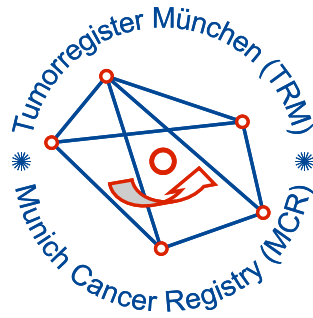


Munich Cancer Registry



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

ICD-10 C15: Oesophagus cancer

Survival

Year of diagnosis	1988-1997	1998-2016
Patients	592	4,552
Diseases	593	4,553
Cases evaluated	514	3,326
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/sC15__E-ICD-10-C15-Oesophagus-cancer-survival.pdf

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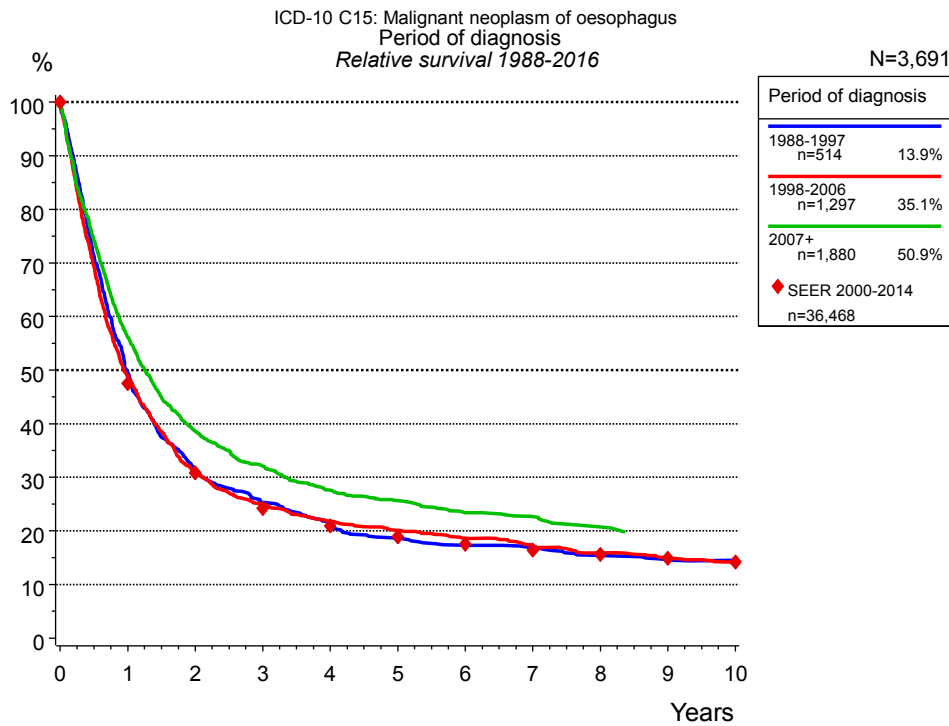


Figure 1a. Relative survival of patients with oesophagus cancer by period of diagnosis. Included in the evaluation are 3,691 cases diagnosed between 1988 and 2016.

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=514		1998-2006 n=1,297		2007+ n=1,880	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	48.4	49.5	47.7	48.9	54.6	56.1
2	30.4	31.7	29.5	30.8	36.8	38.6
3	23.7	25.3	23.4	24.9	29.9	32.1
4	19.8	21.6	20.1	21.8	25.1	27.6
5	16.7	18.6	18.1	20.1	22.7	25.6
6	15.3	17.3	16.5	18.6	20.2	23.4
7	14.4	16.9	14.9	17.2	19.1	22.7
8	12.8	15.4	13.4	15.9	17.3	20.7
9	11.9	14.6	12.4	15.0		
10	11.5	14.5	11.2	14.0		

Table 1b. Observed (obs.) and relative (rel.) survival of patients with oesophagus cancer by period of diagnosis for period 1988-2016 (N=3,691).

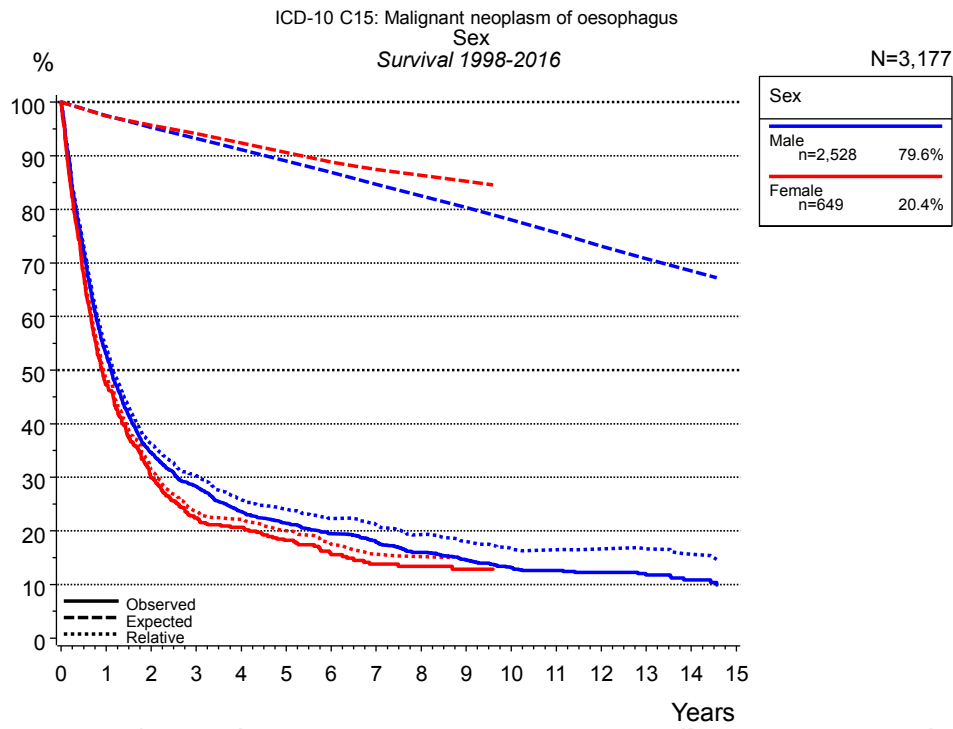


Figure 2a. Survival of patients with oesophagus cancer by sex. Included in the evaluation are 3,177 cases diagnosed between 1998 and 2016.

Years	Sex			
	Male n=2,528		Female n=649	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	52.9	54.3	47.2	48.4
2	34.6	36.3	29.9	31.2
3	28.3	30.3	22.4	23.6
4	23.6	25.9	20.7	22.2
5	21.4	24.0	18.2	20.0
6	19.4	22.3	15.6	17.5
7	17.9	21.1	13.8	15.6
8	16.0	19.3	13.3	15.2
9	14.5	18.0	12.9	14.9
10	13.1	16.7		
11	12.6	16.5		
12	12.3	16.6		
13	11.8	16.6		
14	10.8	15.6		

Table 2b. Observed (obs.) and relative (rel.) survival of patients with oesophagus cancer by sex for period 1998-2016 (N=3,177).

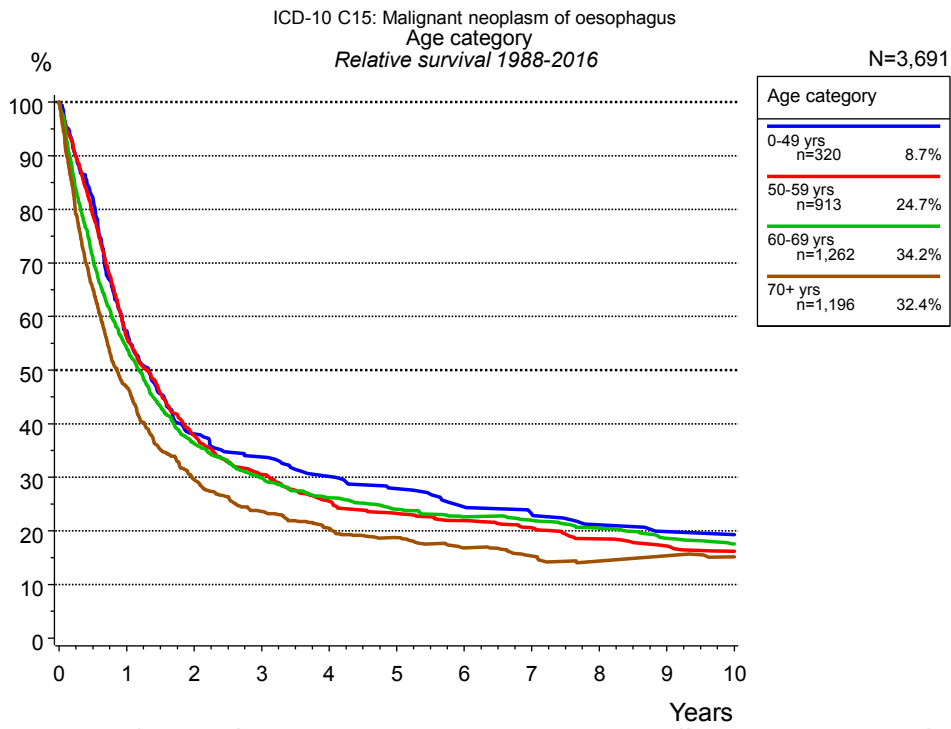


Figure 3a. Relative survival of patients with oesophagus cancer by age category. Included in the evaluation are 3,691 cases diagnosed between 1988 and 2016.

Years	Age category							
	0-49 yrs n=320		50-59 yrs n=913		60-69 yrs n=1,262		70+ yrs n=1,196	
	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	57.5	57.3	55.6	56.0	53.3	54.1	44.3	46.8
2	38.0	38.1	37.4	37.8	35.2	36.3	26.6	29.6
3	33.8	33.8	29.8	30.5	28.5	29.9	20.1	23.6
4	30.0	30.1	24.8	25.6	24.6	26.2	16.5	20.5
5	27.6	27.8	22.3	23.3	22.1	24.0	14.2	18.7
6	24.3	24.5	20.9	21.9	20.3	22.6	11.9	16.8
7	22.8	23.1	19.3	20.6	19.4	22.0	10.1	15.3
8	20.7	21.1	17.3	18.5	17.6	20.5	8.8	14.4
9	19.3	19.9	16.0	17.2	15.6	18.6	8.8	15.3
10	19.3	19.3	14.8	16.2	14.3	17.6	7.8	15.2

Table 3b. Observed (obs.) and relative (rel.) survival of patients with oesophagus cancer by age category for period 1988-2016 (N=3,691).

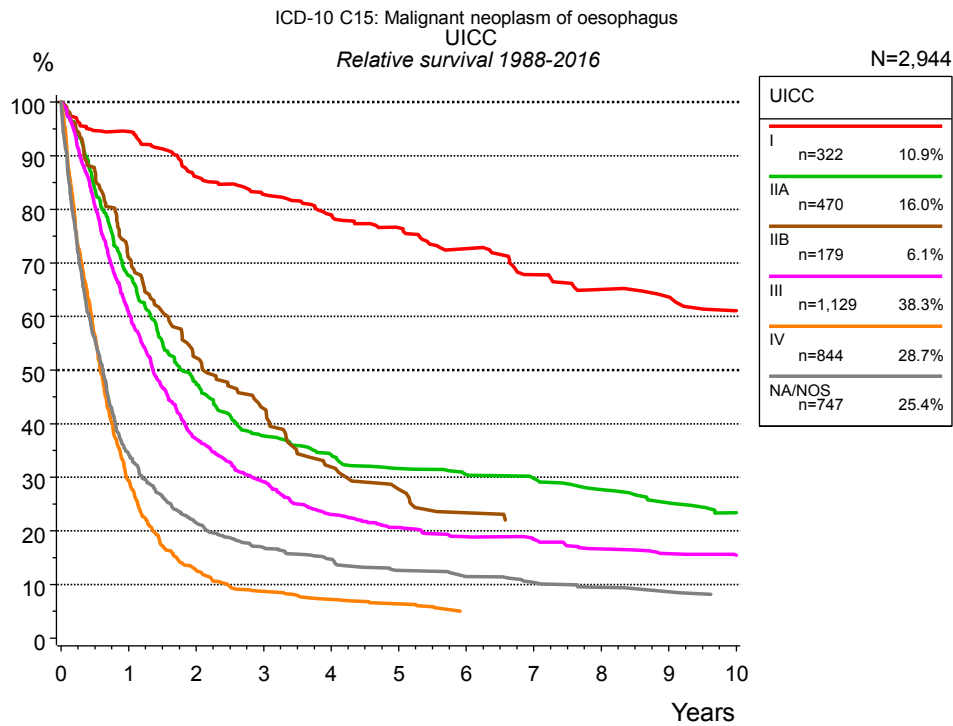


Figure 4a. Relative survival of patients with oesophagus cancer by UICC. For 3,046 of 3,691 cases diagnosed between 1988 and 2016 valid data could be obtained for this item. For a total of 2,944 cases an evaluable classification was established. The grey line represents the subgroup of 747 patients with missing values regarding UICC (20.2 % of 3,691 patients, the percent values of all other categories are related to n=2,944).

Years	UICC											
	I n=322		IIA n=470		IIB n=179		III n=1,129		IV n=844		NA/NOS n=747	
	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
1	92.7	94.5	66.2	67.7	69.6	71.0	59.5	60.7	28.9	29.4	32.8	34.2
2	82.3	86.1	45.7	47.6	50.4	52.3	35.8	37.1	12.2	12.6	20.0	21.5
3	77.3	82.8	35.5	37.7	40.5	42.8	27.5	29.1	8.3	8.7	15.4	16.9
4	72.3	79.0	31.5	34.2	29.7	31.9	21.4	23.1	6.8	7.2	13.0	14.7
5	68.1	76.5	28.6	31.6	25.0	27.8	18.8	20.6	5.9	6.4	10.8	12.6
6	63.1	72.7	27.2	30.5	21.0	23.4	16.7	18.9	4.5	5.0	9.5	11.5
7	57.4	67.8	25.9	29.8	19.1	21.4	15.9	18.4			8.3	10.4
8	53.7	65.0	23.6	27.7			14.1	16.6			7.5	9.5
9	51.5	63.6	21.3	25.2			13.0	15.7			6.6	8.6
10	47.3	61.1	19.2	23.4			12.5	15.5				

Table 4b. Observed (obs.) and relative (rel.) survival of patients with oesophagus cancer by UICC for period 1988-2016 (N=2,944).

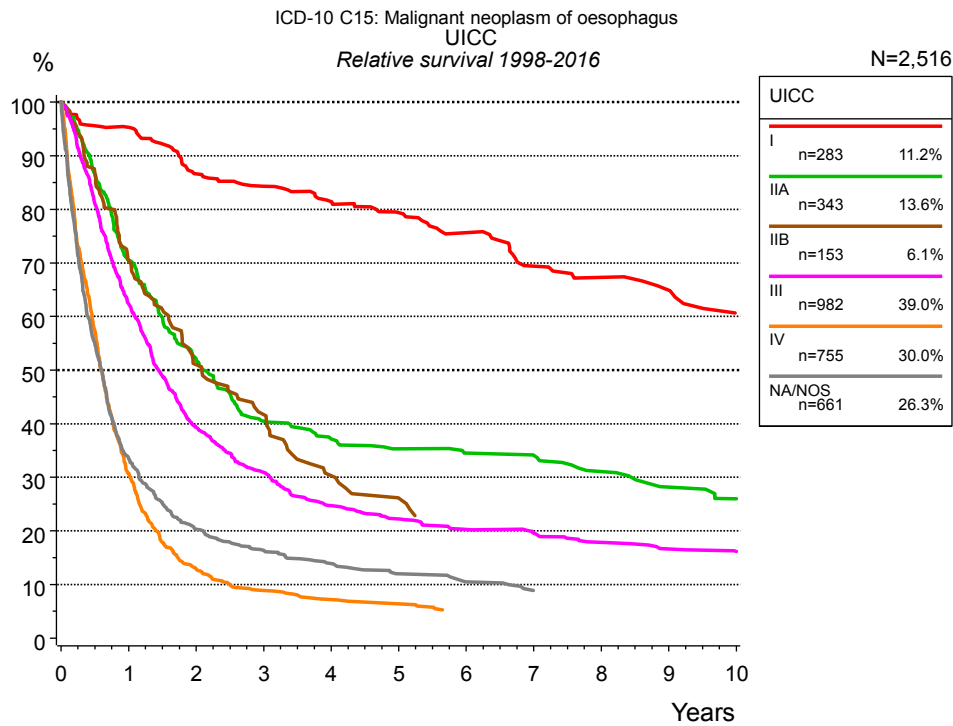


Figure 4c. Relative survival of patients with oesophagus cancer by UICC. For 2,605 of 3,177 cases diagnosed between 1998 and 2016 valid data could be obtained for this item. For a total of 2,516 cases an evaluable classification was established. The grey line represents the subgroup of 661 patients with missing values regarding UICC (20.8 % of 3,177 patients, the percent values of all other categories are related to n=2,516).

Years	UICC											
	I n=283		IIA n=343		IIB n=153		III n=982		IV n=755		NA/NOS n=661	
	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
1	93.5	95.3	69.1	70.6	69.0	70.4	61.1	62.3	30.2	30.7	32.0	33.4
2	82.8	86.6	50.2	52.1	49.0	51.0	37.9	39.3	12.4	12.9	18.8	20.3
3	78.7	84.3	38.2	40.5	39.6	41.7	29.2	30.9	8.4	8.9	14.8	16.3
4	74.6	81.5	34.3	37.1	28.2	30.3	22.9	24.7	6.8	7.2	12.3	13.9
5	70.7	79.4	32.1	35.3	23.4	26.1	20.3	22.2	5.9	6.4	10.2	12.0
6	65.8	75.6	30.8	34.5			18.0	20.3			8.6	10.5
7	58.8	69.4	29.9	34.1			17.0	19.6			7.1	8.9
8	55.8	67.3	26.9	31.0			15.2	17.8				
9	52.8	64.9	23.8	28.1			13.7	16.6				
10	47.1	60.7	21.6	26.0			13.1	16.1				

Table 4d. Observed (obs.) and relative (rel.) survival of patients with oesophagus cancer by UICC for period 1998-2016 (N=2,516).

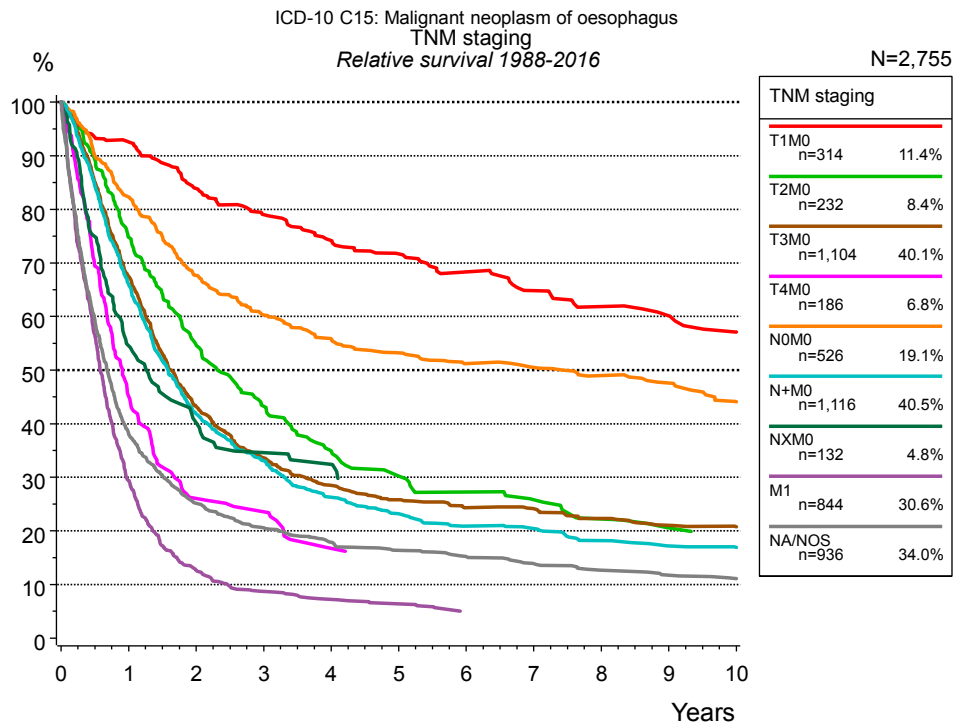


Figure 4e. Relative survival of patients with oesophagus cancer by TNM staging. For 3,046 of 3,691 cases diagnosed between 1988 and 2016 valid data could be obtained for this item. For a total of 2,755 cases an evaluable classification was established. The accumulated percentage exceeds the 100 % value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 936 patients with missing values regarding TNM staging (25.4 % of 3,691 patients, the percent values of all other categories are related to n=2,755).

Years	TNM staging													
	T1M0 n=314		T2M0 n=232		T3M0 n=1,104		T4M0 n=186		NOM0 n=526		N+M0 n=1,116		NXM0 n=132	
	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	90.8	92.6	73.2	74.8	66.1	67.5	44.4	45.1	80.7	82.3	64.6	65.9	53.3	54.5
2	80.4	83.9	52.6	54.7	41.7	43.2	25.4	26.0	65.1	67.7	40.3	41.8	38.8	40.2
3	74.1	79.0	40.6	43.2	31.7	33.6	22.9	23.6	56.7	60.3	31.2	33.1	32.5	34.6
4	68.3	74.2	31.9	34.9	26.3	28.5	15.9	16.7	51.5	55.8	24.3	26.3	30.4	32.5
5	64.3	71.7	27.0	30.2	23.4	25.8			48.1	53.2	20.9	23.2		
6	59.9	68.3	24.1	27.3	21.5	24.4			45.2	51.2	18.5	20.9		
7	55.5	64.8	22.1	25.8	20.9	24.1			43.6	50.5	17.6	20.4		
8	51.8	61.8	18.8	22.2	19.0	22.3			41.3	48.9	15.4	18.2		
9	49.4	60.2	16.6	20.5	17.5	21.1			39.3	47.6	14.1	17.2		
10	44.9	57.1			16.8	20.8			35.2	44.1	13.6	16.9		

<i>cont'd</i>	TNM staging			
	M1 n=844		NA/NOS n=936	
	obs. %	rel. %	obs. %	rel. %
Years				
0	100.0	100.0	100.0	100.0
1	28.9	29.4	36.5	37.9
2	12.2	12.6	23.6	25.2
3	8.3	8.7	18.8	20.5
4	6.8	7.2	15.9	17.9
5	5.9	6.4	14.2	16.4
6	4.5	5.0	12.8	15.2
7			11.3	13.9
8			10.0	12.6
9			9.2	11.7
10			8.5	11.0

Table 4f. Observed (obs.) and relative (rel.) survival of patients with oesophagus cancer by TNM staging for period 1988-2016 (N=2,755).

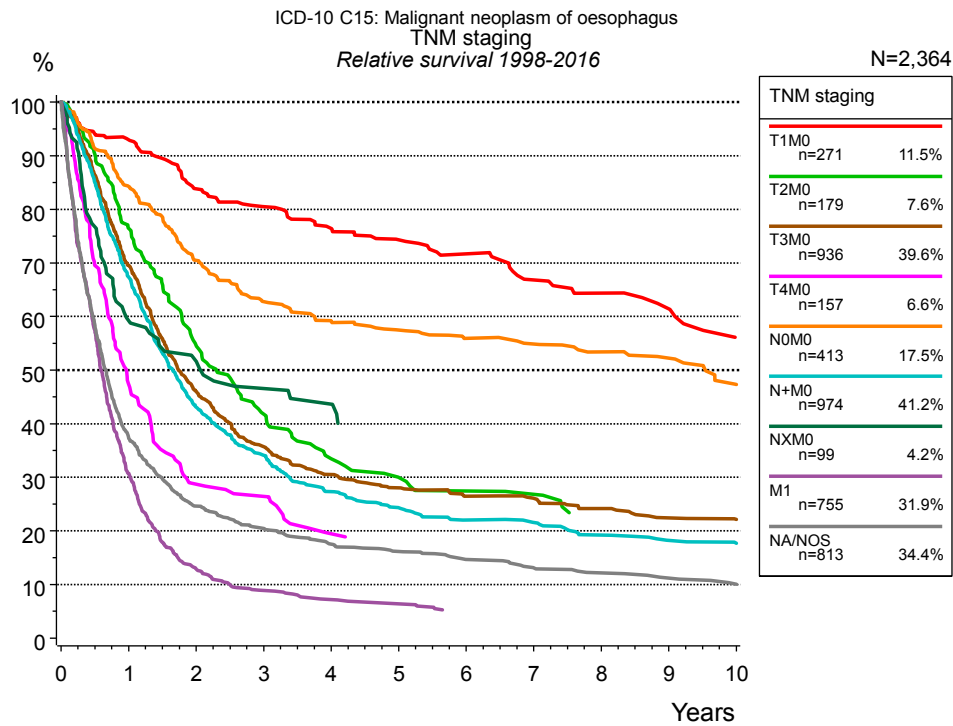


Figure 4g. Relative survival of patients with oesophagus cancer by TNM staging. For 2,605 of 3,177 cases diagnosed between 1998 and 2016 valid data could be obtained for this item. For a total of 2,364 cases an evaluable classification was established. The accumulated percentage exceeds the 100 % value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 813 patients with missing values regarding TNM staging (25.6 % of 3,177 patients, the percent values of all other categories are related to n=2,364).

Years	TNM staging													
	T1M0 n=271		T2M0 n=179		T3M0 n=936		T4M0 n=157		NOM0 n=413		N+M0 n=974		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	91.2	93.0	74.9	76.4	68.1	69.5	46.7	47.2	82.8	84.3	65.9	67.3	58.1	59.2
2	80.3	83.8	52.7	54.6	44.4	46.0	28.1	28.7	67.9	70.5	41.5	43.1	50.0	51.7
3	75.4	80.5	39.4	41.8	33.6	35.7	25.9	26.4	59.2	62.8	32.1	34.1	43.9	46.6
4	70.4	76.4	30.6	33.4	28.3	30.5	18.5	19.4	54.7	59.1	25.3	27.3	41.2	43.6
5	66.6	74.3	26.8	30.0	25.5	28.0			52.0	57.5	21.9	24.3		
6	63.0	71.7	24.5	27.4	23.4	26.5			49.5	55.9	19.4	22.1		
7	57.3	66.8	23.5	26.8	22.6	26.1			47.7	54.9	18.6	21.6		
8	54.1	64.4			20.6	24.1			45.3	53.4	16.3	19.2		
9	50.8	61.4			18.6	22.4			43.4	52.2	14.9	18.2		
10	44.2	56.1			18.0	22.1			38.0	47.3	14.2	17.7		

<i>cont'd</i>	TNM staging			
	M1 n=755		NA/NOS n=813	
	obs. %	rel. %	obs. %	rel. %
Years				
0	100.0	100.0	100.0	100.0
1	30.2	30.7	35.8	37.3
2	12.4	12.9	23.0	24.6
3	8.4	8.9	18.7	20.4
4	6.8	7.2	15.6	17.5
5	5.9	6.4	14.0	16.2
6			12.3	14.7
7			10.7	13.1
8			9.7	12.1
9			8.8	11.2
10			7.8	10.1

Table 4h. Observed (obs.) and relative (rel.) survival of patients with oesophagus cancer by TNM staging for period 1998-2016 (N=2,364).

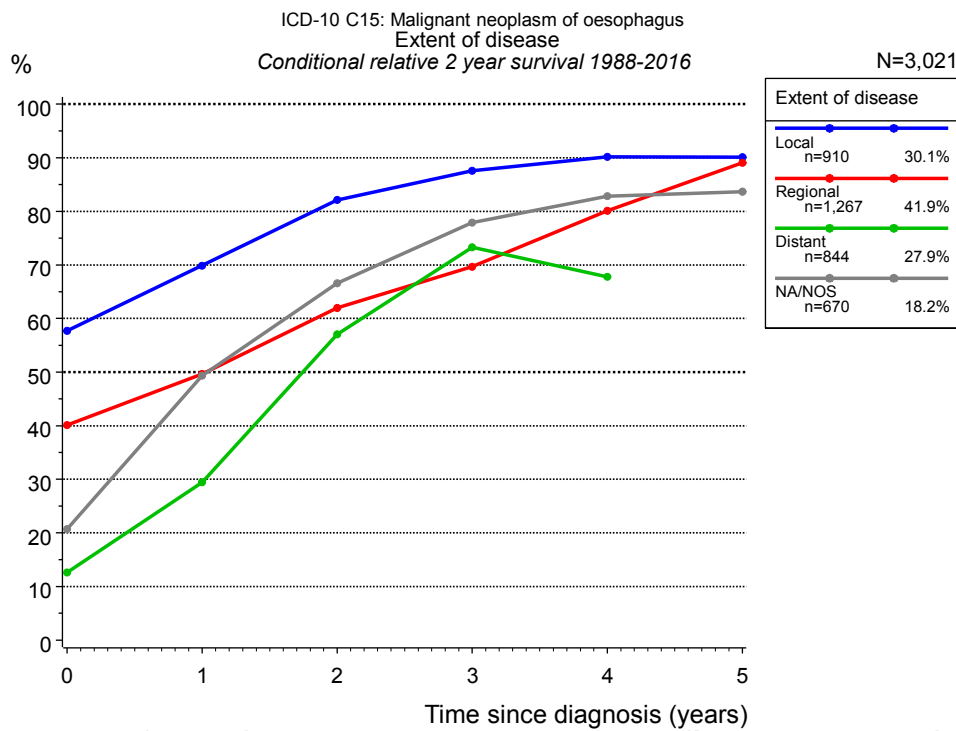


Figure 4i. Conditional relative 2-year survival of patients with oesophagus cancer by extent of disease. For 3,046 of 3,691 cases diagnosed between 1988 and 2016 valid data could be obtained for this item. For a total of 3,021 cases an evaluable classification was established. The grey line represents the subgroup of 670 patients with missing values regarding extent of disease (18.2 % of 3,691 patients, the percent values of all other categories are related to n=3,021).

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	910	57.7	1,267	40.1	844	12.6	670	20.7
1	620	69.9	743	49.7	230	29.5	198	49.3
2	456	82.1	418	62.0	92	57.0	116	66.6
3	380	87.6	295	69.7	55	73.3	79	77.9
4	318	90.2	209	80.1	37	67.8	64	82.8
5	277	90.1	161	89.0			47	83.6

Table 4j. Conditional relative 2-year survival of patients with oesophagus cancer by extent of disease for period 1988-2016 (N=3,021).

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 87.6% (n=380).

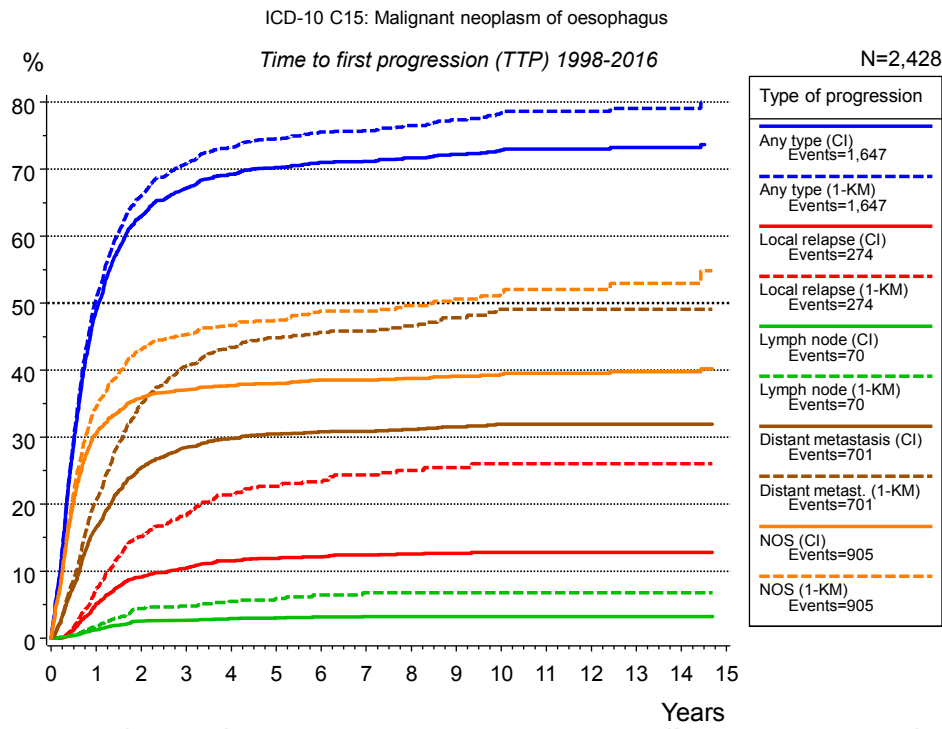


Figure 5a. Time to first progression of 2,428 patients with oesophagus cancer diagnosed between 1998 and 2016 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

Years	Type of progression						
	Any type (CI)	Any type (1-KM)	Local relapse (CI)	Local relapse (1-KM)	Lymph node (CI)	Lymph node (1-KM)	Distant metastasis (CI)
	n=2,428 %	n=2,428 %	n=2,428 %	n=2,428 %	n=2,428 %	n=2,428 %	n=2,428 %
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	48.9	50.7	5.1	7.3	1.3	1.8	16.5
2	62.9	66.0	9.1	15.1	2.5	4.4	25.4
3	67.2	70.8	10.4	18.3	2.7	4.8	28.5
4	69.2	73.3	11.5	21.4	2.9	5.5	29.8
5	70.2	74.5	11.9	22.6	3.0	5.9	30.4
6	71.0	75.5	12.1	23.3	3.2	6.4	30.8
7	71.2	75.8	12.4	24.3	3.2	6.8	30.9
8	71.7	76.5	12.6	25.0	3.2	6.8	31.1
9	72.2	77.3	12.7	25.5	3.2	6.8	31.5
10	72.8	78.4	12.8	26.0	3.2	6.8	31.9
11	73.0	78.6	12.8	26.0	3.2	6.8	31.9
12	73.0	78.6	12.8	26.0	3.2	6.8	31.9
13	73.2	79.1	12.8	26.0	3.2	6.8	31.9
14	73.2	79.1	12.8	26.0	3.2	6.8	31.9

<i>cont'd</i>	Type of progression		
	Distant metast. (1- KM) n=2,428 %	NOS (CI) n=2,428 %	NOS (1-KM) n=2,428 %
Years			
0	0.0	0.0	0.0
1	20.5	30.6	34.5
2	34.9	35.9	43.0
3	40.6	37.0	45.3
4	43.4	37.7	46.7
5	44.8	38.0	47.5
6	45.6	38.5	48.8
7	45.8	38.5	48.8
8	46.6	38.8	49.6
9	47.8	39.1	50.6
10	49.1	39.4	51.6
11	49.1	39.5	52.1
12	49.1	39.5	52.1
13	49.1	39.8	52.9
14	49.1	39.8	52.9

Table 5b. Time to first progression of patients with oesophagus cancer for period 1998-2016 (N=2,428).

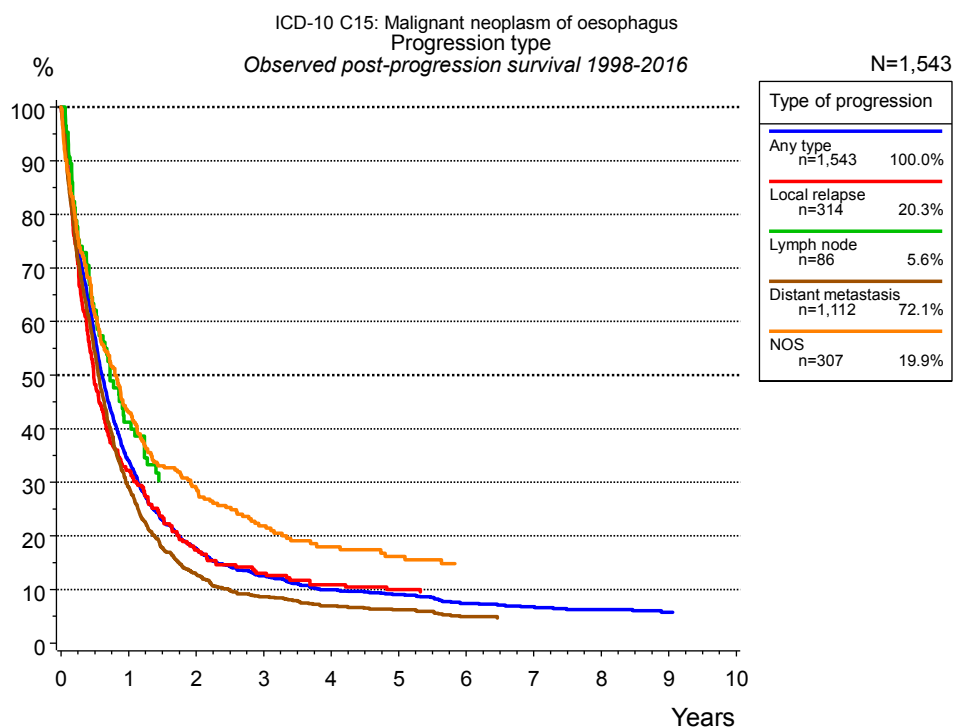


Figure 5c. Observed post-progression survival of 1,543 patients with oesophagus cancer diagnosed between 1998 and 2016. These 1,543 patients with documented progression events during their course of disease represent 48.7 % of the totally 3,169 evaluated cases (incl. M1, n=741, 23.4 %). Patients with cancer relapse documented via death certificates only were excluded (n=845, 26.7 %). 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=1,543 %	Local relapse n=314 %	Lymph node n=86 %	Distant metastasis n=1,112 %	NOS n=307 %
0	100.0	100.0	100.0	100.0	100.0
1	34.0	32.2	41.2	29.1	42.9
2	17.6	17.4		12.9	28.8
3	12.5	13.0		8.6	21.9
4	9.9	10.9		6.9	18.0
5	9.1	10.0		6.2	16.1
6	7.4			4.9	
7	6.8				
8	6.2				
9	5.7				

Table 5d. Observed post-progression survival of patients with oesophagus cancer for period 1998-2016 (N=1,543).

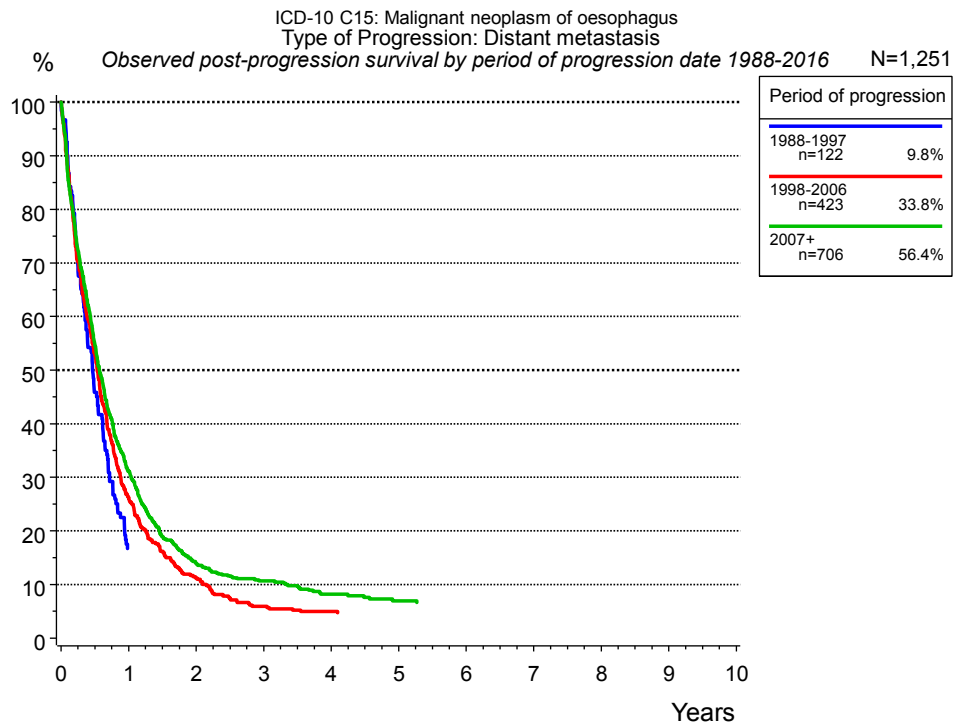


Figure 5e. Observed post-progression (distant metastasis) survival of 1,251 patients with oesophagus cancer diagnosed between 1988 and 2016 by period of progression.

Years	Period of progression		
	1988-1997 n=122 %	1988-2006 n=423 %	2007+ n=706 %
0	100.0	100.0	100.0
1	16.7	26.1	31.2
2		11.2	13.9
3		5.9	10.6
4		5.0	8.1
5			6.9

Table 5f. Observed post-progression (distant metastasis) survival of patients with oesophagus cancer for period 1988-2016 by period of progression (N=1,251).

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

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