

# Changes in Practice Associated with an Increase in Recovery of Kidney Function in an Established Haemodialysis Cohort

## INTRODUCTION AND AIMS:

A recent audit showed an increase in the number of patients who, after at least 3 months on haemodialysis (HD), recovered sufficient function to stop dialysis for at least 3 months.

The increase occurred in 2010, since then one patient has recovered function for every 22 new starters, compared to one for every 100 new starters in the 30 years before (figure 1).

This study aimed to identify changes in practice associated with this increase in the recovery of renal function in our cohort.

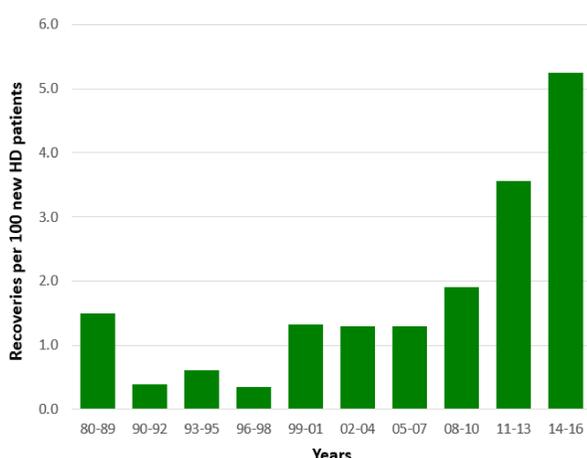


Figure 1: HD patients who recovered function per 100 new HD starters since 1980

## METHODS

A comparison was made of the timing of the start of dialysis in patients who recovered renal function in the early (1980 to 2009) and recent (2010 to 2016) cohorts to look for changes in initiation of renal replacement therapy.

Primary renal diagnosis (PRD) was reviewed to see if improved recovery was related to new treatments for specific conditions

The only change in the provision of dialysis was the introduction of bioimpedance-based measurements of fluid status to assist in fluid management in 2009. This has led to a gradual move away from 'probing for dry weight'.

Records of intradialytic fluid loss, blood pressure drop and interventions for hypotension, as well as prescription of quinine for all patients who reached 6 months on HD (the typical time to recovery) in 2003-09 and 2010-16 were reviewed for evidence of a reduction in excessive volume depletion. The chi-squared test was used to assess for significant changes.

## RESULTS

The majority of patients (68%) who recovered function in both the early and recent cohort were late presenters who had been known to renal services for less than 90 days (figure 2).

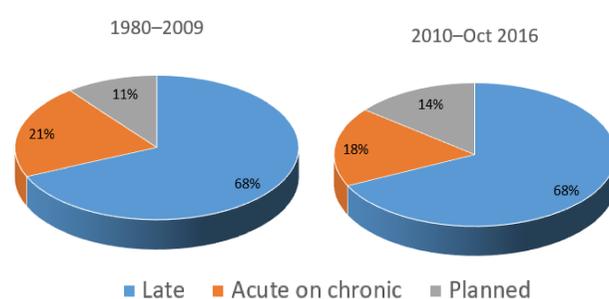


Figure 2. proportion of late starters vs acute on chronic starters vs planned starters in the two eras

The median estimated glomerular filtration rate (eGFR) at initiation of HD was 5mL/min/1.73m<sup>2</sup> in both cohorts (figure 3).

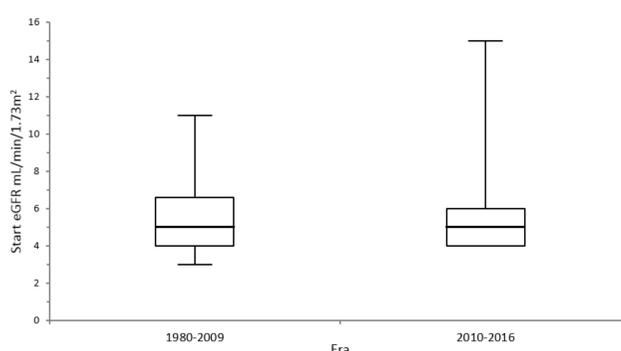


Figure 3 Median start GFR of patients from the two eras

The only notable difference in PRD was myeloma kidney. Six of the 23 patients who started dialysis with a diagnosis of myeloma in 2010-16 have recovered, compared to none of 21 in the previous 7 years.

Table 1 suggests that the increase in recovery of function was associated with less aggressive fluid removal and reduction in indicators of excessive volume depletion in new HD patients

Parameter	2003-2009	2010-2016	p
No of patients reaching 6 months on HD	621	552	
Weight loss during HD < 1.5% BW (Median for last 3 sessions before 6 months)	16%	29%	<0.0001
Systolic BP drop during HD >= 15 mmHg (Median for last 3 sessions before 6 months)	38%	30%	0.005
Frequency of sessions with interventions for IDH (From all recorded sessions in first 6 months)	17%	10%	<0.0001
Prescription of quinine at 6 months (Surrogate for severe cramping)	25%	18%	0.006
No of established HD patients who recovered enough kidney function to stop dialysis	9	29	

## CONCLUSIONS

The increase in recovery of kidney function in patients with myeloma appears to be associated with the introduction of bortezomib which is now the first line agent for most patients.

The reduction in intradialytic fluid loss we observed suggests that interdialytic fluid gains are lower because patients with residual function are not having to increase oral intake to achieve euvolaemia following excessive fluid depletion (figure 4).

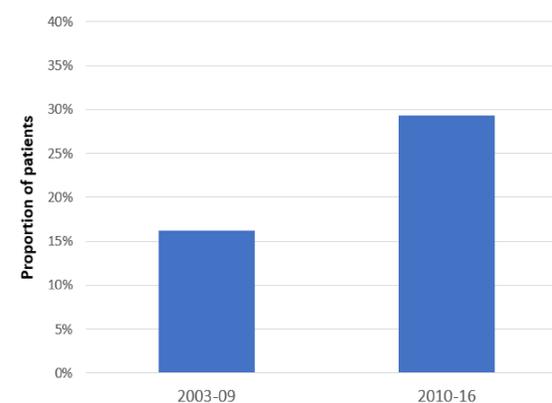


Figure 4 Patients with intradialytic weight loss <1.5% BW at 6 months on HD

The use of bioimpedance as an adjunct to assess fluid status may have led to improved haemodynamic stability indicated by the reduction in blood pressure drops and interventions in our HD population. Maintenance of euvolaemia combined with haemo-dynamic stability may have aided recovery of renal function in our cohort.