

Chapter 10: International Comparisons

Introduction

This chapter provides a worldwide view of end-stage renal disease (ESRD). The number of countries and regions represented in this Annual Data Report has increased by more than 25 percent, from 42 countries in 2013 to 54 this year. Forty countries provided updated data for 2012; 14 new countries provided data this year, including Bahrain, Hungary, Indonesia, Iran, Italy (for 2010), Kuwait, Lebanon, Oman, Poland, Qatar, Saudi Arabia, Slovenia, South Africa, and Ukraine. This chapter is made possible only through the great efforts of many people across all participating countries, in contributing data for this international collaboration. We sincerely thank all of the registries and providers for their efforts, and have included a list at the end of this chapter to further acknowledge their contributions.

We hope these comparisons provide helpful global perspectives and increase awareness regarding the various aspects of ESRD described within this chapter. We welcome any suggestions to further improve the content of this chapter for the international community, and invite all renal registries to participate in this data collection and collaboration. We realize there are many countries not yet represented in this chapter, and that an unmet need exists for availability of dialysis in some communities. Efforts toward enhanced, broadened, and meaningful outreach will be a continued focus of this chapter.

Chapter Highlights

- In 2012, ESRD incidence rates varied more than 15-fold by country, ranging from 25 to 467 new ESRD patients per million population. In most countries, ESRD incidence rates are highest among elderly patients (aged 75 or greater). The highest rate of ESRD incidence in younger individuals (ages 20-44 years old) was observed in the United States (U.S.), at more than twice the

rate reported in the great majority of countries providing 2012 data.

- Comparisons of the change in country average ESRD incidence rates between 2006 and/or 2007 and 2011 and/or 2012 were varied. In 40 percent of countries, relatively small changes were seen over this time period (\pm five percent change). In some countries, however, incidence rates increased by 29 to 70 percent; in other areas ESRD incidence rates declined by seven to 30 percent over this time period.
- Prevalence of ESRD varied more than 20-fold across countries in 2012, from 131 per million population in Ukraine to 2,902 in Taiwan. In all countries reporting data from 2006 to 2011 or 2012, ESRD prevalence increased during this time period, ranging from a six to 135 percent overall rise (median rise of 17 percent; interquartile range: 13 to 35 percent).
- In 2012, the proportion of new ESRD patients with diabetes as the primary cause differed greatly across countries, ranging from 66 and 61 percent of patients in Singapore and Malaysia, respectively, to 12–16 percent of new ESRD patients in Ukraine, Romania, and the Netherlands. In approximately half of all countries, diabetes was the primary cause of ESRD for at least 31 percent of new ESRD patients.
- The number of ESRD patients receiving chronic dialysis per million population in 2012 varied more than 20-fold across countries, from 2,902 and 2,365 in Taiwan and Japan, respectively, to 133-185 in South Africa, Russia, and the Philippines. From 2006 to 2011 or 2012, the number of ESRD patients receiving dialysis per million population increased 1.5- to 2.5-fold across nearly 20 percent of reporting countries, and yet declined or reached an apparent plateau in nearly 25 percent of other reporting countries.

- Although hemodialysis (HD) was the most common form of dialysis provided to ESRD patients in the great majority of countries in 2012, peritoneal dialysis (PD) was used by 73 percent and 50 percent of dialysis patients, respectively, in Hong Kong and in Jalisco (Mexico). Thirty-one percent of patients received PD in New Zealand and Colombia, and 17–27 percent use was reported in Australia, Canada, Denmark, Finland, Iceland, Qatar, South Africa, Sweden, and Thailand; numerous other countries reported 5–16 percent PD use. Although recent increases have been seen in peritoneal dialysis in countries such as Argentina, Hungary, Portugal, Thailand, and the U.S., approximately 40 percent of countries reporting data for most years between 2006 and 2012 displayed an overall decline in the percentage of PD use during this time period.
- Home hemodialysis was provided to 19.0 percent and 9.2 percent of patients, respectively, in New Zealand and Australia in 2012. Furthermore, home HD was used by 3.0 to 5.7 percent of patients in Canada, Denmark, Finland, Sweden, the Netherlands, the United Kingdom (U.K.) and Scotland, with numerous countries providing such treatment for up to two percent of dialysis patients.
- Kidney transplantation rates varied 30-fold across countries, from two to 60 kidney transplants per million population in 2012 (median of 27 per million population). The highest kidney transplant rates were reported in Norway, Jalisco (Mexico), the Netherlands, the U.S., Croatia, and Spain, with 54–60 per million population. Substantial increases in kidney transplantation have been seen since 2006, in nearly 30 percent of reporting countries.
- Large international variations are seen in the prevalence of ESRD patients living with a functioning kidney transplant. In 2012, Norway, Portugal, and the U.S. reported the highest prevalence of such ESRD patients at 594 to 639 per million population. In contrast, in approximately 25 percent of other countries, the prevalence of ESRD patients living with a functioning kidney transplant ranged from two to 106 per million population.

Analytical Methods

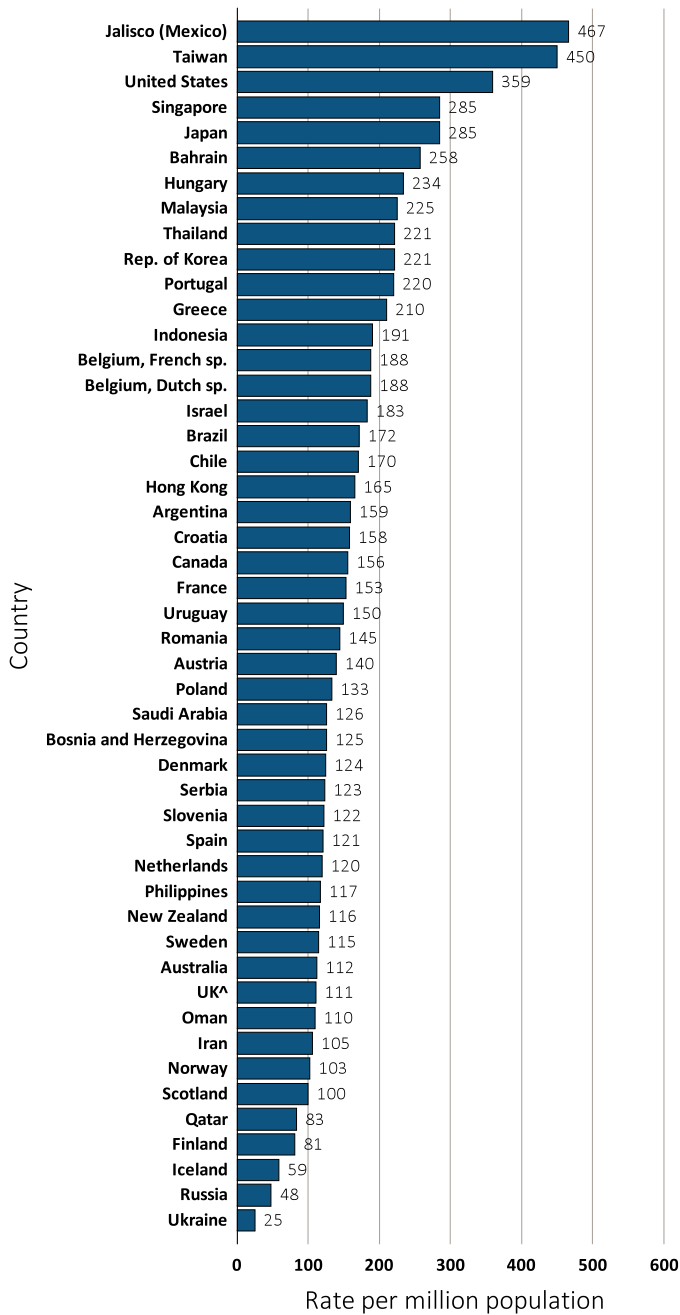
See the ESRD Analytical Methods chapter for the data collection form and for an explanation of the analytical methods used to generate the figures and tables in this chapter.

Incidence of End-Stage Renal Disease

In 2012, reported rates of the incidence of ESRD varied greatly across countries (see Figure 10.1). Jalisco (Mexico), Taiwan, and the U.S. reported the highest rates of ESRD incidence at 467, 450, and 359 per million population, respectively. Below this, ESRD incidence rates of 210–285 per million population were reported for Japan, Singapore, Bahrain, Hungary, Malaysia, Republic of Korea, Thailand, Portugal, and Greece. Much lower ESRD incidence rates of 25 to 100 per million population were reported in Ukraine, Russia, Qatar, Iceland, Finland, and Scotland. In all other countries, incident ESRD rates ranged from 103 to 191 per million population.

As illustrated by Figure 10.2 and Table 10.1, substantial differences are seen across countries regarding the overall trend in ESRD incidence from 2006 to 2011 or 2012. In comparing the average ESRD incidence in 2006 and 2007 versus that in 2011 and 2012, rates increased by 29 to 70 percent in Romania, Russia, Malaysia, Thailand, the Philippines, Jalisco (Mexico), and Chile, while increasing seven to 16 percent in Uruguay, Argentina, Republic of Korea, Singapore, Hong Kong, and Turkey. In contrast, rates of ESRD incidence declined by seven to 14 percent over this time period in Finland, Sweden, Denmark, Scotland, Austria, and Bosnia and Herzegovina, with Colombia reporting a large 32 percent average decline during in the same time period. However, nearly 40 percent of all countries reported a relatively stable rate of ESRD incidence from 2006 to 2012, including the U.S., which showed little overall change (0.7 percent decline).

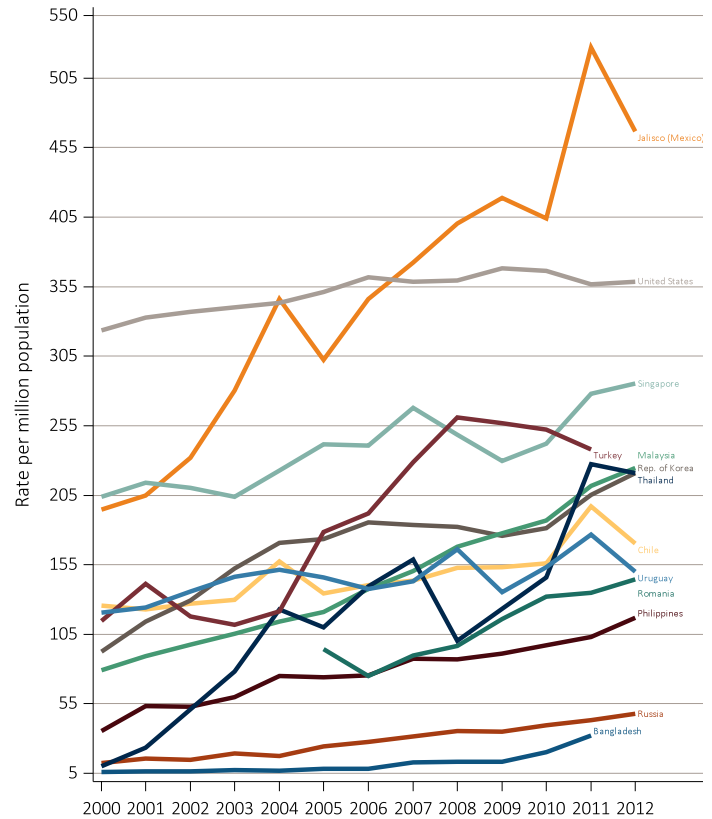
vol 2 Figure 10.1 Incidence rate of ESRD, per million population, by country, in 2012



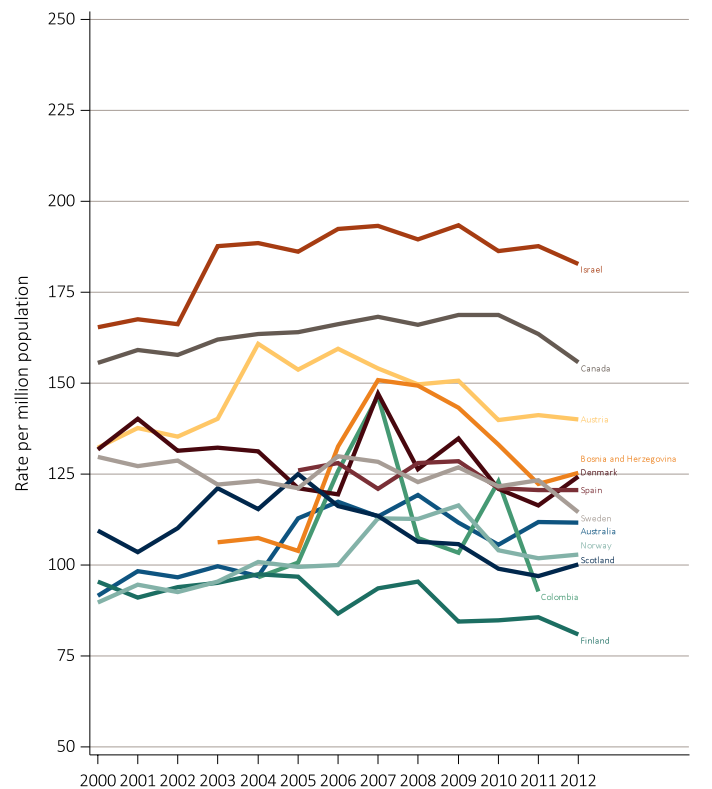
Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. All rates are unadjusted. ^UK: England, Wales, Northern Ireland (Scotland data reported separately). Japan and Taiwan are dialysis only. Data for Belgium do not include patients younger than 20. Data for Indonesia represent the West Java region. Data for France include 22 regions. Data for Spain include 18 of 19 regions. Abbreviations: ESRD, end-stage renal disease; sp., speaking.

vol 2 Figure 10.2 Temporal trends in the incidence rate of ESRD, per million population, by country, years 2000-2012

(a) Countries in which the incidence rate of ESRD increased at least 10% from 2006-2012



(b) Countries in which the incidence rate of ESRD decreased at least 3% from 2006-2012



Data source: Special analyses, USRDS ESRD Database. All rates are unadjusted. Data are shown for countries with incidence increase or decrease from 2006 to 2012 or 2011. Data for U.S. are shown for comparison purposes. Abbreviations: ESRD, end-stage renal disease.

vol 2 Table 10.1 Temporal trends in the incidence rate of ESRD, per million population, by country, years 2006-2012

Country	2006	2007	2008	2009	2010	2011	2012	% change from 2006-2012 ^a
Argentina	141.0	151.1	144.4	152.6	154.0	155.0	159.0	7.5
Australia	117.4	113.3	119.3	111.6	105.6	111.8	111.7	-3.1
Austria	159.5	154.0	149.7	150.7	139.8	141.2	140.0	-10.3
Bahrain	.	.	206.1	205.4	219.5	207.5	257.9	
Bangladesh	8.3	12.9	13.1	13.1	20.2	32.1	.	202.8
Belgium, Dutch sp.	192.4	189.8	192.6	207.5	196.4	184.9	188.2	-2.4
Belgium, French sp.	187.0	187.0	191.8	197.1	191.1	186.1	188.2	0.1
Bosnia and Herzegovina	132.6	150.8	149.3	143.3	133.1	122.3	125.4	-12.6
Brazil	184.9	140.1	145.4	98.9	150.3	176.0	171.5	6.9
Canada	166.3	168.2	166.1	168.7	168.7	163.6	155.7	-4.5
Chile	140.5	143.8	152.8	153.1	155.9	197.2	170.1	29.2
Colombia	125.9	146.4	107.4	103.4	122.9	92.8	.	-31.8
Croatia	.	.	.	.	.	.	158.1	
Czech Republic	185.7	184.6	181.9	180.5	197.8	171.9	.	-7.2
Denmark	119.4	147.2	126.3	134.8	121.0	116.4	124.3	-9.7
Finland	86.6	93.6	95.4	84.5	84.8	85.6	80.9	-7.6
France	144.0	140.8	148.2	151.3	152.4	151.0	153.4	6.9
Greece	197.6	191.6	201.2	205.0	190.8	203.3	209.7	6.1
Hong Kong	148.9	147.4	148.2	132.2	146.0	156.8	165.2	8.7
Hungary	.	.	235.8	264.5	228.6	241.2	234.3	
Iceland	69.1	83.7	72.5	87.9	106.9	103.4	59.2	6.4
Indonesia	.	.	.	.	.	.	190.7	
Iran	.	.	99.2	101.2	106.2	108.0	105.4	
Israel	192.4	193.2	189.5	193.4	186.4	187.6	182.8	-3.9
Italy	.	.	.	.	162.0	.	.	
Jalisco (Mexico)	345.9	372.2	400.4	419.0	403.9	527.1	466.5	38.4
Japan	275.4	285.2	287.7	287.5	290.6	294.6	285.3	3.4
Rep. of Korea	185.3	183.5	182.1	175.9	181.5	205.3	221.1	15.6
Kuwait	.	.	.	.	.	.	.
Lebanon	.	.	.	.	.	.	.

Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. All rates are unadjusted. ^UK: England, Wales, Northern Ireland (Scotland data reported separately). Japan and Taiwan are dialysis only. Data for France include 15 regions in 2006, 18 regions in 2007, 20 regions in 2008, and 22 regions 2009-2012. Data for Spain include 18 of 19 regions. Data for Belgium do not include patients younger than 20. Data for Indonesia represent the West Java region. ^a % change is calculated as the percent difference between the average incidence in 2011 and 2012 and the average in 2006 and 2007. Abbreviations: ESRD, end-stage renal disease; sp., speaking; . signifies data not reported.

Table 10.1 continued on next page.

vol 2 Table 10.1 Temporal trends in the incidence rate of ESRD, per million population, by country, years 2006-2012 (continued)

Country	2006	2007	2008	2009	2010	2011	2012	% change from 2006-2012 ^a
Malaysia	137.8	150.3	168.2	177.5	186.9	211.6	224.6	51.4
Morelos (Mexico)	.	553.2	557.2	597.1	.	.	.	
Netherlands	112.8	117.4	120.8	118.8	117.7	117.7	120.1	3.3
New Zealand	119.5	110.9	116.4	135.3	117.9	110.1	115.7	-2.0
Norway	100.0	112.8	112.6	116.4	104.1	101.8	102.8	-3.9
Oman	.	.	102.1	103.0	106.1	108.0	110.0	
Philippines	-	87.5	87.2	91.1	97.3	103.0	116.8	35.0
Poland	.	.	129.9	134.3	134.3	131.9	133.1	
Portugal	.	.	231.9	239.5	238.5	226.4	219.9	
Poland	.	.	129.9	134.3	134.3	131.9	133.1	
Portugal	.	.	231.9	239.5	238.5	226.4	219.9	
Qatar	.	.	.	.	117.8	117.2	83.3	
Romania	74.9	89.9	96.7	115.9	132.3	134.9	144.5	69.5
Russia	27.7	.	35.5	34.9	39.5	43.1	47.7	63.9
Saudi Arabia	.	.	138.2	122.5	124.0	124.5	125.6	
Scotland	116.3	113.5	106.4	105.7	99.0	96.9	100.1	-14.3
Serbia	.	.	.	.	.	144.5	122.8	
Singapore	240.5	267.7	248.7	229.8	242.3	277.9	285.3	10.8
Slovenia	.	.	.	129.9	120.6	117.9	122.0	
South Africa	.	.	.	.	.	.	.
Spain	128.0	120.9	128.1	128.5	121.1	120.7	120.6	-3.1
Sweden	129.9	128.4	122.8	126.9	121.7	123.4	114.5	-7.9
Taiwan	418.3	423.5	415.9	427.8	449.1	444.2	449.7	6.2
Thailand	139.4	158.9	100.3	123.2	146.0	227.4	221.1	50.4
Turkey	191.8	228.9	261.1	256.7	252.2	238.0	.	13.1
UK [^]	114.8	112.4	112.2	112.5	109.8	111.1	110.5	-2.5
United States	361.9	358.5	359.6	368.3	366.5	356.9	358.7	-0.7
Ukraine	.	.	.	.	.	.	24.8	

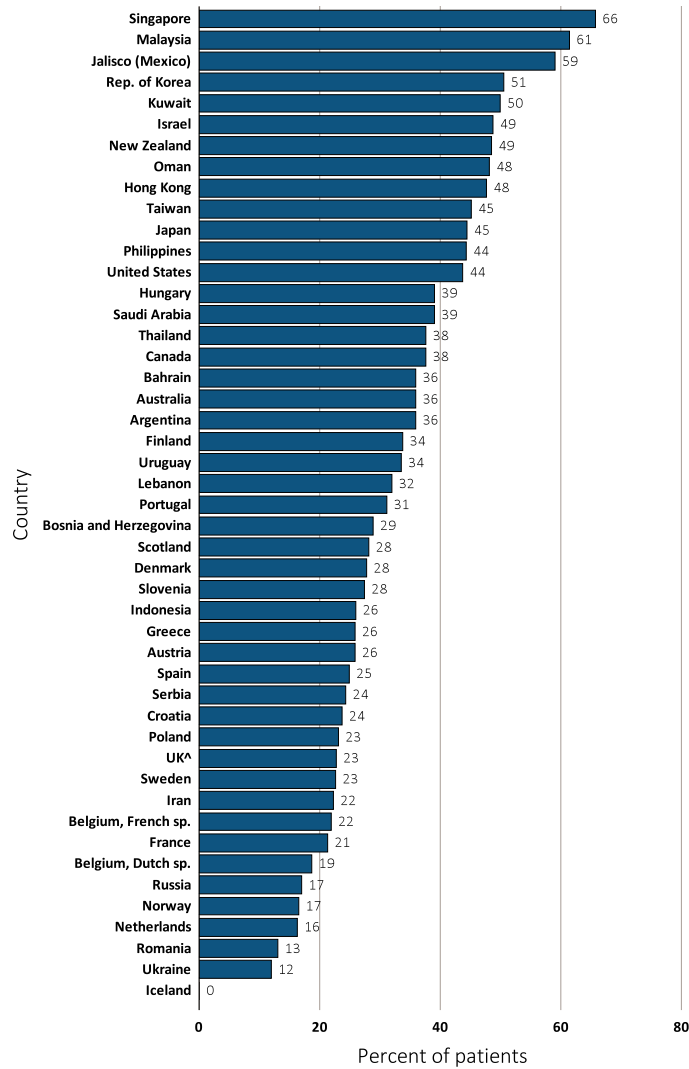
Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. All rates are unadjusted. [^]UK: England, Wales, Northern Ireland (Scotland data reported separately). Japan and Taiwan are dialysis only. Data for France include 15 regions in 2006, 18 regions in 2007, 20 regions in 2008, and 22 regions 2009-2012. Data for Spain include 18 of 19 regions. Data for Belgium do not include patients younger than 20. Data for Indonesia represent the West Java region. ^a % change is calculated as the percent difference between the average incidence in 2011 and 2012 and the average in 2006 and 2007. Abbreviations: ESRD, end-stage renal disease; sp., speaking; . signifies data not reported.

Diabetes as Primary Cause of End-Stage Renal Disease in Incident Patients

The distribution of primary causes of ESRD varies substantially across countries (see Figure 10.3). Data on one of the key primary causes of ESRD, diabetes mellitus (DM), were provided by nearly 75 percent of the countries participating in this report. In 2012, Singapore and Malaysia reported the highest rate

of patients with new ESRD due to DM, at 66 and 61 percent, respectively in 2012. Furthermore, DM was the primary cause of new ESRD for 48 to 59 percent of patients in Jalisco (Mexico), Kuwait, Oman, Israel, Republic of Korea, Hong Kong, and New Zealand.

vol 2 Figure 10.3 Percentage of incident ESRD patients with diabetes as the primary ESRD cause, by country, in 2012



Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. ^UK: England, Wales, & Northern Ireland (Scotland data reported separately). Data for Spain include 18 of 19 regions. Data for France include 22 regions. Data for Indonesia represent the West Java region. Data for Belgium do not include patients younger than 20. There were zero ESRD patients in Iceland with diabetes as the primary ESRD cause in 2012. Abbreviations: ESRD, end-stage renal disease; sp., speaking.

In contrast, in some countries, DM as the primary cause of ESRD was one-third to one-quarter that of the above countries. Thus, in Iran, Russia, Romania, Ukraine, France, Belgium, the Netherlands, and Norway, diabetes was the primary cause for less than 22 percent of new patients in 2012.

Incidence of End Stage Renal Disease by Age Group

When examined across four age categories, the rate of new ESRD was typically highest among patients aged

vol 2 Figure 10.4 Incidence rate of ESRD, per million population, by age group and country, in 2012

(a) 20-44 years old

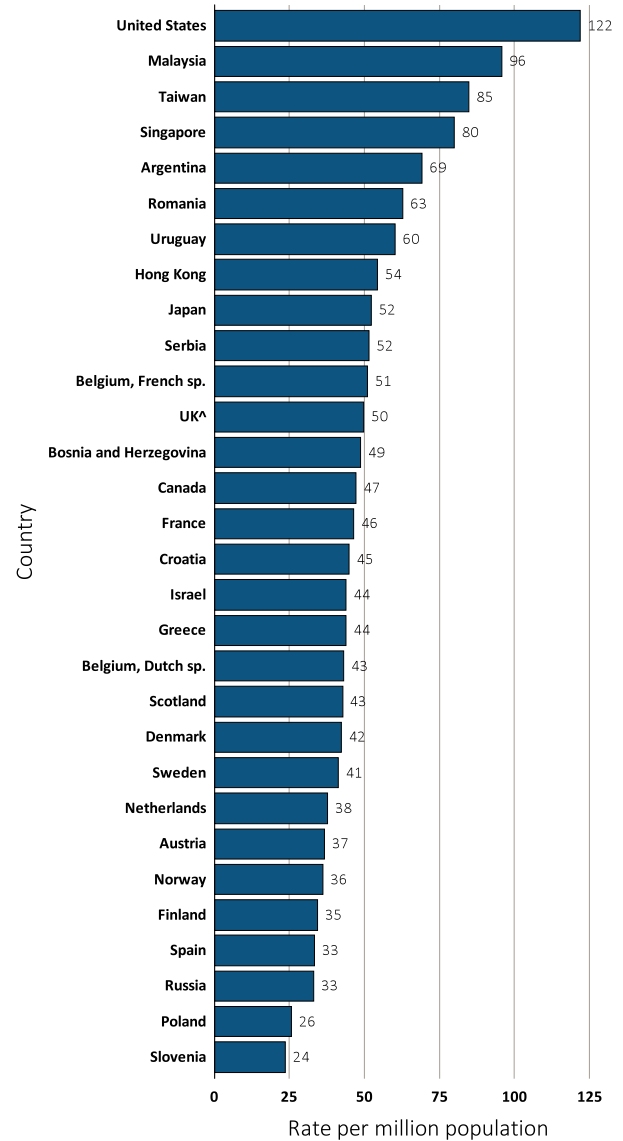
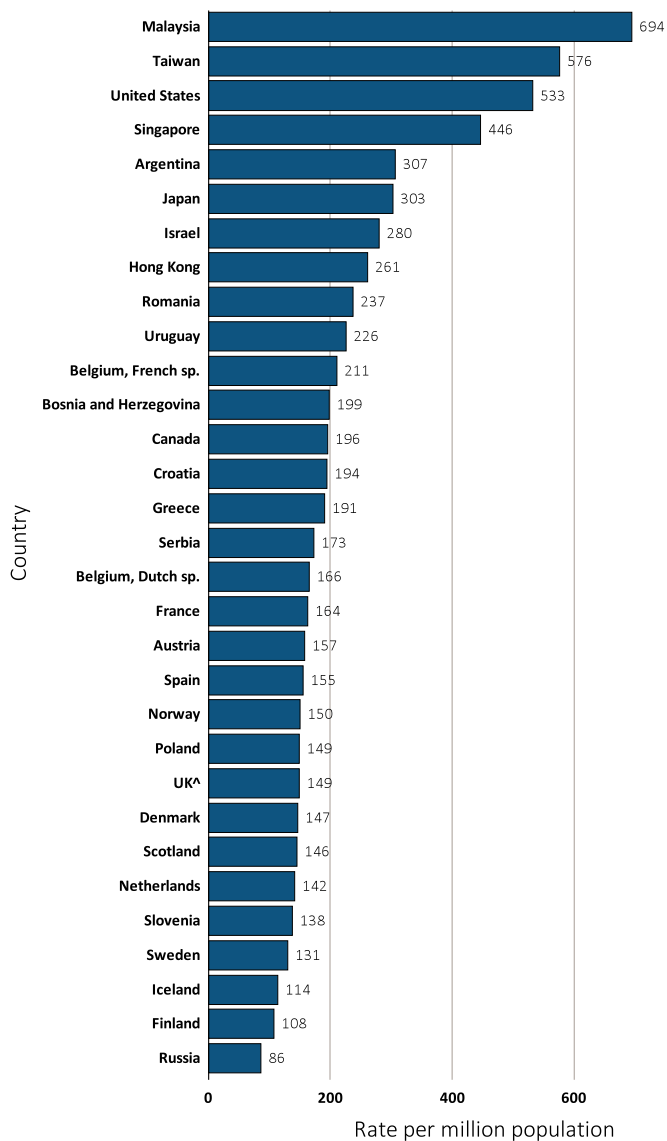


Figure 10.4 continued on next page.

75 years and older in the great majority of countries. In some cases the ESRD incidence rate was more than 1.5-fold higher for this older patient cohort, compared with those 65-74 years old (see Figure 10.4). The highest ESRD incidence rates were reported in Poland, Taiwan, and the U.S. for patients aged 75 years and older, amounting to 4,053, 2,840, and 1,415 per million population of older individuals, respectively, in 2012. Conversely, in Argentina, Hong Kong, Malaysia, Romania, Serbia, and Scotland, the ESRD incidence rate was lower among patients aged 75 years or older than for patients 65-74 years old. Furthermore, the highest rate of ESRD incidence in younger adults (ages 20-44 years old) was seen in the U.S., which was more than twice that reported in the great majority of countries reporting 2012 data.

vol 2 Figure 10.4 Incidence rate of ESRD, per million population, by age group and country, in 2012 (continued)

(b) 45-64 years old



vol 2 Figure 10.4 Incidence rate of ESRD, per million population, by age group and country, in 2012 (continued)

(c) 65-74 years old

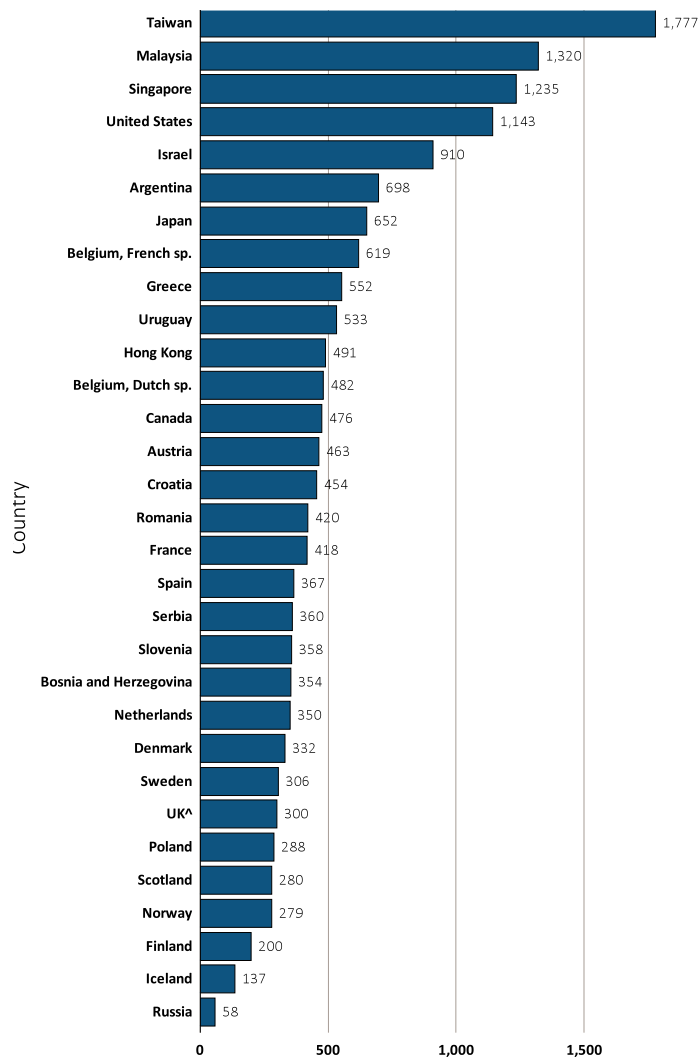
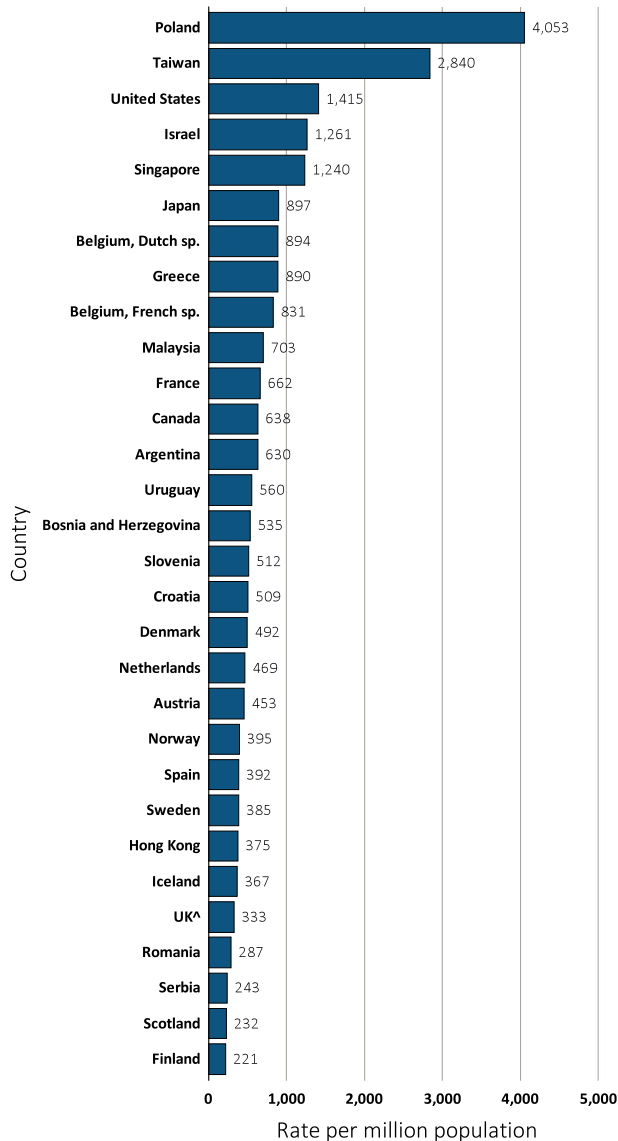


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Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. ^UK: England, Wales, & Northern Ireland (Scotland data reported separately). Data for Belgium do not include patients younger than 20. Data for Spain include 18 of 19 regions. Data for France include 22 regions. Abbreviations: ESRD, end-stage renal disease; sp., speaking.

vol 2 Figure 10.4 Incidence rate of ESRD, per million population, by age group and country, in 2012 (continued)

(d) 75 years or older

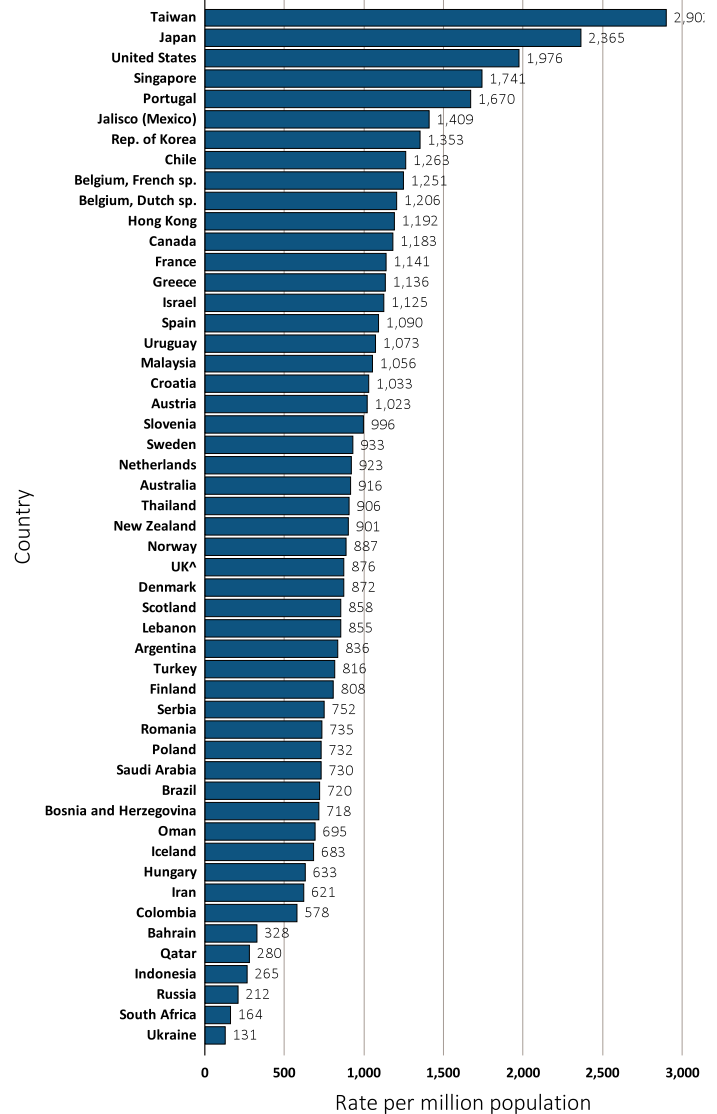


Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. ^UK: England, Wales, & Northern Ireland (Scotland data reported separately). Data for Belgium do not include patients younger than 20. Data for Spain include 18 of 19 regions. Data for France include 22 regions. Abbreviations: ESRD, end-stage renal disease; sp., speaking.

Prevalence of End-Stage Renal Disease

In 2012, ESRD prevalence, indicated as the number of treated ESRD patients per million population on December 31, 2012, was highest in Taiwan, Japan, and the U.S., at 2,902, 2,365, and 1,976 per million population, respectively. Furthermore, in 2012 ESRD prevalence ranged from 1,023 to 1,741 per million population in 33 percent of countries, and from 578

vol 2 Figure 10.5 Prevalence of ESRD, per million population, by country, in 2012



Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. All rates are unadjusted and reflect prevalence at the end of 2012; rates for Colombia and Lebanon reflect prevalence at the end of June 2012. ^U.K.: England, Wales, & Northern Ireland (Scotland data reported separately). Japan and Taiwan include dialysis patients only. Data for Belgium do not include patients younger than 20. Data for Indonesia represent the West Java region. Data for Spain include 18 of 19 regions. Data for France include 22 regions. Data for Turkey in 2012 was collected with the collaboration of the Ministry of Health, which collects patient-based data; however, in previous years center-based data were reported. Abbreviations: ESRD, end-stage renal disease; sp., speaking.

to 996 in 50 percent of countries (see Figure 10.5 and Table 10.2). The lowest rates were reported in Ukraine, Russia, Qatar, Bahrain, Indonesia, and South Africa, where treated ESRD prevalence rates varied from 131 to 328 per million population.

vol 2 Table 10.2 Number of ESRD prevalent patients and prevalence of ESRD, per million population, by country, years 2006-2012

Country	Prevalence rate, per million population								Prevalent patients, counts						
	2006	2007	2008	2009	2010	2011	2012	% change from 2006-2012 ^a	2006	2007	2008	2009	2010	2011	2012
Argentina	598.0	615.4	755.7	761.9	794.8	790.6	835.7	34.0	23,306	24,218	30,035	30,580	31,885	31,975	34,218
Australia	778.3	801.3	833.6	850.1	870.7	892.1	915.6	14.4	16,112	16,842	17,824	18,512	19,210	19,913	20,766
Austria	908.6	933.5	947.9	980.1	991.7	1000.6	1022.7	9.8	7,512	7,731	7,898	8,189	8,320	8,429	8,635
Bahrain	.	.	291.0	300.4	280.3	339.7	328.4	.	.	.	322	354	346	406	410
Bangladesh	87.8	101.3	112.8	137.1	157.7	191.5	.	102.5	12,864	15,089	17,068	21,067	24,618	28,729	.
Belgium, Dutch sp.	1033.1	1063.8	1096.0	1136.4	1160.8	1183.2	1206.2	13.9	6,300	6,531	6,779	7,080	7,289	7,488	7,679
Belgium, French sp.	1071.5	1110.7	1145.7	1142.1	1180.0	1211.2	1251.3	12.8	4,768	4,983	5,184	5,215	5,447	5,650	5,883
Bosnia and Herzegovina	551.9	601.8	637.0	646.4	675.1	709.0	718.1	23.7	2,115	2,306	2,441	2,477	2,587	2,487	2,519
Brazil	398.3	466.0	408.5	480.2	478.7	678.6	720.2	61.8	73,605	87,044	77,589	92,091	91,314	132,491	143,497
Canada	1039.1	1071.1	1094.1	1124.3	1142.3	1166.1	1182.7	11.3	33,898	35,274	36,465	37,934	38,981	40,209	41,252
Chile	929.6	985.7	1065.2	1108.8	1161.1	1235.7	1263.4	30.5	15,353	16,360	17,856	18,849	19,854	21,007	21,730
Colombia	.	.	455.3	441.3	544.2	536.3	578.4	.	.	.	20,239	19,846	24,760	24,692	26,942
Croatia	.	.	.	.	.	.	1033.0	.	3,799	3,932	4,009	4,124	4,257	4,348	4,410
Czech Republic	461.9	499.9	538.1	907.6	970.1	974.4	.	102.6	4,752	5,190	5,633	9,536	10,218	10,236	.
Denmark	781.8	832.2	832.1	843.8	847.8	857.0	872.3	7.1	4,295	4,592	4,619	4,708	4,751	4,823	4,927
Finland	727.1	747.4	769.2	782.2	796.0	805.5	807.7	9.4	3,829	3,953	4,087	4,176	4,269	4,340	4,373
France	962.6	953.9	993.1	1053.4	1089.7	1118.6	1141.3	17.9	34,835	49,679	54,627	62,070	64,225	66,245	68,350
Greece	986.1	1013.4	1038.9	1069.1	1083.0	1103.1	1135.7	12.0	10,994	11,343	11,674	12,062	12,246	12,466	12,598
Hong Kong	1003.0	1031.4	1067.4	1077.7	1106.3	1152.5	1191.7	15.2	6,930	7,171	7,460	7,580	7,857	8,197	8,549
Hungary	.	.	578.1	605.3	620.0	626.2	632.8	.	.	.	5,807	6,072	6,209	6,253	6,285
Iceland	483.9	518.5	523.0	543.2	600.6	667.7	682.8	34.7	147	161	166	173	191	213	219
Indonesia	.	.	.	.	.	.	265.0	.	.	.	.	.	.	.	.
Iran	.	.	490.6	528.8	556.4	585.5	621.2	.	.	.	35,248	38,575	41,192	43,969	47,336
Israel	1010.1	1040.7	1070.8	1086.6	1101.9	1120.2	1125.4	9.5	7,125	7,472	7,826	8,134	8,400	8,699	8,902
Italy	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Jalisco (Mexico)	928.9	986.2	1029.6	1314.3	1332.3	1381.5	1408.8	45.7	6,357	6,865	7,218	9,222	9,916	10,421	10,769
Japan	1954.5	2058.1	2126.0	2205.4	2277.4	2313.8	2365.2	16.6	249,718	262,968	271,471	281,212	289,415	295,706	301,545
Rep. of Korea	941.7	972.8	1031.7	1113.6	1144.4	1224.8	1353.3	34.7	46,730	48,675	51,989	56,396	58,860	63,341	70,211
Kuwait	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lebanon	.	.	.	.	.	.	855.0	.	.	.	.	.	.	.	4,100
Malaysia	626.3	692.5	769.4	840.1	905.3	987.1	1056.4	55.0	16,805	18,825	21,191	23,435	25,574	28,184	30,991
Morelos (Mexico)	.	877.8	939.3	978.0	.	.	.	.	.	1,447	1,561	1,638	.	.	.

Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. ^UK: England, Wales, & Northern Ireland (Scotland data reported separately). Data for France include 15 regions in 2006, 18 in 2007, 20 in 2008, and 22 in 2009-2012. Data for Spain include 18 of 19 regions. Data for Belgium do not include patients younger than 20. Data for Indonesia represent the West Java region. a % change is calculated as the percent difference between the average prevalence in 2011 and 2012 and the average in 2006 and 2007. Abbreviations: ESRD, end-stage renal disease; sp., speaking; . signifies data not reported.

Table 10.2 continued on next page.

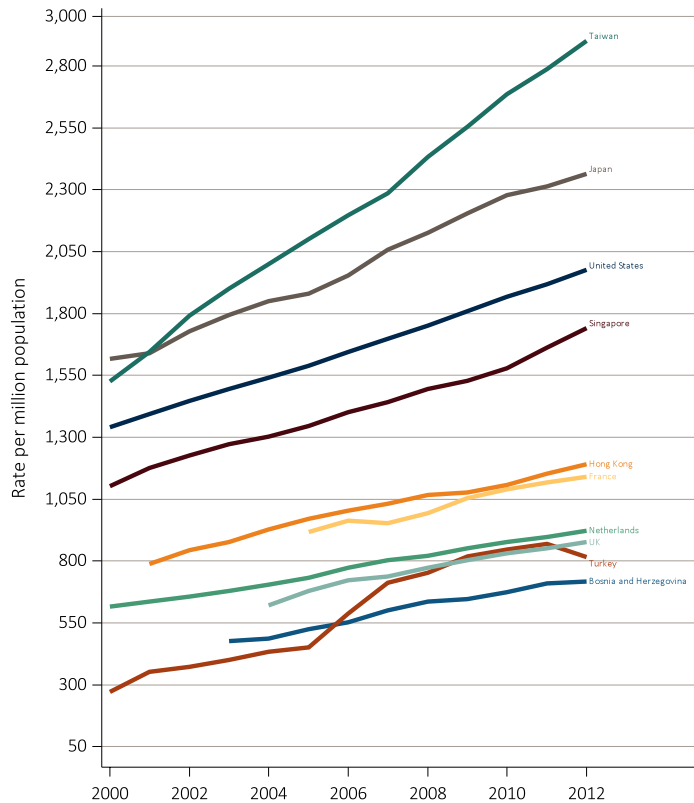
vol 2 Table 10.2 Number of ESRD prevalent patients and prevalence of ESRD, per million population, by country, years 2006-2012

Country	Prevalence rate, per million population								Prevalent patients, counts						
	2006	2007	2008	2009	2010	2011	2012	% change from 2006-2012 ^a	2006	2007	2008	2009	2010	2011	2012
Netherlands	772.2	802.5	820.2	852.1	875.6	897.5	923.4	15.6	12,623	13,146	13,488	14,086	14,549	14,982	15,472
New Zealand	775.5	793.2	809.6	853.8	876.4	879.0	900.7	13.5	3,245	3,354	3,456	3,685	3,828	3,872	3,993
Norway	753.1	784.0	816.9	844.3	859.4	875.0	887.3	14.7	3,510	3,692	3,895	4,077	4,202	4,334	4,453
Oman	.	.	463.5	492.1	615.3	649.3	694.8	.	.	.	1,535	1,682	1,826	1,966	2,147
Philippines	80.6	84.6	109.8	114.0	132.9	159.4	.	93.0	7,437	7,967	10,552	11,172	13,275	16,230	.
Poland	.	.	647.5	672.5	665.5	706.6	732.2	.	.	.	24,783	25,665	25,635	27,236	28,226
Portugal	.	.	1406.8	1505.1	1589.5	1662.0	1670.3	.	.	.	14,965	16,011	16,788	17,553	17,641
Qatar	.	.	.	.	244.3	267.2	280.1	.	.	.	.	.	419	463	511
Romania	304.7	368.3	422.4	533.2	599.9	666.4	735.2	108.3	6,578	7,935	9,088	10,859	12,146	13,410	14,747
Russia	130.1	.	158.0	173.1	185.5	196.4	211.7	56.8	18,486	.	22,234	24,246	26,327	27,989	30,349
Saudi Arabia	.	.	797.5	792.7	763.9	731.7	730.3	.	.	.	19,334	20,113	20,731	20,764	21,321
Scotland	783.9	812.0	809.9	827.7	836.8	842.1	857.6	6.5	4,011	4,177	4,186	4,299	4,370	4,424	4,557
Serbia	.	.	.	.	.	722.4	752.0	.	.	.	.	.	.	5,244	5,414
Singapore	1400.1	1441.8	1494.8	1526.9	1578.6	1661.8	1741.4	19.8	4,936	5,165	5,445	5,701	5,954	6,297	6,648
Slovenia	.	.	.	980.6	986.5	984.5	995.5	.	.	.	.	2,000	2,021	2,021	2,048
South Africa	.	.	.	.	.	.	163.7	.	.	.	.	.	.	.	8,559
Spain	961.0	956.2	994.8	1033.5	1045.5	1074.7	1090.4	12.9	35,462	41,546	44,067	39,708	47,632	50,614	50,837
Sweden	850.7	866.7	875.7	893.5	912.2	931.1	933.0	8.5	7,725	7,929	8,074	8,308	8,555	8,798	8,882
Taiwan	2196.8	2285.1	2432.0	2554.4	2685.2	2785.9	2902.1	26.9	50,255	52,462	56,025	59,056	62,196	64,702	67,665
Thailand	286.0	419.8	496.9	552.8	639.3	749.8	905.9	134.6	17,967	26,457	31,496	35,112	40,845	47,987	58,385
Turkey	589.2	711.5	753.1	819.2	847.4	868.2	815.6	29.5	42,992	50,221	53,859	59,443	62,471	64,877	61,677
UK [^]	722.9	737.6	773.2	804.3	830.1	850.6	875.8	18.2	40,101	41,188	43,478	45,519	47,347	49,321	51,140
United States	1645.1	1697.9	1751.1	1809.6	1867.5	1918.0	1975.5	16.5	490,879	511,465	532,502	555,145	577,675	597,620	620,136
Ukraine	.	.	.	.	.	.	131.3	.	.	.	.	.	.	.	5,985

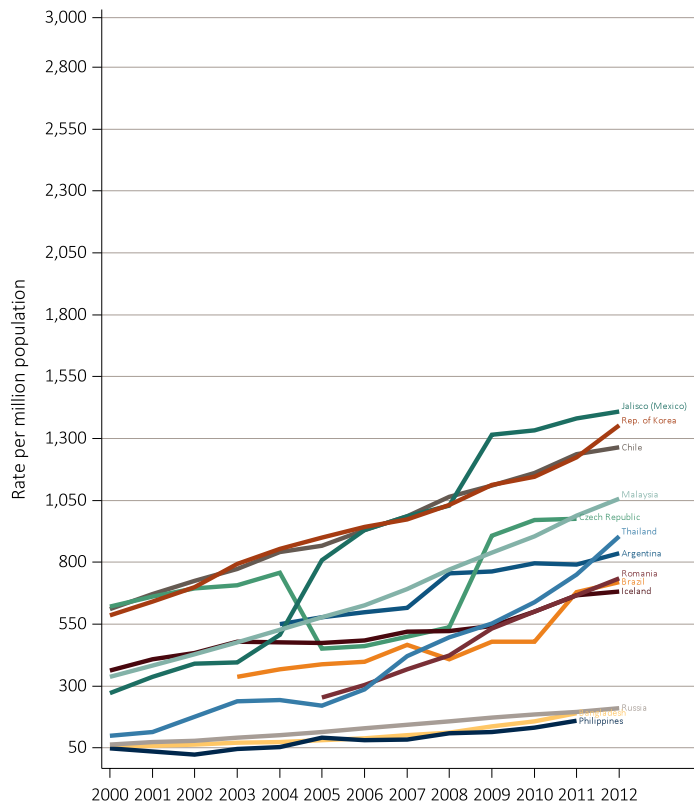
Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. [^]UK: England, Wales, & Northern Ireland (Scotland data reported separately). Data for France include 15 regions in 2006, 18 in 2007, 20 in 2008, and 22 in 2009-2012. Data for Spain include 18 of 19 regions. Data for Belgium do not include patients younger than 20. Data for Indonesia represent the West Java region. a % change is calculated as the percent difference between the average prevalence in 2011 and 2012 and the average in 2006 and 2007. Abbreviations: ESRD, end-stage renal disease; sp., speaking; . signifies data not reported.

vol 2 Figure 10.6 Temporal trends in the prevalence of ESRD, per million population, by country, years 2000-2012

(a) Countries in which the prevalence of ESRD increased by 15-31 % from 2006-2012



(b) Countries in which the prevalence of ESRD increased by greater than 31 % from 2006-2012



Data source: Special analyses, USRDS ESRD Database. All rates are unadjusted. Data for U.S. are shown for comparison purposes. Abbreviations: ESRD, end-stage renal disease.

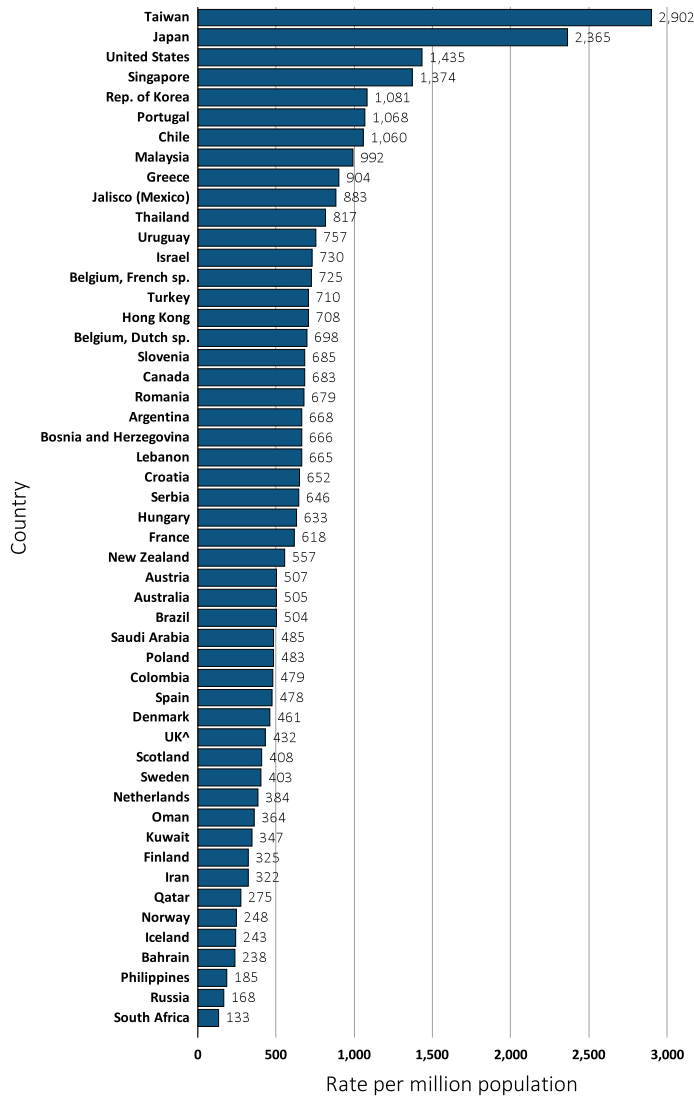
Since 2006, the prevalence of ESRD has been continually rising in nearly all of the countries that provided data for all or most of the 2006-2012 time frame. These results indicate the continuing worldwide need for additional resources and care on a broad, global level to meet the health needs of individuals with ESRD. As seen in Figure 10.6, some countries have shown particularly large rises in ESRD prevalence between 2006 and 2011 or 2012, including Malaysia, Russia, Brazil, the Philippines, the Czech Republic, Romania, and Thailand, where ESRD prevalence has increased 55 to 135 percent.

In 2012, the total number of patients treated for ESRD was by far the highest in the U.S., with nearly 600,000 treated patients, followed by Japan and Brazil with approximate cohorts of 301,000 and 144,000, respectively. France, Spain, Taiwan, Thailand, Turkey, and the U.K. reported between 50,000 to 70,000 treated ESRD patients in 2012, with all other countries treating smaller groups, with a median of approximately 9,000 treated patients.

Dialysis Therapy for ESRD

Dialysis is the most commonly utilized therapeutic approach for treatment of ESRD, followed by kidney transplantation. The number of ESRD patients receiving chronic dialysis per million population in 2012 varied more than 20-fold across countries, from 2,902 and 2,365 in Taiwan and Japan, respectively, to a range of 133 to 185 in South Africa, Russia, and the Philippines (see Figure 10.7). Between 2006 to 2011 or 2012, a large 1.5- to 3.1-fold increase was reported in the number of ESRD patients receiving dialysis per million population in Thailand, the Philippines, Bangladesh, Malaysia, Romania, Russia, Oman (between 2008 to 2012), and Jalisco (Mexico). However, a plateauing or decline in the prevalence of treated ESRD patients receiving chronic dialysis is beginning to be seen in nearly a quarter of all countries reporting several years of data (see Figure 10.8 and Table 10.3). These countries include Austria, Slovenia, Denmark, Argentina, Thailand, Romania, Brazil, Iceland, Finland, Norway, Sweden, the Netherlands, Scotland, Spain, and Uruguay.

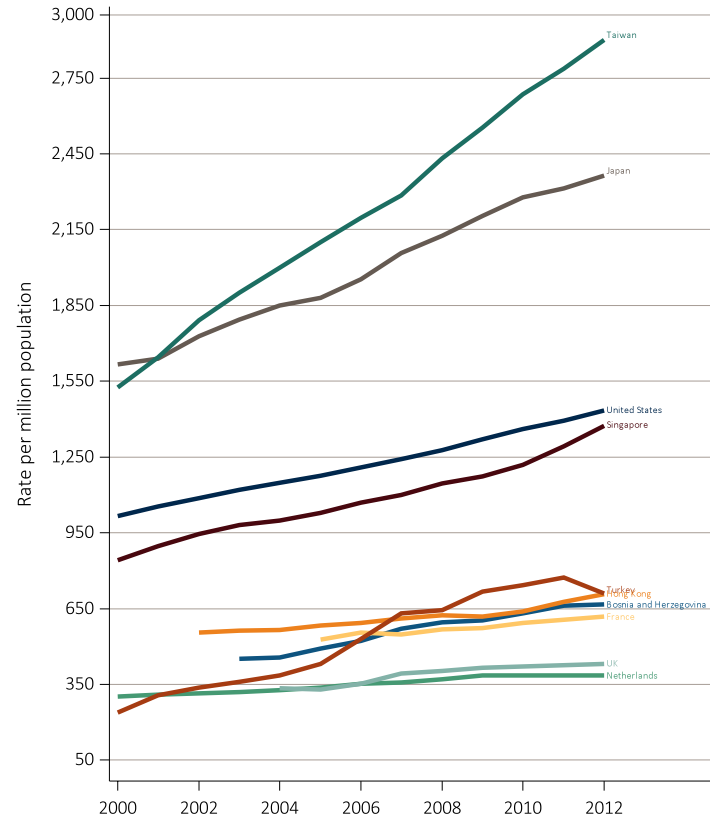
vol 2 Figure 10.7 Prevalence of dialysis, per million population, by country, in 2012



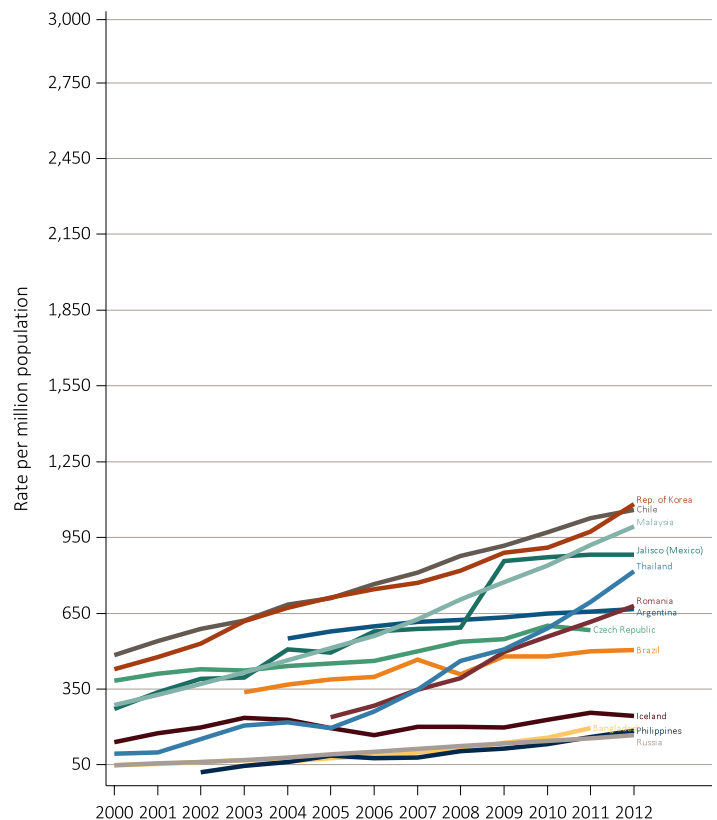
Data source: Special analyses, USRDS ESRD Database. All rates are unadjusted and reflect prevalence at the end of 2012. Japan and Taiwan include dialysis patients only. ^UK: England, Wales, & Northern Ireland (Scotland data reported separately). Data for Spain include 18 of 19 regions. Data for France include 22 regions. Data for Belgium do not include patients younger than 20. Abbreviations: sp., speaking.

vol 2 Figure 10.8 Temporal trends in the prevalence of dialysis, per million population, by country, years 2000-2012

(a) Countries in which the prevalence of ESRD increased by 15-31% from 2006-2012



(b) Countries in which the prevalence of ESRD increased by greater than 31% from 2006-2012



Data source: Special analyses, USRDS ESRD Database. All rates are unadjusted and reflect prevalence of dialysis at the end of each year. Japan includes dialysis patients only. Abbreviations: ESRD, end-stage renal disease.

vol 2 Table 10.3 Temporal trends in the prevalence of dialysis, per million population, by country, years 2006-2012

Country	2006	2007	2008	2009	2010	2011	2012	% change from 2006 – 2012 ^a
Argentina	598.0	615.4	623.4	634.1	647.6	657.0	667.8	9.2
Australia	447.1	462.9	475.6	480.6	485.2	494.4	504.7	9.8
Austria	469.6	477.7	487.9	505.4	507.5	502.5	506.5	6.5
Bahrain	.	.	212.4	221.5	196.8	250.2	237.9	
Bangladesh	87.3	99.3	112.1	138.2	157.1	194.8	.	108.8
Belgium, Dutch sp.	609.9	624.3	644.4	672.5	686.2	692.7	698.4	12.7
Belgium, French sp.	637.8	657.6	673.0	671.5	690.8	699.5	724.9	10.0
Bosnia and Herzegovina	521.1	569.9	596.5	602.8	630.7	661.6	666.2	21.7
Brazil	398.3	466.0	408.5	480.2	478.7	499.8	503.9	16.1
Canada	629.9	643.1	652.4	667.5	671.3	680.9	682.7	7.1
Chile	764.9	810.2	876.3	917.9	969.6	1025.6	1059.9	32.4
Colombia	377.6	403.1	412.7	408.2	455.4	447.9	478.7	18.7
Croatia	.	.	.	.	.	.	651.7	
Czech Republic	461.9	499.9	538.1	548.7	599.8	584.1	.	21.5
Denmark	463.8	498.4	490.0	487.3	470.7	461.0	460.8	-4.2
Finland	292.4	302.0	319.8	322.9	327.6	331.1	325.3	10.4
France	554.0	546.7	567.4	573.8	592.8	606.0	617.7	11.2
Greece	793.6	811.1	824.0	851.5	867.6	881.9	904.4	11.3
Hong Kong	593.2	611.0	624.6	617.9	638.8	677.5	707.6	15.0
Hungary	.	.	578.1	605.3	620.0	626.2	632.8	
Iceland	167.9	199.7	201.6	197.8	229.5	257.0	243.2	36.1
Indonesia	.	.	.	.	.	.	.
Iran	.	.	245.0	260.8	277.0	297.5	322.3	
Israel	652.4	668.4	684.8	703.8	721.2	728.3	730.2	10.4
Italy	.	.	.	.	792.7	.	.	
Jalisco (Mexico)	576.9	586.9	593.4	856.1	872.1	881.1	883.0	51.6
Japan	1954.5	2058.1	2126.0	2205.4	2277.4	2313.8	2365.2	16.6
Rep. of Korea	746.0	770.6	818.9	888.7	910.2	972.4	1081.0	35.4
Kuwait	.	.	.	.	.	.	346.6	
Lebanon	.	.	.	.	.	.	665.4	

Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. All rates are unadjusted. ^UK: England, Wales, & Northern Ireland (Scotland data reported separately). Data for France include 15 regions in 2006, 18 in 2007, 20 in 2008, and 22 in 2009-2012. Data for Belgium do not include patients younger than 20. Data for Spain include 18 of 19 regions. ^a % change is calculated as the percent difference between the average prevalence in 2011 and 2012 and the average in 2006 and 2007. Abbreviations: sp., speaking; . signifies data not reported.

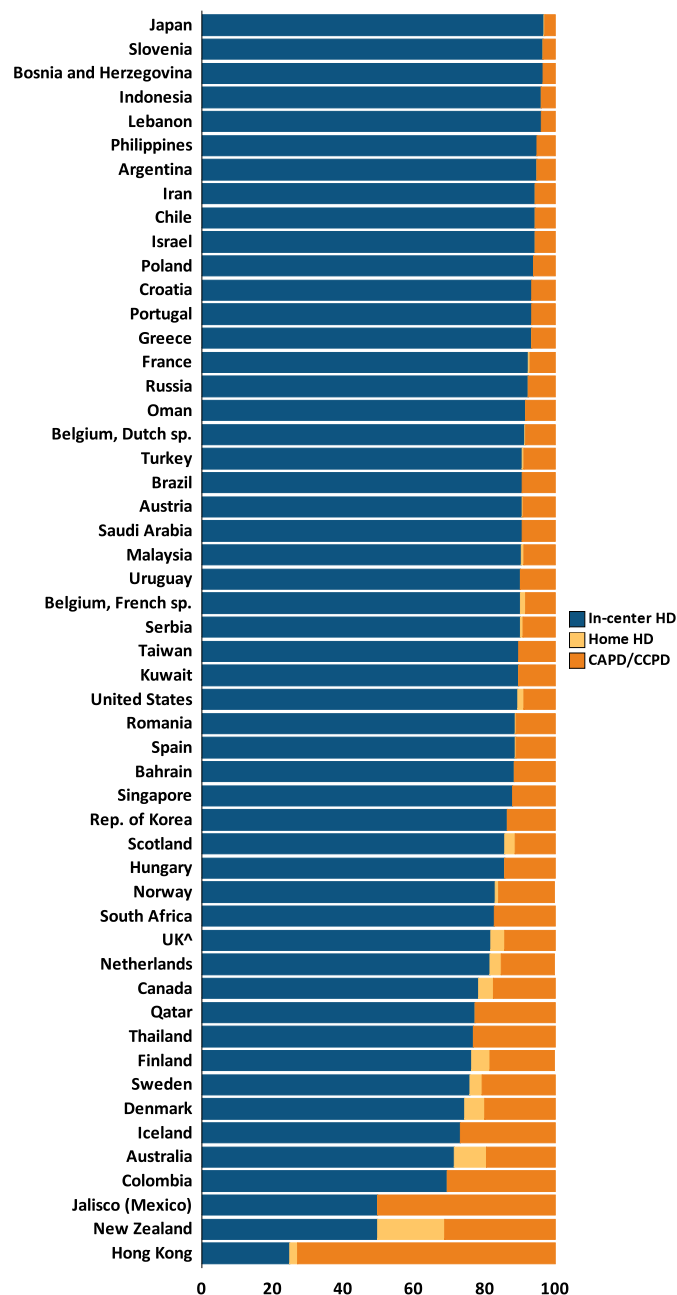
vol 2 Table 10.3 Temporal trends in the prevalence of dialysis, per million population, by country, years 2006-2012

Country	2006	2007	2008	2009	2010	2011	2012	% change from 2006 – 2012 ^a
Malaysia	560.8	627.1	703.8	773.7	838.7	920.5	992.2	61.0
Morelos (Mexico)	.	835.9	905.0	946.4	.	.	.	
Netherlands	353.4	356.3	369.5	384.3	384.8	384.8	384.2	8.4
New Zealand	477.5	489.8	493.3	528.5	546.7	542.3	557.0	13.6
Norway	216.5	232.3	243.7	252.0	249.9	245.9	248.1	10.1
Oman	.	.	231.0	250.7	318.8	333.9	363.7	
Philippines	75.8	79.4	104.6	114.0	132.9	159.4	184.7	121.7
Poland	.	.	417.5	432.8	446.3	466.1	483.2	
Portugal	.	.	922.6	960.5	1023.7	1052.2	1068.2	
Qatar	.	.	.	.	239.1	262.0	275.2	
Romania	285.0	346.2	393.8	497.1	557.7	616.5	679.4	105.3
Russia	101.6	.	124.4	135.4	144.3	154.8	168.3	59.0
Saudi Arabia	.	.	460.7	474.5	465.5	470.7	485.4	
Scotland	414.1	424.4	415.2	418.7	418.6	411.2	407.8	-2.3
Serbia	.	.	.	.	.	619.9	645.5	
Singapore	1070.5	1101.0	1145.9	1173.6	1218.5	1291.8	1373.6	22.7
Slovenia	.	.	.	715.3	702.9	688.3	685.4	
South Africa	.	.	.	.	.	.	132.9	
Spain	515.6	503.6	489.8	651.7	529.4	537.1	477.6	-0.4
Sweden	396.1	397.1	388.6	393.4	404.5	410.7	403.1	2.6
Taiwan	2196.8	2285.1	2432.0	2554.4	2685.2	2785.9	2902.1	26.9
Thailand	261.2	346.5	460.7	506.8	589.5	693.8	817.0	148.6
Turkey	530.8	631.5	643.7	717.6	742.9	772.8	709.8	27.6
UK [^]	352.7	391.8	402.8	415.1	420.1	426.0	431.7	15.2
United States	1210.0	1242.8	1278.0	1319.1	1360.1	1393.7	1435.4	15.3
Ukraine	.	.	.	.	.	.	.
Uruguay	716.9	729.3	760.9	745.9	749.0	762.0	757.1	5.0

Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. All rates are unadjusted. [^]UK: England, Wales, & Northern Ireland (Scotland data reported separately). Data for France include 15 regions in 2006, 18 in 2007, 20 in 2008, and 22 in 2009-2012. Data for Belgium do not include patients younger than 20. Data for Spain include 18 of 19 regions. ^o % change is calculated as the percent difference between the average prevalence in 2011 and 2012 and the average in 2006 and 2007. Abbreviations: sp., speaking; . signifies data not reported.

Hemodialysis continues to be the most common form of dialysis therapy in nearly all countries; in over 60 percent of reporting countries at least 80 percent of chronic dialysis patients were receiving HD (Figure 10.9). However, in 2012 PD was used by 73 percent of dialysis patients in Hong Kong, and 50 percent in Jalisco (Mexico). Furthermore, 31 percent PD use was reported in New Zealand and Colombia, and 17 to 27 percent in Australia, Canada, Denmark, Finland, Iceland, Qatar, South Africa, Sweden, and Thailand. As seen in Table 10.4, since 2006, an overall trend of increasing peritoneal dialysis use as a percentage of all chronic dialysis has been seen in such countries as Argentina, Hungary, Portugal, and Thailand. In contrast, PD use has declined over this same time period in countries such as the Flemish region of Belgium, Colombia, Denmark, Finland, France, Greece, Hong Kong, Israel, Jalisco (Mexico), Republic of Korea, the Netherlands, New Zealand, Norway, Romania, Scotland, Singapore, Turkey, and the U.K. Home HD therapy was provided to 19.0 and 9.2 percent of dialysis patients, respectively, in New Zealand and Australia in 2012. Home HD was also used by 3.0 to 5.7 percent of dialysis patients in Canada, Denmark, Finland, Sweden, the Netherlands, the U.K., and Scotland. However, in all other countries, home HD was either not provided, or used by fewer than two percent of dialysis patients.

vol 2 Figure 10.9 Distribution of the percentage of prevalent dialysis patients using in-center HD, home HD, and CAPD/CCPD, in 2012



Data source: Special analyses, USRDS ESRD Database. Denominator is calculated as the sum of patients receiving HD, PD, and Home HD; does not include patients with other/unknown modality. ^UK: England, Wales, & Northern Ireland (Scotland data reported separately). Data for Spain include 18 of 19 regions. Data for France include 22 regions. Data for Indonesia represent the West Java region. Data for Belgium do not include patients younger than 20. Abbreviations: CAPD, continuous ambulatory peritoneal dialysis; CCPD, continuous cycling peritoneal dialysis; ESRD, end-stage renal disease; HD, hemodialysis; PD, peritoneal dialysis; sp., speaking.

vol 2 Table 10.4 Distribution of the percentage of prevalent dialysis patients using in-center HD, home HD, and CAPD/CCPD, years 2006-2012

Country	In-center HD								CAPD/CCPD								Home HD							
	2006	2007	2008	2009	2010	2011	2012	2006	2007	2008	2009	2010	2011	2012	2006	2007	2008	2009	2010	2011	2012			
Argentina	96.0	96.1	96.0	96.0	95.8	95.1	94.8	4.0	3.9	4.0	4.0	4.2	4.9	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Australia	68.2	68.3	68.6	69.6	71.3	72.2	71.4	22.1	22.0	22.0	21.0	19.5	18.8	19.5	9.6	9.8	9.4	9.3	9.2	9.0	9.2			
Austria	90.8	91.2	91.0	91.0	91.0	91.6	90.8	9.0	8.7	8.9	8.9	8.9	8.4	9.1	0.2	0.1	0.1	0.0	0.0	0.1	0.1			
Bahrain	.	.	95.7	95.8	95.5	95.3	88.4	.	.	4.3	4.2	4.5	4.7	11.6	.	.	0.0	0.0	0.0	0.0	0.0			
Bangladesh	99.6	98.4	98.3	98.3	98.3	98.3	.	0.4	1.6	1.7	1.7	1.7	1.7	.	0.0	0.0	0.0	0.0	0.0	0.0	.			
Belgium, Dutch sp.	89.1	89.2	89.7	89.8	90.6	90.9	91.5	10.7	10.6	10.1	9.9	9.1	9.0	8.2	0.2	0.2	0.3	0.3	0.3	0.1	0.3			
Belgium, French sp.	89.2	90.5	90.7	90.3	89.8	90.1	90.3	9.5	8.3	8.0	8.4	8.7	8.3	8.2	1.3	1.2	1.3	1.3	1.4	1.6	1.5			
Bosnia and Herzegovina	95.3	95.2	95.1	94.9	95.2	96.0	96.5	4.7	4.7	4.9	5.0	4.8	4.0	3.5	0.0	0.1	0.0	0.0	0.0	0.0	.			
Brazil	90.8	89.4	89.6	92.3	90.6	91.6	90.8	9.2	10.6	10.4	7.7	9.4	8.4	9.2	0.0	0.0	0.0	0.0	0.0	0.0	.			
Canada	78.9	78.6	78.4	78.4	78.5	78.9	78.4	18.4	18.4	18.4	18.1	17.8	17.1	17.5	2.8	3.0	3.3	3.5	3.7	3.9	4.1			
Chile	95.0	95.2	95.3	95.3	95.1	94.6	94.5	5.0	4.8	4.7	4.7	4.9	5.4	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Colombia	63.9	63.4	68.0	68.2	68.7	69.1	69.4	36.1	36.6	32.0	31.8	31.3	30.9	30.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Croatia	91.6	92.8	91.8	91.0	91.5	92.1	93.5	8.4	7.2	8.2	9.0	8.5	7.9	6.5	0.0	0.0	0.0	0.0	0.0	0.0	.			
Czech Republic	92.4	92.3	91.8	92.0	92.1	91.7	.	7.6	7.7	8.2	8.0	7.9	8.3	.	0.0	0.0	0.0	0.0	0.0	0.0	.			
Denmark	72.0	71.8	72.9	73.4	73.7	74.9	74.5	23.9	24.5	22.9	21.6	20.8	19.5	19.8	4.1	3.7	4.2	5.1	5.5	5.6	5.7			
Finland	76.0	75.8	74.3	75.0	77.1	77.4	76.4	21.2	20.4	21.7	21.3	19.0	18.4	18.2	2.9	3.8	3.9	3.7	4.0	4.1	5.3			
France	85.4	87.4	87.8	91.9	92.1	92.5	92.4	12.6	11.1	10.9	7.3	7.2	6.9	7.0	2.0	1.6	1.4	0.8	0.7	0.6	0.6			
Greece	91.5	91.7	91.7	92.0	92.3	92.8	93.4	8.4	8.3	8.3	7.9	7.7	7.2	6.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Hong Kong	18.8	19.8	20.4	21.5	23.5	24.4	25.0	81.1	80.0	79.2	77.9	75.6	74.1	72.9	0.0	0.2	0.4	0.6	0.9	1.5	2.1			
Hungary	.	.	88.3	87.2	86.5	85.8	85.7	.	.	11.7	12.8	13.5	14.2	14.3	.	.	0.0	0.0	0.0	0.0	0.0			
Iceland	70.6	72.1	76.6	87.3	83.6	80.5	73.1	29.4	26.2	21.9	12.7	16.4	19.5	26.9	0.0	1.6	1.6	0.0	0.0	0.0	.			
Indonesia	.	.	.	.	.	.	96.1	.	.	.	.	.	.	3.9	.	.	.	.	.	.	0.0
Iran	.	.	93.8	93.6	93.7	93.6	94.5	.	.	6.2	6.4	6.3	6.4	5.5	.	.	0.0	0.0	0.0	0.0	0.0			
Israel	91.9	92.9	93.6	93.3	93.8	94.1	94.3	8.1	7.1	6.4	6.7	6.2	5.9	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Italy	.	.	.	.	90.0	.	.	.	.	.	.	10.0	.	.	.	.	.	.	.	.	.
Jalisco (Mexico)	29.5	34.2	40.4	41.5	48.7	50.6	49.8	70.5	65.8	59.6	58.5	51.3	49.4	50.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Japan	96.8	96.7	96.8	96.7	96.7	96.8	96.9	3.2	3.3	3.1	3.2	3.2	3.1	3.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Rep. of Korea	78.4	80.2	81.0	83.1	84.4	84.7	86.5	21.6	19.8	19.0	16.9	15.6	15.3	13.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Kuwait	.	.	.	.	.	.	89.7	.	.	.	.	.	.	10.3	.	.	.	.	.	.	0.0
Lebanon	.	.	.	.	.	.	96.0	.	.	.	.	.	.	4.0	.	.	.	.	.	.	.

Data source: Special analyses, USRDS ESRD Database. Denominator is calculated as the sum of patients receiving HD, PD, and Home HD; does not include patients with other/unknown modality. ^UK: England, Wales, & Northern Ireland (Scotland data reported separately). Data for France include 15 regions in 2006, 18 in 2007, 20 in 2008, and 22 in 2009-2012. Data for Spain include 18 of 19 regions. Data for Belgium do not include patients younger than 20. Data for Indonesia represent the West Java region. Abbreviations: CAPD, continuous ambulatory peritoneal dialysis; CCPD, continuous cycling peritoneal dialysis; HD, hemodialysis; PD, peritoneal dialysis; sp., speaking; . signifies data not reported.

Table 10.4 continued on next page.

vol 2 Table 10.4 Distribution of the percentage of prevalent dialysis patients using in-center HD, home HD, and CAPD/CCPD, years 2006-2012 (continued)

Country	In-center HD							CAPD/CCPD							Home HD						
	2006	2007	2008	2009	2010	2011	2012	2006	2007	2008	2009	2010	2011	2012	2006	2007	2008	2009	2010	2011	2012
Malaysia	90.2	89.9	90.0	90.3	90.6	90.8	90.4	8.7	9.1	9.0	8.7	8.4	8.3	8.8	1.1	1.0	1.0	1.0	1.0	1.0	0.9
Morelos (Mexico)	.	40.6	43.2	42.4	.	.	.	.	59.4	56.8	57.6	.	.	.	.	0.0	0.0	0.0	.	.	.
Netherlands	74.8	76.0	77.4	79.0	79.5	81.5	81.7	22.9	21.7	20.1	18.5	17.8	15.8	15.2	2.3	2.3	2.5	2.5	2.7	2.7	3.0
New Zealand	45.5	48.2	48.1	48.4	47.4	48.8	49.7	38.3	36.0	36.2	35.1	34.8	33.2	31.3	16.1	15.8	15.7	16.6	17.8	18.1	19.0
Norway	80.5	80.6	83.4	80.7	81.3	84.2	83.1	19.1	19.1	16.4	18.8	18.0	15.3	15.8	0.4	0.3	0.3	0.5	0.7	0.6	1.0
Oman	.	.	95.7	96.1	95.8	95.9	91.8	.	.	4.3	3.9	4.2	4.1	8.2	.	.	0.0	0.0	0.0	0.0	0.0
Philippines	94.5	87.3	93.3	95.6	95.9	96.4	94.9	5.5	12.7	6.7	4.4	4.1	3.6	5.1	0.0	0.0	0.0	0.0	0.0	0.0	.
Poland	.	.	93.1	93.3	93.5	94.1	94.0	.	.	6.9	6.7	6.5	5.9	6.0	.	.	0.0	0.0	0.0	0.0	0.0
Portugal	.	.	94.8	94.4	93.9	93.7	93.4	.	.	5.2	5.6	6.1	6.3	6.6	.	.	0.0	0.0	0.0	0.0	.
Qatar	.	.	.	.	70.9	73.5	77.4	.	.	.	.	29.1	26.5	22.6	.	.	.	.	0.0	0.0	0.0
Romania	80.6	81.8	82.8	84.5	86.4	87.7	88.8	19.4	18.2	17.1	15.5	13.5	12.2	11.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Russia	91.0	.	91.0	91.3	91.4	91.6	92.3	9.0	.	9.0	8.7	8.6	8.4	7.7	0.0	.	0.0	0.0	0.0	0.0	0.0
Saudi Arabia	.	.	92.2	90.8	90.5	90.7	90.6	.	.	7.8	9.2	9.5	9.3	9.4	.	.	.	.	.	.	.
Scotland	79.0	80.7	82.6	83.8	84.8	85.3	85.7	19.3	17.5	15.1	13.7	12.8	12.0	11.2	1.7	1.9	2.2	2.5	2.4	2.7	3.1
Serbia	.	.	.	.	.	90.5	90.2	.	.	.	.	.	8.8	9.1	.	.	.	.	.	0.7	0.7
Singapore	81.1	82.5	85.6	86.3	87.4	87.2	87.9	18.8	17.4	14.4	13.6	12.5	12.8	12.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Slovenia	.	.	.	95.7	96.5	96.7	96.7	.	.	.	4.3	3.5	3.3	3.3	.	.	.	0.0	0.0	0.0	0.0
South Africa	.	.	.	.	.	.	82.7	.	.	.	.	.	.	17.3	.	.	.	.	.	.	.
Spain	90.1	89.4	90.6	90.6	89.8	89.3	88.7	9.7	10.5	9.2	9.2	10.0	10.6	11.1	0.2	0.1	0.3	0.2	0.2	0.2	0.2
Sweden	75.5	73.0	73.3	73.6	74.7	75.6	76.0	21.9	24.2	23.9	23.6	22.5	21.3	20.6	2.6	2.9	2.8	2.8	2.8	3.1	3.4
Taiwan	92.4	91.5	90.7	90.5	90.3	90.1	89.7	7.6	8.5	9.3	9.5	9.7	9.9	10.3	0.0	0.0	0.0	0.0	0.0	.	.
Thailand	95.8	94.5	90.5	84.1	81.9	78.6	76.9	4.2	5.5	9.5	15.9	18.1	21.4	23.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turkey	88.7	88.1	87.4	89.6	90.4	91.8	90.8	11.3	11.9	12.5	10.4	9.6	8.2	8.9	0.0	0.0	0.0	0.0	0.0	0.0	0.3
UK	78.6	78.9	81.1	82.0	82.2	82.1	81.8	19.4	19.1	16.8	15.5	14.9	14.4	14.2	2.0	2.0	2.1	2.5	2.9	3.4	4.0
United States	91.4	91.4	91.5	91.4	90.9	90.3	89.4	8.0	7.8	7.6	7.6	7.9	8.4	8.9	0.6	0.7	0.9	1.0	1.2	1.3	1.7
Ukraine	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Uruguay	92.6	90.6	91.1	90.8	90.1	90.1	90.3	7.4	9.4	8.9	9.2	9.9	9.9	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0

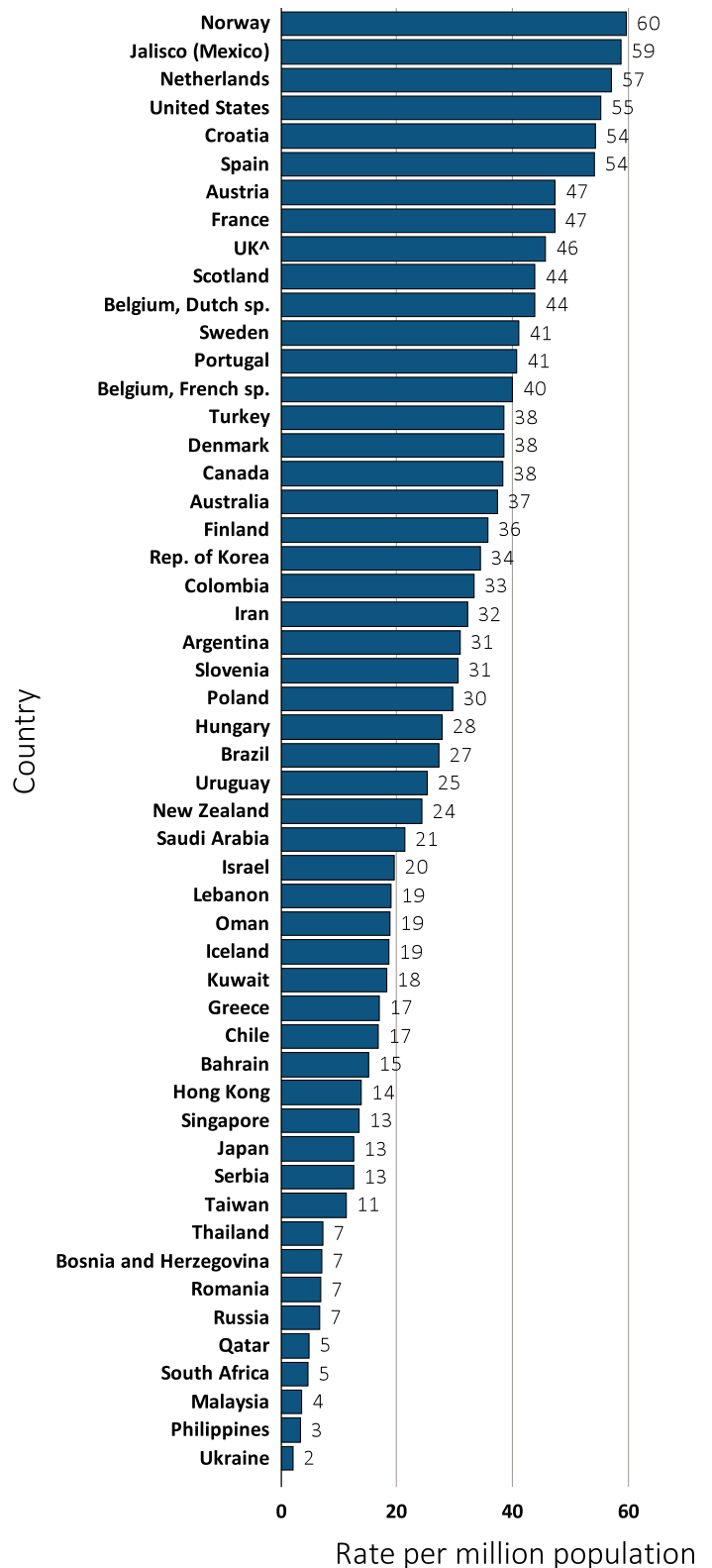
Data source: Special analyses, USRDS ESRD Database. Denominator is calculated as the sum of patients receiving HD, PD, and Home HD; does not include patients with other/unknown modality. ^UK: England, Wales, & Northern Ireland (Scotland data reported separately). Data for France include 15 regions in 2006, 18 in 2007, 20 in 2008, and 22 in 2009-2012. Data for Spain include 18 of 19 regions. Data for Belgium do not include patients younger than 20. Data for Indonesia represent the West Java region. Abbreviations: CAPD, continuous ambulatory peritoneal dialysis; CCPD, continuous cycling peritoneal dialysis; HD, hemodialysis; PD, peritoneal dialysis; sp., speaking; . signifies data not reported.

Transplantation

Kidney transplantation rates vary greatly across countries, which may reflect not only geographic variations in ESRD incidence and prevalence rates but also differences in national health care systems, infrastructure, organ availability, and cultural beliefs. Among the countries represented in this international chapter, kidney transplant rates varied 30-fold across countries, from two to 60 kidney transplants per million population in 2012 (see Figure 10.10). The highest kidney transplant rates were reported in Norway, Jalisco (Mexico), the Netherlands, the U.S., Croatia, and Spain with 54–60 kidney transplants per million population. Among other countries, kidney transplantation rates ranged from 30–47 per million population for 40 percent of countries, to 12–28 per million population for 30 percent of countries, and 2–7 per million population for 20 percent of countries. Countries reporting these lowest rates of kidney transplantation included Ukraine, Malaysia, the Philippines, South Africa, Qatar, Russia, Romania, Bosnia and Herzegovina, and Thailand. As shown in Table 10.5, since 2006 a substantial increase has been seen in kidney transplant rates in some countries, including Argentina, Australia, Brazil, Denmark, Saudi Arabia, Republic of Korea, Poland, Spain, Turkey, and the U.K. In contrast, kidney transplant rates appear to have declined over this time period in the Czech Republic, Greece, Malaysia, Israel, Singapore, and the Philippines.

In 2012, Norway, Portugal, and the U.S. reported the highest prevalence of ESRD patients living with a kidney transplant, at 594 to 639 per million population (Figure 10.11 and Table 10.6). Seventy percent of other participating countries reported distributions within the broad mid-range of 168 to 554 prevalent ESRD patients living with a kidney transplant per million population. The remaining 25 percent of countries had the lowest prevalence, ranging from two to 106 per million population.

vol 2 Figure 10.10 Kidney transplantation rate, per million population, by country, in 2012



Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. All rates are unadjusted. ^UK: England, Wales, & Northern Ireland (Scotland data reported separately). Data for Belgium do not include patients younger than 20. Data for France include 22 regions. Data for Spain include all regions. There is underreporting of prevalent transplant patients in Turkey. Abbreviations: sp., speaking.

vol 2 Table 10.5 Kidney transplantation rates, per million population, by country, years 2006-2012

Country	2006	2007	2008	2009	2010	2011	2012	% change from 2006 – 2012 ^a
Argentina	21.7	23.0	25.1	26.4	28.4	28.9	30.9	33.8
Australia	31.0	29.3	38.0	35.5	38.3	37.0	37.3	23.2
Austria	47.9	43.7	39.5	47.4	44.6	45.0	47.3	0.8
Bahrain	.	.	10.8	18.7	11.3	6.7	15.2	
Bangladesh	0.2	0.5	0.5	0.6	0.6	0.8	.	128.6
Belgium, Dutch sp.	39.7	43.3	40.3	39.6	38.4	41.1	43.8	2.3
Belgium, French sp.	39.3	40.8	37.4	37.7	37.3	43.1	40.0	3.7
Bosnia and Herzegovina	6.8	8.4	9.1	7.0	6.0	6.3	7.1	-11.8
Brazil	17.8	18.5	20.1	22.3	24.4	25.5	27.2	45.2
Canada	38.4	39.5	38.3	37.7	37.9	37.7	38.3	-2.4
Chile	18.5	17.1	16.8	15.1	13.5	15.6	16.7	-9.3
Colombia	29.8	29.5	16.1	18.9	38.9	34.9	33.3	15.0
Croatia	.	.	.	.	.	.	54.3	
Czech Republic	41.6	38.0	31.9	34.0	27.2	31.6	.	-20.6
Denmark	30.8	31.4	34.9	40.7	41.2	44.2	38.4	32.8
Finland	39.7	32.3	28.0	33.0	32.8	33.0	35.8	-4.4
France	39.9	45.1	44.9	44.8	45.7	46.4	47.2	10.1
Greece	22.2	21.9	24.0	15.0	11.1	17.8	16.9	-21.3
Hong Kong	9.6	9.5	11.0	13.4	11.3	9.3	13.8	20.9
Hungary	.	.	25.7	27.1	30.7	25.1	27.8	
Iceland	26.3	22.5	25.2	31.4	31.4	50.2	18.7	41.2
Indonesia	.	.	.	.	.	.	.
Iran	.	.	26.7	28.3	31.4	30.5	32.2	
Israel	43.2	37.7	33.1	28.6	23.7	36.7	19.5	-30.5
Italy	.	.	.	.	.	.	.
Jalisco (Mexico)	52.2	59.3	54.3	58.1	60.1	62.2	58.7	8.4
Japan	.	.	.	.	11.7	12.5	12.6	
Rep. of Korea	18.8	18.5	22.7	24.5	25.1	31.7	34.4	77.2
Kuwait	.	.	.	.	.	.	18.3	
Lebanon	.	.	.	.	.	.	19.0	

Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. All rates are unadjusted. ^UK: England, Wales, & Northern Ireland (Scotland data reported separately). Data for France include 15 regions in 2006, 18 in 2007, 20 in 2008, and 22 in 2009-2012. Data for Belgium do not include patients younger than 20. There is underreporting of prevalent transplant patients in Turkey. ^a % change is calculated as the percent difference between the average rate in 2011 and 2012 and the average in 2006 and 2007. Abbreviations: sp., speaking; . signifies data not reported.

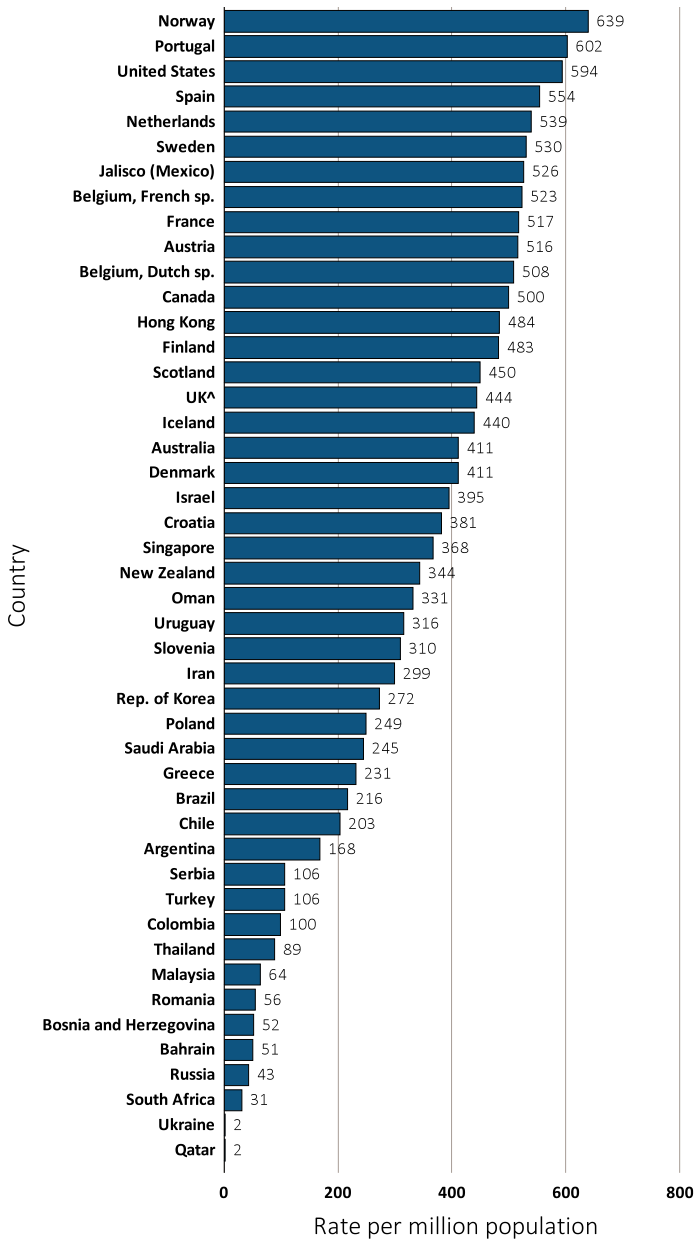
Table 10.5 continued on next page.

vol 2 Table 10.5 Kidney transplantation rates, per million population, by country, years 2006-2012 (continued)

Country	2006	2007	2008	2009	2010	2011	2012	% change from 2006 – 2012 ^a
Malaysia	11.1	8.2	4.7	5.1	4.5	4.3	3.6	-59.1
Morelos (Mexico)	.	54.6	44.5	41.8	.	.	.	
Netherlands	41.0	51.0	47.3	50.0	52.5	51.6	57.1	18.2
New Zealand	21.5	29.1	28.6	28.0	25.2	26.8	24.4	1.2
Norway	45.5	55.2	58.3	60.5	53.8	61.0	59.6	19.8
Oman	.	.	14.8	17.8	18.5	20.1	18.8	
Philippines	7.5	11.1	7.1	5.2	4.0	3.8	3.3	-61.8
Poland	.	.	21.2	20.6	25.9	27.0	29.7	
Portugal	.	.	49.4	55.7	54.3	50.2	40.6	
Qatar	.	.	2.1	1.2	5.2	5.2	4.9	
Romania	5.3	2.8	7.3	6.6	6.5	8.6	6.8	90.1
Russia	2.9	.	5.6	5.9	7.3	6.8	6.6	131.0
Saudi Arabia	.	.	16.3	15.1	18.6	19.5	21.4	
Scotland	26.4	37.7	41.0	40.6	35.4	37.5	43.8	26.8
Serbia	.	.	.	.	.	15.6	12.5	
Singapore	24.1	23.2	20.0	18.5	16.2	17.7	13.4	-34.2
Slovenia	.	.	.	22.6	31.2	23.4	30.6	
South Africa	.	.	.	.	.	.	4.7	
Spain	.	.	48.3	49.8	47.3	52.9	54.0	
Sweden	40.5	42.3	45.6	42.3	39.3	45.3	41.0	4.2
Taiwan	.	.	12.5	13.6	12.1	14.0	11.2	
Thailand	3.6	5.9	5.4	4.8	5.5	6.3	7.2	42.1
Turkey	11.6	18.6	18.1	26.3	34.5	39.3	38.4	157.3
UK [^]	34.1	38.3	40.3	42.4	44.4	44.2	45.7	24.2
United States	60.8	58.4	57.5	58.0	57.6	56.7	55.2	-6.1
Ukraine	.	.	.	.	.	.	2.1	
Uruguay	42.8	28.9	37.5	35.0	25.6	39.0	25.3	-10.3

Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. All rates are unadjusted. [^]UK: England, Wales, & Northern Ireland (Scotland data reported separately). Data for France include 15 regions in 2006, 18 in 2007, 20 in 2008, and 22 in 2009-2012. Data for Belgium do not include patients younger than 20. There is underreporting of prevalent transplant patients in Turkey. ^a % change is calculated as the percent difference between the average rate in 2011 and 2012 and the average in 2006 and 2007. Abbreviations: sp., speaking; . signifies data not reported.

vol 2 Figure 10.11 Prevalence of ESRD patients with a functioning kidney transplant, per million population, by country, in 2012



Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. All rates are unadjusted. ^UK: England, Wales, & Northern Ireland (Scotland data reported separately). Data for Spain include 18 of 19 regions. Data for France include 22 regions. Data for Belgium do not include patients younger than 20. Abbreviations: ESRD, end-stage renal disease; sp., speaking.

vol 2 Table 10.6 Temporal trends in the prevalence of ESRD patients with a functioning kidney transplant, per million population, by country, years 2006-2012

Country	2006	2007	2008	2009	2010	2011	2012	% change from 2006 – 2012 ^a
Argentina	.	.	132.3	127.9	147.2	133.6	168.0	
Australia	331.2	338.4	358.0	369.5	385.5	397.7	410.9	20.8
Austria	438.9	455.8	460.0	474.7	484.2	498.0	516.3	13.4
Bahrain	.	.	62.4	57.7	53.5	52.7	50.5	
Bangladesh	3.5	.	.	.	.	.	.
Belgium, Dutch sp.	423.3	439.4	451.6	463.9	474.6	490.5	507.8	15.7
Belgium, French sp.	433.7	453.2	471.4	467.4	486.1	507.4	523.0	16.2
Bosnia and Herzegovina	31.6	31.8	40.4	43.6	42.3	47.0	51.6	55.5
Brazil	.	.	.	.	.	178.8	216.3	
Canada	409.2	428.1	441.7	456.8	471.0	485.1	499.9	17.6
Chile	164.8	175.4	188.9	190.8	191.5	210.1	203.4	21.5
Colombia	.	.	60.6	59.8	88.8	88.3	99.7	
Croatia	.	.	.	.	.	.	381.3	
Czech Republic	.	.	.	358.9	370.3	390.3	.	
Denmark	318.0	333.6	341.6	355.8	376.5	395.4	410.7	23.7
Finland	434.5	445.5	449.4	459.3	468.4	474.4	482.5	8.7
France	408.6	407.3	425.7	466.5	485.5	503.2	517.3	25.1
Greece	192.5	202.3	214.8	217.6	215.4	221.2	231.3	14.6
Hong Kong	409.7	420.4	442.8	459.8	467.5	474.9	484.1	15.5
Hungary	.	.	.	.	.	.	.
Iceland	316.0	318.8	321.3	345.4	371.0	410.6	439.6	33.9
Indonesia	.	.	.	.	.	.	.
Iran	.	.	245.7	268.0	279.4	288.0	298.9	
Israel	357.5	372.1	386.0	382.9	380.7	391.9	395.2	7.9
Italy	.	.	.	.	.	.	.
Jalisco (Mexico)	352.0	399.4	436.2	458.2	460.2	500.4	525.8	36.6
Japan	.	.	.	.	.	.	.
Rep. of Korea	195.7	202.2	212.8	224.8	234.1	252.4	272.3	31.9
Kuwait	.	.	.	.	.	.	.
Lebanon	.	.	.	.	.	.	.

Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. All rates are unadjusted. ^UK: England, Wales, & Northern Ireland (Scotland data reported separately). Data for France include 15 regions in 2006, 18 in 2007, 20 in 2008, and 22 in 2009-2012. Data for Belgium do not include patients younger than 20. There is underreporting of prevalent transplant patients in Turkey. ^a % change is calculated as the percent difference between the average prevalence in 2011 and 2012 and the average in 2006 and 2007. Abbreviations: ESRD, end-stage renal disease; sp., speaking; . signifies data not reported.

Table 10.6 continued on next page.

vol 2 Table 10.6 Temporal trends in the prevalence of ESRD patients with a functioning kidney transplant, per million population, by country, years 2006-2012 (continued)

Country	2006	2007	2008	2009	2010	2011	2012	% change from 2006 – 2012 ^a
Malaysia	65.6	65.3	65.6	66.4	66.6	66.6	64.2	-0.1
Morelos (Mexico)	.	41.9	34.3	31.6	.	.	.	
Netherlands	418.9	446.1	450.5	467.7	490.8	512.6	539.1	21.6
New Zealand	298.0	303.4	316.2	325.3	329.7	336.7	343.8	13.2
Norway	536.6	551.7	573.2	592.3	609.5	629.1	639.2	16.5
Oman	.	.	232.5	241.4	296.5	315.4	331.1	
Philippines	4.8	5.3	5.2	.	.	.	.
Poland	.	.	240.8	210.4	208.8	240.6	249.0	
Portugal	.	.	484.2	544.7	565.8	609.8	602.1	
Qatar	.	.	2.1	1.2	5.2	5.2	1.6	
Romania	19.7	22.0	28.6	36.0	42.2	49.8	55.6	152.8
Russia	28.5	.	33.7	37.7	41.2	41.6	43.4	49.1
Saudi Arabia	.	.	336.8	318.2	298.4	261.1	244.9	
Scotland	369.0	386.5	394.7	408.9	418.2	431.0	449.8	16.6
Serbia	.	.	.	.	.	102.2	106.4	
Singapore	329.6	340.8	348.9	353.3	360.0	370.0	367.8	10.1
Slovenia	.	.	.	265.2	283.6	296.2	310.1	
South Africa	.	.	.	.	.	.	30.7	
Spain	445.4	452.7	505.0	495.3	516.1	537.6	553.5	21.5
Sweden	454.5	469.5	487.1	500.1	507.8	520.4	530.0	13.7
Taiwan	.	.	.	.	.	.	.
Thailand	20.5	57.4	36.3	46.0	49.8	56.0	88.9	86.0
Turkey	58.4	80.0	109.4	101.6	104.4	95.4	105.8	45.4
UK [^]	287.5	345.8	370.4	389.2	410.0	424.6	444.1	37.2
United States	490.9	509.7	527.0	543.9	560.8	577.3	593.5	17.0
Ukraine	.	.	.	.	.	.	2.1	
Uruguay	210.3	234.7	255.5	272.7	284.2	312.9	315.6	41.2

Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. All rates are unadjusted. [^]UK: England, Wales, & Northern Ireland (Scotland data reported separately). Data for France include 15 regions in 2006, 18 in 2007, 20 in 2008, and 22 in 2009-2012. Data for Belgium do not include patients younger than 20. There is underreporting of prevalent transplant patients in Turkey. ^a% change is calculated as the percent difference between the average prevalence in 2011 and 2012 and the average in 2006 and 2007. Abbreviations: ESRD, end-stage renal disease; sp., speaking; . signifies data not reported.

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