



An Evaluation of the Empiric Antibiotic Regimen for the Treatment of Peritoneal Dialysis-Related Peritonitis at Vancouver General Hospital

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Introduction

Peritonitis is a serious complication of peritoneal dialysis (PD) that can result in unfavorable outcomes including:

- Hospitalization
- Peritoneal membrane failure
- Conversion to hemodialysis
- Death

International Society of Peritoneal Dialysis (ISPD) Peritonitis Treatment Recommendations

Empiric intraperitoneal (IP) antibiotics
+ antifungal prophylaxis

**Gram positive
coverage**

1st generation
cephalosporin or
vancomycin

**Gram negative
coverage**

3rd generation
cephalosporin or
aminoglycoside

Antifungal

fluconazole or
nystatin

Current Practice at Vancouver General Hospital (VGH)

- Empiric IP antibiotic regimen:
cefazolin (1st generation cephalosporin) plus
ceftazidime (3rd generation cephalosporin)
- Exceptions: cephalosporin allergy or history of
resistant infection
- Fluconazole prescribed at nephrologist discretion
based on risk factors for fungal peritonitis

Objectives

- Characterize the pathogens and resistance patterns of peritonitis episodes at VGH over the past 5 years
- Evaluate the effectiveness of the empiric antibiotic regimen based on clinical outcomes
- Assess fungal peritonitis rates at VGH over the past 5 years and determine the need for routine fluconazole prophylaxis

DESIGN

Retrospective chart review of PD associated peritonitis episodes at VGH from January 2013 – December 2017

INCLUSION CRITERIA

- Adults who met criteria for PD-related peritonitis
- PD effluent analyzed
- Empiric IP antibiotics

EXCLUSION CRITERIA

- Episodes with exit site infection only
- Eosinophilic peritonitis

Peritonitis Rate

(# of episodes per patient-year on PD)

Year	2013	2014	2015	2016	2017
BC	0.38	0.27	0.25	0.26	0.33
VGH	0.33	0.17	0.12	0.13	0.09

Patient Characteristics

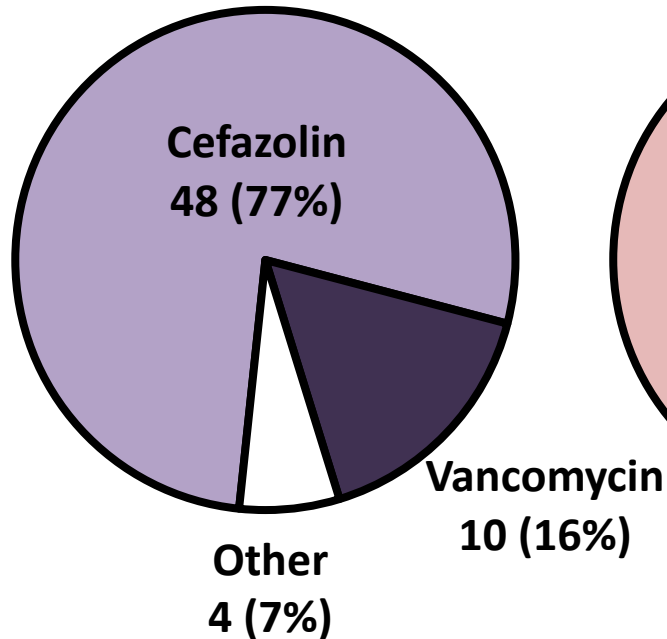
Characteristic	N (%)
Number of patients	42
Male	18 (43)
Mean Age (years)	65 ± 13.3
Number of peritonitis episodes	62
Dialysis Modality	
Continuous Cycling PD	47 (76)
Continuous Ambulatory PD	14 (23)
Mean Duration of Dialysis (days)	938.6 ± 898.6

Patient Characteristics

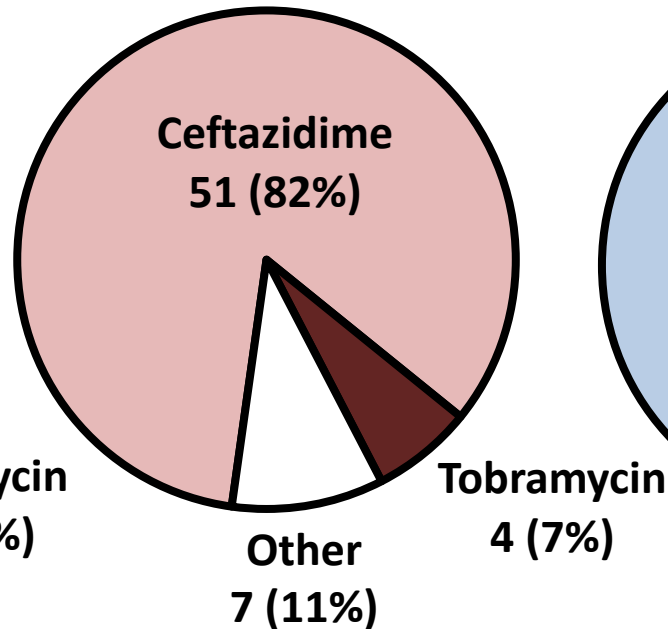
Characteristic	N (%)
Exit Site Antibiotics	
Mupirocin	30 (48)
Gentamicin	32 (52)
Resistant Organisms (MRSA)	1 (2)
Immunosuppression	8 (13)
Antibiotics in past 3 months	15 (24)
Extraperitoneal fungal infection	3 (5)

Empiric Therapy (N=62)

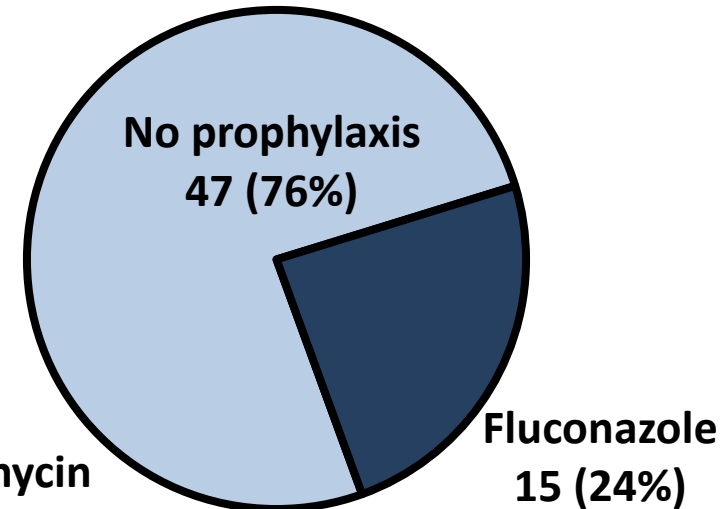
Gram Positive



Gram Negative



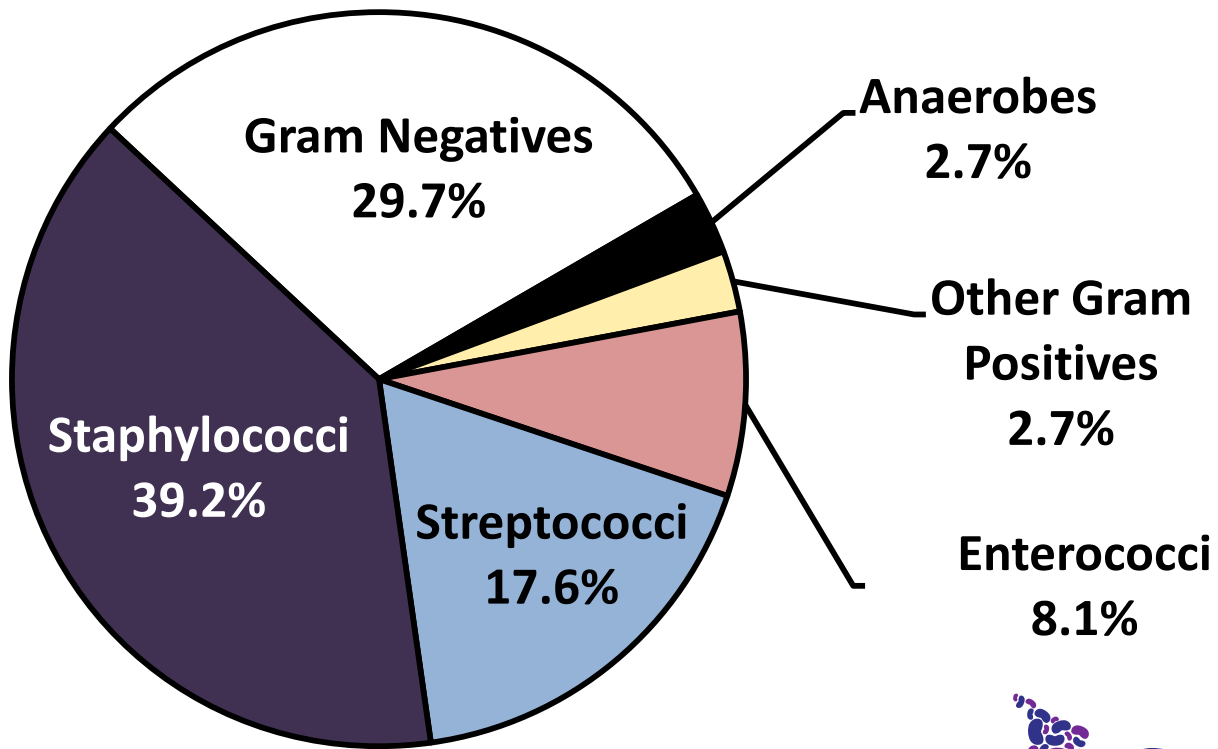
Fungal Prophylaxis



Organisms Isolated from Dialysate (N=74)

**Fungal
Peritonitis: 0%**

**Culture Negative
Peritonitis: 9.7%**



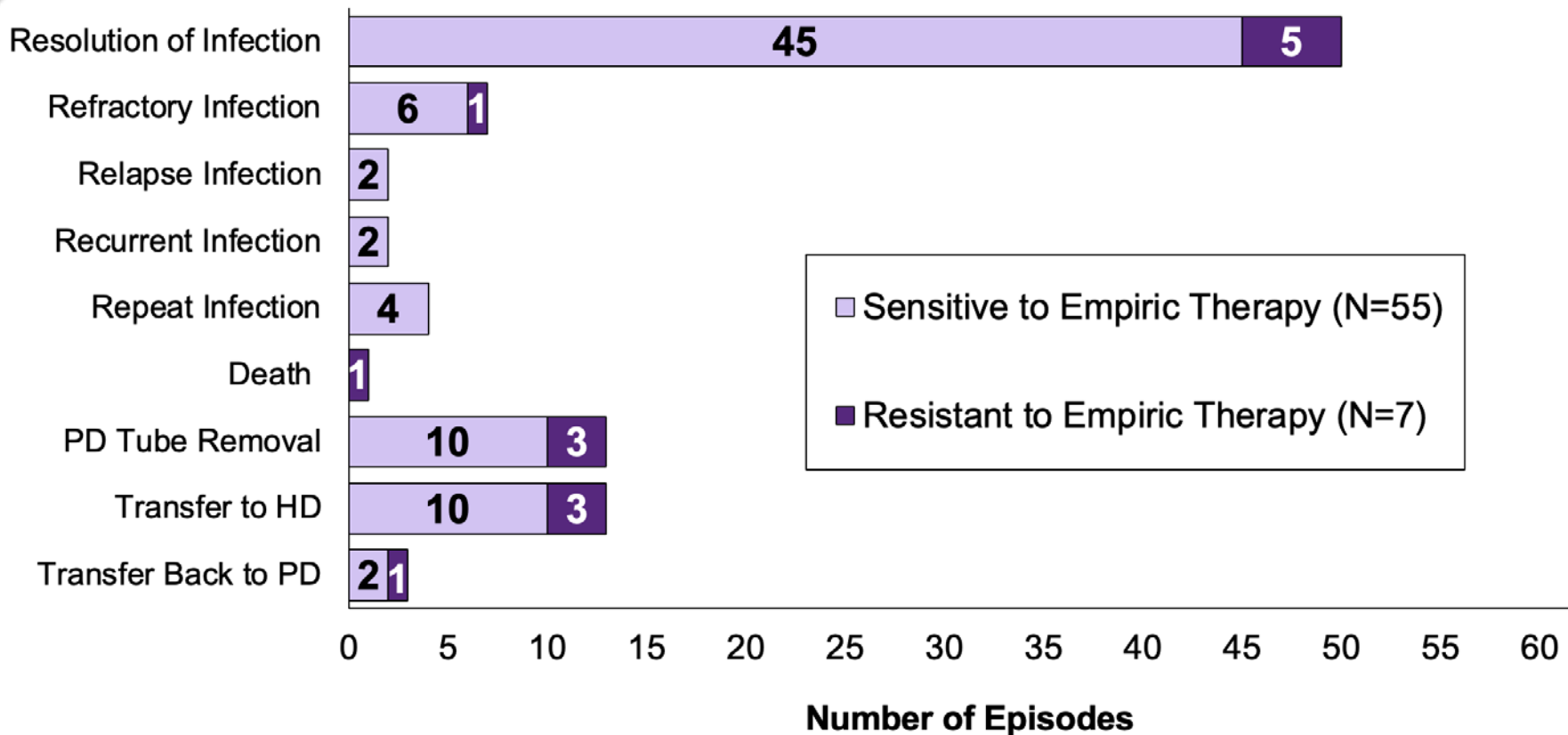
Antibiotic Sensitivity of Organisms Isolated from Dialysate

Organism	Antibiotic	% Sensitive (n_s/n_t^*)
Streptococci (N=13)	Penicillin G	76.9 (10/13)
	Vancomycin	100 (13/13)
Enterococci (N=6)	Vancomycin	83.3 (5/6)
	Gentamicin	66.7 (4/6)

Antibiotic Sensitivity of Organisms Isolated from Dialysate

Organism	Antibiotic	% Sensitive (n_s/n_t^*)
Staphylococci (N=29)	Cefazolin	92.3 (24/26)
	Vancomycin	100 (5/5)
Gram Negatives (N=22)	Ceftazidime	100 (12/12)
	Tobramycin	93.8 (15/16)

Peritonitis Episode Outcomes (N=62)



Limitations & Confounders

- Small sample size precluded ability to associate patient characteristics with clinical outcomes
- Number of peritonitis episodes may be under-reported due to missed or inappropriate PROMIS data entry
- Patients with multiple peritonitis episodes may impact resistance patterns
- Additional antibiotics (eg. piperacillin/tazobactam) were administered in 32.3% of episodes

Conclusions

- Isolated organism(s) was sensitive to empiric antibiotic therapy in 89% of episodes
- Current empiric antibiotic regimen adequate for the treatment of PD-related peritonitis at VGH
- Routine antifungal prophylaxis likely not indicated

Questions?

