

# **CHAPTER 11**

## **Haemodialysis Practices**

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**Table 11.1.1: Vascular access on haemodialysis, 2002-2011**

Access types	2002		2003		2004		2005		2006	
	n	%	n	%	n	%	n	%	n	%
Wrist AVF	4680	77.7	5249	75.2	5891	72.7	6405	69.1	7798	67.7
BCF*	1068	17.7	1359	19.5	1693	20.9	2169	23.4	2856	24.8
Venous graft	14	0.2	23	0.3	41	0.5	30	0.3	22	0.2
Artificial graft	78	1.3	113	1.6	149	1.8	221	2.4	284	2.5
Permanent CVC	43	0.7	61	0.9	99	1.2	179	1.9	235	2
Temporary CVC*	138	2.3	179	2.6	233	2.9	266	2.9	298	2.6
Temporary FVC*	0	0	0	0	0	0	4	0	19	0.2
<b>TOTAL</b>	<b>6021</b>	<b>100</b>	<b>6984</b>	<b>100</b>	<b>8106</b>	<b>100</b>	<b>9274</b>	<b>100</b>	<b>11512</b>	<b>100</b>

Access types	2007		2008		2009		2010		2011	
	n	%	n	%	n	%	n	%	n	%
Wrist AVF	8309	65	9491	62.4	10665	60.6	11130	58.4	12556	56.7
BCF*	3421	26.8	4403	29	5243	29.8	6105	32	7358	33.3
Venous graft	37	0.3	19	0.1	32	0.2	50	0.3	42	0.2
Artificial graft	305	2.4	351	2.3	379	2.2	386	2	378	1.7
Permanent CVC	261	2	298	2	464	2.6	513	2.7	669	3
Temporary CVC*	424	3.3	579	3.8	770	4.4	818	4.3	1039	4.7
Temporary FVC*	25	0.2	59	0.4	46	0.3	71	0.4	86	0.4
<b>TOTAL</b>	<b>12782</b>	<b>100</b>	<b>15200</b>	<b>100</b>	<b>17599</b>	<b>100</b>	<b>19073</b>	<b>100</b>	<b>22128</b>	<b>100</b>

**\*CVC = central venous catheter, FVC = femoral venous catheter,  
BCF = brachiocephalic fistula**

**Table 11.1.2: Difficulties report with vascular access, 2002-2011**

Access difficulty	2002		2003		2004		2005		2006	
	n	%	n	%	n	%	n	%	n	%
Difficulty with needle placement	215	3.9	217	3.3	255	3.4	319	3.5	394	3.5
Difficulty in obtaining desired blood flow rate	235	4.2	243	3.7	301	4	354	3.9	356	3.1
Other difficulties	57	1	60	0.9	67	0.9	58	0.6	45	0.4
No difficulties	5073	90.9	5970	92	6957	91.8	8339	91.9	10592	93
<b>Total</b>	<b>5580</b>	<b>100</b>	<b>6490</b>	<b>100</b>	<b>7580</b>	<b>100</b>	<b>9070</b>	<b>100</b>	<b>11387</b>	<b>100</b>

Access difficulty	2007		2008		2009		2010		2011	
	n	%	n	%	n	%	n	%	n	%
Difficulty with needle placement	478	3.8	417	2.8	522	3	555	2.9	478	2.1
Difficulty in obtaining desired blood flow rate	368	2.9	420	2.8	473	2.7	437	2.3	495	2.2
Other difficulties	57	0.5	81	0.5	101	0.6	78	0.4	72	0.3
No difficulties	11577	92.8	14076	93.9	16482	93.8	18071	94.4	21248	95.3
<b>Total</b>	<b>12480</b>	<b>100</b>	<b>14994</b>	<b>100</b>	<b>17578</b>	<b>100</b>	<b>19141</b>	<b>100</b>	<b>22293</b>	<b>100</b>

**Table 11.1.3: Complications reported with vascular access, 2002-2011**

Complication	2002		2003		2004		2005		2006	
	n	%	n	%	n	%	n	%	n	%
Thrombosis	202	3.5	220	3.2	284	3.6	289	3.2	317	2.8
Bleed	66	1.1	54	0.8	67	0.8	73	0.8	69	0.6
Aneurysmal dilatation	211	3.6	199	2.9	193	2.4	179	2	246	2.2
Swollen limb	56	1	55	0.8	77	1	84	0.9	89	0.8
Access related infection, local/systemic	52	0.9	43	0.6	70	0.9	63	0.7	78	0.7
Distal limb ischaemia	17	0.3	13	0.2	37	0.5	35	0.4	30	0.3
Venous outflow obstruction	101	1.7	119	1.7	151	1.9	170	1.9	202	1.8
Carpal tunnel	44	0.8	63	0.9	49	0.6	55	0.6	48	0.4
Others	118	2	118	1.7	133	1.7	109	1.2	116	1
No complications	4988	85.2	5963	87.1	6896	86.7	8113	88.5	10154	89.5
<b>Total</b>	<b>5855</b>	<b>100</b>	<b>6847</b>	<b>100</b>	<b>7957</b>	<b>100</b>	<b>9170</b>	<b>100</b>	<b>11349</b>	<b>100</b>

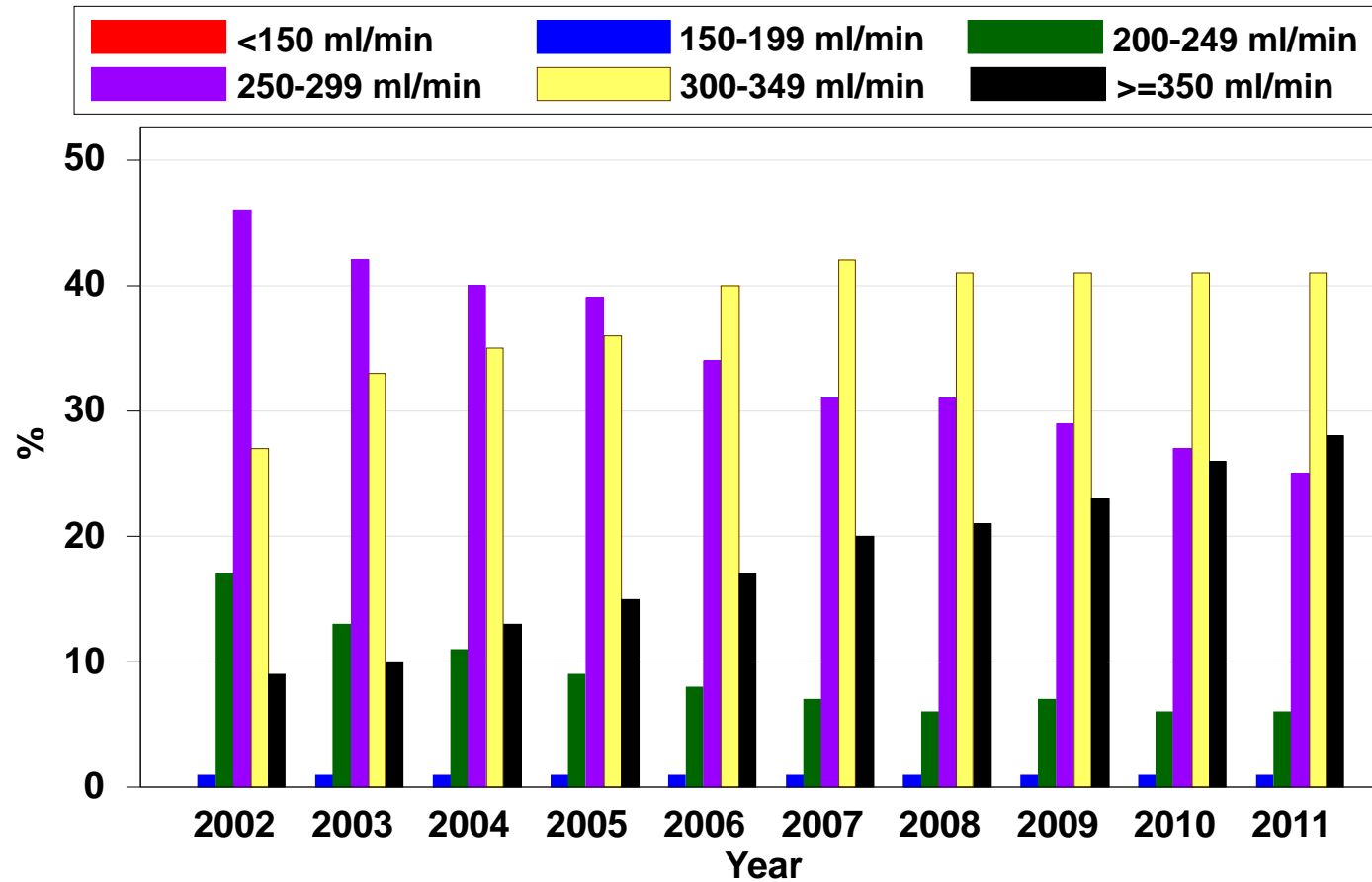
Complication	2007		2008		2009		2010		2011	
	n	%	n	%	n	%	n	%	n	%
Thrombosis	405	3.2	436	2.9	481	2.7	463	2.4	503	2.2
Bleed	58	0.5	76	0.5	72	0.4	78	0.4	78	0.3
Aneurysmal dilatation	385	3.1	396	2.6	452	2.6	319	1.7	398	1.8
Swollen limb	101	0.8	98	0.6	162	0.9	150	0.8	140	0.6
Access related infection, local/systemic	97	0.8	92	0.6	133	0.8	123	0.6	130	0.6
Distal limb ischaemia	27	0.2	31	0.2	25	0.1	33	0.2	25	0.1
Venous outflow obstruction	196	1.6	250	1.7	299	1.7	239	1.2	273	1.2
Carpal tunnel	46	0.4	48	0.3	48	0.3	44	0.2	50	0.2
Others	152	1.2	165	1.1	119	0.7	122	0.6	142	0.6
No complications	11052	88.3	13517	89.5	15866	89.9	17601	91.8	20641	92.2
<b>Total</b>	<b>12519</b>	<b>100</b>	<b>15109</b>	<b>100</b>	<b>17657</b>	<b>100</b>	<b>19172</b>	<b>100</b>	<b>22380</b>	<b>100</b>

**Table 11.2.1: Blood flow rates in HD centers, 2002-2011**

Blood flow rates (ml/min)	2002		2003		2004		2005		2006	
	n	%	n	%	n	%	n	%	n	%
<150	9	0.2	4	0.1	11	0.1	7	0.1	5	0
150-199	69	1.2	84	1.2	86	1.1	94	1	103	0.9
200-249	973	16.7	882	13	879	11.2	814	9.1	923	8.2
250-299	2692	46.1	2865	42.3	3112	39.8	3523	39.2	3818	33.8
300-349	1590	27.2	2241	33.1	2711	34.7	3226	35.9	4529	40.1
≥350	505	8.7	690	10.2	1020	13	1328	14.8	1920	17
Total	5838	100	6766	100	7819	100	8992	100	11298	100

Blood flow rates (ml/min)	2007		2008		2009		2010		2011	
	n	%	n	%	n	%	n	%	n	%
<150	10	0.1	10	0.1	14	0.1	16	0.1	14	0.1
150-199	87	0.7	120	0.8	126	0.7	113	0.6	122	0.6
200-249	929	7.4	928	6.2	1178	6.8	1192	6.3	1303	5.9
250-299	3821	30.5	4638	31.1	5050	29	5021	26.5	5514	25
300-349	5214	41.7	6127	41.1	7093	40.7	7721	40.8	8935	40.5
≥350	2451	19.6	3094	20.7	3977	22.8	4850	25.6	6172	28
Total	12512	100	14917	100	17438	100	18913	100	22060	100

**Figure 11.2.1: Blood flow rates in HD centers, 2002-2011**



**Table 11.2.2: Number of HD sessions per week, 2002-2011**

HD sessions per week	2002		2003		2004		2005		2006	
	n	%	n	%	n	%	n	%	n	%
1	10	0.2	15	0.2	11	0.1	7	0.1	25	0.2
2	369	6.2	343	4.9	281	3.5	265	2.8	273	2.3
3	5603	93.4	6585	94.7	7751	96	9011	96.7	11326	97.2
4	18	0.3	9	0.1	30	0.4	31	0.3	34	0.3
<b>Total</b>	<b>6000</b>	<b>100</b>	<b>6952</b>	<b>100</b>	<b>8073</b>	<b>100</b>	<b>9314</b>	<b>100</b>	<b>11658</b>	<b>100</b>

HD sessions per week	2007		2008		2009		2010		2011	
	n	%	n	%	n	%	n	%	n	%
1	14	0.1	5	0	6	0	9	0	6	0
2	256	2	259	1.7	269	1.5	309	1.6	242	1.1
3	12602	97.7	15054	97.9	17574	98	19089	98.1	22437	98.8
4	31	0.2	61	0.4	88	0.5	47	0.2	31	0.1
<b>Total</b>	<b>12903</b>	<b>100</b>	<b>15379</b>	<b>100</b>	<b>17937</b>	<b>100</b>	<b>19454</b>	<b>100</b>	<b>22716</b>	<b>100</b>

**Table 11.2.3: Duration of HD, 2002-2011**

Duration of HD per session (hours)	2002		2003		2004		2005		2006	
	n	%	n	%	n	%	n	%	n	%
≤3	18	0.3	14	0.2	25	0.3	31	0.3	28	0.2
3.5	15	0.3	3	0	11	0.1	9	0.1	6	0.1
4	5854	97.7	6798	97.9	7885	97.6	9175	98.5	11507	98.8
4.5	60	1	66	1	106	1.3	46	0.5	66	0.6
5	47	0.8	63	0.9	45	0.6	52	0.6	42	0.4
>5	0	0	0	0	3	0	0	0	1	0
<b>Total</b>	<b>5994</b>	<b>100</b>	<b>6944</b>	<b>100</b>	<b>8075</b>	<b>100</b>	<b>9313</b>	<b>100</b>	<b>11650</b>	<b>100</b>

Duration of HD per session (hours)	2007		2008		2009		2010		2011	
	n	%	n	%	n	%	n	%	n	%
≤ 3	37	0.3	54	0.4	66	0.4	77	0.4	70	0.3
3.5	11	0.1	10	0.1	25	0.1	36	0.2	10	0
4	12792	99.2	15200	98.8	17732	98.8	19231	98.8	22552	99.3
4.5	23	0.2	74	0.5	78	0.4	72	0.4	40	0.2
5	31	0.2	42	0.3	42	0.2	50	0.3	39	0.2
5	1	0	0	0	1	0	0	0	5	0
<b>Total</b>	<b>12895</b>	<b>100</b>	<b>15380</b>	<b>100</b>	<b>17944</b>	<b>100</b>	<b>19466</b>	<b>100</b>	<b>22716</b>	<b>100</b>

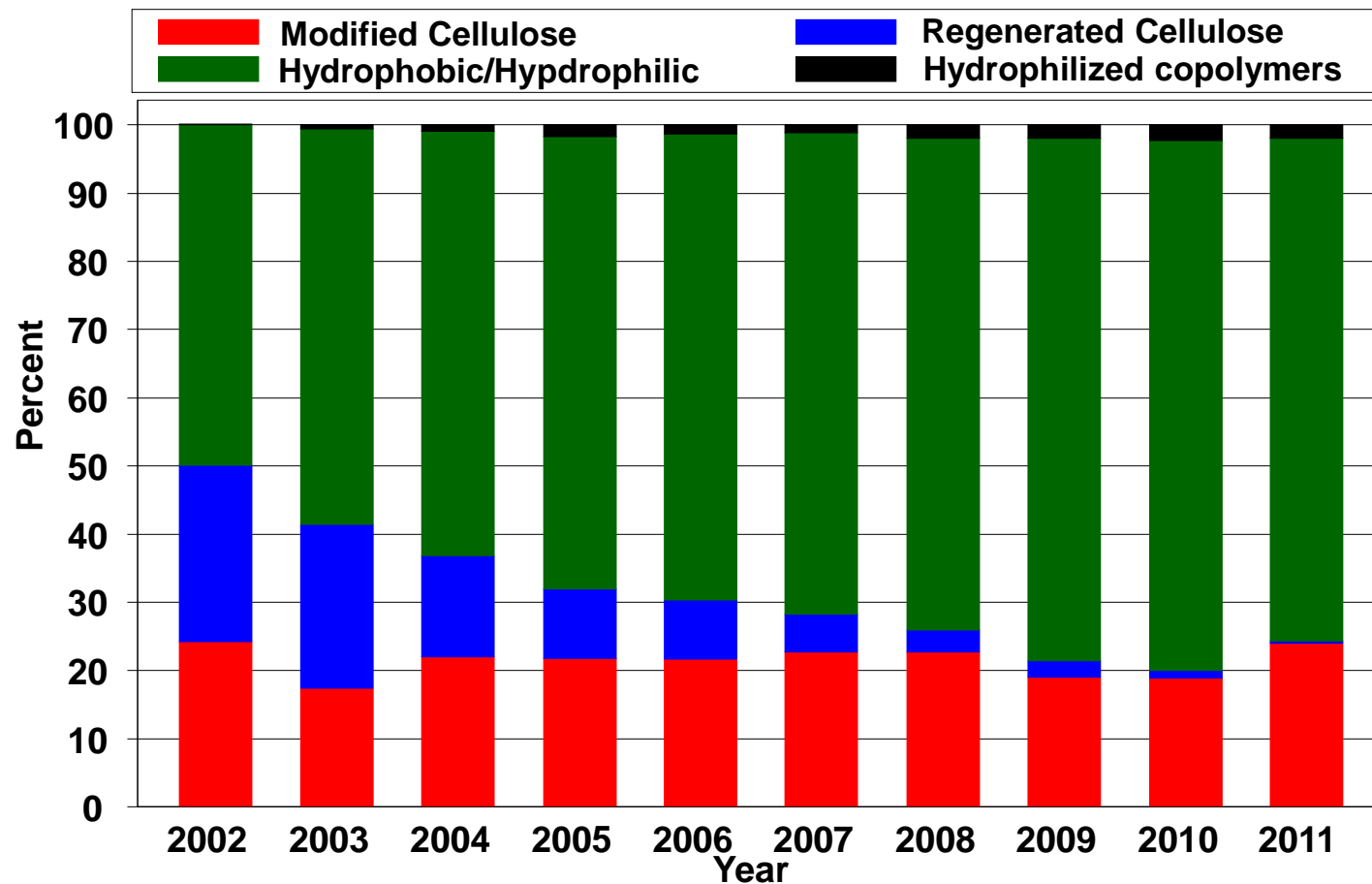


**Table 11.2.4: Dialyser membrane types in HD centres, 2002-2011**

Dialyser membrane	2002		2003		2004		2005		2006	
	n	%	n	%	n	%	n	%	n	%
Modified Cellulose	1377	24.2	1150	17.4	1719	22.1	1974	21.8	2489	21.6
Regenerated Cellulose	1474	26	1599	24.1	1150	14.8	930	10.2	997	8.7
Hydrophobic / Hypdrophilic	2828	49.8	3841	58	4846	62.2	6020	66.3	7860	68.3
Hydrophilized copolymers	1	0	35	0.5	74	1	150	1.7	161	1.4
<b>Total</b>	<b>5680</b>	<b>100</b>	<b>6625</b>	<b>100</b>	<b>7789</b>	<b>100</b>	<b>9074</b>	<b>100</b>	<b>11507</b>	<b>100</b>

Dialyser membrane	2007		2008		2009		2010		2011	
	n	%	n	%	n	%	n	%	n	%
Modified Cellulose	2890	22.7	3431	22.7	3241	19	3306	18.9	3903	24
Regenerated Cellulose	699	5.5	486	3.2	418	2.5	202	1.2	60	0.4
Hydrophobic/Hypdr ophilic	8984	70.7	10886	72.1	13052	76.6	13609	77.7	11995	73.7
Hydrophilized copolymers	137	1.1	286	1.9	335	2	409	2.3	323	2
<b>Total</b>	<b>12710</b>	<b>100</b>	<b>15089</b>	<b>100</b>	<b>17046</b>	<b>100</b>	<b>17526</b>	<b>100</b>	<b>16281</b>	<b>100</b>

**Figure 11.2.4: Dialyser membrane types in HD centres, 2002-2011**



## Table 11.2.5: Dialyser reuse frequency in HD centres, 2002-2011

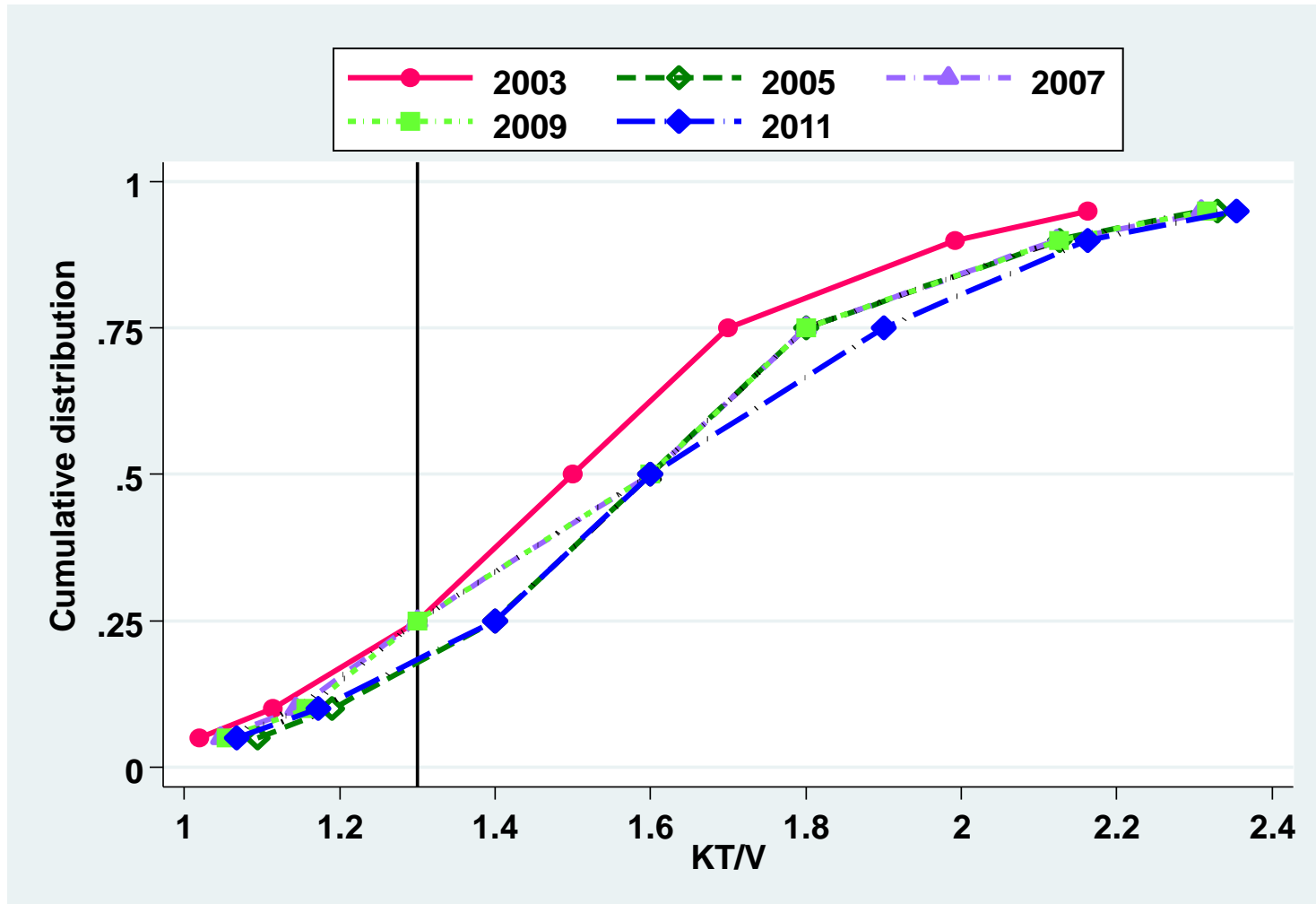
Dialyser reuse frequency	2002		2003		2004		2005		2006	
	n	%	n	%	n	%	n	%	n	%
1	197	3.9	251	4.3	319	5.1	196	4.5	400	6.3
2	41	0.8	19	0.3	42	0.7	1	0	5	0.1
3	316	6.2	349	6	194	3.1	81	1.9	36	0.6
4	337	6.6	339	5.8	192	3.1	85	2	75	1.2
5	318	6.2	267	4.6	192	3.1	137	3.2	190	3
6	1216	23.8	915	15.7	806	12.9	555	12.8	593	9.3
7	124	2.4	71	1.2	89	1.4	44	1	63	1
8	866	17	852	14.6	809	12.9	477	11	422	6.6
9	59	1.2	87	1.5	50	0.8	46	1.1	115	1.8
10	538	10.5	880	15.1	1160	18.5	770	17.8	959	15
11	36	0.7	25	0.4	42	0.7	12	0.3	100	1.6
12	879	17.2	1511	25.8	1916	30.6	1353	31.3	2243	35.1
≥ 13	175	3.4	280	4.8	458	7.3	565	13.1	1185	18.6
<b>Total</b>	<b>5102</b>	<b>100</b>	<b>5846</b>	<b>100</b>	<b>6269</b>	<b>100</b>	<b>4322</b>	<b>100</b>	<b>6386</b>	<b>100</b>

Dialyser reuse frequency	2007		2008		2009		2010		2011	
	n	%	n	%	n	%	n	%	n	%
1	568	5.7	810	6.6	1175	8.4	1494	9.9	2073	11.6
2	24	0.2	29	0.2	29	0.2	24	0.2	22	0.1
3	117	1.2	87	0.7	115	0.8	58	0.4	126	0.7
4	151	1.5	120	1	89	0.6	103	0.7	62	0.3
5	128	1.3	168	1.4	184	1.3	100	0.7	187	1
6	809	8.1	699	5.7	743	5.3	562	3.7	757	4.2
7	141	1.4	156	1.3	193	1.4	286	1.9	214	1.2
8	797	8	844	6.9	774	5.5	886	5.9	713	4
9	107	1.1	247	2	294	2.1	349	2.3	318	1.8
10	1530	15.3	2009	16.3	2651	18.9	2449	16.2	3244	18.1
11	94	0.9	101	0.8	58	0.4	121	0.8	110	0.6
12	4075	40.8	5266	42.7	5690	40.6	5873	38.8	6965	38.8
≥ 13	1440	14.4	1783	14.5	2010	14.4	2837	18.7	3141	17.5
<b>Total</b>	<b>9981</b>	<b>100</b>	<b>12319</b>	<b>100</b>	<b>14005</b>	<b>100</b>	<b>15142</b>	<b>100</b>	<b>17932</b>	<b>100</b>

**Table 11.2.6(a): Distribution of prescribed Kt/V, HD patients  
2002-2011**

<b>Year</b>	<b>Number of patients</b>	<b>Mean</b>	<b>SD</b>	<b>Median</b>	<b>LQ</b>	<b>UQ</b>	<b>% patients <math>\geq 1.3</math></b>
<b>2002</b>	<b>5496</b>	<b>1.5</b>	<b>0.4</b>	<b>1.5</b>	<b>1.3</b>	<b>1.7</b>	<b>73</b>
<b>2003</b>	<b>6525</b>	<b>1.6</b>	<b>0.4</b>	<b>1.6</b>	<b>1.3</b>	<b>1.8</b>	<b>79</b>
<b>2004</b>	<b>7457</b>	<b>1.6</b>	<b>0.4</b>	<b>1.6</b>	<b>1.4</b>	<b>1.8</b>	<b>82</b>
<b>2005</b>	<b>8749</b>	<b>1.6</b>	<b>0.4</b>	<b>1.6</b>	<b>1.4</b>	<b>1.9</b>	<b>81</b>
<b>2006</b>	<b>11092</b>	<b>1.6</b>	<b>0.4</b>	<b>1.6</b>	<b>1.3</b>	<b>1.8</b>	<b>77</b>
<b>2007</b>	<b>12354</b>	<b>1.6</b>	<b>0.4</b>	<b>1.6</b>	<b>1.3</b>	<b>1.8</b>	<b>78</b>
<b>2008</b>	<b>14752</b>	<b>1.6</b>	<b>0.4</b>	<b>1.6</b>	<b>1.3</b>	<b>1.8</b>	<b>79</b>
<b>2009</b>	<b>17252</b>	<b>1.7</b>	<b>0.4</b>	<b>1.6</b>	<b>1.4</b>	<b>1.9</b>	<b>82</b>
<b>2010</b>	<b>18726</b>	<b>1.6</b>	<b>0.4</b>	<b>1.6</b>	<b>1.4</b>	<b>1.9</b>	<b>81</b>
<b>2011</b>	<b>21895</b>	<b>1.7</b>	<b>0.4</b>	<b>1.6</b>	<b>1.4</b>	<b>1.9</b>	<b>82</b>

**Figure 11.2.6(a): Cumulative distribution of prescribed Kt/V, HD patients 2002-2011**

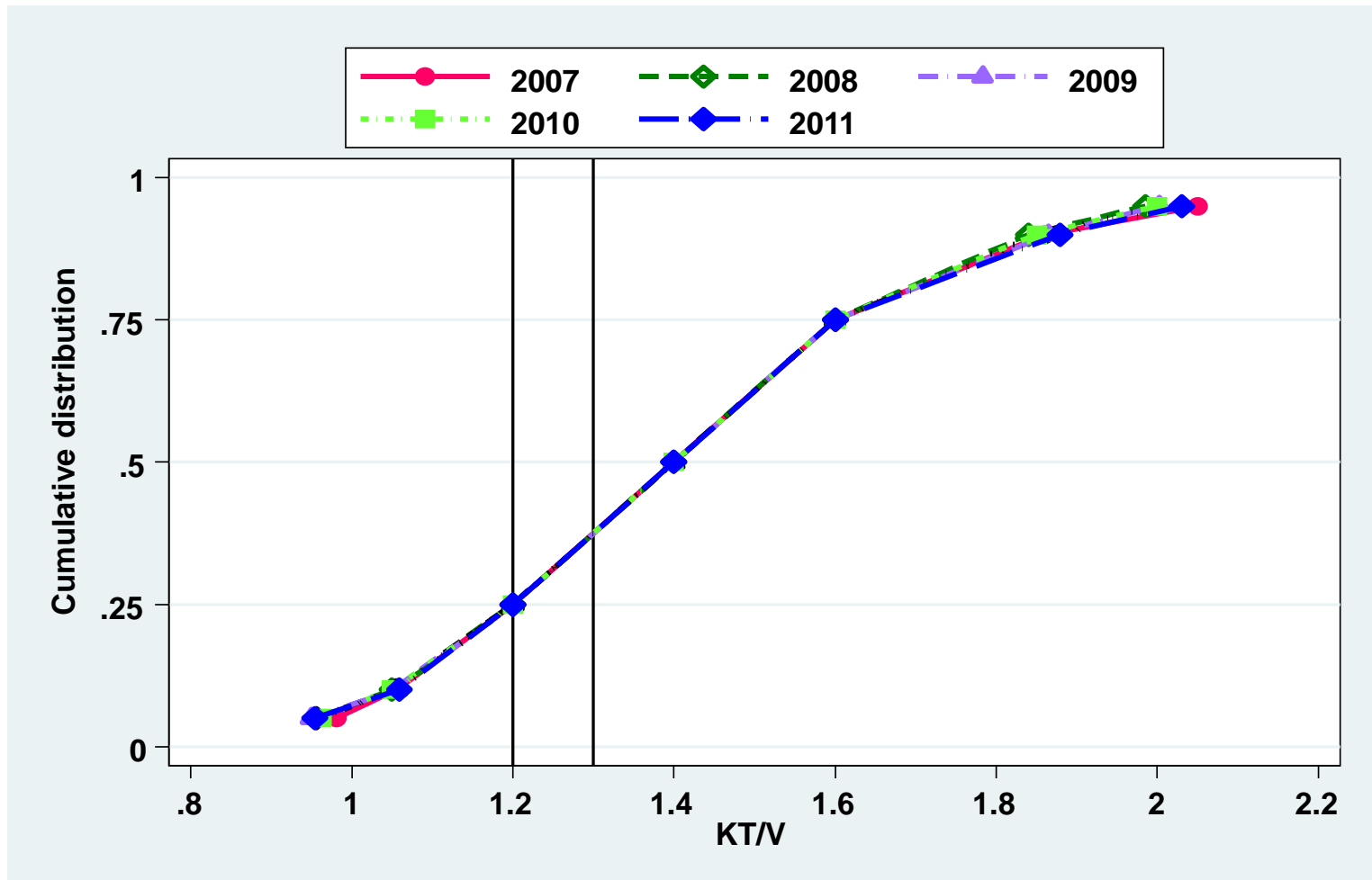


**Table 11.2.6(b): Distribution of delivered Kt/V, HD patients  
2007-2011**

<b>Year</b>	<b>Number of patients</b>	<b>Mean</b>	<b>SD</b>	<b>Median</b>	<b>LQ</b>	<b>UQ</b>	<b>% patients ≥1.2</b>	<b>% patients ≥1.3</b>	<b>Variance*</b>
<b>2007</b>	<b>6360</b>	<b>1.5</b>	<b>0.6</b>	<b>1.4</b>	<b>1.2</b>	<b>1.6</b>	<b>78</b>	<b>62</b>	<b>0.1</b>
<b>2008</b>	<b>8529</b>	<b>1.4</b>	<b>0.3</b>	<b>1.4</b>	<b>1.2</b>	<b>1.6</b>	<b>78</b>	<b>61</b>	<b>0.1</b>
<b>2009</b>	<b>10467</b>	<b>1.5</b>	<b>0.7</b>	<b>1.4</b>	<b>1.2</b>	<b>1.6</b>	<b>81</b>	<b>64</b>	<b>0.1</b>
<b>2010</b>	<b>11697</b>	<b>1.4</b>	<b>0.5</b>	<b>1.4</b>	<b>1.2</b>	<b>1.6</b>	<b>79</b>	<b>62</b>	<b>0.1</b>
<b>2011</b>	<b>13622</b>	<b>1.5</b>	<b>1.2</b>	<b>1.4</b>	<b>1.2</b>	<b>1.6</b>	<b>80</b>	<b>64</b>	<b>0.1</b>

*\*Variance = (prescribed KT/V - Delivered KT/V)/ prescribed KT/V*

**Figure 11.2.6 (b): Cumulative distribution of delivered Kt/V, HD patients 2007-2011**

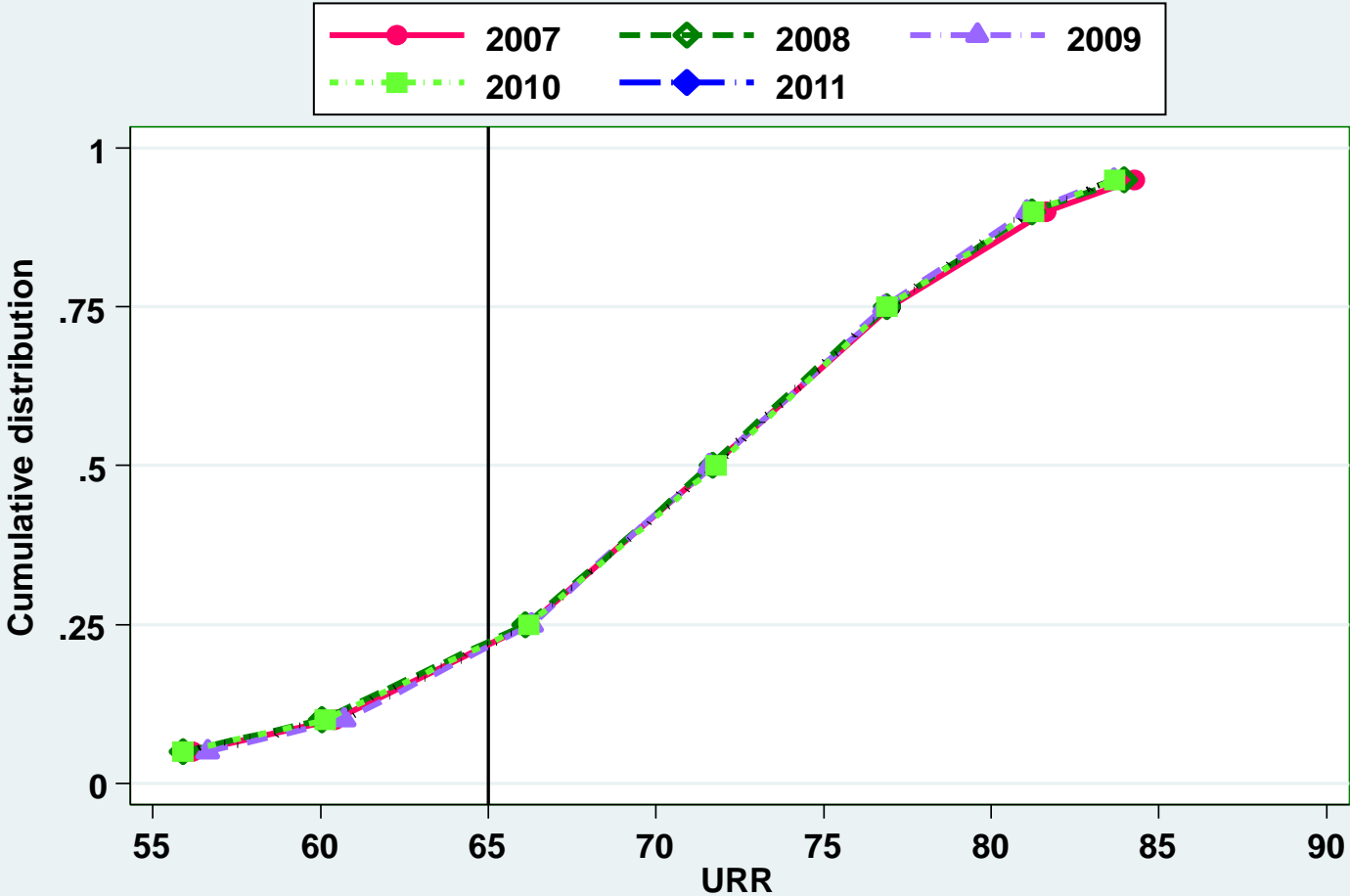


**Table 11.2.6(c): Distribution of URR, HD patients 2007-2011**

<b>Year</b>	<b>Number of patients</b>	<b>Mean</b>	<b>SD</b>	<b>Median</b>	<b>LQ</b>	<b>UQ</b>	<b>% patients <math>\geq</math> 65%</b>
<b>2007</b>	<b>9945</b>	<b>71.3</b>	<b>9.2</b>	<b>71.9</b>	<b>66.3</b>	<b>77.2</b>	<b>79</b>
<b>2008</b>	<b>12601</b>	<b>71.2</b>	<b>9</b>	<b>71.7</b>	<b>66.2</b>	<b>77</b>	<b>79</b>
<b>2009</b>	<b>14947</b>	<b>71</b>	<b>9</b>	<b>71.7</b>	<b>66.1</b>	<b>76.9</b>	<b>79</b>
<b>2010</b>	<b>16727</b>	<b>71.1</b>	<b>8.6</b>	<b>71.6</b>	<b>66.3</b>	<b>76.8</b>	<b>80</b>
<b>2011</b>	<b>19635</b>	<b>71.1</b>	<b>8.8</b>	<b>71.8</b>	<b>66.2</b>	<b>76.9</b>	<b>79</b>



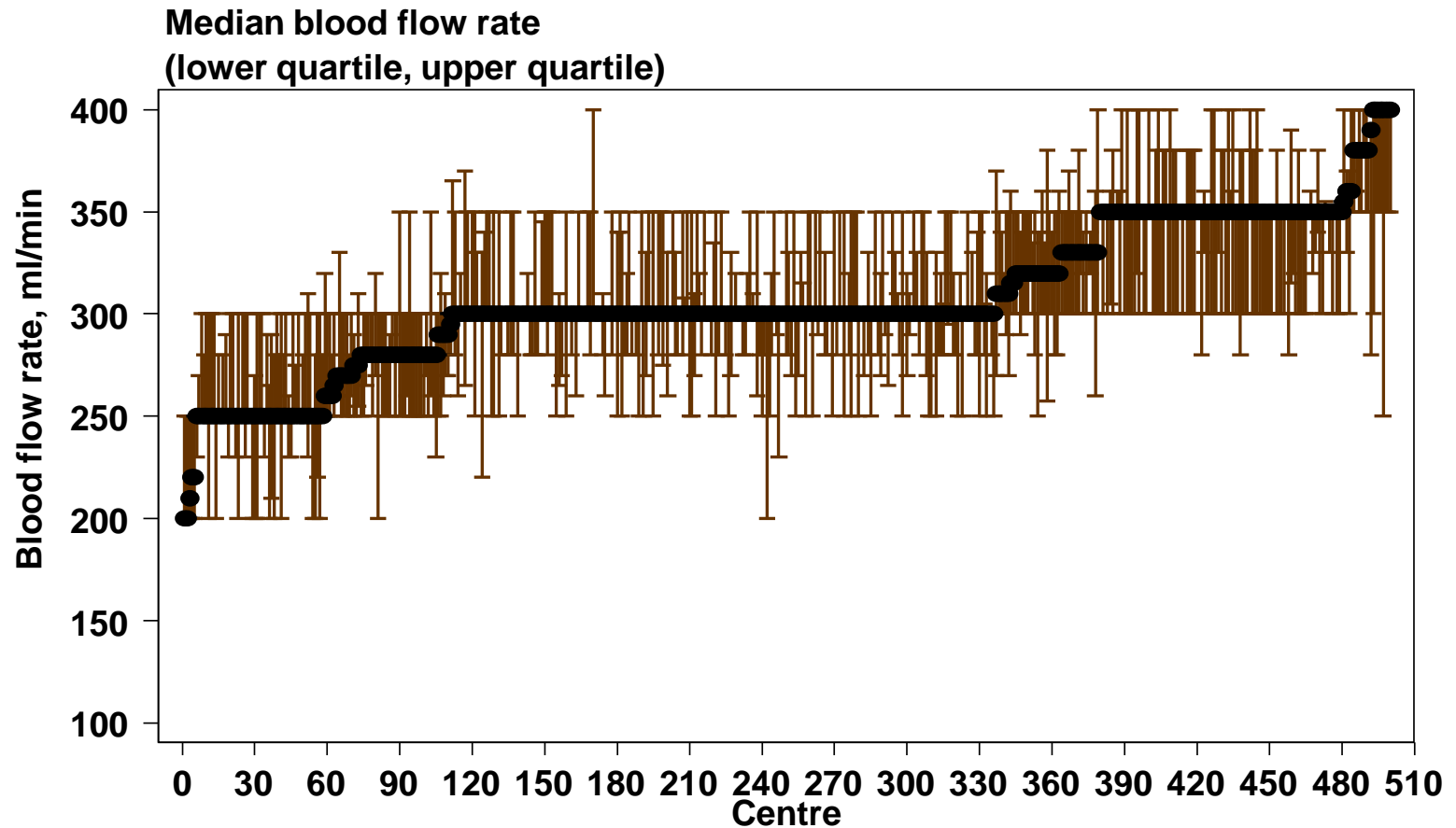
**Figure 11.2.6 (c): Cumulative distribution of URR, HD patients  
2007-2011**



**Table 11.2.7(a): Variation in median blood flow rates in HD patients, HD centres, 2002-2011**

<b>Year</b>	<b>Number of centers</b>	<b>Min</b>	<b>5<sup>th</sup> Centile</b>	<b>LQ</b>	<b>Median</b>	<b>UQ</b>	<b>95<sup>th</sup> Centile</b>	<b>Max</b>
<b>2002</b>	<b>137</b>	<b>200</b>	<b>230</b>	<b>250</b>	<b>280</b>	<b>300</b>	<b>300</b>	<b>350</b>
<b>2003</b>	<b>155</b>	<b>200</b>	<b>240</b>	<b>250</b>	<b>280</b>	<b>300</b>	<b>325</b>	<b>350</b>
<b>2004</b>	<b>184</b>	<b>220</b>	<b>250</b>	<b>257.5</b>	<b>287.5</b>	<b>300</b>	<b>350</b>	<b>400</b>
<b>2005</b>	<b>228</b>	<b>200</b>	<b>250</b>	<b>260</b>	<b>300</b>	<b>300</b>	<b>350</b>	<b>400</b>
<b>2006</b>	<b>283</b>	<b>200</b>	<b>250</b>	<b>270</b>	<b>300</b>	<b>300</b>	<b>350</b>	<b>400</b>
<b>2007</b>	<b>302</b>	<b>200</b>	<b>250</b>	<b>280</b>	<b>300</b>	<b>300</b>	<b>350</b>	<b>400</b>
<b>2008</b>	<b>355</b>	<b>200</b>	<b>250</b>	<b>280</b>	<b>300</b>	<b>300</b>	<b>350</b>	<b>400</b>
<b>2009</b>	<b>404</b>	<b>180</b>	<b>250</b>	<b>280</b>	<b>300</b>	<b>320</b>	<b>350</b>	<b>400</b>
<b>2010</b>	<b>435</b>	<b>150</b>	<b>250</b>	<b>280</b>	<b>300</b>	<b>320</b>	<b>350</b>	<b>400</b>
<b>2011</b>	<b>500</b>	<b>200</b>	<b>250</b>	<b>300</b>	<b>300</b>	<b>330</b>	<b>350</b>	<b>400</b>

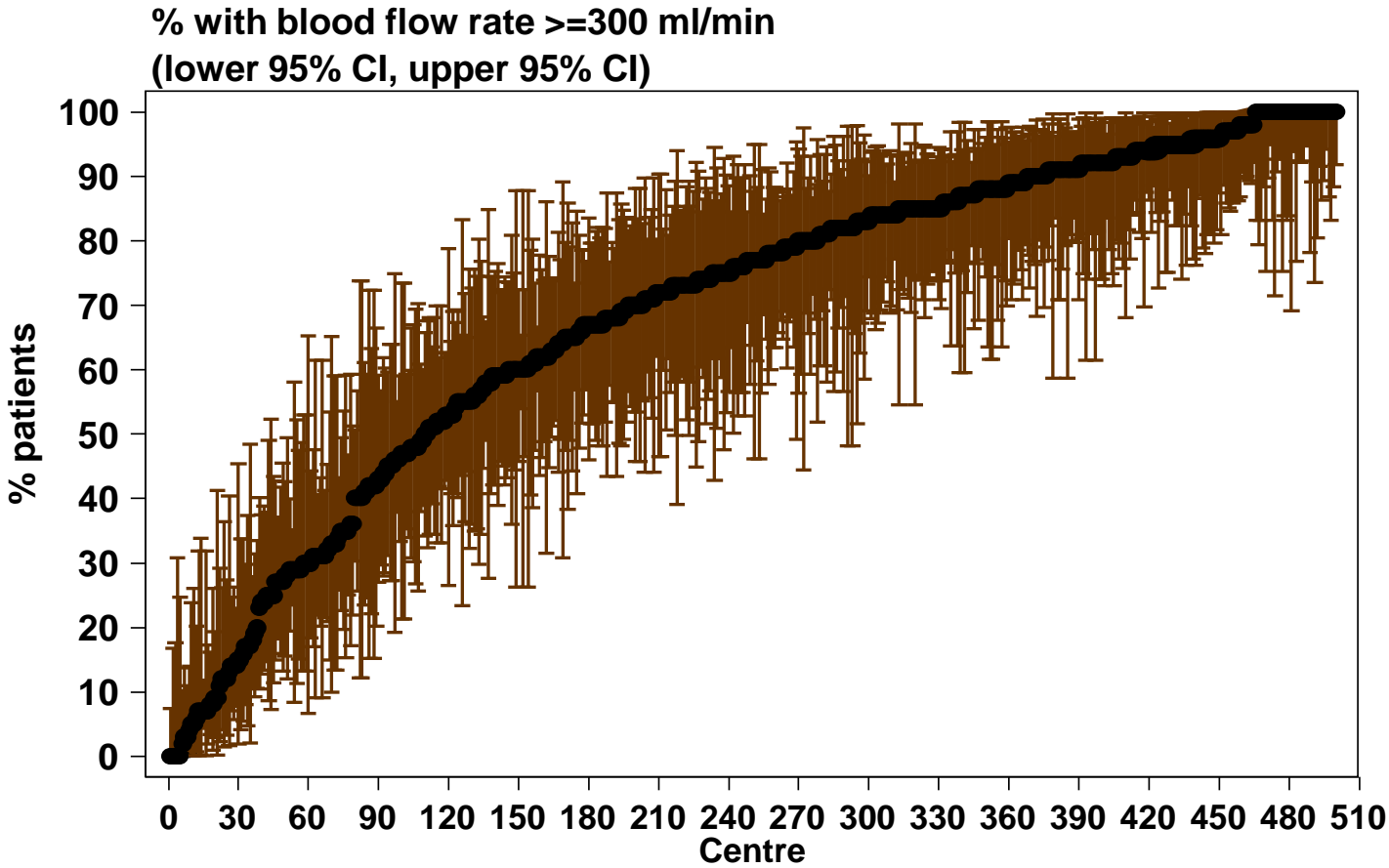
**Figure 11.2.7 (a): Variation in median blood flow rates in HD patients among centres 2011**



**Table 11.2.7 (b) Proportion of patients with blood flow rates  $\geq 300$  ml/min, HD centres 2002-2011**

<b>Year</b>	<b>Number of centers</b>	<b>Min</b>	<b>5<sup>th</sup> Centile</b>	<b>LQ</b>	<b>Median</b>	<b>UQ</b>	<b>95<sup>th</sup> Centile</b>	<b>Max</b>
<b>2002</b>	<b>137</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>33</b>	<b>61</b>	<b>90</b>	<b>100</b>
<b>2003</b>	<b>155</b>	<b>0</b>	<b>0</b>	<b>21</b>	<b>45</b>	<b>69</b>	<b>91</b>	<b>100</b>
<b>2004</b>	<b>184</b>	<b>0</b>	<b>4</b>	<b>23.5</b>	<b>48.5</b>	<b>73</b>	<b>93</b>	<b>100</b>
<b>2005</b>	<b>228</b>	<b>0</b>	<b>0</b>	<b>28</b>	<b>53</b>	<b>77</b>	<b>94</b>	<b>100</b>
<b>2006</b>	<b>283</b>	<b>0</b>	<b>5</b>	<b>30</b>	<b>63</b>	<b>83</b>	<b>94</b>	<b>100</b>
<b>2007</b>	<b>302</b>	<b>0</b>	<b>7</b>	<b>37</b>	<b>68</b>	<b>84</b>	<b>96</b>	<b>100</b>
<b>2008</b>	<b>355</b>	<b>0</b>	<b>9</b>	<b>40</b>	<b>70</b>	<b>86</b>	<b>99</b>	<b>100</b>
<b>2009</b>	<b>404</b>	<b>0</b>	<b>11</b>	<b>42.5</b>	<b>72</b>	<b>88</b>	<b>99</b>	<b>100</b>
<b>2010</b>	<b>435</b>	<b>0</b>	<b>9</b>	<b>46</b>	<b>75</b>	<b>90</b>	<b>100</b>	<b>100</b>
<b>2011</b>	<b>500</b>	<b>0</b>	<b>12.5</b>	<b>55</b>	<b>77</b>	<b>90</b>	<b>100</b>	<b>100</b>

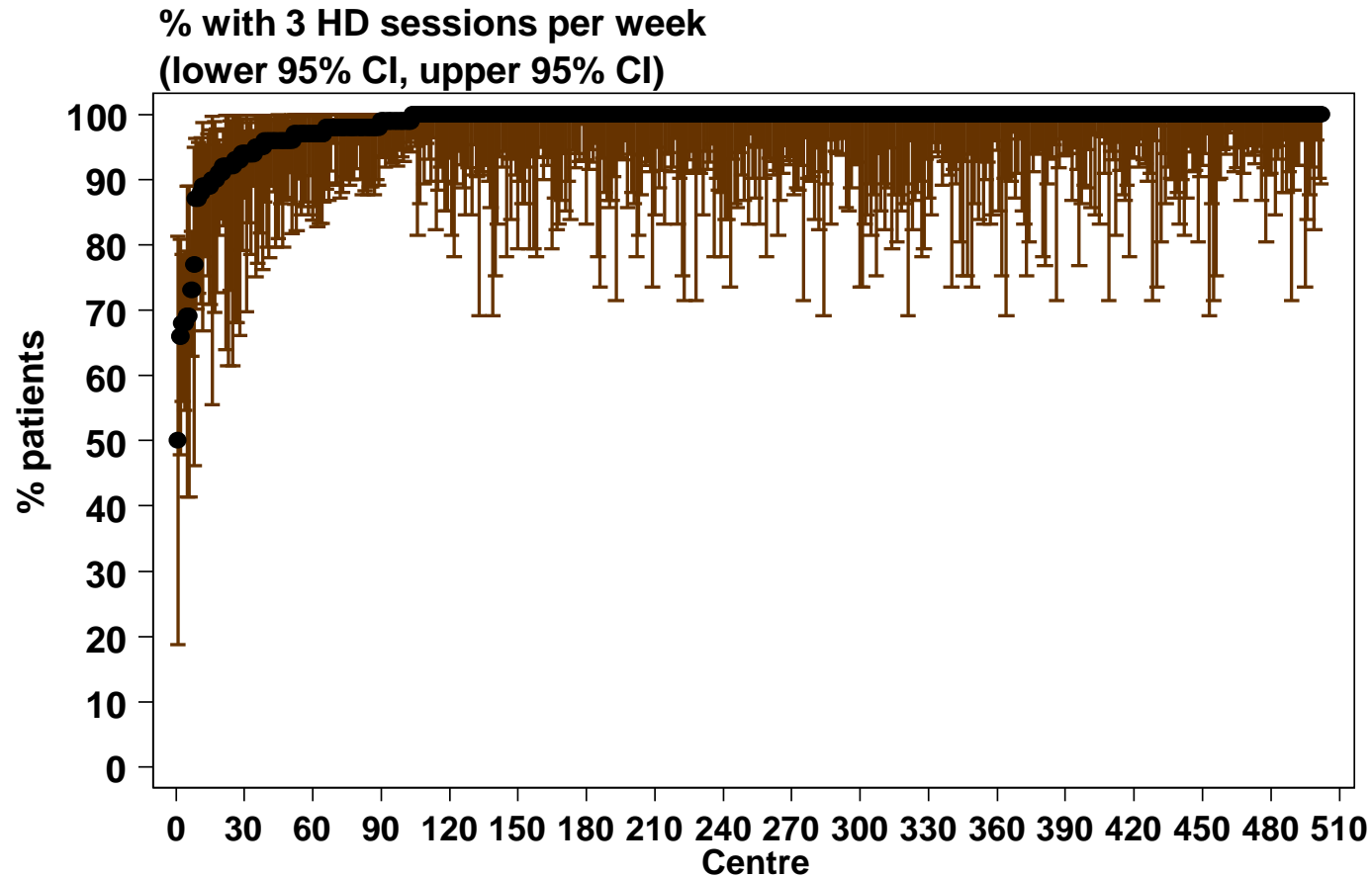
**Figure 11.2.7 (b): Variation in Proportion of patients with blood flow rates  $\geq 300$  ml/min among HD centres 2011**



**Table 11.2.7 (c): Proportion of patients with 3 HD sessions per week, HD centres 2002-2011**

<b>Year</b>	<b>Number of centers</b>	<b>Min</b>	<b>5<sup>th</sup> Centile</b>	<b>LQ</b>	<b>Median</b>	<b>UQ</b>	<b>95<sup>th</sup> Centile</b>	<b>Max</b>
<b>2002</b>	<b>137</b>	<b>28</b>	<b>48</b>	<b>94</b>	<b>99</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>2003</b>	<b>160</b>	<b>36</b>	<b>55</b>	<b>97</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>2004</b>	<b>188</b>	<b>37</b>	<b>70</b>	<b>98</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>2005</b>	<b>231</b>	<b>40</b>	<b>75</b>	<b>99</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>2006</b>	<b>287</b>	<b>52</b>	<b>83</b>	<b>98</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>2007</b>	<b>309</b>	<b>51</b>	<b>87</b>	<b>98</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>2008</b>	<b>359</b>	<b>51</b>	<b>89</b>	<b>98</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>2009</b>	<b>404</b>	<b>18</b>	<b>88</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>2010</b>	<b>437</b>	<b>20</b>	<b>90</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>2011</b>	<b>502</b>	<b>50</b>	<b>93</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

**Figure 11.2.7 (c): Variation in proportion of patients with 3 HD sessions per week among HD centres 2011**

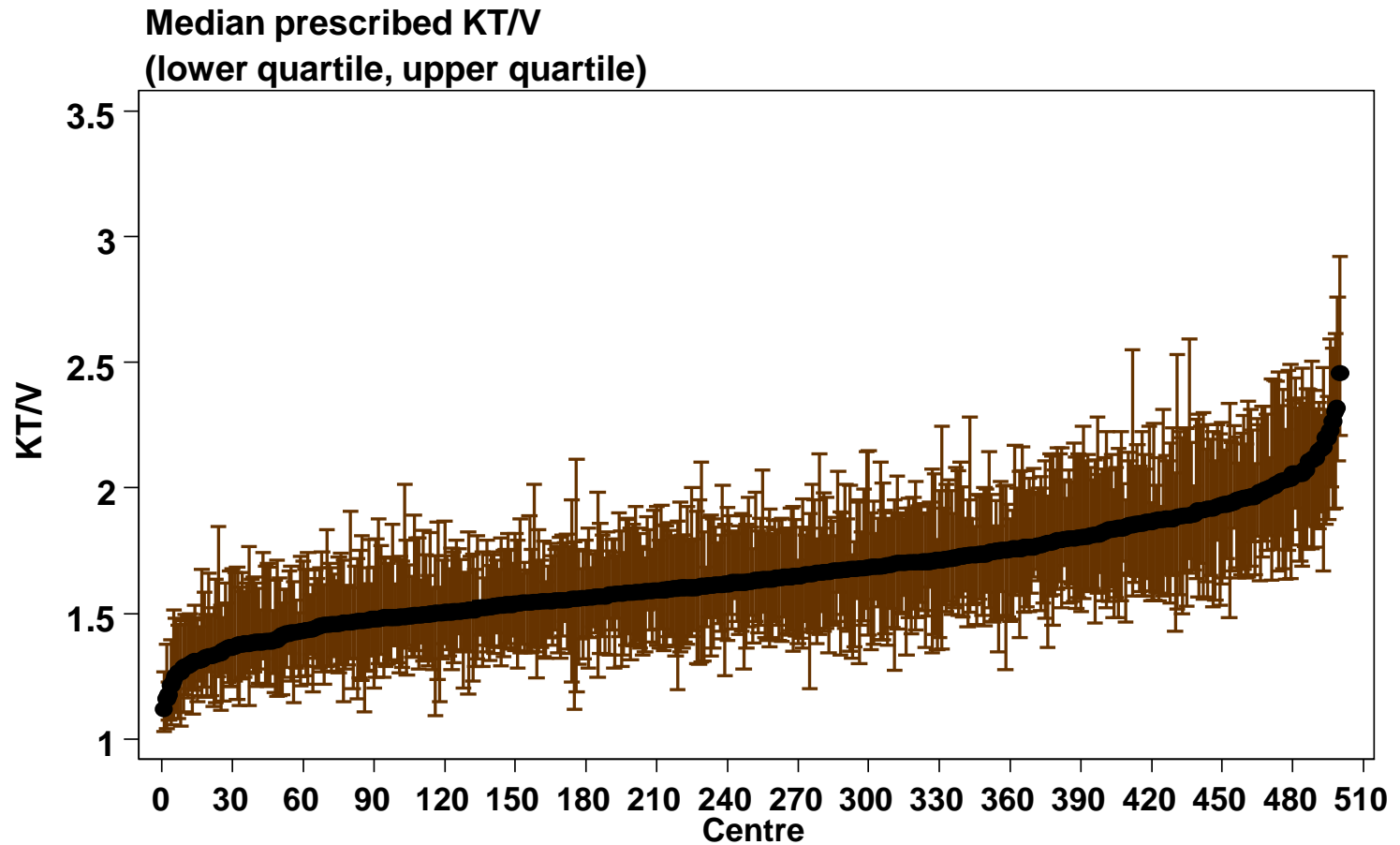


**Table 11.2.7 (d): Median prescribed Kt/V in HD patients,  
HD centres 2002-2011**

<b>Year</b>	<b>Number of centers</b>	<b>Min</b>	<b>5<sup>th</sup> Centile</b>	<b>LQ</b>	<b>Median</b>	<b>UQ</b>	<b>95<sup>th</sup> Centile</b>	<b>Max</b>
<b>2002</b>	<b>132</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.6</b>	<b>1.7</b>	<b>1.8</b>
<b>2003</b>	<b>150</b>	<b>1.1</b>	<b>1.3</b>	<b>1.4</b>	<b>1.6</b>	<b>1.7</b>	<b>1.9</b>	<b>2</b>
<b>2004</b>	<b>181</b>	<b>1.2</b>	<b>1.4</b>	<b>1.5</b>	<b>1.6</b>	<b>1.7</b>	<b>1.9</b>	<b>2.2</b>
<b>2005</b>	<b>224</b>	<b>1.2</b>	<b>1.3</b>	<b>1.5</b>	<b>1.6</b>	<b>1.7</b>	<b>1.8</b>	<b>2</b>
<b>2006</b>	<b>281</b>	<b>1</b>	<b>1.3</b>	<b>1.4</b>	<b>1.6</b>	<b>1.7</b>	<b>1.8</b>	<b>2.1</b>
<b>2007</b>	<b>302</b>	<b>1.1</b>	<b>1.3</b>	<b>1.4</b>	<b>1.6</b>	<b>1.7</b>	<b>1.8</b>	<b>2.1</b>
<b>2008</b>	<b>353</b>	<b>1.1</b>	<b>1.3</b>	<b>1.5</b>	<b>1.6</b>	<b>1.7</b>	<b>1.9</b>	<b>2.1</b>
<b>2009</b>	<b>400</b>	<b>1.1</b>	<b>1.3</b>	<b>1.5</b>	<b>1.6</b>	<b>1.7</b>	<b>1.9</b>	<b>2.2</b>
<b>2010</b>	<b>434</b>	<b>0.8</b>	<b>1.3</b>	<b>1.5</b>	<b>1.6</b>	<b>1.7</b>	<b>1.9</b>	<b>2.9</b>
<b>2011</b>	<b>500</b>	<b>1.1</b>	<b>1.3</b>	<b>1.5</b>	<b>1.6</b>	<b>1.8</b>	<b>2</b>	<b>2.5</b>



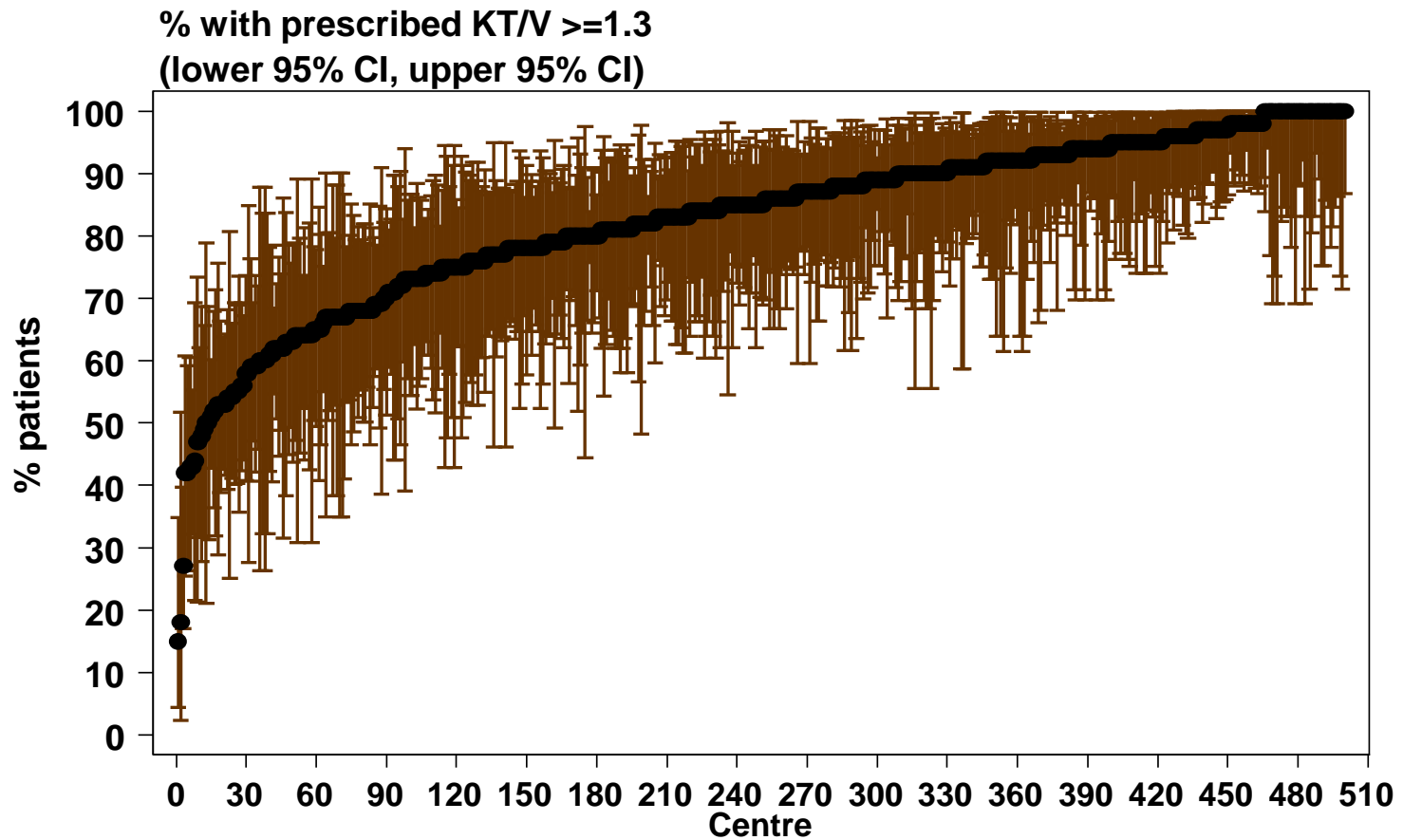
**Figure 11.2.7 (d): Variation in median prescribed Kt/V in HD patients among HD centres 2011**



**Table 11.2.7 (e): Proportion of patients with prescribed Kt/V  $\geq$ 1.3, 2002-2011**

<b>Year</b>	<b>Number of centers</b>	<b>Min</b>	<b>5<sup>th</sup> Centile</b>	<b>LQ</b>	<b>Median</b>	<b>UQ</b>	<b>95<sup>th</sup> Centile</b>	<b>Max</b>
<b>2002</b>	<b>132</b>	<b>26</b>	<b>43</b>	<b>65</b>	<b>74.5</b>	<b>83</b>	<b>92</b>	<b>98</b>
<b>2003</b>	<b>150</b>	<b>30</b>	<b>48</b>	<b>71</b>	<b>81</b>	<b>89</b>	<b>96</b>	<b>100</b>
<b>2004</b>	<b>181</b>	<b>28</b>	<b>58</b>	<b>74</b>	<b>83</b>	<b>91</b>	<b>98</b>	<b>100</b>
<b>2005</b>	<b>224</b>	<b>32</b>	<b>58</b>	<b>73</b>	<b>82</b>	<b>90</b>	<b>98</b>	<b>100</b>
<b>2006</b>	<b>281</b>	<b>0</b>	<b>46</b>	<b>67</b>	<b>79</b>	<b>88</b>	<b>96</b>	<b>100</b>
<b>2007</b>	<b>302</b>	<b>21</b>	<b>50</b>	<b>67</b>	<b>80</b>	<b>89</b>	<b>96</b>	<b>100</b>
<b>2008</b>	<b>353</b>	<b>14</b>	<b>47</b>	<b>69</b>	<b>83</b>	<b>90</b>	<b>98</b>	<b>100</b>
<b>2009</b>	<b>400</b>	<b>26</b>	<b>53</b>	<b>74.5</b>	<b>85</b>	<b>91</b>	<b>97</b>	<b>100</b>
<b>2010</b>	<b>434</b>	<b>6</b>	<b>50</b>	<b>74</b>	<b>84</b>	<b>91</b>	<b>100</b>	<b>100</b>
<b>2011</b>	<b>500</b>	<b>15</b>	<b>55</b>	<b>76</b>	<b>85</b>	<b>93</b>	<b>100</b>	<b>100</b>

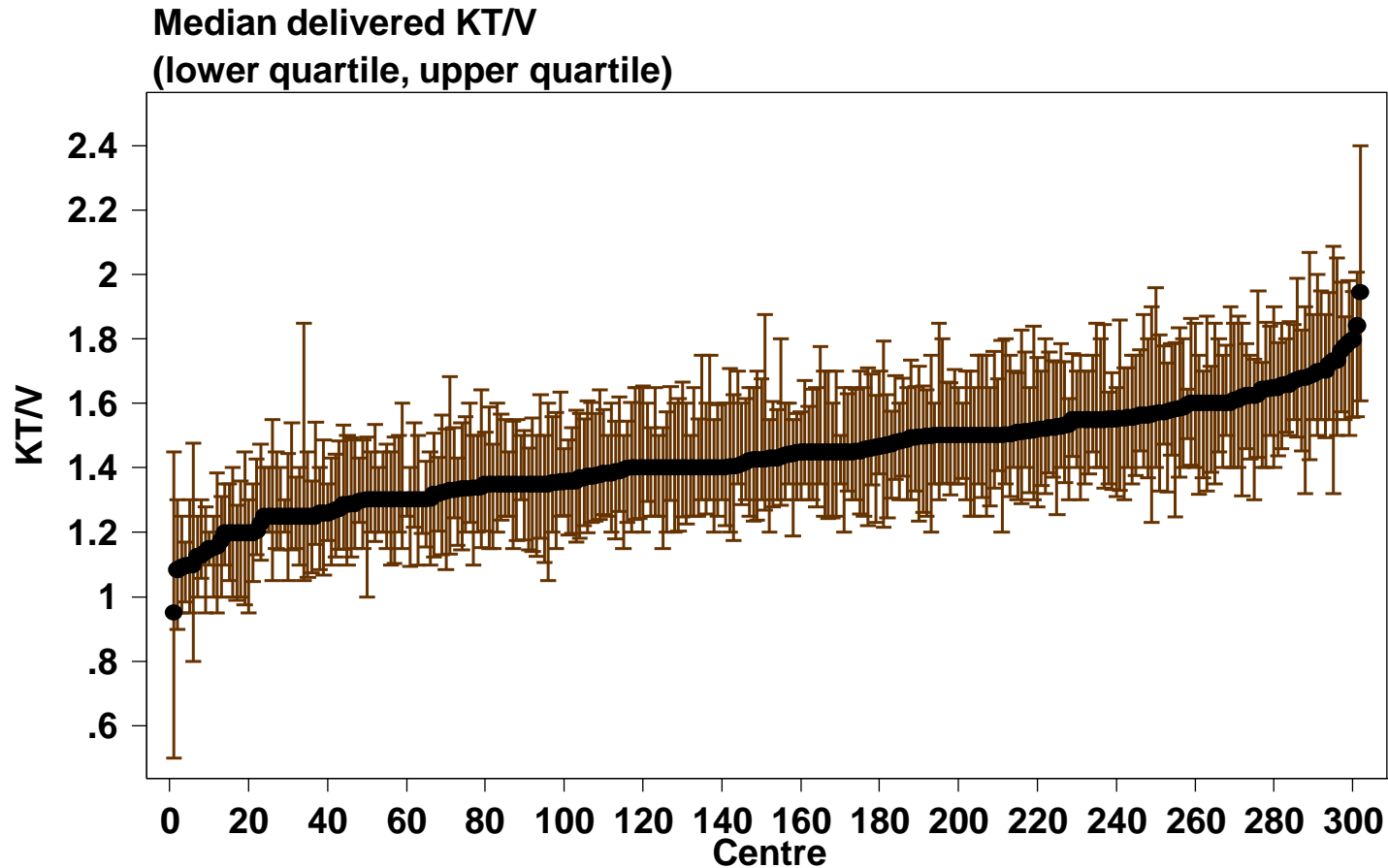
**Figure 11.2.7 (e): Variation in proportion of patients with prescribed Kt/V  $\geq 1.3$  among HD centres 2011**



**Table 11.2.7 (f): Median delivered Kt/V in HD patients, HD centres  
2007-2011**

<b>Year</b>	<b>Number of centers</b>	<b>Min</b>	<b>5<sup>th</sup> Centile</b>	<b>LQ</b>	<b>Median</b>	<b>UQ</b>	<b>95<sup>th</sup> Centile</b>	<b>Max</b>
<b>2007</b>	<b>157</b>	<b>1.1</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.7</b>	<b>1.8</b>
<b>2008</b>	<b>199</b>	<b>1</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.7</b>	<b>1.8</b>
<b>2009</b>	<b>239</b>	<b>1</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.6</b>	<b>2</b>
<b>2010</b>	<b>253</b>	<b>0.8</b>	<b>1.1</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.6</b>	<b>2</b>
<b>2011</b>	<b>302</b>	<b>0.9</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.7</b>	<b>1.9</b>

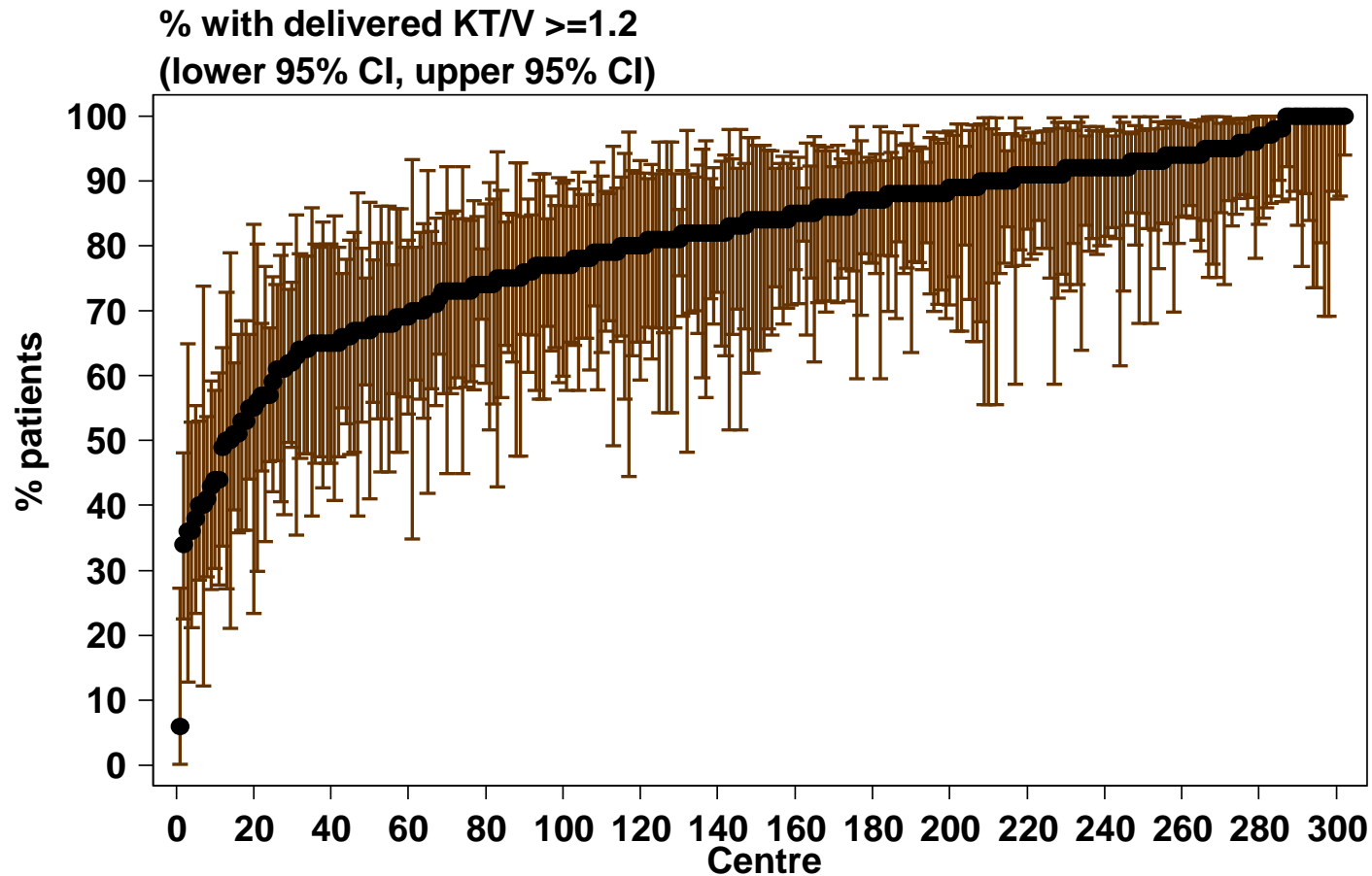
**Figure 11.2.7 (f): Variation in median delivered Kt/V in HD patients among HD centres 2011**



**Table 11.2.7 (g): Proportion of patients with delivered Kt/V  $\geq 1.2$ , HD centres 2007-2011**

<b>Year</b>	<b>Number of centers</b>	<b>Min</b>	<b>5<sup>th</sup> Centile</b>	<b>LQ</b>	<b>Median</b>	<b>UQ</b>	<b>95<sup>th</sup> Centile</b>	<b>Max</b>
<b>2007</b>	<b>157</b>	<b>34</b>	<b>46</b>	<b>70</b>	<b>79</b>	<b>89</b>	<b>97</b>	<b>100</b>
<b>2008</b>	<b>199</b>	<b>21</b>	<b>49</b>	<b>68</b>	<b>81</b>	<b>89</b>	<b>100</b>	<b>100</b>
<b>2009</b>	<b>239</b>	<b>16</b>	<b>51</b>	<b>74</b>	<b>84</b>	<b>90</b>	<b>97</b>	<b>100</b>
<b>2010</b>	<b>253</b>	<b>0</b>	<b>47</b>	<b>71</b>	<b>83</b>	<b>89</b>	<b>98</b>	<b>100</b>
<b>2011</b>	<b>302</b>	<b>6</b>	<b>51</b>	<b>73</b>	<b>84</b>	<b>91</b>	<b>100</b>	<b>100</b>

**Figure 11.2.7 (g): Variation in proportion of patients with delivered  $Kt/V \geq 1.2$ , HD centres 2011**

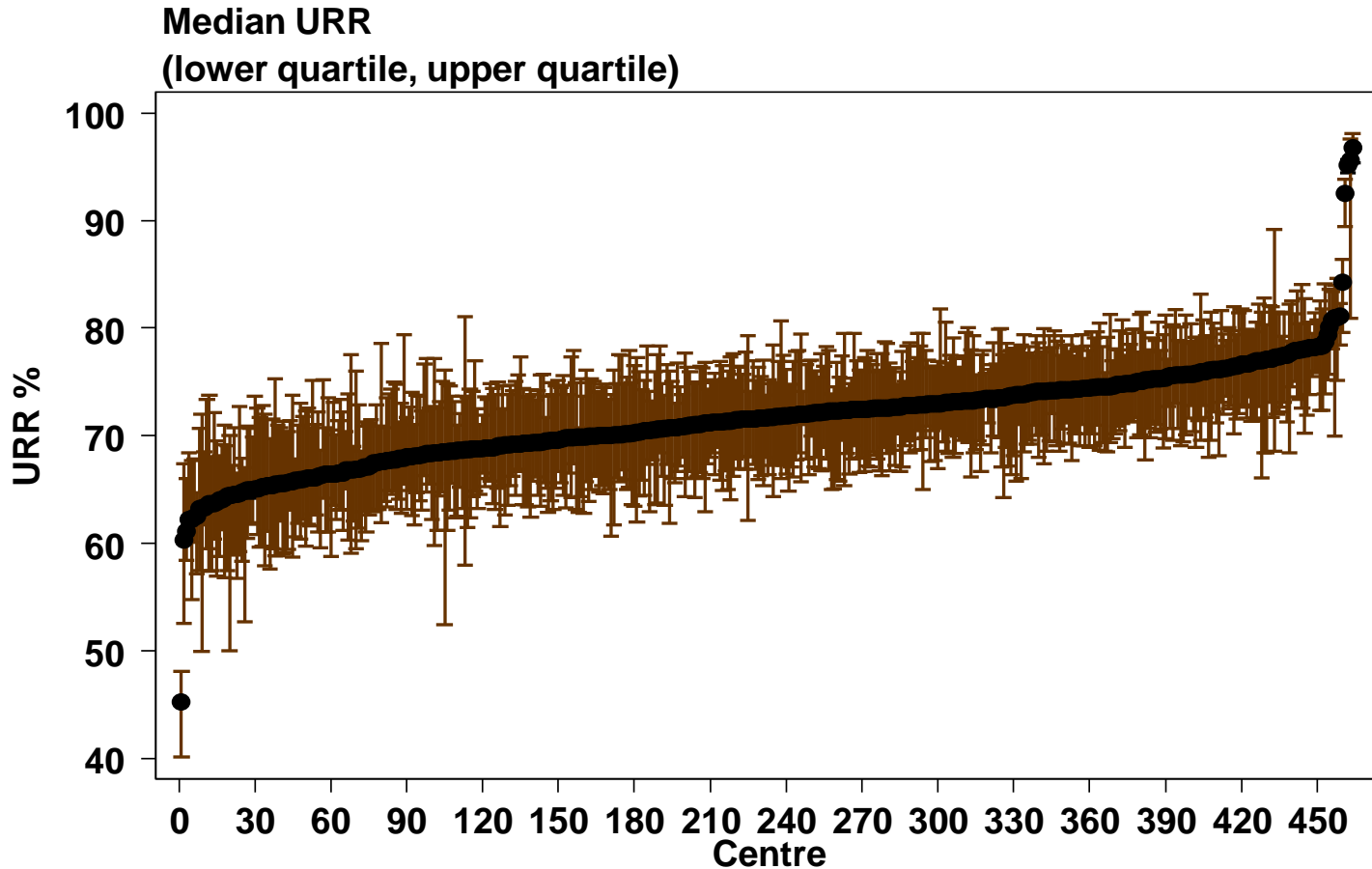


**Table 11.2.7 (h): Median URR among HD patients, HD centres  
2007-2011**

<b>Year</b>	<b>Number of centers</b>	<b>Min</b>	<b>5<sup>th</sup> Centile</b>	<b>LQ</b>	<b>Median</b>	<b>UQ</b>	<b>95<sup>th</sup> Centile</b>	<b>Max</b>
<b>2007</b>	<b>245</b>	<b>56.1</b>	<b>65.3</b>	<b>69.6</b>	<b>71.8</b>	<b>74.8</b>	<b>78</b>	<b>95.5</b>
<b>2008</b>	<b>310</b>	<b>40.4</b>	<b>63.5</b>	<b>68.5</b>	<b>71.7</b>	<b>74.4</b>	<b>77.9</b>	<b>93.6</b>
<b>2009</b>	<b>350</b>	<b>60</b>	<b>64.4</b>	<b>68.7</b>	<b>71.8</b>	<b>74.1</b>	<b>77</b>	<b>93.3</b>
<b>2010</b>	<b>397</b>	<b>54.6</b>	<b>64.8</b>	<b>69</b>	<b>71.3</b>	<b>73.8</b>	<b>76.7</b>	<b>94</b>
<b>2011</b>	<b>464</b>	<b>45.2</b>	<b>64.6</b>	<b>68.8</b>	<b>71.7</b>	<b>74.3</b>	<b>77.9</b>	<b>96.8</b>



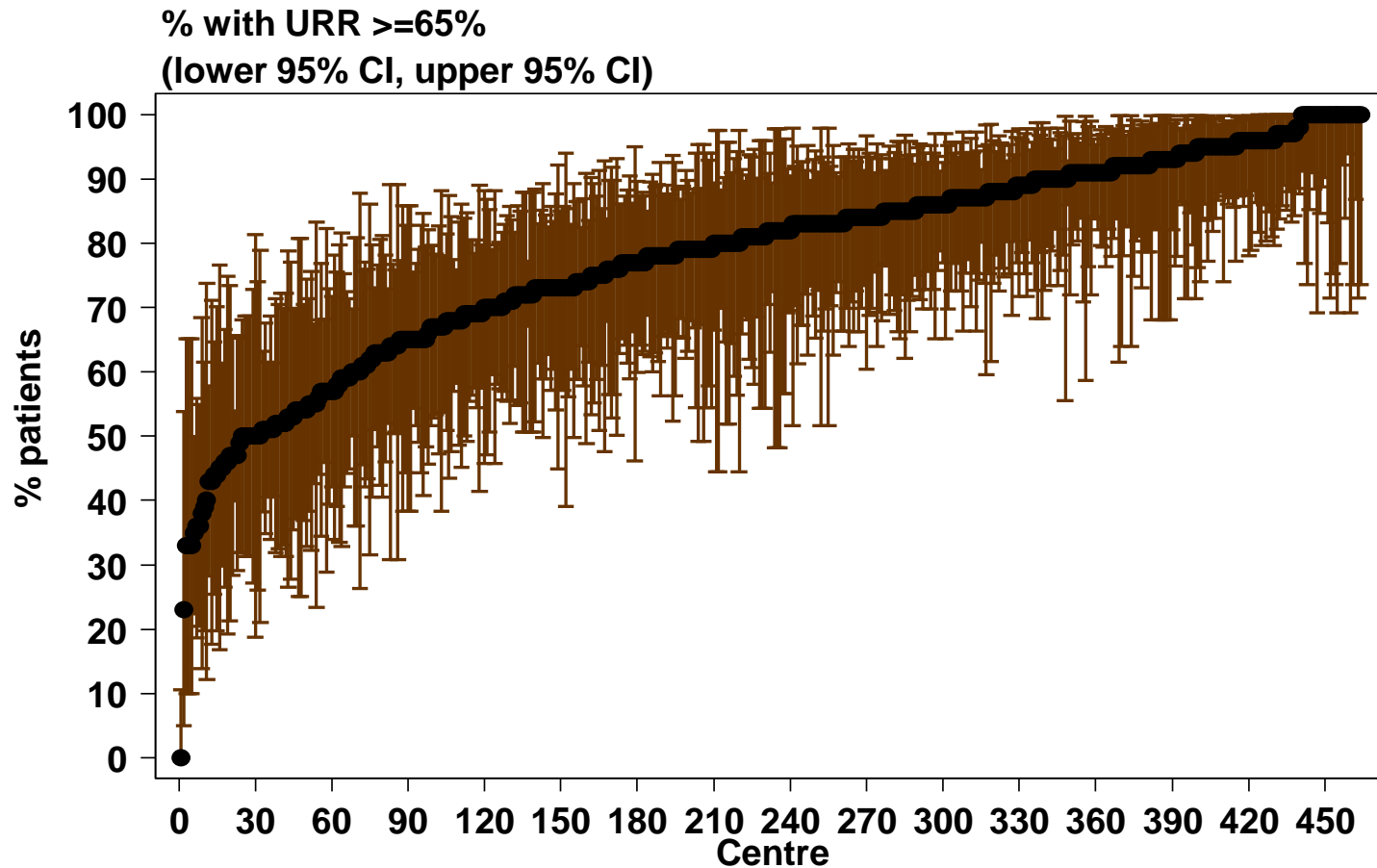
**Figure 11.2.7 (h): Variation in median URR among HD patients, HD centres 2011**



**Table 11.2.7 (i): Proportion of HD patients with URR  $\geq$ 65%, HD centres 2007-2011**

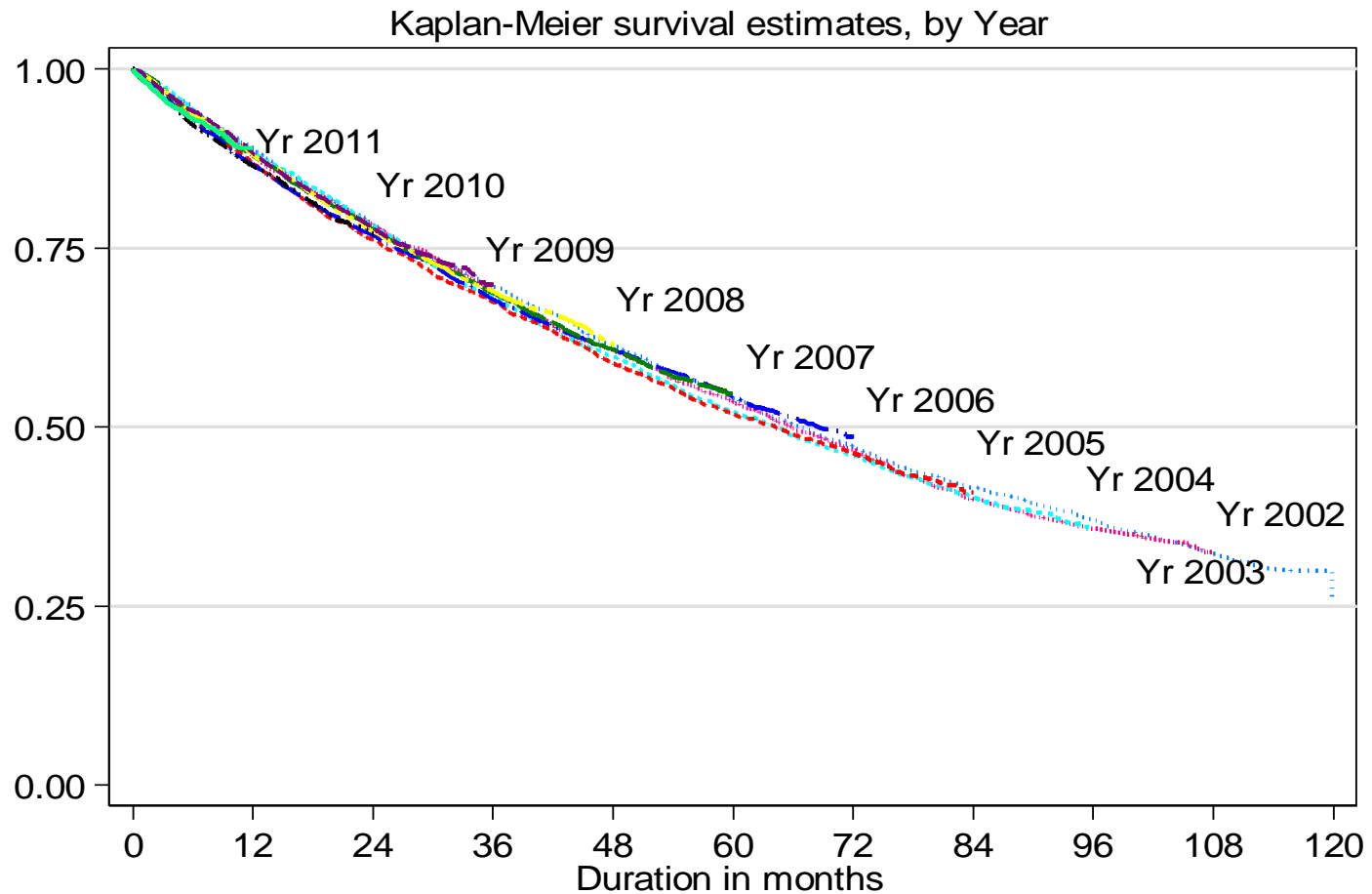
<b>Year</b>	<b>Number of centers</b>	<b>Min</b>	<b>5<sup>th</sup> Centile</b>	<b>LQ</b>	<b>Median</b>	<b>UQ</b>	<b>95<sup>th</sup> Centile</b>	<b>Max</b>
<b>2007</b>	<b>245</b>	<b>15</b>	<b>51</b>	<b>71</b>	<b>82</b>	<b>89</b>	<b>97</b>	<b>100</b>
<b>2008</b>	<b>310</b>	<b>0</b>	<b>43</b>	<b>69</b>	<b>82.5</b>	<b>90</b>	<b>98</b>	<b>100</b>
<b>2009</b>	<b>350</b>	<b>22</b>	<b>45</b>	<b>69</b>	<b>81</b>	<b>89</b>	<b>97</b>	<b>100</b>
<b>2010</b>	<b>397</b>	<b>13</b>	<b>48</b>	<b>69</b>	<b>82</b>	<b>90</b>	<b>98</b>	<b>100</b>
<b>2011</b>	<b>464</b>	<b>0</b>	<b>49</b>	<b>69</b>	<b>82</b>	<b>90</b>	<b>100</b>	<b>100</b>

**Figure 11.2.7 (i): Variation in proportion of patients with URR  $\geq 65\%$  among HD centres 2011**



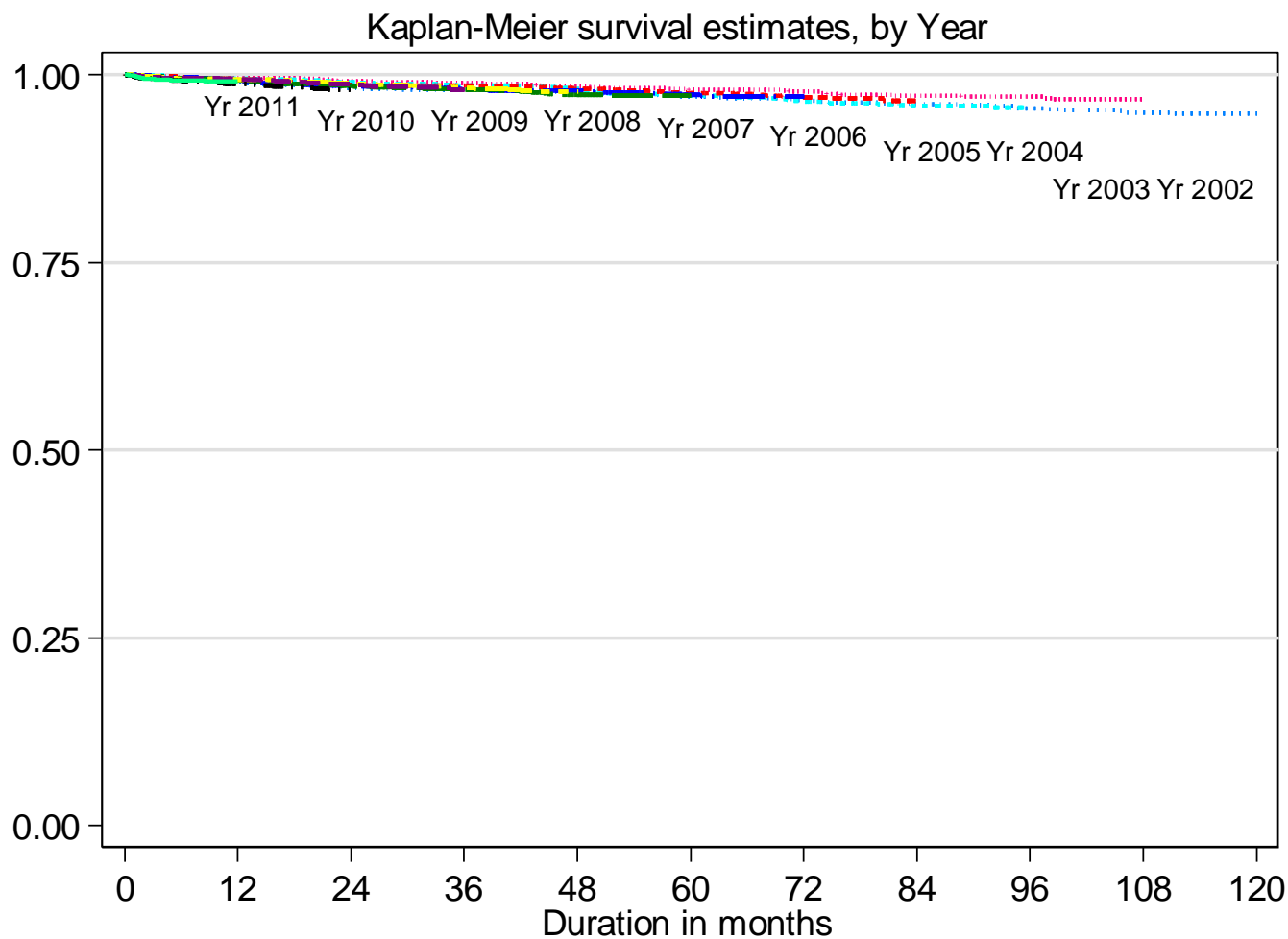


**Figure 11.3.1(a): Unadjusted technique survival by year of entry, 2002-2011**





**Figure 11.3.1(b): Unadjusted technique survival by year of entry (censored for death & transplant), 2002-2011**



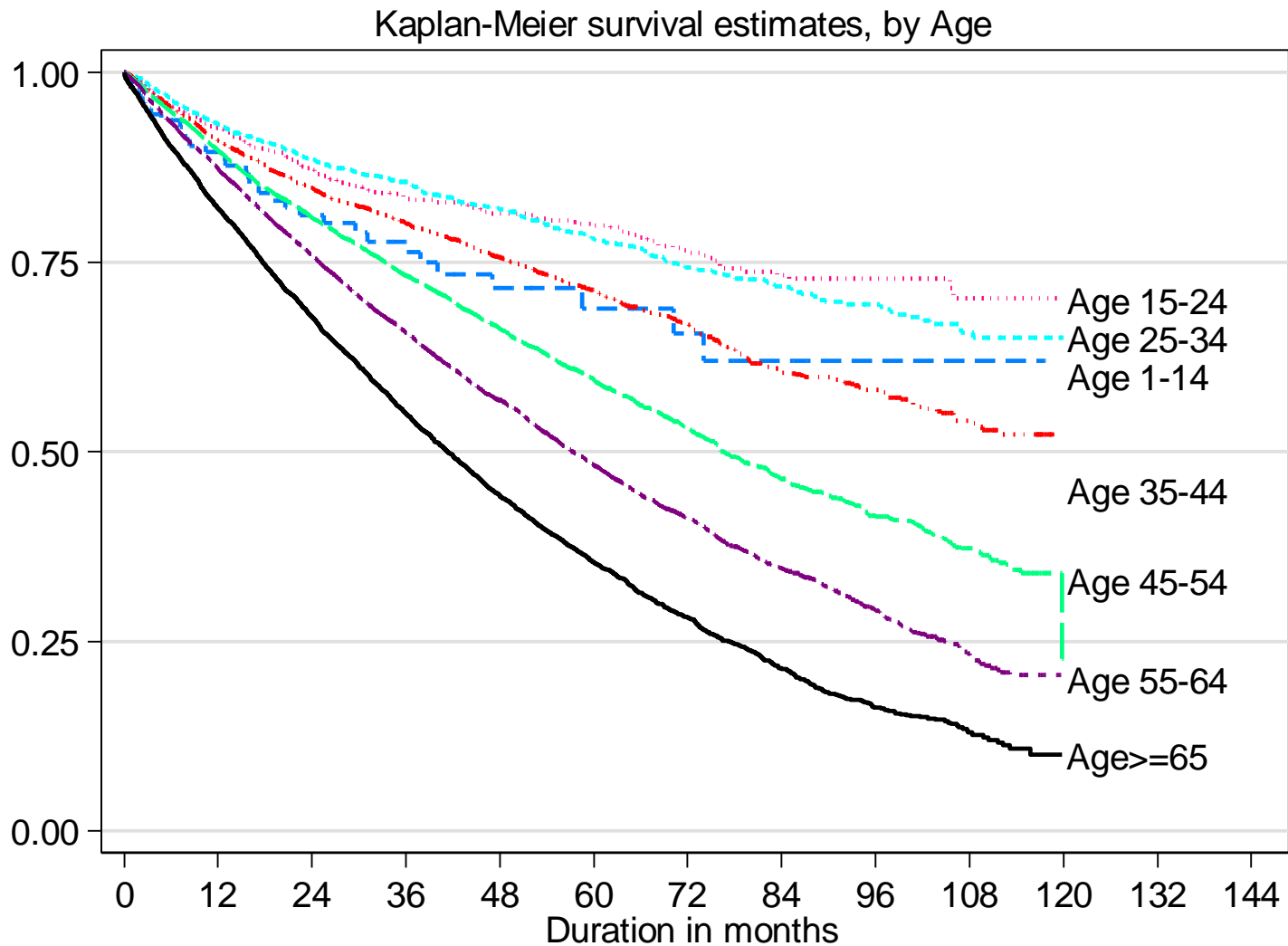
### Table 11.3.2(a): Unadjusted technique survival by age, 2002-2011

Age group (year) Interval (month)	≤ 14			15-24			25-34			35-44		
	n	% Survival	SE	n	% Survival	SE	n	% Survival	SE	n	% Survival	SE
0	130	100		1057	100		2305	100		4006	100	
6	117	94	2	963	96	1	2057	96	0	3586	95	0
12	106	90	3	864	93	1	1811	93	1	3142	91	0
24	82	81	4	676	87	1	1414	89	1	2443	85	1
36	59	78	4	529	83	1	1126	86	1	1934	80	1
48	38	72	5	424	81	1	867	82	1	1437	76	1
60	27	69	5	327	80	1	641	78	1	1102	71	1
72	20	66	6	237	77	2	463	74	1	773	67	1
84	15	62	7	164	73	2	338	72	1	506	61	1
96	8	62	7	99	73	2	215	69	2	297	58	1
108	4	62	7	44	70	3	102	66	2	143	54	2
120	1	-	-	1	-	-	1	-	-	1	-	-

Age group (year) Interval (month)	45-54			55-64			≥ 65		
	n	% Survival	SE	n	% Survival	SE	n	% Survival	SE
0	8919	100		10492	100		8770	100	
6	7883	95	0	9089	93	0	7338	90	0
12	6834	90	0	7751	87	0	6088	82	0
24	5158	81	0	5583	76	0	4238	68	1
36	3868	73	1	3932	66	1	2777	55	1
48	2764	66	1	2716	57	1	1769	44	1
60	1944	59	1	1783	48	1	1077	35	1
72	1254	53	1	1123	41	1	615	28	1
84	768	46	1	646	35	1	328	21	1
96	435	42	1	330	29	1	147	16	1
108	197	37	1	109	23	1	47	13	1
120	2	-	-	1	-	-	1	-	-



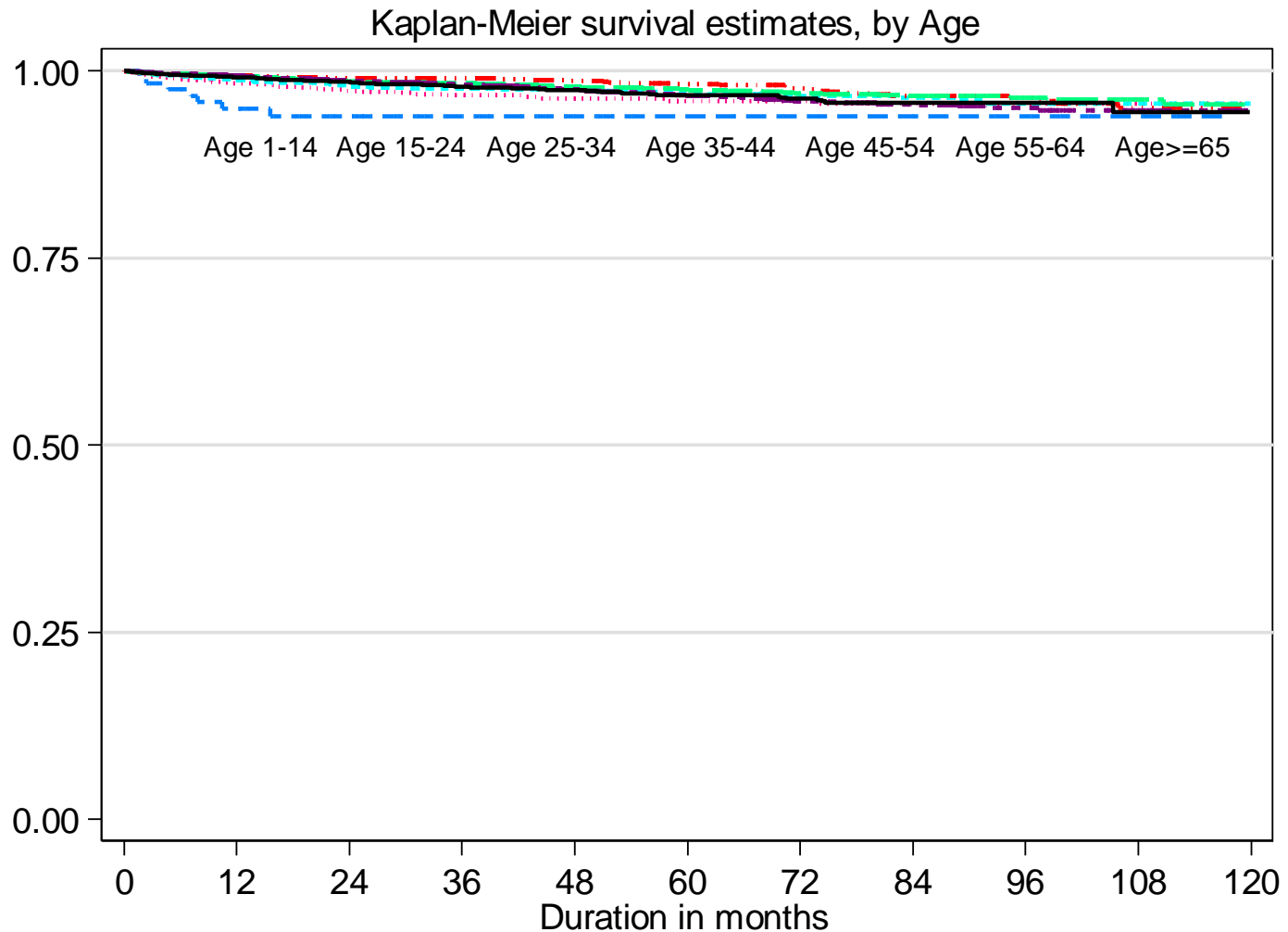
**Figure 11.3.2(a): Unadjusted technique survival by age, 2002-2011**



**Table 11.3.2(b): Unadjusted technique survival by age (censored for death & transplant), 2002-2011**

Age group (year) Interval (month)	≤ 14			15-24			25-34			35-44		
	n	% Survival	SE	n	% Survival	SE	n	% Survival	SE	n	% Survival	SE
0	130	100		1057	100		2305	100		4006	100	
6	117	98	1	963	99	0	2057	99	0	3586	100	0
12	106	95	2	864	98	0	1811	99	0	3142	99	0
24	82	94	2	676	97	1	1414	98	0	2443	99	0
36	59	94	2	529	97	1	1126	98	0	1934	99	0
48	38	94	2	424	96	1	867	98	0	1437	99	0
60	27	94	2	327	96	1	641	97	0	1102	98	0
72	20	94	2	237	96	1	463	97	1	773	98	0
84	15	94	2	164	96	1	338	96	1	506	97	1
96	8	94	2	99	96	1	215	96	1	297	96	1
108	4	94	2	44	96	1	102	96	1	143	95	1
120	1	-	-	1	-	-	1	-	-	1	-	-
Age group (year) Interval (month)	45-54			55-64			≥ 65					
	n	% Survival	SE	n	% Survival	SE	n	% Survival	SE			
0	8919	100		10492	100		8770	100				
6	7883	100	0	9089	100	0	7338	99	0			
12	6834	99	0	7751	99	0	6088	99	0			
24	5158	99	0	5583	99	0	4238	99	0			
36	3868	98	0	3932	98	0	2777	98	0			
48	2764	98	0	2716	98	0	1769	97	0			
60	1944	98	0	1783	97	0	1077	97	0			
72	1254	97	0	1123	96	0	615	96	0			
84	768	97	0	646	95	0	328	96	1			
96	435	96	0	330	95	1	147	96	1			
108	197	96	0	109	95	1	47	95	1			
120	2	-	-	1	-	-	1	-	-			

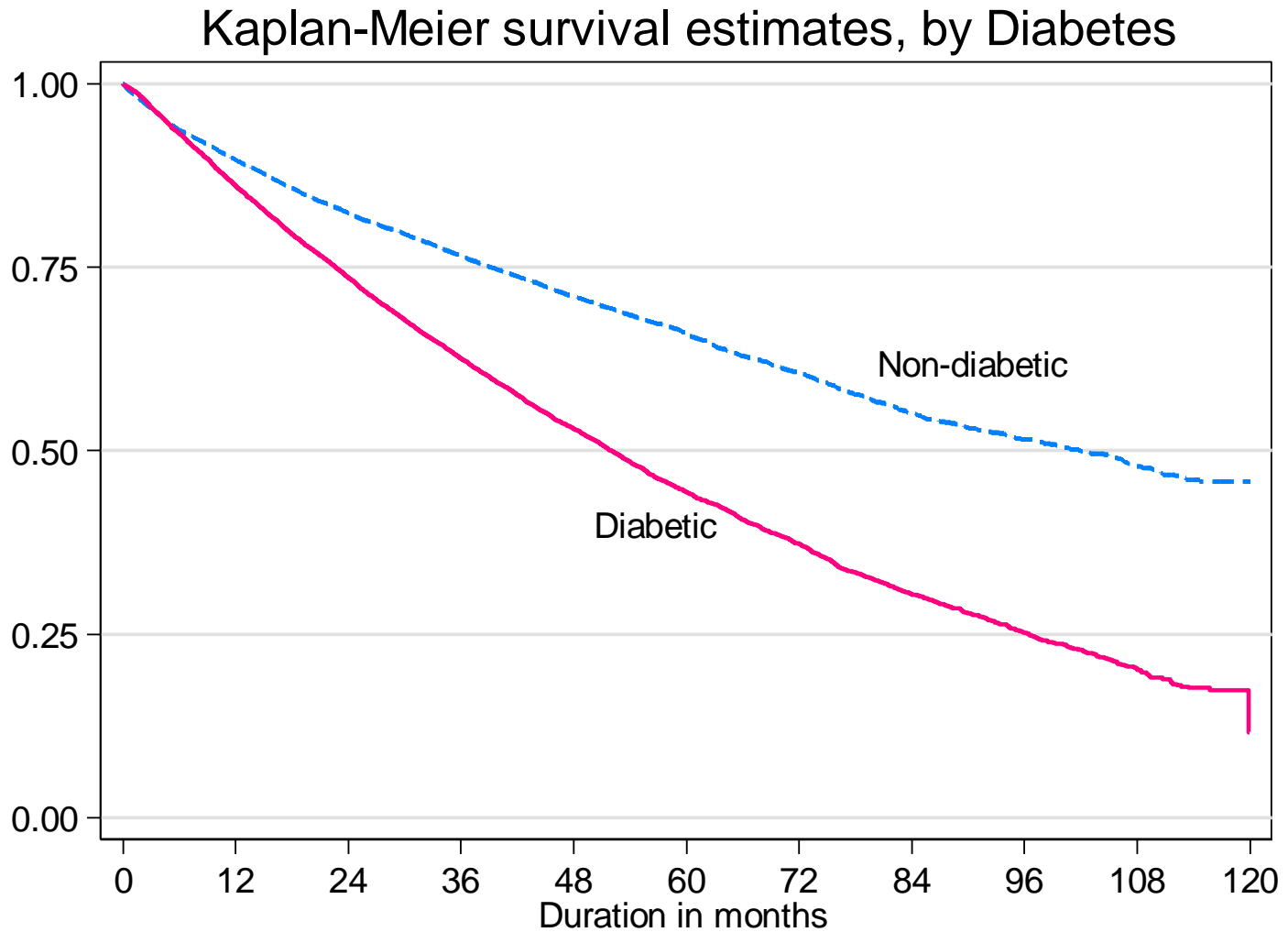
**Figure 11.3.2(b): Unadjusted technique survival by age (censored for death & transplant), 2002-2011**



**Table 11.3.3(a): Unadjusted technique survival by diabetes status, 2002-2011**

Diabetes status Interval (month)	Non-Diabetic			Diabetic		
	n	% Survival	SE	n	% Survival	SE
0	15111	100		20568	100	
6	13130	94	0	17900	93	0
12	11406	90	0	15186	86	0
24	8771	82	0	10815	74	0
36	6738	77	0	7458	63	0
48	5009	71	0	4998	53	0
60	3674	66	0	3201	44	0
72	2572	61	1	1908	37	1
84	1682	55	1	1072	30	1
96	988	52	1	538	25	1
108	444	48	1	200	20	1
120	1	-	-	1	-	-

**Figure 11.3.3(a): Unadjusted technique survival by diabetes status, 2002-2011**



**Table 11.3.3(b): Unadjusted technique survival by diabetes status (censored for death & transplant), 2002-2011**

Diabetes status Interval (month)	Non-Diabetic			Diabetic		
	n	% Survival	SE	n	% Survival	SE
0	15111	100		20568	100	
6	13130	99	0	17900	100	0
12	11406	99	0	15186	99	0
24	8771	99	0	10815	99	0
36	6738	98	0	7458	98	0
48	5009	98	0	4998	98	0
60	3674	97	0	3201	97	0
72	2572	97	0	1908	96	0
84	1682	96	0	1072	96	0
96	988	96	0	538	96	0
108	444	95	0	200	95	1
120	1	-	-	1	-	-

**Figure 11.3.3(b): Unadjusted technique survival by diabetes status (censored for death & transplant), 2002-2011**

