

# Munich Cancer Registry



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## ICD-10 C24: Biliary tract cancer

### Survival

Year of diagnosis	1988-1997	1998-2019
Patients	285	3,271
Diseases	285	3,271
Cases evaluated	252	2,087
Creation date	01/27/2021	
Database export	01/07/2021	
Population	4.92 m	



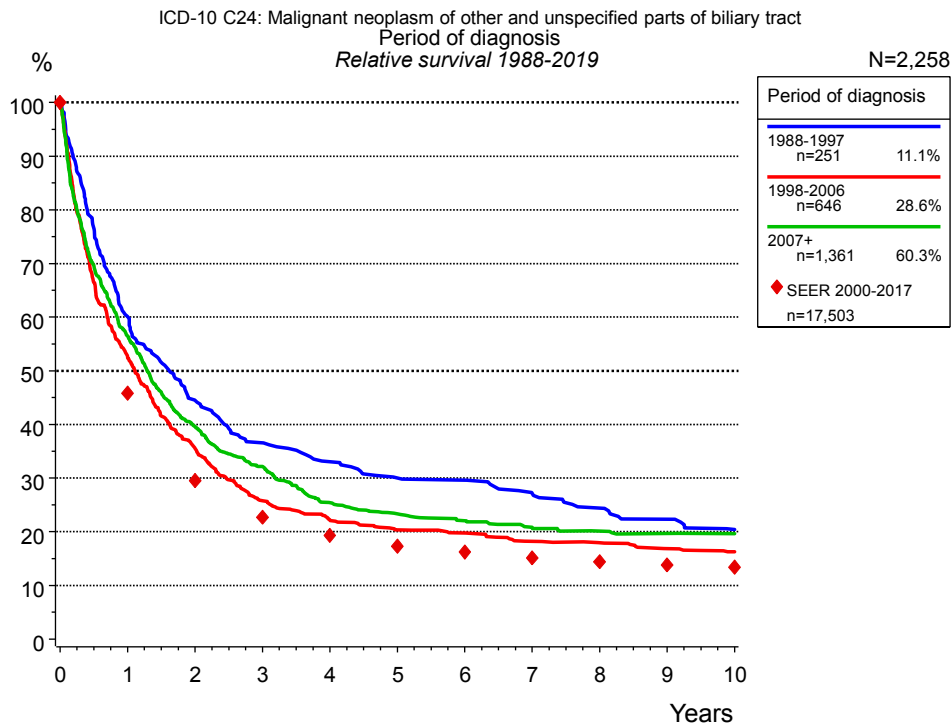
Munich Cancer Registry  
Cancer Registry Bavaria - Upper Bavaria Regional Center  
at Klinikum Grosshadern/IBE  
Marchioninstr. 15  
Munich, 81377  
Germany

<https://www.tumorregister-muenchen.de/en>

[https://www.tumorregister-muenchen.de/en/facts/surv/sC24\\_\\_E-ICD-10-C24-Biliary-tract-cancer-survival.pdf](https://www.tumorregister-muenchen.de/en/facts/surv/sC24__E-ICD-10-C24-Biliary-tract-cancer-survival.pdf)

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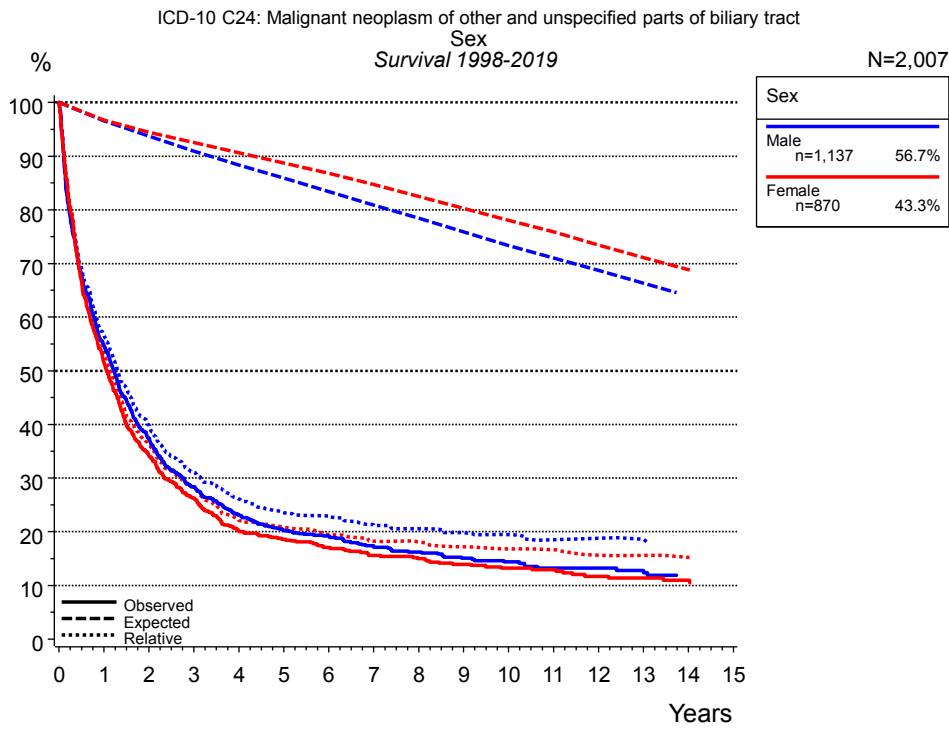
**Figure 1a.** Relative survival of patients with biliary tract cancer by period of diagnosis. Included in the evaluation are 2,258 cases diagnosed between 1988 and 2019.

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=251		1998-2006 n=646		2007+ n=1,361	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	58.4	60.1	50.6	52.5	54.7	56.5
2	42.2	44.5	33.3	35.5	37.3	39.6
3	34.2	36.6	23.7	25.8	29.6	32.1
4	30.0	33.0	19.9	22.2	22.7	25.4
5	26.6	30.0	17.8	20.4	20.4	23.4
6	25.7	29.6	17.0	19.8	18.8	22.0
7	22.7	27.1	15.2	18.2	17.1	20.8
8	20.2	24.4	14.5	18.0	16.2	20.1
9	18.0	22.3	13.2	16.9	15.5	19.7
10	15.9	20.4	12.4	16.3	15.2	19.7
Median	1.5		1.0		1.2	

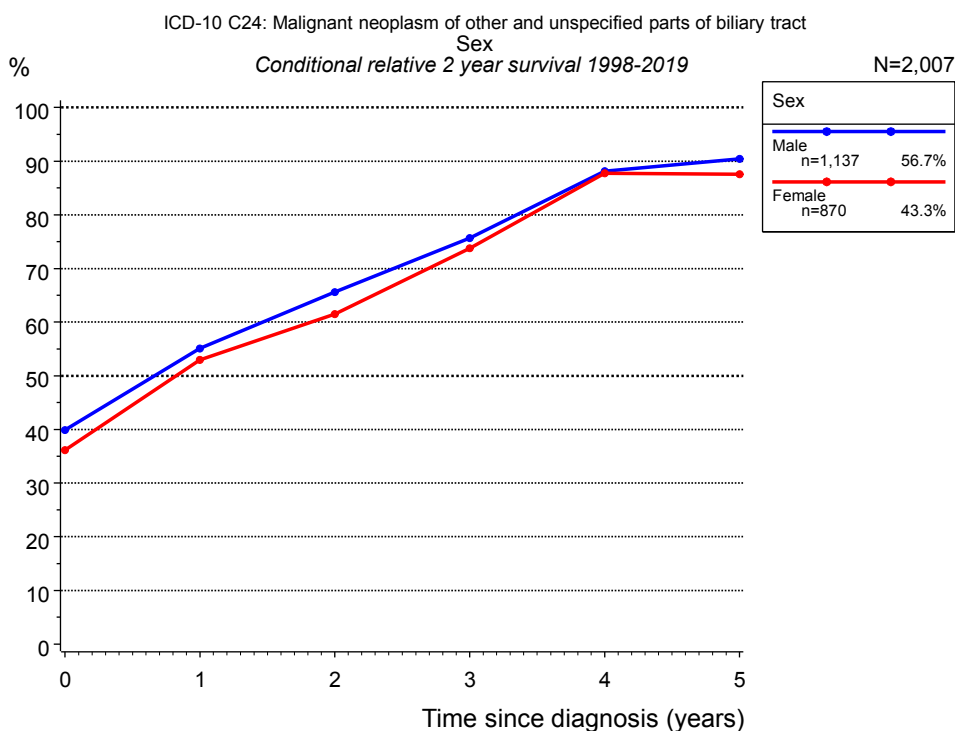
**Table 1b.** Observed (obs.) and relative (rel.) survival of patients with biliary tract cancer by period of diagnosis for period 1988-2019 (N=2,258).



**Figure 2a.** Survival of patients with biliary tract cancer by sex. Included in the evaluation are 2,007 cases diagnosed between 1998 and 2019.

Years	Sex			
	Male n=1,137		Female n=870	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	54.6	56.5	51.6	53.3
2	37.4	39.8	34.1	36.1
3	28.4	31.1	26.3	28.2
4	23.1	26.1	20.2	22.2
5	20.3	23.5	18.6	20.9
6	19.2	22.9	17.0	19.5
7	17.2	21.3	15.6	18.3
8	16.2	20.5	15.0	18.1
9	15.1	19.8	13.9	17.2
10	14.4	19.5	13.2	16.8
11	13.2	18.5	12.9	16.7
12	13.2	18.8	11.7	15.6
13	12.4	18.6	11.3	15.6
14	11.9	17.9	11.0	15.2
Median	1.2		1.1	

**Table 2b.** Observed (obs.) and relative (rel.) survival of patients with biliary tract cancer by sex for period 1998-2019 (N=2,007).

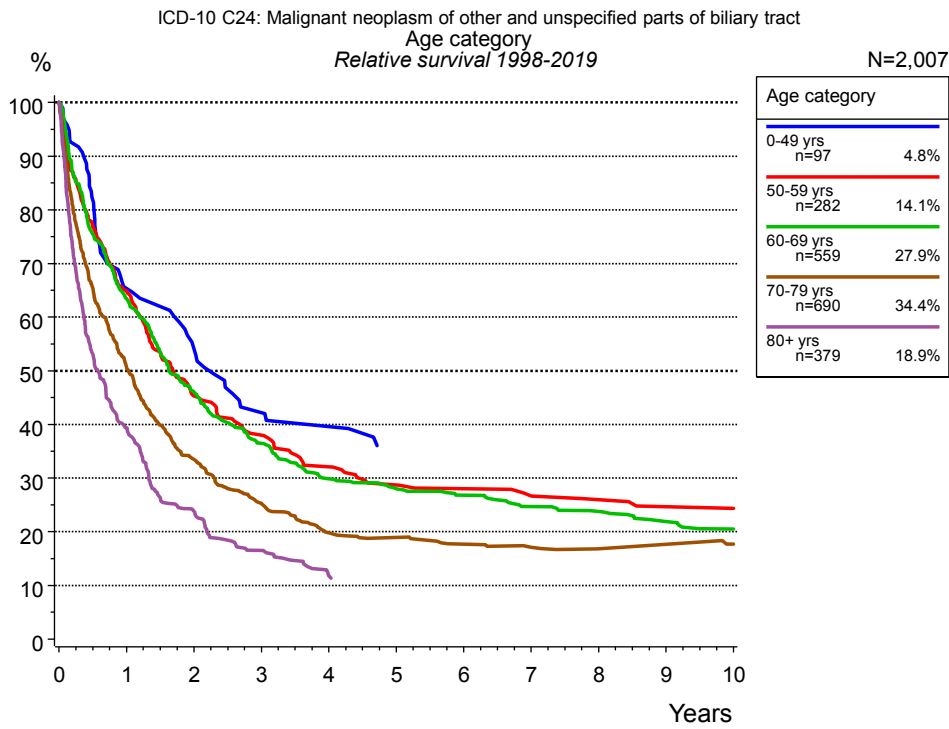


**Figure 2c.** Conditional relative 2-year survival of patients with biliary tract cancer by sex. For 2,007 of 2,007 cases diagnosed between 1998 and 2019 valid data could be obtained for this item.

Years	Sex			
	Male	Female		
	n	Cond. surv. % 2 yrs	n	Cond. surv. % 2 yrs
0	1,137	39.8	870	36.1
1	582	55.1	419	53.0
2	364	65.6	257	61.5
3	250	75.7	187	73.8
4	188	88.1	133	87.7
5	157	90.4	112	87.6

**Table 2d.** Conditional relative 2-year survival of patients with biliary tract cancer by sex for period 1998-2019 (N=2,007).

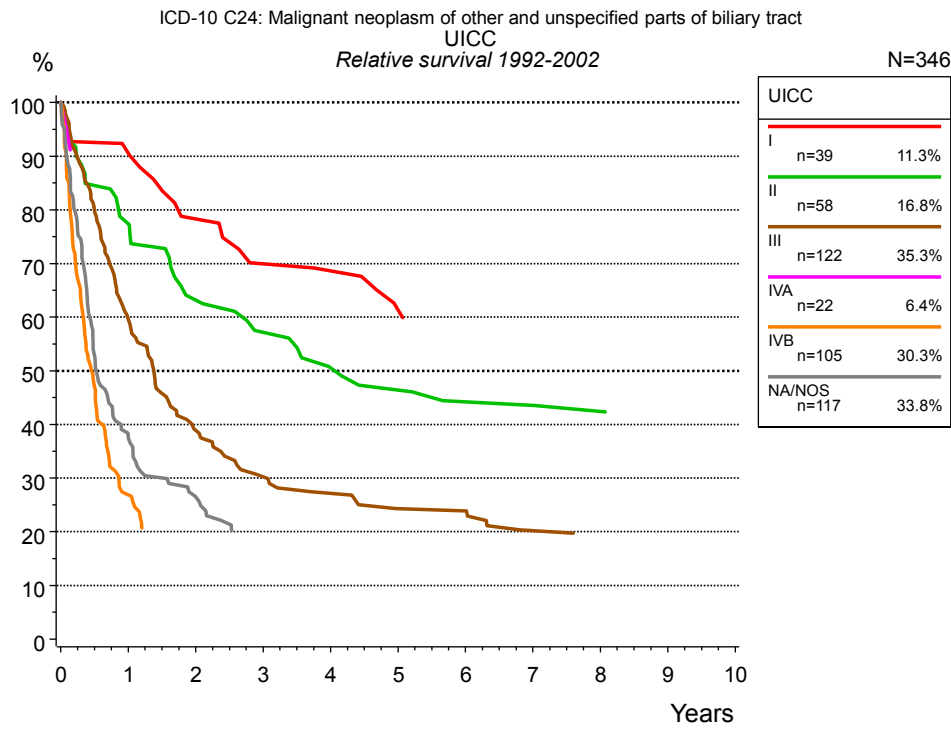
Conditional relative survival rates refer to the relative survival probability, in this case for 2 years after cancer diagnosis, compared to the age- and sex-matched population (=100 %) under the condition of being alive for a certain time period (x-axis in Figure 2a). The results illustrate to what 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 sex="Male", who are alive at least 3 years after cancer diagnosis, the conditional relative 2-year survival rate is 75.7% (n=250).



**Figure 3a.** Relative survival of patients with biliary tract cancer by age category. Included in the evaluation are 2,007 cases diagnosed between 1998 and 2019.

Years	Age category									
	0-49 yrs n=97		50-59 yrs n=282		60-69 yrs n=559		70-79 yrs n=690		80+ yrs n=379	
	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
1	65.6	65.3	64.5	64.8	62.6	63.4	49.1	50.7	35.8	39.4
2	53.9	54.1	44.8	45.3	44.9	46.1	31.4	33.5	19.7	23.9
3	43.0	42.2	37.7	38.0	35.1	36.5	23.0	25.3	12.6	16.5
4	40.5	39.6	31.7	32.1	28.2	29.9	17.4	19.8	8.0	11.8
5			28.2	28.7	26.1	28.0	15.9	18.9		
6			27.1	28.0	24.4	26.8	14.2	17.7		
7			25.9	26.7	22.0	24.7	12.9	17.1		
8			24.6	26.0	20.8	23.8	12.0	16.8		
9			23.2	24.7	18.6	21.9	12.0	17.7		
10			23.2	24.3	17.2	20.5	11.0	17.7		
Median	2.3		1.7		1.6		1.0		0.5	

**Table 3b.** Observed (obs.) and relative (rel.) survival of patients with biliary tract cancer by age category for period 1998-2019 (N=2,007).

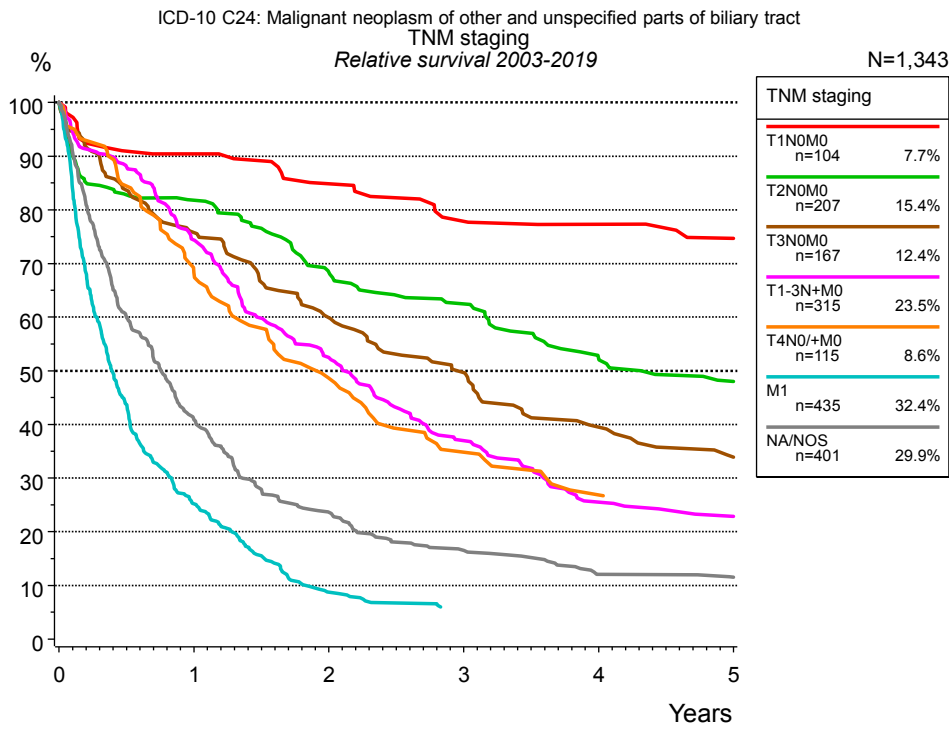


**Figure 4a.** Relative survival of patients with biliary tract cancer by UICC. For 354 of 463 cases diagnosed between 1992 and 2002 valid data could be obtained for this item. For a total of 346 cases an evaluable classification was established. The grey line represents the subgroup of 117 patients with missing values regarding UICC (25.3 % of 463 patients, the percent values of all other categories are related to n=346).

Due to substantial changes in stage classification schemes long-term survival statistics over decades could not be created.

Years	UICC											
	I n=39		II n=58		III n=122		IVA n=22		IVB n=105		NA/NOS n=117	
	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	89.7	90.6	77.2	77.4	58.1	59.5			26.7	26.9	36.2	37.8
2	74.4	78.3	61.4	63.2	37.6	38.9					24.1	26.5
3	64.1	70.0	54.2	57.2	29.1	30.3						
4	61.5	68.6	47.0	50.6	25.6	27.2						
5	53.8	61.4	43.3	46.4	22.2	24.3						
6	51.3	59.5	39.7	44.2	22.2	23.9						
7			39.7	43.5	18.0	20.2						
8			37.9	42.4	17.1	19.2						
Median	6.3		3.6		1.4				0.5		0.5	

**Table 4b.** Observed (obs.) and relative (rel.) survival of patients with biliary tract cancer by UICC for period 1992-2002 (N=346).



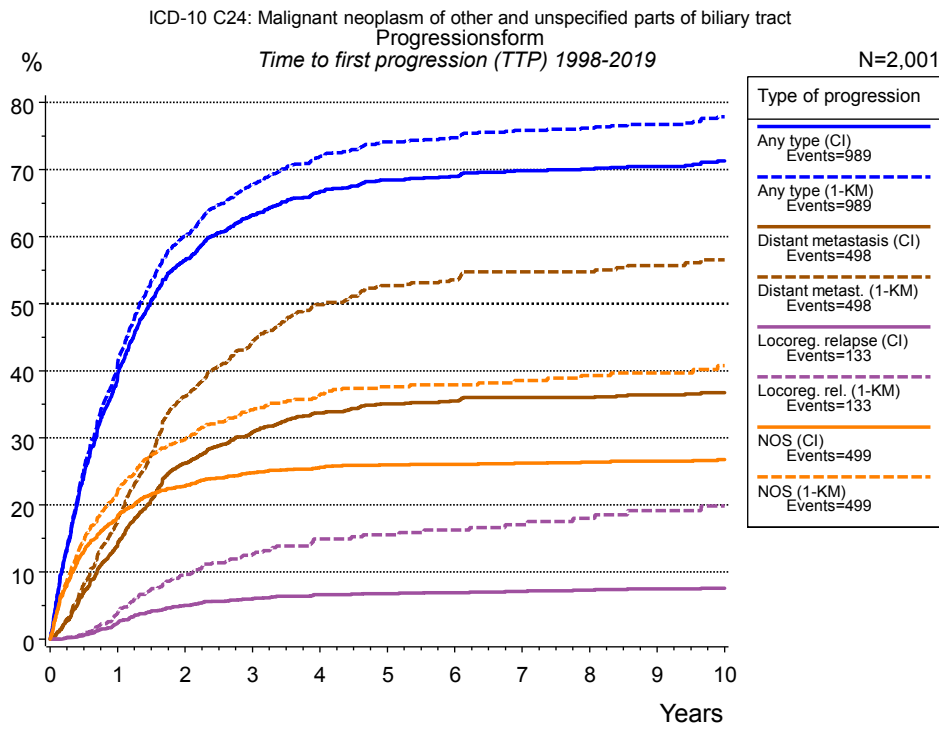
**Figure 4c.** Relative survival of patients with biliary tract cancer by TNM staging. For 1,375 of 1,744 cases diagnosed between 2003 and 2019 valid data could be obtained for this item. For a total of 1,343 cases an evaluable classification was established. The grey line represents the subgroup of 401 patients with missing values regarding TNM staging (23.0 % of 1,744 patients, the percent values of all other categories are related to n=1,343).

Due to substantial changes in stage classification schemes long-term survival statistics over decades could not be created.

Years	TNM staging													
	T1N0M0 n=104		T2N0M0 n=207		T3N0M0 n=167		T1-3N+M0 n=315		T4N0/+M0 n=115		M1 n=435		NA/NOS n=401	
	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	89.0	90.4	79.8	81.8	74.1	75.8	72.8	74.4	66.8	68.2	24.5	25.2	38.7	40.8
2	81.5	84.9	65.0	68.4	57.4	59.9	50.0	52.5	46.7	48.6	8.3	8.7	21.4	23.6
3	73.6	77.9	58.0	62.4	46.6	49.7	34.6	37.0	33.3	34.8			14.7	16.6
4	71.2	77.3	47.4	52.3	36.0	39.5	23.4	25.5	25.6	26.8			10.2	12.1
5	67.1	74.6	42.2	48.0	30.1	33.9	20.7	22.8					9.5	11.6
Median			3.6		2.5		2.0		1.8		0.4		0.7	

**Table 4d.** Observed (obs.) and relative (rel.) survival of patients with biliary tract cancer by TNM staging for period 2003-2019 (N=1,343).



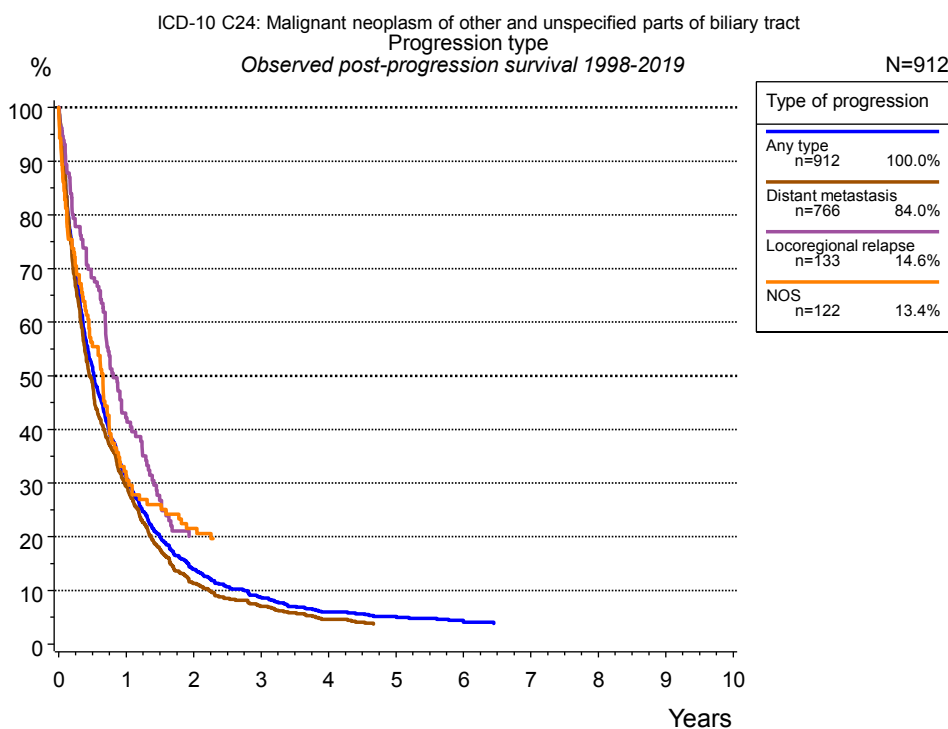


**Figure 5a.** Time to first progression of 2,001 patients with biliary tract cancer diagnosed between 1998 and 2019 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

	Type of progression							
	Any type (CI)	Any type (1-KM)	Distant metastasis (CI)	Distant metast. (1-KM)	Locoreg. relapse (CI)	Locoreg. rel. (1-KM)	NOS (CI)	
N	1,519	1,519	1,520	1,520	2,001	2,001	2,000	
Events	987	987	496	496	131	131	499	
compet.	173		640		1,442		1,068	
Years	%	%	%	%	%	%	%	%
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	39.2	41.0	14.2	17.8	2.3	3.8	18.4	
2	56.5	60.1	26.2	36.3	5.0	9.7	22.8	
3	63.2	67.8	30.8	44.3	6.0	12.5	24.8	
4	66.6	71.9	33.7	49.9	6.6	14.9	25.6	
5	68.5	74.1	35.1	52.7	6.8	15.5	26.0	
6	69.0	74.7	35.5	53.6	6.9	16.2	26.1	
7	69.8	75.9	36.0	54.7	7.1	17.1	26.2	
8	70.1	76.2	36.0	54.7	7.3	18.0	26.4	
9	70.5	76.7	36.4	55.7	7.5	19.1	26.5	
10	71.3	77.9	36.7	56.5	7.6	19.8	26.8	

Type of progression	
<i>cont'd</i>	NOS (1-KM)
N	2,000
Events	499
compet.	
Years	%
0	0.0
1	22.1
2	29.7
3	34.2
4	36.4
5	37.6
6	37.9
7	38.6
8	39.3
9	39.7
10	40.8

**Table 5b.** Time to first progression of patients with biliary tract cancer for period 1998-2019 (N=2,001), also showing the total of progression events (Events) and of deaths as competing risk (compet.).

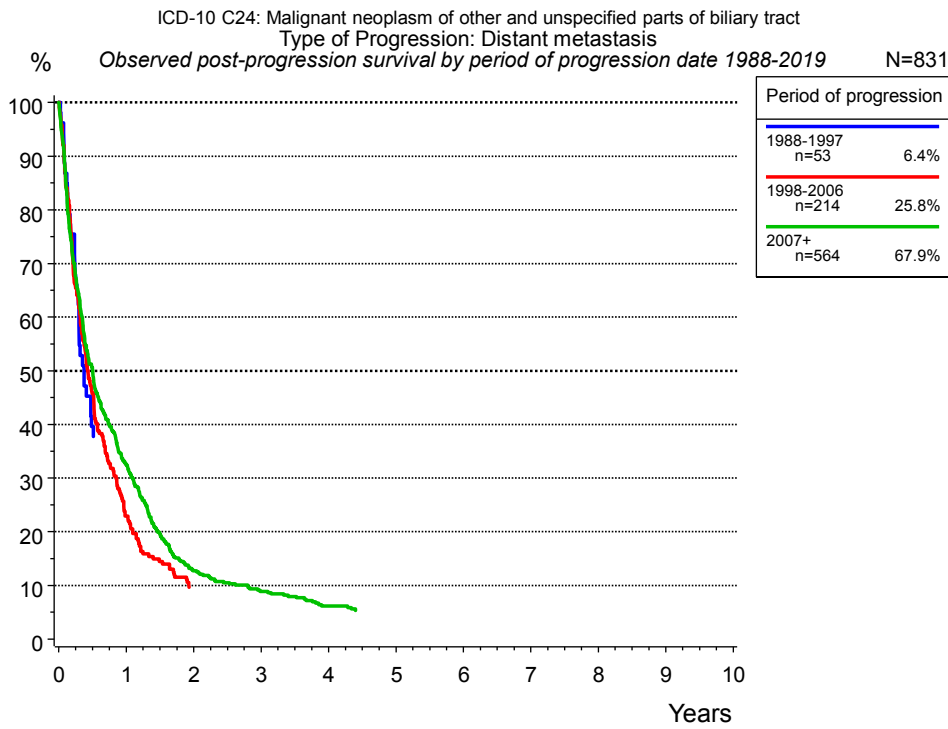


**Figure 5c.** Observed post-progression survival of 912 patients with biliary tract cancer diagnosed between 1998 and 2019. These 912 patients with documented progression events during their course of disease represent 45.6 % of the totally 2,001 evaluated cases (incl. M1, n=482, 24.1 %). Patients with cancer relapse documented via death certificates only were excluded (n=559, 27.9 %). 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=912 %	Distant metastasis n=766 %	Locoregional relapse n=133 %	NOS n=122 %
0	100.0	100.0	100.0	100.0
1	31.0	29.3	42.2	31.3
2	13.9	11.3		21.5
3	8.7	7.0		
4	6.0	4.6		
5	5.1			
6	4.2			

**Table 5d.** Observed post-progression survival of patients with biliary tract cancer for period 1998-2019 (N=912).



**Figure 5e.** Observed post-progression (distant metastasis) survival of 831 patients with biliary tract cancer diagnosed between 1988 and 2019 by period of progression.

Years	Period of progression		
	1988-1997 n=53 %	1998-2006 n=214 %	2007+ n=564 %
0	100.0	100.0	100.0
1		22.9	32.4
2			12.7
3			8.9
4			6.1

**Table 5f.** Observed post-progression (distant metastasis) survival of patients with biliary tract cancer for period 1988-2019 by period of progression (N=831).

## 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

## Recommended Citation

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