

# The killer long break: association between interdialytic weight gain, ultrafiltration rate and



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## OBJECTIVES

The long interdialytic interval is an unavoidable consequence of thrice-weekly haemodialysis schedules.

The three day break has been shown to correlate with increased rates of all-cause and cardiovascular mortality, as well as several additional morbidity outcomes<sup>1-3</sup>. This effect largely relates to inadequate volume control.

The two “high risk” periods are the 24 hours prior to the first dialysis of the week and the 24 hours including the first session.

The first period takes into account the degree of myocardial strain and elevated filling pressures from interdialytic weight gain (IDWG), whilst the second incorporates the consequences of rapid fluid removal, including intravascular volume contraction, tissue hypoperfusion and myocardial stun.

We aimed to directly compare IDWG as a proportion of body weight and ultrafiltration rate (UFR) following the long and short interdialytic interval

## METHODS

Data were prospectively collected from patients undergoing facility-based thrice-weekly haemodialysis over a 12 month study period (Jan–Dec 2014).

Incident haemodialysis patients (<3 months) and those undergoing acute haemodialysis were excluded.

UFR and IDWG as a proportion of target weight (IDWG%) were recorded each session. UFR and IDWG% values were divided into cohorts of 1ml/hr/kg and 0.5% increments respectively.

The proportion of sessions within each IDWG% and UFR cohort occurring after the long or short interdialytic interval was determined.

Mean UFR and IDWG% after the long and short interdialytic intervals were determined using the unpaired t-test. P values <0.05 were considered significant.

## RESULTS

134 patients underwent a total of 9909 dialysis sessions.

The mean patient age was 68.9 years. 56% were male. Mean treatment time was 252 minutes (range 180 - 300). 33.8% of sessions occurred after a long break.

UFR followed a normal distribution with a mean of  $7.95 \pm 2.4$  ml/hr/kg (Figure 1)

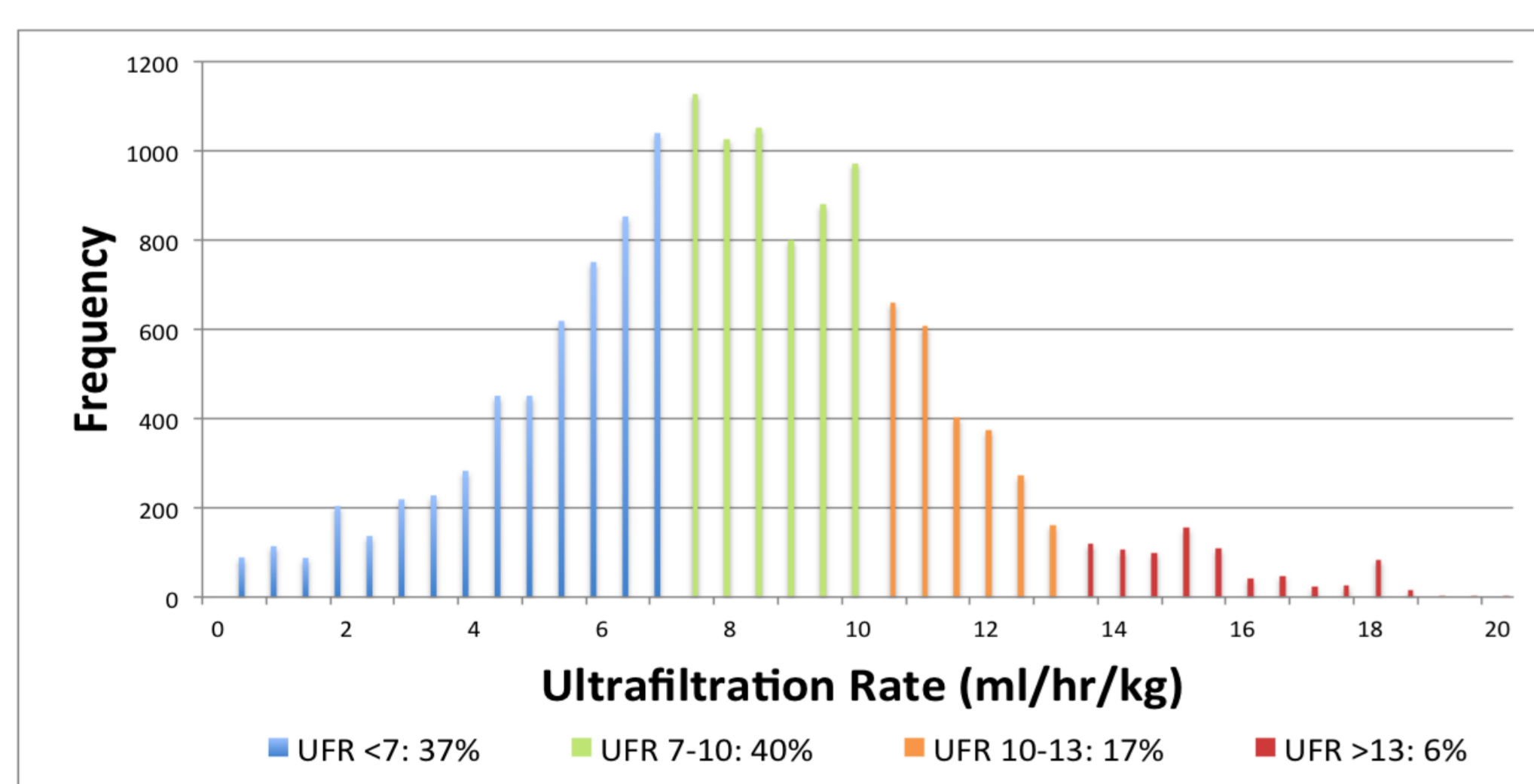
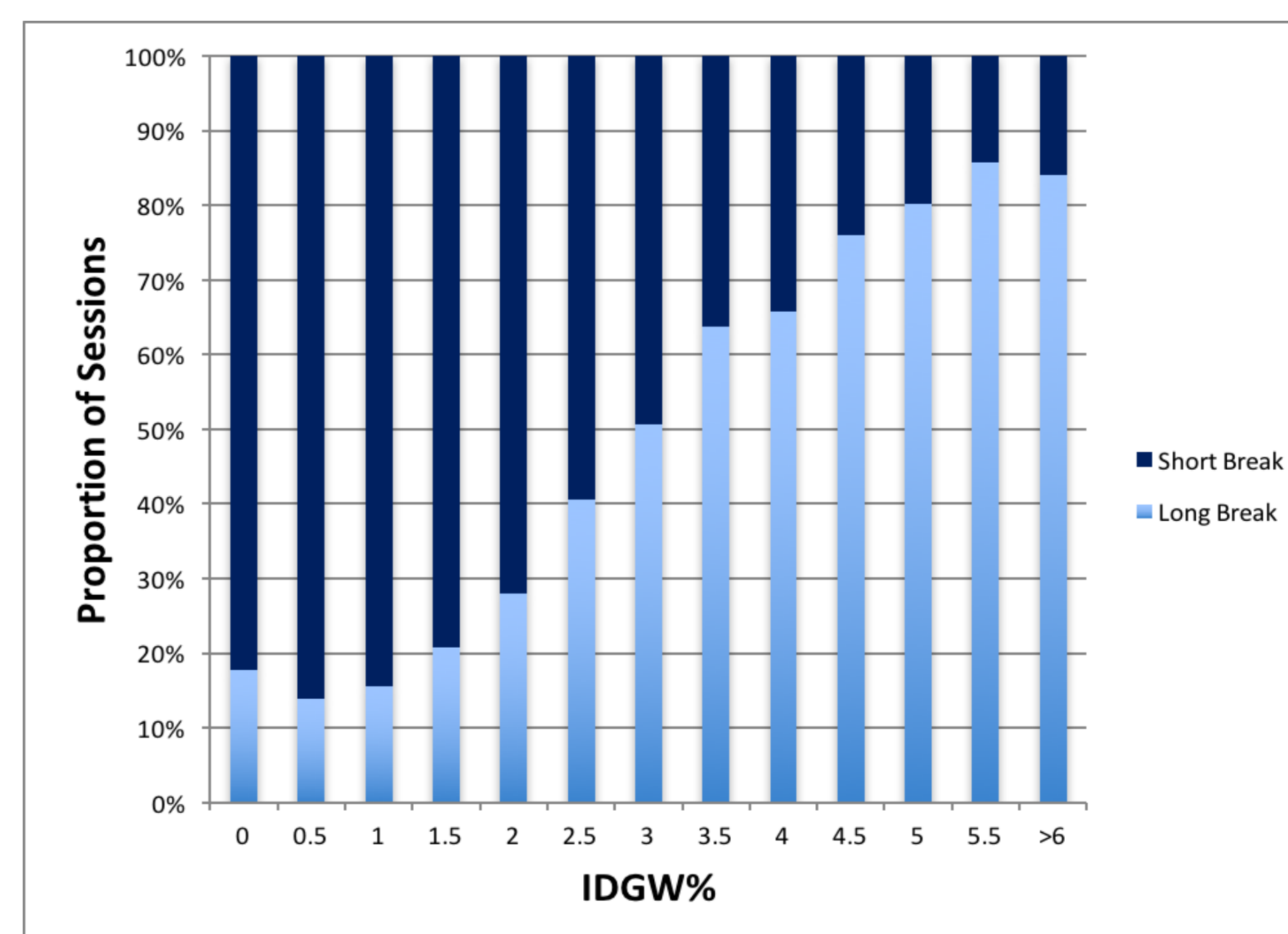


Figure 1: Distribution of UFR by session

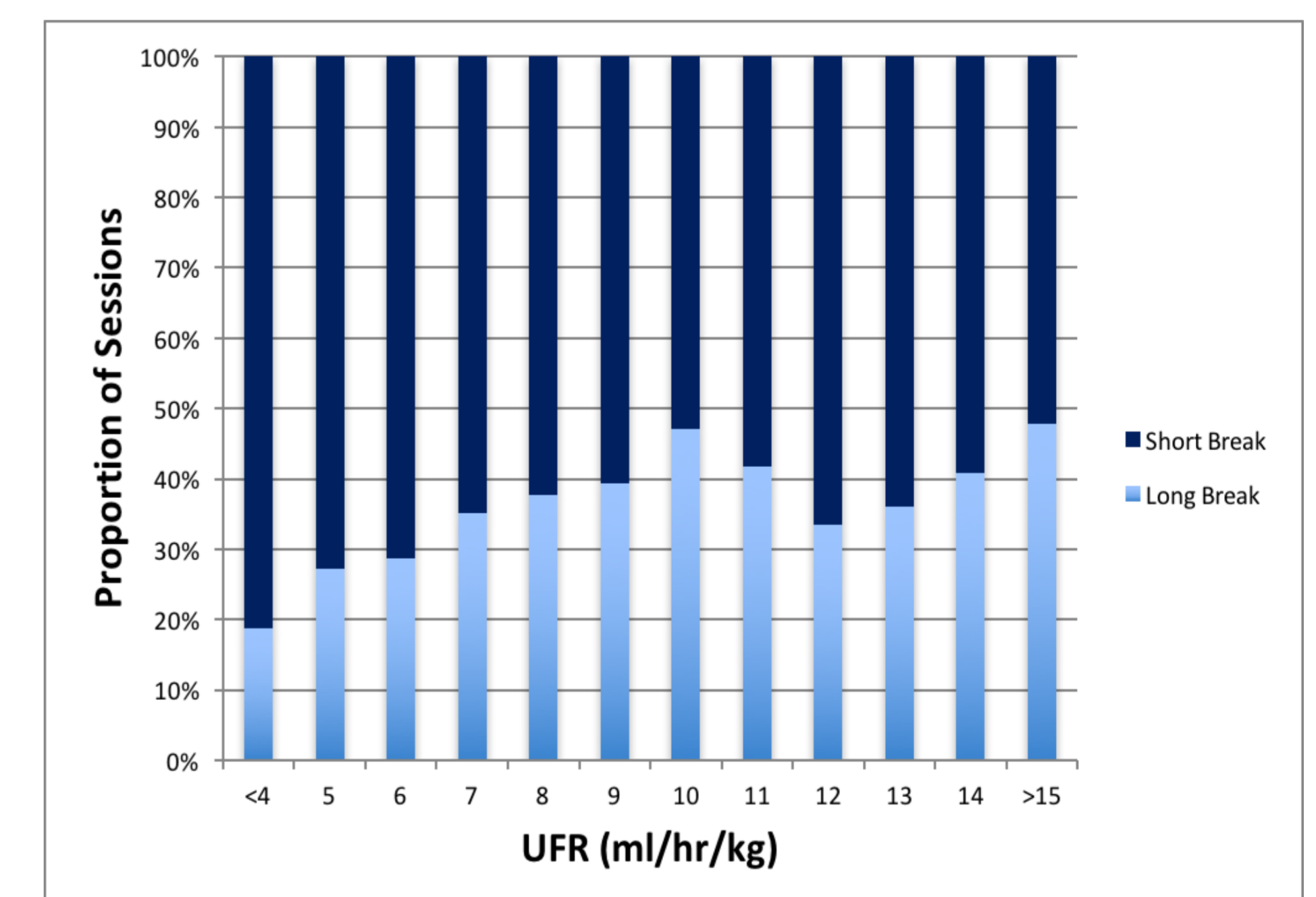
	Long break	Short Break	Overall	
Mean UFR (ml/hr/kg)	$8.51 \pm 2.79$	$7.66 \pm 2.82$	$7.95 \pm 2.84$	P = <0.01
Mean IDWG% (%)	$3.0 \pm 1.2$	$2.0 \pm 0.9$	$2.4 \pm 1.1$	P = <0.01

Figure 2: Mean UFR and IDWG%

Mean UFR and IDWG% were higher after the long break (Figure 2). High UFR (>13ml/hr/kg) and IDWG% (>4%) occurred more frequently after the long break (Figure 3-4)



Figures 3 and 4: proportion of sessions after long and short break by IDWG% and UFR



## CONCLUSIONS

A high IDWG% and UFR occurred disproportionately more frequently following the long interdialytic interval. Though unsurprising, this reflects inadequate fluid restriction over this period, which in turn necessitates excessive ultrafiltration volume and a high rate of fluid removal to achieve target weight.

The constant oscillation between extremes of volume predisposes to cardiac strain, left ventricular remodelling and myocardial ischaemia. This places patients at significant risk of cardiovascular morbidity and mortality.

Given the challenging prospect of obliterating the long break, patients must be specifically and repeatedly counselled regarding fluid intake over this period. Prolongation of the first weekly dialysis session to limit the ultrafiltration rate should be seriously considered

## REFERENCES:

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