

Special Feature

The 2007 ERA-EDTA Registry Annual Report—a Précis

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Table 1. Incidence of RRT over the period 2003–2007 per million population (pmp) at Day 1, adjusted for age and gender distribution

Introduction

This summary of the 2007 ERA-EDTA Registry Report includes data on renal replacement therapy (RRT) from 49 national and regional registries in 28 countries in Europe and bordering the Mediterranean Sea (Figure 1). Data sets with individual patient data for analysis were received from 34 registries, whereas 17 registries contributed data only in aggregated form. For both types of registries, we present incidence and prevalence data as well as transplant rates. Survival analysis used the data from countries and regions that provided individual patient records. More detailed data than those presented in this paper can be found in the 2007 ERA-EDTA Registry Report [1] that is also available on www.era-edta-reg.org.

The incidence of RRT for ESRD across Europe

In 2007, the overall incidence rate of RRT for end-stage renal disease (ESRD) among all registries reporting to the ERA-EDTA Registry was 116 per million population (pmp). Figure 2 shows that the highest incidence rates at Day 1 were reported by Turkey (231 pmp), Portugal (227 pmp) and Israel (193 pmp), whereas incidence rates below 100 pmp were reported by Ukraine (20 pmp), Russia (31 pmp), Montenegro (32 pmp), Iceland (81 pmp), Latvia (86 pmp), Romania (90 pmp), Finland (92 pmp) and FYR of Macedonia (92 pmp). The mean age at the start of RRT ranged from 43 years (Ukraine) to 69 years (Belgium) (Figure 2). Table 1 shows the incidence rate of RRT over the period 2003–2007 for countries and regions providing individual patient data, adjusted for age and gender distribution.

For the age group 0–19 years at the start of RRT, data were available for a limited number of registries including those of Austria, Denmark, Finland, Greece, Iceland, Norway, Romania, Spain (Andalusia), Spain (Aragon), Spain

Country /regions providing individual patient data	2003 pmp	2004 pmp	2005 pmp	2006 pmp	2007 pmp
Austria	138	156	148	153	146
Belgium, Dutch-speaking	160	163	163	169	161
Belgium, French-speaking	156	179	171	180	178
Denmark	133	131	119	117	136
Finland	93	94	92	83	85
Greece	168	177	171	172	164
Iceland	83	87	81	79	84
Italy, Calabria	130	137	127	121	132
Norway	97	102	101	101	113
Spain, Andalusia	137	138	141	139	125
Spain, Aragon	87	114	119	93	113
Spain, Asturias	108	132	101	102	103
Spain, Basque country	128	112	107	99	98
Spain, Cantabria	126	135	142	115	99
Spain, Castile and Leon	98	100	91	101	99
Spain, Castile-La Mancha	105	113	125	109	102
Spain, Catalonia	144	132	141	125	130
Spain, Valencian region	148	157	140	144	137
Sweden	113	113	110	117	117
The Netherlands	108	110	109	114	117
United Kingdom, England	73	86	107	111	107
United Kingdom, Scotland	117	110	119	109	106
United Kingdom, Wales	121	112	122	126	129
All countries	111	118	123	124	122

(Basque country), Spain (Catalonia), Spain (Valencian region), Sweden, The Netherlands, and United Kingdom (Scotland). As numbers of children starting RRT were low, we present averages for 2006–2007 (Table 2). In 2007, the ERA-EDTA Registry started a close collaboration with the ESPN/ERA-EDTA Registry that initiated data collection from paediatric registries across Europe [2]. For

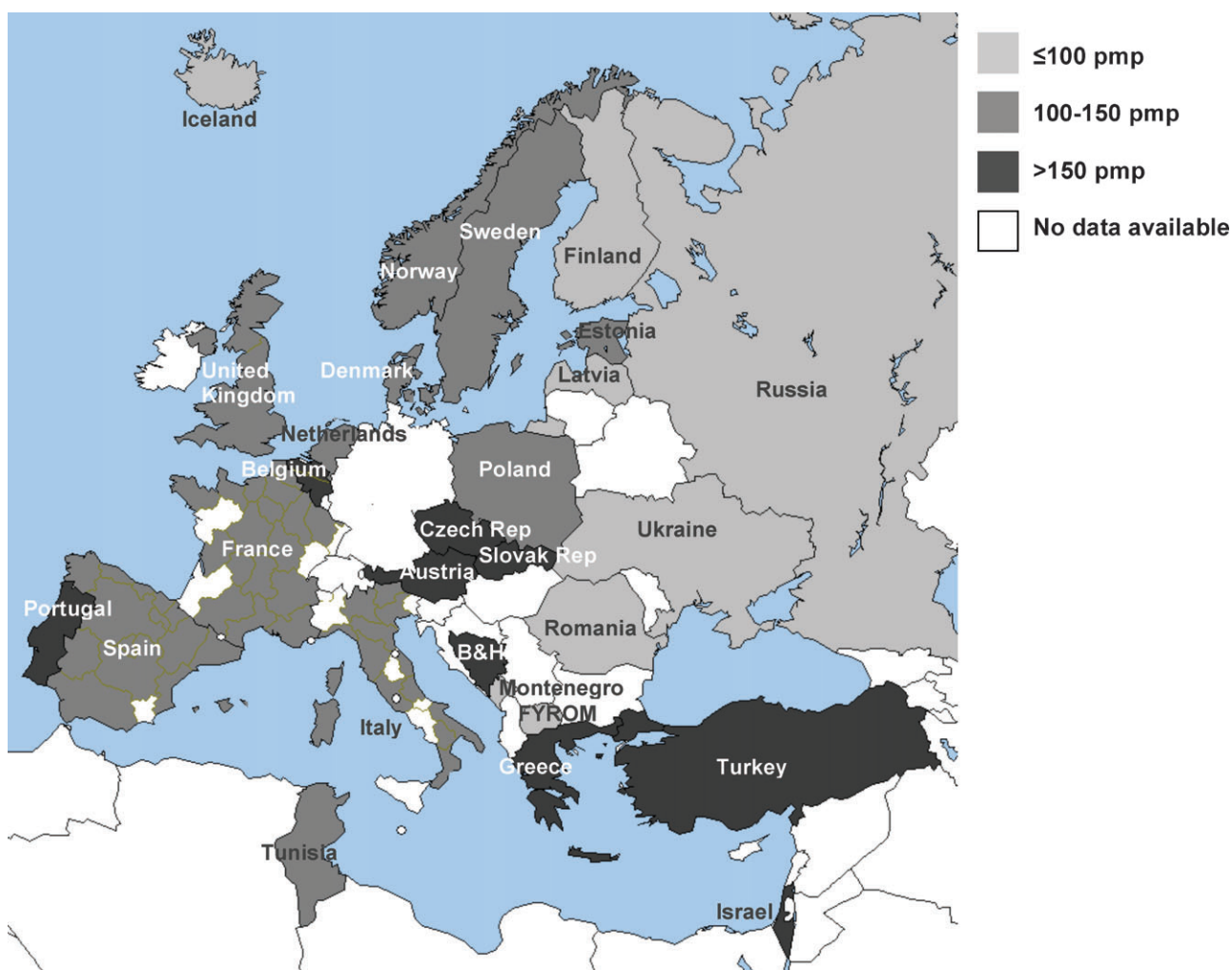


Fig. 1. Incidence of RRT per million population (pmp) at Day 1, 2007. B&H = Bosnia–Herzegovina; FYROM = Former Yugoslav Republic of Macedonia.

Table 2. Incidence of RRT over the period 2006–2007 per million age-related population (pmarp) per year at Day 1, by age group, unadjusted

Cohort	0–19 pmarp	0–4 pmarp	5–9 pmarp	10–14 pmarp	15–19 pmarp
2006–2007	10	8	5	8	16

an overview of paediatric RRT data collected from those registries, please visit www.espn-reg.org.

Table 3 shows the incidence rate of RRT by age group, for countries and regions providing individual patient data. For the highest age groups, the highest incidence rates were reported from Belgium and Greece, whereas Finland and Romania belong to the countries reporting the lowest incidence rates.

The incidence rates of RRT for ESRD due to diabetes mellitus were highest in Israel (81 pmp), Turkey (64 pmp), and Slovakia (60 pmp), whereas the highest incidence rates of RRT for ESRD due to hypertension/renal vascular disease were reported from Turkey (58 pmp), and Belgium (52 pmp) (Table 4).

The prevalence of RRT for ESRD across Europe

The overall prevalence among all registries reporting to the ERA-EDTA Registry was 662 pmp. Figure 3 shows that the prevalence of RRT pmp at 31 December 2007 was highest in Portugal (1372 pmp), Belgium (French-speaking) (1109 pmp) and Spain (Catalonia) (1100 pmp). The lowest prevalence was reported by Ukraine (85 pmp) and Russia (146 pmp). The mean age at 31 December 2007 ranged from 44 years (Russia and Ukraine) to 64 years (Belgium, Dutch speaking) for registries providing data both on dialysis and transplant patients (Figure 3). Table 5 shows the overall prevalence of RRT, adjusted for age and gender distribution.

Only a limited number of registries provided complete data for prevalent patients in the age group 0–19 years in 2007, including those of Austria, Denmark, Finland, Greece, Iceland, Norway, Romania, Spain (Andalusia), Spain (Aragon), Spain (Basque country), Spain (Catalonia), Spain (Valencian region), Sweden, The Netherlands and United Kingdom (Scotland). The prevalence for age group 0–19 years is presented in Table 6.

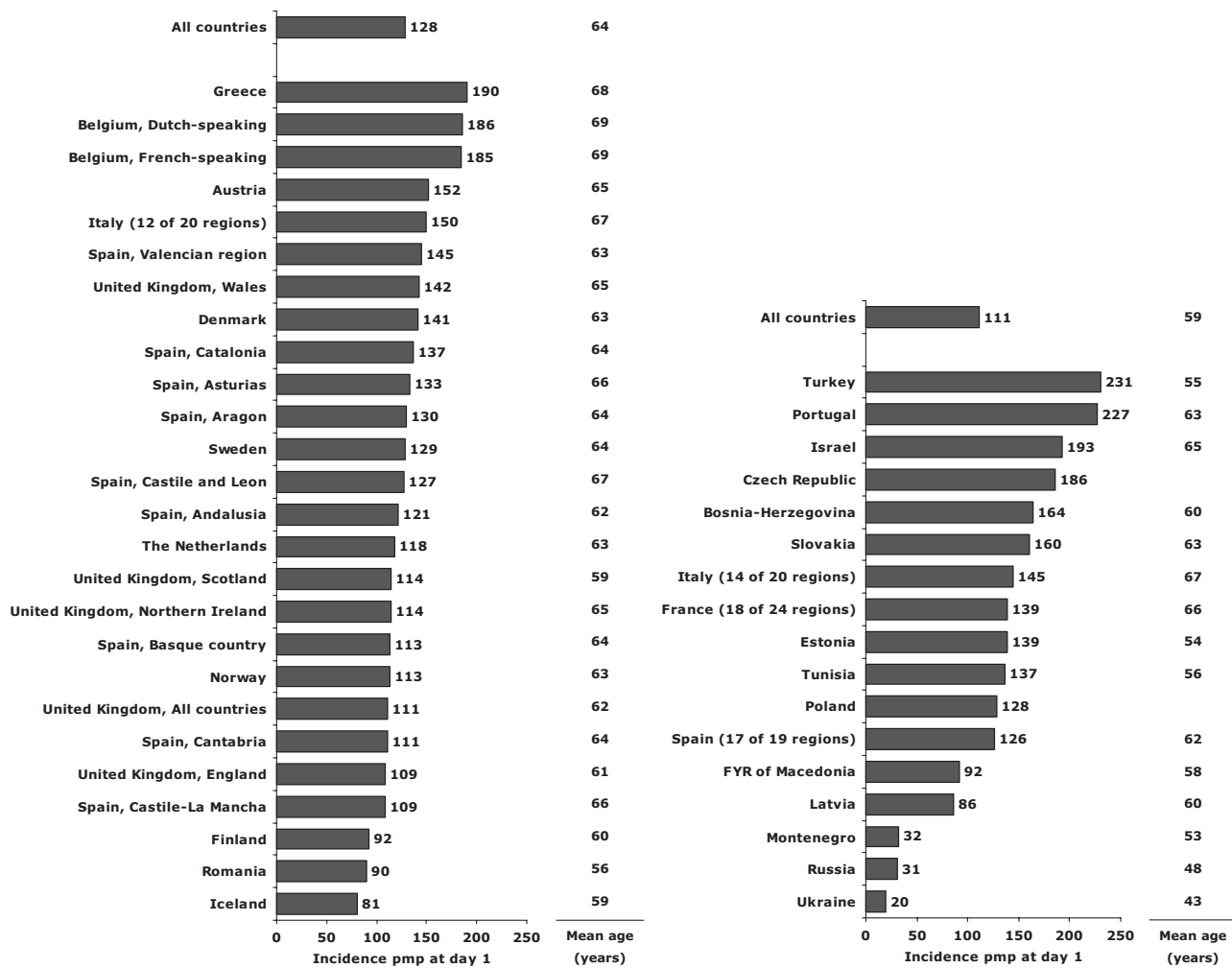


Fig. 2. Incidence of RRT per million population (pmp) and mean age (years) at Day 1 in 2007, unadjusted. Figures include data from renal registries providing individual patient data (left figure) and aggregated data (right figure). Data of Estonia and Tunisia are based on Day 91 of RRT.

Table 7 shows that for the highest age groups, the highest prevalence was reported by Belgium, Greece, Italy, and several Spanish registries.

Renal transplants

Figure 4 shows that the highest transplant rates were reported from Spain (Cantabria) (71 pmp), Spain (Catalonia) (65 pmp) and Norway (55 pmp). Countries with the highest transplant rates with living donor kidneys included Iceland (23 pmp), The Netherlands (23 pmp) and Norway (18 pmp).

Patient and graft survival

Survival analysis used the data from 20 registries in 12 countries that provided individual patient records for the periods 1998–2002 and 2001–2005. Data are presented for all countries and regions together (Table 8 and Figures 5–7). Comparisons of survival by treatment modality were all adjusted for fixed values of age, gender and distribution

of PRD. Similar adjustments have been applied to survival comparisons by PRD (please, consult appendix for fixed values and further methodology).

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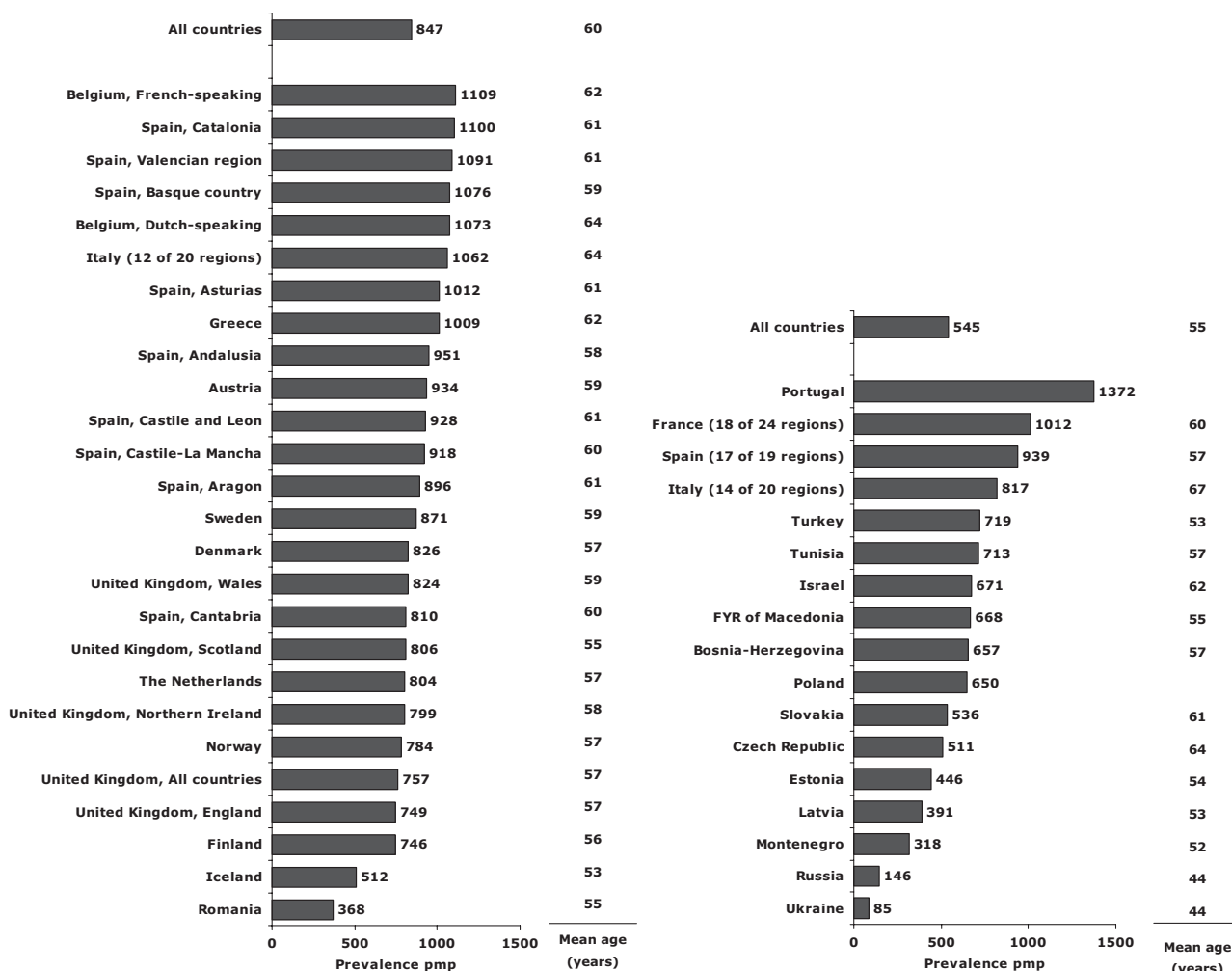


Fig. 3. Prevalence of RRT per million population (pmp) and mean age (years) on 31 December 2007, unadjusted. Figures include data from renal registries providing individual patient data (left figure) and aggregated data (right figure). Data from Czech Republic, Israel, Italy (14 of 20 regions), Slovakia and Tunisia include dialysis patients only, and in Italy (12 of 20 regions) the percentage of missing prevalent RRT patients is estimated at 11%, due to an estimated 25–30% underreporting of patients living on a functioning graft.

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Cornet, FW Dekker, MWM van de Luitgaarden, M Noordzij and KJ van Stralen.

Conflict of interest statement. None declared.

Appendix: statistical methods

To Table 8

Data presented include the survival of incident patients on RRT and of patients receiving a first transplant between 1998–2002 or between 2001–2005 with their 95% confidence intervals. The patients were followed until 31 December 2007. Statistical analysis of unadjusted survival was performed by the Kaplan–Meier method.

For the analysis of patient survival on RRT, the day at the start of RRT was taken as the starting point and the event studied was death. Censored observations were recovery of renal function, loss to follow-up and end of follow-up time.

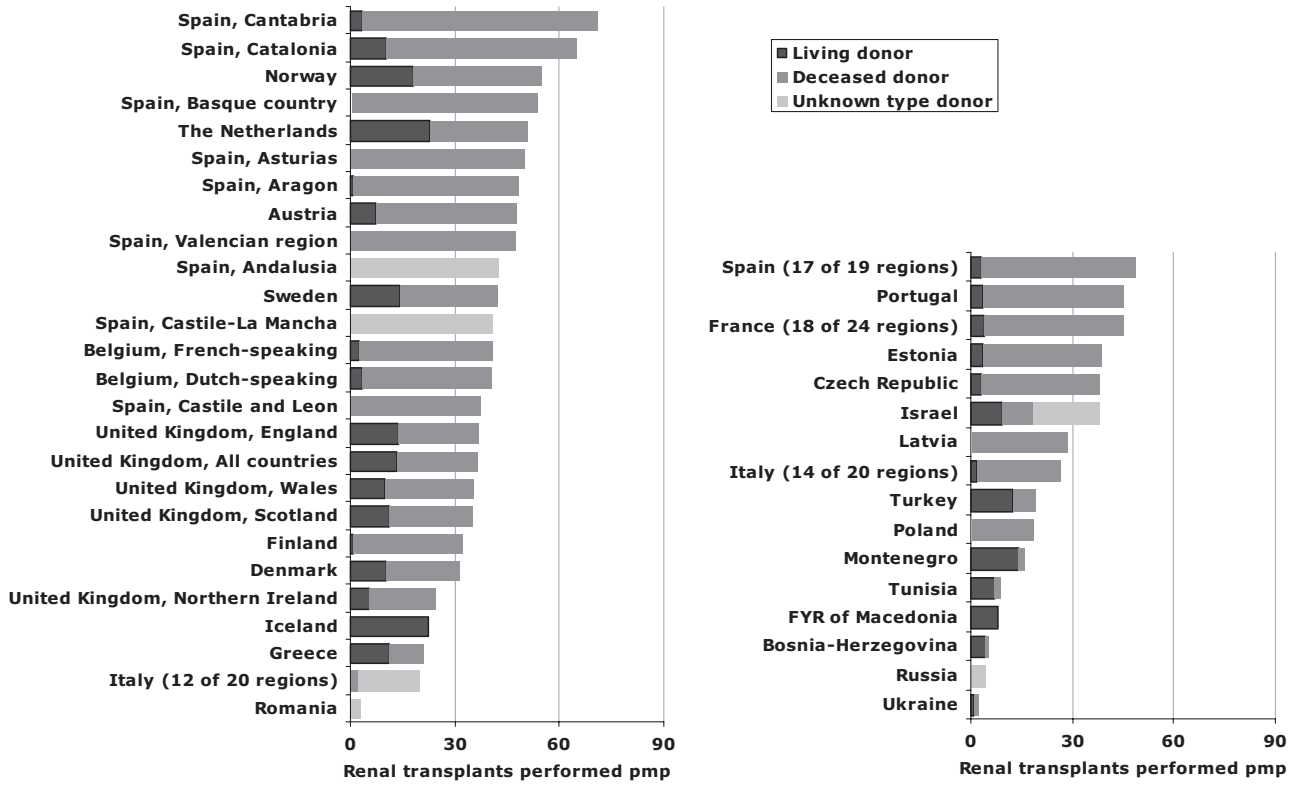


Fig. 4. Renal transplants performed per million population (pmp) in 2007, by donor type, unadjusted. Figures include data from renal registries providing individual patient data (left figure) and aggregated data (right figure).

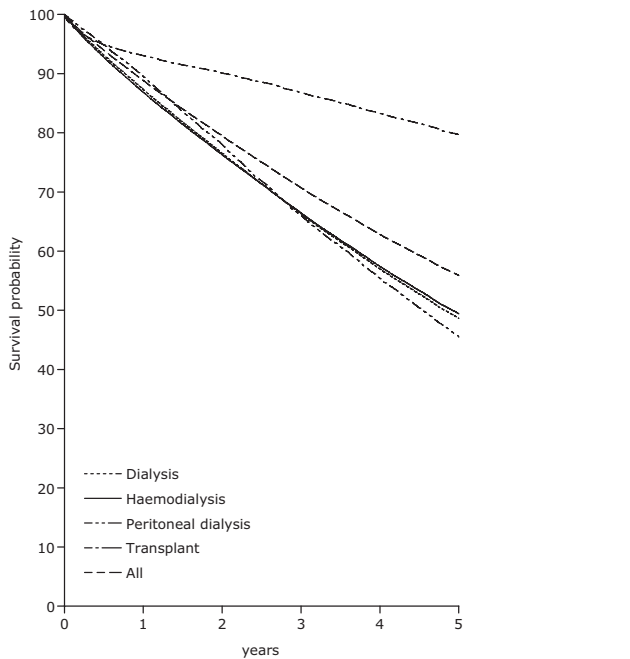


Fig. 5. Survival of incident dialysis patients and of patients receiving a first transplant between 1998–2002, by treatment modality, adjusted for age, gender and primary renal disease.

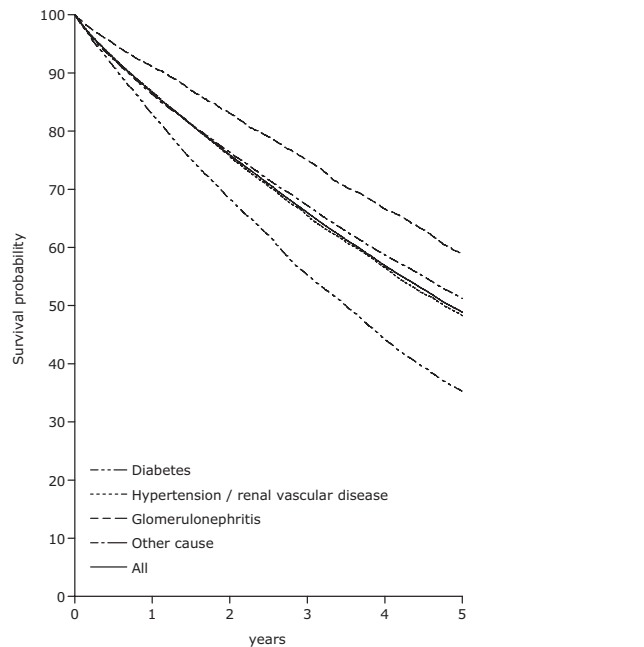


Fig. 6. Survival of incident haemodialysis patients in 1998–2002, from Day 91, by primary renal disease, adjusted for age and gender.

Table 3. Incidence of RRT per million age related population (pmarp) at Day 1 in 2007, by age group, unadjusted

Country/regions providing individual patient data	0–19 pmarp	20–44 pmarp	45–64 pmarp	65–74 pmarp	75+ pmarp
Austria	10	41	191	488	551
Belgium, Dutch-speaking		39	171	542	899
Belgium, French-speaking		34	209	649	848
Denmark	10	51	179	435	524
Finland	11	40	132	231	238
Greece	9	43	188	536	839
Iceland	11	45	137	163	340
Italy (12 of 20 regions)	7	42	143	406	561
Norway	6	42	151	381	416
Romania	8	47	161	251	136
Spain, Andalusia	9	46	160	442	437
Spain, Aragon	9	47	136	490	304
Spain, Asturias		44	141	323	378
Spain, Basque country	3	38	132	340	326
Spain, Cantabria		41	145	362	263
Spain, Castile and Leon		34	128	378	358
Spain, Castile-La Mancha		31	145	360	369
Spain, Catalonia	7	44	176	402	523
Spain, Valencian region	8	51	187	392	582
Sweden	9	44	156	396	428
The Netherlands	10	42	147	393	448
United Kingdom, All countries		55	154	331	334
United Kingdom, England		55	153	325	321
United Kingdom, Northern Ireland		42	141	463	493
United Kingdom, Scotland	15	59	158	278	317
United Kingdom, Wales		54	163	435	491

For the analysis of patient survival on dialysis, the first day on dialysis was the starting point, the event was death and reasons for censoring were recovery of renal function, loss to follow-up, end of follow-up time and renal transplantation.

For the analysis of patient and graft survival after transplantation, the date of the first renal transplantation was defined as the first day of follow-up.

For the patient survival after transplantation, the event studied was death and for the graft survival the events were graft failure and death. Reasons for censoring were loss to follow-up and end of follow-up time.

To Figure 5

For the analyses of patient survival on dialysis the starting point was Day 91 on dialysis. Analyses were adjusted for the fixed values of age (60 years), gender (60% men) and primary renal disease (20% diabetes mellitus, 17% hypertension/renal vascular disease, 15% glomerulonephritis and 48% other cause).

Table 4. Incidence of RRT per million population (pmp) at Day 1 in 2007, by primary renal disease, unadjusted

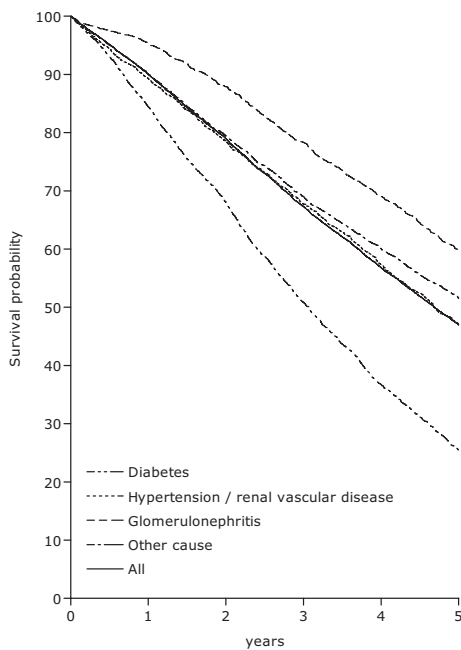
Country/regions providing individual patient data	All pmp	DM pmp	HT/RVD pmp	GN pmp	Other pmp	Unkn/missing pmp
Austria	152	48	34	16	37	17
Belgium, Dutch-speaking	186	44	52	19	56	16
Belgium, French-speaking	185	42	52	19	64	8
Denmark	141	32	18	15	50	27
Finland	92	32	6	11	24	18
Greece	190	53	22	16	37	62
Iceland	81	10	35	6	26	3
Italy (12 of 20 regions)	150	30	36	16	35	34
Norway	113	15	35	19	40	4
Romania	90	11	6	15	30	28
Spain, Andalusia	121	27	20	16	33	25
Spain, Aragon	130	31	24	24	41	11
Spain, Asturias	133	28	21	10	33	41
Spain, Basque country	113	17	25	12	42	17
Spain, Cantabria	111	19	36	40	12	4
Spain, Castile and Leon	127	32	22	14	33	26
Spain, Castile-La Mancha	109	33	14	12	30	20
Spain, Catalonia	137	28	23	19	32	34
Spain, Valencian region	145	25	37	18	33	32
Sweden	129	35	25	16	38	14
The Netherlands	118	21	26	11	28	32
United Kingdom, All countries	111	23	12	13	31	32
United Kingdom, England	109	22	11	12	30	33
United Kingdom, Northern Ireland	114	26	16	12	44	17
United Kingdom, Scotland	114	20	13	13	41	27
United Kingdom, Wales	142	36	15	25	32	34
Bosnia-Herzegovina	164	33	16	14	70	31
Czech Republic						
Estonia						
France (18 of 24 regions)	139	31	36	16	37	19
FYR of Macedonia	92	21	24	7	21	19
Israel	193	81	19	9	28	57
Italy (14 of 20 regions)	145	29	36	15	33	32
Latvia	86	15	11	11	40	10
Montenegro	32	18	6	3	5	
Poland	128	32	17	23	38	17
Portugal						
Russia	31	5	2	11	11	2
Slovakia	160	60	16	13	63	7
Spain (17 of 19 regions)	126	30	22	16	32	26
Tunisia						
Turkey	231	64	58	24	41	45
Ukraine	20	3	1	10	6	1

DM: diabetes mellitus; HT: hypertension; RVD: renal vascular disease; GN: glomerulonephritis/sclerosis; others include pyelonephritis, polycystic kidneys, adult type and miscellaneous; Unkn: unknown. Categories may not add up because of rounding off.

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Table 5. Prevalence of RRT on 31 December over the period 2003–2007 per million population (pmp), adjusted for age and gender distribution

Country/region providing individual patient data	2003 pmp	2004 pmp	2005 pmp	2006 pmp	2007 pmp
Austria	794	829	854	875	894
Belgium, Dutch-speaking	848	876	908	939	962
Belgium, French-speaking	929	978	1010	1054	1087
Denmark	730	751	760	768	798
Finland	642	659	680	686	699
Greece	848	851	872	885	900
Iceland	535	532	527	526	551
Italy, Calabria	897	906	909	913	928
Norway	687	725	743	763	791
Spain, Andalusia	939	968	999	996	981
Spain, Aragon	699	727	755	769	792
Spain, Asturias	765	814	827	835	837
Spain, Basque country	872	902	937	948	965
Spain, Cantabria	722	746	747	745	736
Spain, Castile and Leon	742	764	776	784	779
Spain, Castile-La Mancha	865	867	897	900	901
Spain, Catalonia	1007	1037	1028	1028	1060
Spain, Valencian region	1022	1058	1044	1047	1050
Sweden	753	772	783	804	816
The Netherlands	691	711	736	768	791
United Kingdom, England	441	538	690	712	742
United Kingdom, Scotland	707	717	741	759	782
United Kingdom, Wales	658	663	685	710	780
All countries	686	733	798	815	834

**Fig. 7.** Survival of incident peritoneal dialysis patients in 1998–2002, from Day 91, by primary renal disease, adjusted for age and gender.**Table 6.** Prevalence of RRT per million age-related population (pmarp) on 31 December 2007, by age group, unadjusted

Year	0–19 pmarp	0–4 pmarp	5–9 pmarp	10–14 pmarp	15–19 pmarp
2007	57	19	38	57	108

Table 7. Prevalence of RRT per million age related population (pmarp) on 31 December 2007, by age group, unadjusted

Country/regions providing individual patient data	0–19 pmarp	20–44 pmarp	45–64 pmarp	65–74 pmarp	75+ pmarp
Austria	59	461	1558	2417	1829
Belgium, Dutch-speaking		410	1450	2709	3466
Belgium, French-speaking		484	1698	3072	3322
Denmark	65	562	1273	1957	1662
Finland	110	432	1237	1559	1220
Greece	50	428	1395	2532	2764
Iceland	68	454	819	1035	1303
Italy (12 of 20 regions)	41	402	1350	2566	3024
Norway	61	494	1308	2054	1618
Romania	21	228	728	825	396
Spain, Andalusia	61	509	1653	2623	2213
Spain, Aragon	30	398	1394	2119	1867
Spain, Asturias		489	1404	2243	1810
Spain, Basque country	122	501	1629	2549	2032
Spain, Cantabria		380	1340	2031	1383
Spain, Castile and Leon		445	1373	2024	1732
Spain, Castile-La Mancha		446	1613	2542	1831
Spain, Catalonia	57	467	1775	2967	2800
Spain, Valencian region	58	480	1705	2913	2966
Sweden	66	488	1439	2063	1610
The Netherlands	68	484	1254	2095	1731
United Kingdom, All countries		535	1232	1809	1462
United Kingdom, England		526	1227	1812	1436
United Kingdom, Northern Ireland		545	1294	2275	2097
United Kingdom, Scotland	76	620	1253	1683	1259
United Kingdom, Wales		536	1257	1754	1892

For the analyses of patient survival after transplantation, the starting point was the time of the first transplant. The analyses were adjusted for the fixed values of age (45 years), gender (60% men) and primary renal disease (10% diabetes mellitus, 8% hypertension/renal vascular disease, 28% glomerulonephritis and 54% other cause).

To Figures 6 and 7

For the analyses presented in each figure, the starting point was Day 91 on dialysis. The analyses were adjusted for the fixed values of age (60 years) and gender (60% men).

Table 8. One-, 1- and 5-year survival probabilities, unadjusted^a

	Cohort 1998–2002			Cohort 2001–2005	
	1 year	2 years	5 years	1 years	2 years
Patient survival on RRT	80.9 (80.7–81.2)	69.3 (69.0–69.5)	46.1 (46.0–46.3)	80.9 (80.6–81.1)	69.5 (69.3–69.7)
Patient survival on dialysis	80.3 (80.0–80.5)	67.2 (67.0–67.5)	38.3 (38.2–38.5)	80.2 (79.9–80.4)	67.6 (67.3–67.8)
Patient survival after first transplant (deceased donor)	95.6 (95.3–96.0)	93.7 (93.2–94.1)	86.6 (86.1–87.2)	95.6 (95.3–96.0)	93.7 (93.3–94.0)
Patient survival after first transplant (living donor)	97.7 (97.0–98.1)	96.9 (96.2–97.5)	94.0 (93.1–94.7)	97.4 (96.8–97.9)	96.6 (96.0–97.1)
Graft survival after first transplant (deceased donor)	90.0 (89.5–90.5)	87.0 (86.5–87.6)	77.5 (76.9–78.1)	90.0 (89.5–90.4)	87.1 (86.5–87.5)
Graft survival after first transplant (living donor)	94.4 (93.5–95.2)	92.6 (91.7–93.5)	86.0 (84.9–87.1)	93.8 (93.0–94.5)	92.0 (91.2–92.8)

^aFor analysis methods, see the appendix.

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