

Munich Cancer Registry



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ICD-10 C33, C34: Small cell LC

Survival

Year of diagnosis	1988-1997	1998-2014
Patients	893	4,795
Diseases	893	4,796
Cases evaluated	824	4,028
Creation date	03/02/2016	
Export date	12/23/2015	
Population	4.64 m	



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

http://www.tumorregister-muenchen.de/en/facts/surv/sC34s_E-ICD-10-C33-C34-Small-cell-LC-survival.pdf

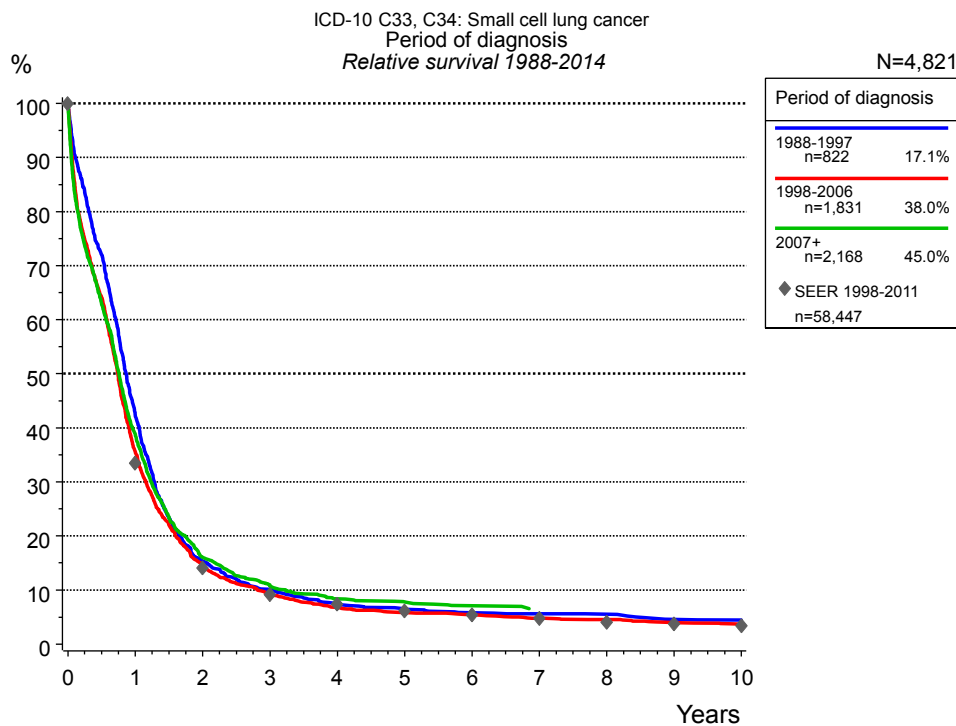


Figure 1a. Relative survival of patients with small cell LC by period of diagnosis. Included in the evaluation are 4,821 cases diagnosed between 1988 and 2014.

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 1998 to 2011, and are represented by gray 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.

Period of diagnosis						
Years	1988-1997 n=822		1998-2006 n=1,831		2007+ n=2,168	
	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	37.9	38.7
2	14.9	15.4	14.1	14.7	15.4	16.0
3	9.6	10.1	8.7	9.2	10.3	10.7
4	7.0	7.5	6.4	6.8	7.8	8.4
5	6.0	6.5	5.4	5.9	7.2	7.8
6	5.2	5.8	4.9	5.5	6.4	7.1
7	4.9	5.6	4.3	4.8	5.8	6.3
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 1988-2014 (N=4,821).

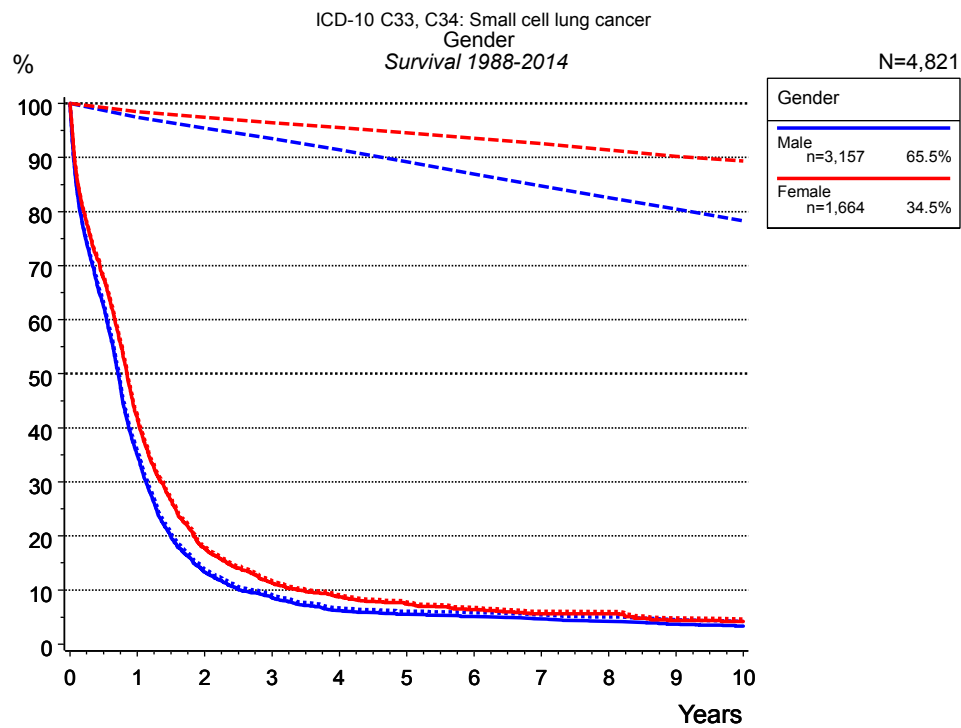


Figure 2a. Survival of patients with small cell LC by gender. Included in the evaluation are 4,821 cases diagnosed between 1988 and 2014.

Years	Gender			
	Male n=3,157		Female n=1,664	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	34.9	35.8	41.8	42.3
2	13.3	13.9	17.7	18.1
3	8.6	9.1	11.3	11.7
4	6.2	6.7	8.7	9.1
5	5.5	6.1	7.4	7.8
6	5.1	5.8	6.4	6.8
7	4.6	5.4	5.6	6.1
8	4.2	5.0	5.6	6.0
9	3.7	4.6	4.4	4.8
10	3.4	4.2	4.2	4.6

Table 2b. Observed (obs.) and relative (rel.) survival of patients with small cell LC by gender for period 1988-2014 (N=4,821).

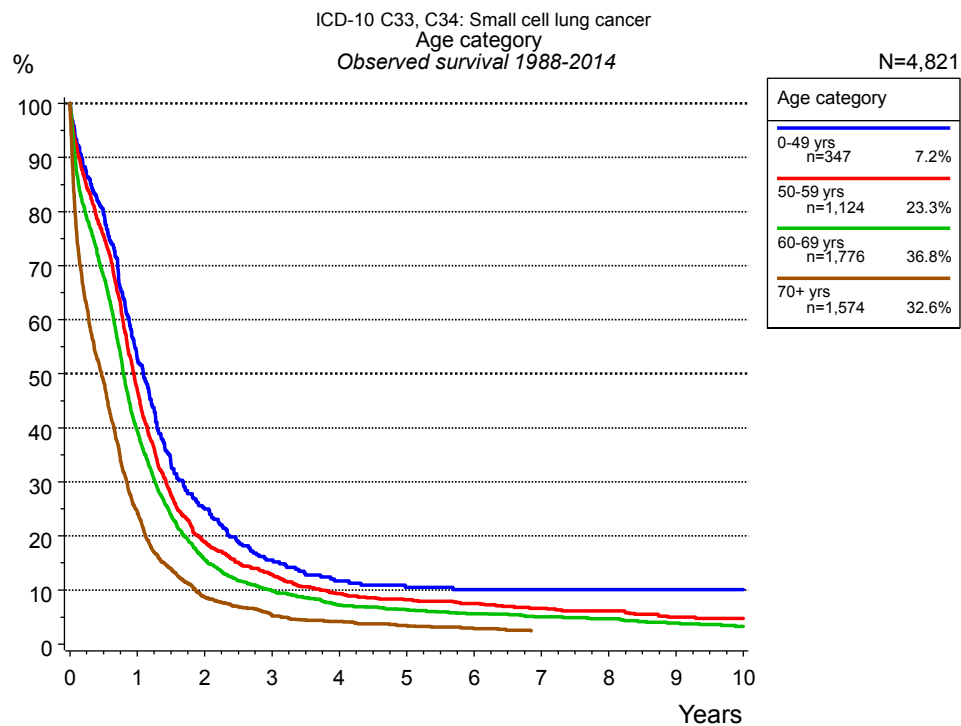


Figure 3a. Observed survival of patients with small cell LC by age category. Included in the evaluation are 4,821 cases diagnosed between 1988 and 2014.

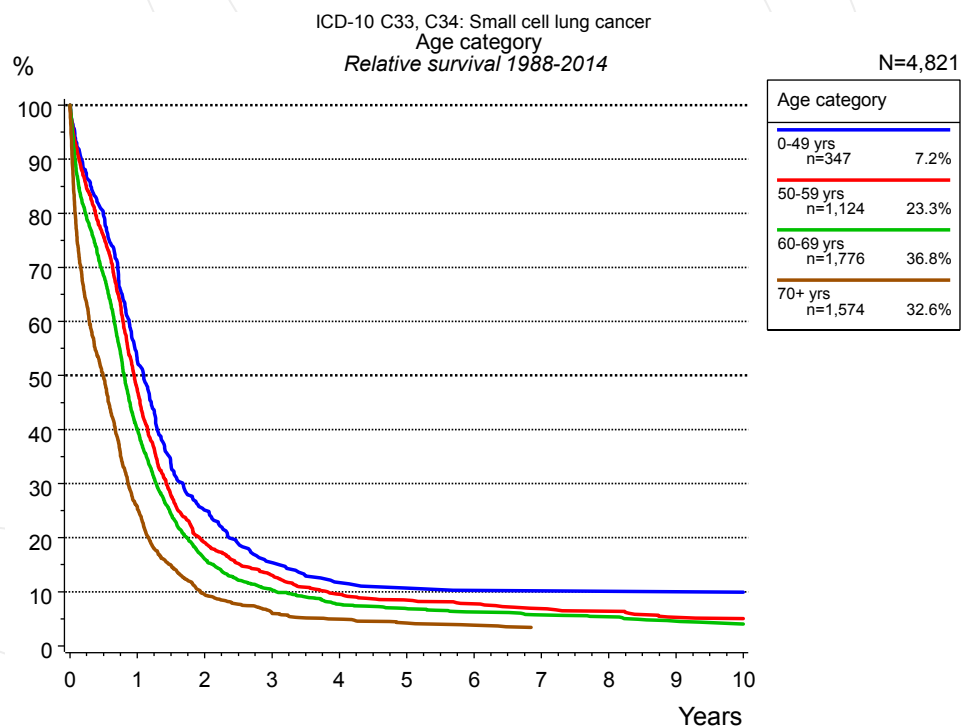


Figure 3b. Relative survival of patients with small cell LC by age category. Included in the evaluation are 4,821 cases diagnosed between 1988 and 2014.

Years	Age category							
	0-49 yrs n=347		50-59 yrs n=1,124		60-69 yrs n=1,776		70+ yrs n=1,574	
	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	52.5	52.6	47.0	47.3	39.5	40.0	24.5	25.6
2	25.0	25.1	18.9	19.1	15.6	16.0	8.7	9.4
3	15.5	15.4	12.8	13.1	9.9	10.3	5.3	6.0
4	11.7	11.7	9.3	9.6	7.2	7.7	4.2	5.0
5	10.5	10.7	8.2	8.4	6.4	6.9	3.5	4.2
6	10.1	10.2	7.5	7.8	5.6	6.2	2.9	3.8
7	10.1	10.2	6.7	6.9	5.0	5.7	2.4	3.3
8	10.1	10.1	6.2	6.4	4.7	5.4		
9	10.1	10.0	5.0	5.3	3.9	4.6		
10	10.1	9.9	4.8	5.0	3.3	4.0		

Table 3c. Observed (obs.) and relative (rel.) survival of patients with small cell LC by age category for period 1988-2014 (N=4,821).

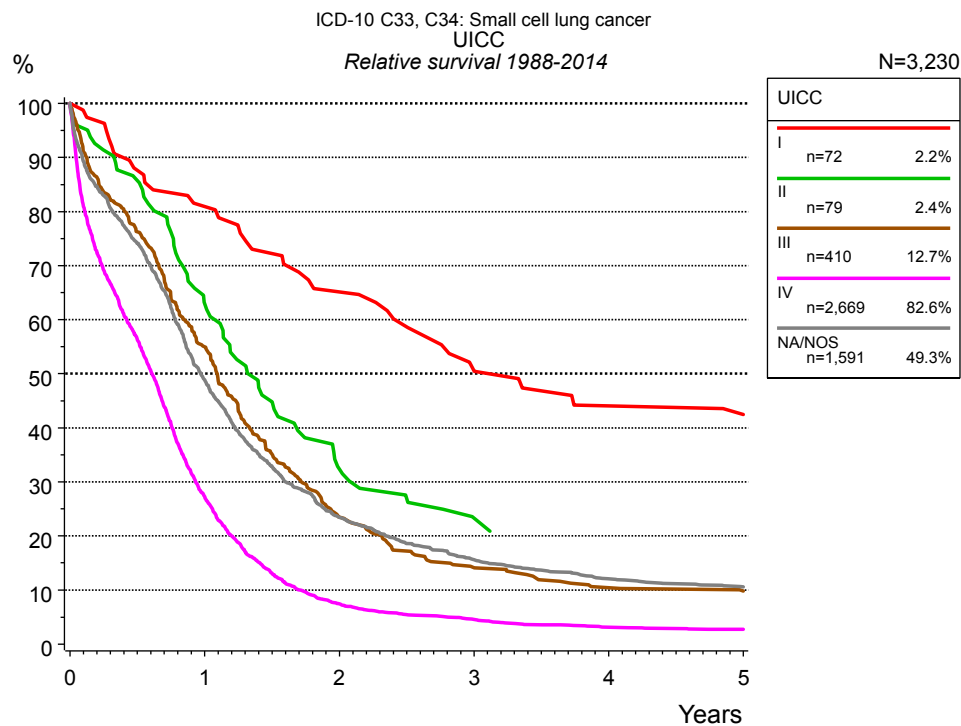


Figure 4a. Relative survival of patients with small cell LC by UICC. For 4,036 of 4,821 cases diagnosed between 1988 and 2014 valid data could be obtained for this item. For a total of 3,230 cases an evaluable classification was established. The grey line represents the subgroup of 1,591 patients with missing values regarding UICC (33.0% of 4,821 patients, the percent values of all other categories are related to n=3,230).

		UICC									
		I n=72		II n=79		III n=410		IV n=2,669		NA/NOS n=1,591	
Years		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		80.0	81.0	62.1	63.0	54.1	55.0	26.6	27.2	47.7	48.8
2		63.3	65.1	31.7	32.4	22.8	23.5	7.2	7.4	22.5	23.4
3		49.0	50.5	22.5	23.3	13.7	14.1	4.3	4.5	14.7	15.6
4		40.8	44.1			10.0	10.4	3.0	3.2	11.2	12.1
5		39.1	42.5			9.3	9.8	2.5	2.7	9.7	10.6

Table 4b. Observed (obs.) and relative (rel.) survival of patients with small cell LC by UICC for period 1988-2014 (N=3,230).

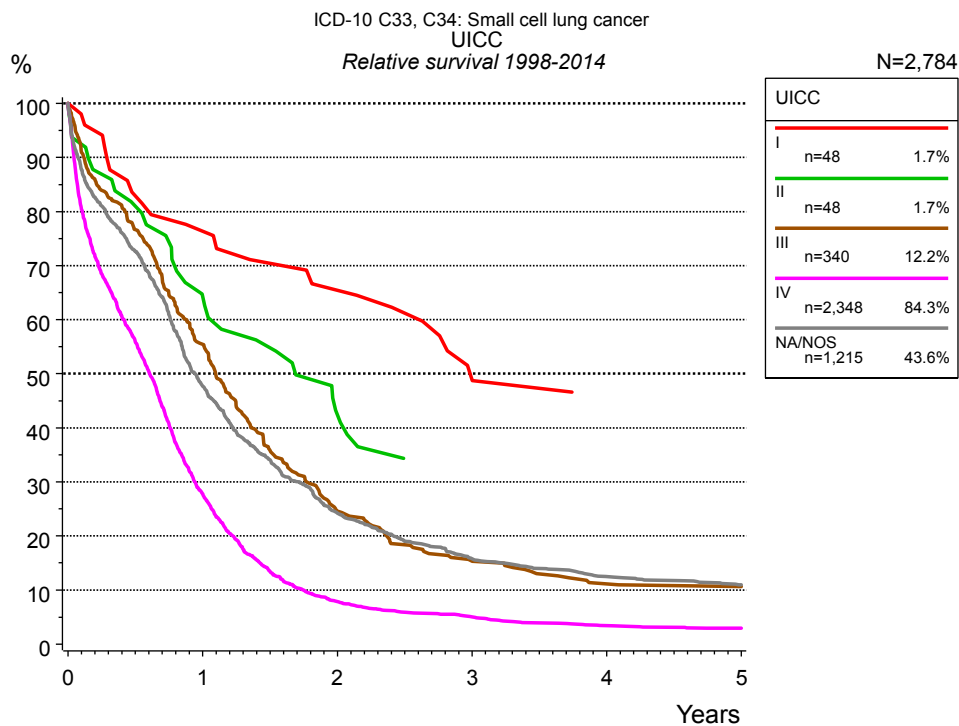


Figure 4c. Relative survival of patients with small cell LC by UICC. For 3,387 of 3,999 cases diagnosed between 1998 and 2014 valid data could be obtained for this item. For a total of 2,784 cases an evaluable classification was established. The grey line represents the subgroup of 1,215 patients with missing values regarding UICC (30.4% of 3,999 patients, the percent values of all other categories are related to n=2,784).

		UICC									
		I n=48		II n=48		III n=340		IV n=2,348		NA/NOS n=1,215	
Years		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		76.2	76.4	63.6	64.4	54.6	55.5	27.2	27.7	46.6	47.7
2		64.2	65.4	41.7	42.5	23.8	24.6	7.6	7.9	23.3	24.2
3		48.5	48.8			15.0	15.3	4.7	5.0	14.9	15.8
4		43.1	46.3			10.7	11.1	3.2	3.4	11.6	12.5
5		43.1	44.8			10.3	10.6	2.7	2.9	10.0	10.9

Table 4d. Observed (obs.) and relative (rel.) survival of patients with small cell LC by UICC for period 1998-2014 (N=2,784).

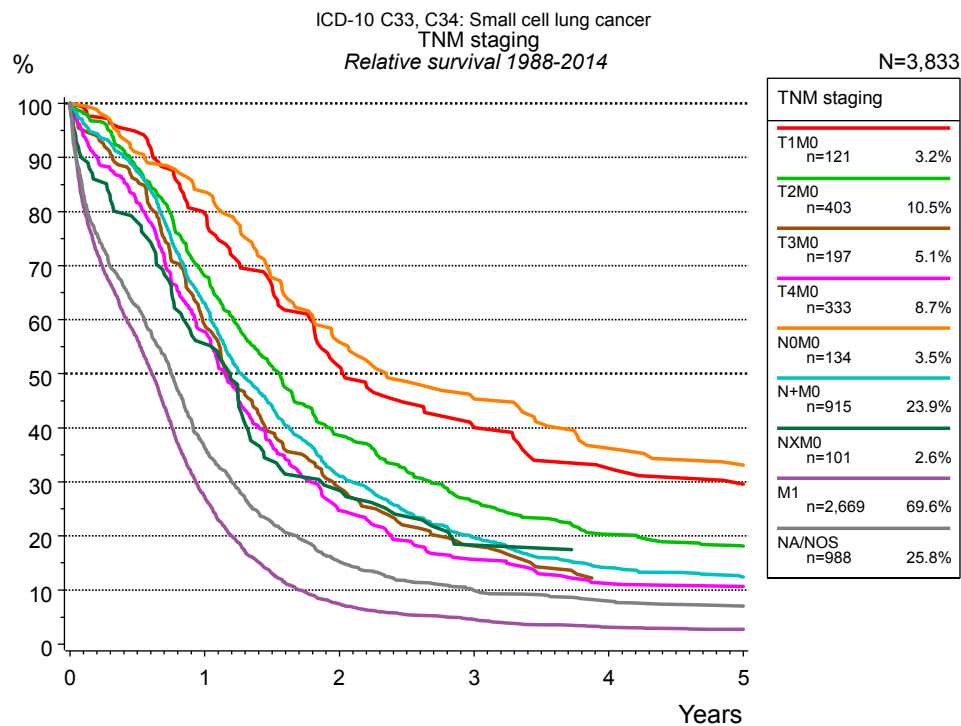


Figure 4e. Relative survival of patients with small cell LC by TNM staging. For 4,036 of 4,821 cases diagnosed between 1988 and 2014 valid data could be obtained for this item. For a total of 3,833 cases an evaluable classification was established. The accumulated percentage exceeds the 100% value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 988 patients with missing values regarding TNM staging (20.5 % of 4,821 patients, the percent values of all other categories are related to n=3,833).

TNM staging														
Years	T1M0 n=121		T2M0 n=403		T3M0 n=197		T4M0 n=333		N0M0 n=134		N+M0 n=915		NXMO n=101	
	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	78.6	79.6	67.0	68.1	58.6	59.0	57.0	57.8	82.6	83.6	62.0	63.0	55.1	55.5
2	50.2	51.3	37.3	38.6	28.0	28.9	24.0	24.7	53.7	55.8	30.1	31.1	28.5	28.4
3	38.9	40.1	25.2	26.4	17.6	18.2	15.0	15.7	43.6	45.4	18.8	19.7	17.7	18.3
4	30.9	32.5	19.1	20.3	11.4	12.0	10.7	11.2	34.0	36.2	13.3	14.1	16.6	17.1
5	27.7	29.6	16.7	18.2			9.9	10.7	30.4	33.1	11.5	12.4		

TNM staging				
cont'd	M1 n=2,669		NA/NOS n=988	
Years	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	26.6	27.2	35.3	36.3
2	7.2	7.4	14.6	15.2
3	4.3	4.5	9.4	9.9
4	3.0	3.2	7.3	7.9
5	2.5	2.7	6.5	7.1

Table 4f. Observed (obs.) and relative (rel.) survival of patients with small cell LC by TNM staging for period 1988-2014 (N=4,873).

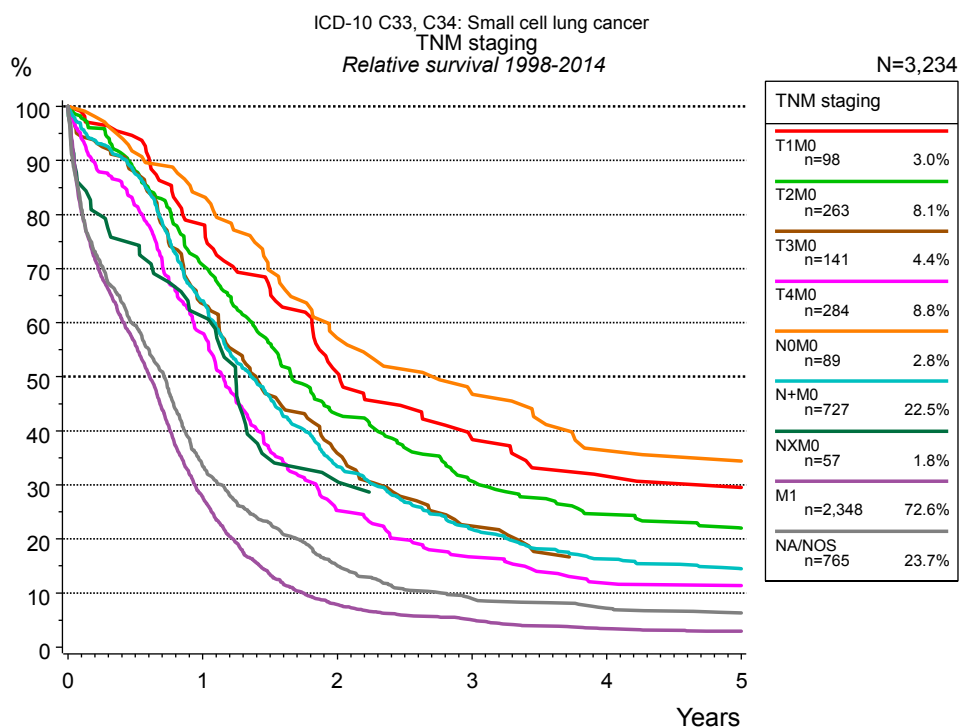


Figure 4g. Relative survival of patients with small cell LC by TNM staging. For 3,387 of 3,999 cases diagnosed between 1998 and 2014 valid data could be obtained for this item. For a total of 3,234 cases an evaluable classification was established. The accumulated percentage exceeds the 100% value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 765 patients with missing values regarding TNM staging (19.1 % of 3,999 patients, the percent values of all other categories are related to n=3,234).

TNM staging														
Years	T1M0 n=98		T2M0 n=263		T3M0 n=141		T4M0 n=284		N0M0 n=89		N+M0 n=727		NXM0 n=57	
	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	77.6	78.2	69.7	70.6	62.7	63.5	57.3	58.0	82.7	83.4	63.0	64.0	61.4	61.1
2	49.7	50.7	41.6	43.1	34.9	35.9	24.5	25.3	55.1	57.1	32.3	33.4	31.5	30.6
3	37.6	38.5	29.4	30.7	21.7	22.4	16.0	16.7	45.6	46.8	20.7	21.7		
4	29.8	31.6	23.2	24.6			11.4	11.8	34.2	36.3	15.4	16.3		
5	28.4	29.5	20.4	22.0			10.9	11.4	32.8	34.4	13.4	14.5		

TNM staging				
cont'd	M1 n=2,348		NA/NOS n=765	
Years	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	27.2	27.7	32.5	33.4
2	7.6	7.9	14.5	15.1
3	4.7	5.0	8.5	9.0
4	3.2	3.4	6.7	7.2
5	2.7	2.9	5.9	6.3

Table 4h. Observed (obs.) and relative (rel.) survival of patients with small cell LC by TNM staging for period 1998-2014 (N=4,007).

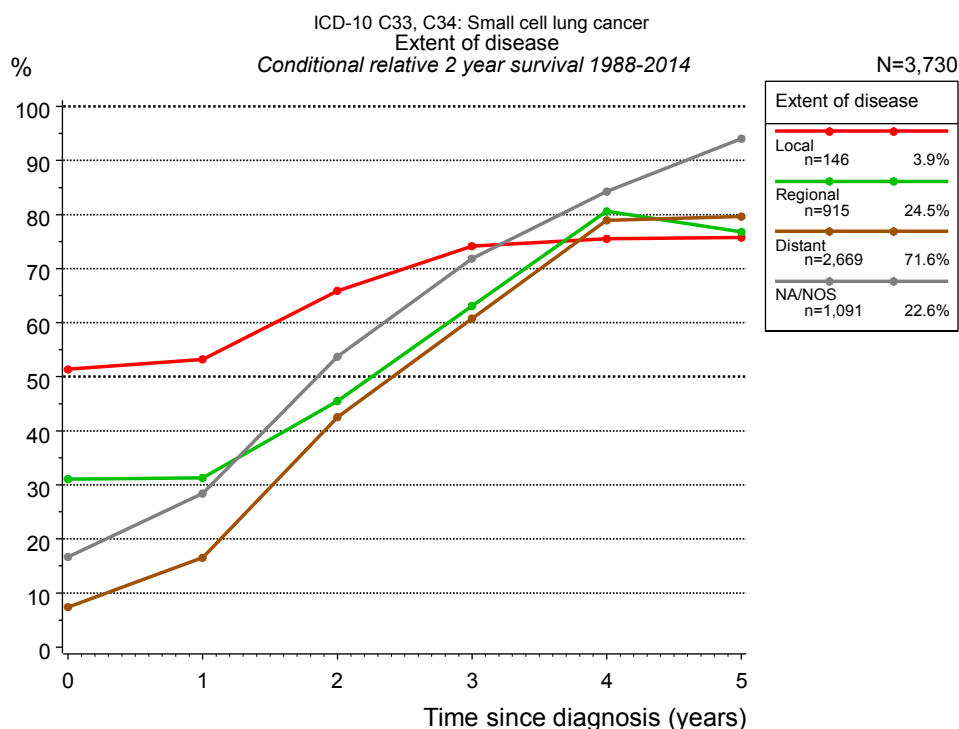


Figure 4i. Conditional relative 2-year survival of patients with small cell LC by extent of disease. For 4,036 of 4,821 cases diagnosed between 1988 and 2014 valid data could be obtained for this item. For a total of 3,730 cases an evaluable classification was established. The grey line represents the subgroup of 1,091 patients with missing values regarding extent of disease (22.6% of 4,821 patients, the percent values of all other categories are related to n=3,730).

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	146	51.4	915	31.1	2,669	7.4	1,091	16.7
1	108	53.2	541	31.3	677	16.5	392	28.4
2	66	65.9	250	45.5	168	42.5	160	53.7
3	52	74.2	142	63.1	89	60.8	99	71.9
4	40	75.5	92	80.6	50	78.9	78	84.2
5	33	75.7	72	76.8	37	79.6	64	94.0

Table 4j. Conditional relative 2-year survival of patients with small cell LC by extent of disease for period 1988-2014 (N=3,730).

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 74.2% (n=52).

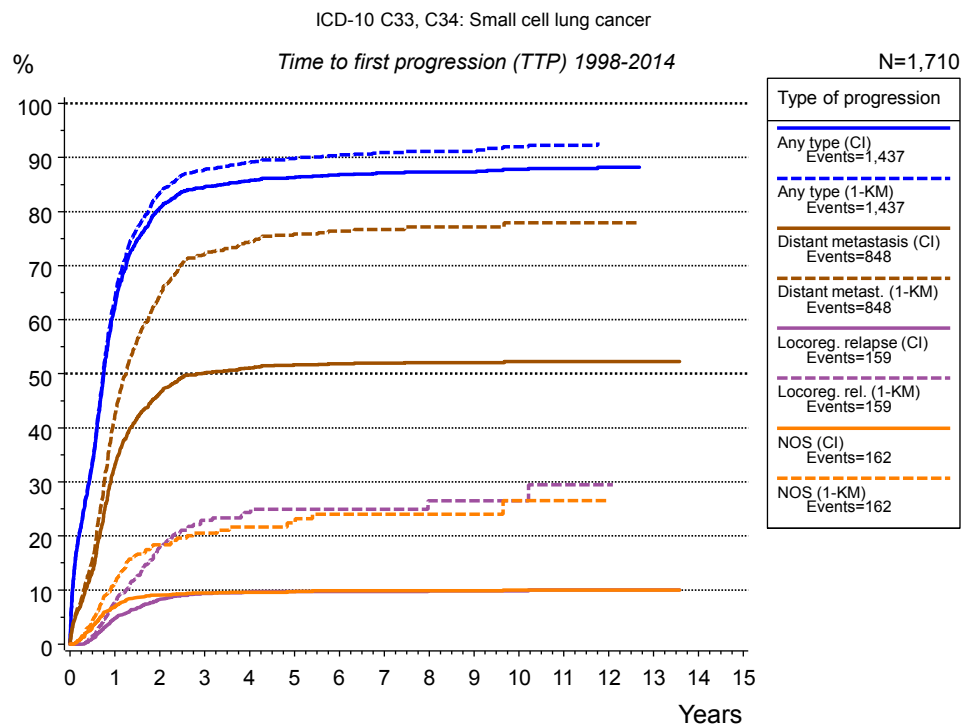


Figure 5a. Time to first progression of 1,710 patients with small cell LC diagnosed between 1998 and 2014 (M0 only in solid cancers) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency 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=1,710 %	n=1,710 %	n=1,710 %	n=1,710 %	n=1,710 %	n=1,710 %	n=1,710 %
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	62.6	64.1	33.2	42.5	4.9	8.0	7.1
2	80.7	83.4	46.4	64.4	8.3	18.0	9.1
3	84.6	87.8	50.1	72.2	9.4	22.9	9.4
4	85.7	89.1	51.1	74.5	9.6	24.4	9.6
5	86.3	89.8	51.7	75.9	9.7	24.9	9.7
6	86.8	90.5	51.9	76.4	9.7	24.9	9.8
7	87.2	90.9	52.0	76.7	9.7	24.9	9.8
8	87.3	91.1	52.1	77.2	9.9	26.5	9.8
9	87.3	91.1	52.1	77.2	9.9	26.5	9.8
10	87.8	91.9	52.3	77.9	9.9	26.5	10.0
11	88.0	92.3	52.3	77.9	10.0	29.5	10.0
12	88.2	92.8	52.3	77.9	10.0	29.5	10.0
13	88.2	92.8	52.3	77.9	10.0	29.5	10.0
14			52.3	77.9			10.0
15			52.3	77.9			10.0

Type of progression	
<i>cont'd</i>	NOS (1-KM) n=1,710
Years	%
0	0.0
1	11.5
2	18.4
3	20.6
4	21.7
5	22.4
6	24.0
7	24.0
8	24.0
9	24.0
10	26.6
11	26.6
12	26.6
13	26.6
14	26.6
15	26.6

Table 5b. Time to first progression of patients with small cell LC for period 1998-2014 (N=1,710).

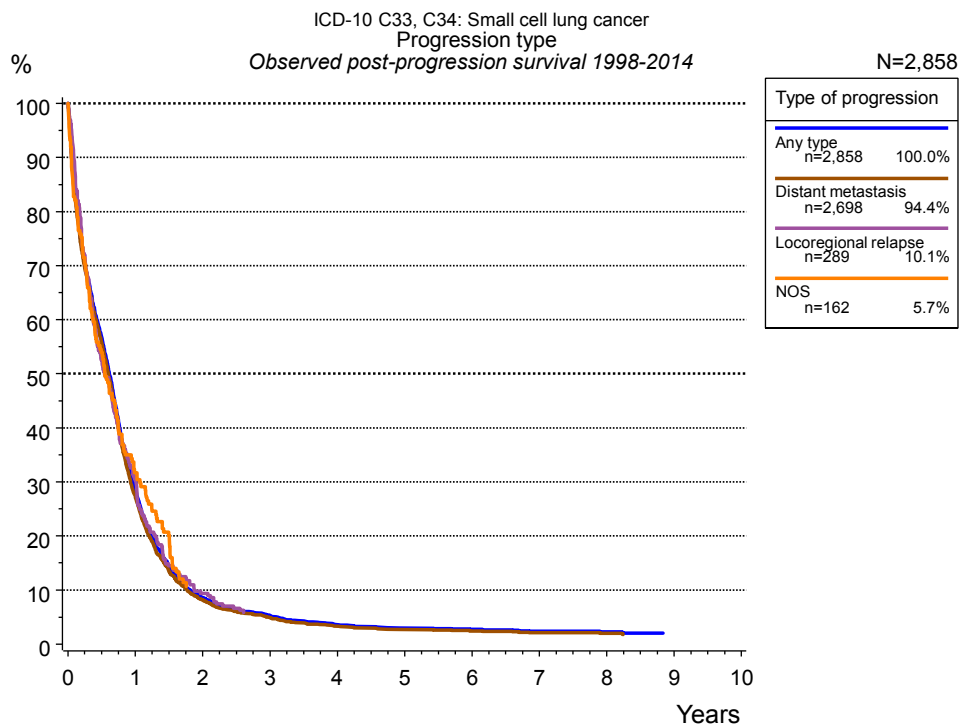


Figure 5c. Observed post-progression survival of 2,858 patients with small cell LC diagnosed between 1998 and 2014. These 2,858 patients with documented progression events during their course of disease represent 71.9% of the totally 3,976 evaluated cases (incl. M1, n=2,266, 57.0%). Patients with cancer relapse documented via death certificates only were excluded (n=845, 21.3%). 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=2,858 %	Distant metastasis n=2,698 %	Locoregional relapse n=289 %	NOS n=162 %
0	100.0	100.0	100.0	100.0
1	28.6	27.2	30.3	31.7
2	8.6	8.1	9.4	
3	5.2	4.9		
4	3.6	3.3		
5	2.9	2.6		
6	2.7	2.4		
7	2.4	2.1		
8	2.3	2.0		
9	2.1	1.7		

Table 5d. Observed post-progression survival of patients with small cell LC for period 1998-2014 (N=2,858).

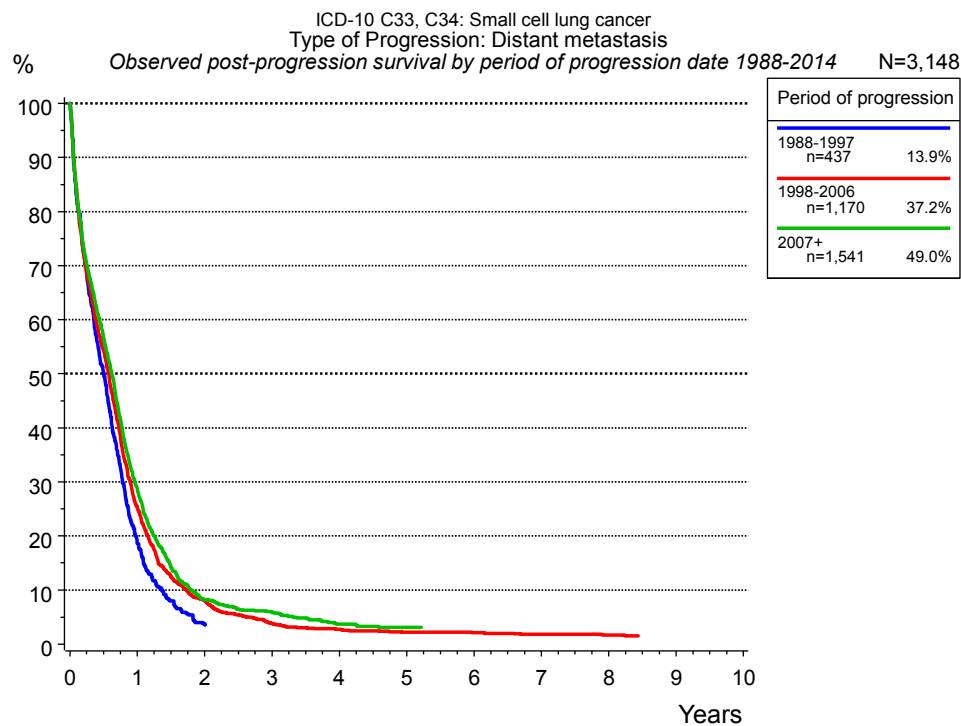


Figure 5e. Observed post-progression (distant metastasis) survival of 3,148 patients with small cell LC diagnosed between 1988 and 2014 by period of progression.

Years	Period of progression		
	1988-1997 n=437	1998-2006 n=1,170	2007+ n=1,541
	%	%	%
0	100.0	100.0	100.0
1	18.8	25.3	28.6
2	3.8	8.1	8.2
3		3.9	5.9
4		2.8	3.7
5		2.2	3.1
6		2.1	
7		1.8	
8		1.7	
9		1.5	

Table 5f. Observed post-progression (distant metastasis) survival of patients with small cell LC for period 1988-2014 by period of progression (N=3,148).

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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