Antimicrobial Dosing Recommendations: Peritoneal Dialysis (PD)-related Infections

Background:

Peritonitis is a common and serious complication of PD. Generally, intraperitoneal (IP) medication administration results in high IP drug levels and is considered the preferred route of antimicrobial administration for PD catheter-related peritonitis to achieve maximum drug exposure at the site of infection. Some studies have shown higher treatment failure rates with intravenous (IV) administration compared to IP for peritonitis.

However, if a patient shows signs of systemic infection, such as sepsis, has bacteremia or another possible presumed site of infection, intravenous (IV) antibiotics should be used. The same drug therapy or antimicrobial coverage should not be given IP and IV concomitantly. Replacement of the peritoneal catheter should be considered for optimal outcomes, especially with virulent organisms (*S. aureus*) and fungus.

Note: If both IV and IP antibiotic therapies are ordered, the appropriate route for the patient's clinical scenario should be clarified with the primary team and Nephrology service to avoid duplication of therapy, supratherapeutic drug levels and toxicities.

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References:

- Kam-Tao Li P, Szeto CC, Piraino B et al. ISPD peritonitis recommendations: 2016 update on prevention and treatment. *Perit Dial Int*. 2016;36:481-508.
- Szeto CC, Tao-Kam P, Johnson BT, et al. ISPD catheter-related infection recommendations: 2017 Update. *Perit Dial Int*. 2017; 37 (2): 141-154

Intraperitoneal (IP) Administration of Antimicrobials

Antimicrobial	Intermittent Dosing (antibiotic added to 1 exchange per day; dwell at least 6 hours)	Continuous Dosing (antibiotic added to all exchanges)
Amikacin	2 mg/kg daily	LD: 25 mg/L MD: 12 mg/L
Ampicillin	No data	MD: 125 mg/L
Ampicillin/ sulbactam	2 g q12 hours	LD: 750-1000 mg/L MD: 100 mg/L
Aztreonam*	2,000 mg daily	LD: 1,000 mg/L MD: 250 mg/L
Cefazolin	15-20 mg/kg daily	LD: 500 mg/L MD: 125 mg/L
Cefepime	1,000 mg daily	LD 250-500 mg/L MD: 100-125 mg/L
Ceftazidime	2,000 mg daily	LD: 500 mg/L MD: 125 mg/L
Ceftriaxone	1,000 mg daily 2,000 mg daily if >80 kg	No data
Daptomycin	3 mg/kg daily (limited data, stable for 6 hours)	LD: 100 mg/L (optional) MD: 20 mg/L
Fluconazole	200 mg q24-48 hours (oral effective)	No data
Gentamicin	0.6 mg/kg daily	LD: 8 mg/L MD: 4 mg/L
Meropenem	1,000 mg daily	No data
Piperacillin/ tazobactam	No data	LD: 4.5 g MD: 1.125 g
Tobramycin	0.6 mg/kg daily	LD: 3 mg/kg MD: 0.3 mg/kg
Vancomycin	15-30 mg/kg Every 5-7 days**	LD: 1000 mg MD: 25mg/L
Voriconazole	2.5 mg/kg daily (oral preferred)	No data

LD: loading dose, MD: maintenance dose

*Consider institutional beta-lactam allergy data when using aztreonam empirically (rarely needed)

**Redose vancomycin when levels ~15 mcg/mL (goal is >15 mcg/mL). Typical dose = 2,000 mg, Maximum = 3,000 mg. Check level every ~3-5 days.

- For antibiotics not listed in the above table, refer to the Renal Dosing Protocol for recommended dosing with systemic administration. https://www.nebraskamed.com/sites/default/files/documents/for-providers/asp/nm-anti-infective-renal-dosing-guidelines.pdf
- Prophylaxis with Nystatin 500,000 units po q 6 hours may be considered in patients being treated with antibiotics for bacterial peritonitis