

Munich Cancer Registry



- Incidence and Mortality
- Selection Matrix
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- *Deutsch*

ICD-10 C15: Oesophagus cancer

Survival

Year of diagnosis	1988-1997	1998-2014
Patients	591	3,896
Diseases	592	3,897
Cases evaluated	513	2,869
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/sC15__E-ICD-10-C15-Oesophagus-cancer-survival.pdf

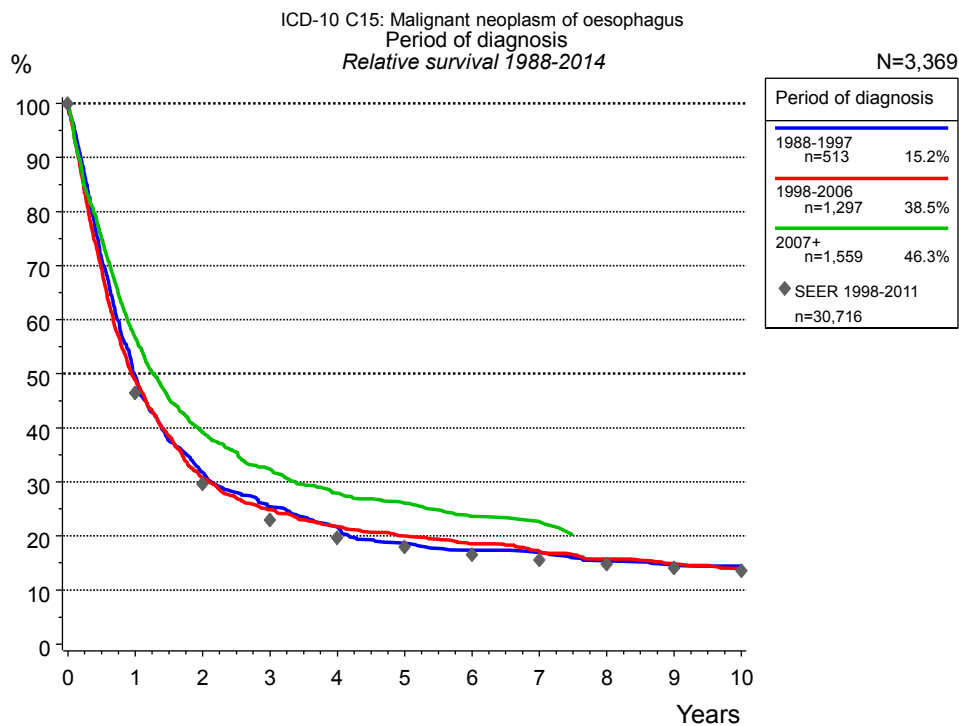


Figure 1a. Relative survival of patients with oesophagus cancer by period of diagnosis. Included in the evaluation are 3,369 cases diagnosed between 1988 and 2014.

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.

Years	Period of diagnosis					
	1988-1997 n=513		1998-2006 n=1,297		2007+ n=1,559	
	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	48.8	55.1	56.5
2	30.5	31.8	29.5	30.8	37.4	39.2
3	23.8	25.4	23.4	24.9	30.2	32.4
4	19.9	21.6	20.1	21.7	25.4	27.9
5	16.8	18.7	18.1	20.0	23.1	26.1
6	15.3	17.4	16.4	18.6	20.4	23.7
7	14.5	17.0	14.8	17.1	19.0	22.6
8	12.8	15.4	13.3	15.8		
9	12.0	14.7	12.3	14.9		
10	11.5	14.4	11.3	14.0		

Table 1b. Observed (obs.) and relative (rel.) survival of patients with oesophagus cancer by period of diagnosis for period 1988-2014 (N=3,369).

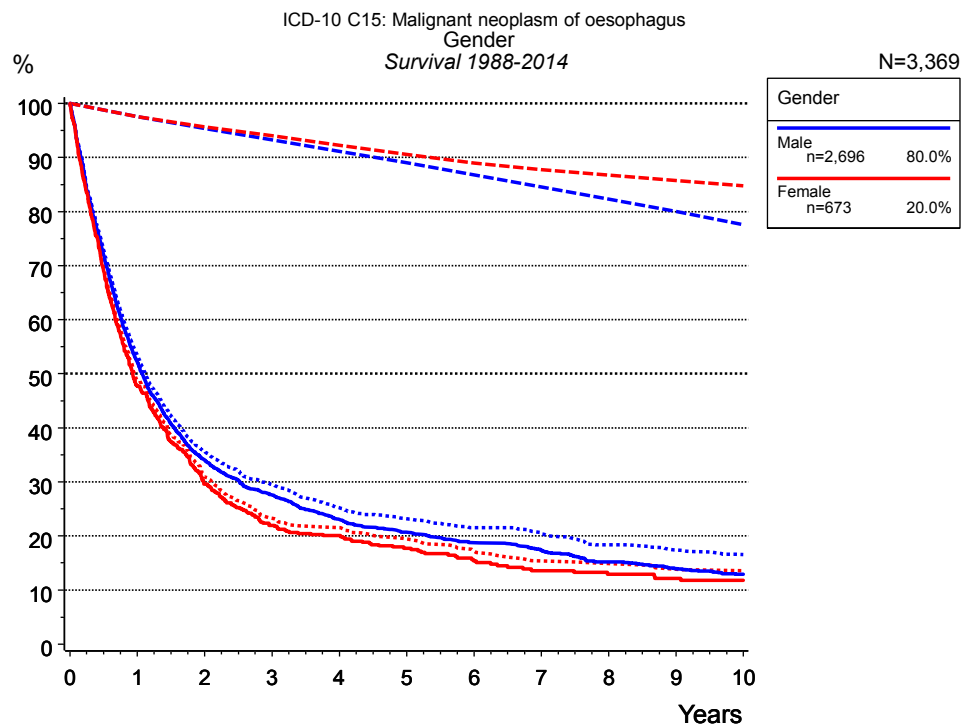


Figure 2a. Survival of patients with oesophagus cancer by gender. Included in the evaluation are 3,369 cases diagnosed between 1988 and 2014.

Years	Gender			
	Male n=2,696		Female n=673	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	52.1	53.4	47.7	48.9
2	34.1	35.7	29.6	30.9
3	27.6	29.5	22.0	23.3
4	23.0	25.2	20.1	21.5
5	20.6	23.2	17.7	19.4
6	18.7	21.6	15.4	17.2
7	17.3	20.4	13.6	15.4
8	15.2	18.4	12.9	14.9
9	14.0	17.4	12.2	13.8
10	12.9	16.6	11.8	13.6

Table 2b. Observed (obs.) and relative (rel.) survival of patients with oesophagus cancer by gender for period 1988-2014 (N=3,369).

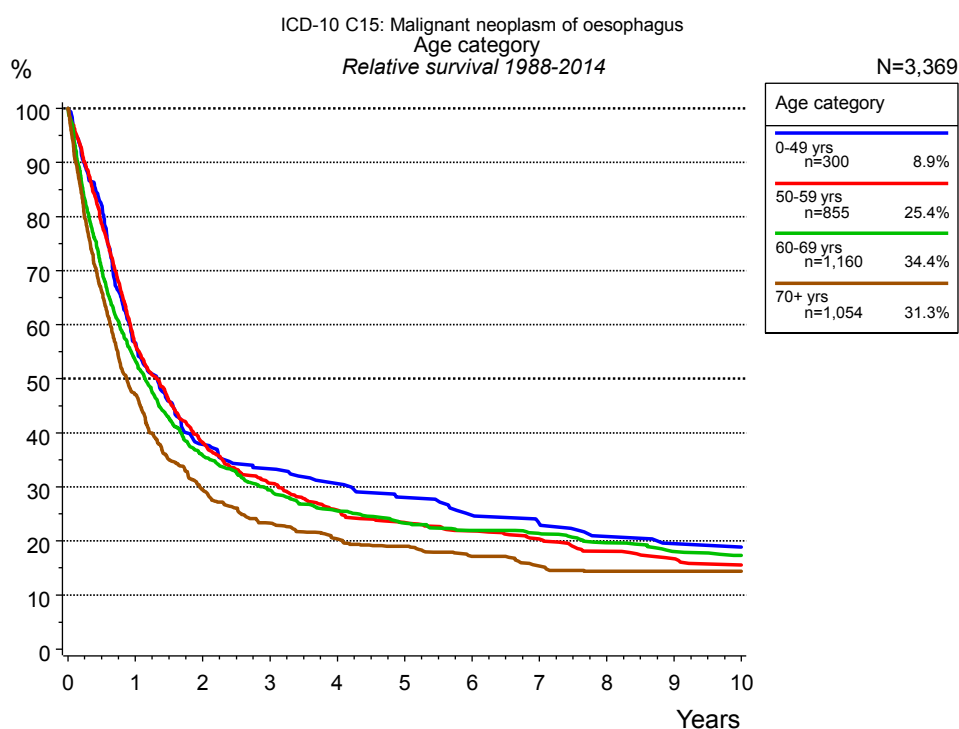


Figure 3a. Relative survival of patients with oesophagus cancer by age category. Included in the evaluation are 3,369 cases diagnosed between 1988 and 2014.

Years	Age category							
	0-49 yrs n=300		50-59 yrs n=855		60-69 yrs n=1,160		70+ yrs n=1,054	
	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	56.8	56.7	55.7	56.1	52.5	53.3	44.5	47.1
2	37.8	37.8	37.7	38.2	34.8	35.8	26.5	29.4
3	33.3	33.3	30.0	30.7	28.1	29.4	19.8	23.3
4	30.4	30.6	24.9	25.7	24.0	25.6	16.4	20.4
5	27.7	28.1	22.5	23.4	21.5	23.3	14.4	19.0
6	24.6	24.7	20.9	21.9	19.7	22.0	12.0	17.1
7	22.9	23.2	19.1	20.3	18.8	21.4	10.0	15.4
8	20.4	20.8	16.9	18.1	16.8	19.6	8.9	14.4
9	19.0	19.5	15.5	16.7	15.1	18.1	8.9	14.4
10	19.0	18.8	14.2	15.6	14.1	17.3	8.1	14.4

Table 3b. Observed (obs.) and relative (rel.) survival of patients with oesophagus cancer by age category for period 1988-2014 (N=3,369).

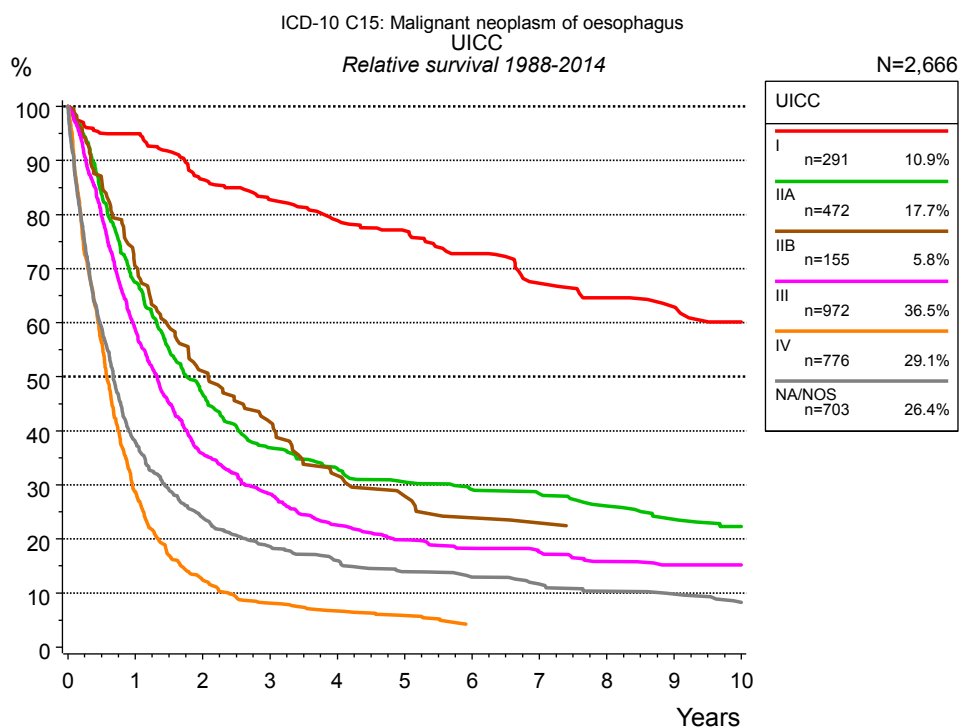


Figure 4a. Relative survival of patients with oesophagus cancer by UICC. For 2,769 of 3,369 cases diagnosed between 1988 and 2014 valid data could be obtained for this item. For a total of 2,666 cases an evaluable classification was established. The grey line represents the subgroup of 703 patients with missing values regarding UICC (20.9% of 3,369 patients, the percent values of all other categories are related to n=2,666).

Years	UICC											
	I n=291		IIA n=472		IIB n=155		III n=972		IV n=776		NA/NOS n=703	
	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	93.4	95.0	66.0	67.5	69.1	70.5	57.5	58.6	28.3	28.7	36.4	37.8
2	82.8	86.5	45.1	46.8	49.1	51.0	34.5	35.8	12.1	12.5	22.4	23.9
3	77.3	82.8	34.7	36.9	39.3	41.6	26.7	28.3	7.8	8.1	17.0	18.6
4	72.3	78.9	30.5	33.0	29.5	31.7	20.8	22.5	6.3	6.7	14.2	16.0
5	68.6	77.0	27.9	30.5	25.1	28.0	18.0	19.9	5.4	5.9	12.0	14.0
6	63.4	72.8	26.2	29.1	21.4	23.9	16.1	18.2	3.8	4.2	10.7	13.0
7	57.1	67.3	24.9	28.4	20.4	23.0	15.1	17.6			9.3	11.7
8	53.4	64.6	22.5	26.1			13.3	15.8			8.1	10.4
9	50.9	62.9	20.2	23.6			12.4	15.2			7.5	9.8
10	47.1	60.1	18.6	22.3			12.4	15.2			6.3	8.3

Table 4b. Observed (obs.) and relative (rel.) survival of patients with oesophagus cancer by UICC for period 1988-2014 (N=2,666).

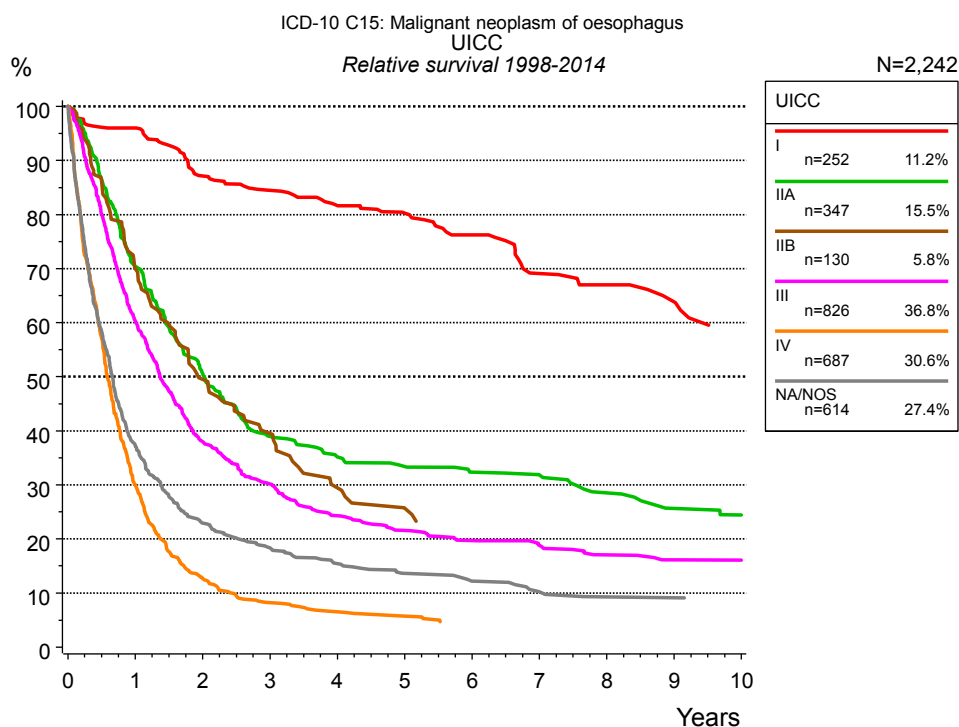


Figure 4c. Relative survival of patients with oesophagus cancer by UICC. For 2,332 of 2,856 cases diagnosed between 1998 and 2014 valid data could be obtained for this item. For a total of 2,242 cases an evaluable classification was established. The grey line represents the subgroup of 614 patients with missing values regarding UICC (21.5% of 2,856 patients, the percent values of all other categories are related to n=2,242).

Years	UICC											
	I n=252		IIA n=347		IIB n=130		III n=826		IV n=687		NA/NOS n=614	
	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	94.4	96.0	69.0	70.4	68.5	69.9	59.0	60.3	29.5	30.0	35.7	37.1
2	83.4	87.2	48.9	50.6	47.6	49.5	36.6	38.0	12.3	12.7	21.4	22.9
3	78.9	84.5	36.9	38.9	37.5	39.5	28.4	30.2	7.8	8.2	16.8	18.4
4	74.9	81.7	32.7	35.2	27.4	29.4	22.5	24.3	6.2	6.5	13.7	15.4
5	71.5	80.3	30.9	33.4	23.0	25.7	19.6	21.6	5.3	5.7	11.7	13.6
6	66.5	76.2	29.1	32.4	20.7	22.9	17.5	19.7			10.0	12.2
7	58.5	69.1	28.2	31.8	20.7	22.5	16.2	18.8			8.1	10.2
8	55.6	67.0	25.1	28.5			14.3	17.0			7.3	9.3
9	52.1	63.9	22.0	25.6			13.2	16.1			7.3	9.1
10	46.8	59.5	20.6	24.4			13.2	16.1				

Table 4d. Observed (obs.) and relative (rel.) survival of patients with oesophagus cancer by UICC for period 1998-2014 (N=2,242).

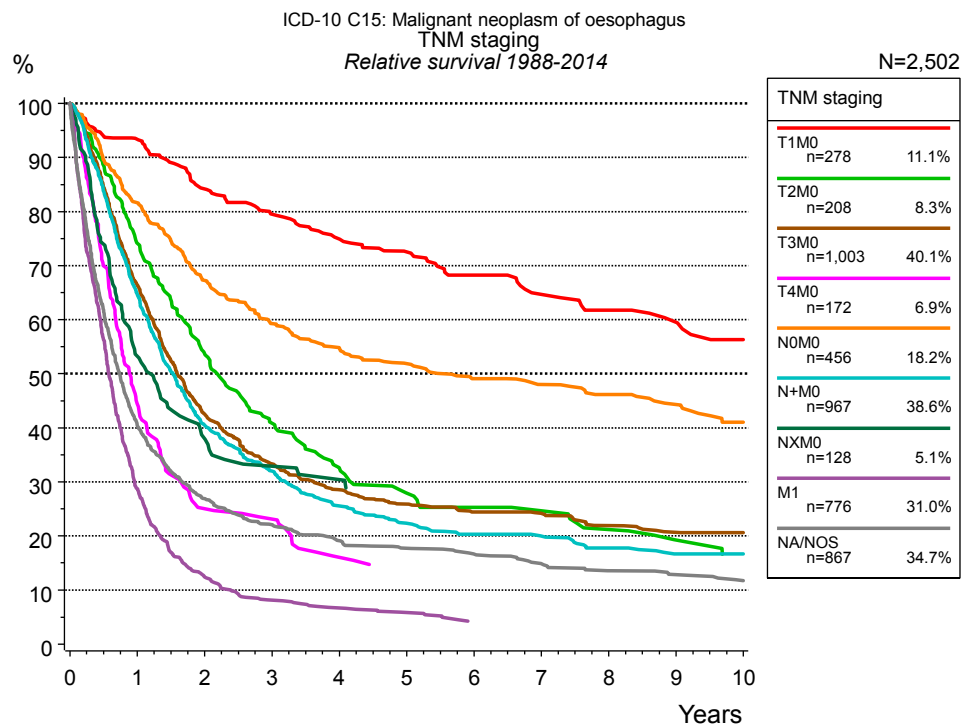


Figure 4e. Relative survival of patients with oesophagus cancer by TNM staging. For 2,769 of 3,369 cases diagnosed between 1988 and 2014 valid data could be obtained for this item. For a total of 2,502 cases an evaluable classification was established. The accumulated percentage exceeds the 100% value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 867 patients with missing values regarding TNM staging (25.7 % of 3,369 patients, the percent values of all other categories are related to n=2,502).

TNM staging														
Years	T1M0 n=278		T2M0 n=208		T3M0 n=1,003		T4M0 n=172		N0M0 n=456		N+M0 n=967		NXM0 n=128	
	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	91.6	93.4	72.6	74.1	65.1	66.4	43.7	44.3	80.1	81.6	63.3	64.6	52.2	53.3
2	80.8	84.2	51.6	53.6	41.0	42.5	24.4	25.0	64.7	67.3	39.0	40.5	36.8	37.9
3	74.6	79.5	38.3	40.8	31.4	33.3	22.4	23.1	55.8	59.3	30.1	32.0	31.2	32.9
4	69.1	74.9	29.7	32.6	26.4	28.5	15.2	16.1	50.4	54.8	23.5	25.5	29.0	30.4
5	65.1	72.5	24.9	27.9	23.5	25.9	13.6	14.2	46.8	51.9	20.1	22.3		
6	60.2	68.2	22.4	25.3	21.6	24.4			43.2	49.1	17.9	20.3		
7	55.6	64.7	21.0	24.6	20.9	24.1			41.4	48.0	17.1	20.0		
8	51.8	61.8	18.0	21.2	18.6	21.9			38.9	46.1	14.9	17.8		
9	49.0	59.5	15.6	19.2	17.3	20.7			36.5	44.3	13.5	16.7		
10	44.9	56.3	13.1	16.6	17.0	20.6			32.9	41.0	13.5	16.7		

<i>cont'd</i>	TNM staging			
	M1 n=776		NA/NOS n=867	
	obs. %	rel. %	obs. %	rel. %
Years				
0	100.0	100.0	100.0	100.0
1	28.3	28.7	38.9	40.3
2	12.1	12.5	25.3	26.9
3	7.8	8.1	20.2	22.1
4	6.3	6.7	17.0	19.1
5	5.4	5.9	15.4	17.7
6	3.8	4.2	14.0	16.6
7			12.1	14.9
8			10.7	13.6
9			10.0	12.8
10			8.9	11.7

Table 4f. Observed (obs.) and relative (rel.) survival of patients with oesophagus cancer by TNM staging for period 1988-2014 (N=3,988).

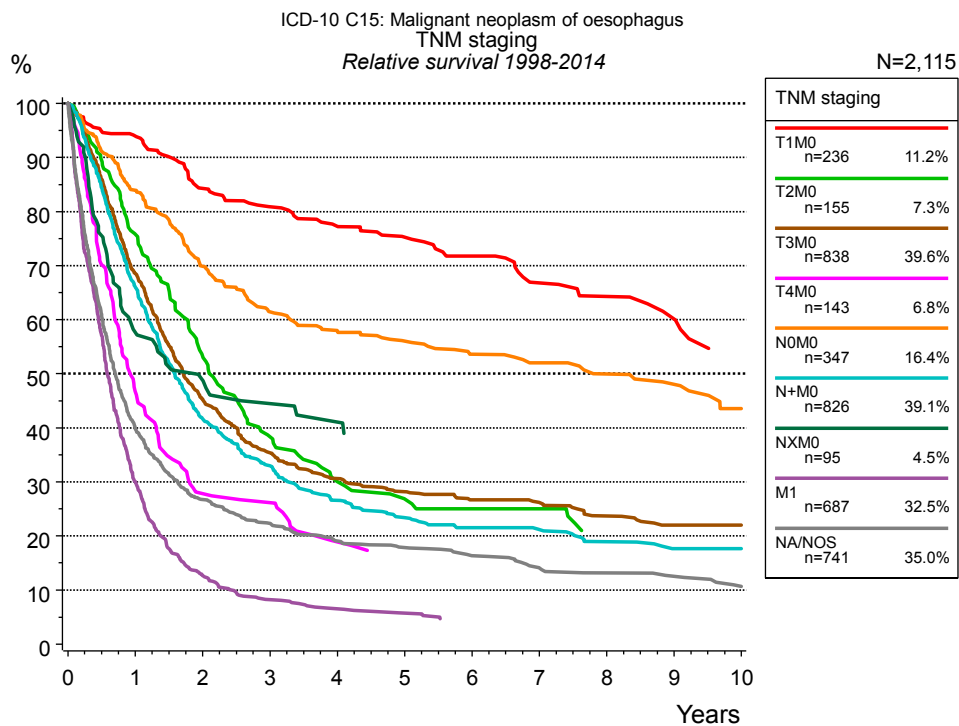


Figure 4g. Relative survival of patients with oesophagus cancer by TNM staging. For 2,332 of 2,856 cases diagnosed between 1998 and 2014 valid data could be obtained for this item. For a total of 2,115 cases an evaluable classification was established. The accumulated percentage exceeds the 100% value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 741 patients with missing values regarding TNM staging (25.9 % of 2,856 patients, the percent values of all other categories are related to n=2,115).

TNM staging														
Years	T1M0 n=236		T2M0 n=155		T3M0 n=838		T4M0 n=143		N0M0 n=347		N+M0 n=826		NXM0 n=95	
	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	92.2	94.0	74.3	75.8	67.2	68.6	46.0	46.6	82.5	84.0	64.6	66.0	56.7	57.7
2	80.8	84.3	51.3	53.1	43.7	45.3	27.2	27.8	67.2	69.9	40.1	41.7	47.5	48.7
3	75.8	80.9	36.2	38.3	33.4	35.4	25.6	26.2	57.9	61.4	31.0	32.9	42.4	44.5
4	71.3	77.3	27.5	30.1	28.4	30.6	18.0	18.9	53.5	57.9	24.6	26.6	39.4	41.1
5	67.5	75.3	24.0	26.8	25.7	28.2	16.1	16.7	50.7	56.0	21.0	23.4		
6	63.3	71.8	22.2	25.0	23.6	26.7			47.4	53.6	18.9	21.6		
7	57.3	66.8	22.2	25.0	22.7	26.2			45.1	52.0	18.1	21.2		
8	54.1	64.3	17.6	20.8	20.2	23.7			42.4	50.0	15.9	19.0		
9	50.0	60.1			18.4	22.0			40.0	48.0	14.3	17.7		
10	43.7	54.5			18.4	22.0			35.1	43.6	14.3	17.7		

<i>cont'd</i>	TNM staging			
	M1 n=687		NA/NOS n=741	
	obs. %	rel. %	obs. %	rel. %
Years				
0	100.0	100.0	100.0	100.0
1	29.5	30.0	38.3	39.8
2	12.3	12.7	25.0	26.7
3	7.8	8.2	20.4	22.3
4	6.2	6.5	16.9	19.1
5	5.3	5.7	15.5	17.9
6			13.7	16.4
7			11.4	14.1
8			10.5	13.2
9			9.7	12.5
10			8.1	10.7

Table 4h. Observed (obs.) and relative (rel.) survival of patients with oesophagus cancer by TNM staging for period 1998-2014 (N=3,327).

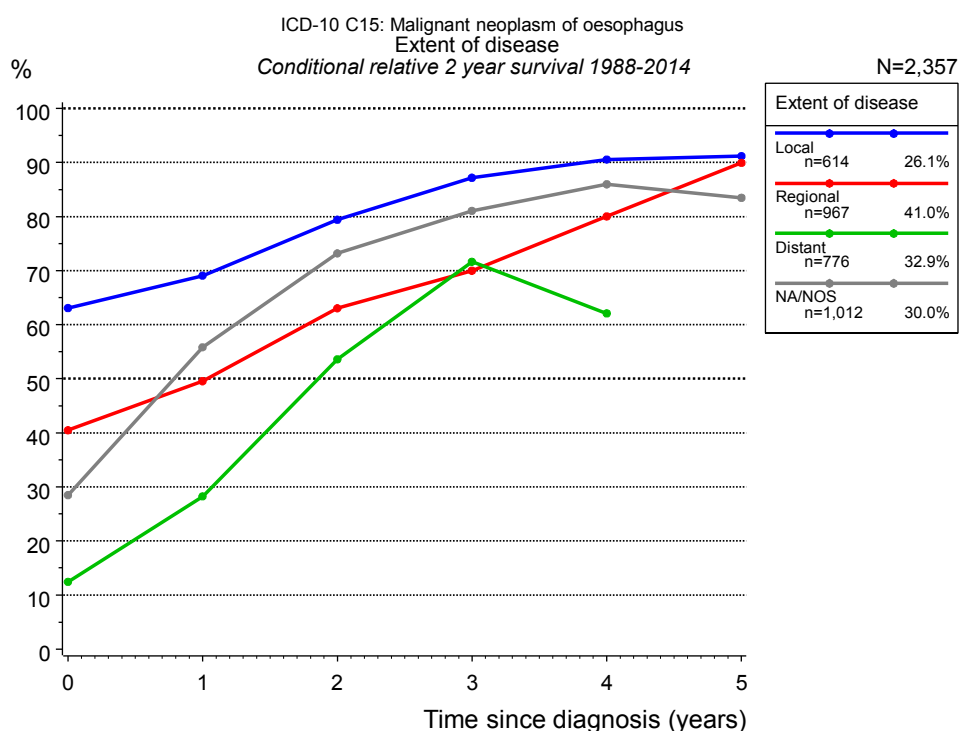


Figure 4i. Conditional relative 2-year survival of patients with oesophagus cancer by extent of disease. For 2,769 of 3,369 cases diagnosed between 1988 and 2014 valid data could be obtained for this item. For a total of 2,357 cases an evaluable classification was established. The grey line represents the subgroup of 1,012 patients with missing values regarding extent of disease (30.0% of 3,369 patients, the percent values of all other categories are related to n=2,357).

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	614	63.1	967	40.5	776	12.5	1,012	28.5
1	469	69.1	583	49.6	210	28.3	398	55.8
2	349	79.4	331	63.1	84	53.6	243	73.2
3	274	87.2	232	70.0	45	71.6	186	81.1
4	233	90.6	162	80.0	35	62.1	142	86.0
5	195	91.2	126	89.9			113	83.5

Table 4j. Conditional relative 2-year survival of patients with oesophagus cancer by extent of disease for period 1988-2014 (N=2,357).

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 87.2% (n=274).

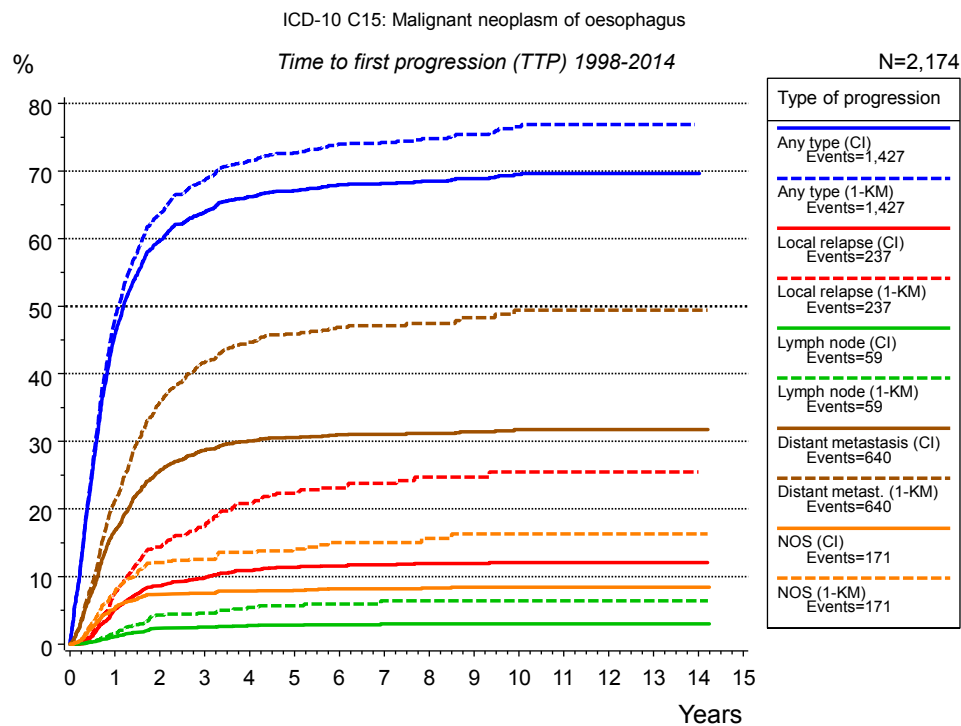


Figure 5a. Time to first progression of 2,174 patients with oesophagus cancer diagnosed between 1998 and 2014 (M0 only in solid cancers) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

Years	Type of progression						
	Any type (CI)	Any type (1-KM)	Local relapse (CI)	Local relapse (1-KM)	Lymph node (CI)	Lymph node (1-KM)	Distant metastasis (CI)
	n=2,174 %	n=2,174 %	n=2,174 %	n=2,174 %	n=2,174 %	n=2,174 %	n=2,174 %
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	45.8	48.1	5.2	7.6	1.2	1.7	16.8
2	59.7	63.6	8.6	14.4	2.4	4.3	25.6
3	63.9	68.6	9.8	17.4	2.5	4.6	28.7
4	66.2	71.5	10.9	20.8	2.7	5.4	30.1
5	67.1	72.7	11.3	22.3	2.8	5.7	30.6
6	68.0	74.0	11.6	23.1	2.9	6.0	31.0
7	68.2	74.2	11.7	23.8	3.0	6.4	31.1
8	68.5	74.8	11.9	24.7	3.0	6.4	31.2
9	68.9	75.4	11.9	24.7	3.0	6.4	31.4
10	69.5	76.5	12.1	25.5	3.0	6.4	31.8
11	69.6	76.9	12.1	25.5	3.0	6.4	31.8
12	69.6	76.9	12.1	25.5	3.0	6.4	31.8
13	69.6	76.9	12.1	25.5	3.0	6.4	31.8
14	69.6	76.9	12.1	25.5	3.0	6.4	31.8
15			12.1	25.5	3.0	6.4	31.8

<i>cont'd</i>	Type of progression		
	Distant metast. (1- KM)	NOS (CI)	NOS (1-KM)
	n=2,174	n=2,174	n=2,174
Years	%	%	%
0	0.0	0.0	0.0
1	21.1	5.4	7.8
2	35.7	7.4	12.1
3	41.7	7.5	12.6
4	44.7	7.8	13.6
5	45.9	8.0	14.1
6	46.9	8.2	15.0
7	47.1	8.2	15.0
8	47.4	8.3	15.6
9	48.3	8.4	16.3
10	49.4	8.4	16.3
11	49.4	8.4	16.3
12	49.4	8.4	16.3
13	49.4	8.4	16.3
14	49.4	8.4	16.3
15	49.4	8.4	16.3

Table 5b. Time to first progression of patients with oesophagus cancer for period 1998-2014 (N=2,174).

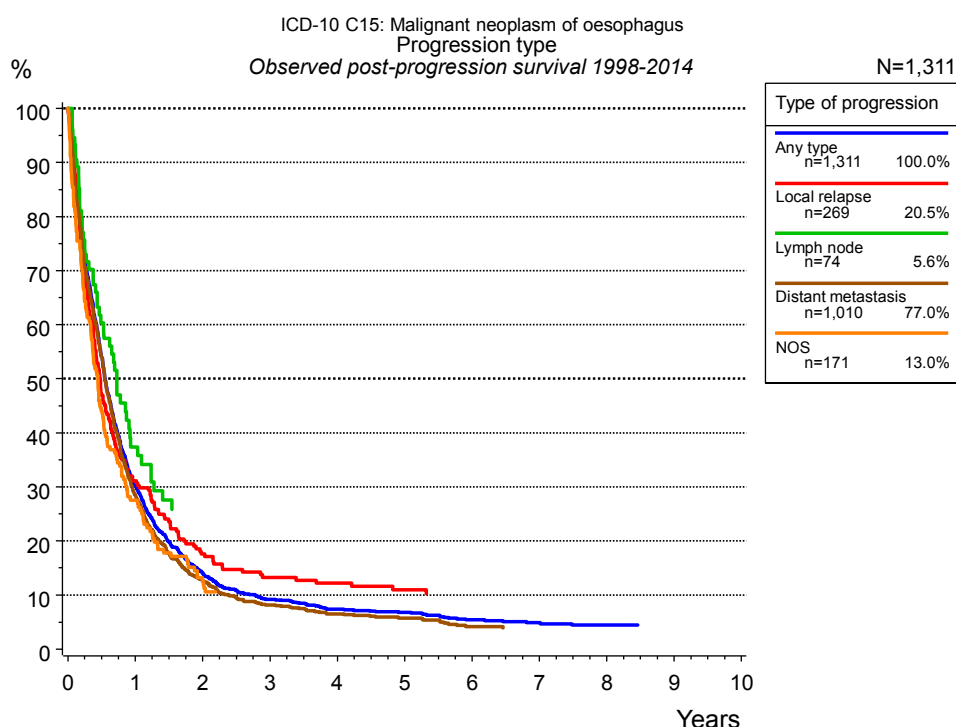


Figure 5c. Observed post-progression survival of 1,311 patients with oesophagus cancer diagnosed between 1998 and 2014. These 1,311 patients with documented progression events during their course of disease represent 46.0 % of the totally 2,848 evaluated cases (incl. M1, n=674, 23.7 %). Patients with cancer relapse documented via death certificates only were excluded (n=790, 27.7 %). 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=1,311 %	Local relapse n=269 %	Lymph node n=74 %	Distant metastasis n=1,010 %	NOS n=171 %
0	100.0	100.0	100.0	100.0	100.0
1	30.3	31.1	37.4	28.5	27.5
2	14.1	17.6		12.7	12.5
3	9.2	13.3		8.2	
4	7.4	12.2		6.5	
5	6.8	11.0		5.8	
6	5.4			4.2	
7	4.9				
8	4.5				

Table 5d. Observed post-progression survival of patients with oesophagus cancer for period 1998-2014 (N=1,311).

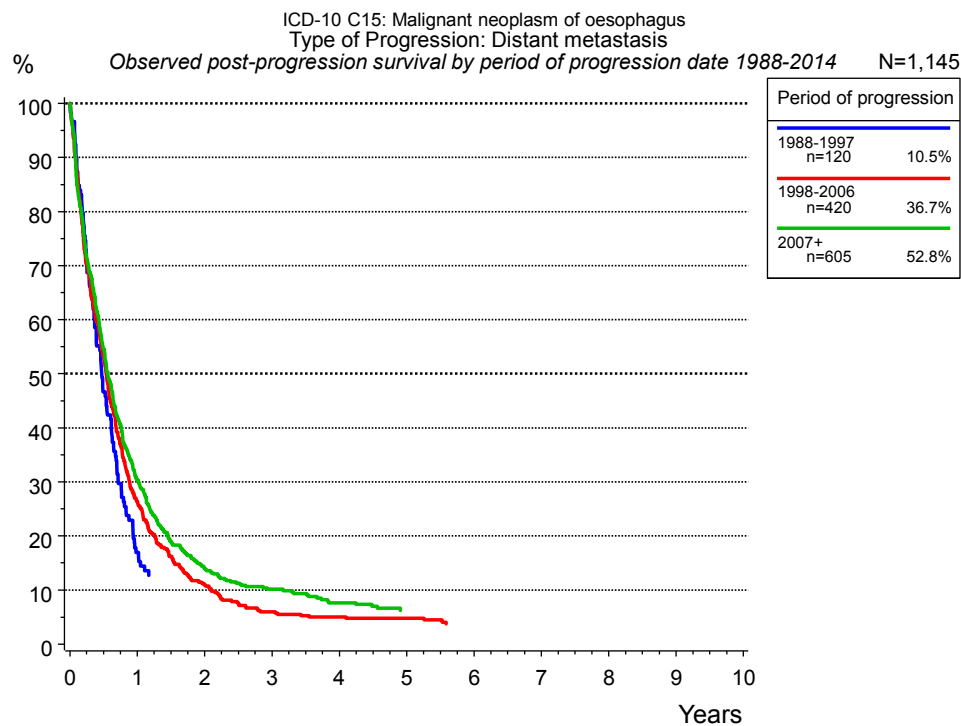


Figure 5e. Observed post-progression (distant metastasis) survival of 1,145 patients with oesophagus cancer diagnosed between 1988 and 2014 by period of progression.

Years	Period of progression		
	1988-1997 n=120	1998-2006 n=420	2007+ n=605
0	100.0	100.0	100.0
1	17.0	26.3	30.4
2		11.0	14.0
3		6.0	10.1
4		5.0	7.6
5		4.8	6.2

Table 5f. Observed post-progression (distant metastasis) survival of patients with oesophagus cancer for period 1988-2014 by period of progression (N=1,145).

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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