

Chapter - 6

**MANAGEMENT OF ANAEMIA IN
PATIENTS ON DIALYSIS**

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SECTION 6.1: TREATMENT FOR ANAEMIA IN PATIENTS ON DIALYSIS

The use of Erythropoiesis Stimulating Agents (ESAs) has been stable over the last five years. Higher percentage (91%) of patients on haemodialysis received ESAs compared to 80% of patients on peritoneal dialysis. Despite the national scheme for ESA subsidy for patients in NGO centres introduced by the Ministry of Health in 2009, there has not been an increase in ESA usage. Despite the high use of ESAs, a significant percentage of patients still received blood transfusions. This is probably due to costs and administrative issues (Table 6.1.1& 6.1.2). This also requires further insight into the method of data collection.

In 2013, 54% of HD patients are still on oral iron and only 34% received parenteral iron. Although this is a positive development over the last 10 years, there is still room for improvement (Table 6.1.1). In patients on peritoneal dialysis, the use of oral iron remained high at 70% with only 14% on parenteral iron. (Table 6.1.2)

Table 6.1.1: Treatment for anaemia, HD patients 2004-2013

| Year | Number of patients | % on ESAs | % received blood transfusion | % on oral iron | % received parenteral iron |
|------|--------------------|-----------|------------------------------|----------------|----------------------------|
| 2004 | 8063 | 74 | 11 | 80 | 10 |
| 2005 | 9343 | 81 | 14 | 74 | 11 |
| 2006 | 11678 | 83 | 18 | 76 | 16 |
| 2007 | 12907 | 85 | 15 | 74 | 17 |
| 2008 | 15403 | 88 | 16 | 63 | 23 |
| 2009 | 17977 | 89 | 15 | 59 | 26 |
| 2010 | 19509 | 90 | 14 | 57 | 26 |
| 2011 | 22296 | 90 | 14 | 55 | 28 |
| 2012 | 25671 | 90 | 14 | 56 | 30 |
| 2013 | 28898 | 91 | 12 | 54 | 34 |

Table 6.1.2: Treatment for anaemia, PD patients 2004-2013

| Year | Number of patients | % on ESAs | % received blood transfusion | % on oral iron | % received parenteral iron |
|------|--------------------|-----------|------------------------------|----------------|----------------------------|
| 2004 | 1312 | 63 | 15 | 85 | 7 |
| 2005 | 1390 | 72 | 12 | 87 | 8 |
| 2006 | 1552 | 74 | 16 | 83 | 13 |
| 2007 | 1806 | 74 | 16 | 80 | 12 |
| 2008 | 2084 | 77 | 16 | 77 | 12 |
| 2009 | 2212 | 76 | 16 | 74 | 14 |
| 2010 | 2360 | 78 | 16 | 73 | 12 |
| 2011 | 2551 | 78 | 18 | 72 | 11 |
| 2012 | 2876 | 80 | 18 | 69 | 11 |
| 2013 | 3261 | 80 | 17 | 70 | 14 |

In 2013, the percentage of patients on ESAs among HD centres varied. The variation in percentage of patients using ESAs among HD centres at the 5th centile and 95th centile has not changed for the last 5 years. This variation is less compared to what it was 10 years ago. The median usage of ESAs is at 92% for the last 5 years. A similar trend was observed in PD patients (Table 6.1.3).

Table 6.1.3: Variation in Erythropoiesis-Stimulating Agents (ESAs) utilization (% patients) among HD centres, 2004-2013

| Year | Number of centres | Min | 5 th centile | LQ | Median | UQ | 95 th centile | Max |
|------|-------------------|-----|-------------------------|----|--------|----|--------------------------|-----|
| 2004 | 219 | 9 | 40 | 65 | 77 | 85 | 97 | 100 |
| 2005 | 241 | 8 | 54 | 74 | 82 | 91 | 100 | 100 |
| 2006 | 288 | 3 | 55 | 79 | 87 | 93 | 100 | 100 |
| 2007 | 320 | 6 | 63 | 82 | 89 | 94 | 100 | 100 |
| 2008 | 377 | 33 | 67 | 85 | 91 | 96 | 100 | 100 |
| 2009 | 427 | 8 | 71 | 86 | 92 | 96 | 100 | 100 |
| 2010 | 460 | 16 | 73 | 86 | 92 | 96 | 100 | 100 |
| 2011 | 514 | 4 | 75 | 87 | 93 | 97 | 100 | 100 |
| 2012 | 566 | 40 | 77 | 88 | 92 | 97 | 100 | 100 |
| 2013 | 611 | 31 | 76 | 88 | 92 | 97 | 100 | 100 |

Figure 6.1.3: Variation in ESAs utilization (% patients) among HD centres, 2013

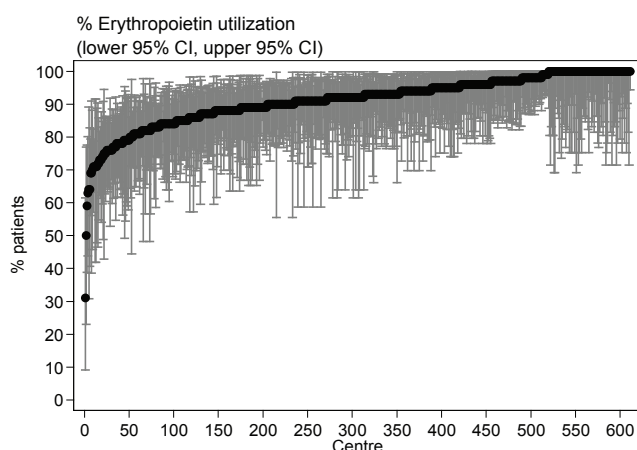


Figure 6.1.4: Variation in ESAs utilization (% patients) among PD centres, 2013

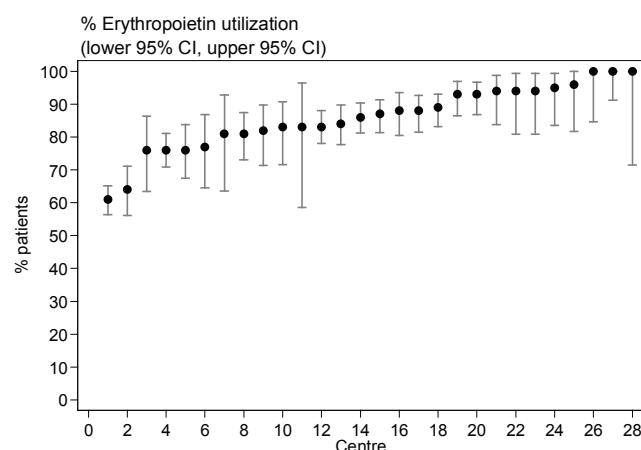


Table 6.1.4: Variation in Erythropoiesis-Stimulating Agents (ESAs) utilization (% patients) among PD centres, 2004-2013

| Year | Number of centres | Min | 5 th centile | LQ | Median | UQ | 95 th centile | Max |
|------|-------------------|-----|-------------------------|------|--------|------|--------------------------|-----|
| 2004 | 18 | 5 | 5 | 55 | 63.5 | 74 | 97 | 97 |
| 2005 | 19 | 40 | 40 | 62 | 69 | 81 | 97 | 97 |
| 2006 | 22 | 35 | 53 | 67 | 74 | 86 | 96 | 97 |
| 2007 | 23 | 0 | 44 | 64 | 76 | 90 | 97 | 100 |
| 2008 | 24 | 20 | 59 | 70.5 | 79 | 86.5 | 100 | 100 |
| 2009 | 25 | 30 | 56 | 73 | 80 | 87 | 100 | 100 |
| 2010 | 26 | 55 | 63 | 80 | 84.5 | 95 | 100 | 100 |
| 2011 | 27 | 44 | 65 | 75 | 87 | 93 | 100 | 100 |
| 2012 | 28 | 51 | 67 | 82.5 | 87.5 | 93 | 100 | 100 |
| 2013 | 28 | 61 | 64 | 81 | 86.5 | 94 | 100 | 100 |

Over the last 5 years, the median weekly dose of ESA for HD patients has remained stable at 5000 units. It is also noted that the minimum and maximum weekly ESA dose was at 2000 and 16000 units respectively. The median weekly ESA dose in PD patients was slightly less compared to HD patients at 4500 units per week. The minimum and maximum weekly ESA dose for PD patients was at 2000 units and 6000 units respectively. This variation is significantly less as compared to HD patients (Table 6.15 & 6.16).

Table 6.1.5: Variation in mean weekly ESAs dose (u/week) among HD centres, 2004-2013

| Year | Number of centres | Mean | SD | Min | 5 th centile | LQ | Median | UQ | 95 th centile | Max |
|------|-------------------|------|------|------|-------------------------|------|--------|------|--------------------------|-------|
| 2004 | 181 | 2463 | 644 | 1929 | 2000 | 2000 | 2191 | 2667 | 3808 | 4929 |
| 2005 | 219 | 3502 | 1873 | 2000 | 2000 | 2265 | 2929 | 4066 | 6400 | 16000 |
| 2006 | 270 | 5130 | 2103 | 2000 | 2800 | 3909 | 4723 | 6044 | 8125 | 20571 |
| 2007 | 303 | 5302 | 1871 | 2000 | 3143 | 4125 | 5071 | 6108 | 8000 | 17500 |
| 2008 | 361 | 4570 | 1115 | 1935 | 3000 | 3800 | 4480 | 5182 | 6529 | 8632 |
| 2009 | 403 | 4752 | 901 | 2444 | 3372 | 4148 | 4778 | 5257 | 6308 | 8154 |
| 2010 | 440 | 5089 | 1113 | 2200 | 3378 | 4400 | 5011 | 5743 | 7206 | 8240 |
| 2011 | 489 | 5105 | 1131 | 2000 | 3412 | 4353 | 5000 | 5788 | 7167 | 11046 |
| 2012 | 552 | 5191 | 1140 | 2105 | 3452 | 4340 | 5084 | 5934 | 7409 | 9164 |
| 2013 | 598 | 5339 | 1492 | 2286 | 3486 | 4361 | 5096 | 6097 | 7783 | 16364 |

Figure 6.1.5: Variation in mean weekly ESAs dose (u/week) among HD centres, 2013

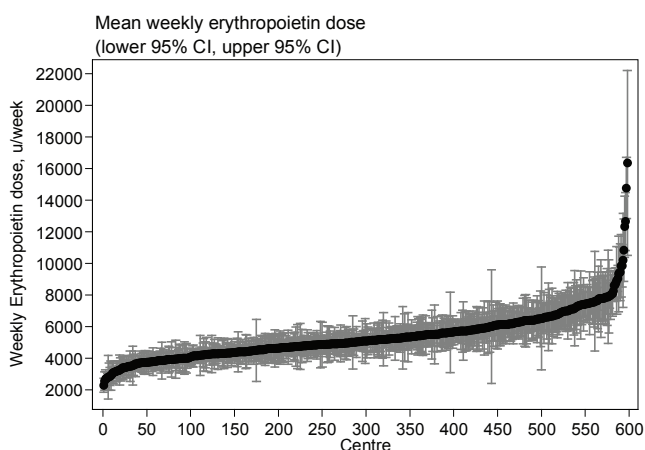


Figure 6.1.6: Variation in mean weekly ESAs dose (u/week) among PD centres 2013

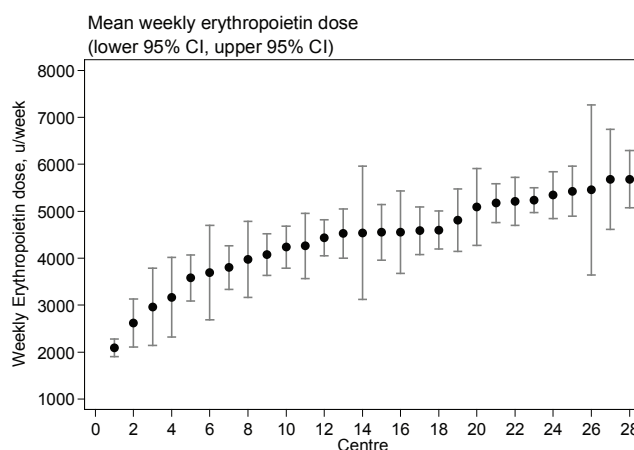


Table 6.1.6: Variation in mean weekly ESAs dose (u/week) among PD centres, 2004-2013

| Year | Number of centres | Mean | SD | Min | 5 th centile | LQ | Median | UQ | 95 th centile | Max |
|------|-------------------|------|------|------|-------------------------|------|--------|------|--------------------------|------|
| 2004 | 17 | 2600 | 429 | 2074 | 2074 | 2400 | 2600 | 2696 | 3958 | 3958 |
| 2005 | 18 | 3443 | 1581 | 2000 | 2000 | 2308 | 2668 | 4124 | 7371 | 7371 |
| 2006 | 21 | 4653 | 1173 | 2308 | 2667 | 4091 | 5045 | 5480 | 5918 | 6373 |
| 2007 | 22 | 4971 | 1015 | 3250 | 3429 | 4151 | 5058 | 5702 | 6471 | 7044 |
| 2008 | 22 | 4546 | 971 | 2556 | 2952 | 3852 | 4481 | 5344 | 6051 | 6239 |
| 2009 | 23 | 4359 | 920 | 2364 | 2720 | 4047 | 4605 | 4800 | 5235 | 6541 |
| 2010 | 25 | 4384 | 952 | 2364 | 2727 | 4013 | 4263 | 4993 | 6066 | 6429 |
| 2011 | 27 | 4374 | 1120 | 1909 | 1955 | 3816 | 4557 | 5040 | 5446 | 7000 |
| 2012 | 27 | 4523 | 879 | 2500 | 2636 | 4074 | 4603 | 5044 | 5778 | 6208 |
| 2013 | 28 | 4406 | 924 | 2091 | 2615 | 3887 | 4545 | 5191 | 5680 | 5683 |

The median requirement of blood transfusion in HD and PD centres was at 10% and 14% respectively. However, there is a much wider variation in the use of blood transfusion among HD centres (0% to 34%) compared to PD centres (6% to 33%) (Table 6.1.7 & 6.1.8).

Table 6.1.7: Variation in use of blood transfusion (% patients) among HD centres, 2004-2013

| Year | Number of centres | Min | 5 th centile | LQ | Median | UQ | 95 th centile | Max |
|------|-------------------|-----|-------------------------|----|--------|------|--------------------------|-----|
| 2004 | 219 | 0 | 0 | 2 | 7 | 17 | 35 | 48 |
| 2005 | 241 | 0 | 0 | 5 | 10 | 19 | 40 | 64 |
| 2006 | 288 | 0 | 2 | 9 | 16 | 25 | 42 | 73 |
| 2007 | 320 | 0 | 0 | 7 | 13 | 21.5 | 37.5 | 52 |
| 2008 | 377 | 0 | 0 | 7 | 14 | 23 | 39 | 88 |
| 2009 | 427 | 0 | 0 | 6 | 12 | 20 | 38 | 55 |
| 2010 | 460 | 0 | 0 | 6 | 11 | 19 | 35 | 73 |
| 2011 | 514 | 0 | 0 | 6 | 11.5 | 19 | 32 | 67 |
| 2012 | 566 | 0 | 0 | 6 | 12 | 19 | 35 | 70 |
| 2013 | 611 | 0 | 0 | 6 | 10 | 17 | 34 | 67 |

Figure 6.1.7: Variation in use of blood transfusion (% patients) among HD centres, 2013

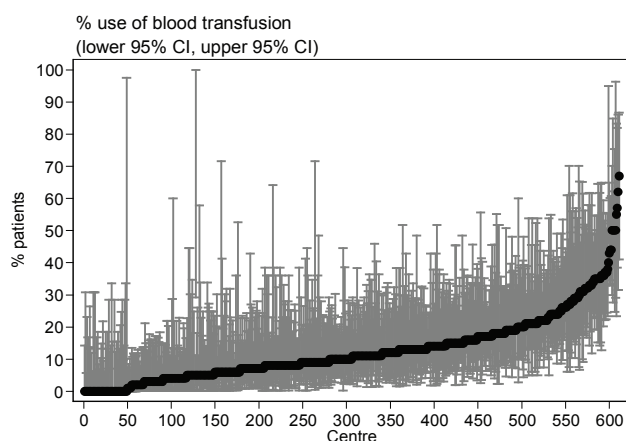


Figure 6.1.8: Variation in use of blood transfusion (% patients) among PD centres, 2013

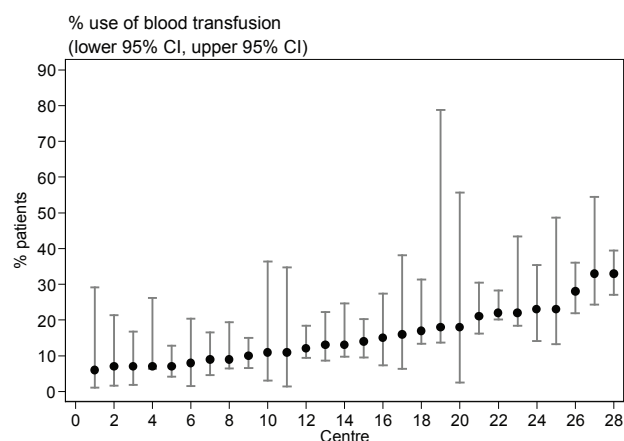


Table 6.1.8: Variation in use of blood transfusion (% patients) among PD centres, 2004-2013

| Year | Number of centres | Min | 5 th centile | LQ | Median | UQ | 95 th centile | Max |
|------|-------------------|-----|-------------------------|-----|--------|------|--------------------------|-----|
| 2004 | 18 | 0 | 0 | 5 | 14.5 | 20 | 37 | 37 |
| 2005 | 19 | 0 | 0 | 3 | 10 | 17 | 41 | 41 |
| 2006 | 22 | 0 | 4 | 9 | 16 | 22 | 35 | 41 |
| 2007 | 23 | 6 | 7 | 10 | 15 | 23 | 33 | 36 |
| 2008 | 24 | 2 | 3 | 7.5 | 14 | 23 | 33 | 36 |
| 2009 | 25 | 0 | 0 | 8 | 14 | 22 | 29 | 31 |
| 2010 | 26 | 0 | 0 | 8 | 14 | 21 | 31 | 33 |
| 2011 | 27 | 2 | 3 | 9 | 15 | 21 | 42 | 46 |
| 2012 | 28 | 0 | 3 | 7 | 13.5 | 20.5 | 31 | 39 |
| 2013 | 28 | 6 | 7 | 9 | 13.5 | 21.5 | 33 | 33 |

SECTION 6.2: IRON STATUS ON DIALYSIS

The median serum ferritin for HD and PD patients on ESAs was at 500ng/ml and 600ng/ml respectively. The target ferritin for HD and PD patients are at ≥ 200 ng/ml and ≥ 100 ng/ml respectively. 66% of HD patients and 97% of patients achieved their target (Table 6.2.1 & 6.2.4).

Table 6.2.1: Distribution of serum ferritin without ESAs, HD patients 2004-2013

| Year | Number of patients | Mean | SD | Median | LQ | UQ | % Patients ≥ 100 ng/ml | % Patients ≥ 200 ng/ml |
|------|--------------------|-------|-------|--------|-------|-------|-----------------------------|-----------------------------|
| 2004 | 1042 | 590.7 | 463.6 | 473.5 | 218 | 910.5 | 89 | 77 |
| 2005 | 1010 | 618.5 | 498.7 | 485.5 | 225 | 902 | 90 | 77 |
| 2006 | 1169 | 562.4 | 485.6 | 408 | 193.8 | 817.5 | 87 | 74 |
| 2007 | 1182 | 586 | 501 | 431 | 196 | 860.9 | 86 | 75 |
| 2008 | 1186 | 578 | 489.9 | 431.9 | 197 | 838.1 | 87 | 75 |
| 2009 | 1283 | 546.6 | 461.7 | 419.7 | 171 | 798 | 87 | 71 |
| 2010 | 1387 | 510 | 454.2 | 372 | 159.7 | 755.6 | 84 | 69 |
| 2011 | 1562 | 499.6 | 441.3 | 375 | 164 | 702.5 | 84 | 70 |
| 2012 | 1674 | 480.9 | 440.8 | 344.8 | 146.9 | 671.7 | 83 | 67 |
| 2013 | 1962 | 462.6 | 423.7 | 324.2 | 142 | 658 | 82 | 66 |

Figure 6.2.1: Cumulative Distribution of serum ferritin without ESAs, HD patients 2004-2013

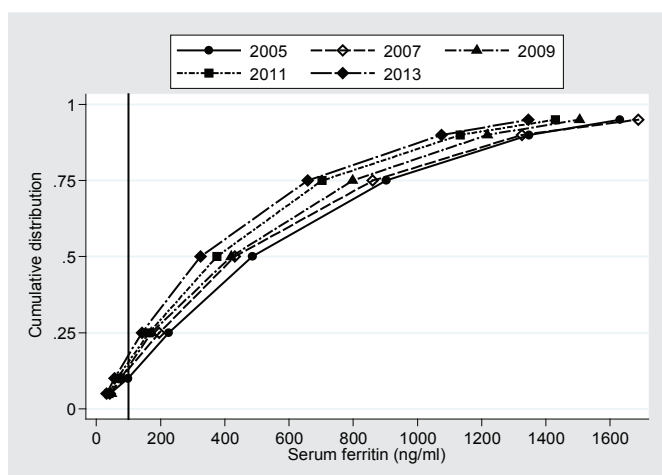


Figure 6.2.2: Distribution of serum ferritin without ESAs, PD patients 2004-2013

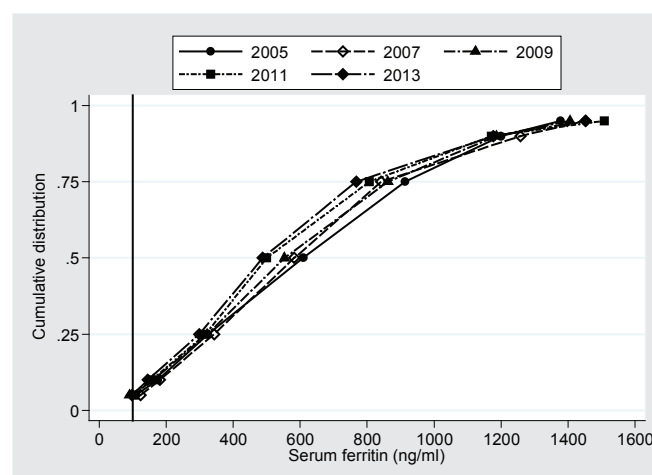
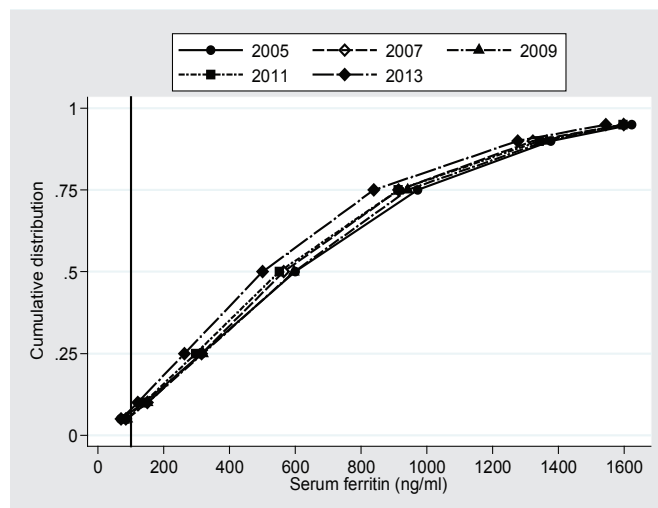
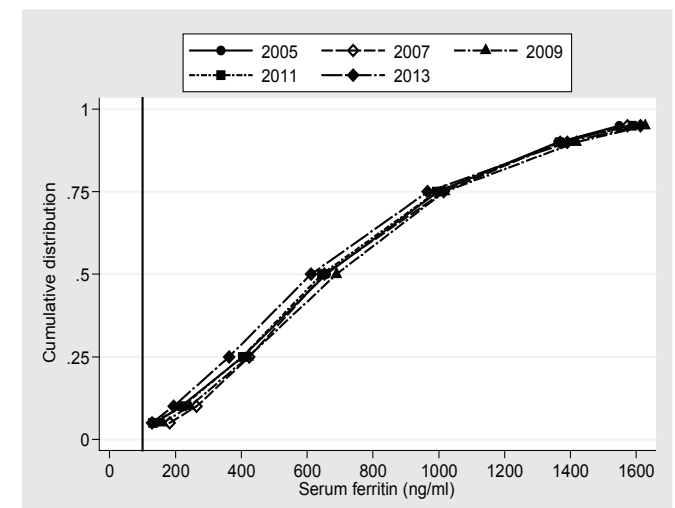


Table 6.2.2: Distribution of serum ferritin without ESAs, PD patients 2004-2013

| Year | Number of patients | Mean | SD | Median | LQ | UQ | % Patients ≥ 100 ng/ml | % Patients ≥ 200 ng/ml |
|------|--------------------|-------|-------|--------|-------|-------|-----------------------------|-----------------------------|
| 2004 | 303 | 608.4 | 385.7 | 522.7 | 330 | 882 | 94 | 85 |
| 2005 | 225 | 651.4 | 397.8 | 609 | 324 | 913.3 | 96 | 88 |
| 2006 | 263 | 589.9 | 411.3 | 484 | 280 | 815.8 | 95 | 85 |
| 2007 | 305 | 636.9 | 396.6 | 582.3 | 342.8 | 841.9 | 96 | 87 |
| 2008 | 338 | 634 | 410.1 | 592 | 327.4 | 841 | 93 | 86 |
| 2009 | 364 | 621.6 | 401.1 | 553 | 322.5 | 861.8 | 95 | 86 |
| 2010 | 382 | 624.9 | 446.6 | 523.5 | 287.4 | 875.8 | 93 | 83 |
| 2011 | 435 | 604.7 | 407.4 | 500 | 316.9 | 806.8 | 95 | 88 |
| 2012 | 467 | 557.5 | 398.8 | 456.8 | 260.4 | 743.9 | 96 | 83 |
| 2013 | 486 | 587.6 | 407.3 | 487.9 | 298.3 | 767.5 | 95 | 83 |

Table 6.2.3: Distribution of serum ferritin on ESAs, HD patients 2004-2013

| Year | Number of patients | Mean | SD | Median | LQ | UQ | % Patients ≥ 100 ng/ml | % Patients ≥ 200 ng/ml |
|------|--------------------|-------|-------|--------|-------|-------|-----------------------------|-----------------------------|
| 2004 | 3903 | 669.8 | 460.5 | 571 | 306 | 977 | 94 | 86 |
| 2005 | 5116 | 682.7 | 471 | 599.5 | 315.3 | 971.5 | 93 | 85 |
| 2006 | 6764 | 640.3 | 459 | 543.1 | 291.1 | 881.1 | 93 | 84 |
| 2007 | 8032 | 658.8 | 452.2 | 564.4 | 315.5 | 914 | 94 | 86 |
| 2008 | 9937 | 703.6 | 469.2 | 611.1 | 337.5 | 979.5 | 95 | 87 |
| 2009 | 12241 | 679.3 | 459.6 | 596 | 319.3 | 941.9 | 94 | 86 |
| 2010 | 13597 | 679.4 | 470 | 581.8 | 312 | 958 | 94 | 85 |
| 2011 | 15871 | 653.5 | 461.1 | 551.5 | 297 | 913.3 | 93 | 84 |
| 2012 | 18135 | 627.6 | 450 | 527.8 | 280 | 879.3 | 93 | 83 |
| 2013 | 20783 | 606 | 448.3 | 500.3 | 263 | 838.9 | 92 | 82 |

Figure 6.2.3: Cumulative distribution of serum ferritin on ESAs, HD patients 2004-2013**Figure 6.2.4:** Cumulative distribution of serum ferritin on ESAs, PD patients 2004-2013**Table 6.2.4:** Distribution of serum ferritin on ESAs, PD patients 2004-2013

| Year | Number of patients | Mean | SD | Median | LQ | UQ | % Patients ≥ 100 ng/ml | % Patients ≥ 200 ng/ml |
|------|--------------------|-------|-------|--------|-------|--------|-----------------------------|-----------------------------|
| 2004 | 540 | 728.8 | 427.2 | 655.6 | 406.3 | 986.7 | 98 | 92 |
| 2005 | 767 | 732.9 | 433.6 | 659 | 403.6 | 997.5 | 97 | 92 |
| 2006 | 888 | 729.9 | 435.6 | 638.4 | 399.5 | 986.2 | 98 | 94 |
| 2007 | 1091 | 741.3 | 426.1 | 652 | 423.8 | 1015 | 98 | 94 |
| 2008 | 1310 | 758.4 | 445.4 | 668.6 | 422.4 | 1030.3 | 98 | 93 |
| 2009 | 1390 | 759.5 | 438.7 | 689 | 421.1 | 1017.5 | 98 | 93 |
| 2010 | 1554 | 753.3 | 438 | 677.1 | 426.3 | 1005.5 | 97 | 93 |
| 2011 | 1631 | 726.4 | 436.4 | 644.7 | 403.3 | 993.7 | 97 | 91 |
| 2012 | 1899 | 707.4 | 440.2 | 640.8 | 375.6 | 951.5 | 96 | 90 |
| 2013 | 2139 | 705.1 | 448.9 | 611.5 | 362.7 | 966.3 | 97 | 89 |

The median transferrin saturation for HD and PD patients on ESAs was 29% and 34% respectively. The percentage of patients achieving transferrin saturation $\geq 20\%$ for HD and PD patients was 84% and 93% respectively (Table 6.2.5 & 6.2.8).

Table 6.2.5: Distribution of transferrin saturation without ESAs, HD patients, 2004-2013

| Year | Number of patients | Mean | SD | Median | LQ | UQ | % Patients $\geq 20\%$ |
|------|--------------------|------|------|--------|------|------|------------------------|
| 2004 | 1031 | 41.2 | 18.1 | 37.5 | 28.5 | 50.1 | 92 |
| 2005 | 1106 | 37.7 | 17.8 | 34.4 | 25.6 | 46.2 | 87 |
| 2006 | 1149 | 36.2 | 16.9 | 32.9 | 24.7 | 44.2 | 87 |
| 2007 | 1206 | 36.1 | 16.5 | 32.5 | 25 | 43.7 | 87 |
| 2008 | 1211 | 34.3 | 15.5 | 31.8 | 23.7 | 41.4 | 85 |
| 2009 | 1283 | 34.3 | 15.9 | 31.3 | 24 | 40.8 | 85 |
| 2010 | 1442 | 33.5 | 15.6 | 30.4 | 22.7 | 40.5 | 83 |
| 2011 | 1567 | 32.4 | 14.7 | 29.8 | 22.9 | 38.4 | 85 |
| 2012 | 1859 | 32.4 | 14.5 | 29.9 | 22.8 | 38.7 | 83 |
| 2013 | 2105 | 31.2 | 14 | 28.9 | 22 | 37.3 | 81 |

Figure 6.2.5: Cumulative distribution of transferrin saturation without ESAs, HD patients 2004-2013

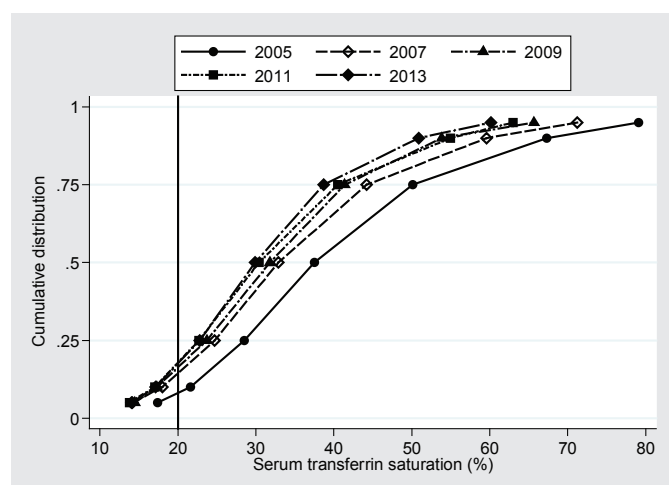


Figure 6.2.6: Cumulative distribution of transferrin saturation without ESAs, PD patients 2004-2013

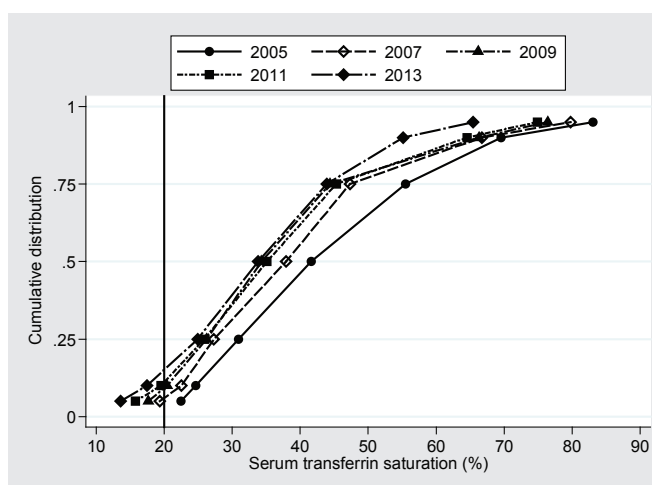
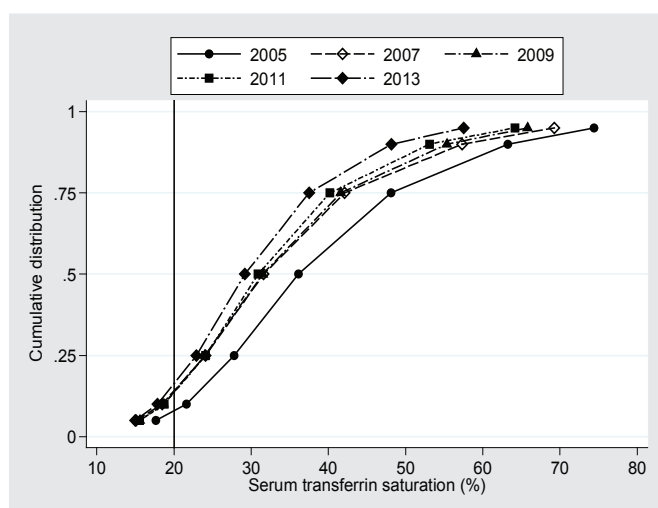
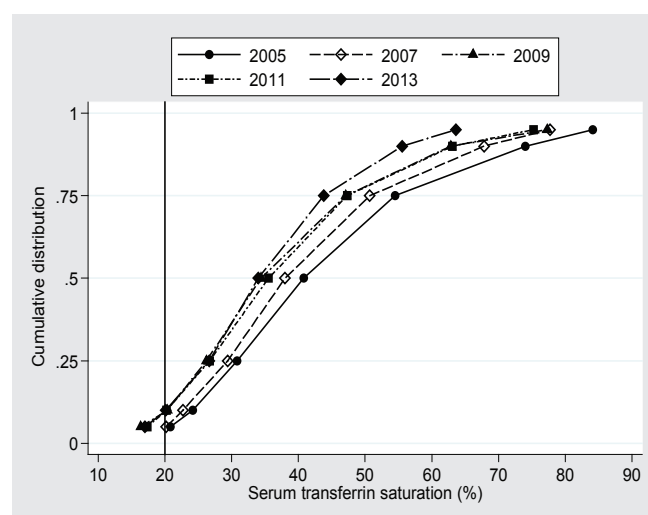


Table 6.2.6: Distribution of transferrin saturation without ESAs, PD patients, 2004-2013

| Year | Number of patients | Mean | SD | Median | LQ | UQ | % Patients $\geq 20\%$ |
|------|--------------------|------|------|--------|------|------|------------------------|
| 2004 | 379 | 44.5 | 18.2 | 41.6 | 30.9 | 55.5 | 98 |
| 2005 | 287 | 40.6 | 16.2 | 37.8 | 29.4 | 48.2 | 95 |
| 2006 | 299 | 40.5 | 17.4 | 37.9 | 27.3 | 47.3 | 95 |
| 2007 | 348 | 40.3 | 17.9 | 36.6 | 27.5 | 48.2 | 92 |
| 2008 | 349 | 38.2 | 17.8 | 34.3 | 26.2 | 44.4 | 91 |
| 2009 | 439 | 38.4 | 18.2 | 36.1 | 26.4 | 45.7 | 87 |
| 2010 | 441 | 38.3 | 17.8 | 35.1 | 25.9 | 45.3 | 89 |
| 2011 | 424 | 36.8 | 15.8 | 33.2 | 26.5 | 45.5 | 90 |
| 2012 | 498 | 35.6 | 15.7 | 33.8 | 24.9 | 43.9 | 85 |
| 2013 | 463 | 37.3 | 15.7 | 34 | 26.1 | 44.4 | 91 |

Table 6.2.7: Distribution of transferrin saturation on ESAs, HD patients, 2004-2013

| Year | Number of patients | Mean | SD | Median | LQ | UQ | % Patients $\geq 20\%$ |
|------|--------------------|------|------|--------|------|------|------------------------|
| 2004 | 3269 | 39.6 | 17 | 36.1 | 27.8 | 48.1 | 93 |
| 2005 | 4808 | 36.6 | 17.2 | 32.8 | 24.6 | 45 | 87 |
| 2006 | 6384 | 35.1 | 16.4 | 31.6 | 24.1 | 42.1 | 87 |
| 2007 | 7604 | 34.7 | 15.4 | 31.6 | 24.4 | 41.6 | 88 |
| 2008 | 9537 | 34.7 | 15.4 | 31.5 | 24 | 41.6 | 87 |
| 2009 | 11854 | 34 | 15.4 | 30.9 | 23.8 | 40.5 | 86 |
| 2010 | 13761 | 34 | 15 | 30.9 | 24.1 | 40.2 | 87 |
| 2011 | 16214 | 32.6 | 14.3 | 29.7 | 23.1 | 38.7 | 85 |
| 2012 | 18972 | 31.7 | 13.5 | 29.2 | 22.9 | 37.5 | 85 |
| 2013 | 21861 | 31 | 13 | 28.7 | 22.6 | 36.8 | 84 |

Figure 6.2.7: Cumulative distribution of transferrin saturation on ESAs, HD patients 2004-2013**Figure 6.2.8:** Cumulative distribution of transferrin saturation on ESAs, PD patients 2004-2013**Table 6.2.8:** Distribution of transferrin saturation on ESAs, PD patients, 2004-2013

| Year | Number of patients | Mean | SD | Median | LQ | UQ | % Patients $\geq 20\%$ |
|------|--------------------|------|------|--------|------|------|------------------------|
| 2004 | 697 | 44.7 | 18.7 | 40.8 | 30.8 | 54.5 | 96 |
| 2005 | 820 | 43.5 | 19.3 | 39.1 | 29.4 | 53.7 | 95 |
| 2006 | 916 | 41.6 | 17.5 | 38 | 29.4 | 50.7 | 95 |
| 2007 | 1080 | 39.3 | 17.6 | 35.3 | 26.9 | 47.3 | 92 |
| 2008 | 1265 | 38.6 | 17.9 | 34.4 | 26.2 | 47.1 | 91 |
| 2009 | 1550 | 39.1 | 17.3 | 35.4 | 26.9 | 47.5 | 92 |
| 2010 | 1628 | 38.9 | 17.5 | 35.5 | 26.7 | 47.3 | 91 |
| 2011 | 1673 | 36.5 | 15.5 | 34.1 | 25.4 | 44.8 | 88 |
| 2012 | 1932 | 36.2 | 14.5 | 34 | 26.6 | 43.8 | 90 |
| 2013 | 1995 | 37.4 | 14.7 | 34.4 | 27.2 | 44.4 | 93 |

There was a wide variation in ferritin levels ranging from 100 to 1300 ng/ml between HD centres in 2013. A similar trend was seen in the PD centres (Table 6.2.9 & 6.2.10).

Table 6.2.9(a): Variation in Medium serum ferritin among patients on ESAs, HD centres 2004-2013

| Year | Number of centres | Min | 5 th centile | LQ | Median | UQ | 95 th centile | Max |
|------|-------------------|-------|-------------------------|-------|--------|-------|--------------------------|--------|
| 2004 | 125 | 99.5 | 324.8 | 454.8 | 563.5 | 716.3 | 981.5 | 2000 |
| 2005 | 163 | 1.6 | 322.5 | 461 | 625 | 731 | 967 | 2000 |
| 2006 | 205 | 1.5 | 234.5 | 419.5 | 553.7 | 691.3 | 914.5 | 2000 |
| 2007 | 242 | 78.3 | 256 | 436 | 566 | 681 | 880.5 | 1573 |
| 2008 | 278 | 92.2 | 332.6 | 478 | 600.7 | 723.3 | 949 | 1402 |
| 2009 | 341 | 89.1 | 301.2 | 457 | 594.7 | 714.5 | 894 | 1532.3 |
| 2010 | 371 | 39 | 255 | 441 | 575.5 | 730 | 969.4 | 1236.5 |
| 2011 | 431 | 27 | 240 | 418.3 | 535.5 | 686 | 904.3 | 1210.5 |
| 2012 | 493 | 100.3 | 241.9 | 385.5 | 517.3 | 653 | 884.5 | 1301.7 |
| 2013 | 527 | 127.3 | 231 | 378.9 | 496 | 620.5 | 858.1 | 1263.3 |

Figure 6.2.9(a): Variation in medium serum ferritin among patients on ESAs, HD centres 2013

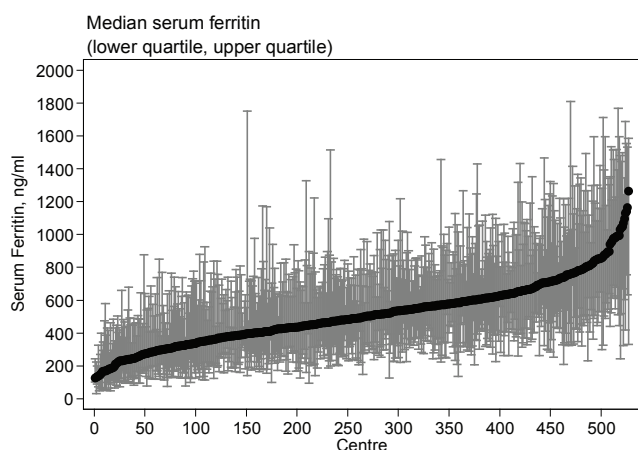


Figure 6.2.9(b): Variation in proportion of patients on ESAs with serum ferritin ≥100 ng/ml, HD centres 2013

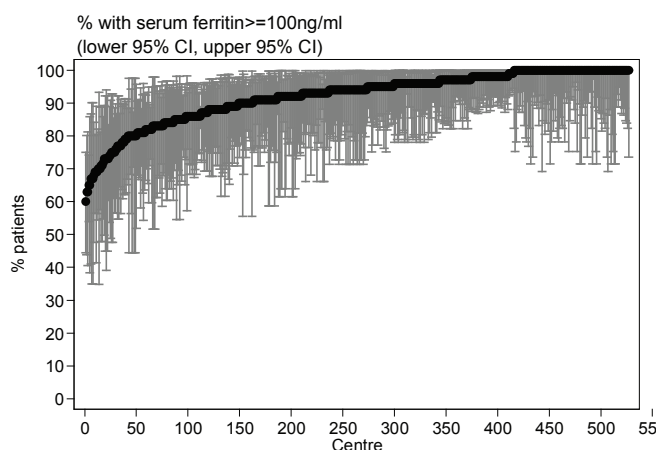
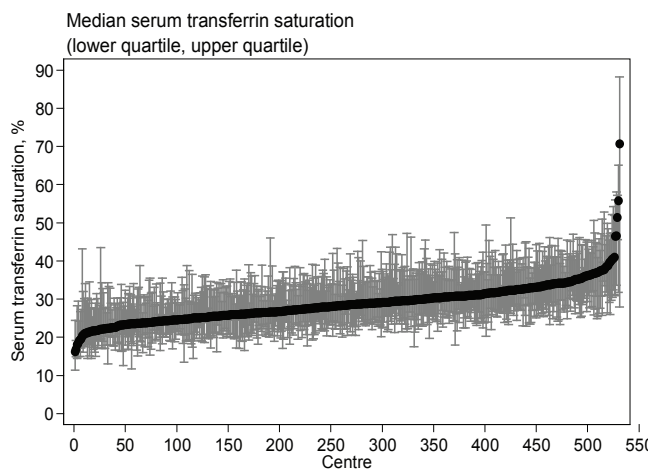
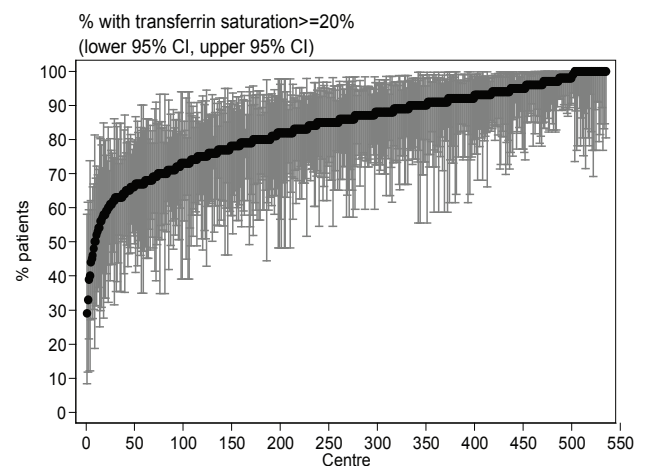


Table 6.2.9(b): Proportion of patients on ESAs with serum ferritin ≥100 ng/ml, HD centres 2004-2013

| Year | Number of centres | Min | 5 th centile | LQ | Median | UQ | 95 th centile | Max |
|------|-------------------|-----|-------------------------|----|--------|-----|--------------------------|-----|
| 2004 | 125 | 50 | 85 | 92 | 96 | 100 | 100 | 100 |
| 2005 | 163 | 6 | 80 | 90 | 95 | 100 | 100 | 100 |
| 2006 | 205 | 0 | 75 | 91 | 95 | 100 | 100 | 100 |
| 2007 | 242 | 36 | 76 | 91 | 96 | 100 | 100 | 100 |
| 2008 | 278 | 44 | 81 | 92 | 96 | 100 | 100 | 100 |
| 2009 | 341 | 44 | 82 | 91 | 95 | 100 | 100 | 100 |
| 2010 | 371 | 18 | 79 | 91 | 96 | 100 | 100 | 100 |
| 2011 | 431 | 15 | 76 | 89 | 95 | 100 | 100 | 100 |
| 2012 | 493 | 51 | 76 | 89 | 95 | 100 | 100 | 100 |
| 2013 | 527 | 60 | 75 | 88 | 94 | 98 | 100 | 100 |

Table 6.2.9(c): Median transferrin saturation among patients on ESAs, HD centres 2004-2013

| Year | Number of centres | Min | 5 th centile | LQ | Median | UQ | 95 th centile | Max |
|------|-------------------|------|-------------------------|------|--------|------|--------------------------|------|
| 2004 | 115 | 22.7 | 27.2 | 33 | 35.9 | 41.4 | 52 | 66.8 |
| 2005 | 148 | 17.3 | 25.1 | 29.1 | 32.3 | 37.8 | 48.9 | 69.8 |
| 2006 | 180 | 13.7 | 23.7 | 28.1 | 31.4 | 36.5 | 46.1 | 81.3 |
| 2007 | 215 | 17.6 | 22 | 27.9 | 31.4 | 35.8 | 42.8 | 78.1 |
| 2008 | 257 | 16.5 | 23.7 | 27.8 | 31.6 | 34.2 | 46.2 | 75.8 |
| 2009 | 306 | 17.2 | 21.9 | 27.5 | 30.5 | 34.1 | 41.2 | 78.6 |
| 2010 | 354 | 15.3 | 22.6 | 27.6 | 31.1 | 33.9 | 40.4 | 75.7 |
| 2011 | 424 | 15.3 | 22.6 | 26.5 | 29.6 | 32.7 | 38.6 | 58.5 |
| 2012 | 485 | 12.6 | 22.4 | 26.4 | 28.7 | 32 | 37.3 | 43.9 |
| 2013 | 531 | 16.2 | 22.1 | 25.4 | 28.5 | 31.3 | 36.6 | 70.6 |

Figure 6.2.9(c): Variation in median transferrin saturation among patients on ESAs HD centres, 2013**Figure 6.2.9(d):** Variation in proportion of patients on ESAs with transferrin saturation $\geq 20\%$, HD centres, 2013**Table 6.2.9(d):** Proportion of patients on ESAs with transferrin saturation $\geq 20\%$, HD centres 2004-2013

| Year | Number of centres | Min | 5 th centile | LQ | Median | UQ | 95 th centile | Max |
|------|-------------------|-----|-------------------------|----|--------|-----|--------------------------|-----|
| 2004 | 115 | 67 | 73 | 90 | 94 | 100 | 100 | 100 |
| 2005 | 149 | 42 | 69 | 83 | 91 | 95 | 100 | 100 |
| 2006 | 181 | 20 | 64 | 81 | 90 | 95 | 100 | 100 |
| 2007 | 216 | 27 | 63 | 83 | 90 | 96 | 100 | 100 |
| 2008 | 259 | 25 | 67 | 81 | 90 | 95 | 100 | 100 |
| 2009 | 310 | 36 | 63 | 80 | 88 | 94 | 100 | 100 |
| 2010 | 357 | 24 | 64 | 81 | 89 | 94 | 100 | 100 |
| 2011 | 431 | 27 | 62 | 79 | 86 | 93 | 100 | 100 |
| 2012 | 490 | 27 | 60 | 77 | 87 | 94 | 100 | 100 |
| 2013 | 535 | 29 | 61 | 76 | 86 | 93 | 100 | 100 |

Table 6.2.10(a): Variation in medium serum ferritin among patients on ESAs, PD centres 2004-2013

| Year | Number of centres | Min | 5 th centile | LQ | Median | UQ | 95 th centile | Max |
|------|-------------------|-------|-------------------------|-------|--------|-------|--------------------------|--------|
| 2004 | 13 | 317 | 317 | 529.5 | 610 | 701.3 | 860.3 | 860.3 |
| 2005 | 17 | 338.5 | 338.5 | 557.2 | 709.9 | 800.9 | 843 | 843 |
| 2006 | 19 | 391.2 | 391.2 | 531 | 633.5 | 783.4 | 968.4 | 968.4 |
| 2007 | 21 | 290.3 | 349.5 | 589.6 | 636.2 | 716.3 | 961.7 | 1048.6 |
| 2008 | 21 | 329.7 | 385 | 499 | 656.3 | 820.9 | 970.1 | 979 |
| 2009 | 21 | 329.4 | 341.3 | 578.8 | 676.6 | 784.9 | 947 | 1157 |
| 2010 | 24 | 266.5 | 306 | 568 | 654.8 | 752.4 | 799 | 827.5 |
| 2011 | 26 | 203.1 | 362.2 | 598 | 636.7 | 783.8 | 830.5 | 923.8 |
| 2012 | 26 | 158.3 | 205.7 | 519.5 | 629.4 | 741.3 | 870.5 | 1038.5 |
| 2013 | 27 | 182.9 | 318 | 501.7 | 607.9 | 724.7 | 917.6 | 991.7 |

Figure 6.2.10(a): Variation in medium serum ferritin among patients on ESAs, PD centres 2013

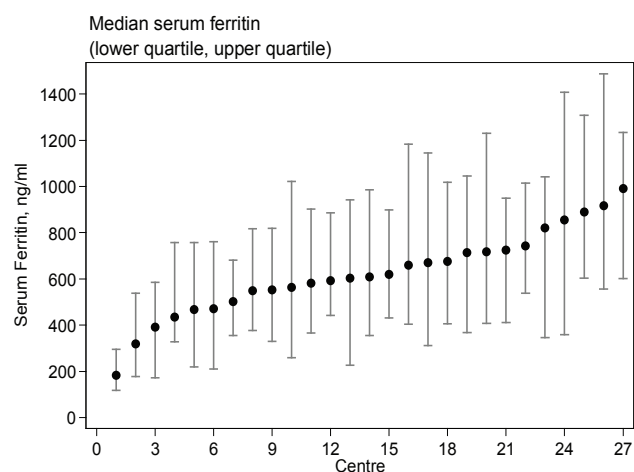


Figure 6.2.10(b): Variation in proportion of patients on ESAs with serum ferritin ≥100ng/ml, PD centres 2013

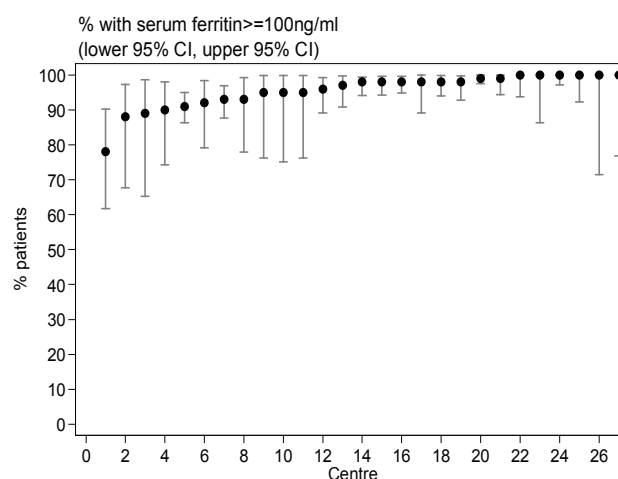
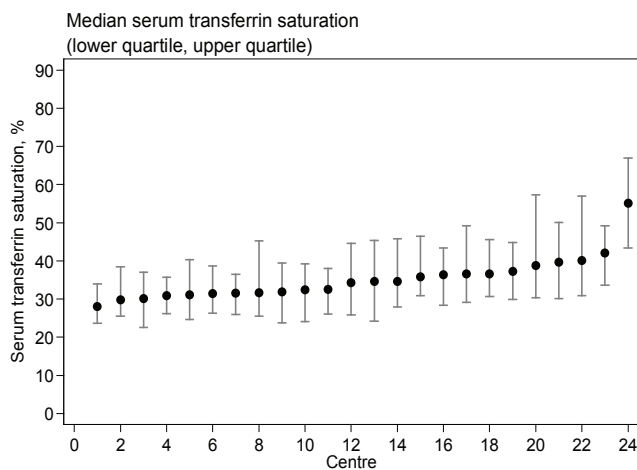
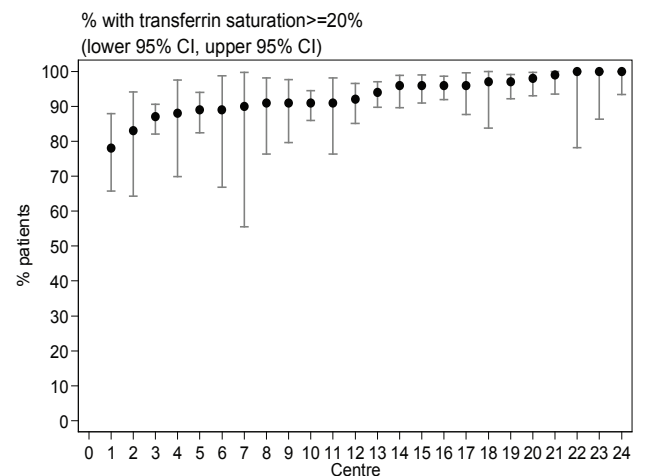


Table 6.2.10(b): Proportion of patients on ESAs with serum ferritin ≥100 ng/ml, PD centres 2004-2013

| Year | Number of centres | Min | 5 th centile | LQ | Median | UQ | 95 th centile | Max |
|------|-------------------|-----|-------------------------|------|--------|-----|--------------------------|-----|
| 2004 | 13 | 94 | 94 | 95 | 100 | 100 | 100 | 100 |
| 2005 | 17 | 88 | 88 | 96 | 97 | 100 | 100 | 100 |
| 2006 | 19 | 95 | 95 | 98 | 100 | 100 | 100 | 100 |
| 2007 | 21 | 90 | 92 | 96 | 98 | 100 | 100 | 100 |
| 2008 | 21 | 88 | 89 | 93 | 98 | 100 | 100 | 100 |
| 2009 | 21 | 85 | 86 | 95 | 98 | 100 | 100 | 100 |
| 2010 | 24 | 85 | 87 | 95.5 | 98 | 99 | 100 | 100 |
| 2011 | 26 | 84 | 84 | 92 | 97 | 100 | 100 | 100 |
| 2012 | 26 | 65 | 83 | 94 | 96.5 | 98 | 100 | 100 |
| 2013 | 27 | 78 | 88 | 93 | 98 | 99 | 100 | 100 |

Table 6.2.10(c): Median transferrin saturation among patients on ESAs, PD centres 2004-2013

| Year | Number of centres | Min | 5 th centile | LQ | Median | UQ | 95 th centile | Max |
|------|-------------------|------|-------------------------|------|--------|------|--------------------------|------|
| 2004 | 17 | 29.1 | 29.1 | 36 | 40.9 | 42.7 | 82.3 | 82.3 |
| 2005 | 17 | 30.3 | 30.3 | 36.3 | 38.5 | 43 | 74.9 | 74.9 |
| 2006 | 19 | 31.9 | 31.9 | 34.8 | 37.7 | 42 | 74.9 | 74.9 |
| 2007 | 19 | 26.1 | 26.1 | 29.4 | 37.7 | 43 | 83 | 83 |
| 2008 | 19 | 25.3 | 25.3 | 31.5 | 34.2 | 42.6 | 81.1 | 81.1 |
| 2009 | 22 | 25 | 26.7 | 33.1 | 37.2 | 44.6 | 54.9 | 83.2 |
| 2010 | 22 | 23.9 | 24.8 | 32.6 | 35.7 | 42.2 | 53.1 | 78.1 |
| 2011 | 24 | 22.4 | 23.9 | 30.5 | 33.6 | 36.9 | 48.6 | 56.1 |
| 2012 | 25 | 25 | 26.6 | 30.5 | 33 | 36.2 | 45.2 | 45.7 |
| 2013 | 24 | 28.1 | 29.8 | 31.5 | 34.4 | 36.9 | 42.1 | 55.1 |

Figure 6.2.10(c): Variation in median transferrin saturation among patients on ESAs, PD centres 2013**Figure 6.2.10(d):** Variation in proportion of patients on ESAs with transferrin saturation $\geq 20\%$, PD centres 2013**Table 6.2.10(d):** Proportion of patients on ESAs with transferrin saturation $\geq 20\%$, PD centres 2004-2013

| Year | Number of centres | Min | 5 th centile | LQ | Median | UQ | 95 th centile | Max |
|------|-------------------|-----|-------------------------|------|--------|------|--------------------------|-----|
| 2004 | 17 | 88 | 88 | 96 | 97 | 100 | 100 | 100 |
| 2005 | 17 | 88 | 88 | 93 | 97 | 100 | 100 | 100 |
| 2006 | 19 | 83 | 83 | 93 | 95 | 98 | 100 | 100 |
| 2007 | 19 | 74 | 74 | 88 | 94 | 98 | 100 | 100 |
| 2008 | 19 | 65 | 65 | 91 | 95 | 97 | 100 | 100 |
| 2009 | 22 | 70 | 83 | 92 | 94.5 | 97 | 100 | 100 |
| 2010 | 22 | 69 | 75 | 90 | 95 | 100 | 100 | 100 |
| 2011 | 24 | 59 | 68 | 85 | 94 | 97.5 | 100 | 100 |
| 2012 | 25 | 62 | 72 | 86 | 94 | 97 | 100 | 100 |
| 2013 | 24 | 78 | 83 | 89.5 | 93 | 97 | 100 | 100 |

SECTION 6.3: HAEMOGLOBIN OUTCOMES ON DIALYSIS

The median haemoglobin in diabetic HD and PD patients on ESA was 10.4 to 10.5g/dl. In non-diabetic HD and PD patients, the haemoglobin was at 10.5g/dl and 10.3g/dl respectively.

In diabetic HD and PD patients, the percentage of patients with haemoglobin 10 to 12g/dl was 48% and 53% respectively. In non-diabetic HD and PD patients, the percentage of patients with haemoglobin 10 to 12g/dl was 50% and 46% respectively. (Table 6.3.1 & 6.3.2)

Table 6.3.1: Distribution of haemoglobin concentration without ESAs, HD patients 2004-2013

| Year | Number of patients | Mean | SD | Median | LQ | UQ | % Patients <10g/dL | % Patients 10-<12g/dL | % Patients >=12g/dL |
|------|--------------------|------|-----|--------|-----|------|--------------------|-----------------------|---------------------|
| 2004 | 1925 | 10.1 | 2.2 | 9.9 | 8.6 | 11.5 | 53 | 28 | 19 |
| 2005 | 1667 | 10.5 | 2.3 | 10.3 | 8.9 | 12.1 | 46 | 29 | 25 |
| 2006 | 1760 | 10.6 | 2.2 | 10.5 | 9 | 12.1 | 42 | 32 | 26 |
| 2007 | 1756 | 10.8 | 2.2 | 10.7 | 9.1 | 12.4 | 40 | 29 | 31 |
| 2008 | 1751 | 10.8 | 2.3 | 10.8 | 9.1 | 12.6 | 39 | 29 | 32 |
| 2009 | 1848 | 11.2 | 2.3 | 11.3 | 9.4 | 12.9 | 33 | 29 | 38 |
| 2010 | 1875 | 11.2 | 2.2 | 11.4 | 9.6 | 12.9 | 30 | 30 | 40 |
| 2011 | 2071 | 11.2 | 2.2 | 11.4 | 9.6 | 12.8 | 31 | 30 | 39 |
| 2012 | 2285 | 11.4 | 2.2 | 11.7 | 9.9 | 13 | 26 | 31 | 43 |
| 2013 | 2542 | 11.4 | 2.2 | 11.7 | 10 | 13 | 26 | 30 | 44 |

Figure 6.3.1: Cumulative distribution of haemoglobin concentration without ESAs, HD patients 2004-2013

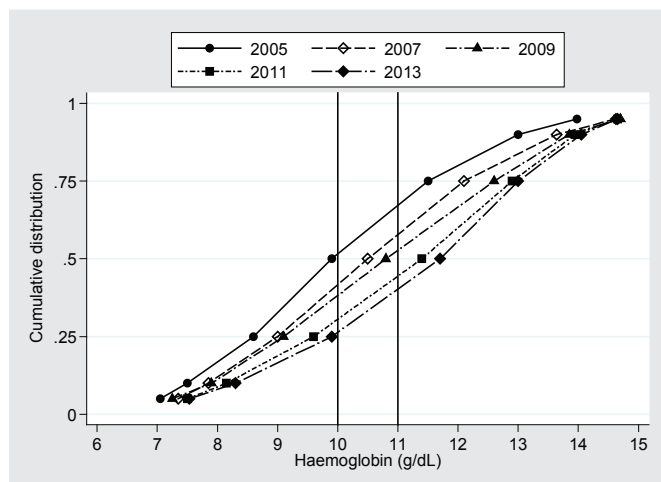


Figure 6.3.2: Cumulative distribution of haemoglobin concentration without ESAs, PD patients 2004-2013

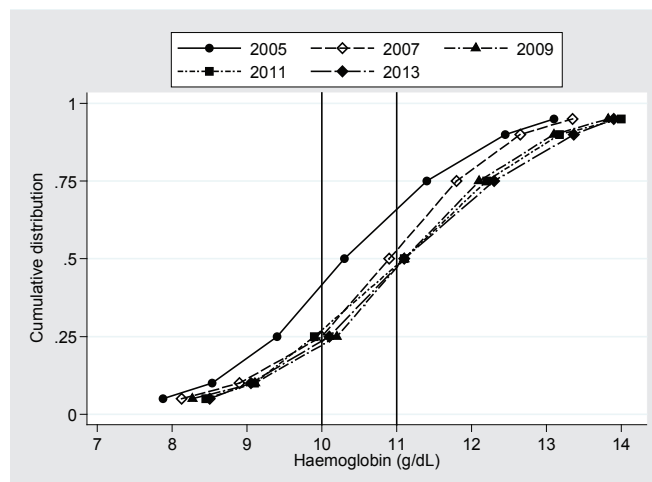
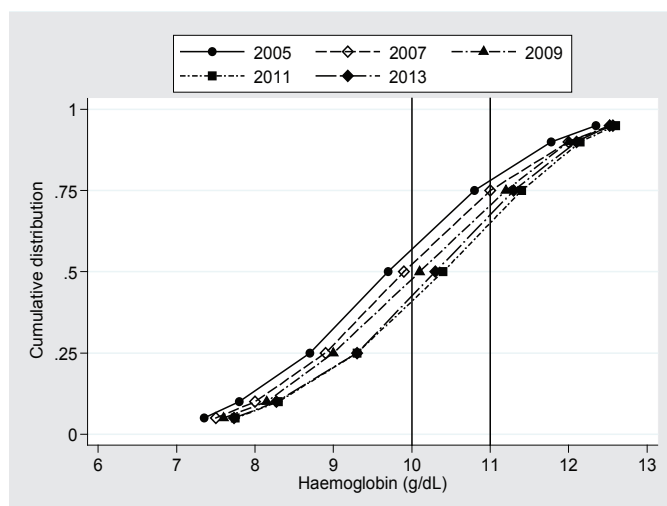
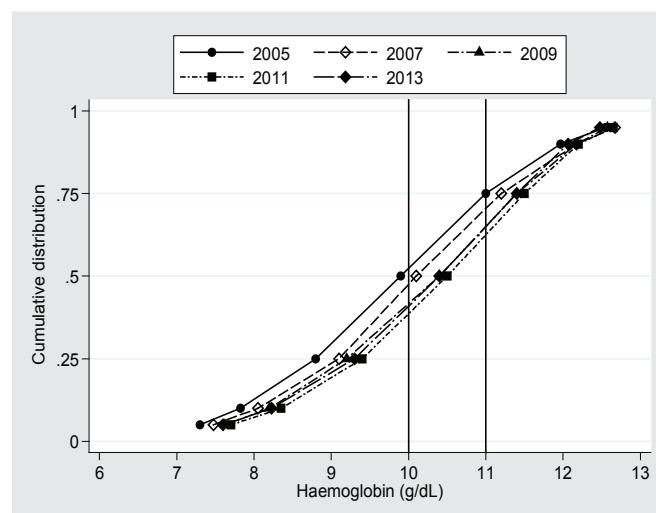


Table 6.3.2: Distribution of haemoglobin concentration without ESAs, PD patients 2004-2013

| Year | Number of patients | Mean | SD | Median | LQ | UQ | % Patients <10g/dL | % Patients 10-<12g/dL | % Patients >=12g/dL |
|------|--------------------|------|-----|--------|------|------|--------------------|-----------------------|---------------------|
| 2004 | 481 | 10.4 | 1.6 | 10.3 | 9.4 | 11.4 | 42 | 43 | 15 |
| 2005 | 375 | 10.8 | 1.6 | 10.8 | 9.9 | 11.8 | 28 | 52 | 20 |
| 2006 | 387 | 10.9 | 1.6 | 10.9 | 10 | 11.8 | 25 | 55 | 20 |
| 2007 | 436 | 11.1 | 1.6 | 11 | 10.2 | 12.1 | 22 | 51 | 27 |
| 2008 | 450 | 11.1 | 1.7 | 11.1 | 10.2 | 12.1 | 21 | 51 | 28 |
| 2009 | 488 | 11.1 | 1.8 | 11.1 | 10.1 | 12.2 | 25 | 47 | 28 |
| 2010 | 495 | 11.1 | 1.7 | 11.1 | 9.9 | 12.2 | 27 | 46 | 27 |
| 2011 | 547 | 11.1 | 1.6 | 11.1 | 10 | 12.1 | 25 | 48 | 27 |
| 2012 | 565 | 11.2 | 1.7 | 11.1 | 10.1 | 12.3 | 25 | 46 | 29 |
| 2013 | 610 | 11.3 | 1.6 | 11.2 | 10.3 | 12.3 | 19 | 49 | 32 |

Table 6.3.3(a): Median transferrin saturation among patients on ESAs, PD centres 2004-2013

| Year | Number of patients | Mean | SD | Median | LQ | UQ | % Patients <10g/dL | % Patients 10-<12g/dL | % Patients ≥12g/dL |
|------|--------------------|------|-----|--------|-----|------|--------------------|-----------------------|--------------------|
| 2004 | 2189 | 9.8 | 1.5 | 9.7 | 8.7 | 10.8 | 57 | 35 | 8 |
| 2005 | 2890 | 10 | 1.6 | 9.9 | 8.9 | 11 | 52 | 38 | 10 |
| 2006 | 4084 | 10 | 1.6 | 9.9 | 8.9 | 11 | 53 | 38 | 9 |
| 2007 | 4657 | 10.1 | 1.5 | 10.1 | 9 | 11.1 | 48 | 42 | 10 |
| 2008 | 5885 | 10.1 | 1.5 | 10.1 | 9 | 11.2 | 47 | 43 | 10 |
| 2009 | 7344 | 10.2 | 1.5 | 10.3 | 9.2 | 11.3 | 44 | 45 | 11 |
| 2010 | 8128 | 10.3 | 1.5 | 10.4 | 9.3 | 11.4 | 42 | 46 | 12 |
| 2011 | 9312 | 10.3 | 1.5 | 10.4 | 9.3 | 11.4 | 41 | 47 | 12 |
| 2012 | 10885 | 10.2 | 1.5 | 10.3 | 9.3 | 11.3 | 42 | 47 | 11 |
| 2013 | 12118 | 10.3 | 1.5 | 10.4 | 9.3 | 11.3 | 41 | 48 | 11 |

Figure 6.3.3(a): Cumulative distribution of haemoglobin concentration on ESAs, diabetes HD patients 2004-2013**Figure 6.3.3(b):** Cumulative distribution of haemoglobin concentration on ESAs, non-diabetes HD patients 2004-2013**Table 6.3.3(b):** Distribution of haemoglobin concentration on ESAs, non-diabetes HD patients 2004-2013

| Year | Number of patients | Mean | SD | Median | LQ | UQ | % Patients <10g/dL | % Patients 10-<12g/dL | % Patients ≥12g/dL |
|------|--------------------|------|-----|--------|-----|------|--------------------|-----------------------|--------------------|
| 2004 | 3616 | 9.9 | 1.6 | 9.9 | 8.8 | 11 | 53 | 38 | 9 |
| 2005 | 4327 | 10.1 | 1.6 | 10.1 | 8.9 | 11.2 | 48 | 40 | 12 |
| 2006 | 5330 | 10.1 | 1.6 | 10.1 | 9.1 | 11.2 | 47 | 41 | 12 |
| 2007 | 6039 | 10.3 | 1.6 | 10.4 | 9.3 | 11.4 | 41 | 46 | 13 |
| 2008 | 7153 | 10.3 | 1.5 | 10.4 | 9.2 | 11.4 | 41 | 47 | 12 |
| 2009 | 8190 | 10.3 | 1.5 | 10.5 | 9.3 | 11.4 | 40 | 48 | 12 |
| 2010 | 8965 | 10.4 | 1.5 | 10.5 | 9.4 | 11.5 | 38 | 49 | 13 |
| 2011 | 10268 | 10.3 | 1.5 | 10.5 | 9.4 | 11.4 | 39 | 49 | 12 |
| 2012 | 11798 | 10.3 | 1.5 | 10.4 | 9.3 | 11.4 | 39 | 50 | 11 |
| 2013 | 13500 | 10.3 | 1.5 | 10.5 | 9.4 | 11.4 | 38 | 50 | 12 |

Table 6.3.4(a): Distribution of haemoglobin concentration on ESAs, diabetes PD patients 2004-2013

| Year | Number of subject | Mean | SD | Median | LQ | UQ | % Patients <10g/dL | % Patients 10-12g/dL | % Patients >=12g/dL |
|------|-------------------|------|-----|--------|-----|------|--------------------|----------------------|---------------------|
| 2004 | 224 | 10.2 | 1.6 | 10.2 | 9.1 | 11.3 | 46 | 40 | 14 |
| 2005 | 267 | 10.3 | 1.6 | 10.3 | 9.3 | 11.5 | 43 | 43 | 14 |
| 2006 | 334 | 10.2 | 1.4 | 10.3 | 9.4 | 11.1 | 43 | 47 | 10 |
| 2007 | 459 | 10.5 | 1.3 | 10.4 | 9.6 | 11.4 | 37 | 51 | 12 |
| 2008 | 629 | 10.5 | 1.3 | 10.6 | 9.6 | 11.4 | 33 | 55 | 12 |
| 2009 | 652 | 10.5 | 1.4 | 10.6 | 9.6 | 11.4 | 35 | 53 | 12 |
| 2010 | 620 | 10.5 | 1.4 | 10.5 | 9.5 | 11.4 | 37 | 50 | 13 |
| 2011 | 593 | 10.4 | 1.4 | 10.5 | 9.6 | 11.4 | 36 | 53 | 11 |
| 2012 | 668 | 10.4 | 1.4 | 10.5 | 9.6 | 11.3 | 37 | 54 | 9 |
| 2013 | 716 | 10.4 | 1.4 | 10.5 | 9.5 | 11.3 | 37 | 53 | 10 |

Figure 6.3.4(a): Cumulative distribution of haemoglobin concentration on ESAs, diabetes PD patients 2004-2013

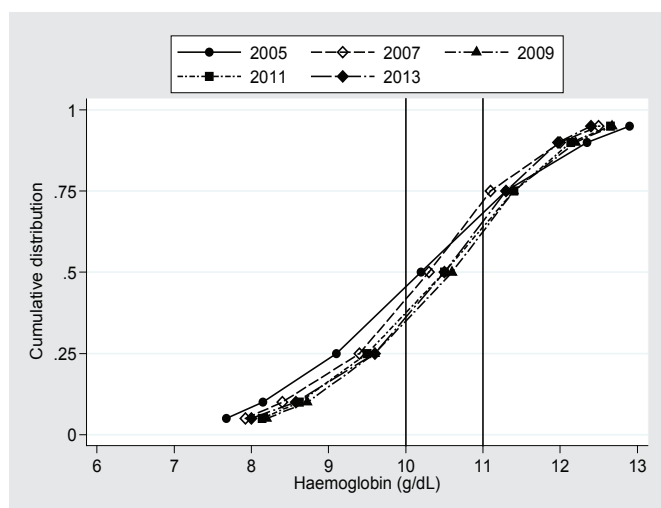


Figure 6.3.4(b): Cumulative distribution of haemoglobin concentration on ESAs, non-diabetes PD patients 2004-2013

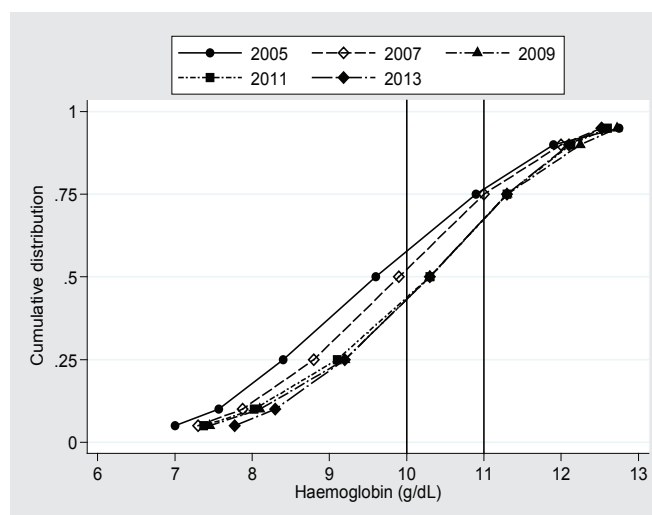


Table 6.3.4(b): Distribution of haemoglobin concentration on ESAs, non-diabetes PD patients 2004-2013

| Year | Number of subject | Mean | SD | Median | LQ | UQ | % Patients <10g/dL | % Patients 10-12g/dL | % Patients >=12g/dL |
|------|-------------------|------|-----|--------|-----|------|--------------------|----------------------|---------------------|
| 2004 | 574 | 9.7 | 1.7 | 9.6 | 8.4 | 10.9 | 57 | 34 | 9 |
| 2005 | 703 | 9.8 | 1.7 | 9.7 | 8.6 | 11 | 56 | 33 | 11 |
| 2006 | 784 | 9.9 | 1.6 | 9.9 | 8.8 | 11 | 52 | 38 | 10 |
| 2007 | 860 | 10.2 | 1.7 | 10.3 | 9 | 11.4 | 44 | 41 | 15 |
| 2008 | 948 | 10.2 | 1.6 | 10.3 | 9.2 | 11.3 | 44 | 44 | 12 |
| 2009 | 1012 | 10.2 | 1.6 | 10.3 | 9.2 | 11.4 | 44 | 44 | 12 |
| 2010 | 1185 | 10.2 | 1.6 | 10.3 | 9.1 | 11.3 | 44 | 45 | 11 |
| 2011 | 1349 | 10.1 | 1.5 | 10.2 | 9.1 | 11.2 | 46 | 45 | 9 |
| 2012 | 1582 | 10.3 | 1.5 | 10.3 | 9.2 | 11.3 | 43 | 46 | 11 |
| 2013 | 1849 | 10.2 | 1.5 | 10.3 | 9.2 | 11.2 | 44 | 46 | 10 |

In 2013, for HD patients on ESAs, the Hb ranged 8.3 to 11.8gm/dl with the median at 10.4 gm/dl. For PD patients, the median hemoglobin is similar at 10.3g/dl, with a lesser variation among PD centres compared to HD centres.

Table 6.3.5(a): Variation in median haemoglobin level among patients on ESAs, HD centres 2004-2013

| Year | Number of centres | Min | 5 th centile | LQ | Median | UQ | 95 th centile | Max |
|------|-------------------|-----|-------------------------|-----|--------|------|--------------------------|------|
| 2004 | 179 | 7.6 | 8.6 | 9.2 | 9.8 | 10.2 | 10.9 | 11.3 |
| 2005 | 216 | 8.3 | 8.8 | 9.4 | 9.9 | 10.4 | 11.1 | 11.5 |
| 2006 | 267 | 7.7 | 8.8 | 9.5 | 9.9 | 10.5 | 11.3 | 12.6 |
| 2007 | 302 | 8.6 | 9.2 | 9.8 | 10.2 | 10.6 | 11.2 | 12.2 |
| 2008 | 355 | 8.1 | 9 | 9.8 | 10.2 | 10.7 | 11.3 | 11.9 |
| 2009 | 401 | 8.5 | 9.1 | 9.9 | 10.3 | 10.8 | 11.4 | 12.2 |
| 2010 | 438 | 8.1 | 9.2 | 9.9 | 10.4 | 10.9 | 11.4 | 12.1 |
| 2011 | 495 | 8.3 | 9.1 | 9.9 | 10.4 | 10.8 | 11.4 | 12.2 |
| 2012 | 551 | 8.2 | 9 | 9.8 | 10.4 | 10.8 | 11.3 | 11.8 |
| 2013 | 597 | 8.3 | 9.1 | 9.9 | 10.4 | 10.8 | 11.3 | 11.8 |

Figure 6.3.5(a): Variation in median haemoglobin level among patients on ESAs, HD centres 2013

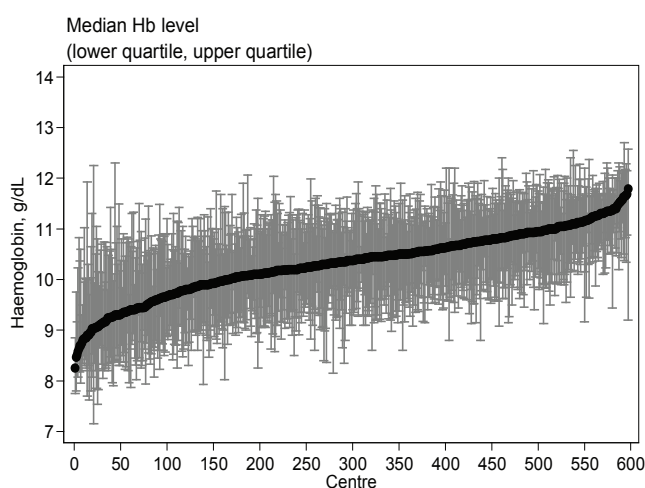


Figure 6.3.5(b): Variation in proportion of patients on ESAs with haemoglobin level > 10g/dL, HD centres 2013

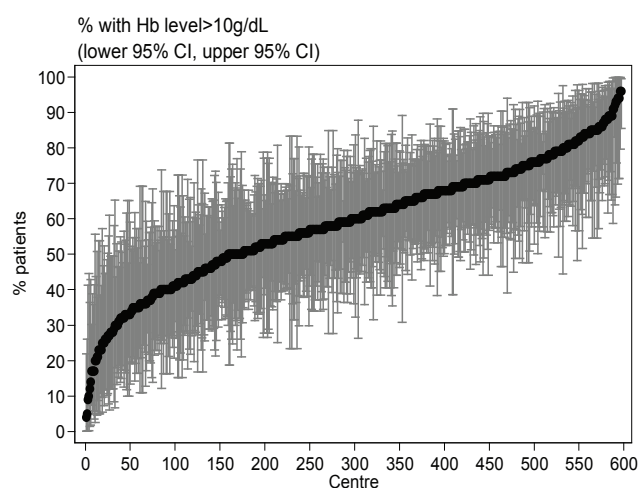


Table 6.3.5(b): Proportion of patients on ESAs with haemoglobin level > 10g/dL, HD centres 2004-2013

| Year | Number of centres | Min | 5 th centile | LQ | Median | UQ | 95 th centile | Max |
|------|-------------------|-----|-------------------------|----|--------|----|--------------------------|-----|
| 2004 | 179 | 7 | 17 | 31 | 42 | 57 | 73 | 85 |
| 2005 | 216 | 0 | 18 | 33 | 48.5 | 61 | 76 | 88 |
| 2006 | 267 | 0 | 21 | 36 | 48 | 62 | 80 | 94 |
| 2007 | 302 | 9 | 29 | 43 | 56 | 67 | 83 | 100 |
| 2008 | 355 | 0 | 25 | 43 | 56 | 69 | 82 | 100 |
| 2009 | 401 | 4 | 28 | 46 | 58 | 70 | 86 | 100 |
| 2010 | 438 | 12 | 29 | 47 | 60 | 72 | 87 | 100 |
| 2011 | 495 | 0 | 28 | 47 | 60 | 71 | 88 | 100 |
| 2012 | 551 | 0 | 25 | 46 | 60 | 70 | 83 | 100 |
| 2013 | 597 | 4 | 28 | 48 | 60 | 71 | 85 | 96 |

Table 6.3.6(a): Variation in Median haemoglobin level among patients on ESAs, PD centres 2004-2013

| Year | Number of centres | Min | 5 th centile | LQ | Median | UQ | 95 th centile | Max |
|------|-------------------|-----|-------------------------|------|--------|------|--------------------------|------|
| 2004 | 17 | 8.4 | 8.4 | 9.2 | 9.7 | 10.2 | 11.2 | 11.2 |
| 2005 | 18 | 8.9 | 8.9 | 9.6 | 9.8 | 10.3 | 11 | 11 |
| 2006 | 22 | 8.7 | 8.9 | 9.4 | 9.9 | 10.4 | 10.6 | 10.9 |
| 2007 | 22 | 9.5 | 9.5 | 10.1 | 10.3 | 10.8 | 11.1 | 11.1 |
| 2008 | 22 | 9.2 | 9.6 | 10.2 | 10.4 | 10.6 | 11.1 | 11.2 |
| 2009 | 23 | 9.4 | 9.5 | 9.9 | 10.6 | 10.7 | 11 | 11.2 |
| 2010 | 25 | 9.3 | 9.5 | 10.2 | 10.4 | 10.6 | 11.2 | 11.3 |
| 2011 | 27 | 8.6 | 9 | 9.9 | 10.3 | 10.6 | 10.9 | 11 |
| 2012 | 27 | 9.3 | 9.4 | 9.8 | 10.4 | 10.6 | 11.1 | 11.2 |
| 2013 | 28 | 9.4 | 9.6 | 9.9 | 10.3 | 10.5 | 10.9 | 11.3 |

Figure 6.3.6(a): Variation in median haemoglobin level among patients on ESAs, PD centres 2013

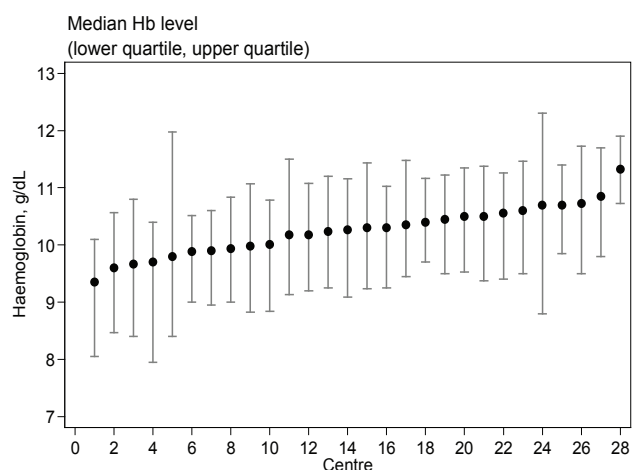


Figure 6.3.6(b): Variation in proportion of patients on ESAs with haemoglobin level >10g/dL, PD centres, 2013

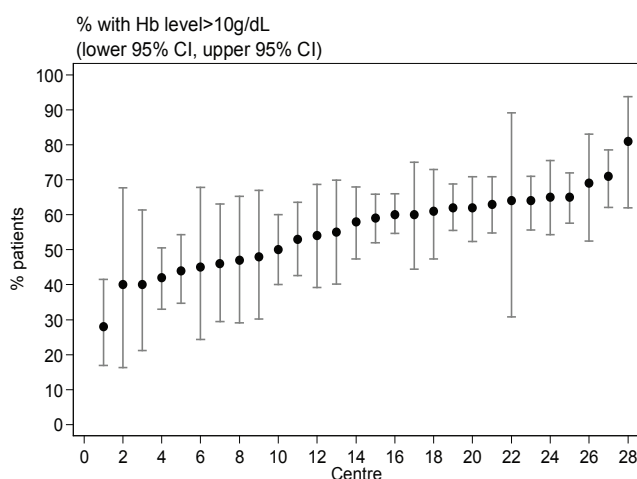


Table 6.3.6(b): Proportion of patients on ESAs with haemoglobin level >10g/dL, PD centres 2004-2013

| Year | Number of centres | Min | 5 th centile | LQ | Median | UQ | 95 th centile | Max |
|------|-------------------|-----|-------------------------|------|--------|------|--------------------------|-----|
| 2004 | 17 | 11 | 11 | 38 | 43 | 52 | 72 | 72 |
| 2005 | 18 | 21 | 21 | 35 | 47.5 | 56 | 76 | 76 |
| 2006 | 22 | 19 | 20 | 43 | 48.5 | 58 | 69 | 70 |
| 2007 | 22 | 35 | 36 | 52 | 59.5 | 63 | 72 | 72 |
| 2008 | 22 | 32 | 36 | 57 | 60.5 | 64 | 75 | 89 |
| 2009 | 23 | 34 | 38 | 48 | 61 | 67 | 71 | 76 |
| 2010 | 25 | 36 | 37 | 50 | 58 | 65 | 73 | 77 |
| 2011 | 27 | 17 | 22 | 49 | 58 | 68 | 79 | 80 |
| 2012 | 27 | 36 | 38 | 44 | 61 | 66 | 77 | 85 |
| 2013 | 28 | 28 | 40 | 46.5 | 58.5 | 63.5 | 71 | 81 |