

# Clinical Audit Reviewing the Management of Peritonitis and Peritoneal Dialysis Catheter Care at Southampton Children's Hospital: April 2021 to March 2023



Claire Kelly, Katie Hart, Su Ywel, and Matt Harmer, Southampton Children's Hospital, UK.

## Objectives:

The aim of our audit was to compare our current practice in the prevention and management of Peritoneal Dialysis-Associated Peritonitis against international [1-3] and local standards.

## Methods:

Patients were identified from patient lists. Demographic, clinical, and disease-specific data were gathered retrospectively from the clinical record of all children who had received chronic (>90 days) PD at Southampton Children's Hospital between April 2021 and March 2023.

The data collected from each 12-month cohort (April 2021-March 2022, and April 2022-March 2023), was compared to international standards.

When gathering data in relation to peritonitis the following criteria was used to define peritonitis [1,2]:

- All patients who had received a 14-day course of intra-peritoneal antibiotics;
- Clinical features consistent with peritonitis identified (abdominal pain and/or cloudy dialysis fluid).
- Dialysis effluent white cell count >100/ $\mu$ L (after a dwell time of at least 1 hour), with > 50% polymorphonuclear leucocytes.
- Positive dialysis effluent culture.

## Home Peritoneal Dialysis patients 2021 - 2023

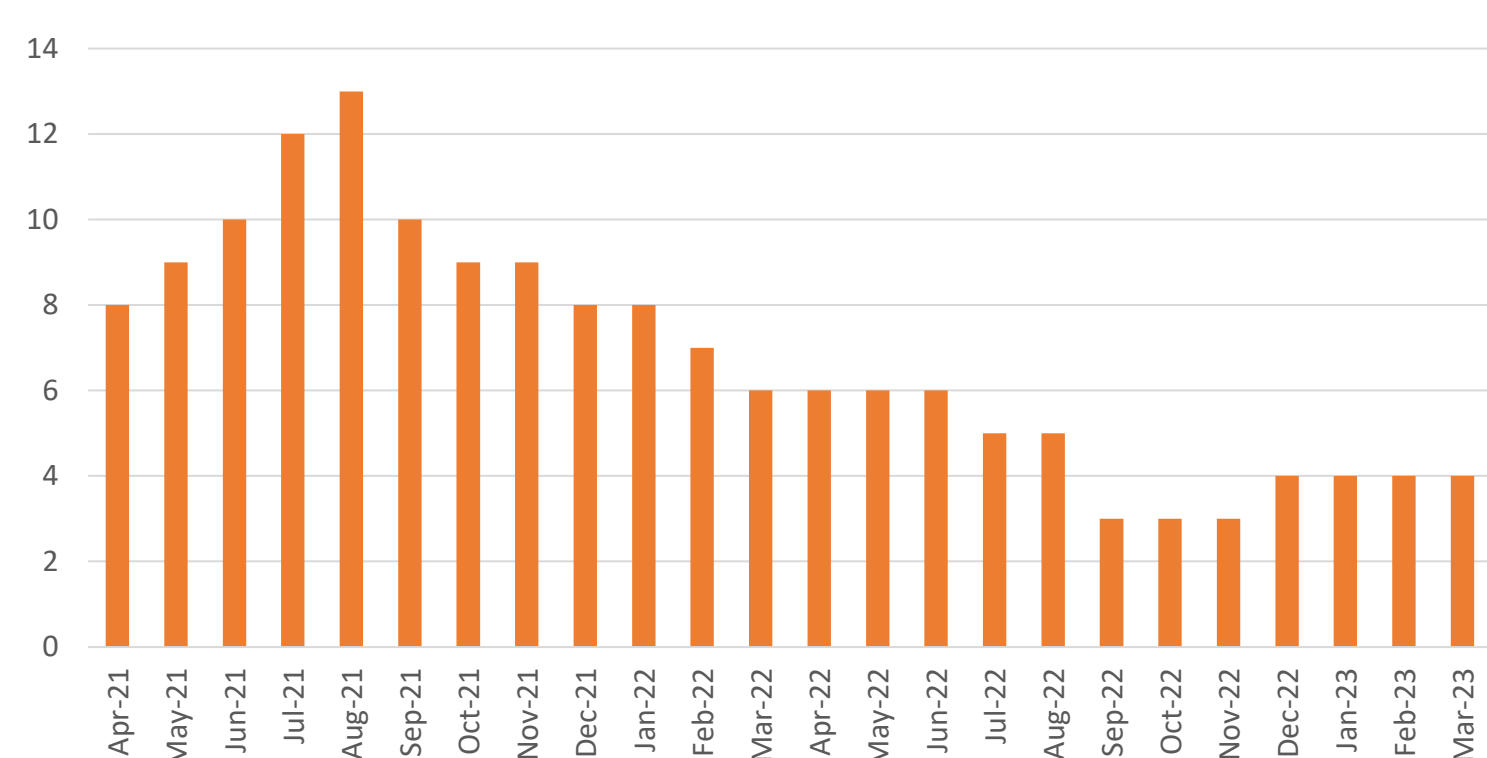


Figure 1. Numbers of peritoneal dialysis patients throughout the examined years.

## Results:

A total of 22 children met inclusion criteria for review.

- 15 males and 7 females
- Age range of 2 months to 17 years, 73% of which were under 5 years, with a mean age of 6.7 years.

Results are displayed in table 1 opposite.

- We had a 40% improvement in the proportion of patients free from peritonitis in 2022-2023 from the previous year.
- Culture negative rates increased by 18% 2022-2023.
- In 2022-2023 we saw 0% of PD catheter insertion-related peritonitis.
- 100% in our pre planned catheter insertion *S. aureus* screening.
- Improvement needed in reassessment of caregivers PD technique post an episode of peritonitis.

Table 1. Audit standards and the concordance in the examined years.

Audit Standard	Audit standard target	April 2021 to March 2022	April 2022 to March 2023
Peritonitis rates	< 0.4 episodes per patient-year.	1.07	0.93
Culture-negative peritonitis	< 15% of all peritonitis episodes.	8/14 (57%)	3/4 (75%)
Time to first peritonitis	-	101 days	39 days
Proportion of patients free from peritonitis	> 80% per year	5/14 (35%)	6/8 (75%)
PD catheter insertion-related peritonitis (<30 days of insertion)	< 5%	2/8 (25%)	0/3 (0%)
Medical cure	-	8/10 (80%)	3/4 (75%)
Recurrent peritonitis	-	0%	0%
Relapsing peritonitis	-	2/10 (20%)	1/4 (25%)
Peritonitis-associated catheter removal	-	2 (18%)	1 (25%)
Peritonitis-associated haemodialysis transfer	-	1 (18%)	1 (25%)
Peritonitis-associated death	-	0	0
Caregiver reassessment of PD technique on admission with peritonitis	100%	2/10 (20%)	0/4 (0%)
PD exit site infections	-	0 (0%)	1 (13%)
<i>S. aureus</i> carriage screen pre-planned PD catheter insertion	100%	1/4 (25%)	2/2 (100%)

## Changes to practice:

Although impacted by small patient numbers, this data demonstrates suboptimal rates of peritonitis and has identified opportunities for improvement in management of peritonitis and PD catheter care.

Our audit resulted in the following changes in practice:

- Increase in education sessions for the ward staff;
- Improvements in re-education and assessment of parents/caregivers PD technique when admitted with peritonitis;
- CNS team attending ward round and discussions when patients admitted with peritonitis;
- Planned work to commence on generating a peritonitis proforma to ensure all episodes of peritonitis/culture negative episodes treated appropriately;
- Introduction of 'The PD catheter insertion pathway', 'The Treatment of Peritonitis Guideline' and revised PD prescriptions.

We will continue to audit our PD population three-monthly, against the current local and international audit standards, with a formal 12-monthly review and presentation of all findings.

## References:

1. Li et al. ISPD peritonitis guideline recommendations: 2022 update on prevention and treatment. *Perit Dial Int.* 2022 Mar;42(2):110-153.
2. Warady et al. ISPD Consensus guidelines for the prevention and treatment of catheter-related infections and peritonitis in paediatric patients receiving peritoneal dialysis:2012 update. *Peritoneal dialysis international*, vol. 32: S32-S86.
3. Woodrow et al. Renal Association Clinical Practice Guideline on peritoneal dialysis in adults and children. *BMC Nephrol.* 2017;18(1):333.