

Munich Cancer Registry



- Incidence and Mortality
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- *Deutsch*

ICD-10 C17: Small intestine cancer

Survival

Year of diagnosis	1988-1997	1998-2020
Patients	138	2,642
Diseases	138	2,649
Cases evaluated	115	1,859
Creation date	04/15/2022	
Database export	12/20/2021	
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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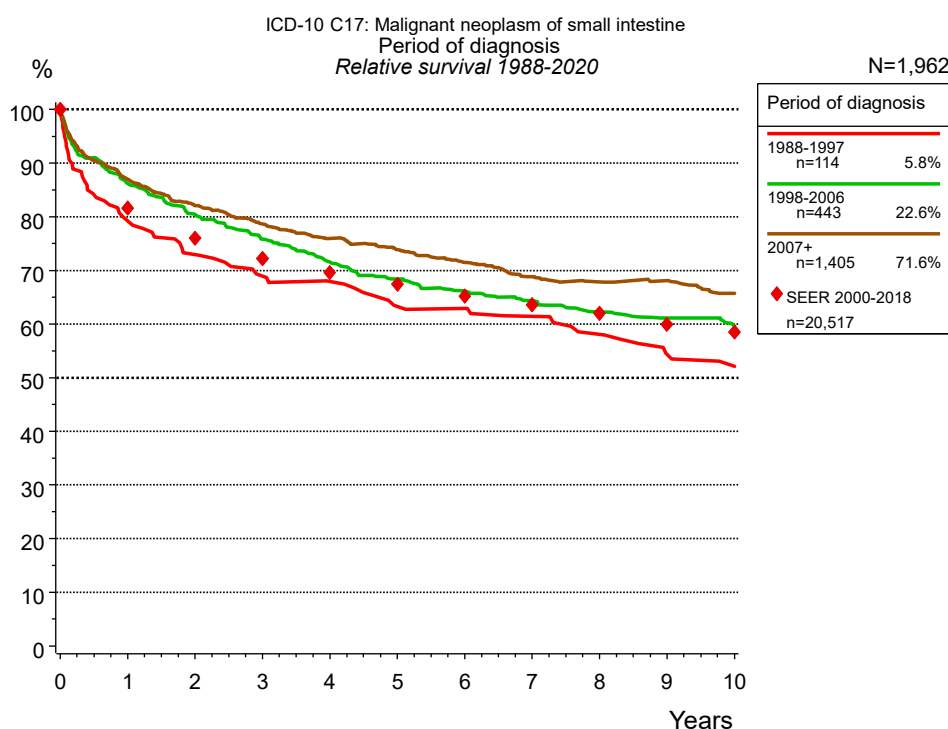


Figure 1a. Relative survival of patients with small intestine cancer by period of diagnosis. Included in the evaluation are 1,962 cases diagnosed between 1988 and 2020.

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 2018, 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.

Period of diagnosis						
Years	1988-1997 n=114		1998-2006 n=443		2007+ n=1,405	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	76.8	79.2	84.3	86.2	85.0	87.0
2	69.5	72.9	77.0	80.4	78.5	82.1
3	64.1	69.0	71.2	75.9	73.7	78.7
4	61.4	67.9	66.0	71.6	69.6	75.9
5	56.0	63.3	61.7	68.4	66.3	73.9
6	55.1	62.9	58.3	66.1	62.8	71.5
7	52.4	61.4	55.7	64.3	59.2	68.8
8	48.7	58.1	52.5	62.3	57.1	67.8
9	44.1	54.4	50.5	61.1	56.1	68.1
10	41.3	52.1	48.2	59.7	52.8	65.7
Median	7.6		9.3		11.3	

Table 1b. Observed (obs.) and relative (rel.) survival of patients with small intestine cancer by period of diagnosis for period 1988-2020 (N=1,962).

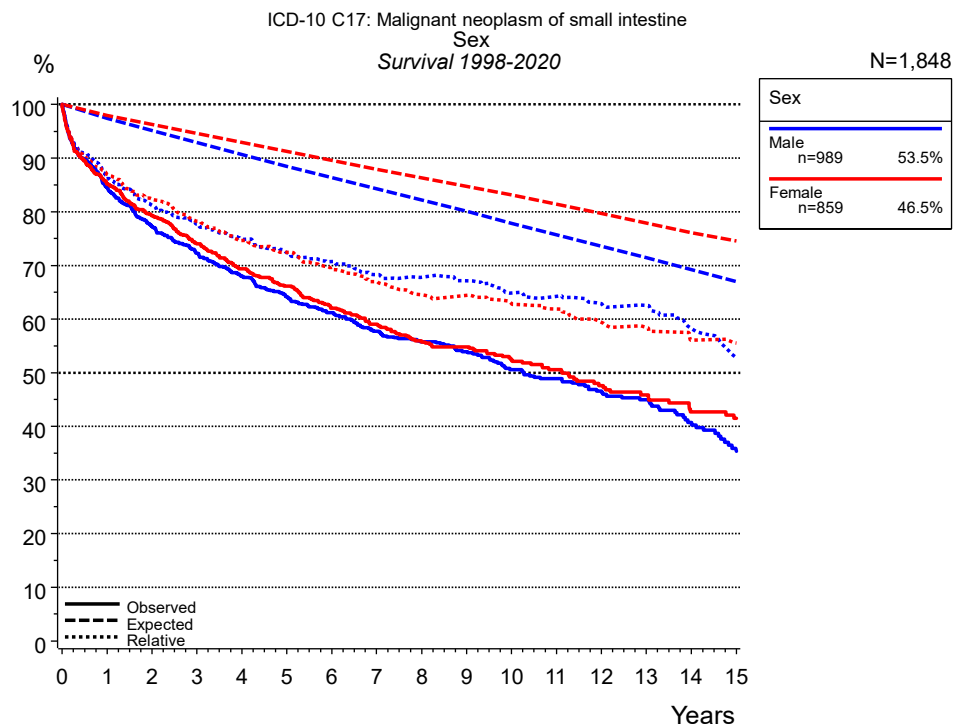


Figure 2a. Survival of patients with small intestine cancer by sex. Included in the evaluation are 1,848 cases diagnosed between 1998 and 2020.

Years	Sex			
	Male n=989		Female n=859	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	84.5	86.7	85.3	87.0
2	77.2	81.1	79.3	82.3
3	72.3	77.7	74.0	78.2
4	68.0	74.9	69.4	74.6
5	64.1	72.4	66.1	72.4
6	61.2	70.7	62.0	69.2
7	57.7	68.3	59.0	66.9
8	55.8	67.8	55.7	64.5
9	53.9	67.1	54.8	64.4
10	50.6	64.9	52.4	62.9
11	48.8	64.2	50.6	61.9
12	46.6	62.9	47.6	59.4
13	44.9	62.5	45.9	58.4
14	40.7	58.2	42.7	56.1
15	35.3	52.8	41.4	55.5
Median	10.3		11.1	

Table 2b. Observed (obs.) and relative (rel.) survival of patients with small intestine cancer by sex for period 1998-2020 (N=1,848).

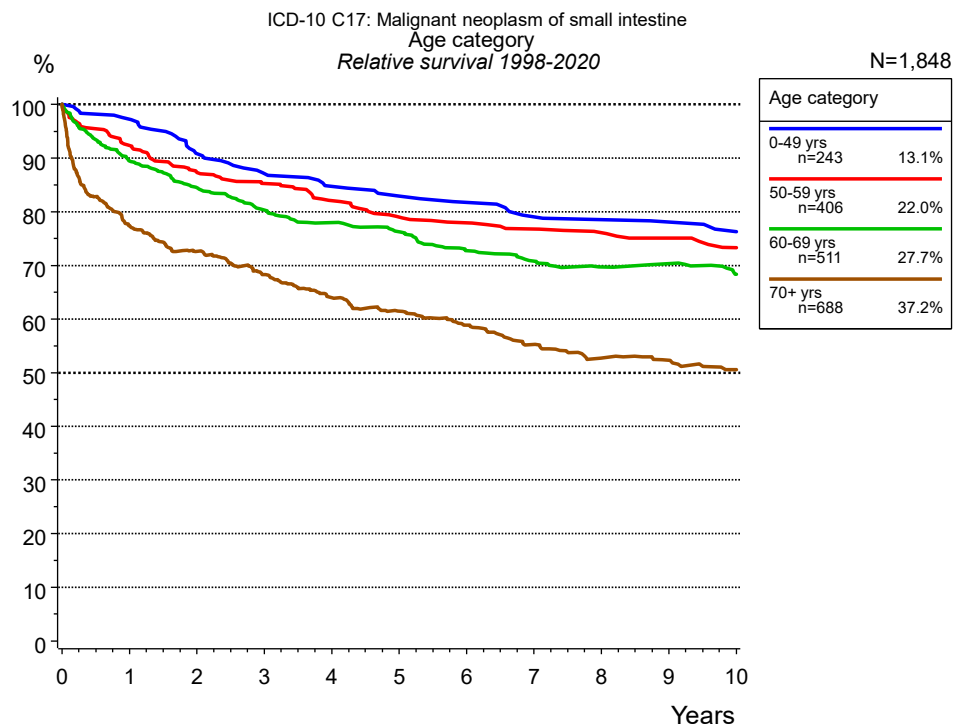


Figure 3a. Relative survival of patients with small intestine cancer by age category. Included in the evaluation are 1,848 cases diagnosed between 1998 and 2020.

Years	Age category							
	0-49 yrs n=243		50-59 yrs n=406		60-69 yrs n=511		70+ yrs n=688	
	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	97.4	97.2	91.9	92.3	88.5	89.5	73.6	77.4
2	90.6	90.8	86.4	87.4	82.5	84.5	65.7	72.6
3	86.8	87.1	83.9	85.3	77.3	80.3	58.8	68.3
4	84.3	84.8	80.2	82.0	74.1	78.0	52.3	64.0
5	82.1	82.9	76.8	79.0	71.3	76.3	47.3	61.5
6	80.9	81.7	75.3	77.9	66.7	72.7	42.8	58.9
7	78.2	79.1	73.6	76.8	63.8	70.8	37.9	55.3
8	77.5	78.5	72.2	76.1	61.4	69.7	33.7	52.7
9	76.7	78.1	70.6	75.1	60.7	70.4	31.4	52.3
10	74.9	76.3	68.1	73.3	57.4	68.4	28.1	50.6
Median			16.6		13.0		4.3	

Table 3b. Observed (obs.) and relative (rel.) survival of patients with small intestine cancer by age category for period 1998-2020 (N=1,848).

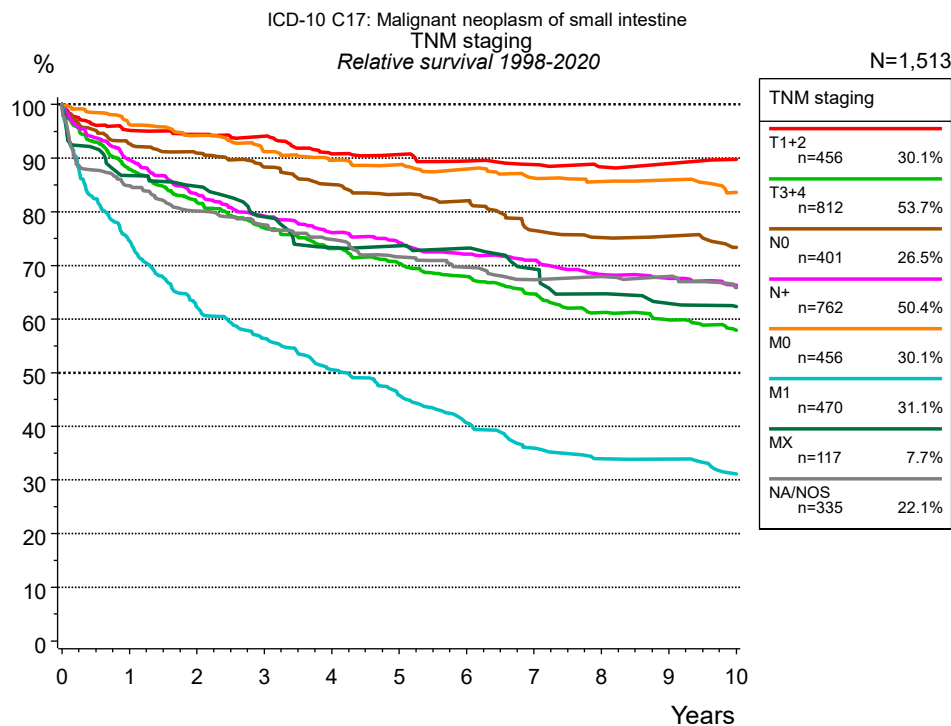


Figure 4a. Relative survival of patients with small intestine cancer by TNM staging. For 1,515 of 1,848 cases diagnosed between 1998 and 2020 valid data could be obtained for this item. For a total of 1,513 cases an evaluable classification was established. The accumulated percentage exceeds the 100 % value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 335 patients with missing values regarding TNM staging (18.1 % of 1,848 patients, the percent values of all other categories are related to n=1,513).

TNM staging														
	T1+2 n=456		T3+4 n=812		N0 n=401		N+ n=762		M0 n=456		M1 n=470		MX n=117	
Years	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	93.7	95.2	86.0	87.9	90.7	92.6	88.1	89.7	94.6	96.3	73.1	74.5	85.0	86.8
2	91.3	94.4	78.2	81.8	87.2	90.9	80.3	83.2	91.0	94.3	59.8	62.2	81.5	84.7
3	89.7	94.1	72.0	77.0	83.0	88.3	75.1	79.2	86.4	91.2	53.4	56.4	74.2	79.0
4	85.2	90.8	66.8	73.1	78.4	85.1	70.9	76.1	83.3	89.6	47.2	50.6	67.3	73.3
5	83.6	90.7	62.8	70.4	75.2	83.2	67.8	74.3	81.3	88.8	41.9	45.8	66.3	73.7
6	81.1	89.5	59.3	68.0	72.9	82.0	64.6	72.1	79.0	88.0	36.5	40.6	64.3	73.2
7	79.3	88.8	55.0	64.6	66.5	76.6	62.3	71.0	75.9	86.3	31.9	36.0	59.2	69.3
8	77.3	88.4	50.8	61.2	63.9	75.2	58.6	68.3	73.8	85.6	29.5	34.0	54.0	64.7
9	76.8	89.0	48.5	59.9	62.7	75.5	56.9	67.6	72.3	85.9	29.1	33.9	50.8	62.9
10	76.0	89.8	45.7	57.9	59.3	73.3	54.6	66.3	68.8	83.6	26.4	31.1	48.5	62.3
Median	19.4		8.6		14.5		11.8		15.8		3.6		9.2	

TNM staging		
<i>cont'd</i>	NA/NOS n=335	
Years	obs. %	rel. %
0	100.0	100.0
1	82.4	84.8
2	75.6	80.1
3	71.4	77.6
4	67.3	74.8
5	62.7	71.6
6	59.4	69.7
7	56.3	67.3
8	55.1	67.9
9	54.2	67.9
10	50.9	65.8
Median	10.4	

Table 4b. Observed (obs.) and relative (rel.) survival of patients with small intestine cancer by TNM staging for period 1998-2020 (N=1,513).

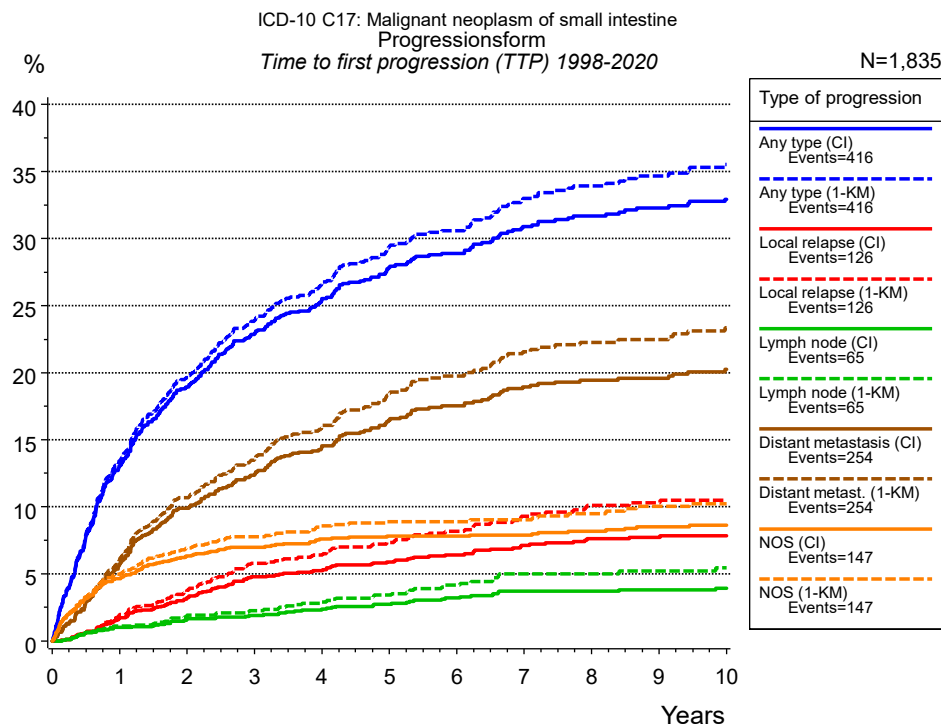


Figure 5a. Time to first progression of 1,835 patients with small intestine cancer diagnosed between 1998 and 2020 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The 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	1,372	1,372	1,835	1,835	1,835	1,835	1,372
Events	395	395	120	120	59	59	237
compet.	183		661		707		288
Years	%	%	%	%	%	%	%
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	13.1	13.5	1.7	1.9	1.0	1.1	5.7
2	18.9	19.6	3.2	3.8	1.6	1.9	9.9
3	22.9	23.8	4.8	5.8	1.9	2.2	12.3
4	25.3	26.6	5.2	6.4	2.3	2.8	14.4
5	27.9	29.4	5.9	7.3	2.7	3.4	16.5
6	28.9	30.6	6.4	8.2	3.2	4.2	17.5
7	30.9	33.0	7.1	9.3	3.7	5.0	18.9
8	31.7	33.9	7.6	10.1	3.7	5.0	19.4
9	32.3	34.7	7.7	10.3	3.8	5.2	19.6
10	33.0	35.5	7.8	10.5	3.9	5.4	20.3

<i>cont'd</i>	Type of progression		
	Distant		
	metast. (1-KM)	NOS (CI)	NOS (1-KM)
	N	1,835	1,835
	Events	144	144
compet.		627	
Years	%	%	%
0	0.0	0.0	0.0
1	6.1	4.6	5.0
2	10.7	6.3	6.9
3	13.5	7.0	7.8
4	15.9	7.6	8.6
5	18.4	7.8	8.9
6	19.7	7.8	8.9
7	21.6	7.9	9.0
8	22.3	8.2	9.5
9	22.5	8.5	10.0
10	23.4	8.6	10.2

Table 5b. Time to first progression of patients with small intestine cancer for period 1998-2020 (N=1,835), also showing the total of progression events (Events) and of deaths as competing risk (compet.).

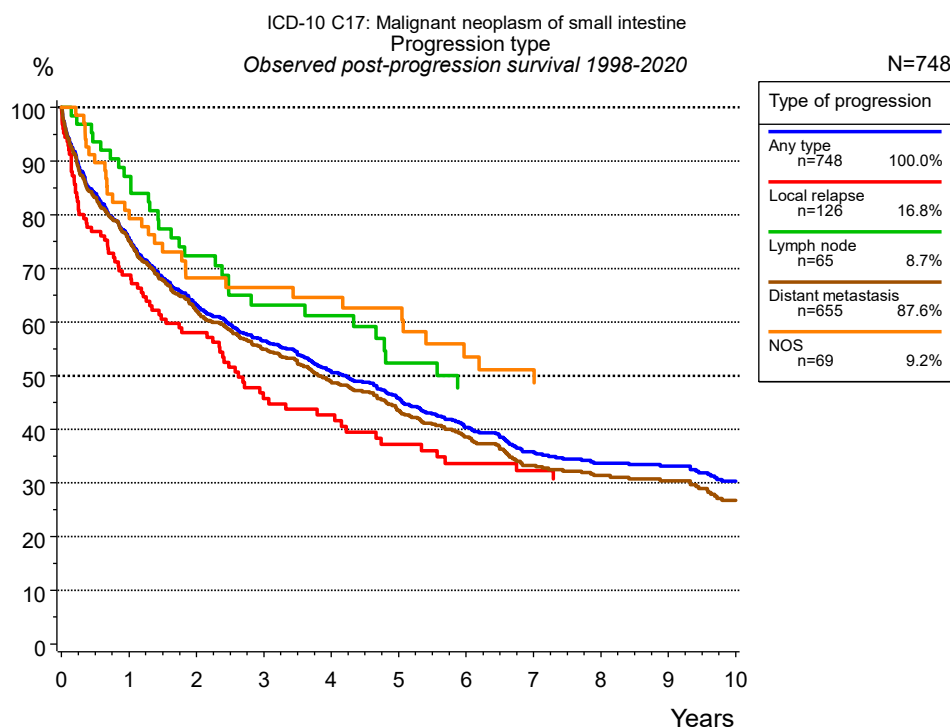


Figure 5c. Observed post-progression survival of 748 patients with small intestine cancer diagnosed between 1998 and 2020. These 748 patients with documented progression events during their course of disease represent 40.8 % of the totally 1,835 evaluated cases (incl. M1, n=463, 25.2 %). Patients with cancer relapse documented via death certificates only were excluded (n=131, 7.1 %). 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=748 %	Local relapse n=126 %	Lymph node n=65 %	Distant metastasis n=655 %	NOS n=69 %
0	100.0	100.0	100.0	100.0	100.0
1	75.7	68.8	87.2	75.2	80.8
2	63.1	58.0	72.3	62.0	68.2
3	56.4	45.8	63.1	54.9	66.4
4	50.9	42.7	61.2	49.0	64.6
5	45.8	37.2	52.4	43.6	62.6
6	40.4	33.6		38.5	53.5
7	35.8	32.3		33.3	51.1
8	33.7			31.4	
9	33.1			30.4	
10	30.3			26.8	

Table 5d. Observed post-progression survival of patients with small intestine cancer for period 1998-2020 (N=748).

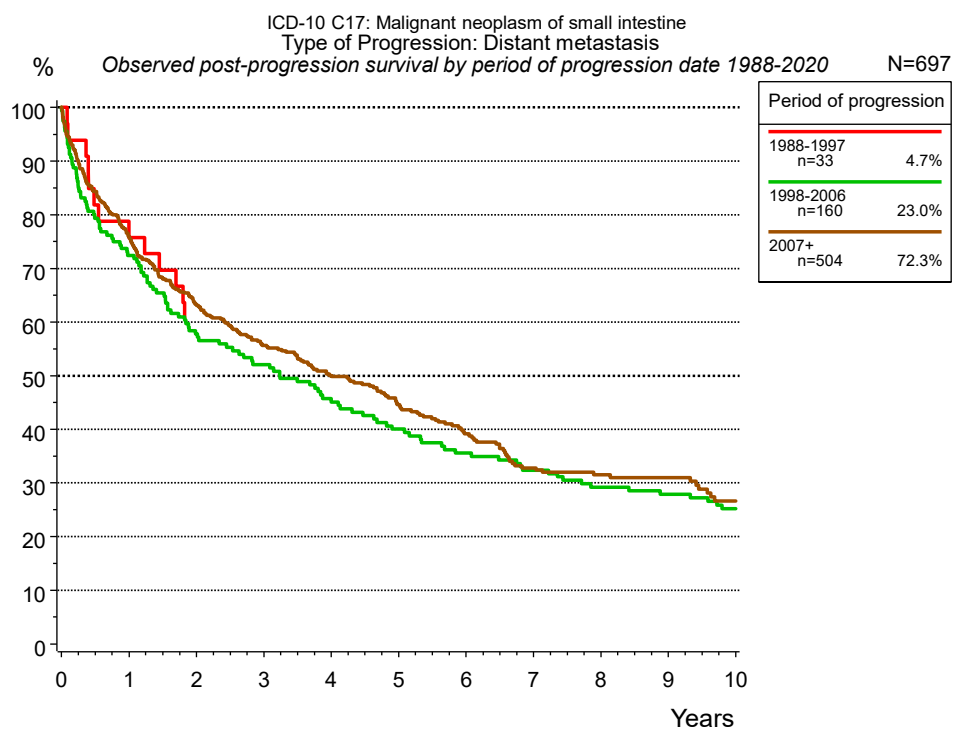


Figure 5e. Observed post-progression (distant metastasis) survival of 697 patients with small intestine cancer diagnosed between 1988 and 2020 by period of progression.

Years	Period of progression		
	1988-1997 n=33 %	1998-2006 n=160 %	2007+ n=504 %
0	100.0	100.0	100.0
1	75.8	72.4	76.0
2	60.6	57.8	63.1
3		52.1	55.6
4		45.7	50.1
5		40.0	44.6
6		35.6	39.1
7		32.4	32.8
8		29.2	31.5
9		27.9	31.0
10		25.2	26.7

Table 5f. Observed post-progression (distant metastasis) survival of patients with small intestine cancer for period 1988-2020 by period of progression (N=697).

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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