INTRODUCTION AND AIMS: Patients with End Stage Renal Disease on maintenance haemodialysis are at increased risk of cardiovascular mortality and morbidity. Controlling hypertension is thought to reduce this risk. Hypervolaemia is a significant contributing factor to hypertension in dialysis patients and consequently ultrafiltration is recommended as the first line of treatment for hypertension. Intra dialytic hypotension (IDH), defined as ‘an acute symptomatic fall in blood pressure during dialysis requiring immediate intervention to prevent syncope’, is also thought to increase mortality and morbidity in dialysis patients. Despite this, IDH is the most frequent symptomatic complication of haemodialysis occurring in 7-15% of all dialysis sessions and remains poorly understood. We performed a retrospective observational study of our prevalent dialysis population to identify the characteristics of patients most prone to intra dialytic hypotension.

METHODS: We identified all patients who had received outpatient haemodialysis in their usual centre for 7 weeks without any admissions to hospital from January 1st 2014. Clinical data from all haemodialysis sessions are routinely recorded onto a database from which we extracted pre and post dialysis blood pressure and weight for each patient. Delta systolic blood pressure was calculated by subtracting post dialysis systolic blood pressure from pre dialysis systolic blood pressure, and is presented as a percentage change. Episodes of IDH, comorbidities and antihypertensive medication were noted.

RESULTS: 433 patients underwent 21 consecutive outpatient dialysis sessions during the study period. In the 9033 dialysis sessions studied, 438 were complicated by episodes of IDH (4.8%). 266/433 patients experienced no episodes, 70/433 experienced 1 episode, and 97/433 experienced 2 or more episodes of IDH. Patients who experienced multiple episodes had significantly lower pre dialysis systolic blood pressures than those without hypotensive episodes (136mmHg vs. 146mmHg p<0.0001). These patients also demonstrated a greater drop between their pre and post dialysis systolic blood pressure (10.88% vs. 4.09% p<0.0001) despite similar ultrafiltration rates. The use of anti-hypertensive agents was varied with 41% of patients being on no agents, 33.5% a single agent, and 26.3% of patients being on two or more agents. Patients taking more than one anti-hypertensive agent experienced less of a drop in systolic blood pressure than those on either a single or no anti-hypertensive agents at all (2.25% vs. 6.59% vs. 8.22% p<0.0001) and were less prone to IDH.

CONCLUSIONS: Patients who experience a large drop (>10%) between their pre and post dialysis systolic blood pressure are more likely to experience IDH during dialysis. Use of anti hypertensive agents in conjunction with ultrafiltration to control hypertension was associated with less extreme drops in systolic blood pressure despite similar ultrafiltration rates. Incorporating delta systolic measurements into the routine clinical assessment of dialysis patients can identify those at risk of IDH. By modifying target weight and antihypertensive use it may be possible to reduce the magnitude of the systolic drop, thereby reducing episodes of IDH, and improving both morbidity and mortality.