



ISPD Asia-Pacific Chapter Newsletter, December 2022

VOLUME 20, ISSUE 3

Prepared by Chia-Te LIAO and Cheuk-Chun SZETO

News from the ISPD

ISPD APC 2025 meeting call for bidding

Deadline for bidding

30 June 2023

Submission of application

A soft copy of the bid application should be sent to the ISPD APC coordinator:

CC Szeto

c/o Department of Medicine & Therapeutics, Prince of Wales Hospital, The Chinese University of Hong Kong. Tel: (852) 3505-3101; Email: ccszeto@cuhk.edu.hk

Content of the bid application

- The name of president of the local organizing committee
- Confirmation of support from the national or regional society of nephrology
- The proposed timing and venue of conference
- The convention facilities with preferably a venue hotel in the convention complex.
- The strength and experience of the local organizing committee, national or regional society of nephrology in relation to PD practice, development, research, and organization of conferences
- Rationale why Asia Pacific Chapter conference should be hosted in that country
- Transportation information
- Accommodation details (at different budgetary levels)
- The proposed budget to host the meeting
- Local attractions for visitors

Financial Arrangement

Any profits arising from the Congress will be split 50-50 between the Local Organization Committee and the ISPD. Majority of the profit going to ISPD will be designated for promotion and development of PD in the Asia Pacific region. Any further financial loss will be the responsibility of the organizing committee.

Decision making body

All bid applications will be reviewed by the ISPD APC Executive Group. A final decision would be made in close consultation with the ISPD President. The ISPD APC will convey the decision to the ISPD Council. The process will be completed, and result announced around 18 months before the conference.

ISPD APC scholarship to support ISPD 2022 Conference

We congratulate 15 recipients of the ISPD APC scholarship to attend the ISPD 2022 Conference in Singapore. The recipients include 9 from Thailand, 2 from Malaysia, 2 from Indonesia, 1 from Philippine, and 1 from Pakistan. In addition to 6 adult nephrologists, there are 7 nurses, 1 pediatrician, and 1 pharmacist among the recipients. Ms Papassara Wannathong (picture), a pharmacist from Thailand, presented her poster in the conference as one of the recipients.



ISPD APC scholarship for June 2022

We are happy to announce Dr IP Chin Kin (picture) from Macau as the only recipient of the ISPD APC scholarship for June 2022. He will spend 3 months in Peking University First Hospital, under the supervision of Prof Jie DONG.



ISPD APC coordinator: call for nomination

Nominator

A current executive committee member of the Asian Pacific Chapter or ISPD council member from Asia / Oceania.

Nominee

A current executive committee member or core group member of the Asian Pacific Chapter, or an ISPD council member from Asia / Oceania.

Nomination Process

The nominator should submit a brief introduction of the nominee and the reason of nomination.

The nominee should submit:

- a vision statement and a proposal about the Asian Pacific Chapter of no more than two A4 pages
- a brief CV of no more than two A4 pages

The nomination and related documents should be submitted to the current ISPD Asian Pacific Chapter coordinator: CC Szeto

c/o Department of Medicine & Therapeutics, Prince of Wales Hospital, The Chinese University of Hong Kong. Tel: (852) 3505-3101; Email: ccszeto@cuhk.edu.hk

Deadline of nomination

31 March 2023

Renew your membership!

Visit <https://ispd.org/memberships/> to join the ISPD or renew your membership. Membership benefits of the International Society for Peritoneal Dialysis include:

- print and/or online subscription to Peritoneal Dialysis International
- Receipt of PD News
- Online access to ISPD Guidelines
- Special registration fees at ISPD Congress, Chapter Meetings and the Annual Dialysis Conference
- Application for ISPD Scholarships and Grants

Membership for developing countries can be done at advantageous rates, by grouping members by institution or region geographical area. Write to admin@ispd.org for more information.

Upcoming Meetings

10th International Society for Peritoneal Dialysis Asia Pacific Chapter meeting

22-24 September 2023

New Delhi, India

International Society for Peritoneal Dialysis 2024 congress

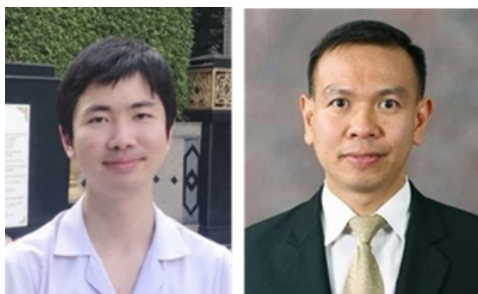
26-29 September 2024

Dubai World Trade Center, Dubai, UAE

More information: www.ispd.org/dubai2024

Guideline Update

What's new with the 2022 update of the ISPD peritonitis guidelines?



Athiphat Banjongjit [1] (Left), Prof. Talerngsak Kanjanabuch [2] (right)

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Peritonitis is associated with substantial mortality and morbidities. Of particular importance, peritonitis remains the most frequent PD-related complication requiring hospitalization and high healthcare costs. Thus, it is not surprising that a bibliographic analysis of global research on PD in the past 10 years found that peritonitis is among the most frequent PD topics and the most highly cited PD publications. According to the Standardized Outcomes in Nephrology-PD (SONG-PD) initiative, peritonitis is rated by patients and caregivers as the highest priority in PD. Managing peritonitis requires careful attention to properly diagnosing the condition, obtaining appropriate specimens for culture, thoughtfully selecting antimicrobial therapy, quickly determining when PD catheter removal is required, and providing any needed additional patient care.

The ISPD guidelines are available to assist clinicians in managing peritonitis. A panel of PD experts convened by the ISPD has revised peritonitis guidelines every 5-6 years since 1993. These current guidelines update both the format and content of the most recent previous guideline, published in 2016. Specifically, it incorporates information from the concurrently published literature. In this narrative, we have summarized the 2022 ISPD Peritonitis Guidelines and broadly divided them into those related to diagnosis, microbiological assessment, treatment (antibiotic, surgical, and adjunctive), and continuous quality improvement.

1. Diagnosis

The standardization of the diagnostic criteria for peritonitis is crucial to facilitate nephrology care teams benchmarking their practices. The diagnostic criteria of peritonitis in the 2022 ISPD guideline remain unchanged from the previous guidelines. It requires at least two of the following criteria, including clinical features consistent with peritoneal inflammation; dialysis effluent leukocyte count of >100 cells/ μL with neutrophil predominance; and positive effluent culture. However, these new guidelines introduce new categories of peritonitis according to the root cause of infection and onset as well as revise the definitions for peritonitis outcomes. Additionally, the guidelines urge diagnosing peritonitis according to pathogens (e.g., *Staphylococcus aureus* peritonitis, culture-negative peritonitis) and sources of infection (Table 1, Figures 1 and 2).

Once peritonitis is suspected, the causative organism should be identified by examining the exit site and tunnel, seeking for intraluminal colonization (evidence of fungal infection, Figure 3), and performing effluent Gram stain (yield 2-8%) and bacterial cultures. Enteric peritonitis should be excluded. Then, deciding whether the patient should be admitted as an inpatient (e.g., clinical clues of sepsis) or outpatient treatment with intraperitoneal (IP) antibiotic.

Table 1. Peritonitis nomenclature and definitions (Ref. 1)

Terms	Definitions
Enteric peritonitis	Peritonitis elicits from the process involving the bowel such as inflammation (e.g., appendicitis), perforation, or ischemia of intraabdominal organs (e.g., strangulated bowel, ischemic colitis).
Catheter-related peritonitis	Peritonitis occurs concomitantly with an exit-site and/or tunnel infection.
Pre-PD peritonitis	Peritonitis occurs after PD catheter insertion and prior to the first day commencing long-term PD treatment, excluding peritonitis related to PD catheter flushing.
PD catheter insertion-related peritonitis:	Peritonitis occurs within 30 days of PD catheter insertion.

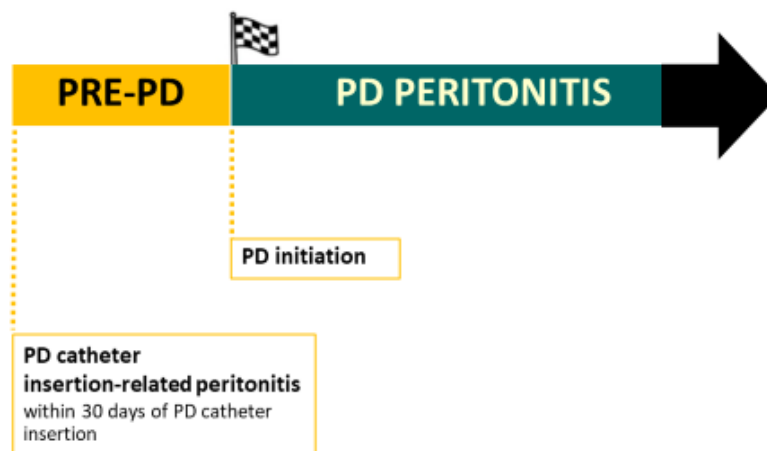


Figure 1. Timeline and pre-PD peritonitis and PD-catheter insertion-related peritonitis (Ref. 2)

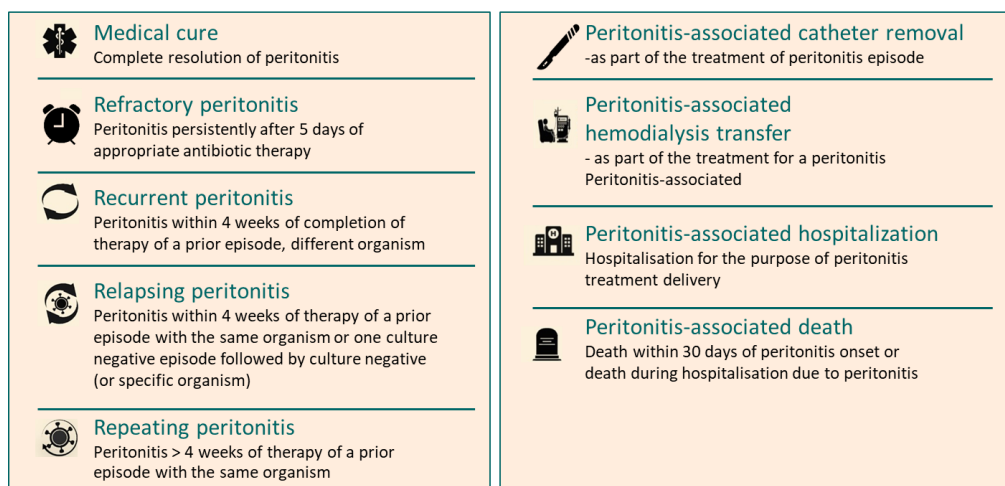


Figure 2. Outcome-specific definition following peritonitis (Ref. 2)



Figure 3. Peritonitis episodes with intraluminal fungal colonization with spilled fungal materials into the drained bag.

Novel peritonitis diagnostic techniques are mentioned to make an early diagnosis of peritonitis (e.g., leukocyte esterase reagent strips, biomarker assays). Innovative pathogen identification techniques (e.g., galactomannan [GM], PCR for bacterial-derived DNA fragments, PCR/ electrospray ionization–mass spectrometry assay, 16S rDNA gene sequencing, MALDI-TOF mass spectrometry, and pathogen-specific immune fingerprints) are raised to aid clinicians dealing with culture-negative peritonitis since pathogen identification is critical for guiding antimicrobial treatment, optimizing clinical outcomes, promoting antimicrobial stewardship, and minimizing antimicrobial resistance. Among all, effluent and serum GM indexes seem useful in the diagnosis of fungal peritonitis since they can reduce turnaround time with a diagnostic accuracy of 65% sensitivity and 85% specificity. However, the ISPD reemphasize that all basic steps of the effluent culture techniques should comply with the guidelines as follows: collect the effluent before starting antimicrobial medications, perform bedside inoculation of 5-10 mL (as the instruction leaflet) in 2 automated broths (aerobic and anaerobic), wait until anti-septic solution applied to the toppers of the broths are dry before injecting the effluent into the broths, transfer the inoculated broths to the lab and incubate them in the incubator within 6 hours (should not keep the inoculated broths in a refrigerator), and discuss with your microbiologist team which organism you suspect.

2. Treatment

2.1 Empirical antibiotic

After appropriate diagnostic investigations have been performed, empirical antibiotics should be promptly started. A delay in administering antibiotics increases the risk of PD catheter removal by 3 folds. IP route is preferred to intravenous (IV) unless the patient has clinical sepsis. The doses and regimens of empirical antibiotics remain unchanged from the 2016 ISPD Guidelines recommendation (covering Gram-positive staphylococci and Gram-negative *Pseudomonas*) besides these guidelines introduce monotherapy with cefepime according to 2 recent RCTs. Prolonged aminoglycoside treatment for >3 weeks increases the risk of vestibular toxicity or ototoxicity; therefore, it should be avoided. Adjunctive oral N-acetylcysteine therapy may help to prevent aminoglycoside ototoxicity. PD patients who have residual urine volumes of more than 100 mL daily should receive a 25% increase in the loading and maintenance dose of cefepime, cefazolin, and ceftazidime. Vancomycin is preferred in IP route due to the superiority of treatment success rate compared to IV route.

2.2 Specific antibiotic

After the initiation of treatment for 48 hours, most patients are expected to have markedly clinical improvement. Otherwise, effluent cell counts, and cultures should be repeated. Previously, the 2016 ISPD recommended prompt PD catheter removal in patients with refractory episodes. In these 2022 guidelines, they still recommend but instead of mandatory PD catheter removal, unless the effluent is clear on day 5; they recommend waiting if the effluent leukocyte count is decreasing towards normal.

When the culture results and sensitivities are known, the antibiotic therapy should be adjusted as per groups of the organism. Most bacterial pathogens should treat with 3 weeks of appropriate antibiotics. Two weeks are only recommended for Coagulase-negative *Staphylococcus*, streptococci, *Corynebacterium*, and antibiotic-responsive culture-negative peritonitis. Figure 4 demonstrated the subsequent antimicrobial treatment diagram according to identified pathogen and initial responsiveness to empirical antibiotics. A single antibiotic agent is enough for most bacteria but methicillin *S. aureus* and non-Enterobacteriaceae (*Pseudomonas*, *Stenotrophomonas*, *Xanthomonas*, etc.). These organisms need combination antibiotics. The guidelines also encourage adjusting antibiotics according to antimicrobial

susceptibility patterns, particularly Gram-negative bacilli (see ref. 1 for details). However, treatment failure with the use of third-generation cephalosporin for AmpC β -lactamases producing bacilli (*Serratia*, *Providencia*, indole-positive *Proteus*, *Citrobacter freundii*, and *Enterobacter* spp.) are common; therefore, fourth-generation cephalosporin (cefepime), quinolones or carbapenem are recommended. The updated recommendation for IP antibiotic dosing is depicted in Table 2 (see ref. 1 for oral and IV dosing). The oral ciprofloxacin dosage was changed from 250 mg twice daily to a once-daily dose of 500-750 mg. Continuous IP aminoglycosides are discarded to minimize toxicity since intermittent dosing can effectively suppress bacterial growth due to its concentration-dependent activity and post-antibiotic effect.

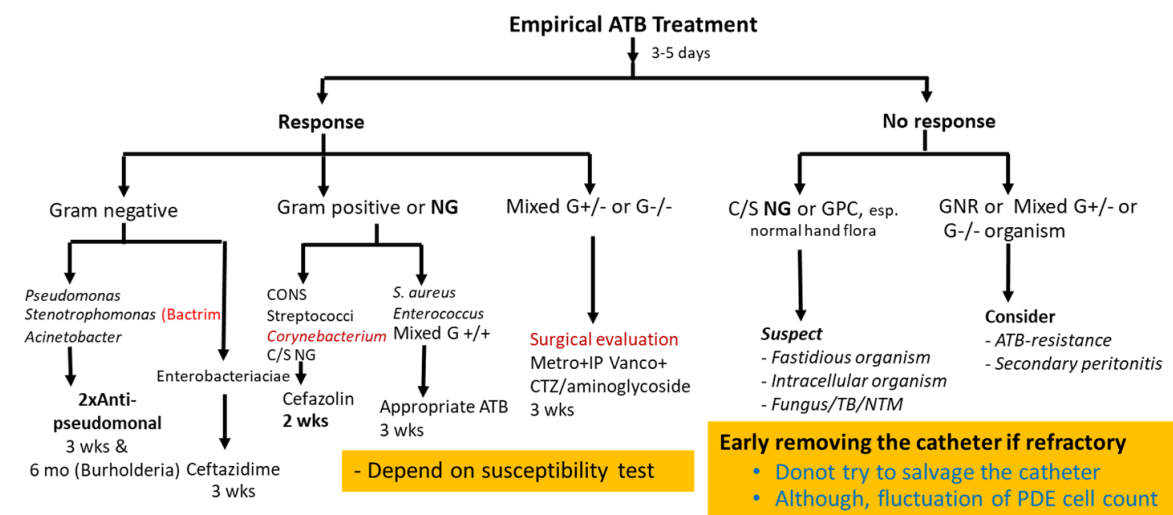


Figure 4. A schematic diagram highlights the subsequent antimicrobial treatment according to identified pathogen and initial responsiveness to empirical antibiotics. Abbreviations: ATB, antibiotic; C/S, culture; CONS, Coagulase-negative staphylococci; CTZ, ceftazidime; G, esp, especially; Gram; GPC, Gram-positive cocci; GNR, Gram-negative rod; IP, intraperitoneal; Metro, metronidazole; NG, no growth; PDE, PD effluent; Vanco, vancomycin; wks, weeks (Ref. 1)

2.3 Supportive and adjunctive management

Supportive management includes pain control, IP heparin if fibrin or bloody dialysate is found in the drained effluent. Hypervolemia is uncommon during peritonitis, albeit increased peritoneal transportation from peritoneal inflammation, since the patients generally decrease oral intake due to anorexia and abdominal pain. However, preparing for UF problems and restriction of salt/fluid intake should be integrated into the practice. Icodextrin (2C) can rescue patients with UF failure who are failing to achieve euvolemia with the aforementioned management. Peritoneal lavage should be avoided for the purpose of improving peritonitis cure (2B) but could be performed in patients with intractable abdominal pain. Antifungal prophylaxis should be started in every administration of broad-spectrum antibiotics (including the empirical treatment), particularly in centers with a high prevalence of fungal peritonitis. Ensure follow-up arrangements are scheduled. Reevaluate the treatment should be arranged if no improvement (clinical & effluent leukocyte count) in 36-48 hours. In every episode of peritonitis, a root-cause analysis should be performed to prevent the recurrence of infection. The indications for PD catheter removal include refractory peritonitis, enteric peritonitis, catheter-related peritonitis, and fungal peritonitis as well as relapsing, recurrent, and repeat peritonitis.

Table 2. The updated 2022 ISPD Peritonitis recommendation for intraperitoneal antibiotic dosing (Ref. 1)

Antibiotic	Intermittent (I exchange daily for at least 6 h)	Continuous (all exchanges)
Aminoglycosides		
Amikacin	2 mg/kg daily	Not advised
Gentamicin	0.6 mg/kg daily	Not advised
Netilmicin	0.6 mg/kg daily	Not advised
Tobramycin	0.6 mg/kg daily	Not advised
Cephalosporins		
Cefazolin	15 mg/kg daily (for long dwell) 20 mg/kg daily (for short dwell)	LD 500 mg/L, MD 125 mg/L ^d
Cefepime	1000 mg daily	LD 500 mg/L, MD 125 mg/L ^d
Cefoperazone	No data	LD 500 mg/L, MD 62.5-125 mg/L
Cefotaxime	500-1000 mg daily	no data
Ceftazidime	1000-1500 mg daily (for long dwell) 20 mg/kg daily (for short dwell)	LD 500 mg/L, MD 125 mg/L
Ceftriaxone	1000 mg daily	No data
Penicillins		
Penicillin G	No data	LD 50,000 unit/L, MD 25,000 unit/L
Amoxicillin	No data	MD 150 mg/L
Ampicillin ^a	4 gm daily	MD 125 mg/L
Ampicillin/sulbactam	No data	LD 1000 mg/500 mg, MD 133.3 mg/66.7 mg
Piperacillin/tazobactam	No data	LD 4 gm/0.5 gm, MD 1 gm/0.125 gm
Ticarcillin/clavulanic acid	No data	LD 3 gm/0.2 gm, MD 300 mg/20 mg/L
Others		
Aztreonam	2 gm daily	LD 500 mg/L, MD 250 mg/L
Ciprofloxacin	No data	MD 50 mg/L
Clindamycin	No data	MD 600 mg/bag
Daptomycin	300 mg daily	LD 100 mg/L, MD 20 mg/L
Fosfomycin	4 g daily	No data
Imipenem/cilastatin	500 mg in alternate exchange	LD 250 mg/L, MD 50 mg/L
Ofloxacin	No data	LD 200 mg, MD 25 mg/L
Polymyxin B	No data	MD 300,000 unit (30 mg)/bag
Quinupristin/dalfopristin	25 mg/L in alternate exchanges ^b	No data
Meropenem	500 mg daily (for long dwell in APD) 1000 mg daily (for short dwell in CAPD)	MD 125 mg/L
Teicoplanin	15 mg/kg every 5 days	LD 400 mg/bag, MD 20 mg/L
Vancomycin	15-30 mg/kg every 5-7 days ^c for CAPD 15 mg/kg every 4 days for APD	LD 20-25 mg/kg, MD 25 mg/L
Antifungal		
Fluconazole	IP 150-200 mg every 24 to 48 h (oral route is preferred: see Ref. 1)	No data
Voriconazole	IP 2.5 mg/kg daily (oral route is preferred: see Ref. 1)	No data

LD: loading dose in mg; MD: maintenance dose in mg; IP: intraperitoneal; APD: automated peritoneal dialysis.

^aIP ampicillin is not recommended for treatment of enterococcal peritonitis.²¹⁸

^bGiven in conjunction with 500 mg intravenous twice daily.

^cSupplemental doses may be needed for APD patients and dwell time of at least 6 h is preferred.

^dIncrease in doses by 25% may be needed for patients with significant residual kidney function.¹⁶⁸

3. Prevention

As always, prevention is better than cure. The revised guidelines give several recommendations involving post-contamination of PD systems, pre- and post-invasive procedures, and PD training/reassessment. Extra precautions are raised on domestic pets, hypokalemia, and exposure to an anti-peptic ulcer (type 2 histamine receptor antagonist, H2RA) (Figure 5).

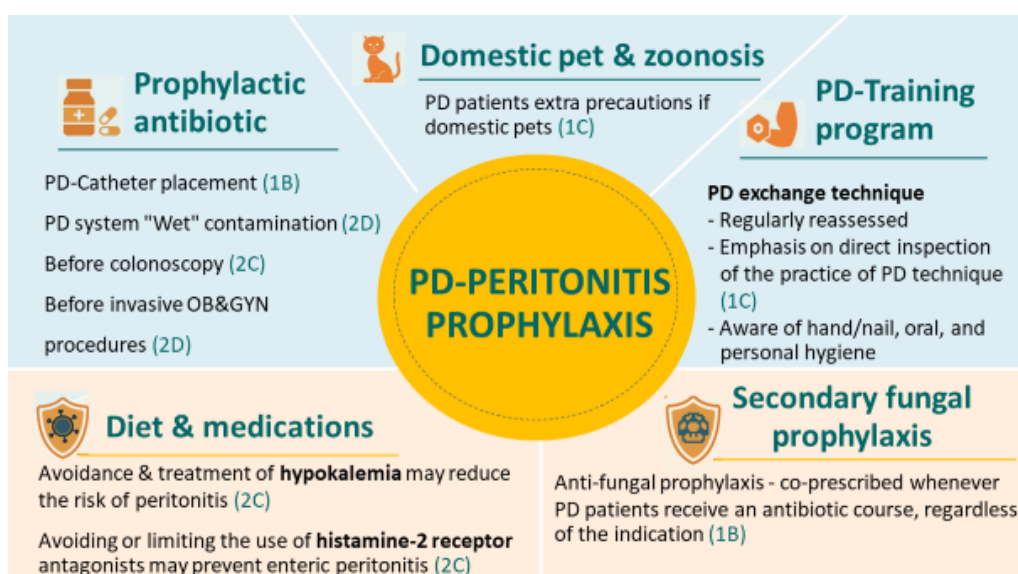


Figure 5. Peritonitis prevention is crucial in all PD care setting (Ref. 2)

3.1 Contamination of the PD system

The 2016 ISPD Guidelines recommended using prophylactic antibiotics after "wet" contamination (dialysis solution is infused into the patient's abdomen after contamination, or the transfer set is uncapped for an extended period) but without a specific regimen recommendation. The revised guidelines expand the definition of "wet" contamination e.g., leaks of dialysis bags, leaks or breaks in tubing proximal to the tubing clamp, breach of aseptic technique, or any touch contamination of the connection during the PD exchange. 'Undoubtedly wet or dry' contamination should be managed against reduced-risk claims. The transfer set should be changed. The effluent should be submitted for cell count and culture. One dose of intraperitoneal cefazolin is recommended, or a short course of oral fluoroquinolones could be prescribed if there is no alternative option.

3.2 Invasive gastrointestinal and gynecological procedures

Invasive or instrumental gynecological procedures can lead to secondary peritonitis in PD patients due to the proximity of the pelvis to the peritoneal cavity. No standardized regimen is recommended but it should cover both Gram-positive and Gram-negative (aerobic and anaerobic) organisms in the upper part of female reproductive tracts e.g., IV cefazolin or ceftriaxone before the procedure or oral cefadroxil 500 mg once daily for 3 days. Since post-colonoscopy Gram-negative peritonitis is common, IV antibiotic prophylaxis, including cephalosporins (such as ceftriaxone or ceftazidime), amoxicillin-clavulanate, ampicillin-sulbactam, ampicillin plus aminoglycoside should be prescribed. In addition, the patient's abdomen should be dry during the procedures.

3.3 Training program

Patients and caregivers should be trained and re-trained. However, an optimal PD training program (how, how long, where, when, and by whom) remains unclear. Direct feedback immediately after the return demonstration of PD steps should be mandatory. Table 4 depicts indications for retraining.

3.4 Domestic pet and zoonotic infection

No pet is allowed into the room during the dialysis treatment procedure and where dialysis tubing, equipment, and machine are stored. Just undetected small pinhole-shaped damage can cause serious tubing defects.

3.5 Other modifiable risk factors

Hypokalemia is associated with the risk of peritonitis. Dietary intervention and potassium supplementation are recommended to correct hypokalemia. Gastric acid suppression, especially with H2RA, increases the risk of enteric peritonitis with a hazard ratio of 1.7. Patients' hand/nail, oral, and personal hygiene should be well aware (Ref. 3-5). Regular evaluation and re-evaluation of patients with PD techniques and eye-hand coordination are mandated (6).

Table 3. Indications for retraining (Ref. 1)

- | |
|--|
| <ul style="list-style-type: none">• Following prolonged hospitalization• Following peritonitis and/or catheter failure• Following change in dexterity, vision, or mental acuity• Following change to another supplier or a different type of connection• Following change in caregiver for PD exchange• Following other interruption in PD (e.g., period of time on hemodialysis) |
|--|

4. Continuous quality improvement (CQI)

The revised guidelines recommended monitoring the incidence and outcomes of peritonitis at least yearly. Peritonitis rate should be measured as the number of peritonitis episodes divided by the number of patient-years at risk (i.e., number of years on PD starting from the time of PD commencement), reported as episodes per patient-years. If relapsing peritonitis occurs, only the original episode is included in the calculation but not the relapsing episode because it is an extension of the original episode. The target overall peritonitis rate reduced from <0.5 episodes per year at risk in the 2016 ISPD guideline to <0.4 episodes per year at risk in the 2022 ISPD guideline. PD units should also measure and report other peritonitis parameters, including mean time to first peritonitis episode, pre-PD peritonitis (episodes per year), and percentage of patients free of peritonitis per unit time (>80% per year). Target culture-negative peritonitis rate is set at <15% of all peritonitis episodes.

5. Conclusion

Early diagnosis of peritonitis is crucial. The best treatment is prevention. Careful attention must be paid to patient training and re-training. Perform “root-cause” analysis for every episode of peritonitis.

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Research News from Asia-Pacific Region

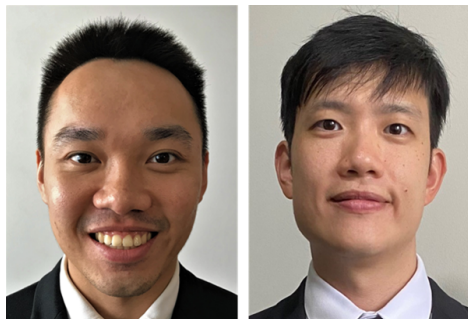
Literature update

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Salvage-first approach for the treatment of peritoneal dialysis catheter-related chronic exit-site and tunnel infections



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Peritoneal dialysis (PD) is a popular mode of renal replacement therapy, but peritoneal dialysis catheter (PDC)-related infections result in significant morbidity, PD disruptions, costs and may lead to its inevitable cessation. According to the International Society for Peritoneal Dialysis (ISPD) 2017 update [1], various types of PDC-infections have been defined as:

- Exit-site infection (ESI) is defined as the presence of purulent discharge, with or without erythema of the skin at the catheter-epidermal interface
- Tunnel infection (TI) is defined as the presence of clinical inflammation or ultrasonographic evidence of collection along the catheter tunnel
- Chronic/refractory ESI or TI are defined as failure to respond after 3 weeks of effective antibiotic therapy

Further updates to the ISPD guidelines in 2019 [2] outline the recommendations for the management of chronic ESI/TI. In the presence of abscess formation around the inner cuff (for PDCs with a dual-cuff design) or concurrent peritonitis, catheter removal, interim hemodialysis, and staged reinsertion of the PDC is recommended. Conversely, in the absence of peritonitis or abscess formation around the inner cuff, the options are upfront removal and replacement of the PDC versus a PDC salvage procedure.

We performed a systematic review [3] to study the safety and efficacy of the different variations in salvage techniques that have been described in the literature. Two broad categories of procedures were identified and then further sub-categorized by the components involved.

1. Cuff-shaving techniques and its variations. The technique was first described by Nichols in 1983 [4]. Variations of this technique include addition of en-bloc resection of the skin and tissues around the peripheral cuff [5] as well as catheter diversion via a new subcutaneous tunnel [6].
2. Partial reimplantation with catheter diversion. The technique was first described by Roman in 1984 [7]. It involved transection of the PDC between 2 cuffs, removal of the external segment, followed by connection of the remnant PDC to a new external segment using a ridged connector. The new external segment was then diverted via a new subcutaneous tunnel.

Overall PDC salvage rate after intervention was 73.2% amongst 409 patients (445 salvage procedures) from 20 studies. Overall complication rate attributable to the procedures was 2.7%, with the most common complications being dialysate leakage, PDC laceration and subcutaneous hematoma.

The review showed that PDC-salvage was safe and effective in the management of chronic ESI/TI, supporting the ISPD guideline recommendations. However, in institutions without the expertise or experience with salvage techniques, patients may only be offered PDC replacement or conversion to hemodialysis. PDC salvage is an invaluable tool in the armamentarium of options for ESI/TI because it allows the patient uninterrupted PD thereby avoiding the risks and expense of hemodialysis. Patients who are poor candidates for hemodialysis due to logistical reasons, or with an expiry of vascular access options may benefit even more from a salvage-first approach. In special populations such as children, it may be impossible to interrupt PD for a prolonged time due to inability to obtain vascular access for hemodialysis.

PD patients with PDC-related infections are often cared for by various specialties including internists, nephrologists, infectious disease physicians, general and vascular surgeons. Therefore, multidisciplinary input in the process of patient identification and selection is important. Notably PDC infection with fungal [8] and non-tuberculous mycobacteria [9] are strong predictors of failure of salvage. We propose a simple algorithm that may aid in decision making and patient selection for PDC salvage (**Figure 1**).

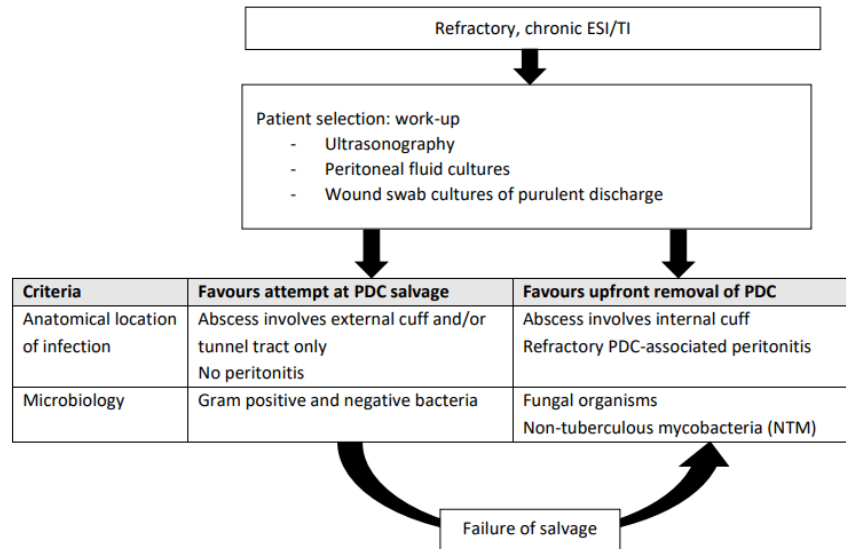


Figure 1. A simple algorithm aids in decision making and patient selection for peritoneal dialysis catheter salvage. Abbreviation: ESI, exit site infection; TI, tunnel infection

In our institution's experience, the PDC salvage rate was 83.3% and median PDC survival after intervention was 10 months. A description of our preferred technique involving en-bloc resection of infected tissue, cuff shaving, and catheter diversion can be found in the same article [3]. We favor this technique as it harnesses the benefits of most of the variations and is easily reproducible. It also does not preclude the possibility of employing partial reimplantation for subsequent infections. The procedure has a short learning curve and has proven to be effective for the patients at our institution.

We hoped to have raised awareness and consideration of a salvage-first approach in selected patients who may benefit from more months and years of PD. Future prospective comparative trials are required to determine which techniques may be the most effective.

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Randomized Study of Urgent-Start Peritoneal Dialysis Versus Urgent-Start Temporary Hemodialysis in Patients Transitioning to Kidney Failure



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This study starts from the challenge in our dialysis unit in the transition from chronic kidney disease (CKD) to dialysis in the setting of peritoneal dialysis (PD) first policy in Thailand. More than half of the patients were start PD in an unplanned fashion due to present with severe CKD complications and need temporary hemodialysis (HD) with HD catheter before transit to conventional start PD (break-in period for 2 weeks after PD catheter insertion). This situation was not only leading to poor patient outcomes (1,2) but also increase the workload of our HD unit and increase the travel cost of patients for incenter HD. Therefore, we come up with the idea of urgent-start PD to overcome this challenge. Urgent-start PD is generally defined as an initiation of PD during the break-in period (within 14 days post-PD catheter insertion) (3,4). The evidence of urgent start PD demonstrated that urgent-start PD might reduce the risk of bloodstream infection compared with HD initiated with HD catheter but had uncertain effects on the risks of infection-related and catheter-related complications, technique survival, and patient survival (5) Nevertheless, all of this evidence was an observational study. In the present study, we sought to evaluate the efficiency and complications of both modalities in a randomized controlled trial fashion.

We conduct a multicenter open label randomized controlled trial in 3 tertiary hospitals in Thailand from November 2018 to February 2020. According to country policy, participants were randomly allocated in a 1:1 ratio to either urgent-start PD or urgent-start temporary HD for 2 weeks to 4 weeks, followed by an elective transition to PD. Adult CKD stage V patients aged >18 years, who accepted long-term dialysis and required immediate dialysis treatment without access to definitive dialysis were enrolled. Indications for immediate dialysis were symptomatic uremia (e.g., nausea, vomiting, or uremic encephalopathy), refractory volume overload, and hyperkalemia that was refractory to conservative medical treatment. Patients who had medical or social contraindications for PD and life-threatening CKD complications requiring emergent dialysis (severe respiratory insufficiency, abdominal infection, severe life-threatening hyperkalemia) were excluded.

Urgent-start PD

After PD catheter insertion was inserted with a percutaneous technique. Rapid PD exchanges started immediately after catheter insertion and continued until the drained PD fluid was clear. Then, the patients were treated with manual acute PD exchanges immediately. Exchanges were started with a dwell volume of 800 ml to 1000 ml in a supine position, then gradually increased to 1.5 liters to 2 liters within 2 weeks.

Urgent-Start HD

A non-tunneled HD catheter was inserted under routine ultrasound guidance in the right internal jugular vein or in the femoral vein. HD was performed before PD catheter insertion and during PD break-in period with 2-3 sessions a week. PD catheter insertion was inserted with the same technique as urgent-start PD, but the PD exchange was started after PD catheter insertion for 2 weeks.

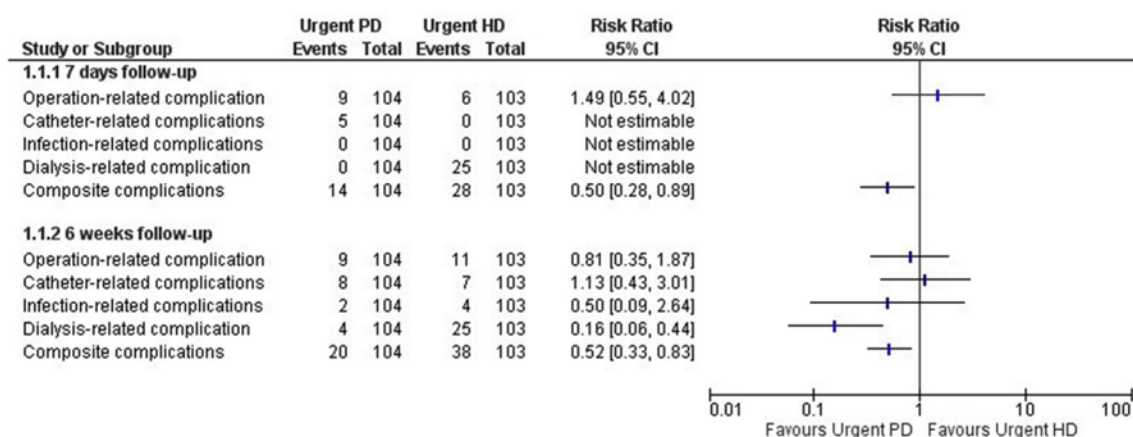
Outcomes

The primary outcome was a composite of operation-related, catheter-related, and dialysis-related complications at 6 weeks. The secondary outcomes included composite complications at 1 week, intraoperative and postoperative complications, catheter patency rate, technique, and patients' survivals at 1 and 6 weeks after randomization. There were 207 participants were included in this study as urgent-start PD group (n = 104) or urgent-start temporary HD group (n = 103). Most of the baseline characteristics were comparable between groups, including age, sex, body mass index, comorbidity, cause of kidney failure, late referral to a nephrologist, and preceding admission with CKD complication. Compared with urgent-start temporary HD, the urgent-start PD group had a lower 6-week overall composite complication rate (19% vs. 37%, RR 0.52, 95% CI 0.33–0.83) and dialysis-related complications (4% vs. 24%, RR 0.16, 95% CI 0.06–0.44), but no differences in operation-related, catheter-related, and infection-related complications. The overall operation-related complication rate of PD catheter insertion was 15 of 201 (7%) and was comparable between the urgent PD and urgent-start temporary HD (and subsequent PD) groups. There were 12 (6%) catheter-related complications (particularly peri-catheter leakage), which were more common in the urgent-start PD group (8 vs. 4 episodes). All peri-catheter leakage resolved after decreasing dwell volumes and interrupting PD for a short period (3, IQR 3–5 days).

The unplanned start of dialysis is a challenging global problem. Home dialysis, including PD, has gained much attention during the pandemic because of the lower risk of acquiring COVID-19 than in-center HD (6,7). Urgent-start PD is an attractive strategy to overcome this challenge. Our findings confirm that unplanned dialysis patients could be treated safely with urgent-start PD without jeopardizing patient outcomes, at least in patients who are suitable for long-term PD. Nevertheless, the modality for long-term dialysis should depend on the patient's preference and shared decision-making. The availability of an urgent-start PD program enables patients with kidney failure to have a dialysis option other than HD. Furthermore, setting up the hospital infrastructure for urgent-start PD programs was beneficial to the patients and the healthcare system because of the lower cost.⁴⁰ Lastly, urgent-start PD is one of the essential keys to increasing home dialysis utilization and promoting patient-centered healthcare in the next decade.

Our study shows the high success rate of PD catheter insertion in advanced-stage CKD and the safety from an acceptable complication rate (8,9). Two critical factors of the success of PD catheter insertion in our study were as follows: (i) the experienced nephrologists who performed PD catheter insertion and (ii) the availability of standardized preoperative and postoperative protocols.

In conclusion, urgent-start PD strategy is a viable option for patients transitioning from kidney failure to dialysis. In the setting where PD is the final modality of choice, urgent-start PD is safe, requiring only a single operation and avoiding temporary CVC, leading to fewer overall complications than urgent-start temporary HD during the transition period. In addition, using an urgent-start PD strategy provided comparable patient and technique survivals to urgent-start temporary HD strategy up to 6 weeks after dialysis commencement.



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