

EAN Fact Sheet

Country profile of Ukraine

EAN Fact Sheet

Country profile of Ukraine

The EAN is pleased to present this fact sheet to each and every national neurological society, offering key insights into the latest epidemiological, economic, and demographic trends. This data aims to support informed decision-making and enhance understanding of neurological conditions on both national and European level with information provided by three EAN projects: the [“Burden of Neurological Disease in Europe”](#) study, the EAN [“COst of Illness in Neurology in EUrope \(COIN-EU\)”](#) project, the EAN NNS 2021-2022 survey.

Burden of Disease in Europe – Collaboration with IHME

Neurological disorders are the second most common cause of disability and premature death in the European Region and their prevalence and burden will likely increase with the progressive ageing of the European population. Greater attention to neurological diseases must be paid by health authorities for prevention and care. For this reason, the European Academy of Neurology is conducting research on gaining and analysing reliable data on the number of patients with neurological diseases.

These data are obtained from the currently most developed data base, the [Global Burden of Disease \(GBD\)](#) study of the Institute for Health Metrics and Evaluation (IHME), University of Washington, Seattle. The burden of neurological disorders in Europe was calculated for the year 2021 as prevalence, mortality, disability-adjusted life-years (DALYs), years of life lost (YLLs), and years lived with disability (YLDs) for the countries in the EU and the WHO European region for a total of 26 neurological disorders.

The study in Europe is run by the EAN and led by Prof. Dr. Günther Deuschl, Dr. Maurizio Leone and Maria Konti, M.Sc., in close collaboration with the leading scientists of the IHME Institute.

In the table below, you will find the national total counts for DALYs, YLDs, YLLs, prevalence, and deaths, the age-standardised rates by neurological disorder category for the years 1990 and 2021, and the percentage change for both of your country and the WHO Europe.

Diseases with counts less than one have been excluded and the number of decimal points has been adjusted individually for each disease.

	Counts	Age-standardized rate		Percentage change, 1990-2021	
	(thousands)	1990	2021	Ukraine	WHO Europe
All Neurological Disorders					
DALYs	2,892,253	5,714	4,306	-24.6%	-29.0%
Deaths	106,119	224	137	-38.8%	-43.2%
Prevalence	21,327,223	43,294	43,624	0.8%	0.3%
YLDs	987,460	1,632	1,669	2.3%	2.9%
YLLs	1,904,690	4,082	2,636	-35.4%	-44.4%
Alzheimer's disease and other dementias					
DALYs	317,857	403	396	-1.6%	-2.5%
Deaths	16,380	21.50	21.01	-2.3%	-2.8%
Prevalence	527,238	672	651	-3.1%	-2.1%
YLDs	108,841	139	135	-3.0%	-2.6%
YLLs	209,016	264	262	-0.8%	-2.5%
Chromosomal abnormalities					
DALYs	1,734	6.48	6.67	2.9%	-12.3%
Prevalence	19,117	73	75	2.5%	-12.8%
YLDs	1,734	6.48	6.67	3.0%	-12.4%
Covid-19 (neurological)					
DALYs	24,124	-	46	-	-
Prevalence	248,047	-	471	-	-
YLDs	24,124	-	46	-	-
Cystic echinococcosis					
DALYs	109	0.24	0.19	-17.8%	-18.3%
Prevalence	398	0.81	0.71	-12.6%	-9.0%
YLDs	109	0.24	0.19	-17.8%	-18.4%
Diabetic neuropathy					
DALYs	167,636	121	228	88.2%	98.1%
Prevalence	1,330,298	961	1,807	88.0%	97.9%
YLDs	167,636	121	228	88.2%	98.1%

Down syndrome					
DALYs	817	3.21	3.20	-0.3%	-19.6%
Prevalence	9,146	35.89	36.00	0.3%	-20.7%
YLDs	817	3.21	3.20	-0.4%	-19.8%
Encephalitis					
DALYs	22,358	74	60	-18.0%	-30.1%
Deaths	445	1.19	0.99	-17.0%	-15.9%
Prevalence	19,202	31	36	16.4%	-13.6%
YLDs	1,774	3.11	3.63	16.7%	-12.0%
YLLs	20,584	71	57	-19.6%	-31.0%
Epilepsy					
DALYs	52,475	163	120	-26.3%	-12.6%
Deaths	425	1.27	0.88	-30.3%	3.9%
Prevalence	110,518	301	253	-16.0%	3.3%
YLDs	31,735	93	73	-21.4%	-11.3%
YLLs	20,740	70	47	-32.9%	-14.3%
Guillain-Barre Syndrome					
DALYs	269	0.55	0.55	0.4%	12.4%
Prevalence	909	1.85	1.86	0.3%	12.4%
YLDs	269	0.55	0.55	0.3%	12.4%
Idiopathic intellectual disability					
DALYs	7,630	19	21	11.7%	-19.7%
Prevalence	199,069	484	548	13.2%	-21.2%
YLDs	7,630	19	21	11.7%	-19.7%
Klinefelter syndrome					
DALYs	19	0.03	0.04	9.7%	5.7%
Prevalence	1,408	4.49	4.82	7.3%	5.5%
YLDs	19	0.03	0.04	9.5%	5.5%

	Counts	Age-standardized rate		Percentage change, 1990-2021	
	(thousands)	(per 100 000 people)		Ukraine	WHO Europe
	2021	1990	2021		
Meningitis					
DALYs	15,460	151	48	-68.3%	-80.5%
Deaths	286	1.94	0.69	-64.5%	-75.4%
Prevalence	31,301	150	66	-56.2%	-66.7%
YLDs	2,345	12	5	-53.9%	-64.6%
YLLs	13,115	139	42	-69.5%	-81.3%
Migraine					
DALYs	271,531	552	548	-0.8%	0.04%
Prevalence	6,594,152	13,687	13,592	-0.7%	0.3%
YLDs	271,531	552	548	-0.8%	0.04%
Motor neuron disease					
DALYs	4,988	5.23	8.94	70.9%	37.5%
Deaths	133	0.10	0.21	110.5%	54.1%
Prevalence	1,254	3.20	3.01	-6.1%	19.8%
YLDs	267	0.68	0.64	-6.1%	19.5%
YLLs	4,721	4.55	8.30	82.4%	38.5%
Multiple sclerosis					
DALYs	13,458	34	24	-29.2%	-5.0%
Deaths	241	0.63	0.40	-36.7%	-12.5%
Prevalence	15,285	25	26	3.9%	26.4%
YLDs	4,049	6.71	7.04	4.9%	25.5%
YLLs	9,409	27	17	-37.7%	-22.2%
Nervous system cancer					
DALYs	83,597	144	165	14.5%	-3.3%
Deaths	2,291	3.12	3.79	21.4%	10.8%
Prevalence	6,232	9	13	39.8%	35.9%
YLDs	1,005	1.38	1.85	34.2%	25.3%
YLLs	82,592	143	163	14.3%	-3.7%

Neurocysticercosis					
DALYs	12,265	28.81	19.24	-33.2%	-42.5%
Prevalence	50,410	110.71	78.34	-29.2%	-32.8%
YLDs	12,254	28.77	19.22	-33.2%	-42.5%
YLLs	11	0.04	0.02	-50.2%	-70.7%
Neurosyphilis					
DALYs	75	0.24	0.12	-51.7%	-43.6%
Prevalence	529	1.50	0.90	-40.3%	-11.7%
YLDs	75	0.24	0.12	-51.4%	-43.4%
Other neurological disorders					
DALYs	26,254	70	65	-6.5%	25.8%
Deaths	387	0.92	0.82	-11.3%	45.0%
YLDs	9,547	13	20	50.3%	62.9%
YLLs	16,604	56	45	-20.1%	14.2%
Parkinson's disease					
DALYs	59,517	69	73	5.7%	5.6%
Deaths	3,177	3.61	3.86	6.7%	4.0%
Prevalence	77,483	98	96	-2.4%	21.9%
YLDs	10,946	13.82	13.58	-1.8%	21.4%
YLLs	48,571	55	59	7.6%	2.0%
Rabies					
DALYs	54	0.14	0.12	-17.0%	-59.7%
Deaths	1	0.00	0.00	-9.5%	-57.2%
YLLs	54	0.14	0.12	-17.2%	-59.7%
Spinal cord injury					
DALYs	49,045	112	91	-18.6%	-26.9%
Prevalence	174,019	372	317	-14.6%	-21.9%
YLDs	49,045	112	91	-18.6%	-26.9%

	Counts	Age-standardized rate		Percentage change, 1990-2021	
	(thousands)	(per 100 000 people)		Ukraine	WHO Europe
	2021	1990	2021		
Stroke					
DALYs	1,631,824	3,504	2,153	-38.6%	-52.6%
Deaths	82,352	189	104	-45.0%	-55.6%
Prevalence	843,892	1,397	1,208	-13.5%	-19.2%
YLDs	152,587	253	217	-14.1%	-18.9%
YLLs	1,479,237	3,251	1,936	-40.4%	-55.3%
Tension-type headache					
DALYs	48,418	92.04	91.73	-0.3%	-1.6%
Prevalence	15,063,001	31,881	31,873	-0.03%	-0.8%
YLDs	48,418	92.04	91.72	-0.3%	-1.6%
Tetanus					
DALYs	37	1.91	0.06	-97.1%	-97.3%
Deaths	1	0.072	0.002	-97.3%	-95.8%
YLLs	37	1.91	0.06	-97.1%	-97.5%
Traumatic Brain Injury					
DALYs	80,700	161	136	-15.2%	-28.2%
Prevalence	555,304	1,095	929	-15.2%	-28.0%
YLDs	80,700	161	136	-15.2%	-28.2%

Table 1: National total counts for DALYs, YLDs, YLLs, prevalence, and deaths, age-standardised rates by neurological disorder category for 1990 and 2021, and percentage change of 1990-2021. Diseases with counts less than one have been excluded and the number of decimal points has been adjusted individually for each disease.

Neurological conditions

In figure 1 below, the top 20 neurological disorders are ranked based on the national age-standardised rate of DALYs per 100 000 population in 2021 for all age groups.

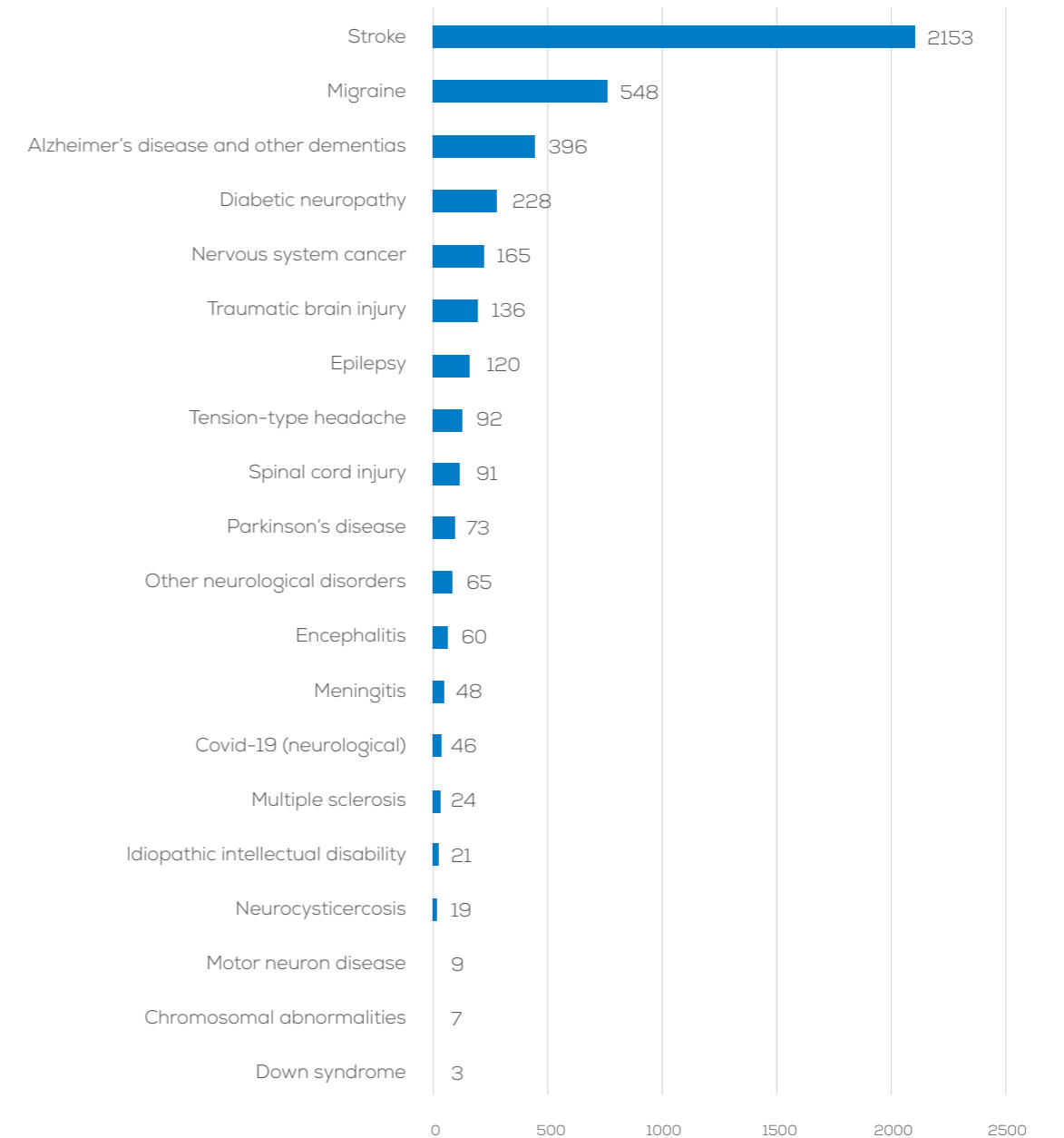


Figure 1: National age-standardised DALYs per 100 000 population by neurological disorder in 2021.

DALYs per 100 000 population

In order to show how the diseases are evolving both in **Ukraine** and the European Region, we present the temporal pattern of DALYs per 100 000 population over the last three decades in the figure below:

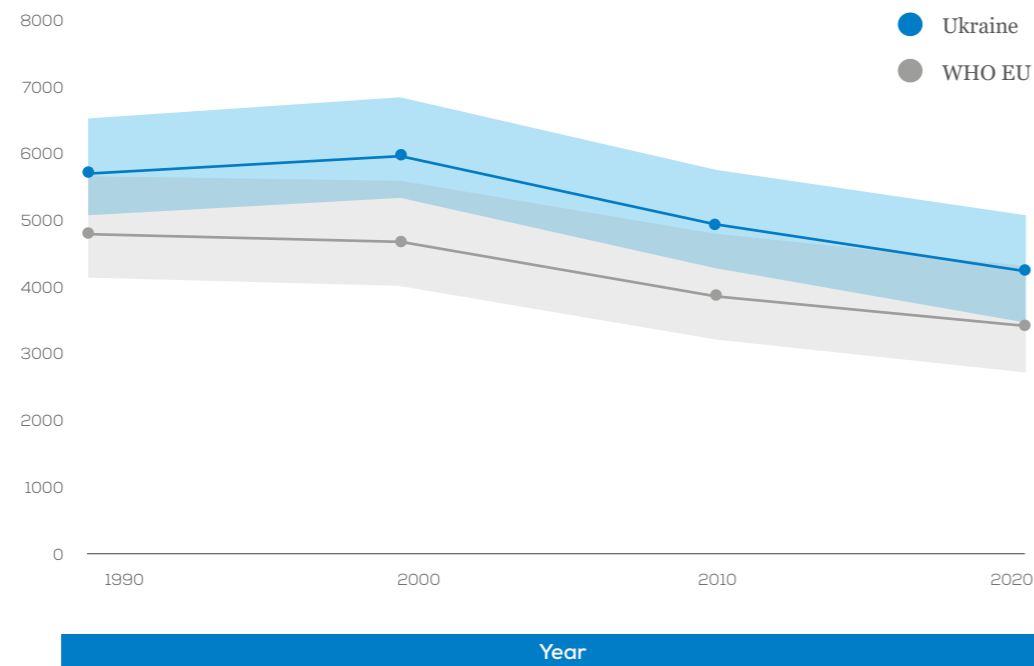


Figure 2: Age-Standardized DALYs per 100 000 population over the last 3 decades.

In figure 3 we show the distribution of DALYs rate per 100 000 population by age group divided in female and male:

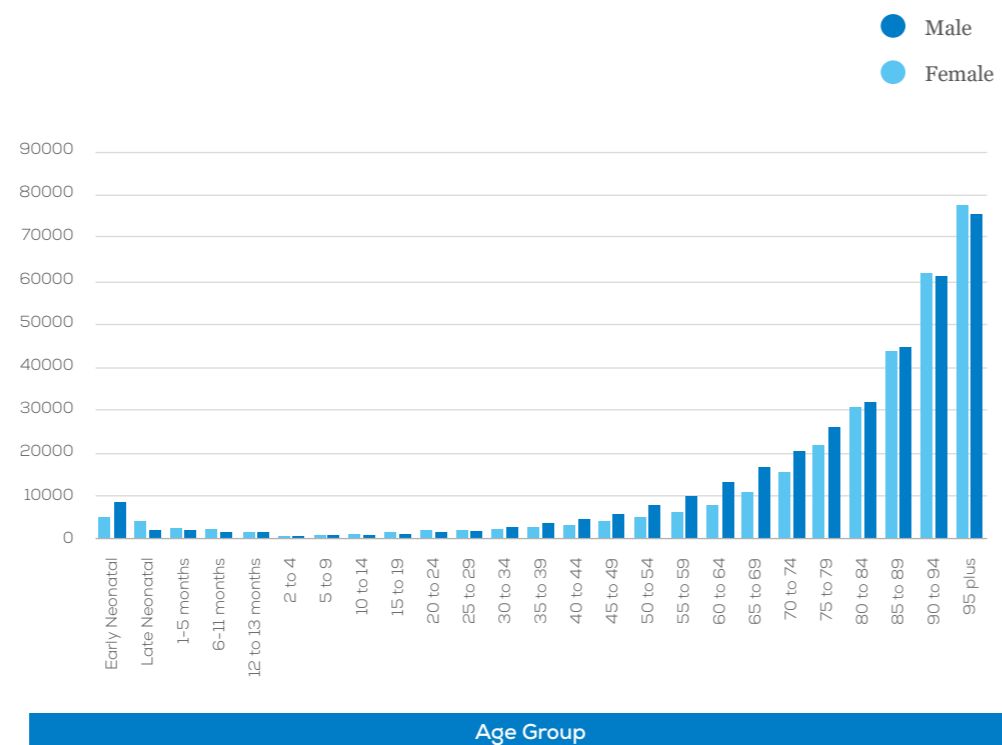


Figure 3: National DALYs per 100 000 population by age group and sex in 2021.

Extensive data and analyses are provided in the published paper and it will be communicated to the National Neurological societies.

COIN-EU (Cost of Illness in Neurology in Europe)

The Cost of Illness in Neurology in Europe (COIN-EU) project, which was launched in 2021, is run by EAN and led by Prof. Richard Dodel, Prof. Uwe Siebert and Prof. Günther Deuschl. This project is overseen at the EAN by Prof. Paul Boon, Prof. Claudio Bassetti and Prof. Thomas Berger.

The aim of the study is to assess disease- and country-specific annual costs for 12 categories of neurological diseases in Europe with a focus on the prevalent adult patient population. Costs have been calculated in three main categories: a) direct health care costs (i.e., all goods and services related to the prevention, diagnosis and treatment of a disorder; e.g. physician visits, hospitalizations and pharmaceuticals), b) informal care costs (i.e. other goods and services related to the disorder; e.g. social services, special accommodation and informal care), and c) indirect costs (i.e., lost productivity due to work absence or early retirement).

As the literature review revealed many gaps in research for many diseases and many countries, the group has developed a method to provide estimations of the above cost categories for the cases where no data are available. Data are imputed for those countries which belong to the same GNI category with countries that do present data. In case none of the countries which belong to the same GNI category present data, then an imputation is not possible.

Unfortunately for **Ukraine**, the literature review did not identify any relevant studies, and the GNI category in which Ukraine is included also lacked data that could be used for imputation. In the table below, the costs for the 47 EAN European countries have been calculated, in three main categories where the numbers represent millions € PPP 2019.

million € PPP
2019

Informal Care

Neurological Disorder	Total Costs	Direct Costs	Informal Care Costs	Indirect Costs
Headache disorders	814,559.6	256,143.1	93,330.3	465,086.2
Sleep disorders	422,900.9	204,308.2	-	218,592.6
Alzheimer's disease and other dementias	221,391.2	93,210.9	128,121.0	59.4
Stroke	82,938.9	42,643.7	23,441.1	16,854.0
Traumatic brain injury	53,112.5	24,095.1	11,454.6	17,562.8
Polyneuropathies	38,718.6	19,958.8	-	18,759.8
Parkinson's disease	22,786.5	17,308.5	4,442.8	1,035.2
Multiple sclerosis	18,832.2	11,852.7	2,632.0	4,347.5
Idiopathic epilepsy	16,325.9	7,917.2	-	8,408.7
Motor neuron disease	1,101.1	661.6	309.8	129.8
Brain and central nervous system cancer	913.7	557.3	356.4	-
Meningitis	148.9	148.9	-	-
Total Costs:	1,693,730.0	678,806.1	264,088.0	750,835.9

Table 2: Total, direct, informal care and indirect costs per neurological disorder among the 47 European countries.

NNS Survey 2021

In December 2021, the EAN conducted a survey among the national neurological societies. By combining the data from the Burden of Disease in Europe study across all European Region countries, we can provide demographic data regarding the workforce of neurologists in Europe for the 37 countries who took part in the survey.

The figure below represents the number of neurologists, fully specialised and in training per 100 000 population.

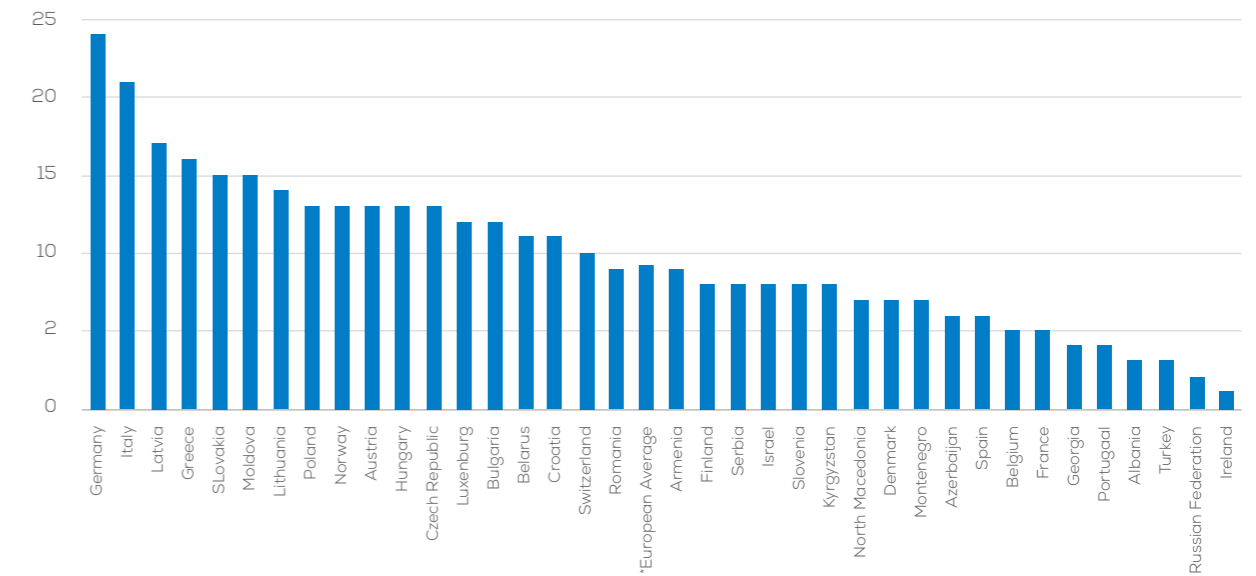


Figure 4: Number of neurologists (fully specialised and in training) per 100 000 population.

In the last figure the number of patients per neurologist is displayed:

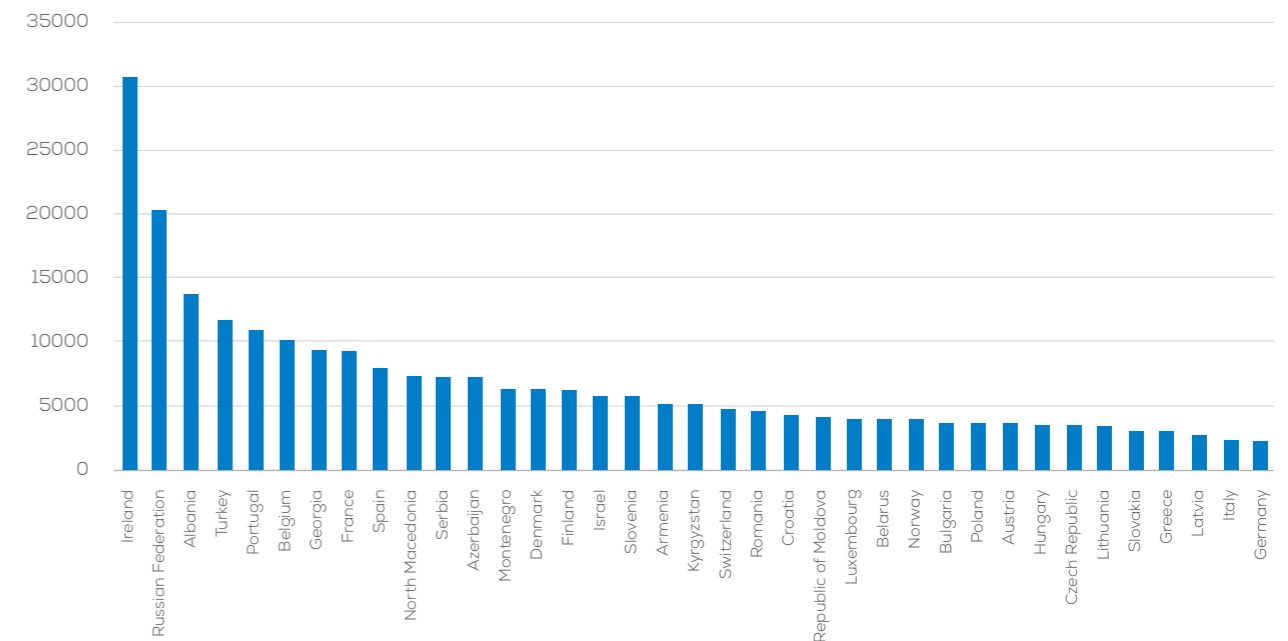
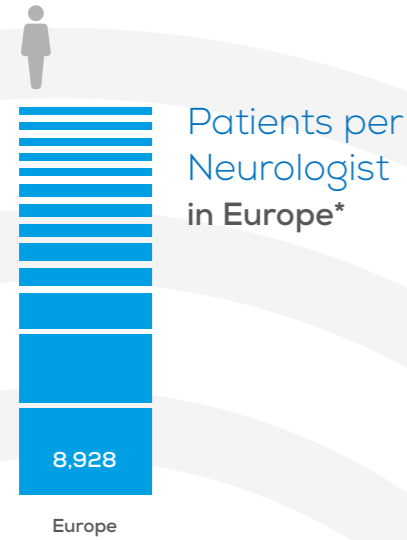


Figure 5: Number of patients per neurologist (fully specialised and in training).

Neurological Diseases in Europe and Ukraine:

Key Data and Trends from 2021



Neurologists per 100,000 population in Europe*



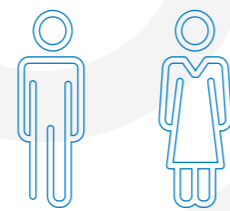
Percentage change of age-standardised DALYs, Deaths and prevalence from 1990 to 2021:

	WHO Europe	vs	Ukraine
DALYs	-28.98%		-24.65%
Deaths	-43.19%		-38.84%
Prevalence	0.34%		0.76%

Most prevalent neurological diseases in Ukraine in

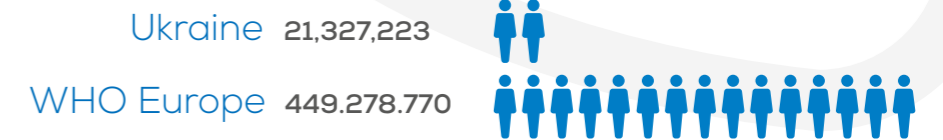
2021

- 1 Tension-type headache
- 2 Migraine
- 3 Diabetic neuropaty
- 4 Stroke
- 5 Traumatic brain injury



Sex	WHO Europe	Ukraine
Male	3,513	3,351
Female	4,905	3,872

Age-standardised DALYs rate per 100,000 population in 2021 by sex



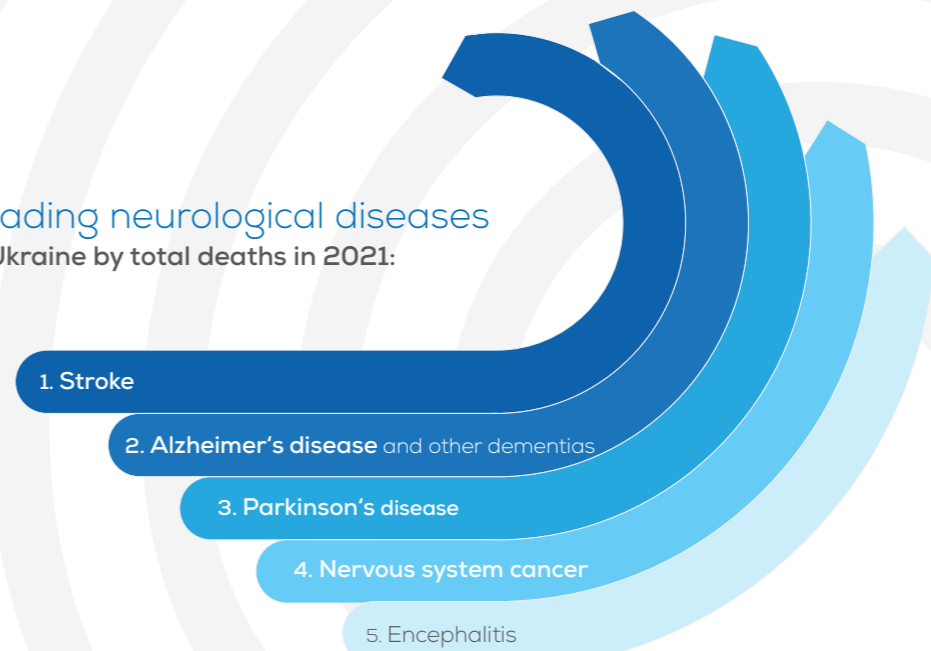
Number of patients with a neurological disease in 2021 in the WHO Europe and in Ukraine.

WHO Europe



Annual total costs (in million € PPP 2019) for 12 major neurological diseases:

Leading neurological diseases in Ukraine by total deaths in 2021:



*Based on data from 37 countries of the WHO European region
 **Cost estimates are derived from country-specific data available for specific diseases.

