

# EAN Fact Sheet

Country profile of Denmark

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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)		Denmark	WHO Europe
	2021	1990	2021		
<b>All Neurological Disorders</b>					
DALYs	233,923	3,337	2,415	-27.6%	-29.0%
Deaths	9,548	112	70	-37.0%	-43.2%
Prevalence	2,825,579	45,152	44,602	-1.2%	0.3%
YLDs	96,995	1,282	1,254	-2.2%	2.9%
YLLs	136,917	2,055	1,161	-43.5%	-44.4%
<b>Alzheimer's disease and other dementias</b>					
DALYs	53,947	403	385	-4.3%	-2.5%
Deaths	3,511	23	24	3.9%	-2.8%
Prevalence	64,492	587	475	-19.1%	-2.1%
YLDs	13,490	121	99	-18.4%	-2.6%
YLLs	40,457	282	287	1.8%	-2.5%
<b>Chromosomal abnormalities</b>					
DALYs	342	9.05	7.85	-13.3%	-12.3%
Prevalence	3,802	102	88	-13.8%	-12.8%
YLDs	342	9.05	7.85	-13.3%	-12.4%
<b>Covid-19 (neurological)</b>					
DALYs	636	-	10	-	-
Prevalence	5,733	-	87	-	-
YLDs	636	-	10	-	-
<b>Diabetic neuropathy</b>					
DALYs	10,985	46	106	129.3%	98.1%
Prevalence	84,397	356	814	128.3%	97.9%
YLDs	10,985	46	106	129.3%	98.1%
<b>Down syndrome</b>					
DALYs	230	6.21	4.98	-19.8%	-19.6%
Prevalence	2,544	70	56	-20.0%	-20.7%
YLDs	230	6.21	4.98	-19.7%	-19.8%

<b>Encephalitis</b>					
DALYs	392	1	6	605.3%	-30.1%
Deaths	14	0.01	0.14	2659.9%	-15.9%
Prevalence	379	5.59	5.42	-3.1%	-13.6%
YLDs	38	0.58	0.58	0.7%	-12.0%
YLLs	354	0.23	5.14	2119.0%	-31.0%
<b>Epilepsy</b>					
DALYs	7,648	118	112	-5.5%	-12.6%
Deaths	135	1.00	1.38	37.7%	3.9%
Prevalence	17,317	270	266	-1.5%	3.3%
YLDs	4,124	74	64	-14.4%	-11.3%
YLLs	3,524	44	48	9.6%	-14.3%
<b>Guillain-Barre Syndrome</b>					
DALYs	29	0.27	0.39	44.8%	12.4%
Prevalence	96	0.91	1.31	44.5%	12.4%
YLDs	29	0.27	0.39	44.6%	12.4%
<b>Idiopathic intellectual disability</b>					
DALYs	109	2.96	2.01	-32.1%	-19.7%
Prevalence	2,585	69	48	-30.5%	-21.2%
YLDs	109	2.96	2.01	-32.3%	-19.7%
<b>Klinefelter syndrome</b>					
DALYs	3	0.03	0.03	5.1%	5.7%
Prevalence	207	4.28	4.49	5.0%	5.5%
YLDs	3	0.03	0.03	5.2%	5.5%

	Counts	Age-standardized rate		Percentage change, 1990-2021	
	(thousands)	(per 100 000 people)		Denmark	WHO Europe
	2021	1990	2021		
<b>Meningitis</b>					
DALYs	1,408	120	25	-79.0%	-80.5%
Deaths	44	2.02	0.51	-74.8%	-75.4%
Prevalence	1,281	72	20	-72.7%	-66.7%
YLDs	105	6	2	-70.0%	-64.6%
YLLs	1,302	114	24	-79.4%	-81.3%
<b>Migraine</b>					
DALYs	34,567	567	581	2.5%	0.0%
Prevalence	906,327	15,004	15,422	2.8%	0.3%
YLDs	34,567	567	581	2.5%	0.0%
<b>Motor neuron disease</b>					
DALYs	4,400	40.88	43.41	6.2%	37.5%
Deaths	192	1.29	1.63	26.8%	54.1%
Prevalence	966	9.26	10.56	14.1%	19.8%
YLDs	205	1.97	2.24	14.0%	19.5%
YLLs	4,195	38.91	41.16	5.8%	38.5%
<b>Multiple sclerosis</b>					
DALYs	5,525	70	66	-5.7%	-5.0%
Deaths	127	1.35	1.23	-8.5%	-12.5%
Prevalence	8,751	102	115	13.5%	26.4%
YLDs	2,188	26	29	13.0%	25.5%
YLLs	3,337	44	37	-16.7%	-22.2%
<b>Nervous system cancer</b>					
DALYs	13,598	175	160	-8.2%	-3.3%
Deaths	509	4.64	4.90	5.6%	10.8%
Prevalence	7,434	51	91	77.7%	35.9%
YLDs	653	5	8	57.9%	25.3%
YLLs	12,945	170	153	-10.0%	-3.7%

<b>Neurosyphilis</b>					
DALYs	1	0.01	0.01	12.1%	-43.6%
Prevalence	16	0.27	0.22	-18.6%	-11.7%
YLDs	1	0.01	0.01	12.1%	-43.4%
<b>Other neurological disorders</b>					
DALYs	4,554	57	60	4.2%	25.8%
Deaths	138	1.11	1.28	15.8%	45.0%
YLDs	1,335	13	20	57.8%	62.9%
YLLs	3,209	45	40	-11.2%	14.2%
<b>Parkinson's disease</b>					
DALYs	11,424	61	84	36.4%	5.6%
Deaths	655	3	5	36.5%	4.0%
Prevalence	17,647	81	136	66.9%	21.9%
YLDs	2,503	12	19	67.2%	21.4%
YLLs	8,920	50	64	29.2%	2.0%
<b>Spinal cord injury</b>					
DALYs	5,631	100	79	-20.6%	-26.9%
Prevalence	20,496	349	284	-18.8%	-21.9%
YLDs	5,631	100	79	-20.6%	-26.9%
<b>Stroke</b>					
DALYs	70,252	1,427	568	-60.2%	-52.6%
Deaths	4,224	74	31	-58.5%	-55.6%
Prevalence	79,025	1,144	745	-34.9%	-19.2%
YLDs	11,585	159	105	-33.9%	-18.9%
YLLs	58,667	1,268	463	-63.5%	-55.3%

	Counts (thousands)		Age-standardized rate (per 100 000 people)		Percentage change, 1990-2021	
	2021	1990	2021	Denmark	WHO Europe	
<b>Tension-type headache</b>						
DALYs	4,633	71	70	-0.9%	-1.6%	
Prevalence	2,116,006	34,637	33,765	-2.5%	-0.8%	
YLDs	4,633	71	70	-0.9%	-1.6%	
<b>Traumatic Brain Injury</b>						
DALYs	3,605	62	44	-29.3%	-28.2%	
Prevalence	27,428	468	329	-29.5%	-28.0%	
YLDs	3,605	62	44	-29.3%	-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.

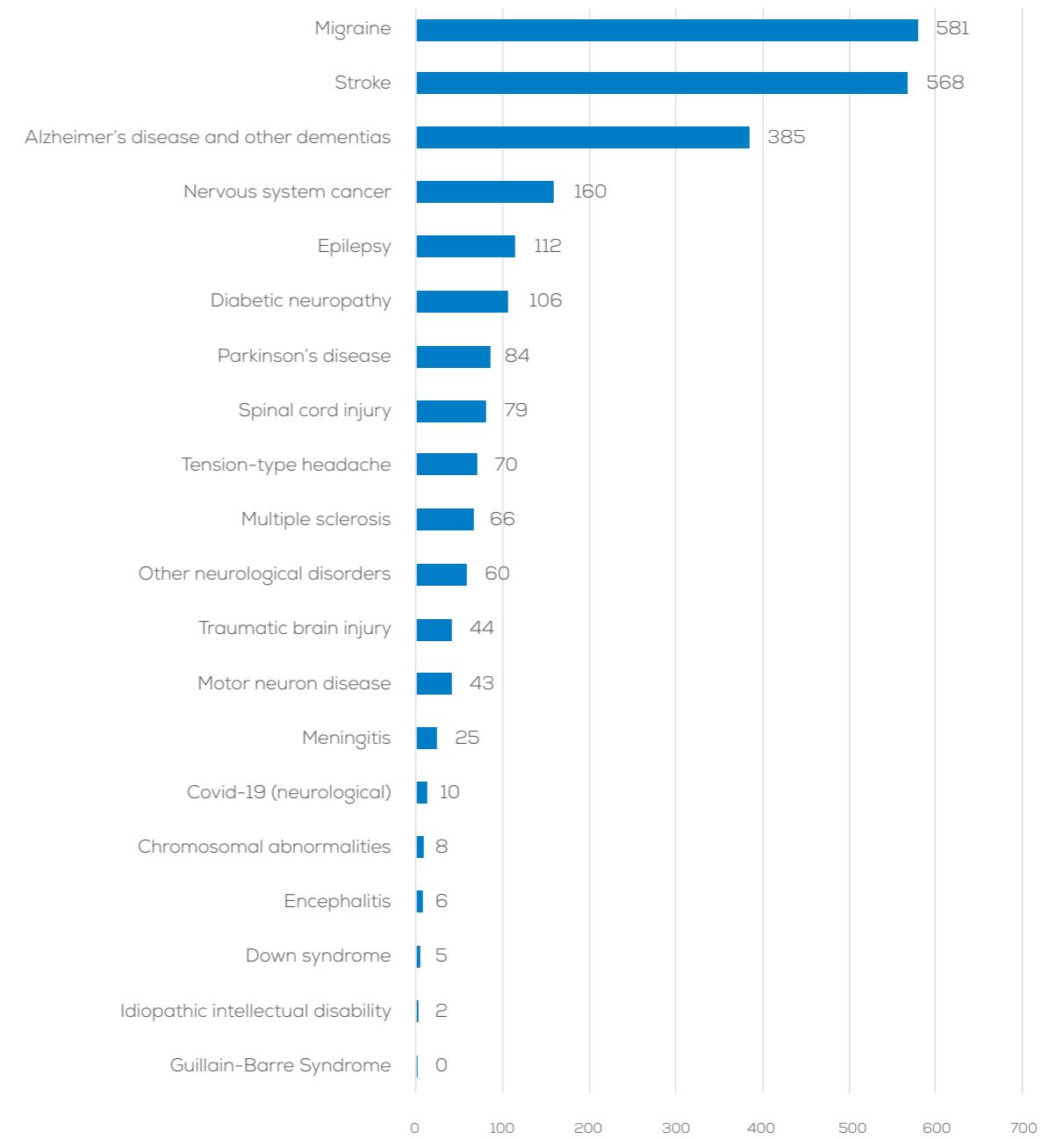


Figure 1: National age-standardised DALYs per 100 000 population by neurological disorder in 2021.

## DALYs per 100 000 population

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

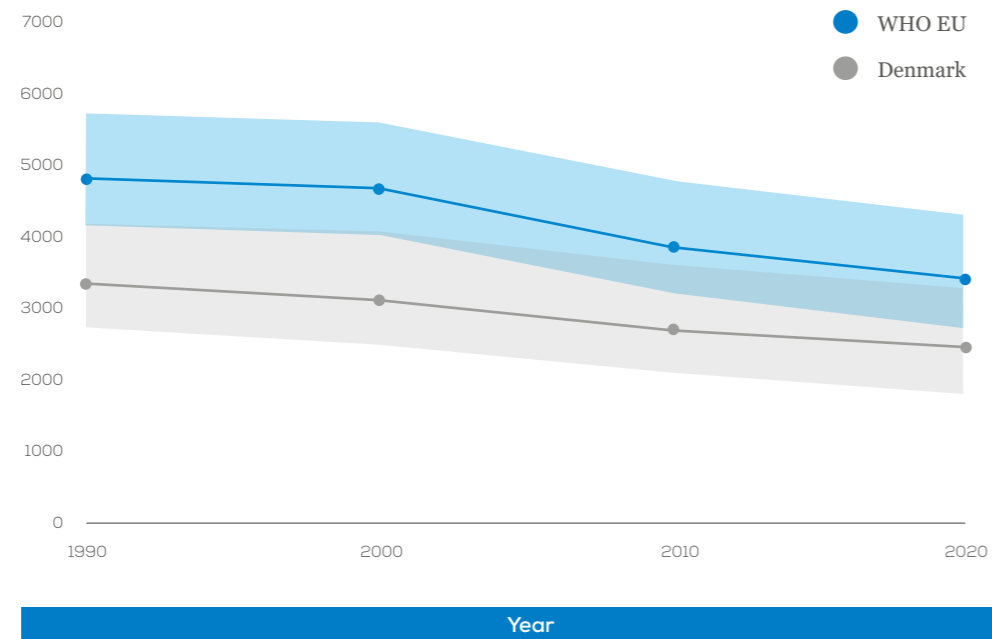


Figure 2: Age-Standardized DALYs per 100 000 population over the last 3 decades.

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

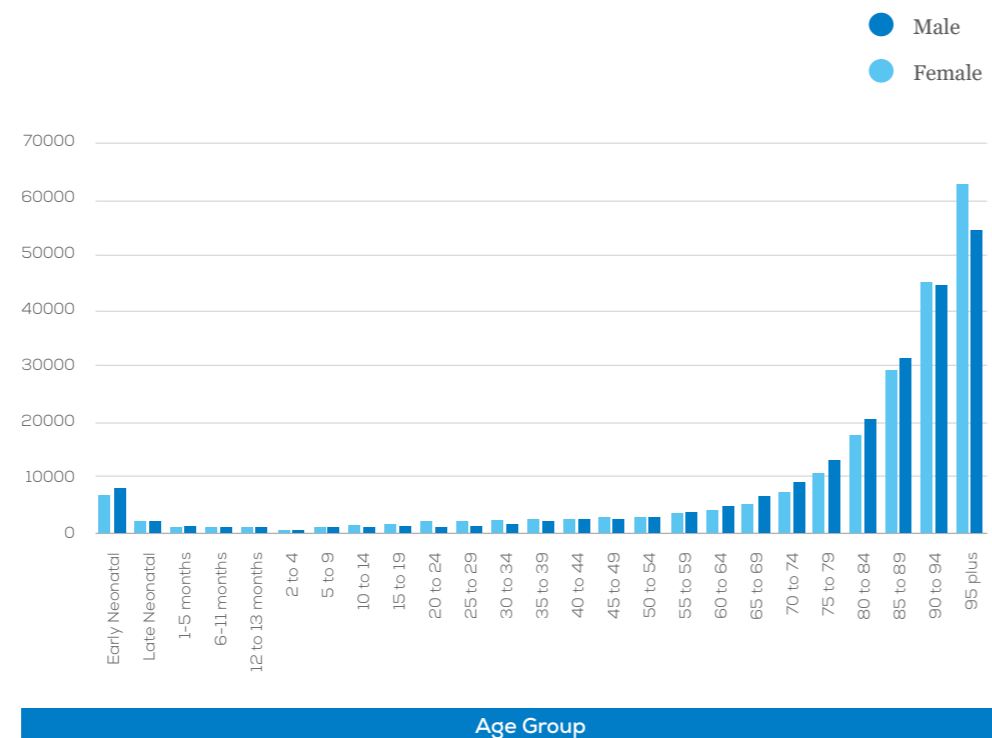


Figure 3: National DALYs per 100 000 population by age group and sex in 2021.

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 **Denmark** 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	9,578.7	4,335.6	985.9	4,257.2
Sleep disorders	7,810.4	4,204.7	-	3,605.7
Alzheimer's disease and other dementias	2,285.7	784.2	1,497.9	3.6
Stroke	735.3	406.7	124.9	203.7
Traumatic brain injury	389.3	86.9	92.3	210.1
Polyneuropathies	368.6	145.0	-	223.7
Multiple sclerosis	202.9	105.5	22.4	74.9
Idiopathic epilepsy	173.9	73.8	-	100.1
Parkinson's disease	173.7	129.5	40.8	3.4
Brain and central nervous system cancer	20.5	12.4	8.1	-
Motor neuron disease	15.1	10.0	3.6	1.5
Meningitis	3.1	3.1	-	-
<b>Total Costs:</b>	<b>21,757.1</b>	<b>10,297.4</b>	<b>2,775.9</b>	<b>8,683.9</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.

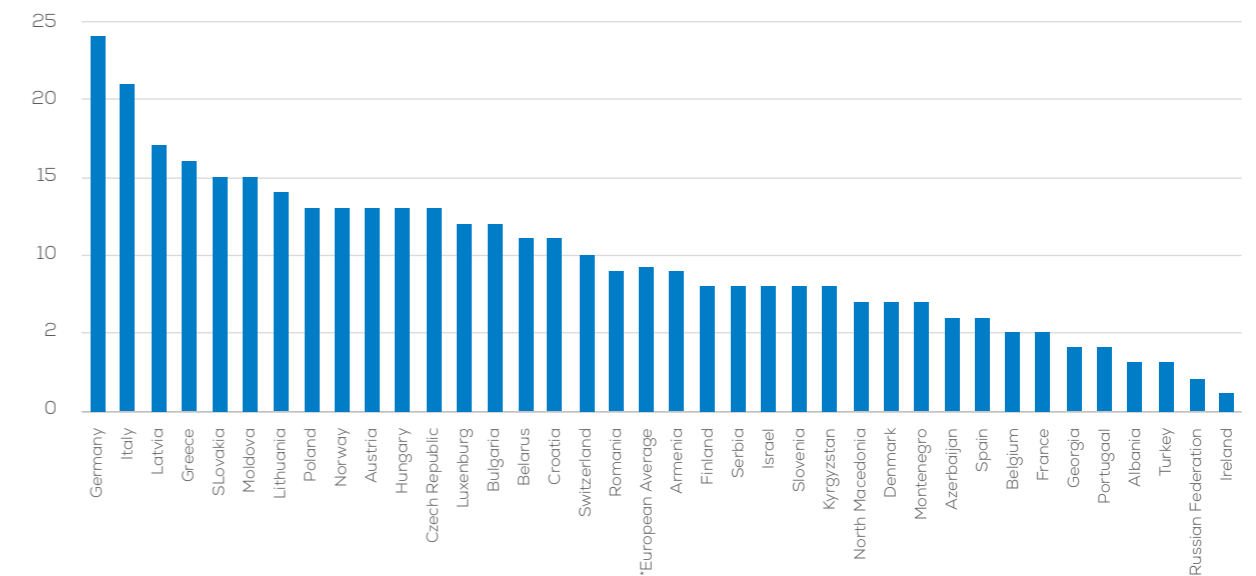


Figure 4: Number of neurologists (fully specialised and in training) per 100 000 population.

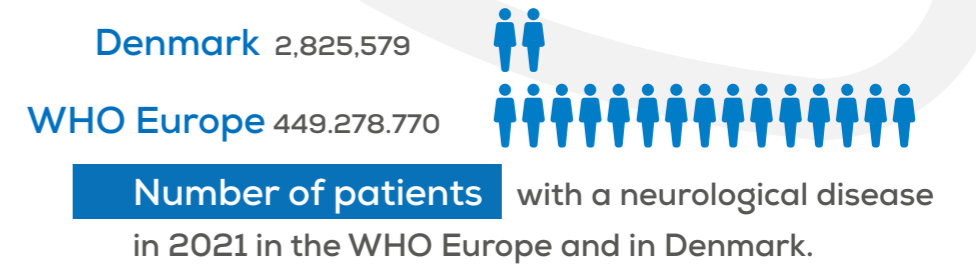
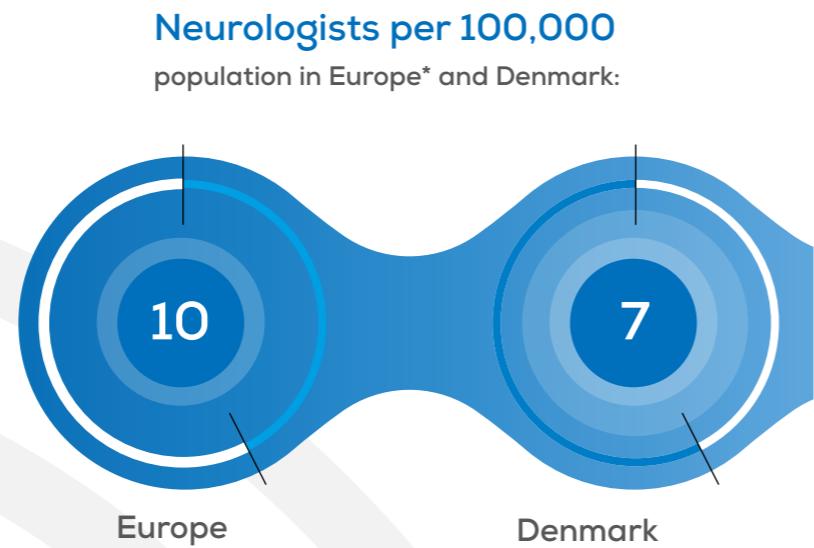
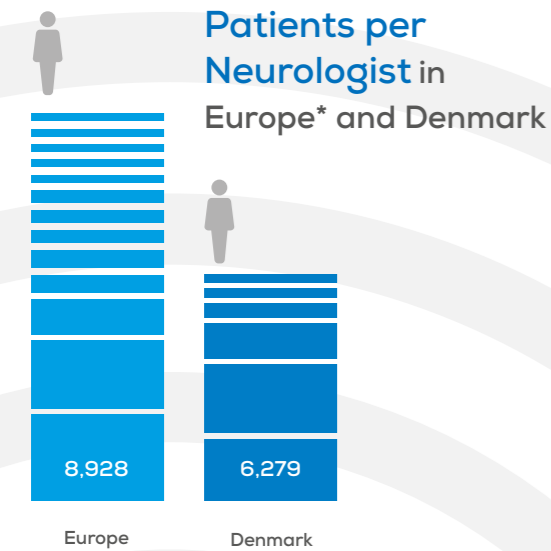
In the last figure the number of patients per neurologist is displayed:



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

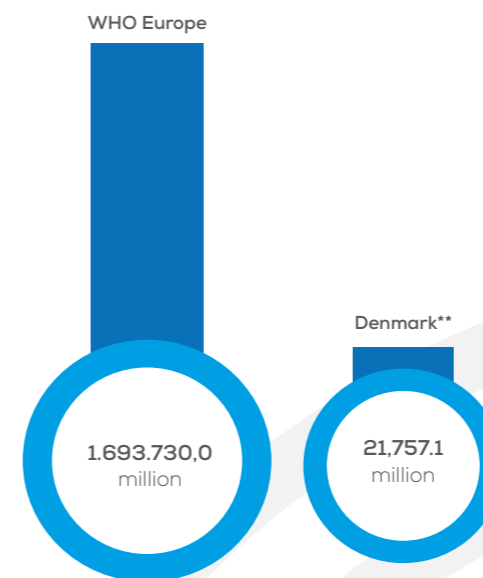
# Neurological Diseases in Europe and Denmark:

Key Data and Trends from 2021



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

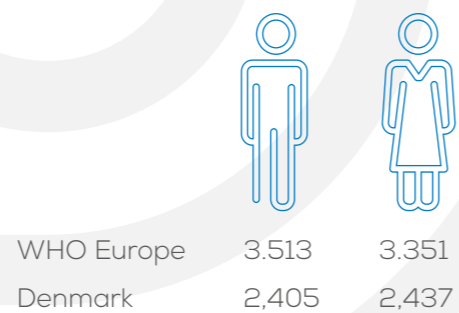
	WHO Europe	vs	Denmark
DALYs	-28.98%		-27.63%
Deaths	-43.19%		-37.01%
Prevalence	0.34%		-1.22%



### Most prevalent neurological diseases in Denmark in

# 2021

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



### Leading neurological diseases in Denmark 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.

