

Munich Cancer Registry



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Munich Cancer Registry at Munich Cancer Center
Marchioninstr. 15
Munich, 81377
Germany

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

Cancer statistics: Survival

C67: Bladder cancer

Year of diagnosis	1988-2013
Patients	10,784
Diseases	10,789
Cases evaluated	5,372
Creation date	05/13/2015
Export date	12/30/2014
Population	4.64 m



http://www.tumorregister-muenchen.de/en/facts/surv/surv_C67__E.pdf

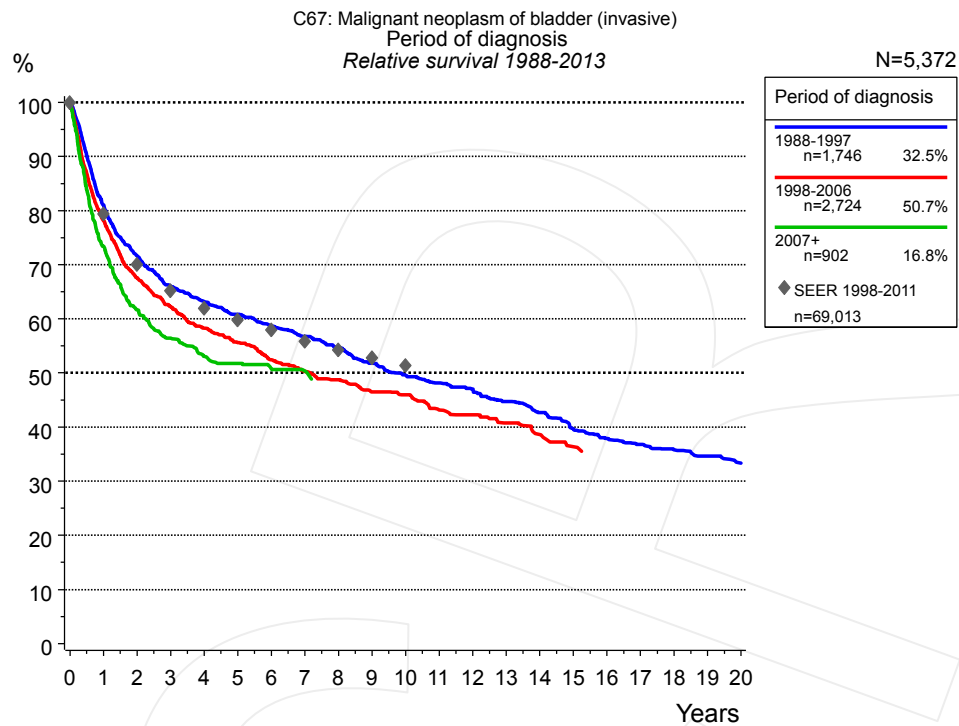


Figure 1a. Relative survival of patients with bladder cancer by period of diagnosis. Included in the evaluation are 5,372 cases diagnosed between 1988 and 2013.

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 1988, 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		1998-2006		2007+	
	n=1,746		n=2,724		n=902	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	77.0	81.0	74.5	78.1	70.3	73.4
2	65.0	71.6	61.8	67.6	56.9	61.6
3	57.3	65.9	54.7	62.2	50.4	56.4
4	52.6	63.2	49.3	58.3	45.6	53.1
5	48.7	60.9	45.3	55.6	43.5	51.7
6	44.9	58.6	41.1	52.4	40.9	50.7
7	41.8	56.8	37.9	50.2	39.5	50.3
8	38.6	54.7	35.6	48.7		
9	35.1	51.8	32.6	46.5		
10	32.2	49.6	31.1	46.0		
11	30.1	48.2	28.0	43.1		
12	28.2	47.0	26.7	42.3		
13	25.8	44.7	24.5	40.7		
14	23.6	42.7	22.5	38.6		
15	21.0	39.6	20.3	36.4		
16	19.3	37.9				
17	18.0	36.8				
18	16.6	35.8				
19	15.6	34.7				
20	14.2	33.4				

Table 1b. Observed (obs.) and relative (rel.) survival of patients with bladder cancer by period of diagnosis for period 1988-2013 (N=5,372).

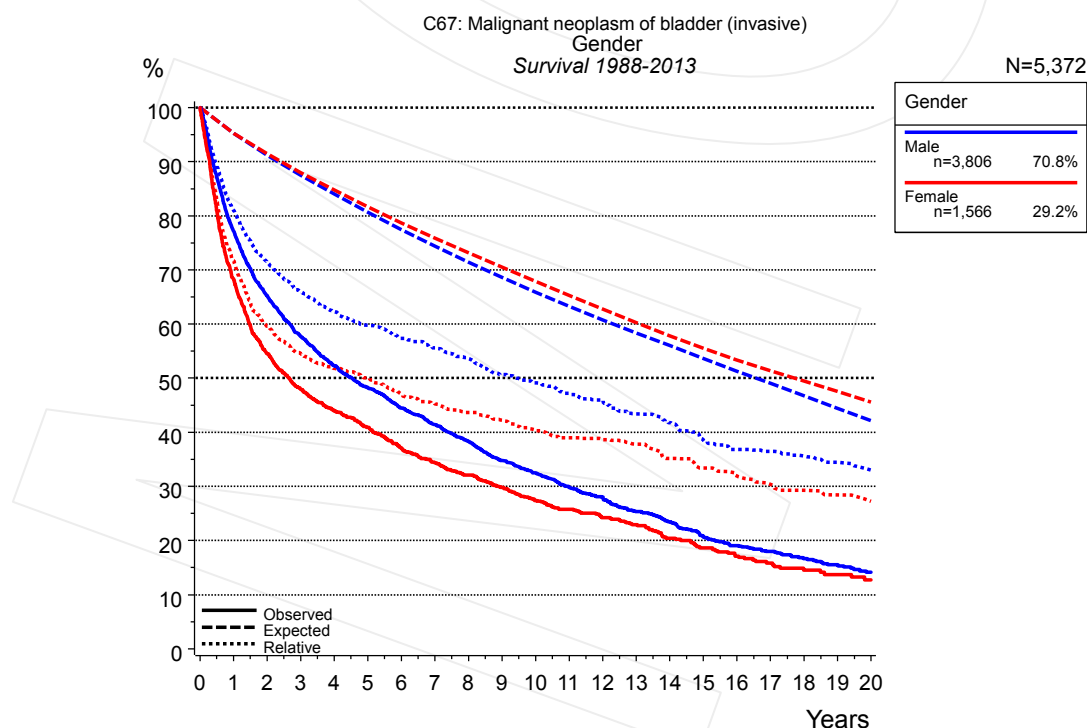


Figure 2a. Survival of patients with bladder cancer by gender. Included in the evaluation are 5,372 cases diagnosed between 1988 and 2013.

Years	Gender			
	Male n=3,806		Female n=1,566	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	77.3	81.1	68.3	71.7
2	65.2	71.5	54.5	59.6
3	57.8	66.0	48.0	54.5
4	52.3	62.3	44.0	51.9
5	48.3	59.8	40.9	50.1
6	44.5	57.4	37.1	47.1
7	41.4	55.6	34.3	45.2
8	38.3	53.6	32.1	43.7
9	34.8	50.7	29.8	42.3
10	32.5	49.2	27.4	40.3
11	29.9	47.1	25.8	39.0
12	28.1	46.0	24.3	38.6
13	25.4	43.4	22.9	37.8
14	23.5	41.8	20.5	35.2
15	20.8	38.6	18.6	33.4
16	19.1	36.8	17.2	31.9
17	18.0	36.5	15.8	30.4
18	16.7	35.6	14.6	29.3
19	15.5	34.5	13.7	28.4
20	14.1	33.0	12.7	27.2

Table 2b. Observed (obs.) and relative (rel.) survival of patients with bladder cancer by gender for period 1988-2013 (N=5,372).

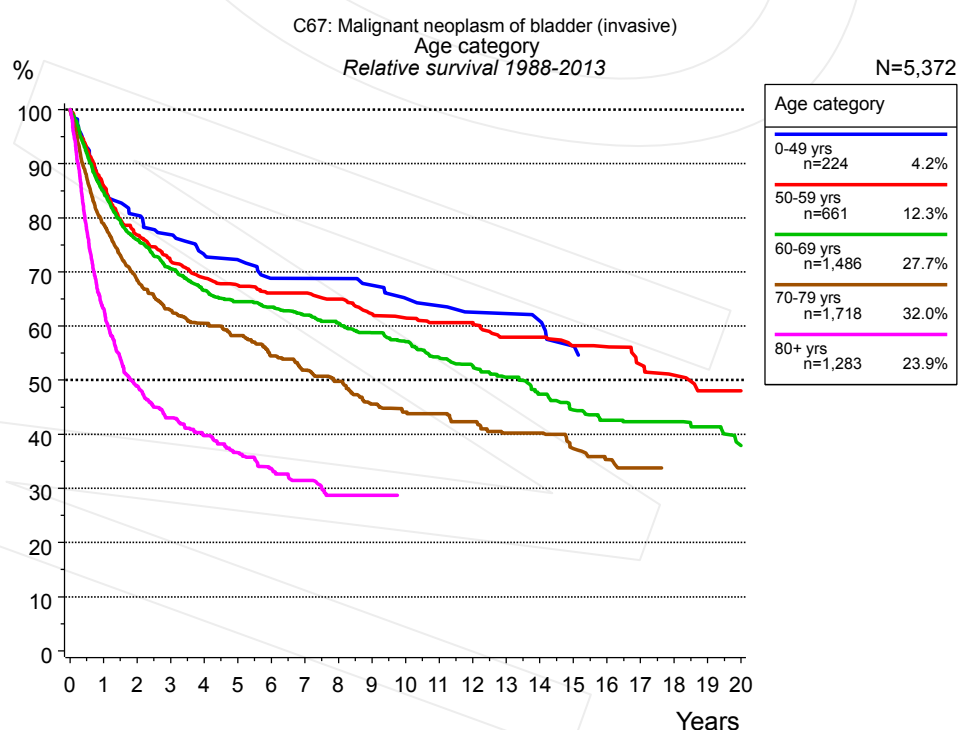


Figure 3a. Relative survival of patients with bladder cancer by age category. Included in the evaluation are 5,372 cases diagnosed between 1988 and 2013.

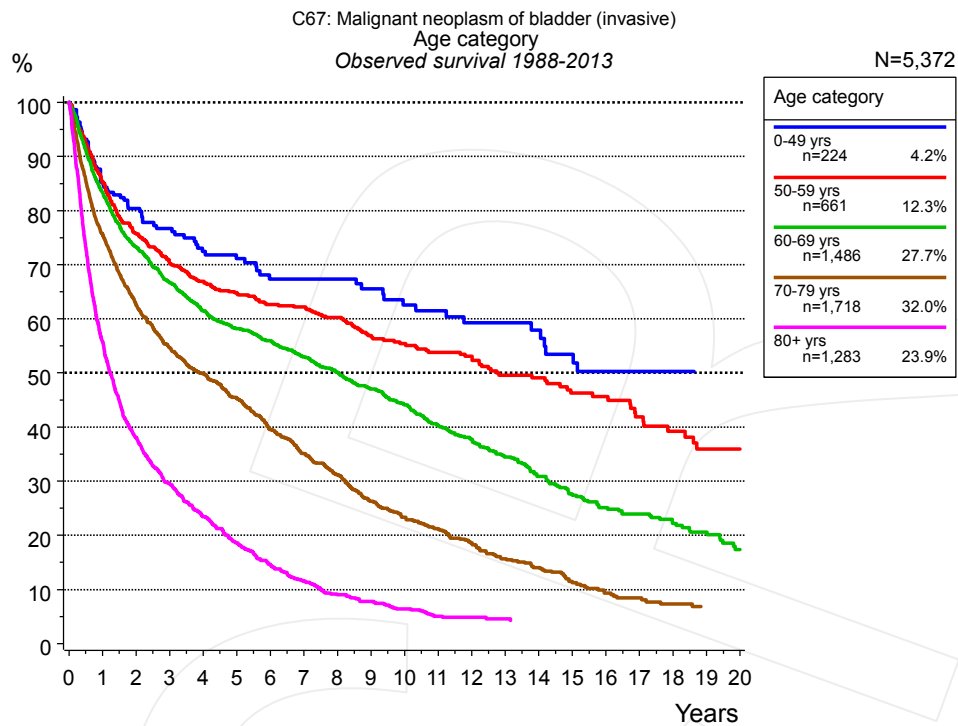


Figure 3b. Observed survival of patients with bladder cancer by age category. Included in the evaluation are 5,372 cases diagnosed between 1988 and 2013.

Years	Age category									
	0-49 yrs n=224		50-59 yrs n=661		60-69 yrs n=1,486		70-79 yrs n=1,718		80+ yrs n=1,283	
	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	85.3	85.1	85.3	85.9	83.4	84.8	75.5	78.8	55.9	63.3
2	80.4	80.5	75.7	76.9	73.3	76.0	62.5	68.4	38.0	48.9
3	76.7	76.9	70.3	72.0	66.6	70.6	54.7	62.9	29.6	43.1
4	72.4	73.2	66.9	68.9	61.5	66.6	49.9	60.5	23.4	39.8
5	71.1	72.3	64.8	67.6	58.2	64.5	45.4	58.2	18.6	36.6
6	67.4	68.8	62.7	66.1	56.0	63.6	39.5	54.5	14.7	33.7
7	67.4	68.8	62.2	66.1	53.0	62.1	35.1	51.9	11.5	31.4
8	67.4	68.8	60.3	65.0	50.1	60.6	31.2	49.8	9.0	28.7
9	65.5	67.5	56.9	62.3	47.0	58.8	26.3	45.6	7.8	28.7
10	62.5	65.1	55.4	61.5	44.1	57.1	23.3	44.1	6.4	28.7
11	61.5	63.7	53.8	60.6	40.3	54.2	21.1	43.8		
12	59.3	62.5	53.1	60.6	37.8	52.7	18.6	42.3		
13	59.3	62.3	49.6	58.0	34.5	50.5	15.7	40.2		
14	57.9	60.9	49.1	58.0	30.9	47.5	14.0	40.2		
15	53.4	56.3	46.3	56.4	27.7	44.5	11.2	37.3		
16			45.6	56.2	25.1	42.6	9.3	35.3		
17			41.8	52.9	24.0	42.3	8.5	33.8		
18			39.2	50.9	22.2	42.3				
19			36.0	48.0	20.6	41.4				
20			36.0	48.0	17.4	37.9				

Table 3c. Observed (obs.) and relative (rel.) survival of patients with bladder cancer by age category for period 1988-2013 (N=5,372).

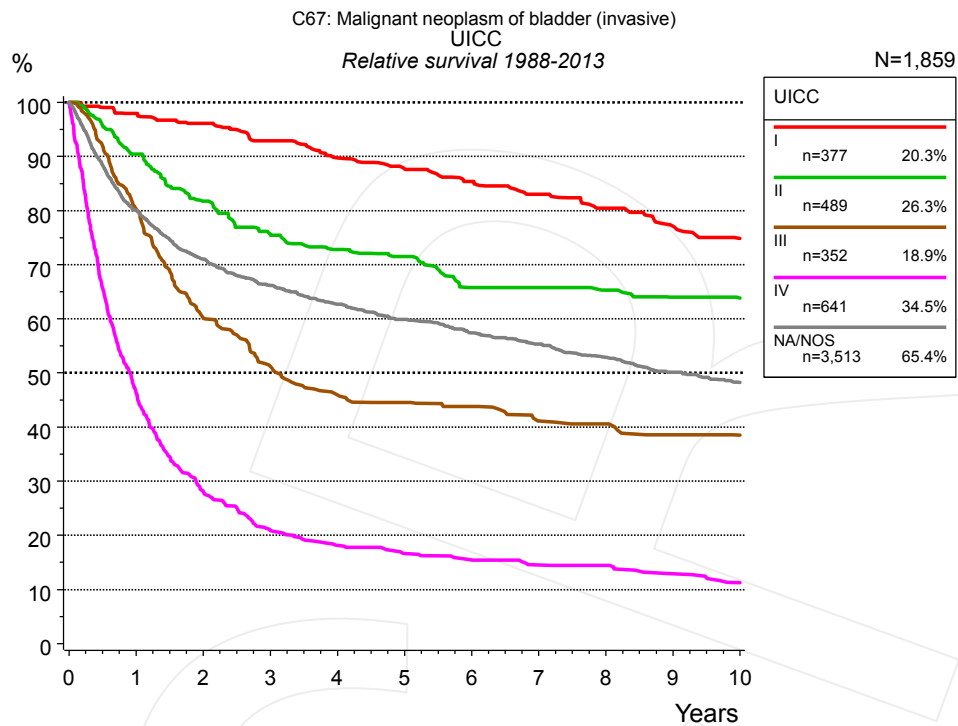


Figure 4a. Relative survival of patients with bladder cancer by UICC. For 4,944 of 5,372 cases diagnosed between 1988 and 2013 valid data could be obtained for this item. For a total of 1,859 cases an evaluable classification was established. The grey line represents the subgroup of 3,513 patients with missing values regarding UICC (65.4% of 5,372 patients, the percent values of all other categories are related to n=1,859).

Years	UICC									
	I n=377		II n=489		III n=352		IV n=641		NA/NOS n=3,513	
	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	94.9	97.9	87.8	90.5	78.3	80.3	45.0	46.4	75.6	80.1
2	90.2	96.2	76.8	81.8	57.4	60.2	26.3	28.0	63.9	71.0
3	84.3	92.9	68.9	75.6	47.8	51.2	19.0	20.9	56.8	66.2
4	78.6	89.8	64.3	72.8	41.7	45.9	16.0	18.2	51.6	62.7
5	74.2	87.7	61.3	71.5	39.7	44.6	14.2	16.7	47.3	59.9
6	69.8	85.4	54.2	65.7	37.9	43.8	13.0	15.5	43.4	57.4
7	65.6	83.0	52.7	65.7	34.0	41.2	11.7	14.5	40.1	55.4
8	61.2	80.5	50.2	65.3	33.0	40.6	11.4	14.4	36.7	52.9
9	56.6	77.1	47.4	64.0	30.3	38.6	9.8	12.9	33.4	50.1
10	52.6	74.8	45.8	63.9	29.1	38.5	8.3	11.3	30.9	48.3

Table 4b. Observed (obs.) and relative (rel.) survival of patients with bladder cancer by UICC for period 1988-2013 (N=1,859).

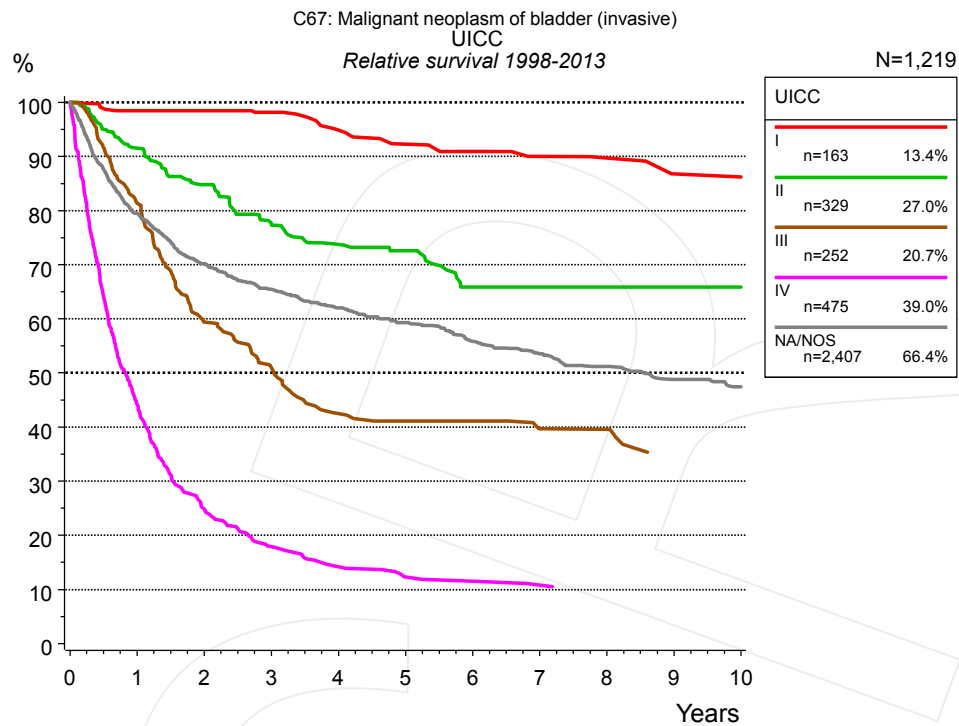


Figure 4c. Relative survival of patients with bladder cancer by UICC. For 3,390 of 3,626 cases diagnosed between 1998 and 2013 valid data could be obtained for this item. For a total of 1,219 cases an evaluable classification was established. The grey line represents the subgroup of 2,407 patients with missing values regarding UICC (66.4% of 3,626 patients, the percent values of all other categories are related to n=1,219).

Years	UICC									
	I n=163		II n=329		III n=252		IV n=475		NA/NOS n=2,407	
	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	96.8	98.5	89.4	91.6	79.2	81.3	42.9	44.1	75.1	79.5
2	94.8	98.5	80.3	84.8	56.6	59.4	23.4	24.8	63.2	70.2
3	91.7	98.2	71.6	77.5	47.9	51.0	16.5	17.9	56.4	65.4
4	86.2	94.9	66.1	73.8	38.7	42.5	12.7	14.2	51.3	62.0
5	81.8	92.3	63.3	72.6	36.6	41.1	10.6	12.3	47.1	59.3
6	79.0	90.9	55.5	65.9	36.6	41.1	10.1	11.5	42.6	55.8
7	75.5	90.0	54.6	65.9	32.8	39.7	9.1	10.8	39.2	53.6
8	73.5	89.7	52.4	65.9	32.8	39.6	8.5	10.5	36.2	51.2
9	68.4	86.8	50.6	65.9	27.8	35.2	8.5	10.5	32.9	48.8
10	68.4	86.2	50.6	65.9	27.8	34.7	8.5	10.5	30.8	47.4

Table 4d. Observed (obs.) and relative (rel.) survival of patients with bladder cancer by UICC for period 1998-2013 (N=1,219).

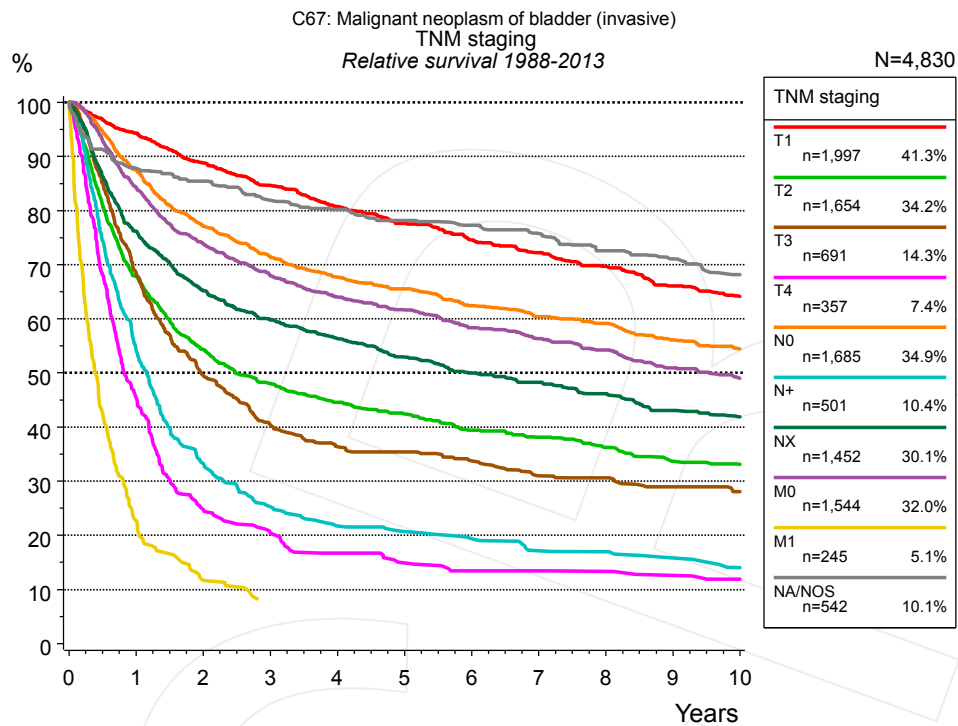


Figure 4e. Relative survival of patients with bladder cancer by TNM staging. For 4,944 of 5,372 cases diagnosed between 1988 and 2013 valid data could be obtained for this item. For a total of 4,830 cases an evaluable classification was established. The accumulated percentage exceeds the 100% value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 542 patients with missing values regarding TNM staging (10.1% of 5,372 patients, the percent values of all other categories are related to n=4,830).

TNM staging															
Years	T1 n=1,997		T2 n=1,654		T3 n=691		T4 n=357		N0 n=1,685		N+ n=501		NX n=1,452		
	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	90.0	94.3	64.1	67.9	66.1	68.5	43.7	45.5	84.5	87.5	52.7	54.3	71.6	76.2	
2	81.1	88.8	48.8	54.3	46.5	49.5	22.9	24.7	72.1	77.1	31.3	33.3	58.0	65.2	
3	74.1	84.6	41.3	48.0	36.8	40.4	18.3	20.4	64.6	71.4	23.2	25.3	50.6	59.8	
4	67.9	80.7	36.8	44.6	32.2	36.4	14.6	16.7	59.2	67.7	19.3	21.7	45.4	56.3	
5	62.7	77.6	33.5	42.4	30.7	35.4	12.6	14.9	55.4	65.5	17.7	20.7	40.7	52.9	
6	57.8	74.6	29.8	39.4	28.1	33.7	11.0	13.4	50.9	62.4	16.4	19.4	36.7	50.0	
7	53.9	72.3	27.6	38.1	24.8	31.0	11.0	13.4	47.5	60.4	14.0	17.2	33.9	48.3	
8	49.8	69.7	25.2	36.2	24.2	30.6	10.5	13.3	44.8	59.1	13.6	17.0	31.0	46.2	
9	45.4	66.1	22.5	33.7	22.0	28.9	9.6	12.6	41.1	56.1	12.1	15.8	27.7	43.0	
10	42.3	64.1	21.3	33.1	20.4	28.1	8.6	11.9	38.3	54.4	10.4	14.0	25.7	41.9	

cont'd	TNM staging					
	M0 n=1,544		M1 n=245		NA/NOS n=542	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
Years						
0	100.0	100.0	100.0	100.0	100.0	100.0
1	80.9	84.2	22.2	22.7	84.0	87.8
2	68.2	73.9	10.7	11.7	79.0	85.4
3	60.5	68.0	7.3	8.1	72.5	81.9
4	54.9	64.0			68.4	80.2
5	50.9	61.7			64.6	78.1
6	46.5	58.4			61.3	77.3
7	43.2	56.4			57.6	75.8
8	40.1	54.2			53.3	72.6
9	36.3	51.0			50.1	71.1
10	33.5	49.0			46.3	68.2

Table 4f. Observed (obs.) and relative (rel.) survival of patients with bladder cancer by TNM staging for period 1988-2013 (N=10,126).

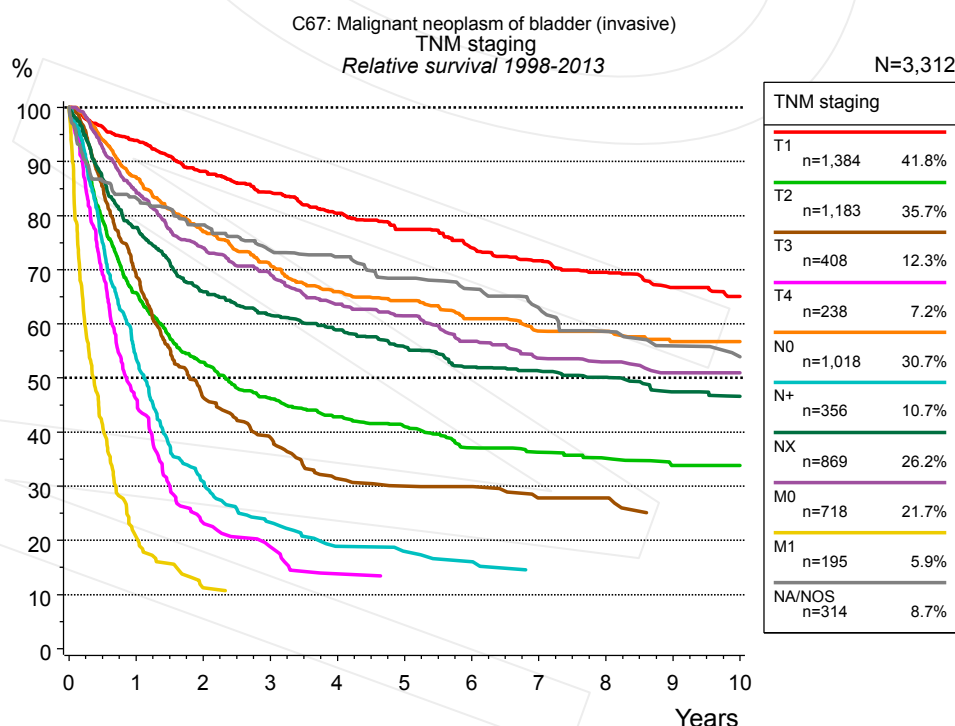


Figure 4g. Relative survival of patients with bladder cancer by TNM staging. For 3,390 of 3,626 cases diagnosed between 1998 and 2013 valid data could be obtained for this item. For a total of 3,312 cases an evaluable classification was established. The accumulated percentage exceeds the 100% value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 314 patients with missing values regarding TNM staging (8.7% of 3,626 patients, the percent values of all other categories are related to n=3,312).

Years	TNM staging													
	T1 n=1,384		T2 n=1,183		T3 n=408		T4 n=238		N0 n=1,018		N+ n=356		NX n=869	
	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	89.7	93.9	62.2	65.7	66.9	69.0	44.5	46.1	84.5	87.1	52.3	53.7	73.5	77.8
2	80.9	88.2	47.8	52.9	43.9	46.4	22.0	23.2	72.6	77.0	29.4	30.9	59.3	65.9
3	74.4	84.3	40.1	46.2	36.2	39.0	17.0	18.8	64.9	70.9	21.6	23.3	53.0	61.6
4	68.4	80.5	35.7	42.8	28.2	31.4	12.2	13.8	58.6	65.9	16.9	18.9	48.5	58.9
5	63.5	77.5	33.0	41.0	26.3	30.0			55.4	64.3	15.6	18.0	44.1	55.8
6	58.3	74.0	28.7	37.1	25.8	29.9			50.9	60.9	14.2	16.0	39.4	52.0
7	54.3	71.7	27.0	36.3	22.6	27.8			47.2	58.7	12.0	14.2	37.2	51.3
8	50.8	69.5	25.3	35.1	22.6	27.8			46.0	58.6			35.1	50.2
9	46.7	66.7	23.3	33.8	19.4	25.0			42.8	56.7			31.4	47.4
10	44.0	65.1	22.8	33.8	19.4	24.8			42.3	56.7			29.7	46.6

Years	TNM staging					
	M0 n=718		M1 n=195		NA/NOS n=314	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	81.5	84.4	20.6	20.6	79.3	83.3
2	69.2	74.1	10.5	11.3	71.7	78.3
3	62.6	69.2			64.6	73.6
4	55.6	63.7			60.9	72.4
5	51.9	61.5			55.9	68.4
6	46.6	56.8			52.1	66.4
7	42.5	53.7			47.3	62.9
8	40.6	53.0			42.8	58.6
9	38.0	51.0			39.4	55.9
10	37.4	51.0			37.1	53.9

Table 4h. Observed (obs.) and relative (rel.) survival of patients with bladder cancer by TNM staging for period 1998-2013 (N=6,369).

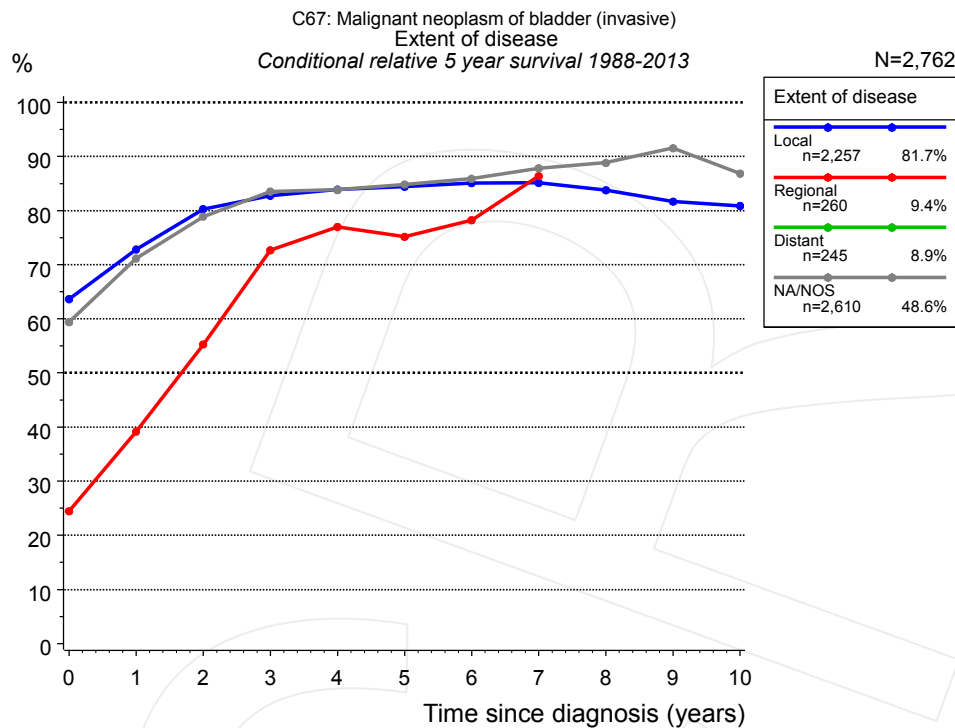


Figure 4i. Conditional relative 5-year survival of patients with bladder cancer by extent of disease. For 4,944 of 5,372 cases diagnosed between 1988 and 2013 valid data could be obtained for this item. For a total of 2,762 cases an evaluable classification was established. The grey line represents the subgroup of 2,610 patients with missing values regarding extent of disease (48.6% of 5,372 patients, the percent values of all other categories are related to n=2,762).

Years	Extent of disease							
	Local		Regional		Distant		NA/NOS	
	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs
0	2,257	63.7	260	24.5	245		2,610	59.4
1	1,700	72.8	140	39.2			1,918	71.2
2	1,348	80.3	79	55.3			1,508	78.9
3	1,097	82.7	53	72.7			1,253	83.5
4	897	83.9	43	77.0			1,077	83.8
5	746	84.4	36	75.2			911	84.8
6	619	85.1	32	78.2			773	85.9
7	533	85.1	26	86.4			678	87.8
8	449	83.8					580	88.8
9	376	81.7					482	91.5
10	326	80.9					406	86.9

Table 4j. Conditional relative 5-year survival of patients with bladder cancer by extent of disease for period 1988-2013 (N=2,762).

Conditional relative survival rates refer to the relative survival probability, in this case for 5 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 5-year survival rate is 82.7% (n=1,097).

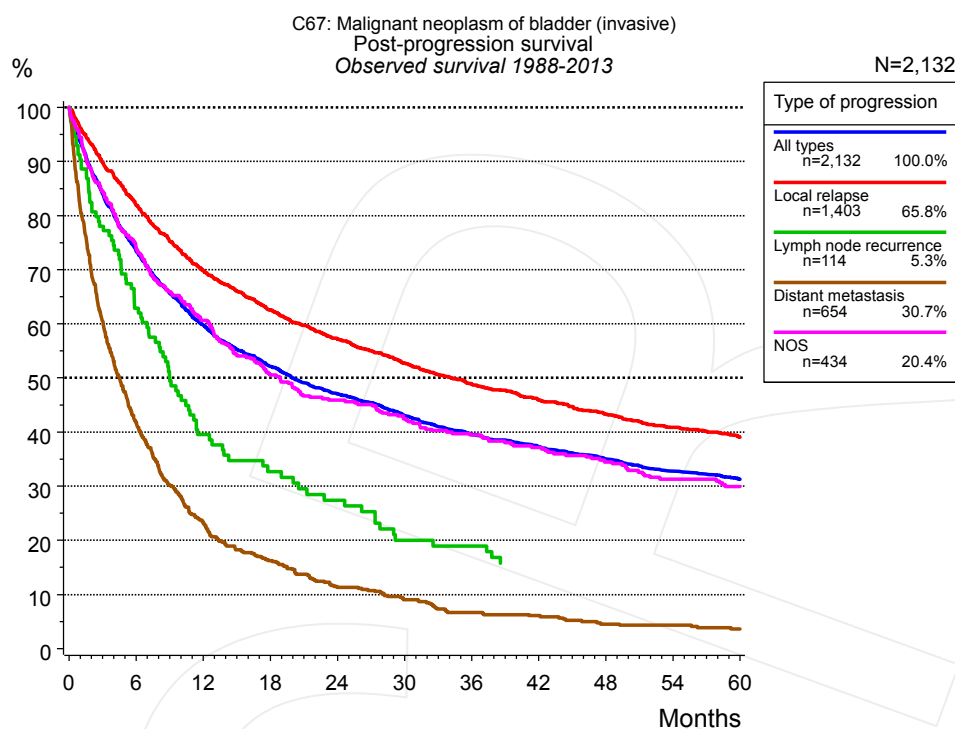


Figure 5a. Observed post-progression survival of 2,132 patients with bladder cancer diagnosed between 1988 and 2013 (incl. M1). These 2,132 patients with documented progression events during their course of disease represent 39.7% of the totally 5,372 evaluated cases. Patients with cancer relapse documented via death certificates only were excluded (n=555, 10.3%). 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 “All types” 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.

Months	Type of progression				
	All types n=2,132	Local relapse n=1,403	Lymph node recurrence n=114	Distant metastasis n=654	NOS n=434
	%	%	%	%	%
0	100.0	100.0	100.0	100.0	100.0
12	59.8	69.8	39.5	23.1	60.7
24	47.1	57.2	27.4	11.3	45.9
36	39.6	48.9	19.0	6.7	39.4
48	35.0	43.3		4.5	34.5
60	31.3	39.1		3.6	29.9

Table 5b. Observed post-progression survival of patients with bladder cancer for period 1988-2013 (N=2,132).

Shortcuts

MCR	Munich Cancer Registry, Germany (Tumorregister München)
NCI	National Cancer Institute, USA
SEER	Surveillance, Epidemiology, and End Results, USA
UICC	Union for International Cancer Control, Geneva
DCO	Death certificate only. The death certificate provides the only notification to the registry.
NA	Not available
NOS	Not otherwise specified
OS	Observed/overall survival (Kaplan-Meier estimate)
RS	Relative survival, compared to the general population, ratio of observed to expected survival (Ederer II method), reflecting excess mortality among cancer patients
AS	Assembled survival chart (observed, expected, relative)
PPS	Post-progression survival, survival since first relapse (Kaplan-Meier estimate)
progression	Date of entry: Date of first locoregional recurrence, distant metastasis, unspecified
	Event: Death of all causes
CS	Conditional survival, survival probability under the condition of surviving a given period of time

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