

Munich Cancer Registry



- ▶ Incidence and Mortality
- ▶ Selection Matrix
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ICD-10 C15: Oesophagus cancer

Survival

Year of diagnosis	1988-1997	1998-2019
Patients	595	5,293
Diseases	596	5,294
Cases evaluated	517	3,832
Creation date	01/27/2021	
Database export	01/07/2021	
Population	4.92 m	



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<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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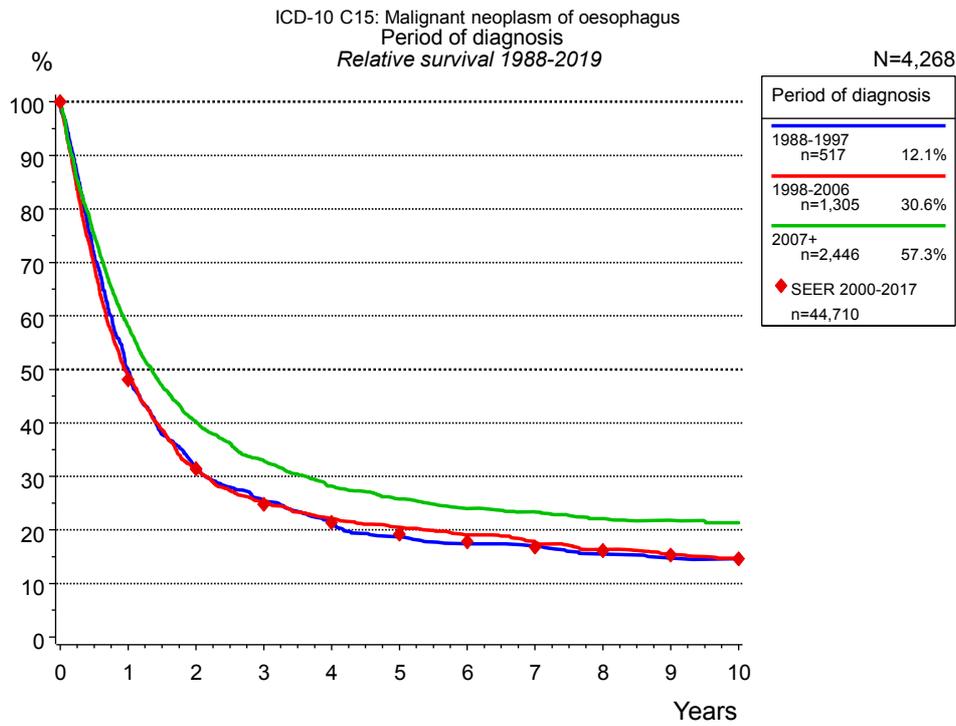


Figure 1a. Relative survival of patients with oesophagus cancer by period of diagnosis. Included in the evaluation are 4,268 cases diagnosed between 1988 and 2019.

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 2017, 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=517		1998-2006 n=1,305		2007+ n=2,446	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	48.7	49.8	47.9	49.0	56.5	58.0
2	30.6	31.9	29.8	31.1	38.4	40.2
3	23.8	25.4	23.7	25.2	30.8	32.9
4	19.9	21.6	20.4	22.1	25.7	28.2
5	16.8	18.7	18.5	20.5	22.9	25.8
6	15.4	17.4	16.9	19.1	20.8	24.0
7	14.6	17.0	15.3	17.7	19.8	23.3
8	12.9	15.5	13.8	16.4	18.2	22.1
9	12.0	14.7	12.8	15.5	17.4	21.8
10	11.6	14.6	11.7	14.5	16.6	21.3
Median	1.0		0.9		1.3	

Table 1b. Observed (obs.) and relative (rel.) survival of patients with oesophagus cancer by period of diagnosis for period 1988-2019 (N=4,268).

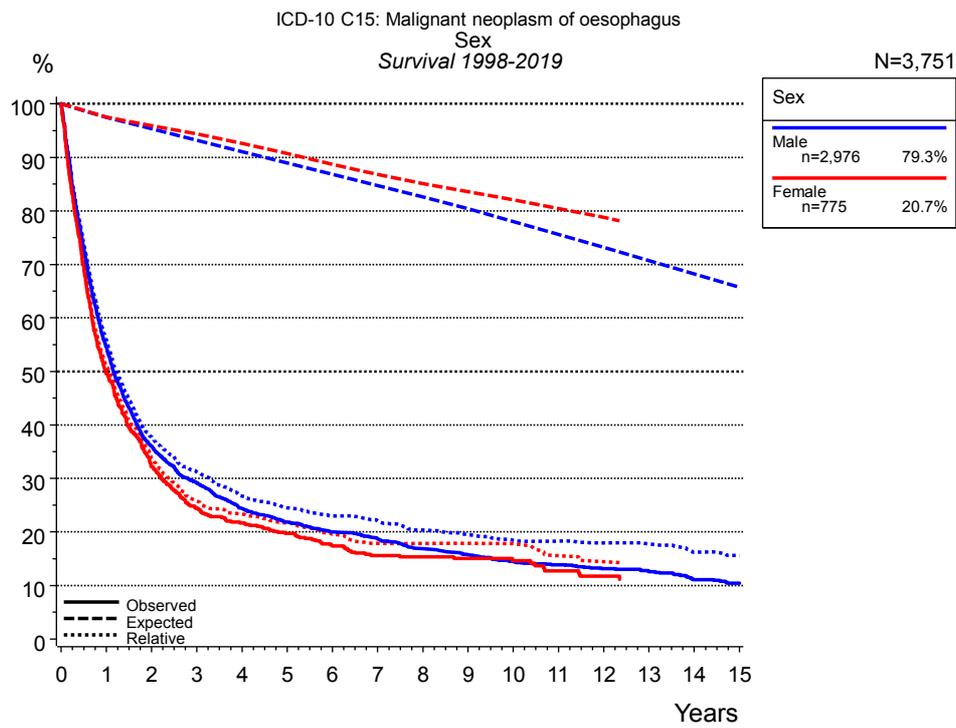


Figure 2a. Survival of patients with oesophagus cancer by sex. Included in the evaluation are 3,751 cases diagnosed between 1998 and 2019.

Years	Sex			
	Male n=2,976		Female n=775	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	54.5	55.9	49.6	50.8
2	36.1	37.8	32.3	33.5
3	29.2	31.3	24.5	25.8
4	24.3	26.7	21.7	23.3
5	21.8	24.5	19.7	21.7
6	20.0	23.0	17.3	19.5
7	18.7	22.0	15.6	17.8
8	16.9	20.4	15.3	17.8
9	15.7	19.5	15.0	17.8
10	14.4	18.5	14.6	17.8
11	13.9	18.3	12.7	15.5
12	13.2	18.0	11.7	14.4
13	12.5	17.7		
14	11.1	16.2		
15	10.4	15.6		
Median	1.2		1.0	

Table 2b. Observed (obs.) and relative (rel.) survival of patients with oesophagus cancer by sex for period 1998-2019 (N=3,751).

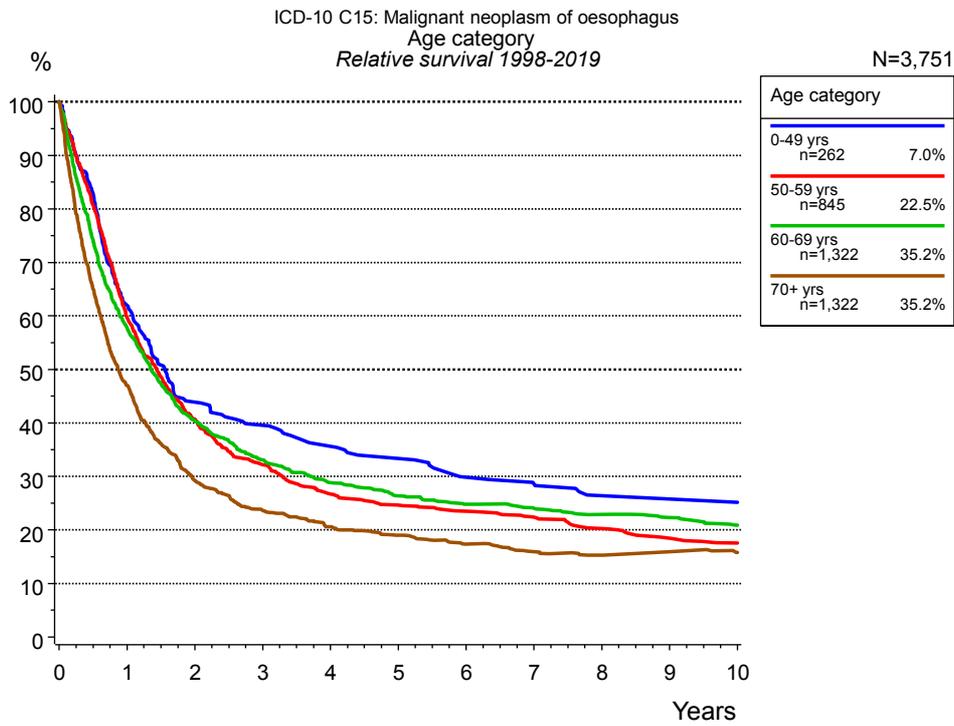


Figure 3a. Relative survival of patients with oesophagus cancer by age category. Included in the evaluation are 3,751 cases diagnosed between 1998 and 2019.

Years	Age category							
	0-49 yrs n=262		50-59 yrs n=845		60-69 yrs n=1,322		70+ yrs n=1,322	
	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	62.4	61.9	59.2	59.6	57.0	57.8	44.6	47.0
2	43.9	43.9	40.3	40.7	39.2	40.4	26.5	29.2
3	39.6	39.6	31.6	32.2	31.7	33.1	20.3	23.6
4	35.5	35.6	25.9	26.7	27.2	28.9	16.8	20.6
5	33.1	33.4	23.7	24.7	24.4	26.4	14.6	19.0
6	29.4	29.8	22.5	23.5	22.4	24.8	12.5	17.3
7	28.3	28.6	21.1	22.4	21.4	24.0	10.7	15.9
8	25.9	26.4	19.0	20.2	19.8	22.9	9.7	15.3
9	25.2	25.8	17.2	18.5	18.8	22.3	9.2	15.9
10	25.2	25.1	16.0	17.5	17.1	20.9	8.4	15.8
Median	1.6		1.4		1.3		0.8	

Table 3b. Observed (obs.) and relative (rel.) survival of patients with oesophagus cancer by age category for period 1998-2019 (N=3,751).

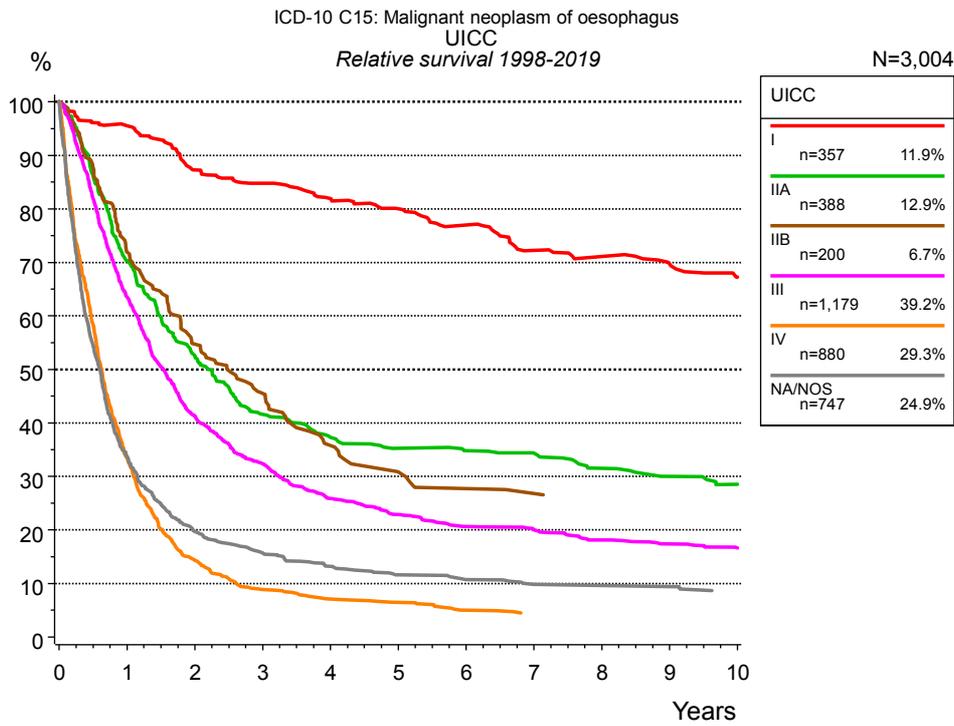


Figure 4a. Relative survival of patients with oesophagus cancer by UICC. For 3,118 of 3,751 cases diagnosed between 1998 and 2019 valid data could be obtained for this item. For a total of 3,004 cases an evaluable classification was established. The grey line represents the subgroup of 747 patients with missing values regarding UICC (19.9 % of 3,751 patients, the percent values of all other categories are related to n=3,004).

Years	UICC											
	I n=357		IIA n=388		IIB n=200		III n=1,179		IV n=880		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	93.9	95.5	68.9	70.3	70.5	71.9	62.3	63.5	33.0	33.6	32.1	33.5
2	83.5	87.3	50.6	52.5	52.6	54.7	39.8	41.3	13.8	14.3	18.3	19.7
3	79.1	84.8	39.2	41.6	43.1	45.5	30.6	32.4	8.3	8.8	14.4	15.6
4	74.9	81.9	34.5	37.3	33.2	35.8	24.0	25.9	6.6	7.1	11.6	13.1
5	71.1	80.0	32.0	35.2	27.7	30.8	20.7	22.9	5.9	6.4	9.9	11.6
6	66.7	77.0	31.0	34.8	25.0	27.7	18.3	20.6	4.5	5.0	8.9	10.7
7	60.9	72.2	30.0	34.3	23.8	26.8	17.3	20.0			7.9	9.8
8	58.5	71.1	27.0	31.5			15.3	18.1			7.7	9.6
9	55.8	69.7	25.1	30.0			14.3	17.4			7.4	9.4
10	52.1	67.3	23.4	28.6			13.3	16.7				
Median	11.3		2.0		2.2		1.4		0.6		0.6	

Table 4b. Observed (obs.) and relative (rel.) survival of patients with oesophagus cancer by UICC for period 1998-2019 (N=3,004).

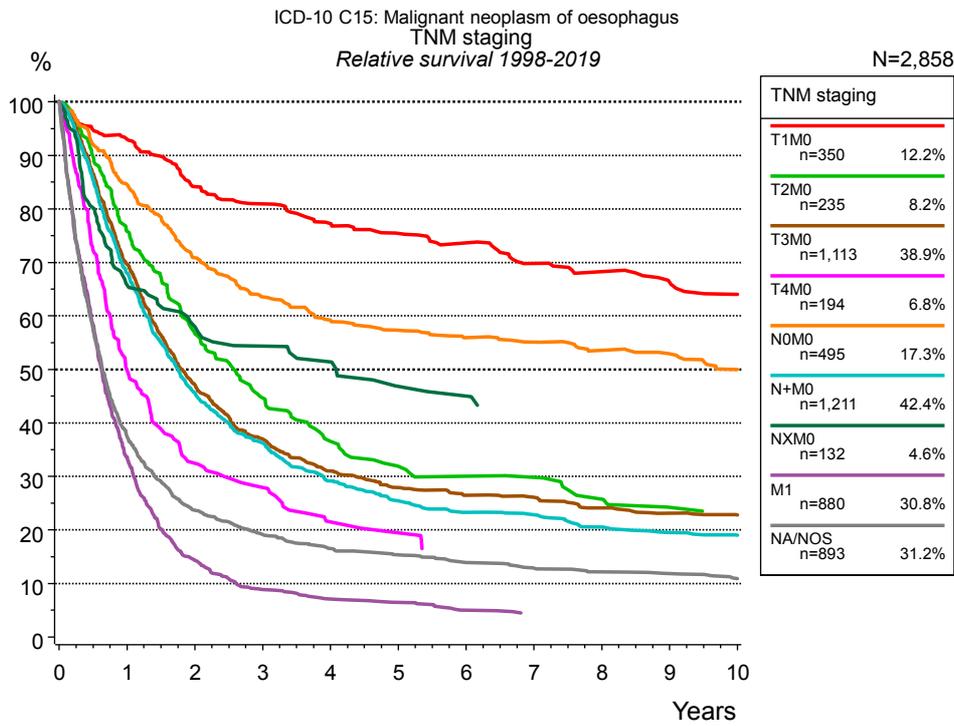


Figure 4e. Relative survival of patients with oesophagus cancer by TNM staging. For 3,118 of 3,751 cases diagnosed between 1998 and 2019 valid data could be obtained for this item. For a total of 2,858 cases an evaluable classification was established. The accumulated percentage exceeds the 100 % value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 893 patients with missing values regarding TNM staging (23.8 % of 3,751 patients, the percent values of all other categories are related to n=2,858).

Years	TNM staging													
	T1M0 n=350		T2M0 n=235		T3M0 n=1,113		T4M0 n=194		NOM0 n=495		N+M0 n=1,211		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	91.4	93.0	74.4	75.8	68.3	69.7	49.0	49.7	83.1	84.5	66.6	67.9	64.3	65.8
2	80.7	84.2	54.8	56.8	45.4	47.1	31.8	32.5	68.2	70.9	43.9	45.6	56.0	58.0
3	75.8	80.9	42.2	44.7	34.9	37.0	26.9	27.9	59.9	63.6	34.2	36.2	51.1	54.3
4	71.0	77.2	33.5	36.5	28.7	31.0	20.3	21.5	54.6	59.2	26.9	29.1	47.8	51.4
5	67.4	75.4	28.6	31.9	25.3	27.9	18.1	19.4	51.8	57.3	22.9	25.4	41.6	46.8
6	64.4	73.7	26.6	30.0	23.4	26.5			49.4	55.9	20.5	23.3	40.2	45.0
7	59.4	69.8	25.9	29.8	22.5	26.1			47.7	55.1	19.6	22.8		
8	56.7	68.3	22.0	25.8	20.4	24.1			45.1	53.6	17.4	20.6		
9	53.7	66.3	19.4	24.2	19.0	23.1			43.4	52.9	15.9	19.5		
10	50.3	64.1			18.3	22.8			39.9	50.0	15.1	19.0		
Median	10.5		2.3		1.7		1.0		5.7		1.7		3.4	

<i>cont'd</i>	TNM staging			
	M1 n=880		NA/NOS n=893	
Years	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	33.0	33.6	35.9	37.3
2	13.8	14.3	22.2	23.7
3	8.3	8.8	17.7	19.2
4	6.6	7.1	14.7	16.5
5	5.9	6.4	13.3	15.3
6	4.5	5.0	11.7	13.9
7			10.5	12.8
8			9.8	12.2
9			9.3	11.8
10			8.3	10.9
Median	0.6		0.6	

Table 4f. Observed (obs.) and relative (rel.) survival of patients with oesophagus cancer by TNM staging for period 1998-2019 (N=2,858).

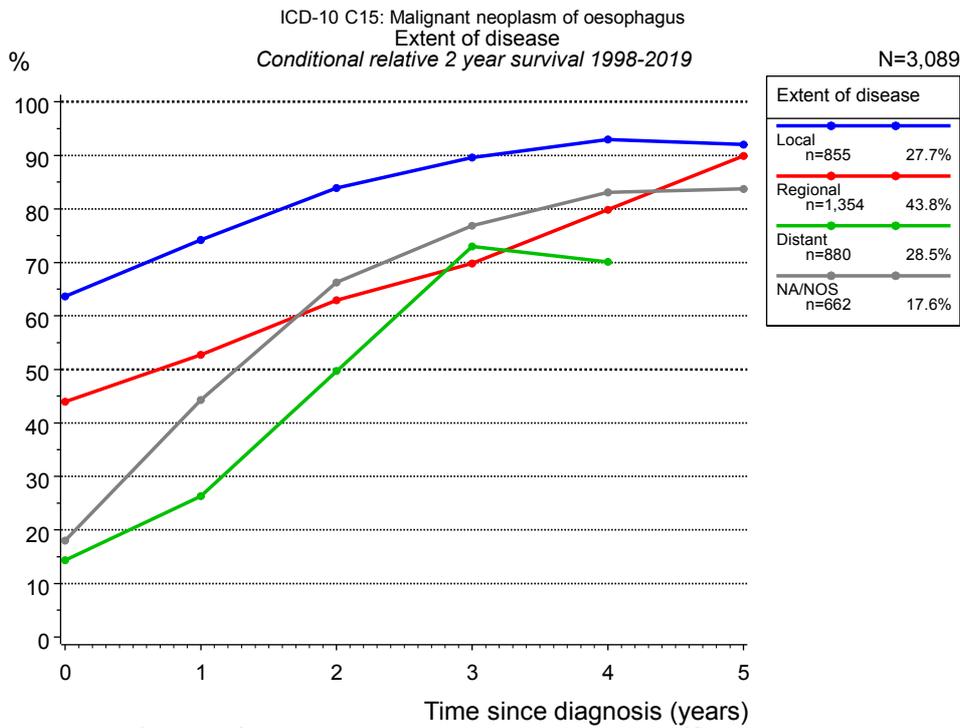


Figure 4i. Conditional relative 2-year survival of patients with oesophagus cancer by extent of disease. For 3,118 of 3,751 cases diagnosed between 1998 and 2019 valid data could be obtained for this item. For a total of 3,089 cases an evaluable classification was established. The grey line represents the subgroup of 662 patients with missing values regarding extent of disease (17.6 % of 3,751 patients, the percent values of all other categories are related to n=3,089).

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	855	63.6	1,354	43.9	880	14.3	662	18.0
1	611	74.2	827	52.7	272	26.3	193	44.3
2	464	83.9	510	62.9	105	49.7	106	66.3
3	389	89.6	360	69.8	60	73.0	78	76.8
4	332	93.0	257	79.8	45	70.1	64	83.1
5	297	92.0	201	89.9			55	83.7

Table 4j. Conditional relative 2-year survival of patients with oesophagus cancer by extent of disease for period 1998-2019 (N=3,089).

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 89.6% (n=389).

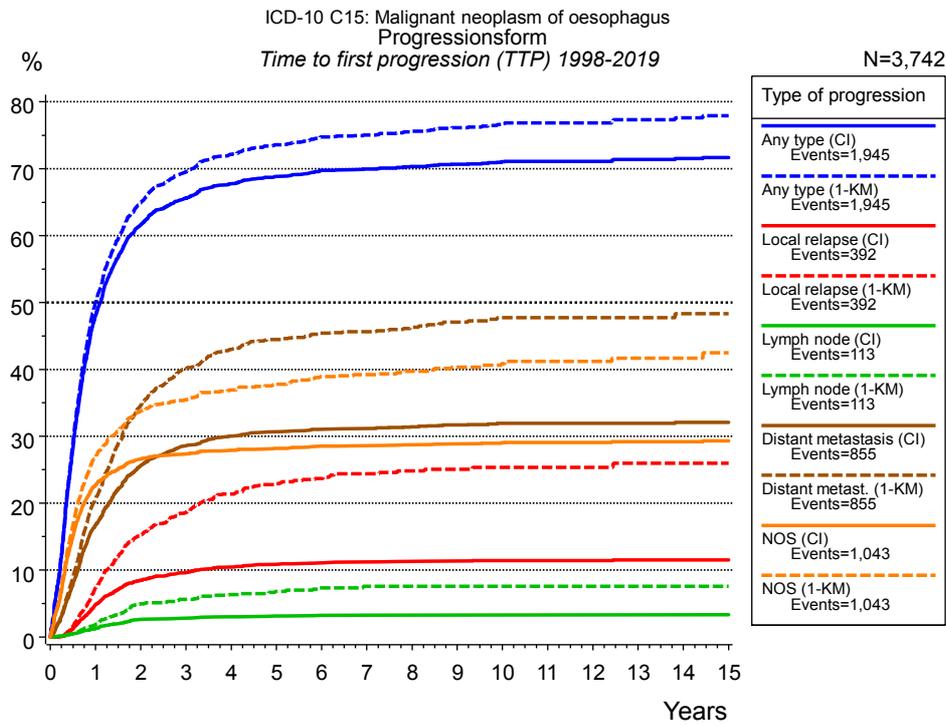


Figure 5a. Time to first progression of 3,742 patients with oesophagus cancer diagnosed between 1998 and 2019 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

	Type of progression							Distant metastasis (CI)
	Any type (CI)	Any type (1-KM)	Local relapse (CI)	Local relapse (1-KM)	Lymph node (CI)	Lymph node (1-KM)		
N	2,881	2,881	3,742	3,742	3,742	3,742		2,881
Events	1,945	1,945	391	391	113	113		855
compet.	392		2,636		2,876			1,375
Years	%	%	%	%	%	%	%	%
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	48.1	50.0	4.8	7.4	1.3	1.9	16.7	
2	61.6	64.9	8.4	15.2	2.6	4.9	25.6	
3	65.6	69.5	9.6	18.6	2.8	5.6	28.6	
4	67.8	72.1	10.5	21.4	3.0	6.4	30.0	
5	68.9	73.6	10.9	22.9	3.1	6.8	30.7	
6	69.8	74.7	11.1	23.7	3.2	7.3	31.1	
7	70.0	75.0	11.2	24.4	3.3	7.6	31.2	
8	70.4	75.6	11.3	24.8	3.3	7.6	31.4	
9	70.7	76.1	11.4	25.0	3.3	7.6	31.7	
10	71.0	76.7	11.4	25.3	3.3	7.6	31.9	
11	71.1	76.9	11.4	25.3	3.3	7.6	31.9	
12	71.1	76.9	11.4	25.3	3.3	7.6	31.9	
13	71.4	77.3	11.5	26.0	3.3	7.6	31.9	
14	71.5	77.6	11.5	26.0	3.3	7.6	32.1	
15	71.7	78.0	11.5	26.0	3.3	7.6	32.1	

<i>cont'd</i>	Type of progression		
	Distant metast. (1- KM)	NOS (CI)	NOS (1-KM)
N	2,881	3,742	3,742
Events	855	1,043	1,043
compet.		2,003	
Years	%	%	%
0	0.0	0.0	0.0
1	20.6	22.7	27.0
2	34.6	26.6	33.7
3	40.1	27.4	35.5
4	43.0	27.9	36.9
5	44.5	28.2	37.8
6	45.4	28.5	38.9
7	45.7	28.6	39.2
8	46.3	28.8	39.7
9	47.0	28.9	40.3
10	47.7	29.0	40.9
11	47.7	29.1	41.2
12	47.7	29.1	41.2
13	47.7	29.2	41.7
14	48.3	29.2	41.7
15	48.3	29.3	42.5

Table 5b. Time to first progression of patients with oesophagus cancer for period 1998-2019 (N=3,742), also showing the total of progression events (Events) and of deaths as competing risk (compet.).

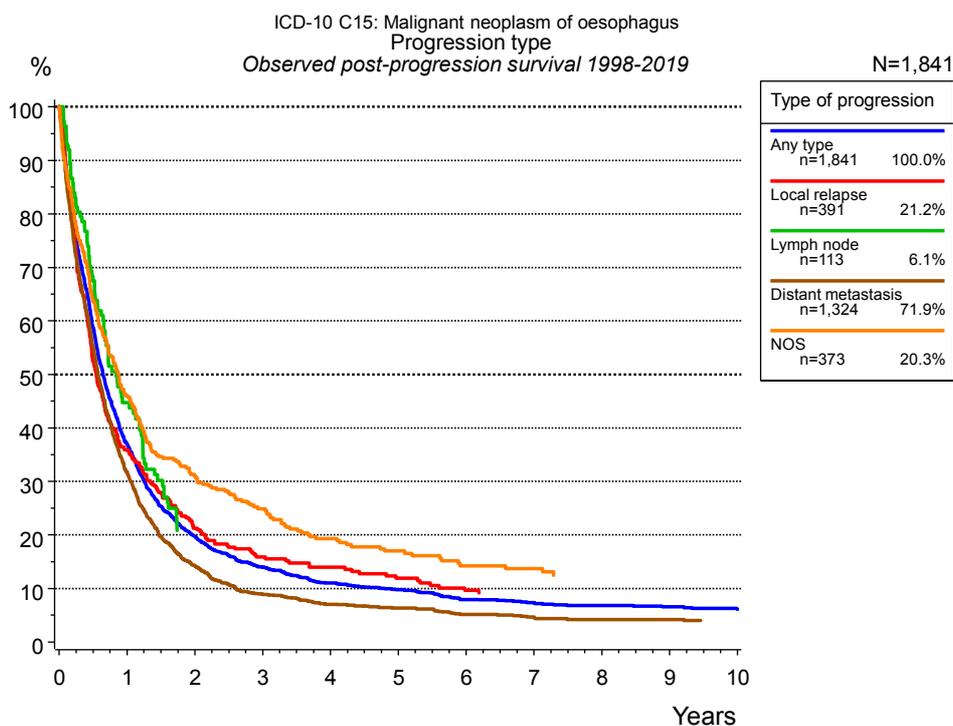


Figure 5c. Observed post-progression survival of 1,841 patients with oesophagus cancer diagnosed between 1998 and 2019. These 1,841 patients with documented progression events during their course of disease represent 49.2 % of the totally 3,742 evaluated cases (incl. M1, n=861, 23.0 %). Patients with cancer relapse documented via death certificates only were excluded (n=965, 25.8 %). 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=1,841 %	Local relapse n=391 %	Lymph node n=113 %	Distant metastasis n=1,324 %	NOS n=373 %
0	100.0	100.0	100.0	100.0	100.0
1	37.0	35.9	44.7	31.7	45.8
2	19.6	21.2		14.2	31.0
3	14.0	15.8		8.9	24.9
4	11.0	14.0		7.1	19.3
5	9.7	11.9		6.3	17.0
6	7.9	9.6		5.1	14.2
7	7.3			4.6	13.7
8	6.8			4.2	
9	6.5			4.2	
10	6.1				

Table 5d. Observed post-progression survival of patients with oesophagus cancer for period 1998-2019 (N=1,841).

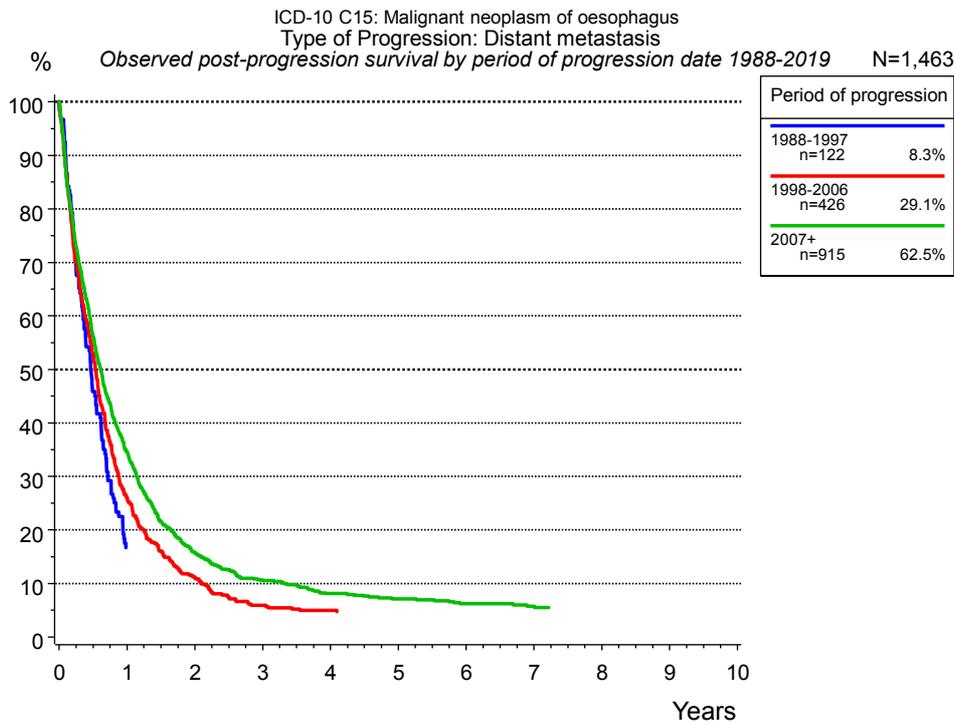


Figure 5e. Observed post-progression (distant metastasis) survival of 1,463 patients with oesophagus cancer diagnosed between 1988 and 2019 by period of progression.

Years	Period of progression		
	1988-1997 n=122 %	1998-2006 n=426 %	2007+ n=915 %
0	100.0	100.0	100.0
1	16.7	25.9	34.6
2		11.1	15.7
3		5.9	10.5
4		4.9	8.1
5			7.1
6			6.2
7			5.7

Table 5f. Observed post-progression (distant metastasis) survival of patients with oesophagus cancer for period 1988-2019 by period of progression (N=1,463).

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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