

Chapter 8: Performance Against Renal Association Standards

Introduction

The Standards Committee of the Renal Association have identified a number of laboratory and clinical variables which may relate to quality of care or outcomes and have recommended minimum standards or target ranges which should be achieved in established dialysis patients. These are shown in table 8.1.

<i>Standard</i>	<i>Haemodialysis</i>	<i>Peritoneal dialysis</i>
Haemoglobin	≥10g/dl in >85% of patients	≥10g/dl in >85% of patients
Calcium	Local normal range	Local normal range
Phosphate	1.2-1.7 mmol/l	1.1-1.6 mmol/l
Albumin	Local normal range	70% of patients in the local normal range
Bicarbonate	Local normal range	Lower local normal to upper local normal +3mmol/l
Parathyroid Hormone	2–3x local normal range	2–3x local normal range
Systolic BP	≤160 mmHg aged over 60 ≤140 mmHg aged under 60	≤160 mmHg aged over 60 ≤140 mmHg aged under 60
Diastolic BP	≤90 mmHg	≤90 mmHg
Adequacy	URR ≥65% or KT/V ≥1.2	CC>50l/week or KT/V.1.7 for CAPD (65l/week and 2.0 for APD)

Table 8.1 Renal Association Standards

This year due to previously mentioned problems with albumin measurement and correction of calcium, these graphs have not been included here although will be released in the ‘web’ publication. Also the parathyroid hormone level achievements have been standardised at < 23 pmol/l rather than the local laboratory range as these locally provided ranges have shown not to be population, method or equipment based.

Data are included for the last quarter of 2000. Patients were excluded if they had not been on renal replacement therapy for at least three months or if they had transferred unit or changed dialysis modality in the three month period prior to data sampling. This ensures that the results for a unit reflect stable treatment patterns and are not adversely affected by new patients which the unit has not had chance to treat effectively.

The problems of comparing biochemical variables such as albumin, calcium and bicarbonate identified in the previous reports still apply; and comparative data must be interpreted with caution. Achievement of Standards defined around the local laboratory reference range is dependent on the source of derivation for the reference range. Biochemical data have been harmonised as described previously. The harmonisation constants for an individual laboratory change year on year and are monitored. The urea reduction ratios may be influenced by post-dialysis sampling techniques; this is discussed again this year in detail in the appendix.

Results have been ranked in order of performance purely for clarity of presentation, otherwise the figures would be difficult to read. The ranking does not necessarily imply significant differences in the performance of different units and the significance of the ranking order has not been tested. The figures which show a percentage of patients reaching a ‘target’ also include the 95% confidence interval for that percentage. This provides an estimate in the potential variation around this figure in repeated measurement and provides an indication of the overlap between centres. Some of the results are also shown as bar charts divided into bands. The numbers immediately under each centre on the figures are the percentage of missing data from that centre for patients on that treatment modality. These methods are the best way the Registry has found to convey the underlying data for the larger number of centres.

Overview of presentation

In the following section the figures use a common modified box-plot format with data presented separately for haemodialysis and peritoneal dialysis. The figures showing the percentage of patients reaching the Renal Association Standard include the 95% confidence interval calculated for this figure. Where medians are displayed, the 25th and 75th centiles for the unit are included. Figures showing the percentage within a range (as defined by the Renal Association Standard or a Renal Registry defined range) also include the 95% confidence interval calculated for this figure. Data completeness is indicated by the percentage missing figure below the unit code letter.

Haemoglobin

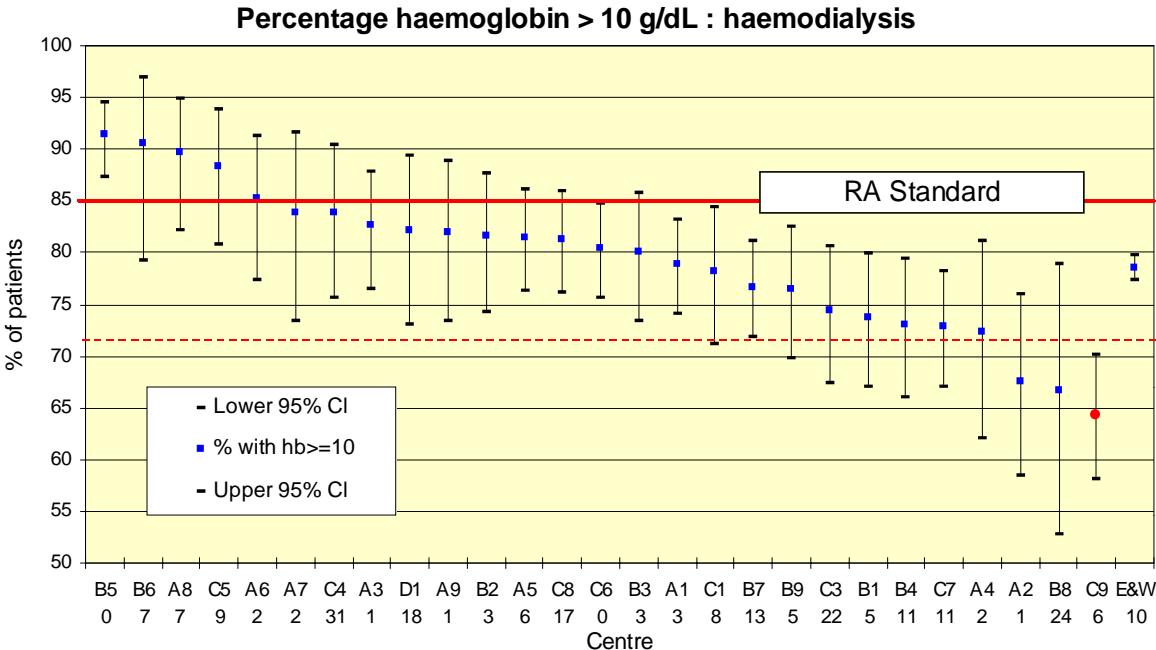


Figure 8.1 Haemoglobin Percentage of HD patients achieving the RA Standard

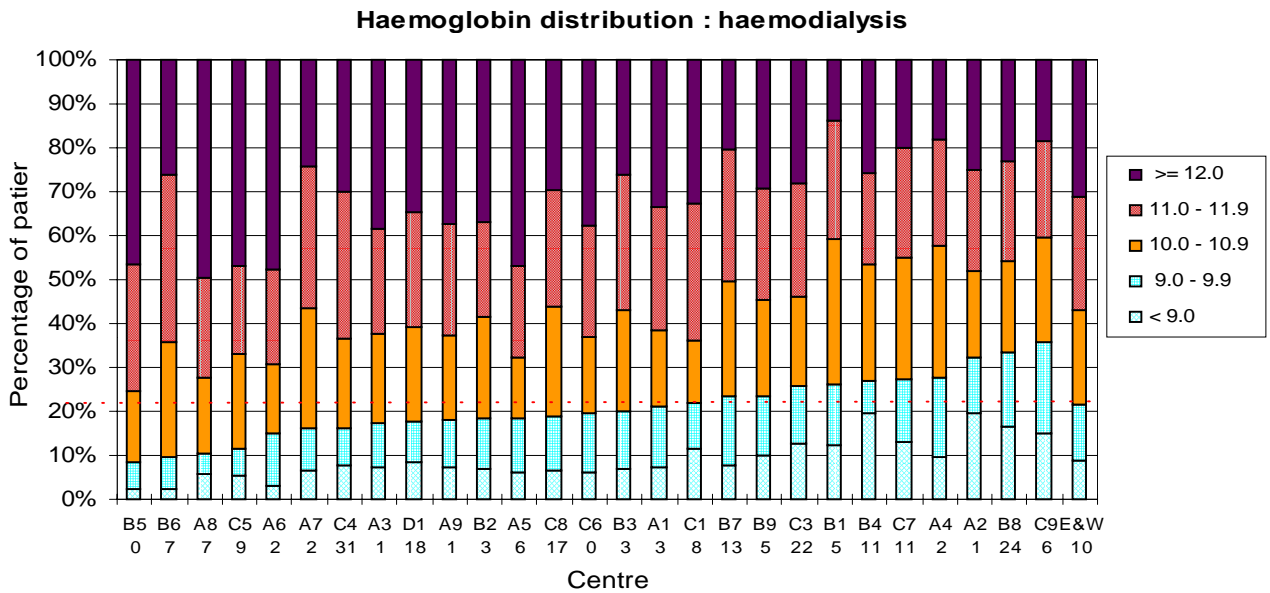


Figure 8.2 Haemoglobin for patients on HD by 1g/dl bands

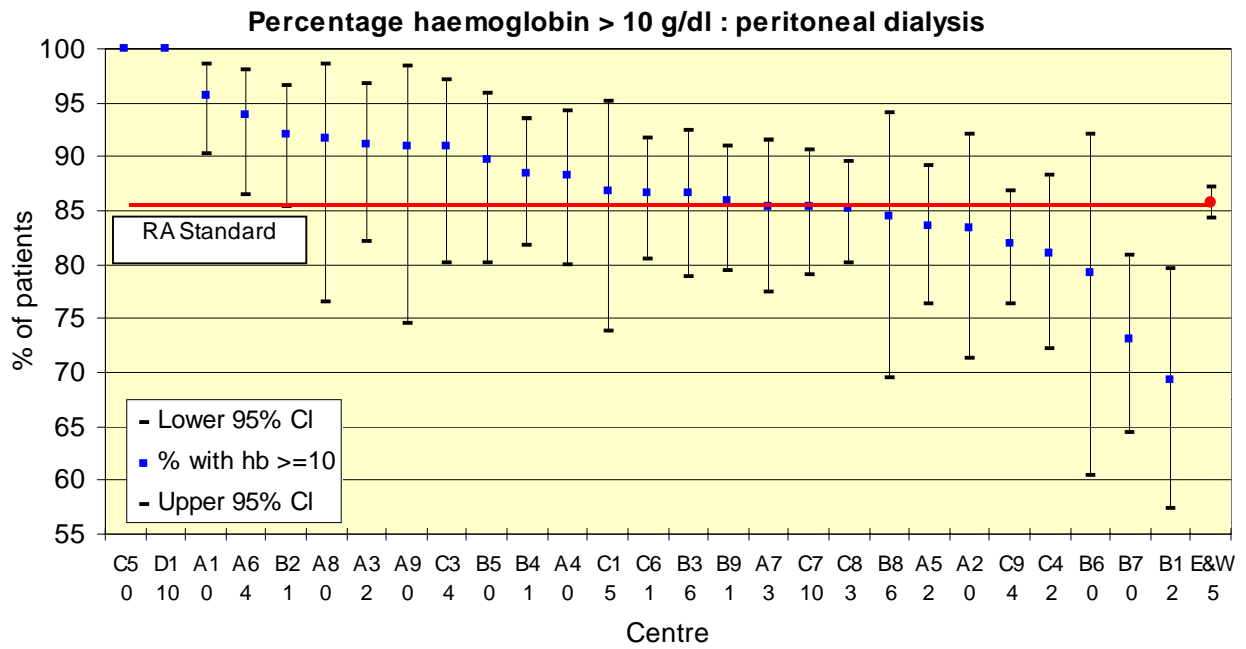


Figure 8.3 Percentage of PD patients by centre achieving the RA Standard

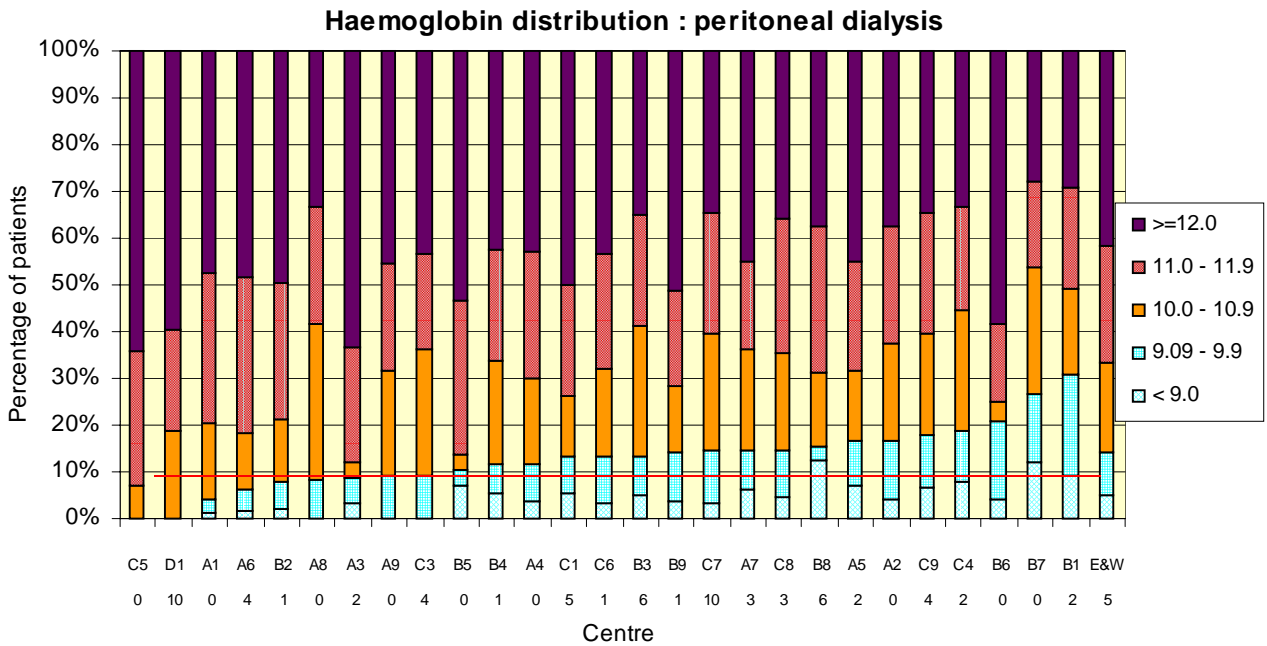


Figure 8.4 Distribution of haemoglobin for patients on PD by 1g/dl bands

Serum Bicarbonate

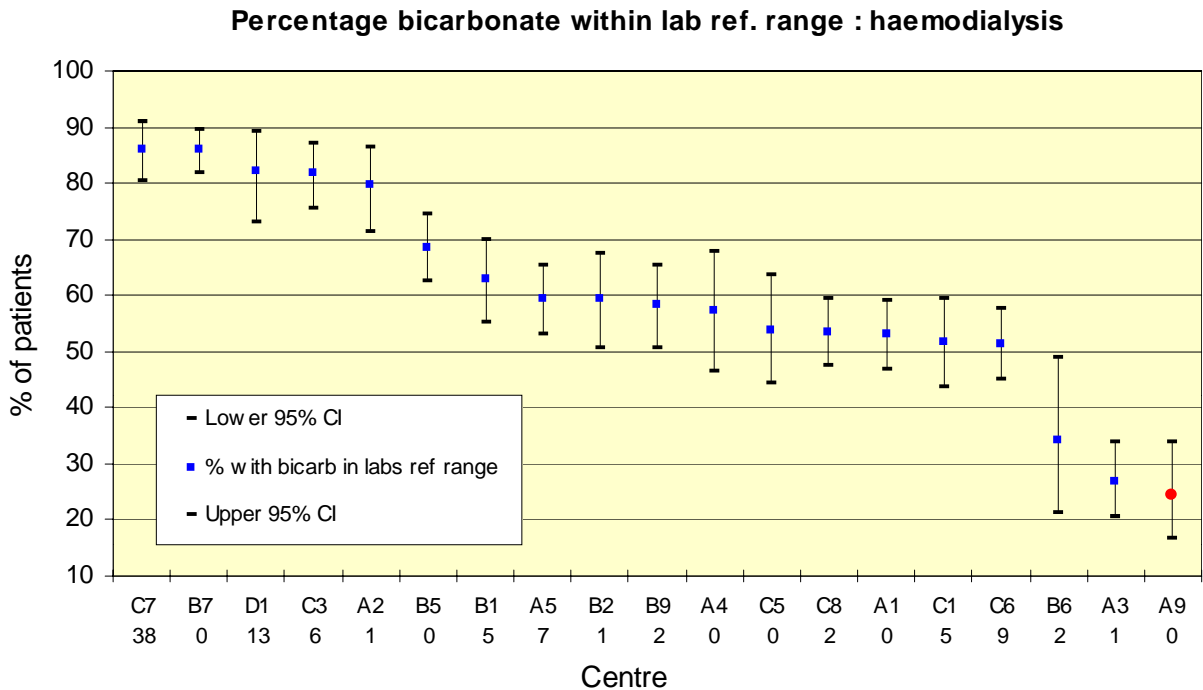


Figure 8.5 Percentage bicarbonate in lab reference range for haemodialysis

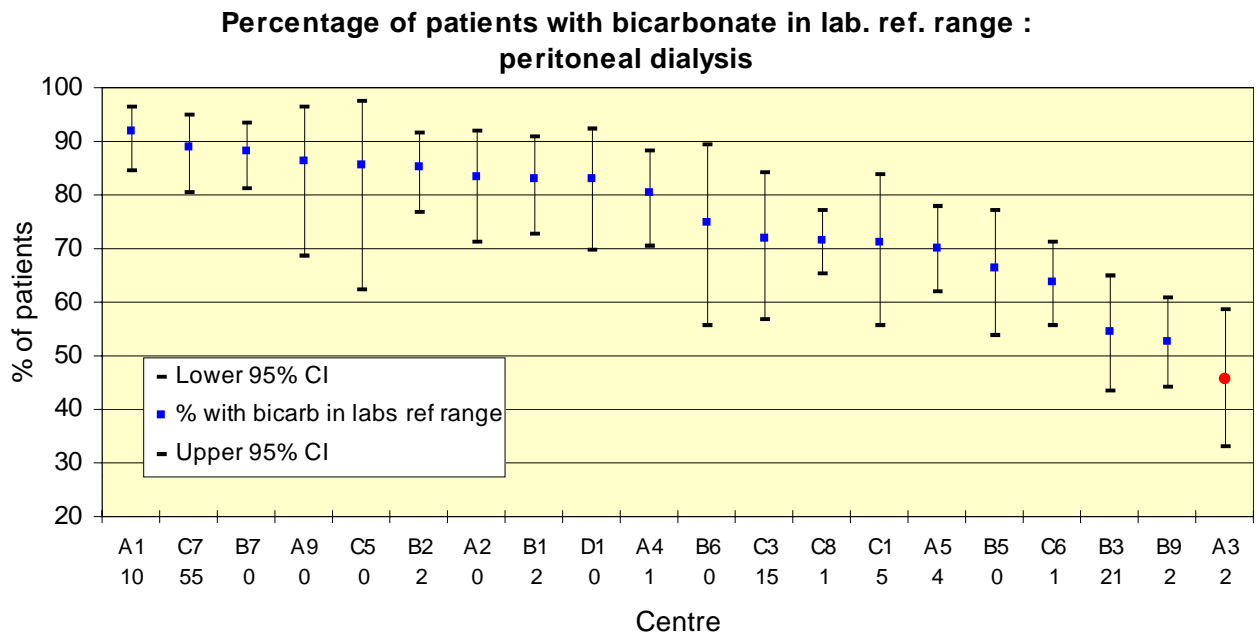


Figure 8.6 Percentage bicarbonate in lab reference range for peritoneal dialysis

Serum Phosphate

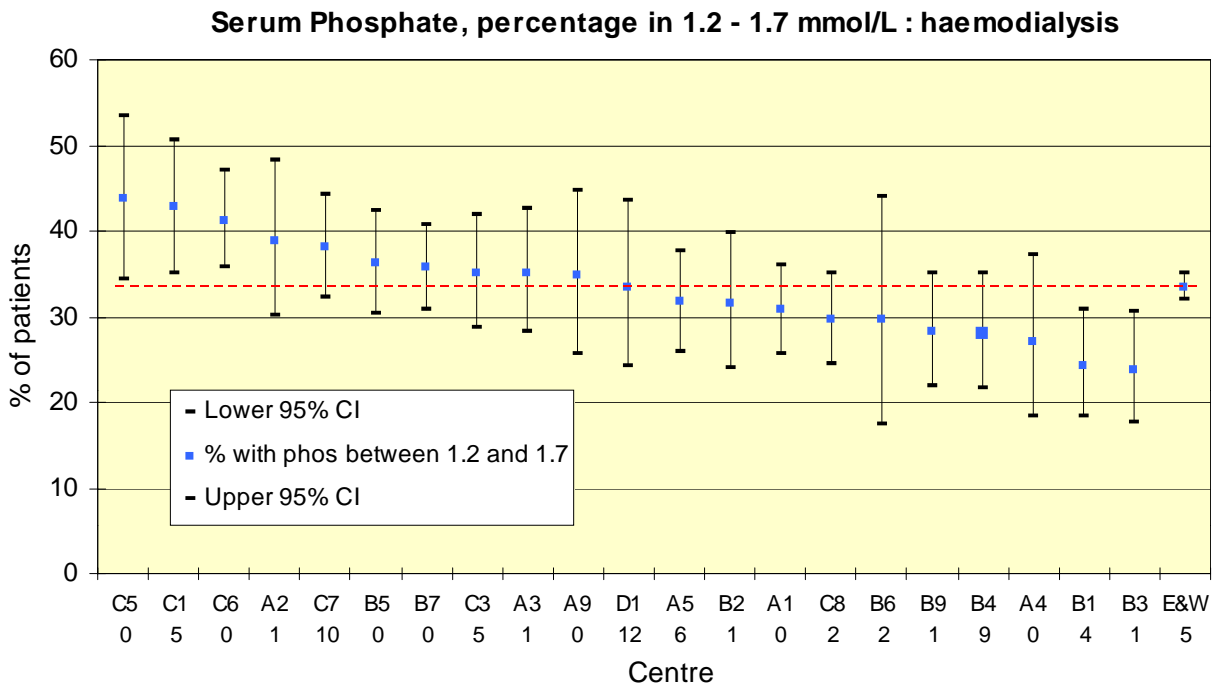


Figure 8.7 Percentage serum phosphate in range 1.2-1.7 for haemodialysis

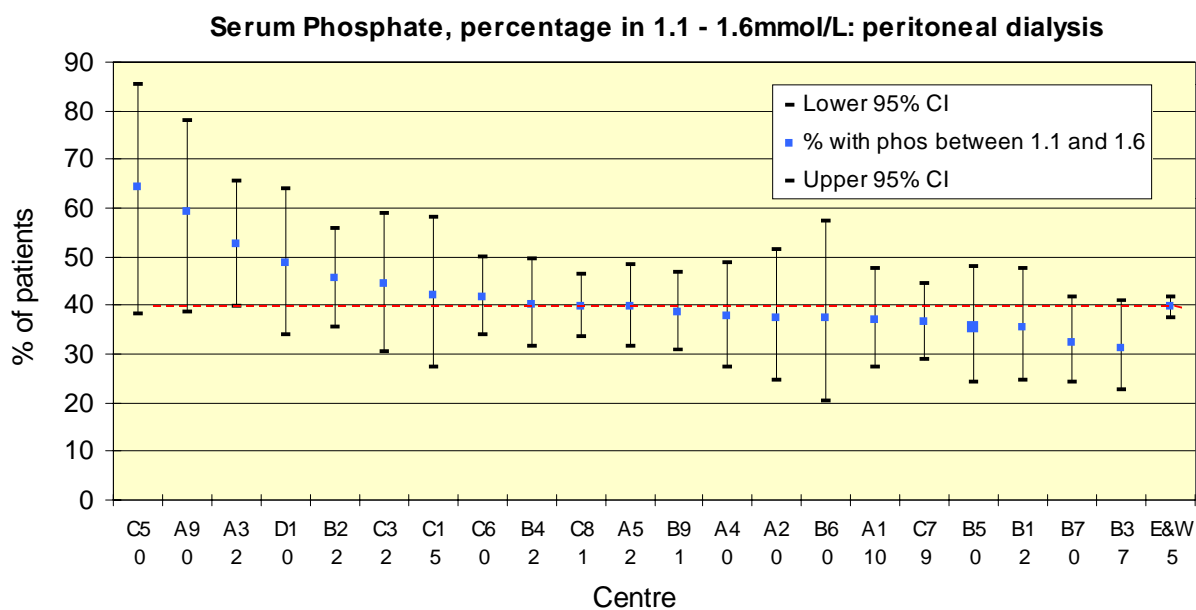


Figure 8.8 Percentage serum phosphate in range 1.1-1.6 for peritoneal dialysis

Intact parathyroid hormone

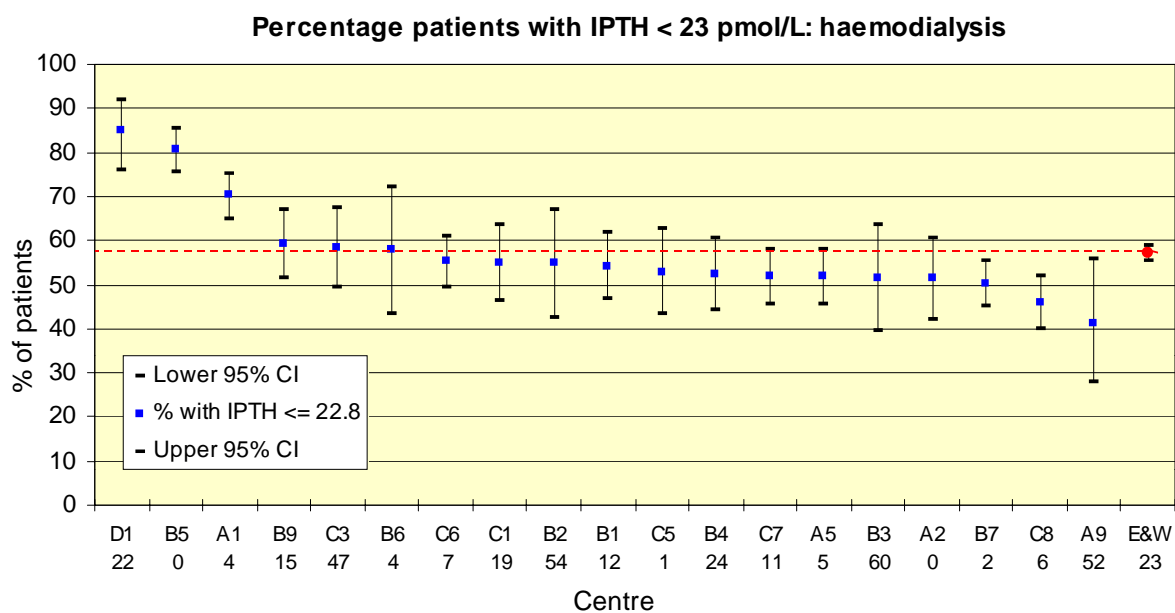


Figure 8.9 Percentage patients with iPTH in 3x lab range on haemodialysis

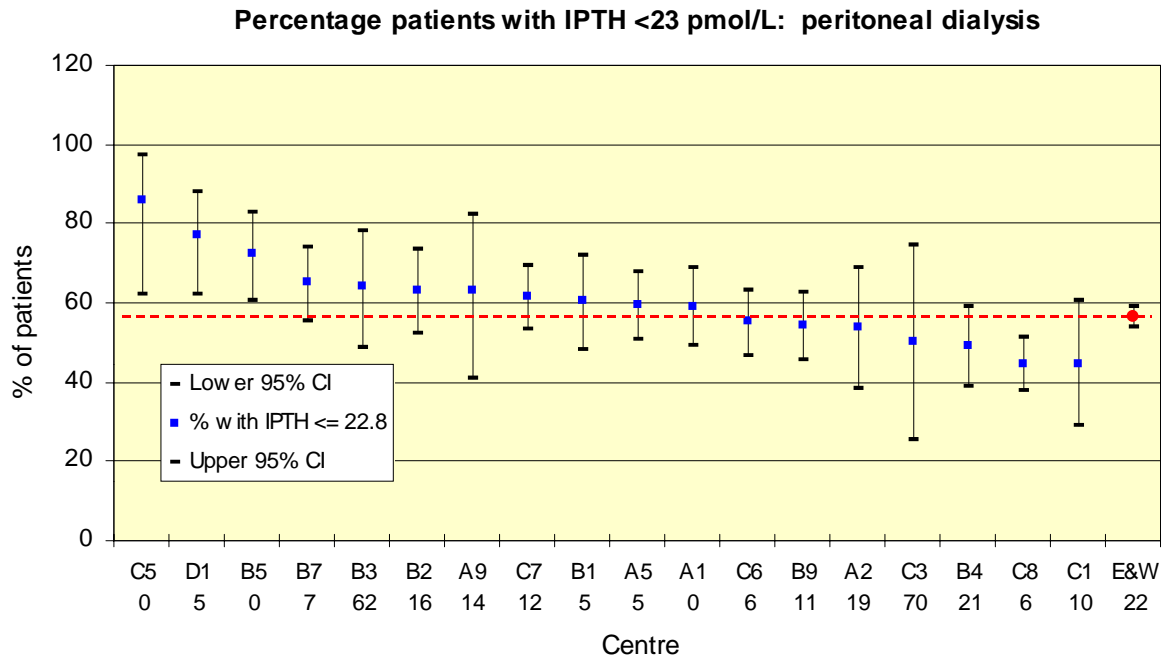


Figure 8.10 Percentage patients with iPTH in 3x lab range on peritoneal dialysis

Dialysis Adequacy

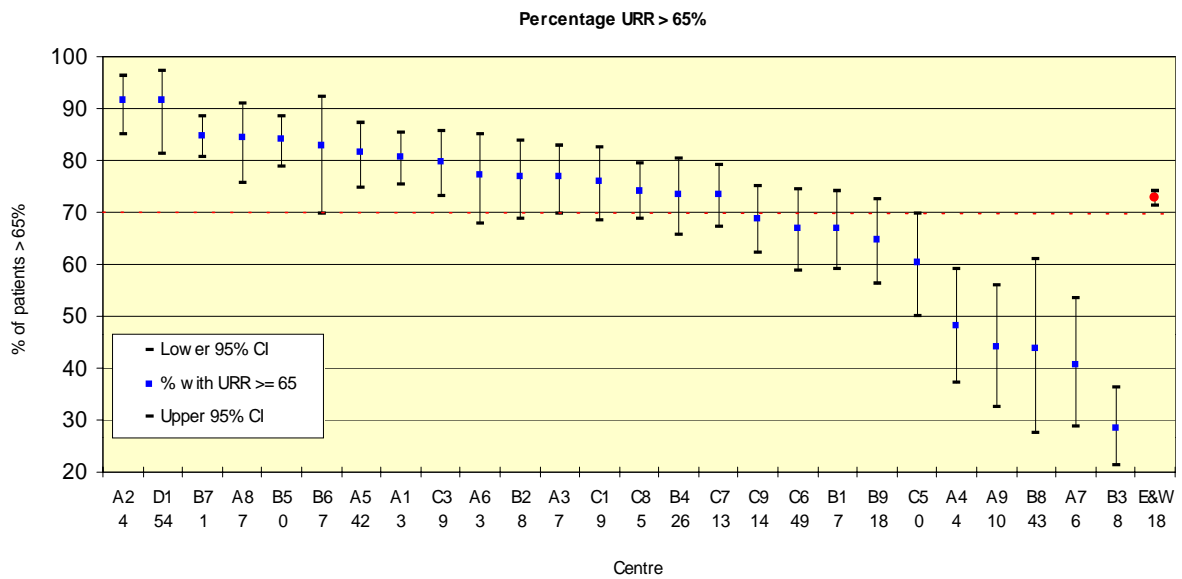


Figure 8.11 Percentage URR > 65%

Blood Pressure

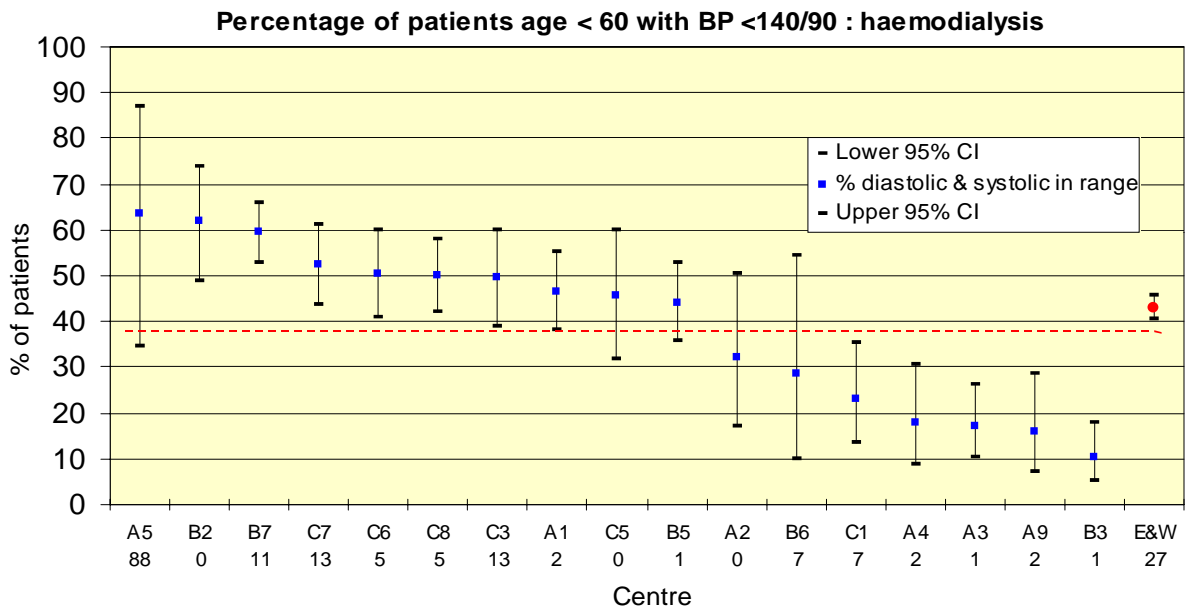


Figure 8.12 Percentage haemodialysis patients <60 with BP in RA Standard range

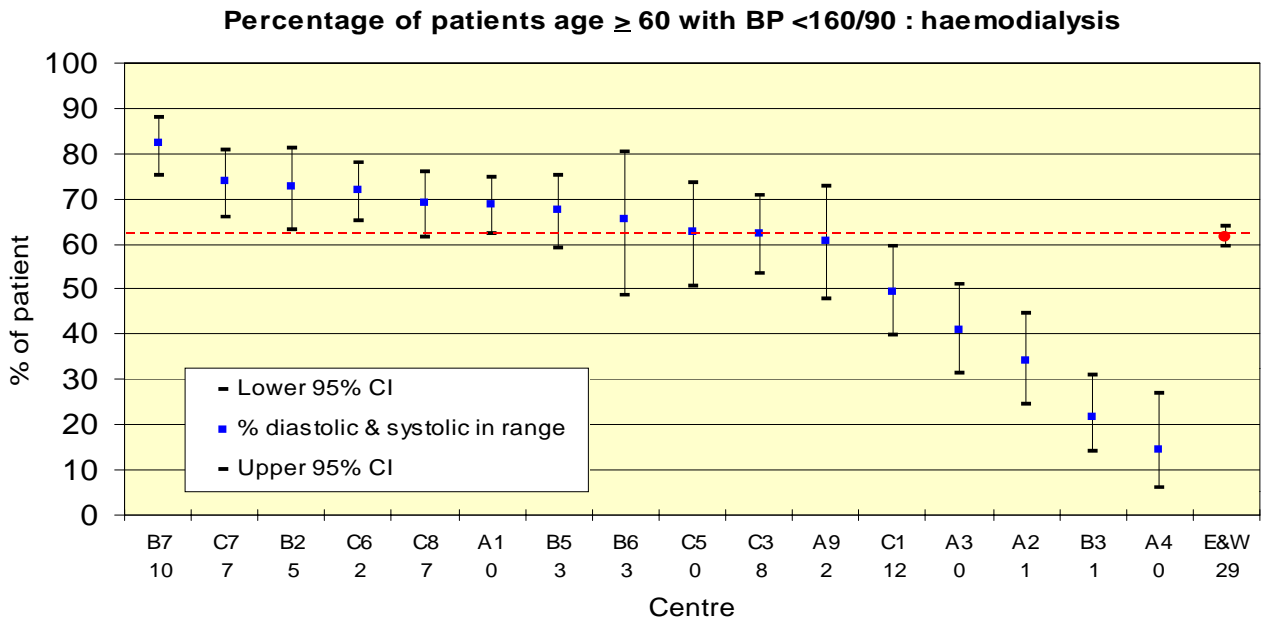


Figure 8.13 Percentage patients >60 with BP in RA Standard on haemodialysis

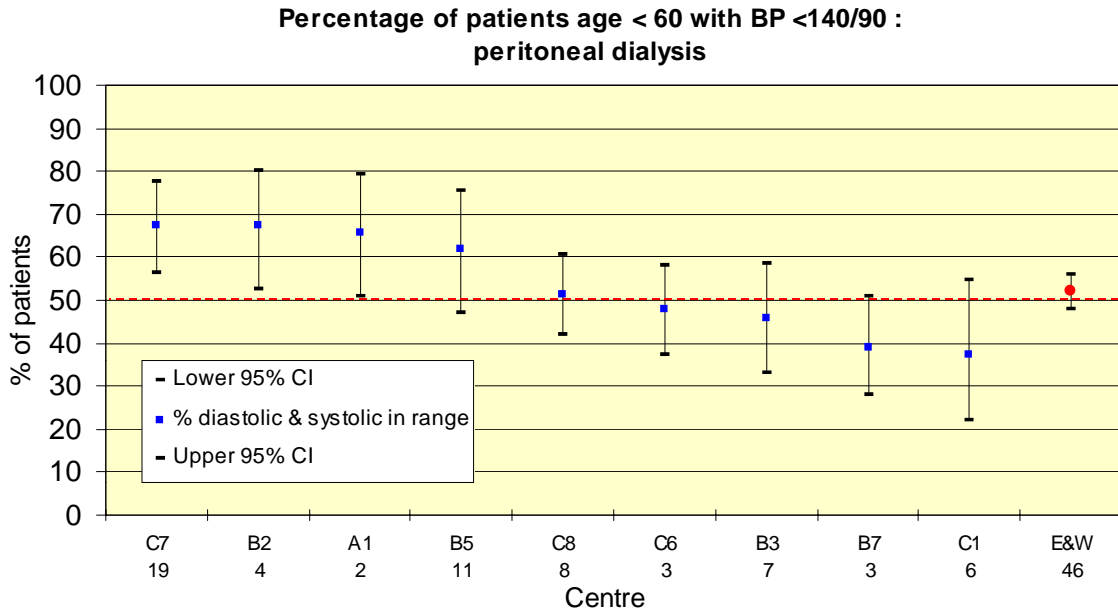


Figure 8.14 Percentage pts age <60 with BP in RA Standard range on peritoneal dialysis

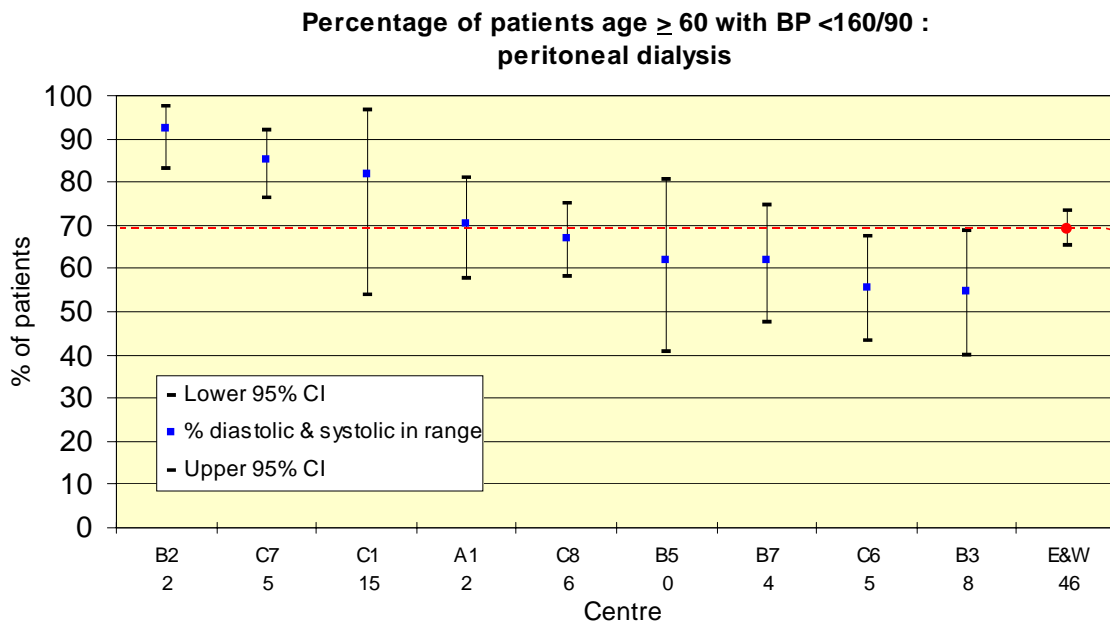


Figure 8.15 Percentage pts age >60 with BP in RA Standard range on peritoneal dialysis

Statistical analysis

Methodology

Chi-squared tests were used to see whether the percentage of patients with data in a given range varied significantly between centres. Degrees of freedom are equal to the number of centres with over 50% completeness minus 1.

Haemoglobin.

A chi-squared test was used to determine whether the percentage of patients with haemoglobin ≥ 10 g/dl differed between centres.

For patients on HD, the percentage of patients with haemoglobin ≥ 10 g/dl was found to differ significantly between centres ($X^2 = 105.7$, d.f. = 27, $p < 0.001$).

For patients on PD, the percentage of patients with haemoglobin ≥ 10 g/dl was found to differ significantly between centres ($X^2 = 62.7$, d.f. = 27, $p < 0.001$).

Ferritin

A chi-squared test was used to determine whether the percentage of patients with ferritin ≥ 100 mcg/L differed between centres.

For patients on HD, the percentage of patients with ferritin ≥ 100 was found to differ significantly between centres ($X^2 = 252.9$, d.f. = 27, $p < 0.001$).

For patients on PD, the percentage of patients with ferritin ≥ 100 was found to differ significantly between centres ($X^2 = 164.1$, d.f. = 27, $p < 0.001$).

Bicarbonate

A chi-squared test was used to determine whether the percentage of patients with bicarbonate within the Standard varied between centres. For this analysis, note that the patients were categorised as having bicarbonate within the Standard or not having a bicarbonate within the Standard (regardless of whether the patient's bicarbonate was below or above the Standard). Note that the Standards are different for HD and PD.

For patients on HD, the percentage of patients with bicarbonate within the Standard differed significantly between centres ($X^2 = 378.7$, d.f. = 19, $p < 0.001$).

For patients on PD, the percentage of patients with bicarbonate within the Standard differed significantly between centres ($X^2 = 129.6$, d.f. = 19, $p < 0.001$).

Phosphate

For patients on HD, a chi-squared test was used to determine whether the percentage of patients with phosphate ≤ 1.70 mmol/L differed between centres. For patients on PD, a chi-squared test was used to determine whether the percentage of patients with phosphate ≤ 1.60 mmol/L differed between centres. Note that the analysis considered lab-harmonised phosphate.

For patients on HD, the percentage of patients with phosphate ≤ 1.70 mmol/L differed significantly between centres ($X^2 = 144.8$, d.f. = 20, $p < 0.001$). [Note this does not fit in with text in the Report for phosphate.]

For patients on PD, the percentage of patients with phosphate ≤ 1.60 mmol/L differed significantly between centres ($X^2 = 36.0$, d.f. = 20 $p < 0.015$). [Note this does not fit in with text in the Report for phosphate.]

PTH

A chi-squared test was used to determine whether the percentage of patients with PTH ≤ 22.8 pmol/L differed between centres. Note that the analysis considered lab harmonised PTH.

For patients on HD, the percentage of patients with PTH ≤ 22.8 pmol/L differed significantly between centres ($X^2 = 138.3$, d.f. = 18, $p < 0.001$).

For patients on PD, the percentage of patients with PTH ≤ 22.8 pmol/L differed significantly between centres ($X^2 = 76.3$, d.f. = 18, $p < 0.001$).

