# Impact of Nocturnal haemodialysis on Erythropoietin responsiveness

# Background:

Home nocturnal haemodialysis (HNHD) offers some potential benefits over conventional unit dialysis. These include better phosphate, potassium and fluid control which allows for relaxation on some dietary restrictions. Improvement in haemoglobin levels have previously been described. Morriston renal unit in Swansea has been offering a HNHD program since 2011. Since then we have gained over 80 patient years of experience. The target hours for our nocturnal patients is 40 hours of dialysis per week, most of these patients regularly achieve this. We have noticed that some of our HNHD patients no longer require erythropoietin stimulating agent (ESA).

# Objectives:

To assess the changes in biochemical and haematological parameters as well as ESA use after initiating nocturnal dialysis.

Methodology:

We collected haematological and biochemical results on all our HNHD patients a year before and after change to nocturnal haemodialysis. We used the earliest blood test of the month for the parameters studied (they were not necessarily on the same day). ESA use was defined as the the total weekly dosage prescribed at the time of the first monthly blood tests. Intravenous iron dosage was the sum total of iron given that month. We excluded the results from a month if there was evidence of significant inflammation or infection shown by a C-Reactive protein over 50mg/L. All patients started on HNHD were on haemodialysis for 3 months prior to starting nocturnal dialysis. Nocturnal blood tests are performed at least 12 hours post dialysis or following a night off dialysis. In the before group, the blood tests are either pre-dialysis samples or clinic samples. The start date of HNHD was the day the patients were discharged to dialyse at home.

# Results:

42 patients spent 3 or more months on HNHD. 4 patients were excluded from the analysis due to blood loss or major infections not directly related to dialysis treatment. 18 and 24 rows of data were removed due to high CRP in the pre and post group respectively. The average age of the cohort was 53.7 at initiation of nocturnal dialysis and 63% of the patients were male. There were 379 sets of results and drug dose before initiation of HNHD and 378 after. We observed a 35% reduction in average ESA dose after starting HNHD (7493 international units (iu) before compared to 4845iu after). The average haemoglobin was 110g/L before and 112.7g/L after starting nocturnal treatment. Haemaglobin was maintained above 100g/L in 81.3% of the tests before and 83.3% of the tests after changing to nocturnal, this was not found to be statistically significant (p value 0.46). We saw a decline in phosphate and urea from an average of 1.7mmol/L and 19.8mmol/L before to 1.2mmol/L and 9.3mmol/L post initiation of nocturnal dialysis. The effect of HNHD on iron indices and intravenous iron requirements are not currently available and will be presented in the poster.

# Conclusions:

We observed a significant reduction in the total weekly dosage of ESA with no change in haemoglobin levels following the initiation of HNHD. Reductions in phosphate and urea levels were also observed, in keeping with previous observations in studies of nocturnal patients.