

THE GLOBAL KIDNEY HEALTH ATLAS



<Congress title>

Date

www.theisn.org/global-atlas

Overview

- **Aim**
- **Methods**
- **Key Results**
- **Implications**

Aim of the Global Kidney Health Atlas

To understand, compare and monitor how different countries around the world detect, treat, monitor and advocate for people with kidney disease (AKI or CKD)

Key focus on availability, accessibility, affordability and quality of ESKD care

Global Kidney Health Atlas survey



Design and scope

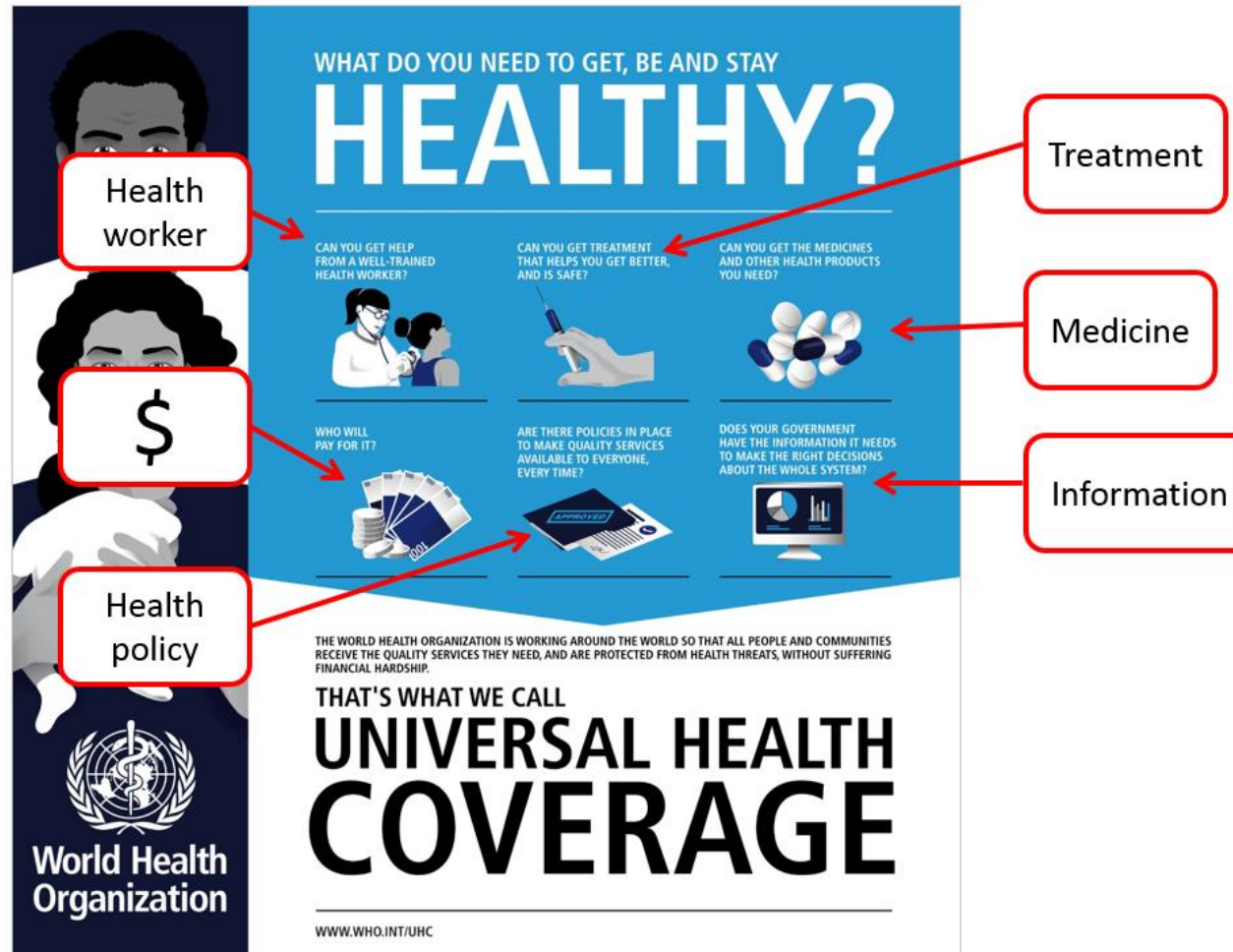
Desk research (across countries and regions)

- Published and grey literature review
- Systematic review ESKD burden and outcomes
- Data extraction from major renal registries (USRDS, ERA-EDTA) and relevant national registries where available
- Scoping review of KRT cost estimates

Online questionnaire-based survey July – September 2018

- 3 languages (English, French, Spanish)
- Across 182 countries
- ≥3 stakeholders per country
 - National nephrology society leadership
 - Healthcare policymakers
 - Patients / patient advocacy groups
- Discrepancies resolved by follow-up conferences with regional and country nephrology leaders

Overall survey components



Overall GKHA response

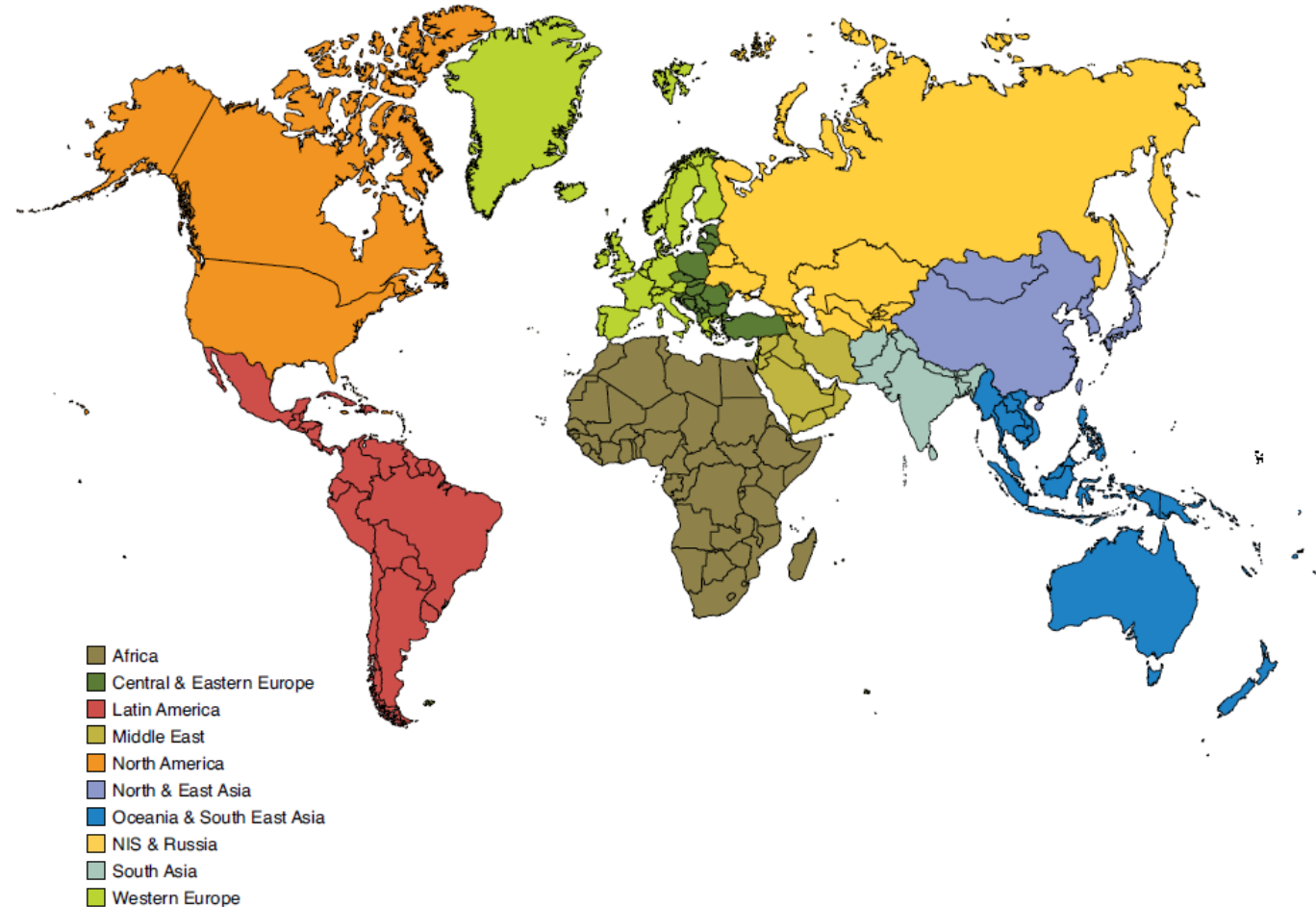
■ Participated in survey ■ Did not participate in survey



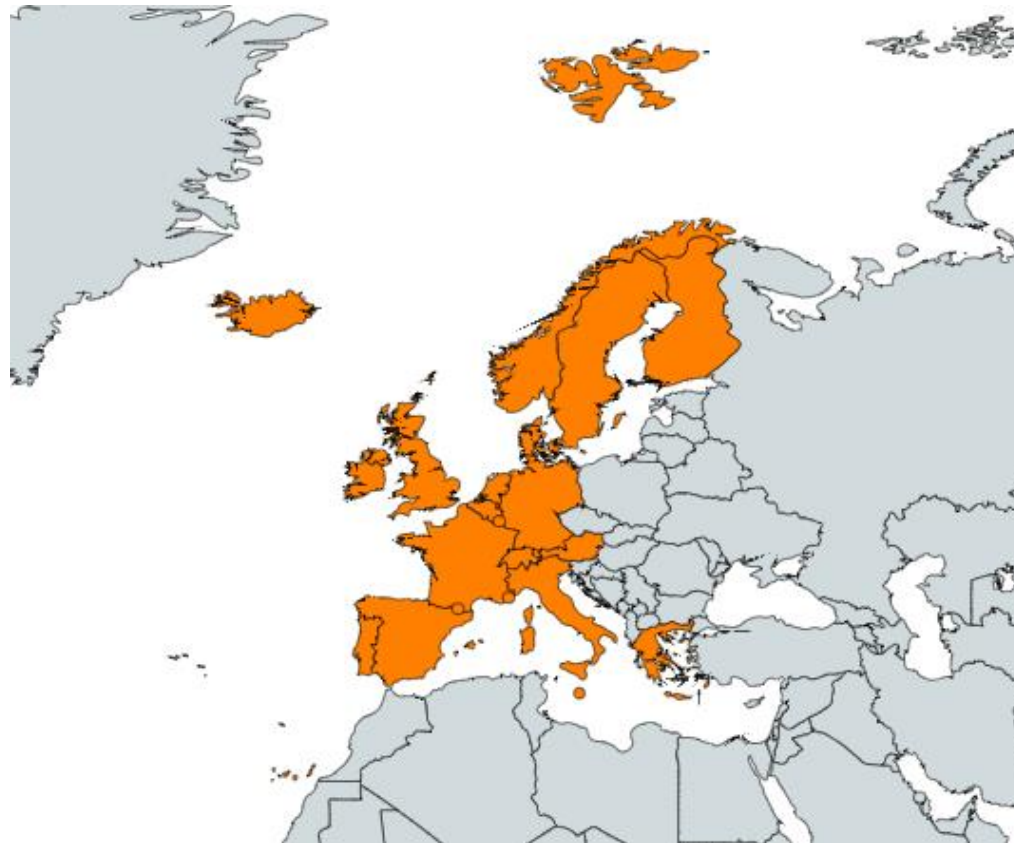
160 countries (88%)
99% world's population
317 individuals (69%) response
3 respondents/country (IQR 2-4)

113 countries participated
in both GKHA surveys

Results presented by ISN regions

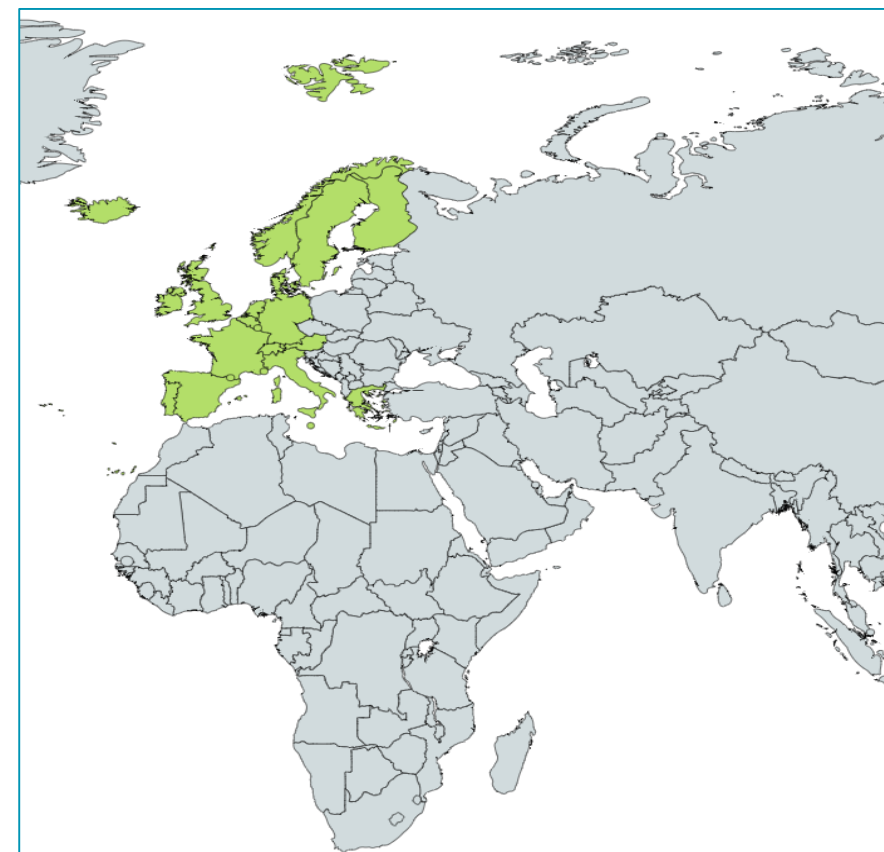


ISN Region: Western Europe



Demographics

Country	World bank ranking	Area (sq km)	Total population (2018)	GDP (PPP) (\$ billion)	Total health expenditures (% of GDP)
Andorra	High income	468	85,708	3.327	10.4
Austria	High income	83,871	8,793,370	441	10.4
Belgium	High income	30,528	11,570,762	529.2	10.0
Denmark	High income	43,094	5,809,502	287.8	10.4
England	-	-	-	-	-
Finland	High income	357,022	5,537,364	244.9	9.4
France	High income	643,801	67,364,357	2856	11.1
Germany	High income	357,022	80,457,737	4199	11.2
Greece	High income	131,957	10,761,523	299.3	8.4
Iceland	High income	572	343,518	18.18	8.6
Ireland	High income	70,723	5,068,050	353.3	7.8
Israel	High income	20,770	8,424,904	317.1	7.4
Italy	High income	2,586	62,246,674	2317	9.0
Liechtenstein	High income	160	38,547	4.978	-
Luxembourg	High income	2,586	605,764	62.11	6.0
Malta	High income	316	449,043	19.26	9.6
Monaco	High income	2	30,727	7.672	1.7
Northern Ireland	-	-	-	-	-
Netherlands	High income	41,543	17,151,228	924.4	10.7
Norway	High income	323,802	5,372,191	381.2	10.0
Portugal	High income	450,295	10,355,493	314.1	9.0
San Marino	High income	61	33,779	2.064	6.4
Scotland	-	-	-	-	-
Spain	High income	505,370	49,331,076	1778	9.2
Sweden	High income	450,295	10,040,995	518	11.0
Switzerland	High income	41,277	8,292,809	523.1	12.1
United Kingdom	High income	243,610	65,105,246	2925	9.9
Vatican	data not reported/unavailable	-	-	-	-



CKD and its risk factors burden

Country	CKD Prevalence % (95% CI)	Death attributed to CKD % (95% CI)	DALYS attributed to CKD % (95% CI)	Obesity % (95% CI)	Increased BP % (95% CI)	Smoking % (95% CI)
Andorra	8.51 (7.90 - 9.24)	1.03 (0.93 - 1.19)	0.71 (0.63 - 0.79)	28.0 (22.0 - 34.0)	18.7 (13.3 - 24.8)	20.6 (18.1 - 23.0)
Austria	10.23 (9.46 - 11.15)	3.38 (3.23 - 3.55)	1.52 (1.37 - 1.67)	21.9 (17.5 - 26.8)	21.0 (15.7 - 27.1)	25.2 (22.8 - 27.8)
Belgium	10.33 (9.53 - 11.27)	1.93 (1.81 - 2.05)	1.06 (0.97 - 1.15)	24.5 (20.7 - 28.5)	17.5 (12.9 - 23.0)	18.7 (17.0 - 20.4)
Denmark	10.14 (9.34 - 11.03)	1.79 (1.69 - 1.89)	1.1 (1 - 1.21)	21.3 (17.5 - 25.3)	20.6 (15.9 - 25.7)	17.5 (16.0 - 19.1)
England	8.83 (8.19 - 9.60)	1.08 (1.06 - 1.11)	0.75 (0.7 - 0.81)	-	-	-
Finland	10.75 (9.94 - 11.7)	1.03 (0.98 - 1.09)	0.74 (0.67 - 0.81)	24.9 (21.2 - 28.7)	19.4 (15.2 - 24.1)	16.8 (15.2 - 18.6)
France	9.88 (9.08 - 10.79)	1.6 (1.5 - 1.71)	0.95 (0.86 - 1.03)	23.2 (18.8 - 27.8)	22.0 (16.6 - 27.8)	21.4 (19.3 - 23.4)
Germany	11.46 (10.56 - 12.52)	2.82 (2.68 - 2.99)	1.48 (1.34 - 1.61)	25.7 (21.9 - 29.8)	19.9 (14.7 - 25.1)	21.2 (19.2 - 23.3)
Greece	11.01 (10.12 - 12.07)	2.98 (2.82 - 3.15)	1.75 (1.6 - 1.91)	27.4 (22.5 - 32.7)	19.1 (13.8 - 25.3)	31.2 (28.9 - 33.5)
Iceland	7.87 (7.28 - 8.55)	1.21 (1.14 - 1.3)	0.74 (0.67 - 0.82)	23.1 (19.1 - 27.4)	19.7 (14.1 - 25.9)	14.7 (12.9 - 16.5)
Ireland	8.68 (8.04 - 9.41)	1.88 (1.77 - 2.01)	0.95 (0.86 - 1.05)	26.9 (22.3 - 31.7)	19.7 (14.7 - 25.3)	21.6 (19.2 - 24.2)
Israel	7.84 (7.27 - 8.51)	4.91 (4.64 - 5.21)	2.13 (1.89 - 2.4)	26.7 (21.9 - 31.6)	16.6 (11.7 - 22.4)	17.8 (15.9 - 20.0)
Italy	10.6 (9.77 - 11.53)	2.3 (2.16 - 2.43)	1.27 (1.14 - 1.39)	22.9 (19.3 - 26.8)	21.2 (16.2 - 26.3)	19.4 (17.7 - 21.4)
Liechtenstein	-	-	-	-	-	-
Luxembourg	9.39 (8.65 - 10.21)	1.92 (1.77 - 2.08)	1.03 (0.92 - 1.14)	24.2 (19.4 - 29.4)	21.9 (16.3 - 27.9)	20.9 (18.4 - 23.6)
Malta	10.91 (10.08 - 11.87)	2.37 (2.22 - 2.52)	1.46 (1.31 - 1.61)	31.0 (25.1 - 37.0)	19.4 (13.8 - 25.5)	18.8 (16.6 - 20.9)
Monaco	-	-	-	-	-	-
Northern Ireland	8.71 (8.08 - 9.48)	1.3 (1.22 - 1.38)	0.81 (0.73 - 0.88)	-	-	-
Netherlands	10.64 (9.86 - 11.56)	1.76 (1.67 - 1.87)	1 (0.91 - 1.09)	23.1 (19.3 - 27.0)	18.7 (14.4 - 23.7)	17.9 (16.2 - 19.5)
Norway	9.3 (8.65 - 10.05)	1.43 (1.38 - 1.48)	0.82 (0.75 - 0.9)	25.0 (20.9 - 29.2)	19.7 (14.7 - 25.0)	15.3 (13.6 - 17.2)
Portugal	11.44 (10.55 - 12.42)	2.73 (2.58 - 2.9)	1.63 (1.48 - 1.78)	23.2 (18.8 - 27.8)	24.4 (18.2 - 31.2)	17.8 (15.9 - 19.8)
San Marino	-	-	-	-	-	-
Scotland	9.68 (8.94 - 10.60)	1.29 (1.22 - 1.36)	0.84 (0.78 - 0.91)	-	-	-
Spain	9.6 (8.83 - 10.5)	2.55 (2.39 - 2.71)	1.29 (1.17 - 1.41)	27.1 (23.2 - 31.1)	19.2 (14.5 - 24.6)	21.8 (19.7 - 24.0)
Sweden	11.84 (11.0 - 12.85)	1.59 (1.51 - 1.68)	0.97 (0.88 - 1.06)	22.1 (18.3 - 26.0)	19.3 (14.7 - 24.3)	11.4 (10.7 - 12.2)
Switzerland	10.31 (9.52 - 11.2)	2.41 (2.27 - 2.57)	1.13 (1.02 - 1.25)	21.2 (17.3 - 25.3)	18.0 (13.5 - 23.2)	19.1 (17.1 - 21.3)
United Kingdom	8.96 (8.33 - 9.77)	1.11 (1.09 - 1.13)	0.77 (0.71 - 0.83)	29.5 (26.6 - 32.5)	15.2 (12.2 - 18.3)	18.7 (17.0 - 20.4)
Vatican	-	-	-	-	-	-
Wales	10.26 (9.48 - 11.17)	1.13 (1.06 - 1.19)	0.81 (0.74 - 0.88)	-	-	-

Abbreviations:

CKD (Chronic Kidney Disease),
 DALYS (disability-adjusted life years),
 BP (blood pressure),
 CI (confidence interval)

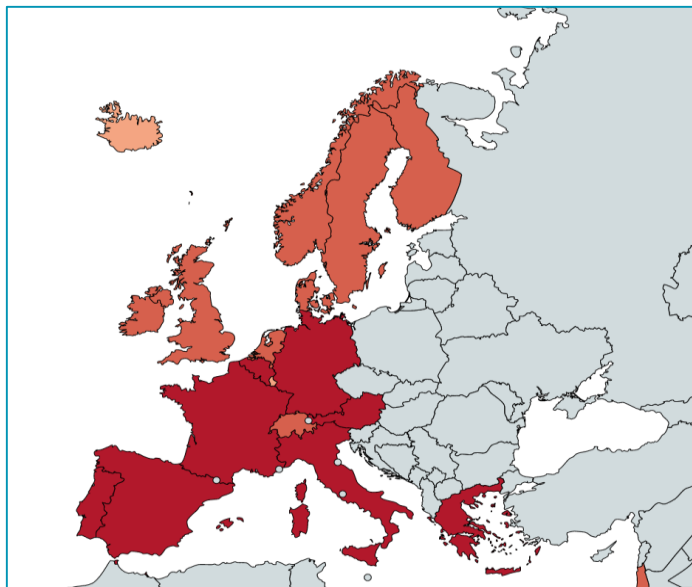
Data sources:

GBD study database
<http://www.healthdata.org/gbd>,
 WHO data observatory
<https://www.who.int/gho/en/>

' - ': data not reported/unavailable

Burden of ESKD

Prevalence of treated ESKD



■ <433.0 pmp
 ■ 433.0-759.0 pmp
 ■ 759.1-1048.0 pmp
 ■ >1048.0 pmp
 ■ Data not reported

Treated ESKD: all dialysis + transplant

* pmp (per million population)

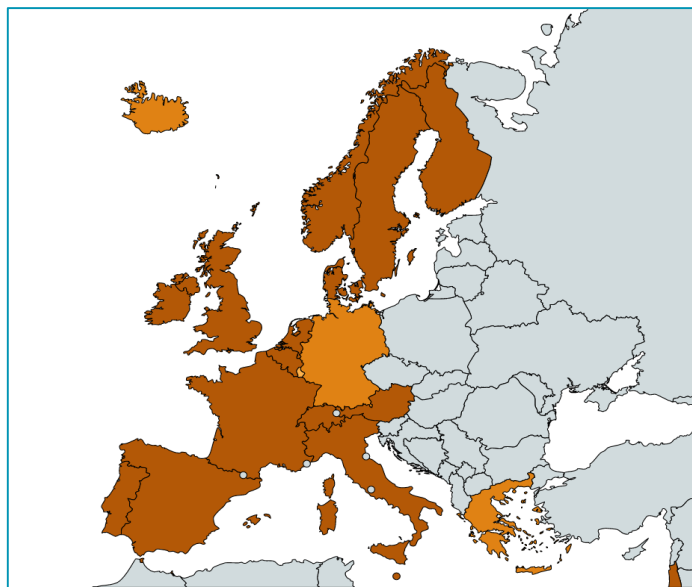
Data source: ERA-EDTA Registry Annual Report 2016/2017, Jain et al. (JASN) 2012, 2017/2018 USRDS Annual Data Report

' - ' : data not reported/unavailable

Country	Treated ESKD		Chronic dialysis (HD+PD)		Chronic Hemodialysis		Chronic Peritoneal dialysis	
	Incidence	Prevalence	Incidence	Prevalence	Incidence	Prevalence	Incidence	Prevalence
Andorra	-	-	-	-	-	-	-	-
Austria	129	1087	125.8	518.4	114.4	477.5	11.4	40.9
Belgium	182	1287	178.8	717.6	157.6	663.3	21.2	54.3
Denmark	131	958	119.4	459.2	79.5	364.5	39.9	94.7
England	117	952	107.9	442.9	83.8	386.6	24.1	56.3
Finland	100	909	97.7	361.3	71.7	291.6	26	69.7
France	173	1316	164.7	716.3	147.2	670.1	17.5	46.2
Germany	-	1114	-	808	-	768.1	-	38.8
Greece	252	1319	251.5	1076.7	238.3	1010	13.2	66.7
Iceland	143	760	128.1	253.3	84.4	195.1	43.7	58.2
Ireland	88	862	-	393	-	310.1	-	44.3
Israel	193	768	-	767	-	662.8	-	43.5
Italy	140	1137	-	731	-	738.8	-	78.3
Liechtenstein	-	-	-	-	-	-	-	-
Luxembourg	-	522	-	87	-	596.7	-	4.7
Malta	-	-	-	-	-	-	-	-
Monaco	-	-	-	-	-	-	-	-
Northern Ireland	121	958	107.4	381.3	88.1	340.5	19.3	40.8
Netherlands	115	1047	100.3	376	81	323.2	19.3	52.8
Norway	111	977	96.9	282.4	69.0	232.5	27.9	49.9
Portugal	230	1965	-	1212	-	871.3	-	48.1
San Marino	-	-	-	-	-	-	-	-
Scotland	106	930	99.4	398.4	80.3	354.5	19.1	43.9
Spain	141	1284	132.5	567.2	108.3	499.8	24.2	67.4
Sweden	116	987	106.7	408	69.8	319.4	36.9	88.6
Switzerland	97	938	89.8	435.3	77.5	395.1	12.3	40.2
United Kingdom	118	980	108.7	437.1	85.8	383.8	22.9	53.3
Vatican	-	-	-	-	-	-	-	-
Wales	119	984	114	438.1	90.6	372.9	23.4	65.2

Burden of ESKD (cont'd)

Incidence of kidney transplantation



■ <5.2 pmp
 ■ 5.2-13.5 pmp
 ■ 13.6-37.8 pmp
 ■ >37.8 pmp
 ■ Data not reported

* pmp (per million population)

Data source:

ERA-EDTA Registry Annual Report 2016/2017, GODT database

(<http://www.transplant-observatory.org/data-charts-and-tables/>),

2017/2018 USRDS Annual Data Report

'-': data not reported/unavailable

Country	Kidney transplantation				
	Incidence overall	Prevalence overall	Incidence of deceased donor	Incidence of living donor	Incidence of pre-emptive
Andorra	-	-	-	-	-
Austria	49.2	569	41.26	7.93	3.4
Belgium	48.07	569.2	42.54	5.53	3.7
Denmark	45.09	499.2	28.95	16.14	11.3
England	-	509.4	-	-	-
Finland	43.64	547.9	38.36	5.27	2.0
France	58.18	593.4	48.78	9.4	8.4
Germany	23.4	-	16.61	6.78	-
Greece	15.71	242.1	9.64	6.07	0.7
Iceland	26.67	506.7	0	26.67	14.6
Ireland	40	473	29.38	10.63	-
Israel	44.22	432	17.47	26.75	-
Italy	37.81	419	32.54	5.27	-
Liechtenstein	-	-	-	-	-
Luxembourg	12	-	12	0	-
Malta	52.5	-	40	12.5	-
Monaco	-	-	-	-	-
Northern Ireland	-	576.2	-	11.3	13.4
Netherlands	57.59	661.8	25.18	32.41	15.1
Norway	51.7	679.6	37.17	14.53	13.8
Portugal	51.36	693	43.88	7.48	-
San Marino	-	-	-	-	-
Scotland	-	531.8	-	-	6.3
Spain	70.45	645.7	63.3	7.16	5.1
Sweden	47.88	579	35.25	12.63	9.1
Switzerland	42.35	501.9	27.29	15.06	7.7
United Kingdom	52.08	533.8	36.98	15.11	10.4
Vatican	-	-	-	-	-
Wales	-	545.4	-	-	4.8

Annual cost of kidney replacement therapy components

Country	Hemodialysis	Peritoneal dialysis	Kidney Transplant (First year)	Kidney Transplant (later years)	HD/PD ratio
Andorra	-	-	-	-	-
Austria	56,252	30,248	67,059	19,828	1.86
Belgium	67,512	61,643	38,451	8,949	1.10
Denmark	59,576	28,102	25,836	-	2.12
England	-	-	-	-	-
Finland	78,233	66,816	36,117	14,697	1.17
France	85,436	69,516	114,220	26,660	1.23
Germany	76,642	51,196	101,915	20,704	1.50
Greece	45,435	56,354	63,196	10,069	0.81
Iceland	73,320	17,155	-	-	4.27
Ireland	60,498	36,926	-	-	1.64
Israel	56,174	65,716	-	-	0.85
Italy	46,912	26,254	71,461	13,969	1.79
Liechtenstein	-	-	-	-	-
Luxembourg	-	-	-	-	-
Malta	-	-	-	-	-
Monaco	-	-	-	-	-
Northern Ireland	-	-	-	-	-
Netherlands	103,187	67,974	71,882	14,376	1.52
Norway	50,847	19,061	33,414	22,708	2.67
Portugal	32,846	32,109	105,183	11,133	1.02
San Marino	-	-	-	-	-
Scotland	-	-	-	-	-
Spain	56,602	39,414	45,487	9,562	1.44
Sweden	92,285	83,193	-	-	1.11
Switzerland	67,800	47,963	-	-	1.41
United Kingdom	49,690	31,505	27,971	5,226	1.58
Vatican	-	-	-	-	-
Wales	-	-	-	-	-

*Cost is in \$US 2016

Abbreviations:
HD (hemodialysis),
PD (peritoneal dialysis)

Data source: Ardine de Wit et al. (1998), Baboolal et al. (2008), Barreiro et al. (2011), Benain et al. (2007), Blotiere et al. (2010), Cantaluppi et al. (2000), Cavallo et al. (2014), Chaib-Eddour et al. (2005), Cleemput et al. (2010), Cleemput & Laet (2013), de Francisco (2011), Eriksson et al. (2016), Gonzalez-Perez et al. (2005), Greiner et al. (2001), Grun et al. (2003), Haller et al. (2011), Hallinen et al. (2009), Haycox et al. (1996), Iannazzo et al. (2012), Icks et al. (2010), Jakobsen A. et al. (1990), Jensen et al. (2014), Jonsson et al. (2008), Jurgensen et al. (2015), Keller et al. (2007), Kerr et al. (2012), Kirby & Vale (2001), Kleophas & Reichel (2007), Komenda et al. (2012), Kontodimonopoulos & Niakas (2008), Koukou et al. (2017), Lamas et al. (2001), Li et al. (2015), Lorenzo et al. (2010), Luis A. Coentrao (2013), MacKenzie et al. (1998), Maschorek et al. (1998), Moore & Marriott (1999), Moncasi et al. (2011), Pike et al. (2017), Pontoriero et al. (2007), Rocha MJ et al. (2011), Rodriguez-Carmona et al. (1996), Sainsaulieu et al. (2014), Salonen et al. (2003), Sanchez-Escuredo et al. (2015), Sennfalt et al. (2002), Sharif & Baboolal (2011), Van Biesen et al. (2007), van der Tol et al. (2019), Villa et al. (2011, 2012), Weydevelt et al. (1999), Wikstrom et al. (2007), Wordsworth et al. (2005), Zambrowski (2016)

Survey response

- 21 of 29 countries in Western Europe (72%) responded to the 2018 survey
- This represents 99% of the region's population

Country level scorecard

Countries	Availability of KRT and CKM				Funding for Medications		Availability and Distribution of Registry				Advocacy Group			Nephrology Workforce (PMP)	
	Chronic hemodialysis	Chronic peritoneal dialysis	Kidney transplantation	CKM	Dialysis medications	Transplant medications	CKD	Dialysis	Transplantation	AKI	CKD	AKI	ESKD/RRT	Nephrologists	Nephrologist trainees
Western Europe															
Austria	2017														
	2019	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No	No	Yes	34.12	5.69
Belgium	2017													21.19	2.65
	2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes			
Denmark	2017	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	26.87	5.37	
	2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	25.82	4.48	
Finland	2017														
	2019	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	14.45	1.81	
France	2017	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	11.84	2.63	
	2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	20.04	5.05	
Germany	2017												15.47	0.01	
	2019	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	No	Yes	18.64	3.73	
Greece	2017	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	46.40	9.28	
	2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	55.75	7.43	
Iceland	2017														
	2019	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	No	Yes	29.11		
Ireland	2017														
	2019	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	No	Yes	9.47	5.92	
Israel	2017	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	9.69	0.81	
	2019	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	No	Yes	29.67	2.37	
Italy	2017														
	2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	48.20	8.03	

Yes
No
N/A

Abbreviations
 KRT: kidney replacement therapy
 CKM: conservative kidney management
 CKD: chronic kidney disease
 AKI: acute kidney injury
 ESKD: end stage kidney disease
 RRT: renal replacement therapy

Nephrologists density	<1.2 PMP	1.2–10.0 PMP	10.1–22.9 PMP	>22.9 PMP
Nephrology trainees density	<0.3 PMP	0.3–1.4 PMP	1.5–3.7 PMP	>3.7 PMP



Country level scorecard (cont'd)

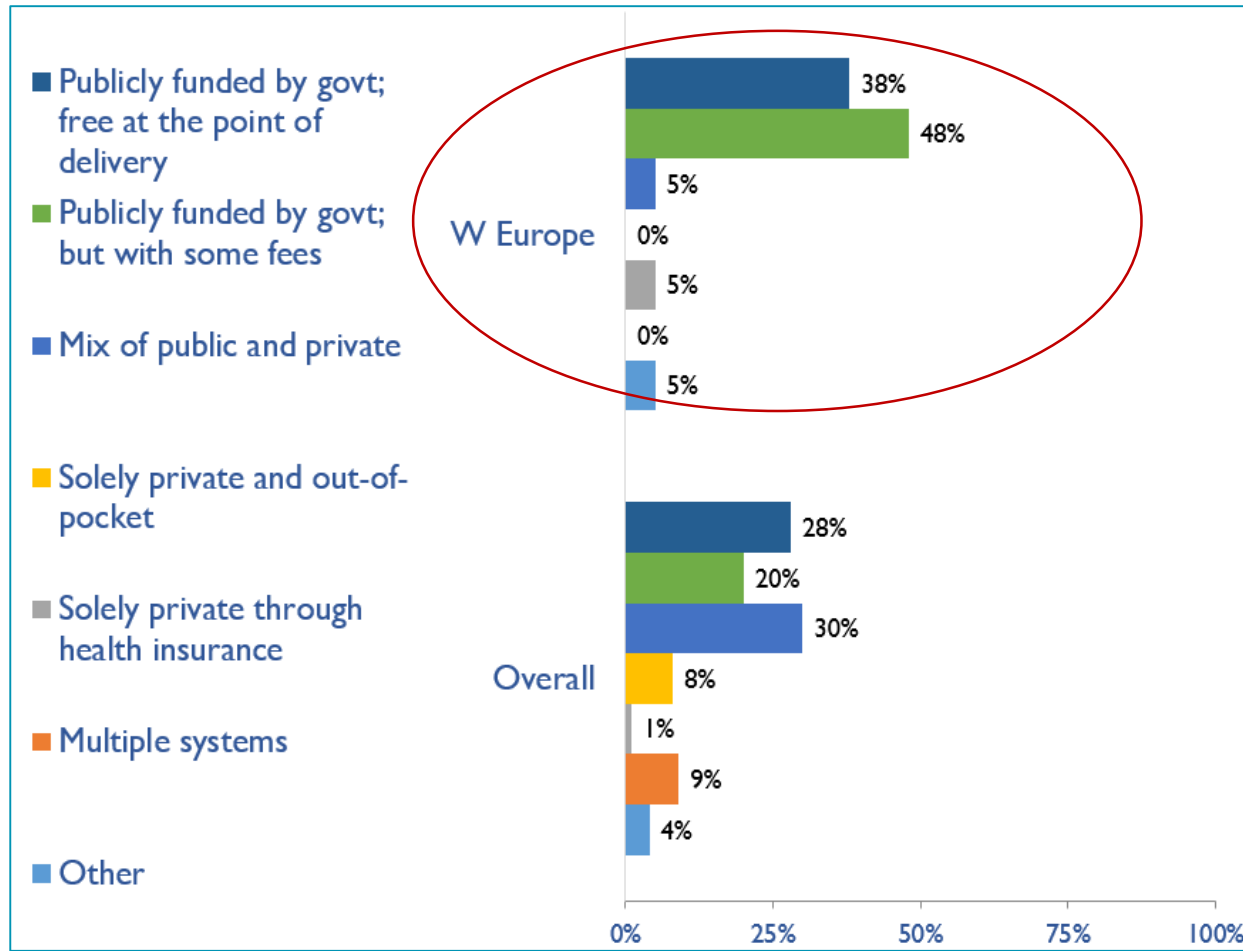
Countries	Availability of KRT and CKM				Funding for Medications		Availability and Distribution of Registry				Advocacy Group			Nephrology Workforce (PMP)	
	Chronic hemodialysis	Chronic peritoneal dialysis	Kidney transplantation	CKM	Dialysis medications	Transplant medications	CKD	Dialysis	Transplantation	AKI	CKD	AKI	ESKD/RRT	Nephrologists	Nephrologist trainees
Western Europe															
Liechtenstein	2017														
	2019	Yes	Yes	No	Yes	No	No	Yes	Yes	No	Yes	Yes	No	51.88	0.00
Luxembourg	2017														
	2019	Yes	Yes	No	Yes	No	No	Yes	Yes	No	Yes	Yes	No	21.46	
Malta	2017														
	2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	13.36	22.27	
Netherlands	2017	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	19.18	2.51	
	2019	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No	Yes	17.49	2.33	
Norway	2017	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	28.80	9.60	
	2019	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No	Yes	27.92	18.61	
Portugal	2017														
	2019	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	27.52	9.66	
Spain	2017	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	41.54	7.23	
	2019	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	20.27	7.30	
Sweden	2017														
	2019	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No	Yes	22.91	8.96	
Switzerland	2017														
	2019	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No	Yes	30.15	5.12	
United Kingdom	2017	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	18.72	7.02	
	2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes			



Abbreviations
 KRT: kidney replacement therapy
 CKM: conservative kidney management
 CKD: chronic kidney disease
 AKI: acute kidney injury
 ESKD: end stage kidney disease
 RRT: renal replacement therapy

Nephrologists density	<1.2 PMP	1.2–10.0 PMP	10.1–22.9 PMP	>22.9 PMP
Nephrology trainees density	<0.3 PMP	0.3–1.4 PMP	1.5–3.7 PMP	>3.7 PMP

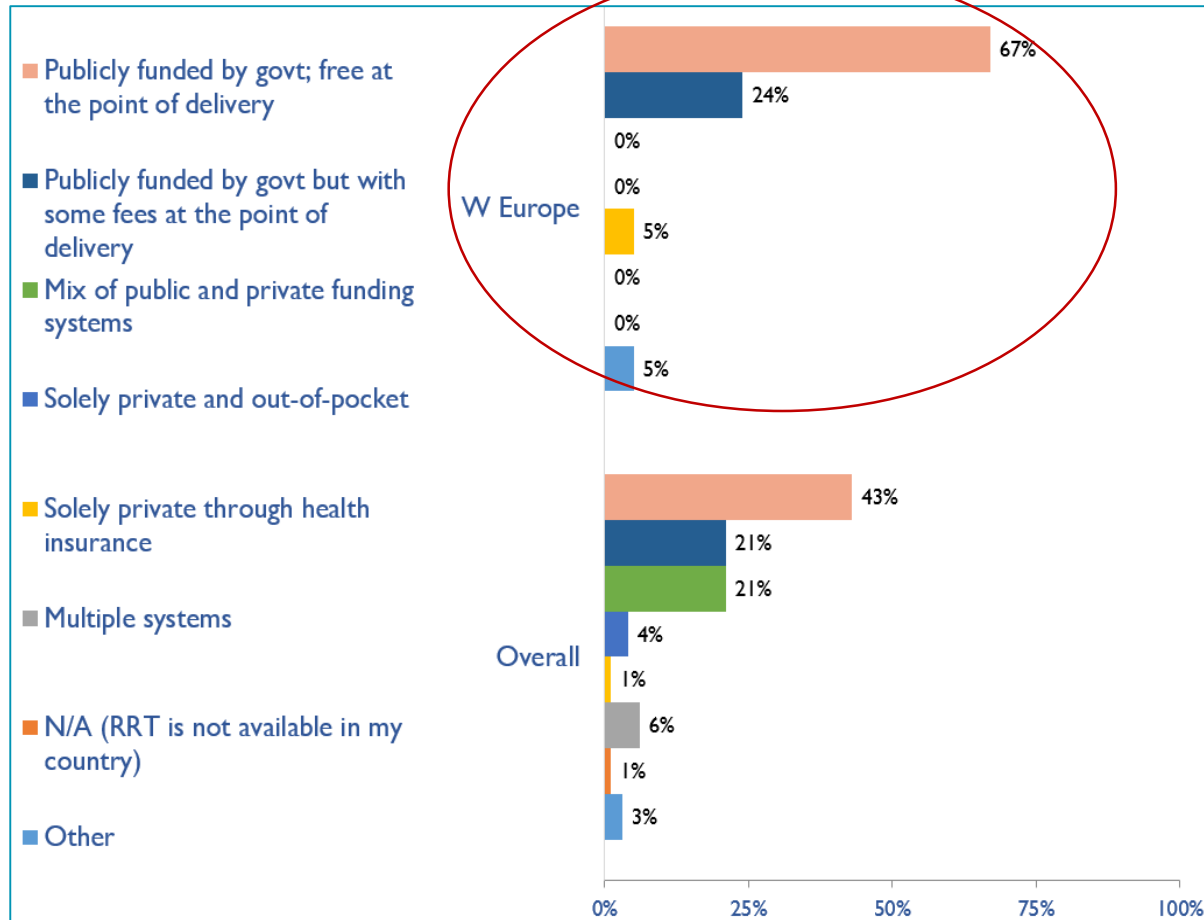
Funding for non-dialysis CKD



Country	Publicly funded by govt; free at the point of delivery	Publicly funded by govt but with some fees at the point of delivery	Mix of public and private funding systems	Solely private and out-of-pocket	Solely private through health insurance	Multiple systems	Other
Austria	X						
Belgium		X					
Denmark	X						
Finland	X						
France	X						
Germany							X
Greece		X					
Iceland		X					
Ireland			X				
Israel		X					
Italy		X					
Liechtenstein					X		
Luxembourg	X						
Malta	X						
Netherlands		X					
Norway		X					
Portugal		X					
Spain	X						
Sweden		X					
Switzerland		X					
United Kingdom	X						

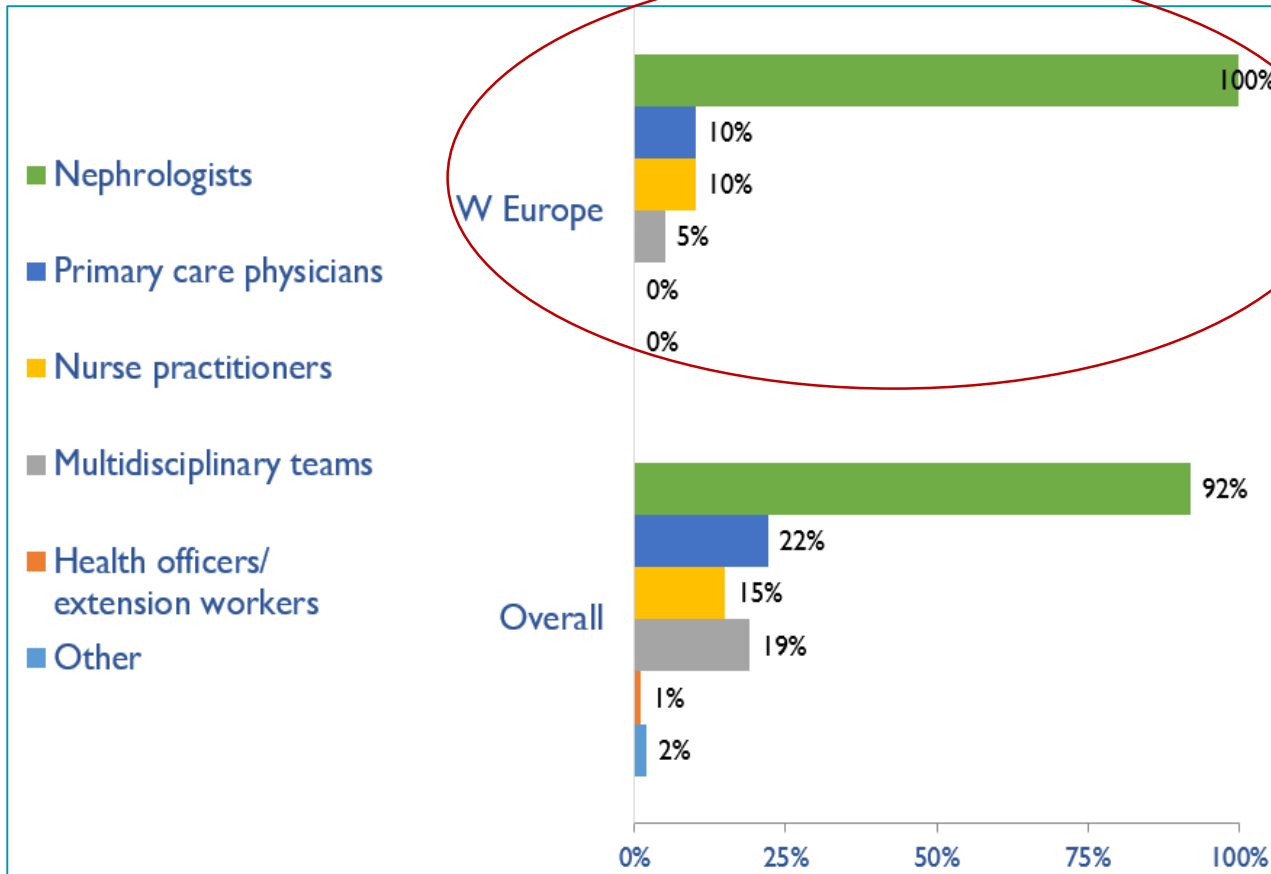
X : Yes

Funding for kidney replacement therapy (KRT)



Country	Publicly funded by govt; free at the point of delivery	Publicly funded by govt but with some fees at the point of delivery	Mix of public and private funding systems	Solely private and out-of-pocket	Solely private through health insurance	Multiple systems	N/A (RRT is not available in my country)	Other
Austria	X							
Belgium	X							
Denmark	X							
Finland	X							
France		X						
Germany								X
Greece	X							
Iceland		X						
Ireland	X							
Israel	X							
Italy	X							
Liechtenstein					X			
Luxembourg	X							
Malta	X							
Netherlands		X						
Norway	X							
Portugal	X							
Spain	X							
Sweden		X						
Switzerland		X						
United Kingdom	X							

Providers primarily responsible for ESKD care



Country	Nephrologists	Primary care physicians	Nurse practitioners or specialized nurses	Multidisciplinary teams	Health officers/extension workers	Other
Austria	X					
Belgium	X					
Denmark	X					
Finland	X					
France	X					
Germany	X					
Greece	X					
Iceland	X					
Ireland	X		X	X		
Israel	X	X				
Italy	X					
Liechtenstein	X					
Luxembourg	X	X				
Malta	X					
Netherlands	X					
Norway	X		X			
Portugal	X					
Spain	X					
Sweden	X					
Switzerland	X					
United Kingdom	X					

Shortage of ESKD care providers

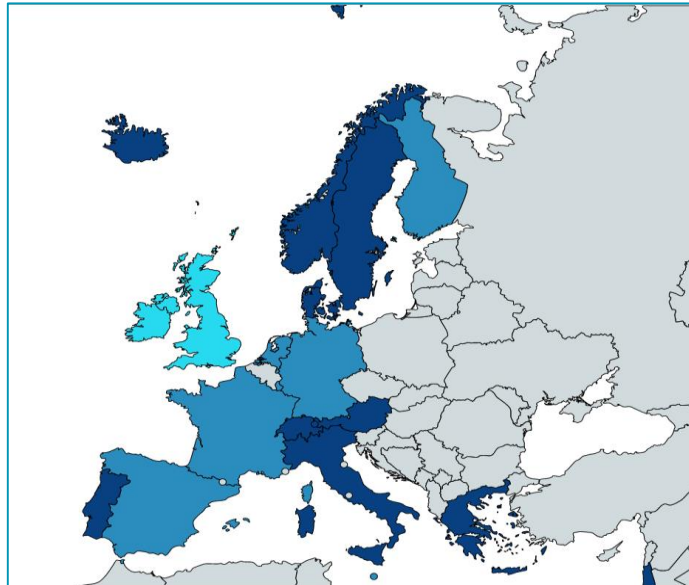
Country	Nephrologists	Transplant surgeons	Surgeons (HD access)	Surgeons (PD access)	Interventional radiologists (HD access)	Interventional radiologists (PD access)	Laboratory technicians	Dietitians	Radiologists (ultrasound)	Vascular access coordinators	Counsellors/psychologists	Transplant coordinators	Dialysis nurses	Dialysis technicians
Austria	Shortage	Shortage	Shortage	Shortage	No shortage	No shortage	No shortage	No shortage	No shortage	Shortage	No shortage	No shortage	No shortage	No shortage
Belgium	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	Shortage	No shortage
Denmark	No shortage	No shortage	No shortage	No shortage	Shortage	No shortage	No shortage	No shortage	No shortage	Shortage	Shortage	No shortage	No shortage	No shortage
Finland	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage
France	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage
Germany	Shortage	No shortage	Shortage	No shortage	Shortage	No shortage	No shortage	No shortage	No shortage	Shortage	No shortage	Shortage	Shortage	Shortage
Greece	No shortage	No shortage	Shortage	No shortage	No shortage	No shortage	Shortage	No shortage	No shortage	No shortage	No shortage	No shortage	Shortage	No shortage
Iceland	Shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	Shortage	No shortage
Ireland	Shortage	Shortage	Shortage	Shortage	Shortage	Shortage	Shortage	No shortage	No shortage	Shortage	Shortage	No shortage	No shortage	No shortage
Israel	Shortage	No shortage	Shortage	No shortage	No shortage	No shortage	Shortage	No shortage	No shortage	No shortage	Shortage	No shortage	No shortage	No shortage
Italy	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	Shortage	No shortage
Liechtenstein	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage
Luxembourg	Shortage	Shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage
Malta	Shortage	Shortage	Shortage	Shortage	Shortage	No shortage	Shortage	No shortage	No shortage	No shortage	Shortage	No shortage	Shortage	Shortage
Netherlands	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	Shortage	No shortage
Norway	Shortage	No shortage	Shortage	Shortage	No shortage	No shortage	Shortage	No shortage	No shortage	No shortage	No shortage	No shortage	Shortage	No shortage
Portugal	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	Shortage	No shortage	No shortage	No shortage	No shortage
Spain	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage
Sweden	Shortage	No shortage	Shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	Shortage	No shortage
Switzerland	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	Shortage	Shortage	No shortage	No shortage	No shortage
United Kingdom	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage	No shortage

No shortage

Shortage

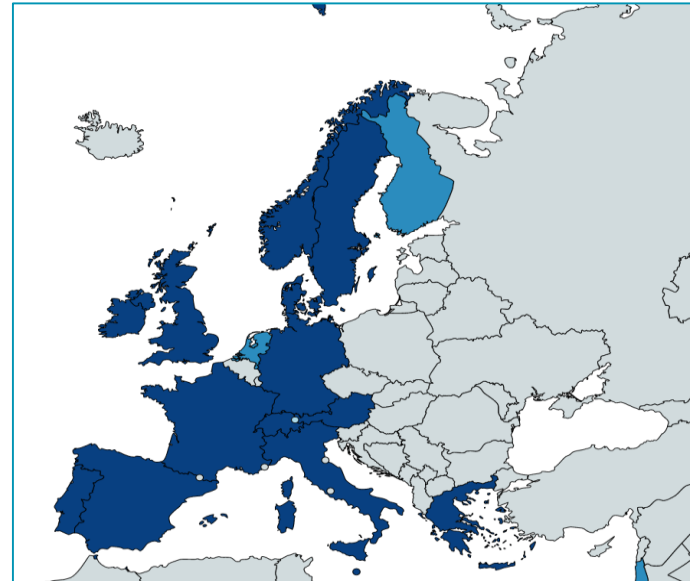
Prevalence of nephrologists and trainees

Nephrologists



■ <1.2 pmp
 ■ 1.2–10.0 pmp
 ■ 10.1–22.9 pmp
 ■ >22.9 pmp
 ■ Data not reported

Nephrology trainees

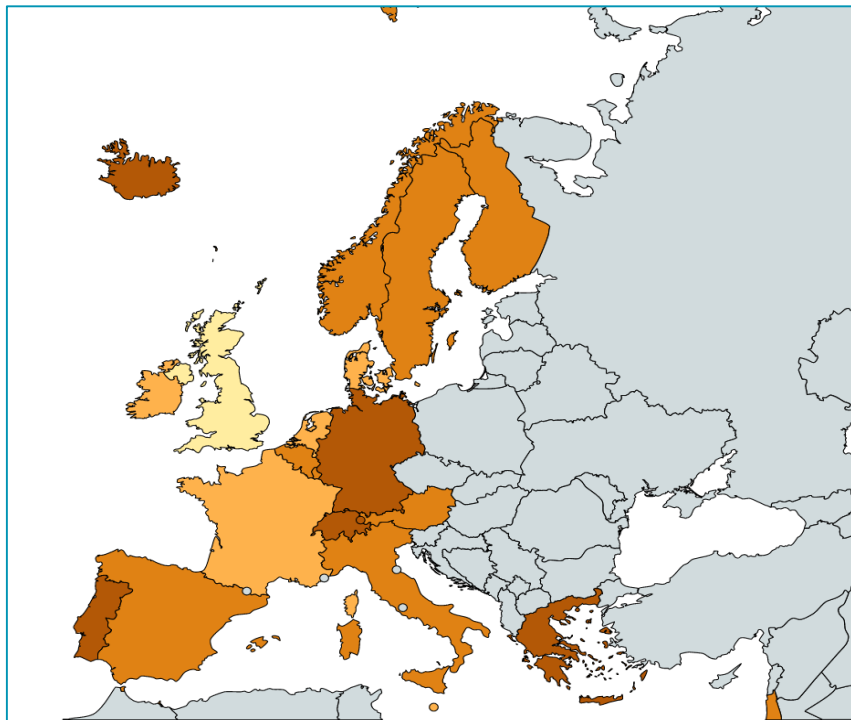


■ <0.3 pmp
 ■ 0.3–1.4 pmp
 ■ 1.5–3.7 pmp
 ■ >3.7 pmp
 ■ Data not reported

Country	Nephrologists PMP	Nephrology trainees PMP
Austria	34.12	5.69
Belgium	-	-
Denmark	25.82	4.48
Finland	14.45	1.81
France	20.04	5.05
Germany	18.64	3.73
Greece	55.75	7.43
Iceland	29.11	-
Ireland	9.47	5.92
Israel	29.67	2.37
Italy	48.20	8.03
Liechtenstein	51.88	0.00
Luxembourg	21.46	-
Malta	13.36	22.27
Netherlands	17.49	2.33
Norway	27.92	18.61
Portugal	27.52	9.66
Spain	20.27	7.30
Sweden	22.91	8.96
Switzerland	30.15	5.12
United Kingdom	9.78	6.14

Capacity for chronic dialysis (HD)

Chronic HD centers



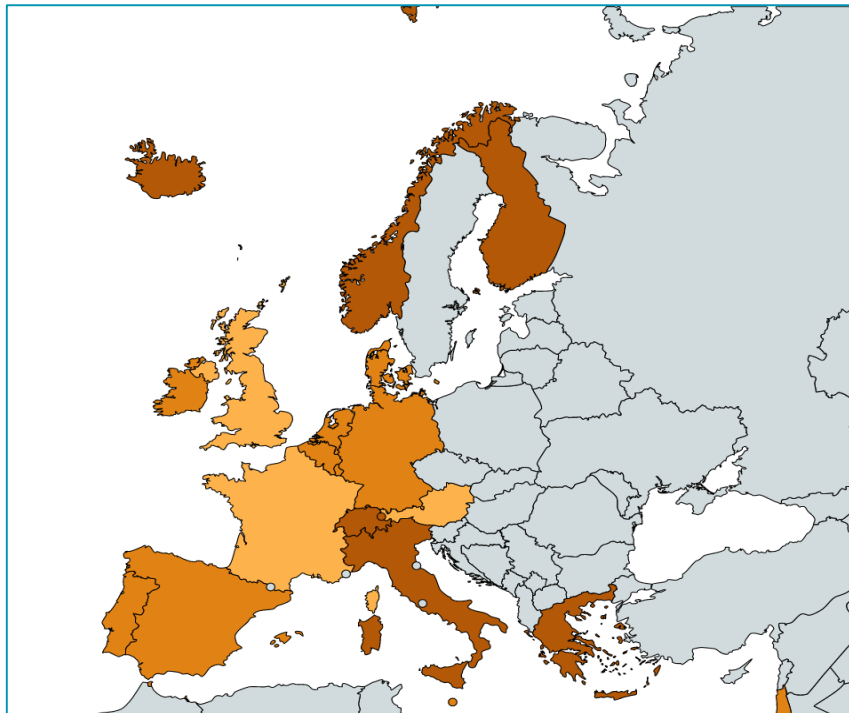
■ <1.2 pmp ■ 1.2–4.5 pmp ■ 4.6–9.9 pmp ■ >9.9 pmp ■ Data not reported

- Chronic HD services are available in all countries of the region
- The Western Europe average of HD treatment centers is 6.93 pmp

Country	Chronic HD Centres PMP
Austria	9.10
Belgium	4.62
Denmark	2.32
Finland	5.42
France	4.16
Germany	9.94
Greece	15.80
Iceland	11.64
Ireland	4.54
Israel	9.26
Italy	9.88
Liechtenstein	25.94
Luxembourg	8.25
Malta	4.45
Netherlands	4.37
Norway	4.65
Portugal	10.19
Spain	6.93
Sweden	6.77
Switzerland	12.06
United Kingdom	0.95

Capacity for chronic dialysis (PD)

Chronic PD centers



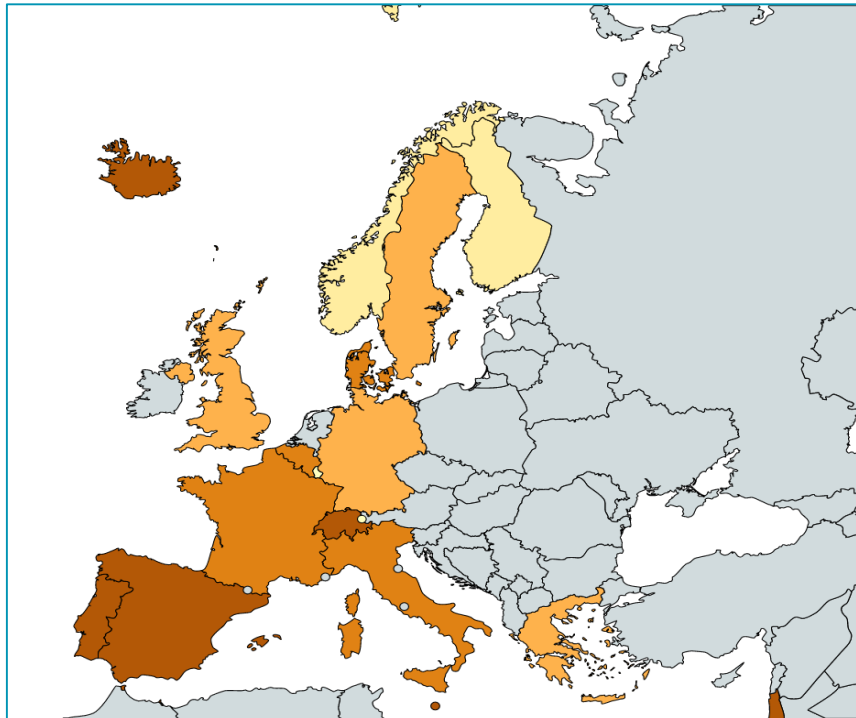
- Chronic PD services are available in all countries of the region.
- The Western Europe average of PD treatment centers is 2.33 pmp

Country	Chronic PD Centres PMP
Austria	1.14
Belgium	2.33
Denmark	2.32
Finland	3.61
France	1.19
Germany	2.49
Greece	2.79
Iceland	2.91
Ireland	1.97
Israel	2.49
Italy	3.60
Liechtenstein	25.94
Luxembourg	1.65
Malta	2.23
Netherlands	2.33
Norway	4.28
Portugal	1.69
Spain	2.23
Sweden	4.18
Switzerland	7.24
United Kingdom	0.80

Chronic PD not provided
 <0.4 pmp
 0.4–1.3 pmp
 1.4–2.5 pmp
 >2.5 pmp
 Data not reported

Capacity for kidney transplantation

Kidney transplantation centers



- Kidney transplantation services are available in 19 (90%) countries of the region.
- The Western Europe average of kidney transplantation centers is 0.52 pmp.

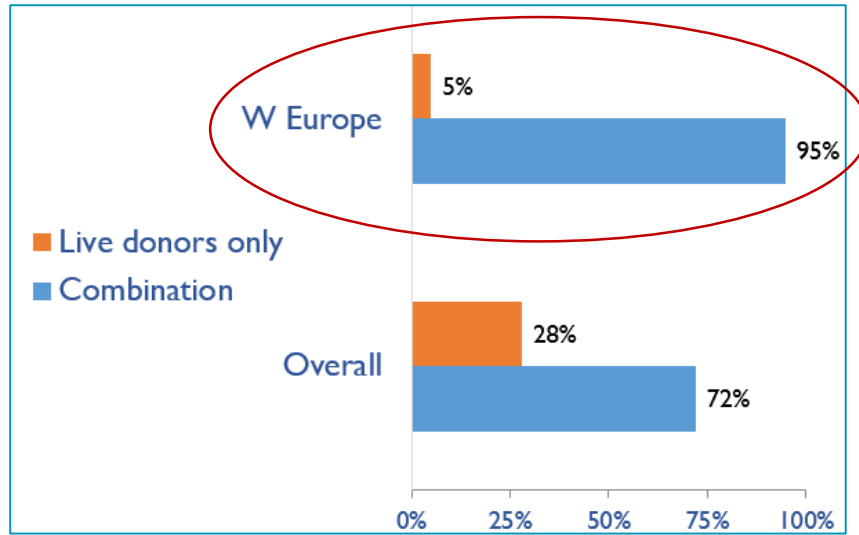
Country	Kidney Transplantation availability	Transplant centers PMP
Austria	X	0.45
Belgium	X	0.60
Denmark	X	0.52
Finland	X	0.18
France	X	0.52
Germany	X	0.37
Greece	X	0.42
Iceland	X	5.82
Ireland	X	0.20
Israel	X	0.71
Italy	X	0.66
Liechtenstein		-
Luxembourg		-
Malta	X	2.23
Netherlands	X	0.47
Norway	X	0.19
Portugal	X	0.72
Spain	X	0.93
Sweden	X	0.40
Switzerland	X	0.72
United Kingdom	X	0.33

X : Yes

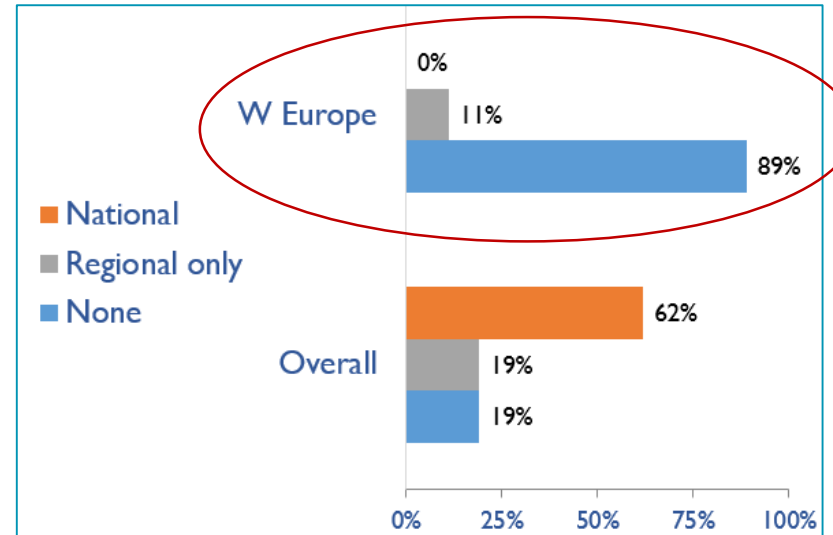
Kidney transplantation not provided
 <0.2 pmp
 0.2–0.4 pmp
 0.5–0.7 pmp
 >0.7 pmp
 Data not reported

Capacity for kidney transplantation (cont'd)

Transplant donor type



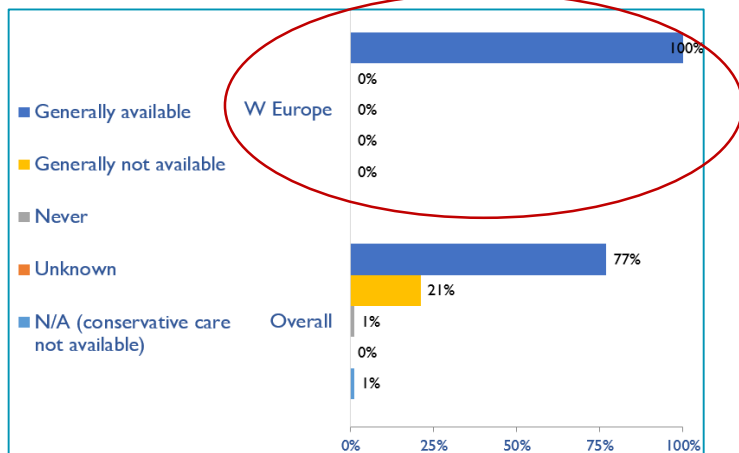
Transplant waitlist



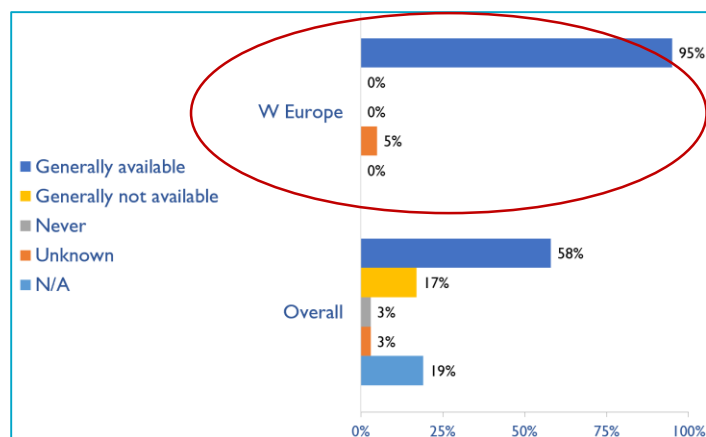
Country	Donor type		Transplant waitlist		
	Live donors only	Combination	National	Regional only	None
Austria		X		X	
Belgium		X	X		
Denmark		X		X	
Finland		X	X		
France		X	X		
Germany		X	X		
Greece		X	X		
Iceland	X		X		
Ireland		X	X		
Israel		X	X		
Italy		X	X		
Liechtenstein					
Luxembourg					
Malta		X	X		
Netherlands		X	X		
Norway		X	X		
Portugal		X	X		
Spain		X	X		
Sweden		X	X		
Switzerland		X	X		
United Kingdom		X	X		

Availability of services within dialysis care

HD frequency



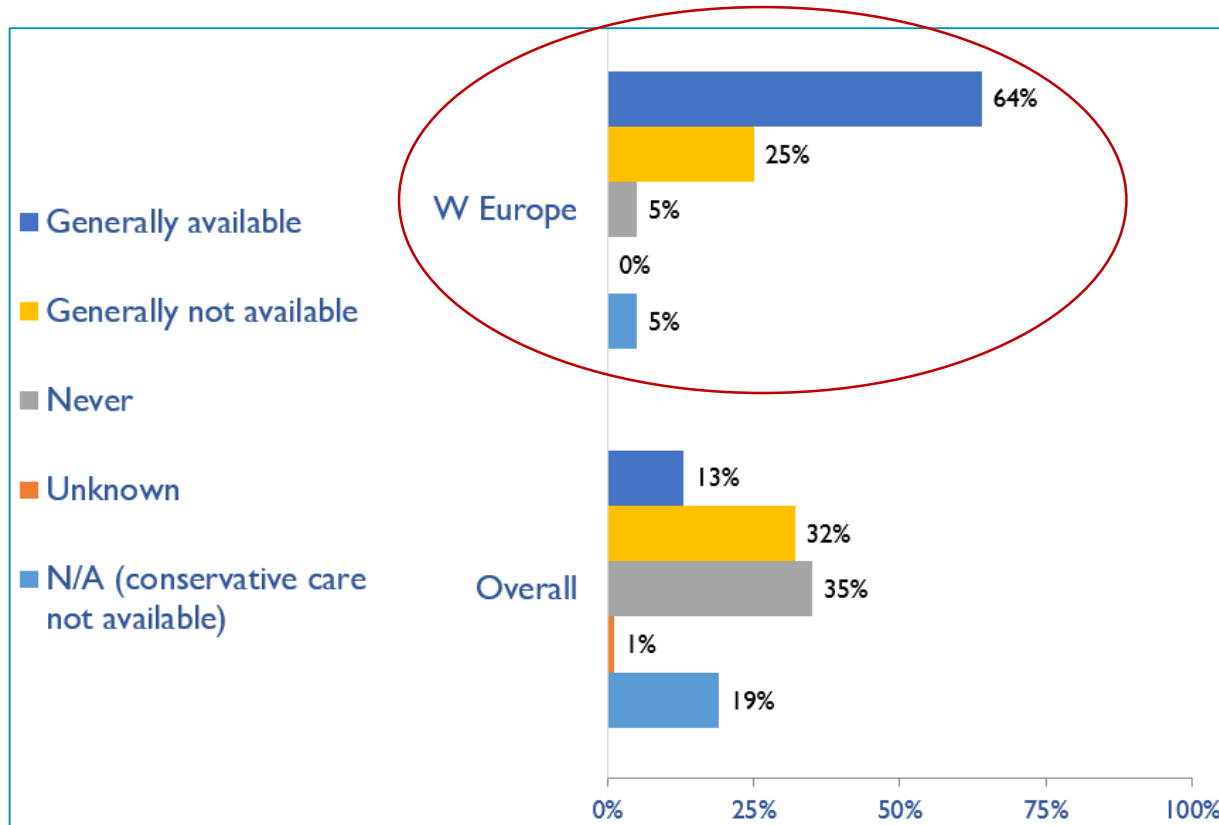
PD frequency



Country	HD frequency a center-based service that involves treatment 3x week/3-4x hours					PD frequency ability to do adequate exchanges 3-4x day (or equivalent cycles on automated PD)				
	Generally available	Generally not available	Never	Unknown	N/A (dialysis not provided)	Generally available	Generally not available	Never	Unknown	N/A (dialysis not provided)
Austria	X					X				
Belgium	X					X				
Denmark	X					X				
Finland	X					X				
France	X					X				
Germany	X					X				
Greece	X					X				
Iceland										
Ireland	X					X				
Israel	X					X				
Italy	X					X				
Liechtenstein	X					X				
Luxembourg	X					X				
Malta	X					X				
Netherlands	X					X				
Norway	X					X				
Portugal	X					X				
Spain	X					X				
Sweden	X					X				
Switzerland	X					X				
United Kingdom	X					X				

X : Yes

Availability of home hemodialysis

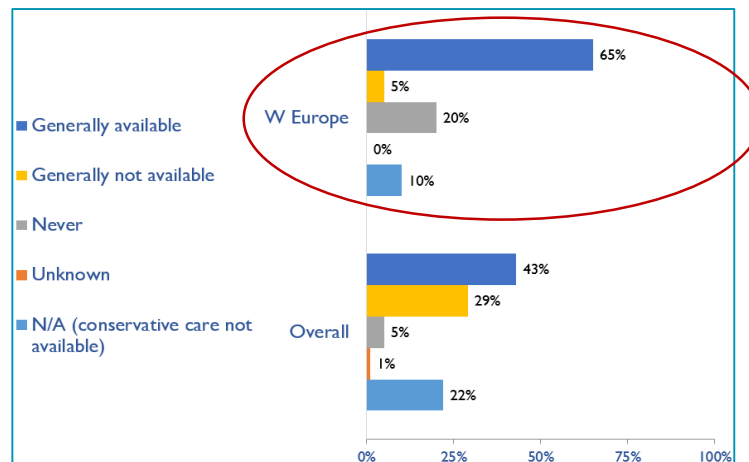


Country	Availability of Home hemodialysis				
	Generally available	Generally not available	Never	Unknown	N/A (dialysis not provided)
Austria		X			
Belgium	X				
Denmark	X				
Finland	X				
France	X				
Germany		X			
Greece			X		
Iceland					
Ireland	X				
Israel		X			
Italy	X				
Liechtenstein	X				
Luxembourg		X			
Malta				X	
Netherlands	X				
Norway	X				
Portugal	X				
Spain		X			
Sweden	X				
Switzerland	X				
United Kingdom	X				

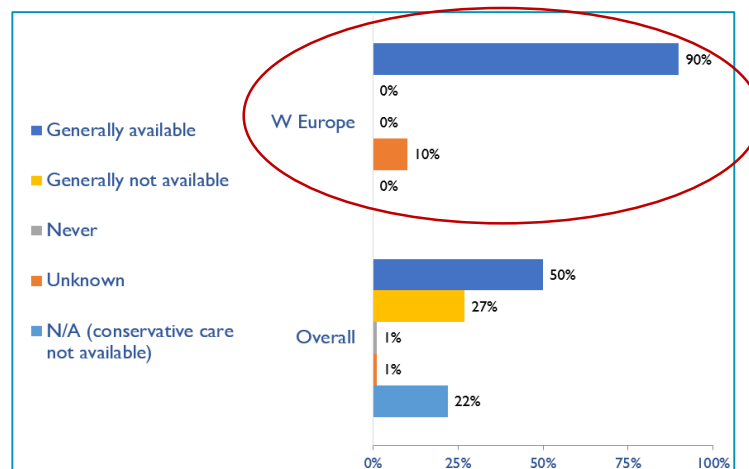
X : Yes

Capacity for conservative kidney management (CKM)

Choice-restricted CKM



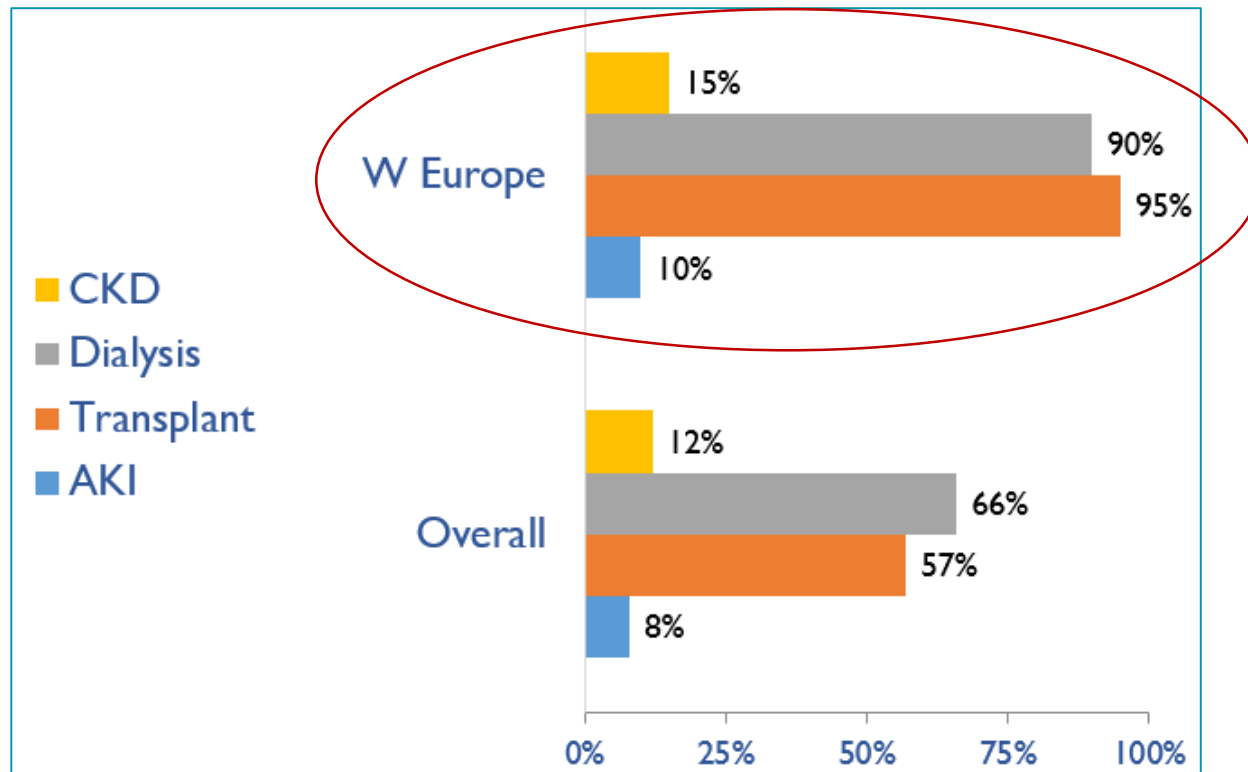
Chosen or medically advised CKM



Country	Established choice-restricted conservative care					Established conservative care that is chosen or medically advised				
	Generally available	Generally not available	Never	Unknown	N/A (conservative care not available)	Generally available	Generally not available	Never	Unknown	N/A (conservative care not available)
Austria			X			X				
Belgium	X					X				
Denmark	X					X				
Finland				X					X	
France	X					X				
Germany				X					X	
Greece	X					X				
Iceland										
Ireland			X			X				
Israel	X					X				
Italy	X					X				
Liechtenstein		X				X				
Luxembourg	X					X				
Malta	X					X				
Netherlands	X					X				
Norway	X					X				
Portugal			X			X				
Spain			X			X				
Sweden	X					X				
Switzerland	X					X				
United Kingdom	X					X				

X : Yes

Availability of official registry



Country	CKD	Dialysis	Transplant	AKI
Austria		X	X	
Belgium		X	X	
Denmark		X	X	
Finland		X	X	
France		X	X	
Germany			X	
Greece		X	X	
Iceland				
Ireland		X	X	
Israel		X	X	
Italy		X	X	
Liechtenstein		X	X	
Luxembourg				
Malta	X	X	X	X
Netherlands		X	X	
Norway		X	X	
Portugal		X	X	
Spain		X	X	
Sweden	X	X	X	
Switzerland		X	X	
United Kingdom	X	X	X	X

Yes

Summary of 2019 GKHA findings

- KRT availability, access, and quality is high
- Conservative kidney management is available, generally chosen or medically-advised
- Government funding for kidney care is high, less for medications
- Many registries for end-stage kidney disease
- Few workforce limitations
- Little advocacy for CKD and AKI in Western Europe

Implications

- Increase health care financing for ESKD prevention and management
- Address workforce shortages through multidisciplinary teams and telemedicine
- Incorporate the collection and reporting of quality indicators in ESKD care
- Expand health information systems to prevent and manage ESKD
- Promote ESKD prevention and treatment by implementing policies, strategies, and advocacy, and mitigating barriers

To access the Atlas report:

www.theisn.org/global-atlas