PERITONEAL DIALYSIS CATHETER (PDC): POOR FLOW OR NO FLOW MANAGEMENT

Cross References (including NSW Health/ SESLHD policy directives)	NSW Health PD2013_043 *Medication Handling in NSW Public Health Facilities* NSW Health PD2007_036 *Infection Prevention and Control Policy* Australian Commission on Safety and Quality in Health Care *National Standard for User-applied Labelling of Injectable Medicines Fluids and Lines* SESLHD PR283 *Patient with Acute Condition for Escalation (PACE) Management of the Deteriorating Adult and Maternity Inpatient* SGH-TSH CLIN027 *Aseptic Technique - Competency and Education Requirements* SGH CLIN238 *Peritoneal Dialysis – After Hours Management Of Outpatients* SGH CLIN 402 *Peritoneal Dialysis Catheter – Daily Care, dressing and management* SGH CLIN 414 *Peritoneal Dialysis Catheter (PDC) – Post insertion Catheter Care, Dressing and Management* SGH CLIN364 *Peritoneal Dialysis Catheter (PDC) – Heparin lock* SGH CLIN379 *Intraperitoneal Actilyse (Alteplase) Administration* SGH CLIN396 *Peritoneal dialysis patients – Preparation for invasive procedures or surgery* SGH CLIN380 *Intraperitoneal Heparin Administration* SGH WPI 137 *Peritoneal Dialysis Catheter (PDC) – Simple/Small flush on Peritoneal Dialysis* SGH WPI 053 *Peritoneal Dialysis – 1L Flush on a Peritoneal Dialysis Catheter*
1. What it is	A guideline and pathway for the safe and timely management of blocked or poor flowing PD catheter
2. Risk Rating	Medium
3. Employees it Applies to	Registered Nurses (RN) trained in peritoneal dialysis Medical Officers (MO) trained in peritoneal dialysis

4. Process

The peritoneal dialysis catheter (PDC) is the only access for peritoneal dialysis (PD). It is considered the lifeline of patients on PD. Poor flowing or blocked PDC can cause serious complications like PD fluid retention, fluid overload, inadequate or missed dialysis which may lead to PD failure and catheter loss. Early assessment, immediate investigation and rapid intervention are necessary measures before patient becomes unwell from these serious complications.

4.1 Diagnosing poor flowing or blocked PDC

1. Prolonged fill time (>30 minutes) or drain time (>45 minutes) during CAPD exchange
2. Multiple drain or fill alarms during APD cycles
3. Unable to flush PDC
4. Resistance when aspirating PDC

4.2 Probable causes of poor flowing or blocked PDC

1. Internal obstruction:
    a. Internal pathology i.e. constipation, hernia, peritonitis, small bowel obstruction, diverticulitis or irritable bowel syndrome
    b. Poor PDC tip position (i.e. located in the upper abdominal quadrants or located outside the peritoneal cavity)
    c. PDC migration
    d. Blood or fibrin clots
    e. Omental wrapping
    f. Kink
2. External obstruction:
    a. Kink
    b. Tight dressing
    c. Clamp
    d. Broken or closed valve

4.3 Procedure

1. Patient reports blocked or poor flowing PD catheter:
    a. If patient is clinically unwell or symptomatic, advise patient to present to emergency department
    b. After hours, advise patient to present to 4 South renal ward immediately as per SGH CLIN238 *Peritoneal Dialysis – After Hours Management Of Outpatients*
    c. During PD office hours (Monday to Friday, 0730 to 1630), advise patient to present to the PD unit immediately
2. On review, remove exit site dressing to inspect PDC for external obstruction. Once review is completed, redo dressing as per SGH CLIN 402 *Peritoneal Dialysis Catheter – Daily Care, dressing and management* or SGH CLIN 414 *Peritoneal Dialysis Catheter (PDC) – Post insertion Catheter Care, Dressing and Management*
3. Ascertain if patient's peritoneal cavity is empty or full:
    a. Interview patient and/or carer
    b. Review current PD regimen
    c. Percuss abdomen for fluid level
4. Perform small PDC flush as per SGH WPI 137 *Peritoneal Dialysis Catheter (PDC) – Simple/Small flush on Peritoneal Dialysis*
5. If small flush is successful, proceed with 1 Litre flush as per SGH WPI 053 *Peritoneal Dialysis – 1L Flush on a Peritoneal Dialysis Catheter*:
    a. For successful 1 Litre flush, proceed to step 15
    b. For unsuccessful 1 Litre flush, proceed to step 6
6. If small flush is unsuccessful, check patient's recent bowel activity, commence bowel chart and notify renal team to review patient
7. Renal team will:
    a. Order PDC heparin lock to dwell for 4-6 hours as per SGH CLIN364 *Peritoneal Dialysis Catheter (PDC) – Heparin lock*
    b. Order and review AXR
    c. Order aperient, laxative or bowel preparation (i.e. coloxy with senna, lactulose, macrogol and/or picoprep) as needed

8. After 4 – 6 hours of heparin dwell, using sterile technique attempt to aspirate heparin from PDC
    a. For successful heparin aspiration, proceed to step 14
    b. For unsuccessful heparin aspiration, notify renal team to order IP actilyse
9. Administer IP actilyse for blocked or poor flow PDC as per SGH CLIN379 *Intraperitoneal Actilyse (Alteplase) Administration*
10. After 2 – 4 hours of dwell, using sterile technique attempt to aspirate IP actilyse
    a. For successful actilyse aspiration, proceed to step 14
    b. For unsuccessful actilyse aspiration, notify renal team to order PDC manipulation under radiology and the corresponding prophylactic IV antibiotics and oral anti-fungal as per SGH CLIN396 *Peritoneal dialysis patients – Preparation for invasive procedures or surgery*
11. Administer IV antibiotics and oral anti-fungal prior to PDC manipulation under radiology
12. After PDC manipulation under radiology, repeat small PDC flush as per SGH WPI 137 *Peritoneal Dialysis Catheter (PDC) – Simple/Small flush on Peritoneal Dialysis*
13. If PDC remains blocked or poor flowing, notify renal team to discuss with renal consultant the patient's treatment pathway:
    a. Patients to continue with PD – refer to vascular surgeon for review and ±PDC reinsertion
    b. Patients to transfer to haemodialysis – refer to renal vascular access CNC for vascular access planning
    c. Patients not for further dialysis – refer to renal supportive care CNC
14. If PDC is working, proceed with 1 Litre flush as per SGH WPI 053 *Peritoneal Dialysis – 1L Flush on a Peritoneal Dialysis Catheter*
15. For successful 1 Litre flush, proceed with regular PD therapy or provide heparinised PD fluid if fibrin is present as per SGH CLIN380 *Intraperitoneal Heparin Administration*
16. For unsuccessful 1 Litre flush, proceed to step 13
17. Notify PD nurses
18. Document progress on patient notes and PD chart
19. Hand over to the next shift

5. Keywords	Peritoneal Dialysis, Catheter, Blocked, Troubleshoot
6. Functional Group	Renal, Peritoneal Dialysis
7. External References	Anderson, D. M., Pesaturo, K. A., Casavant, J., & Ramsey, E. Z. (2013). Alteplase for the Treatment of Catheter Occlusion in Pediatric Patients. *Annals of Pharmacotherapy*, 47(3), 405-410. doi: 10.1345/aph.1Q483 Diaz-Buxo JA.(2006). Complications of peritoneal dialysis catheters: early and late. *Int J Artif Organs*, 29(1):50-58. Available from: http://www.ncbi.nlm.nih.gov/pubmed/16485239 Diaz-Buxo JA, Turner MW, Nelms M. (1997) Fluoroscopic manipulation of Tenckhoff catheters: outcome analysis. *Clin Nephrol*, 47(6):384-388. Available from: http://www.ncbi.nlm.nih.gov/pubmed/9202869 Figueiredo, A., Goh, B.-L., Jenkins, S., Johnson, D. W., Mactier, R.,

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8. Consumer Advisory Group (CAG) approval of patient information brochure (or related material)	Not applicable
9. Implementation and Evaluation Plan	- Inservice education by PD CNC/nurses to 4South and Emergency Department - PD tutorial to Junior Medical Officers by the PD CNC at the beginning of renal rotation
10. Knowledge Evaluation	Q1: What are the signs of a blocked or poor flowing PDC? A: Prolonged drain or fill time, multiple PD machine alarms and unable to flush or aspirate a PDC Q2: What are the 2 major causes of blocked PDC A: Internal or external obstruction Q3: What IP additives are used in the attempt to unblock a PDC A: IP heparin and IP actilyse
11. Who is Responsible	Director of St George and Sutherland Renal Service. Nursing Unit Manager, Dialysis Unit

Approval for PERITONEAL DIALYSIS CATHETER (PDC): POOR FLOW OR NO FLOW MANAGEMENT	
Specialty/Department Committee	Committee title: Peritoneal Dialysis Committee Chairperson name/position: Franziska Pettit, Staff Specialist Date: 05.02.19
Nurse Manager	Name/position: Christine Day, Nurse Manager Medicine Date: 21.02.19
Medical Head of Department	Name /position: George Mangos, Department Head Renal Services Date: 14.02.19
Contributors to ClBR development e.g. CNC, Medical Officers (names and position title/specialty)	

Revision and Approval History

Date	Revision number	Author (Position)	Revision due
Feb 2019	0	Anna Claire Cuesta (PD CNC)	Feb 2022

General Manager's Ratification	
Name: Leisa Rathborne	Date: 29.05.19