INTRODUCTION AND AIMS: Peritoneal dialysis (PD) related peritonitis remains the leading cause of technique failure. To reduce peritonitis rates we need to identify modifiable risk factors.

Fluid overhydration (OH) is a frequent problem in PD. Severe OH is associated with gut wall oedema and ischaemia. These factors may increase bowel permeability and lead to peritonitis from “enteric” organisms.

The Body Composition Monitor (BCM) is an objective method of assessing fluid status. We hypothesized that OH measured by BCM data will be associated with increased peritonitis rates particularly from organisms that reside in the gut flora.

METHODS: We retrospectively analysed all patients on continuous ambulatory peritoneal dialysis (CAPD) and automated peritoneal dialysis (APD) within our Renal Unit who had at least 1 BCM reading between August 2008 and September 2014.

Patient’s data were extracted from a pre-existing renal database. The diagnosis of peritonitis was made according to the International Society for Peritoneal Dialysis (ISPD) guidelines.

We compared the peritonitis rates of patients with above or below the median time-averaged hydration parameter (OH). We also performed multivariate analysis to determine if overhydration was an independent risk factor for peritonitis by enteric organism. With the exception of pseudomonas, Gram negative organisms causing peritonitis were considered “enteric”. Enterococci were also considered to be enteric.

RESULTS: We studied 580 patients. Peritonitis was experienced by 28% of the study patients who were followed up for an average of 17 months and who have an average of 10 BCM readings.

The overall peritonitis rate for these patients was 1:34 patient months. The patients with low OH values (mean of 0.3L) had a peritonitis rate that was statistically lower than overhydrated patients (mean +2.9L); 1 in 39 vs 1 in 29 patient months (p< 0.03 by Chi Square Test).

For multivariate analysis, we determined peritonitis-free survival for the patients. When we included Age, Gender, Ethnicity and Diabetic status, OH was not a predictor for overall peritonitis but was an independent predictor of peritonitis from enteric organisms (HR for a 1L increment of OH was 1.03; 95%CI 1.00-1.06, p<0.03).

CONCLUSIONS: We found an association between overhydration and increased rates of peritonitis.

Whilst this may partly be due to the high co-morbidity of patients with heart failure (advanced age and diabetes), on multivariate analysis we found that overhydration remained an independent predictor of peritonitis from bacteria of enteric origins.

We suggest that overhydration is a potentially modifiable risk factor for peritonitis.