

# EAN Fact Sheet

Country profile of Bosnia and Herzegovina

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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)	(per 100 000 people)		Bosnia and Herzegovina	WHO Europe
	2021	1990	2021		
<b>All Neurological Disorders</b>					
DALYs	243,428	5,362	4,429	-17.4%	-29.0%
Deaths	9,206	200	146	-27.1%	-43.2%
Prevalence	1,635,575	42,369	43,239	2.1%	0.3%
YLDs	91,818	1,636	1,911	16.8%	2.9%
YLLs	151,605	3,726	2,518	-32.4%	-44.4%
<b>Alzheimer's disease and other dementias</b>					
DALYs	23,766	386	374	-3.0%	-2.5%
Deaths	1,202	20.38	19.57	-4.0%	-2.8%
Prevalence	41,105	640.72	641.05	0.1%	-2.1%
YLDs	8,389	132	131	-0.7%	-2.6%
YLLs	15,377	254	243	-4.1%	-2.5%
<b>Chromosomal abnormalities</b>					
DALYs	117	5.20	5.41	4.0%	-12.3%
Prevalence	1,283	58	60	3.6%	-12.8%
YLDs	117	5.20	5.41	4.0%	-12.4%
<b>Covid-19 (neurological)</b>					
DALYs	2,350	-	57	-	-
Prevalence	23,181	-	576	-	-
YLDs	2,350	-	57	-	-
<b>Cystic echinococcosis</b>					
DALYs	7	0.20	0.17	-16.2%	-18.3%
Prevalence	26	0.65	0.67	2.4%	-9.0%
YLDs	7	0.20	0.17	-16.3%	-18.4%
<b>Diabetic neuropathy</b>					
DALYs	30,133	230	494	114.8%	98.1%
Prevalence	237,398	1,809	3,885	114.8%	97.9%
YLDs	30,133	230	494	114.8%	98.1%

<b>Down syndrome</b>					
DALYs	69	3.10	3.19	2.9%	-19.6%
Prevalence	759	35	36	3.2%	-20.7%
YLDs	69	3.10	3.19	3.1%	-19.8%
<b>Encephalitis</b>					
DALYs	469	30	12	-59.6%	-30.1%
Deaths	12	0.59	0.25	-57.6%	-15.9%
Prevalence	625	29	15	-47.9%	-13.6%
YLDs	62	3.13	1.65	-47.3%	-12.0%
YLLs	407	27	10	-61.0%	-31.0%
<b>Epilepsy</b>					
DALYs	6,359	206	183	-11.3%	-12.6%
Deaths	78	2.05	1.79	-12.5%	3.9%
Prevalence	12,911	326	379	16.2%	3.3%
YLDs	3,451	106	102	-3.6%	-11.3%
YLLs	2,908	101	81	-19.4%	-14.3%
<b>Guillain-Barre Syndrome</b>					
DALYs	12	0.40	0.33	-15.9%	12.4%
Prevalence	42	1.34	1.13	-15.8%	12.4%
YLDs	12	0.40	0.33	-15.8%	12.4%
<b>Idiopathic intellectual disability</b>					
DALYs	504	41	17	-57.8%	-19.7%
Prevalence	11,831	1,088	406	-62.6%	-21.2%
YLDs	504	41	17	-57.8%	-19.7%
<b>Klinefelter syndrome</b>					
DALYs	1	0.02	0.02	5.9%	5.7%
Prevalence	71	2.68	2.84	6.1%	5.5%
YLDs	1	0.02	0.02	6.0%	5.5%

	Counts	Age-standardized rate		Percentage change, 1990-2021	
	(thousands)	(per 100 000 people)		Bosnia and Herzegovina	WHO Europe
	2021	1990	2021		
<b>Meningitis</b>					
DALYs	464	53	16	-70.0%	-80.5%
Deaths	10	0.77	0.24	-68.8%	-75.4%
Prevalence	1,400	96	38	-61.0%	-66.7%
YLDs	114	8	3	-59.2%	-64.6%
YLLs	350	45	13	-72.0%	-81.3%
<b>Migraine</b>					
DALYs	18,815	517	515	-0.4%	0.0%
Prevalence	491,056	13,644	13,633	-0.1%	0.3%
YLDs	18,815	517	515	-0.4%	0.0%
<b>Motor neuron disease</b>					
DALYs	505	7.33	11.20	52.8%	37.5%
Deaths	17	0.17	0.30	81.5%	54.1%
Prevalence	117	3.35	3.55	6.1%	19.8%
YLDs	25	0.71	0.76	6.1%	19.5%
YLLs	480	6.62	10.45	57.8%	38.5%
<b>Multiple sclerosis</b>					
DALYs	888	26	19	-29.0%	-5.0%
Deaths	18	0.54	0.33	-37.9%	-12.5%
Prevalence	1,267	27	28	3.8%	26.4%
YLDs	332	7.23	7.46	3.3%	25.5%
YLLs	557	19	11	-41.1%	-22.2%
<b>Nervous system cancer</b>					
DALYs	11,379	223	243	9.1%	-3.3%
Deaths	396	5.80	7.19	23.9%	10.8%
Prevalence	681	11	18	54.6%	35.9%
YLDs	120	1.92	2.58	34.8%	25.3%
YLLs	11,258	221	241	8.9%	-3.7%

<b>Neurocysticercosis</b>					
DALYs	845	21.49	15.95	-25.7%	-42.5%
Prevalence	3,771	78.16	70.46	-9.9%	-32.8%
YLDs	845	21.44	15.95	-25.6%	-42.5%
<b>Neurosyphilis</b>					
DALYs	2	0.02	0.03	35.3%	-43.6%
Prevalence	52	0.60	1.37	125.8%	-11.7%
YLDs	2	0.02	0.03	35.0%	-43.4%
<b>Other neurological disorders</b>					
DALYs	2,178	39	62	61.5%	25.8%
Deaths	40	0.46	0.85	83.2%	45.0%
YLDs	878	15	26	69.4%	62.9%
YLLs	1,295	23	36	56.8%	14.2%
<b>Parkinson's disease</b>					
DALYs	5,857	96	89	-7.4%	5.6%
Deaths	336	5.24	5.12	-2.2%	4.0%
Prevalence	6,339	99	97	-2.2%	21.9%
YLDs	887	14	14	-2.6%	21.4%
YLLs	4,970	82	76	-8.2%	2.0%
<b>Spinal cord injury</b>					
DALYs	4,533	97	110	13.7%	-26.9%
Prevalence	16,843	305	404	32.7%	-21.9%
YLDs	4,533	97	110	13.7%	-26.9%

	Counts	Age-standardized rate		Percentage change, 1990-2021	
	(thousands)	(per 100 000 people)		Bosnia and Herzegovina	WHO Europe
	2021	1990	2021		
<b>Stroke</b>					
DALYs	126,649	3,189	2,023	-36.6%	-52.6%
Deaths	7,098	164	110	-32.8%	-55.6%
Prevalence	70,511	1,339	1,269	-5.2%	-19.2%
YLDs	12,648	242	227	-6.2%	-18.9%
YLLs	114,002	2,947	1,796	-39.1%	-55.3%
<b>Tension-type headache</b>					
DALYs	2,867	72.60	72.69	0.1%	-1.6%
Prevalence	1,077,399	29,970	29,959	-0.04%	-0.8%
YLDs	2,867	72.60	72.69	0.1%	-1.6%
<b>Traumatic Brain Injury</b>					
DALYs	4,658	117	103	-11.7%	-28.2%
Prevalence	32,356	802	711	-11.4%	-28.0%
YLDs	4,658	117	103	-11.7%	-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.

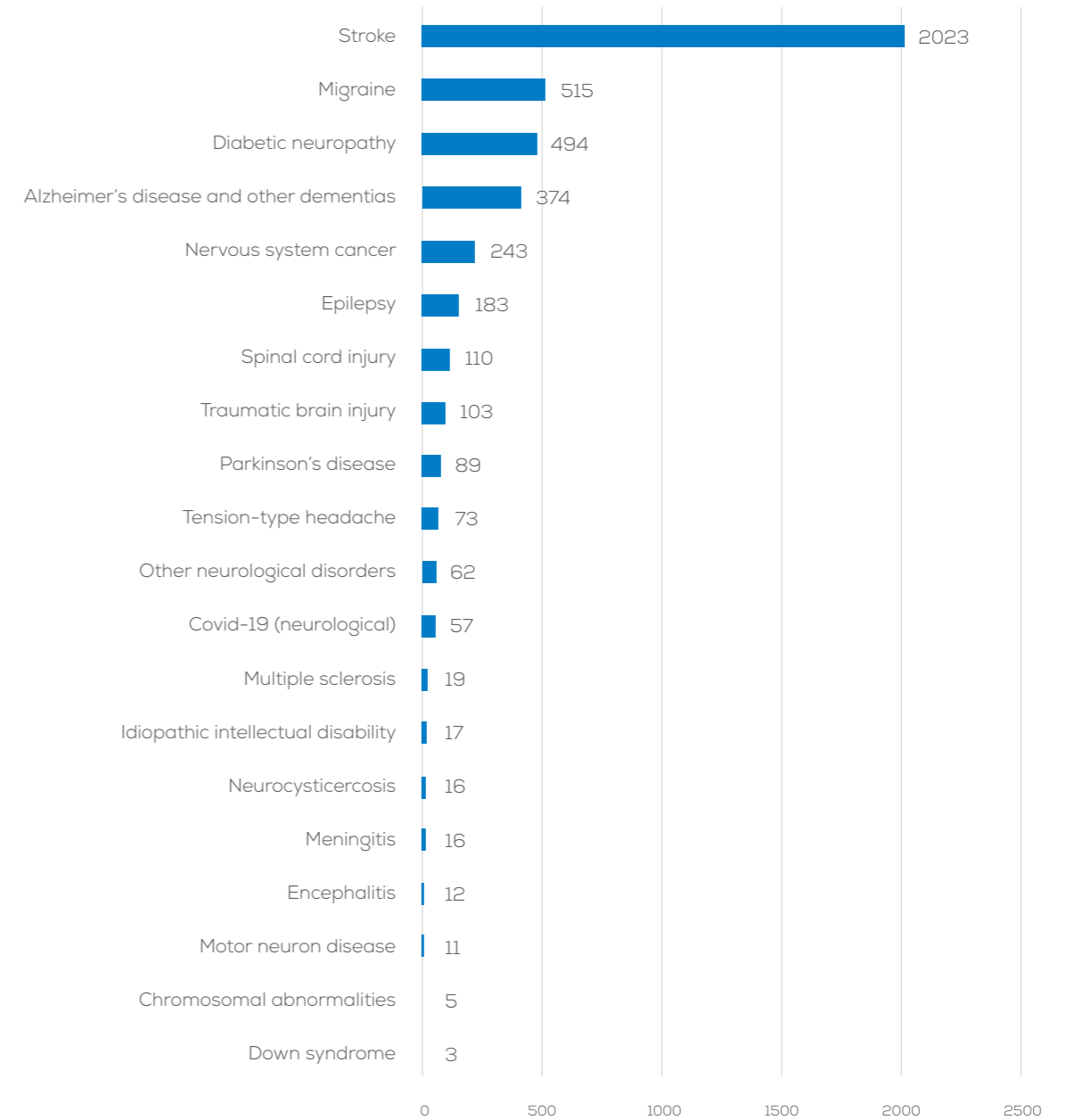


Figure 1: National age-standardised DALYs per 100 000 population by neurological disorder in 2021.

## DALYs per 100 000 population

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

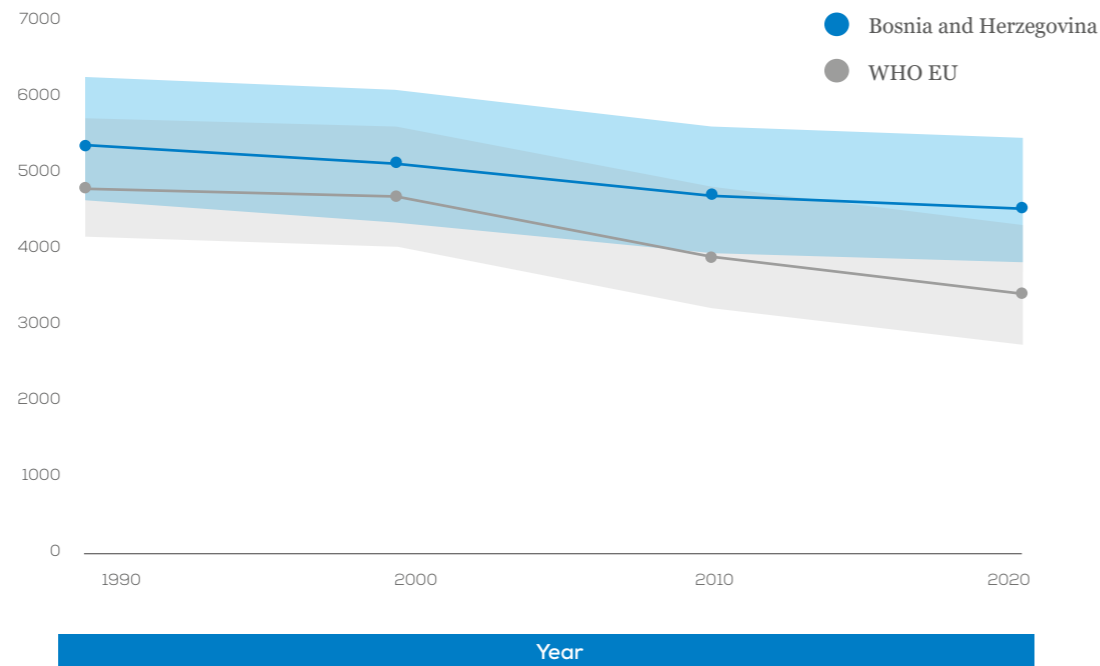


Figure 2: Age-Standardized DALYs per 100 000 population over the last 3 decades.

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

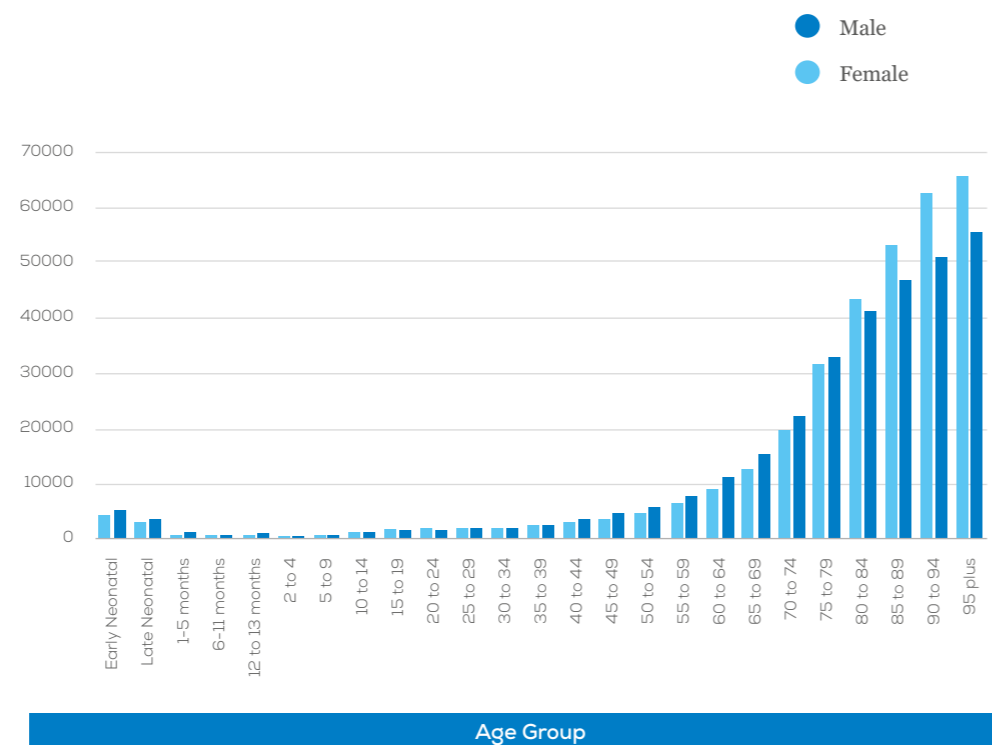


Figure 3: National DALYs per 100 000 population by age group and sex in 2021.

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 **Bosnia and Herzegovina** 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	241.4	120.3	55.2	65.8
Traumatic brain injury	76.6	76.6	-	-
Parkinson's disease	39.2	24.6	13.4	1.2
Multiple sclerosis	30.3	26.1	2.4	1.8
Idiopathic epilepsy	18.2	16.7	-	1.5
<b>Total Costs:</b>	<b>405.7</b>	<b>264.3</b>	<b>71.1</b>	<b>70.3</b>

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.

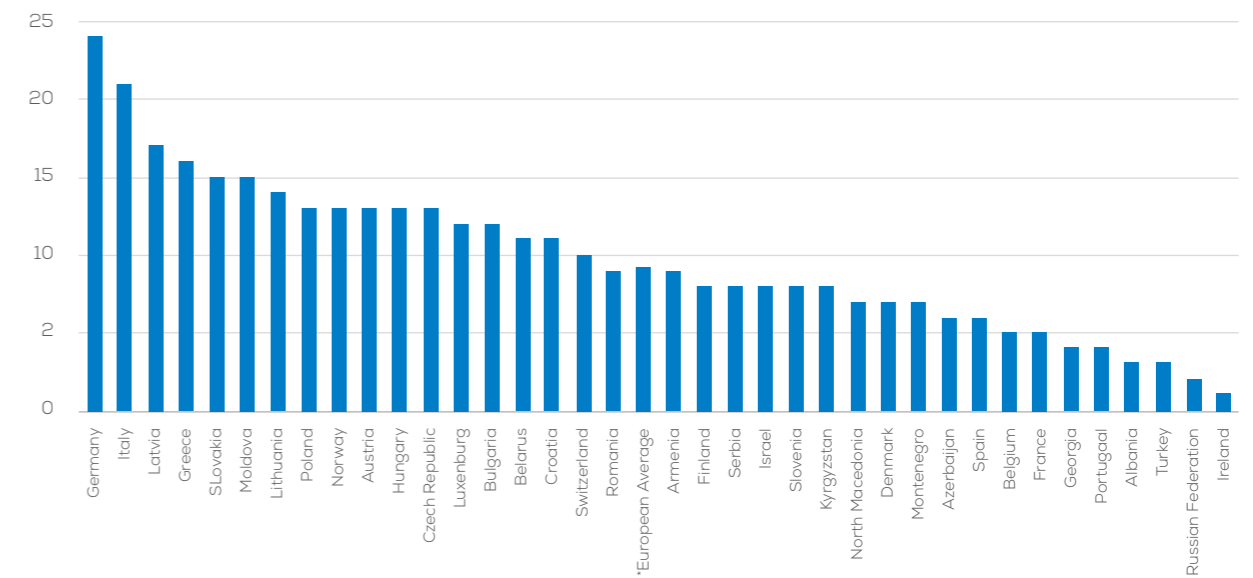


Figure 4: Number of neurologists (fully specialised and in training) per 100 000 population.

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

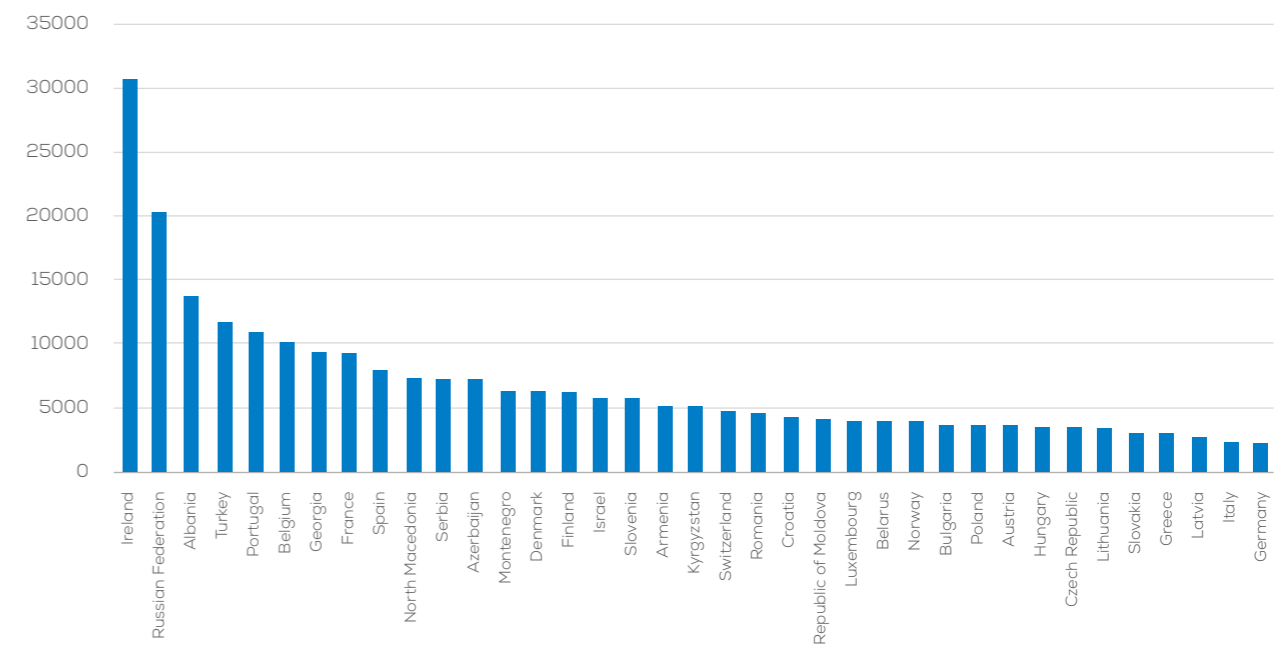
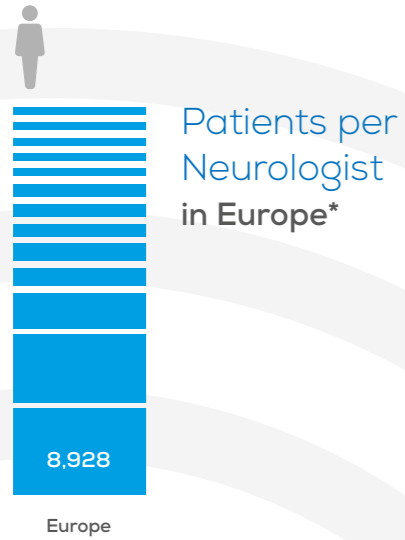


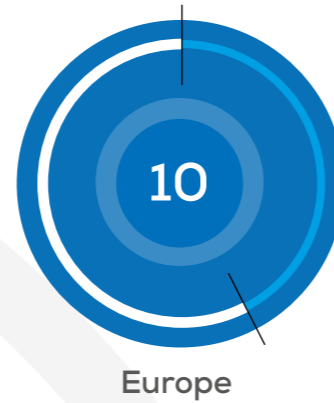
Figure 5: Number of patients per neurologist (fully specialised and in training).

# Neurological Diseases in Europe and Republic of Moldova:

Key Data and Trends from 2021



Neurologists per 100,000 population in Europe\*



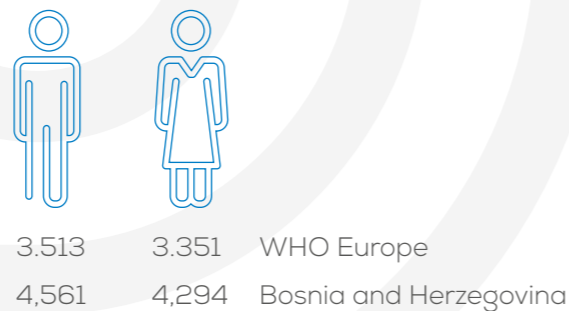
Percentage change of age-standardised DALYs, Deaths and prevalence from 1990 to 2021:

	WHO Europe	vs	Bosnia and Herzegovina
DALYs	-28.98%		-17.40%
Deaths	-43.19%		-27.08%
Prevalence	0.34%		2.05%

Most prevalent neurological diseases in Bosnia and Herzegovina in

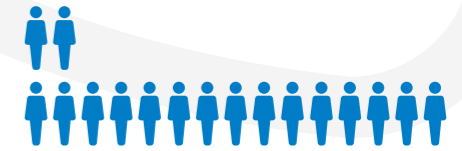
# 2021

- 1 Tension-type headache
- 2 Migraine
- 3 Diabetic neuropaty
- 4 Stroke
- 5 Alzheimer's disease and other dementias

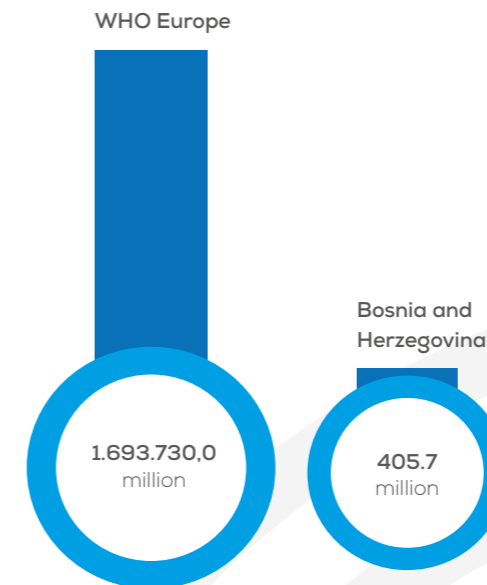


Age-standardised DALYs rate per 100,000 population in 2021 by sex

Bosnia and Herzegovina 1,635,575  
WHO Europe 449,278,770

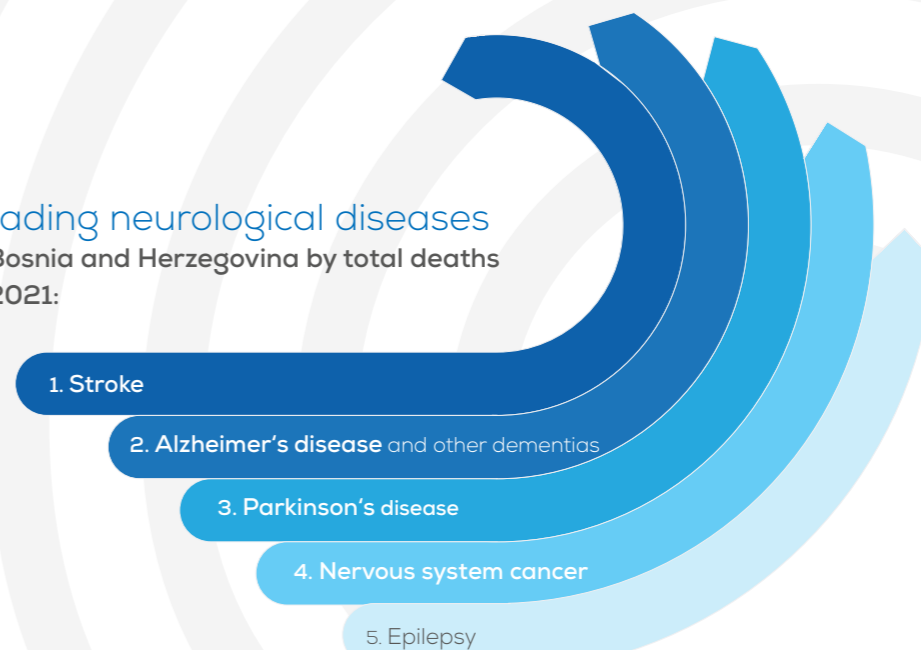


Number of patients with a neurological disease in 2021 in the WHO Europe and in Bosnia and Herzegovina.



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

Leading neurological diseases in Bosnia and Herzegovina 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.

