evidence to be strong in preventing catheter insertion associated early peritonitis, but not tunnel or exit site infection3. This evidence is also reviewed in the ISPD peritonitis guidelines4. The choice of antibiotic should be based upon local guidelines with consideration given to efficacy, risks of selection of resistant organisms and development of Clostridium difficile colitis.


4. Peritoneal Dialysis Access (PD Access) (Guidelines 4.1-4.4)

Guideline 4.1 - PD Access: The implantation technique

We recommend that local expertise at individual centres should govern the choice of method of Peritoneal Dialysis (PD) catheter insertion (1B).

Guideline 4.2 - PD Access: The implantation technique

We recommend that each PD unit should have the ability to manipulate or re-implant PD catheters when necessary (1B).

Guideline 4.3 - PD Access: The implantation technique

We recommend that urgent removal of PD catheters should be available where necessary (1A).

Guideline 4.3 - PD Access: The implantation technique

We recommend that timely surgical support should be available for the review of PD patients (1A).

Rationale

There is no RCT evidence to support one method of insertion over another – however, the method needs be determined by patient characteristics. For more complicated patients, including those with previous significant abdominal surgery, a technique that involves direct vision is necessary such as laparoscopic or open insertion1.

Peritoneal access surgery is generally considered as part of the overall requirement for dialysis access and should include facilities for both catheter insertion and removal. Data from the Renal Registry indicates that the incident renal replacement population was 113 per million of the population in 2006, with 20% starting on PD2. About 2/3rds of catheters inserted in the UK are performed using the open surgical technique, with the majority of the others being done using the medical percutaneous technique.


5. Peritoneal Dialysis Access (PD Access) (Guidelines 5.1-5.4)


We recommend that a dedicated area should be used for catheter insertion with appropriate staffing, suction, oxygen and patient monitoring facilities (1A).

Rationale

The anaesthetic requirement depends on the technique selected, which is influenced by the characteristics of the patient. Typically for percutaneous or peritoneoscopic routes sedation may be required. This is commonly achieved with a combination of an opiate and a benzodiazepine (e.g. pethidine and midazolam), with 1-2% lignocaine given subcutaneously (usually without adrenaline) to the insertion site, exit site and tunnel. Conscious sedation needs to be managed according to local clinical governance procedures.


Guideline 5.2 - PD Access: The Facilities for PD Catheter Insertion

We suggest that no particular catheter type is proven to be better than another (2C).

Rationale

The Cochrane review did not find any advantage for straight versus coiled catheters, single or double cuff, median or lateral incision. However, a RCT reported improved PD technique survival for straight versus coiled catheters and a further RCT reported that coiled catheters may have higher migration rates than straight catheters. These data relate to relatively small studies and we would not advocate at this stage that centres with good outcomes change their choice of catheters type until more information is available. Although subcutaneous burying of the catheter until use (Moncrief method) was not associated with a reduction in infectious complications, its use may have advantages for the relationship between the timing of catheter insertion and the start of training.


Guideline 5.3 - PD Access: The Facilities for PD Catheter Insertion

We suggest that a catheter of a suitable size should be used (2C).
Rationale

It is good practice to make an assessment of the required length of peritoneal catheter since a catheter of inappropriate length can lead to pain or impaired function.\(^1\),\(^2\).


Guideline 5.4 - PD Access: The Facilities for PD Catheter Insertion

We suggest that units should explore the possibility for increasing the number of day case catheter insertions (2C).

Rationale

The use of day case facilities has considerable advantages for patients and resource utilisation\(^1\).


6. Peritoneal Dialysis Access (PD Access) (Guideline 6.1- 6.2)

Guideline 6.1 - PD Access: Training for PD catheter insertion

We recommend that PD catheter insertion training should be available to all trainees with an interest (1C).

Rationale

The Renal Association Training Committee should advise the inclusion of PD catheter insertion as an optional component of the curriculum for trainees, although this will not be taken up by all trainees\(^1\). A procedure-based competency for PD catheter insertion should be included in the JRCPTB Renal Medicine Specialty Training Curriculum.


Guideline 6.2 - PD Access: Training for PD catheter insertion

We recommend that PD catheter insertion should not be delegated to inexperienced unsupervised operators (1A).

Rationale
Successful peritoneal access is crucial and should be performed by an operator (surgeon, specialist nurse or physician) with training and expertise in creating peritoneal access.


7. Peritoneal Dialysis Access (PD Access) (Guideline 7.1)

Guideline 7.1 - PD Access : Audit of PD catheter insertion

We recommend that there should be regular audit at not less than 12 monthly intervals of the outcome of catheter insertion as part of multidisciplinary meetings of the PD team and the access operators (1B).

Rationale

There is RCT evidence to demonstrate that audit can improve practice. The primary marker of successful outcome is primary catheter patency. Although we do not have a specific audit standard in this area it has been recommended that >80% of catheters should be patent at 1 year (censoring for death and elective modality change). The following are audit standards for catheter related complications –

- Bowel perforation < 1%
- Significant haemorrhage <1%
- Exit site infection within 2 weeks of catheter insertion <5%
- Peritonitis within 2 weeks of catheter insertion <5%
- Functional catheter problem requiring manipulation or replacement or leading to technique failure <20%

At least every 12 months a combined meeting between surgeons (or other health providers inserting PD catheters) and the nephrology team should be held to review PD catheter data.

Data to be collected and used in the audit should include –

- Peri-operative complications including bowel perforation, significant haemorrhage (requiring transfusion or surgical intervention)
- Early infections – peritonitis and exit site infections within 2 weeks of catheter insertions
- Dialysate fluid leaks
- Catheter dysfunction at the time of first use that requires catheter manipulation or replacement or results in technique failure.

We recommend that a subset of data should be shared nationally via the Renal Registry.


Acknowledgements

These guidelines have drawn extensively on The Renal Association PD access working party (2008) – members were Dr Jonathan Barratt PhD MRCP, Mr Robert H Diament FRCS, Dr Stephen Holt PhD FRCP, Ms Helen Hurst BA MSC RGN, Dr CG Winearls FRCP as well as Mr Badri Shrestha and Dr Martin Wilkie.

Declaration of competing interests

Martin Wilkie has received lecturing honoraria from Gambro, Baxter and Fresenius and has participated in clinical trials with Baxter and Fresenius.