Peritoneal Dialysis Associated Peritonitis - Assessment, Treatment and Management Guideline

1. Purpose

This guideline will provide WA Country Health Service (WACHS) medical and nursing clinicians with information regarding the assessment, treatment, and management of adult peritoneal dialysis (PD) patients with PD associated peritonitis presenting to WACHS regional hospitals, health centres or nursing posts.

PD is a self-care treatment option for patients with end stage kidney disease (ESKD) and includes Continuous Ambulatory Peritoneal Dialysis (CAPD) and Automated Peritoneal Dialysis (APD). CAPD is usually performed four times a day taking approximately 30 minutes to complete each exchange. APD involves the use of an automated cycler to perform fluid exchanges overnight while the patient sleeps.

Outpatient PD training, support and care in WA is provided and coordinated by an externally contracted Renal Home Therapies (RHT) team. WACHS Regional Renal Support Teams are established in most WACHS regions and facilitate the provision of outpatient care for PD patients in collaboration with the RHT team.

PD associated peritonitis is a serious complication of PD that can lead to sepsis and should be considered an emergency.

This guideline can be read in conjunction with:
- WACHS Peritoneal Dialysis Catheter Exit Site Care and Management Guideline
- WACHS Peritoneal Dialysis Intra-Peritoneal Medications - Preparation and Administration Procedure

2. Guideline

Management and treatment plans for PD patients with PD associated peritonitis can be determined and implemented following the recommendations within this guideline and in consultation with the RHT team and Nephrologist/On-call Renal Specialist that provides medical governance and support to each WACHS region. See WACHS Renal Services Intranet Page for the WACHS regions' tertiary alignments. Recommendations within this guideline for the assessment and management of PD patients with PD associated peritonitis align with the International Society for Peritoneal Dialysis (ISPD) Peritonitis Guideline Recommendations.

This guideline includes recommendations for the:
- Initial assessment and management of PD associated peritonitis (sections 2.1 to 2.5). Appendix A provides a flowchart summary of the assessment and management of PD associated peritonitis.
- Subsequent treatment of PD associated peritonitis (sections 2.6 to 2.8).

Guidelines are designed to provide staff with evidence-based recommendations to support appropriate actions in specific settings and circumstances. As such, this guideline should

be followed in the first instance where practical. In the clinical context, where a patient's management should vary from this guideline, this variation and the clinical opinion as to reasons for variation should be documented in accordance with Clinical Practice Standards.

2.1 Initial assessment and management

ATTENTION

All PD patients with suspected peritonitis require prompt diagnosis and commencement of initial empiric antibiotic treatment as soon as possible after presentation.

Delays in commencement of empiric antibiotic treatment have been shown to increase adverse patient outcomes.

As part of their RHT training, PD patients are advised to notify the RHT team if they have complications with their PD treatments (i.e. suspected peritonitis). The RHT team will determine the need for the patient to present to their local emergency department (ED) for further assessment and management. If ED presentation is required, the RHT team will inform the ED of the patient's presentation and advise the suggested management plan.

Note: PD patients may present to ED without notifying the RHT team prior. In this case the RHT team should be notified by the ED to provide guidance and support on management of PD associated peritonitis required.

PD patients may display any of the below clinical manifestations of PD associated peritonitis with varying severity.

Manifestations

Clinical manifestations of PD associated peritonitis include:
- cloudy PD effluent (i.e. drain fluid)
- abdominal pain/tenderness
- fever
- chills/rigors
- nausea
- vomiting
- diarrhoea

Most commonly pain and cloudy effluent are characteristic presentations.

PD patients should also be questioned regarding:
- any recent contamination (i.e., PD catheter or exit site) or accidental disconnection of the PD catheter
  - if a PD patient presents after PD catheter contamination or disconnection without cloudy effluent then catheter extension line change and prophylactic antibiotics may need to be commenced to prevent peritonitis
  - advice should be sought from the RHT team regarding management
- any recent endoscopic or gynaecological procedures
- presence of constipation
- history of peritonitis and PD catheter exit site infection.

Management

When a PD patient presents with clinical manifestations of PD associated peritonitis then peritonitis should be presumed and managed promptly:

- notify the RHT team and appropriate Nephrologist/On-call Renal Specialist and receive guidance for management of PD associated peritonitis, and potential requirement for transfer to tertiary hospital dependent on PD patient condition
- promptly collect and send **whole bag** of cloudy PD effluent to lab for urgent analysis for cell count, differential, gram stain and culture as per information detailed in Appendix B
- commence initial empiric antibiotic treatment of PD associated peritonitis **as soon as possible** upon PD patient presentation (see section 2.2)
- observe and report any signs of PD catheter exit site infection. Refer to WACHS Peritoneal Dialysis Catheter Exit Site Care and Management Guideline
- following commencement of initial antibiotic treatment, the results of PD effluent analysis will support the diagnosis of PD associated peritonitis (see section 2.3).

2.2 Initial empiric antibiotic treatment

The initial empiric antibiotic treatment detailed in Table 1 should commence **as soon as possible** upon PD patient presentation.

Empiric antibiotics should be started to achieve rapid resolution of inflammation, reduction of pain and preservation of the peritoneal membrane.

Microbiological results from the PD effluent will determine duration and choice of subsequent antibiotic therapy.

Table 1. Initial empiric antibiotic treatment

	Gram-Positive coverage	Gram-Negative coverage	Yeast coverage
Medication	vancomycin	gentamicin	nystatin
Route	Intra-Peritoneal (IP)	IP	Oral
Frequency	STAT (single dose)	STAT (single dose)	QID (duration of IP therapy and for one week post completion of antibiotics)
Dose	2 g	40 mg ≤ 60 kg 80 mg ≥ 60 kg	500,000 units 1 tablet/capsule

Adapted from: Western Australian Committee for Antimicrobials of the Western Australian Therapeutics Advisory Group, Treatment of Peritoneal Dialysis (PD) Related Peritonitis Guidelines.

Important considerations

Important considerations for initial empiric antibiotic treatment include:

- IP administration is the preferred route of administration to expedite direct contact with the peritoneal membrane.
  - If there are delays in commencing IP antibiotic treatment (i.e., due to lack of staff comfortability or competence with administering IP antibiotics), intravenous (IV) administration can be considered to avoid delaying treatment. However, route of administration should be switched to IP as soon as possible.
- If features of systemic sepsis (i.e. hypotension, tachycardia, confusion) are present then IV antibiotics may be preferable.
- Vancomycin and gentamicin should be instilled in the same PD dialysate (i.e. fluid) bag and left to dwell for a **minimum of six hours.**
  - Dwell time for PD dialysate containing antibiotics should be at least six hours to allow adequate absorption of the antibiotic into the systemic circulation.
- IP medications should be prepared and instilled into the PD dialysate using aseptic technique. Refer to WACHS Peritoneal Dialysis Intra-Peritoneal Medications - Preparation and Administration Procedure.
- Ensure all IP medications are compatible with PD dialysate.
  - Check the manufacturer's recommendations regarding antimicrobial stability in PD solutions.
  - Refer to Appendix D for an ISPD summary of IP antibiotic stability.
- Consider drug compatibility if adding more than one medication into PD dialysate.
  - Aminoglycosides and penicillins **should not be instilled** in the same PD dialysate bag due to chemical incompatibility.
  - gentamicin is compatible with cefazolin or vancomycin, and ceftazidime is compatible with cefazolin or vancomycin.
- If fibrin present in cloudy effluent, IP heparin 500 units/L (i.e., 1000 units in 2 L PD dialysate bag) can be added to PD dialysate to prevent occlusion of the catheter.
  - gentamicin has reduced duration of stability when mixed with IP heparin.
  - heparin is compatible with vancomycin, ceftazidime and cefazolin.
- Patients should be able to perform own PD treatment but may require assistance if acutely unwell or in increased pain.
  - Nursing staff can refer to the CAPD Fresenius Stay•safe® procedure for guidance with PD treatment.
  - Additional guidance with PD treatment is available via the RHT team and/or the local Regional Renal Support team (if applicable).
- Most PD patients with PD associated peritonitis will show considerable clinical improvement within 48 hours of initiating therapy.
  - If there is **no clinical improvement after 48 hours** perform cell counts and repeat cultures.
  - Monitoring white blood cell (WBC) count in PD effluent may predict treatment response.
- Routine imaging (i.e., chest and abdominal x-ray) is **not commonly indicated**.
  - Intra-peritoneal air is a common and non-pathological finding in PD patients and may not indicate a perforated viscus
  - In the presence of severe sepsis presentations and cloudy bags, the preferred imaging is CT scan after the initial treatment with antibiotics.
  - Patients peritoneum may be required to be empty/drained for imaging procedures. Confirm requirements with local radiology service prior.

2.3 Diagnosis

Peritonitis should be diagnosed when **at least two** of the following are present:

- clinical features consistent with peritonitis (i.e. abdominal pain and/or cloudy dialysis effluent
- dialysis effluent white cell count > 100/µL or > 0.1 × 10^9/L (after a dwell time of at least two hours), with > 50% polymorphonuclear leukocytes
- positive dialysis effluent culture.

2.4 Initial pain management

Pain management as required, appropriate for patients with ESKD includes:

- paracetamol suggested as first-line treatment
- narcotic analgesia may cause constipation which will affect PD treatment
- laxative treatment (i.e., coloxyl with senna and/or lactulose) may be required if not already part of regular PD regimen
- post administration of antibiotics, pain will usually subside
- for severe pain or pain not controlled with first-line analgesia consult with Nephrologist/On-call Renal Specialist as the PD patient may have other complications.

2.5 Follow-up and monitoring

PD patient follow-up and monitoring should include:

- monitoring PD patient's clinical condition – clarity of PD effluent, abdominal pain, fluid status
- continuing with PD patients' usual PD regimen or as advised by RHT team and/or Nephrologist/On-call Renal Specialist
- follow up results of microbiological testing
    - liaise with RHT team and Nephrologist/On-call Renal Specialist to determine appropriate subsequent treatment of PD associated peritonitis (section 2.6) and ongoing care and management
    - plan for follow-up in place with RHT team upon patient discharge home
- monitoring of plasma levels for patients receiving more than one dose of vancomycin or gentamicin for adequacy and non-toxicity (if applicable)
    - vancomycin and gentamicin levels should be taken on **day 3** after initial dose coinciding with microbiological testing follow-up to assess improvements and appropriateness of antibiotic choice
- continue anti-fungal prophylaxis (e.g., nystatin) for the duration of the entire antibiotic course plus one week after completion of antibiotics as this has been shown to significantly reduce the risk of fungal peritonitis
    - anti-fungal prophylaxis should be prescribed whenever PD patients receive any antibiotic course regardless of the indication of the antibiotic course.

2.6 Subsequent treatment

Once microbiological results and sensitivities from the PD effluent sample is known then subsequent treatment can be determined. Refer to Appendix C for subsequent antibiotic management and duration guidance.

PD patient subsequent treatment may occur as an inpatient at a WACHS health facility or as an outpatient if the PD patient is clinically well and discharged after initial empiric treatment.

Indications for hospital admission are severe pain, inability to safely perform PD, concerns about home supports, and clinically unstable.

In most cases subsequent treatment of PD associated peritonitis will be continued as an outpatient hence it is essential follow-up and monitoring plans are in place.

2.7 Outpatient follow-up and monitoring

The RHT team are responsible for the planning and coordination for PD patient outpatient follow-up and monitoring of PD associated peritonitis, this should include:

- antibiotic treatment plan as discussed and agreed with RHT team and Nephrologist/On-call Renal Specialist
- ensure anti-fungal (e.g. nystatin) is continued for length of antibiotic course, plus one additional week.
- plan in place for IP antibiotic preparation and instillation into patient's PD dialysate
    - each region may have different resources and arrangements in place for IP antibiotic preparation and instillation i.e., regionally based RHT nurse or Hospital in the Home (HITH)
- schedule for vancomycin and/or gentamicin plasma levels to monitor for adequacy and non-toxicity (if applicable)
- visual inspection of PD effluent to determine if clearing is occurring
    - effluent is clear when an item with text (i.e., paper/alcohol swab) can be placed underneath effluent bag and writing can be read clearly
- plans for PD effluent re-testing as required
- assessment of PD catheter exit site and tunnel to ensure no infective signs present. Refer to WACHS Peritoneal Dialysis Catheter Exit Site Care and Management Guideline
- continuation of routine PD catheter exit site care to be performed by patient or with assistance as needed. Refer to WACHS Peritoneal Dialysis Catheter Exit Site Care and Management Guideline
- plan for follow-up by the RHT team after the resolution of the peritonitis episode to assess PD technique of patient and/or carer to determine need for re-training.

2.8 Refractory, relapsing, recurrent and repeat peritonitis management

The management of refractory, relapsing, recurrent and repeat peritonitis is made in collaboration with the RHT team and Nephrologist/On-call Renal Specialist.

Refractory peritonitis

Refractory peritonitis is failure of the PD effluent to clear after five days of appropriate antibiotics. In cases of refractory peritonitis, the PD catheter may need to be removed. Observation for antibiotic effect longer than five days is appropriate if PD effluent white cell count is decreasing towards normal.

Relapsing, recurrent and repeat peritonitis

Relapsing peritonitis is a peritonitis episode that occurs within four weeks of completion of therapy of a prior episode with the same organism or one sterile (i.e. culture negative) episode.

Recurrent peritonitis is a peritonitis episode that occurs within four weeks of completion of therapy of a prior episode but with a different organism.

Repeat peritonitis is a peritonitis episode that occurs more than four weeks after completion of therapy of a prior episode with the same organism.

To manage or reduce the risk of relapsing, recurrent or repeat peritonitis, simultaneous removal and reinsertion of PD catheters have been proposed after the culture of PD effluent has become negative and the PD effluent white cell count is below 100/µL, in the absence of concomitant PD catheter exit site or tunnel infection.

3. Roles and Responsibilities

WACHS staff are required to work within their identified scope of practice, level of experience and work role.

WACHS medical and nursing clinicians will have varied roles and responsibilities in implementing this guideline dependent on their scope of practice. These include:

The **Nephrologist/On-call Renal Specialist** is responsible for:
- providing medical oversight and support to WACHS medical and nursing clinicians providing care to PD patients with PD associated peritonitis.

The **Medical Officer (MO)** is responsible for:
- assessment and diagnosis
- follow-up and review of microbiology results
- consultation with Nephrologist/On-call Renal Specialist
- selection and prescribing of medications.

The **Registered nurse (RN)** is responsible for:
- initial patient assessment and care
- liaising with MO and RHT team to formulate treatment plan
- preparation and administration of prescribed medications
- coordination of PD patient follow-up plan in consultation with RHT team.

As detailed in the state-wide RHT contract, the **Renal Home Therapies team** roles and responsibilities include:
- providing training and clinical support for PD patients
- providing PD patient information (i.e., PD regimen, history of peritonitis or contamination episodes)
- liaising with MO and RN to provide guidance with PD management
- liaising with MO and RN to determine subsequent management
- supporting, coordinating and managing outpatient follow-up and monitoring.

All staff are required to comply with the directions in WACHS policies and procedures as per their roles and responsibilities. Guidelines are the recommended course of action for WACHS and staff are expected to use this information to guide practice. If staff are unsure which policies procedures and guidelines apply to their role or scope of practice, and/or are unsure of the application of directions they should consult their manager in the first instance.

4. Monitoring and Evaluation

Monitoring of compliance to this guideline is to be undertaken bi-monthly by the WACHS Renal Services Team and WACHS Renal Governance Group through:

- review of patient safety and quality data including clinical incidents and consumer feedback related to PD associated peritonitis.

This guideline will be reviewed as required to determine effectiveness, relevance and currency. At a minimum it will be reviewed every three years by the WACHS Renal Services Team and the WACHS Renal Governance Group.

5. References

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6. Definitions

Term	Definition
Clinician	A qualified healthcare professional who provides direct patient care e.g. medical officers (MO) and registered nurses (RN)
Dialysate	An electrolyte, buffer and dextrose solution used to draw waste products and extra fluid out of the blood. Can be referred to as PD fluid.
Effluent	The drained dialysate fluid that has dwelled in the patient. It contains waste products and excess fluid from the patient.
End Stage Kidney Disease	End Stage Kidney Disease (ESKD) is the stage of chronic kidney disease (CKD) when a person's kidney function cannot sustain their wellbeing, requiring some form of treatment to maintain life.
Nephrologist	Senior physician specialised in renal medicine providing diagnosis and management of kidney disease.
On-call Renal Specialist	Senior medical officer (registrar or advanced trainee) specialised in renal medicine providing out-of-hours medical oversight and governance of renal patients.
Peritoneal Dialysis	Peritoneal Dialysis (PD) is a treatment option for patients with ESKD which uses the peritoneum as a semipermeable membrane to remove excess toxins and fluid from the patient's blood.
Peritonitis	An infection of the peritoneal membrane lining the peritoneal cavity. It is a serious complication of peritoneal dialysis (PD) which occurs when bacteria enter the peritoneal cavity.
Regional Renal Support Team	Regional Renal Support Team (RRST) is the multidisciplinary team providing outpatient renal support services focused on early detection, primary and secondary prevention, and management of chronic kidney disease (CKD).

Term	Definition
Renal Home Therapies	Renal home therapies include Home Haemodialysis (HHD), Continuous Ambulatory Peritoneal Dialysis (CAPD), Automated Peritoneal Dialysis (APD) and Community Supported Home Haemodialysis (CSHD).
Renal Home Therapies team	Renal Home Therapies (RHT) team are renal clinicians from an external provider contracted by WACHS to provide renal home therapies including training to the patient and their carer, equipment, consumables, technical and clinical support.

7. Document Summary

Coverage	WACHS wide
Audience	Any WACHS clinician providing direct patient care to PD patients presenting to WACHS health facilities
Records Management	Clinical: Health Record Management Policy
Related Legislation	*Health Services Act 2016* (WA)
Related Mandatory Policies / Frameworks	• MP 0131/20 High Risk Medication Policy • MP 0078/18 Medication Chart Policy • MP 0104/19 Medication Review Policy • Clinical Governance, Safety and Quality Policy Framework
Related WACHS Policy Documents	• Aseptic Technique Policy • Hand Hygiene Policy • High Risk Medications Procedure • Medication Prescribing and Administration Policy • Peritoneal Dialysis Catheter Exit Site Care and Management Guideline • Peritoneal Dialysis Intra-Peritoneal Medications - Preparation and Administration Procedure
Other Related Documents	• CAPD Fresenius Stay•safe® procedure
Related Forms	• MR170A WA Hospital Medication Chart – Short Stay
Related Training Packages	Nil
Aboriginal Health Impact Statement Declaration (ISD)	ISD Record ID: 3498
National Safety and Quality Health Service (NSQHS) Standards	2.06; 2.07; 3.05; 3.10; 3.11; 3.12; 3.14; 3.18; 4.04; 6.09
Aged Care Quality Standards	Nil
National Standards for Mental Health Services	Nil
Other Standards	Nil

8. Document Control

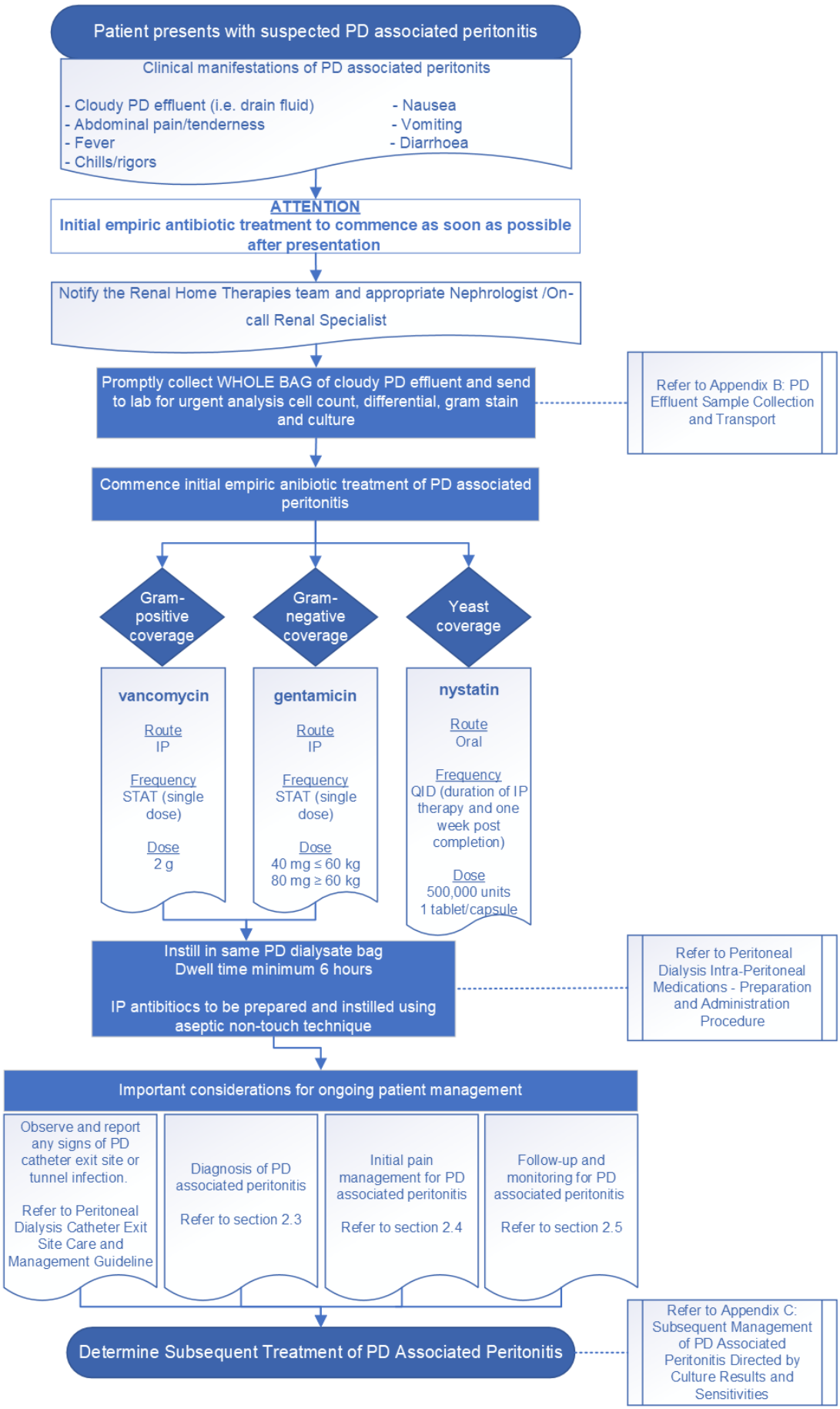
Version	Published date	Current from	Summary of changes
1.00	19 November 2024	19 November 2024	New guideline

9. Approval

Policy Owner	Executive Director of Clinical Excellence
Co-approver	Executive Director Nursing and Midwifery Services
Contact	Clinical Nurse Consultant – Renal
Business Unit	Population Health
EDRMS #	ED-CO-24-316654

This document can be made available in alternative formats on request.

Appendix A: Initial management of PD associated peritonitis flowchart



Adapted from: WA Home Dialysis Program (WAHDiP). Remote Area Manual.

Appendix B: PD effluent sample collection and transport

Rationale

Appropriate collection, storage and transport of PD effluent specimens is vital for microbiological evaluation, appropriate culturing process and subsequent treatment of peritonitis based on the culture and sensitivities of the microorganism.

Specific organisms can indicate predicted outcomes of PD survival, with some providing better outcomes than others. Inadequate sampling, inappropriate culture technique or delays in processing can impact results i.e., increased rates of culture negative peritonitis.

Basic Principles of PD Effluent Sample Collection and Transport

- PD effluent should be tested for cell count, differential, gram stain and culture whenever peritonitis is suspected.
- Patients will be instructed to bring in the drained cloudy bag when they present. **Send this bag to the lab for testing.**
  - If this does not occur and samples need to be obtained upon patient presentation, effluent should have dwelled for a **minimum of two hours** prior to sampling.
- Samples should be obtained prior to commencing Intra-Peritoneal (IP) antibiotics.
  - If IP antibiotics are due for administration and PD effluent samples are required, ensure the antibiotics are instilled as per **Procedure 1** in WACHS Peritoneal Dialysis Intra-Peritoneal Medications - Preparation and Administration Procedure
  - to avoid antibiotics being flushed into the drain bag and contaminating the PD effluent sample.
- It is preferable that the **whole bag** of cloudy PD effluent is sent for testing.
- If the whole bag is unable to be sent, a minimum of 50ml is required.
  - PathWest protocol - Continuous Ambulatory Peritoneal Dialysis (CAPD) Fluid, section 7. Specimen indicates two (2) yellow top containers (YTC) of dialysate must be made available.
- Ensure the PD effluent is transported to the nearest lab.
  - Refer to PathWest protocol – Packing of CAPD Fluid from Dialysis Units for Transport.
- Ensure refrigeration of the sample if unable to send to laboratory immediately.

Adapted from: WA Home Dialysis Program (WAHDiP). Remote Area Manual.

Appendix C: Subsequent management of PD associated peritonitis directed by culture results and sensitivities

	Organisms	Treatment Plan

Gram-Positive Isolates or Culture Negative
 	
Continue vancomycin treatment for Gram-positive organisms. Otherwise treat as directed by the results of culture and susceptibilities in consultation with a specialist if necessary
	Culture Negative
	Corynebacterium species
	Coagulase negative staphylococcus
	Streptococcus species
		• Stop gentamicin
		• Continue IP vancomycin
		  ○ Dose: 2 g
		  ○ Frequency: repeat dose every 3 to 7 days when level <15 mg/L. If levels not readily available repeat dose once weekly.
		  ○ Duration: 14 days

	Staphylococcus aureus	• Stop gentamicin
		• Continue IP vancomycin
		  ○ Dose: 2 g
		  ○ Frequency: repeat dose every 3 to 7 days when level <15 mg/L. If levels not readily available repeat dose once weekly.
		  ○ Duration: 21 days

	Enterococcus	• Stop gentamicin
		• Continue IP vancomycin (if sensitive) **or** as directed (e.g. PO amoxicillin 500 mg TDS)
		  ○ Dose: 2 g
		  ○ Frequency: repeat dose every 3 to 7 days when level <15 mg/L. If levels not readily available repeat dose once weekly.
		  ○ Duration: 21 days

	Polymicrobial Gram positive (without ESI/tunnel infection)	• Based on susceptibilities
		  ○ Frequency: As advised
		  ○ Duration: As advised

Gram-Negative Isolates
 	
Treatment should be directed by the result of culture and susceptibilities in consultation with specialist
	Pseudomonas aeruginosa	• Stop IP vancomycin **and** IP gentamicin
		• If susceptible, commence oral ciprofloxacin 1000 mg loading and then 500mg daily **and either** IP cefepime 1 g **or** IP ceftazidime 1 g
		  ○ Frequency: Daily
		  ○ Duration: 21 days

	Gram-negative organism (E.coli, Proteus or Klebsiella) - single species isolated	• Stop IP vancomycin **and** IP gentamicin
		• If susceptible, commence IP ceftazidime 1 g or IP cefepime 1 g **or** oral ciprofloxacin 500 mg
		  ○ Frequency: Daily
		  ○ Duration: 21 days

	Organisms	Treatment Plan
Gram-negative isolates cont.	Stenotrophomonas Polymicrobial gram-negative peritonitis	• Stop IP vancomycin **and** IP gentamicin • Consult with an Infectious Disease physician/microbiologist in every case
High-Risk Peritonitis Please contact Nephrologist/On-call Renal Specialist as may warrant PD catheter removal	Staphylococcus aureus (MSSA or MRSA) with PD catheter exit site/tunnel infection	• Seriously consider catheter removal in refractory PD catheter exit site infection (ESI) • Adjuvant Treatment ○ Continue antimicrobials for at least 14 days after catheter removal
	Pseudomonas aeruginosa with PD catheter exit site/tunnel infection	• Seriously consider catheter removal in refractory ESI • Adjuvant Treatment ○ Continue antimicrobials for at least 14 days after catheter removal
	Fungal peritonitis	• **IMMEDIATE** catheter removal required • Consult with an Infectious Diseases Physician • Adjuvant Treatment ○ Continue antifungal therapy for at least14 days after catheter removal
	Polymicrobial Gram-negative enteric organisms	• Consider enteric source and investigate source of contamination • Systemic antimicrobial therapy usually required • Adjuvant Therapy ○ Continue antimicrobials for at least 14 days after catheter removal
	Mycobacterial peritonitis	• Seriously consider catheter removal • Consult with an Infectious Diseases Physician • Adjuvant Therapy ○ Continue antimicrobials for at least 14 days after catheter removal

Adapted from: Western Australian Committee for Antimicrobials of the Western Australian Therapeutics Advisory Group, Treatment of Peritoneal Dialysis (PD) Related Peritonitis Guidelines and ISPD peritonitis guideline recommendation: 2022 update on prevention and treatment

Appendix D: Summary of intra-peritoneal antibiotics stability

Table 7. Summary of IP antibiotics stability.

Antibiotics	PD solutions		Stability	Storage conditions		Remarks[a]	
	Dextrose-based	Icodextrin- based		Room temperature	Under refrigeration	Tested for	Stable for
Gentamicin	✓		14 days	✓	✓	14 days	
		✓	14 days	✓	✓	14 days	
Cefazolin	✓		8 days	✓			8 days
	✓		14 days		✓	14 days	
		✓	7 days	✓			7 days
		✓	14 days		✓	14 days	
Ceftazidime	✓		4 days	✓			4 days
	✓		7 days		✓		7 days
		✓	2 days	✓			2 days
		✓	14 days		✓	14 days	
Cefepime	✓		14 days		✓	14 days	
Vancomycin	✓		28 days	✓		N/A	
		✓	14 days	✓	✓	14 days	
Piperacillin/ tazobactam + Heparin	✓	✓	7 days		✓	7 days	

PD: peritoneal dialysis.
[a]'Stable for X days' indicates that the antibiotic concentration retained at least 90% of its initial concentration up to day X. 'Tested for X days' indicates the antibiotic concentration retained at least 90% of its initial concentration up to the study duration set for X days only.
Stability (Stable for X days) is interpreted according to the type of PD solutions and storage conditions specified.

Source: ISPD peritonitis guideline recommendation: 2022 update on prevention and treatment, page 127.