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

1. Purpose	A guideline and pathway for the safe and timely management of blocked or poor flowing PD catheter
2. Risk Rating	Medium
3. National Standards	1 – Clinical Governance 2 – Partnering with Consumers 3 – Preventing and Controlling Healthcare Associated Infection 4 – Medication Safety 5 – Comprehensive Care 6 – Communicating for Safety
4. Employees it Applies to	Registered Nurses (RN) and Medical Officers (MO) trained in peritoneal dialysis

5. 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.

5.1 DIAGNOSING POOR FLOWING OR BLOCKED PDC

1. Prolonged fill time (>20 minutes) or drain time (>30 minutes) during CAPD exchange
2. Multiple drain alarms during APD cycles for 2 consecutive days, not resolved by repositioning patient or APD machine
3. Fill alarms during APD cycles
4. Difficulty or unable to flush PDC
5. Difficulty or unable to aspirate PDC i.e. resistance when aspirating PDC

5.2 PROBABLE CAUSES OF POOR FLOWING OR BLOCKED PDC

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

5.3 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. Upon patient presentation, attend to patient's COVID – 19 screening as per as per most recent COVID guidelines and recommendation for SGH
    a. For COVID positive patients in PD unit, manage patient as per SGH WPI 138 PD – *Managing Unwell Outpatients in the PD Unit*
    b. For COVID positive patients in ED or 4S, manage patient as per recent COVID guidelines for inpatients in SGH
3. 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*
4. 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
5. Perform small PDC flush as per SGH WPI 137 *Peritoneal Dialysis Catheter (PDC) – Simple/Small flush on a Peritoneal Dialysis*
6. 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 16
    b. For unsuccessful 1 Litre flush, proceed to step 7
7. If small flush is unsuccessful, check patient's recent bowel activity, commence bowel chart and notify renal team to review patient
8. 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
9. After 4 – 6 hours of PDC heparin dwell, using sterile technique attempt to aspirate heparin from PDC
    a. For successful heparin aspiration, proceed to step 15
    b. For unsuccessful heparin aspiration, notify renal team to order IP actilyse
10. Administer IP actilyse for blocked or poor flow PDC as per SGH CLIN379 *Intraperitoneal Actilyse (Alteplase) Administration*
11. After 2 – 4 hours of dwell, using sterile technique attempt to aspirate IP actilyse as per SGH CLIN379 *Intraperitoneal Actilyse (Alteplase) Administration:*
    a. For successful actilyse aspiration, proceed to step 15

   b. For unsuccessful actilyse aspiration, notify renal team to order PDC manipulation under radiology and the corresponding prophylactic IV antibiotics and oral antifungal as per SGH CLIN396 *Peritoneal dialysis patients – Preparation for invasive procedures or surgery*

12. Administer IV antibiotics and oral anti-fungal prior to PDC manipulation under radiology
13. After PDC manipulation under radiology, repeat small PDC flush as per SGH WPI 137 *Peritoneal Dialysis Catheter (PDC) – Simple/Small flush on a Peritoneal Dialysis*
14. If PDC remains blocked or poor flowing, notify renal team to discuss with renal consultant the patient's treatment pathway:
    a. Patient to continue with PD – refer to vascular surgeon for review and ±PDC reinsertion
    b. Patient 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
15. If PDC is working, proceed with 1 Litre flush as per SGH WPI 053 *Peritoneal Dialysis – 1L Flush on a Peritoneal Dialysis Catheter*
16. 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*
17. For unsuccessful 1 Litre flush, go back to step 14
18. Notify PD nurses (X33770 or page 1091)
19. Document progress in eMR patient notes and PD chart
20. Hand over to the next shift

6. Cross References	SGH CLIN238 *Peritoneal Dialysis – After Hours Management Of Outpatients* SGH CLIN364 *Peritoneal Dialysis Catheter (PDC) – Heparin lock* SGH CLIN379 *Intraperitoneal Actilyse (Alteplase) Administration:* SGH CLIN380 *Intraperitoneal Heparin Administration* SGH CLIN396 *Peritoneal dialysis patients – Preparation for invasive procedures or surgery* 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 WPI 053 *Peritoneal Dialysis – 1L Flush on a Peritoneal Dialysis Catheter* SGH WPI 137 *Peritoneal Dialysis Catheter (PDC) – Simple/Small flush on a Peritoneal Dialysis* SGH WPI 138 *PD – Managing Unwell Outpatients in the PD Unit*
7. Keywords	Peritoneal Dialysis, Catheter, Blocked, Troubleshoot
8. Document Location	Peritoneal Dialysis in SGH-TSH Business Rule Webpage
9. External References	1. 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 2. 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 3. 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 4. Figueiredo, A., Goh, B.-L., Jenkins, S., Johnson, D. W., Mactier, R., Ramalakshmi, S., . . . Wilkie, M. (2010). Clinical Practice Guidelines for Peritoneal Access. Peritoneal Dialysis International, 30(4), 424-429. doi: 10.3747/pdi.2010.00087 5. Li PK-T, Chow KM, Cho Y, et al. (2022) ISPD peritonitis guideline recommendations: 2022 update on prevention and treatment. *Peritoneal Dialysis International*, 42(2):110-153. doi:10.1177/08968608221080586 6. Sifil, A., Mermut, C., Yenicerioglu, Y., Cavdar C., Gumustekin, M., Celik, A., Yuksel, F., and Camsari, T. (2003). Intraperitoneal and subcutaneous pharmacokinetics of low molecular weight heparin in continuous ambulatory peritoneal dialysis patients. Advances in Peritoneal Dialysis, 19; 28-30. PubMed PMID: 14763030 7. Szeto, C.-C., Li, P. K.-T., Johnson, D. W., Bernardini, J., Dong, J., Figueiredo, A. E., . . . Brown, E. A. (2017). ISPD Catheter-Related Infection Recommendations: 2017 Update. Peritoneal Dialysis International, 37(2), 141-154. doi: 10.3747/pdi.2016.00120 8. Zorzanello, M. M., Fleming, W. J., & Prowant, B. E. (2004). Use of tissue plasminogen activator in peritoneal dialysis catheters: a literature review and one center's experience. Nephrology nursing journal : journal of the American Nephrology Nurses' Association, 31(5), 534- 537.
10. Consumer Advisory Group (CAG) approval	Not Applicable
11. Aboriginal Health Impact Statement	The Aboriginal Health Impact Statement does not require completion because there is no direct or indirect impact on Aboriginal people. Blocked or poor flowing PDC management and treatment is similar for patients of aboriginal and non-aboriginal background. Approval: T22/
12. Implementation and Evaluation Plan	**Implementation:** The document will be published on the SGH-TSH business rule webpage and distributed via the monthly SGH-TSH CGD report. Inservice Education **Evaluation:** Incident (IMS+) Monitoring
13. Knowledge Evaluation	**Q1: What are the signs of a blocked or poor flowing PDC?** *A1: Prolonged drain or fill time, multiple PD machine alarms and unable or difficulty to flush or aspirate a PDC* **Q2: What are the 2 major causes of blocked PDC** *A2: Internal or external obstruction* **Q3: What IP additives are used in the attempt to unblock a PDC** *A3: IP heparin and IP actilyse*
14. Who is Responsible	Department Head Renal Services Divisional Director, Medicine and Cancer

Approval for: PERITONEAL DIALYSIS CATHETER (PDC): POOR FLOW OR NO FLOW MANAGEMENT	
Specialty/Department Committee	Committee: Peritoneal Dialysis Committee Chairperson: Franziska Pettit, Staff Specialist Date: 07.04.2022
Nurse Manager (SGH)	Christine Day, Medicine and Cancer Divisional Director Date: 14.04.2022
Medical Head of Department (SGH)	George Mangos, Department Head Renal Services Date: 31.03.2022
Medical Head of Department (SGH)	George Mangos, Department Head Renal Services Date: 31.03.2022
Contributors to ClBR	Anna Claire Cuesta (PD CNC)

Revision and Approval History				
Revision Date	Revision number	Reason	Coordinator/Author (Position)	Revision Due
Feb 2019	1	New	Anna Claire Cuesta (PD CNC)	Feb 2022
Apr 2022	2	Review – include COVID – 19 screening and management	Anna Claire Cuesta (PD CNC)	Apr 2025

General Manager's Ratification	
Angela Karooz (SGH)	Date: 27.04.2022