

Chapter 13: International Comparisons

- Taiwan, the Jalisco region of Mexico, and the United States continue to report the highest incidence of treated ESRD (458, 421 and 363 per million population (PMP) respectively; Fig 13.2), as they have done for the past decade.
- The greatest proportionate increases in the incidence of treated ESRD over the interval from 2000/2001 to 2012/2013 (Table 13.1) were reported for Thailand (1210%), Bangladesh (629%), Russia (249%), Philippines (185%), Malaysia (176%), the Jalisco region of Mexico (122%) and the Republic of Korea (120%).
- In contrast however, incidence rates have remained relatively stable since 2000/2001 in most high-income countries, and have declined by between 2 and 11% in Denmark, Sweden, Scotland, Finland and Canada (Table 13.1).
- In 2013, diabetes mellitus accounted for >50% of incident ESRD patients in Malaysia, Singapore and the Jalisco region of Mexico, but <20% of incident ESRD patients in Norway, the Netherlands, Iceland and Romania (Fig 13.4).
- The most rapid increases in diabetes-related ESRD over the interval from 2000/2001 to 2012/2013 have occurred in Thailand, Russia, Philippines, Malaysia, the Republic of Korea, the Jalisco region of Mexico, and Uruguay
- The highest prevalence of treated ESRD in 2013 was reported for Taiwan, Japan, and the United States (3138, 2411, and 2043 PMP respectively, Fig 13.8)
- The countries that have experienced the largest absolute increases in ESRD prevalence since 2000/2001 (Table 13.3) include the Jalisco region of Mexico (from 270 to 1654 PMP), the Republic of Korea (from 585 to 1442 PMP), Chile (from 612 to 1294 PMP), Malaysia (from 338 to 1140 PMP), and Thailand (98 to 1097 PMP).
- Internationally, in-center hemodialysis remains the most common form of treatment for ESRD, and constitutes greater than 80% of dialysis provision in the majority of countries represented in this report (Fig 13.17 and Table 13.6). The highest utilization of peritoneal dialysis is found in Hong Kong (72%), the Jalisco region of Mexico (45%), Iceland (34%), New Zealand (32%), Colombia (30%), and Thailand (25%).
- In 2013, the highest rates of kidney transplantation relative to population size were reported for Croatia (59 PMP), Jalisco (58 PMP), the Netherlands (56 PMP), the United States (56 PMP), and Spain (54 PMP; Fig 13.18(a)). When expressed relative to the size of the prevalent dialysis population, the highest rates of kidney transplantation were observed in Norway (210 kidney transplants per thousand dialysis patients), Estonia (158 per thousand), the Netherlands (146 per thousand), Scotland (129 per thousand) and the United Kingdom (117 per thousand; Fig 13.18(b)).
- The countries that have experienced the largest absolute increases in their rate of kidney transplantation since 2000/2001 (Table 13.7) are Croatia (from 9 to 59 PMP), the Netherlands (from 36 to 56 PMP), the Republic of Korea (from 14 to 34 PMP), Scotland (from 36 to 51 PMP), Turkey (from 6 to 38 PMP) and Uruguay (from 17 to 32 PMP).

Introduction

This chapter examines treated end-stage renal disease (ESRD) from an international perspective. The number of countries and regions represented

in this Annual Data Report has increased from 54 in 2014 to 57, with the addition of Estonia, Ireland, and Switzerland to this year's chapter. This work is made possible through the substantial efforts of many individuals from all participating countries, through

collecting and contributing data for this international collaboration. We sincerely thank all of the registries and providers for their efforts, and have included a list of participants at the end of this chapter to further acknowledge their contributions.

The comparisons we present are intended to increase awareness of the international trends, similarities, and differences in key ESRD treatment measures. Data collection methods vary to some extent across countries, and therefore direct comparisons should be made with caution. We welcome any suggestions to further improve the content of this chapter for the benefit of the international community, and invite all renal registries to participate in this data collection and collaboration in the future. There are many countries not yet represented in this chapter. Therefore, efforts to increase international representation and enhance the comparisons presented will continue to be a focus of our work.

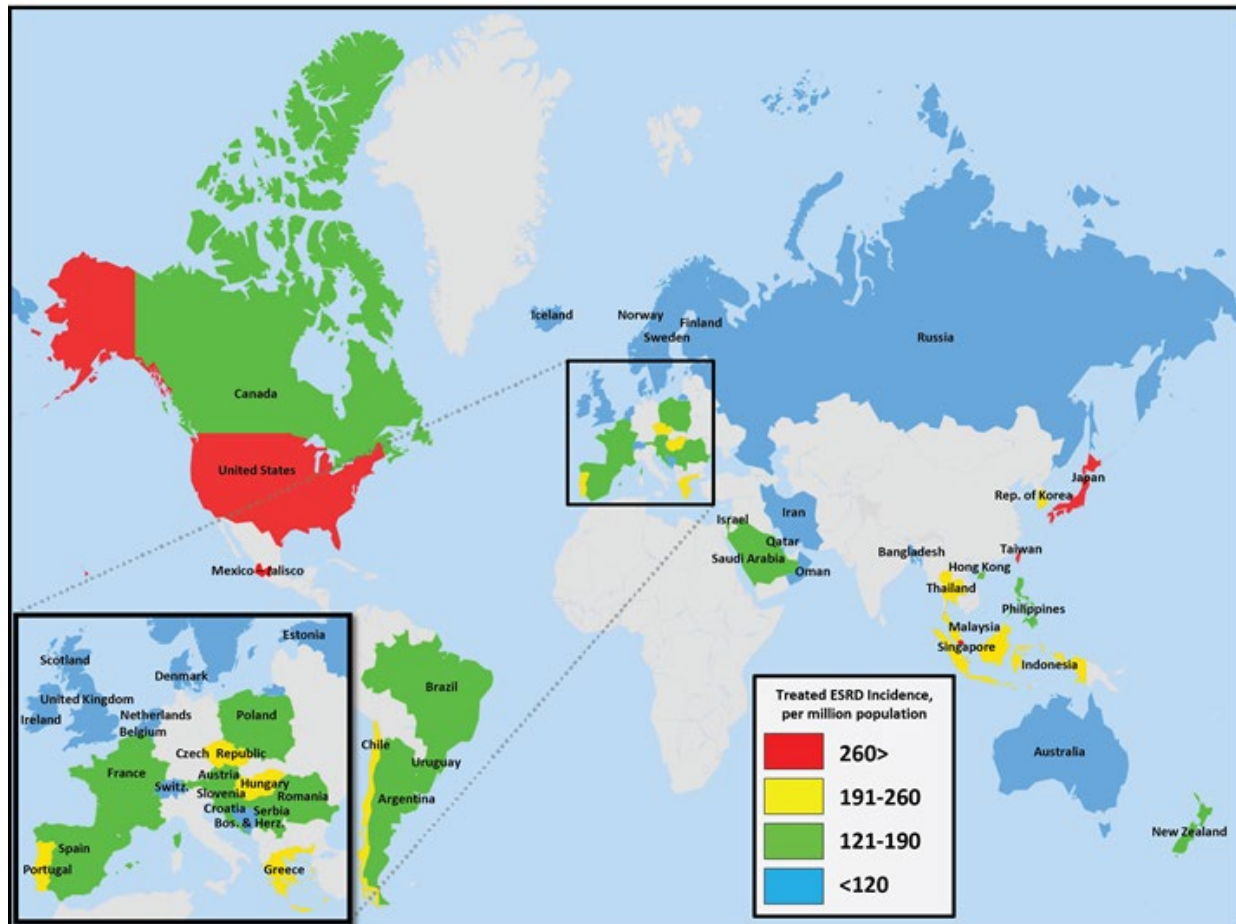
ANALYTICAL METHODS

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

Incidence of Treated End-stage Renal Disease

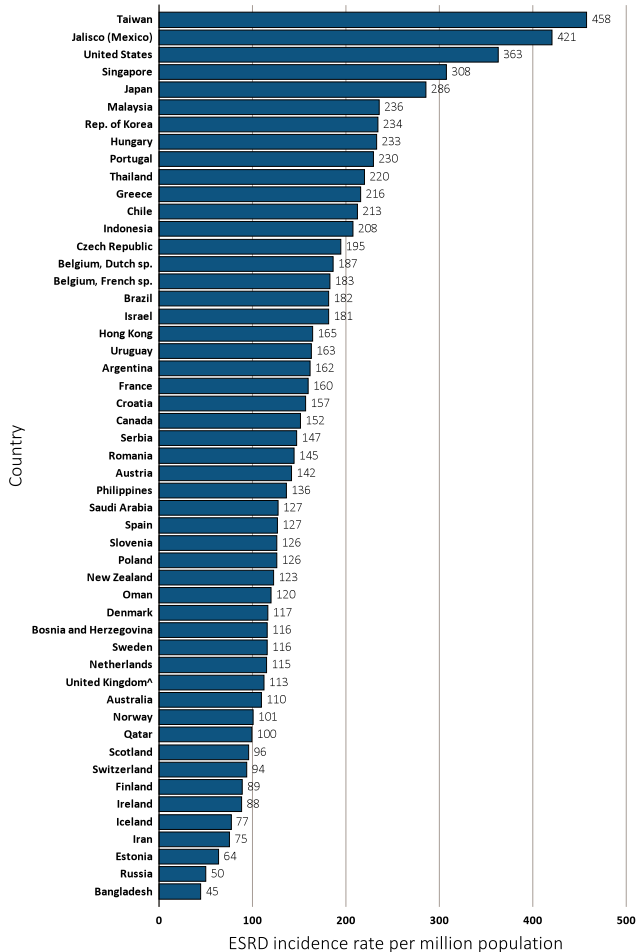
In 2013, reported incidence rates of treated ESRD varied greatly across countries (see Figures 13.1 and 13.2). Taiwan, the Jalisco region of Mexico, and the United States (U.S.) reported the highest incidence of treated ESRD, at 458, 421, and 363 individuals per million population, respectively. The next highest rates, ranging from 208–308 per million population, were reported for Singapore, Japan, Malaysia, Republic of Korea, Hungary, Portugal, Thailand, Greece, Chile, and Indonesia. The lowest treated ESRD incidence rates, ranging from 45 to 96 per million population, were reported by Bangladesh, Russia, Estonia, Iran, Iceland, Ireland, Finland, Switzerland, and Scotland.

vol 2 Figure 13.1 Geographic variations in the incidence of treated ESRD, per million population, by country, 2013



Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. All rates are unadjusted. 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.

vol 2 Figure 13.2 Incidence of treated ESRD, per million population, by country, 2013

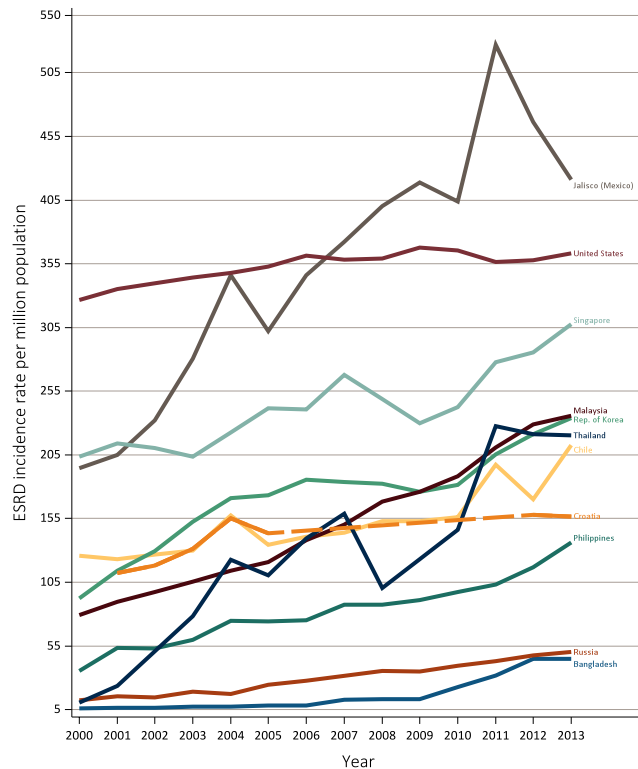


Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. All rates are unadjusted. Data for Belgium do not include patients younger than 20. Data for Indonesia represent the West Java region. Data for France include 22 regions. Data for Spain include 18 of 19 regions. Abbreviations: ESRD, end-stage renal disease.

Trends in the incidence of treated ESRD, by country, are shown in Figure 13.3 and Table 13.1. Large international variations are observed. Table 13.1, shows the percent change in averaged ESRD incidence rates in 2000/2001 versus that in 2012/2013. The greatest increases in the incidence of treated ESRD were reported for Thailand (1210%), Bangladesh (629%), Russia (249%), Philippines (185%), Malaysia (176%), the Jalisco region of Mexico (122%), and the Republic of Korea (121%). In contrast, the averaged ESRD incidence in 2012/13 was 2-11% lower than that in 2000/01 in Denmark, Sweden, Scotland, Finland, and Canada. However, the trend in the treated ESRD incidence rate was relatively stable in nearly half of all countries with reported data from 2000 to 2013, ranging from an overall 5% to 30% increase in the ESRD incidence rate in 2000/01 versus that in 2012/13. The U.S. displayed one of the more stable ESRD incidence rates over this time period, with an overall 9% increase from 2000/01 to that in 2012/13, with most of this change occurring prior to 2006 with essentially no meaningful change as of 2006 in the US in ESRD incidence rates.

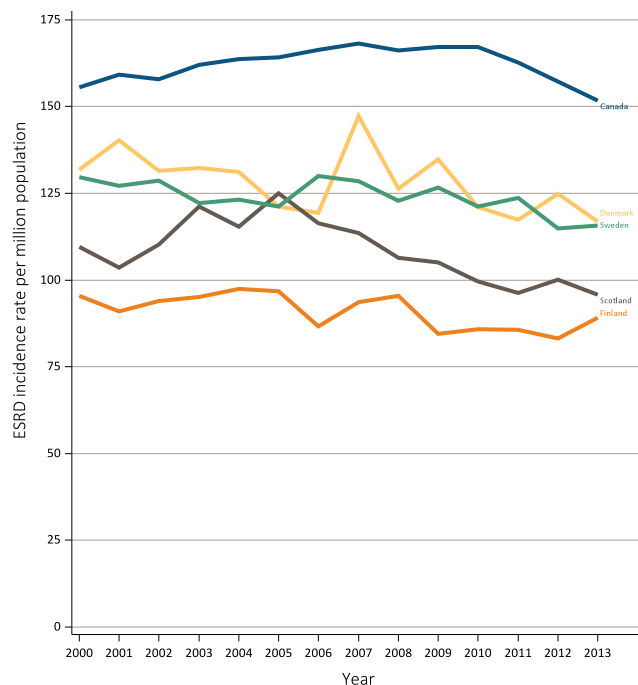
vol 2 Figure 13.3 Trends in the incidence of treated ESRD, per million population, by country, 2000-2013

(a) Ten countries having the highest % rise in ESRD incidence rate from 2000/01 to 2012/13, plus the U.S.



Data source: Special analyses, USRDS ESRD Database. All rates are unadjusted. Data for Croatia are missing from 2006-2011, indicated by the dashed line. Data for U.S. are shown for comparison purposes. Abbreviations: ESRD, end-stage renal disease.

(b) Five countries having the largest % decline in ESRD incidence rate from 2000/01 to 2012/13



Data source: Special analyses, USRDS ESRD Database. All rates are unadjusted. Only five countries had a decrease in incidence from 2000/01-2012/13. Abbreviations: ESRD, end-stage renal disease.

vol 2 Table 13.1 Trends in the incidence of treated ESRD, per million population, by country, 2000-2013

ESRD prevalence, per million population

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	% change from 2000/01 to 2012/13
Argentina	.	.	.	.	137.4	140.3	141.0	151.1	144.4	152.6	151.5	151.9	156.0	162.0	.
Australia	91.6	98.4	96.7	99.7	96.9	112.8	117.4	113.3	120.2	112.1	106.0	112.4	113.2	110.0	17.5
Austria	132.3	137.6	135.3	140.2	160.8	153.8	159.5	154.0	149.7	150.9	139.8	141.4	143.0	141.7	5.5
Bahrain	.	.	.	.	.	.	.	.	206.1	205.4	219.5	207.5	.	.	.
Bangladesh	6.1	6.2	6.4	7.5	7.1	8.3	8.3	12.9	13.1	13.4	22.8	31.5	44.9	44.7	628.5
Belgium, Dutch sp.	149.3	159.8	174.0	174.8	181.4	183.1	192.4	189.8	192.6	208.8	198.4	185.3	189.6	186.5	21.7
Belgium, French sp.	.	176.5	172.9	160.5	186.5	176.8	187.0	187.0	191.8	195.8	191.1	186.3	190.4	182.7	5.7
Bosnia and Herzegovina	.	.	.	106.2	107.5	103.9	132.6	150.8	149.3	143.3	133.1	122.6	125.4	116.0	.
Brazil	.	.	.	.	.	177.4	184.9	140.1	145.4	98.0	146.7	174.1	171.5	181.8	.
Canada	155.6	159.2	157.8	162.0	163.6	164.1	166.3	168.2	166.1	167.2	167.1	162.6	157.1	151.7	-1.9
Chile	125.8	123.0	126.8	129.9	157.4	134.5	140.5	143.8	152.8	153.1	155.9	197.2	170.1	212.6	53.8
Colombia	.	.	.	.	96.7	100.7	125.9	146.4	107.4	103.4	122.9	92.8	.	.	.
Croatia	.	112.1	118.2	131.4	155.0	143.5	.	.	.	.	.	.	158.1	156.7	40.4
Czech Republic	150.1	162.8	159.0	167.0	166.0	174.5	185.7	184.6	181.9	180.5	197.8	171.9	.	194.5	24.3
Denmark	131.8	140.2	131.5	132.3	131.2	121.2	119.4	147.2	126.3	134.8	121.0	117.3	124.8	116.9	-11.1
Estonia	.	.	.	.	.	.	.	.	.	.	.	.	.	63.7	.
Finland	95.4	91.0	94.0	95.1	97.4	96.8	86.6	93.6	95.4	84.5	85.8	85.6	83.1	89.2	-7.6
France	.	.	.	.	.	140.1	144.0	140.8	148.2	151.3	152.2	151.0	154.7	159.9	.
Greece	157.2	166.7	167.9	179.7	196.5	194.3	197.6	191.6	201.2	205.0	190.9	203.5	210.2	215.8	31.5
Hong Kong	.	130.8	128.8	128.2	141.2	145.1	148.9	147.4	148.2	138.5	151.2	157.7	165.6	164.5	26.2
Hungary	.	.	.	.	.	.	.	.	235.8	264.5	228.6	241.2	234.3	233.2	.
Iceland	56.9	77.2	73.0	72.5	78.7	67.4	69.1	83.7	72.5	87.9	106.9	103.4	59.2	77.2	1.7
Indonesia	.	.	.	.	.	.	.	.	.	100.8	128.4	176.1	194.6	207.9	.
Iran	.	.	.	.	.	.	.	.	99.2	70.2	73.7	73.5	73.6	75.2	.
Ireland	.	.	.	.	.	.	.	.	.	107.2	81.7	90.3	92.2	88.2	.
Israel	165.3	167.5	166.2	187.6	188.6	186.2	192.4	193.2	189.5	193.4	186.4	187.6	182.8	181.4	9.4
Italy	.	.	.	.	.	.	.	.	.	.	162.0	.	.	.	.
Jalisco (Mexico)	194.7	204.8	231.9	280.4	346.1	302.3	345.9	372.2	400.4	419.0	403.9	527.1	466.5	420.9	122.1
Japan	241.8	251.3	256.0	263.0	266.8	270.6	275.4	285.2	287.7	287.5	290.6	294.6	285.3	285.9	15.8

vol 2 Table 13.1 Trends in the incidence of treated ESRD , per million population, by country, 2000-2013 (continued)

ESRD prevalence, per million population

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	% change from 2000/01 to 2012/13
Rep. of Korea	92.5	113.9	129.5	152.4	170.8	173.4	185.3	183.5	182.1	175.9	181.5	205.3	221.1	234.0	120.5
Malaysia	79.1	89.5	97.4	105.6	114.0	121.0	137.8	150.3	168.2	176.0	188.2	210.7	228.8	235.7	175.5
Morelos (Mexico)	.	.	.	.	.	.	.	553.2	557.2	597.1	.	.	.	.	.
Netherlands	95.4	100.8	102.1	103.2	105.7	106.7	112.8	117.4	120.8	118.6	117.6	117.4	120.7	115.4	20.3
New Zealand	109.1	120.3	118.6	115.5	112.5	111.3	119.5	110.9	116.4	135.7	118.4	111.1	117.3	122.9	4.7
Norway	89.7	94.6	92.5	95.5	100.8	99.5	100.0	112.8	112.6	116.4	104.1	102.0	103.4	101.0	10.9
Oman	.	.	.	.	.	.	.	.	102.1	103.0	106.0	108.0	110.0	120.0	.
Philippines	35.2	53.5	53.1	59.8	74.8	74.2	75.3	87.5	87.2	91.1	97.3	103.0	116.8	136.2	185.2
Poland	.	.	.	.	.	.	.	.	129.9	134.2	134.3	131.9	133.1	126.2	.
Portugal	.	.	.	.	.	.	.	.	231.9	239.5	238.5	226.4	219.9	229.8	.
Qatar	.	.	.	.	.	.	.	.	.	.	132.9	136.8	98.7	99.6	.
Romania	.	.	.	.	.	94.2	74.9	89.9	96.7	120.8	137.8	140.5	150.6	144.7	.
Russia	12.5	15.5	14.7	19.2	17.3	24.3	27.7	.	35.5	34.9	39.5	43.1	47.7	50.1	249.3
Saudi Arabia	.	.	.	.	.	.	.	.	138.2	122.5	124.0	130.2	129.2	127.3	.
Scotland	109.5	103.5	110.2	121.2	115.4	125.0	116.3	113.5	106.4	105.1	99.6	96.3	100.1	95.7	-8.1
Serbia	.	.	.	.	.	.	.	.	.	.	.	150.5	136.1	147.3	.
Singapore	203.7	214.1	210.4	203.8	222.6	241.4	240.5	267.7	248.7	229.8	242.3	277.9	285.3	307.5	41.9
Slovenia	.	.	.	.	.	.	.	.	.	129.9	120.1	118.4	125.4	126.2	.
Spain	.	.	.	.	.	126.0	128.0	120.9	128.1	126.5	121.1	120.7	120.4	127.0	.
Sweden	129.7	127.2	128.7	122.1	123.1	121.2	129.9	128.4	122.8	126.7	121.2	123.6	114.8	115.7	-10.3
Switzerland	.	.	.	.	.	.	.	.	.	.	.	.	.	93.9	.
Taiwan	353.0	368.0	395.1	391.5	405.3	432.4	418.3	423.5	415.9	413.9	439.3	431.2	445.4	457.6	25.2
Thailand	10.3	23.4	.	78.4	122.8	110.2	139.4	158.9	100.3	123.2	146.0	227.4	221.1	220.2	1209.5
Turkey	114.8	141.1	117.9	111.6	121.4	178.7	191.8	228.9	261.1	256.7	252.2	238.0	.	.	.
Ukraine	.	.	.	.	.	.	.	.	.	.	.	.	24.8	.	.
United Kingdom^	.	.	.	.	99.7	110.6	114.8	112.4	112.2	111.3	108.6	110.8	110.8	112.5	.
United States	326.7	335.2	339.7	344.3	348.0	352.8	361.5	358.1	359.3	367.9	365.7	356.3	357.7	363.1	8.9
Uruguay	120.6	124.1	135.6	146.3	151.5	146.1	137.6	142.9	166.2	135.1	153.4	176.5	150.0	163.1	28

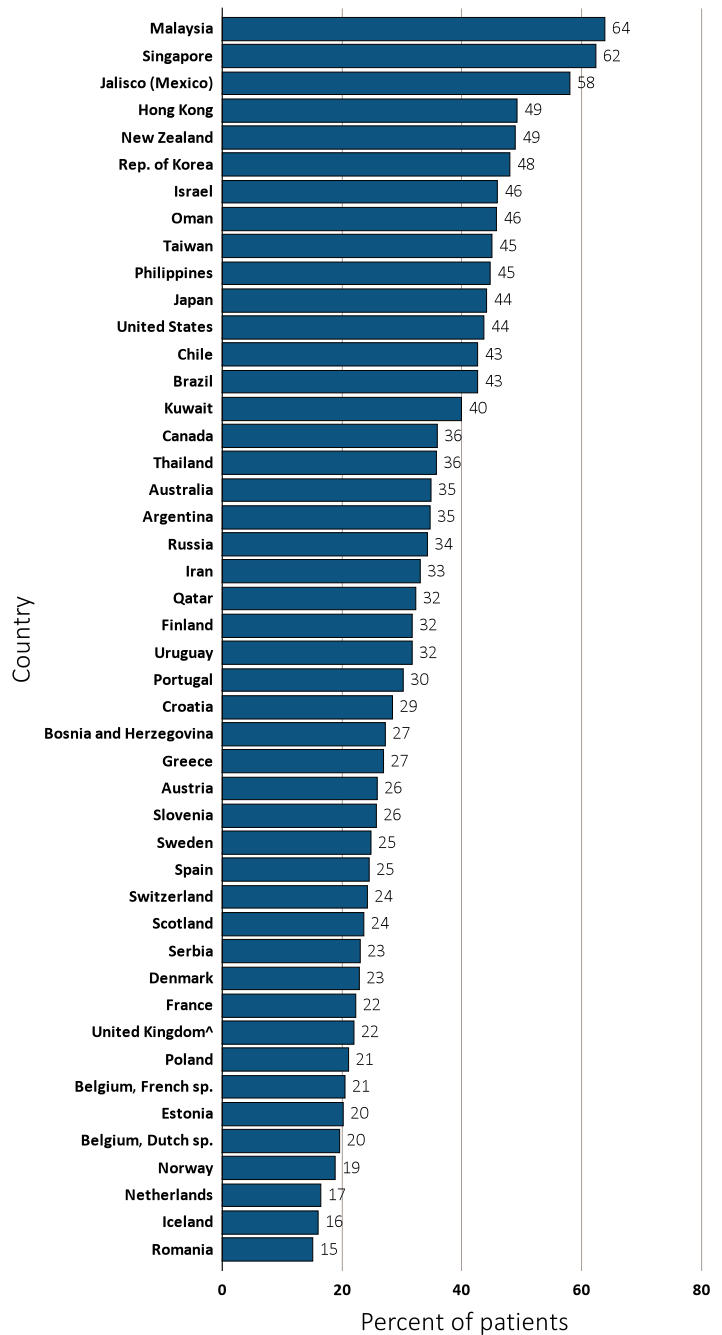
Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. Incidence is unadjusted. ^United Kingdom: England, Wales, Northern Ireland (Scotland data reported separately). Japan and Taiwan are dialysis only. Data for France include 15 regions in 2006, 18 regions in 2007, 20 regions in 2008, and 22 regions in 2009-2013. 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. ° % change is calculated as the percent difference between the average incidence in 2012 and 2013 and the average in 2000 and 2001. Abbreviations: ESRD, end-stage renal disease; sp., speaking; . signifies data not reported.

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

Data on the incidence of treated ESRD with a primary cause of diabetes mellitus (DM)—a key factor in the global burden of ESRD—were provided by nearly 80% of the countries participating in this report. In 2013, Singapore and Malaysia reported the highest proportions of patients with new ESRD due to DM, at 64 and 62%, respectively (Figure 13.4). Furthermore, DM was the primary cause of new ESRD for at least 40% of patients in Hong Kong, New Zealand, Republic of Korea, Israel, Oman, Taiwan, the Philippines, Japan, United States, Chile, Brazil, and Kuwait. In contrast, DM was the primary cause of ESRD for $\leq 20\%$ of new ESRD patients in Estonia, Belgium (Dutch-speaking), Norway, Netherlands, Iceland, and Romania in 2013.

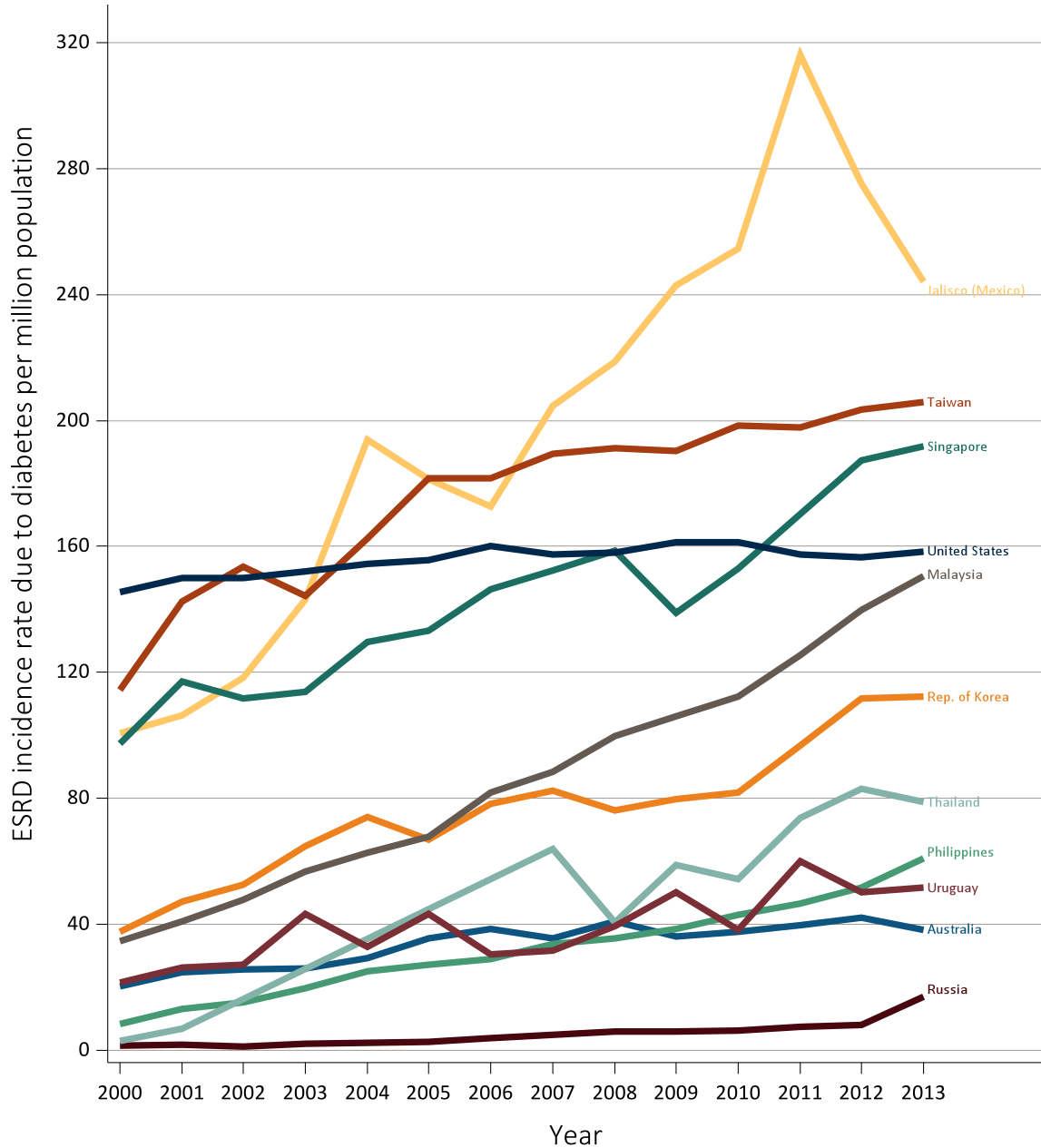
Twenty-one countries have provided rates of ESRD due to DM for the entire time period from 2000 to 2013. These data indicate an overall rise in the rate of treated ESRD due to DM in most, but not all, countries (Table 13.2) However, in some countries the increase in treated ESRD incidence due to DM has been especially large (Figure 13.5), such as in the Jalisco region of Mexico, the Republic of Korea, Malaysia, the Philippines, Singapore, Thailand, Russia, and Uruguay. In these countries, rates have more than doubled between 2000 and 2013. Among the countries shown, the Jalisco region of Mexico had the highest rate of treated ESRD incidence due to DM in 2013, at nearly 280 new ESRD patients per million population.

vol 2 Figure 13.4 Percentage of incident ESRD patients with diabetes as the primary cause of ESRD, by country, 2013



Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. 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: ESRD, end-stage renal disease; sp., speaking.

vol 2 Figure 13.5 Trends in the incidence of treated ESRD due to diabetes, per million population, 2000-2013: Ten countries having the highest % rise from 2000/01 to 2012/13, plus the U.S.



Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. Abbreviations: ESRD, end-stage renal disease.

vol 2 Table 13.2 Trends in the incidence of treated ESRD due to diabetes, per million population, 2000-2013

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	% change from 2000/01 to 2012/13
Argentina	.	.	.	.	43.1	48.7	47.6	50.1	51.1	52.1	53.5	54.9	56.2	56.2	.
Australia	20.4	24.9	25.8	25.9	29.3	35.6	38.5	35.7	40.9	36.1	37.7	39.9	42.1	38.4	77.7
Austria	43.6	44.5	46.6	47.0	51.9	51.5	52.7	48.8	47.8	44.9	42.1	40.6	37.1	36.7	-16.2
Bahrain	.	.	.	.	.	.	.	.	71.4	71.3	70.5	81.2	.	.	.
Belgium, Dutch sp.	31.3	38.1	38.9	42.0	44.3	44.4	42.8	44.5	44.5	48.3	41.6	38.4	35.3	36.6	3.6
Belgium, French sp.	.	36.5	38.9	40.1	39.6	41.9	42.0	42.6	44.2	49.3	40.7	38.6	41.7	37.4	8.4
Bosnia and Herzegovina	.	.	.	24.3	21.7	21.4	28.4	29.7	30.3	43.1	32.4	31.4	36.2	31.6	.
Brazil	.	.	.	.	.	.	.	.	50.2	.	.	.	.	77.4	.
Canada	49.8	53.3	53.1	55.4	56.2	57.2	56.9	58.4	57.6	57.4	59.5	58.1	60.8	54.5	11.8
Chile	.	.	.	.	.	.	.	.	.	.	.	.	.	90.6	.
Colombia	.	.	.	.	31.9	36.2	57.5	58.4	35.1	26.1	52.2	31.1	.	.	.
Croatia	.	.	.	.	.	.	.	.	.	.	.	.	37.5	44.6	.
Czech Republic	49.6	55.3	.	.	.	.	.	.	.	.	.	.	.	.	.
Denmark	28.5	31.7	34.6	29.9	28.2	29.4	28.0	34.6	28.8	30.1	27.7	30.6	34.9	26.8	2.5
Estonia	.	.	.	.	.	.	.	.	.	.	.	.	.	12.9	.
Finland	30.3	30.8	36.7	33.2	32.3	33.5	31.0	33.5	31.8	27.9	29.1	30.4	28.3	28.3	-7.4
France	.	.	.	.	.	32.1	30.7	30.9	33.6	34.5	34.7	33.8	34.1	35.7	.
Greece	41.0	44.6	45.0	50.4	55.6	56.9	58.3	53.3	58.6	57.0	55.7	55.2	54.5	58.0	31.4
Hong Kong	.	.	60.5	51.2	57.2	59.7	59.9	66.6	62.7	65.4	69.3	72.5	79.0	81.0	.
Hungary	.	.	.	.	.	.	.	.	91.4	91.2	101.9	91.4	91.6	.	.
Iceland	3.6	14.0	7.0	.	3.4	3.4	19.8	9.7	12.6	15.7	15.7	40.8	.	12.4	40.9
Iran	.	.	.	.	.	.	.	.	22.1	23.2	24.6	24.6	24.8	24.9	.
Israel	.	.	65.3	73.3	79.6	75.8	80.7	80.8	78.4	83.4	83.7	90.5	89.2	83.3	.
Italy	.	.	.	.	.	.	.	.	.	.	34.0	.	.	.	.
Jalisco (Mexico)	100.6	106.5	118.2	143.0	193.8	181.4	172.7	204.7	218.8	243.0	254.5	316.2	275.2	244.1	150.7
Japan	87.9	95.7	99.1	106.8	109.1	112.6	117.1	123.3	124.2	128.1	127.7	131.3	126.8	126.0	37.7
Rep. of Korea	37.7	47.3	52.7	64.8	74.1	66.8	78.4	82.4	76.3	79.8	82.0	96.7	111.9	112.3	163.8
Malaysia	34.8	41.0	47.8	56.9	62.8	67.7	81.9	88.5	99.7	106.2	112.3	125.6	139.8	150.7	283.2

Table 13.2 continued on next page.

vol 2 Table 13.2 Trends in the incidence of treated ESRD due to diabetes, per million population, 2000-2013 (continued)

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	% change from 2000/01 to 2012/13
Morelos (Mexico)	.	.	.	.	.	.	.	287.5	333.4	346.9	.	.	.	.	.
Netherlands	15.6	16.3	17.8	17.1	18.4	16.7	18.4	21.5	22.2	18.8	18.8	20.5	20.1	19.0	22.6
New Zealand	39.1	45.6	52.8	47.6	45.7	46.9	50.4	45.6	53.3	64.8	59.8	46.8	57.2	60.1	38.5
Norway	13.6	13.7	11.0	15.1	17.4	12.8	16.5	15.3	20.3	21.3	17.8	14.5	17.1	19.1	32.6
Oman	.	.	.	.	.	.	.	.	45.9	48.0	48.0	52.0	52.0	55.0	.
Philippines	8.4	13.3	15.2	19.7	25.1	27.1	29.0	33.8	35.5	38.7	43.0	46.5	51.8	60.9	419.4
Poland	.	.	.	.	.	.	.	.	31.2	28.7	26.3	30.0	30.7	26.7	.
Portugal	.	.	.	.	.	.	.	.	75.7	72.3	75.2	75.7	68.5	69.4	.
Qatar	.	.	.	.	.	.	.	.	.	.	32.1	32.9	32.9	32.3	.
Romania	.	.	.	.	.	10.1	9.2	10.5	12.1	15.7	19.6	18.4	19.7	21.9	.
Russia	1.6	1.8	1.3	2.1	.	2.7	3.8	.	6.1	5.9	6.2	7.4	8.1	17.2	644.1
Saudi Arabia	.	.	.	.	.	.	.	.	48.4	45.3	42.2	48.2	50.4	.	.
Scotland	19.9	18.8	20.4	22.9	20.7	27.7	25.8	23.1	23.4	25.4	23.2	22.3	28.0	22.7	31
Serbia	.	.	.	.	.	.	.	.	.	.	.	33.4	33.1	34.0	.
Singapore	97.4	117.2	111.7	113.8	129.8	133.2	146.4	152.4	158.7	139.0	153.0	170.2	187.3	191.7	76.6
Slovenia	.	.	.	.	.	.	.	.	.	31.9	30.3	31.7	35.0	32.5	.
Spain	.	.	.	.	30.6	29.3	29.9	26.0	28.9	25.6	29.8	29.3	29.9	31.3	.
Sweden	33.0	32.1	30.6	29.4	30.9	31.3	33.9	35.4	29.0	32.0	29.8	30.2	26.2	28.6	-15.8
Switzerland	.	.	.	.	.	.	.	.	.	.	.	.	.	22.8	.
Taiwan	114.4	142.5	153.6	144.2	162.6	181.8	181.8	189.5	191.1	190.2	198.4	197.8	203.4	205.8	59.3
Thailand	3.1	7.0	.	.	.	.	.	64.0	40.7	58.8	54.5	73.9	83.2	78.8	1504
Turkey	26.7	37.1	54.5	25.8	25.9	54.0	44.2	52.2	70.5	68.6	76.9	78.4	.	.	.
Ukraine	.	.	.	.	.	.	.	.	.	.	.	.	3.0	.	.
United Kingdom^a	.	.	.	.	19.1	21.0	23.7	23.7	23.9	25.3	24.0	24.7	25.7	24.7	.
United States	145.6	150.0	150.1	152.2	154.5	155.8	160.2	157.4	158.0	161.4	161.4	157.6	156.6	158.5	6.6
Uruguay	21.4	26.3	27.1	43.3	33.0	43.3	30.5	31.6	39.6	50.2	38.4	60.0	50.2	51.7	113.6

Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. Data for France include 15 regions in 2006, 18 regions in 2007, 20 regions in 2008, and 22 regions in 2009-2013. Data for Spain include 18 of 19 regions. Data for Belgium do not include patients younger than 20. ^a % change is calculated as the percent difference between the average incidence in 2012 and 2013 and the average in 2000 and 2001. Abbreviations: ESRD, end-stage renal disease.

Incidence of Treated End-stage Renal Disease by Age Group

The incidence of treated ESRD in 2013 is shown by age group in Figure 13.6. In the majority of countries, treated ESRD incidence was highest among patients aged 75 years or older. The highest ESRD incidence rates in the population aged 75 years and older were reported for Poland, Taiwan, and the U.S. (3166, 2720, and 1396 per million population, respectively). However, the oldest cohort did not display the highest incidence in all countries. In Hong Kong, Malaysia, New Zealand, Serbia, Romania, Russia, Estonia, and Finland, the incidence of treated ESRD was 20-50% lower in the population aged 75 years or older, as compared to those 65-74 years. The highest rate of ESRD incidence in younger adults (aged 20-44 years) was reported in the U.S., where 2013 rates were more than twice that of most other countries with available data.

vol 2 Figure 13.6 Incidence of treated ESRD per million population, by age group and country, 2013

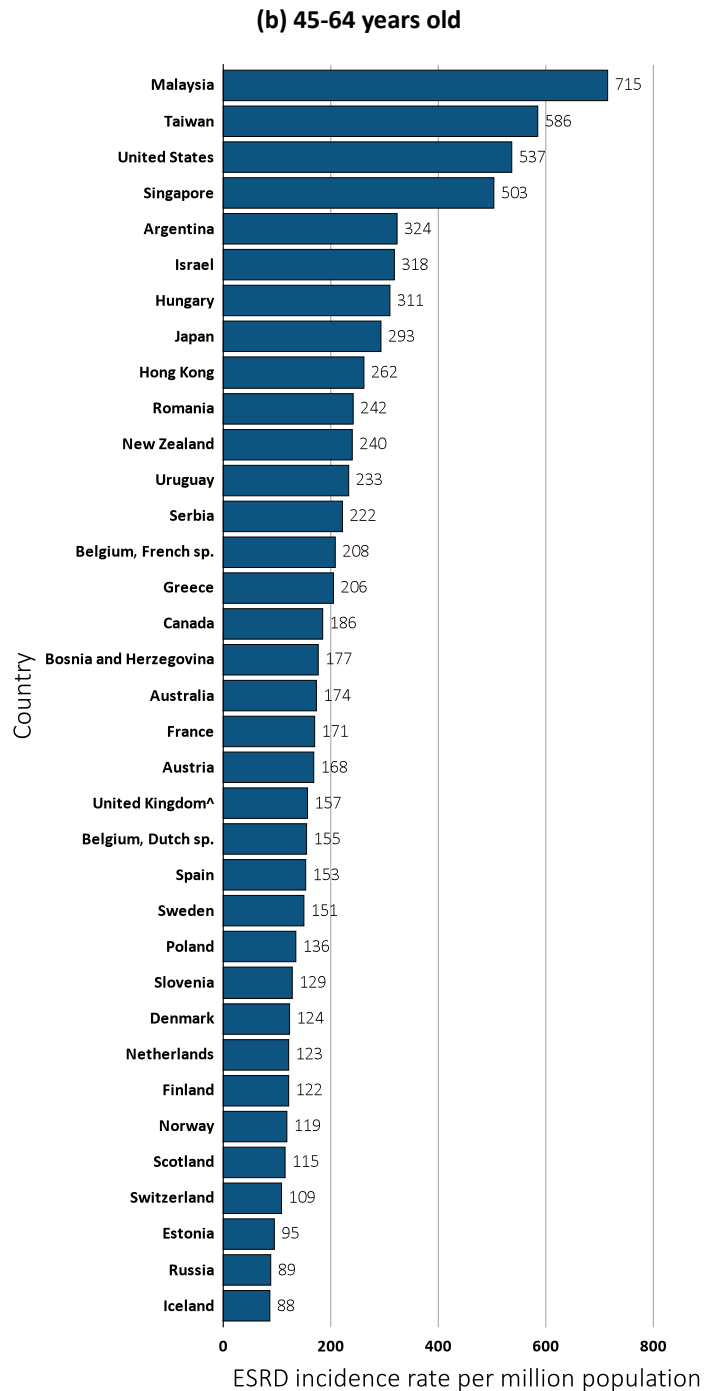
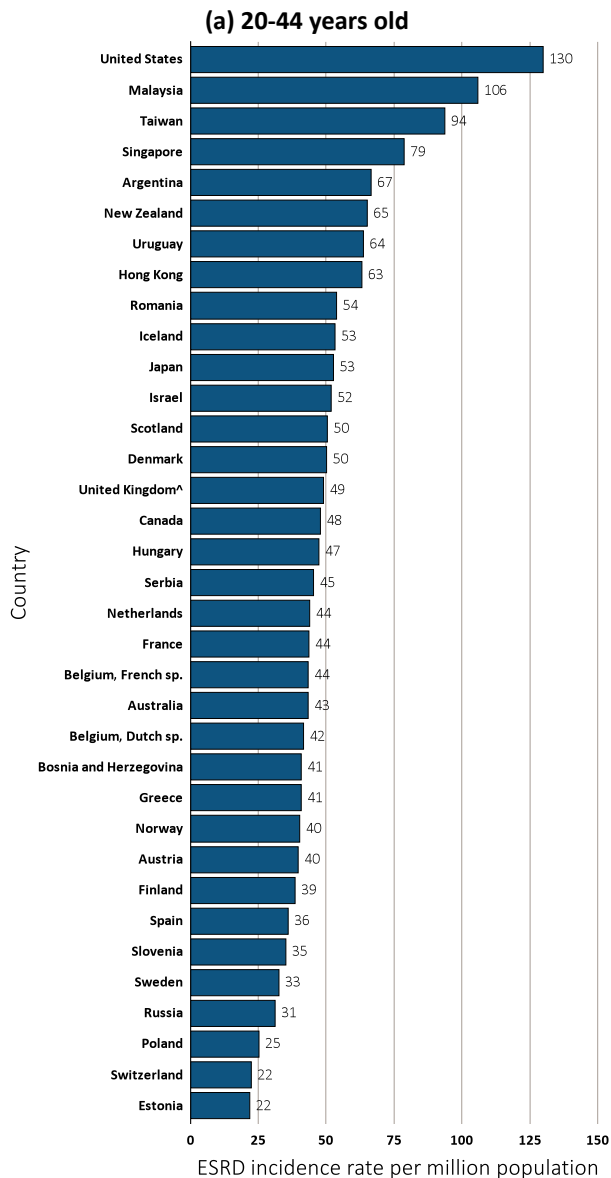
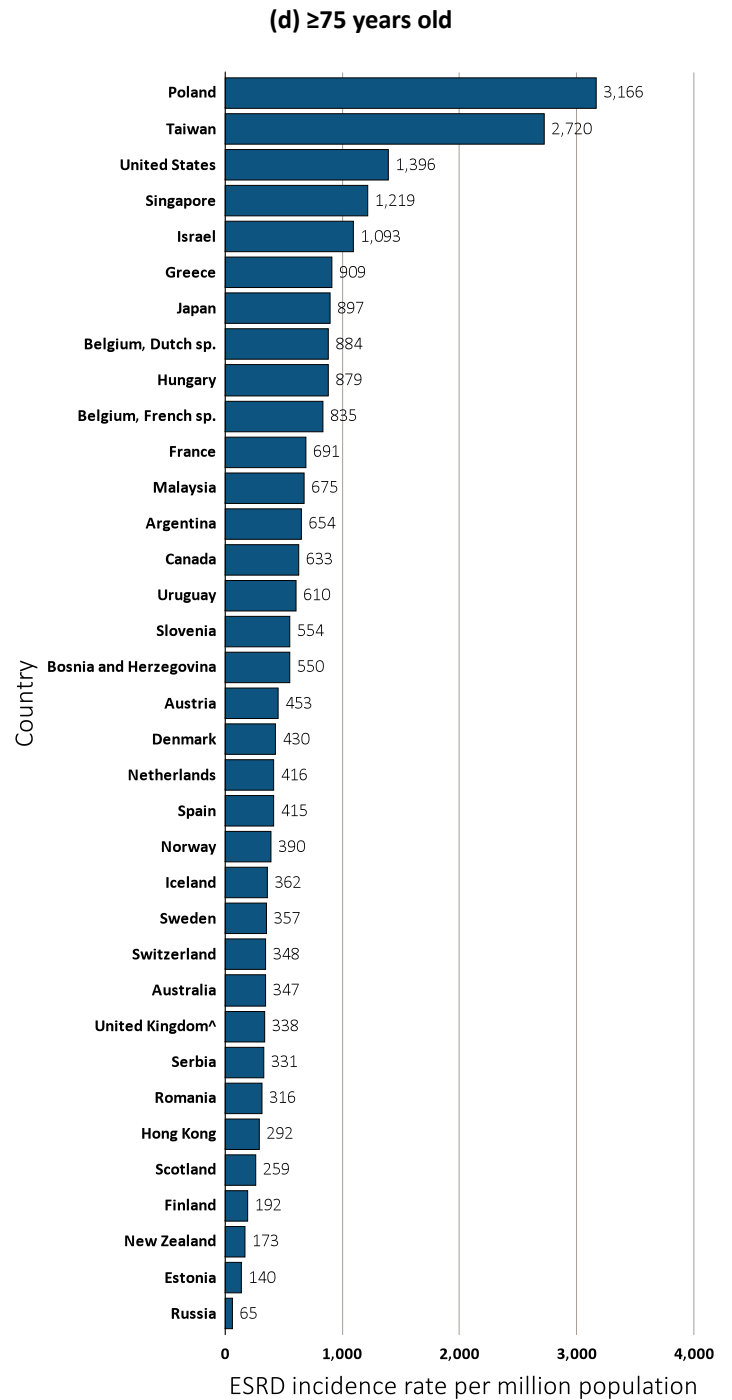
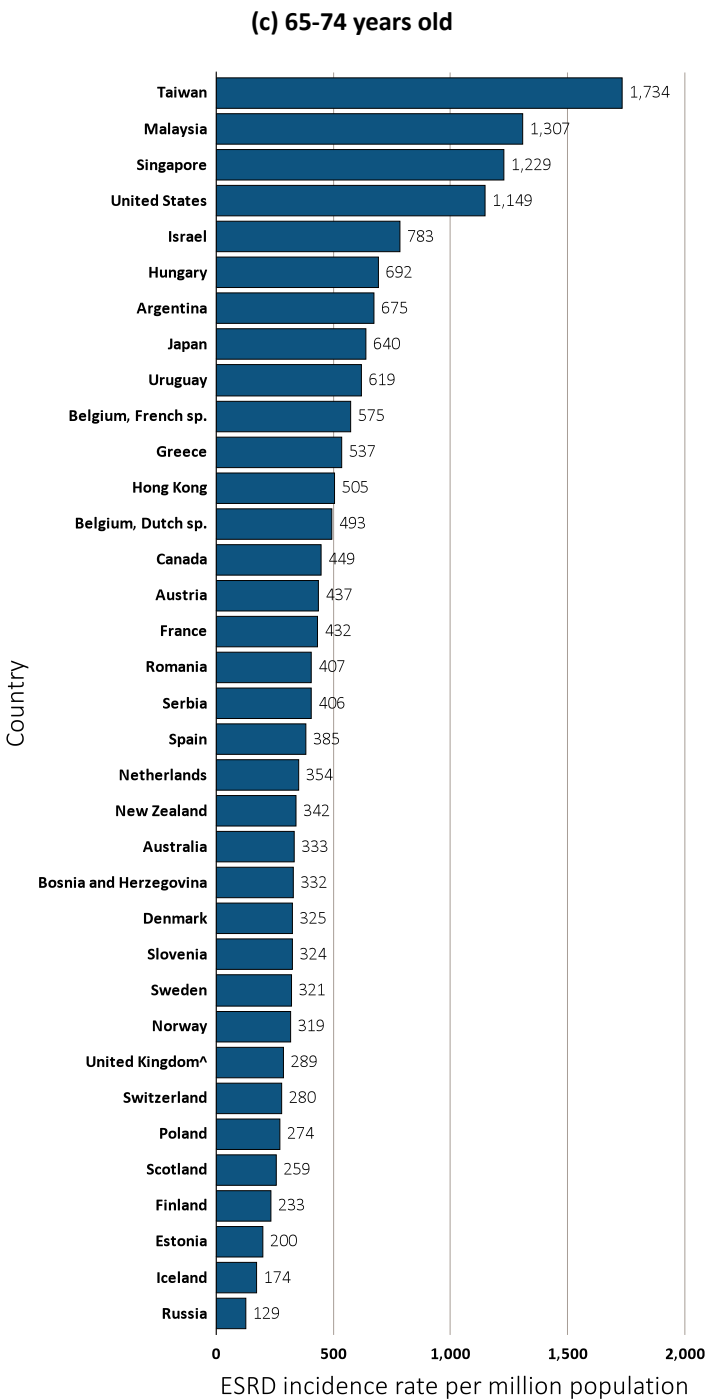


Figure 13.6 continued on next page.

vol 2 Figure 13.6 Incidence of treated ESRD per million population, by age group and country, 2013 (continued)



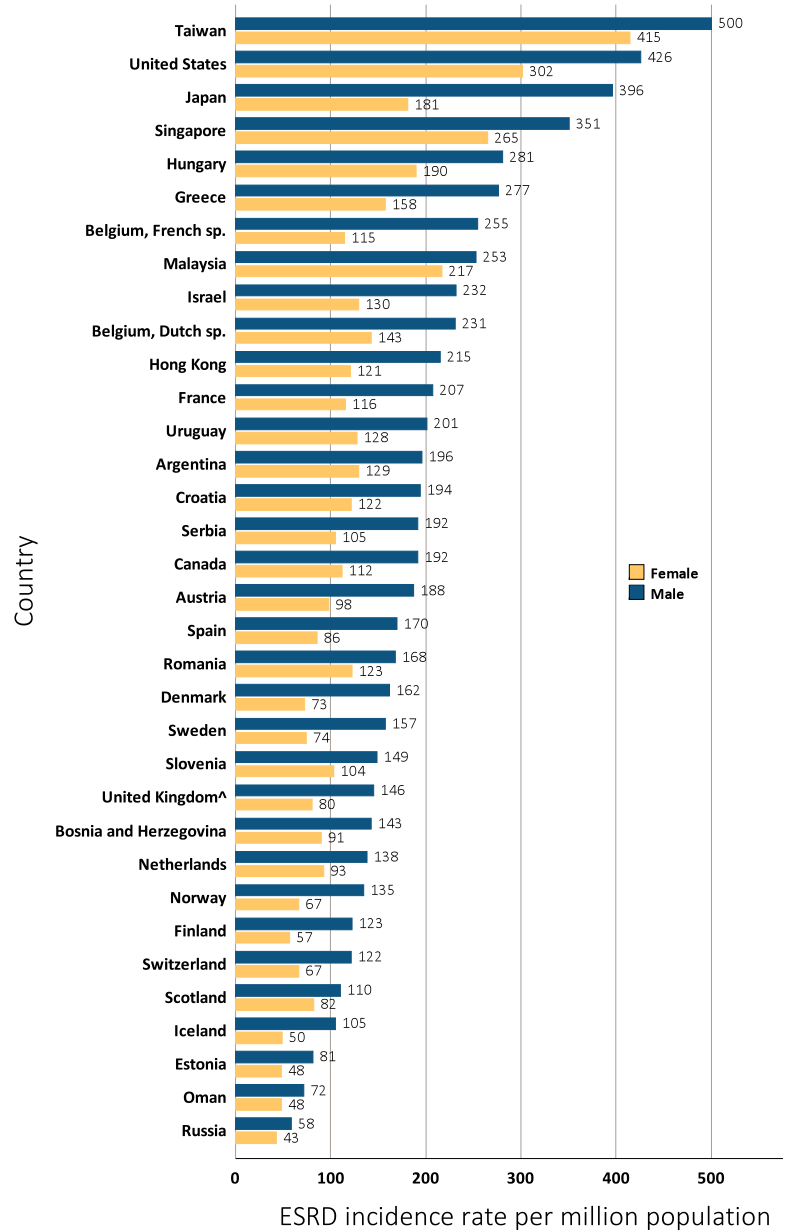
Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. Data for Spain include 18 of 19 regions. Data for France include 22 regions. For graph (a), data for Spain include patients 15-44 years old, and data for the United States include patients 22-44 years old. Abbreviations: ESRD, end-stage renal disease; sp., speaking.

Incidence of Treated End-stage Renal Disease by Sex

Comparisons of the incidence of treated ESRD by sex are shown in Figure 13.7. In every country the rate is substantially higher for males than for females. The incidence of treated ESRD was approximately 1.8 to 2 times higher for males in French-speaking Belgium, France, all of the Nordic countries shown, and Spain, and was 1.2 to 1.9 times higher for males versus females in most other countries. In contrast, Taiwan was the only country in which the incidence of treated ESRD was only slightly higher for males than for females.

The above indication of considerably lower ESRD incidence for females versus males in nearly all countries shown in Figure 13.7 is consistent with the recent paper by Hecking et al (2014) who observed that considerably fewer women than men were being treated with hemodialysis for end-stage renal disease in 12 countries participating in the Dialysis Outcomes and Practice Patterns Study (DOPPS) from 2002-2012. The current international findings regarding substantially lower ESRD incidence rates for females versus males in essentially all countries displayed in this current report in conjunction with the prior findings by Hecking et al (2014) lead to the broader question of what factors are responsible for this differential ESRD incidence in males versus females that is consistently being seen across this large number of countries.

vol 2 Figure 13.7 Incidence of treated ESRD per million population, by sex and country, 2013



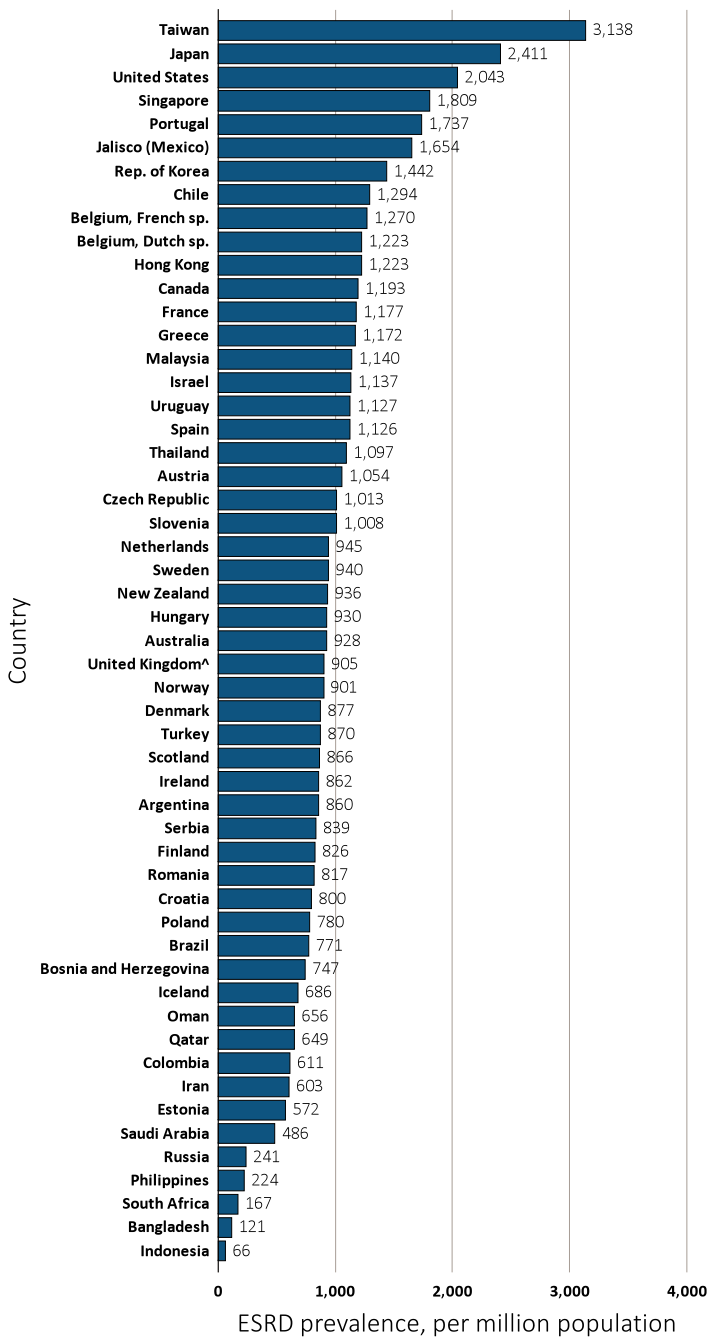
Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. Data for Belgium do not include patients younger than 20. Data for Spain include 18 of 19 regions. Data for France include 22 regions. Data for Indonesia represent the West Java region. Abbreviations: ESRD, end-stage renal disease; sp., speaking.

Prevalence of End-stage Renal Disease

In 2013, ESRD prevalence varied nearly 30-fold across represented countries (see Figure 13.8 and Table 13.3). Treated ESRD prevalence was highest, ranging from 1442 to 3138 per million population, in the Asian countries of Taiwan, Japan, Singapore, and the Republic of Korea, as well as in the US, Portugal, and Jalisco region of Mexico. In nearly 30% of countries, prevalence ranged from 1,000 to 1,300 per million population, while nearly 45% of countries reported a treated ESRD prevalence between 600 and 1000 patients per million population. These included many countries in the northern part of Western Europe and Central/Eastern Europe, Australia and New Zealand, the South American countries of Argentina, Brazil, and Colombia, and the Middle Eastern nations of Iran and Qatar. The lowest prevalence was reported in Indonesia, Bangladesh, South Africa, the Philippines, Russia, and Saudi Arabia, where ESRD prevalence ranged from 66 to 486 per million population.

In most countries, the prevalence of treated ESRD per million population was highest for individuals aged 65-74 years (Figure 13.9), whereas in Belgium, Bosnia and Herzegovina, Canada, France, Greece, Japan, Netherlands, Slovenia, and Taiwan, the prevalence was highest for those aged 75 years and older. Notably, in Malaysia, New Zealand, and Russia, the prevalence of treated ESRD was ~2 to 2.6 times lower for those 75 years and older versus those 65-74 years old. Among younger adults - 20 to 44 years old - the US displayed the highest ESRD prevalence across all countries. Similar to that seen for ESRD incidence rates, the prevalence of treated ESRD was substantially greater for males than females in all countries, except in Taiwan in which ESRD prevalence was similar for males and females (Figure 13.10).

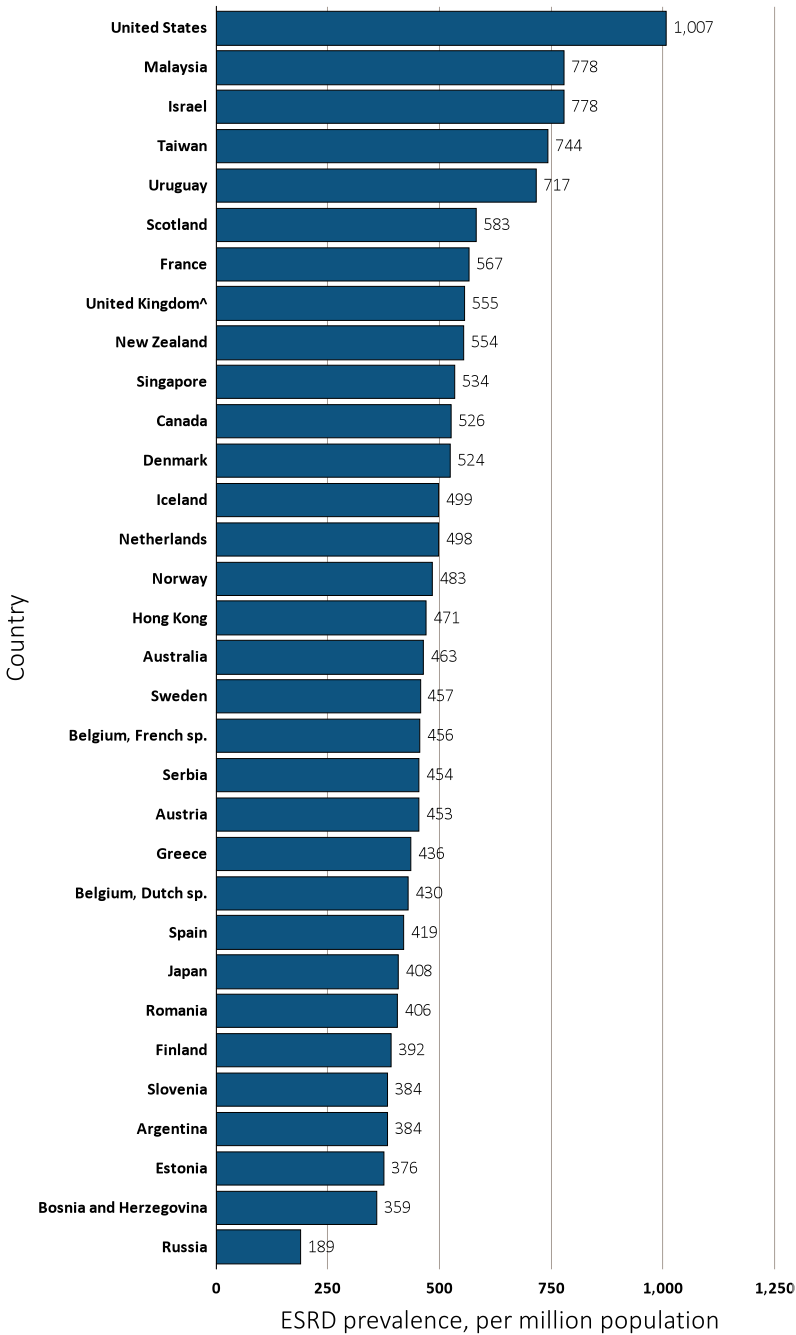
vol 2 Figure 13.8 Prevalence of treated ESRD per million population, by country, 2013



Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. The prevalence is unadjusted and reflects prevalence at the end of 2013. Japan and Indonesia includes 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. Abbreviations: ESRD, end-stage renal disease; sp., speaking.

vol 2 Figure 13.9 Prevalence of treated ESRD per million population, by age group and country, 2013

(a) 20-44 years old



(b) 45-64 years old

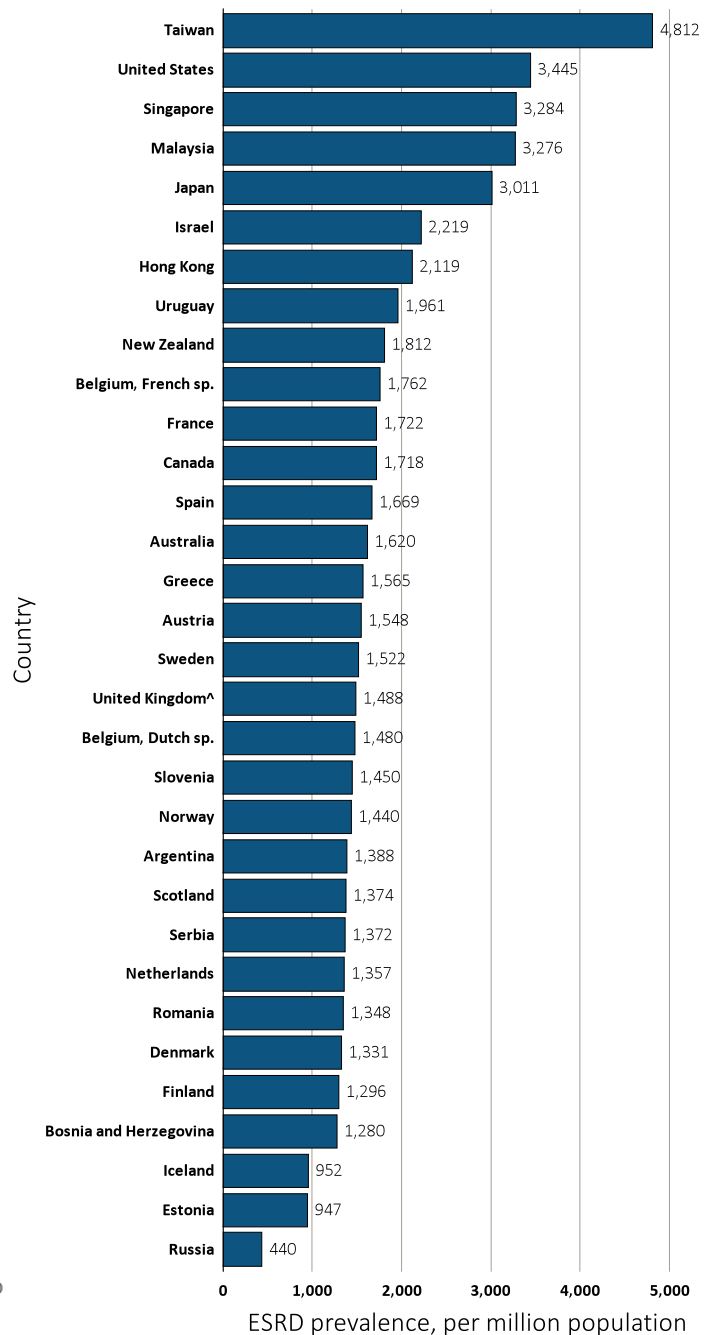
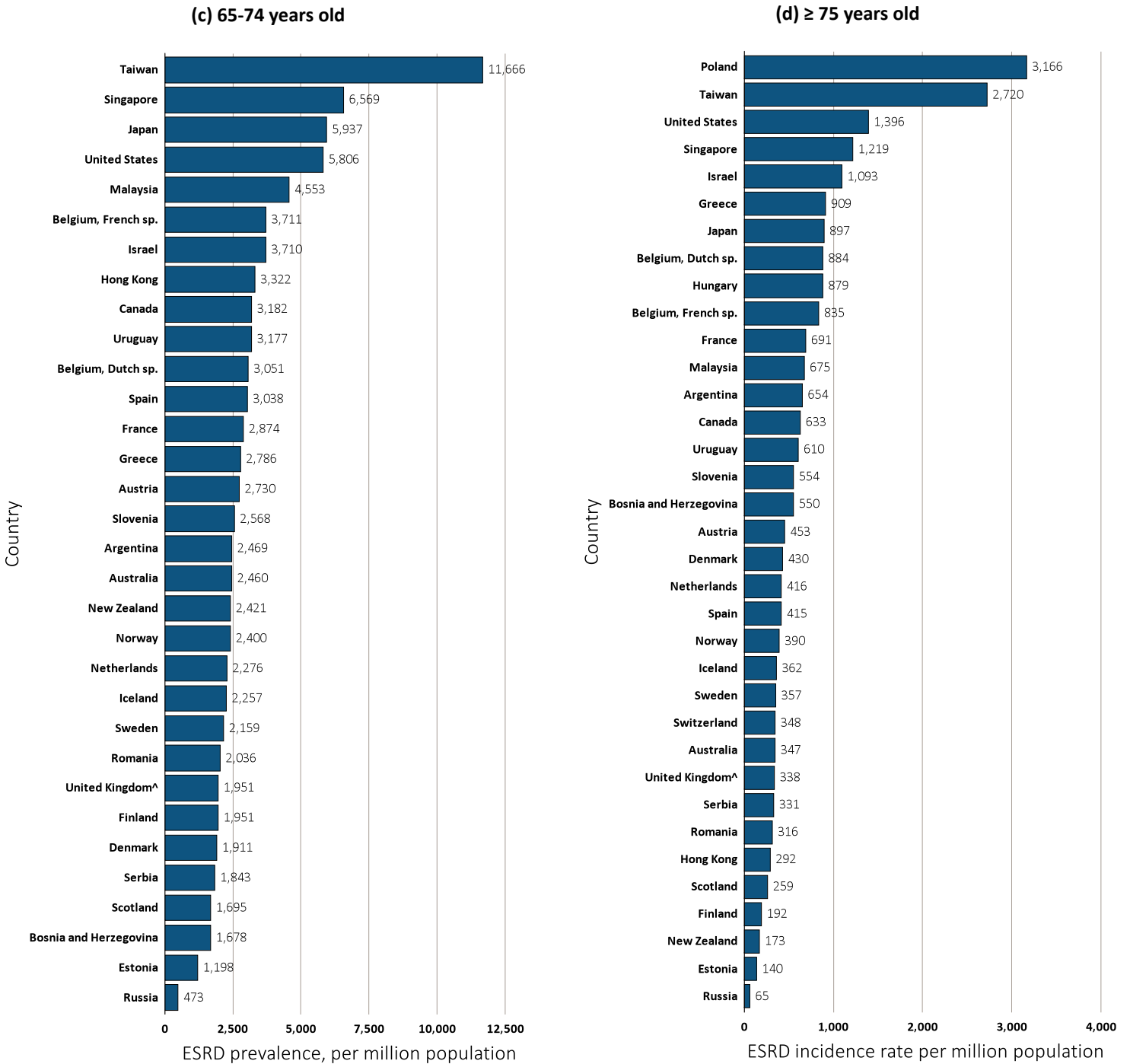


Figure 13.9 continued on next page.

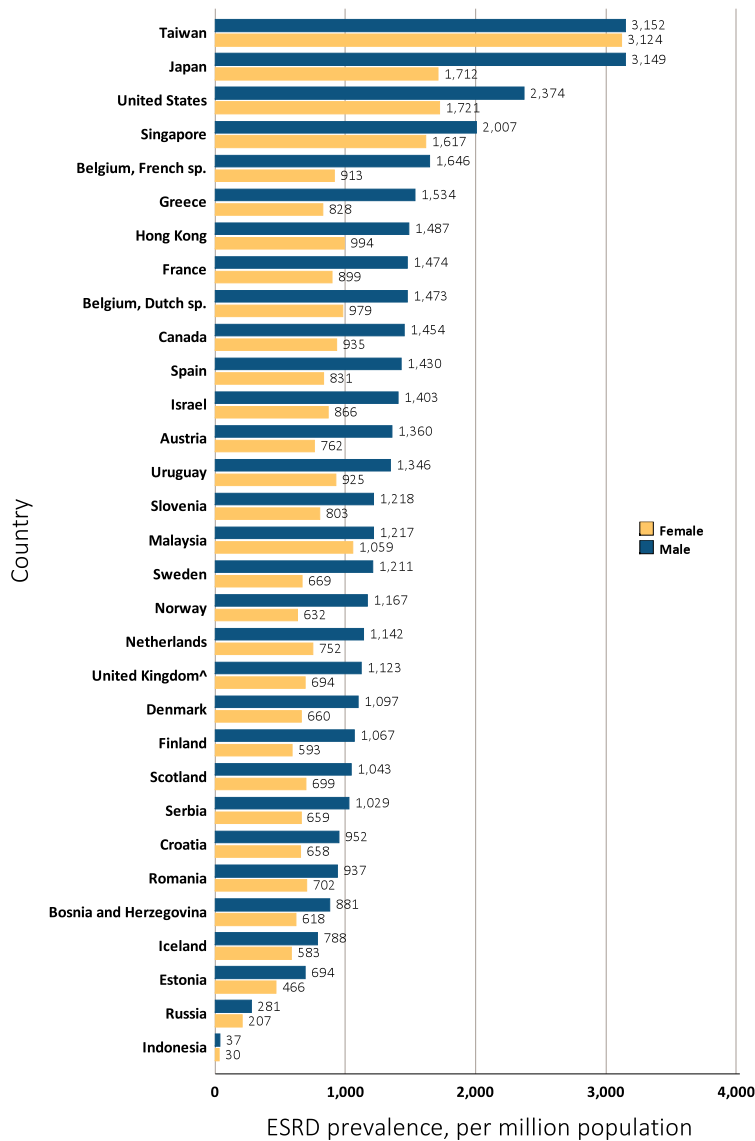
Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. Japan and Indonesia include dialysis patients only. Data for Spain include 18 of 19 regions. Data for France include 22 regions. Abbreviations: ESRD, end-stage renal disease; sp., speaking.

vol 2 Figure 13.9 Prevalence of treated ESRD, per million population, by age group and country, in 2013 (continued)



Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. Japan and Indonesia include dialysis patients only. 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 13.10 Prevalence of treated ESRD per million population, by sex and country, 2013



From 2006 to 2013 the prevalence of ESRD steadily increased in all countries that provided data for 2013. These trends are indicative of the increasing worldwide need for additional dialysis and kidney transplantation services to meet the health needs of individuals with ESRD. As shown in Figure 13.11 and Table 13.3, the largest proportionate increases in ESRD prevalence between 2000/01 and 2012/2013 were observed in Thailand, the Jalisco region of Mexico, and the Philippines (range: 323 to 839% increase), followed by rises of 99% to 227% in ESRD prevalence in Russia, Malaysia, Turkey, the Republic of Korea, Bangladesh, Israel, and Chile.

In 2013, the total number of patients treated for ESRD was by far the highest in the U.S. (Table 13.3), with nearly 650,000 treated patients, followed by Japan and Brazil with approximate cohorts of 307,000 and 155,000 patients, respectively. Spain, the United Kingdom, Turkey, France, Thailand, Taiwan, and the Republic of Korea reported between 50,000 to 75,000 treated ESRD patients in 2013, with all other countries indicating a smaller treated ESRD population, with approximately 9,000 treated ESRD patients in the median country.

Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. Japan and Indonesia include dialysis patients only. 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 Table 13.3 Number of prevalent treated ESRD patients and prevalence of ESRD, per million population, by country, 2000-2013

Country	ESRD prevalence, per million population														% change from 2000/01 to 2012/13
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
Argentina	.	.	.	.	550.3	578.7	598.0	615.4	755.7	761.9	781.7	774.9	819.9	859.9	.
Australia	608.6	634.5	662.7	688.6	709.8	746.5	778.3	801.3	839.0	853.4	872.1	891.3	912.7	928.4	48.1
Austria	714.7	755.2	781.6	859.1	854.4	889.4	908.6	933.5	947.9	980.8	992.3	1001.0	1025.3	1053.7	41.4
Bahrain	.	.	.	.	.	.	.	.	291.0	300.4	280.3	339.7	.	.	.
Bangladesh	52.7	58.9	64.6	72.0	72.5	80.2	87.8	101.3	112.8	107.5	113.0	105.0	122.3	120.7	117.7
Belgium, Dutch sp.	790.4	834.4	879.0	909.8	950.0	993.7	1033.1	1063.8	1096.0	1138.6	1164.0	1184.6	1205.9	1223.1	49.5
Belgium, French sp.	.	828.6	885.3	933.0	987.1	1022.2	1071.5	1110.7	1145.7	1128.1	1165.0	1193.2	1232.6	1269.9	51
Bosnia and Herzegovina	.	.	.	477.3	487.2	524.2	551.9	601.8	637.0	646.4	675.1	709.8	718.9	746.9	.
Brazil	.	.	.	338.1	367.5	388.9	398.3	466.0	408.5	475.8	467.1	671.2	720.2	771.1	.
Canada	807.6	856.9	899.9	933.1	972.2	1006.1	1039.1	1071.1	1094.1	1118.6	1135.5	1158.3	1175.7	1192.6	42.3
Chile	611.5	671.6	725.8	772.8	840.9	865.8	929.6	985.7	1065.2	1108.8	1161.1	1235.7	1263.4	1293.8	99.3
Colombia	.	.	.	.	.	.	.	.	455.3	441.3	544.2	536.3	578.4	611.3	.
Croatia	621.5	657.0	699.1	789.7	806.8	835.5	.	.	.	.	.	.	1033.0	799.5	43.3
Czech Republic	620.9	662.2	695.1	707.7	757.6	452.4	461.9	499.9	538.1	907.6	970.1	974.4	.	1012.8	57.9
Denmark	639.6	685.3	716.5	743.2	755.8	770.4	781.8	832.2	832.1	842.6	846.3	856.7	871.6	876.9	32
Estonia	.	.	.	.	.	.	.	.	.	.	.	.	.	572.1	.
Finland	582.3	613.0	635.5	663.9	688.8	715.8	727.1	747.4	769.2	783.5	798.6	807.5	811.8	825.9	37
France	.	.	.	.	.	916.9	962.6	953.9	993.1	1052.5	1089.2	1118.6	1142.9	1177.4	.
Greece	799.9	815.6	842.1	880.8	922.7	958.3	986.1	1013.4	1038.9	1069.7	1083.8	1104.1	1136.6	1172.1	42.9
Hong Kong	.	787.5	843.0	877.7	927.8	970.3	1003.0	1031.4	1067.4	1128.9	1145.8	1159.1	1194.9	1222.5	53.5
Hungary	.	.	.	.	.	.	.	.	578.1	868.6	889.9	904.7	919.8	929.6	.
Iceland	362.7	407.1	434.7	480.1	475.9	475.2	483.9	518.5	523.0	536.9	594.3	661.4	676.6	685.7	77
Indonesia	.	.	.	.	.	.	.	.	.	27.9	37.3	40.1	50.6	65.9	.
Iran	.	.	.	.	.	.	.	.	490.6	524.3	544.4	564.2	583.3	603.4	.
Ireland	.	.	.	.	.	.	.	.	.	769.2	801.6	825.2	845.3	862.2	.
Israel	526.0	542.0	577.7	896.3	934.7	973.6	1010.1	1040.7	1070.8	1086.6	1101.9	1120.2	1125.4	1136.7	111.8
Jalisco (Mexico)	270.3	337.9	389.5	394.4	507.6	807.9	928.9	986.2	1029.6	1314.3	1332.3	1381.5	1408.8	1653.5	403.5
Japan	1616.2	1640.3	1727.0	1795.2	1850.9	1879.8	1954.5	2058.1	2126.0	2205.4	2277.4	2313.8	2365.2	2411.1	46.7
Rep. of Korea	584.5	642.2	700.6	794.5	854.0	899.8	941.7	972.8	1031.7	1113.6	1144.4	1224.8	1353.3	1441.5	127.8
Lebanon	.	.	.	.	.	.	.	.	.	.	.	.	855.0	.	.

Table 13.3 continued on next page.

vol 2 Table 13.3 Number of prevalent treated ESRD patients and prevalence of ESRD, per million population, by country, 2000-2013 (continued)

ESRD prevalence, per million population

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	% change from 2000/01 to 2012/13
Malaysia	338.4	382.3	429.4	476.8	526.9	577.4	626.3	692.5	769.4	828.1	903.1	974.8	1060.5	1140.4	205.4
Netherlands	617.1	636.2	656.0	678.4	703.7	733.5	772.2	802.5	820.2	850.4	873.2	894.1	918.2	945.4	48.7
New Zealand	610.6	652.2	689.2	719.1	733.9	754.0	775.5	793.2	812.0	857.2	880.8	884.6	904.7	935.6	45.7
Norway	581.2	611.9	642.8	667.9	708.9	732.4	753.1	784.0	816.9	844.1	859.2	875.0	887.9	900.5	49.9
Oman	.	.	.	.	.	.	.	.	463.5	499.7	618.7	663.2	713.9	655.8	.
Philippines	48.4	.	22.3	46.0	52.3	91.1	80.6	84.6	109.8	119.2	136.9	163.2	185.1	224.4	323
Poland	.	.	.	.	.	.	.	.	647.5	672.4	665.5	706.7	732.2	779.8	.
Portugal	.	.	.	.	.	.	.	.	1406.8	1505.1	1589.5	1662.0	1670.3	1736.9	.
Qatar	.	.	.	.	.	.	.	.	.	.	601.2	627.9	647.4	649.1	.
Romania	.	.	.	.	.	254.4	304.7	368.3	422.4	555.6	625.1	694.4	766.1	816.9	.
Russia	64.8	73.8	79.3	90.9	102.2	114.9	130.1	.	158.0	173.1	185.5	196.4	211.7	241.4	226.9
Saudi Arabia	.	.	.	.	.	.	.	.	797.5	474.5	465.5	492.2	499.4	485.5	.
Scotland	634.5	661.2	683.9	713.2	731.1	761.0	783.9	812.0	809.9	827.1	836.6	841.2	856.1	866.0	32.9
Serbia	.	.	.	.	.	.	.	.	.	.	.	765.5	799.7	839.1	.
Singapore	1103.0	1176.1	1225.7	1271.6	1301.9	1345.3	1400.1	1441.8	1494.8	1526.9	1578.6	1661.8	1741.4	1809.1	55.8
Slovenia	.	.	.	.	.	.	.	.	.	981.5	987.5	985.5	999.9	1008.3	.
South Africa	.	.	.	.	.	.	.	.	.	.	.	.	163.7	166.8	.
Spain	.	.	.	.	1098.5	868.4	961.0	956.2	994.8	886.2	1045.5	1074.7	1075.6	1125.7	.
Sweden	716.4	739.8	764.5	778.3	808.9	820.4	850.7	866.7	875.7	891.6	910.0	929.2	931.3	939.5	28.5
Taiwan	1526.3	1643.7	1792.2	1899.8	1999.2	2101.4	2196.8	2285.1	2432.0	2667.3	2811.5	2923.1	3030.8	3137.7	94.6
Thailand	98.4	114.8	.	237.9	243.4	220.1	286.0	419.8	496.9	552.8	639.3	749.8	905.9	1096.6	839.3
Turkey	271.2	352.6	373.7	401.2	433.4	450.7	589.2	711.5	753.1	819.2	847.4	868.2	815.6	870.2	170.2
Ukraine	.	.	.	.	.	.	.	.	.	.	.	.	131.3	.	.
United Kingdom^	.	.	.	.	621.5	680.4	722.9	737.6	773.2	802.7	826.1	851.6	874.1	905.0	.
United States	1359.9	1415.7	1469.6	1520.5	1570.6	1619.7	1672.1	1722.5	1774.5	1831.5	1887.4	1936.2	1987.8	2042.5	45.2
Uruguay	737.1	762.9	807.3	845.5	893.2	849.1	927.1	963.9	1016.5	1018.6	1033.2	1074.9	1072.6	1127.1	46.6

Table 13.3 continued on next page.

vol 2 Table 13.3 Number of prevalent ESRD patients and prevalence of ESRD, per million population, by country, 2000-2013 (continued)

Country	(a) Prevalent patients, counts													
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Argentina	.	.	.	.	21,034	22,333	23,306	24,218	30,035	30,580	31,885	31,975	34,218	36,290
Australia	11,657	12,318	13,017	13,691	14,275	15,175	16,112	16,842	17,826	18,510	19,212	19,909	20,742	21,470
Austria	5,770	6,091	6,303	6,940	6,925	7,232	7,512	7,731	7,898	8,195	8,325	8,432	8,657	8,906
Bahrain	.	.	.	.	.	.	.	.	322	354	346	406	410	.
Bangladesh	6,746	7,537	8,265	9,220	10,274	11,565	12,864	15,089	17,068	16,068	17,080	16,050	18,922	18,900
Belgium, Dutch sp.	4,700	4,975	5,260	5,464	5,728	6,023	6,300	6,531	6,779	7,094	7,309	7,497	7,677	7,823
Belgium, French sp.	.	3,583	3,850	4,068	4,335	4,516	4,768	4,983	5,184	5,151	5,378	5,566	5,795	6,005
Bosnia and Herzegovina	.	.	.	1,829	1,867	2,009	2,115	2,306	2,441	2,477	2,587	2,490	2,522	2,620
Brazil	.	.	.	59,153	65,121	70,872	73,605	87,044	77,589	92,091	91,314	132,491	143,497	155,011
Canada	24,784	26,581	28,222	29,542	31,057	32,467	33,898	35,274	36,465	37,742	38,749	39,942	41,009	41,931
Chile	9,301	10,344	11,314	12,190	13,450	14,160	15,353	16,360	17,856	18,849	19,854	21,007	21,730	22,512
Colombia	.	.	.	.	.	.	.	.	20,239	19,846	24,760	24,692	26,942	28,807
Croatia	2,755	2,913	3,100	3,504	3,582	3,708	3,799	3,932	4,009	4,124	4,257	4,348	4,410	2,740
Czech Republic	6,374	6,759	7,092	7,227	7,743	4,638	4,752	5,190	5,633	9,536	10,218	10,236	.	10,647
Denmark	3,415	3,670	3,851	4,004	4,125	4,219	4,295	4,592	4,619	4,701	4,743	4,821	4,923	4,973
Estonia	.	.	.	.	.	.	.	.	.	.	.	.	.	754
Finland	3,014	3,180	3,305	3,461	3,601	3,755	3,829	3,953	4,087	4,183	4,283	4,351	4,395	4,492
France	.	.	.	.	.	31,151	34,835	49,679	54,627	62,019	64,197	66,243	68,448	70,792
Greece	8,480	8,942	9,266	9,705	10,207	10,641	10,994	11,343	11,674	12,069	12,255	12,477	12,608	12,832
Hong Kong	.	5,300	5,670	5,937	6,307	6,635	6,930	7,171	7,460	7,580	7,857	8,197	8,549	8,787
Hungary	.	.	.	.	.	.	.	.	5,807	8,713	8,912	9,034	9,135	9,211
Iceland	102	116	125	139	139	141	147	161	166	171	189	211	217	222
Indonesia	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Iran	.	.	.	.	.	.	.	.	35,248	38,250	40,300	42,370	44,450	46,640
Ireland	.	.	.	.	.	.	.	.	.	3,487	3,651	3,775	3,876	3,960
Israel	3,350	3,528	3,796	5,995	6,364	6,747	7,125	7,472	7,826	8,134	8,400	8,699	8,902	9,161
Jalisco (Mexico)	1,688	2,110	2,432	2,463	3,170	5,455	6,357	6,865	7,218	9,222	9,916	10,421	10,769	12,802
Japan	205,139	208,791	220,196	229,110	236,334	240,170	249,718	262,968	271,471	281,212	289,415	295,706	301,545	306,925
Rep. of Korea	28,046	31,014	33,993	38,790	41,891	44,333	46,730	48,675	51,989	56,396	58,860	63,341	70,211	75,042
Lebanon	.	.	.	.	.	.	.	.	.	.	.	.	4,100	.

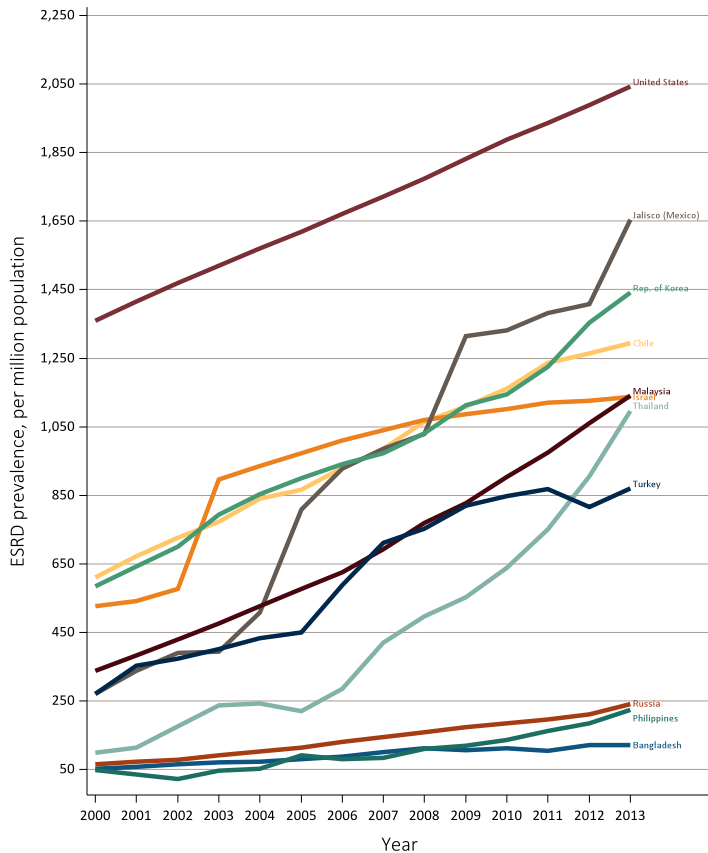
Table 13.3 continued on next page.

vol 2 Table 13.3 Number of prevalent ESRD patients and prevalence of ESRD, per million population, by country, 2000-2013

(a) Prevalent patients, counts														
Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Malaysia	7,951	9,180	10,531	11,943	13,479	15,086	16,805	18,825	21,191	23,442	25,589	28,234	31,113	33,887
Morelos (Mexico)	.	.	.	.	.	.	.	1,447	1,561	1,638	.	.	.	.
Netherlands	9,827	10,209	10,594	11,008	11,457	11,970	12,623	13,146	13,488	14,057	14,508	14,926	15,384	15,887
New Zealand	2,356	2,531	2,715	2,883	3,000	3,117	3,245	3,354	3,459	3,688	3,832	3,878	3,988	4,156
Norway	2,610	2,762	2,917	3,049	3,255	3,386	3,510	3,692	3,895	4,076	4,201	4,334	4,456	4,574
Oman	.	.	.	.	.	.	.	.	1,535	1,708	1,836	2,008	2,206	2,382
Philippines	3,861	.	1,853	3,922	4,375	7,676	7,437	7,967	10,552	11,683	13,674	16,619	19,210	23,727
Poland	.	.	.	.	.	.	.	.	24,783	25,665	25,635	27,236	28,226	30,131
Portugal	.	.	.	.	.	.	.	.	14,965	16,011	16,788	17,553	17,641	18,345
Qatar	.	.	.	.	.	.	.	.	.	1,031	1,088	1,181	1,408	.
Romania	.	.	.	.	.	5,504	6,578	7,935	9,088	10,863	12,150	13,414	14,752	16,162
Russia	9,508	10,770	11,517	13,175	14,720	16,483	18,486	.	22,234	24,246	26,327	27,989	30,349	34,680
Saudi Arabia	.	.	.	.	.	.	.	.	19,334	12,040	12,633	13,356	14,171	14,562
Scotland	3,245	3,347	3,457	3,607	3,713	3,877	4,011	4,177	4,186	4,296	4,369	4,419	4,549	4,614
Serbia	.	.	.	.	.	.	.	.	.	.	.	5,223	5,412	5,651
Singapore	3,611	3,912	4,147	4,281	4,444	4,665	4,936	5,165	5,445	5,701	5,954	6,297	6,648	6,955
Slovenia	.	.	.	.	.	.	.	.	.	2,002	2,023	2,023	2,057	2,077
South Africa	.	.	.	.	.	.	.	.	.	.	.	.	8,559	8,840
Spain	.	.	.	.	39,578	28,366	35,462	41,546	44,067	39,708	47,632	50,614	50,837	50,565
Sweden	6,356	6,581	6,823	6,972	7,275	7,408	7,725	7,929	8,074	8,291	8,534	8,780	8,865	9,020
Taiwan	34,001	36,828	40,362	42,945	45,360	47,849	50,255	52,462	56,025	61,668	65,120	67,889	70,666	73,339
Thailand	5,963	7,225	.	15,004	15,083	13,741	17,967	26,457	31,496	35,112	40,845	47,987	58,385	71,037
Turkey	18,390	24,348	26,268	28,549	31,251	33,014	42,992	50,221	53,859	59,443	62,471	64,877	61,677	66,711
Ukraine	.	.	.	.	.	.	.	.	.	.	.	.	5,985	.
United Kingdom ^a	.	.	.	.	34,022	37,502	40,101	41,188	43,478	45,775	47,499	49,383	51,042	53,196
United States	383,716	403,431	422,696	441,103	459,875	478,651	498,928	518,883	539,620	561,848	583,817	603,287	623,916	645,697
Uruguay	.	2,551	2,715	2,675	2,895	2,807	3,073	3,204	3,389	3,407	3,468	3,532	3,525	3,704

Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. ESRD prevalence is unadjusted and reflects prevalence at the end of each year. ^aUnited Kingdom: England, Wales, Northern Ireland (Scotland data reported separately). Japan and Indonesia include dialysis only; Israel includes dialysis patients only for 2000-2002. Taiwan includes dialysis patients only for 2000-2012. Data for France include 15 regions in 2006, 18 regions in 2007, 20 regions in 2008, and 22 regions in 2009-2013. 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. ^o% change is calculated as the percent difference between the average prevalence in 2012 and 2013 and the average in 2000 and 2001. Abbreviations: ESRD, end-stage renal disease; sp., speaking; . signifies data not reported.

vol 2 Figure 13.11 Trends in the prevalence of treated ESRD per million population, by country, 2000-2013: Ten countries having the highest % rise in ESRD prevalence from 2000/01 to 2012/13, plus the U.S.



Data source: Special analyses, USRDS ESRD Database. ESRD prevalence is unadjusted. Israel includes dialysis patients only from 2000-2002. U.S. is shown for comparison purposes. Abbreviations: ESRD, end-stage renal disease.

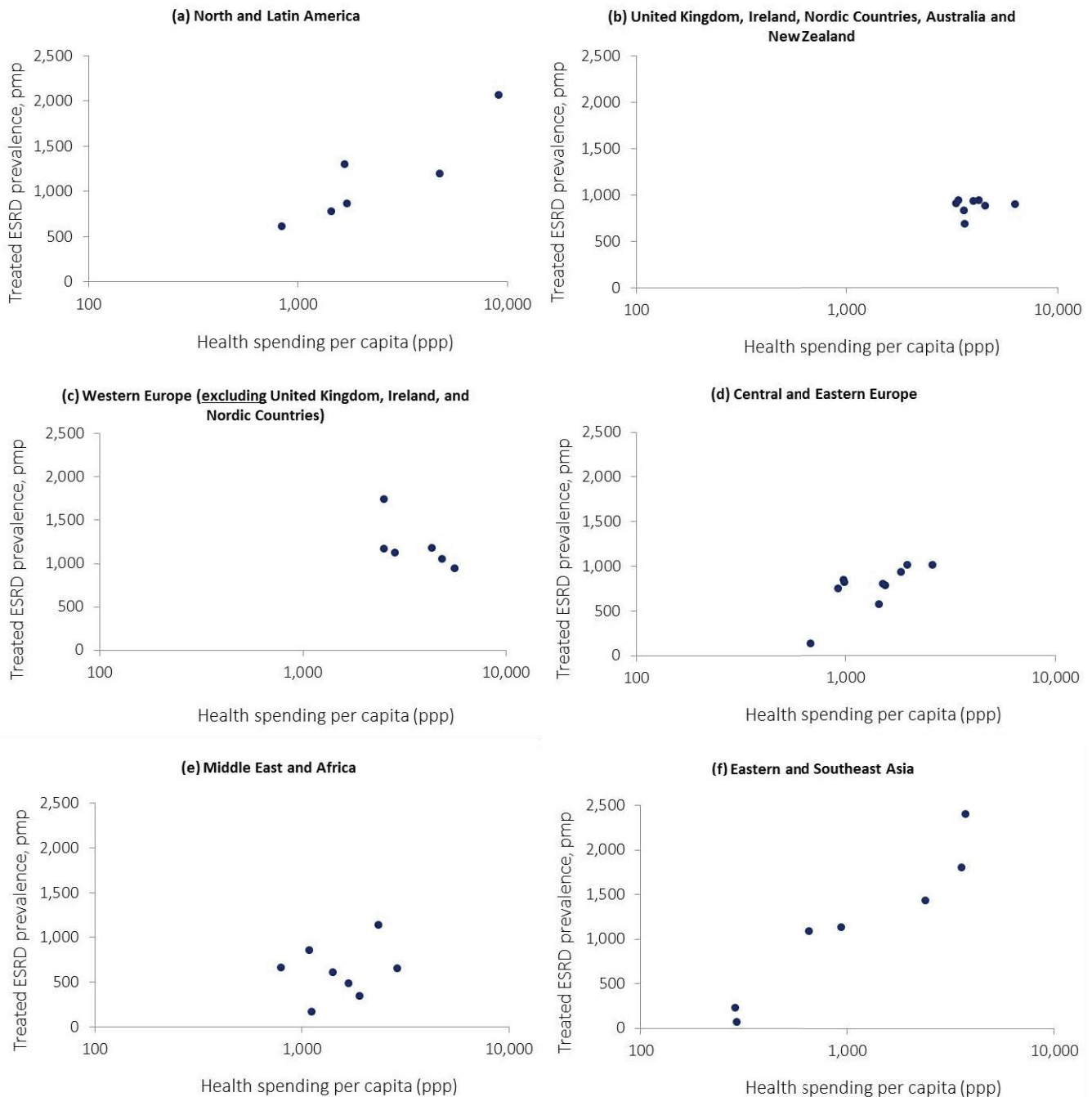
Relationships between Health and Development Indicators and the Prevalence of Treated ESRD across Countries

Given the increasing diversity of countries represented in this International Comparisons chapter, this year we introduce a comparison of a country's prevalence of treated ESRD with selected health and development indicators. International variation in treated ESRD prevalence reflects interactions between the underlying burden of disease, historical access to treatment, and treatment outcomes in different countries. Indicators such as the human development index (HDI), health spending per capita, and diabetes prevalence may therefore explain some of the observed international variation in treated ESRD prevalence. While it would also be relevant to examine

the correlations between these indicators and ESRD incidence, such an analysis is partially confounded by "catch-up" growth of dialysis programs in countries that are transitioning away from historically limited access to renal replacement therapy. For this reason, we present analyses of ESRD prevalence only. Correlations are presented within discrete global regions that reflect genetic, health system, economic, and/or geographical similarities. As with ESRD data collection methods varying across countries to some extent, the manner by which HDI, health spending, and diabetes prevalence are ascertained for individual countries likely differ across countries, and thus direct comparisons should be made with caution.

Figure 13.12 presents the correlations between prevalence of treated ESRD and health spending per capita (in constant 2011 international dollars, reflecting purchasing power parity—PPP) for all countries represented in this chapter, by region. Trends towards higher prevalence of ESRD with higher health spending per capita were observed for North & Latin America, and Eastern & Southeast Asia. There was also some indication of similar, though weaker, trends in Central and Eastern Europe and the Middle East and Africa. In Australasia, Ireland, Nordic countries and the United Kingdom, ESRD prevalence clustered between 686 and 940 cases per million population, with health spending ranging from 3,311 to 6,308 international dollars per capita. By comparison, prevalence of ESRD was higher in the rest of Western Europe, ranging from 945 to 1,737 per million population, whereas health spending was slightly lower (range of 2,508 to 4,885 international dollars per capita).

vol 2 Figure 13.12 Prevalence of treated ESRD per million population, and health spending per capita (PPP), by region, 2013

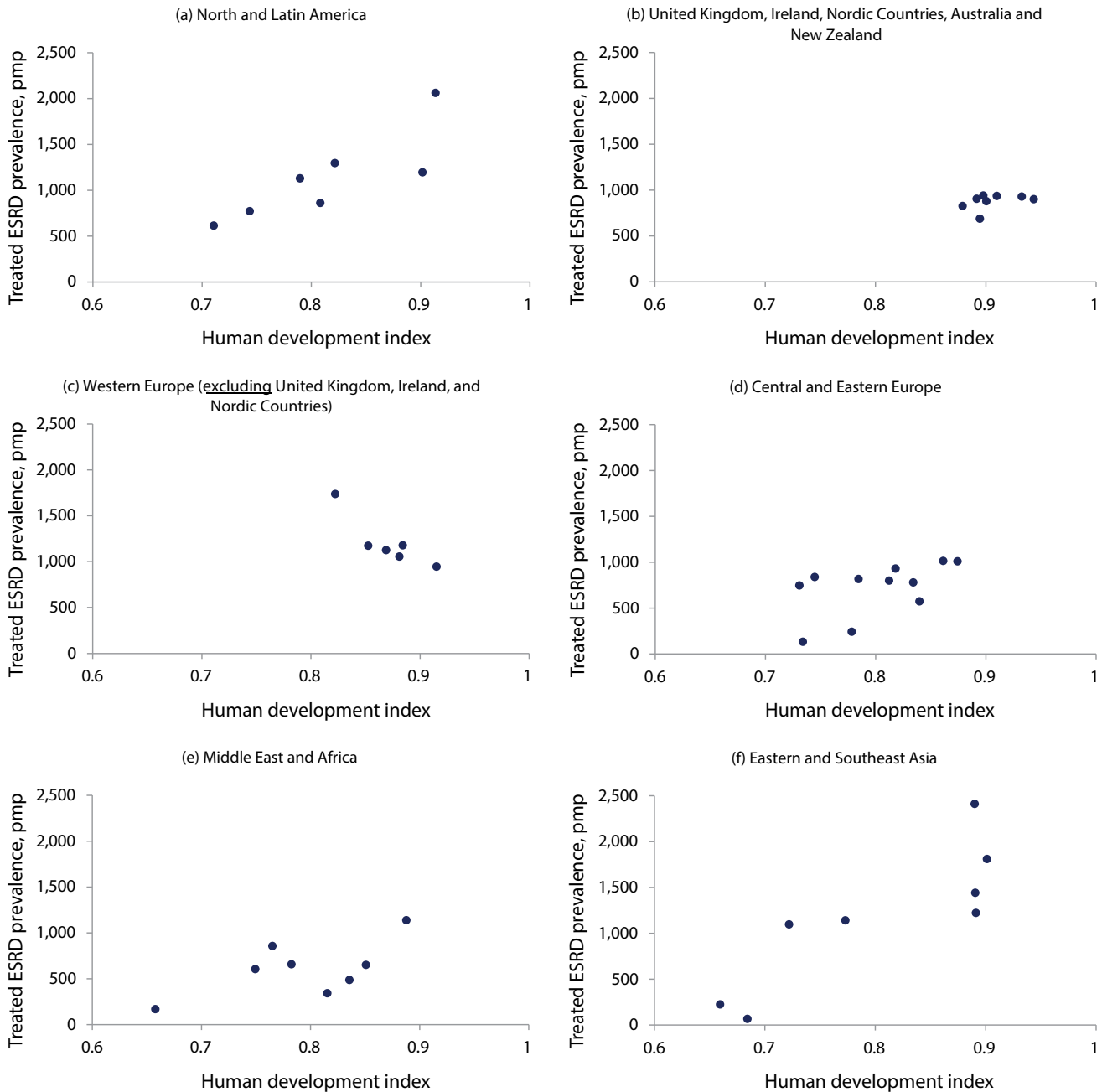


Data source: Special analyses, USRDS ESRD Database & World Health Organization Global Health Expenditure database. Data presented only for countries from which relevant information was available. ESRD prevalence is unadjusted and reflects the most recent available prevalence since 2010. aCentral & Eastern Europe: Hungary, Romania, Czech Republic, Poland, Bosnia and Herzegovina, Serbia, Slovenia, Russian Federation, Turkey; Western Europe (except. United Kingdom, Ireland, & Nordic countries): France, Belgium (French-speaking), Belgium (Dutch-speaking), Spain, Portugal, Greece, Austria, Netherlands; United Kingdom, Ireland, Nordic Countries & ANZ: United Kingdom, Ireland, Sweden, Norway, Finland, Denmark, Iceland, Australia, New Zealand; North & Latin America: Argentina, Uruguay, Colombia, Brazil, Mexico (Jalisco), United States, Canada; Eastern & Southeast Asia: South Korea, Malaysia, Singapore, Thailand, Indonesia, Philippines, Japan; Middle East & Africa: Bahrain, Israel, Iran, Qatar, Saudi Arabia, South Africa. Abbreviations: ESRD, end-stage renal disease; PPP, purchasing power parity; pmp, per million population.

Figure 13.13 shows the relationship between ESRD prevalence with values of the human development index (HDI), for countries in the dataset. The HDI is a summary measure of averaged achievement in 3 key dimensions of human development: life expectancy at birth, mean years of schooling, and standard of living (based on gross national income per capita expressed in purchasing power parity international dollars). Longer life expectancies and higher living standards may result in higher rates of treated ESRD, but also potentially to more effective disease prevention. Trends towards higher prevalence of ESRD with a higher HDI were observed for North and

Latin America, the Middle East and Africa, and Eastern and Southeast Asia. There was also evidence of a similar, though weaker, trend in Central and Eastern Europe. In the group of countries including in Australasia, Ireland, the Nordic countries, and the United Kingdom, ESRD prevalence ranged from 686 to 940 cases per million population, with HDI clustered between 0.88 and 0.94. By comparison, prevalence of ESRD was higher in the rest of Western Europe (range 945 to 1,737 per million population), where HDI values were on average slightly lower. Among countries with the highest HDI (>0.90), ESRD prevalence ranged from 877 cases per million population (Denmark) to 2043 cases per million population (United States). Among countries with the lowest HDI in this dataset (<0.75), ESRD prevalence ranged from 70 cases per million population (Indonesia), to 1097 cases per million population (Thailand).

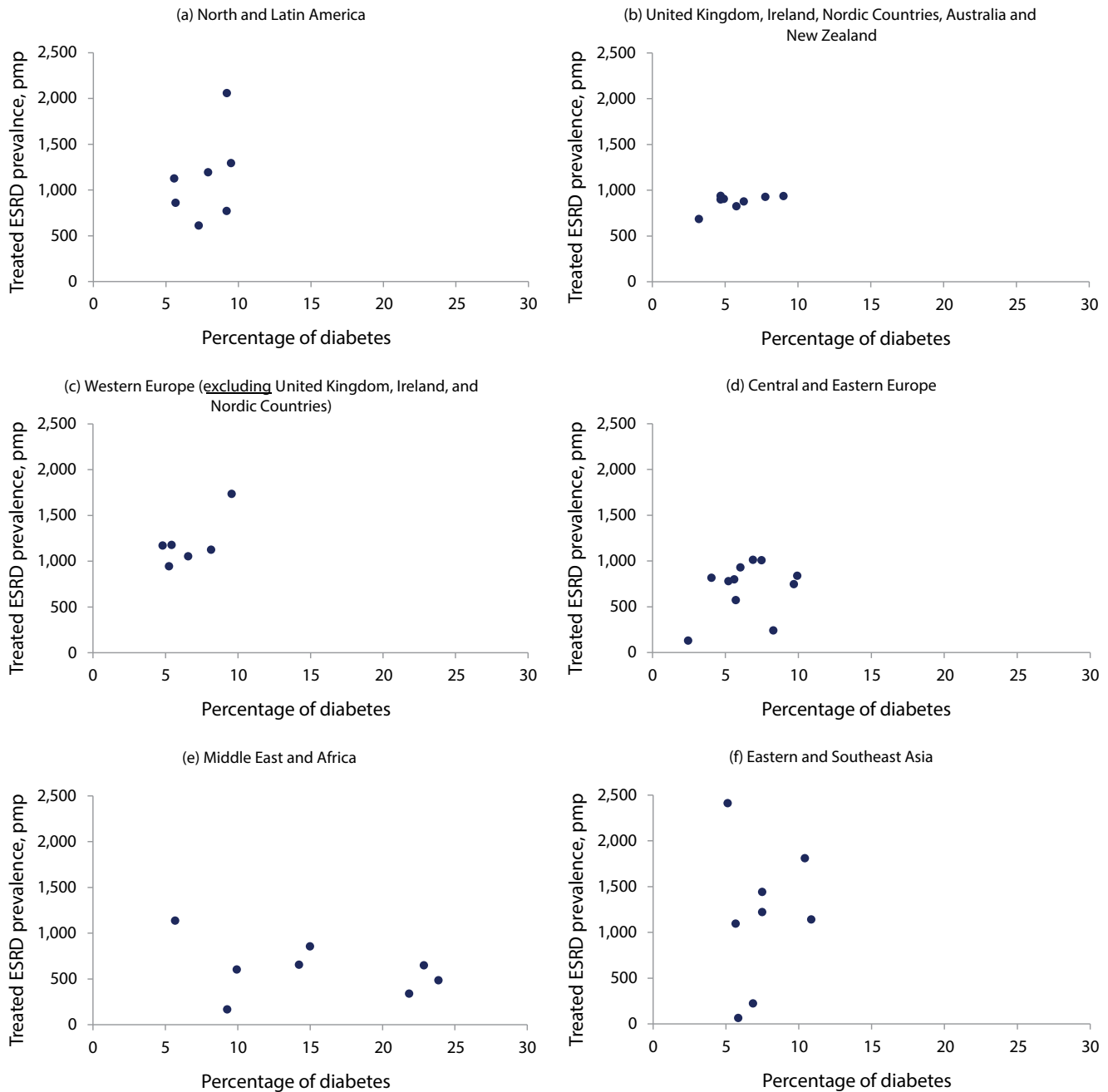
vol 2 Figure 13.13 Prevalence of treated ESRD per million population, and Human Development Index, by region, 2013



Data source: Special analyses, USRDS ESRD Database & United Nations Development Programme. Data presented only for countries from which relevant information was available. ESRD prevalence is unadjusted and was from 2013 for all countries except Bahrain for which it was from 2011 and Ukraine for which it was from 2012. aCentral & Eastern Europe: Hungary, Romania, Czech Republic, Poland, Bosnia and Herzegovina, Serbia, Slovenia, Russian Federation, Turkey; Western Europe (except. United Kingdom, Ireland, & Nordic countries): France, Belgium (French-speaking), Belgium (Dutch-speaking), Spain, Portugal, Greece, Austria, Netherlands; United Kingdom, Ireland, Nordic Countries & ANZ: United Kingdom, Ireland, Sweden, Norway, Finland, Denmark, Iceland, Australia, New Zealand; North & Latin America: Argentina, Uruguay, Colombia, Brazil, Mexico (Jalisco), United States, Canada; Eastern & Southeast Asia: South Korea, Malaysia, Singapore, Thailand, Indonesia, Philippines, Japan; Middle East & Africa: Bahrain, Israel, Iran, Qatar, Saudi Arabia, South Africa. Abbreviations: ESRD, end-stage renal disease; pmp, per million population.

Figure 13.14 illustrates the relationship between population prevalence of treated ESRD and crude prevalence of diabetes in the population aged 20-79 years. Overall, poor correlation was observed between the burden of diabetes in the adult population and rates of treatment for ESRD. This overall poor correlation may be indicative of multiple factors—in particular the relative impact of secondary prevention in different settings, rates of mortality in the diabetes population, variation in rates of detection of kidney disease in diabetic individuals, and access to dialysis and transplantation. The very high estimated prevalence of diabetes, but relatively low prevalence of treated ESRD, in North Africa and the Middle Eastern region are particularly noteworthy.

vol 2 Figure 13.14 Prevalence of treated ESRD per million population, and percentage of diabetes, by region, 2013



Data source: Special analyses, USRDS ESRD Database & International Diabetes Federation, Diabetes Atlas. Data presented only for countries from which relevant information was available. ESRD prevalence is unadjusted and was from 2013 for all countries except Bahrain for which it was from 2011 and Ukraine for which it was from 2012. Diabetes percentage refers to the percentage of people ages 20-79 who have type 1 or type 2 diabetes. aCentral & Eastern Europe: Hungary, Romania, Czech Republic, Poland, Bosnia and Herzegovina, Serbia, Slovenia, Russian Federation, Turkey; Western Europe (except. United Kingdom, Ireland, & Nordic countries): France, Belgium (French-speaking), Belgium (Dutch-speaking), Spain, Portugal, Greece, Austria, Netherlands; United Kingdom, Ireland, Nordic Countries & ANZ: United Kingdom, Ireland, Sweden, Norway, Finland, Denmark, Iceland, Australia, New Zealand; North & Latin America: Argentina, Uruguay, Colombia, Mexico (Jalisco), United States, Canada; Eastern & Southeast Asia: South Korea, Malaysia, Singapore, Thailand, Indonesia, Philippines, Japan; Middle East & Africa: Bahrain, Israel, Iran, Qatar, Saudi Arabia, South Africa. Abbreviations: ESRD, end-stage renal disease; pmp, per million population.

vol 2 Table 13.4 Health and development indicators and the prevalence of treated ESRD, across countries, 2013

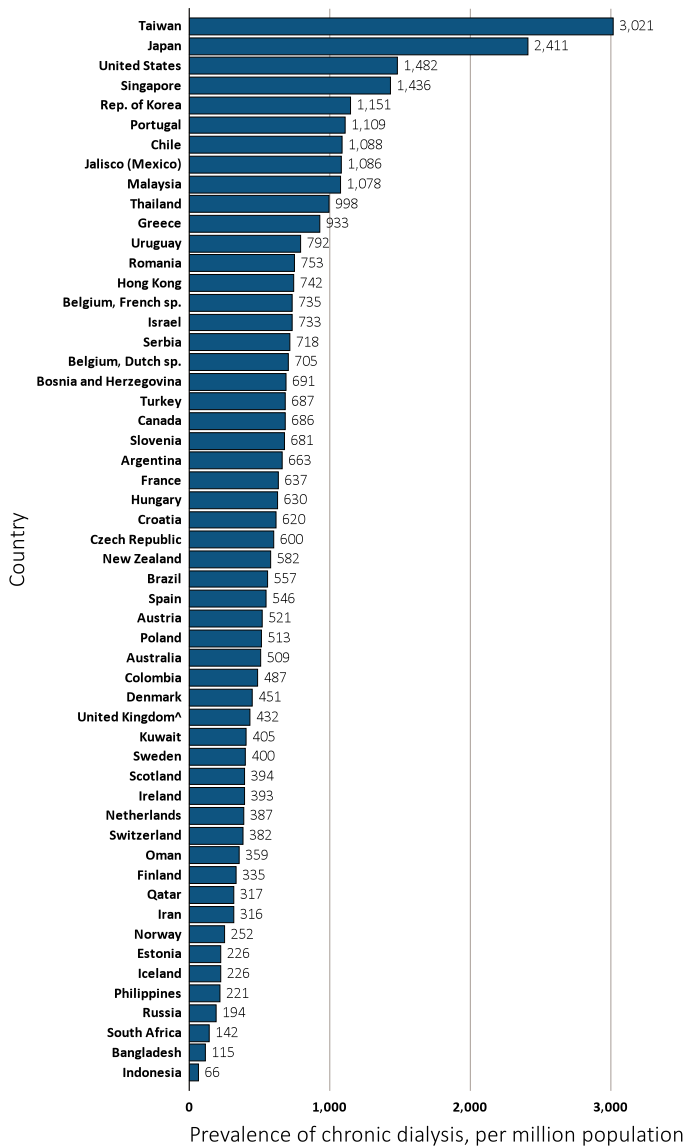
Region	Country	Health spending per capita	Human Development Index	Percentage of diabetes	Prevalence of treated ESRD, pmp
Central & Eastern Europe	Bosnia and Herzegovina	928	0.73	9.7	747
	Croatia	1517	0.81	5.6	800
	Czech Republic	1982	0.86	6.9	1013
	Estonia	1453	0.84	5.7	572
	Hungary	1839	0.82	6.0	930
	Poland	1551	0.83	5.2	780
	Romania	988	0.78	4.0	817
	Russia	NA	0.78	8.3	241
	Serbia	987	0.74	9.9	839
	Slovenia	2595	0.87	7.5	1008
	Ukraine	687	0.73	2.5	131
Eastern & Southeast Asia	Hong Kong	NA	0.89	7.5	1223
	Indonesia	293	0.68	5.8	66
	Japan	3741	0.89	5.1	2411
	Republic of Korea	2398	0.89	7.5	1442
	Malaysia	938	0.77	10.9	1140
	Philippines	287	0.66	6.9	224
	Singapore	3578	0.90	10.4	1809
	Thailand	658	0.72	5.7	1097
Middle East & Africa	Bahrain	1900	0.82	21.8	340
	Iran	1414	0.75	9.9	603
	Israel	2357	0.89	5.7	1137
	Lebanon	1092	0.77	15.0	855
	Oman	796	0.78	14.2	656
	Qatar	2882	0.85	22.9	649
	Saudi Arabia	1681	0.84	23.9	486
	South Africa	1121	0.66	9.3	167
North & Latin America	Argentina	1725	0.81	5.7	860
	Brazil	1452	0.74	9.2	771
	Canada	4759	0.90	7.9	1193
	Chile	1678	0.82	9.5	1294
	Colombia	843	0.71	7.3	611
	United States	9146	0.91	9.2	2043
	Uruguay	1715	0.79	5.6	1127
UK, Ireland, Nordic European Union Countries, & Australia /New Zealand	Australia	3997	0.93	7.8	928
	Denmark	4552	0.90	6.3	877
	Finland	3604	0.88	5.8	826
	Iceland	3646	0.89	3.2	686
	New Zealand	3405	0.91	9.0	936
	Norway	6308	0.94	4.7	901
	Sweden	4244	0.90	4.7	940
	United Kingdom	3311	0.89	4.9	905
Western Europe	Austria	4885	0.88	6.6	1054
	France	4334	0.88	5.4	1177
	Greece	2513	0.85	4.8	1172
	Netherlands	5601	0.92	5.2	945
	Portugal	2508	0.82	9.6	1737
	Spain	2846	0.87	8.2	1126

Data source: Special analyses, USRDS ESRD Database & World Health Organization Global Health Expenditure database, United Nations Development Programme, International Diabetes Federation, Diabetes Atlas. Data presented only for countries from which relevant information was available. ESRD prevalence is unadjusted and reflects the most recent available prevalence since 2010. Diabetes percentage refers to the percentage of people ages 20-79 who have type 1 or type 2 diabetes. Abbreviations: ESRD, end-stage renal disease; PPP, purchasing power parity; pmp, per million population.

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 2013 varied more than 40-fold across countries, from 3021 in Taiwan to a range of 66 to 194 in Indonesia, Bangladesh, South Africa, and Russia, (see Figure 13.15). Some countries have experienced very large rises in the prevalence of dialysis during recent years, with

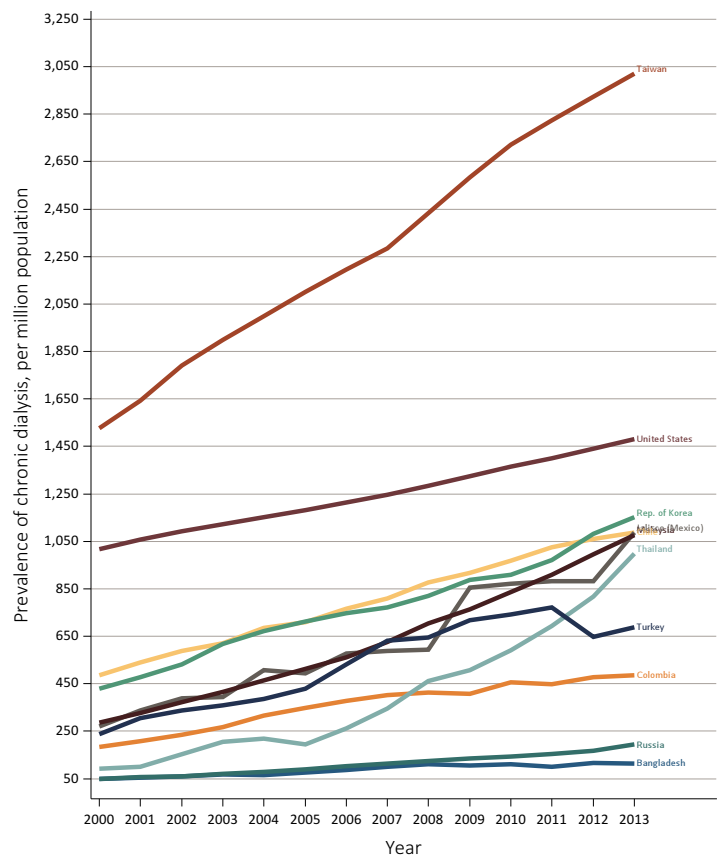
vol 2 Figure 13.15 Prevalence of dialysis per million population, by country, 2013



Data source: Special analyses, USRDS ESRD Database. ESRD prevalence is unadjusted and reflects prevalence at the end of 2013. Data for Indonesia represent the West Java region. 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.

a 179% increase in Romania since 2005, and a 200% nearly 850% increase in Thailand since year 2000, to 250% rise in the prevalence of dialysis in Russia, Malaysia, and the Jalisco region of Mexico since year 2000 (Table 13.4). However, a plateauing or decline in the prevalence of dialysis patients receiving chronic dialysis is beginning to be seen in nearly a quarter of all countries reporting several years of data (Table 13.5). These countries include Denmark, Finland, Netherlands, Norway, Scotland, Slovenia, Spain, Sweden, and Turkey.

vol 2 Figure 13.16 Trends in the prevalence of dialysis per million population, by country, 2000-2013: Ten countries having the highest % rise in dialysis prevalence from 2000/01 to 2012/13, plus the U.S.



Data source: Special analyses, USRDS ESRD Database. The prevalence is unadjusted and reflects prevalence of dialysis at the end of each year. Abbreviations: ESRD, end-stage renal disease.

vol 2 Table 13.5 Trends in the prevalence of dialysis per million population, by country, 2000-2013

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	% change from 2000/01 to 2012/13
Argentina	.	.	.	.	550.3	578.7	598.0	615.4	623.4	634.1	636.9	644.0	655.1	662.7	.
Australia	334.7	353.0	370.3	388.5	398.2	424.9	447.1	462.9	478.8	482.6	486.3	494.9	505.1	509.1	47.5
Austria	372.3	386.2	394.2	412.1	441.8	461.4	469.6	477.7	487.9	505.9	507.8	503.2	510.2	521.1	36
Bahrain	.	.	.	.	.	.	.	.	212.4	221.5	196.8	250.2	.	.	.
Bangladesh	48.6	54.6	60.9	68.0	64.7	75.7	87.3	99.3	112.1	104.7	109.7	101.0	117.5	114.7	125
Belgium, Dutch sp.	440.6	467.9	501.3	518.7	549.3	589.0	609.9	624.3	644.4	674.6	689.2	694.8	699.8	705.4	54.7
Belgium, French sp.	.	506.3	523.4	555.2	594.3	611.8	637.8	657.6	673.0	663.6	682.8	689.6	713.2	735.1	43
Bosnia and Herzegovina	.	.	.	450.7	455.6	490.8	521.1	569.9	596.5	602.8	630.7	662.2	666.8	690.7	.
Brazil	.	.	.	338.1	367.5	388.9	398.3	466.0	408.5	475.8	467.1	494.4	503.9	556.7	.
Canada	487.9	521.9	551.5	565.4	591.1	613.2	629.9	643.1	652.4	667.2	670.6	680.3	684.1	685.9	35.7
Chile	484.4	540.5	587.1	621.2	684.6	708.4	764.9	810.2	876.3	917.9	969.6	1025.6	1059.9	1088.2	109.6
Colombia	184.4	208.8	236.2	267.4	315.5	348.6	377.6	403.1	412.7	408.2	455.4	447.9	478.7	486.5	145.5
Croatia	529.7	556.9	581.2	655.4	652.9	669.2	.	.	.	.	.	.	651.7	620.3	17.1
Czech Republic	382.4	409.5	428.4	424.6	440.7	452.3	461.9	499.9	538.1	548.7	599.8	584.1	.	600.3	51.6
Denmark	385.8	423.7	440.8	452.5	457.7	460.9	463.8	498.4	490.0	486.8	470.0	461.0	461.0	451.4	12.7
Estonia	.	.	.	.	.	.	.	.	.	.	.	.	.	226.1	.
Finland	230.3	243.4	257.3	272.6	280.0	297.6	292.4	302.0	319.8	323.3	329.3	331.5	327.9	335.0	39.9
France	.	.	.	.	.	526.9	554.0	546.7	567.4	572.1	590.4	605.2	616.9	637.2	.
Greece	660.0	674.1	691.3	718.9	752.4	776.7	793.6	811.1	824.0	851.5	867.7	882.4	904.9	933.1	37.8
Hong Kong	.	.	556.1	563.3	566.4	582.9	593.2	611.0	624.6	647.3	661.6	681.5	709.5	742.4	.
Hungary	.	.	.	.	.	.	.	.	578.1	605.3	620.0	626.2	632.8	630.4	.
Iceland	138.7	175.5	198.2	234.9	229.4	195.5	167.9	199.7	201.6	191.5	223.2	250.8	237.0	225.5	47.2
Indonesia	.	.	.	.	.	.	.	.	.	27.9	37.3	40.1	50.6	65.9	.
Iran	.	.	.	.	.	.	.	.	245.0	282.1	290.7	299.2	307.3	316.4	.
Ireland	.	.	.	.	.	.	.	.	.	366.8	386.4	386.5	391.9	392.8	.
Israel	526.0	542.0	577.7	599.1	621.8	636.7	652.4	668.4	684.8	703.8	721.2	728.3	730.2	732.6	37
Italy	.	.	.	.	.	.	.	.	.	.	792.7	.	.	.	.
Jalisco (Mexico)	270.3	337.9	389.5	394.4	507.6	493.2	576.9	586.9	593.4	856.1	872.1	881.1	883.0	1086.1	223.8
Japan	1616.2	1640.3	1727.0	1795.2	1850.9	1879.8	1954.5	2058.1	2126.0	2205.4	2277.4	2313.8	2365.2	2411.1	46.7
Rep. of Korea	427.8	477.5	530.2	617.6	670.8	711.7	746.0	770.6	818.9	888.7	910.2	972.4	1081.0	1151.0	146.5
Kuwait	.	.	.	.	.	.	.	.	.	.	.	.	346.6	404.8	.
Lebanon	.	.	.	.	.	.	.	.	.	.	.	.	665.4	.	.
Malaysia	285.4	326.9	371.3	416.7	464.6	513.0	560.8	627.1	703.8	762.7	836.7	908.9	996.1	1077.5	238.7

Table 13.5 continued on next page.

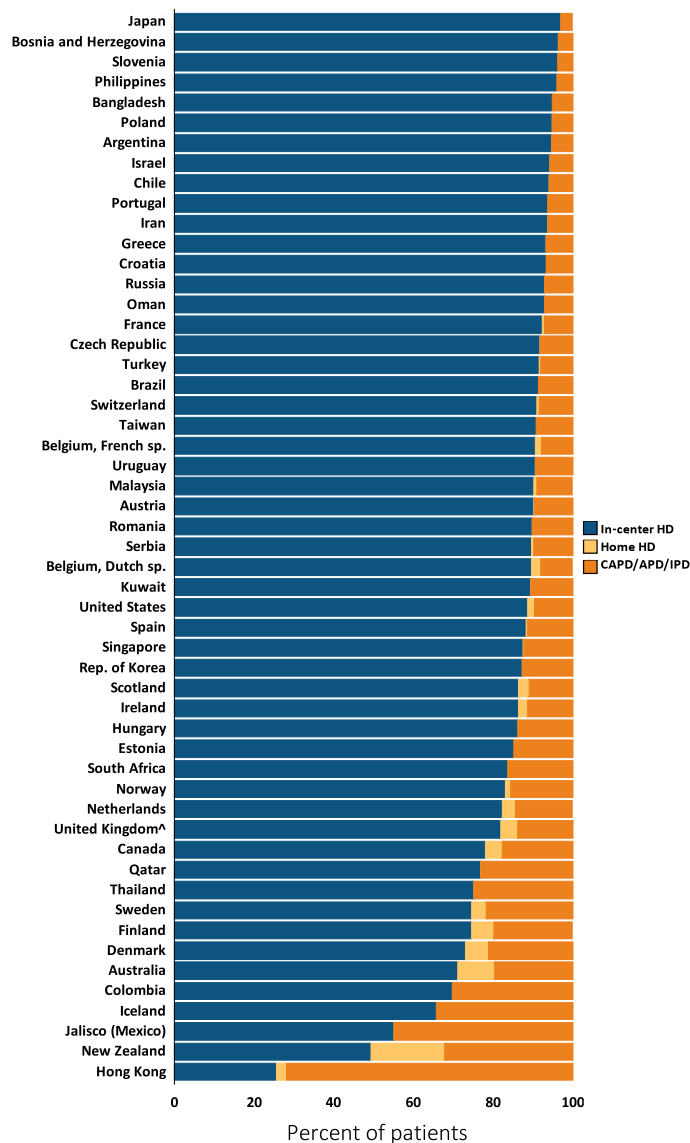
vol 2 Table 13.5 Trends in the prevalence of dialysis per million population, by country, 2000-2013 (continued)

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	% change from 2000/01 to 2012/13
Morelos (Mexico)	.	.	.	.	.	.	.	835.9	905.0	946.4	.	.	.	.	.
Netherlands	302.5	310.4	315.0	320.5	326.7	336.3	353.4	356.3	369.5	385.0	385.1	385.2	385.1	387.2	26
New Zealand	346.0	378.3	406.2	427.8	435.2	454.3	477.5	489.8	494.4	530.1	548.9	545.6	559.7	581.7	57.6
Norway	143.6	160.2	172.5	179.4	195.6	207.9	216.5	232.3	243.7	252.0	249.9	246.1	248.9	251.8	64.8
Oman	.	.	.	.	.	.	.	.	231.0	258.3	322.1	347.8	382.8	358.5	.
Philippines	.	.	20.1	46.0	61.2	86.5	75.8	79.4	104.6	114.0	132.9	159.4	181.8	221.0	.
Poland	.	.	.	.	.	.	.	.	417.5	432.8	446.3	466.1	483.2	513.2	.
Portugal	.	.	.	.	.	.	.	.	922.6	960.5	1023.7	1052.2	1068.2	1108.6	.
Qatar	.	.	.	.	.	.	.	.	.	.	246.6	254.5	271.9	316.7	.
Romania	.	.	.	.	.	239.5	285.0	346.2	393.8	518.0	581.1	642.3	708.0	752.5	.
Russia	48.3	55.7	60.6	69.0	79.1	90.4	101.6	.	124.4	135.4	144.3	154.8	168.3	193.6	248
Saudi Arabia	.	.	.	.	.	.	.	.	460.7	474.5	465.5	492.2	499.4	.	.
Scotland	326.9	334.8	354.3	367.2	379.5	399.0	414.1	424.4	415.2	418.2	418.8	410.6	407.4	393.8	21.1
Serbia	.	.	.	.	.	.	.	.	.	.	.	657.8	688.3	718.1	.
Singapore	841.9	897.1	944.9	979.6	998.1	1028.1	1070.5	1101.0	1145.9	1173.6	1218.5	1291.8	1373.6	1436.1	61.6
Slovenia	.	.	.	.	.	.	.	.	.	716.3	703.9	689.3	689.8	681.1	.
South Africa	.	.	.	.	.	.	.	.	.	.	.	.	132.9	142.2	.
Spain	.	.	.	.	576.9	545.6	515.6	503.6	489.8	461.5	579.9	537.1	529.6	545.9	.
Sweden	338.9	353.1	367.3	367.0	378.5	381.3	396.1	397.1	388.6	392.8	403.1	409.7	402.1	400.0	15.9
Switzerland	.	.	.	.	.	.	.	.	.	.	.	.	.	381.6	.
Taiwan	1526.3	1643.7	1792.2	1899.8	1999.2	2101.4	2196.8	2285.1	2432.0	2585.1	2720.5	2823.1	2923.1	3020.5	87.5
Thailand	93.0	98.9	.	205.9	218.5	195.4	261.2	346.5	460.7	506.8	589.5	693.8	817.0	998.2	845.9
Turkey	237.9	306.1	337.1	359.6	386.3	430.0	530.8	631.5	643.7	717.6	742.9	772.8	646.6	687.1	145.2
United Kingdom [^]	335.2	329.0	352.7	391.8	402.8	415.9	419.3	426.7	430.4	432.2	.
United States	1018.3	1056.4	1091.6	1123.1	1151.6	1181.3	1214.7	1247.5	1283.2	1324.5	1365.5	1399.4	1439.1	1481.6	40.8
Uruguay	644.1	662.4	687.2	711.2	723.2	717.2	716.9	729.3	760.9	745.9	749.0	762.0	757.1	791.8	18.6

Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. The prevalence is unadjusted. [^]United Kingdom: 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 2009-2013. Data for Belgium do not include patients younger than 20. Data for Spain include 18 of 19 regions. [^]% change is calculated as the percent difference between the average prevalence in 2012 and 2013 and the average in 2000 and 2001. Abbreviations: sp., speaking; . signifies data not reported.

Hemodialysis (HD) continues to be the most common form of dialysis therapy in nearly all countries. In nearly three-fourths of reporting countries, at least 80% of chronic dialysis patients were receiving in-center HD in 2013 (Figure 13.17). However, in 2013, peritoneal dialysis (PD) was used by 72% of dialysis patients in Hong Kong, and 45% in Jalisco (Mexico). Furthermore, 30-34% PD use was reported in Colombia, New Zealand, and Iceland, respectively, with 16% to 25% in Australia, Canada, Denmark, Finland, Qatar, South Africa, Sweden, and Thailand. As seen in Table 10.6, since 2006, an overall trend of increasing PD use as a percentage of all chronic dialysis has been seen in the countries of Argentina, Bangladesh, Hungary, Spain, Taiwan, Thailand, the U.S., and Uruguay. In contrast, PD use has declined over this same time period in countries such as Australia, Belgium, Bosnia and Herzogovina, Colombia, Croatia, Denmark, Finland, France, Greece, Hong Kong, Israel, Jalisco (Mexico), Republic of Korea, Netherlands, New Zealand, Norway, Romania, Russia, Scotland, Singapore, Turkey, and the United Kingdom Home HD therapy was provided to 18.4% and 9.3% of dialysis patients, respectively, in New Zealand and Australia in 2013. Home HD was also used by 3.0 to 5.9% of dialysis patients in Canada, Denmark, Finland, the Netherlands, Sweden, and the United Kingdom. However, in all other countries, home HD was either not provided, or used by fewer than three percent of dialysis patients.

vol 2 Figure 13.17 Distribution of the percentage of prevalent dialysis patients using in-center HD, home HD, or peritoneal dialysis (CAPD/APD/IPD), 2013



Data source: Special analyses, USRDS ESRD Database. Denominator is calculated as the sum of patients receiving HD, PD, or Home HD; does not include patients with other/unknown modality. 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: CAPD, continuous ambulatory peritoneal dialysis; APD, automated peritoneal dialysis; IPD, intermittent peritoneal dialysis; ESRD, end-stage renal disease; HD, hemodialysis; PD, peritoneal dialysis; sp., speaking.

vol 2 Table 13.6 Distribution of the percentage of prevalent dialysis patients using in-center HD, home HD, or peritoneal dialysis (CAPD/APD/IPD), 2000-2013

(a) In-center HD														
Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Argentina	.	.	.	.	95.6	96.0	96.0	96.1	96.0	96.0	95.8	95.1	94.8	94.6
Australia	61.3	62.3	64.7	66.1	67.6	68.9	68.2	68.3	68.6	69.6	71.3	72.2	71.1	71.1
Austria	91.6	91.7	92.0	92.0	92.3	92.1	90.8	91.2	91.0	91.0	91.1	91.6	90.9	90.3
Bahrain	.	.	.	.	.	.	.	.	95.7	95.8	95.5	95.3	88.4	.
Bangladesh	99.1	99.1	99.1	99.0	98.8	98.6	99.6	98.4	98.3	98.2	97.5	96.2	95.9	94.9
Belgium, Dutch sp.	91.9	90.1	89.7	89.5	88.5	88.8	89.1	89.2	89.7	88.9	89.5	89.2	89.2	89.7
Belgium, French sp.	.	90.6	90.3	90.3	89.8	89.5	89.2	90.5	90.7	90.4	89.9	90.2	90.4	90.7
Bosnia and Herzegovina	.	.	.	96.6	96.2	95.7	95.3	95.2	95.1	94.9	95.2	96.0	96.5	96.5
Brazil	.	.	.	89.2	89.0	90.7	90.8	89.4	89.6	92.3	90.6	91.6	90.8	91.4
Canada	76.3	77.6	78.7	79.4	79.1	78.9	78.9	78.6	78.4	78.4	78.5	78.9	78.4	78.1
Chile	96.3	96.0	95.3	94.3	94.0	94.3	95.0	95.2	95.3	95.3	95.1	94.6	94.5	94.0
Colombia	.	.	.	.	63.3	62.4	63.9	63.4	68.0	68.2	68.7	69.1	69.4	69.9
Croatia	94.7	93.3	91.5	92.0	91.1	90.8	91.6	92.8	91.8	91.0	91.5	92.1	93.5	93.3
Czech Republic	93.3	92.4	92.8	92.6	92.5	92.5	92.4	92.3	91.8	92.0	92.1	91.7	.	91.8
Denmark	73.4	72.8	74.3	72.8	73.0	72.2	72.0	71.8	72.9	73.4	73.7	75.0	74.7	73.0
Estonia	.	.	.	.	.	.	.	.	.	.	.	.	.	85.2
Finland	75.8	77.8	78.2	75.5	75.6	75.5	76.0	75.8	74.3	75.0	77.1	77.4	76.2	74.6
France	.	.	.	.	.	85.2	85.4	87.4	87.8	91.9	92.1	92.5	92.5	92.3
Greece	89.4	89.9	90.0	90.3	90.6	91.0	91.5	91.7	91.7	92.0	92.3	92.7	93.4	93.4
Hong Kong	.	.	17.9	17.4	17.9	17.7	18.8	19.8	20.4	21.5	23.5	24.4	25.0	25.6
Hungary	.	.	.	.	.	.	.	.	88.3	87.2	86.5	85.8	85.7	86.1
Iceland	71.8	70.0	66.7	66.2	58.8	65.5	70.6	72.1	76.6	86.9	83.1	80.0	72.4	65.8
Iran	.	.	.	.	.	.	.	.	93.8	94.5	93.5	93.1	93.4	93.7
Ireland	.	.	.	.	.	.	.	.	.	88.6	88.3	88.1	86.8	86.3
Israel	87.5	88.8	84.7	88.5	89.0	90.9	91.9	92.9	93.6	93.3	93.8	94.1	94.3	94.3
Italy	.	.	.	.	.	.	.	.	.	.	90.0	.	.	.
Jalisco (Mexico)	17.0	17.0	18.0	20.0	30.1	28.3	29.5	34.2	40.4	41.5	48.7	50.6	49.8	55.2
Japan	95.9	96.1	96.2	96.5	96.6	96.6	96.8	96.7	96.8	96.7	96.7	96.8	96.9	96.9

Table 13.6 continued on next page.

vol 2 Table 13.6 Distribution of the percentage of prevalent dialysis patients using in-center HD, home HD, or CAPD/APD/IPD, 2000-2013 (continued)

Country	(a) In-center HD													
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Rep. of Korea	77.2	76.2	77.8	77.4	77.0	77.7	78.4	80.2	81.0	83.1	84.4	84.7	86.5	87.4
Kuwait	.	.	.	.	.	.	.	.	.	.	.	.	89.7	89.5
Lebanon	.	.	.	.	.	.	.	.	.	.	.	.	96.0	.
Malaysia	86.7	87.3	87.5	88.1	89.2	90.1	90.2	89.9	90.0	90.3	90.6	90.8	90.4	90.3
Morelos (Mexico)	.	.	.	.	.	.	.	40.6	43.2	42.4	.	.	.	.
Netherlands	67.6	66.9	68.3	69.5	72.2	73.4	74.8	76.0	77.4	79.1	79.5	81.4	81.6	82.4
New Zealand	34.9	37.6	37.5	41.2	43.3	45.9	45.5	48.2	48.1	48.4	47.4	48.6	49.3	49.4
Norway	81.2	86.2	84.0	83.6	82.9	83.2	80.5	80.6	83.4	80.7	81.3	84.2	83.2	83.2
Oman	.	.	.	.	.	.	.	.	95.7	97.1	95.9	96.0	95.0	92.9
Philippines	.	.	91.2	100.0	85.5	87.9	94.5	87.3	93.3	95.6	95.9	96.4	96.4	96.1
Poland	.	.	.	.	.	.	.	.	93.1	93.3	93.5	94.1	94.0	94.8
Portugal	.	.	.	.	.	.	.	.	94.8	94.4	93.9	93.7	93.4	93.7
Qatar	.	.	.	.	.	.	.	.	.	.	70.9	73.5	77.4	77.0
Romania	.	.	.	.	.	81.9	80.6	81.8	82.8	84.5	86.4	87.7	88.8	89.9
Russia	93.1	93.4	93.5	92.5	91.9	91.5	91.0	.	91.0	91.3	91.4	91.6	92.3	92.9
Saudi Arabia	.	.	.	.	.	.	.	.	92.2	90.6	90.5	90.7	90.6	.
Scotland	68.7	73.0	75.6	77.4	77.4	77.8	79.0	80.7	82.6	83.7	84.8	85.3	85.6	86.4
Serbia	.	.	.	.	.	.	.	.	.	.	.	90.1	90.5	89.7
Singapore	84.3	83.5	79.4	79.6	79.2	80.3	81.1	82.5	85.6	86.3	87.4	87.2	87.9	87.6
Slovenia	.	.	.	.	.	.	.	.	.	95.6	96.5	96.6	96.8	96.3
South Africa	.	.	.	.	.	.	.	.	.	.	.	.	82.7	83.6
Spain	.	.	.	.	88.6	90.6	90.1	89.4	90.6	90.6	89.8	89.2	88.7	88.3
Sweden	72.7	73.0	73.5	74.2	74.6	75.8	75.5	73.0	73.3	73.7	74.7	75.6	76.0	74.6
Switzerland	.	.	.	.	.	.	.	.	.	.	.	.	.	91.1
Taiwan	94.2	93.7	93.9	93.5	93.5	93.0	92.4	91.5	90.7	90.7	90.6	90.5	90.7	90.8
Thailand	82.9	84.5	.	92.3	93.2	93.9	95.8	94.5	90.5	84.1	81.9	78.6	76.9	75.2
Turkey	87.3	89.0	86.9	87.5	88.2	87.9	88.7	88.1	87.4	89.6	90.4	91.8	90.4	91.6
United Kingdom^	.	.	.	.	73.8	76.3	78.6	78.9	81.1	81.6	81.9	81.9	81.5	82.0
United States	89.7	90.2	90.5	90.7	91.1	91.1	91.3	91.4	91.5	91.3	90.9	90.3	89.3	88.7
Uruguay	94.4	94.9	93.7	93.0	92.3	92.3	92.6	90.6	91.1	90.8	90.1	90.1	90.3	90.6

Table 13.6 continued on next page.

vol 2 Table 13.6 Distribution of the percentage of prevalent dialysis patients using in-center HD, home HD, or CAPD/APD/IPD, 2000-2013

Country	(b) CAPD/APD/IPD													
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Argentina	.	.	.	.	4.4	4.0	4.0	3.9	4.0	4.0	4.2	4.9	5.2	5.4
Australia	27.1	26.4	24.6	23.9	22.4	21.5	22.1	22.0	22.0	21.0	19.5	18.8	19.5	19.6
Austria	8.2	8.0	7.7	7.8	7.5	7.7	9.0	8.7	8.9	8.9	8.9	8.4	9.0	9.6
Bahrain	.	.	.	.	.	.	.	.	4.3	4.2	4.5	4.7	11.6	.
Bangladesh	0.9	0.9	0.9	1.0	1.2	1.4	0.4	1.6	1.7	1.8	2.5	3.8	4.1	5.1
Belgium, Dutch sp.	7.8	9.7	10.2	10.4	11.3	11.0	10.7	10.6	10.1	9.9	9.2	9.1	8.4	8.0
Belgium, French sp.	.	8.3	8.7	8.5	9.0	9.3	9.5	8.3	8.0	8.4	8.7	8.2	8.1	7.8
Bosnia and Herzegovina	.	.	.	3.4	3.8	4.3	4.7	4.7	4.9	5.0	4.8	4.0	3.5	3.5
Brazil	.	.	.	10.8	11.0	9.3	9.2	10.6	10.4	7.7	9.4	8.4	9.2	8.6
Canada	22.2	21.0	19.8	18.9	18.9	18.7	18.4	18.4	18.4	18.1	17.9	17.2	17.5	17.6
Chile	3.7	4.0	4.7	5.7	6.0	5.6	5.0	4.8	4.7	4.7	4.9	5.4	5.5	6.0
Colombia	.	.	.	.	36.7	37.6	36.1	36.6	32.0	31.8	31.3	30.9	30.6	30.1
Croatia	5.3	6.7	8.5	8.0	8.9	9.2	8.4	7.2	8.2	9.0	8.5	7.9	6.5	6.7
Czech Republic	6.7	7.5	7.2	7.4	7.5	7.5	7.6	7.7	8.2	8.0	7.9	8.3	.	8.2
Denmark	26.1	26.5	24.7	25.7	24.7	24.8	23.9	24.5	22.9	21.6	20.8	19.5	19.7	21.2
Estonia	.	.	.	.	.	.	.	.	.	.	.	.	.	14.8
Finland	22.7	20.3	18.9	21.3	21.0	21.3	21.2	20.4	21.7	21.3	18.9	18.5	18.4	19.6
France	.	.	.	.	.	12.2	12.6	11.1	10.9	7.3	7.2	6.9	6.9	7.1
Greece	10.6	10.1	10.0	9.7	9.4	9.0	8.4	8.3	8.3	7.9	7.7	7.2	6.6	6.6
Hong Kong	.	.	81.9	82.5	82.1	82.2	81.1	80.0	79.2	77.9	75.6	74.1	72.9	71.8
Hungary	.	.	.	.	.	.	.	.	11.7	12.8	13.5	14.2	14.3	13.9
Iceland	28.2	30.0	33.3	33.8	39.7	34.5	29.4	26.2	21.9	13.1	16.9	20.0	27.6	34.2
Iran	.	.	.	.	.	.	.	.	6.2	5.5	6.5	6.9	6.6	6.3
Ireland	.	.	.	.	.	.	.	.	.	11.3	11.1	10.8	11.6	11.3
Israel	12.5	11.2	15.3	11.5	11.0	9.1	8.1	7.1	6.4	6.7	6.2	5.9	5.7	5.7
Italy	.	.	.	.	.	.	.	.	.	.	10.0	.	.	.
Jalisco (Mexico)	83.0	83.0	82.0	80.0	69.9	71.7	70.5	65.8	59.6	58.5	51.3	49.4	50.2	44.8
Japan	4.1	3.9	3.8	3.4	3.4	3.4	3.2	3.3	3.1	3.2	3.2	3.1	3.0	2.9

Table 13.6 continued on next page.

vol 2 Table 13.6 Distribution of the percentage of prevalent dialysis patients using in-center HD, home HD, or CAPD/APD/IPD, 2000-2013 (continued)

Country	(b) CAPD/APD/IPD													
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Rep. of Korea	22.8	23.8	22.2	22.6	23.0	22.3	21.6	19.8	19.0	16.9	15.6	15.3	13.5	12.6
Kuwait	.	.	.	.	.	.	.	.	.	.	.	.	10.3	10.5
Lebanon	.	.	.	.	.	.	.	.	.	.	.	.	4.0	.
Malaysia	9.9	9.8	10.1	10.1	9.4	8.7	8.7	9.1	9.0	8.7	8.4	8.3	8.8	8.8
Morelos (Mexico)	.	.	.	.	.	.	.	59.4	56.8	57.6	.	.	.	.
Netherlands	30.6	31.4	29.9	28.5	25.7	24.5	22.9	21.7	20.1	18.5	17.8	15.9	15.3	14.2
New Zealand	51.0	48.7	48.1	44.8	41.9	38.3	38.3	36.0	36.2	35.1	34.8	33.2	31.5	32.2
Norway	18.4	13.6	15.7	16.1	16.9	16.2	19.1	19.1	16.4	18.8	18.0	15.3	15.8	15.5
Oman	.	.	.	.	.	.	.	.	4.3	2.9	4.1	4.0	5.0	7.1
Philippines	.	.	8.8	0.0	14.5	12.1	5.5	12.7	6.7	4.4	4.1	3.6	3.6	3.9
Poland	.	.	.	.	.	.	.	.	6.9	6.7	6.5	5.9	6.0	5.2
Portugal	.	.	.	.	.	.	.	.	5.2	5.6	6.1	6.3	6.6	6.3
Qatar	.	.	.	.	.	.	.	.	.	.	29.1	26.5	22.6	23.0
Romania	.	.	.	.	.	18.1	19.4	18.2	17.1	15.5	13.5	12.2	11.1	10.1
Russia	6.9	6.6	6.5	7.5	8.1	8.5	9.0	.	9.0	8.7	8.6	8.4	7.7	7.1
Saudi Arabia	.	.	.	.	.	.	.	.	7.8	9.4	9.5	9.3	9.4	.
Scotland	28.2	24.2	21.9	20.2	20.4	20.1	19.3	17.5	15.1	13.7	12.8	12.1	11.3	11.0
Serbia	.	.	.	.	.	.	.	.	.	.	.	9.2	8.8	9.7
Singapore	15.6	16.4	20.5	20.3	20.8	19.7	18.8	17.4	14.4	13.6	12.5	12.8	12.0	12.3
Slovenia	.	.	.	.	.	.	.	.	.	4.4	3.5	3.4	3.2	3.7
South Africa	.	.	.	.	.	.	.	.	.	.	.	.	17.3	16.4
Spain	.	.	.	.	11.4	9.4	9.7	10.5	9.2	9.2	10.0	10.6	11.1	11.4
Sweden	25.4	25.0	24.2	23.5	22.4	21.1	21.9	24.2	23.9	23.5	22.5	21.3	20.6	21.7
Switzerland	.	.	.	.	.	.	.	.	.	.	.	.	.	8.4
Taiwan	5.8	6.3	6.1	6.5	6.5	7.0	7.6	8.5	9.3	9.3	9.4	9.5	9.3	9.2
Thailand	17.1	15.5	.	7.7	6.8	6.1	4.2	5.5	9.5	15.9	18.1	21.4	23.1	24.8
Turkey	12.7	11.0	13.1	12.5	11.8	12.1	11.3	11.9	12.5	10.4	9.6	8.2	9.2	8.1
United Kingdom^	.	.	.	.	24.0	21.6	19.4	19.1	16.8	16.0	15.2	14.7	14.4	13.8
United States	9.8	9.4	9.1	8.9	8.5	8.4	8.1	7.9	7.7	7.6	8.0	8.5	9.0	9.5
Uruguay	5.6	5.1	6.3	7.0	7.7	7.7	7.4	9.4	8.9	9.2	9.9	9.9	9.7	9.4

Table 13.6 continued on next page.

vol 2 Table 13.6 Distribution of the percentage of prevalent dialysis patients using in-center HD, home HD, or CAPD/APD/IPD, 2000-2013

Country	(c) Home HD													
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Argentina	.	.	.	.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Australia	11.6	11.3	10.7	10.1	10.0	9.5	9.6	9.8	9.4	9.4	9.2	9.0	9.4	9.3
Austria	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.1	0.1	0.1
Bahrain	.	.	.	.	.	.	.	.	0.0	0.0	0.0	0.0	0.0	.
Bangladesh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.	.
Belgium, Dutch sp.	0.3	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.3	1.2	1.4	1.7	2.4	2.2
Belgium, French sp.	.	1.1	1.0	1.2	1.2	1.2	1.3	1.2	1.3	1.2	1.4	1.6	1.5	1.5
Bosnia and Herzegovina	.	.	.	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Brazil	.	.	.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.	.
Canada	1.5	1.4	1.5	1.7	2.0	2.5	2.8	3.0	3.3	3.5	3.7	3.9	4.1	4.3
Chile	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Colombia	.	.	.	.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Croatia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.	.
Czech Republic	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.	0.0
Denmark	0.5	0.7	1.1	1.6	2.3	3.1	4.1	3.7	4.2	5.1	5.5	5.5	5.7	5.9
Estonia	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Finland	1.6	1.9	2.9	3.2	3.4	3.1	2.9	3.8	3.9	3.7	4.0	4.1	5.4	5.7
France	.	.	.	.	.	2.6	2.0	1.6	1.4	0.8	0.7	0.6	0.6	0.6
Greece	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hong Kong	.	.	0.2	0.1	0.0	0.0	0.0	0.2	0.4	0.6	0.9	1.5	2.1	2.6
Hungary	.	.	.	.	.	.	.	.	0.0	0.0	0.0	0.0	0.0	.
Iceland	0.0	0.0	0.0	0.0	1.5	0.0	0.0	1.6	1.6	0.0	0.0	0.0	.	.
Iran	.	.	.	.	.	.	.	.	0.0	0.0	0.0	0.0	0.0	0.0
Ireland	.	.	.	.	.	.	.	.	.	0.1	0.6	1.1	1.6	2.4
Israel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Italy	.	.	.	.	.	.	.	.	.	.	10.0	.	.	.
Jalisco (Mexico)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Japan	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Table 13.6 continued on next page.

vol 2 Table 13.6 Distribution of the percentage of prevalent dialysis patients using in-center HD, home HD, or CAPD/APD/IPD, 2000-2013 (continued)

Country	(c) Home HD													
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Rep. of Korea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kuwait	.	.	.	.	.	.	.	.	.	.	.	.	0.0	0.0
Lebanon	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Malaysia	3.4	2.9	2.4	1.7	1.4	1.2	1.1	1.0	1.0	1.0	1.0	1.0	0.9	0.8
Morelos (Mexico)	.	.	.	.	.	.	.	0.0	0.0	0.0	.	.	.	.
Netherlands	1.8	1.7	1.8	2.0	2.1	2.1	2.3	2.3	2.5	2.5	2.7	2.7	3.1	3.3
New Zealand	14.1	13.7	14.4	14.0	14.8	15.8	16.1	15.8	15.7	16.6	17.8	18.1	19.2	18.4
Norway	0.3	0.3	0.3	0.2	0.2	0.5	0.4	0.3	0.3	0.5	0.7	0.6	1.0	1.3
Oman	.	.	.	.	.	.	.	.	0.0	0.0	0.0	0.0	0.0	0.0
Philippines	.	.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.	.
Poland	.	.	.	.	.	.	.	.	0.0	0.0	0.0	0.0	0.0	0.0
Portugal	.	.	.	.	.	.	.	.	0.0	0.0	0.0	0.0	.	.
Qatar	.	.	.	.	.	.	.	.	.	.	0.0	0.0	0.0	0.0
Romania	.	.	.	.	.	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Russia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.	0.0	0.0	0.0	0.0	0.0	0.0
Saudi Arabia	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Scotland	3.1	2.8	2.5	2.4	2.2	2.1	1.7	1.9	2.2	2.5	2.4	2.7	3.1	2.6
Serbia	.	.	.	.	.	.	.	.	.	.	.	0.7	0.7	0.6
Singapore	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Slovenia	.	.	.	.	.	.	.	.	.	0.0	0.0	0.0	0.0	.
South Africa	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Spain	.	.	.	.	.	.	0.2	0.1	0.3	0.2	0.2	0.2	0.2	0.3
Sweden	1.9	2.0	2.3	2.3	2.9	3.1	2.6	2.9	2.8	2.8	2.8	3.1	3.4	3.7
Switzerland	.	.	.	.	.	.	.	.	.	.	.	.	.	0.5
Taiwan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.	.	.
Thailand	0.0	0.0	.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turkey	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
United Kingdom^	.	.	.	.	2.2	2.1	2.0	2.0	2.1	2.5	2.8	3.4	4.0	4.2
United States	0.6	0.4	0.4	0.4	0.4	0.5	0.6	0.7	0.9	1.0	1.2	1.3	1.7	1.8
Uruguay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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, or Home HD; does not include patients with other/unknown modality. Data prior to 2013 represents information on CAPD/CCPD. ^United Kingdom: 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: APD, automated peritoneal dialysis; CAPD, continuous ambulatory peritoneal dialysis; CCPD, continuous cycling peritoneal dialysis; ESRD, end-stage renal disease; HD, hemodialysis; IPD, intermittent peritoneal dialysis; PD, peritoneal dialysis; sp., speaking.

Kidney Transplantation

Kidney transplantation rates vary greatly across countries, which may reflect not only geographic variations in ESRD incidence and prevalence but also differences in national health care systems, infrastructure, organ availability, and cultural beliefs. Kidney transplantation rates when expressed per million population serve to help standardize rates according to the size of a country's population and thus account for potential kidney donor pool size to some extent. However, it is also of interest to understand kidney transplantation rates in relationship to the size of the population in need of a kidney transplant. Towards this purpose, we now display kidney transplantation rates per 1000 dialysis patients in a country (Fig. 13.18b). A comparison of kidney transplantation rates per million population (Fig. 13.18a) with transplant rates per 1000 dialysis patients (Fig. 13.18b) indicates that the relative rates by country differ considerably between the two approaches for expressing kidney transplantation rates.

Among the countries represented in this chapter, kidney transplant rates when expressed per million population varied >30-fold across countries, from 1 to 59 kidney transplants per million population in 2013 (Figure 13.18a). The highest kidney transplant rates were reported in Croatia, the Jalisco region of Mexico, Netherlands, Norway, Spain, and the U.S., with 53–59 kidney transplants per million population. Kidney transplantation rates ranged from 30–51 per million population for 42% percent of countries, 11–29 per million population for 31% of countries, and 1–9 kidney transplants per million population for the remaining 15%. Countries reporting these lowest rates of kidney transplantation included Bangladesh, Bosnia and Herzegovina, the Philippines, Malaysia, Romania, Russia, South Africa, and Thailand.

Kidney transplant rates when expressed per 1000 dialysis patients are seen to greatly vary across countries, from 3 to 210 kidney transplants per 1000 dialysis patients in 2013 (Figure 13.18b). The highest kidney transplant rates per 1000 dialysis patients in 2013 occurred in Norway (210), Estonia (158), the Netherlands (146), Scotland (129), and the United Kingdom (117, not including Scotland). Furthermore transplant rates of 101 to 110 per 1000 dialysis patients were reported in Finland, Iceland, Iran, Ireland, Spain, Sweden, and Switzerland. Nearly 30% of

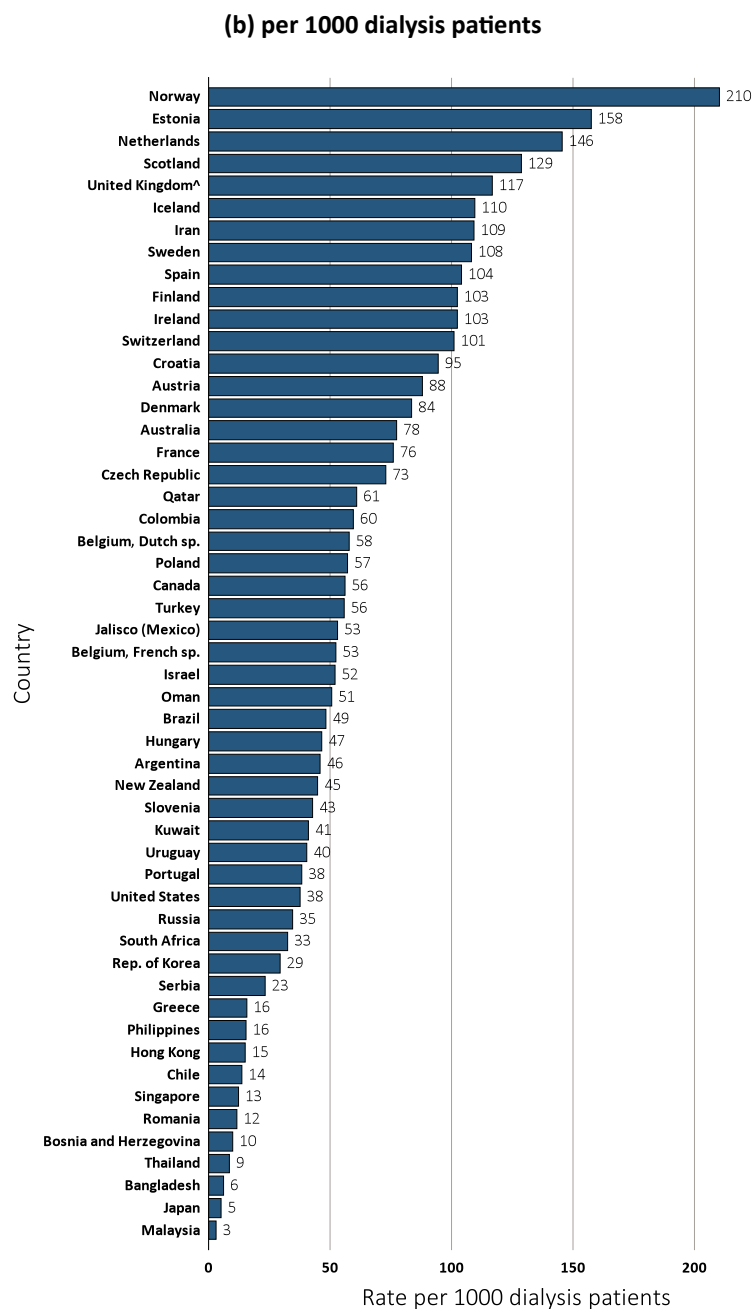
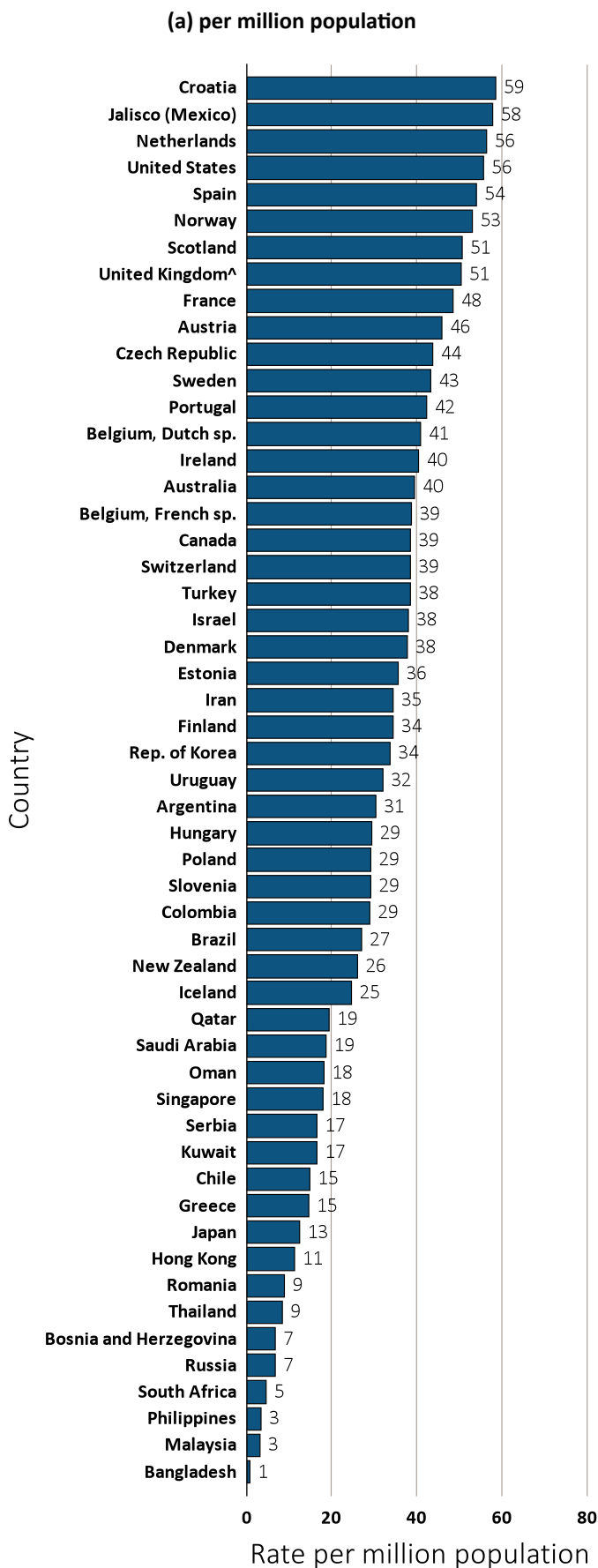
countries reported kidney transplant rates of 50 to 99 transplants per 1000 dialysis patients, 25% of countries with rates of 20–49 per 1000 dialysis patients, and 22% of countries with rates of <20 transplants per 1000 dialysis patients. The lowest rates of 3 to 9 transplants per 1000 dialysis patients are seen in the countries of Bangladesh, Japan, Malaysia, and Thailand. In the US, 38 kidney transplants were reported per 1000 dialysis patients, in 2013.

Since 2000, a substantial increase has been seen in kidney transplant rates per million population in some countries (Table 13.6, Figure 13.19) – particularly in Bangladesh, Croatia, the Netherlands, the Republic of Korea, Russia, Thailand, Turkey, and Uruguay, which have demonstrated the largest increases (66% to 519%) in kidney transplantation rates per million population over this time period. Furthermore, during this time period since 2000, kidney transplantation rates per million population rose 26–41% in Australia, French-speaking Belgium, the Czech Republic, Colombia, Denmark, Scotland, and Sweden.

Great variation is seen in the types of kidney donors, ranging from 80–100% living donor kidney transplantation in Bangladesh, Japan, Iceland, the Philippines, Qatar, Saudi Arabia, and Turkey, to 0% in Slovenia (Figure 13.20). In approximately 60% of countries, donation from deceased individuals was the predominant form of kidney donation for transplantation reported in 2013.

vol 2 Figure 13.18 Kidney transplantation rate, by country, 2013

vol 2 Figure 13.18 Kidney transplantation rate, by country, 2013



Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. All rates are unadjusted. ^United Kingdom: England, Wales, & Northern Ireland (Scotland data reported separately). Data for Belgium do not include patients younger than 20. Data for France include 22 regions. Transplant data for Romania are limited to that available in dialysis center reports, and include only non-preemptive transplants. Data for Spain include all regions. Abbreviations: sp., speaking.

vol 2 Table 13.7 Kidney transplantation rates per million population, by country, 2000-2013

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	% change from 2000/01 to 2012/13
Argentina	.	.	.	.	.	19.1	21.7	23.0	25.1	26.4	27.9	28.3	30.3	30.5	.
Australia	27.7	27.9	30.8	27.3	32.3	30.6	31.0	29.3	38.5	35.7	38.8	38.1	37.7	39.5	38.8
Austria	43.6	48.2	45.1	43.6	43.6	45.9	47.9	43.7	39.5	47.4	44.6	45.0	47.3	45.9	1.5
Bahrain	.	.	.	.	.	.	.	.	10.8	18.7	11.3	6.7	.	.	.
Bangladesh	0.4	0.2	0.4	0.4	0.4	0.4	0.2	0.5	0.5	0.6	0.6	0.8	0.5	0.7	100
Belgium, Dutch sp.	50.8	36.7	31.1	37.3	31.3	28.4	39.7	43.3	40.3	39.6	38.7	41.2	44.6	41.0	-2.2
Belgium, French sp.	.	29.4	32.2	36.5	29.8	37.6	39.3	40.8	37.4	37.9	37.0	43.1	40.6	38.7	34.9
Bosnia and Herzegovina	.	.	.	6.5	7.6	11.5	6.8	8.4	9.1	7.0	6.0	4.6	6.8	6.8	.
Brazil	.	.	.	17.9	18.8	18.4	17.8	18.5	20.1	22.1	23.8	25.2	27.2	27.0	.
Canada	37.9	35.4	34.6	33.4	32.1	32.7	38.4	39.5	38.3	37.7	38.0	37.7	38.4	38.6	5
Chile	17.9	17.3	16.6	19.8	16.9	17.2	18.5	17.1	16.8	15.1	13.5	15.6	16.7	14.9	-10.2
Colombia	21.7	22.7	19.7	19.2	11.0	11.9	29.8	29.5	16.1	18.9	38.9	34.9	33.3	29.0	40.3
Croatia	9.0	16.2	18.3	18.0	26.4	22.3	.	.	.	.	.	.	54.3	58.6	348
Czech Republic	33.2	30.6	32.5	40.4	41.6	38.0	41.6	38.0	31.9	34.0	27.2	31.6	.	43.8	37.3
Denmark	28.7	30.4	31.8	32.7	34.8	32.7	30.8	31.4	34.9	40.7	41.2	44.6	37.9	37.7	27.9
Estonia	.	.	.	.	.	.	.	.	.	.	.	.	.	35.7	.
Finland	37.7	32.4	32.9	31.3	37.1	31.8	39.7	32.3	28.0	33.2	32.8	33.0	36.4	34.4	1
France	.	.	.	.	.	36.6	39.9	45.1	44.9	44.6	45.5	46.3	47.0	48.4	.
Greece	12.5	16.9	20.0	21.7	19.1	23.7	22.2	21.9	24.0	15.1	11.1	17.9	17.0	14.7	7.8
Hong Kong	.	.	12.0	7.5	7.4	8.6	9.6	9.5	11.0	14.0	11.7	9.3	13.8	11.3	.
Hungary	.	.	.	.	.	.	.	.	25.7	27.1	30.7	25.1	27.8	29.4	.
Iceland	24.9	17.5	0.0	3.5	10.3	33.7	26.3	22.5	25.2	31.4	31.4	50.2	18.7	24.7	2.4
Iran	.	.	.	.	.	.	.	.	26.7	29.3	30.1	30.3	31.8	34.5	.
Ireland	.	.	.	.	.	.	.	.	.	37.9	26.8	42.0	35.8	40.3	.
Israel	29.5	24.9	23.9	36.8	37.0	43.4	43.2	37.7	33.1	28.6	23.7	36.7	19.5	38.1	5.9
Jalisco (Mexico)	50.6	49.3	44.5	46.6	56.5	55.7	52.2	59.3	54.3	58.1	60.1	62.2	58.7	57.7	16.5
Japan	.	.	.	.	.	.	.	.	.	10.3	11.7	12.5	12.6	12.5	.
Rep. of Korea	14.2	17.6	15.2	16.5	17.4	15.5	18.8	18.5	22.7	24.5	25.1	31.7	34.4	33.8	114.5
Kuwait	.	.	.	.	.	.	.	.	.	.	.	.	18.3	16.6	.
Lebanon	.	.	.	.	.	.	.	.	.	.	.	.	19.0	.	.
Malaysia	6.1	6.6	6.7	6.4	7.4	6.2	11.1	8.2	4.7	5.0	4.5	4.4	3.6	3.3	-45.7

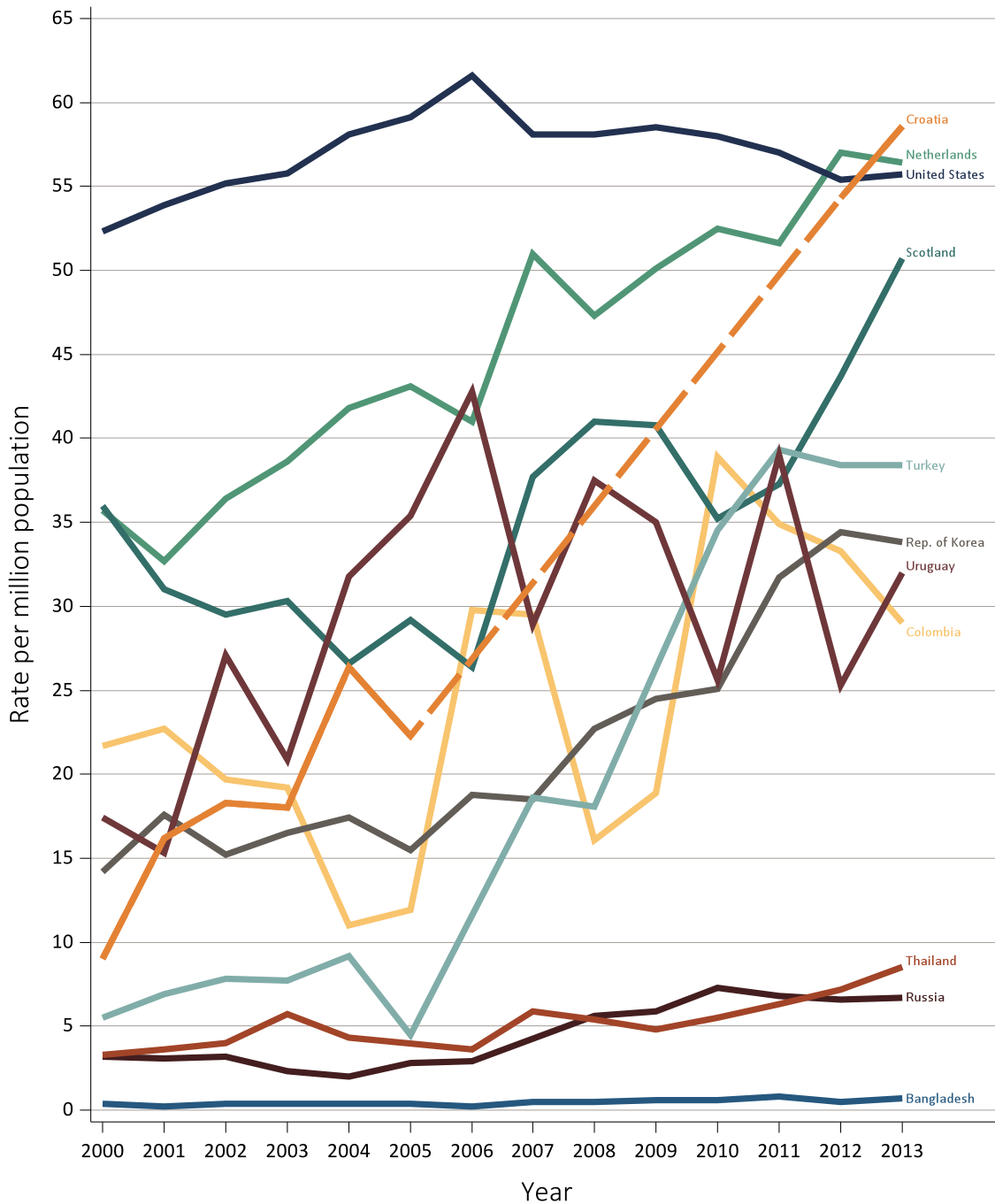
Table 13.7 continued on next page.

vol 2 Table 13.7 Kidney transplantation rates, per million population, by country, 2000-2013 (continued)

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	% change from 2000/01 to 2012/13
Morelos (Mexico)	.	.	.	.	.	.	.	54.6	44.5	41.8	.	.	.	.	.
Netherlands	35.7	32.7	36.4	38.6	41.8	43.1	41.0	51.0	47.3	50.1	52.5	51.6	57.0	56.4	65.8
New Zealand	27.5	28.3	29.7	27.7	25.7	22.5	21.5	29.1	28.6	28.1	25.3	27.4	25.0	26.1	-8.4
Norway	46.1	46.7	46.9	52.8	57.7	49.5	45.5	55.2	58.3	60.5	53.8	61.0	59.6	53.0	21.3
Oman	.	.	.	.	.	.	.	.	14.8	18.4	16.8	22.1	21.4	18.2	.
Philippines	3.5	3.0	3.7	4.9	5.6	7.5	7.5	11.1	7.1	5.2	4.0	3.8	3.3	3.4	3.1
Poland	.	.	.	.	.	.	.	.	21.2	20.6	25.9	27.0	29.7	29.3	.
Portugal	.	.	.	.	.	.	.	.	49.4	55.7	54.3	50.2	40.6	42.4	.
Qatar	.	.	.	.	.	.	.	.	2.1	1.2	15.2	19.6	15.3	19.4	.
Romania	.	.	.	.	.	4.7	5.3	2.8	7.3	6.9	6.8	9.0	7.1	8.9	.
Russia	3.2	3.1	3.2	2.3	2.0	2.8	2.9	.	5.6	5.9	7.3	6.8	6.6	6.7	111.1
Saudi Arabia	.	.	.	.	.	.	.	.	16.3	15.1	18.6	20.4	19.6	18.6	.
Scotland	36.0	31.0	29.5	30.3	26.6	29.2	26.4	37.7	41.0	40.8	35.2	37.3	43.7	50.7	40.9
Serbia	.	.	.	.	.	.	.	.	.	.	.	14.5	13.0	16.6	.
Singapore	16.5	21.0	14.2	10.1	17.6	19.6	24.1	23.2	20.0	18.5	16.2	17.7	13.4	17.9	-16.5
Slovenia	.	.	.	.	.	.	.	.	.	22.6	31.7	23.9	30.6	29.1	.
South Africa	.	.	.	.	.	.	.	.	.	.	.	.	4.7	4.6	.
Spain	.	.	.	.	.	.	.	.	.	49.8	47.3	52.9	54.0	54.1	.
Sweden	31.9	34.8	34.6	39.0	41.7	43.2	40.5	42.3	45.6	42.4	39.5	45.2	41.3	43.2	26.7
Switzerland	.	.	.	.	.	.	.	.	.	.	.	.	.	38.5	.
Taiwan	12.0	16.0	17.2	.	.	.	.	.	12.5	13.6	12.1	14.0	11.2	.	-20
Thailand	3.3	3.6	4.0	5.7	4.3	.	3.6	5.9	5.4	4.8	5.5	6.3	7.2	8.5	127.5
Turkey	5.5	6.9	7.8	7.7	9.2	4.5	11.6	18.6	18.1	26.3	34.5	39.3	38.4	38.4	519.4
Ukraine	.	.	.	.	.	.	.	.	.	.	.	.	2.1	.	.
United Kingdom^	.	.	.	.	34.8	30.0	34.1	38.3	40.3	42.1	44.0	44.3	45.9	50.5	.
United States	52.3	53.9	55.2	55.8	58.1	59.1	61.6	58.1	58.1	58.5	58.0	57.0	55.4	55.7	4.6
Uruguay	17.4	15.3	27.1	20.9	31.8	35.4	42.8	28.9	37.5	35.0	25.6	39.0	25.3	32.0	75.2

Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. All rates are unadjusted. ^United Kingdom: 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 2009-2013. Transplant data for Romania are limited to that available in dialysis center reports, and include only non-preemptive transplants. 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 2012 and 2013 and the average in 2000 and 2001. Abbreviations: sp., speaking; . signifies data not reported.

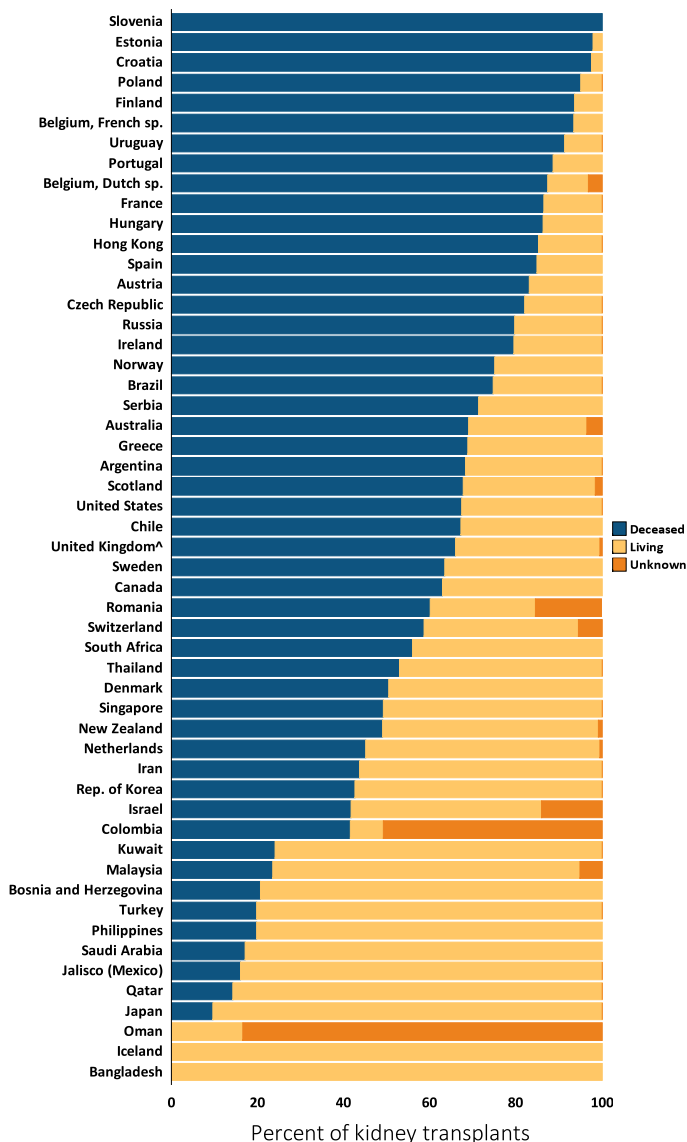
vol 2 Figure 13.19 Trends in kidney transplantation rates per million population, by country: Ten countries having the highest % rise in kidney transplantation rate from 2000/01 to 2012/13, plus the U.S.



Data source: Special analyses, USRDS ESRD Database. All rates are unadjusted. Data for Croatia are missing from 2006-2011. Abbreviations: ESRD, end-stage renal disease.

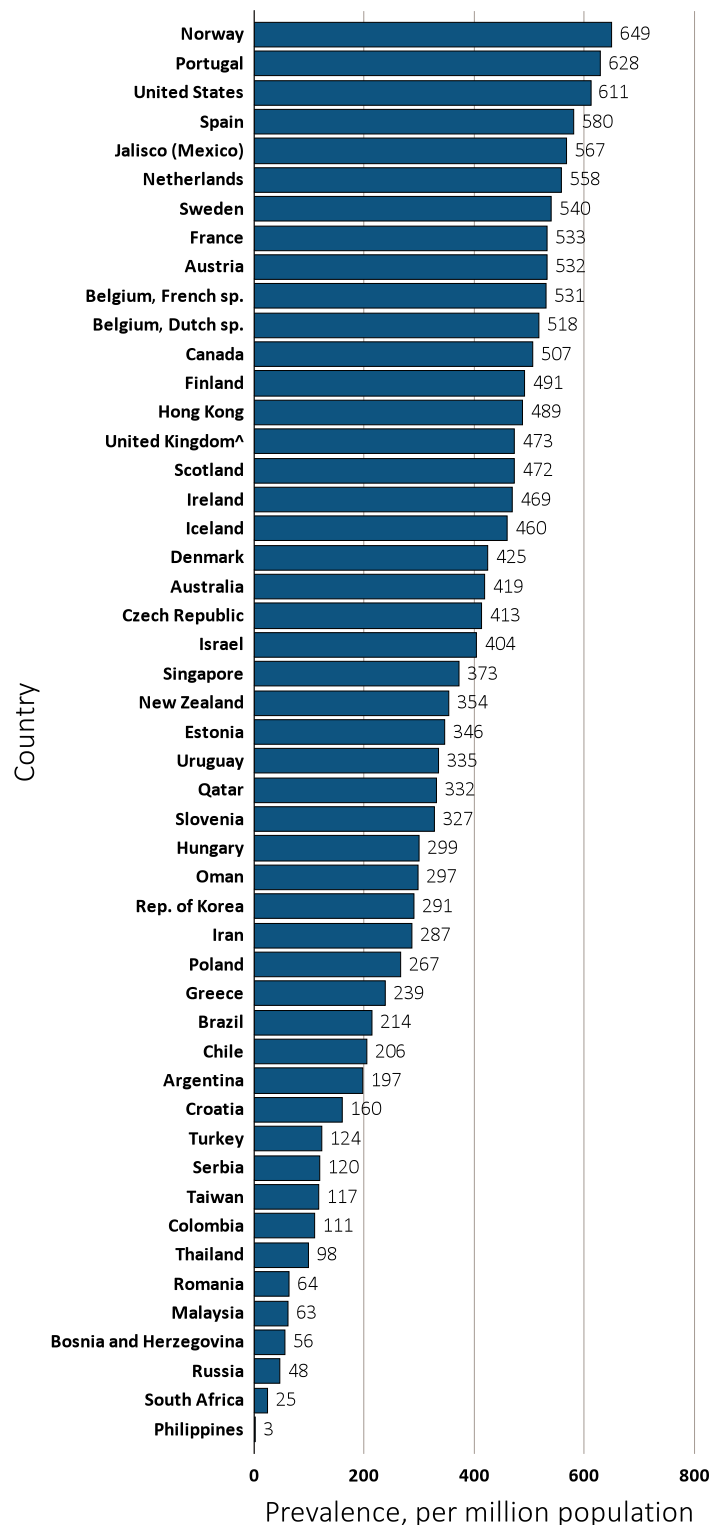
In 2013, Norway, Portugal, and the U.S. reported the highest prevalence of ESRD patients living with a kidney transplant, at 611 to 649 per million population (Figure 13.21 and Table 13.8). Forty percent of countries indicated 400 to 599 prevalent ESRD patients living with a kidney transplant per million population, with the remaining 54% of countries evenly divided between having <200 and having 200-399 ESRD patients living with a kidney transplant per million population. From 2000 to 2013, the prevalence of ESRD patients living with a kidney transplant has continued to increase in every country with available data - increasing 60% to nearly 500% in one-half of all countries, while rising 18-52% in the remaining countries. The largest increases (160% to 490%) in the prevalence of ESRD patients living with a kidney transplant from 2000 to 2013 were seen in Croatia, Russia, Thailand, Turkey, and Uruguay.

vol 2 Figure 13.20 Distribution of the percentage of kidney transplantations by kidney donor type and country, 2013



Data source: Special analyses, USRDS ESRD Database. Denominator is calculated as the sum of deceased, living donor, and unknown transplants. ^United Kingdom: England, Wales, & Northern Ireland (Scotland data reported separately). Data for France include 22 regions. Abbreviations: ESRD, end-stage renal disease.

vol 2 Figure 13.21 Prevalence of treated ESRD patients with a functioning kidney transplant, per million population, by country, 2013



Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. The prevalence is unadjusted. ^United Kingdom: 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 13.8 Trends in the prevalence of treated ESRD patients with a functioning kidney transplant, per million population, by country, 2000-2013

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	% change from 2000/01 to 2012/13
Argentina	.	.	.	.	.	.	.	.	132.3	127.9	144.8	130.9	164.8	197.2	.
Australia	274.1	280.9	292.4	300.1	311.6	321.6	331.2	338.4	360.2	370.8	385.9	396.4	407.7	419.3	49
Austria	342.3	369.0	387.4	447.0	412.6	428.0	438.9	455.8	460.0	474.9	484.5	497.6	515.1	532.4	47.3
Bahrain	.	.	.	.	.	.	.	.	62.4	57.7	53.5	52.7	.	.	.
Bangladesh	2.6	2.7	3.1	3.3	3.2	3.4	3.5	.	.	.	.	.	.	.	.
Belgium, Dutch sp.	349.8	366.4	377.3	391.1	400.7	404.7	423.3	439.4	451.6	464.0	474.7	489.8	506.1	517.6	42.9
Belgium, French sp.	.	322.4	349.5	377.3	392.8	410.4	433.7	453.2	471.4	463.0	480.5	501.0	516.2	530.6	62.3
Bosnia and Herzegovina	.	.	.	26.6	31.6	33.4	31.6	31.8	40.4	43.6	42.3	47.3	51.9	56.2	.
Brazil	.	.	.	.	.	.	.	.	.	.	.	176.8	193.2	214.4	.
Canada	319.7	335.0	348.4	367.7	381.0	392.9	409.2	428.1	441.7	451.4	464.9	478.1	491.6	506.8	52.5
Chile	126.9	131.3	138.7	151.6	156.2	157.5	164.8	175.4	188.9	190.8	191.5	210.1	203.4	205.6	58.4
Colombia	.	.	.	.	.	.	.	.	60.6	59.8	88.8	88.3	99.7	111.1	.
Croatia	91.8	100.1	117.9	134.3	153.8	166.3	.	.	.	.	.	.	381.3	159.9	182
Czech Republic	238.4	252.7	266.7	276.3	316.9	.	.	.	.	358.9	370.3	390.3	.	412.5	68
Denmark	253.8	261.6	273.3	288.4	297.4	266.8	318.0	333.6	341.6	355.1	375.8	395.0	409.8	424.6	61.9
Estonia	.	.	.	.	.	.	.	.	.	.	.	.	.	346.0	.
Finland	352.0	369.5	378.2	391.3	408.6	418.0	434.5	445.5	449.4	460.2	469.3	476.0	483.9	490.9	35.1
France	.	.	.	.	.	390.0	408.6	407.3	425.7	464.4	483.2	500.5	514.6	532.6	.
Greece	139.9	141.5	150.8	161.9	170.3	181.6	192.5	202.3	214.8	218.2	216.1	221.8	231.7	239.0	67.3
Hong Kong	.	.	312.5	314.4	361.4	387.4	409.7	420.4	442.8	481.7	484.2	477.7	485.4	488.5	.
Hungary	.	.	.	.	.	.	.	.	.	263.3	269.9	278.5	287.0	299.1	.
Iceland	224.0	231.6	236.5	241.8	246.5	276.3	316.0	318.8	321.3	345.4	371.0	410.6	439.6	460.2	97.5
Iran	.	.	.	.	.	.	.	.	245.7	242.2	253.7	265.0	276.0	286.9	.
Ireland	.	.	.	.	.	.	.	.	.	402.3	415.2	438.7	453.4	469.4	.
Israel	.	.	.	297.2	312.8	336.8	357.5	372.1	386.0	382.9	380.7	391.9	395.2	404.1	.
Jalisco (Mexico)	.	.	.	.	.	314.7	352.0	399.4	436.2	458.2	460.2	500.4	525.8	567.4	.
Japan	.	.	.	.	.	.	.	.	.	85.0	83.3	.	.	.	.
Rep. of Korea	156.8	164.8	170.5	176.9	183.2	188.2	195.7	202.2	212.8	224.8	234.1	252.4	272.3	290.5	75
Malaysia	53.0	55.4	58.1	60.1	62.4	64.4	65.6	65.3	65.6	65.4	66.4	65.8	64.5	62.9	17.5

Table 13.8 continued on next page.

vol 2 Table 13.8 Trends in the prevalence of ESRD patients with a functioning kidney transplant, per million population, by country, 2000-2013 (continued)

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	% change from 2000/01 to 2012/13
Morelos (Mexico)	.	.	.	.	.	.	.	41.9	34.3	31.6	.	.	.	.	.
Netherlands	314.6	325.9	341.0	357.6	376.7	396.9	418.9	446.1	450.5	465.1	487.9	508.8	532.9	558.2	70.4
New Zealand	264.6	273.9	283.1	291.3	298.7	299.7	298.0	303.4	317.6	327.0	331.9	339.0	345.1	353.9	29.8
Norway	437.5	451.7	466.0	488.5	513.3	524.5	536.6	551.7	573.2	592.1	609.3	628.9	639.0	648.7	44.8
Oman	.	.	.	.	.	.	.	.	232.5	241.4	296.5	315.4	331.1	297.4	.
Philippines	.	.	2.2	.	.	4.6	4.8	5.3	5.2	5.2	4.0	3.8	3.3	3.4	.
Poland	.	.	.	.	.	.	.	.	240.8	210.4	208.9	240.6	249.0	266.6	.
Portugal	.	.	.	.	.	.	.	.	484.2	544.7	565.8	609.8	602.1	628.3	.
Qatar	.	.	.	.	.	.	.	.	2.1	1.2	354.5	373.4	375.5	332.4	.
Romania	.	.	.	.	.	14.9	19.7	22.0	28.6	37.5	44.0	51.9	57.9	64.1	.
Russia	16.5	18.1	18.7	21.9	23.1	24.5	28.5	.	33.7	37.7	41.2	41.6	43.4	47.8	163.6
Saudi Arabia	.	.	.	.	.	.	.	.	336.8	318.2	298.4	273.0	252.0	.	.
Scotland	307.6	326.4	329.6	345.4	351.3	361.2	369.0	386.5	394.7	408.9	417.8	430.6	448.7	471.9	45.2
Serbia	.	.	.	.	.	.	.	.	.	.	.	107.3	111.1	120.4	.
Singapore	261.2	279.0	280.8	292.0	303.8	317.2	329.6	340.8	348.9	353.3	360.0	370.0	367.8	373.0	37.1
Slovenia	.	.	.	.	.	.	.	.	.	265.2	283.6	296.2	310.1	327.2	.
South Africa	.	.	.	.	.	.	.	.	.	.	.	.	30.7	24.7	.
Spain	.	.	.	.	521.6	386.3	445.4	452.7	505.0	424.7	516.1	537.6	545.9	579.9	.
Sweden	377.5	386.7	396.8	411.2	430.4	438.9	454.5	469.5	487.1	498.8	506.8	519.4	529.0	539.5	39.8
Taiwan	.	.	.	.	.	.	.	.	.	82.2	91.0	100.0	107.7	117.2	.
Thailand	.	15.9	23.8	33.8	24.9	24.7	20.5	57.4	36.3	46.0	49.8	56.0	88.9	98.4	489
Turkey	21.0	26.7	36.6	41.1	47.1	20.7	58.4	80.0	109.4	101.6	104.4	95.4	105.8	123.9	381.6
Ukraine	.	.	.	.	.	.	.	.	.	.	.	.	2.1	.	.
United Kingdom [^]	286.3	271.3	287.5	345.8	370.4	386.7	406.9	425.0	443.8	472.8	.
United States	378.4	397.1	416.7	435.7	456.2	476.5	497.2	516.1	533.7	550.7	567.2	583.1	597.1	611.3	55.8
Uruguay	87.5	100.8	120.1	134.3	151.5	131.9	210.3	234.7	255.5	272.7	284.2	312.9	315.6	335.3	245.7

Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. Prevalence is unadjusted. [^]United Kingdom: 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 2009-2013. Data for Belgium do not include patients younger than 20. There is underreporting of prevalent transplant patients in Turkey. ^o % change is calculated as the percent difference between the average prevalence in 2012 and 2013 and the average in 2000 and 2001. Abbreviations: ESRD, end-stage renal disease; sp., speaking; . signifies data not reported.

References

Hecking M, Bieber BA, Ethier J, Kautzky-Willer A, Sunder-Plassmann G, et al. Sex-specific differences in hemodialysis prevalence and practices and the male-to-female mortality rate: The Dialysis Outcomes and Practice Patterns Study (DOPPS). *PLoS Med* 2014;11(10): e1001750. *Zoi*:10.1371/journal.pmed.1001750.

Acknowledgements

We would like to greatly thank the following contributors—Sergio Miguel Marinovich (Argentina), Kylie Hurst (Australia and New Zealand), Reinhard Kramar (Austria), Professor Harun ur Rashid, Chief consultant, Kidney foundation hospital and research institute, Dhaka and Dr Nazrul Islam, Country manager, Bangladesh, National trading syndicate ltd., Baxter (Bangladesh), Frans Schroven, Bart De Moor, and Johan De Meester (Belgium, Dutch-speaking), Jean-Marine des Grottes and Frederic Collart (Belgium, French-speaking), Halima Resic, Besim Prnjavorac, Nenad Petković (Bosnia and Herzegovina), Ricardo Sesso and Jocemir Ronaldo Lugon (Brazil), Norma Hall, Analyst, CIHI, Eric de Sa, Senior Analyst, CIHI, Michael Terner, Program Lead, CIHI, Juliana Wu, Manager, CIHI (Canada), Hugo Poblete Badal MD, Mireya Ortiz Mejias MD, Marcela Valenzuela Cerna MD, and Susana Elgueta Miranda MD (Chile), Rafael Alberto Gómez and Cuenta de Alto Costo (Colombia), Croatia, Professor Ivan Rychlík, MD, PhD, Frantisek Lopot, Dipl. Eng., PhD. (Czech Republic), James Goya Heaf (Denmark), Anneke Kramer (ERA-EDTA), Estonia, Patrik Finne and Carola Grönhagen-Riska (Finland), Mathilde Lassalle and Cécile Couchoud (France), Nikolaos Afentakis (Greece), C.B. Leung and Stanley Lo (Hong Kong), Imre Kulcsar, Sandor Mihaly, George Reusz, Karoly Kalmar-Nagy, Balazs Nemes, Edit Szederkenyi (Hungary), Runolfur Palsson (Iceland), Afiatin Abdurahman and Dheny Sarli (Indonesia), Office for Transplantation and Special Diseases (Iran), Dr Liam Plant, National Clinical Director, Health Service Executive National Renal Office (Ireland), Tamar Shohat, Rita Dichtiar, Eliezer Golan (Israel), Dr. Ikuto Masakane (Japan), Dr Ali Alshahow (Kuwait), Lee Day Guat, National Renal Registry, Malaysian Society of Nephrology (Malaysia), Registro de Diálisis y Trasplante del Edo. de Jalisco (REDTJAL) (Mexico-Jalisco), Aline Hemke and Marc Hemmeler (The Netherlands), Torbjørn

Leivestad and Anna Varberg Reisæter (Norway), Dr Yaqoub al Maimani and Issa Al Salmi (Oman), Dr. Russell Villanueva and Dr. Romina Danguilan (Philippines), Grzegorz Korejwo on behalf of Prof. Boleslaw Rutkowski, Director of Polish Renal Registry (Poland), Fernando Macário and Fernando Nolasco (Portugal), Dr. Fadwa ALAli, Dr. Mohamed ELsayed, Miss. Aisha Elsayed, and Dr. Reyad A. Fadhil (Qatar), ESRD Registry Committee, Korean Society of Nephrology, Dong Chan Jin, MD (Republic of Korea), Gabriel Mirescu, Liliana Garneata, and Eugen Podgoreanu (Romania), Boris Bikbov and Natalia Tomilina (Russia), Dr. Faissal A.M. Shaheen, Beshar Al-Attar, M.D, and Dr. Haroun Zakaria (Saudi Arabia), Wendy Metcalfe and Jamie Traynor (Scotland), Visnja Lezaic (Serbia), Singapore Renal Registry, National Registry of Diseases Office (Singapore), Jadranka Buturović-Ponikvar, Jakob Gubenšek, Miha Arnl (Slovenia), Razeen Davids (South Africa), Eduardo Martín-Escobar Registro Español de Enfermos Renales (Spain), Pablo Castro de la Nuez (Spain, Andalusia), Jose Ignacio Sanchez Miret and José Maria Abad Diez (Spain. Aragon), Ramón Alonso de la Torre, José Ramón Quirós García (Spain, Asturias), Manuel Arias Rodríguez and Oscar García Ruiz (Spain, Cantabria), Raquel González Fernández and Carlos Fernández-Renedo (Spain, Castile and León), Gonzalo Gutiérrez Ávila and Inmaculada Moreno Alía (Spain, Castile-La Mancha), Encarnación Bouzas-Camaño and Jacinto Sánchez-Ibáñez (Spain, Galicia), Manuel Aparicio de Madre & Carlos Chamorro Jambrina (Spain, Madrid), Carmen Santiuste de Pablos and Inmaculada Marín Sánchez (Spain, Region of Murcia), Oscar Zurriaga Llorens, Manuel Ferrer Alamar and Nieves Fuster Camarena (Spain, Valencia), Karl Goran Prütz, Maria Stendahl, Marie Evans (Sweden), Patrice Ambühl and Rebecca Winzeler (Switzerland), Hung-Chun Chen, MD, PhD. and Chiu-Ching Huang, MD (Taiwan), Kearnkiat Praditpornsilpa MD, MS, Professor of Medicine Chairman of Thai Renal Replacement Therapy Registry, The Nephrology Society of Thailand (Thailand), Prof. Dr. Gültekin Süleymanlar, Prof. Dr. Nurhan Seyahi, and Prof. Dr. Mehmet Riza Altiparmak (Turkey), Dr. Fergus Caskey and Anna Casula (United Kingdom), María Carlota González-Bedat and Francisco González-Martínez (Uruguay)