

# Munich Cancer Registry



- ▶ Incidence and Mortality
- ▶ Selection Matrix
- ▶ Homepage
- ▶ *Deutsch*

## BNET: Pulm. neuroend. tumor

### Survival

Year of diagnosis	1988-1997	1998-2016
Patients	87	906
Diseases	87	908
Cases evaluated	72	697
Creation date	08/22/2018	
Export date	08/09/2018	
Population	4.81 m	



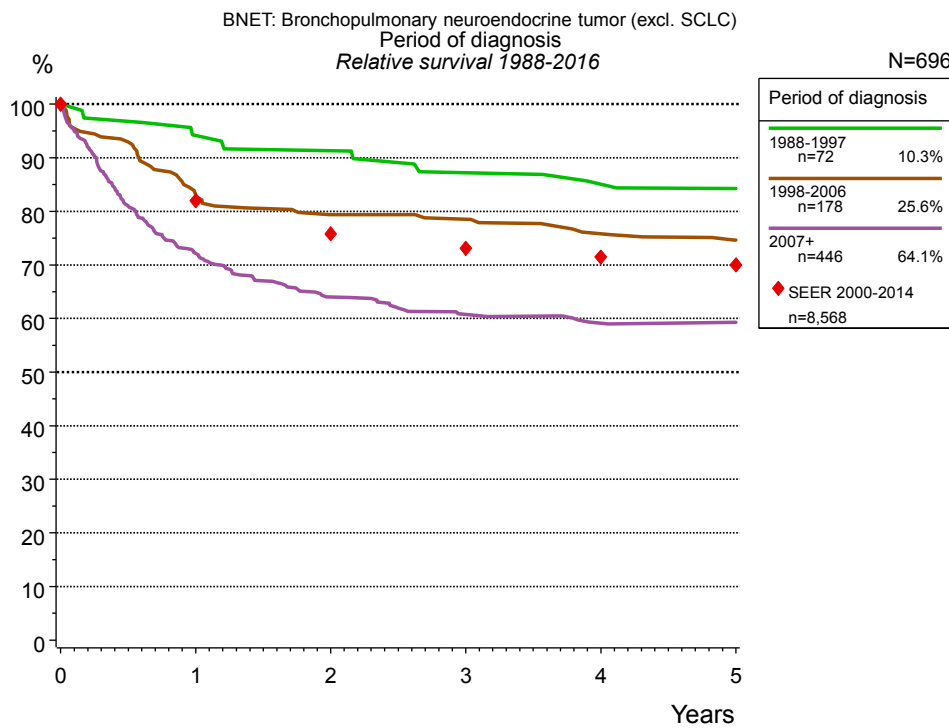
Munich Cancer Registry  
Cancer Registry Bavaria - Upper Bavaria Regional Center  
at Klinikum Grosshadern/IBE  
Marchioninstr. 15  
Munich, 81377  
Germany

<https://www.tumorregister-muenchen.de/en>

<https://www.tumorregister-muenchen.de/en/facts/surv/shBNETE-BNET-Pulm.-neuroend.-tumor-survival.pdf>

**Index of figures and tables**

Fig./Tbl.		Page
1a	Relative survival by period of diagnosis (chart)	3
1b	Survival by period of diagnosis (table)	3
2a	Survival by sex (chart)	4
2b	Survival by sex (table)	4
2c	Conditional survival by sex (chart)	5
2d	Conditional survival by sex (table)	5
3a	Relative survival by age category (chart)	6
3b	Survival by age category (table)	6
4a	Relative survival by extent of disease (chart)	7
4b	Survival by extent of disease (table)	7
5a	Time to first progression (chart)	8
5b	Time to first progression (table)	8
5c	Observed post-progression survival (chart)	9
5d	Observed post-progression survival (table)	9
5e	Observed post-progression survival by period of progression (chart)	10
5f	Observed post-progression survival by period of progression (table)	10



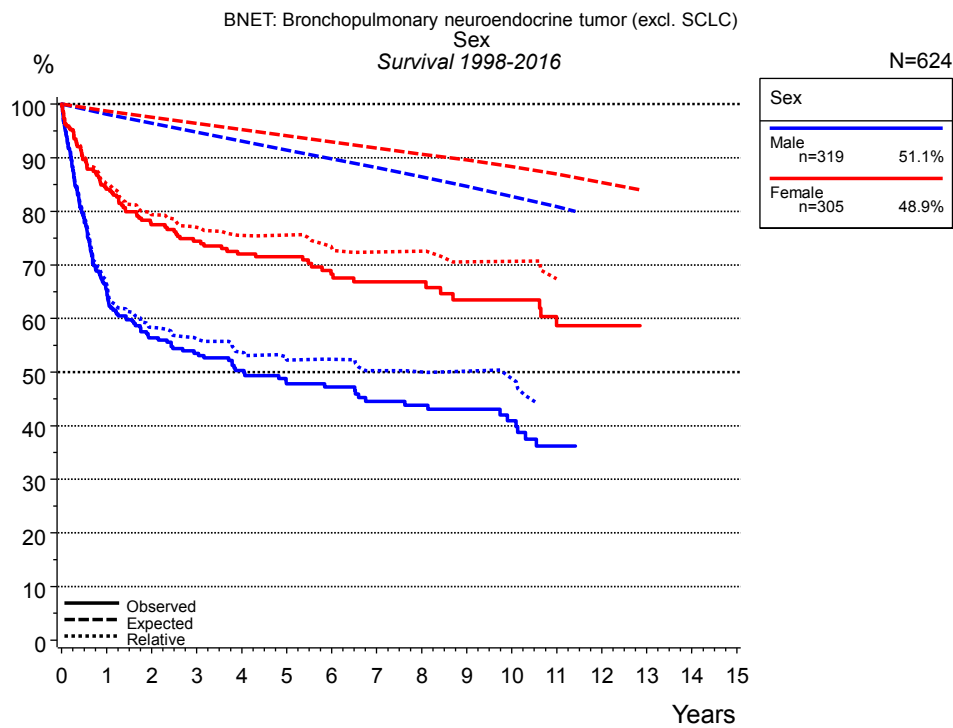
**Figure 1a.** Relative survival of patients with pulm. neuroend. tumor by period of diagnosis. Included in the evaluation are 696 cases diagnosed between 1988 and 2016.

The survival results of the SEER program (Surveillance, Epidemiology, and End Results) of the American National Cancer Institute (NCI) are summarized as the period of diagnosis from 2000 to 2014, and are represented by colored diamonds in order to facilitate comparisons between MCR and SEER.

The presented survival curves are derived from clinical records with valid follow-up informations, which means that death certificate cases (DCO) cases are omitted from the analysis. With this one restriction, the MCR has provided population-based statistics since 1998, collecting data on all cancer cases in the region of southern Bavaria. Historical data of previous time periods can be heavily selected, therefore, univariate survival comparisons of the presented time periods must be carefully considered. Nonetheless, all calculable survival curves are depicted to facilitate the comparison of long time follow-up analyses of relative survival between particular cancers.

Years	Period of diagnosis					
	1988-1997 n=72		1998-2006 n=178		2007+ n=446	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	93.0	94.1	82.7	83.2	71.2	72.2
2	90.1	91.3	77.3	79.4	62.1	64.0
3	84.4	87.2	76.1	78.6	58.2	60.8
4	81.5	85.1	72.4	75.8	55.8	59.1
5	80.1	84.3	69.9	74.6	54.8	59.3

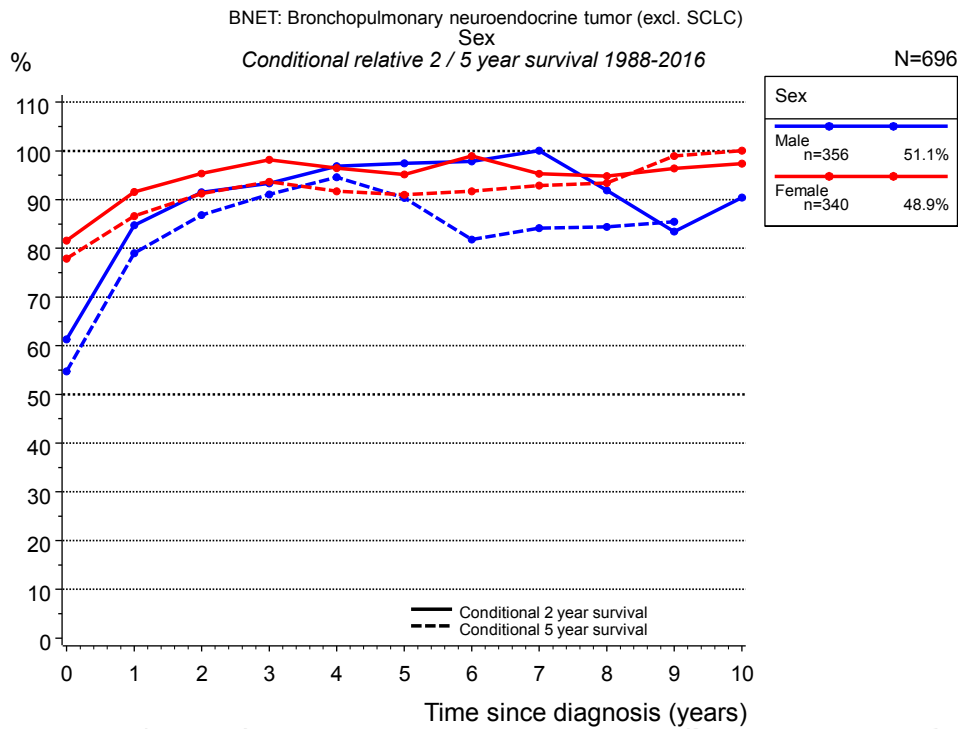
**Table 1b.** Observed (obs.) and relative (rel.) survival of patients with pulm. neuroend. tumor by period of diagnosis for period 1988-2016 (N=696).



**Figure 2a.** Survival of patients with pulm. neuroend. tumor by sex. Included in the evaluation are 624 cases diagnosed between 1998 and 2016.

Years	Sex			
	Male n=319		Female n=305	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	65.4	66.4	84.2	85.2
2	56.4	58.3	77.5	79.4
3	53.5	56.2	74.4	77.0
4	50.3	53.7	72.0	75.5
5	47.8	52.3	71.5	75.6
6	47.2	52.4	68.3	73.2
7	44.6	50.3	66.8	72.4
8	43.8	50.1	66.8	72.6
9	43.1	50.2	63.4	70.6
10	40.9	48.8	63.4	70.7
11	36.2	44.3		

**Table 2b.** Observed (obs.) and relative (rel.) survival of patients with pulm. neuroend. tumor by sex for period 1998-2016 (N=624).

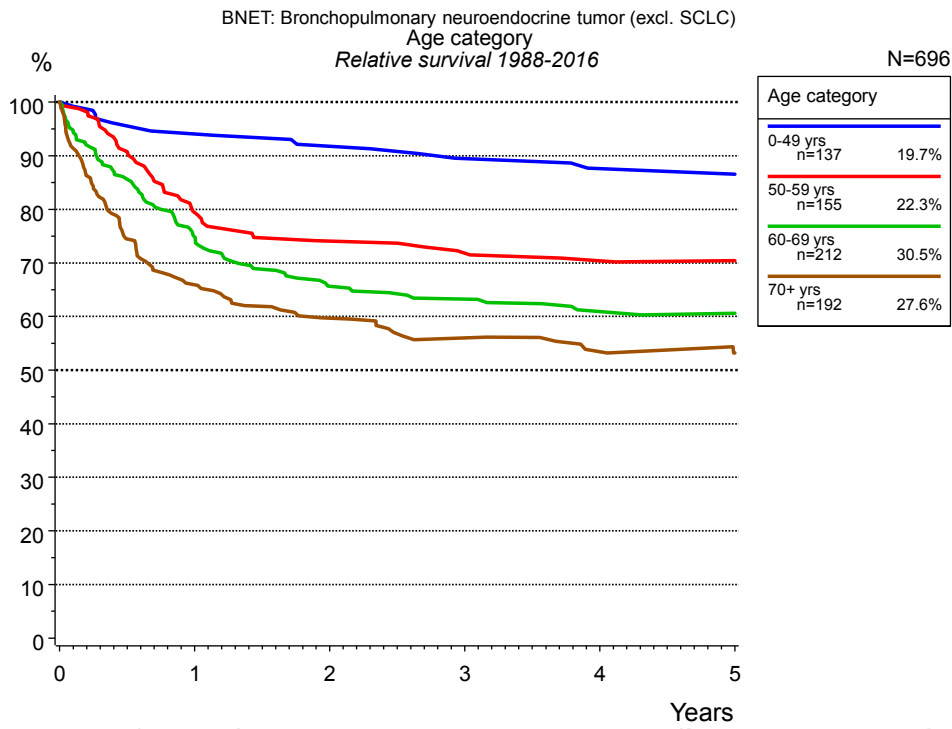


**Figure 2c.** Conditional relative 2 / 5-year survival of patients with pulm. neuroend. tumor by sex. For 696 of 696 cases diagnosed between 1988 and 2016 valid data could be obtained for this item.

Years	Sex					
	n	Male		Female		
		Cond. surv. %	2 yrs	5 yrs	n	Cond. surv. %
0	356	61.3	54.8	340	81.6	77.9
1	220	84.7	79.0	256	91.6	86.6
2	172	91.5	86.8	219	95.3	91.3
3	150	93.3	91.1	198	98.2	93.7
4	132	96.9	94.6	174	96.5	91.7
5	115	97.5	90.3	151	95.2	91.0
6	102	97.8	81.8	125	98.9	91.7
7	88	100.1	84.2	109	95.3	92.9
8	82	91.9	84.4	91	94.8	93.4
9	67	83.5	85.4	75	96.4	99.0
10	55	90.4		68	97.4	100.1

**Table 2d.** Conditional relative 2 / 5-year survival of patients with pulm. neuroend. tumor by sex for period 1988-2016 (N=696).

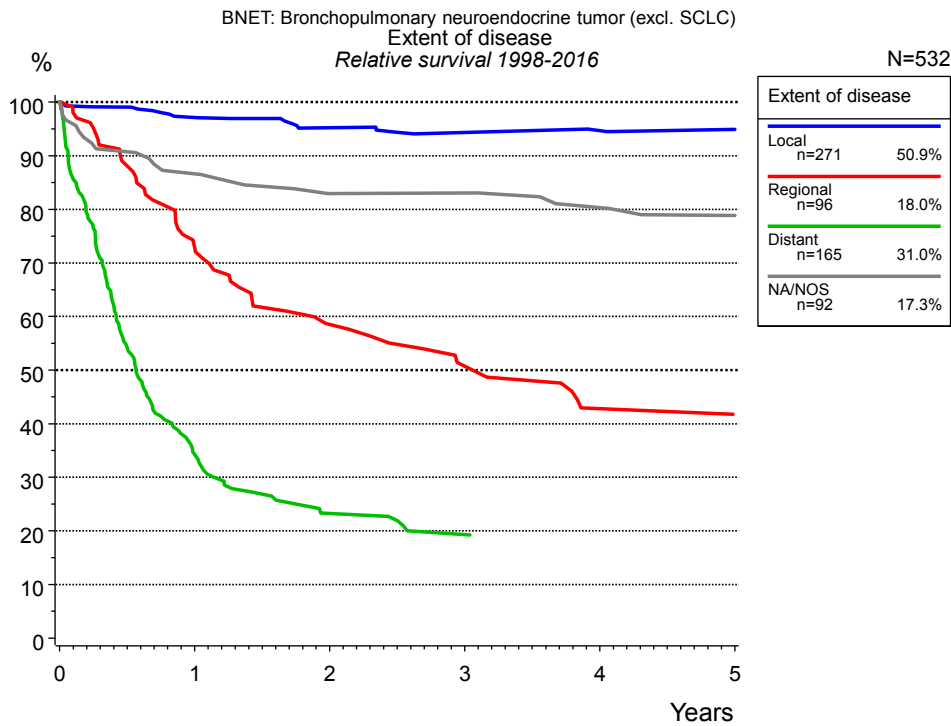
Conditional relative survival rates refer to the relative survival probability, in this case for 2 and 5 years after cancer diagnosis, compared to the age- and sex-matched population (=100 %) under the condition of being alive for a certain time period (x-axis in Figure 2a). The results illustrate to what extent the cancer induced mortality of particular subgroups declines in the subsequent years after detection of the malignancy. For instance, according to the presented survival statistics, patients in the subgroup sex="Male", who are alive at least 3 years after cancer diagnosis, the conditional relative 2-year survival rate is 93.3% (n=150).



**Figure 3a.** Relative survival of patients with pulm. neuroend. tumor by age category. Included in the evaluation are 696 cases diagnosed between 1988 and 2016.

Years	Age category							
	0-49 yrs n=137		50-59 yrs n=155		60-69 yrs n=212		70+ yrs n=192	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	94.5	94.1	79.3	79.4	74.3	74.8	63.9	65.9
2	91.9	91.8	73.4	74.1	64.0	65.7	55.5	59.7
3	89.1	89.4	71.0	71.8	61.3	63.3	50.3	56.0
4	87.1	87.6	69.3	70.4	58.1	60.9	46.0	53.4
5	86.1	86.6	68.4	70.5	56.8	60.6	43.2	53.2

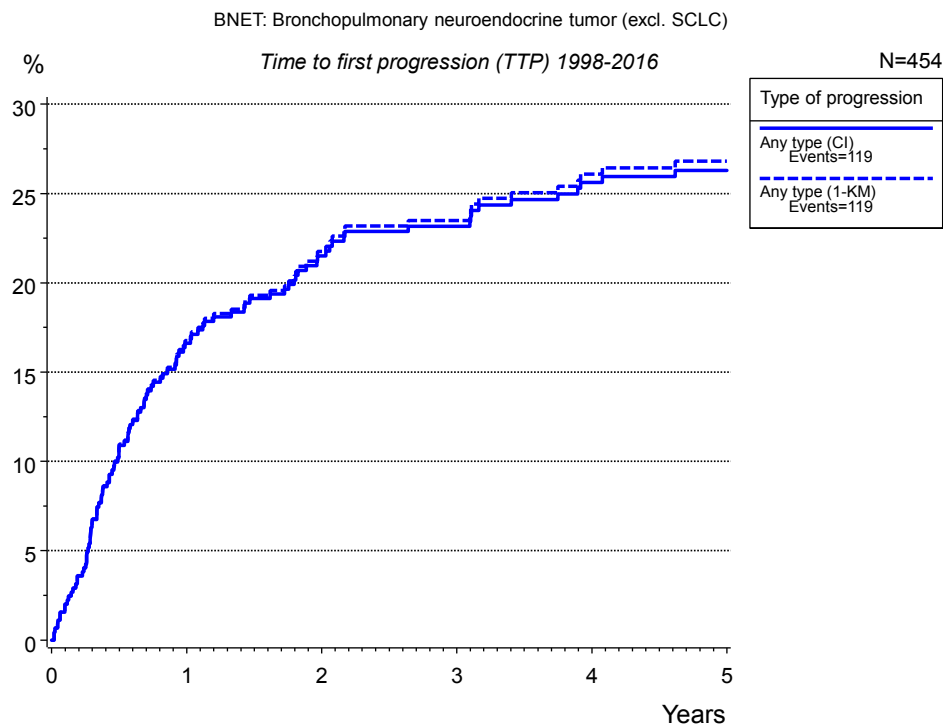
**Table 3b.** Observed (obs.) and relative (rel.) survival of patients with pulm. neuroend. tumor by age category for period 1988-2016 (N=696).



**Figure 4a.** Relative survival of patients with pulm. neuroend. tumor by extent of disease. For 539 of 624 cases diagnosed between 1998 and 2016 valid data could be obtained for this item. For a total of 532 cases an evaluable classification was established. The grey line represents the subgroup of 92 patients with missing values regarding extent of disease (14.7 % of 624 patients, the percent values of all other categories are related to n=532).

Years	Extent of disease							
	Local n=271		Regional n=96		Distant n=165		NA/NOS n=92	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	96.4	97.2	72.9	72.9	34.1	34.2	86.1	86.7
2	93.2	95.2	56.7	58.5	22.5	23.3	80.0	82.9
3	91.2	94.4	48.8	50.7	19.1	19.3	80.0	83.1
4	90.6	94.7	40.1	42.8			76.1	80.3
5	89.3	94.9	38.3	41.7			73.4	78.9

**Table 4b.** Observed (obs.) and relative (rel.) survival of patients with pulm. neuroend. tumor by extent of disease for period 1998-2016 (N=532).

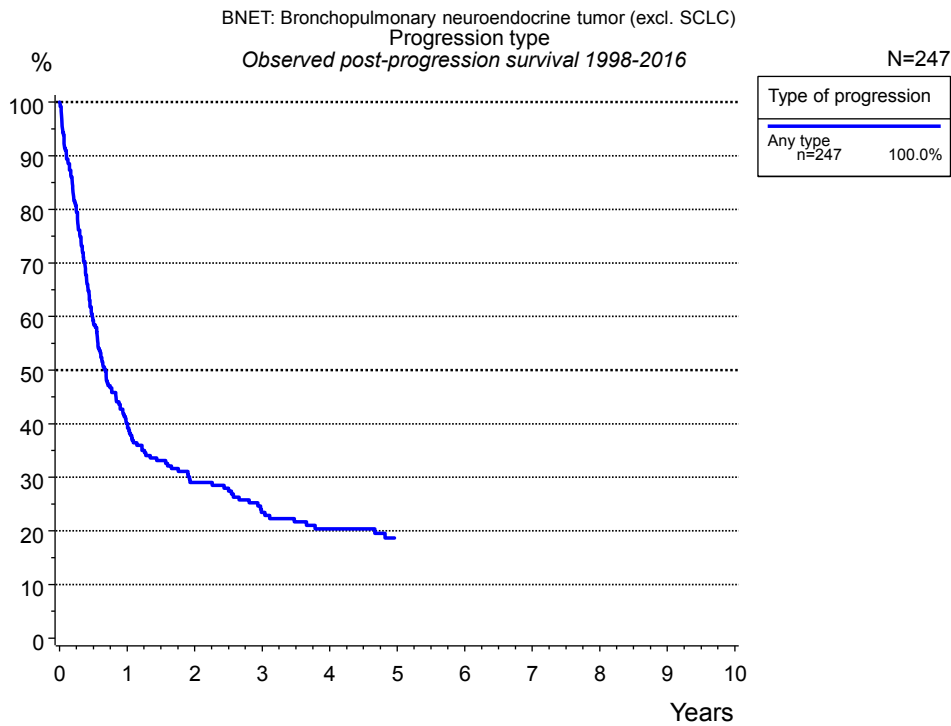


**Figure 5a.** Time to first progression of 454 patients with pulm. neuroend. tumor diagnosed between 1998 and 2016 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

Years	Type of progression	
	Any type (CI)	Any type (1-KM)
	n=454 %	n=454 %
0	0.0	0.0
1	16.6	16.8
2	21.5	21.8
3	23.2	23.5
4	25.6	26.1
5	26.3	26.8

**Table 5b.** Time to first progression of patients with pulm. neuroend. tumor for period 1998-2016 (N=454).



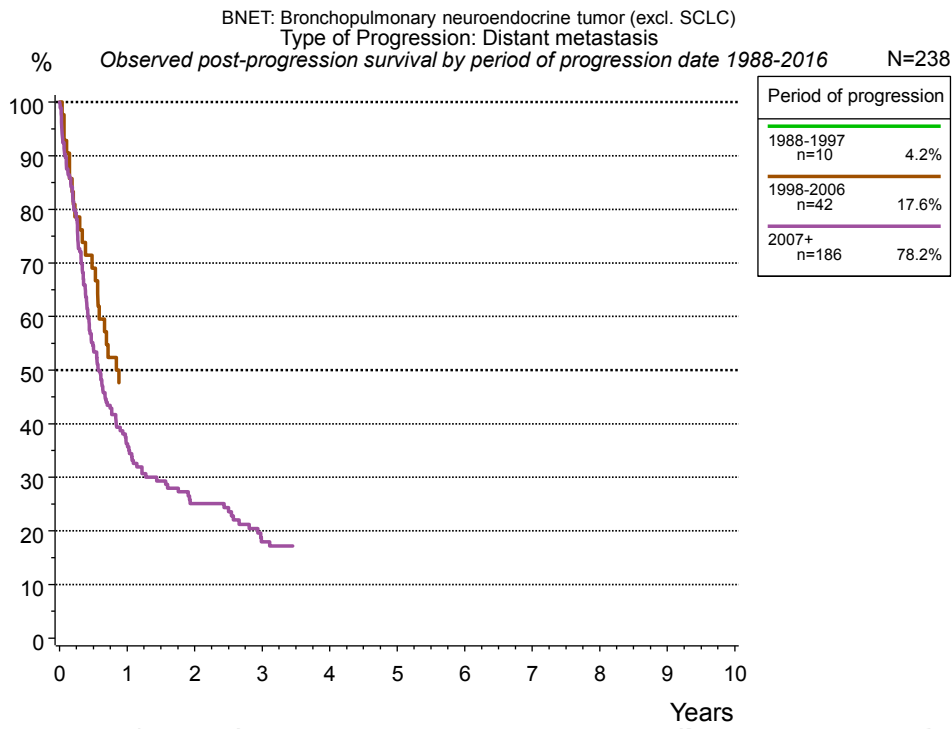


**Figure 5c.** Observed post-progression survival of 247 patients with pulm. neuroend. tumor diagnosed between 1998 and 2016. These 247 patients with documented progression events during their course of disease represent 40.1 % of the totally 616 evaluated cases (incl. M1, n=162, 26.3 %). Patients with cancer relapse documented via death certificates only were excluded (n=34, 5.5 %).

Medical record documentation often lacks the linguistic severity to distinguish between local relapse, regional lymph node metastasis and distant spread in solid cancers. Frequently, the statement “not specified” is the only information in registries regarding relapse of the disease. The category “Any type” denotes all cases who suffered from at least one relapse during the course of disease (incl. primary M1-status). Although, the real number of relapsed patients is likely to be much higher. The accumulated percentage of patients with local relapse or distant metastasis exceeds the 100 % value because patients are potentially considered in more than one subgroup.

Type of progression	
Years	Any type n=247 %
0	100.0
1	40.0
2	29.0
3	23.5
4	20.4

**Table 5d.** Observed post-progression survival of patients with pulm. neuroend. tumor for period 1998-2016 (N=247).



**Figure 5e.** Observed post-progression (distant metastasis) survival of 238 patients with pulm. neuroend. tumor diagnosed between 1988 and 2016 by period of progression.

Years	Period of progression	
	1998-2006 n=42 %	2007+ n=186 %
0	100.0	100.0
1		36.2
2		25.1
3		18.0

**Table 5f.** Observed post-progression (distant metastasis) survival of patients with pulm. neuroend. tumor for period 1988-2016 by period of progression (N=238).

## Shortcuts

MCR	Munich Cancer Registry, Germany	
NCI	National Cancer Institute, USA	
SEER	Surveillance, Epidemiology, and End Results, USA	
UICC	Union for International Cancer Control, Geneva	
DCO	Death certificate only	Death certificate provides the only notification to the registry.
NA	Not available	
NOS	Not otherwise specified	
OS	Overall/Observed survival	Overall/Observed survival (Kaplan-Meier estimate) Date of entry: diagnosis Event: death from any cause
RS	Relative survival	Survival compared to “general population”, ratio of observed to expected survival (Ederer II method), reflecting cancer specific survival
AS	Assembled survival	Assembled chart of observed, expected, relative survival
CS	Conditional survival	Survival probability under the condition of surviving a given period of time
TTP	Time to progression	Time to first progression / relapse Date of entry: diagnosis Event: (progression / relapse): first local-, lymph node recurrence, distant metastasis or unspecified progression
1-KM		1 minus Kaplan-Meier estimator (“inverse” Kaplan-Meier estimator)
CI		Cumulative incidence Death as competing risk (according to Kalbfleisch und Prentice)
PPS	Post-progression survival	Survival since first progression / relapse (Kaplan-Meier estimate) Date of entry (progression / relapse): first local-, lymph node recurrence, distant metastasis or unspecified progression Event: death from any cause

## Recommended Citation

Munich Cancer Registry. Survival BNET: Pulm. neuroend. tumor [Internet]. 2018 [updated 2018 Aug 22; cited 2018 Oct 1]. Available from: <https://www.tumorregister-muenchen.de/en/facts/surv/shBNETE-BNET-Pulm.-neuroend.-tumor-survival.pdf>

## Copyright

The content of the public web site provided by the Munich Cancer Registry is available worldwide and free of charge. All documents are free to download, utilize, copy, print-out and distribute, providing that the MCR is referenced.

## Disclaimer

The Munich Cancer Registry reserves the right to not be responsible for the topicality, correctness, completeness or quality of the information provided. Liability claims regarding damage caused by the use of any information provided, including any kind of information which is incomplete or incorrect, will therefore be rejected.