

# EAN Fact Sheet

Country profile of Estonia

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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)		Estonia	WHO Europe
	2021	1990	2021		
<b>All Neurological Disorders</b>					
DALYs	64,938	5,485	2,915	-46.9%	-29.0%
Deaths	2,344	207	74	-64.2%	-43.2%
Prevalence	608,769	41,675	41,637	-0.1%	0.3%
YLDs	29,404	1,588	1,550	-2.4%	2.9%
YLLs	35,532	3,896	1,365	-65.0%	-44.4%
<b>Alzheimer's disease and other dementias</b>					
DALYs	13,585	393	403	2.6%	-2.5%
Deaths	785	21	22	5.8%	-2.8%
Prevalence	21,192	657	649	-1.3%	-2.1%
YLDs	4,462	137	135	-1.7%	-2.6%
YLLs	9,124	255	268	4.9%	-2.5%
<b>Chromosomal abnormalities</b>					
DALYs	54	7.03	6.28	-10.7%	-12.3%
Prevalence	602	79	70	-11.5%	-12.8%
YLDs	54	7.03	6.28	-10.7%	-12.4%
<b>Covid-19 (neurological)</b>					
DALYs	344	-	22	-	-
Prevalence	3,390	-	217	-	-
YLDs	344	-	22	-	-
<b>Cystic echinococcosis</b>					
DALYs	1	0.05	0.04	-16.7%	-18.3%
Prevalence	3	0.18	0.18	-0.7%	-9.0%
YLDs	1	0.05	0.04	-16.8%	-18.4%
<b>Diabetic neuropathy</b>					
DALYs	5,115	202	250	24.0%	98.1%
Prevalence	40,274	1,592	1,966	23.4%	97.9%
YLDs	5,115	202	250	24.0%	98.1%

<b>Down syndrome</b>					
DALYs	28	3.97	3.27	-17.6%	-19.6%
Prevalence	312	45	36	-18.1%	-20.7%
YLDs	28	3.97	3.27	-17.5%	-19.8%
<b>Encephalitis</b>					
DALYs	166	21	10	-49.7%	-30.1%
Deaths	5	0.35	0.23	-34.8%	-15.9%
Prevalence	273	23	17	-25.9%	-13.6%
YLDs	27	2.40	1.89	-21.3%	-12.0%
YLLs	138	18	8	-53.5%	-31.0%
<b>Epilepsy</b>					
DALYs	2,667	284	185	-35.0%	-12.6%
Deaths	30	3.30	1.72	-47.9%	3.9%
Prevalence	6,239	358	421	17.4%	3.3%
YLDs	1,582	110	107	-2.7%	-11.3%
YLLs	1,084	174	78	-55.4%	-14.3%
<b>Guillain-Barre Syndrome</b>					
DALYs	8	0.50	0.50	0.4%	12.4%
Prevalence	26	1.68	1.68	0.3%	12.4%
YLDs	8	0.50	0.50	0.3%	12.4%
<b>Idiopathic intellectual disability</b>					
DALYs	128	19	11	-39.0%	-19.7%
Prevalence	2,902	420	260	-38.0%	-21.2%
YLDs	128	19	11	-39.0%	-19.7%
<b>Klinefelter syndrome</b>					
DALYs	1	0.03	0.03	2.6%	5.7%
Prevalence	42	4.17	4.36	4.6%	5.5%
YLDs	1	0.03	0.03	2.7%	5.5%

	Counts (thousands)	Age-standardized rate (per 100 000 people)		Percentage change, 1990-2021	
	2021	1990	2021	Estonia	WHO Europe
<b>Meningitis</b>					
DALYs	323	125	25	-79.8%	-80.5%
Deaths	8	1.71	0.45	-73.5%	-75.4%
Prevalence	632	120	43	-63.9%	-66.7%
YLDs	51	9	4	-58.9%	-64.6%
YLLs	273	115	21	-81.5%	-81.3%
<b>Migraine</b>					
DALYs	7,477	529	523	-1.2%	0.0%
Prevalence	180,464	13,084	12,900	-1.4%	0.3%
YLDs	7,477	529	523	-1.2%	0.0%
<b>Motor neuron disease</b>					
DALYs	510	13.11	24.68	88.3%	37.5%
Deaths	19	0.35	0.81	133.6%	54.1%
Prevalence	54	4.02	4.08	1.5%	19.8%
YLDs	11	0.85	0.87	1.5%	19.5%
YLLs	498	12.25	23.81	94.3%	38.5%
<b>Multiple sclerosis</b>					
DALYs	318	46	19	-59.4%	-5.0%
Deaths	8	1.03	0.38	-63.4%	-12.5%
Prevalence	288	17	18	6.3%	26.4%
YLDs	78	4.50	4.78	6.3%	25.5%
YLLs	240	41	14	-66.6%	-22.2%
<b>Nervous system cancer</b>					
DALYs	3,237	151	184	21.3%	-3.3%
Deaths	112	4	5	38.8%	10.8%
Prevalence	249	10	18	83.2%	35.9%
YLDs	41	1.47	2.37	61.6%	25.3%
YLLs	3,196	150	181	20.9%	-3.7%

<b>Neurocysticercosis</b>					
DALYs	475	30.06	23.76	-21.0%	-42.5%
Prevalence	2,205	114.76	108.85	-5.1%	-32.8%
YLDs	475	30.03	23.76	-20.9%	-42.5%
<b>Neurosyphilis</b>					
DALYs	3	0.24	0.13	-45.3%	-43.6%
Prevalence	23	2.13	1.36	-36.2%	-11.7%
YLDs	3	0.24	0.13	-45.2%	-43.4%
<b>Other neurological disorders</b>					
DALYs	2,070	53	125	132.8%	25.8%
Deaths	79	0.79	3.15	298.8%	45.0%
YLDs	366	15	25	70.3%	62.9%
YLLs	1,701	39	100	156.9%	14.2%
<b>Parkinson's disease</b>					
DALYs	2,415	78	76	-3.7%	5.6%
Deaths	150	4.28	4.32	1.1%	4.0%
Prevalence	2,989	110	103	-6.3%	21.9%
YLDs	421	15.53	14.63	-5.8%	21.4%
YLLs	1,994	63	61	-3.2%	2.0%
<b>Spinal cord injury</b>					
DALYs	1,061	112	65	-41.7%	-26.9%
Prevalence	4,097	374	247	-34.0%	-21.9%
YLDs	1,061	112	65	-41.7%	-26.9%

	Counts (thousands)		Age-standardized rate (per 100 000 people)		Percentage change, 1990-2021	
	2021	1990	2021	Estonia	WHO Europe	
<b>Stroke</b>						
DALYs	20,521	3,228	751	-76.7%	-52.6%	
Deaths	1,149	170	36	-79.0%	-55.6%	
Prevalence	17,504	1,112	773	-30.5%	-19.2%	
YLDs	3,238	200	141	-29.4%	-18.9%	
YLLs	17,283	3,028	610	-79.9%	-55.3%	
<b>Tension-type headache</b>						
DALYs	1,350	88.01	87.75	-0.3%	-1.6%	
Prevalence	423,965	30,345	30,336	-0.03%	-0.8%	
YLDs	1,350	88.01	87.75	-0.3%	-1.6%	
<b>Traumatic Brain Injury</b>						
DALYs	1,732	171	94	-44.7%	-28.2%	
Prevalence	11,969	1,159	644	-44.5%	-28.0%	
YLDs	1,732	171	94	-44.7%	-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.

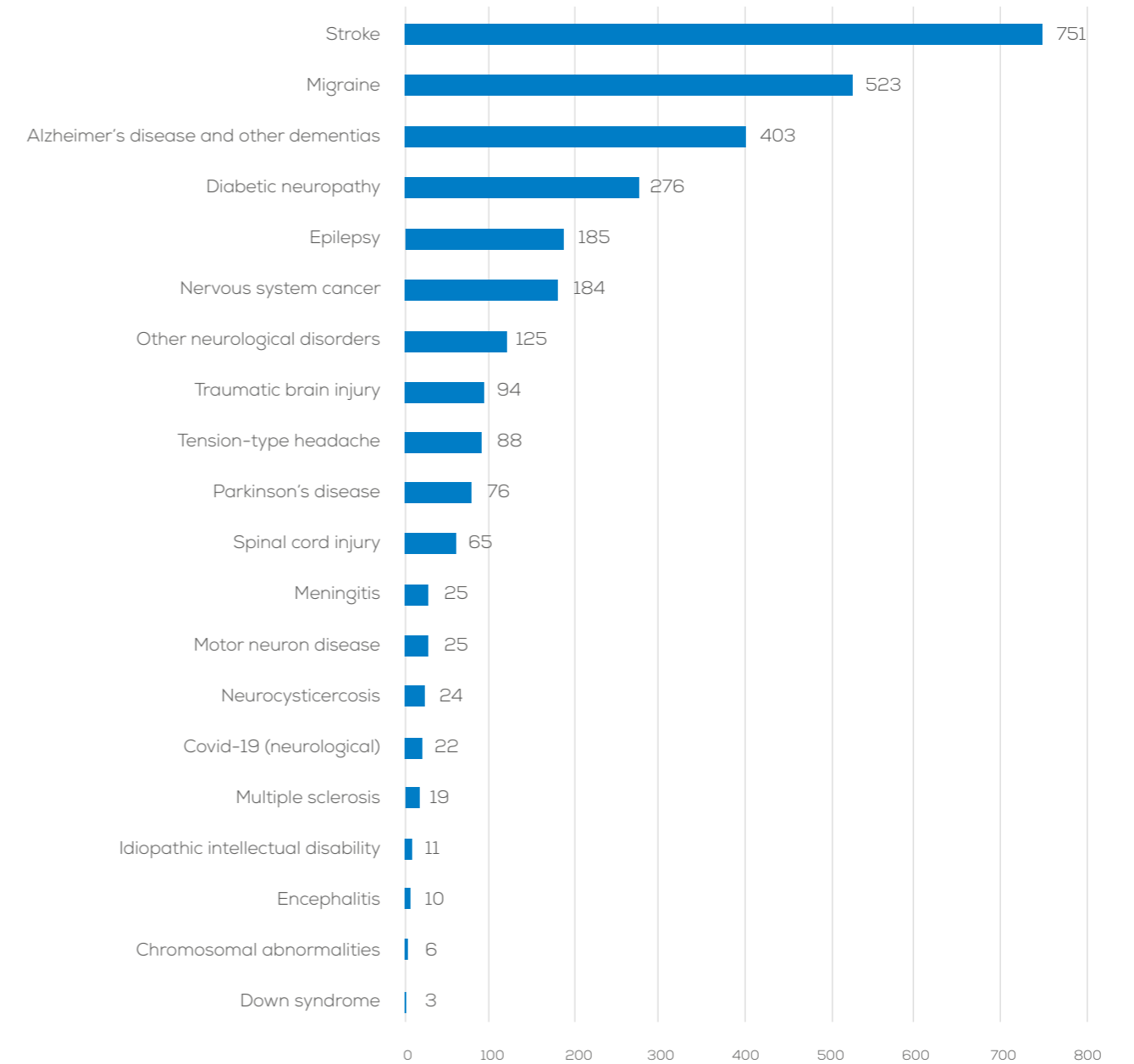


Figure 1: National age-standardised DALYs per 100 000 population by neurological disorder in 2021.

## DALYs per 100 000 population

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

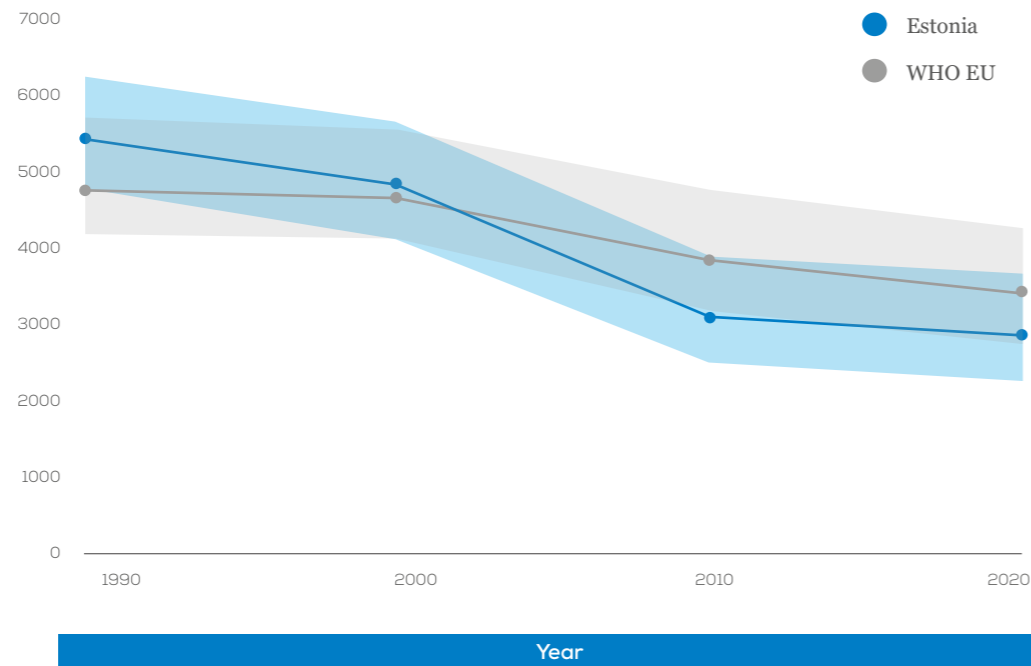


Figure 2: Age-Standardized DALYs per 100 000 population over the last 3 decades.

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

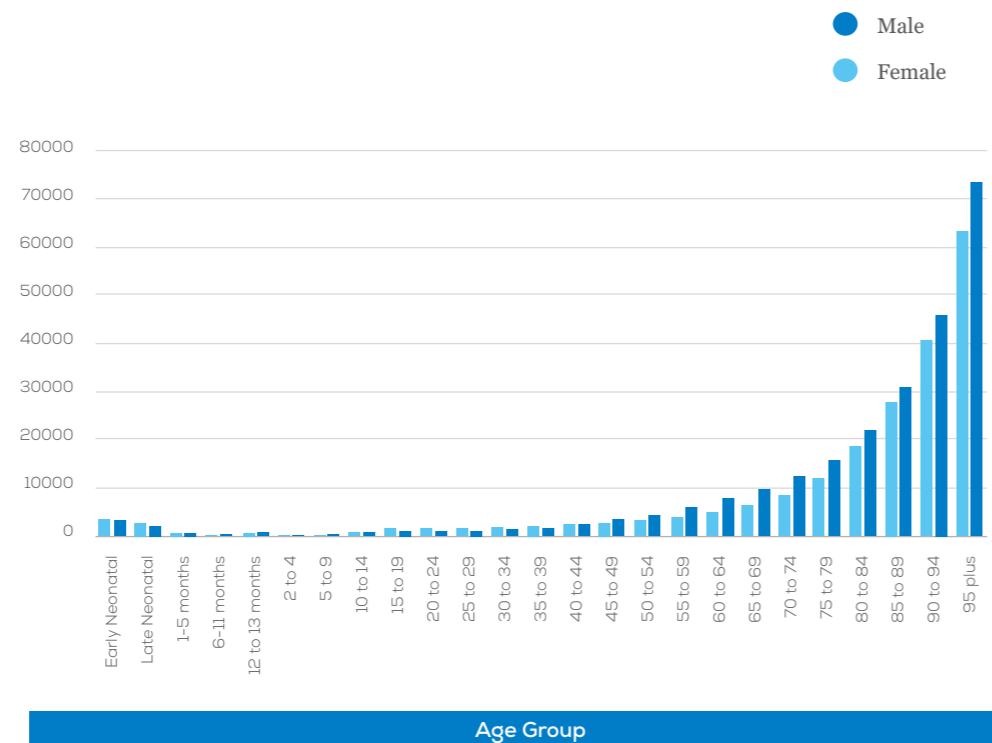


Figure 3: National DALYs per 100 000 population by age group and sex in 2021.

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 **Estonia** 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

	Total Costs	Direct Costs	Informal Care Costs	Indirect Costs
<b>Neurological Disorder</b>				
Headache disorders	870.5	387.3	140.4	342.8
Sleep disorders	586.4	304.3	-	282.0
Alzheimer's disease and other dementias	377.7	263.0	114.6	0.1
Traumatic brain injury	108.5	42.0	25.4	41.1
Stroke	62.8	35.0	19.2	8.6
Polyneuropathies	50.3	26.4	-	23.9
Idiopathic epilepsy	20.7	5.7	-	15.0
Parkinson's disease	16.9	11.2	4.5	1.1
Multiple sclerosis	4.3	2.5	0.6	1.3
Brain and central nervous system cancer	1.3	0.8	0.5	-
Meningitis	0.6	0.6	-	-
Motor neuron disease	0.4	0.2	0.1	0.1
<b>Total Costs:</b>	<b>2,100.2</b>	<b>1,079.0</b>	<b>305.2</b>	<b>716.0</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.

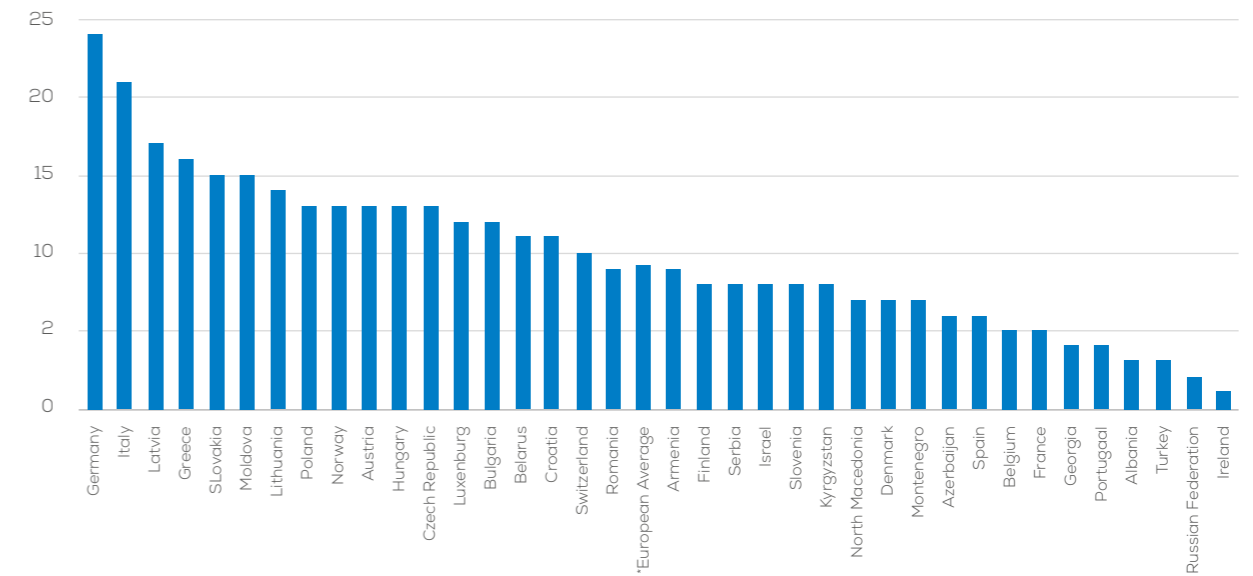


Figure 4: Number of neurologists (fully specialised and in training) per 100 000 population.

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

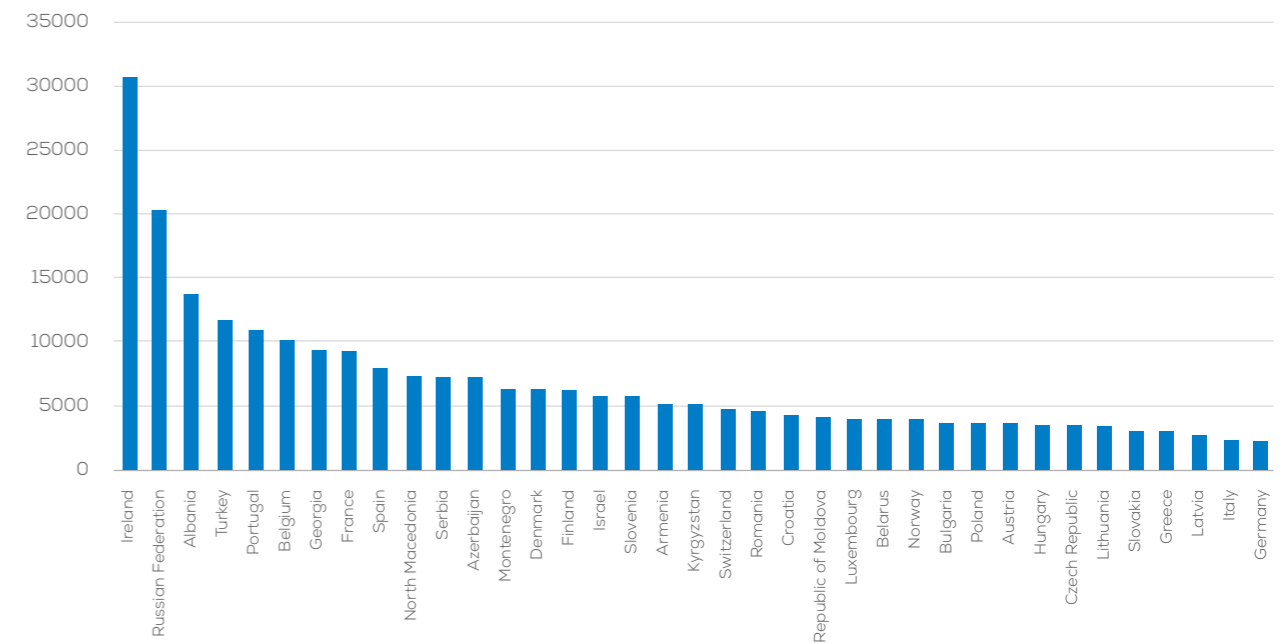
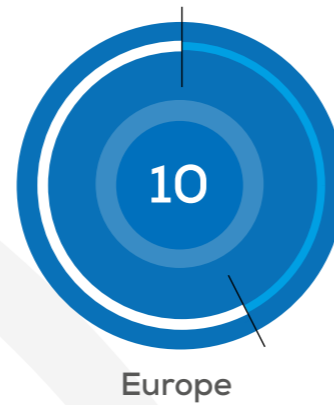


Figure 5: Number of patients per neurologist (fully specialised and in training).

# Neurological Diseases in Europe and Estonia:

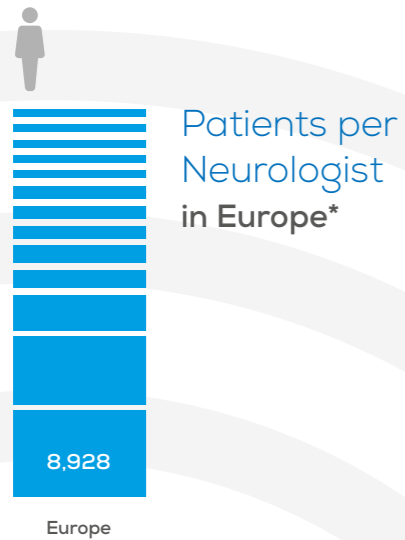
Key Data and Trends from 2021

Neurologists per 100,000 population in Europe\*



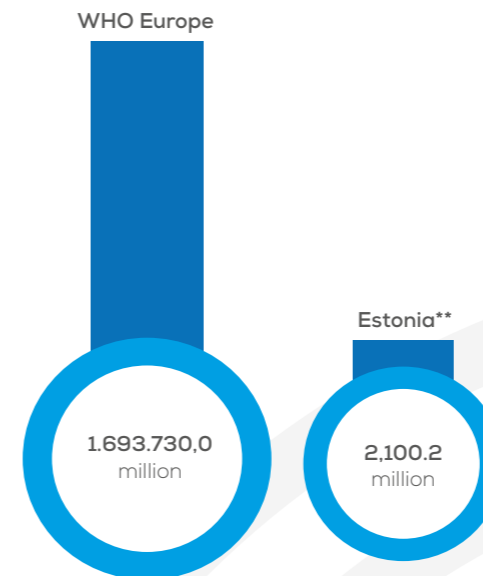
Estonia 608,769  
WHO Europe 449.278.770

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



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

	WHO Europe	vs	Estonia
DALYs	-28.98%		-46.86%
Deaths	-43.19%		-64.21%
Prevalence	0.34%		-0.09%

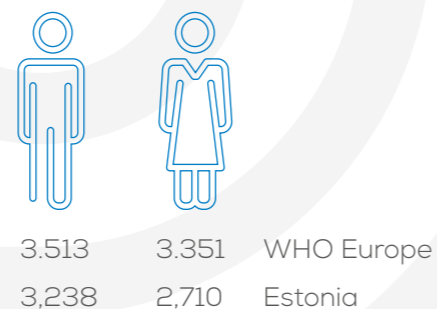


Annual total costs (in million € PPP 2019) for 12 major neurological diseases:

Most prevalent neurological diseases in Estonia in

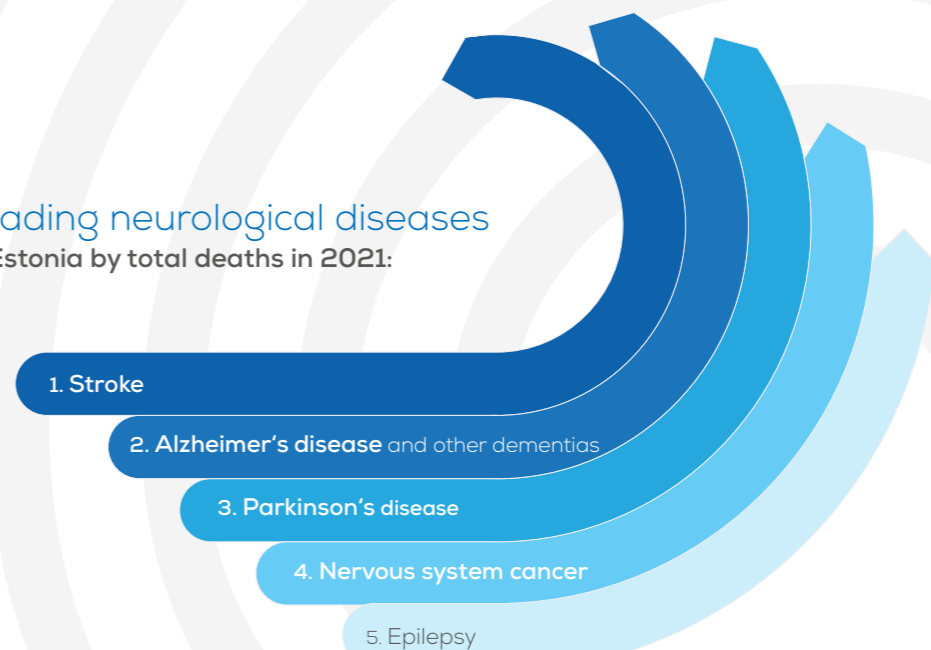
# 2021

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



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

Leading neurological diseases in Estonia 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.

