Incidence and Outcomes of Nontuberculous Mycobacterium Infections in Patients Undergoing Peritoneal Dialysis

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Introduction

- Nontuberculous mycobacterium (NTM) infections in peritoneal dialysis (PD) patients often require lengthy antibiotic treatment and PD catheter removal to resolve.[1-3]
- The NTM dialysis-associated infections literature is largely comprised of case reports and treatment overviews.[2,4]

Objective

Our aim was to describe demographics, incidence, and outcomes, including discontinuation of PD modality and hospital admission, associated with NTM PD fluid and exit site infections among a population of PD patients.

Methods

- The study population included PD patients with at least one positive exit site or PD fluid culture collected between January 1, 2019 and December 31, 2023.
- Data included laboratory results, patient demographics, hospital admission dates, and dialysis treatment dates obtained from medical records at a large US dialysis provider (average 26,000 PD patients treated annually).
- Infection events were defined by positive cultures. Cultures resulting in any NTM organism were categorized as NTM events; cultures resulting in non-NTM organisms were categorized as Other.
- Study outcomes included hospital admission and discontinuation of PD within 30 days of culture collection date.
- Odds ratios and 95% confidence intervals were calculated using multivariate logistic regression models to estimate associations between NTM infection and outcomes, overall and stratified by culture source.
- All regression models were adjusted for sex, age, race/ethnicity, PD vintage, and US region. Models for all culture sources were additionally adjusted for culture source.

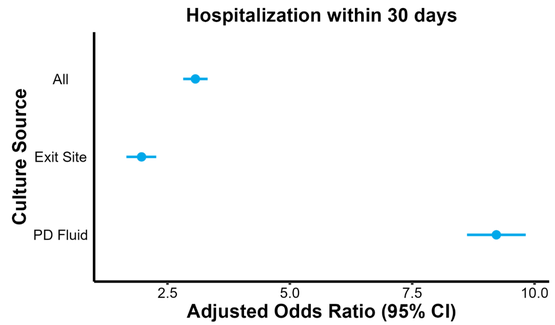
Results

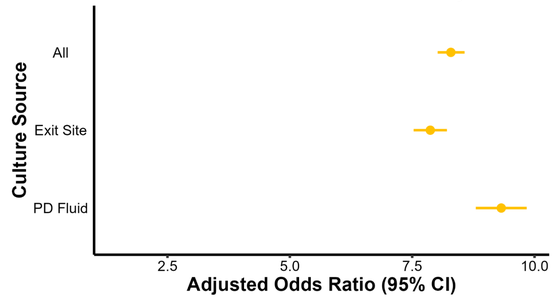
Event characteristics for positive PD and Exit Site cultures among PD patients, NTM and Other organisms, 2019-2023

	NTM Events	Other Events
Total	**305 (100%)**	**28,627 (100%)**
Culture Source, %		
PD Fluid	21%	66%
Exit Site	79%	44%
Age at infection (yrs), %		
<40	7%	14%
40-59	40%	39%
60-79	44%	41%
>=80	9%	6%
Sex		
Male	62%	59%
Race/ethnicity (%)		
Asian	<1%	1%
Black	18%	28%
Hispanic	24%	18%
White	46%	43%
Other	5%	4%
Unknown	6%	7%
PD Vintage (mths), median (IQR)	5 (2, 13)	16 (6, 32)
US Region[a] (%)		
West	11%	22%
Southwest	21%	14%
Midwest	12%	17%
Northeast	7%	11%
Southeast	49%	36%
Hospital admit within 30 days (%)	35%	21%
PD discontinuation within 30 days (%)	28%	7%

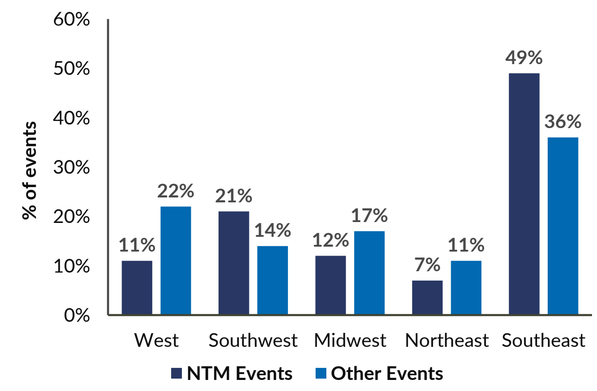
[a]States by region: **West** (CA, CO, HI, ID, MT, NV, OR, UT, WA); **Southwest** (AZ, NM, OK, TX); **Midwest** (IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, SD, WI); **Northeast** (CT, MA, ME, NH, NJ, NY, PA, RI); **Southeast** (AL, AR, DC, FL, GA, KY, LA, MD, MS, NC, SC, TN, VA, WV)

NTM infection events and outcomes comparisons by culture source





NTM vs Other organism infection events by US Region



Results & Conclusions

- NTM organisms represented 1% of positive PD fluid and exit site cultures among PD patients over a 5-year period.
- NTM showed greater tropism for exit site (versus PD fluid) than other organisms.
- The majority of NTM events occurred in the Southeast or Southwest regions of the US, and a greater proportion of NTM events occurred in these two regions (70%) compared with other organism events (50%).
- Thirty-day risks for hospital admission and discontinuation of PD were greater following NTM infection events compared with other infection events, overall and when stratified by culture source:
  - 9-fold increased odds of hospitalization for PD fluid NTM events
  - 9-fold increased odds of PD discontinuation for PD fluid NTM events
  - 2-fold increased odds of hospitalization for PD exit site NTM events
  - 8-fold increased odds of PD discontinuation for PD exit site NTM events
- PD NTM infections are strongly associated with poorer outcomes; therefore, it is important to consider the possibility of NTM organisms in unresolved PD infections and to conduct organism surveillance to identify geographic areas or patient populations that may be more susceptible.

References

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