

Munich Cancer Registry



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- ▶ Selection Matrix
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- ▶ *Deutsch*

ICD-10 C33, C34: Small cell LC

Survival

Year of diagnosis	1988-1997	1998-2016
Patients	893	5,504
Diseases	893	5,505
Cases evaluated	824	4,595
Creation date	08/22/2018	
Export date	08/09/2018	
Population	4.81 m	



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

https://www.tumorregister-muenchen.de/en/facts/surv/sC34s_E-ICD-10-C33-C34-Small-cell-LC-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
3a	Observed survival by age category (chart)	5
3b	Relative survival by age category (chart)	5
3c	Survival by age category (table)	6
4a	Relative survival by UICC 1988+ (chart)	7
4b	Survival by UICC 1988+ (table)	7
4c	Relative survival by UICC 1998+ (chart)	8
4d	Survival by UICC 1998+ (table)	8
4e	Relative survival by TNM staging 1988+ (chart)	9
4f	Survival by TNM staging 1988+ (table)	9
4g	Relative survival by TNM staging 1998+ (chart)	10
4h	Survival by TNM staging 1998+ (table)	10
4i	Conditional survival by extent of disease (chart)	11
4j	Conditional survival by extent of disease (table)	11
5a	Time to first progression (chart)	12
5b	Time to first progression (table)	12
5c	Observed post-progression survival (chart)	14
5d	Observed post-progression survival (table)	14
5e	Observed post-progression survival by period of progression (chart)	15
5f	Observed post-progression survival by period of progression (table)	15

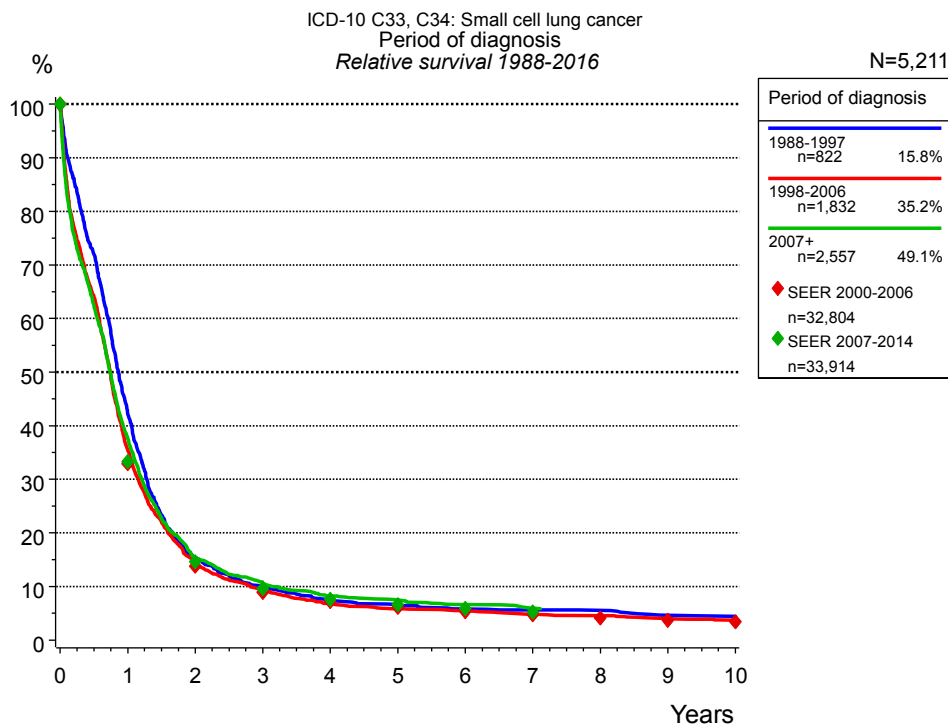


Figure 1a. Relative survival of patients with small cell LC by period of diagnosis. Included in the evaluation are 5,211 cases diagnosed between 1988 and 2016.

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=822		1998-2006 n=1,832		2007+ n=2,557	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	41.7	42.3	34.7	35.5	36.9	37.7
2	14.9	15.4	14.1	14.7	14.7	15.3
3	9.6	10.1	8.7	9.2	10.1	10.6
4	7.0	7.5	6.4	6.8	7.7	8.2
5	6.0	6.5	5.4	5.9	6.9	7.5
6	5.2	5.8	4.9	5.5	5.9	6.6
7	4.9	5.6	4.3	4.8	5.3	5.9
8	4.8	5.5	4.0	4.6		
9	3.9	4.6	3.5	4.0		
10	3.7	4.4	3.1	3.7		

Table 1b. Observed (obs.) and relative (rel.) survival of patients with small cell LC by period of diagnosis for period 1988-2016 (N=5,211).

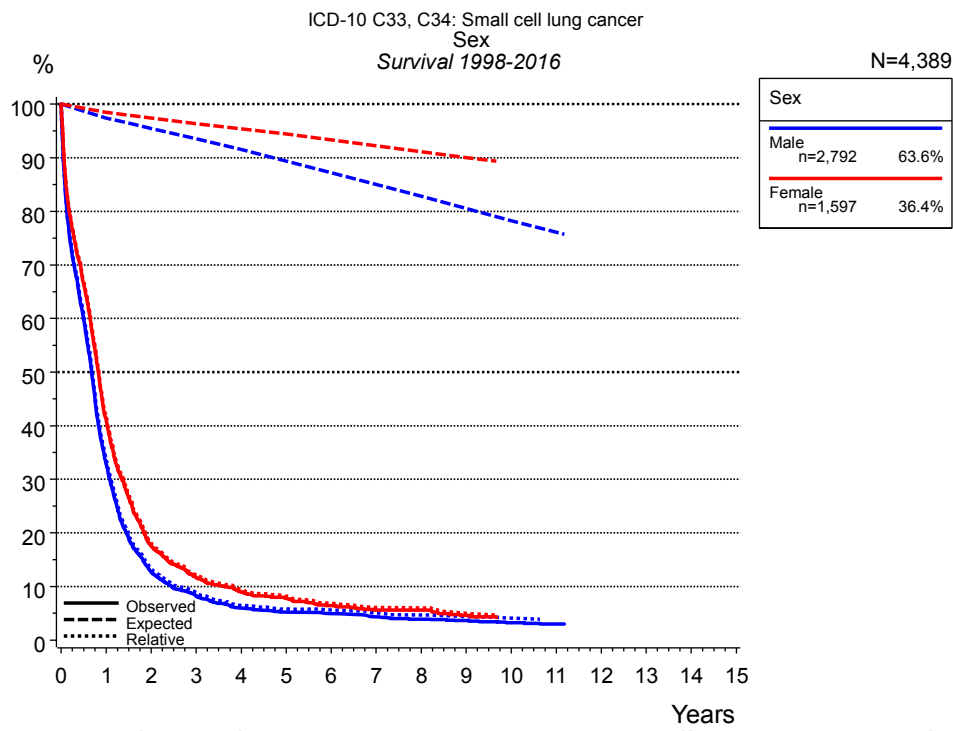


Figure 2a. Survival of patients with small cell LC by sex. Included in the evaluation are 4,389 cases diagnosed between 1998 and 2016.

Years	Sex			
	Male n=2,792		Female n=1,597	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	33.0	33.8	41.1	41.7
2	12.7	13.3	17.6	18.0
3	8.2	8.8	11.7	12.0
4	6.0	6.5	9.0	9.4
5	5.2	5.8	7.8	8.2
6	4.9	5.6	6.4	6.8
7	4.3	5.0	5.6	6.1
8	3.9	4.7	5.6	6.0
9	3.6	4.4	4.6	5.0
10	3.2	4.1		
11	3.0	3.8		

Table 2b. Observed (obs.) and relative (rel.) survival of patients with small cell LC by sex for period 1998-2016 (N=4,389).

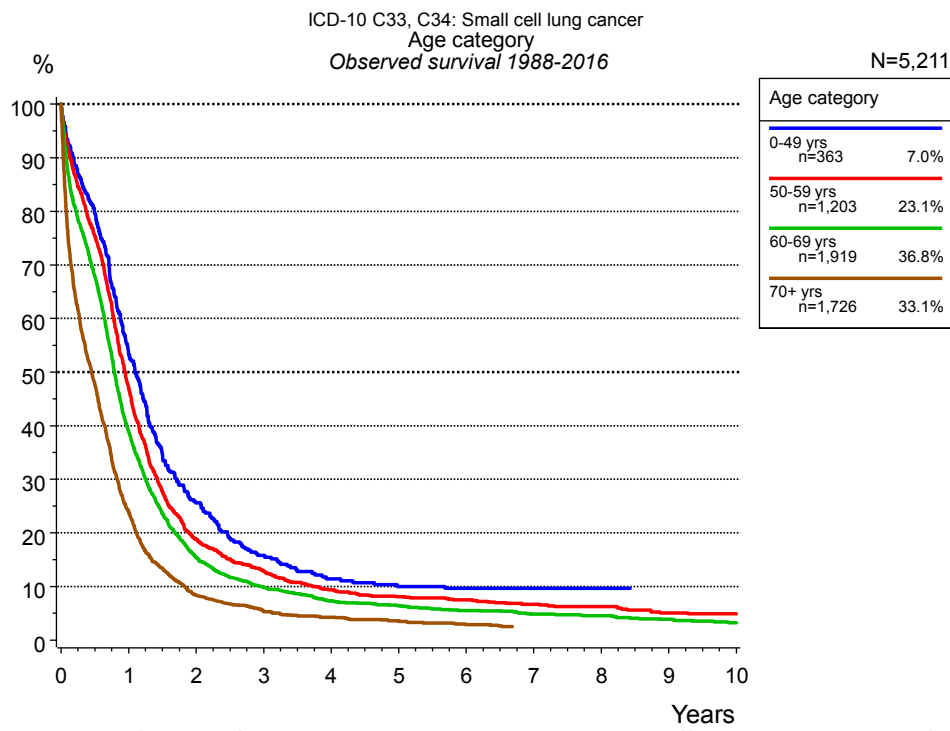


Figure 3a. Observed survival of patients with small cell LC by age category. Included in the evaluation are 5,211 cases diagnosed between 1988 and 2016.

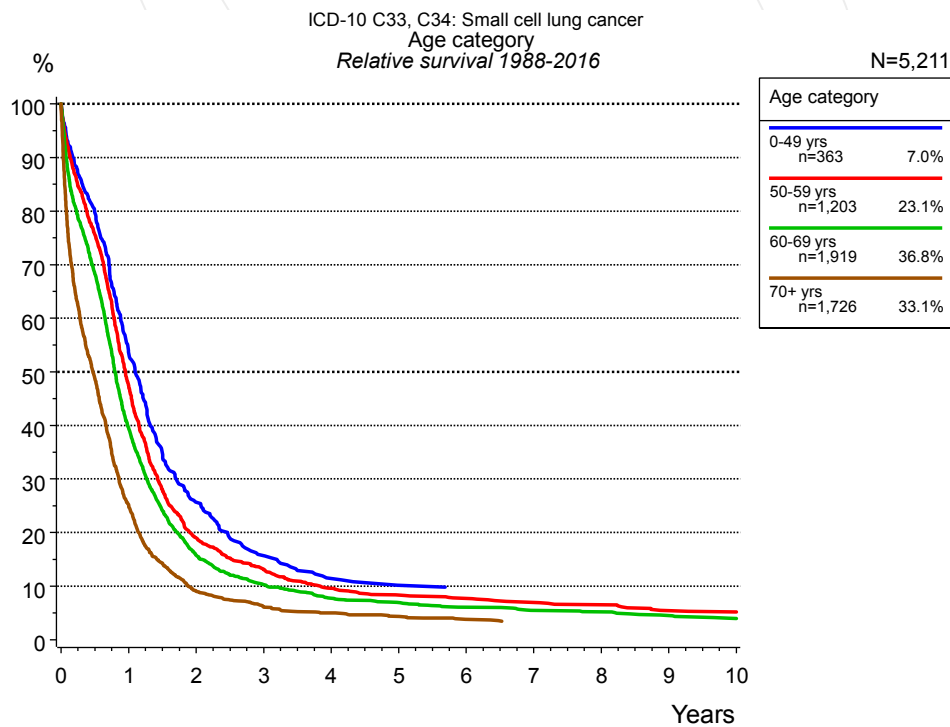


Figure 3b. Relative survival of patients with small cell LC by age category. Included in the evaluation are 5,211 cases diagnosed between 1988 and 2016.

Years	Age category							
	0-49 yrs n=363		50-59 yrs n=1,203		60-69 yrs n=1,919		70+ yrs n=1,726	
	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	53.2	53.4	47.1	47.3	39.0	39.5	24.0	25.0
2	25.6	25.7	18.8	19.0	15.4	15.8	8.3	9.0
3	15.8	15.7	12.9	13.1	9.8	10.2	5.4	6.1
4	11.4	11.4	9.4	9.6	7.3	7.7	4.3	5.0
5	10.0	10.1	8.1	8.3	6.4	6.9	3.6	4.4
6	9.7	9.8	7.5	7.7	5.5	6.1	2.9	3.8
7	9.7	9.7	6.7	7.0	4.8	5.5		
8	9.7	9.6	6.3	6.5	4.5	5.2		
9	9.7	9.5	5.1	5.4	3.9	4.5		
10			4.9	5.2	3.2	3.9		

Table 3c. Observed (obs.) and relative (rel.) survival of patients with small cell LC by age category for period 1988-2016 (N=5,211).

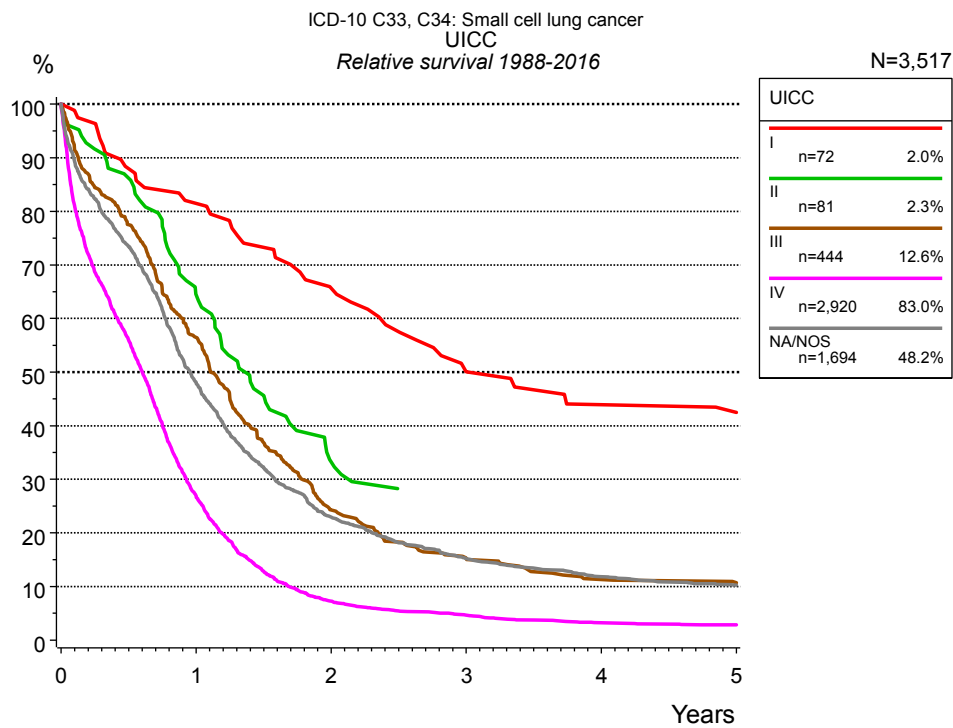


Figure 4a. Relative survival of patients with small cell LC by UICC. For 4,364 of 5,211 cases diagnosed between 1988 and 2016 valid data could be obtained for this item. For a total of 3,517 cases an evaluable classification was established. The grey line represents the subgroup of 1,694 patients with missing values regarding UICC (32.5 % of 5,211 patients, the percent values of all other categories are related to n=3,517).

Years	UICC									
	I n=72		II n=81		III n=444		IV n=2,920		NA/NOS n=1,694	
	obs. %	rel. %	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	100.0	100.0
1	80.5	81.5	63.4	64.4	55.5	56.5	26.3	26.8	46.9	48.0
2	63.3	65.7	32.4	33.2	23.5	24.3	7.0	7.2	22.0	22.9
3	48.5	50.1			14.9	15.3	4.4	4.6	14.4	15.2
4	40.7	43.9			10.8	11.3	3.0	3.2	11.0	11.8
5	39.1	42.5			10.1	10.7	2.6	2.8	9.4	10.2

Table 4b. Observed (obs.) and relative (rel.) survival of patients with small cell LC by UICC for period 1988-2016 (N=3,517).

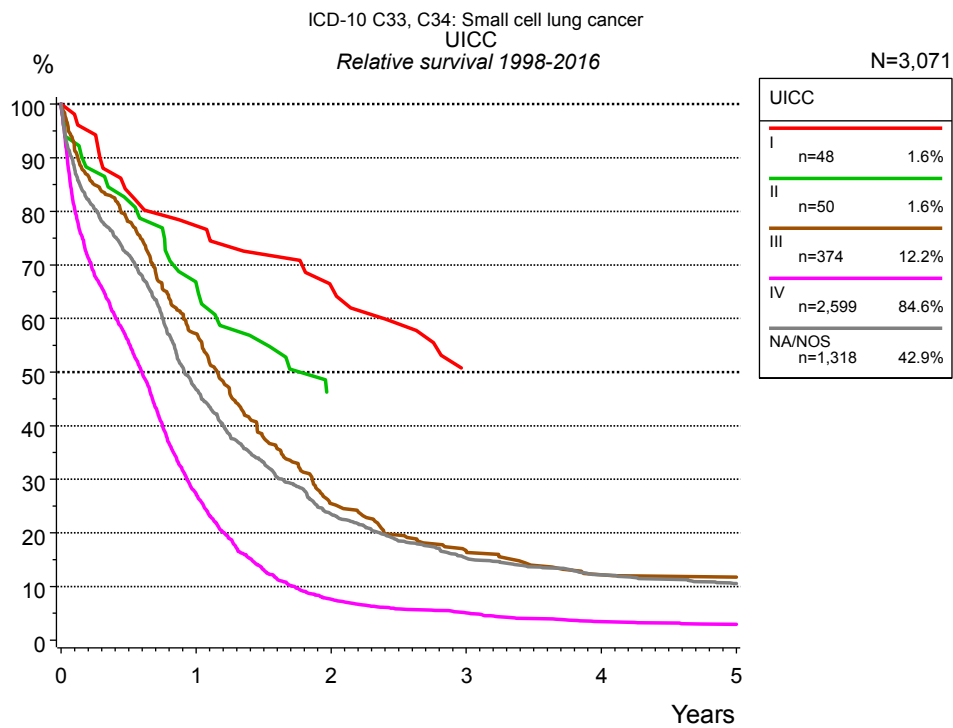


Figure 4c. Relative survival of patients with small cell LC by UICC. For 3,715 of 4,389 cases diagnosed between 1998 and 2016 valid data could be obtained for this item. For a total of 3,071 cases an evaluable classification was established. The grey line represents the subgroup of 1,318 patients with missing values regarding UICC (30.0 % of 4,389 patients, the percent values of all other categories are related to n=3,071).

Years	UICC									
	I n=48		II n=50		III n=374		IV n=2,599		NA/NOS n=1,318	
	obs. %	rel. %	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	100.0	100.0
1	77.0	77.3	65.6	66.5	56.3	57.1	26.7	27.3	45.6	46.7
2	63.9	66.1			24.7	25.4	7.3	7.6	22.6	23.5
3	47.8	48.3			16.3	16.7	4.8	5.0	14.4	15.3
4					11.7	12.2	3.2	3.4	11.3	12.2
5					11.3	11.7	2.8	3.0	9.6	10.5

Table 4d. Observed (obs.) and relative (rel.) survival of patients with small cell LC by UICC for period 1998-2016 (N=3,071).

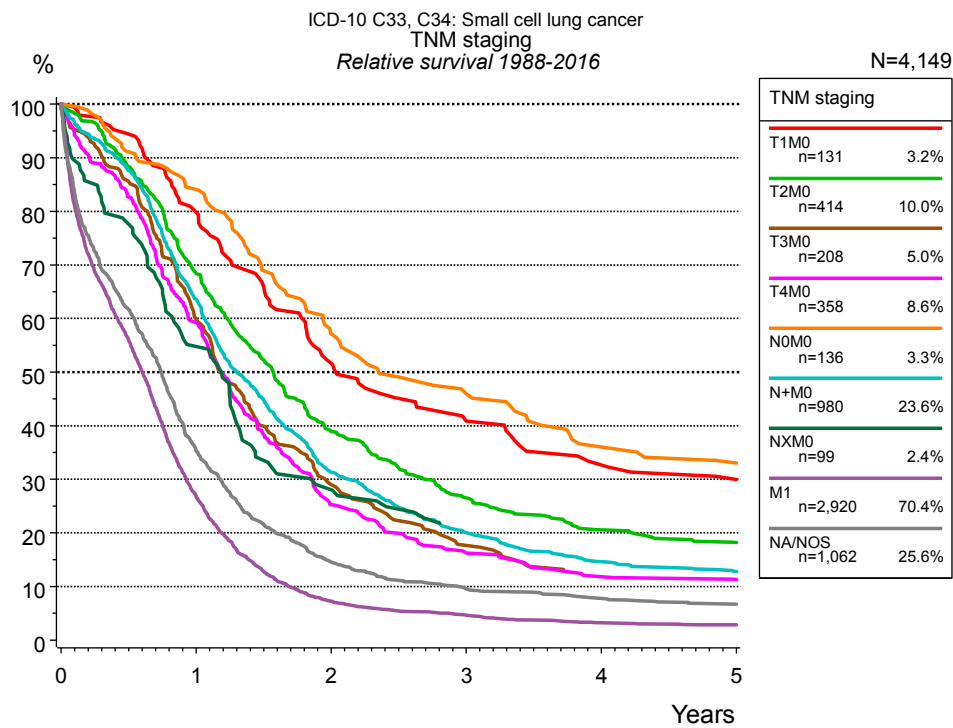


Figure 4e. Relative survival of patients with small cell LC by TNM staging. For 4,364 of 5,211 cases diagnosed between 1988 and 2016 valid data could be obtained for this item. For a total of 4,149 cases an evaluable classification was established. The accumulated percentage exceeds the 100 % value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 1,062 patients with missing values regarding TNM staging (20.4 % of 5,211 patients, the percent values of all other categories are related to n=4,149).

Years	TNM staging													
	T1M0 n=131		T2M0 n=414		T3M0 n=208		T4M0 n=358		NOM0 n=136		N+M0 n=980		NXM0 n=99	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	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	100.0	100.0	100.0	100.0	100.0	100.0
1	78.7	79.8	67.3	68.4	59.4	59.8	58.4	59.2	83.0	84.1	62.6	63.6	54.2	54.8
2	50.4	51.6	37.6	38.9	28.1	29.0	24.6	25.3	55.0	57.2	30.3	31.3	28.1	28.1
3	39.6	40.9	25.3	26.5	17.1	17.7	15.9	16.3	44.2	46.0	19.1	20.0		
4	31.0	32.7	19.2	20.5			11.3	11.8	33.9	36.1	13.8	14.6		
5	27.9	30.0	16.7	18.2			10.5	11.3	30.3	33.0	11.8	12.8		

Years	TNM staging			
	M1 n=2,920		NA/NOS n=1,062	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	26.3	26.8	34.4	35.3
2	7.0	7.2	13.9	14.5
3	4.4	4.6	9.0	9.5
4	3.0	3.2	7.1	7.8
5	2.6	2.8	6.1	6.7

Table 4f. Observed (obs.) and relative (rel.) survival of patients with small cell LC by TNM staging for period 1988-2016 (N=4,149).

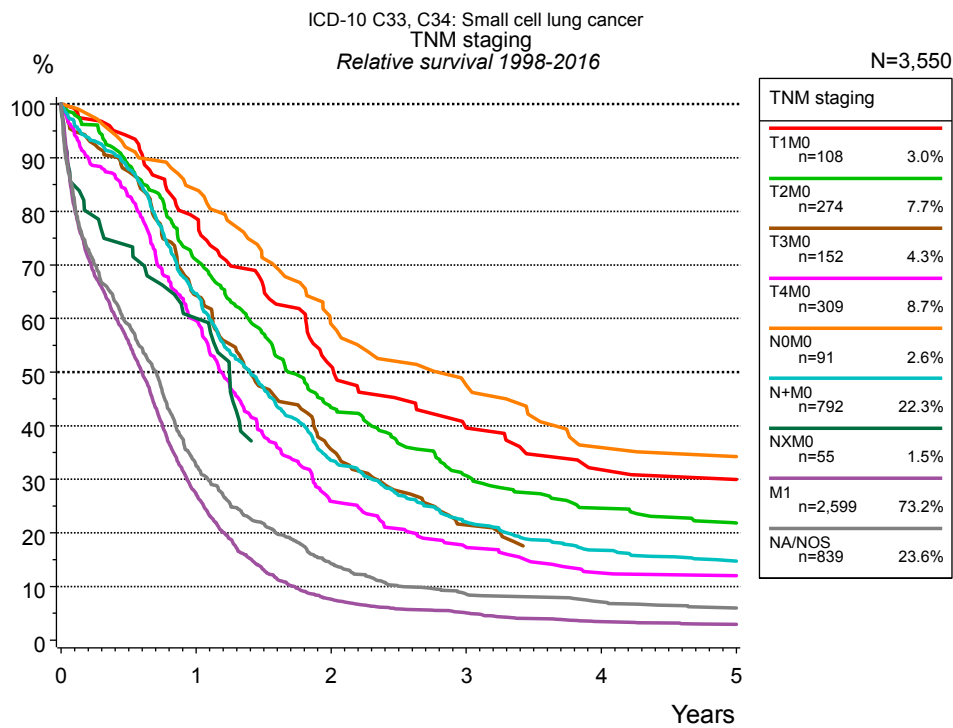


Figure 4g. Relative survival of patients with small cell LC by TNM staging. For 3,715 of 4,389 cases diagnosed between 1998 and 2016 valid data could be obtained for this item. For a total of 3,550 cases an evaluable classification was established. The accumulated percentage exceeds the 100 % value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 839 patients with missing values regarding TNM staging (19.1 % of 4,389 patients, the percent values of all other categories are related to n=3,550).

Years	TNM staging													
	T1M0 n=108		T2M0 n=274		T3M0 n=152		T4M0 n=309		NOM0 n=91		N+M0 n=792		NXM0 n=55	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	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	100.0	100.0	100.0	100.0	100.0	100.0
1	77.9	78.7	70.0	70.9	63.5	64.3	58.9	59.6	83.4	84.0	63.7	64.7	60.0	60.0
2	50.0	51.1	41.9	43.4	34.6	35.6	25.1	25.9	57.0	59.0	32.4	33.5		
3	38.6	39.6	29.4	30.7	20.7	21.5	17.0	17.4	46.4	47.6	21.0	22.0		
4	29.9	31.8	23.3	24.6			12.1	12.5	33.9	35.9	15.8	16.8		
5	28.5	30.0	20.2	21.8			11.6	12.0	32.4	34.2	13.7	14.8		

Years	TNM staging			
	M1 n=2,599		NA/NOS n=839	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	26.7	27.3	31.5	32.5
2	7.3	7.6	13.7	14.2
3	4.8	5.0	8.1	8.6
4	3.2	3.4	6.5	7.1
5	2.8	3.0	5.5	5.9

Table 4h. Observed (obs.) and relative (rel.) survival of patients with small cell LC by TNM staging for period 1998-2016 (N=3,550).

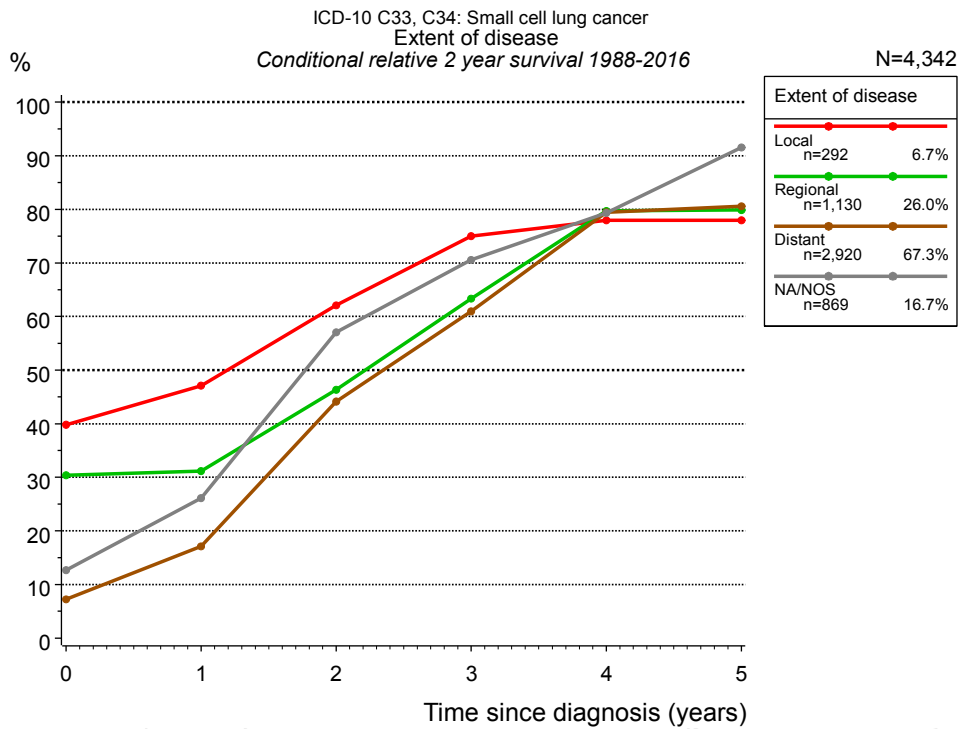


Figure 4i. Conditional relative 2-year survival of patients with small cell LC by extent of disease. For 4,364 of 5,211 cases diagnosed between 1988 and 2016 valid data could be obtained for this item. For a total of 4,342 cases an evaluable classification was established. The grey line represents the subgroup of 869 patients with missing values regarding extent of disease (16.7 % of 5,211 patients, the percent values of all other categories are related to n=4,342).

Years	Extent of disease							
	Local		Regional		Distant		NA/NOS	
	n	Cond. surv. % 2 yrs	n	Cond. surv. % 2 yrs	n	Cond. surv. % 2 yrs	n	Cond. surv. % 2 yrs
0	292	39.8	1,130	30.4	2,920	7.2	869	12.7
1	180	47.1	650	31.2	722	17.1	265	26.1
2	103	62.1	295	46.3	180	44.1	97	57.1
3	76	75.0	176	63.3	102	61.0	63	70.6
4	58	77.9	113	79.7	58	79.4	51	79.3
5	52	78.0	89	79.9	41	80.6	43	91.5

Table 4j. Conditional relative 2-year survival of patients with small cell LC by extent of disease for period 1988-2016 (N=4,342).

Conditional relative survival rates refer to the relative survival probability, in this case for 2 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 4g). 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 extent of disease="Local", who are alive at least 3 years after cancer diagnosis, the conditional relative 2-year survival rate is 75.0% (n=76).

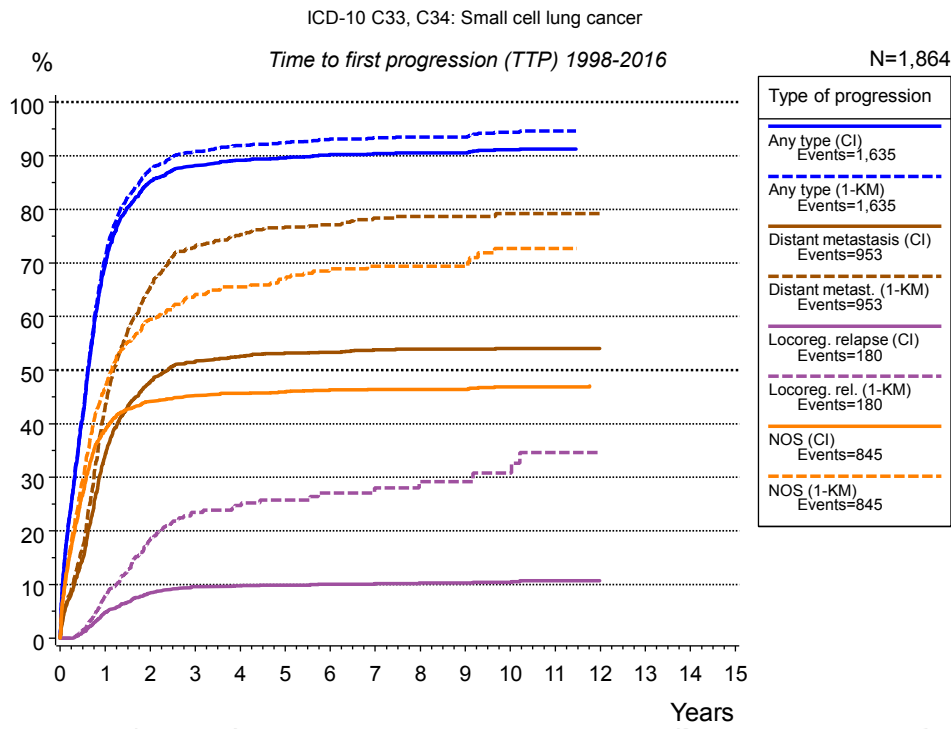


Figure 5a. Time to first progression of 1,864 patients with small cell LC diagnosed between 1998 and 2016 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

Years	Type of progression						
	Any type (CI)	Any type (1-KM)	Distant metastasis (CI)	Distant metast. (1-KM)	Locoreg. relapse (CI)	Locoreg. rel. (1-KM)	NOS (CI)
	n=1,864 %	n=1,864 %	n=1,864 %	n=1,864 %	n=1,864 %	n=1,864 %	n=1,864 %
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	69.7	71.1	34.3	43.4	4.8	7.9	38.9
2	85.2	87.4	47.8	65.4	8.4	18.4	44.2
3	88.3	90.8	51.6	73.0	9.6	23.5	45.3
4	89.2	91.9	52.6	75.3	9.8	24.8	45.7
5	89.6	92.4	53.2	76.7	9.9	25.8	45.9
6	90.2	93.1	53.3	77.1	10.1	27.1	46.3
7	90.4	93.4	53.8	78.4	10.2	28.0	46.4
8	90.5	93.5	53.9	78.7	10.3	29.2	46.4
9	90.5	93.5	53.9	78.7	10.3	29.2	46.4
10	91.1	94.4	54.0	79.2	10.4	30.8	46.9
11	91.3	94.6	54.0	79.2	10.7	34.6	46.9
12			54.0	79.2	10.7	34.6	

Type of progression	
<i>cont'd</i>	NOS (1-KM) n=1,864
Years	%
0	0.0
1	46.7
2	59.5
3	64.1
4	65.5
5	67.0
6	68.9
7	69.4
8	69.4
9	69.4
10	72.7
11	72.7
12	

Table 5b. Time to first progression of patients with small cell LC for period 1998-2016 (N=1,864).

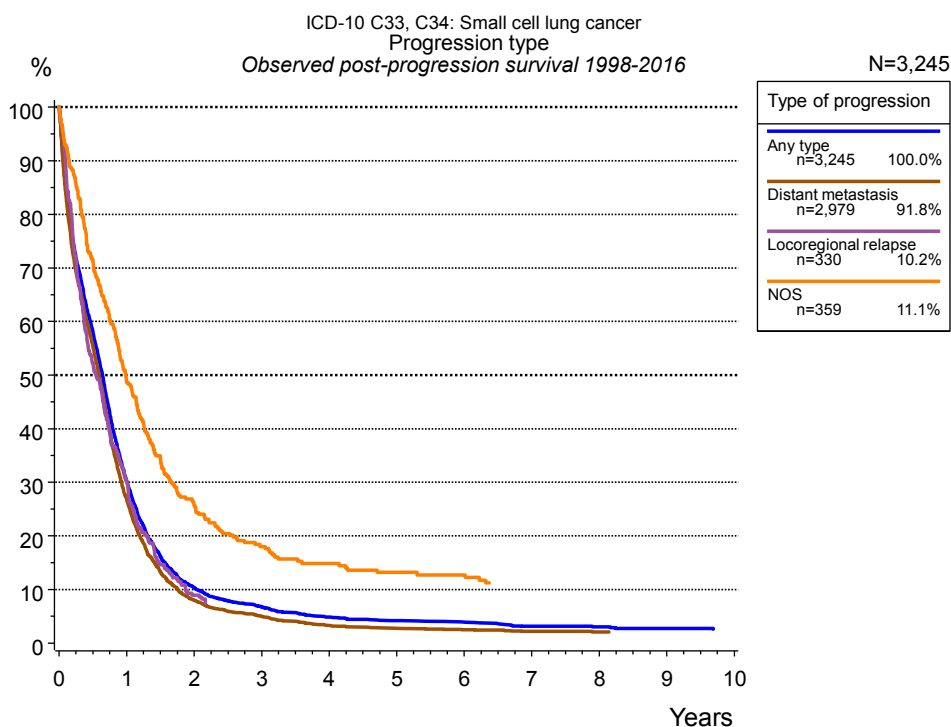


Figure 5c. Observed post-progression survival of 3,245 patients with small cell LC diagnosed between 1998 and 2016. These 3,245 patients with documented progression events during their course of disease represent 74.4 % of the totally 4,363 evaluated cases (incl. M1, n=2,499, 57.3 %). Patients with cancer relapse documented via death certificates only were excluded (n=889, 20.4 %). Multiple progression types on different sites are included in the evaluation even when not occurring synchronously. The NOS (not otherwise specified) class is included under the condition, that it is the one and only progression type during the course of disease.

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.

Years	Type of progression			
	Any type n=3,245 %	Distant metastasis n=2,979 %	Locoregional relapse n=330 %	NOS n=359 %
0	100.0	100.0	100.0	100.0
1	30.3	26.8	30.1	48.9
2	10.3	8.0	8.9	25.6
3	6.7	4.9		18.0
4	4.8	3.2		14.9
5	4.2	2.7		13.2
6	3.9	2.5		12.7
7	3.1	2.2		
8	3.0	2.1		
9	2.7			

Table 5d. Observed post-progression survival of patients with small cell LC for period 1998-2016 (N=3,245).

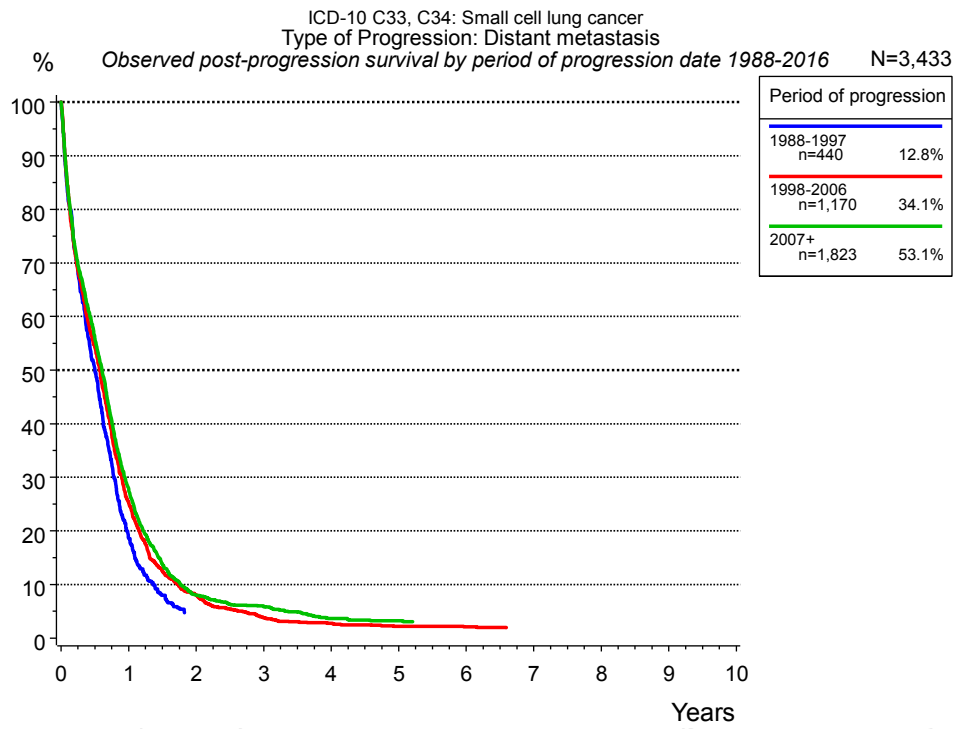


Figure 5e. Observed post-progression (distant metastasis) survival of 3,433 patients with small cell LC diagnosed between 1988 and 2016 by period of progression.

Years	Period of progression		
	1988-1997 n=440 %	1988-2006 n=1,170 %	2007+ n=1,823 %
0	100.0	100.0	100.0
1	18.8	25.3	27.8
2		8.1	8.0
3		3.9	5.8
4		2.8	3.6
5		2.2	3.2
6		2.1	

Table 5f. Observed post-progression (distant metastasis) survival of patients with small cell LC for period 1988-2016 by period of progression (N=3,433).

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

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