

Munich Cancer Registry



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ICD-10 C17: Small intestine cancer

Survival

Year of diagnosis	1988-1997	1998-2019
Patients	140	2,487
Diseases	140	2,495
Cases evaluated	116	1,755
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/sC17__E-ICD-10-C17-Small-intestine-cancer-survival.pdf

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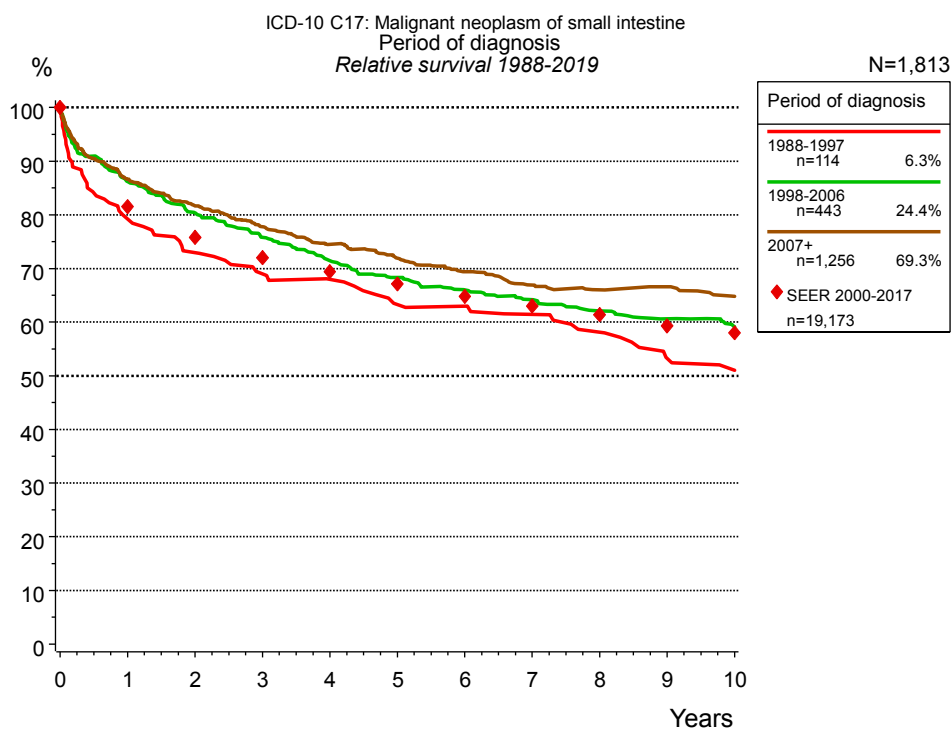


Figure 1a. Relative survival of patients with small intestine cancer by period of diagnosis. Included in the evaluation are 1,813 cases diagnosed between 1988 and 2019.

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=114		1998-2006 n=443		2007+ n=1,256	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	76.8	79.2	84.2	86.2	84.7	86.6
2	69.5	72.9	77.0	80.4	78.2	81.7
3	64.1	69.0	71.1	75.8	72.9	77.8
4	61.4	68.0	65.9	71.5	68.4	74.5
5	56.0	63.3	61.6	68.3	64.7	71.9
6	55.1	62.9	58.2	66.0	61.1	69.4
7	52.4	61.5	55.6	64.2	57.8	66.9
8	48.7	58.1	52.4	62.1	55.8	66.0
9	43.2	53.3	50.1	60.6	55.2	66.6
10	40.4	51.0	47.9	59.1	52.3	64.8
Median	7.6		9.1		10.7	

Table 1b. Observed (obs.) and relative (rel.) survival of patients with small intestine cancer by period of diagnosis for period 1988-2019 (N=1,813).

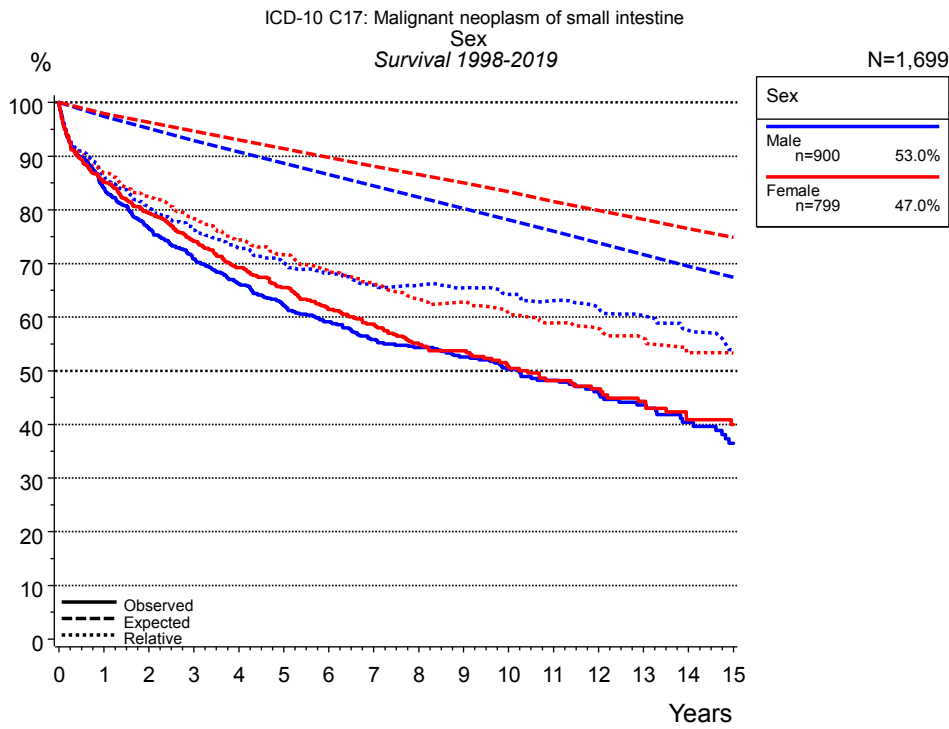


Figure 2a. Survival of patients with small intestine cancer by sex. Included in the evaluation are 1,699 cases diagnosed between 1998 and 2019.

Years	Sex			
	Male n=900		Female n=799	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	84.0	86.2	85.1	86.9
2	76.5	80.4	79.4	82.4
3	70.9	76.2	74.1	78.3
4	66.3	72.8	69.2	74.4
5	62.2	70.1	65.5	71.6
6	59.1	68.2	61.4	68.4
7	55.8	66.0	58.7	66.4
8	54.3	65.9	54.9	63.4
9	52.6	65.4	53.7	62.8
10	50.2	64.2	50.8	60.6
11	48.2	63.1	48.2	58.9
12	46.1	61.8	46.6	57.8
13	43.6	60.2	44.3	56.1
14	40.4	57.5	40.9	53.4
15	36.5	53.8	40.0	53.3
Median	10.2		10.2	

Table 2b. Observed (obs.) and relative (rel.) survival of patients with small intestine cancer by sex for period 1998-2019 (N=1,699).

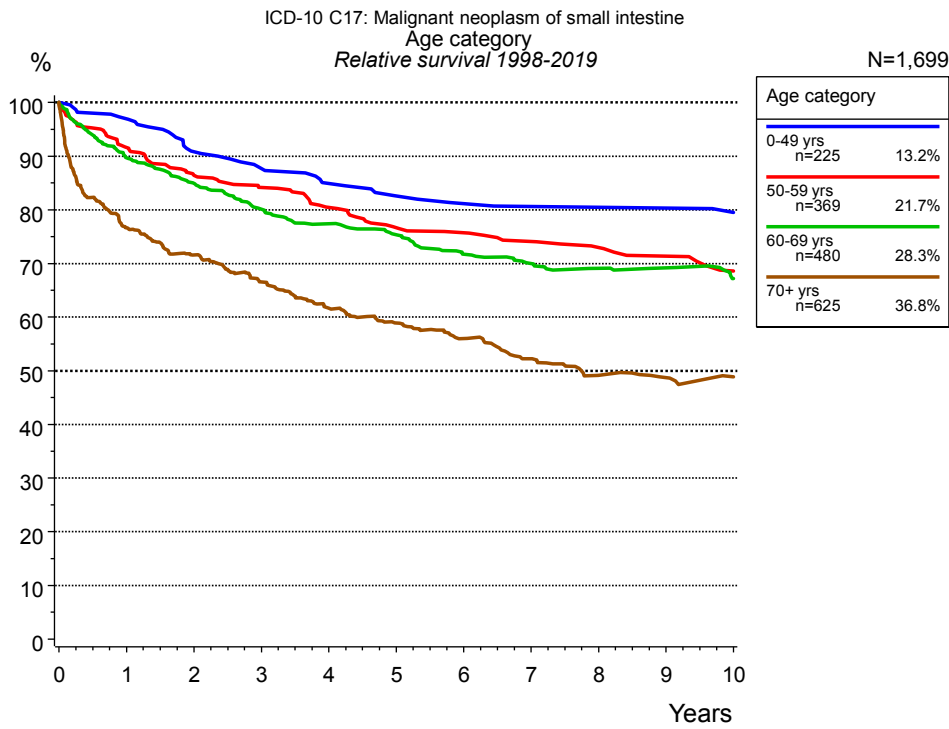


Figure 3a. Relative survival of patients with small intestine cancer by age category. Included in the evaluation are 1,699 cases diagnosed between 1998 and 2019.

Years	Age category							
	0-49 yrs n=225		50-59 yrs n=369		60-69 yrs n=480		70+ yrs n=625	
	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	97.2	97.0	91.3	91.6	88.7	89.7	72.9	76.6
2	90.7	90.8	85.5	86.4	82.9	84.9	64.8	71.6
3	87.4	87.7	82.8	84.2	77.1	80.1	57.2	66.5
4	84.4	84.9	78.6	80.4	73.5	77.4	50.4	61.7
5	81.8	82.6	74.5	76.7	70.5	75.4	45.4	58.9
6	80.3	81.1	73.2	75.7	65.7	71.7	40.8	56.0
7	79.6	80.6	71.1	74.1	63.1	70.0	35.9	52.3
8	79.6	80.5	69.3	73.0	61.0	69.1	31.2	49.2
9	79.6	80.3	67.3	71.4	59.8	69.2	29.1	48.7
10	78.3	79.5	63.8	68.6	56.4	67.2	27.1	48.9
Median					12.0		4.0	

Table 3b. Observed (obs.) and relative (rel.) survival of patients with small intestine cancer by age category for period 1998-2019 (N=1,699).

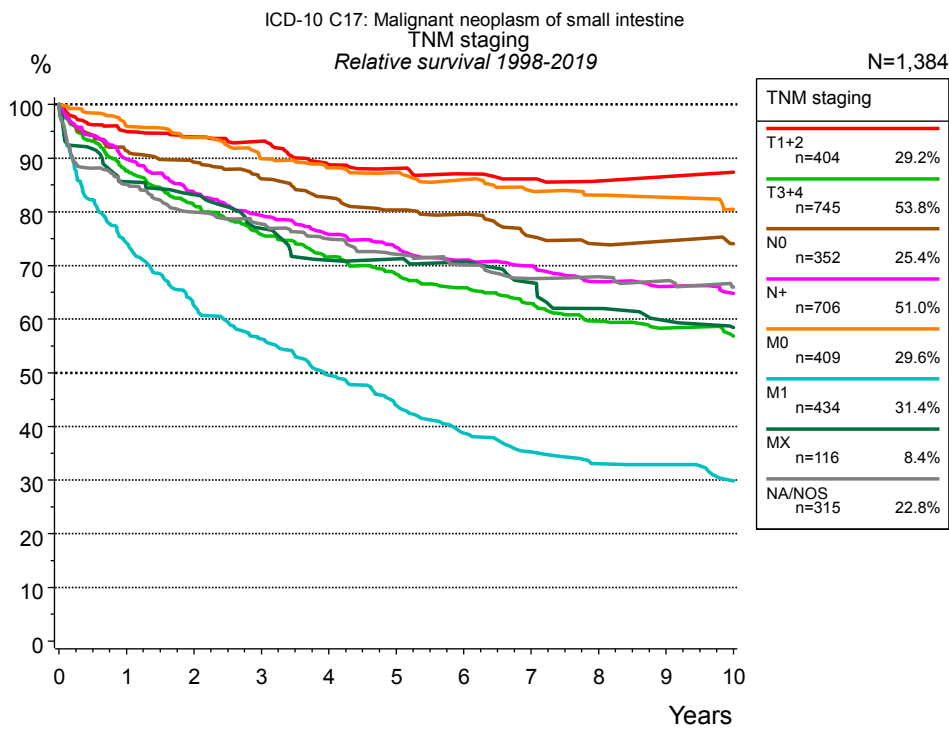


Figure 4a. Relative survival of patients with small intestine cancer by TNM staging. For 1,385 of 1,699 cases diagnosed between 1998 and 2019 valid data could be obtained for this item. For a total of 1,384 cases an evaluable classification was established. The accumulated percentage exceeds the 100 % value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 315 patients with missing values regarding TNM staging (18.5 % of 1,699 patients, the percent values of all other categories are related to n=1,384).

Years	TNM staging													
	T1+2 n=404		T3+4 n=745		N0 n=352		N+ n=706		M0 n=409		M1 n=434		MX n=116	
	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	93.5	95.0	85.7	87.6	89.6	91.4	88.2	89.8	94.3	96.0	72.7	74.2	83.9	85.6
2	90.9	93.9	77.7	81.2	85.7	89.3	80.7	83.7	90.7	93.9	60.1	62.5	80.1	83.2
3	89.0	93.2	70.8	75.7	81.1	86.2	75.2	79.3	85.3	89.9	53.3	56.3	72.2	76.9
4	83.6	88.8	65.5	71.6	76.3	82.6	70.6	75.8	82.3	88.2	46.3	49.5	65.3	71.0
5	81.5	88.1	61.2	68.4	72.9	80.4	67.0	73.4	80.1	87.3	40.2	43.9	64.3	71.2
6	79.1	87.1	57.6	65.8	70.9	79.5	63.6	71.0	77.3	86.0	34.8	38.8	62.3	70.7
7	77.4	86.1	53.7	62.9	65.6	75.4	61.4	69.9	73.9	83.9	31.4	35.2	57.2	66.8
8	75.3	85.8	49.6	59.6	63.0	74.0	57.5	67.0	71.7	83.1	28.8	33.1	51.9	62.0
9	75.3	86.6	47.2	58.3	62.2	74.5	55.5	66.1	69.7	82.7	28.3	32.9	48.5	59.7
10	75.3	87.4	45.0	56.8	60.0	74.0	53.5	64.8	66.3	80.4	25.5	29.8	45.8	58.4
Median			7.8		14.8		11.5		15.3		3.5		8.6	

TNM staging		
<i>cont'd</i>	NA/NOS n=315	
Years	obs. %	rel. %
0	100.0	100.0
1	82.7	85.1
2	75.5	79.9
3	71.5	77.7
4	67.4	74.9
5	63.2	72.1
6	59.8	70.1
7	56.7	67.5
8	55.3	67.9
9	53.8	67.1
10	51.1	65.9
Median	10.4	

Table 4b. Observed (obs.) and relative (rel.) survival of patients with small intestine cancer by TNM staging for period 1998-2019 (N=1,384).

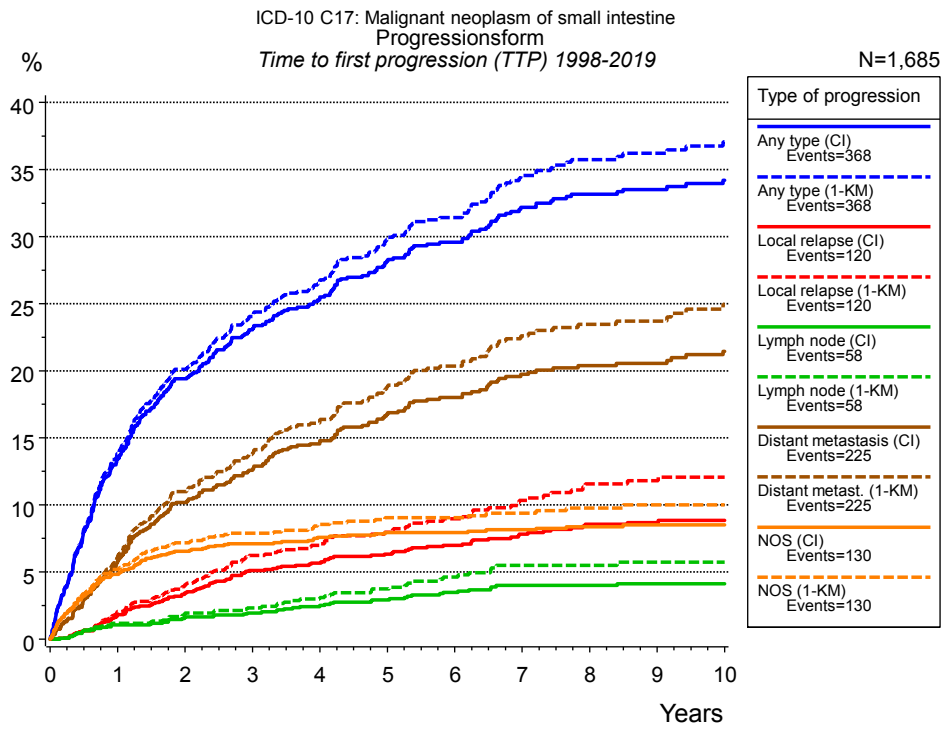


Figure 5a. Time to first progression of 1,685 patients with small intestine cancer diagnosed between 1998 and 2019 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

	Type of progression						
	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	1,258	1,258	1,685	1,685	1,685	1,685	1,258
Events	355	355	115	115	54	54	214
compet.	159		585		627		249
Years	%	%	%	%	%	%	%
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	13.4	13.8	1.8	2.0	1.1	1.2	5.8
2	19.4	20.1	3.5	4.1	1.7	1.9	10.2
3	23.1	24.1	5.1	6.2	1.9	2.3	12.6
4	25.3	26.5	5.7	7.0	2.4	3.0	14.6
5	28.2	29.8	6.3	8.0	2.9	3.7	16.8
6	29.6	31.4	7.0	9.0	3.5	4.6	18.0
7	32.2	34.6	7.8	10.3	4.0	5.5	19.7
8	33.2	35.8	8.5	11.6	4.0	5.5	20.4
9	33.5	36.2	8.7	11.8	4.1	5.7	20.6
10	34.2	37.1	8.8	12.1	4.1	5.7	21.4

<i>cont'd</i>	Type of progression		
	Distant metast. (1- KM)	NOS (CI)	NOS (1-KM)
N	1,258	1,685	1,685
Events	214	128	128
compet.		559	
Years	%	%	%
0	0.0	0.0	0.0
1	6.1	4.8	5.2
2	11.0	6.5	7.2
3	13.8	7.1	7.9
4	16.1	7.6	8.5
5	18.8	7.9	9.0
6	20.4	7.9	9.0
7	22.6	8.1	9.4
8	23.5	8.4	9.8
9	23.7	8.5	10.0
10	24.9	8.5	10.0

Table 5b. Time to first progression of patients with small intestine cancer for period 1998-2019 (N=1,685), also showing the total of progression events (Events) and of deaths as competing risk (compet.).

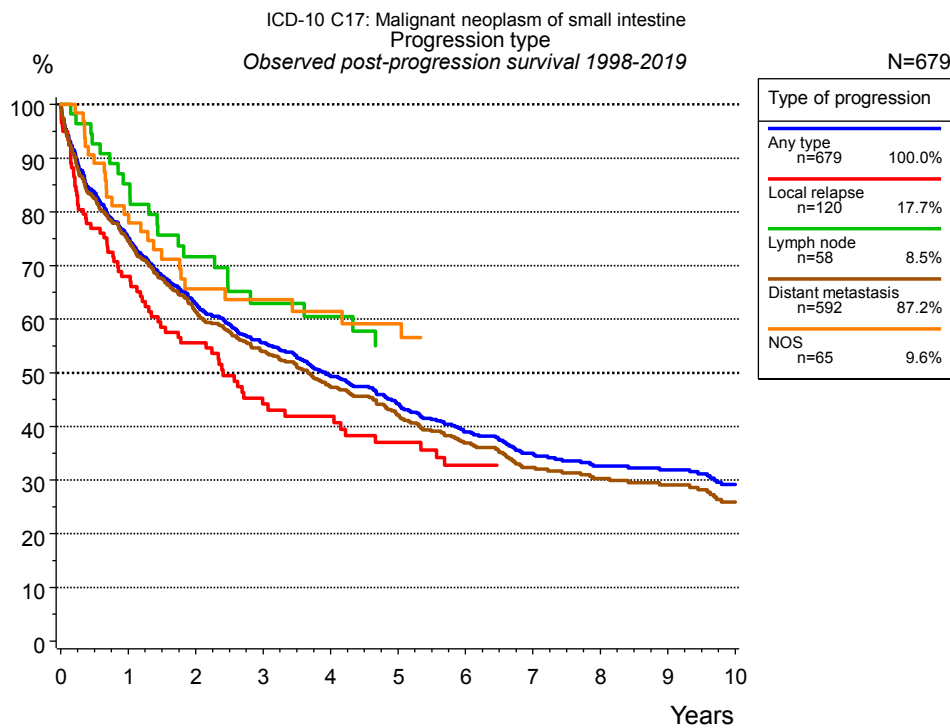


Figure 5c. Observed post-progression survival of 679 patients with small intestine cancer diagnosed between 1998 and 2019. These 679 patients with documented progression events during their course of disease represent 40.3 % of the totally 1,685 evaluated cases (incl. M1, n=427, 25.3 %). Patients with cancer relapse documented via death certificates only were excluded (n=116, 6.9 %). 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=679 %	Local relapse n=120 %	Lymph node n=58 %	Distant metastasis n=592 %	NOS n=65 %
0	100.0	100.0	100.0	100.0	100.0
1	75.3	67.9	85.2	74.6	79.5
2	62.8	55.6	71.7	61.3	65.7
3	55.6	44.2	62.9	54.0	63.6
4	49.5	41.9	60.5	47.5	61.4
5	44.2	37.0		42.1	59.1
6	39.0	32.8		36.9	
7	35.0			32.3	
8	32.6			30.3	
9	32.0			29.1	
10	29.2			25.9	

Table 5d. Observed post-progression survival of patients with small intestine cancer for period 1998-2019 (N=679).

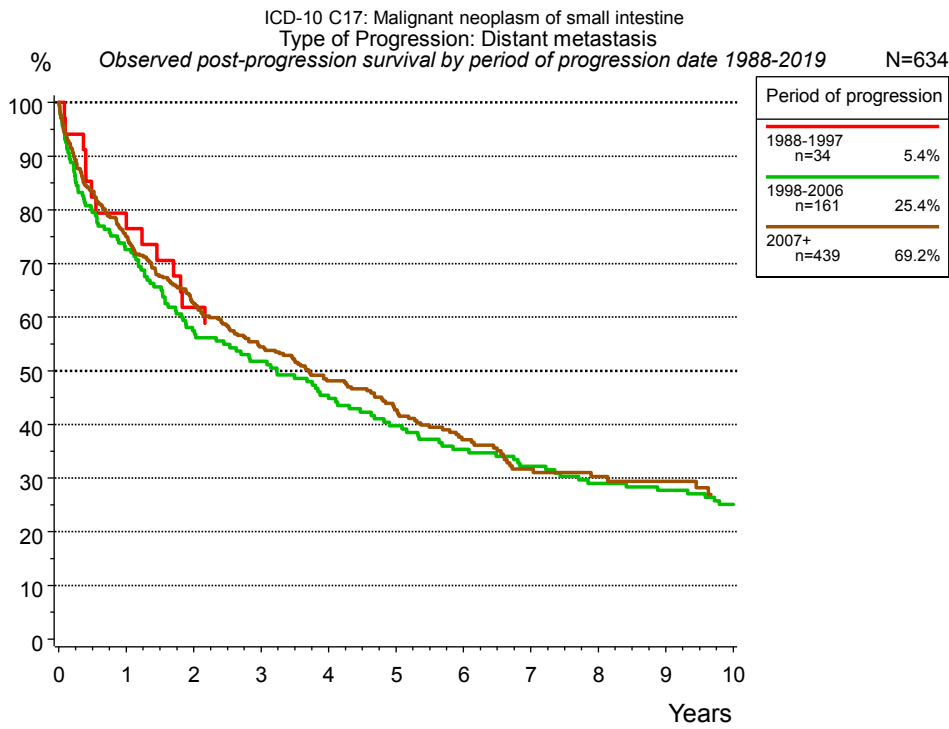


Figure 5e. Observed post-progression (distant metastasis) survival of 634 patients with small intestine cancer diagnosed between 1988 and 2019 by period of progression.

Years	Period of progression		
	1988-1997 n=34 %	1998-2006 n=161 %	2007+ n=439 %
0	100.0	100.0	100.0
1	76.5	72.6	75.1
2	61.8	57.4	62.4
3		51.8	54.4
4		45.4	48.1
5		39.8	42.7
6		35.3	37.1
7		32.2	31.7
8		29.0	30.3
9		27.7	29.4
10		25.1	

Table 5f. Observed post-progression (distant metastasis) survival of patients with small intestine cancer for period 1988-2019 by period of progression (N=634).

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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