

EAN Fact Sheet

Country profile of Finland

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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)	1990	2021	Finland	WHO Europe
All Neurological Disorders					
DALYs	290,994	3,846	2,877	-25.2%	-29.0%
Deaths	11,428	124	73	-41.1%	-43.2%
Prevalence	2,810,068	45,785	45,894	0.2%	0.3%
YLDs	132,454	1,597	1,631	2.1%	2.9%
YLLs	158,531	2,249	1,246	-44.6%	-44.4%
Alzheimer's disease and other dementias					
DALYs	71,276	477	438	-8.1%	-2.5%
Deaths	4,590	28	26	-7.1%	-2.8%
Prevalence	95,436	691	617	-10.7%	-2.1%
YLDs	19,800	142	127	-10.9%	-2.6%
YLLs	51,476	334	311	-6.9%	-2.5%
Chromosomal abnormalities					
DALYs	346	10.50	8.61	-18.0%	-12.3%
Prevalence	3,731	117	95	-18.7%	-12.8%
YLDs	346	10.50	8.61	-18.0%	-12.4%
Covid-19 (neurological)					
DALYs	351	-	6	-	-
Prevalence	3,214	-	52	-	-
YLDs	351	-	6	-	-
Diabetic neuropathy					
DALYs	26,524	136	260	90.3%	98.1%
Prevalence	212,507	1,084	2,062	90.2%	97.9%
YLDs	26,524	136	260	90.3%	98.1%
Down syndrome					
DALYs	225	7	5	-25.4%	-19.6%
Prevalence	2,391	77	57	-26.6%	-20.7%
YLDs	225	7	5	-25.3%	-19.8%

Encephalitis					
DALYs	466	6	7	26.2%	-30.1%
Deaths	15	0.09	0.15	60.7%	-15.9%
Prevalence	920	15	13	-9.3%	-13.6%
YLDs	92	1.55	1.44	-6.9%	-12.0%
YLLs	374	4	6	39.0%	-31.0%
Epilepsy					
DALYs	8,224	137	132	-4.0%	-12.6%
Deaths	126	115	1.35	16.7%	3.9%
Prevalence	20,456	308	336	9.3%	3.3%
YLDs	4,784	86	79	-8.0%	-11.3%
YLLs	3,440	51	53	2.8%	-14.3%
Guillain-Barre Syndrome					
DALYs	24	0.32	0.36	9.9%	12.4%
Prevalence	81	1.09	1.20	10.1%	12.4%
YLDs	24	0.32	0.36	10.0%	12.4%
Idiopathic intellectual disability					
DALYs	782	20	16	-19.2%	-19.7%
Prevalence	16,238	418	333	-20.4%	-21.2%
YLDs	782	20	16	-19.2%	-19.7%
Klinefelter syndrome					
DALYs	3	0.04	0.04	2.4%	5.7%
Prevalence	223	5.21	5.42	4.1%	5.5%
YLDs	3	0.04	0.04	2.5%	5.5%

	Counts (thousands)		Age-standardized rate (per 100 000 people)		Percentage change, 1990-2021	
	2021	1990	2021	Finland	WHO Europe	
Meningitis						
DALYs	833	56	16	-70.9%	-80.5%	
Deaths	25	0.97	0.30	-68.6%	-75.4%	
Prevalence	1,032	41	16	-59.4%	-66.7%	
YLDs	83	3.50	1.46	-58.2%	-64.6%	
YLLs	750	53	15	-71.8%	-81.3%	
Migraine						
DALYs	36,012	654	650	-0.6%	0.0%	
Prevalence	959,038	17,570	17,478	-0.5%	0.3%	
YLDs	36,012	654	650	-0.6%	0.0%	
Motor neuron disease						
DALYs	5,875	51.66	58.07	12.4%	37.5%	
Deaths	257	1.75	2.14	22.6%	54.1%	
Prevalence	990	11.79	11.16	-5.3%	19.8%	
YLDs	210	2.50	2.37	-5.2%	19.5%	
YLLs	5,665	49.16	55.70	13.3%	38.5%	
Multiple sclerosis						
DALYs	3,548	40	44	9.3%	-5.0%	
Deaths	74	0.70	0.74	6.4%	-12.5%	
Prevalence	6,262	66	82	24.9%	26.4%	
YLDs	1,550	17	21	23.1%	25.5%	
YLLs	1,998	23	23	-0.6%	-22.2%	
Nervous system cancer						
DALYs	10,610	165	138	-16.3%	-3.3%	
Deaths	380	4.45	3.82	-14.1%	10.8%	
Prevalence	5,367	51	72	40.7%	35.9%	
YLDs	472	4.71	5.91	25.7%	25.3%	
YLLs	10,138	160	132	-17.6%	-3.7%	

Neurosyphilis						
DALYs	1	0.02	0.02	-17.7%	-43.6%	
Prevalence	27	0.48	0.41	-14.9%	-11.7%	
YLDs	1	0.02	0.02	-17.8%	-43.4%	
Other neurological disorders						
DALYs	10,215	89	124	39.9%	25.8%	
Deaths	403	1.89	3.43	81.6%	45.0%	
YLDs	1,432	13	23	72.3%	62.9%	
YLLs	8,774	75	101	34.3%	14.2%	
Parkinson's disease						
DALYs	13,844	77	92	20.4%	5.6%	
Deaths	801	4.23	4.99	18.1%	4.0%	
Prevalence	21,580	101	152	50.4%	21.9%	
YLDs	2,998	14	21	50.3%	21.4%	
YLLs	10,845	63	71	13.5%	2.0%	
Spinal cord injury						
DALYs	8,044	135	113	-16.2%	-26.9%	
Prevalence	29,623	469	407	-13.4%	-21.9%	
YLDs	8,044	135	113	-16.2%	-26.9%	
Stroke						
DALYs	83,839	1,634	634	-61.2%	-52.6%	
Deaths	4,757	81	30	-62.8%	-55.6%	
Prevalence	126,865	1,422	1,110	-21.9%	-19.2%	
YLDs	18,770	199	156	-21.5%	-18.9%	
YLLs	65,069	1,435	477	-66.7%	-55.3%	

	Counts (thousands)		Age-standardized rate (per 100 000 people)		Percentage change, 1990-2021	
	2021	1990	2021	Finland	WHO Europe	
Tension-type headache						
DALYs	4,336	69.38	69.26	-0.2%	-1.6%	
Prevalence	1,917,833	32,424	32,383	-0.1%	-0.8%	
YLDs	4,336	69.38	69.26	-0.2%	-1.6%	
Traumatic Brain Injury						
DALYs	5,615	81	65	-19.5%	-28.2%	
Prevalence	43,034	611	492	-19.5%	-28.0%	
YLDs	5,615	81	65	-19.5%	-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.

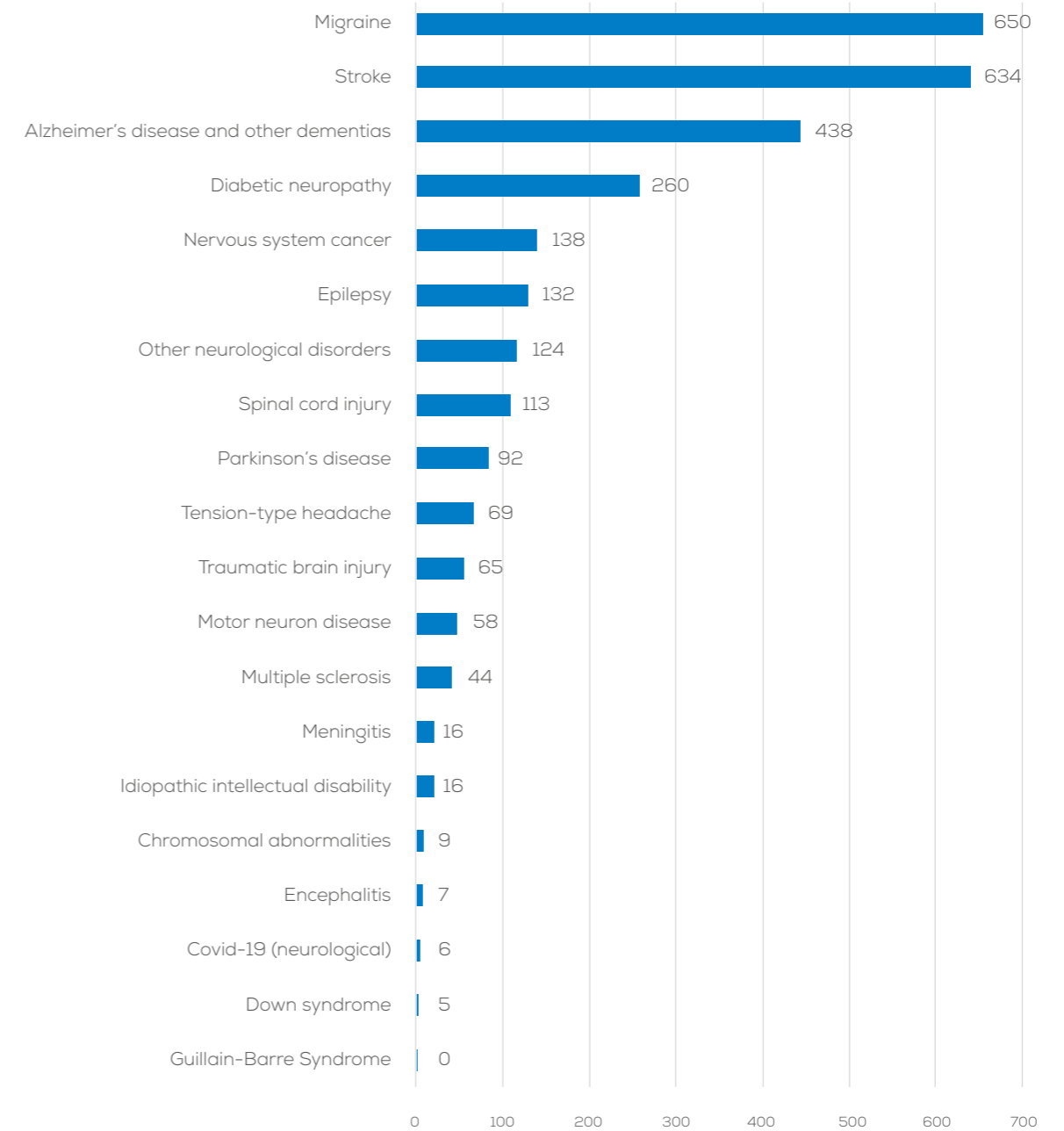


Figure 1: National age-standardised DALYs per 100 000 population by neurological disorder in 2021.

DALYs per 100 000 population

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

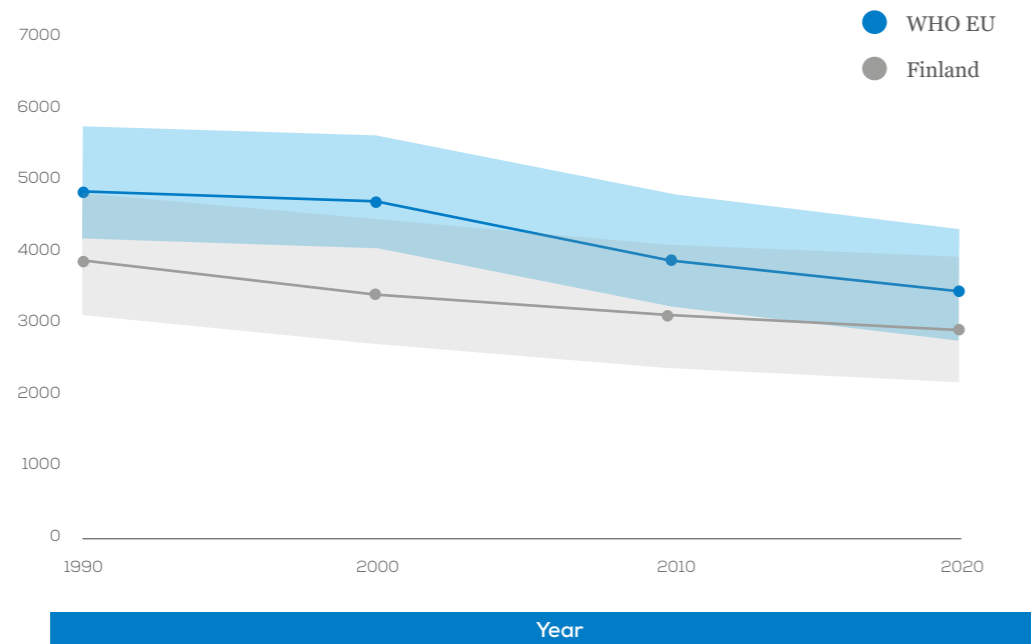


Figure 2: Age-Standardized DALYs per 100 000 population over the last 3 decades.

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

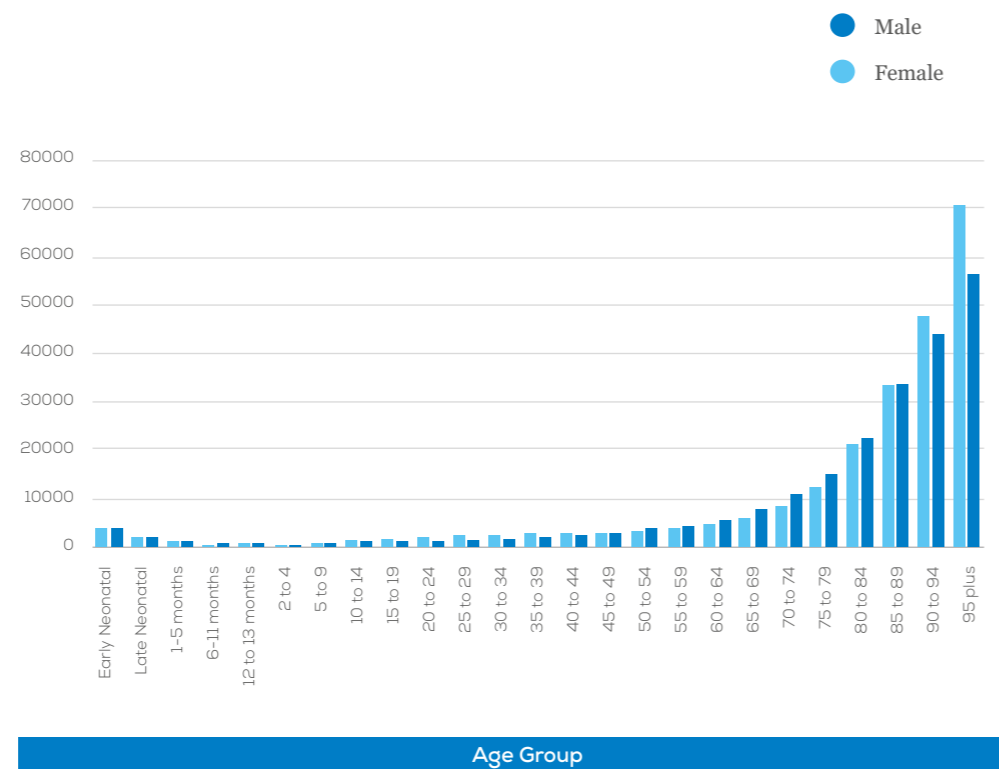


Figure 3: National DALYs per 100 000 population by age group and sex in 2021.

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 **Finland** 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
Headache disorders	6,506.7	2,394.7	868.4	3,243.6
Sleep disorders	5,620.0	2,401.4	-	3,218.6
Alzheimer's disease and other dementias	2,792.0	1,333.5	1,457.8	0.7
Stroke	1,055.5	901.4	88.7	65.4
Traumatic brain injury	849.5	448.1	133.7	267.7
Polyneuropathies	481.5	202.7	-	278.8
Multiple sclerosis	211.0	106.5	31.2	73.3
Parkinson's disease	157.7	104.8	42.1	10.7
Idiopathic epilepsy	140.0	57.2	-	82.9
Brain and central nervous system cancer	13.3	8.0	5.2	-
Motor neuron disease	11.7	6.4	3.4	1.8
Meningitis	1.9	1.9	-	-
Total Costs:	17,840.8	7,966.8	2,630.6	7,243.4

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.

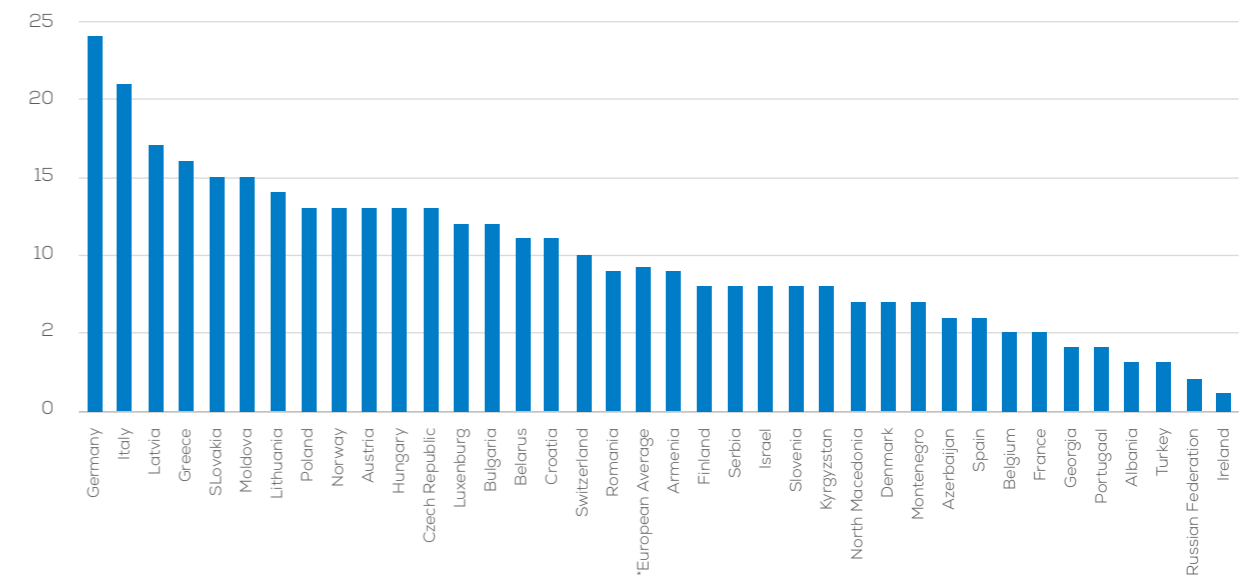


Figure 4: Number of neurologists (fully specialised and in training) per 100 000 population.

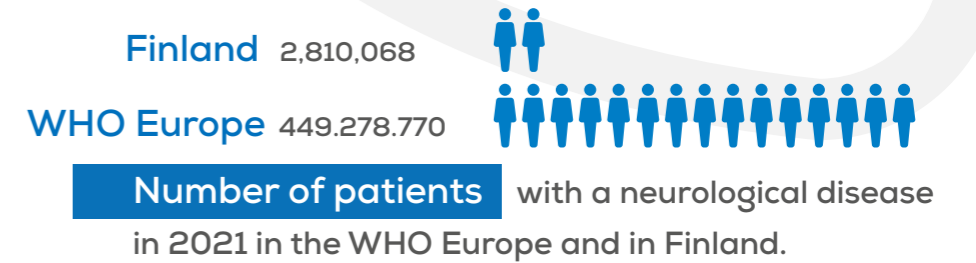
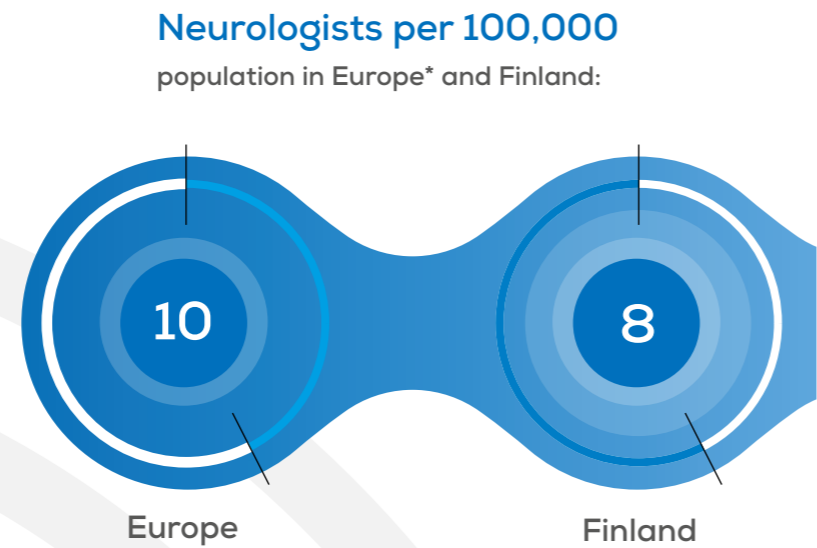
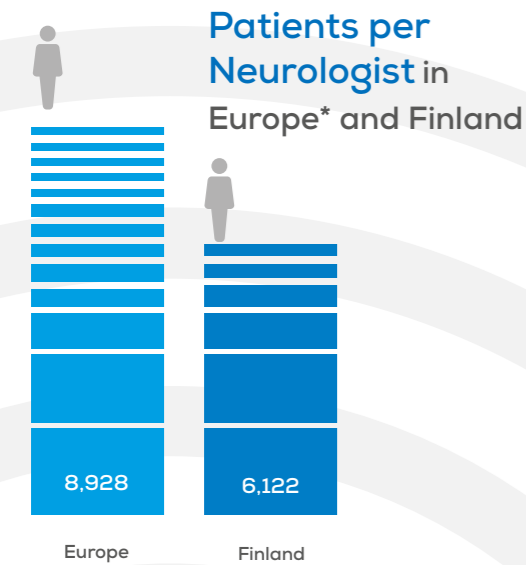
In the last figure the number of patients per neurologist is displayed:



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

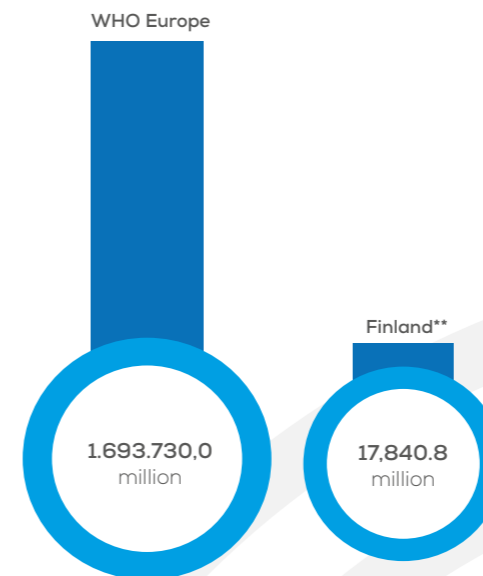
Neurological Diseases in Europe and Finland:

Key Data and Trends from 2021



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

	WHO Europe	vs	Finland
DALYs	-28.98%		-25.20%
Deaths	-43.19%		-41.08%
Prevalence	0.34%		0.24%



Most prevalent neurological diseases in Finland 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

	WHO Europe	Finland
Male	3,513	2,861
Female	3,351	2,902

Leading neurological diseases in Finland by total deaths in 2021:

1. Stroke
2. Alzheimer's disease and other dementias
3. Parkinson's disease
4. Nervous system cancer
5. Motor neuron disease

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

