Munich Cancer Registry

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ICD-10 C22: Liver cancer

Survival

Year of diagnosis	1988-1997	1998-2014
Patients	390	6,111
Diseases	390	6,119
Cases evaluated	355	3,516
Creation date	03/02/2016	
Export date	12/23/2015	
Population	4.64 m	

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Munich, 81377
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http://www.tumorregister-muenchen.de/en

http://www.tumorregister-muenchen.de/en/facts/surv/sC22__E-ICD-10-C22-Liver-cancer-survival.pdf

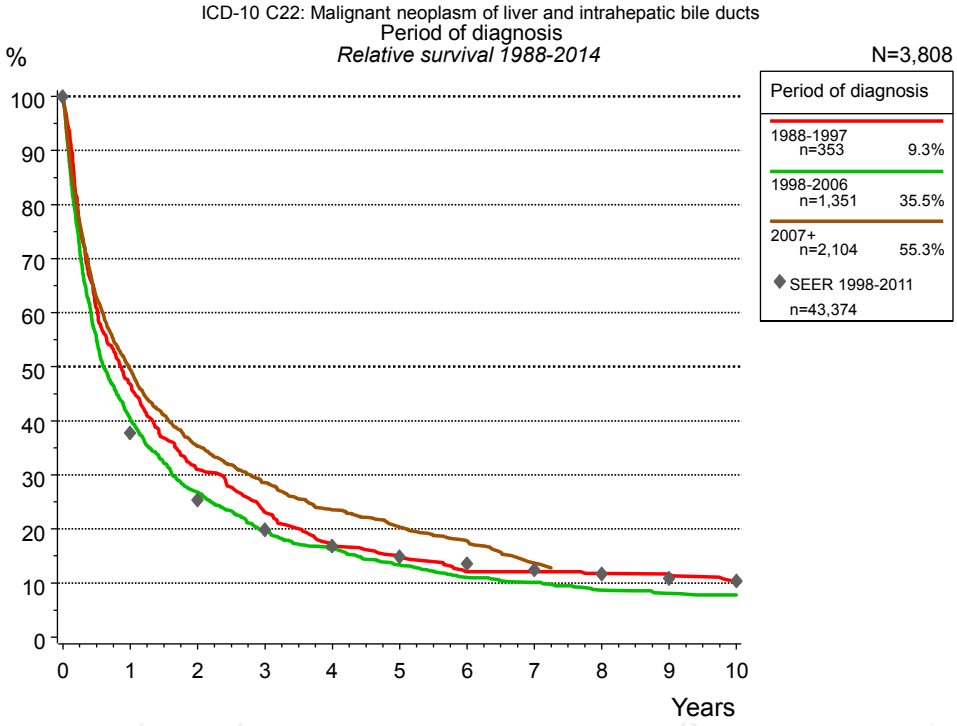

Figure 1a. Relative survival of patients with liver cancer by period of diagnosis. Included in the evaluation are 3,808 cases diagnosed between 1988 and 2014.

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.

	Period of diagnosis					
	1988-1997 n=353		1998-2006 n=1,351		2007+ n=2,104	
Years	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	45.7	46.8	39.0	40.1	48.2	49.4
2	29.5	31.0	25.4	26.8	33.5	35.3
3	21.5	23.1	18.1	19.6	26.5	28.5
4	15.6	16.9	14.8	16.3	21.2	23.5
5	13.7	15.0	11.8	13.3	17.9	20.3
6	10.6	12.1	9.6	11.1	15.3	17.8
7	10.6	12.1	8.6	10.2	11.7	13.7
8	10.0	11.8	7.2	8.7		
9	9.7	11.6	6.6	8.1		
10	8.4	10.3	6.2	7.8		

Table 1b. Observed (obs.) and relative (rel.) survival of patients with liver cancer by period of diagnosis for period 1988-2014 (N=3,808).

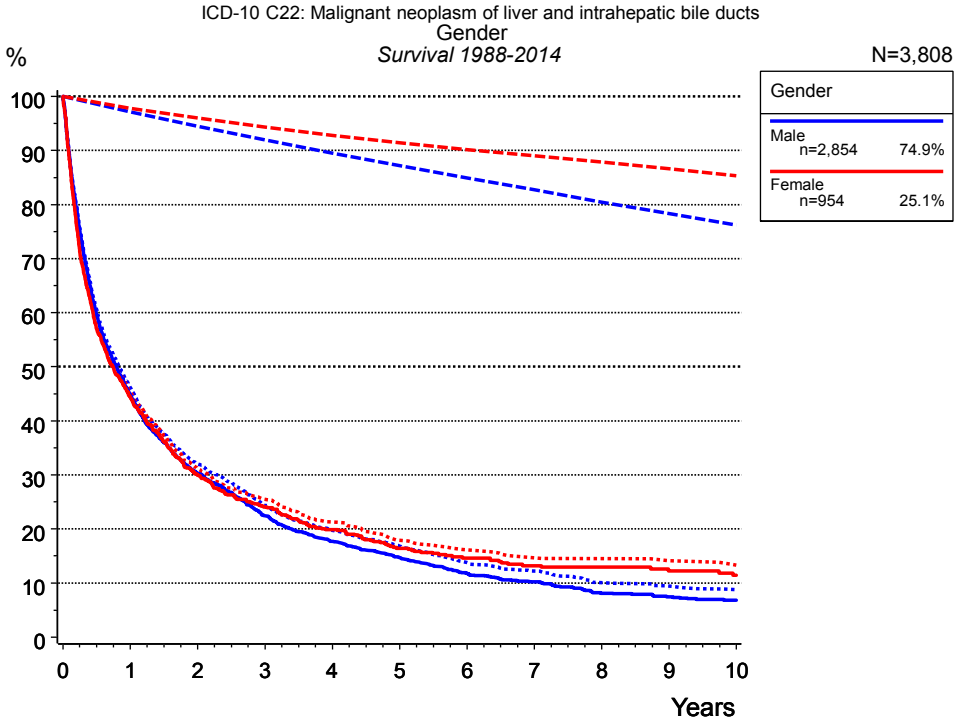

Figure 2a. Survival of patients with liver cancer by gender. Included in the evaluation are 3,808 cases diagnosed between 1988 and 2014.

	Gender			
	Male n=2,854		Female n=954	
Years	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	44.8	46.1	44.4	45.4
2	30.3	32.0	30.0	31.2
3	22.4	24.4	24.1	25.5
4	17.7	19.8	19.9	21.3
5	14.7	16.8	16.4	17.9
6	11.8	13.8	14.6	16.2
7	10.2	12.3	13.2	14.7
8	8.1	10.1	13.0	14.5
9	7.4	9.4	12.3	14.2
10	6.8	8.8	11.5	13.4

Table 2b. Observed (obs.) and relative (rel.) survival of patients with liver cancer by gender for period 1988-2014 (N=3,808).

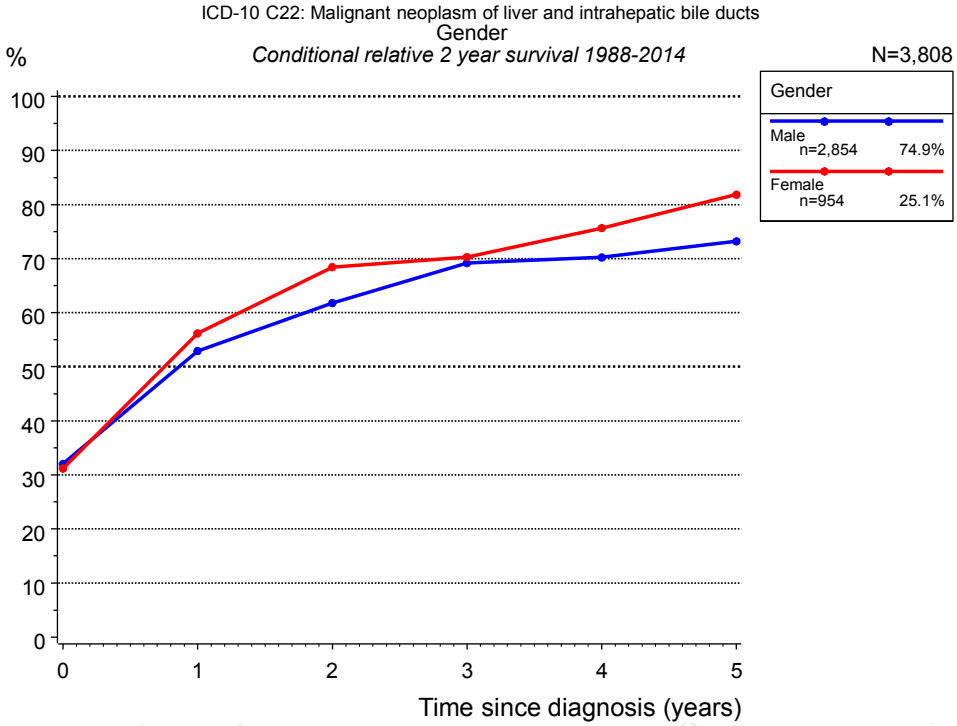

Figure 2c. Conditional relative 2-year survival of patients with liver cancer by gender. For 3,808 of 3,808 cases diagnosed between 1988 and 2014 valid data could be obtained for this item.

	Gender			
	Male		Female	
Years	n	Cond. surv. % 2 yrs	n	Cond. surv. % 2 yrs
0	2,854	32.0	954	31.2
1	1,213	52.9	402	56.2
2	749	61.8	245	68.4
3	495	69.2	170	70.3
4	340	70.2	120	75.7
5	255	73.2	90	81.8

Table 2d. Conditional relative 2-year survival of patients with liver cancer by gender for period 1988-2014 (N=3,808).

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 gender="Male", who are alive at least 3 years after cancer diagnosis, the conditional relative 2-year survival rate is 69.2% (n=495).

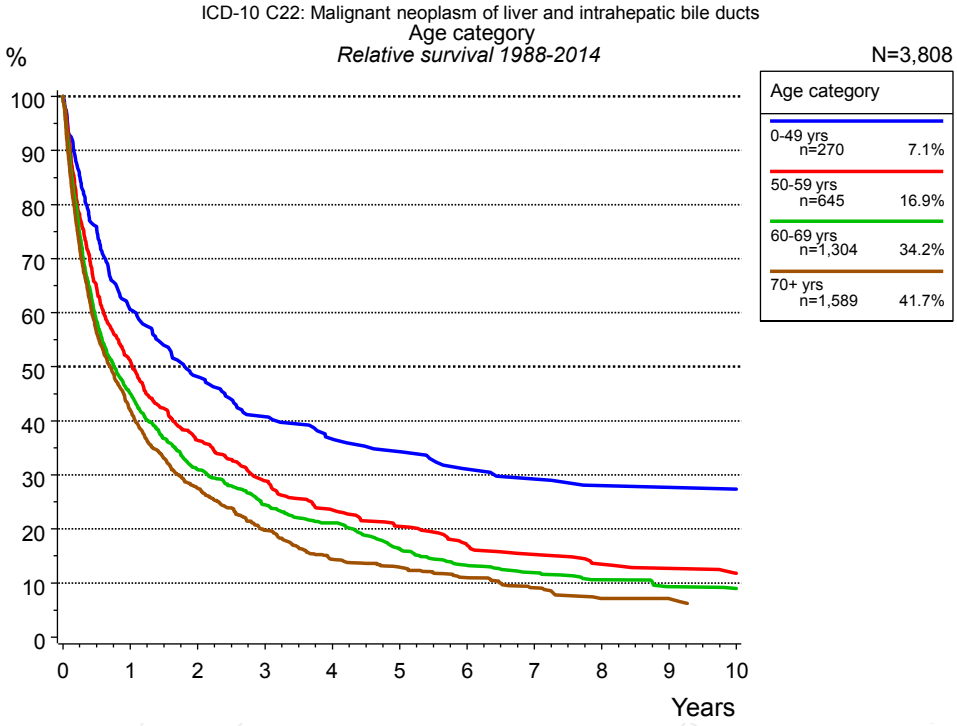

Figure 3a. Relative survival of patients with liver cancer by age category. Included in the evaluation are 3,808 cases diagnosed between 1988 and 2014.

	Age category							
	0-49 yrs n=270		50-59 yrs n=645		60-69 yrs n=1,304		70+ yrs n=1,589	
Years	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	60.5	60.6	50.7	51.0	44.4	45.0	39.8	41.8
2	48.2	48.1	36.0	36.4	30.0	31.0	24.9	27.5
3	40.9	40.8	28.3	28.9	23.4	24.5	17.0	19.8
4	36.8	36.6	23.0	23.5	19.8	21.1	11.7	14.4
5	34.5	34.3	19.8	20.5	14.9	16.3	10.0	12.9
6	30.7	31.0	16.4	17.0	12.0	13.3	8.1	11.0
7	29.4	29.2	14.7	15.3	10.5	11.9	6.3	9.1
8	27.6	28.0	12.8	13.5	9.1	10.6	4.6	7.2
9	27.6	27.7	12.0	12.7	7.7	9.3	4.4	7.1
10	27.6	27.4	10.9	11.8	7.4	9.0		

Table 3b. Observed (obs.) and relative (rel.) survival of patients with liver cancer by age category for period 1988-2014 (N=3,808).

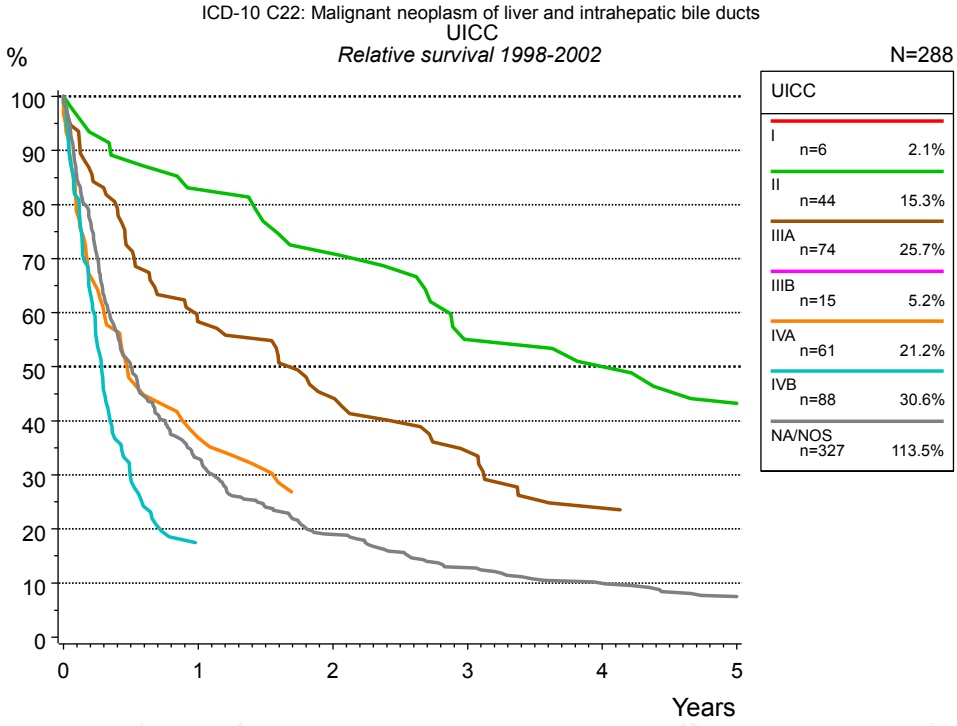

Figure 4a. Relative survival of patients with liver cancer by UICC. For 299 of 615 cases diagnosed between 1998 and 2002 valid data could be obtained for this item. For a total of 288 cases an evaluable classification was established. The grey line represents the subgroup of 327 patients with missing values regarding UICC (53.2% of 615 patients, the percent values of all other categories are related to n=288). Subgroups with sample size <15 are dropped from the chart.

	UICC													
	I n=6		II n=44		IIIA n=74		IIIB n=15		IVA n=61		IVB n=88		NA/NOS n=327	
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	100.0	88.1	81.8	82.8	56.8	58.3			36.1	36.9			32.2	33.0
2			70.5	70.9	43.2	44.2							17.9	19.0
3			52.3	55.0	32.4	34.3							11.9	12.8
4			47.6	50.0	22.8	23.9							9.1	10.0
5			40.5	43.2									6.7	7.5

Table 4b. Observed (obs.) and relative (rel.) survival of patients with liver cancer by UICC for period 1998-2002 (N=288).

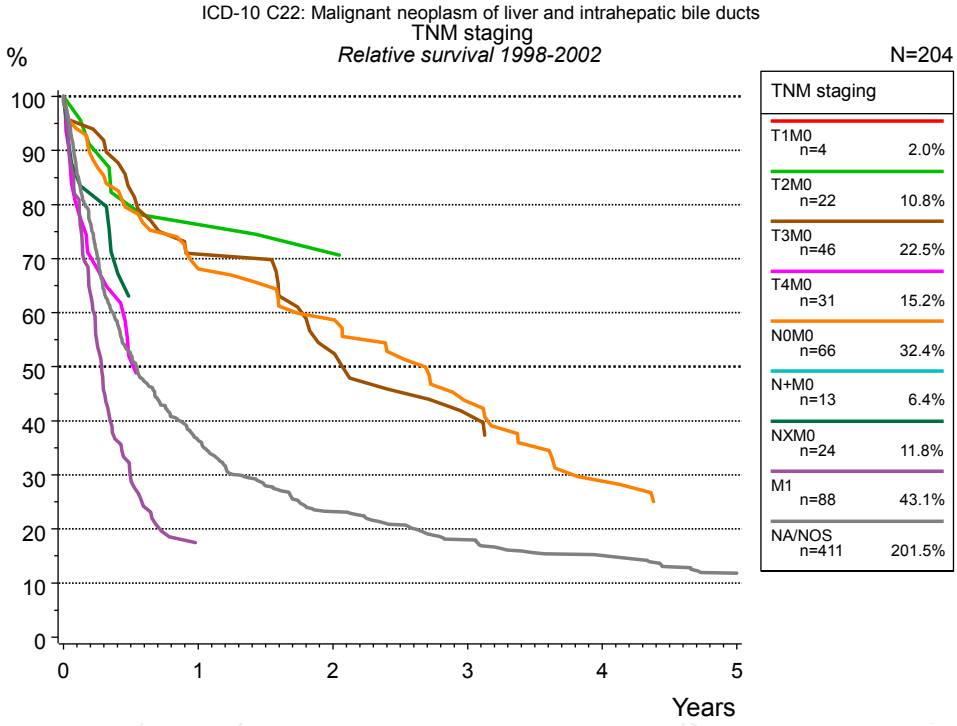

Figure 4c. Relative survival of patients with liver cancer by TNM staging. For 299 of 615 cases diagnosed between 1998 and 2002 valid data could be obtained for this item. For a total of 204 cases an evaluable classification was established. The accumulated percentage exceeds the 100% value because patients are potientially considered in more than one subgroup. The grey line represents the subgroup of 411 patients with missing values regarding TNM staging (66.8 % of 615 patients, the percent values of all other categories are related to n=204). Subgroups with sample size <15 are dropped from the chart.

	TNM staging													
	T1M0 n=4		T2M0 n=22		T3M0 n=46		T4M0 n=31		N0M0 n=66		N+M0 n=13		NXM0 n=24	
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	100.0	81.8	77.3	76.3	69.6	70.8			66.7	68.1				
2			72.7	71.0	52.2	52.6			57.6	58.7				
3					39.1	41.2			40.9	43.6				
4									27.3	28.9				
5									22.7	23.7				

	TNM staging			
cont'd	M1 n=88		NA/NOS n=411	
Years	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1			35.4	36.4
2			22.0	23.3
3			16.8	18.0
4			13.8	15.1
5			10.6	11.8

Table 4d. Observed (obs.) and relative (rel.) survival of patients with liver cancer by TNM staging for period 1998-2002 (N=294).

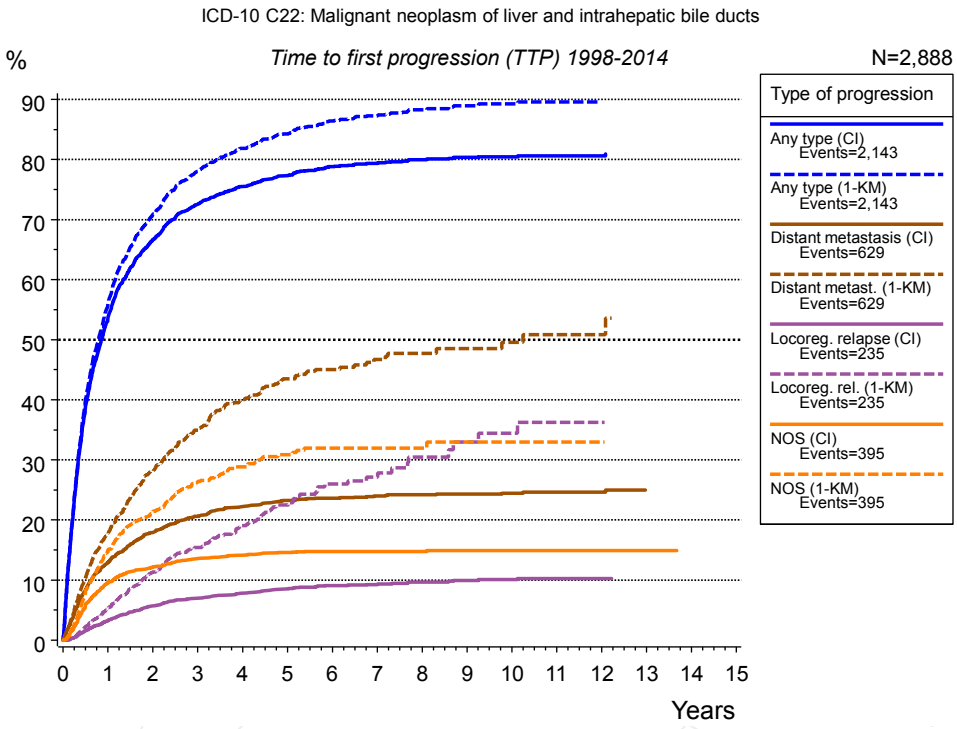

Figure 5a. Time to first progression of 2,888 patients with liver cancer diagnosed between 1998 and 2014 (M0 only in solid cancers) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

	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=2,888	n=2,888	n=2,888	n=2,888	n=2,888	n=2,888	n=2,888
Years	%	%	%	%	%	%	%
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	53.7	56.1	13.0	17.8	3.3	5.3	9.7
2	66.6	70.8	18.0	28.2	5.7	11.3	12.2
3	72.6	78.1	20.6	34.9	7.0	15.5	13.6
4	75.5	81.9	22.2	39.9	7.8	19.1	14.2
5	77.3	84.3	23.3	43.5	8.5	22.5	14.6
6	78.8	86.4	23.6	45.0	9.1	26.0	14.8
7	79.3	87.3	24.0	46.7	9.3	27.2	14.8
8	79.9	88.3	24.2	47.7	9.7	30.5	14.8
9	80.3	89.0	24.3	48.5	9.9	33.0	14.9
10	80.5	89.2	24.5	49.6	10.1	34.4	14.9
11	80.6	89.6	24.6	50.8	10.3	36.3	14.9
12	80.6	89.6	24.6	50.8	10.3	36.3	14.9
13	80.9		25.0	53.6	10.3	36.3	14.9
14	80.9		25.0	53.6	10.3	36.3	14.9
15	80.9		25.0	53.6	10.3	36.3	14.9

Type of progression *cont'd*	NOS (1-KM) n=2,888
Years	%
0	0.0
1	15.2
2	21.3
3	26.4
4	28.8
5	30.9
6	32.0
7	32.0
8	32.0
9	33.0
10	33.0
11	33.0
12	33.0
13	33.0
14	33.0
15	33.0

Table 5b. Time to first progression of patients with liver cancer for period 1998-2014 (N=2,888).

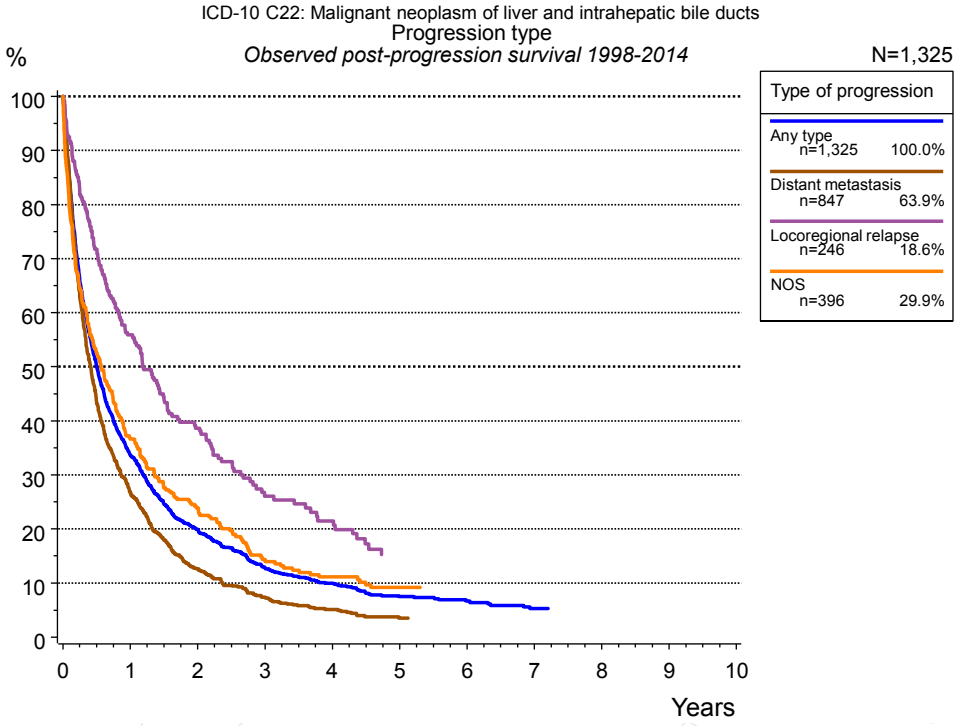

Figure 5c. Observed post-progression survival of 1,325 patients with liver cancer diagnosed between 1998 and 2014. These 1,325 patients with documented progression events during their course of disease represent 38.7 % of the totally 3,425 evaluated cases (incl. M1, n=537, 15.7 %). Patients with cancer relapse documented via death certificates only were excluded (n=1,355, 39.6 %). Multiple progression types on different sites are included in the evaluation even when not occuring 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 potientially considered in more than one subgroup.

	Type of progression			
	Any type n=1,325	Distant metastasis n=847	Locoregional relapse n=246	NOS n=396
Years	%	%	%	%
0	100.0	100.0	100.0	100.0
1	33.6	26.5	55.9	36.7
2	19.9	12.6	38.6	23.9
3	12.8	7.4	26.1	14.4
4	10.0	5.1	21.5	11.1
5	7.5	3.5	15.3	9.2
6	6.7			
7	5.2			

Table 5d. Observed post-progression survival of patients with liver cancer for period 1998-2014 (N=1,325).

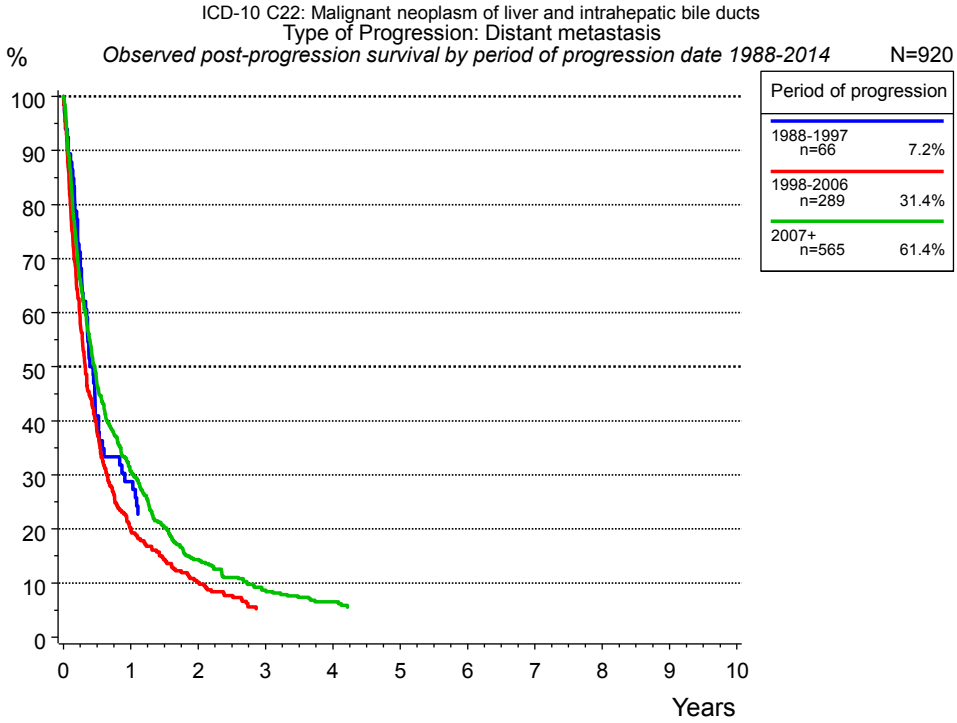

Figure 5e. Observed post-progression (distant metastasis) survival of 920 patients with liver cancer diagnosed between 1988 and 2014 by period of progression.

	Period of progression		
	1988-1997 n=66	1998-2006 n=289	2007+ n=565
Years	%	%	%
0	100.0	100.0	100.0
1	28.8	19.6	30.6
2		10.1	14.3
3		5.2	8.7
4			6.5

Table 5f. Observed post-progression (distant metastasis) survival of patients with liver cancer for period 1988-2014 by period of progression (N=920).

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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