The Renal Association
UK Renal Registry

Biochemical Variables in UK Adult Dialysis Patients in 2016

Plain English Summary

Healthy kidneys carry out a number of important functions in the body, including helping to regulate blood levels of:

- phosphate, calcium and parathyroid hormone ("bone mineral disease – BMD parameters")
- blood acidity and potassium.

When the kidneys no longer work properly, these levels and the way they affect each other can become abnormal. Left unchecked, this can result in serious bone problems and damage to other body systems including the heart and blood vessels. There are different types of renal bone disease, but no single blood test can determine the correct treatment for an individual patient. The medical team work with patients to try to manage the levels of BMD parameters, acidity and potassium through dietary advice and prescribing various medications. In end stage renal disease, dialysis or a kidney transplant, as well as diet and medication measures are required.

Guidelines recommend that high phosphate levels should be avoided (target below 1.7 mmol/L). For the other biochemical parameters, target ranges in the guidelines are simply based on values in patients with healthy kidneys.

Figure 1 shows that approximately 60% of both haemodialysis (HD) and peritoneal dialysis (PD) patients have met the phosphate target over the decade to 2016.

Figure 2 shows the percentage of HD patients (white dot) in each centre who achieved simultaneous control of all three BMD parameters (phosphate, calcium, parathyroid hormone) in 2016. The percentages are plotted against the number of people receiving HD at each centre. The thick black dashed line shows the average achievement (27.3%) and the red curved lines (funnels) give a measure of the limits within which you would expect most centres to fall. While some centres will fall outside these curves by random chance, the plot allows you to see the variability between centres and whether any have markedly lower or higher percentages achieving BMD parameter control than others. There are many possible reasons for the observed variability, for example, there may be problems with data transfer or differences in assays used, differences in patients' characteristics or differences in use of drugs.

Figure 1. Changes in the control of phosphate over time in HD and PD patients

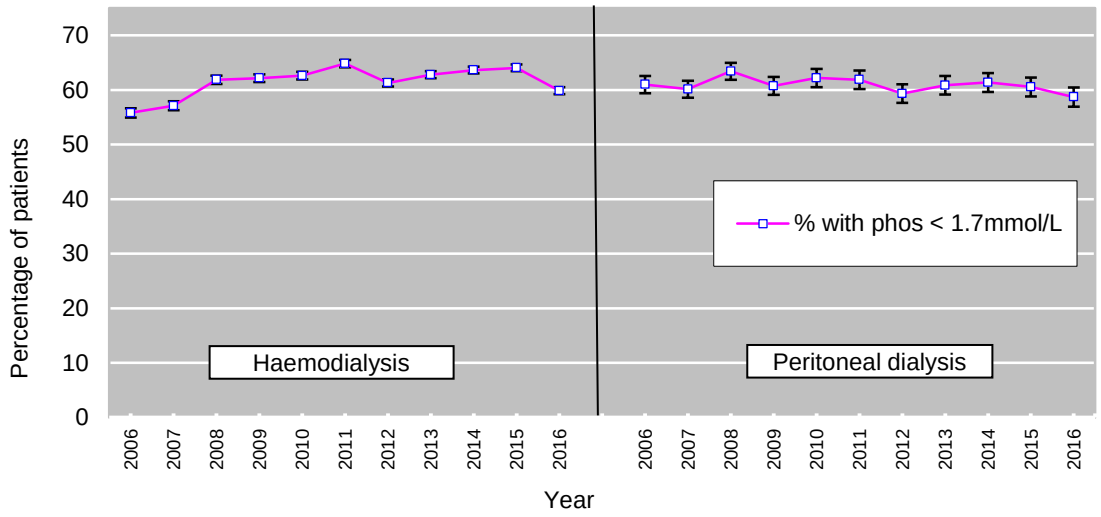
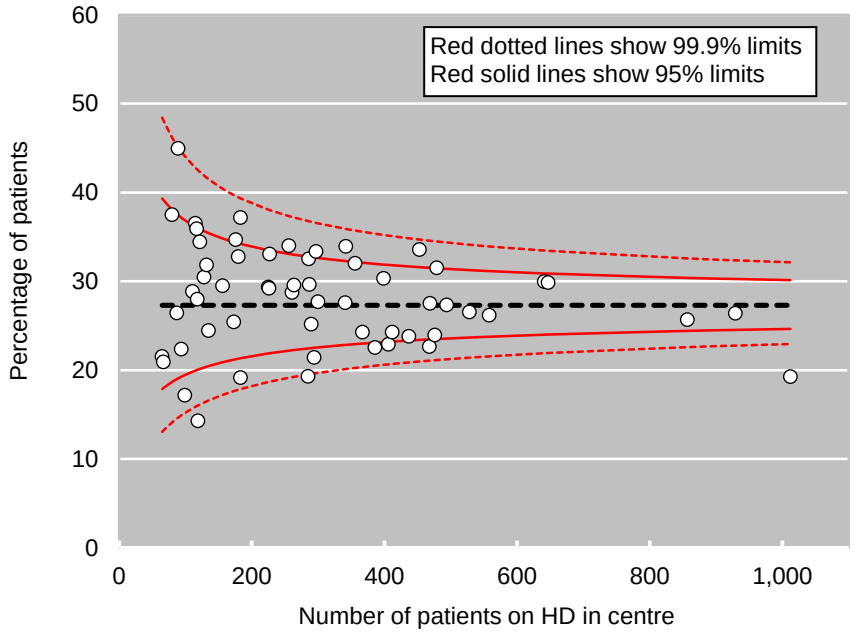


Figure 2. Funnel plot for percentage of patients on HD achieving simultaneous control of all three BMD parameters by centre in 2016



In 2016, simultaneous control of all three BMD parameters was achieved by 27.3% of HD patients and 33.2% of PD patients (not shown), which was similar to 2015. The low percentages reflect the challenges of managing renal bone disease in patients on dialysis.

For the first time, pre-dialysis potassium levels in HD patients was reported against a recommended target of 4.0–6.0 mmol/L. Potassium levels outside this range have been shown to be linked to lower survival. Data were received for only around half of patients on HD, but more than 80% of these patients were within the target range.

For the full annual report chapters visit https://www.renalreg.org/reports/2017-twentieth-annual-report/