

Clinical Message Tool Reference Summary

Zelenitsky S, Barns L, Findlay I, et al. Analysis of microbiological trends in peritoneal dialysis-related peritonitis from 1991 to 1998. *Am J Kidney Dis.* 2000;36:1009-1013.

Background

- The overall incidence of PD-related peritonitis has declined over the past decades.
- PD-related peritonitis varies considerably with such factors as age, race, education, and method of dialysis.

Objectives

- To describe the microbial causes of peritonitis in a PD program and analyze trends in the infecting pathogens and their antibiotic susceptibilities.

Methods

- This study was conducted at the St. Boniface General Hospital, a 550-bed, tertiary-care facility affiliated with the University of Manitoba, Winnipeg, Canada.
- Culture-positive cases of PD-related peritonitis from 1991 through 1998 were identified using a microbiology database and matched to the episodes of peritonitis documented in medical charts of PD patients.
- Cases did not include treatment failures or relapse infections; these were defined as positive cultures within two weeks or four weeks of therapy completion for gram-positive and gram-negative infections, respectively.
- Antibiotic susceptibility testing was performed using Microscan panels and the National Committee for Clinical Laboratory Standards interpretive criteria or by Kirby Bauer or E-test methods, when appropriate.
- The rate of peritonitis, causative pathogens, and antibiotic resistance profiles were determined and analyzed in order to identify any trends from 1991 to 1998.

Results

- The figure below from the publication (Fig. 1) shows that the rate the peritonitis declined significantly from 1.37 episodes/patient-year in 1991 to 0.55 episodes/patient-year in 1998 ($P = 0.02$).
 - This occurred with significant reductions in both culture-positive peritonitis (0.93 to 0.42 episodes/patient-year; $P = 0.02$) and culture-negative peritonitis (0.43 to 0.12 episodes/patient-year; $P = 0.03$) between 1991 and 1998.
- The figure below from the publication (Fig. 2) shows that the rate of gram-positive peritonitis decreased significantly from 0.75 episodes/patient-year in 1991 to 0.28 episodes/patient-year in 1998 ($P = 0.02$).

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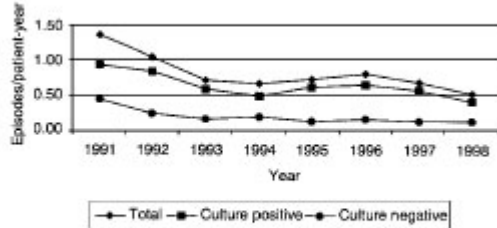


Fig 1. Rates of peritoneal dialysis-related peritonitis from 1991 through 1998.

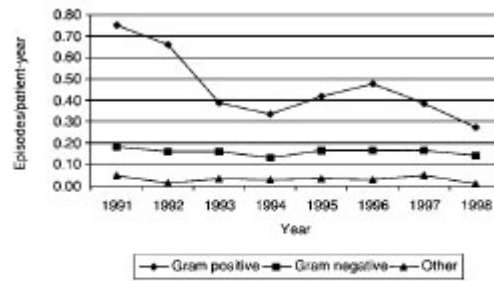


Fig 2. Rates of Gram-positive, Gram-negative, and other peritoneal dialysis-related peritonitis from 1991 through 1998.

- *Staphylococcus epidermidis* and *Staphylococcus aureus* were the most common causes of peritonitis, isolated in 27.8% and 19.3% of the culture-positive cases, respectively
- *Pseudomonas aeruginosa*, *Escherichia coli*, and *Klebsiella* species were the most common causes of gram-negative peritonitis, identified in 7.1%, 6.8%, and 5.2% of the culture-positive cases, respectively.
- The figure below from the publication shows significant increases in resistance rates observed for ciprofloxacin ($P = 0.003$) and oxacillin ($P = 0.003$; Fig 4).

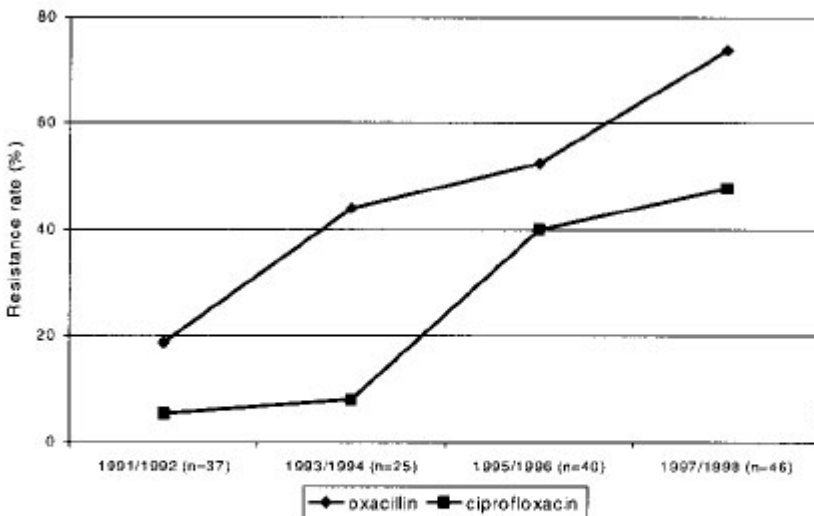


Fig 4. Significant changes in antibiotic resistance rates for *S. epidermidis*.

Authors Conclusions

- The study showed a significant decrease in the rate of peritonitis in PD patients, which occurred with reductions in both culture-positive and culture-negative episodes.

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- The study showed significant increases in antibiotic resistance, especially among *S. epidermis*.
- A dramatic decrease in infections caused by *S. epidermis* was observed after 1991 and corresponded to the introduction of twin-bag apparatus for PD.