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Primary and Secondary Peritonitis in Peritoneal Dialysis

Abbas Etminan
Nephrologist

TEHRAN 2023

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

Revised, clarified definitions for refractory peritonitis, relapsing peritonitis, peritonitis-associated catheter removal, peritonitis-associated haemodialysis transfer, peritonitis-associated death and peritonitis-associated hospitalization

Definitions for new peritonitis categories and outcomes: pre-PD peritonitis, enteric peritonitis, catheter-related peritonitis and medical cure

Revised, updated recommendations for calculating and reporting peritonitis rates before and after PD commencement New targets recommended for overall peritonitis rate, proportion of patients free of peritonitis and culture-negative peritonitis

Revised recommendations regarding management of contamination of PD systems

Revised recommendations regarding antibiotic prophylaxis for invasive procedures

Revised recommendations regarding PD training and reassessment

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

New recommendations regarding PD patients with pets

New recommendations regarding management of modifiable peritonitis risk factors (hypokalaemia, histamine-2 receptor antagonists)

Update on novel diagnostic techniques for peritonitis

Updated recommendations regarding empirical antibiotic selection and dosage of antibiotics

New recommendation regarding adjunctive oral N-acetylcysteine therapy for mitigating aminoglycoside ototoxicity

Revised recommendations regarding treatment of peritonitis in patients receiving APD

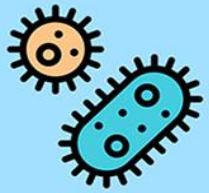
Revised recommendation regarding consideration of expectant management in patients longer than 5 days if PD effluent white cell count is decreasing towards normal, instead of mandatory PD catheter removal if effluent does not clear up by day 5

Updated recommendations for treatment of peritonitis due to coagulase-negative staphylococci, Corynebacteria , enterococcus , Pseudomonas, Acinetobacter , Stenotrophomonas and non-tuberculous mycobacteria

ISPD Peritonitis Guideline Recommendations: 2022 Update on Prevention and Treatment

PERITONEAL DIALYSIS INTERNATIONAL

Definitions and measurement of peritonitis



- ❑ *Cause-specific peritonitis*
- ❑ *Time-specific peritonitis*
- ❑ *Outcomes-specific definitions*

Prevention of peritonitis

- ❑ *Catheter placement*
- ❑ *Exit-site care*
- ❑ *Contamination of PD system*
- ❑ *Invasive G.I. and Gynecological procedures*
- ❑ *Training program*
- ❑ *Domestic pet and zoonotic infections*

Treatment of peritonitis: initial and subsequent

- ❑ *Identification of causative organisms*
- ❑ *Empiric antibiotic selection*
- ❑ *Dosage of antibiotics*
- ❑ *Antibiotic delivery and stability*

Monitoring response to peritonitis treatment

(including indications for catheter removal)

- ❑ *Refractory peritonitis*
- ❑ *Relapsing, recurrent and repeat peritonitis*

Return to PD after cessation of PD

(due to peritonitis-related catheter removal

These recommendations are evidence-based where evidence is available, and if multiple reports are available, findings from the more recent publications have been incorporated by the committee.

Philip Kam-Tao Li, Kai Ming Chow, Yeoungjee Cho, et al. ***ISPD Peritonitis Guideline Recommendations: 2022 Update on Prevention and Treatment.*** *Perit Dial Int. DOI:10.1177/08968608221080586*

Visual Graphic by Edgar Lerma, MD

Definition and measurement of peritonitis

Peritonitis (two of the followings)

1. Clinical features consistent with peritonitis, that is, abdominal pain and/or cloudy dialysis effluent
2. Dialysis effluent white cell count > 100/µL (after a dwell time of at least 2 h), with > 50% polymorphonuclear leukocytes (PMN)
3. Positive dialysis effluent culture

Differential diagnosis of cloudy effluent

Table 4. Differential diagnosis of cloudy effluent.

Cellular causes
- PMN leucocytes
  - Culture-positive infectious peritonitis
  - Infectious peritonitis with sterile cultures
  - Chemical peritonitis
- Eosinophils
  - Dialysate eosinophilia
  - Chemical peritonitis
- Monocyte/macrophages
  - Specimen taken from 'dry' abdomen (after prolonged peritoneal rest)
- Red blood cells
  - Hemoperitoneum
- Malignant cells
  - Lymphoma
  - Peritoneal metastasis

Non-cellular causes
- Fibrin
- Triglycerides (milky white appearance of effluent)
  - Calcium channel blockers
  - Lymphatic obstruction
  - Acute pancreatitis

Peritoneal Dialysis Fluid Appearance

Cloudy:
Peritonitis
Intraperitoneal disease (appendicitis, cholecystitis, bowel ischemia)
Retroperitoneal disease (pancreatitis, renal cell carcinoma)
Drugs (vancomycin, amphotericin B)
Allergic reaction (increased eosinophils)

Bloody (hemoperitoneum):
Coagulopathy
Retrograde menstruation
Ovulation
Strenuous exercise
Ovarian cyst rupture
Adhesions
Catheter-associated trauma

Chylous:
High triglycerides
Lymphatic obstruction
Trauma
Abdominal lymphomas
Pancreatitis
Drugs (calcium channel blockers)

Normal

Definition and measurement of peritonitis

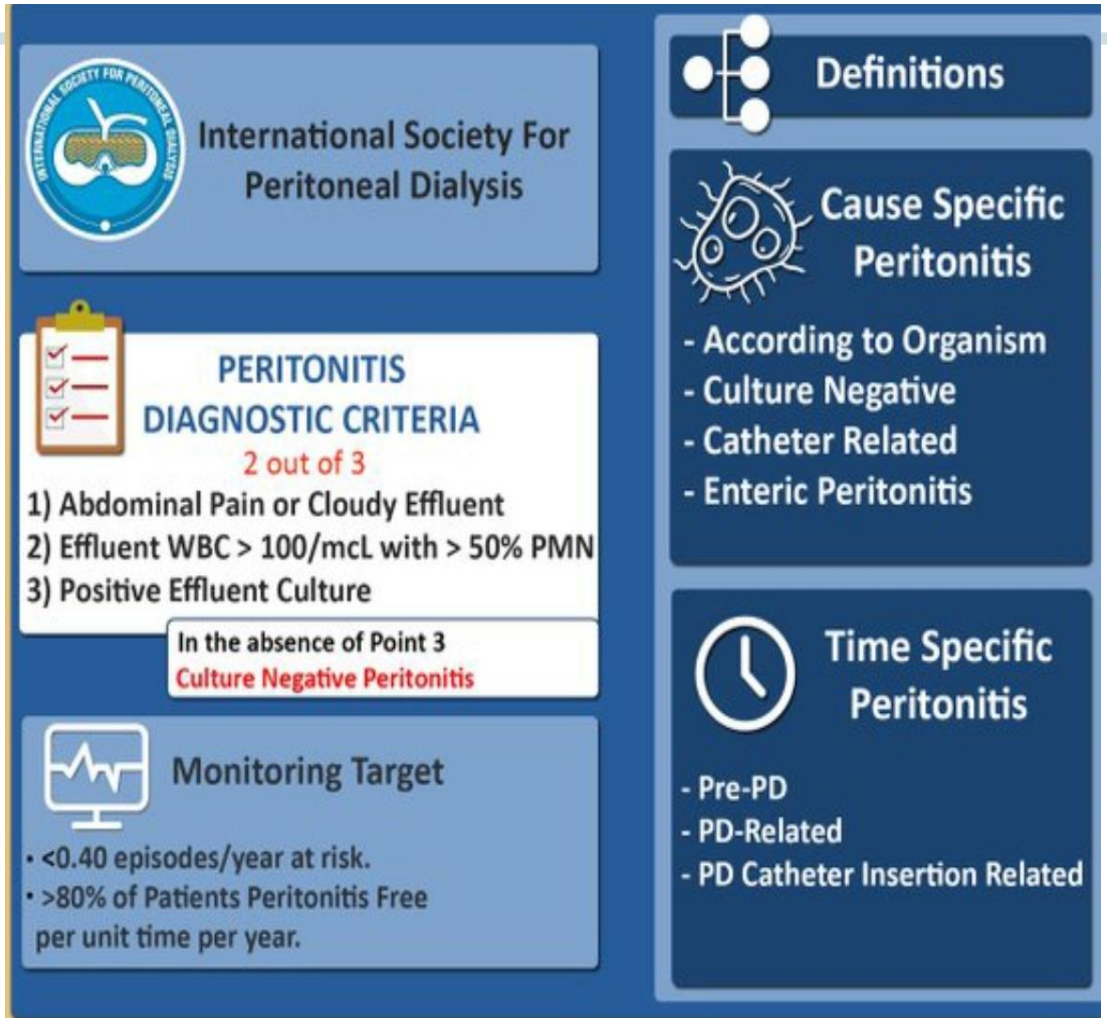
Cause-specific peritonitis

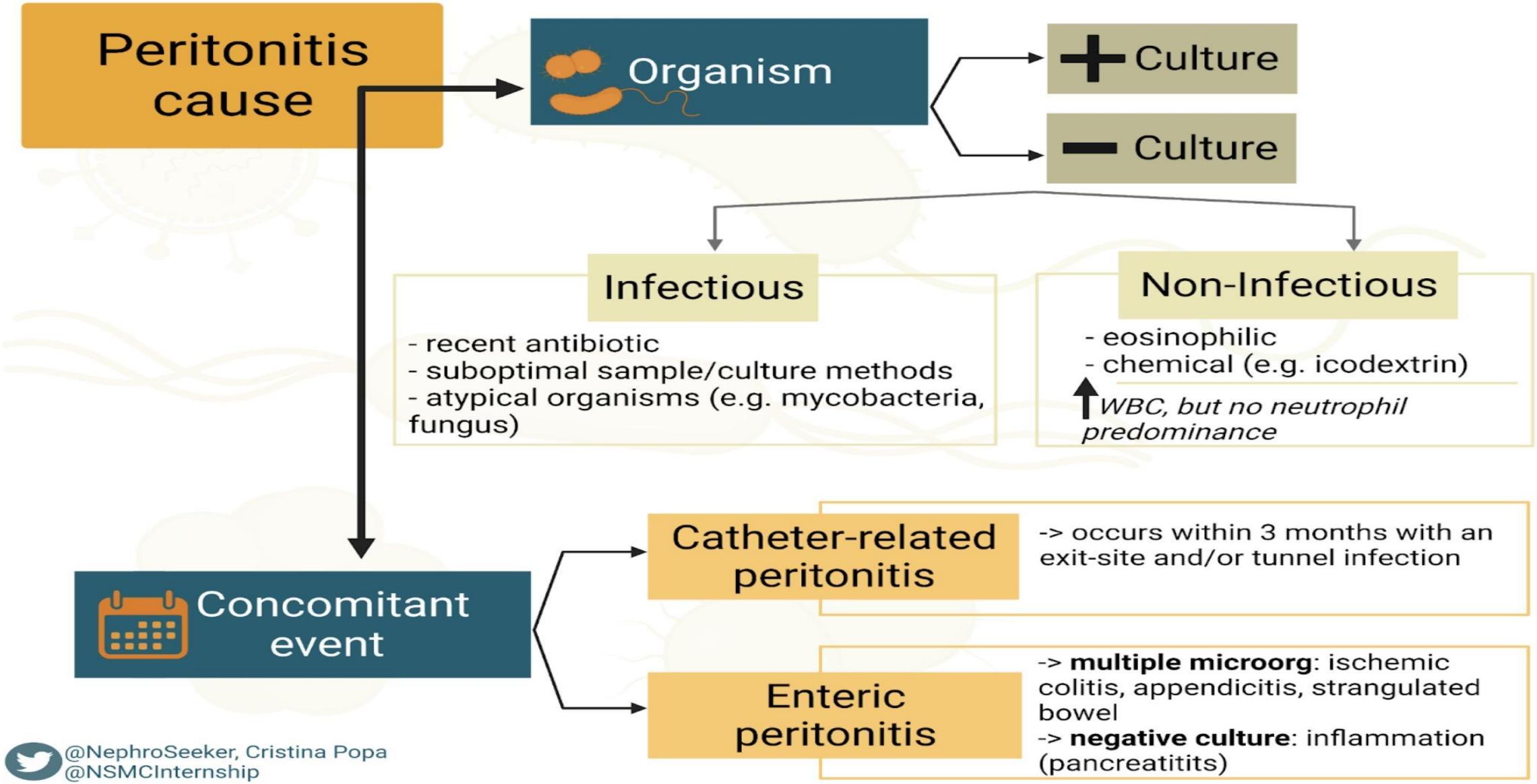
A. Organisms identified on culture (e.g., Staphylococcus aureus peritonitis)

B. Culture-negative peritonitis

C. Catheter-related peritonitis

D. Enteric peritonitis (intestinal and intra-abdominal ongans source: Inflammation, perforation or ischemia)




Peritonitis cause
Organism
+ Culture
− Culture
Infectious
- recent antibiotic
- suboptimal sample/culture methods
- atypical organisms (e.g. mycobacteria, fungus)
Non-Infectious
- eosinophilic
- chemical (e.g. icodextrin)
↑WBC, but no neutrophil predominance
Concomitant event
Catheter-related peritonitis
-> occurs within 3 months with an exit-site and/or tunnel infection
Enteric peritonitis
-> multiple microorg: ischemic colitis, appendicitis, strangulated bowel
-> negative culture: inflammation (pancreatitits)
@NephroSeeker, Cristina Popa
@NSMCInternship

Definition and measurement of peritonitis 3

Time-specific peritonitis

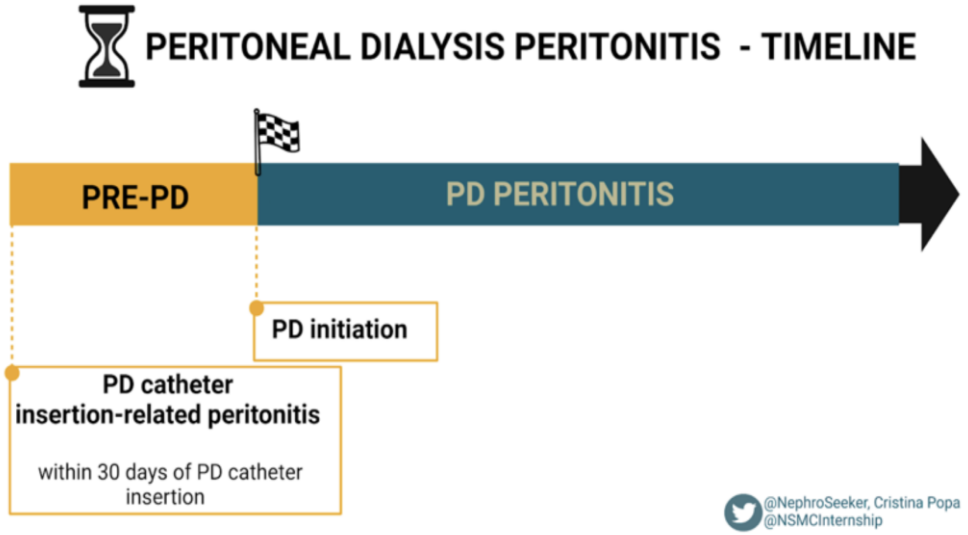
Pre-PD peritonitis (before PD commencement)

- Peritonitis episode occurring after PD catheter insertion and prior to commencement of PD treatment

PD-related peritonitis (after PD commencement)

PD catheter insertion-related peritonitis

- Peritonitis that occurs within 30 days of PD catheter insertion



Definition and measurement of peritonitis

Table 1. Outcome specific definition following peritonitis.

Outcome	Definition
Medical cure	Complete resolution of peritonitis together with NONE of the following complications: relapse/ recurrent peritonitis, catheter removal, transfer to haemodialysis for ≥30 days or death
Refractory	Peritonitis episode with persistently cloudy bags or persistent dialysis effluent leukocyte count >100 × 10^9/L after 5 days of appropriate antibiotic therapy
Recurrent	Peritonitis episode that occurs within 4 weeks of completion of therapy of a prior episode but with a different organism
Relapsing	Peritonitis episode that occurs within 4 weeks of completion of therapy[a] of a prior episode with the same organism or one sterile (culture negative) episode (i.e. specific organism followed by the same organism, culture negative followed by a specific organism or specific organism followed by culture negative).
Repeat	Peritonitis episode that occurs more than 4 weeks after completion of therapy[a] of a prior episode with the same organism
Peritonitis-associated catheter removal	Removal of PD catheter as part of the treatment of an active peritonitis episode
Peritonitis-associated haemodialysis transfer	Transfer from PD to haemodialysis for any period of time as part of the treatment for a peritonitis episode
Peritonitis-associated death	Death occurring within 30 days of peritonitis onset or death during hospitalisation due to peritonitis
Peritonitis-associated hospitalisation	Hospitalisation precipitated by the occurrence of peritonitis for the purpose of peritonitis treatment delivery

PD: peritoneal dialysis.
[a]Completion of therapy is defined as the last day of antibiotic administration.

PD PERITONITIS OUTCOMES

Medical cure

Complete resolution of peritonitis

Refractory peritonitis

Peritonitis persistent after 5 days of appropriate antibiotic therapy

Recurrent peritonitis

Peritonitis - within 4 weeks of completion of therapy of a prior episode, **different organism**

Relapsing peritonitis

Peritonitis within 4 weeks of therapy of a prior episode with the **same organism** or **one culture negative episode followed by culture negative (or specific organism)**

Repeating peritonitis

Peritonitis > 4 weeks of therapy of a prior episode with the **same organism**

Peritonitis-associated catheter removal

- as part of the treatment of peritonitis episode

Peritonitis-associated hemodialysis transfer

- as part of the treatment for a peritonitis

Peritonitis-associated hospitalization

Hospitalisation for the purpose of peritonitis treatment delivery

Peritonitis-associated death

Death within 30 days of peritonitis onset or death during hospitalisation due to peritonitis

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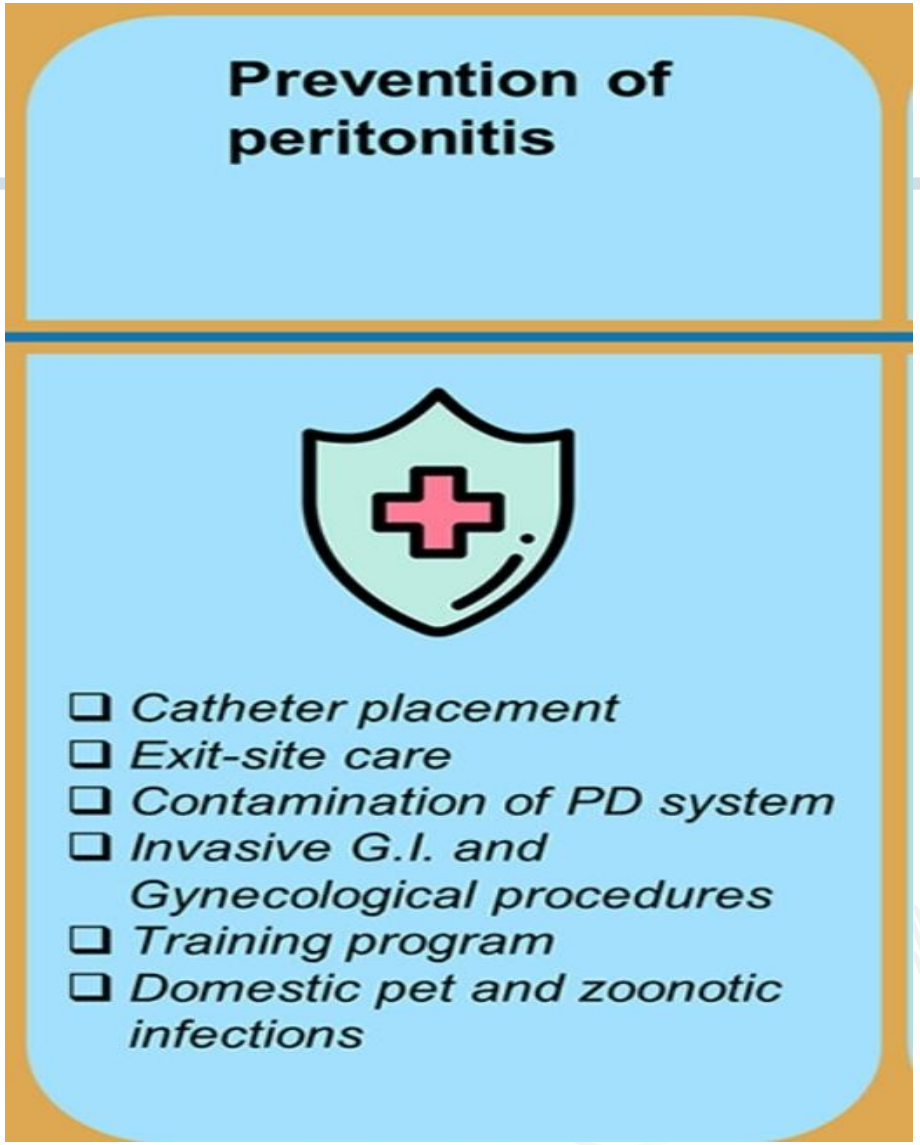
Measurement and Reporting

Table 2. Measurement and reporting of peritonitis.

	Unit of measure	Minimum frequency	Target
Peritonitis rates (overall and organism-specific)	Episodes per patient year	Yearly	<0.4 episodes per patient-year
Culture-negative peritonitis	% of all peritonitis episodes	Yearly	<15% of all peritonitis episodes
Time to first peritonitis episode	Mean unit time to first episode peritonitis	Quarterly (local report)	–
Proportion of patients free of peritonitis	% per unit time	Quarterly (local report)	>80% per year
Pre-PD peritonitis	% of all peritonitis episodes	Quarterly (local report)	–
PD catheter insertion-related peritonitis	% of all PD catheter insertions	Quarterly (local report)	<5%
Medical cure	% of all peritonitis episodes	Quarterly (local report)	–
Recurrent peritonitis	% of all peritonitis episodes	Quarterly (local report)	–
Relapsing peritonitis	% of all peritonitis episodes	Quarterly (local report)	–
Peritonitis-associated catheter removal	% of all peritonitis episodes	Quarterly (local report)	–
Peritonitis-associated haemodialysis transfer	% of all peritonitis episodes	Quarterly (local report)	–
Peritonitis-associated death	% of all peritonitis episodes	Quarterly (local report)	–

PD: peritoneal dialysis.

Prevention of Peritonitis



PD-PERITONITIS PROPHYLAXIS

Domestic pet & zoonosis

PD patients extra precautions if domestic pets (1C)

Prophylactic antibiotic

PD-Catheter placement (1B)

PD system "Wet" contamination (2D)

Before colonoscopy (2C)

Before invasive OB&GYN procedures (2D)

PD-Training program

PD exchange technique

- regularly reassessed,
- emphasis on direct inspection of the practice of PD technique (1C)

Diet & medication effect

Avoidance & treatment of **hypokalemia** may reduce the risk of peritonitis (2C)

Avoiding or limiting the use of **histamine-2 receptor antagonists** may prevent enteric peritonitis (2C)

Secondary fungal prophylaxis

Anti-fungal prophylaxis - co-prescribed whenever PD patients receive an antibiotic course, regardless of the indication (1B)

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Retraining Program

Table 3. Indications for PD Retraining.

- Following prolonged hospitalisation
- Following peritonitis and/or catheter infection
- 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 haemodialysis)

PD: peritoneal dialysis.

Initial presentation and management of peritonitis

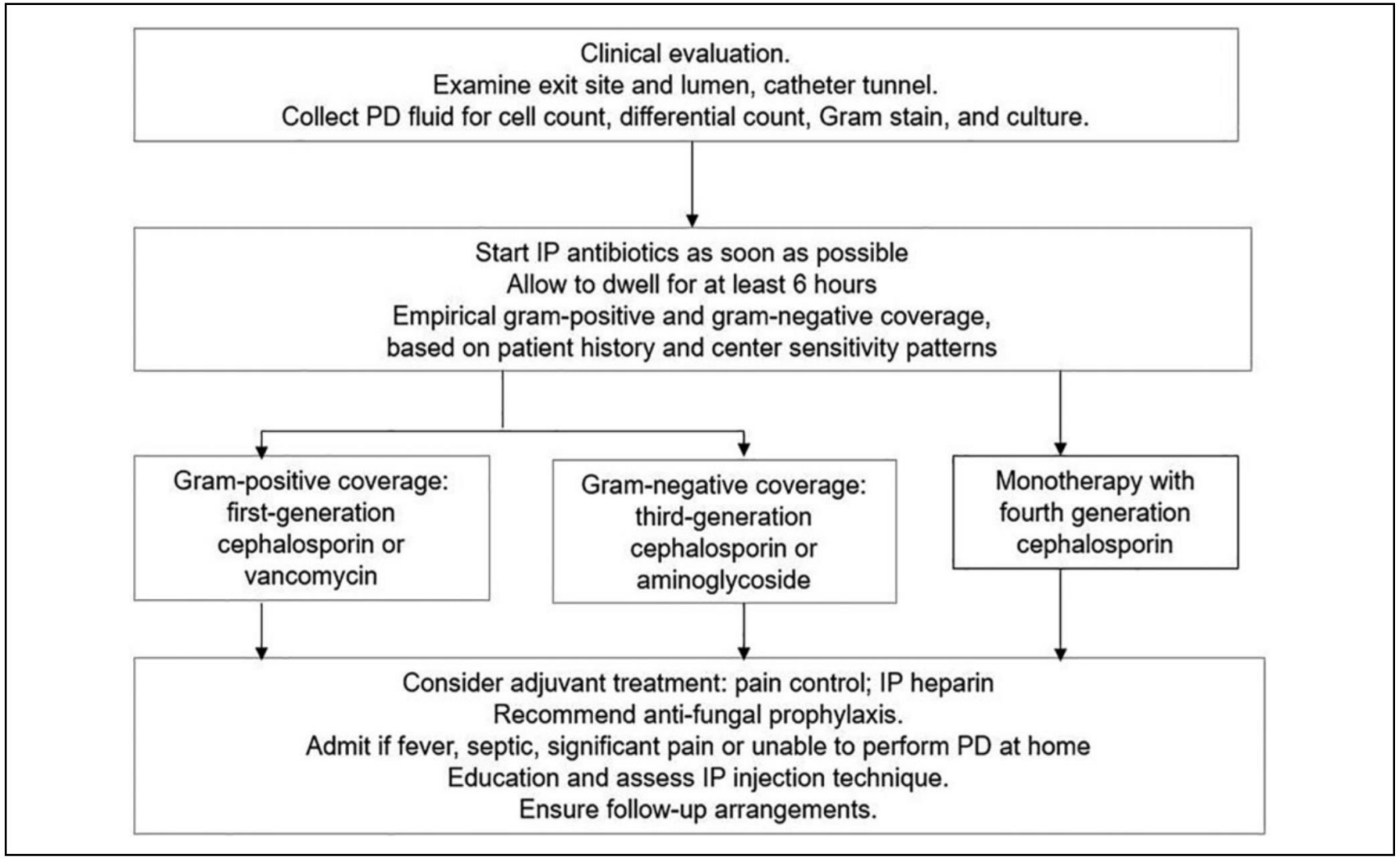


Figure 1. The algorithm of initial management for PD patients presenting with a clinical diagnosis of peritonitis. PD: peritoneal dialysis.

Treatment of peritonitis: initial and subsequent

- ❑ *Identification of causative organisms*
- ❑ *Empiric antibiotic selection*
- ❑ *Dosage of antibiotics*
- ❑ *Antibiotic delivery and stability*

ISPD ORGANISM SPECIFIC PERITONITIS GUIDELINES 2022

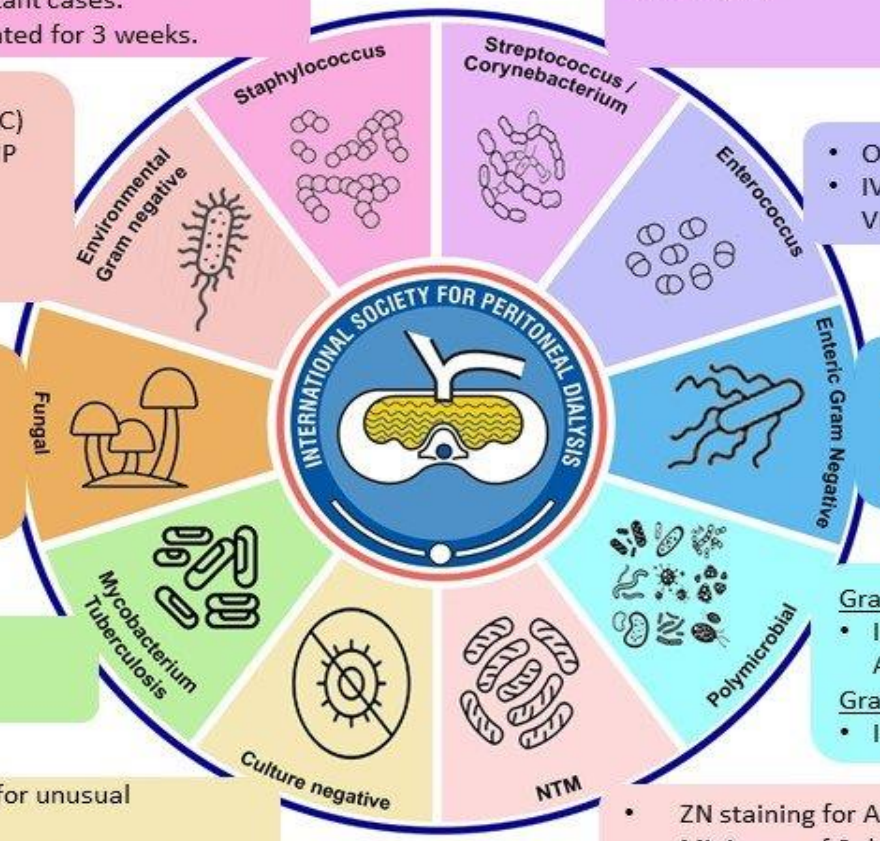
#NephJC

- IP Cephalosporin/IP Vancomycin(VM) for 2 weeks.(2C)
- IV Daptomycin in VM resistant cases.
- Staphylococcus aureus treated for 3 weeks.

IP Cephalosporin/IP Vancomycin for 2 weeks for 2 weeks.(2C)

- Treated for 3 weeks.
- Pseudomonas-IP Cephalosporin+IP Aminoglycoside (2C)
- Acinetobacter-Oral Ciprofloxacin/Oral Cotrimoxazole/IP Meropenem/IP AG(2C)
- CRAB-IP Colistin
- Strenotrophomonas- Oral Cotrimoxazole+Oral Ciprofloxacin/IP Meropenem/IP AG(2D)

- Oral Amoxicillin/IP Vancomycin for 3 weeks.(2C)
- IV Daptomycin/IV Linezolid/IV Teicoplanin in VRE.(2D)



- Remove the catheter.(1C)
- Treated for 2-4 weeks.(2C)
- Candida-IV Fluconazole/IV Echinocandin/Oral Voriconazole.
- Aspergillus-IV Amphotericin B/Azoles.

- Treated for 3 weeks.(2C)
- Amp C BL-IP Cephalosporin/oral Ciprofloxacin/IP Meropenem.
- ESBL-IP Meropenem/oral Ciprofloxacin.

- GeneXpert TB PCR aids rapid diagnosis.
- HRZE/FQ for 2months and HR for 12 months(2C)

Gram Negative:
- IP Ampicillin and IP Cephalosporin/IP Aminoglycoside with oral Metronidazole.

Gram Positive
- IP Cephalosporin/IP Vancomycin for 3 weeks.

- Special culture methods for unusual organisms.
- Remove catheter if signs and symptoms persist beyond day 5.

- ZN staining for AFB.(2D)
- Minimum of 2 drugs including Amikacin for 6 weeks and catheter removal.(2D)

Reference: Li PK et al. ISPD peritonitis guideline recommendations:2022 update on prevention and treatment. 2022 Perit Dial Int. 2022 Mar:42(2):110-153. PMID: 35264029.

Legend: AG:aminoglycoside; CRAB:Carbapenem-resistant Acinetobacter baumannii; VRE:Vancomycin resistant enterococci; ESBL:Extended spectrum beta lactamase producing.

@drpriyajohn

Dosage of antibiotics

IP antibiotics should be the preferred route of administration as long as the compatibility and stability of the IP antibiotics allow, unless the patient has features of systemic sepsis (1B)

IP aminoglycoside should be administered as daily intermittent dosing (2B)

Prolonged courses of IP aminoglycoside should be avoided (1C)

Adjunctive oral N-acetylcysteine therapy may help to prevent aminoglycoside ototoxicity (2B)

There is insufficient evidence to make a recommendation as to whether patients on APD should be temporarily switched to CAPD during treatment of peritonitis (Not Graded)

Antibiotics dosing Recommendations

Table 5. IP antibiotic dosing recommendations for treatment of peritonitis.

Antibiotic	Intermittent (1 exchange daily for at least 6 h)	Continuous (all exchanges)
Aminoglycosides		
Amikacin	2 mg/kg daily[173]	Not advised
Gentamicin	0.6 mg/kg daily[174,175]	Not advised
Netilmicin	0.6 mg/kg daily[165]	Not advised
Tobramycin	0.6 mg/kg daily	Not advised
Cephalosporins		
Cefazolin	15 mg/kg daily (for long dwell)[176,177] 20 mg/kg daily (for short dwell)[178,176]	LD 500 mg/L, MD 125 mg/L[d] [168,179]
Cefepime	1000 mg daily	LD 500 mg/L, MD 125 mg/L[d] [168]
Cefoperazone	No data	LD 500 mg/L, MD 62.5–125 mg/L[180]
Cefotaxime	500–1000 mg daily[181]	no data
Ceftazidime	1000–1500 mg daily (for long dwell) 20 mg/kg daily (for short dwell)[178]	LD 500 mg/L, MD 125 mg/L[d] [168,182]
Ceftriaxone	1000 mg daily[183]	No data
Penicillins		
Penicillin G	No data	LD 50,000 unit/L, MD 25,000 unit/L[13]
Amoxicillin	No data	MD 150 mg/L[184]
Ampicillin[a]	4 gm daily[185]	MD 125 mg/L[186]
Ampicillin/ sulbactam		LD 1000 mg/500 mg, MD 133.3 mg/66.7 mg[187,188]
Piperacillin/ tazobactam	No data	LD 4 gm/0.5 gm, MD 1 gm/0.125 gm[189]
Ticarcillin/clavulanic acid	No data	LD 3 gm/0.2 gm, MD 300 mg/20 mg/L[190]
Others		
Aztreonam	2 gm daily[191]	LD 500 mg/L[192], MD 250 mg/L[192,193]
Ciprofloxacin	No data	MD 50 mg/L[194]
Clindamycin	No data	MD 600 mg/bag[195]
Daptomycin	300 mg daily[196]	LD 100 mg/L[197,198,199], MD 20 mg/L[197,200]
Fosfomycin	4 g daily[201,202]	No data
Imipenem/cilastatin	500 mg in alternate exchange[203]	LD 250 mg/L, MD 50 mg/L[182]
Ofloxacin	No data	LD 200 mg, MD 25 mg/L[204]
Polymyxin B	No data	MD 300,000 unit (30 mg)/bag[188]
Quinupristin/ dalfopristin	25 mg/L in alternate exchanges[b205]	No data
Meropenem	500 mg daily (for long dwell in APD)[207] 1000 mg daily (for short dwell in CAPD)[208,209]	MD 125 mg/L[206]
Teicoplanin	15 mg/kg every 5 days[210]	LD 400 mg/bag, MD 20 mg/L[211,140]
Vancomycin	15–30 mg/kg every 5–7 days[c141,212] for CAPD 15 mg/kg every 4 days[213] for APD	LD 20–25 mg/kg, MD 25 mg/L[214]
Antifungal		
Fluconazole	IP 150–200 mg every 24 to 48 h[215,216] (oral route is preferred: see Table 6)	No data
Voriconazole	IP 2.5 mg/kg daily[217] (oral route is preferred: see Table 6)	No data

LD: loading dose in mg; MD: maintenance dose in mg; IP: intraperitoneal; APD: automated peritoneal dialysis.
[a]IP ampicillin is not recommended for treatment of enterococcal peritonitis.[218]
[b]Given in conjunction with 500 mg intravenous twice daily.
[c]Supplemental doses may be needed for APD patients and dwell time of at least 6 h is preferred.
[d]Increase in doses by 25% may be needed for patients with significant residual kidney function.[168]

Systemic antibiotic dosing Recommendations for treatment of peritonitis

Table 6. Systemic antibiotic dosing recommendations for treatment of peritonitis.

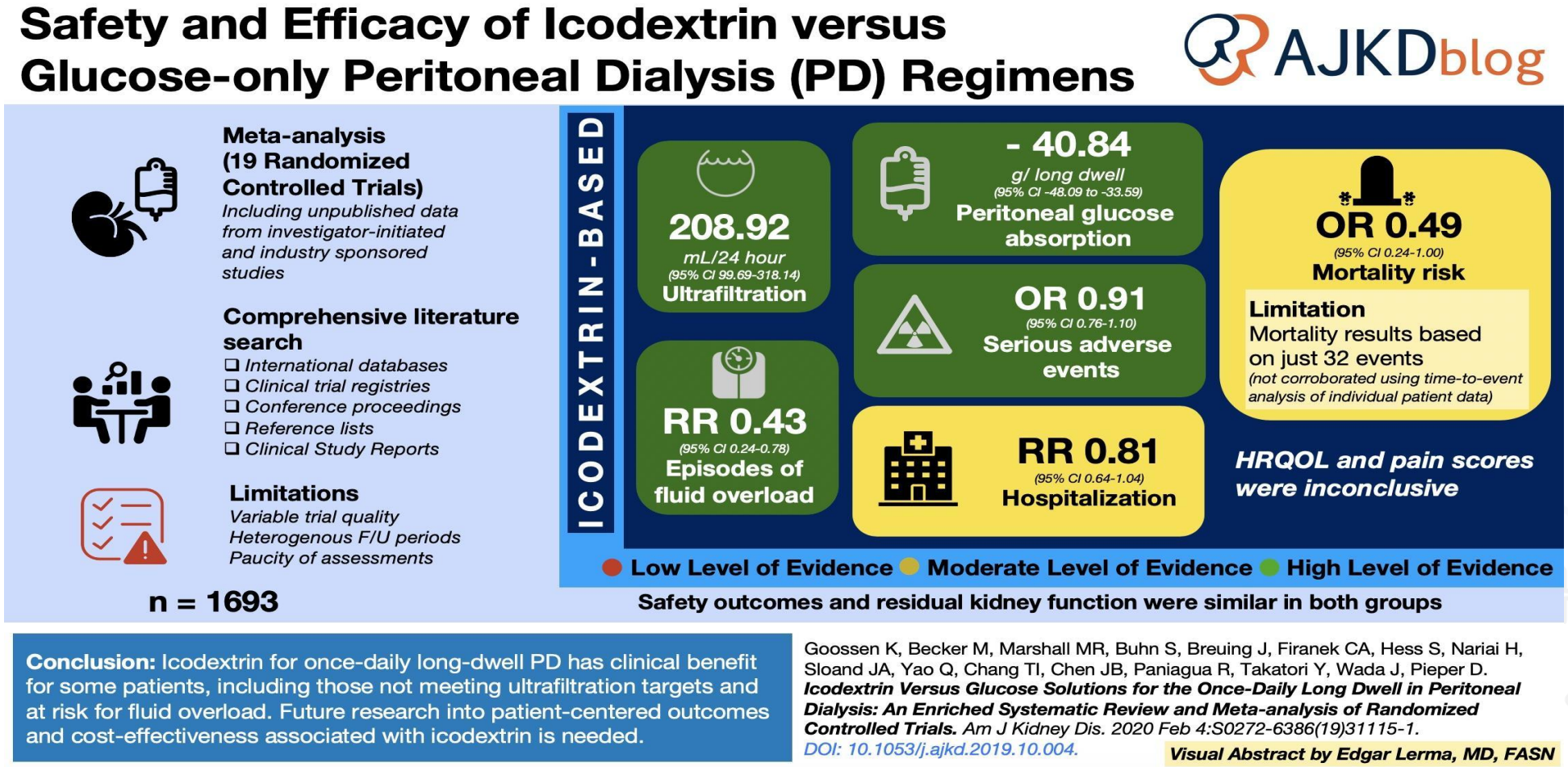
Drug	Dosing
Antibacterial	
Amoxicillin	Oral 500 mg thrice daily[219]
Ciprofloxacin	Oral 500–750 mg daily[220]
	Oral 750 mg BD for CCPD[221]
Clarithromycin	Oral 250 mg BD[222,223]
Colistin	IV 300 mg loading (for critically ill patients), then 60–200 mg daily[b224-226]
Dalbavancin	IV 1500 mg over 30 min single dose[227]
Daptomycin	IV 4–6 mg/kg every 48 h[228]
Ertapenem[a]	IV 500 mg daily[229]
Levofloxacin	Oral 250 mg daily[230] or 500 mg every 48 h
Linezolid	IV or oral 600 mg BD[231,232] for 48 h, then 300 mg BD[233]
Moxifloxacin	Oral 400 mg daily[234,235]
Rifampicin	Oral or IV 450 mg daily for BW <50 kg; 600 mg daily for BW ≥50 kg
Ticarcillin/clavulanic acid	IV 3 gm/0.2 gm every 12 h
Tigecycline	IV 100 mg loading, then 50 mg every 12 h[236,237]
Trimethoprim/sulfamethoxazole	Oral 160 mg/800 mg BD[238,239]
Anti-fungal	
Amphotericin B desoxycholate	IV 0.75–1.0 mg/kg/day over 4–6 h[240]
Amphotericin B (liposomal)	IV 3–5 mg/kg/day[241,242]
Anidulafungin	IV 200 mg loading, then 100 mg daily[243,244]
Caspofungin	IV 70 mg loading, then 50 mg daily[243]
Fluconazole	Oral 200 mg loading, then 100 mg daily[240]
Flucytosine	Oral 1 gm daily[240]
Isavuconazole	Oral or IV 200 mg every 8 h for 6 doses (48 h) loading, then 200 mg daily
Micafungin	IV 100 mg daily[243,245]
Posaconazole	Oral tablet 300 mg every 12 h loading for two doses, then 300 mg daily[246]
Voriconazole	Oral 200 mg every 12 h

BD: twice a day; IV: intravenous; BW: body weight.
[a]Ertapenem is not active against *Pseudomonas* or *Acinetobacter* species.
[b]Expressed as colistin base activity in mg.

Adjunctive treatments

Augmented peritoneal lavage should not be performed

Icodextrin be considered for volume overload which occurs during acute peritonitis



ISPD Catheter-Related Infection Recommendations: 2023 Update

PERITONEAL DIALYSIS INTERNATIONAL

DEFINITIONS

EXIT SITE INFECTION (ESI)

- Purulent discharge ± skin erythema (NG)
- Classification based on identified organism (1C)

TUNNEL INFECTION

- Clinical inflammation ± ultrasonographic evidence of a fluid collection (NG)

Insertion related ESI and/or tunnel infection: Episode of infection that occurs within 30 days of PD catheter insertion (NG)

MONITORING AND REPORTING

- Monitor yearly incidence of CRI (1C)
- Report rate of CRI as # of episodes/year at risk (NG)
- Report ESI and tunnel infection rates separately (NG)
- Overall, ESI rate should be ≤0.40 episodes/year at risk (2C)
- Proportion of PD catheter insertion related infection should be <5% (2C)

PREVENTION

- Administer prophylactic antibiotics immediately before insertion (1A)
- Nasal antibiotic prophylaxis on screening (1C)
  (if identified as nasal S. aureus carriers)
- Shared decision making in choice of PD catheter placement technique (2C)
- Leave exit site dressing intact for 7 days after PD catheter insertion (NG)

**CRI, Catheter Related Infection, *NG, Not Graded*

TREATMENT OF CRI

EXIT SITE CARE

- "Daily" exit site inspection and cleansing
  Early recognition of worsening infection

ANTIBIOTICS

- Appropriate *S. aureus* coverage
  1st generation cephalosporin or anti-staphylococcal penicillin
- Treat tunnel infection with at least 3 weeks of effective antibiotics (1D)

SURGICAL INTERVENTION

- Remove PD catheter if infection progresses to, or occurs simultaneously with, peritonitis due to the same organism (2C)

Conclusions: The 2023 guidelines set new target for the overall exit site infection rate and downgraded the recommendation about topical antibiotic cream or ointment. Recommendations on antibiotic treatment and duration, catheter removal, and salvage options were provided.

Kai Ming Chow, Philip Kam-Tao Li, Yeoungjee Cho, et al. ***ISPD Catheter-Related Infection Recommendations: 2023 Update***
DOI: 10.1177/08968608231172740
Visual Abstract by Edgar Lerma, MD

Pseudomonas peritonitis

We suggest that Pseudomonas peritonitis be treated with 2 antibiotics with different mechanisms of action and to which the organism is sensitive for 3 weeks (2C)

We suggest that Pseudomonas peritonitis with concomitant exit-site and tunnel infection be treated with catheter removal (2D)

If there is no clinical response after 5 days of effective antibiotic treatment, we suggest that Pseudomonas peritonitis be treated with early catheter removal instead of using three antibiotics as an attempt to salvage (2D)

Management of Polymicrobial Peritonitis

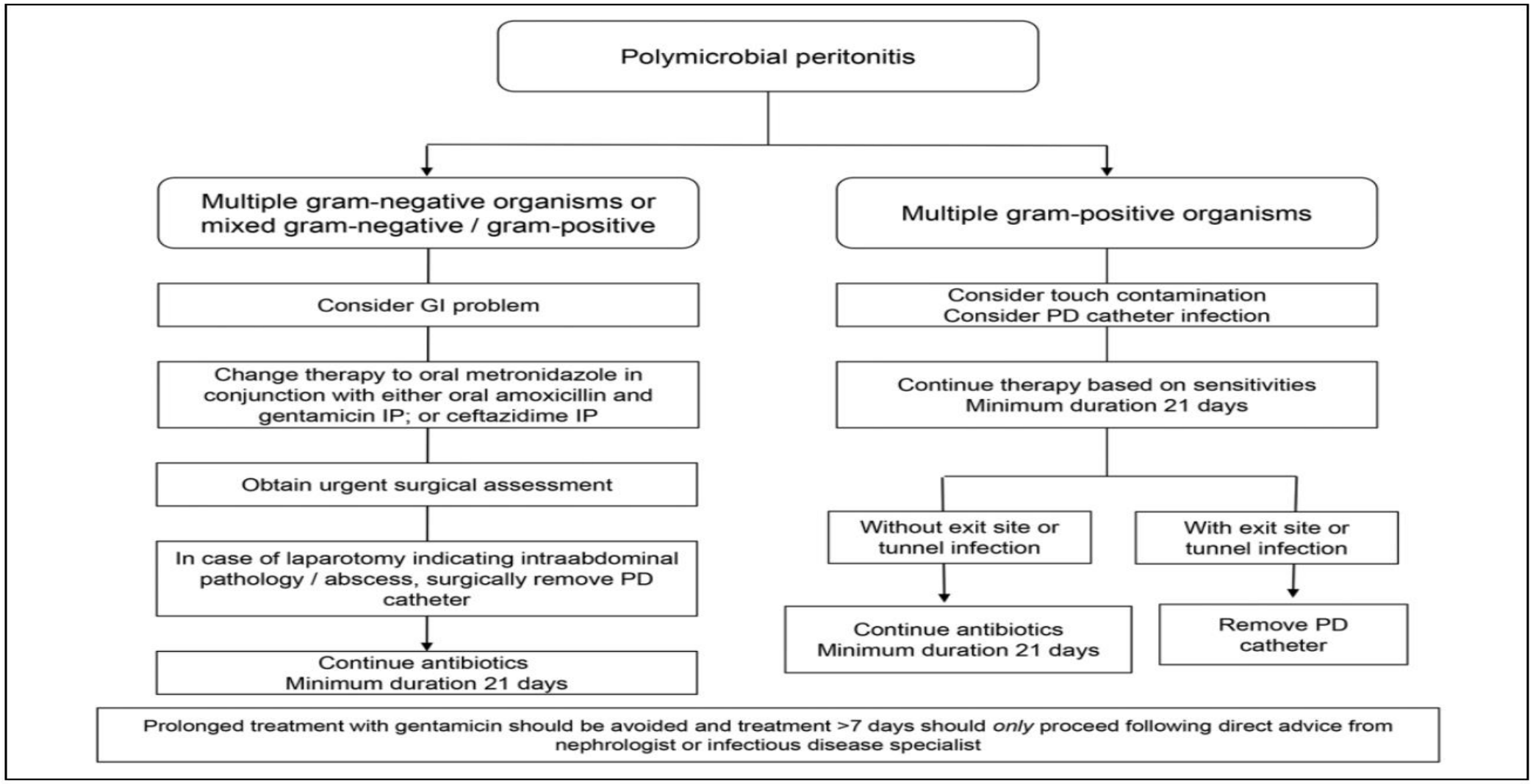
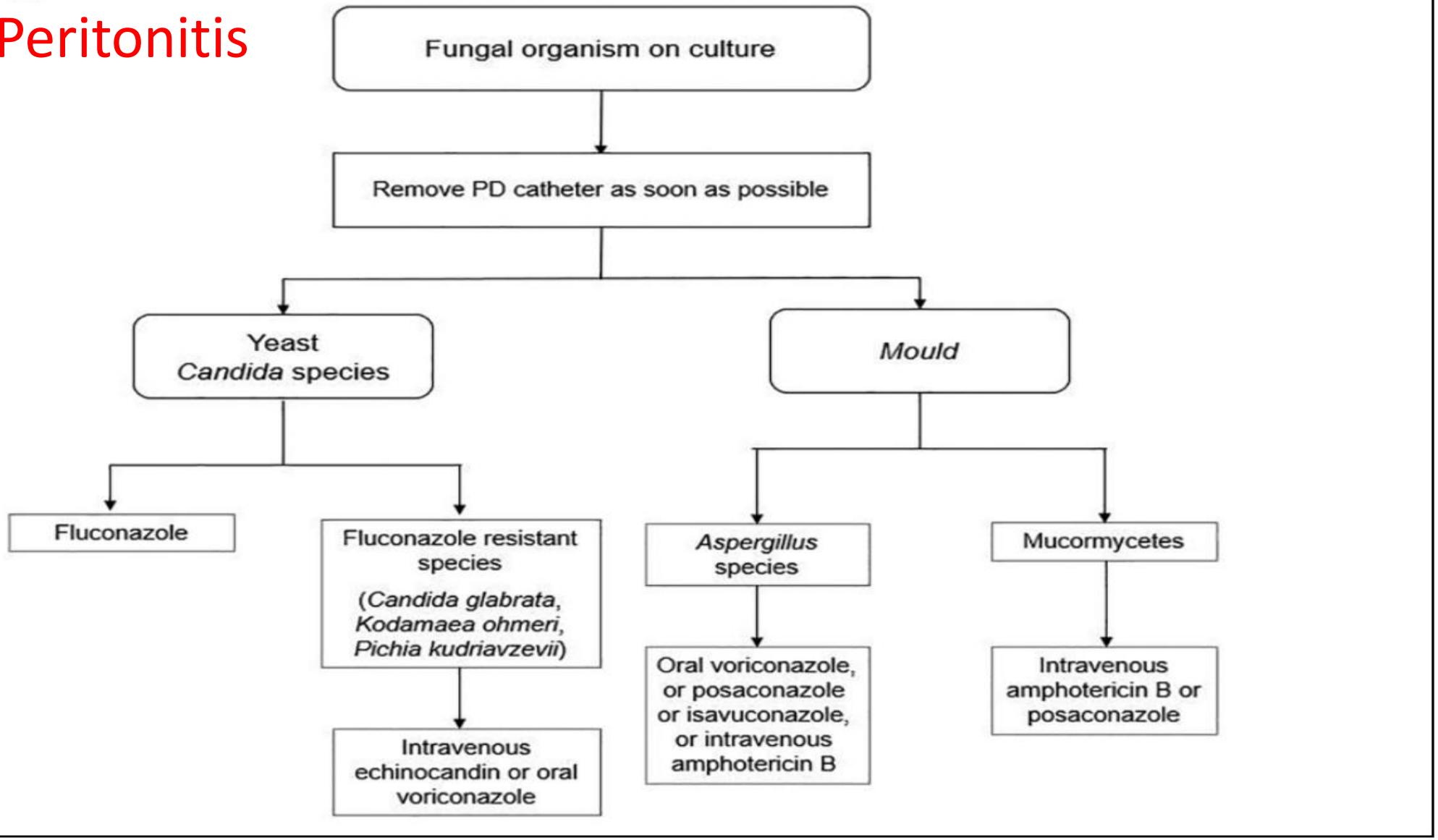


Figure 8. Management algorithm for polymicrobial peritonitis.

Fungal Peritonitis



Management of culture-negative Peritonitis

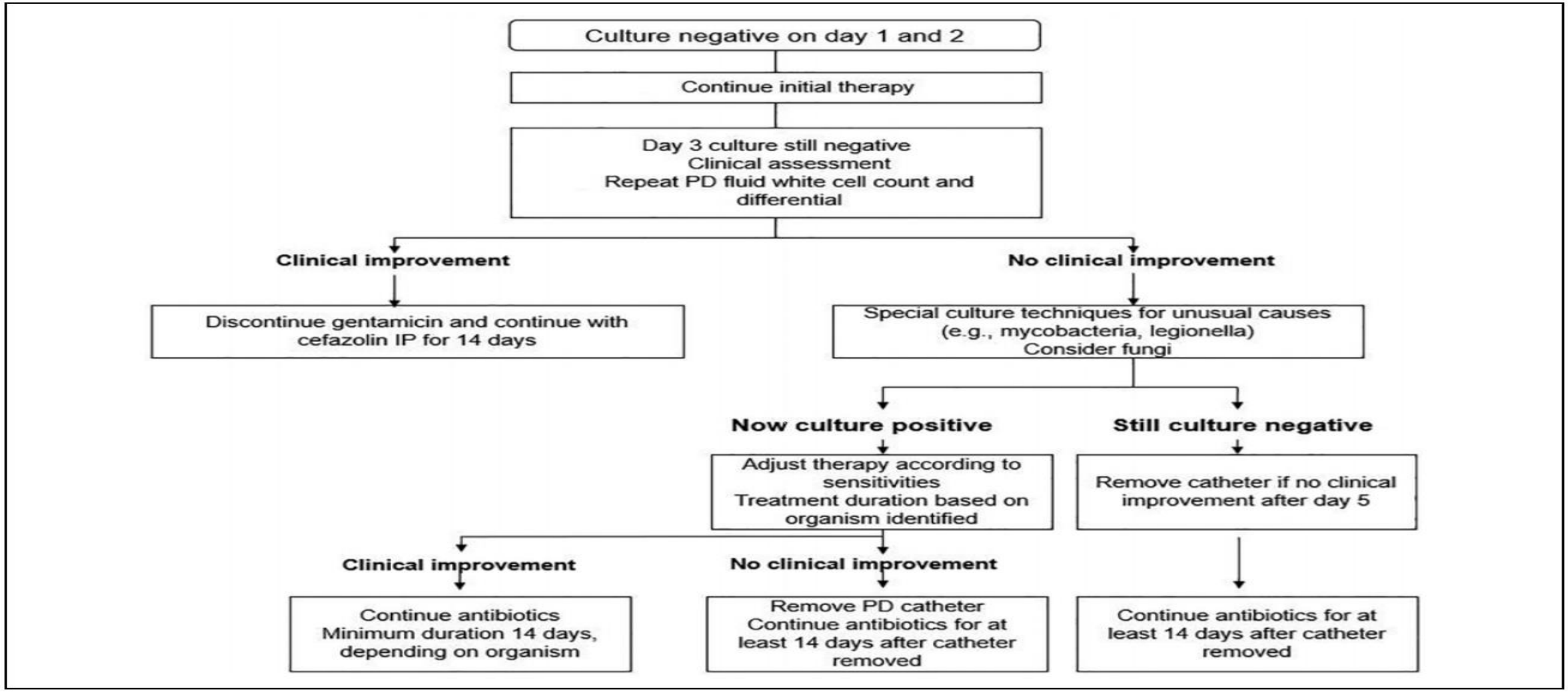


Figure 10. Management algorithm for culture-negative peritonitis.

Tuberculous peritonitis

We suggest antituberculous therapy, instead of PD catheter removal, as the primary treatment of peritonitis caused by Mycobacterium tuberculosis (2C)

Non-tuberculous mycobacterial peritonitis

We suggest that Ziehl–Neelsen staining for acid-fast bacilli be requested when there is a clinical suggestion of non-tuberculous mycobacterial (NTM) peritonitis, including persistent culture-negative peritonitis (2D)

We suggest that NTM peritonitis be treated with both effective antibiotics and catheter removal (2D).

Tuberculose Peritonitis in Peritoneal Dialysis

Table 8. Drug dosing recommendations for treatment of tuberculous peritonitis.

Drug	Dosing
Isoniazid	Oral 5 mg/kg daily (maximum dose 300 mg daily)[382]
Rifampicin	Oral 450 mg daily for BW <50 kg; 600 mg daily for BW ≥50 kg
Pyrazinamide	Oral 30 mg/kg three times weekly
Levofloxacin	Oral 250 mg every 48 h
Ofloxacin	Oral 200 mg daily[375]
Ethambutol	Oral 15 mg/kg every 48 h[382]
Moxifloxacin	Oral 400 mg daily[234,235]
Pyridoxine	Oral 50–100 mg daily[375,382]

BW: body weight.

ISPD Peritonitis Guideline Recommendations: 2022 update on prevention and treatment

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International Society For Peritoneal Dialysis

PERITONITIS DIAGNOSTIC CRITERIA

2 out of 3

1) Abdominal Pain or Cloudy Effluent
2) Effluent WBC > 100/mcL with > 50% PMN
3) Positive Effluent Culture

In the absence of Point 3
Culture Negative Peritonitis

Monitoring Target

- <0.40 episodes/year at risk.
- >80% of Patients Peritonitis Free per unit time per year.

Definitions

Cause Specific Peritonitis

- According to Organism
- Culture Negative
- Catheter Related
- Enteric Peritonitis

Time Specific Peritonitis

- Pre-PD
- PD-Related
- PD Catheter Insertion Related

Outcomes

Medical Cure
Complete Resolution
No Relapse, Recurrence, Catheter Removal or Transfer to HD for >30 Days

Refractory
Cloudy Bags or Effluent Leukocyte Count > 100 /mcl after 5 days of therapy

Recurrent
Peritonitis within 4 weeks of therapy, Different organism

Relapsing
Peritonitis within 4 weeks of therapy, Same organism or Culture Negative

Repeat
Peritonitis > 4 weeks of therapy, Same organism

Associated with
- Catheter Removal
- HD Transfer
- Death (30 days) and Hospitalisation

Prevention

- Antibiotic Before Catheter Placement (1A)
- Topical Antibiotic For Exit-Site Care
- Prophylactic Antibiotic After Wet Contamination of PD System (2D)
- Antibiotics Prior to Colonoscopy (2C) or Invasive Gynecological Procedure and Drainage of PD Fluid (2D)
- Pets NOT Allowed in PD Exchange Room (2A)
- Avoid Hypokalemia And H2-Blocker (2C)

Treatment

- IP Antibiotics is the Prefered Route (1B)
- Gram Negative and Positive Coverage (1C)
- Anti-Fungal Coverage (1B)
- Adjust Antibiotics to Culture Results (1C)
- In Refractory Remove Catheter (1D) or Observe If WBC is Decreasing (2C)
- Organism Specific Recommendations

Conclusion: The ISPD updated recommendations have revised definitions for peritonitis and peritonitis-associated medical conditions. New peritonitis categories and outcomes are defined. Revised recommendations regarding prevention and treatment of peritonitis including empirical antibiotic selection and dosage and treatment of peritonitis due to specific microorganisms.

Reference: Li PK et al. ISPD peritonitis guideline recommendations: 2022 update on prevention and treatment. 2022 Perit Dial Int. 2022 Mar;42(2):110-153. PMID: 35264029.

Visual abstract by Momen Abbasi, MD @Momen_Abbasi