

SECTION H VASCULAR ACCESS FOR HAEMODIALYSIS

Details of vascular access used for haemodialysis for all hospital and home haemodialysis patients were collected during the the SRR census week in May 2012.

1873 patients with established renal failure were being treated by haemodialysis, details of vascular access were available for 1769 (94.4%).

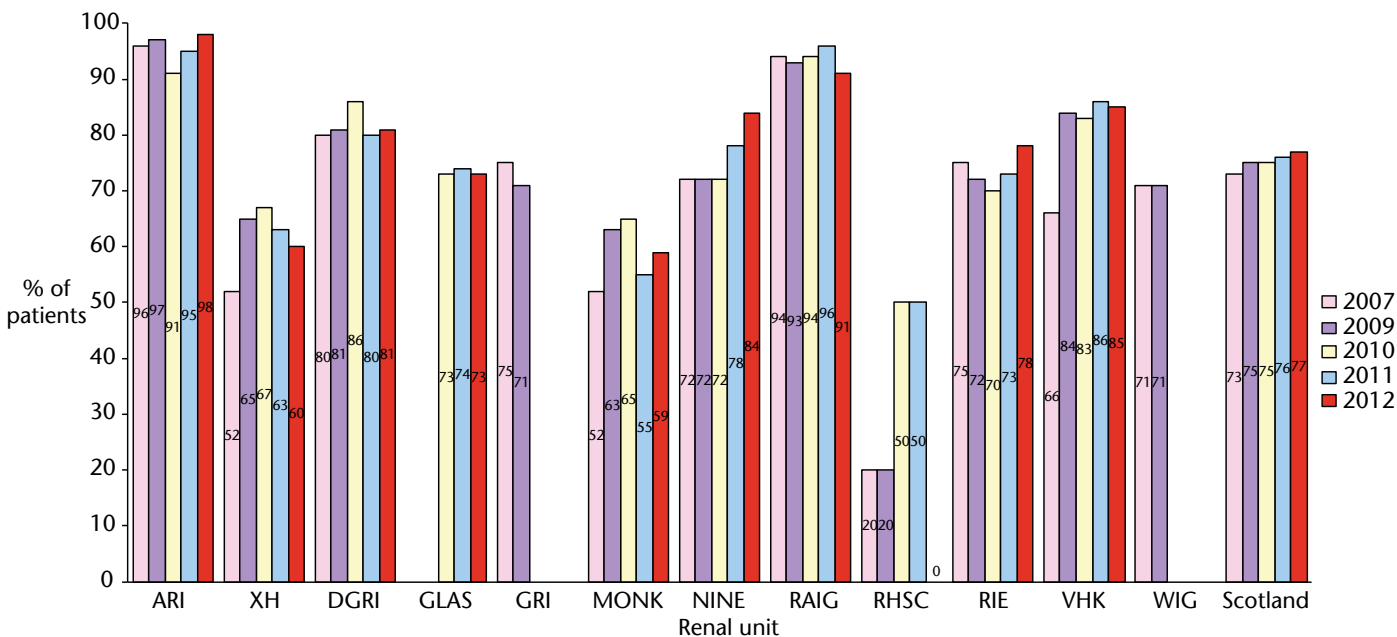
H1 Types of vascular access for haemodialysis patients May 2012		
Type of Access	Number	Percentage
Arteriovenous	1366	77.2
Fistula	1284	72.6
Graft	72	4.1
AV access – details not known	10	0.6
Central venous catheter	403	22.8
Tunnelled	379	21.4
Non-tunnelled	24	1.4
Total	1769	

As in previous years, males were significantly more likely than females to be using AV access (81% v. 72%; Chi square $p < 0.001$).

Age did not affect rates of AV access.

There were significant differences between diagnostic groups, patients with diabetic nephropathy were least likely to have AV access (72%), and patients with glomerulonephritis or interstitial disease most likely (81%). The prevalence of AV access in patients with multisystem disease and unknown cause of renal failure was 79% and 75% respectively (Chi square $p < 0.01$).

H2 Percentage of haemodialysis patients with AV access by renal unit: Census results 2007, 2009, 2010, 2011 and May 2012



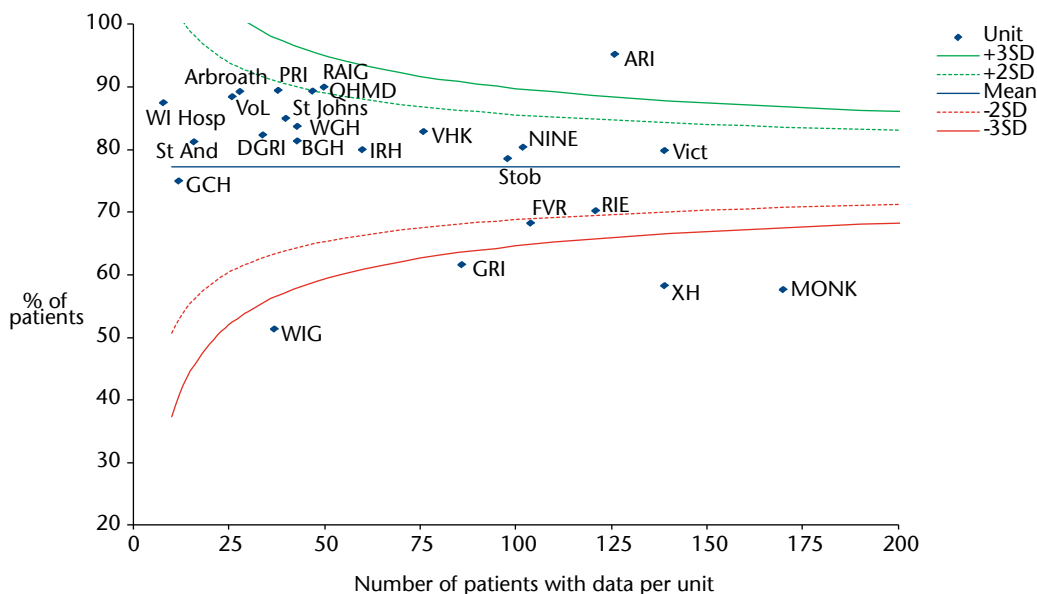
Rates of AV access (for patients with data submitted) in the adult units in May 2012 ranged from 59% to 98% (Chi square $p < 0.001$).

The Renal Association guideline suggests that 85% of all prevalent adult patients on haemodialysis should receive dialysis via a functioning arteriovenous fistula.

GRI and WIG units merged in 2010, data from those units are shown separately for 2007 and 2009 and amalgamated thereafter.

The renal unit previously based at QMHD moved to VHK at the end of 2011, those results are all now shown under VHK.

H3 Percentage of patients with AV access by dialysis unit May 2012



Balfour, GH Elgin, G Bain, Inverurie, P’head, Portsoy, BHFW, Wick all had 100% prevalence of AV access and are not shown on the funnel plot to enhance clarity.

RHSC had no patients with AV access and similarly are not shown on the funnel plot.

H4 Vascular access used for first hemodialysis for incident patients 1 January to 30 June 2012							
Unit	Number of incident patients	AV access		Tunnelled CVC		Non-tunnelled CVC	
		n	%	n	%	n	%
ARI	18	12	67	0	-	6	33
XH	14	6	43	5	36	3	21
DGRI	10	4	40	4	40	2	20
GLAS	80	37	46	26	33	17	21
MONK	27	7	26	17	63	3	11
NINE	19	7	37	12	63	0	-
RAIG	7	5	71	1	14	1	14
RHSC	2	0	-	2	100	0	-
RIE	33	15	45	17	52	1	3
VHK	12	4	33	5	42	3	25
Scotland	222	97	43.7	89	40.1	36	16.2

The SRR has collected the access used for first haemodialysis for incident patients since the start of 2012.

There were 222 incident RRT patients who started treatment on haemodialysis in the first six months of 2012. Details of the vascular access used for first dialysis was available for 100% of patients.

The Renal Association guideline suggests that 65% of all incident adult haemodialysis patients should commence dialysis with an arteriovenous fistula.

SECTION I BONE MINERAL METABOLISM

The laboratory data relating to bone mineral metabolism were audited in May 2012 for all prevalent patients receiving hospital or home haemodialysis. Pre dialysis blood samples were collected after a short interdialytic gap. Any samples marked 'post haemodialysis' were excluded.

As recommended by the Working Group of Senior Scottish Clinical Biochemists on bone biochemistry targets in the management of renal failure, the PTH data in this report are presented according to the recommended assay specific targets appropriate to each renal unit.

The working group's recommendations have been adopted across Scotland. Those recommendations; the local ranges for corrected calcium for the biochemistry laboratories that serve each dialysis unit; and assay specific PTH ranges are available on the SRR website:

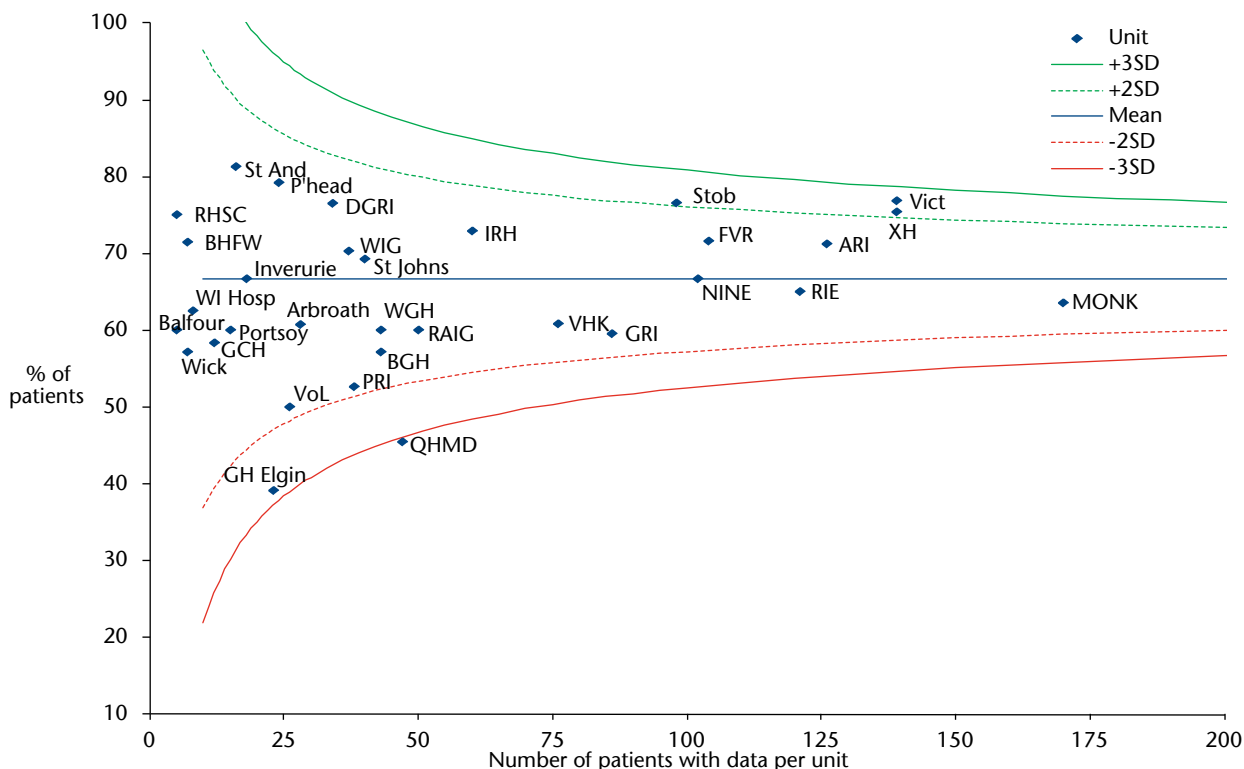
<http://www.srr.scot.nhs.uk/Projects/Projects1.html#calc>

I1 Achievement of guideline targets for phosphate, corrected calcium and PTH in haemodialysis patients by renal unit May 2012

Renal Unit	Number of patients	% with PO ₄ result	Mean PO ₄ mmol/L	% with result <1.7 mmol/L	% with cCa result	% with cCa in normal range	% with PTH result	% PTH result 2-9x UL † normal
ARI	219	97.7	1.57	67.3	97.7	81.3	93.6	45.9
XH	150	98.7	1.39	75.7	98.7	80.4	91.3	46.0
DGRI	50	98.0	1.54	71.4	98.0	91.8	92.0	60.9
GLAS	590	98.5	1.41	70.2	98.5	86.1	42.5	54.2
MONK	181	99.5	1.51	65.6	99.5	87.8	94.0	57.3
NINE	181	97.8	1.61	62.7	98.3	82.6	82.9	56.7
RAIG	84	100	1.63	60.7	100	90.5	98.8	54.2
RHSC	5	80.0	1.34	75.0	80.0	50.0	60.0	66.7
RIE	266	95.5	1.62	61.8	99.2	83.0	91.4	65.8
VHK	147	95.2	1.63	58.6	96.6	89.4	89.8	67.4
Scotland	1873	97.8	1.52	66.7	98.5	85.0	75.8	56.3

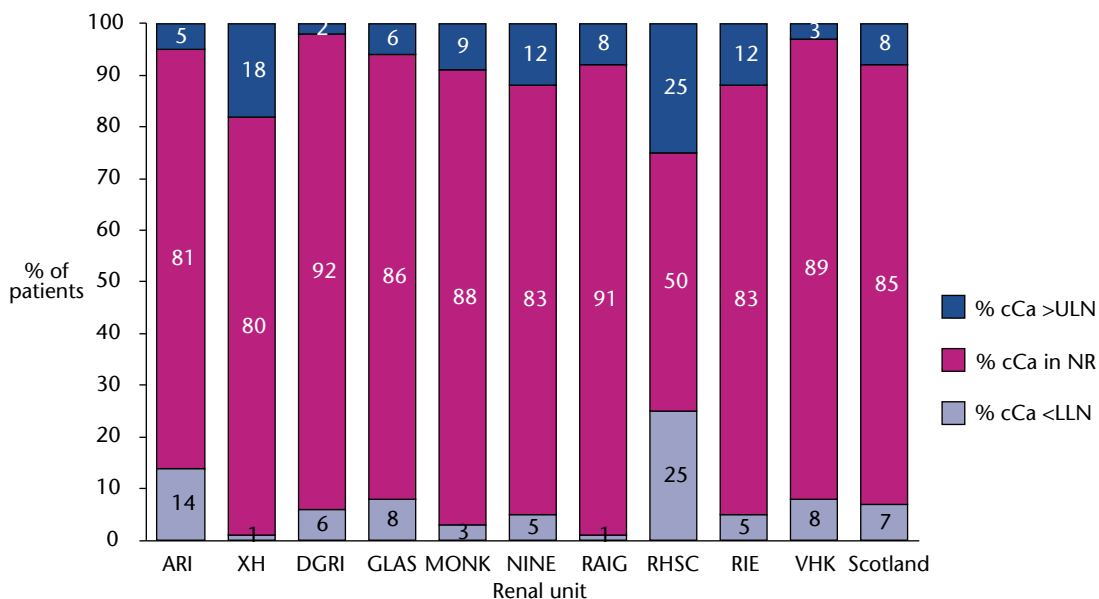
† UL-upper limit of normal

12 Percentage of patients achieving pre-HD PO4 target of <1.7 mmol/L by dialysis unit May 2012



Analytical methods for phosphate are fairly standard across Scotland and results are comparable both between units, and against the UKRA recommended guideline (pre-HD PO4 <1.7 mmol/L).

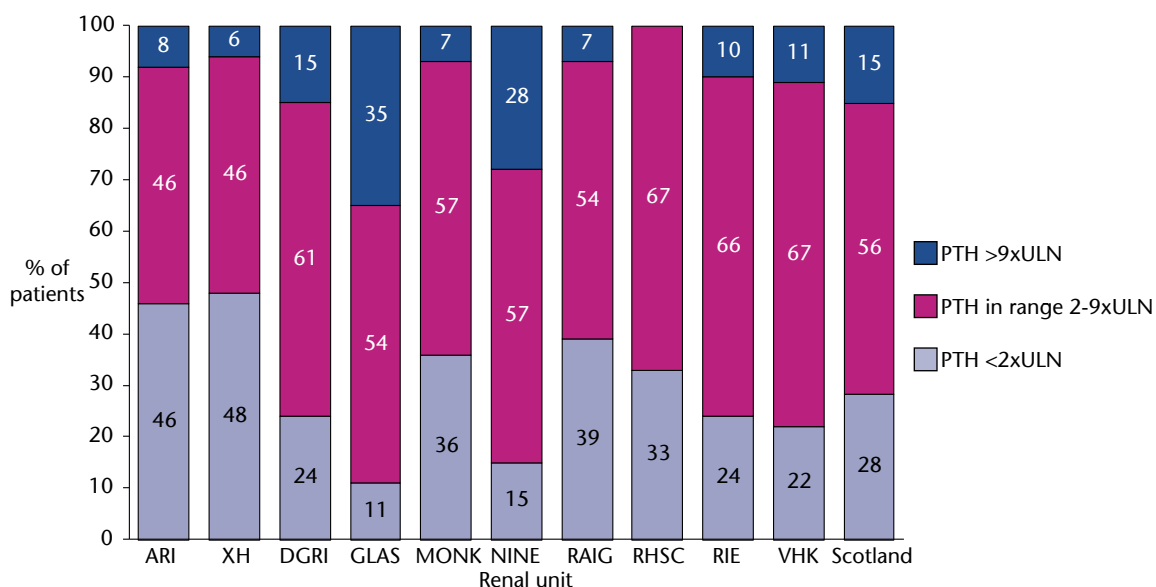
13 Distribution of pre HD corrected serum calcium in haemodialysis patients by renal unit May 2012



The graph shows the percentage of patients within each unit, who were hypocalcaemic (cCa < lower limit of normal range (LLN)), normocalcaemic (cCa in normal range (NR)) and hypercalcaemic (cCa > upper limit of normal range (ULN)) according to the local assay ranges for the biochemistry laboratory serving each dialysis unit.

The UKRA guideline suggests that corrected calcium should be maintained within the local normal range, the normal range differs between renal units, therefore actual calcium values are not shown.

14 Distribution of pre HD serum PTH in haemodialysis patients by renal unit May 2012



The UKRA guideline suggests that PTH levels should be maintained between 2 and 9 times the upper limit of normal (ULN) for the assay used.

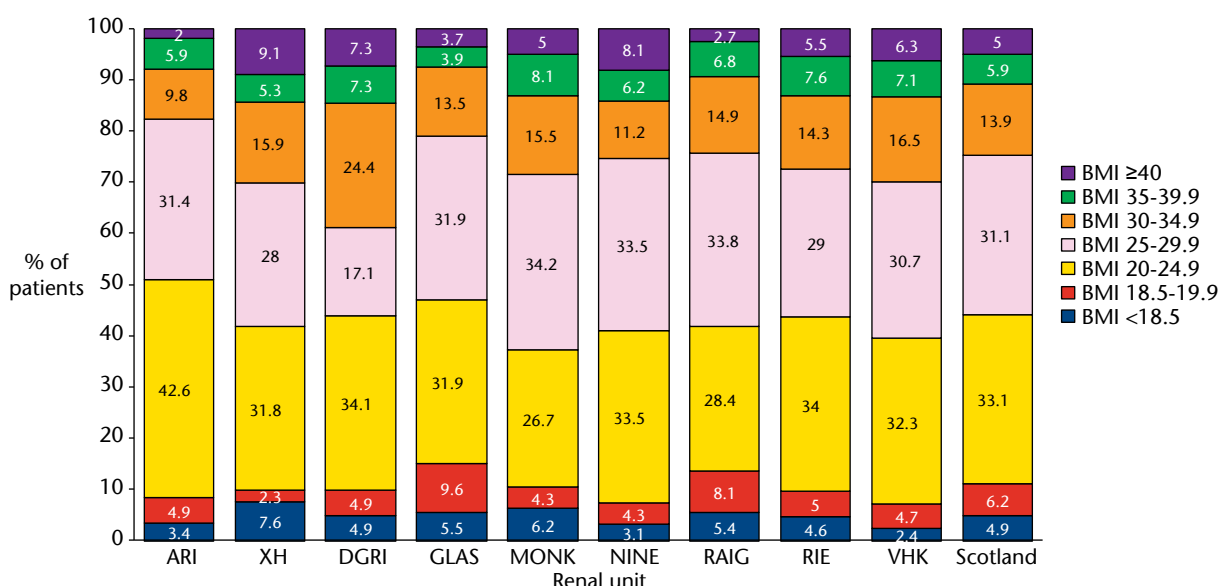
SECTION J ANTHROPOMETRIC MEASUREMENTS OF HAEMODIALYSIS PATIENTS

Patients’ measured height and weight were recorded in the May 2012 census, all prevalent home and hospital HD patients on 2 May 2012 were included. Height and weight measurements were available for 1735 (92.6%) of the 1873 prevalent HD patients. Body mass index (BMI) can be calculated using height and weight in adult patients. Patients aged under 18 (6 patients) and those with one or more limb amputations (85 patients) are excluded from the analyses.

The data collection form and methods are available on the SRR website:

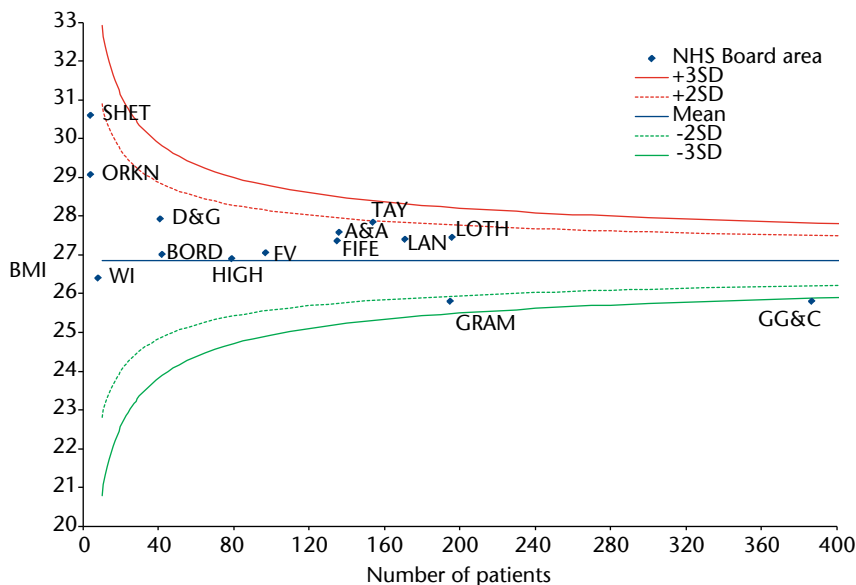
<http://www.srr.scot.nhs.uk/Projects/Main.html#census>

J1 Distribution of BMI (kg/m²) by renal unit May 2012



The BMI range categories have been altered in this report compared with previous SRR reports to allow direct comparison with bandings used elsewhere. The WHO suggest that BMI <18.5 kg/m² is underweight in the normal population, that BMI ≥ 25 kg/m² is overweight and ≥ 30 kg/m² denotes obesity. A BMI of <20kg/m² is suggested as an audit measure by Renal Association clinical guidelines as a measure of under nutrition. The Renal Association guideline regarding evaluation and selection for potential renal transplant states that patients with BMI >30 kg/m² present technical difficulties, and those with BMI >40 kg/m² are less likely to benefit from transplantation.

J2 Distribution of mean BMI (kg/m²) by NHS Board area of residence May 2012



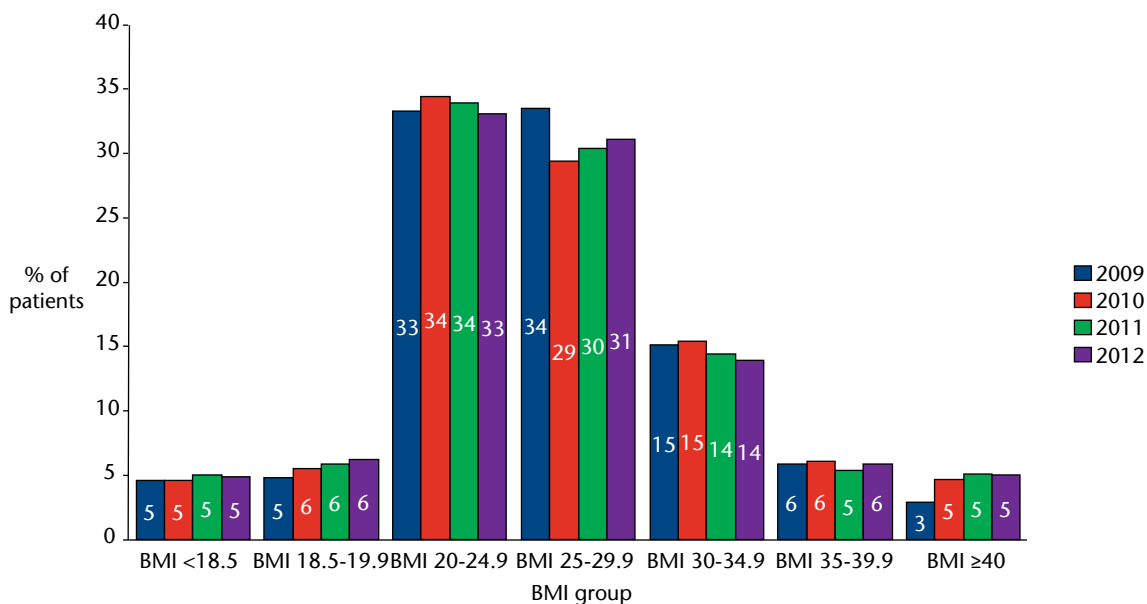
The mean BMI of HD patients in Scotland was 26.9 kg/m² (overweight).

J3 Median BMI (kg/m²) of patients in each primary renal diagnosis group May 2012

Diagnosis group	Number of patients	Median BMI	IQR
Glomerulonephritis	291	25.7	22.4 - 29.9
Interstitial	433	25.2	22.2 - 28.8
Multisystem	284	25.0	22.1 - 29.1
Diabetes	308	28.3	23.9 - 33.2
Unknown	309	25.6	21.8 - 29.0

There are significant differences in BMI between PRD groups (p<0.001 Kruskal-Wallis).

J4 Distribution of HD patients BMI by year 2009 to 2012



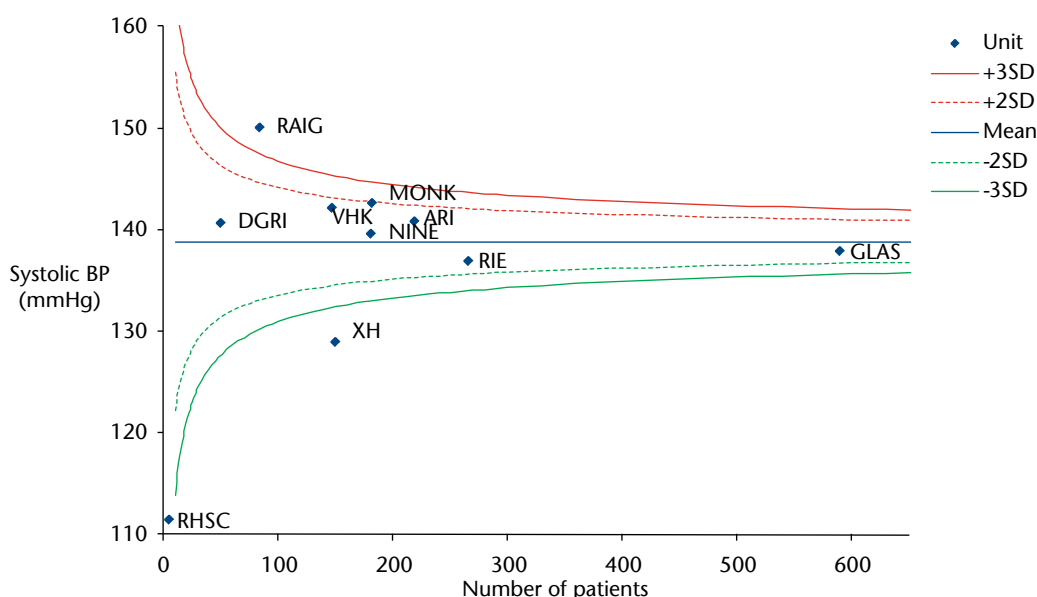
Data relating to patients with limb amputations is available for 2011 and 2012 only, prior to this all adult patients on HD with data are included.

SECTION K BLOOD PRESSURE

Pre-dialysis systolic and diastolic blood pressures in patients receiving haemodialysis at home or in hospital were collected on the census day in May 2012. Blood pressure measures were available for 1773 (94.7%) of the 1873 patients.

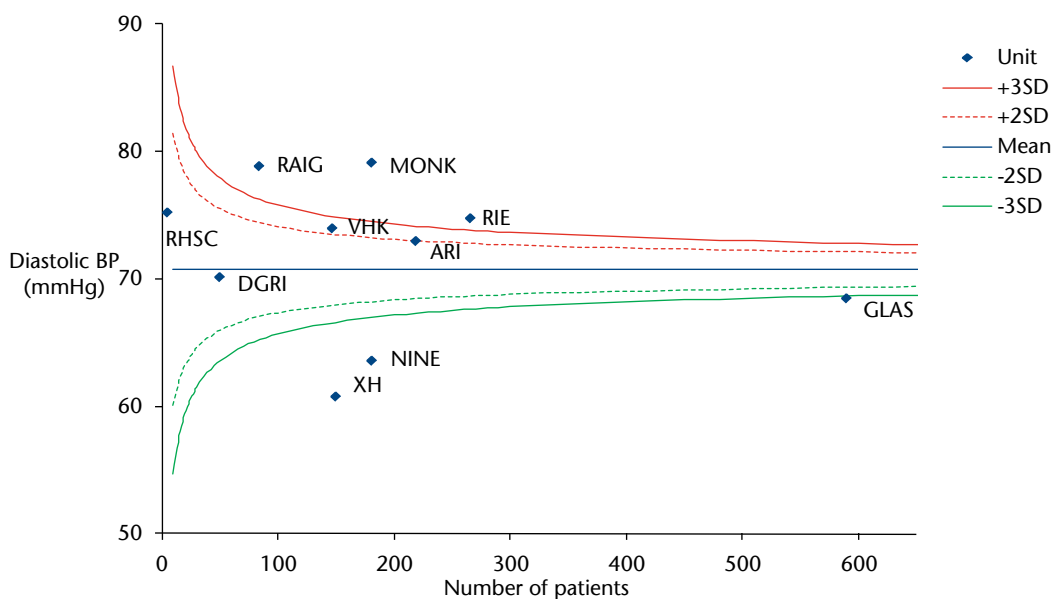
Information on co-morbidity and the use of drugs which affect blood pressure are not available. There is no recognised target for pre-dialysis blood pressure.

K1 Pre HD systolic blood pressure by renal unit May 2012



Mean pre-dialysis systolic BP for HD patients in XH was more than three standard deviations (SD) below the population mean, and for HD patients in RAIG was more than 3 SD above the mean.

K2 Pre HD diastolic blood pressure by renal unit May 2012



Mean pre-dialysis diastolic BP in HD patients in XH and NINE are more than 3 SD below the population mean. HD patients in RAIG, MONK and RIE had mean pre-HD diastolic BP more than 3 SD above the population mean.

K3 Mean achieved pre-dialysis blood pressure 2006-2012

	2006	2007	2008	2009	2010	2011	2012
Systolic BP (mmHg)	139	138	137	136	139	141	139
SD	28.7	25.7	25.3	27.9	30.1	26.5	36.3
Diastolic BP (mmHg)	73	74	72	70	72	73	71
SD	16.5	15.1	16.2	16.5	16.1	14.1	16.8

Results from each annual SRR census are shown in the table. Despite uncertainty regarding target pre-dialysis blood pressure there appears to have been no major change in mean achieved blood pressure in HD in Scotland over the last 7 years.