

EAN Fact Sheet

Country profile of Kazakhstan

EAN Fact Sheet

Country profile of Kazakhstan

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 (thousands)		Age-standardized rate (per 100 000 people)		Percentage change, 1990-2021	
	2021	1990	2021	Kazakhstan	WHO Europe	
All Neurological Disorders						
DALYs	899,952	6,007	5,274	-12.2%	-29.0%	
Deaths	26,915	215	195	-9.2%	-43.2%	
Prevalence	8,145,678	42,302	42,935	1.5%	0.3%	
YLDs	337,043	1,679	1,806	7.6%	2.9%	
YLLs	562,869	4,327	3,467	-19.9%	-44.4%	
Alzheimer's disease and other dementias						
DALYs	48,377	391	372	-4.9%	-2.5%	
Deaths	2,136	21	19	-6.5%	-2.8%	
Prevalence	87,907	650	634	-2.5%	-2.1%	
YLDs	17,813	135	131	-3.3%	-2.6%	
YLLs	30,563	255	241	-5.8%	-2.5%	
Chromosomal abnormalities						
DALYs	810	4.17	4.37	4.8%	-12.3%	
Prevalence	9,047	46	49	5.1%	-12.8%	
YLDs	810	4.17	4.37	4.8%	-12.4%	
Covid-19 (neurological)						
DALYs	7,330	-	37	-	-	
Prevalence	72,845	-	380	-	-	
YLDs	7,330	-	37	-	-	
Cystic echinococcosis						
DALYs	27	0.10	0.14	36.6%	-18.3%	
Prevalence	95	0.30	0.49	61.3%	-9.0%	
YLDs	27	0.10	0.14	37.0%	-18.4%	
Diabetic neuropathy						
DALYs	73,823	176	388	120.7%	98.1%	
Prevalence	581,921	1,385	3,062	121.1%	97.9%	
YLDs	73,823	176	388	120.7%	98.1%	

Down syndrome						
DALYs	292	1.46	1.61	10.3%	-19.6%	
Prevalence	3,243	16	18	10.5%	-20.7%	
YLDs	292	1.46	1.61	10.6%	-19.8%	
Encephalitis						
DALYs	11,695	92	60	-34.8%	-30.1%	
Deaths	175	1.20	0.90	-25.1%	-15.9%	
Prevalence	5,177	40	27	-32.9%	-13.6%	
YLDs	532	3.97	2.75	-30.5%	-12.0%	
YLLs	11,163	88	57	-35.0%	-31.0%	
Epilepsy						
DALYs	45,402	237	239	0.8%	-12.6%	
Deaths	369	1.52	1.93	27.1%	3.9%	
Prevalence	89,737	436	476	9.0%	3.3%	
YLDs	26,817	153	142	-7.0%	-11.3%	
YLLs	18,585	84	97	14.8%	-14.3%	
Guillain-Barre Syndrome						
DALYs	103	0.54	0.54	0.4%	12.4%	
Prevalence	348	1.83	1.83	0.2%	12.4%	
YLDs	103	0.54	0.54	0.2%	12.4%	
Idiopathic intellectual disability						
DALYs	2,736	19	15	-23.0%	-19.7%	
Prevalence	59,821	456	319	-30.1%	-21.2%	
YLDs	2,736	19	15	-23.0%	-19.7%	
Klinefelter syndrome						
DALYs	10	0.03	0.03	4.4%	5.7%	
Prevalence	723	3.76	3.86	2.5%	5.5%	
YLDs	10	0.03	0.03	4.6%	5.5%	

	Counts (thousands)	Age-standardized rate (per 100 000 people)		Percentage change, 1990-2021	
	2021	1990	2021	Kazakhstan	WHO Europe
Meningitis					
DALYs	6,134	206	31	-84.7%	-80.5%
Deaths	93	2.79	0.49	-82.5%	-75.4%
Prevalence	9,984	140	53	-62.4%	-66.7%
YLDs	851	11	4	-58.5%	-64.6%
YLLs	5,283	195	27	-86.1%	-81.3%
Migraine					
DALYs	98,007	510	509	-0.2%	0.04%
Prevalence	2,626,668	13,673	13,656	-0.1%	0.3%
YLDs	98,007	510	509	-0.2%	0.04%
Motor neuron disease					
DALYs	121	0.63	0.65	2.5%	37.5%
Prevalence	538	2.90	2.89	-0.3%	19.8%
YLDs	114	0.62	0.61	-0.3%	19.5%
YLLs	6	0.01	0.03	132.1%	38.5%
Multiple sclerosis					
DALYs	4,057	26	21	-19.8%	-5.0%
Deaths	40	0.52	0.26	-50.2%	-12.5%
Prevalence	11,625	52	59	13.4%	26.4%
YLDs	2,893	13	15	12.5%	25.5%
YLLs	1,164	13	6	-51.7%	-22.2%
Nervous system cancer					
DALYs	23,408	114	119	4.0%	-3.3%
Deaths	595	2.60	3.11	19.9%	10.8%
Prevalence	1,454	5.65	7.45	31.9%	35.9%
YLDs	224	0.90	1.15	27.3%	25.3%
YLLs	23,184	113	118	3.8%	-3.7%

Neurocysticercosis					
DALYs	3,080	21	16	-23.3%	-42.5%
Prevalence	12,065	70	62	-11.0%	-32.8%
YLDs	3,079	21	16	-23.2%	-42.5%
YLLs	2	0.06	0.01	-83.9%	-70.7%
Neurosyphilis					
DALYs	18	0.14	0.09	-33.0%	-43.6%
Prevalence	150	1.06	0.78	-26.6%	-11.7%
YLDs	18	0.14	0.09	-33.1%	-43.4%
Other neurological disorders					
DALYs	9,706	38	52	37.8%	25.8%
Deaths	91	0.41	0.57	38.0%	45.0%
YLDs	6,286	20	33	66.7%	62.9%
YLLs	3,381	18	19	5.5%	14.2%
Parkinson's disease					
DALYs	12,974	69	89	29.8%	5.6%
Deaths	684	3.75	5.24	39.7%	4.0%
Prevalence	14,847	76	93	22.4%	21.9%
YLDs	2,123	11	13	21.7%	21.4%
YLLs	10,851	58	76	31.3%	2.0%
Rabies					
DALYs	177	0.69	0.93	34.7%	-59.7%
Deaths	3	0.01	0.02	52.9%	-57.2%
YLLs	177	0.69	0.93	34.8%	-59.7%
Spinal cord injury					
DALYs	58,597	89	70	-21.6%	-26.9%
Prevalence	214,549	312	252	-19.2%	-21.9%
YLDs	58,597	89	70	-21.6%	-26.9%

	Counts (thousands)		Age-standardized rate (per 100 000 people)		Percentage change, 1990-2021	
	2021	1990	2021	Kazakhstan	WHO Europe	
Stroke						
DALYs	508,613	3,841	3,099	-19.3%	-52.6%	
Deaths	22,729	181	163	-10.0%	-55.6%	
Prevalence	275,451	1,856	1,483	-20.1%	-19.2%	
YLDs	50,103	340	273	-19.8%	-18.9%	
YLLs	458,510	3,501	2,826	-19.3%	-55.3%	
Tension-type headache						
DALYs	12,971	67.01	67.00	-0.01%	-1.6%	
Prevalence	5,754,106	30,298	30,289	-0.03%	-0.8%	
YLDs	12,971	67.01	67.00	-0.01%	-1.6%	
Traumatic Brain Injury						
DALYs	17,750	109	90	-17.7%	-28.2%	
Prevalence	120,317	737	610	-17.1%	-28.0%	
YLDs	17,750	109	90	-17.7%	-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.

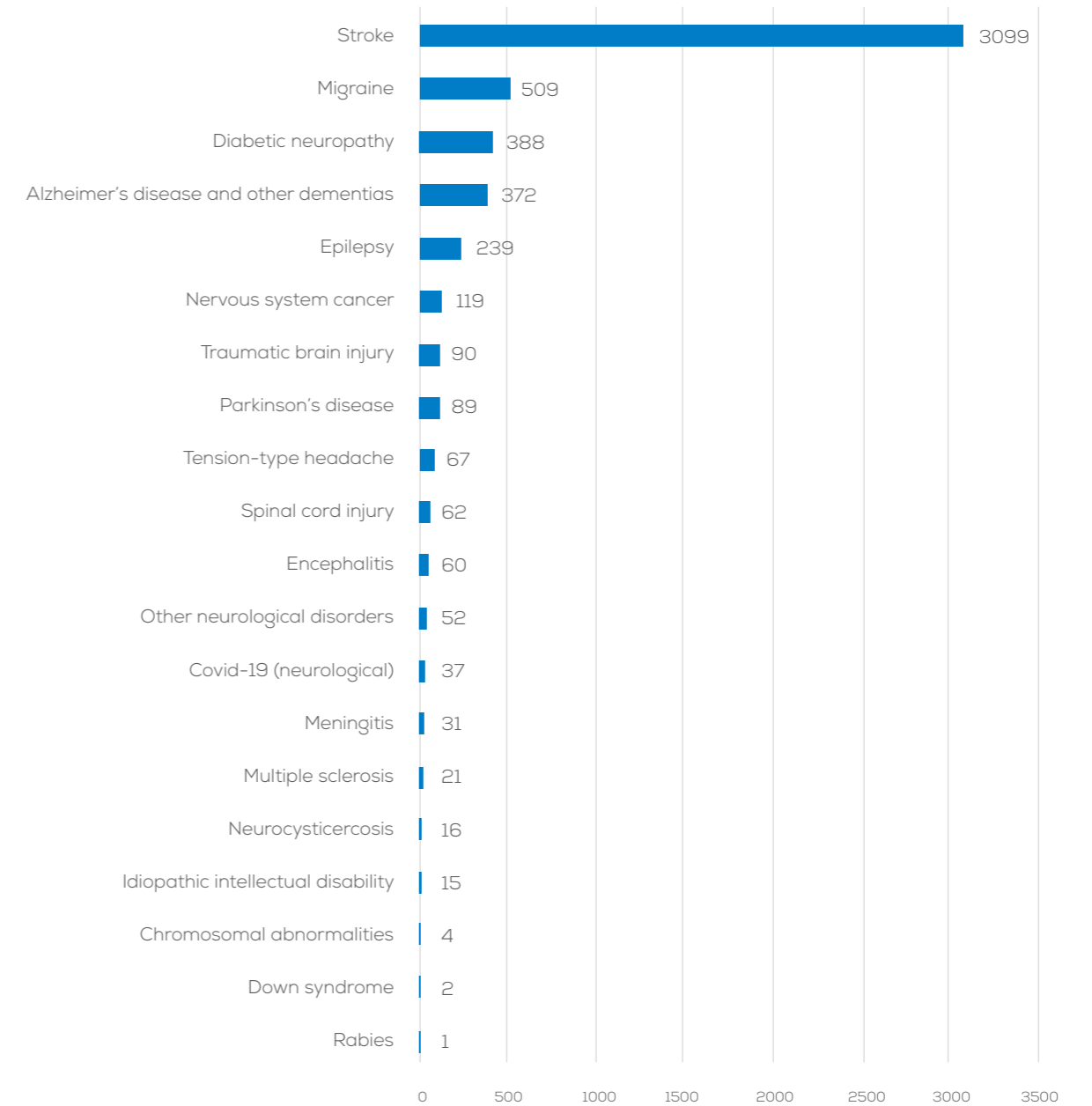


Figure 1: National age-standardised DALYs per 100 000 population by neurological disorder in 2021.

DALYs per 100 000 population

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

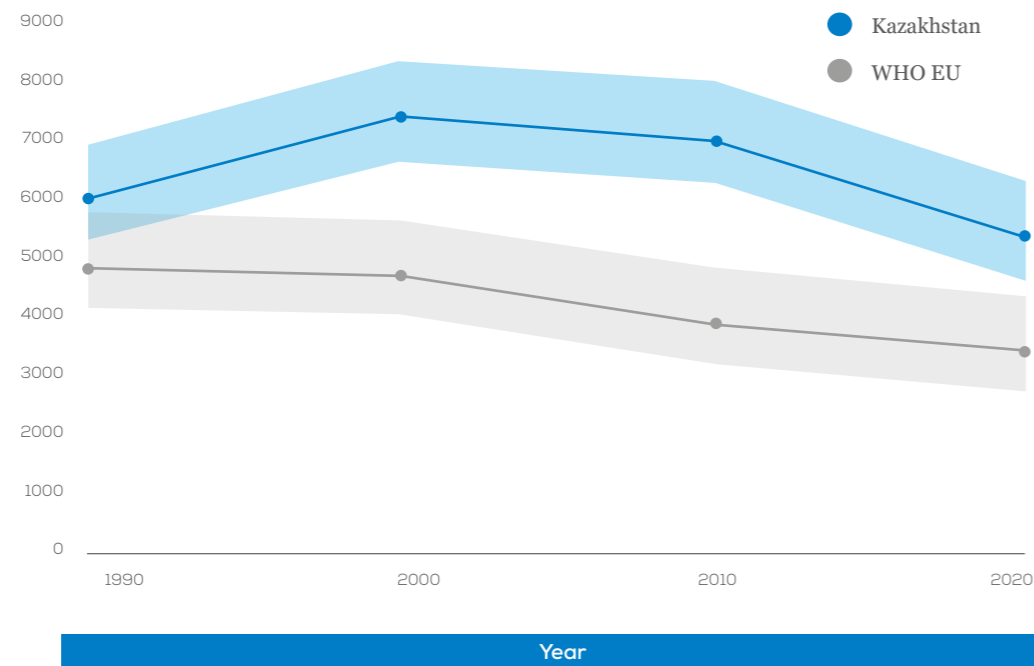


Figure 2: Age-Standardized DALYs per 100 000 population over the last 3 decades.

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

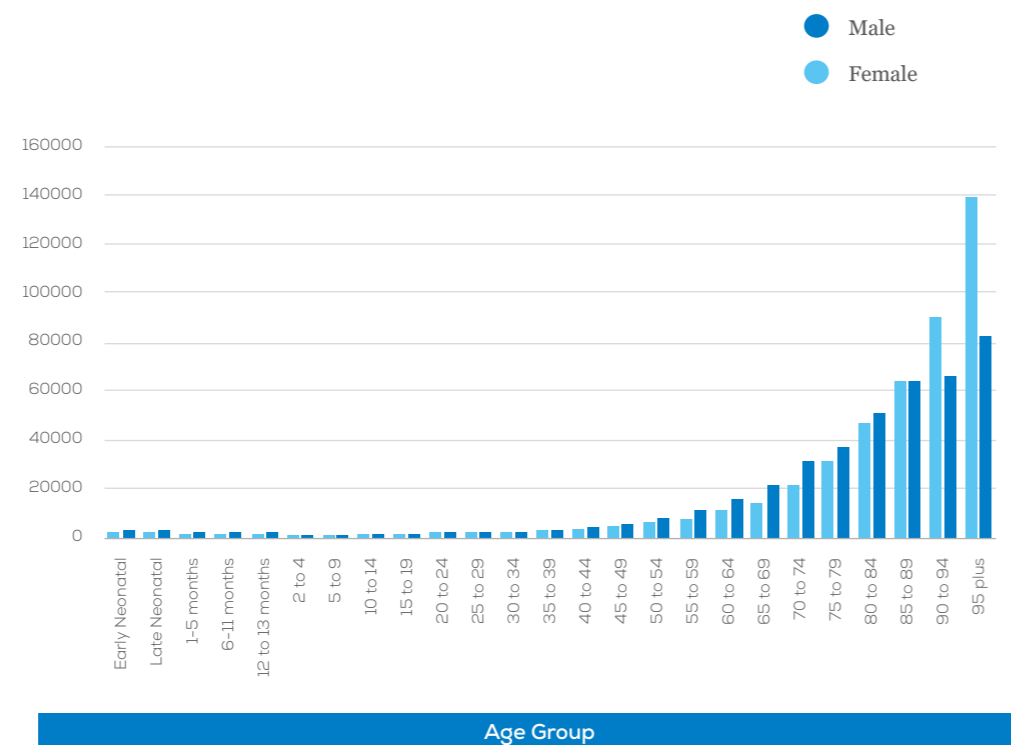


Figure 3: National DALYs per 100 000 population by age group and sex in 2021.

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.

In the table below, costs for **Kazakhstan** have been calculated for the diseases with available data, 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
Stroke	755.7	139.7	64.1	551.9
Traumatic brain injury	119.4	119.4	-	-
Multiple sclerosis	102.7	71.2	6.7	24.8
Idiopathic epilepsy	71.6	56.3	-	15.3
Parkinson's disease	33.9	17.4	9.4	7.1
Total Costs:	1,083.4	404.0	80.3	599.1

Table 2: Total, direct, informal care and indirect costs per neurological disorder. Number of diseases depends on the availability of original studies and imputation of data.

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.

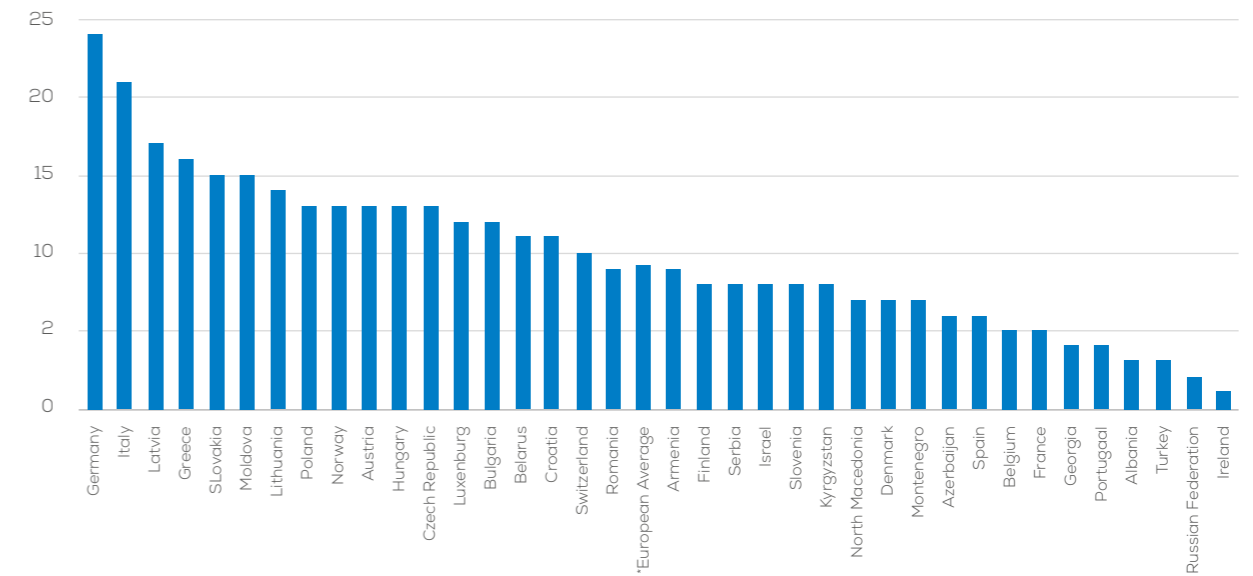


Figure 4: Number of neurologists (fully specialised and in training) per 100 000 population.

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

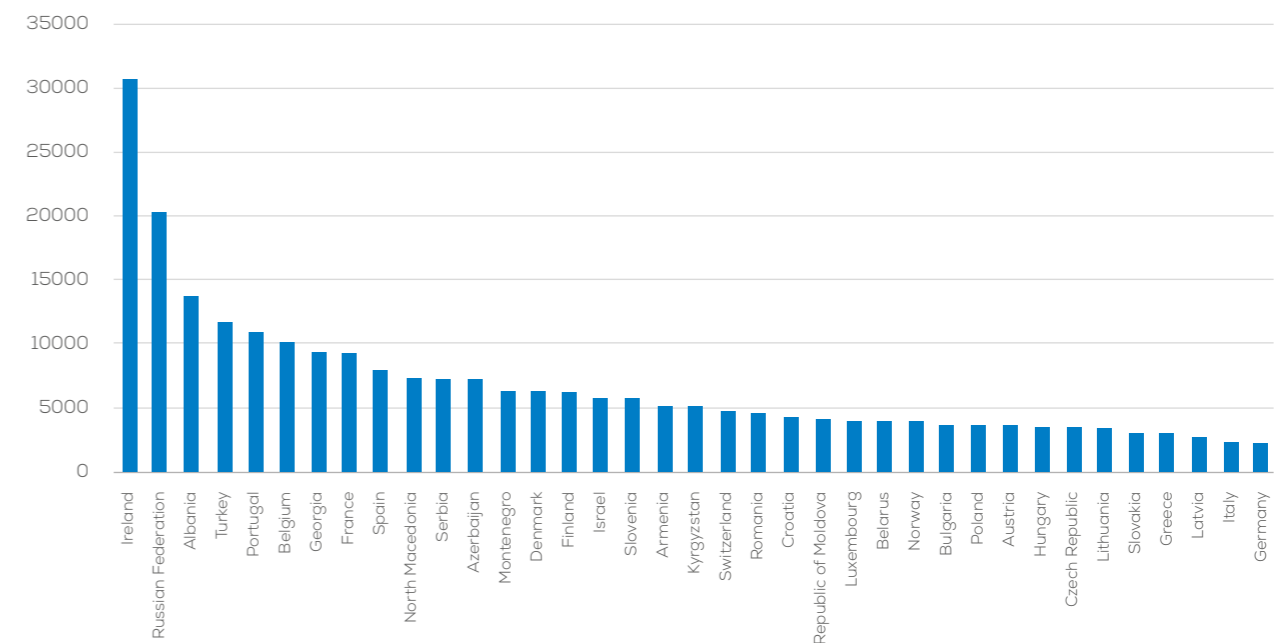
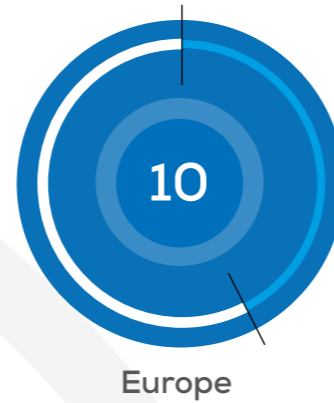


Figure 5: Number of patients per neurologist (fully specialised and in training).

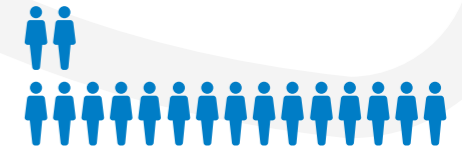
Neurological Diseases in Europe and Kazakhstan:

Key Data and Trends from 2021

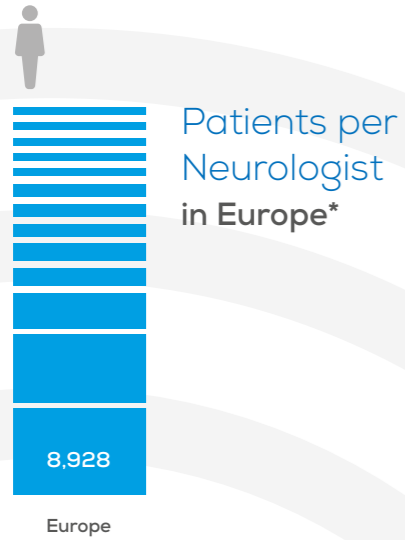
Neurologists per 100,000 population in Europe*



Kazakhstan 8,145,678
WHO Europe 449.278.770

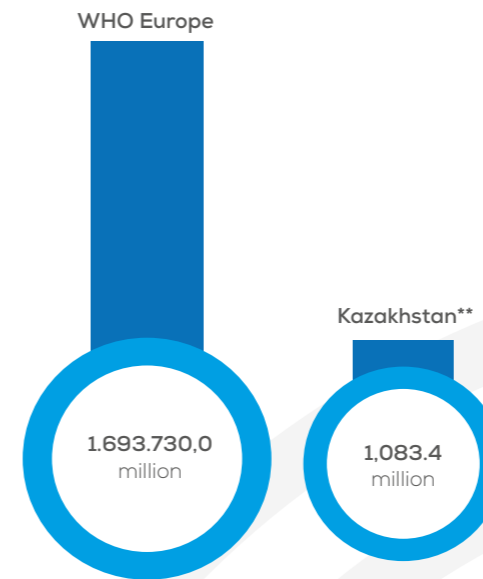


Number of patients with a neurological disease in 2021 in the WHO Europe and in Kazakhstan.



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

	WHO Europe	vs	Kazakhstan
DALYs	-28.98%		-12.20%
Deaths	-43.19%		-9.23%
Prevalence	0.34%		1.50%

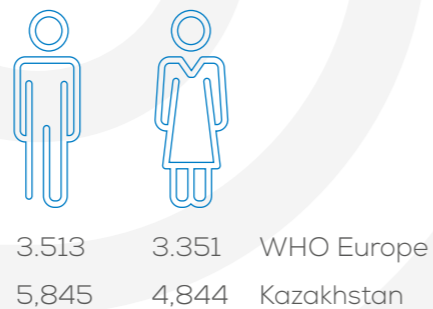


Annual total costs (in million € PPP 2019) for 12 major neurological diseases:

Most prevalent neurological diseases in Kazakhstan in

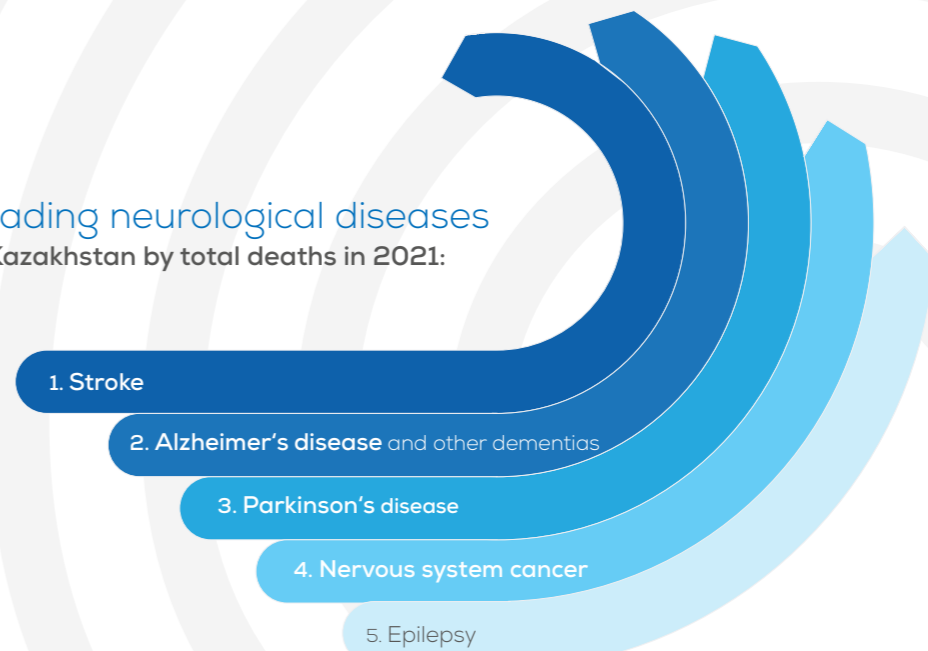
2021

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



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

Leading neurological diseases in Kazakhstan 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.

