3.23 Central nervous system

Table 3.23.1
Overview of key epidemiological parameters for Germany, ICD-10 C70–C72

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	3,900	3,180	3,960	3,220	4,200	3,400
Crude incidence rate[1]	10.0	7.7	10.1	7.8	10.5	8.2
Standardised incidence rate[1,2]	8.0	5.6	7.9	5.6	8.0	5.6
Median age at diagnosis	62	66	63	66		
Deaths	3,124	2,623	3,293	2,591		
Crude mortality rate[1]	8.0	6.4	8.4	6.3		
Standardised mortality rate[1,2]	6.0	4.1	6.1	4.0		
5-year prevalence	6,900	5,400	6,900	5,300		
		after 5 years		*after 10 years*		
Absolute survival rate (2011–2012)[3]	19 (14–25)	21 (16–26)	13 (3–21)	17 (12–21)		
Relative survival rate (2011–2012)[3]	21 (14–27)	22 (17–28)	15 (4–24)	19 (13–23)		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

Cancers of the central nervous system (CNS) predominantly affect the brain, including the brain stem. The remaining 5% are cancers of the meninges, cranial nerves, and the spinal nerves in the cauda equina. Malignant neoplasms of the central nervous system originate from glial cells, nerve sheaths and meninges. Histologically, approximately two thirds are accounted for by glioblastomas, as well as astrocytomas in particular (15%) and other gliomatous tumours.

In 2012 nearly 7,200 people developed cancer of the central nervous system in Germany, of whom around 3,200 were women and 4,000 men. Men show higher incidence and mortality rates in all age groups than women and have a median age at diagnosis of 63 years, 3 years younger than for women with 66 years, though CNS tumours eventually occur at earlier age – even during their first years – in both sexes as well.

Following increases in mortality rates through the 1980s to the mid-1990s, especially among the more advanced age groups, no major changes of the rates are seen since the millennium in Germany. However, with the demographic change, the absolute number of malignant neoplasms occurring in men has continued to rise, significantly steeper than in women.

The relative 5-year survival rates for patients with cancer of the central nervous system have improved slightly and are currently at 21% and 22% respectively, although for example survival with glioblastomas of the brain is at 8% considerably worse.

Risk factors

The causes of the various brain tumours are still largely unclear. The only exceptions are the rare hereditary tumour syndromes, which are associated with a significantly higher risk of brain tumours. Following therapeutic radiation of the scalp in childhood (from 1910–late 1950s due to tinea capitis) there is a slightly higher risk of developing a brain tumour after a long period of latency. Computed tomography during childhood may also marginally increase the risk of a brain tumour. In contrast, there is no indication from available data that either the use of ionising radiation in diagnostic imaging procedures as for x-ray of the teeth causes any discernible risk.

Further, current thinking is that neither environmental factors nor electromagnetic radiation (mobile telephones) contribute to an increased risk. There is similarly no evidence that viruses or toxic substances cause brain tumours in humans. First-degree relatives of patients with brain tumours have a slightly higher risk to develope a brain tumour themselves. Genetic mutations are presumably also involved in this marginal familial increased risk.

Figure 3.23.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C70–C72, Germany 1999–2012
per 100,000 (European standard)

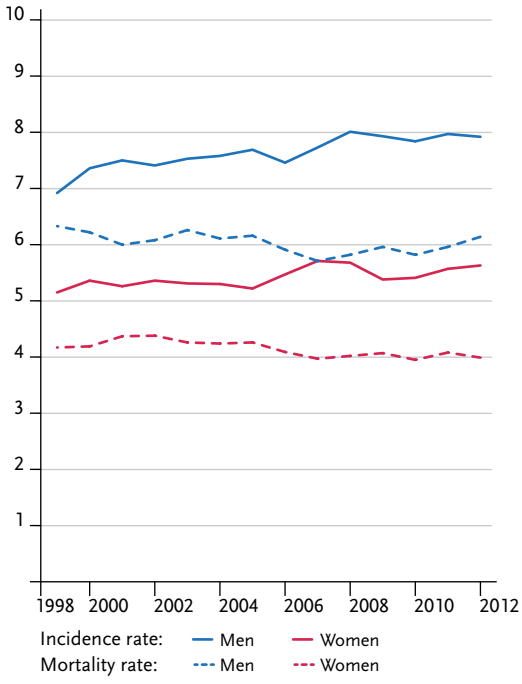


Figure 3.23.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C70–C72, Germany 1999–2012

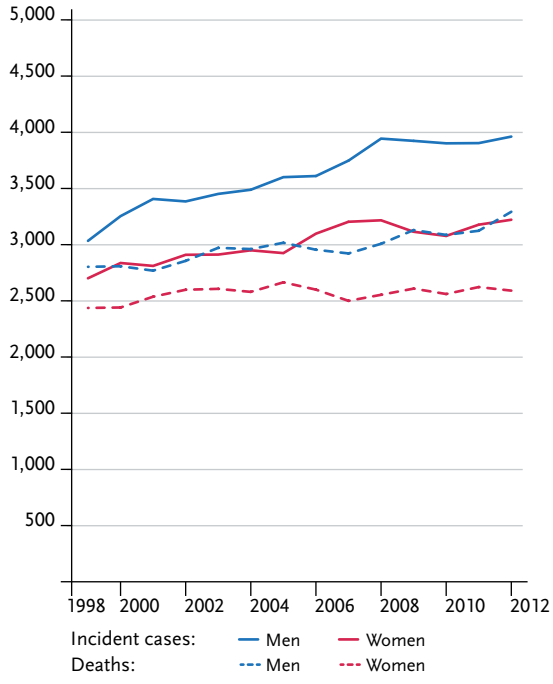


Figure 3.23.2
Age-specific incidence rates by sex, ICD-10 C70 – C72, Germany 2011–2012
per 100,000

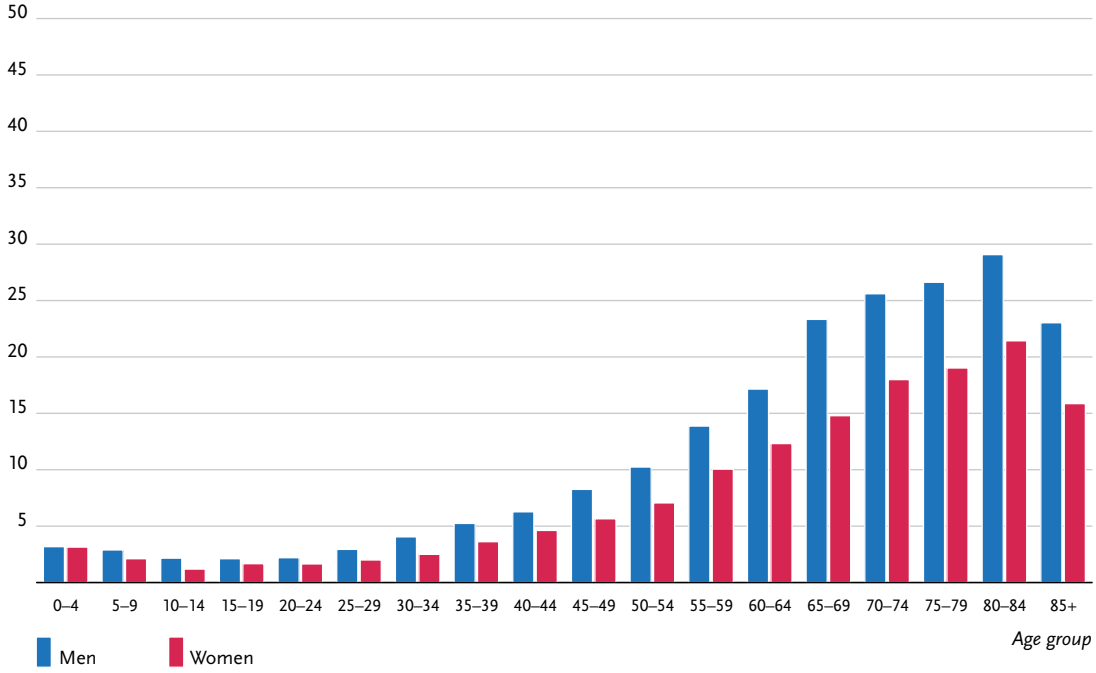


Table 3.23.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C70–C72, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	0.1 %	(1 in 1,800)	0.7 %	(1 in 150)	<0.1 %	(1 in 3,100)	0.6 %	(1 in 160)
45 years	0.1 %	(1 in 1,100)	0.6 %	(1 in 160)	0.1 %	(1 in 1,500)	0.6 %	(1 in 170)
55 years	0.1 %	(1 in 690)	0.6 %	(1 in 180)	0.1 %	(1 in 760)	0.5 %	(1 in 190)
65 years	0.2 %	(1 in 450)	0.5 %	(1 in 220)	0.2 %	(1 in 500)	0.5 %	(1 in 220)
75 years	0.2 %	(1 in 460)	0.3 %	(1 in 340)	0.2 %	(1 in 440)	0.3 %	(1 in 320)
Lifetime risk			0.8 %	(1 in 130)			0.6 %	(1 in 160)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1 %	(1 in 2,700)	0.5 %	(1 in 180)	<0.1 %	(1 in 4,800)	0.5 %	(1 in 210)
45 years	0.1 %	(1 in 1,500)	0.5 %	(1 in 190)	<0.1 %	(1 in 2,300)	0.5 %	(1 in 220)
55 years	0.1 %	(1 in 920)	0.5 %	(1 in 220)	0.1 %	(1 in 1,100)	0.4 %	(1 in 230)
65 years	0.2 %	(1 in 660)	0.4 %	(1 in 270)	0.1 %	(1 in 690)	0.4 %	(1 in 280)
75 years	0.2 %	(1 in 590)	0.2 %	(1 in 410)	0.2 %	(1 in 620)	0.2 %	(1 in 420)
Lifetime risk			0.6 %	(1 in 160)			0.5 %	(1 in 200)

Figure 3.23.3
Distribution of T-stages at first diagnosis by sex
T-stages are not defined for tumours of the central nervous system.

Figure 3.23.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C70–C72, Germany 2011–2012

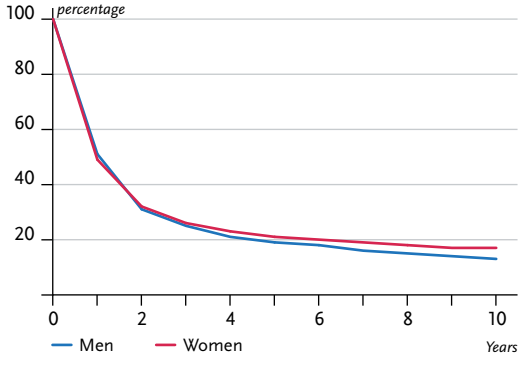


Figure 3.23.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C70–C72, Germany 2011–2012

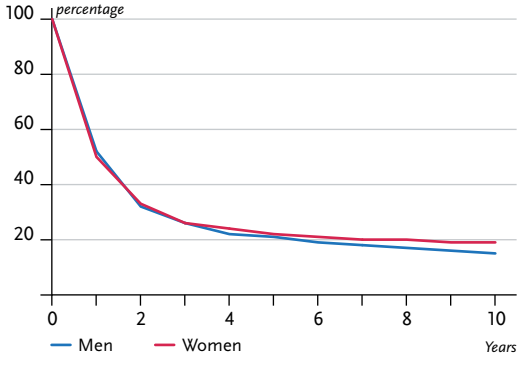


Figure 3.23.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C70–C72, 2011–2012
per 100,000 (European standard)

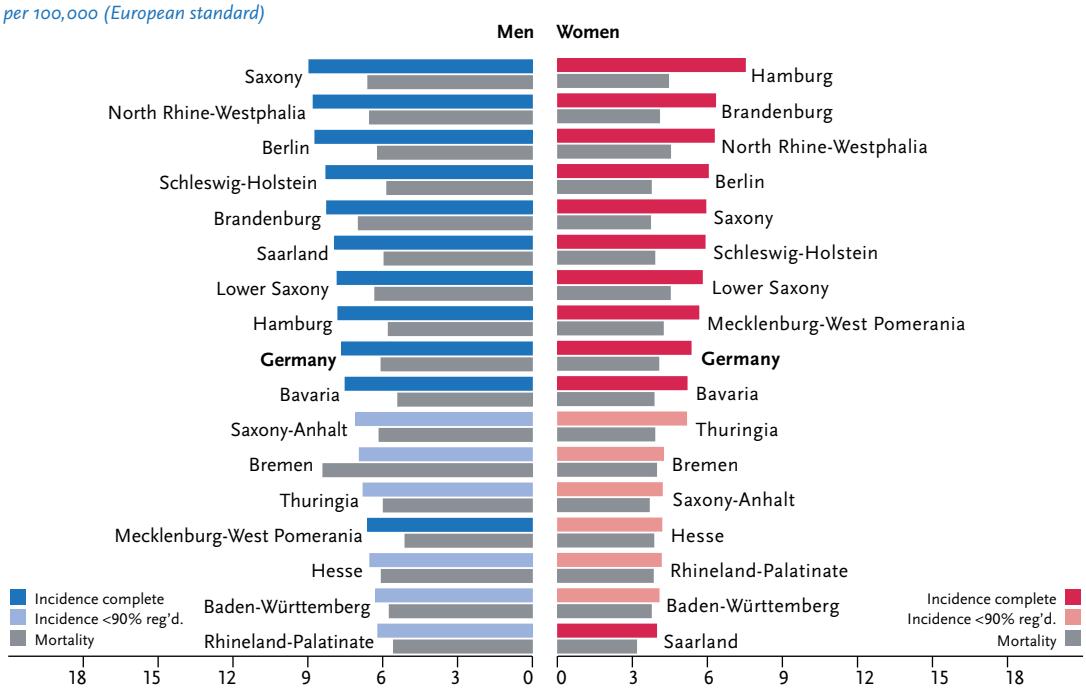
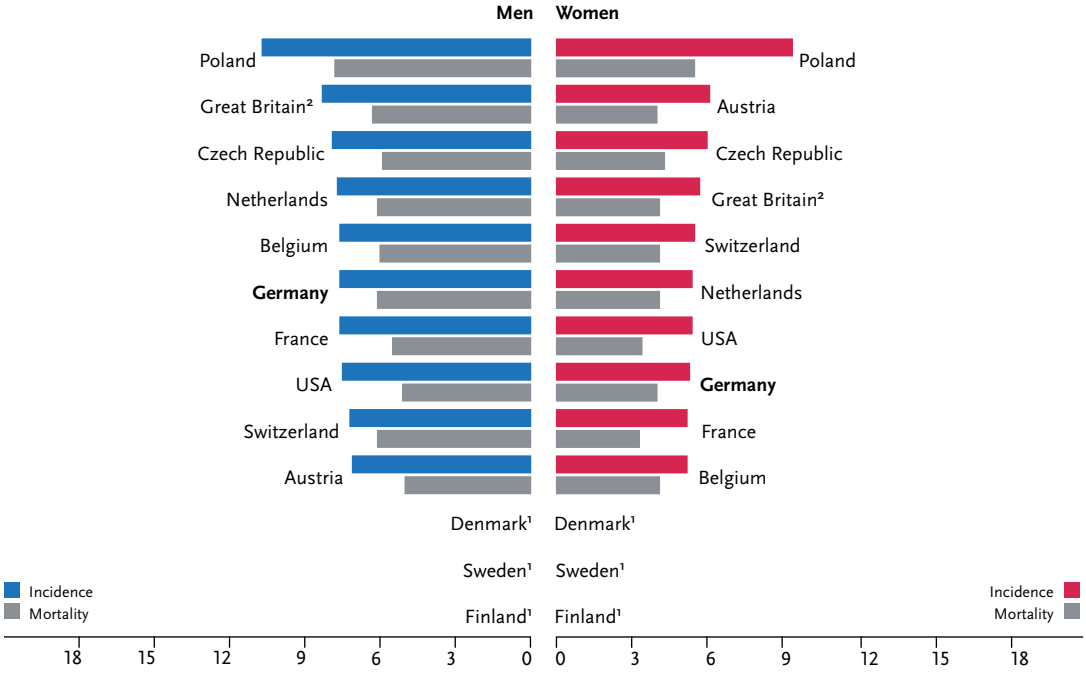


Figure 3.23.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C70–C72, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



[1] no comparable data
[2] incl. C75.1 to C75.3