A Peritonitis Surveillance System Developed by a Large Dialysis Organization to Improve the Accuracy and Consistency of Peritonitis Rate Reporting in the United States

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Introduction

- Peritonitis (PTN) remains a major reason for hospitalization of peritoneal dialysis (PD) patients and may result in modality failure and transfer to in-center hemodialysis.[1-4]
- The ability to accurately and consistently identify PTN events is necessary to make comparisons across and between PD programs and to allow monitoring of efforts to reduce PTN rates.
- In August 2015, a standardized approach to PTN surveillance was introduced by an LDO to improve the consistency and accuracy of PTN event identification across affiliated programs in the US.

Objective

The goal of this analysis was to examine the impact of introduction of the standardized surveillance system on the reporting of PTN events.

Methods

- Under the standardized surveillance system, patients with PTN are identified based on the following 6 hierarchical business rules:
  - 4 standard diagnostic rules for PTN (based on positive culture, positive cell count, abdominal pain)
  - hospitalization for infection
  - receipt of intraperitoneal (IP) antibiotics (> 8 days, > 2 vancomycin doses within 8 days, or > 5 doses of non-vancomycin within 8 days).
    - An exemption process exists for PTN events identified based on the IP antibiotic dosing rule alone. PTN events identified under the IP antibiotic dosing rule during each month are reviewed during the last 7 days of the month and may be reclassified.
- Episodes occurring within 28 days of identification of a prior episode with the same causal organism were considered relapse episodes and were not included in calculations of PTN rates.

Results

Table 1: Summary of Peritonitis Episodes, 2015–2017

Diagnostic Category	PTN Episodes n (%)			
	2015 [a]	2016	2017	Total
Standard diagnostic rules	**1144 (56.8)**	**2650 (58.4)**	**2486 (58.3)**	**6280 (58.1)**
Positive culture + fluids	145 (7.2)	345 (7.6)	389 (9.1)	879 (8.1)
Positive culture + abdominal pain	245 (12.2)	526 (11.6)	453 (10.6)	1224 (11.3)
Positive culture + fluids + abdominal pain	610 (30.3)	1466 (32.3)	1343 (31.5)	3419 (31.6)
Fluids + abdominal pain (sterile episode)	144 (7.2)	313 (6.9)	301 (7.1)	758 (7.0)
Hospitalization for infection	**467 (23.2)**	**1141 (25.2)**	**1185 (27.8)**	**2793 (25.8)**
Receipt of IP antibiotic	**404 (20.1)**	**743 (16.4)**	**594 (13.9)**	**1741 (16.1)**

[a] 2015 data are for August to December only

Abbreviations: IP, intraperitoneal; PTN, peritonitis

Figure 1: Peritonitis Episodes Identified Under the Surveillance System, Aug 2015 to Dec 2017

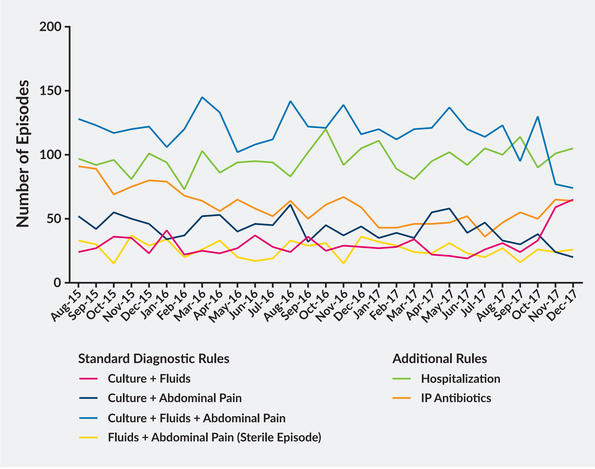
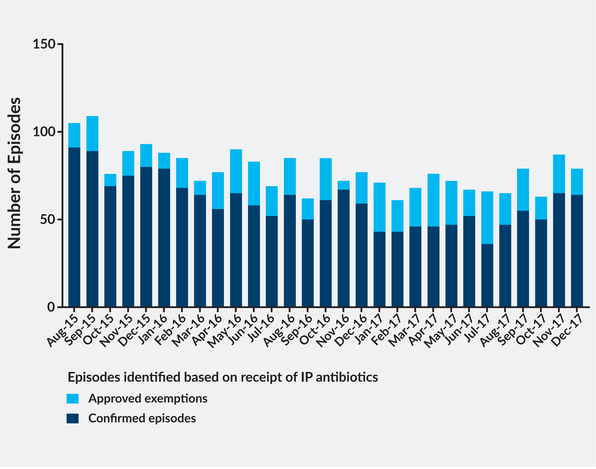


Figure 2: PTN Episodes Identified Based on Receipt of IP Antibiotic, Aug 2015 to Dec 2017



- During the period August 2015 to December 2017, a total of 10,814 cases of PTN were identified.
  - Among PD patients overall, 88% experienced no episodes of PTN, 10% developed 1 episode/year, and 2% were observed to have 2 or more PTN events/year.
  - The average time to first PTN event was 19.4 months, with 8.6% of events occurring in the first 90 days on PD.
- Over the entire study period, 6280 episodes (58.1%) were identified by standard diagnostic rules, 2793 (25.8%) were identified based on hospitalization, and 1741 (16.1%) were identified based on receipt of IP antibiotics (Table 1 and Figure 1).
  - The proportion of PTN episodes identified by standard diagnostic rules was constant over time.
  - There was a slight increase in the proportion of events identified based on hospitalization and a decrease in the proportion of events identified based on receipt of an IP antibiotic.
  - Exemption filings have remained relatively constant over time (Figure 2).

Conclusions

- The surveillance system provides a consistent approach for the identification of PTN events, combining standard criteria with infection-related hospitalizations and IP antibiotic dosing.
- Use of the PTN surveillance system will allow comparisons of rates between practices in the US and across LDOs and different countries.

References

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