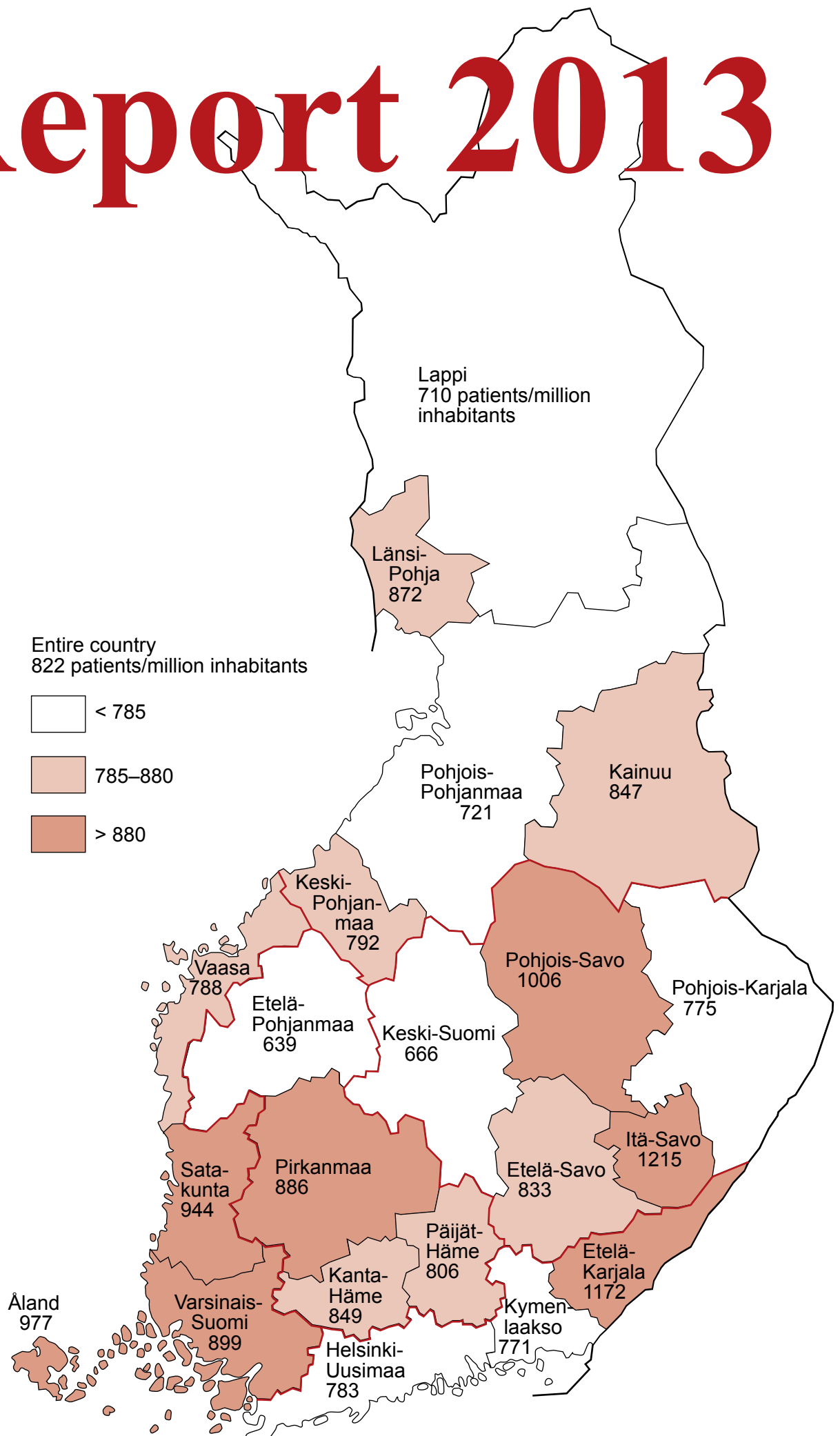


# Report 2013

## Finnish Registry for Kidney Diseases



# Finnish Registry for Kidney Diseases – Report 2013

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## *Finnish Registry for Kidney Diseases 2013*

The Finnish Registry for Kidney Diseases has published an annual report since the early 1990s. The registry's data are also published together with data from other countries in the reports of the European ERA-EDTA Registry and the American USRDS Registry. In addition, the registry's data are used for research published in international scientific journals.

Report 2013 presents updated information on the incidence and prevalence of renal replacement therapy (RRT, i.e. dialysis or kidney transplantation) and on the mortality of RRT patients. Incidence of RRT (number of new RRT patients per million inhabitants) has not increased during the past few years, and Finnish incidence figures are among the lowest in Europe. Prevalence of RRT (number of RRT patients at end of year per million inhabitants) has continuously increased, but the rate of increase has slowed down in recent years. RRT patients' mortality has declined for many years and this favorable trend appears to continue. During the past 10 years mortality of both dialysis and kidney transplantation patients has decreased (see pages 24 and 25).

During 2013 and 2014 the Ministry of Social Affairs and Health has granted the Finnish Registry for Kidney Diseases funding for evaluating the potential to develop the registry to a quality register. Two meetings were arranged in which leading nephrologists from the healthcare districts and representatives from the Institute of Health and Welfare, the Ministry of Social Affairs and Health, and the Finnish Kidney and Liver Association participated. The choice of quality measures and the way of presenting results of treatment quality were discussed. The results of the healthcare districts and regions are published openly and the most essential analyses are presented an-

nually. The aim is that repeated quality analyses will lead to an improved quality regarding the measured parameters. The first quality analyses were published in Report 2012 in January 2014, and these analyses cannot have affected the results of the analyses in Report 2013, as the follow-up concludes on 31 December 2013. The potential effect of quality analyses will be revealed in the years to come. Analyses that are new in Report 2013 are those of estimated glomerular filtration rate (GFR) before start of RRT, waitlisting for kidney transplantation, proportion of dialysis patients receiving transplant, use of erythropoietin-stimulating agents (ESAs), and use of intravenous iron.

The Finnish Registry for Kidney Diseases is a national healthcare registry financed by the Finnish government through the National Institute for Health and Welfare. All patients have provided written consent for data collection. The Finnish Kidney and Liver Association is responsible for the technical maintenance of the registry. Statistics in this report were updated using data obtained from the Registry for the Follow-up of Kidney Transplantation Patients, maintained by the Kidney Transplantation Unit of Helsinki University Central Hospital. The Board of the Finnish Registry for Kidney Diseases thanks all supporters and participating hospitals for excellent cooperation.

Patrik Finne  
Administrative Director

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Chairman of the Board

*Board of the Finnish Registry for Kidney Diseases*

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Table 1. The Finnish population (as thousands of inhabitants) and its distribution in healthcare districts  
Finnish Registry for Kidney Diseases 2003–2013

Healthcare district		Year					Change (%) 2003–2013
		2003	2008	2011	2012	2013	
1	Helsinki-Uusimaa	1426	1497	1545	1563	1581	10.9
3	Varsinais-Suomi	456	465	470	472	474	4.0
4	Satakunta	230	226	225	225	225	-2.3
5	Kanta-Häme	167	173	175	175	175	5.3
6	Pirkanmaa	484	504	515	518	522	7.7
7	Päijät-Häme	210	212	213	214	213	1.8
8	Kymenlaakso	178	176	175	174	174	-2.5
9	Etelä-Karjala	135	134	133	132	132	-2.4
10	Etelä-Savo	110	107	105	105	104	-5.4
11	Itä-Savo	48	46	45	45	44	-8.1
12	Pohjois-Karjala	174	170	170	169	169	-2.6
13	Pohjois-Savo	251	248	248	248	248	-1.2
14	Keski-Suomi	240	246	249	250	251	4.4
15	Etelä-Pohjanmaa	199	199	199	199	199	-0.1
16	Vaasa	161	164	167	168	169	4.7
17	Keski-Pohjanmaa	77	78	78	78	78	1.1
18	Pohjois-Pohjanmaa	376	390	398	401	404	7.4
19	Kainuu	83	80	78	77	77	-7.2
20	Länsi-Pohja	67	66	65	65	64	-4.0
21	Lappi	120	118	118	118	118	-1.4
22	Åland	26	27	28	29	29	8.8
Region							
	South	1740	1807	1852	1870	1888	8.5
	Southwest	874	883	892	894	896	2.6
	West	1060	1088	1102	1106	1109	4.7
	East	824	818	818	818	817	-0.8
	North	723	731	738	739	741	2.5
Entire country		5220	5326	5401	5427	5451	4.4

Figure 1. Healthcare districts and regions in Finland  
Finnish Registry for Kidney Diseases 2013

On 31 December 2013, the population of Finland was 5.451 million (Table 1, Source: Statistics Finland). During the past ten years the population of the country has increased by 4.4%, with the fastest increase occurring in the southern region. The population in the eastern region has decreased. Of the healthcare districts, the population has increased most in Helsinki-Uusimaa, Åland, Pirkanmaa, and Pohjois-Pohjanmaa. In the healthcare districts of Itä-Savo, Kainuu, and Etelä-Savo, the population has decreased especially rapidly.

The numbers in Figure 1 refer to the healthcare districts listed in Table 1. In this report, "region" refers to a university hospital region. Vaasa healthcare district was earlier part of the western region, but has belonged since 1 January 2013 to the southwestern region (Turku University Central Hospital).

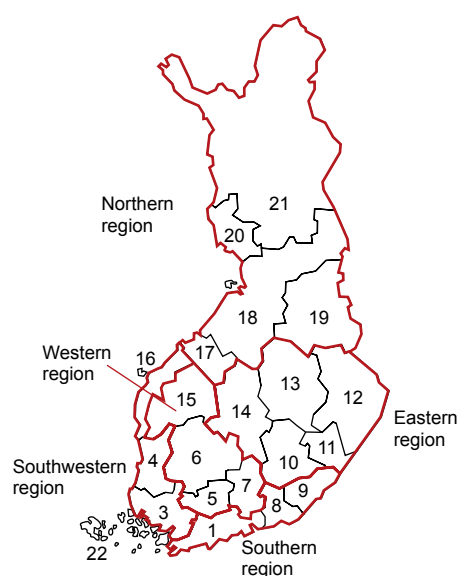


Table 2. The Finnish population (as thousands of inhabitants) according to region, age group, and sex  
Finnish Registry for Kidney Diseases 2003–2013

Region	2003					2013				
	0– 19 y (%)	20– 64 y (%)	65– 74 y (%)	> 75 y (%)	Total	0– 19 y (%)	20– 64 y (%)	65– 74 y (%)	> 75 y (%)	Total
South										
Men	208 (25)	545 (65)	56 (7)	32 (4)	841 (100)	212 (23)	573 (62)	86 (9)	47 (5)	918 (100)
Women	201 (22)	558 (62)	71 (8)	69 (8)	899 (100)	204 (21)	579 (60)	103 (11)	84 (9)	969 (100)
Total	409 (23)	1102 (63)	128 (7)	101 (6)	1740 (100)	417 (22)	1151 (61)	188 (10)	131 (7)	1888 (100)
Southwest										
Men	103 (24)	263 (62)	36 (8)	24 (6)	426 (100)	99 (22)	259 (59)	50 (11)	32 (7)	441 (100)
Women	98 (22)	258 (58)	44 (10)	48 (11)	447 (100)	94 (21)	253 (56)	54 (12)	54 (12)	456 (100)
Total	201 (23)	522 (60)	80 (9)	72 (8)	874 (100)	193 (22)	513 (57)	104 (12)	86 (10)	896 (100)
West										
Men	126 (24)	321 (62)	43 (8)	27 (5)	518 (100)	125 (23)	323 (59)	60 (11)	38 (7)	545 (100)
Women	121 (22)	311 (57)	54 (10)	56 (10)	542 (100)	119 (21)	313 (55)	67 (12)	65 (12)	564 (100)
Total	247 (23)	632 (60)	97 (9)	83 (8)	1060 (100)	244 (22)	635 (57)	127 (11)	103 (9)	1109 (100)
East										
Men	98 (24)	250 (62)	36 (9)	22 (5)	406 (100)	88 (22)	239 (59)	47 (12)	31 (8)	404 (100)
Women	94 (22)	237 (57)	43 (10)	44 (10)	418 (100)	84 (20)	228 (55)	50 (12)	51 (12)	413 (100)
Total	192 (23)	487 (59)	80 (10)	66 (8)	824 (100)	172 (21)	467 (57)	97 (12)	82 (10)	817 (100)
North										
Men	98 (27)	220 (61)	29 (8)	16 (5)	363 (100)	94 (25)	217 (58)	37 (10)	24 (7)	372 (100)
Women	94 (26)	204 (57)	33 (9)	30 (8)	360 (100)	89 (24)	203 (55)	39 (11)	38 (10)	369 (100)
Total	191 (26)	423 (59)	61 (8)	47 (6)	723 (100)	183 (25)	420 (57)	76 (10)	62 (8)	741 (100)
Entire country										
Men	633 (25)	1599 (63)	200 (8)	121 (5)	2553 (100)	617 (23)	1611 (60)	279 (10)	173 (6)	2680 (100)
Women	607 (23)	1568 (59)	245 (9)	247 (9)	2667 (100)	591 (21)	1575 (57)	313 (11)	292 (11)	2771 (100)
Total	1240 (24)	3167 (61)	445 (9)	368 (7)	5220 (100)	1209 (22)	3186 (58)	592 (11)	464 (9)	5451 (100)

Table 2 shows the age and sex distribution of the Finnish population at the end of 2003 and 2013. At the end of 2013, 19% of the Finnish inhabitants were older than 65 years. In the southern region, the proportion of inhabitants older than 65 years was the smallest, 17%, whereas in the other regions it was 19–22%. The proportion of inhabitants aged 20–64 years was largest in the southern region, 61%, while

it was 57% in the other regions. In the northern region, the proportion of inhabitants younger than 20 years was the largest, 25%.

The age of the Finnish population has increased during the past ten years. The proportion of inhabitants older than 75 years has increased from 7.1% to 8.5%, and the proportion of 65–74-year-olds from 8.5% to 10.9%.

Table 3. Number of new RRT patients and incidence of RRT by healthcare district and region  
Finnish Registry for Kidney Diseases 2003–2013

Healthcare district	Number of new RRT patients						Incidence of RRT/million inhabitants						
	2003	2008	2011	2012	2013	2009–2013 on average	2003	2008	2011	2012	2013	2009–2013 on average	
1	Helsinki-Uusimaa	131	121	113	113	130	116	92	81	73	72	82	75
3	Varsinais-Suomi	51	57	38	45	37	37	112	123	81	95	78	79
4	Satakunta	19	25	21	23	18	21	83	110	93	102	80	94
5	Kanta-Häme	16	16	29	15	22	21	96	92	165	85	125	118
6	Pirkanmaa	39	42	47	45	58	50	81	83	91	87	111	98
7	Päijät-Häme	31	27	19	13	15	17	148	127	89	61	70	78
8	Kymenlaakso	20	23	8	16	7	12	112	131	46	92	40	70
9	Etelä-Karjala	20	23	13	12	16	15	148	172	98	91	121	113
10	Etelä-Savo	5	5	8	5	5	8	45	47	76	48	48	76
11	Itä-Savo	7	4	5	6	7	6	145	87	111	134	158	142
12	Pohjois-Karjala	12	14	13	7	18	13	69	82	77	41	106	79
13	Pohjois-Savo	24	26	33	34	26	28	95	105	133	137	105	112
14	Keski-Suomi	16	26	21	23	16	20	67	106	84	92	64	79
15	Etelä-Pohjanmaa	18	12	24	21	12	18	90	60	121	106	60	91
16	Vaasa	18	15	16	12	21	16	112	91	96	71	124	96
17	Keski-Pohjanmaa	9	6	5	9	9	9	116	77	64	115	115	115
18	Pohjois-Pohjanmaa	29	37	21	30	39	30	77	95	53	75	97	76
19	Kainuu	9	4	5	6	11	7	109	50	64	77	143	85
20	Länsi-Pohja	8	14	3	2	7	5	120	213	46	31	109	71
21	Lappi	13	6	15	8	8	9	108	51	127	68	68	74
22	Åland	2	5	4	5	3	3	76	182	141	175	105	120
Region	South	171	167	134	141	153	144	98	92	72	75	81	77
	Southwest	90	102	79	85	79	78	103	116	89	95	88	87
	West	104	97	119	94	107	105	98	89	108	85	96	96
	East	64	75	80	75	72	75	78	92	98	92	88	92
	North	68	67	49	55	74	59	94	92	66	74	100	80
Entire country		497	508	461	450	485	461	95	95	85	83	89	85
	Children <15 y	9	4	6	8	8	7	10	4	7	9	9	8

Table 3 shows the number of new RRT patients and the incidence of RRT according to healthcare district and region. In the entire country, the incidence in 2013 was somewhat larger than in 2011 and 2012, but smaller than in 2003 and 2008.

In 2009–2013, the average incidence was highest in the western region and lowest in the southern region. In Table 3 and in the entire report, results are presented according to

the region as of 1 January 2013 (Vaasa healthcare district became part of the southwestern region instead of the western region).

In the healthcare districts, the average incidence in 2009–2013 was lowest in Kymenlaakso (70 new RRT patients per million inhabitants) and highest in Itä-Savo (142/million inhabitants).



Table 4. Number of new RRT patients by age group in healthcare districts and regions  
Finnish Registry for Kidney Diseases 2009–2013

Healthcare district		Average annual number of new RRT patients in 2009–2013 by age group (y)						Incidence*/million inhabitants in 2009–2013 by age group (y)					
		0–19	20–44	45–64	65–74	≥ 75	Total	0–19	20–44	45–64	65–74	≥ 75	Total
1	Helsinki-Uusimaa	3,4	17,0	46,6	29,8	19,6	116	10	31	112	225	211	75
3	Varsinais-Suomi	0,4	3,8	15,6	10,6	6,6	37	4	26	119	218	156	79
4	Satakunta	0,2	2,2	8,2	6,2	4,4	21	4	36	123	235	191	94
5	Kanta-Häme	0,4	2,6	8,2	4,4	5,0	21	10	52	161	238	310	118
6	Pirkanmaa	0,8	5,8	19,0	13,2	11,4	50	7	35	136	258	262	98
7	Päijät-Häme	0	2,4	5,0	5,4	3,8	17	0	40	79	218	197	78
8	Kymenlaakso	0	1,8	4,6	3,6	2,2	12	0	38	86	175	124	70
9	Etelä-Karjala	0,6	1,2	5,2	5,2	2,8	15	23	33	129	334	202	113
10	Etelä-Savo	0,2	1,0	2,4	2,4	2,0	8	10	38	72	182	170	76
11	Itä-Savo	0	1,0	2,0	2,0	1,4	6	0	94	137	337	256	142
12	Pohjois-Karjala	0,2	1,6	5,2	4,2	2,2	13	6	35	98	224	132	79
13	Pohjois-Savo	0,6	5,0	11,4	7,6	3,2	28	11	72	152	290	133	112
14	Keski-Suomi	0,6	2,2	8,4	5,8	2,8	20	11	28	122	236	134	79
15	Etelä-Pohjanmaa	1,0	1,6	6,6	4,6	4,2	18	21	29	116	224	210	91
16	Vaasa	1,0	1,8	4,0	4,8	4,4	16	25	35	92	285	279	96
17	Keski-Pohjanmaa	0,6	1,2	3,6	2,2	1,4	9	30	54	169	280	202	115
18	Pohjois-Pohjanmaa	0,6	6,0	10,8	8,0	4,8	30	6	48	105	241	174	76
19	Kainuu	0	0,6	3,2	2,0	0,8	7	0	31	128	224	99	85
20	Länsi-Pohja	0,2	0,8	1,6	1,0	1,0	5	14	46	80	147	163	71
21	Lappi	0,2	0,8	3,6	2,6	1,6	9	8	25	96	207	152	74
22	Åland	0	0,2	1,8	1,0	0,4	3	0	24	223	338	168	120
Region South		4,0	20,0	56,4	38,6	24,6	144	10	32	110	229	198	77
Southwest		1,6	8,0	29,6	22,6	15,8	78	8	30	119	238	190	87
West		2,2	12,4	38,8	27,6	24,4	105	9	38	125	240	247	96
East		1,6	10,8	29,4	22,0	11,6	75	9	47	120	248	147	92
North		1,6	9,4	22,8	15,8	9,6	59	9	43	110	228	162	80
Entire country		11	61	177	127	86	461	9	36	116	236	193	85

\*Average annual incidence of RRT in subgroup

Table 4 presents the average annual number of new RRT patients and incidence of RRT in 2009–2013 according to healthcare district, region, and age group. Incidence was highest among 65–74-year-olds. In the age group of 75 years and older, the incidence varied in the range of 99–310 and in the regions in the range of 147–247 new RRT patients per million inhabitants. In small healthcare districts, chance may cause great variation in incidence of RRT in age groups. In nine healthcare districts, the average annual number of patients entering RRT was less than 15. Both the highest and the lowest incidence rates were observed among these healthcare districts.

Table 5. Number of new RRT patients by age group and sex  
Finnish Registry for Kidney Diseases 2003–2013

Age group		Number of new RRT patients					Incidence of RRT/million inhabitants				
		2003	2008	2011	2012	2013	2003	2008	2011	2012	2013
0–19 y	Males	9	5	3	7	12	14	8	5	11	19
	Females	4	1	8	2	2	7	2	13	3	3
	Total	13	6	11	9	14	10	5	9	7	12
20–44 y	Males	54	52	37	38	42	62	61	43	44	49
	Females	18	22	20	20	23	21	27	24	24	28
	Total	72	74	57	58	65	42	44	34	34	39
45–64 y	Males	118	119	117	119	125	163	156	154	158	168
	Females	56	70	61	51	58	77	91	80	67	77
	Total	174	189	178	170	183	120	124	117	112	122
65–74 y	Males	90	96	88	85	88	450	440	351	320	316
	Females	50	38	43	29	47	204	149	151	97	150
	Total	140	134	131	114	135	315	283	244	202	228
≥75 y	Males	62	57	56	64	61	512	387	348	385	353
	Females	36	48	28	35	27	146	176	99	122	93
	Total	98	105	84	99	88	266	250	189	219	189
Total	Males	333	329	301	313	328	130	126	113	117	122
	Females	164	179	160	137	157	61	66	58	50	57
	Total	497	508	461	450	485	95	95	85	83	89

Table 5 shows the number of new RRT patients and the incidence of RRT according to age group and sex in 2003–2013. The incidence of RRT is approximately twice as high in men as in women, and the difference is even larger in those older than 75 years. In those 65 years and older, the incidence in 2013 was 28% lower than in 2003. The annual number of new RRT patients older than 65 years has not decreased, but the population in this age group has increased by 30%, which explains the decreased incidence. In the age group 45–64 years, the incidence has remained virtually unchanged in recent years.

Figure 2. Standardized incidence of RRT in regions Finnish Registry for Kidney Diseases 2003–2013

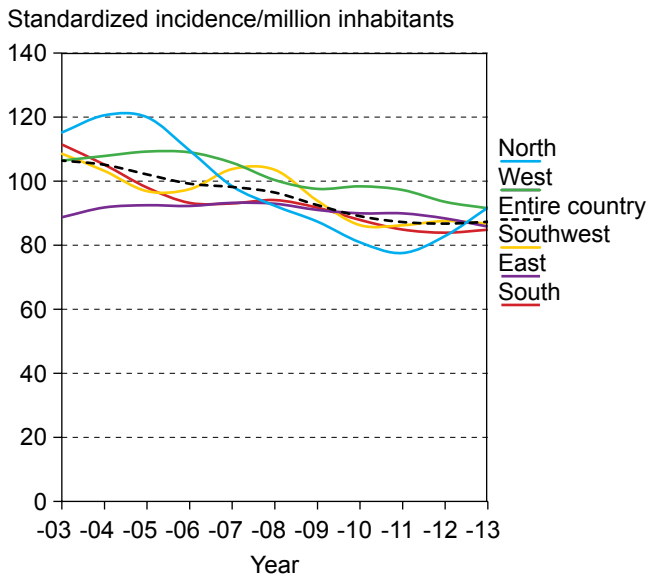


Figure 2 shows the regional incidence of RRT (i.e. dialysis and kidney transplantation) in 2003–2013 as smoothed averages. The incidence rates are age- and sex-standardized using the Finnish general population on 31 December 2013 as the reference population. Population changes in 2003–2013 have been taken into consideration. Standardization removes the effect of age and sex on regional differences in incidence rates. Nationwide, the standardized incidence has declined during 2003–2013. Regional differences in standardized incidence are very small.

Figure 3. Standardized incidence of RRT in regions 90 days after the start of RRT Finnish Registry for Kidney Diseases 2003–2013

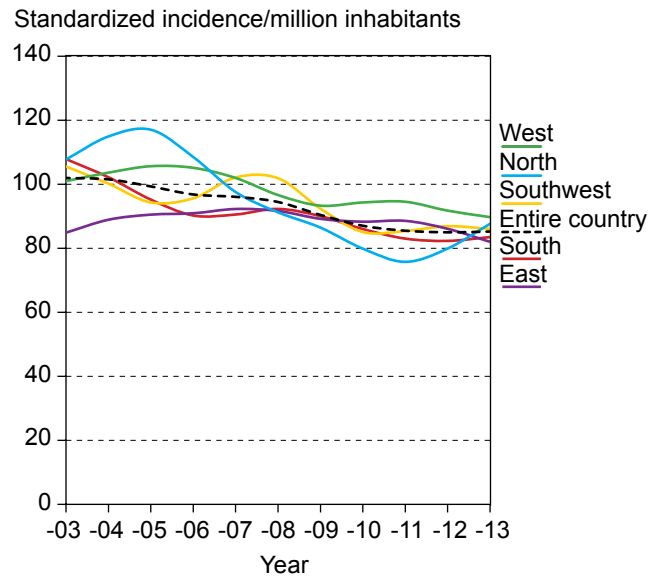
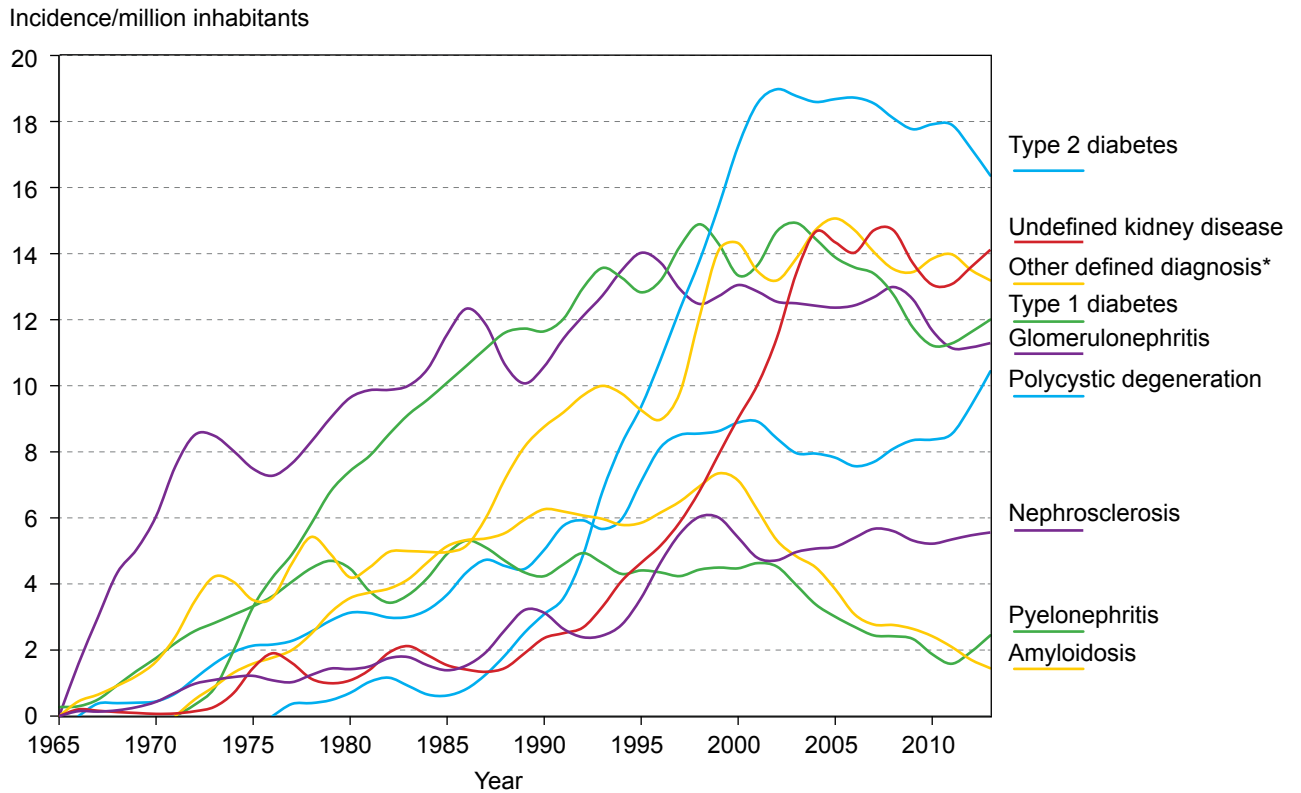


Figure 3 shows the age- and sex-standardized regional incidence of RRT 90 days after the start of RRT. The Finnish Registry for Kidney Diseases does not store data on patients who have regained renal function within 90 days from start of RRT because in that case RRT is not considered chronic. However, the registry does store information on patient who died or moved abroad within 90 days from start of RRT, but these patients were excluded from Figure 3.

Figure 4. Incidence of RRT according to diagnosis  
Finnish Registry for Kidney Diseases 1965–2013



\*Other systemic diseases, urinary tract obstruction, congenital diseases, and tubulointerstitial nephritis, among others

The incidence of RRT according to diagnosis appears as smoothed averages in Figure 4. Until the end of the 1990s, incidence increased in almost all diagnostic groups, but after that the increase has stopped or even declined.

Type 2 diabetes has been the leading cause of end-stage renal disease since 1999. Type 1 diabetes and glomerulo-

nephritis have been the second most common causes of end-stage renal disease, and polycystic degeneration is nowadays almost as common. The number of amyloidosis patients entering RRT has decreased substantially since 2000.

Table 6. Number of new RRT patients according to diagnosis in regions  
Finnish Registry for Kidney Diseases 2009–2013

Diagnosis	Number of new RRT patients in 2009–2013 (%)					
	Southern region	Southwestern region	Western region	Eastern region	Northern region	Entire country
Type 2 diabetes	150 (21)	67 (17)	117 (22)	70 (19)	63 (21)	467 (20)
Glomerulonephritis	104 (14)	50 (13)	59 (11)	54 (14)	45 (15)	312 (14)
Type 1 diabetes	92 (13)	46 (12)	76 (14)	45 (12)	49 (17)	308 (13)
Polycystic degeneration	82 (11)	43 (11)	50 (9)	41 (11)	27 (9)	243 (11)
Nephrosclerosis	43 (6)	28 (7)	25 (5)	24 (6)	25 (8)	145 (6)
Pyelonephritis	13 (2)	17 (4)	10 (2)	8 (2)	8 (3)	56 (2)
Amyloidosis	15 (2)	13 (3)	11 (2)	10 (3)	5 (2)	54 (2)
Other defined diagnosis	97 (14)	63 (16)	85 (16)	63 (17)	55 (19)	363 (16)
Undefined kidney disease	122 (17)	61 (16)	94 (18)	62 (16)	19 (6)	358 (16)
<b>Total</b>	<b>718 (100)</b>	<b>388 (100)</b>	<b>527 (100)</b>	<b>377 (100)</b>	<b>296 (100)</b>	<b>2306 (100)</b>

Table 6 presents the number of patients entering RRT in 2009–2013 according to diagnosis in regions. Of patients entering RRT, 20% had type 2 diabetes and 13% type 1 diabetes as cause of end-stage renal disease. Most diagnoses are similarly distributed in the various regions. Undefined kidney disease and nephrosclerosis are less frequent in the northern region than elsewhere.

Figure 5. International comparison of incidence of RRT in 2012  
Finnish Registry for Kidney Diseases 2012

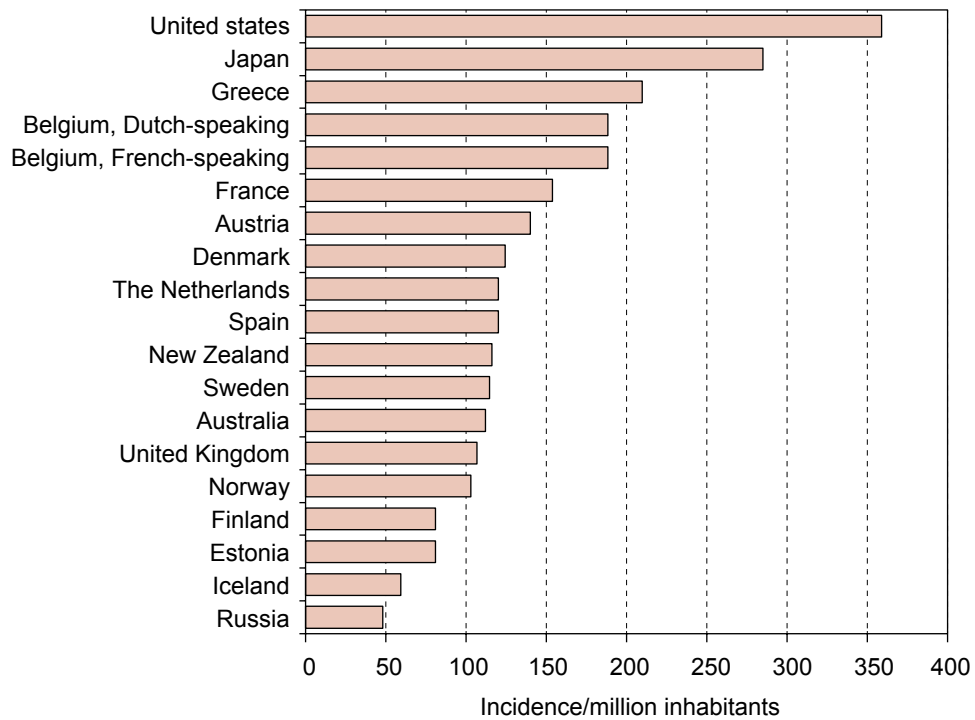


Figure 5 shows the incidence of RRT in 2012 in countries reporting to the ERA-EDTA Registry (Annual Report 2012, <http://www.era-edta-reg.org>) and in the United States, Australia, New Zealand, and Japan (The 2014USRDS Annual Data Report Atlas, <http://www.usrds.org>). In 2012, the incidence of RRT in Finland was the second lowest among the Nordic countries. Relative to Finland, the incidence in Denmark was 54% higher, in Sweden 42% higher, in Norway 27% higher, and in Iceland 27% lower.

Table 7. Patients on RRT at end of year according to healthcare district and region  
Finnish Registry for Kidney Diseases 2003–2013

Healthcare district		Number of RRT patients					Prevalence of RRT/million inhabitants				
		2003	2008	2011	2012	2013	2003	2008	2011	2012	2013
1	Helsinki-Uusimaa	941	1072	1162	1184	1238	660	716	752	758	783
3	Varsinais-Suomi	318	389	404	413	426	697	837	859	875	899
4	Satakunta	188	231	231	225	212	818	1021	1025	1000	944
5	Kanta-Häme	96	120	145	146	149	576	693	827	832	849
6	Pirkanmaa	335	415	434	443	462	692	823	844	855	886
7	Päijät-Häme	133	173	176	175	172	634	816	825	820	806
8	Kymenlaakso	113	142	137	141	134	634	808	784	808	771
9	Etelä-Karjala	102	144	152	151	155	753	1077	1147	1141	1172
10	Etelä-Savo	65	81	90	86	87	589	756	853	821	833
11	Itä-Savo	36	41	50	49	54	745	887	1105	1092	1215
12	Pohjois-Karjala	115	132	136	131	131	663	776	801	773	775
13	Pohjois-Savo	225	221	234	245	250	895	890	943	987	1006
14	Keski-Suomi	133	152	169	171	167	553	618	678	683	666
15	Etelä-Pohjanmaa	100	113	132	136	127	502	569	664	684	639
16	Vaasa	93	107	118	119	133	577	651	705	708	788
17	Keski-Pohjanmaa	38	53	59	60	62	491	682	755	767	792
18	Pohjois-Pohjanmaa	236	272	282	282	291	628	698	708	703	721
19	Kainuu	58	67	61	61	65	701	841	782	788	847
20	Länsi-Pohja	47	66	59	54	56	703	1006	908	835	872
21	Lappi	76	76	84	83	84	633	642	710	702	710
22	Åland	17	21	27	30	28	645	765	952	1053	977
Region	South	1156	1358	1451	1476	1527	664	752	783	789	809
	Southwest	616	748	780	787	799	705	847	875	881	892
	West	664	821	887	900	910	627	755	805	814	820
	East	574	627	679	682	689	697	767	830	834	843
	North	455	534	545	540	558	629	730	739	730	753
Entire country		3465	4088	4342	4385	4483	664	768	804	808	822

Table 7 presents the number of RRT patients and the prevalence of RRT on 31 December 2003–2013. In the entire country, the prevalence at the end of 2013 was 822 RRT patients per million inhabitants; it had increased by 24% from 2003 and by 7% from 2008. On 31 December 2013, the prevalence was the highest in the southwestern region and the lowest in the northern region. In the healthcare districts, the prevalence varied between 639 and 1215 patients per million inhabitants.

Table 8. Patients on RRT according to age group and sex  
Finnish Registry for Kidney Diseases 2003–2013

Age group		Number of RRT patients					Prevalence of RRT/million inhabitants				
		2003	2008	2011	2012	2013	2003	2008	2011	2012	2013
0–19 y	Males	79	69	66	65	67	125	110	106	105	109
	Females	46	52	55	52	48	76	87	92	88	81
	Total	125	121	121	117	115	101	99	99	97	95
20–44 y	Males	440	458	425	411	418	503	533	494	476	483
	Females	304	271	253	245	240	362	330	309	299	292
	Total	744	729	678	656	658	434	434	404	390	390
45–64 y	Males	989	1201	1242	1225	1224	1366	1576	1635	1626	1641
	Females	592	720	725	718	728	813	938	946	945	967
	Total	1581	1921	1967	1943	1952	1089	1256	1289	1284	1303
65–74 y	Males	402	495	651	688	733	2008	2269	2598	2591	2628
	Females	300	316	364	370	390	1225	1241	1276	1234	1245
	Total	702	811	1015	1058	1123	1578	1715	1894	1871	1896
≥75 y	Males	182	310	351	387	406	1504	2107	2179	2328	2350
	Females	131	196	210	224	229	530	720	743	781	785
	Total	313	506	561	611	635	850	1207	1264	1349	1367
Total	Males	2092	2533	2735	2776	2848	819	970	1031	1041	1063
	Females	1373	1555	1607	1609	1635	515	573	585	583	590
	Total	3465	4088	4342	4385	4483	664	768	804	808	822

Figure 6. Standardized prevalence of RRT in regions  
Finnish Registry for Kidney Diseases 2003–2013

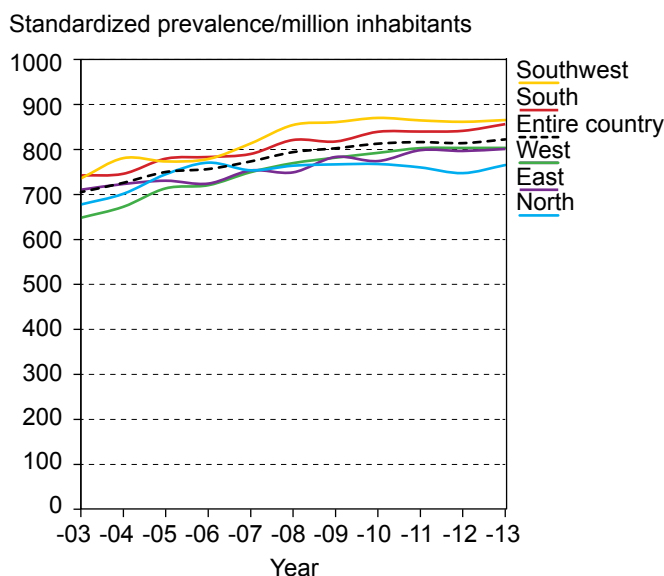
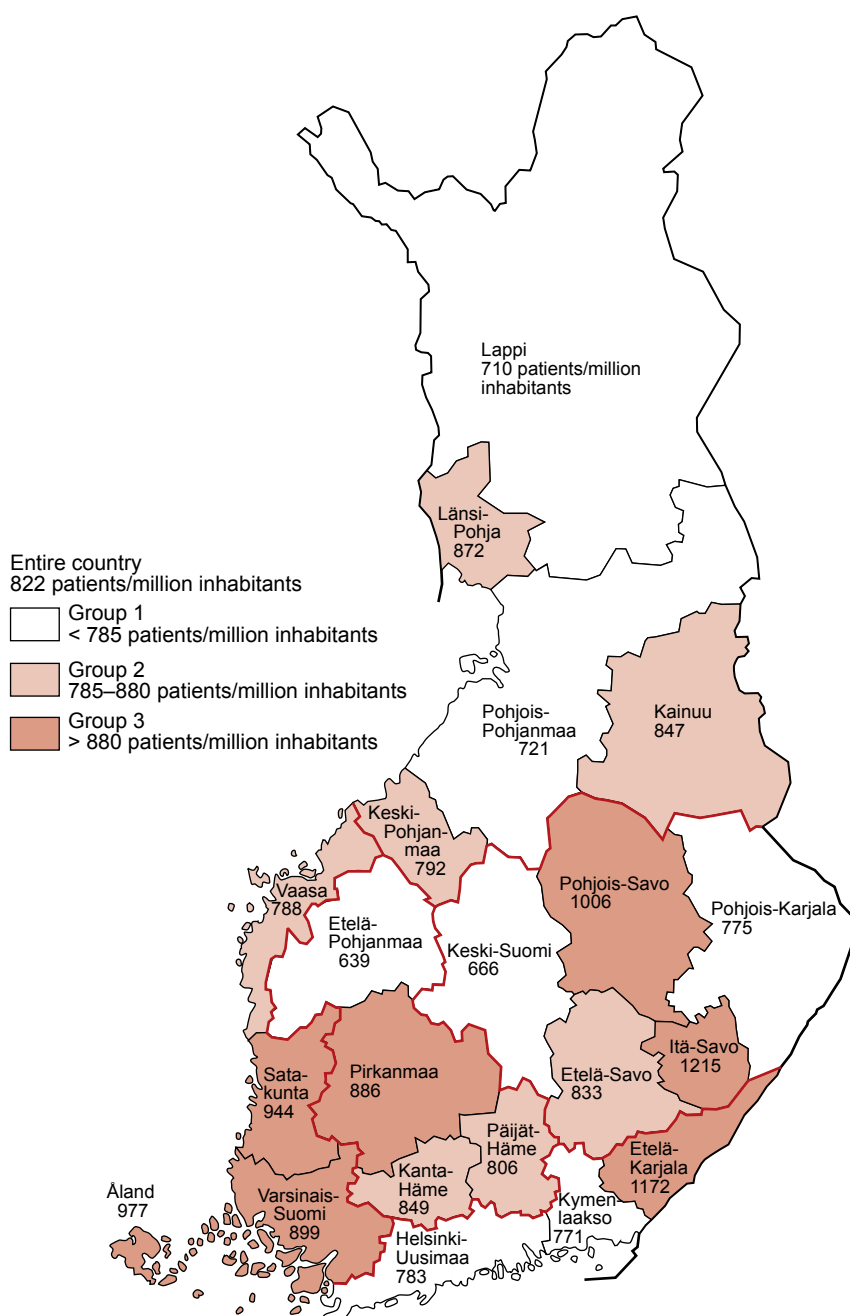


Table 8 shows the number of RRT patients and the prevalence of RRT on 31 December 2003–2013 according to age group and sex. The prevalence has increased by 24% since 2003. In the age group 75 years and older, the prevalence of RRT has increased by 61%. In 45–74-year-olds, the prevalence has increased by 20%. In 20–44-year-olds, the prevalence has decreased by 10%. The highest prevalence, observed among men aged 65–74 years at the end of 2013, was 2628 cases per million inhabitants. At the end of 2013, the prevalence was 80% greater among men than women, and the sex difference was even more pronounced in the oldest age group, in which it was threefold in men compared with women.

Figure 6 shows the age- and sex-standardized prevalence rates for 2003–2013 using the Finnish general population on 31 December 2013 as the reference population. Population changes during this period have been taken into consideration. The standardized prevalence rates have no longer increased in recent years.



Figure 7. Prevalence of RRT on 31 December 2013  
Finnish Registry for Kidney Diseases 2013



The healthcare districts shown on the map are grouped according to the prevalence of RRT at the end of 2013 (Figure 7). The prevalence per million inhabitants was <785 in seven districts, 785–880 in seven districts, and >880 in seven districts. The borders of the regions are indicated with thick lines.

Figure 8. Prevalence of RRT at end of year according type of treatment  
Finnish Registry for Kidney Diseases 1965–2013

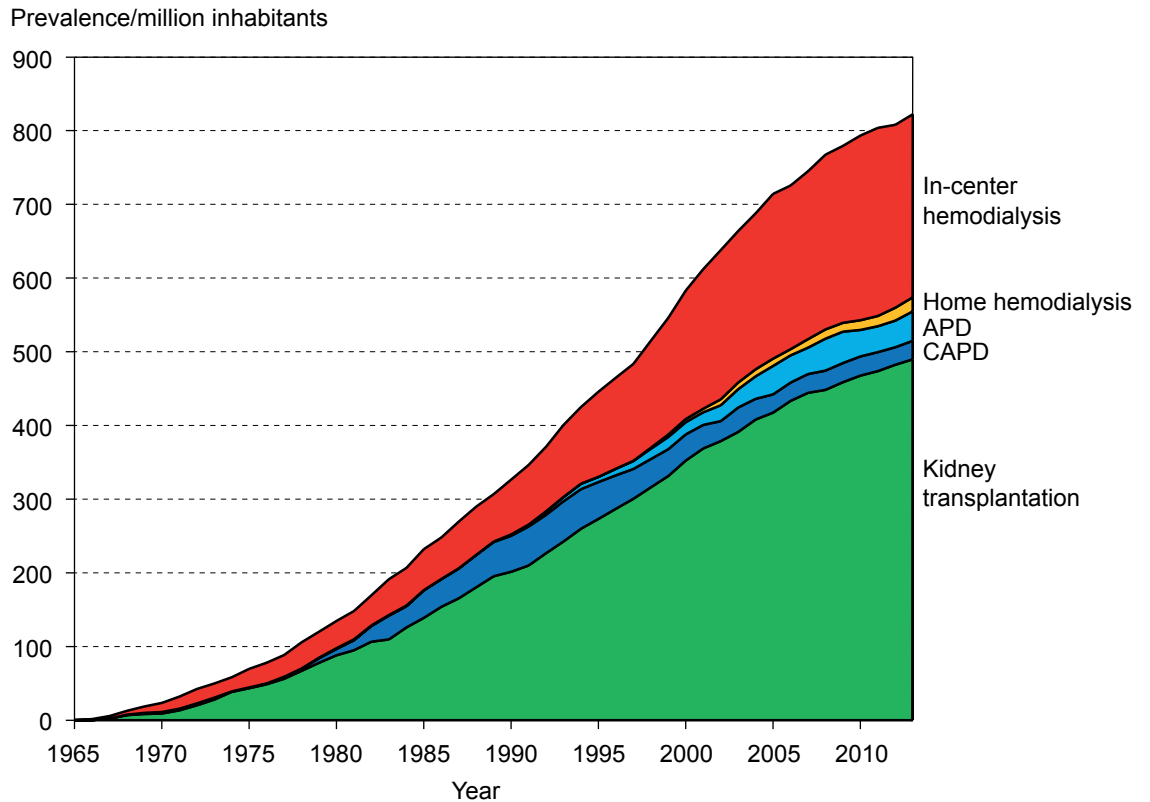


Figure 8 displays the prevalence of RRT according to treatment type. The prevalence of peritoneal dialysis has remained virtually unchanged for decades, but the proportion of automated peritoneal dialysis (APD) has increased and that of continuous ambulatory peritoneal dialysis (CAPD) has decreased. The prevalence of home hemodialysis (home HD) has doubled in ten years. The numbers

of kidney transplantation and in-center HD patients have increased steadily, more than 20% in ten years.

At the end of 2013, the proportion of in-center HD patients of all RRT patients was 30%, that of home HD 2%, that of APD 5%, that of CAPD 3%, and that of kidney transplantation 60%.

Table 9. Prevalence of dialysis and kidney transplantation in healthcare districts and regions  
Finnish Registry for Kidney Diseases 2003–2013

Healthcare district		Number of dialysis patients/ million inhabitants					Number of kidney transplantation patients/ million inhabitants				
		2003	2008	2011	2012	2013	2003	2008	2011	2012	2013
1	Helsinki-Uusimaa	269	280	287	278	294	391	436	465	480	489
3	Varsinais-Suomi	300	336	329	358	363	397	502	529	517	536
4	Satakunta	335	420	364	382	365	483	601	661	618	579
5	Kanta-Häme	318	387	439	399	370	258	306	388	433	479
6	Pirkanmaa	295	367	362	359	380	396	456	482	496	506
7	Päijät-Häme	315	335	342	318	300	319	481	483	501	506
8	Kymenlaakso	275	381	389	424	408	359	427	395	384	362
9	Etelä-Karjala	347	546	551	499	484	406	531	596	642	688
10	Etelä-Savo	154	233	332	324	316	435	523	522	496	517
11	Itä-Savo	290	411	486	401	540	455	476	619	691	675
12	Pohjois-Karjala	219	300	324	283	290	444	476	477	490	485
13	Pohjois-Savo	338	330	395	403	390	557	560	548	584	616
14	Keski-Suomi	225	248	297	304	263	329	370	381	379	403
15	Etelä-Pohjanmaa	161	207	287	337	317	342	363	378	347	322
16	Vaasa	242	286	281	268	326	335	365	424	440	462
17	Keski-Pohjanmaa	207	322	358	345	332	284	360	397	422	460
18	Pohjois-Pohjanmaa	271	293	266	262	295	357	405	442	441	426
19	Kainuu	254	389	269	245	287	447	452	513	542	560
20	Länsi-Pohja	284	564	492	418	498	419	442	415	418	374
21	Lappi	200	211	304	279	279	433	431	406	423	431
22	Åland	228	328	529	526	453	418	437	423	526	523
Region	South	276	309	315	307	318	389	442	468	482	491
	Southwest	297	348	335	352	359	409	500	539	528	532
	West	277	335	357	353	352	349	420	448	460	469
	East	252	291	347	337	329	444	476	483	496	514
	North	252	317	302	285	313	378	413	437	445	440
Entire country		273	319	330	326	333	391	448	474	482	490

Table 9 presents the prevalence of dialysis and kidney transplantation per million inhabitants in healthcare districts and regions in 2003–2013. The prevalence of dialysis has increased by 22% and that of kidney transplantation by 25% during the past ten years. At the end of 2013, the prevalence of dialysis varied between 263 and 540 and that of kidney transplantation between 322 and 688 per million inhabitants. In regions, the prevalence of dialysis varied between 313 and 359 and that of kidney transplantation between 440 and 534 per million inhabitants.

Figure 9. International comparison of prevalence of RRT on 31 December 2012  
Finnish Registry for Kidney Diseases 2012

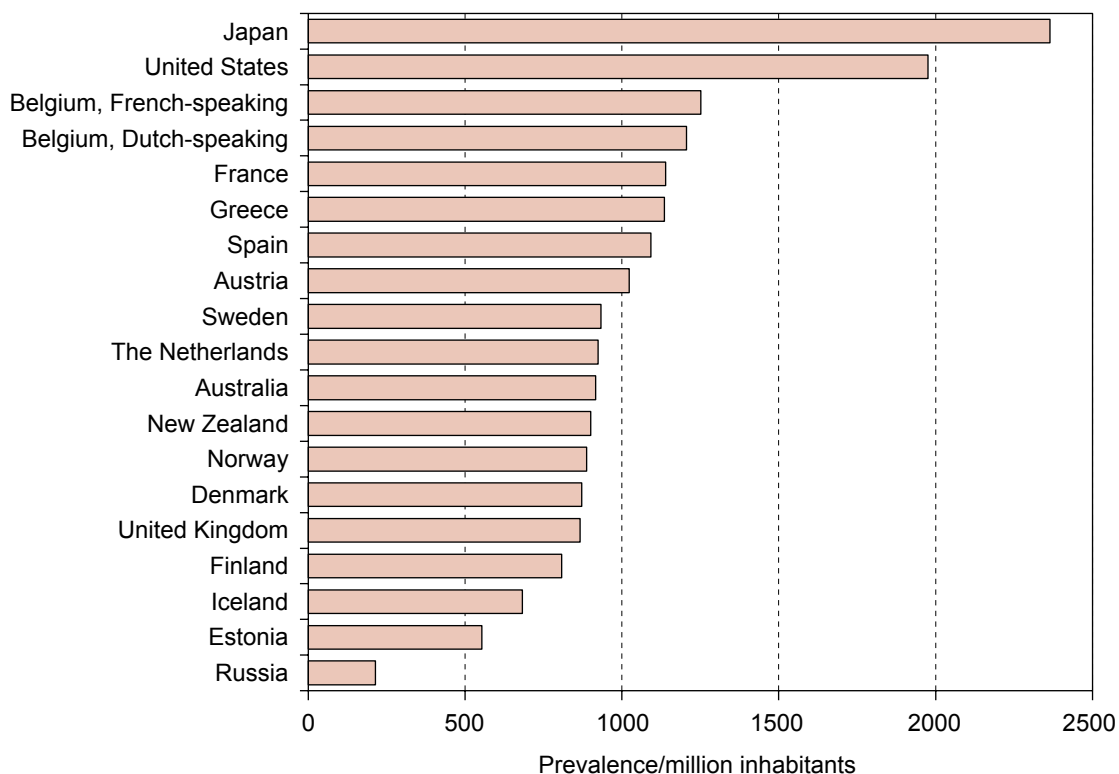


Figure 9 displays the prevalence of RRT on 31 December 2012 in countries reporting to the ERA-EDTA Registry (Annual Report 2012, <http://www.era-edta-reg.org>) and in the United States, Australia, New Zealand, and Japan (The 2014 USRDS Annual Data Report Atlas, <http://www.usrds.org>). The prevalence rate in Finland was the fourth lowest internationally and the second lowest of the Nordic countries. Relative to Finland, the prevalence in Sweden was 16% higher, in Norway 10% higher, and in Denmark 8% higher. Figure 5 shows the international incidence rates.

Table 10. Number of patient-years of all RRT patients according to diagnosis and type of treatment  
Finnish Registry for Kidney Diseases 2003–2013

Diagnosis	Number of patient-years in 2003 (%)				Number of patient-years in 2013 (%)			
	Peritoneal dialysis	Hemo-dialysis	Trans-plantation	Total	Peritoneal dialysis	Hemo-dialysis	Trans-plantation	Total
Glomerulonephritis	53 (19.6)	177 (16.0)	583 (29.0)	813 (24.0)	60 (17.4)	222 (15.1)	702 (26.5)	985 (22.1)
Type 1 diabetes	74 (27.3)	121 (11.0)	394 (19.6)	589 (17.4)	73 (21.0)	162 (11.1)	478 (18.0)	713 (16.0)
Polycystic degeneration	11 (4.2)	111 (10.1)	306 (15.2)	428 (12.7)	28 (8.0)	148 (10.1)	457 (17.2)	633 (14.2)
Type 2 diabetes	42 (15.4)	221 (20.0)	31 (1.5)	293 (8.7)	44 (12.7)	302 (20.6)	99 (3.7)	446 (10.0)
Undefined kidney disease	19 (7.0)	116 (10.5)	67 (3.3)	201 (5.9)	53 (15.3)	238 (16.2)	138 (5.2)	429 (9.6)
Pyelonephritis	16 (6.0)	69 (6.3)	201 (10.0)	287 (8.5)	17 (4.8)	47 (3.2)	182 (6.9)	246 (5.5)
Nephrosclerosis	16 (5.8)	65 (5.9)	45 (2.3)	126 (3.7)	20 (5.8)	91 (6.2)	80 (3.0)	191 (4.3)
Other systemic diseases	9 (3.4)	44 (4.0)	56 (2.8)	109 (3.2)	11 (3.1)	64 (4.3)	102 (3.9)	177 (4.0)
Urinary tract obstruction	7 (2.4)	28 (2.6)	82 (4.1)	117 (3.5)	11 (3.3)	45 (3.0)	99 (3.7)	154 (3.5)
Congenital diseases	5 (1.9)	16 (1.4)	84 (4.2)	105 (3.1)	8 (2.2)	21 (1.4)	98 (3.7)	127 (2.8)
Congenital nephrosis, Finnish type	6 (2.2)	0 (0.0)	51 (2.6)	58 (1.7)	2 (0.7)	6 (0.4)	80 (3.0)	88 (2.0)
Other kidney diseases	4 (1.4)	25 (2.3)	23 (1.2)	52 (1.5)	6 (1.7)	41 (2.8)	38 (1.4)	85 (1.9)
Amyloidosis	4 (1.5)	72 (6.5)	45 (2.2)	121 (3.6)	5 (1.6)	32 (2.2)	37 (1.4)	75 (1.7)
Tubulointerstitial nephritis	2 (0.6)	16 (1.4)	30 (1.5)	48 (1.4)	1 (0.4)	17 (1.2)	35 (1.3)	54 (1.2)
Malignancies	2 (0.8)	17 (1.6)	4 (0.2)	23 (0.7)	5 (1.6)	25 (1.7)	11 (0.4)	42 (0.9)
Metabolic diseases	2 (0.6)	5 (0.5)	7 (0.4)	14 (0.4)	2 (0.7)	4 (0.2)	15 (0.6)	21 (0.5)
All	270 (100)	1105 (100)	2009 (100)	3384 (100)	348 (100)	1464 (100)	2652 (100)	4464 (100)

Table 10 presents the number of patient-years according to diagnosis of kidney disease and type of treatment in 2003 and 2013. The number of patient-years indicates time spent by patients in RRT during the year. Overall, the number of patient-years has increased by 32% since 2003. The number of patient-years has increased by 29% in peritoneal dialysis, by 33% in hemodialysis, and by 32% in kidney transplantation.

Glomerulonephritis is the most common diagnosis among all RRT patients and among kidney transplantation patients; the proportion of patient-years due to glomerulonephritis was 22% in 2013. Type 1 diabetes is the second

most common diagnosis among all RRT patients and the most common diagnosis among peritoneal dialysis patients. The number of patient-years due to type 2 diabetes has increased by 52% during the past decade, and in 2013, type 2 diabetes was the most common kidney disease diagnosis among hemodialysis patients. Among kidney transplantation patients, type 2 diabetes is a rare cause of end-stage renal disease. The proportions of patient-years due to amyloidosis and pyelonephritis have decreased since 2003. The proportion of undefined kidney disease was only 3% in 2003, but increased to 10% in 2013.

Table 11. Number of patient-years of all RRT patients according to age group and sex in regions  
Finnish Registry for Kidney Diseases 2003–2013

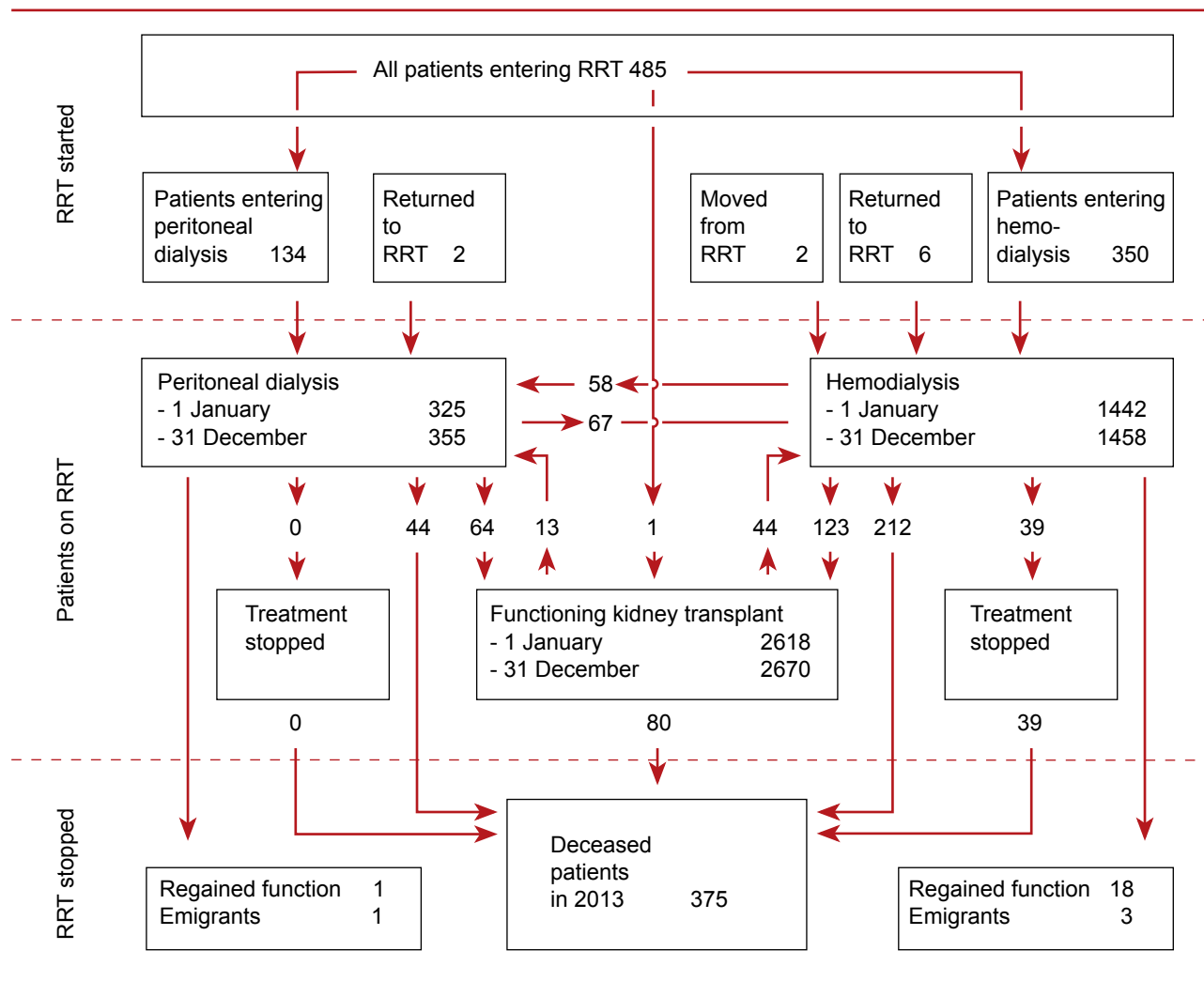
Region	2003						2013					
	0– 19 y (%)	20– 44 y (%)	45– 64 y (%)	65– 74 y (%)	> 75 y (%)	Total	0– 19 y (%)	20– 44 y (%)	45– 64 y (%)	65– 74 y (%)	> 75 y (%)	Total
<b>South</b>												
Men	27 (4)	134 (21)	318 (49)	129 (20)	44 (7)	652 (100)	25 (3)	143 (15)	383 (40)	256 (27)	152 (16)	960 (100)
Women	16 (3)	110 (23)	205 (43)	97 (21)	45 (9)	472 (100)	10 (2)	81 (15)	248 (45)	135 (25)	75 (14)	549 (100)
Total	43 (4)	244 (22)	522 (46)	226 (20)	88 (8)	1124 (100)	36 (2)	223 (15)	631 (42)	391 (26)	227 (15)	1508 (100)
<b>Southwest</b>												
Men	18 (5)	65 (19)	145 (43)	78 (23)	31 (9)	336 (100)	9 (2)	51 (11)	204 (44)	128 (27)	77 (16)	469 (100)
Women	9 (4)	45 (18)	101 (41)	66 (27)	25 (10)	247 (100)	10 (3)	45 (14)	135 (42)	76 (23)	59 (18)	326 (100)
Total	27 (5)	110 (19)	246 (42)	144 (25)	56 (10)	584 (100)	19 (2)	96 (12)	340 (43)	205 (26)	136 (17)	795 (100)
<b>West</b>												
Men	8 (2)	80 (19)	212 (52)	78 (19)	32 (8)	410 (100)	9 (2)	79 (13)	242 (41)	159 (27)	98 (17)	589 (100)
Women	8 (3)	66 (26)	105 (41)	46 (18)	31 (12)	257 (100)	14 (4)	46 (14)	144 (44)	69 (21)	56 (17)	328 (100)
Total	16 (2)	146 (22)	318 (48)	124 (19)	63 (9)	667 (100)	23 (3)	125 (14)	387 (42)	228 (25)	154 (17)	917 (100)
<b>East</b>												
Men	19 (5)	80 (22)	170 (46)	66 (18)	35 (10)	370 (100)	8 (2)	65 (14)	220 (48)	108 (23)	61 (13)	462 (100)
Women	7 (3)	35 (18)	90 (46)	50 (25)	16 (8)	198 (100)	10 (4)	32 (14)	98 (43)	60 (26)	28 (13)	227 (100)
Total	25 (4)	115 (20)	260 (46)	116 (20)	51 (9)	568 (100)	18 (3)	97 (14)	317 (46)	168 (24)	90 (13)	690 (100)
<b>North</b>												
Men	6 (2)	54 (22)	130 (52)	41 (16)	19 (8)	251 (100)	11 (3)	64 (18)	155 (44)	83 (24)	39 (11)	351 (100)
Women	5 (3)	46 (24)	79 (41)	44 (23)	16 (8)	190 (100)	3 (1)	29 (14)	102 (50)	42 (21)	28 (14)	203 (100)
Total	11 (2)	100 (23)	209 (47)	86 (19)	35 (8)	441 (100)	14 (2)	93 (17)	257 (46)	125 (23)	66 (12)	554 (100)
<b>Entire country</b>												
Men	78 (4)	414 (20)	975 (48)	392 (19)	161 (8)	2019 (100)	62 (2)	402 (14)	1205 (43)	736 (26)	427 (15)	2831 (100)
Women	45 (3)	302 (22)	580 (43)	303 (22)	133 (10)	1364 (100)	47 (3)	231 (14)	727 (44)	382 (23)	247 (15)	1633 (100)
Total	123 (4)	716 (21)	1556 (46)	695 (21)	294 (9)	3384 (100)	109 (2)	633 (14)	1931 (43)	1117 (25)	674 (15)	4464 (100)

Table 11 presents the number of patient-years according to region, age group and sex in 2003 and 2013. In 2013, the number of patient-years was 32% larger than in 2003. The proportion of patient-years of patients older than 65 years was 29% in 2003 and 40% in 2013. In 2013, the proportion of patient-years of patients older than 65 years was largest

in the southwestern region (43%) and smallest in the northern region (35%).

The distribution of patient-years presented in Table 11 was used as a reference for the standardization of mortality in Figures 11 and 12.

Figure 10. Net changes in type of treatment  
Finnish Registry for Kidney Diseases 2013



During 2013 altogether 485 new patients entered RRT (Figure 10), and seven patients returned to RRT. In all, 4385 patients were receiving RRT at the beginning of the year. Altogether 375 patients died and dialysis was discontinued for 23 patients because patients' own kidney function resumed. Of those who died, 80 had a functioning transplant, 44 were receiving peritoneal dialysis, and 212 were on hemodialysis. During 2013 RRT was discontinued for 39 uremic patients. At the end of 2013, the number of peritoneal dialysis patients was 9% larger and the number of hemodi-

alysis patients 1% larger than at the beginning of the year. A total of 189 patients received a kidney transplant. Ten of these patients received a combined pancreas and kidney transplantation, and one received a combined liver and kidney transplantation (source: Kidney Transplantation Unit, Helsinki University Central Hospital). Thirteen kidney transplants were received from living donors. One kidney transplantation patient moved to Finland from abroad (not shown in Figure 10).

Table 12. Mortality of RRT patients by region  
Finnish Registry for Kidney Diseases 2003–2013

Region	Deaths/1000 patient-years						Deaths/1000 patient-years <sup>1)</sup>					
	2003	2008	2011	2012	2013	2009–2013	2003	2008	2011	2012	2013	2009–2013
South	91	76	72	79	66	73	88	76	71	76	66	71
Southwest	82	83	87	92	79	82	79	79	86	92	78	82
West	109	92	110	90	99	99	100	90	105	90	98	96
East	114	114	92	105	91	93	111	113	92	103	86	91
North	129	110	94	100	105	94	118	106	92	96	99	92
Entire country	102	91	88	90	84	86	97	89	86	89	82	84

<sup>1)</sup>Patients who died within 90 days of start of RRT excluded

Figure 11. Standardized mortality of RRT patients by region  
Finnish Registry for Kidney Diseases 2003–2013

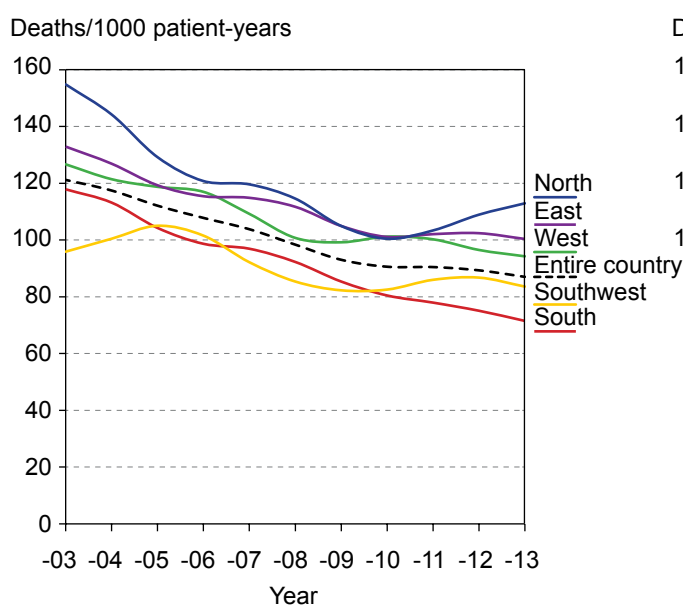


Figure 12. Standardized mortality of RRT patients by region (patients who died within 90 days of start of RRT excluded)  
Finnish Registry for Kidney Diseases 2003–2013

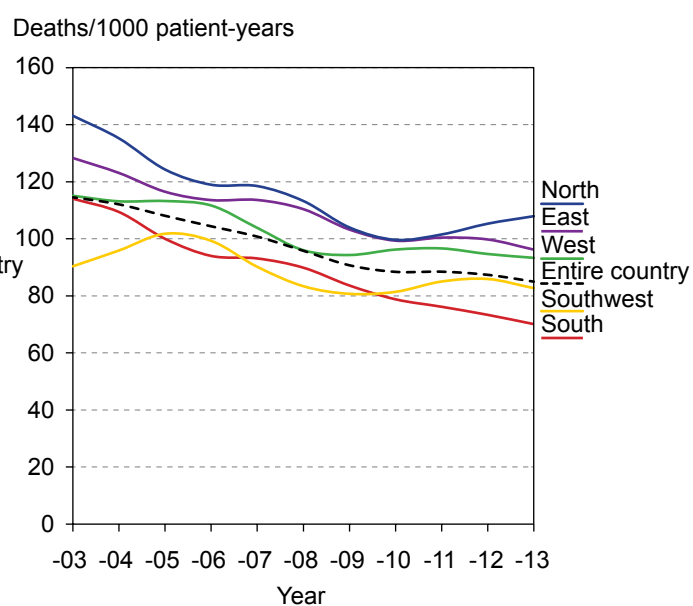


Table 12 shows RRT patients' mortality in 2003–2013 according to region. The mortality of patients who had been on RRT for at least 90 days is presented separately. The average mortality in 2009–2013 was lower in the southern and southwestern regions than elsewhere.

Figures 11 and 12 show regional mortality as smoothed averages. The regional mortality rates for 2003–2013 have been age- and sex-standardized using all patient-years in

2013 as the reference. Changes in age and sex distribution during this ten-year period have been taken into consideration. Patients who died within 90 days of the start of RRT were excluded from Figure 12. During the period 2003–2013 the standardized mortality rate has declined in all regions. In 2013, standardized mortality was highest in the northern region and lowest in the southern region.



Table 13. Mortality of dialysis patients by region  
Finnish Registry for Kidney Diseases 2003–2013

Region	Deaths/1000 patient-years						Deaths/1000 patient-years <sup>1)</sup>					
	2003	2008	2011	2012	2013	2009–2013	2003	2008	2011	2012	2013	2009–2013
South	179	150	131	150	131	138	172	150	128	143	129	135
Southwest	154	168	190	179	138	163	146	158	187	179	135	161
West	217	185	216	184	193	190	196	182	205	184	190	182
East	249	235	187	202	185	184	239	231	187	198	171	178
North	296	207	184	213	201	194	268	198	180	203	188	189
Entire country	208	181	175	178	163	168	195	177	171	174	157	163

<sup>1)</sup>Patients who died within 90 days of start of RRT excluded

Figure 13. Standardized mortality of dialysis patients by region  
Finnish Registry for Kidney Diseases 2003–2013

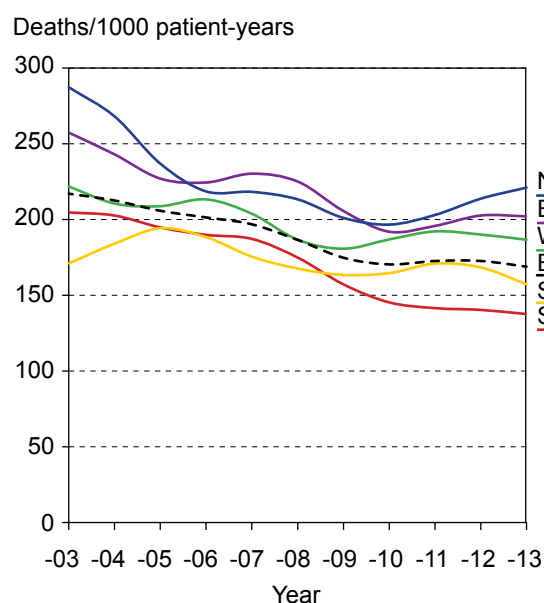


Figure 14. Standardized mortality of dialysis patients by region (patients who died within 90 days of start of RRT excluded)  
Finnish Registry for Kidney Diseases 2003–2013

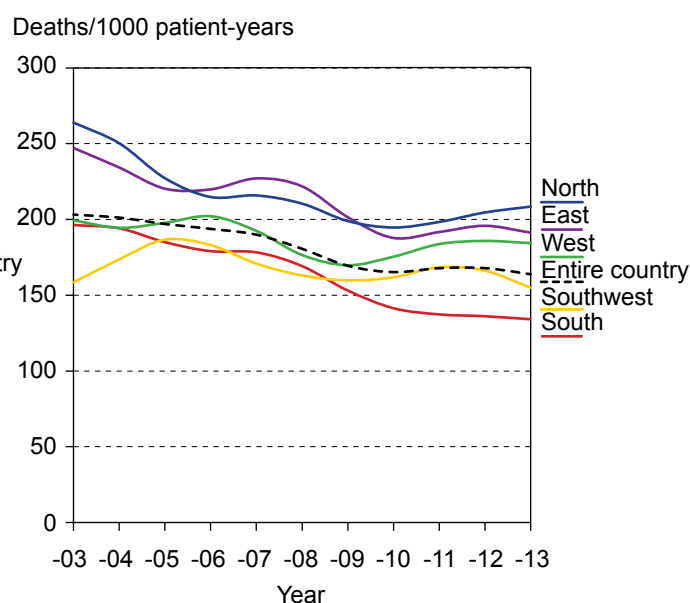


Table 13 presents dialysis patients' mortality in 2003–2013 according to region. The mortality of patients who had been on RRT for at least 90 days is presented separately. Dialysis patients' average mortality in 2009–2013 was the lowest in the southern region.

Figures 13 and 14 show regional mortality of dialysis patients as smoothed averages. The regional mortality rates for 2003–2013 have been age- and sex-standardized using all patient-years of dialysis patients in 2013 as the refer-

ence. Changes in age and sex distribution during this ten-year period have been taken into consideration. Patients who died within 90 days of the start of RRT were excluded from Figure 14. During the period 2003–2013 dialysis patients' standardized mortality rate has declined in the entire country. In 2013, dialysis patients' standardized mortality was highest in the northern region and lowest in the southern region.

Table 14. Mortality of kidney transplantation patients by region  
Finnish Registry for Kidney Diseases 2003–2013

Region	Deaths/1000 patient-years					
	2003	2008	2011	2012	2013	2009–2013
South	30	25	32	31	25	29
Southwest	32	21	23	38	40	30
West	24	20	27	18	27	27
East	39	39	25	37	29	32
North	19	39	31	27	37	25
Entire country	29	27	28	30	30	29

Figure 15. Standardized mortality of kidney transplantation patients by region  
Finnish Registry for Kidney Diseases 2003–2013

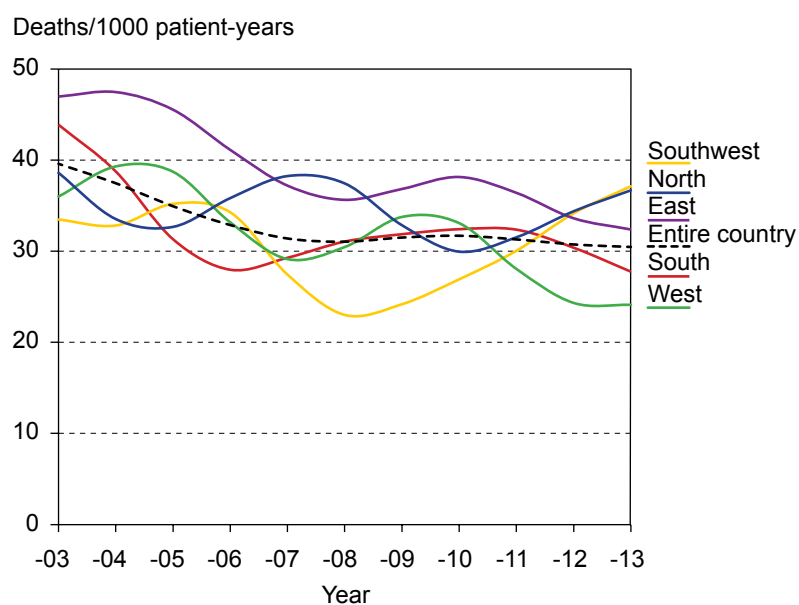


Table 14 presents kidney transplantation patients' mortality in 2003–2013 according to region. In 2009–2013, kidney transplantation patients accumulated 12 703 patient-years and 367 patients died. Consequently, mortality was 29 deaths per 1000 patient-years. The variation in mortality between regions was small, in the range of 25–32 deaths per 1000 patient-years.

Figure 15 shows regional mortality of kidney transplanta-

tion patients as smoothed averages. The regional mortality rates for 2003–2013 have been age- and sex-standardized using all patient-years of kidney transplantation patients in 2013 as the reference. Changes in age and sex distribution during this ten-year period have been taken into consideration. Age- and sex-standardized mortality of kidney transplantation patients declined until 2007, after which it has remained virtually unchanged.

Table 15. Number of RRT patients older than 20 years at 90 days from start of RRT according to type of treatment in healthcare districts and regions  
Finnish Registry for Kidney Diseases 2009–2013

Healthcare district		Number of patients (%) at 90 days from start of RRT in 2009–2013						Total
		CAPD	APD	Home HD	In-center HD	HDF	Tx	
1	Helsinki-Uusimaa	61 (11)	90 (16)	46 (8)	338 (61)	21 (4)	2 (0)	558 (100)
3	Varsinais-Suomi	41 (23)	31 (17)	0 (0)	104 (58)	4 (2)	0 (0)	180 (100)
4	Satakunta	36 (35)	8 (8)	0 (0)	59 (57)	1 (1)	0 (0)	104 (100)
5	Kanta-Häme	7 (8)	28 (31)	0 (0)	52 (57)	3 (3)	1 (1)	91 (100)
6	Pirkanmaa	25 (11)	33 (14)	2 (1)	176 (74)	1 (0)	0 (0)	237 (100)
7	Päijät-Häme	14 (17)	2 (2)	0 (0)	66 (80)	0 (0)	0 (0)	82 (100)
8	Kymenlaakso	3 (5)	16 (27)	1 (2)	40 (67)	0 (0)	0 (0)	60 (100)
9	Etelä-Karjala	2 (3)	7 (11)	3 (5)	53 (80)	0 (0)	1 (2)	66 (100)
10	Etelä-Savo	5 (14)	1 (3)	0 (0)	28 (80)	1 (3)	0 (0)	35 (100)
11	Itä-Savo	4 (11)	1 (3)	0 (0)	28 (80)	2 (6)	0 (0)	35 (100)
12	Pohjois-Karjala	9 (15)	13 (22)	0 (0)	36 (61)	1 (2)	0 (0)	59 (100)
13	Pohjois-Savo	7 (5)	36 (26)	9 (6)	84 (60)	2 (1)	1 (1)	139 (100)
14	Keski-Suomi	10 (10)	19 (18)	0 (0)	74 (71)	1 (1)	0 (0)	104 (100)
15	Etelä-Pohjanmaa	14 (19)	3 (4)	0 (0)	51 (71)	4 (6)	0 (0)	72 (100)
16	Vaasa	5 (7)	11 (15)	0 (0)	55 (74)	2 (3)	1 (1)	74 (100)
17	Keski-Pohjanmaa	4 (9)	1 (2)	0 (0)	38 (84)	2 (4)	0 (0)	45 (100)
18	Pohjois-Pohjanmaa	14 (10)	26 (18)	0 (0)	97 (68)	5 (4)	0 (0)	142 (100)
19	Kainuu	4 (13)	10 (32)	0 (0)	16 (52)	1 (3)	0 (0)	31 (100)
20	Länsi-Pohja	6 (27)	5 (23)	0 (0)	5 (23)	6 (27)	0 (0)	22 (100)
21	Lappi	17 (45)	2 (5)	0 (0)	19 (50)	0 (0)	0 (0)	38 (100)
22	Åland	0 (0)	0 (0)	0 (0)	16 (100)	0 (0)	0 (0)	16 (100)
Region South		66 (10)	113 (17)	50 (7)	431 (63)	21 (3)	3 (0)	684 (100)
Southwest		82 (22)	50 (14)	0 (0)	225 (62)	7 (2)	1 (0)	365 (100)
West		60 (12)	66 (13)	2 (0)	354 (72)	8 (2)	1 (0)	491 (100)
East		35 (9)	70 (19)	9 (2)	250 (67)	7 (2)	1 (0)	372 (100)
North		45 (16)	44 (16)	0 (0)	175 (63)	14 (5)	0 (0)	278 (100)
Entire country		288 (13)	343 (16)	61 (3)	1435 (66)	57 (3)	6 (0)	2190 (100)

Analyses of treatment quality are presented on pages 27–44. Pages 27–32 show analyses of patients at the time of entering RRT or up to one year after start of RRT. Pages 33–44 disclose analyses of the treatment quality of patients at the end of the year. In the analyses of treatment quality on pages 27–44, healthcare district of the patient is determined according to treating hospital, not according to place of residence as in the initial portion of this report.

Table 15 shows the number of RRT patients at 90 days from start of RRT in 2009–2013 according to type of treatment in healthcare districts and regions. Of the 2190 patients, only six (0.3%) had received a kidney graft (Tx), 29% were on continuous ambulatory or automatic peritoneal dialysis (CAPD or APD), 3% were on home hemodialysis (home HD), and 68% were on either in-center hemodialysis (in-center HD) or hemodiafiltration (HDF).

Figure 16. Estimated GFR of new RRT patients older than 20 years  
Finnish Registry for Kidney Diseases 2003–2013

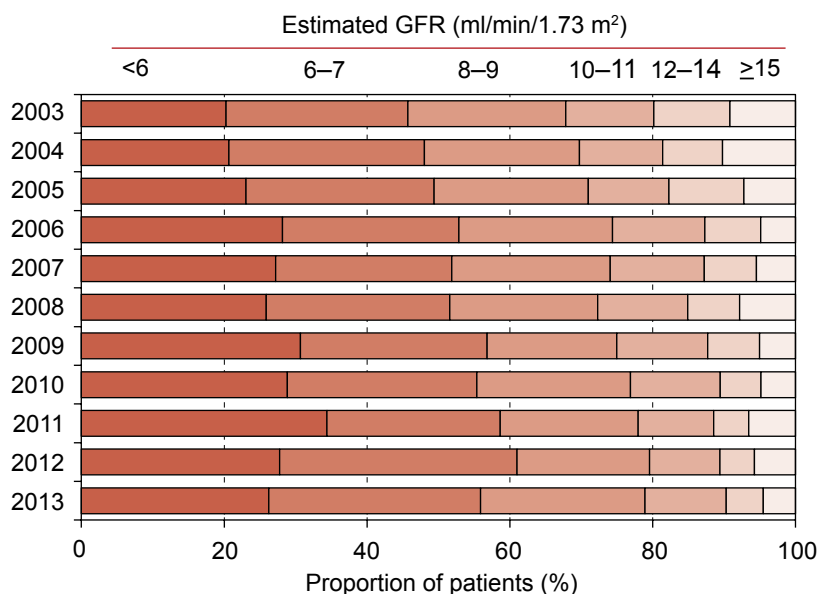


Figure 17. Estimated GFR of new RRT patients older than 20 years in healthcare districts  
Finnish Registry for Kidney Diseases 2003–2013

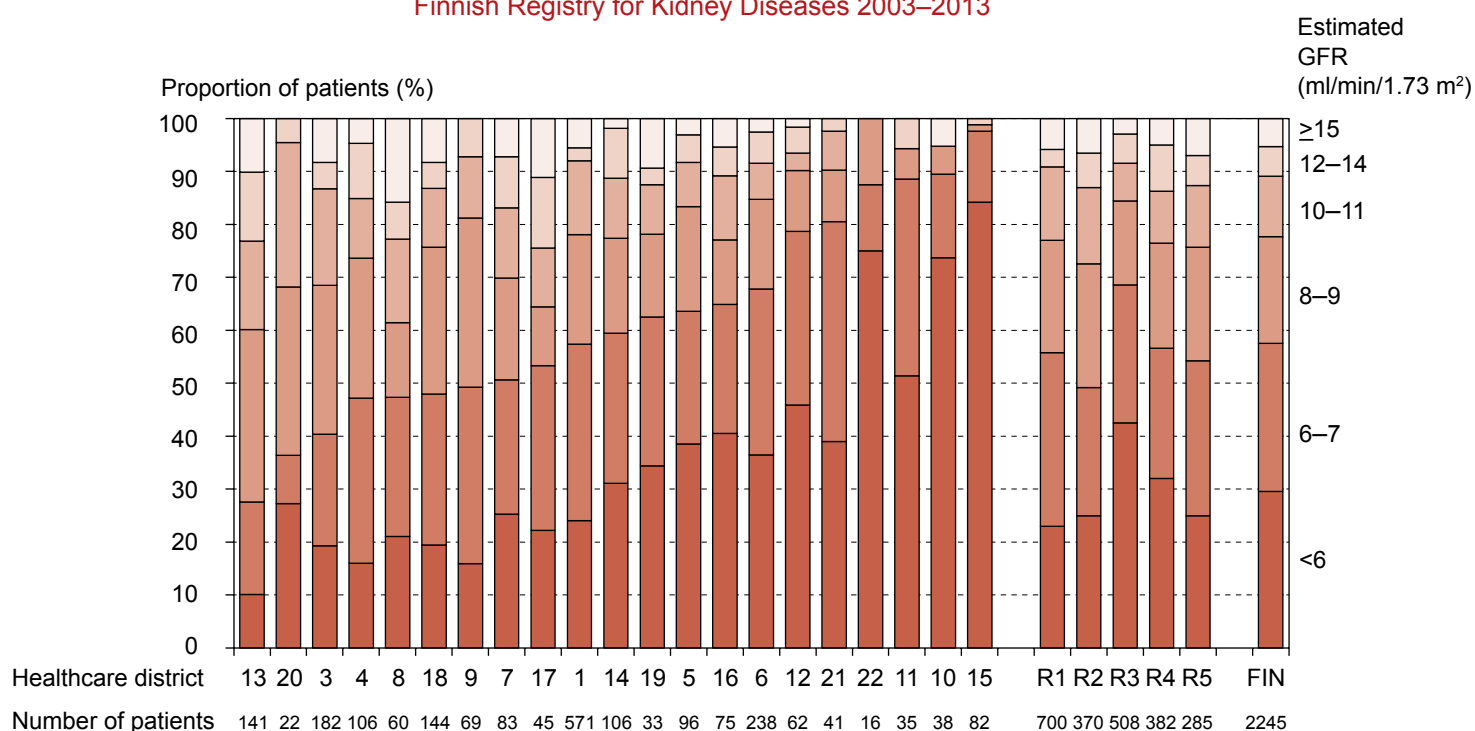


Figure 16 shows estimated glomerular filtration rate (GFR), calculated with the CKD-EPI formula, of patients who entered RRT in 2003–2013. The decision to start RRT is not based on estimated GFR alone; the patient's symptoms and clinical condition also affect the decision. Research on timing of RRT start has not supported a very early start (at high estimated GFR) of RRT.

The registry collects data on serum creatinine before start of RRT. As there are patients with a high estimated GFR, over 15 ml/min/1.73 m<sup>2</sup>, it appears that for some patients creatinine concentrations measured after start of

RRT might have been reported. Estimated GFR before start of RRT has decreased during the past ten years (P<0.001). In 2003, the median estimated GFR was 8.5 and in 2013 it was 7.6 ml/min/1.73 m<sup>2</sup>.

Figure 17 presents estimated GFR of patients who entered RRT in 2009–2013 in healthcare districts and regions. The healthcare districts are sorted according to proportion of patients with an estimated GFR lower than 8 ml/min/1.73 m<sup>2</sup>. The distribution of estimated GFR varied between healthcare districts (P<0.001) and regions (P<0.001).

Figure 18. Time to waitlisting for kidney transplantation of new RRT patients older than 20 years  
Finnish Registry for Kidney Diseases 2003–2013

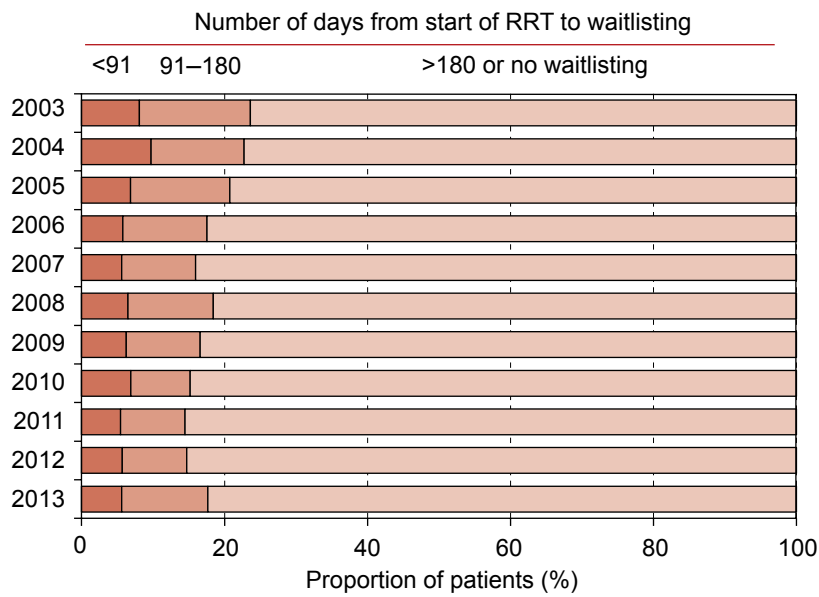
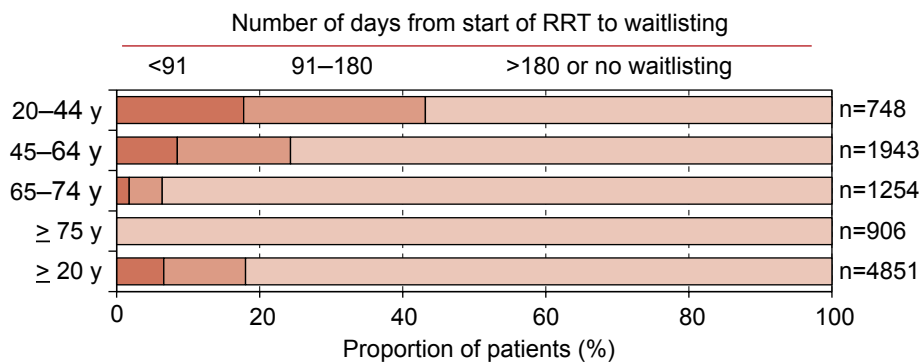


Figure 19. Time to waitlisting for kidney transplantation by age group of new RRT patients older than 20 years  
Finnish Registry for Kidney Diseases 2003–2013



In 2003–2013, 5247 patients older than 20 years entered RRT. Of these, four received a kidney transplant without preceding dialysis treatment. Of the patients, 4840 (92%) were alive 180 days after start of RRT, and their time from start of RRT to waitlisting for kidney transplantation is shown in Figure 18. Of the patients who entered RRT in 2013, 6% were waitlisted within 90 days and 18% within 181 days

from start of RRT. In 2003, the corresponding proportions were 8% and 24%. Information on waitlisting was provided by the Registry for the Follow-up of Kidney Transplantation Patients at Helsinki University Central Hospital.

Figure 19 displays the time from start of RRT to waitlisting for kidney transplantation of patients who entered RRT in 2003–2013.

Figure 20. Proportion of new RRT patients waitlisted for kidney transplantation within 91 days from start of RRT in healthcare districts  
Finnish Registry for Kidney Diseases 2009–2013

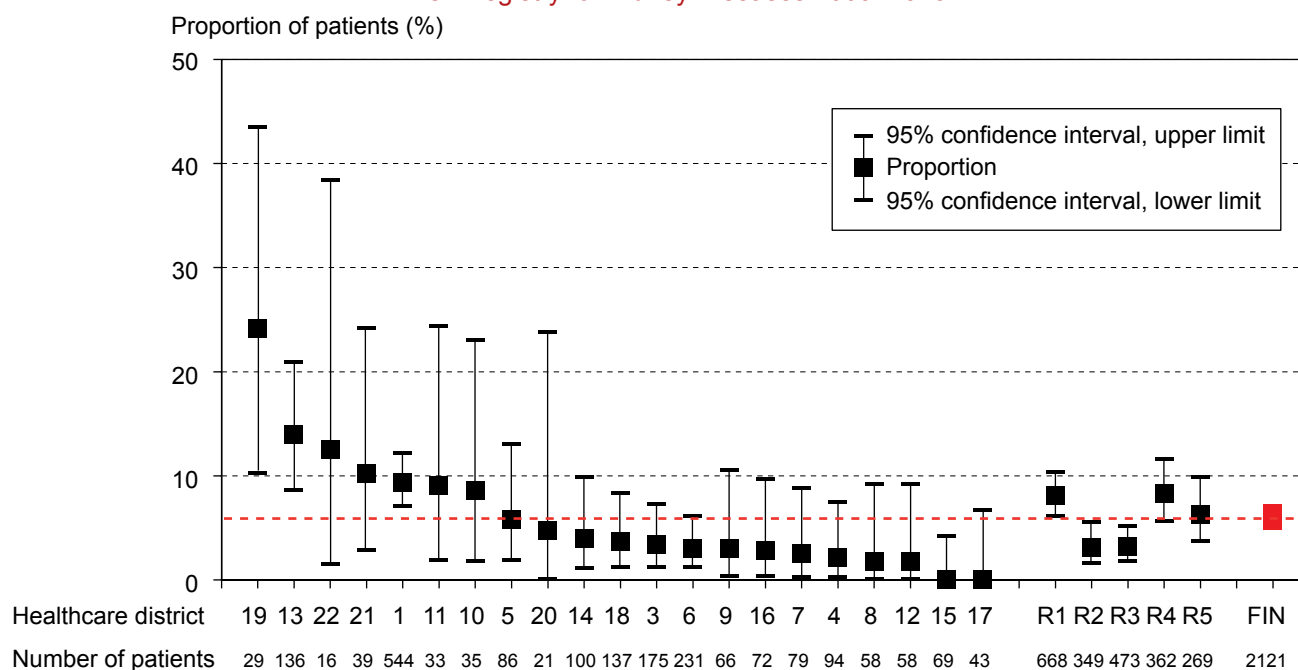
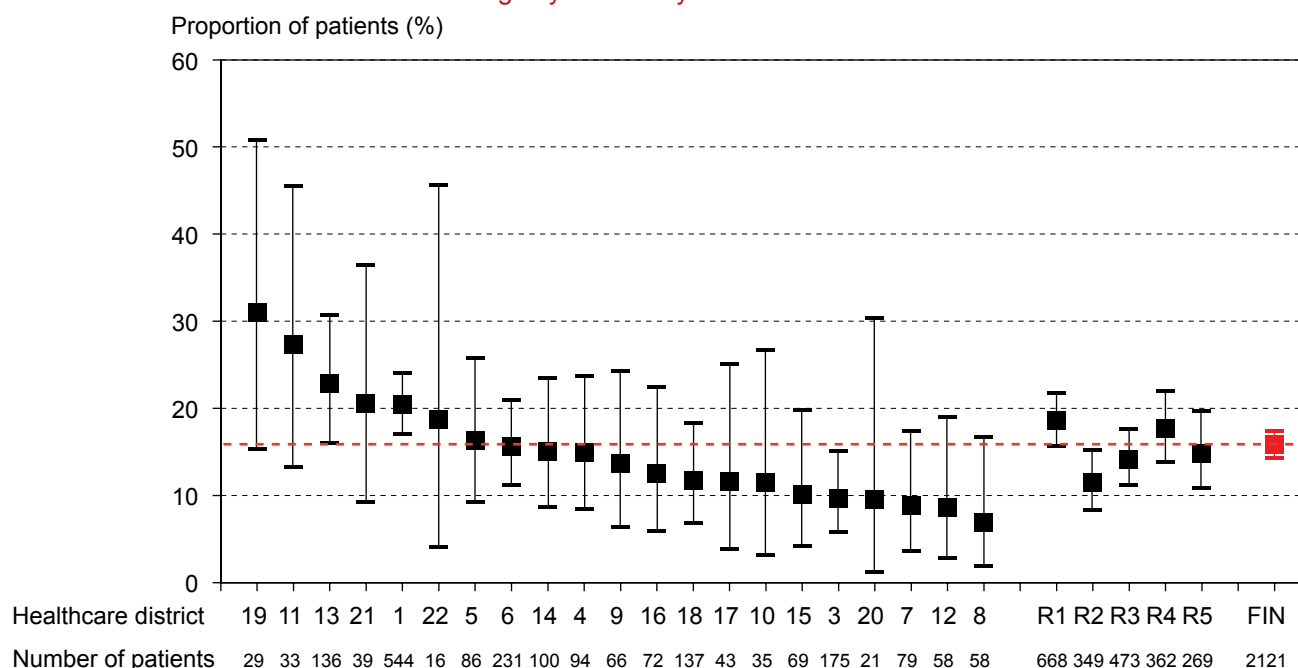


Figure 21. Proportion of new RRT patients waitlisted for kidney transplantation within 181 days from start of RRT in healthcare districts  
Finnish Registry for Kidney Diseases 2009–2013



Figures 20 and 21 show the proportions of patients entering RRT in 2009–2013 who had been waitlisted for kidney transplantation within 90 and 180 days from start of RRT. Patients who had died within 180 days from start of RRT were excluded from the analyses.

In the entire country, 6% of patients had been waitlisted within 90 days from start of RRT (Figure 20), and this proportion showed a range of 0–24% in healthcare districts ( $P < 0.001$ ) and 3–8% in regions ( $P < 0.001$ ). From start of RRT, 8% of female and 5% of male patients were waitlisted

within 90 days ( $P = 0.001$ ).

Of the patients entering RRT in 2009–2013, 16% had been waitlisted within 180 days from start of RRT. This proportion ranged from 7% to 31% in healthcare districts ( $P = 0.003$ ) and from 11% to 19% in regions ( $P = 0.028$ ). After adjustment for age and sex, the difference between regions lost statistical significance ( $P = 0.079$ ). Within 180 days from start of RRT, 20% of women and 14% of men were waitlisted for kidney transplantation ( $P = 0.001$ ).

Figure 22. Time to kidney transplantation of new RRT patients older than 20 years  
Finnish Registry for Kidney Diseases 2003–2012

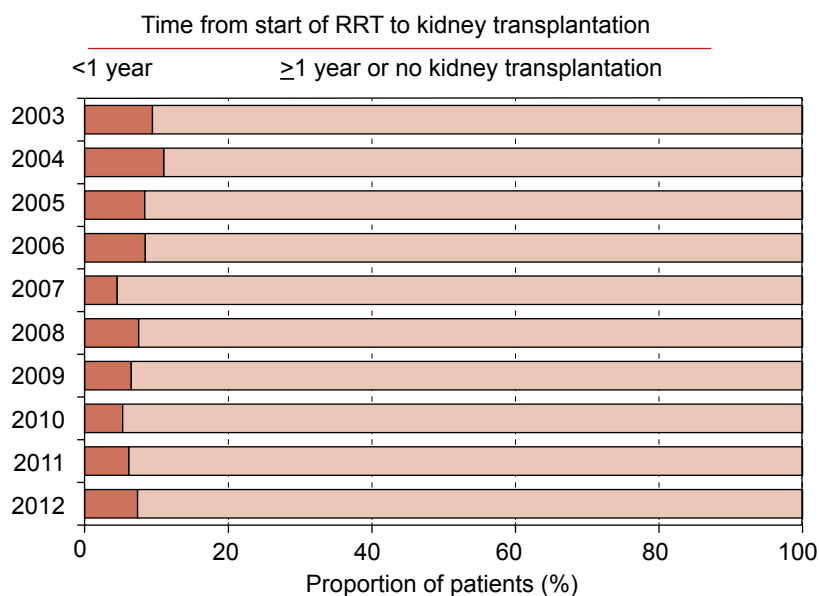
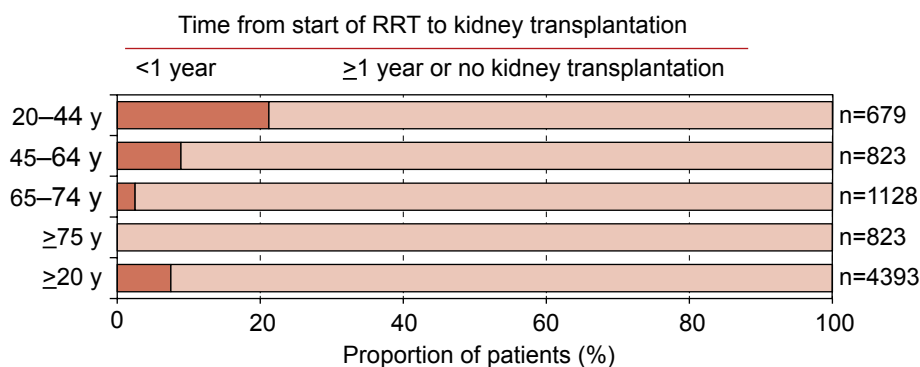


Figure 23. Time to kidney transplantation by age group of new RRT patients older than 20 years  
Finnish Registry for Kidney Diseases 2003–2012



Figures 22 and 23 display the proportion of patients who received a kidney transplant within one year from start of RRT in 2003–2012. Patients who had died within 180 days from start of RRT were excluded from the analyses. Included in the analysis were 4393 patients, and of these 329 (7%) received a kidney transplant within one year.

Of patients who entered RRT in 2012, 31 of 430 (7%)

had received a kidney transplant within one year (Figure 22). The proportion of patients receiving a kidney transplant within one year was largest in 2004, 11%, and smallest in 2007 and 2005, 5%.

The proportion of patients receiving a kidney transplant within one year from start of RRT was greatest in the age group of 20–44-year-olds, 21% (Figure 23).

Figure 24. Proportion of new RRT patients receiving a kidney transplant within one year from start of RRT in healthcare districts  
Finnish Registry for Kidney Diseases 2003–2012

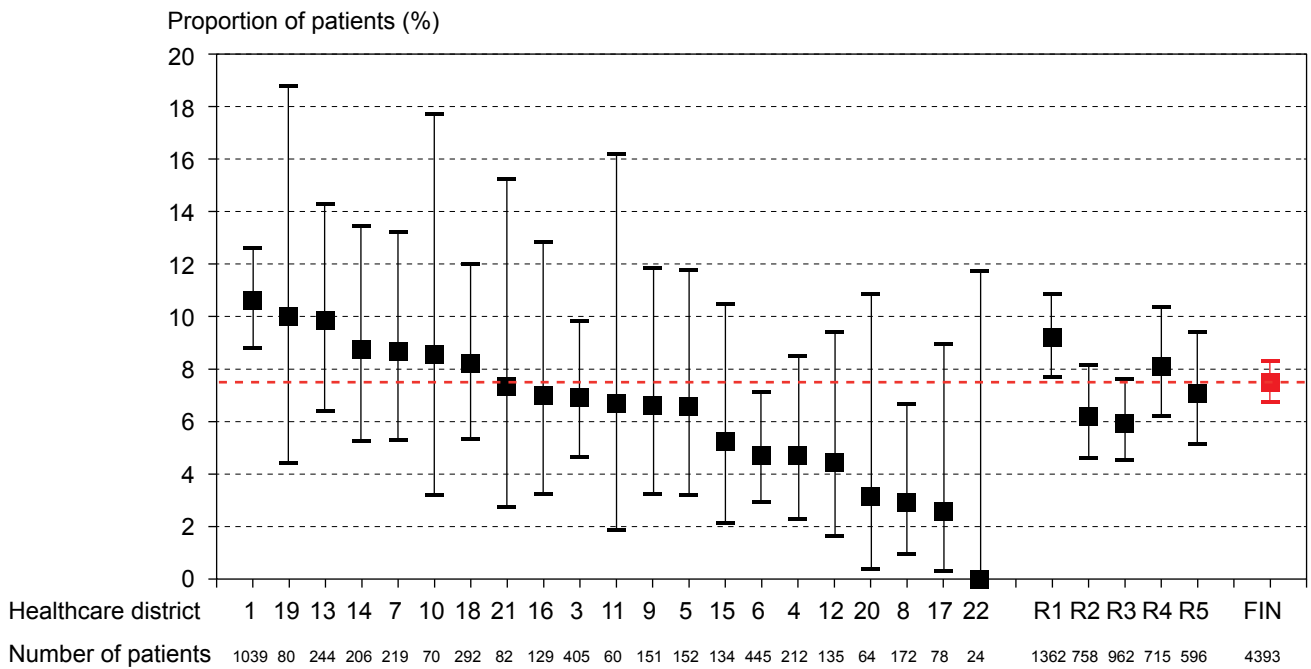


Figure 25. Correlation between proportion of waitlisted patients and proportion of patients receiving a kidney transplant in healthcare districts  
Finnish Registry for Kidney Diseases 2003–2012

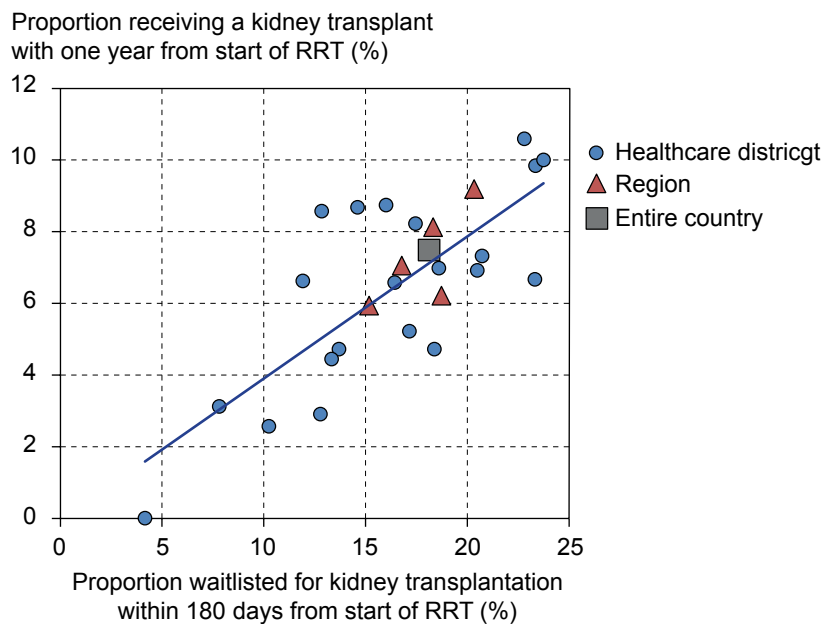


Figure 24 presents the proportion of RRT patients older than 20 years who received a kidney transplant within one year from start of RRT in healthcare districts and regions in 2003–2012. Patients who had died within 180 days from start of RRT were excluded from the analysis. The proportion of patients who had received a kidney transplant within one year from start of RRT varied from 0 to 11% between healthcare districts ( $P=0.004$ ) and from 6% to 9% between regions ( $P=0.023$ ). After age- and sex-adjustment, the differences between healthcare districts ( $P=0.147$ ) and regions ( $P=0.108$ ) were no longer significant. The proportion

receiving a kidney transplant did not differ between men and women ( $P=0.934$ ).

Figure 25 presents the correlation between proportion of patients waitlisted within 180 days and proportion of patients who received a kidney graft within one year from start of RRT in healthcare districts (correlation coefficient 0.65,  $P<0.001$ ). The analysis was age-adjusted and healthcare districts were weighted according to number of patients. In addition, the figure displays the corresponding proportions in regions and in the entire country.



**Table 16. Number of RRT patients older than 20 years in hospitals  
Finnish Registry for Kidney Diseases 2013**

Region	Healthcare district	Hospital	No. of RRT patients (≥20 y) 31 Dec 2013			
			PD	HD	Tx	Total
<b>South (R1)</b>						
	<b>Helsinki-Uusimaa (1)</b>		97	499	892	1488
		Helsinki University Central Hospital	77	388	746	1211
		Nephrology Polyclinic			649	1008
		Dialysis unit DHK		64		64
		Dialysis unit DOK	77	88		165
		B. Braun Malmi		65		65
		B. Braun Pitäjänmäki		65		65
		Unit of Transplantation and Liver Surgery			3	3
		Hyvinkää Hospital		32	25	57
		Lohja Hospital		25	28	53
		Länsi-Uusimaa Hospital		21	19	40
		Porvoo Hospital		28	25	53
	<b>Kymenlaakso (8)</b>		13	57	57	127
		Kymenlaakso Central Hospital	13	57	57	127
	<b>Etelä-Karjala (9)</b>		7	54	89	150
		South Karelia Central Hospital	7	36	89	132
		Honkajarju Hospital		18		18
<b>Southwest (R2)</b>						
	<b>Varsinais-Suomi (3)</b>		83	242	457	782
		Turku University Central Hospital	51	121	250	422
	<b>Satakunta (4)</b>		21	62	127	210
		Satakunta Central Hospital	21	62	127	210
	<b>Vaasa (16)</b>		11	46	65	122
		Vaasa Central Hospital	11	37	63	111
		Pietarsaari Hospital		9	2	11
	<b>Åland (22)</b>			13	15	28
		Åland Central Hospital		13	15	28
<b>West (R3)</b>						
	<b>Kanta-Häme (5)</b>		63	315	494	872
		Central Hospital of Tavastia	12	49	82	143
	<b>Pirkanmaa (6)</b>		12	49	82	143
		Tampere University Hospital	30	164	246	440
		Valkeakoski Regional Hospital	30	147	244	421
				17	2	19
	<b>Päijät-Häme (7)</b>		10	55	106	171
		Päijänne Tavastia Central Hospital	10	55	106	171
	<b>Etelä-Pohjanmaa (15)</b>		11	47	60	118
		Southern Ostrobothnia Central Hospital	11	47	60	118
<b>East (R4)</b>						
	<b>Etelä-Savo (10)</b>		46	220	413	679
		Mikkeli Central Hospital	4	24	47	75
			4	24	47	75
	<b>Itä-Savo (11)</b>		3	23	34	60
		Central hospital of Savonlinna	3	23	34	60
	<b>Pohjois-Karjala (12)</b>		9	38	77	124
		North Karelia Central Hospital	9	38	77	124
	<b>Pohjois-Savo (13)</b>		13	87	148	248
		Kuopio University Hospital	13	57	132	202
		Regional Hospital of Iisalmi		18	10	28
		Regional Hospital of Varkaus		12	6	18
	<b>Keski-Suomi (14)</b>		17	48	107	172
		Central Finland Central Hospital	17	48	107	172
<b>North (R5)</b>						
	<b>Keski-Pohjanmaa (17)</b>		58	172	317	547
		Central Hospital of Keski-Pohjanmaa	3	24	37	64
			3	24	37	64
	<b>Pohjois-Pohjanmaa (18)</b>		26	92	165	283
		Oulu University Hospital	26	92	165	283
	<b>Kainuu (19)</b>		7	14	41	62
		Kainuu Central Hospital	7	14	41	62
	<b>Länsi-Pohja (20)</b>		8	24	24	56
		Central Hospital of Länsi-Pohja	8	24	24	56
	<b>Lapland (21)</b>		14	18	50	82
		Lapland Central Hospital	14	18	50	82
<b>Entire country</b>			<b>347</b>	<b>1448</b>	<b>2573</b>	<b>4368</b>

At the end of 2013, dialysis and kidney transplantation patients were treated and followed up in 30 hospitals in 21 healthcare districts in five regions (Table 16). In the first part of this report, the healthcare district of the patient is determined according to place of residence. However, in the

analysis of treatment quality on pages 27–44, healthcare district of the patient is determined according to treating hospital. In the entire country, 98% of patients lived in the same healthcare district where they were treated.

Figure 26. Hemoglobin distribution of dialysis patients older than 20 years at end of year  
Finnish Registry for Kidney Diseases 2003–2013

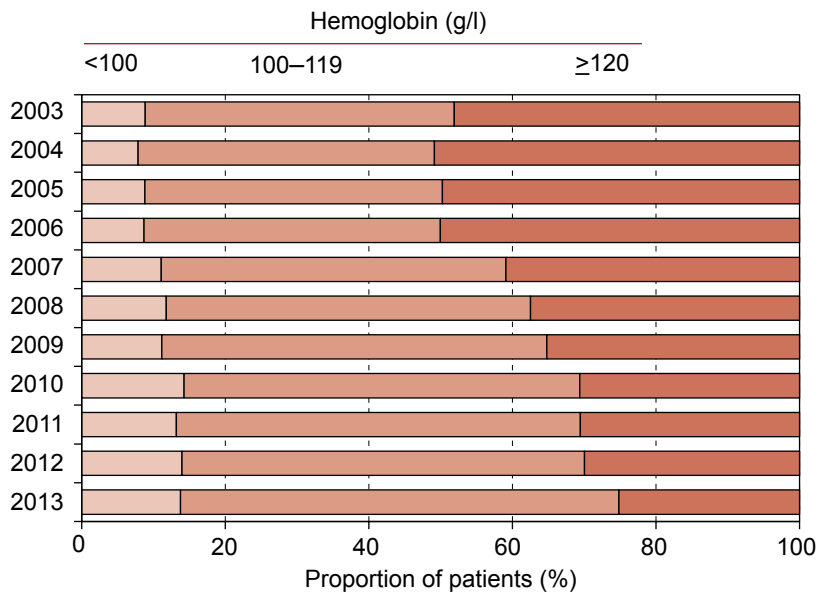
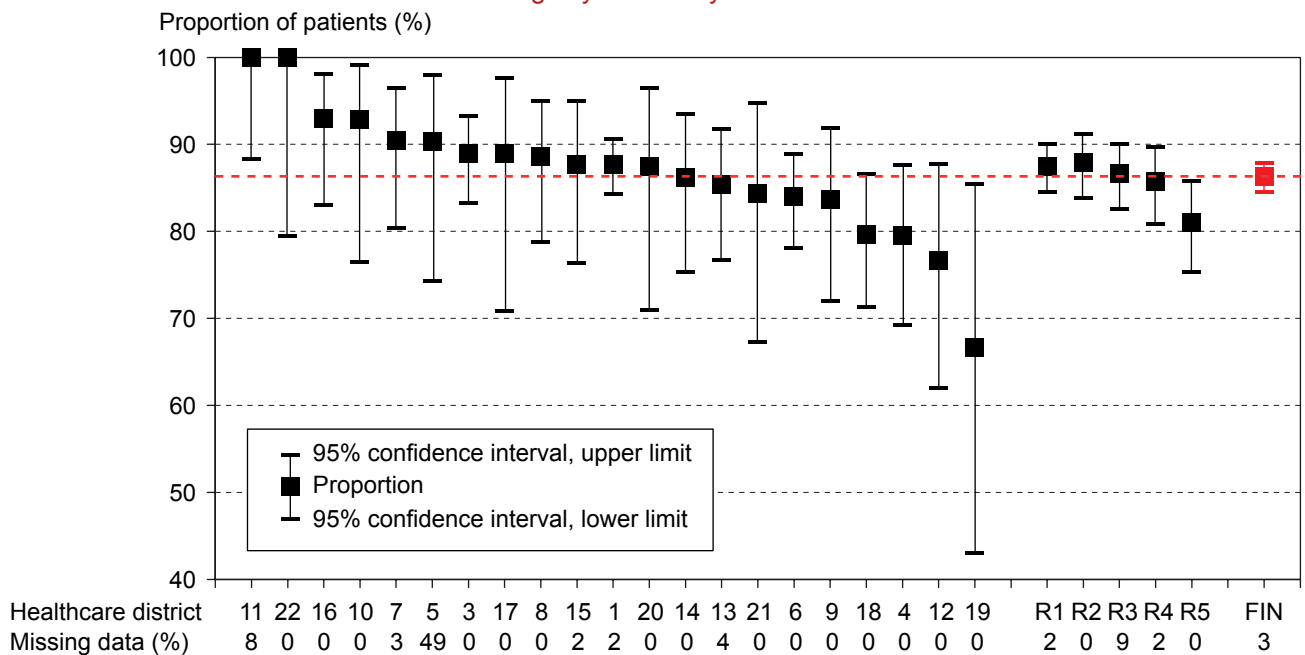


Figure 27. Proportion of dialysis patients older than 20 years with hemoglobin concentration  $\geq 100$  g/l in healthcare districts and regions  
Finnish Registry for Kidney Diseases 2013



Several guidelines exist regarding the target for blood hemoglobin concentration in dialysis patients: European Best Practice Guidelines (EPBG) and the guidelines of the Kidney Disease Outcome Quality Initiative (KDOQI) and the Kidney Disease Global Outcomes (KDIGO). KDIGO published new guidelines on renal anemia in 2012, according to which erythropoietin-stimulating agents (ESAs) should be used to keep dialysis patients' hemoglobin in the range of 100–115 g/l.

The renal registries in UK and Sweden have in their reports used target levels of hemoglobin of either 100–120 g/l or  $\geq 100$  g/l. For sake of comparison, we have chosen the same cut-offs.

At the end of 2013, 61% of dialysis patients had a hemo-

globin concentration of 100–119 g/l, and 86% had a concentration of 100 g/l or higher (Figure 26). The proportion of patients reaching the target hemoglobin concentration of 100–119 g/l has increased in ten years. Figures 26 and 27 include all hemodialysis patients, also those who did not use ESAs.

In Figure 27, the hemoglobin target is 100 g/l or higher. At the end of 2013, the proportion of dialysis patients reaching this target varied from 67% to 100% in the healthcare districts ( $P=0.226$ ) and from 81% to 88% in the regions ( $P=0.205$ ). No significant difference was present in the proportions of men and women with a hemoglobin concentration of 100 g/l or higher.

Figure 28. Proportion of dialysis patients older than 20 years using erythropoietin-stimulating agents (ESAs) in healthcare districts

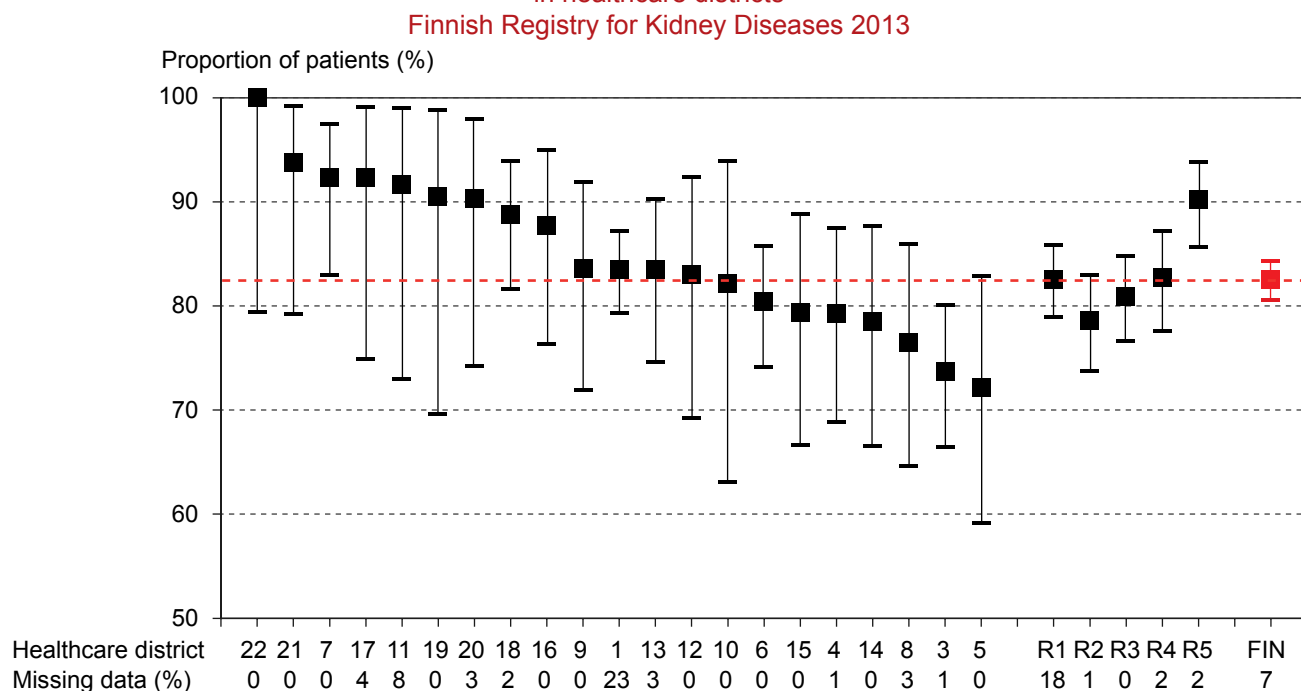
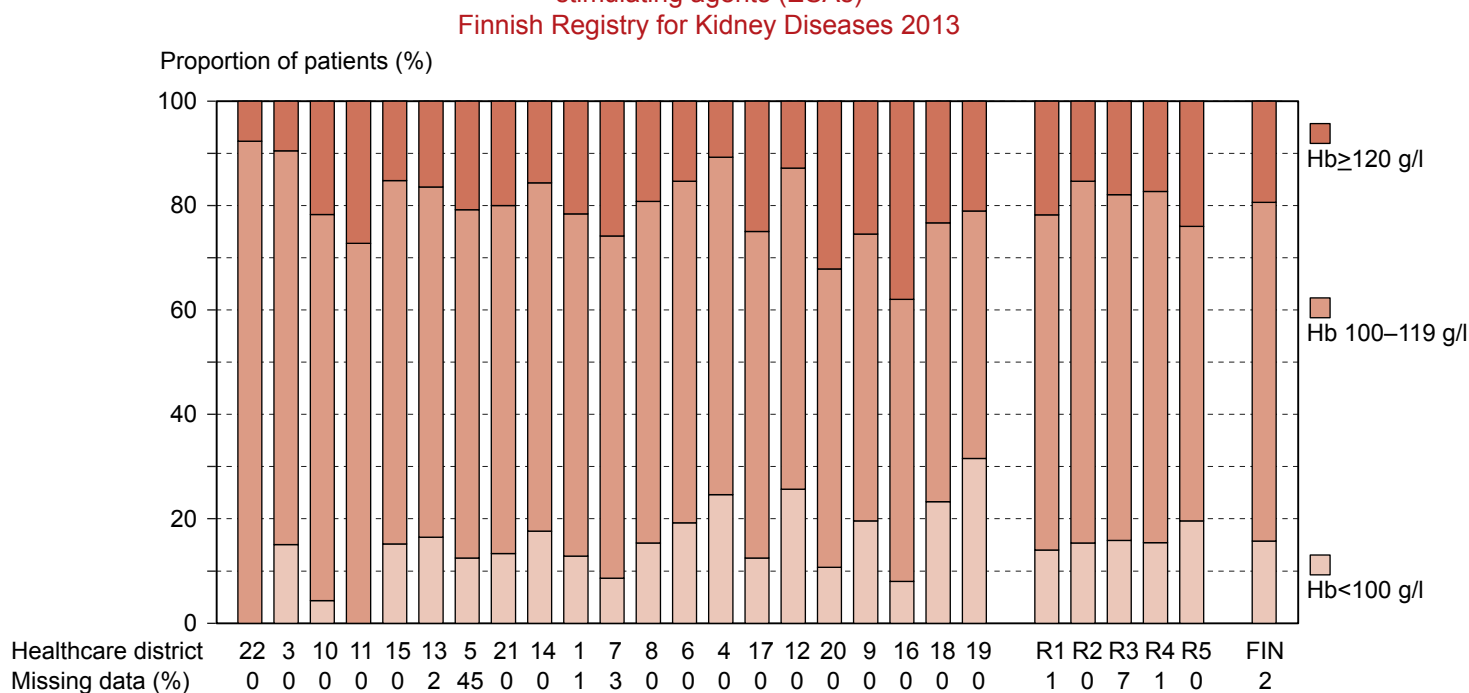


Figure 29. Hemoglobin concentration among dialysis patients older than 20 years who use erythropoietin stimulating agents (ESAs)

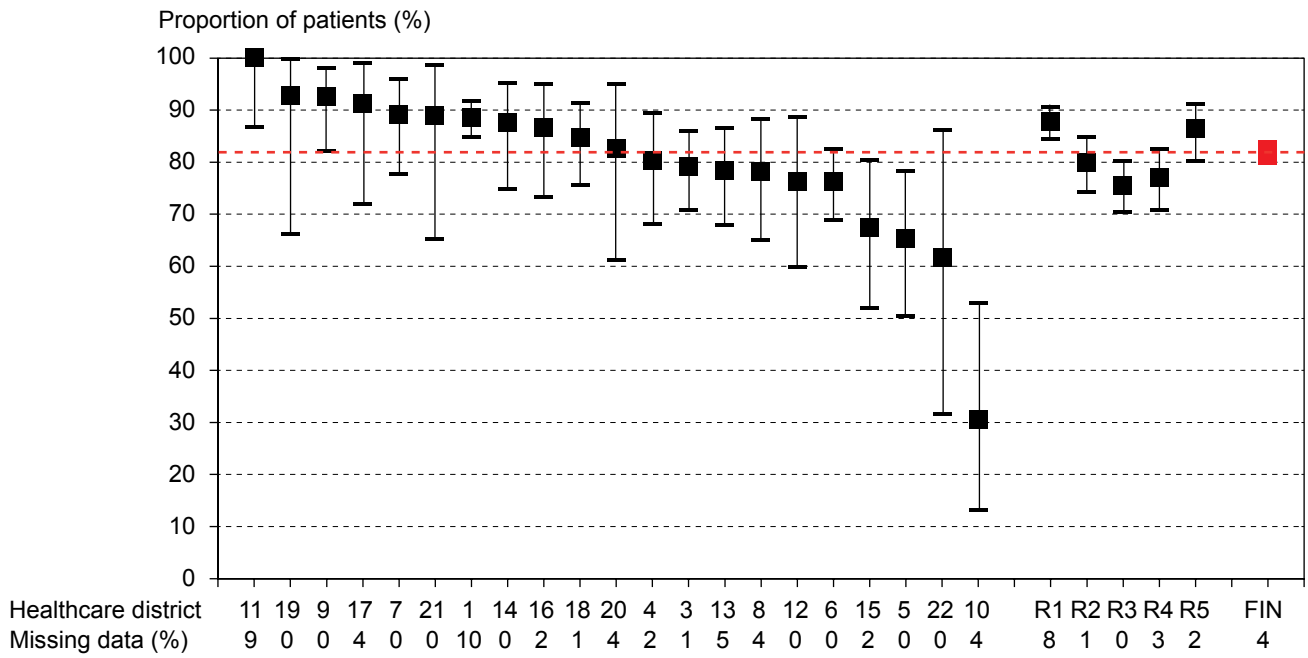


The Finnish Registry for Kidney Diseases has since 2013 collected information on the use of erythropoietin-stimulating agents (ESAs) at the end of the year. Figure 28 presents the proportion of dialysis patients using ESAs at the end of 2013 in healthcare districts and regions. The frequency of ESA use was 83% in the entire country, ranging between 72% and 100% in healthcare districts ( $P=0.010$ ) and between 79% and 90% in regions ( $P=0.009$ ). Use of ESAs was more frequent among women (88%) than men

(80%,  $P<0.001$ ).

Figure 29 shows the distribution of hemoglobin concentration in dialysis patients ( $n=1382$ ) using ESAs at the end of 2013. The proportion of patients who reached the target hemoglobin concentration of 100–119 g/l was 65% in the entire country, ranging between 47% and 92% in healthcare districts ( $P=0.135$ ) and between 56% and 69% in regions ( $P=0.083$ ). The proportions of men and women reaching the hemoglobin target did not differ.

Figure 30. Proportion of dialysis patients older than 20 years using intravenous iron in healthcare districts  
Finnish Registry for Kidney Diseases 2013



The Finnish Registry for Kidney Diseases has since 2013 collected information on the use of intravenous iron at the end of the year. Figure 30 shows the proportion of hemodialysis patients receiving intravenous iron at the end of 2013 in healthcare districts and regions. In the entire country, 82% of hemodialysis patients received intravenous iron, with this proportion varying from 30% to 100% in healthcare districts ( $P < 0.001$ ) and from 75% to 88% in regions ( $P < 0.001$ ). The proportions of men and women receiving intravenous iron did not differ ( $P = 0.311$ ).

Of the hemodialysis patients who received intravenous iron, 87% also used erythropoietin-stimulating agents (ESAs). Of hemodialysis patients who did not receive intravenous iron, 74% used ESAs. Hemoglobin concentration was 100 g/l or higher among 85% and 120 g/l or higher among 24% of hemodialysis patients. Hemoglobin concentration did not differ between hemoglobin patients who used and those who did not use intravenous iron ( $P = 0.717$ ).

Of the peritoneal dialysis patients in the entire country, 18% received intravenous iron at the end of 2013.

Figure 31. Distribution of serum phosphorus among dialysis patients older than 20 years at end of year Finnish Registry for Kidney Diseases 2003–2013

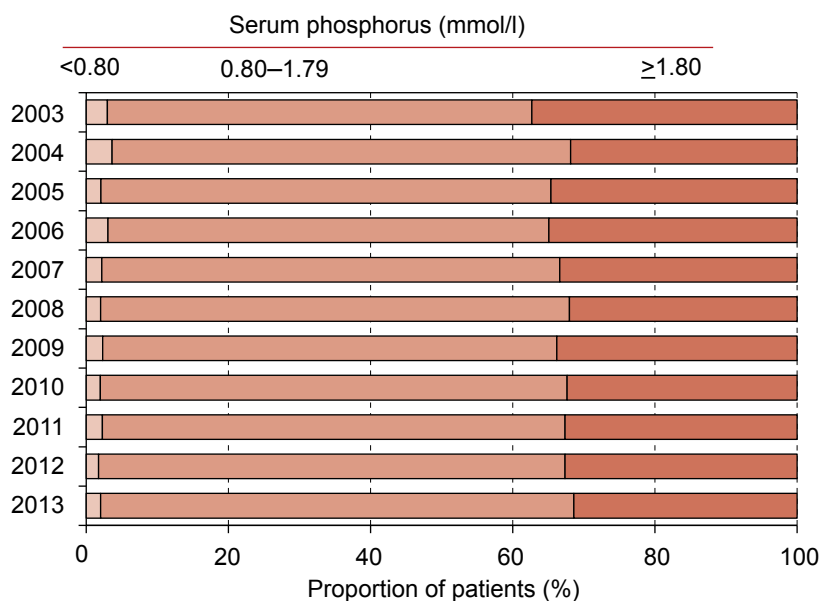
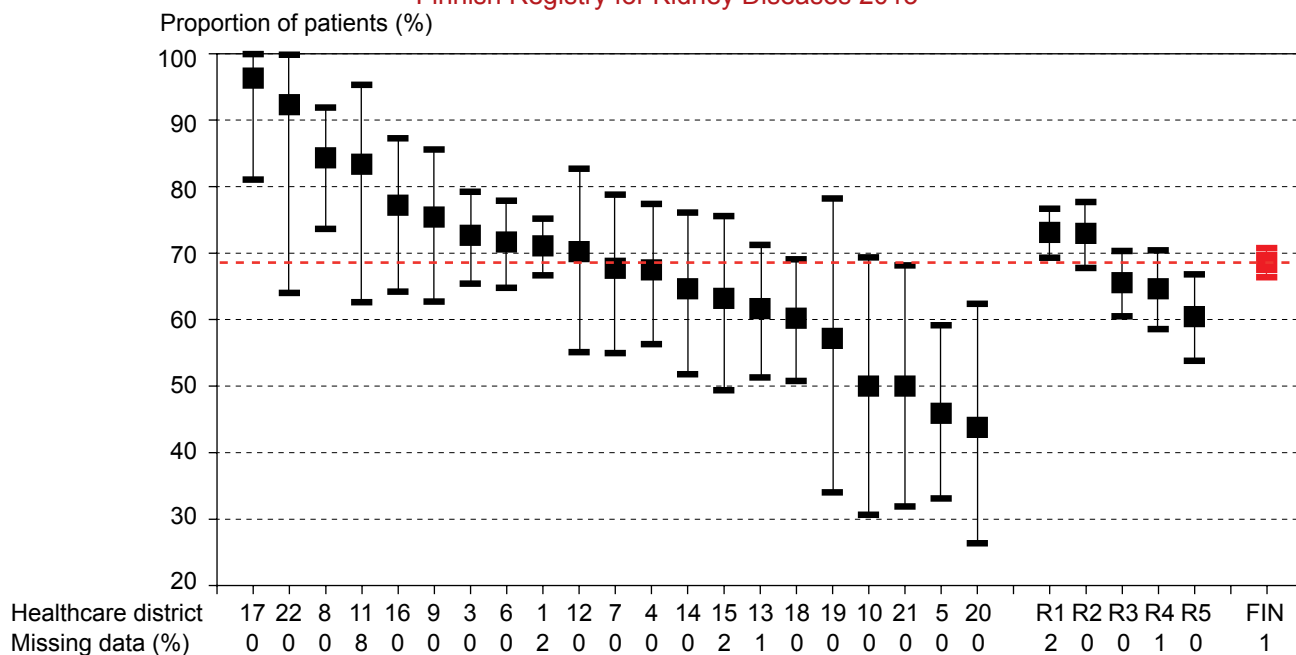


Figure 32. Proportion of dialysis patients older than 20 years with serum phosphorus lower than 1.8 mmol/l in healthcare districts and regions Finnish Registry for Kidney Diseases 2013



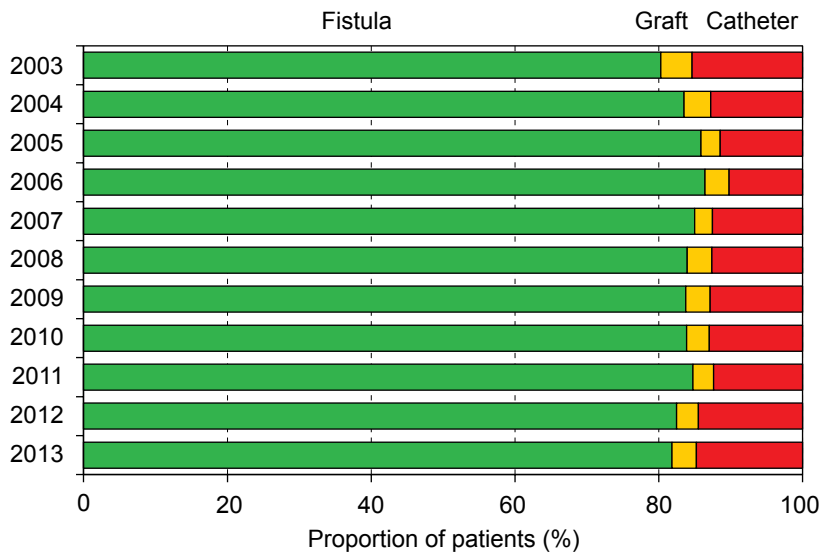
Hyperphosphatemia among patients with kidney disease is associated with vascular calcification and increased mortality. The guideline of the Kidney Disease Global Outcomes (KDIGO) suggests that elevated serum phosphorus of dialysis patients should be lowered towards the normal range with diet, intensified dialysis treatment, and phosphate binders if needed.

At the end of 2013, 69% of hemodialysis and peritoneal dialysis patients had concentrations of serum phosphorus lower than 1.8 mmol/l; this proportion has remained virtu-

ally unchanged during the past ten years (Figure 31). Only 2% of dialysis patients had an excessively low concentration of serum phosphorus (<0.8 mmol/l).

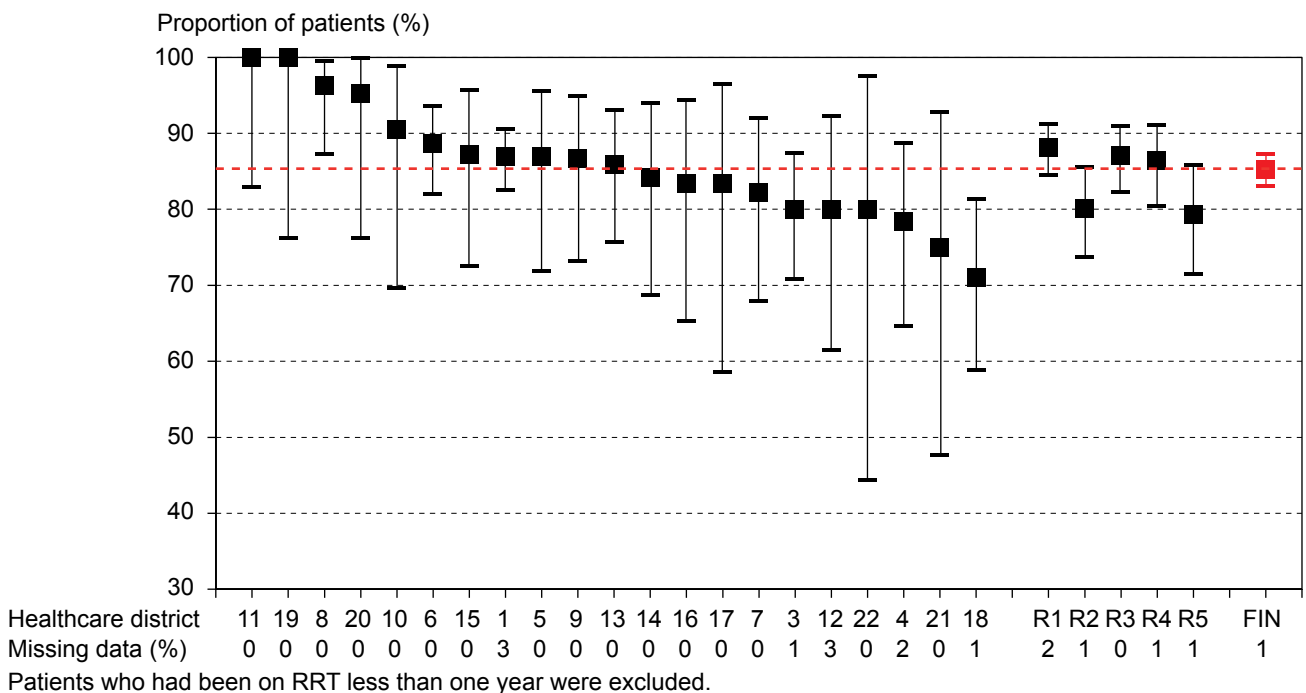
The proportion of patients reaching the treatment target (serum phosphorus <1.8 mmol/l) varied between 44% and 96% in the healthcare districts (P<0.001) and between 60% and 73% in the regions (P=0.001) (Figure 32). Men reached the treatment target less frequently than women (66% vs. 74%, P=0.001).

Figure 33. Vascular access of hemodialysis patients older than 20 years at end of year  
Finnish Registry for Kidney Diseases 2003–2013



Patients who had been on RRT less than one year were excluded.

Figure 34. Proportion of hemodialysis patients older than 20 years with a fistula or graft in healthcare districts and regions  
Finnish Registry for Kidney Diseases 2013



Patients who had been on RRT less than one year were excluded.

Vascular access is one of the most important quality measures in hemodialysis. Use of a central venous catheter is associated with complications, and the goal is that hemodialysis patients have an arteriovenous fistula or graft. Of hemodialysis patients aged 20 years or older who had been on RRT for at least one year, the proportion with a fistula or graft was the largest, 90%, in 2006, after which it has decreased slightly, to 85%, in 2013 (Figure 33).

At the end of 2013, the proportion of patients with a fistula or graft varied between 71% and 100% in healthcare districts ( $P=0.036$ ) and between 79% and 88% in regions ( $P=0.018$ ) (Figure 34). After adjustment for age and sex, the difference between regions was no longer significant ( $P=0.123$ ). At the end of 2013, female hemodialysis patients less frequently than male patients had a fistula or graft (80% vs. 88%,  $P<0.001$ ).

Figure 35. Sufficiency of dialysis time among hemodialysis patients aged 20–74 years  
Finnish Registry for Kidney Diseases 2003–2013

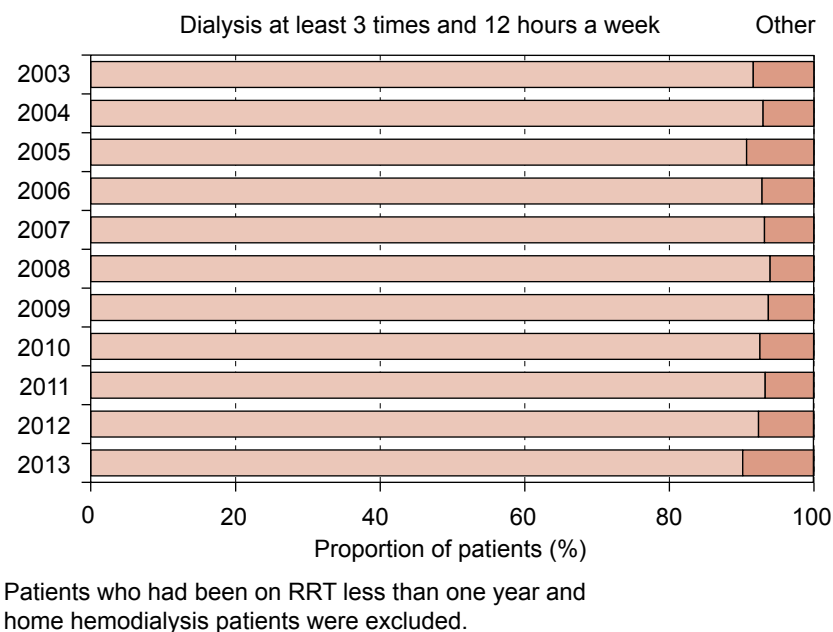
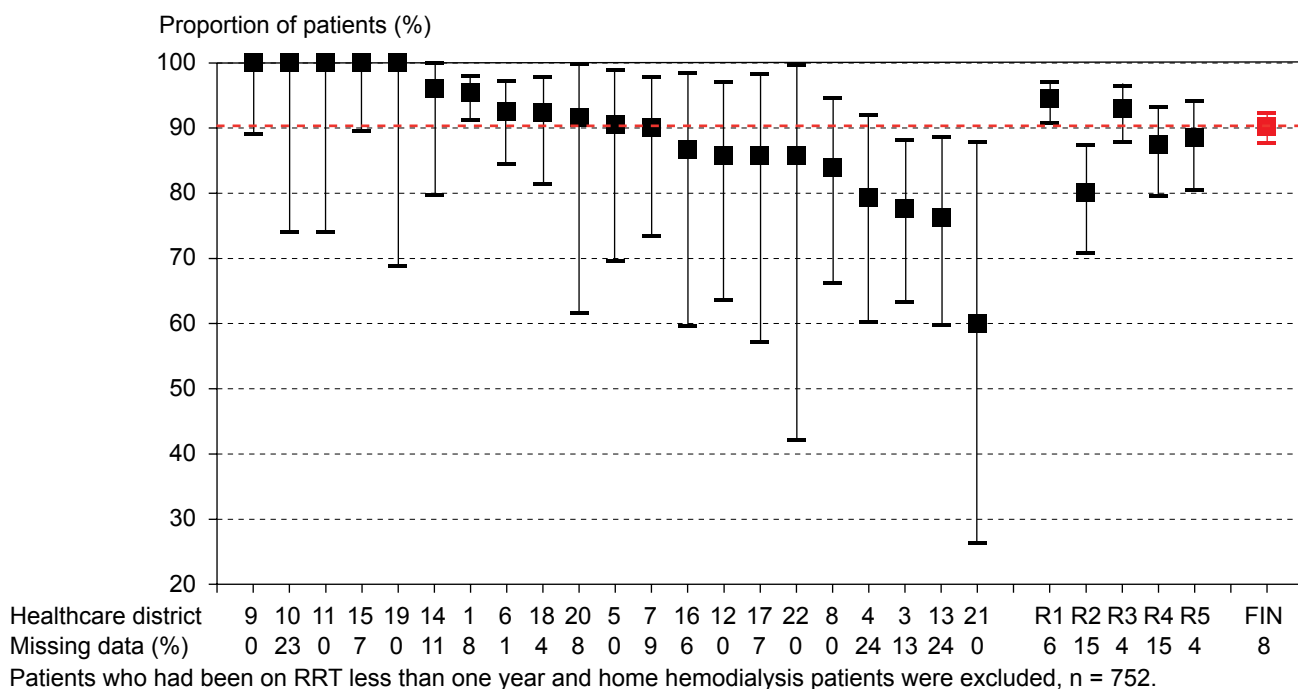


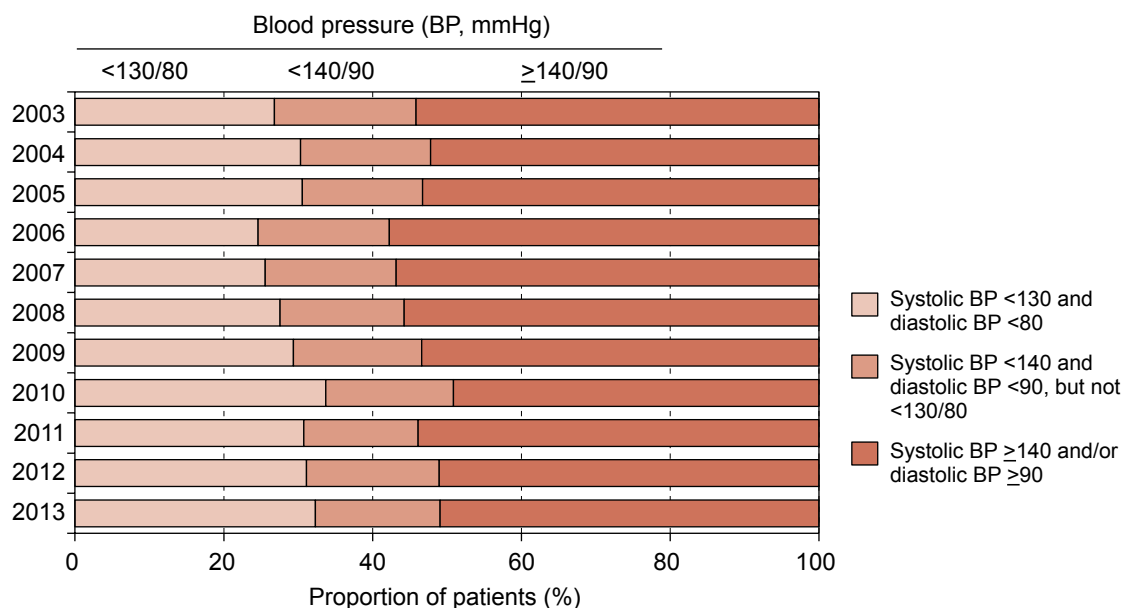
Figure 36. Proportion of hemodialysis patients aged 20–74-years with sufficient dialysis time in healthcare districts and regions  
Finnish Registry for Kidney Diseases 2013



According to the European Best Practice Guidelines (EBPG), hemodialysis should be performed at least three times and for at least 12 hours a week if there is no significant residual kidney function. According to this definition, 90% of 20–74-year-old in-center hemodialysis patients received sufficient hemodialysis time at the end of 2013. This proportion has remained stable since 2003 (Figure 35). At

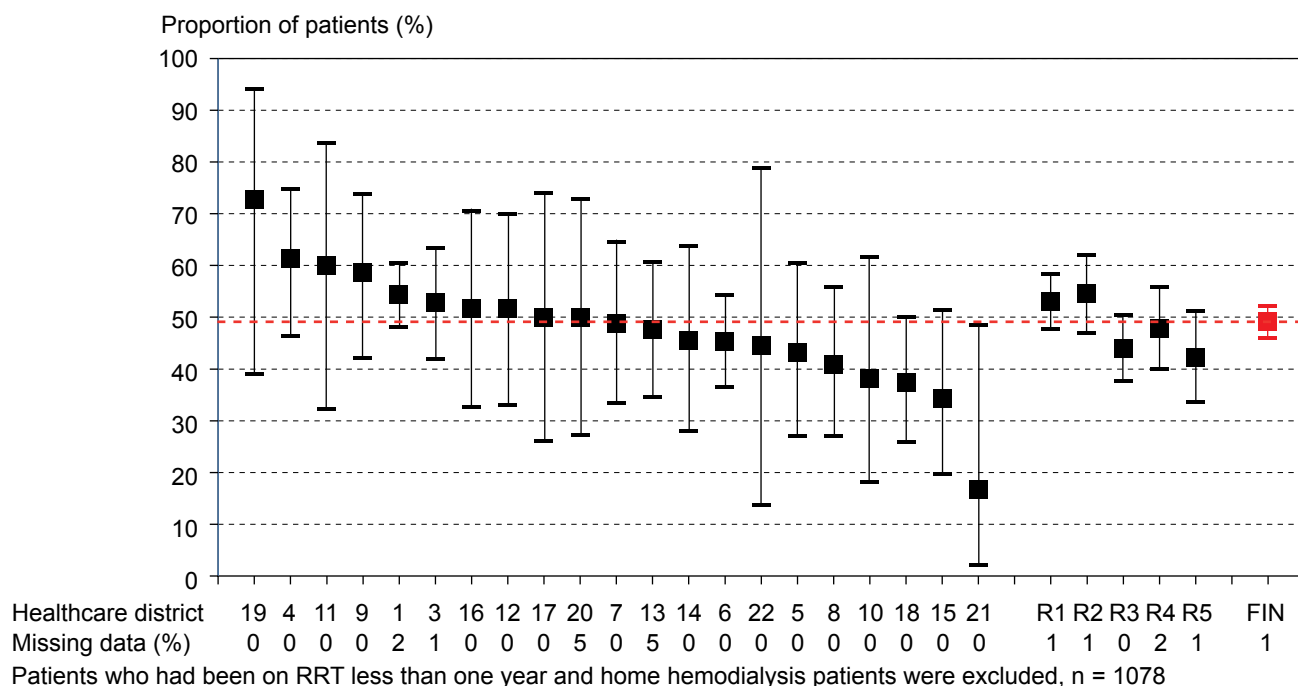
the end of 2013, the proportion varied between 71% and 100% in healthcare districts ( $P < 0.001$ ) and between 82% and 95% in regions ( $P = 0.001$ ) (Figure 36). After adjustment for age and sex, the difference between healthcare districts was no longer significant ( $P = 0.051$ ). No significant sex difference existed with regard to sufficiency of dialysis time.

Figure 37. Distribution of predialytic blood pressure among hemodialysis patients older than 20 years  
Finnish Registry for Kidney Diseases 2003–2013



Patients who had been on RRT less than one year and home hemodialysis patients were excluded.

Figure 38. Proportion of hemodialysis patients older than 20 years with predialytic blood pressure lower than 140/90 mmHg in healthcare districts and regions  
Finnish Registry for Kidney Diseases 2013



According to the guidelines of the Kidney Disease Outcome Quality Initiative (KDOQI), hemodialysis patients' target for predialytic blood pressure is lower than 140/90 mmHg. At the end of 2013, 49% of hemodialysis patients reached this target (Figure 37). The proportion of patients reaching this

target varied between 17% and 73% in healthcare districts (P=0,136) and between 42% and 54% in regions (P=0.066) (Figure 38). There was no significant difference in proportions of males and females reaching the target blood pressure (P=0.146).



Figure 39. Use of blood pressure-lowering medication among hemodialysis patients older than 20 years  
Finnish Registry for Kidney Diseases 2003–2013

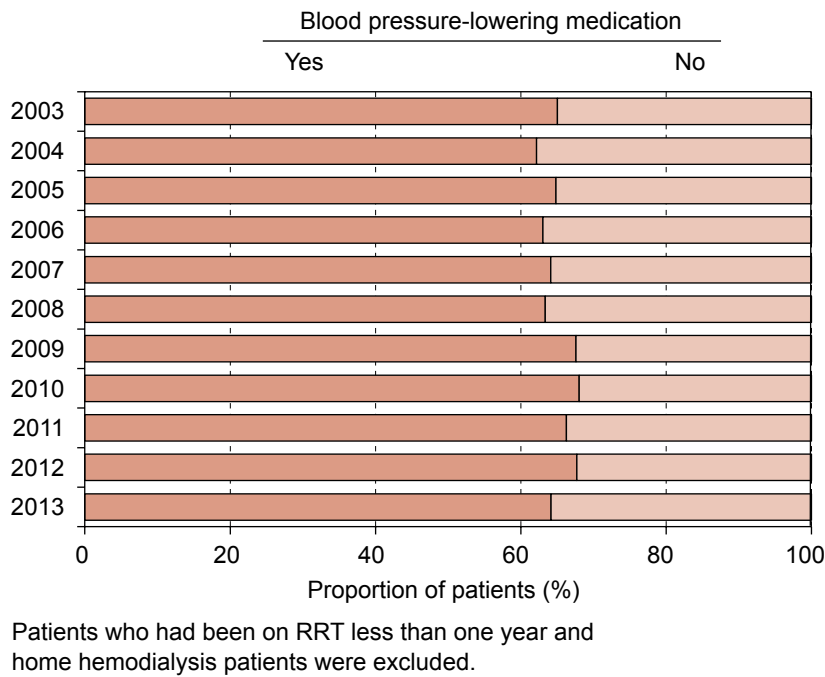
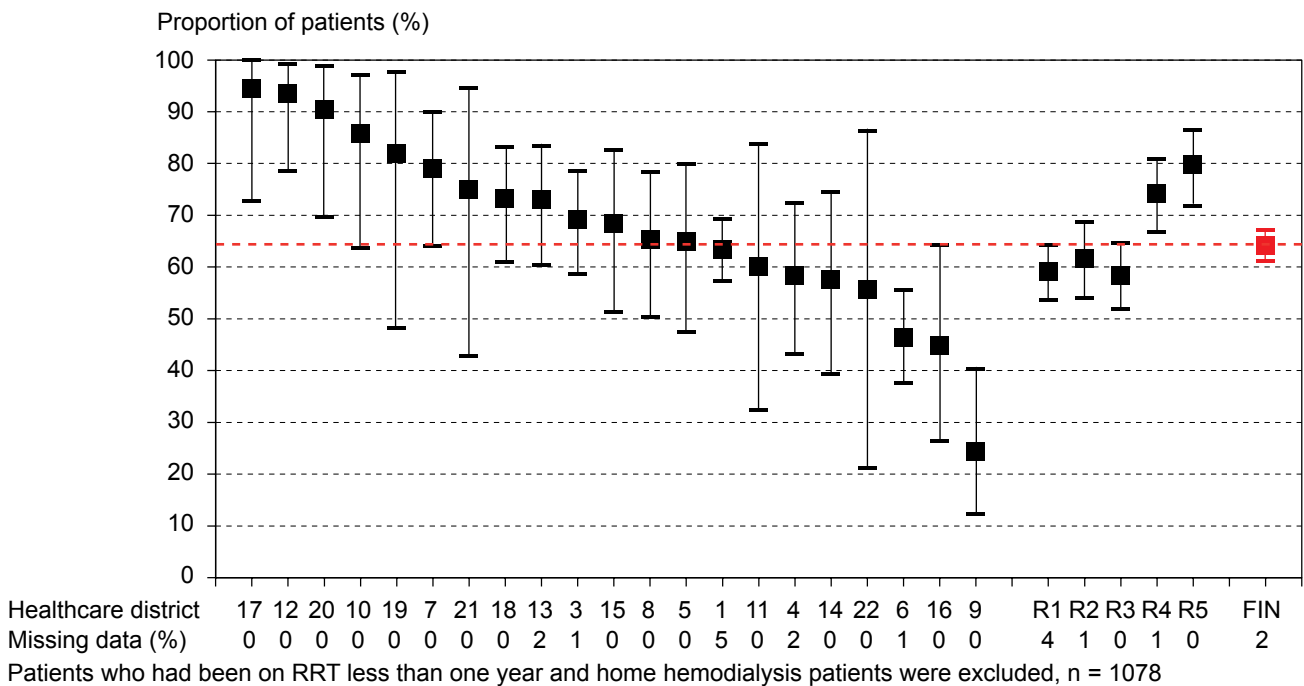


Figure 40. Proportion of hemodialysis patients older than 20 years using blood pressure-lowering medication in healthcare districts and regions  
Finnish Registry for Kidney Diseases 2013



Of the hemodialysis patients, 64% used blood pressure-lowering medication at the end of 2013. This proportion has remained virtually unchanged since 2003 (Figure 39). At the end of 2013, the proportion of hemodialysis patients using blood pressure-lowering medication varied between

24% and 94% in healthcare districts ( $P < 0.001$ ) and between 58% and 80% in regions ( $P < 0.001$ ) (Figure 40). The proportions of males and females using blood pressure-lowering medication did not differ ( $P = 0.320$ ).

Figure 41. Distribution of blood pressure of kidney transplantation patients older than 20 years  
Finnish Registry for Kidney Diseases 2003–2013

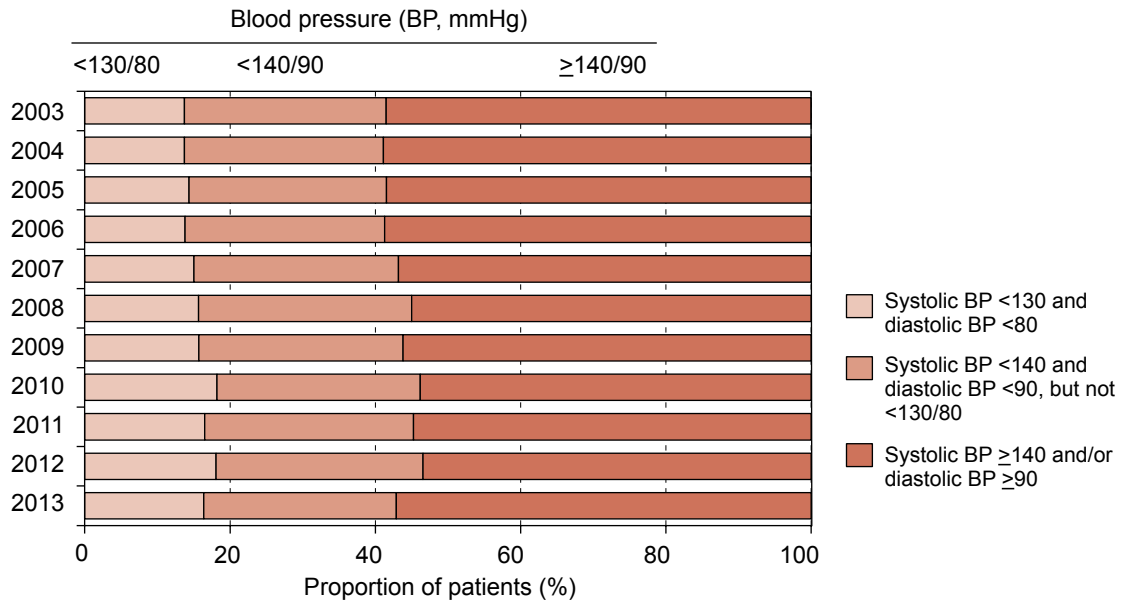
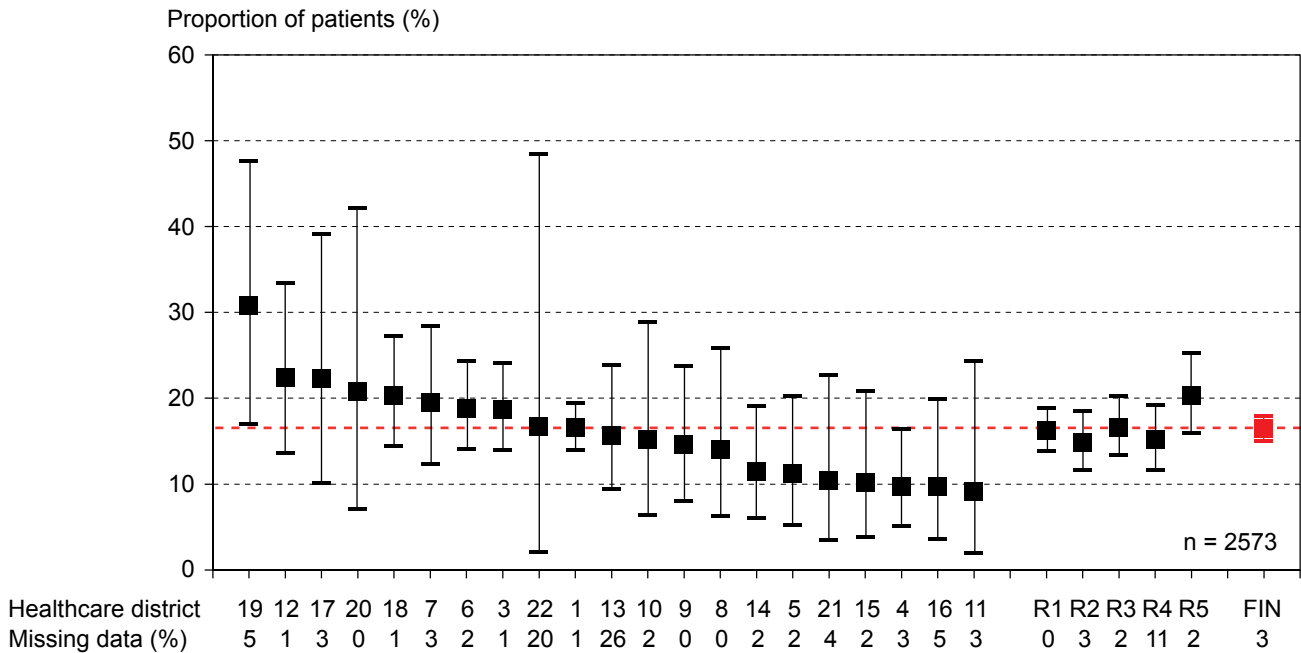


Figure 42. Proportion of kidney transplantation patients older than 20 years with blood pressure lower than 130/80 mmHg in healthcare districts and regions  
Finnish Registry for Kidney Diseases 2013



The KDIGO guidelines suggest that the blood pressure target of kidney transplantation patients be lower than 130 mmHg for systolic blood pressure and lower than 80 mmHg for diastolic blood pressure. Figure 41 shows the blood pressure distribution of kidney transplantation patients at the end of the years 2003–2013. The proportion of patients reaching the target (<130/80 mmHg) was 14% in 2003 and

16% in 2013.

At the end of 2013, the proportion of kidney transplantation patients reaching the blood pressure target varied between 9% and 31% in healthcare districts (P=0.137) and between 15% and 20% in regions (P=0.369) (Figure 42). No significant difference was observed between the genders (P=0.395).

Figure 43. Use of blood pressure-lowering medication among kidney transplantation patients older than 20 years  
Finnish Registry for Kidney Diseases 2003–2013

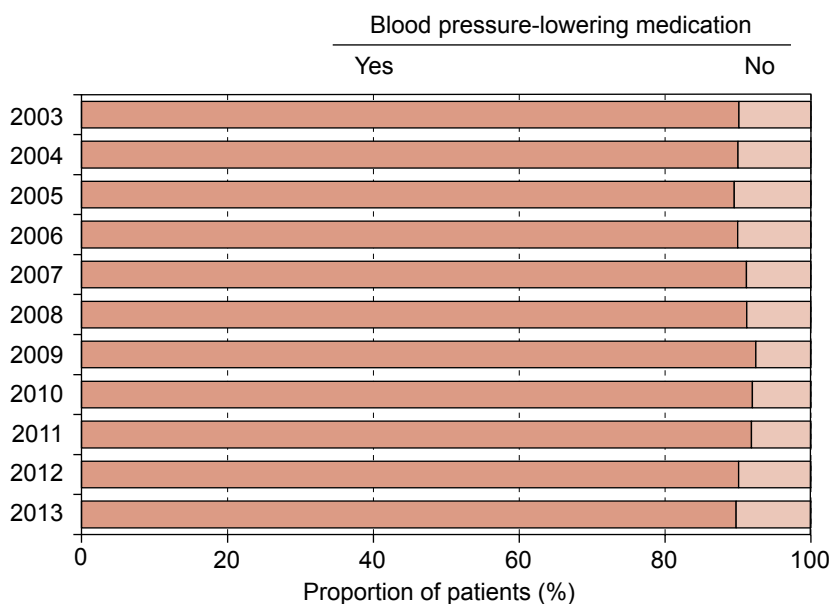
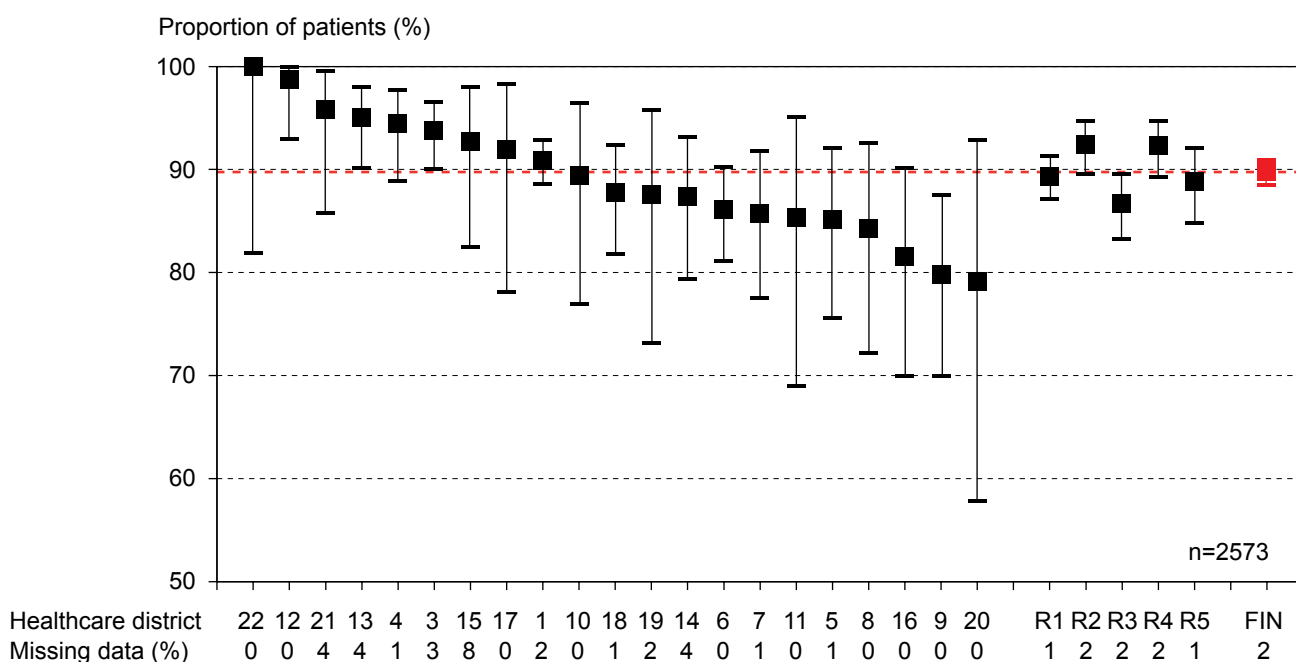


Figure 44. Proportion of kidney transplantation patients older than 20 years using blood pressure-lowering medication in healthcare districts and regions  
Finnish Registry for Kidney Diseases 2013



Of the kidney transplantation patients, 90% used blood pressure-lowering medication at the end of 2013. This proportion has remained virtually unchanged since 2003 (Figure 43). The proportion of kidney transplantation patients using blood pressure-lowering drugs varied between 79%

and 100% in healthcare districts ( $P < 0.001$ ) and between 88% and 93% in regions ( $P = 0.018$ ) (Figure 44). Men more frequently than women used blood pressure-lowering medication (93% vs. 85%,  $P < 0.001$ ).

Figure 45. Distribution of serum LDL cholesterol among kidney transplantation patients older than 20 years Finnish Registry for Kidney Diseases 2003–2013

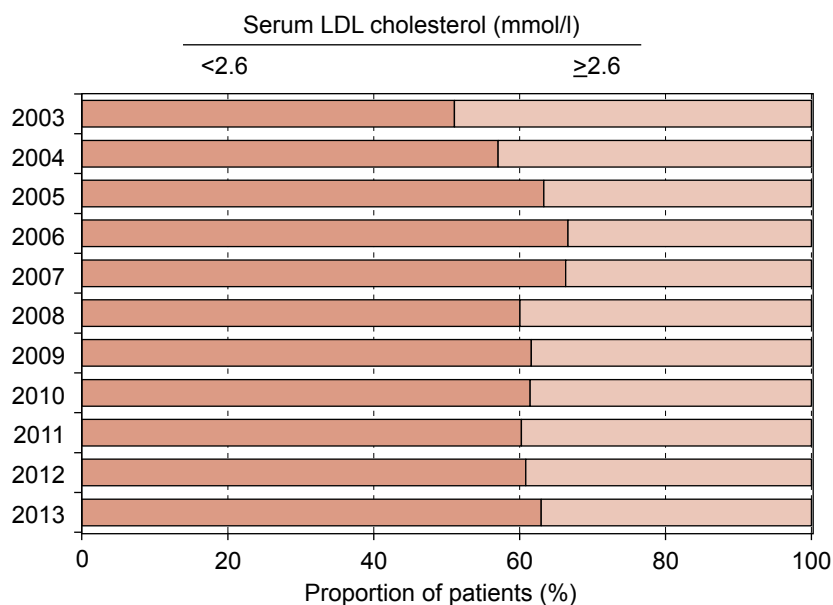
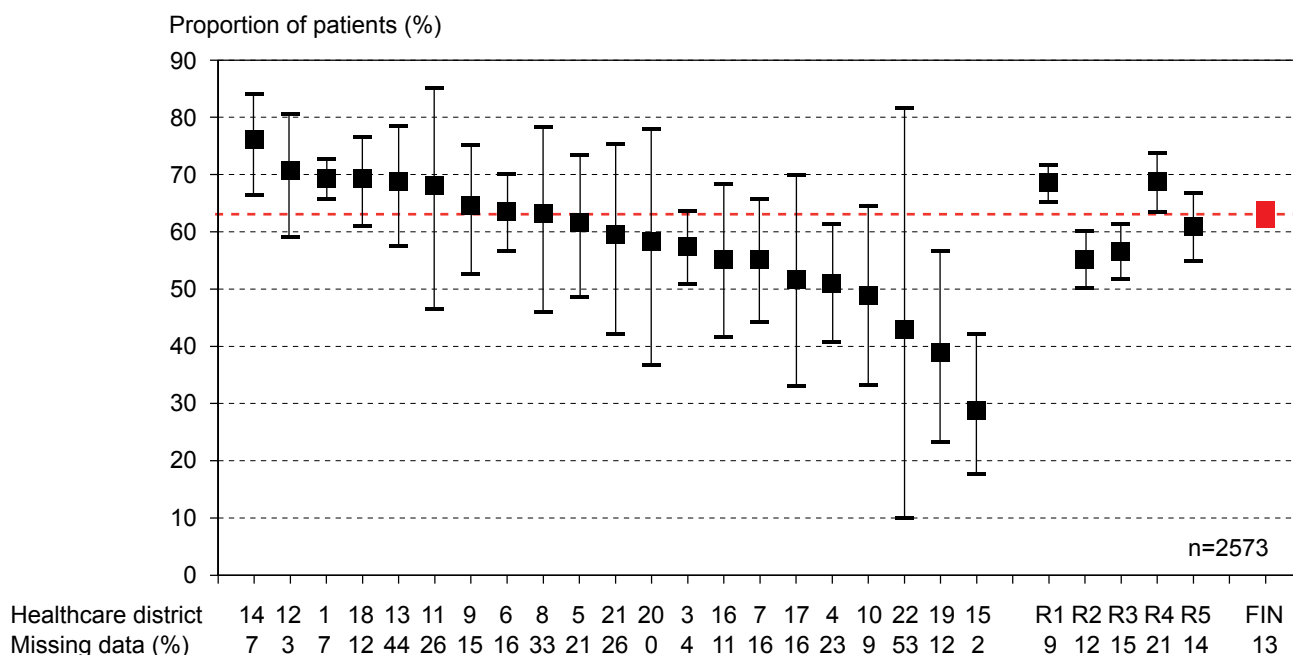


Figure 46. Proportion of kidney transplantation patients older than 20 years with serum LDL cholesterol lower than 2.6 mmol/l in healthcare districts and regions Finnish Registry for Kidney Diseases 2013



According to the KDIGO and KDOQI guidelines, kidney transplantation patients' concentration of serum low-density lipoprotein (LDL) cholesterol should be lower than 2.6 mmol/l. In 2003, 51% of the kidney transplantation patients reached this target, and in 2013 this proportion had increased to 63% (Figure 45).

The proportion of kidney transplantation patients reaching the treatment target for LDL cholesterol varied between 29% and 76% in healthcare districts ( $P < 0.001$ ) and be-

tween 55% and 69% in regions ( $P < 0.001$ ) (Figure 46).

The concentration of LDL cholesterol was calculated using the Friedewald formula based on serum concentrations of total cholesterol, high-density lipoprotein (HDL) cholesterol, and triglycerides. Because of the restrictions of the Friedewald formula, patients with a concentration of triglycerides higher than 4.5 mmol/l were excluded (1% of patients).

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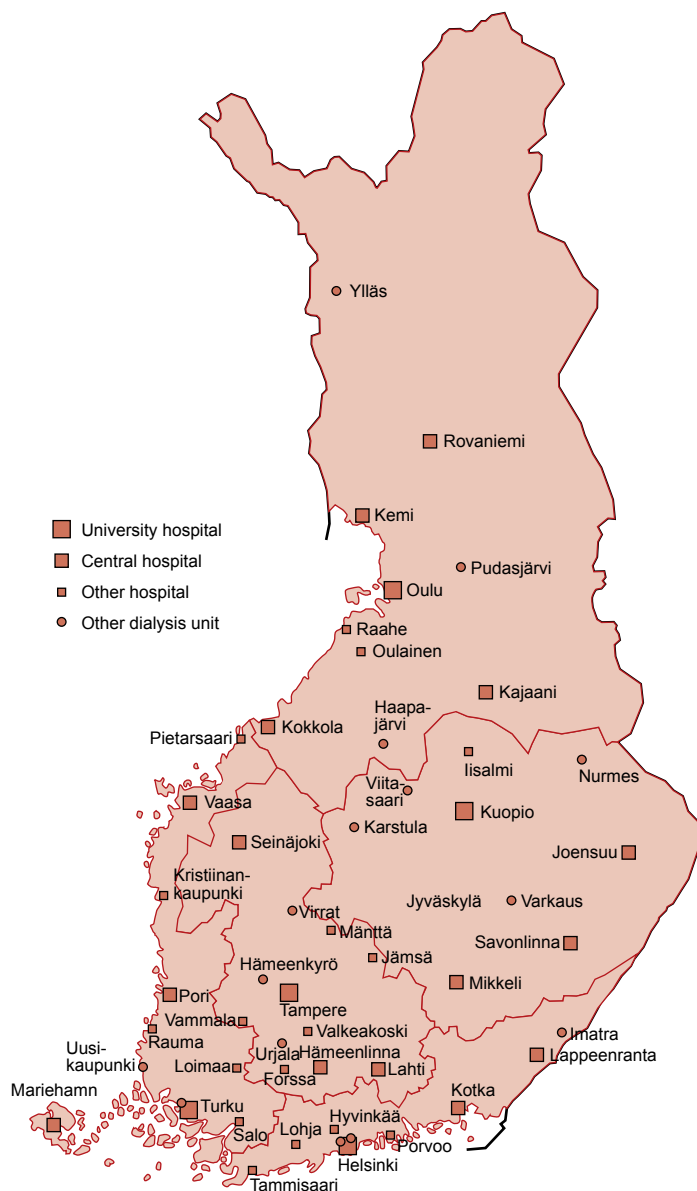
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# Finnish Registry for Kidney Diseases

## Report 2013



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