

Munich Cancer Registry



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ICD-10 C64-C66, C68: Urinary tract cancer

Survival

Year of diagnosis	1988-1997	1998-2014
Patients	3,095	11,748
Diseases	3,138	12,104
Cases evaluated	2,694	8,186
Creation date	03/02/2016	
Export date	12/23/2015	
Population	4.64 m	



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

<http://www.tumorregister-muenchen.de/en/facts/surv/sC6466E-ICD-10-C64-C66-C68-Urinary-tract-cancer-survival.pdf>

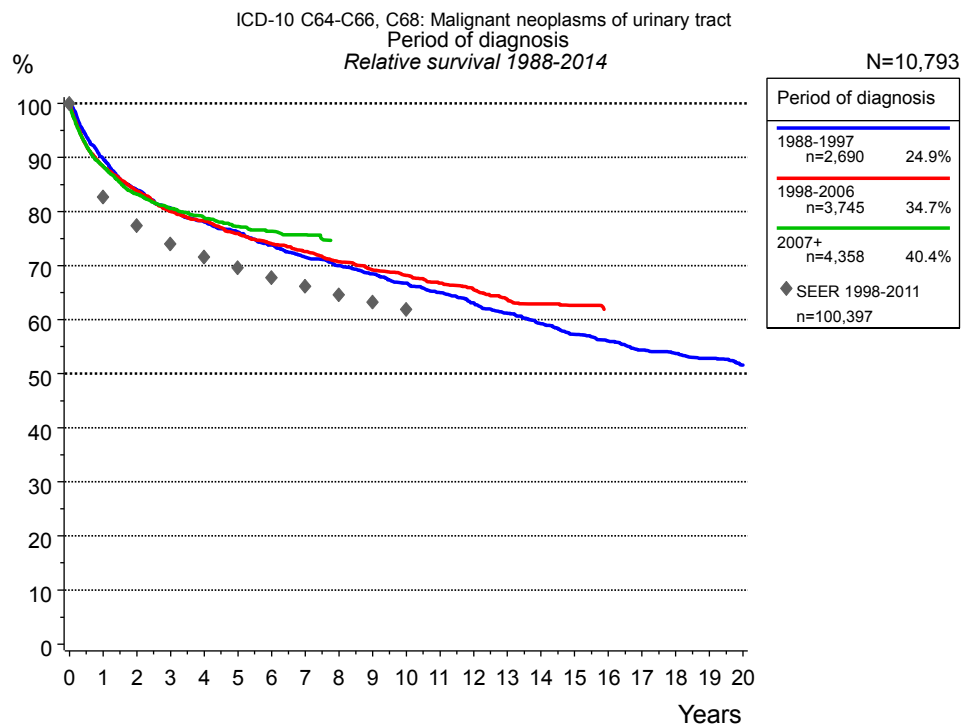


Figure 1a. Relative survival of patients with urinary tract cancer by period of diagnosis. Included in the evaluation are 10,793 cases diagnosed between 1988 and 2014.

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.

Years	Period of diagnosis					
	1988-1997 n=2,690		1998-2006 n=3,745		2007+ n=4,358	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	87.5	89.7	86.1	88.3	86.2	88.3
2	79.9	84.0	79.7	83.8	79.2	83.2
3	74.8	80.6	74.2	80.0	74.8	80.6
4	70.7	78.1	70.8	78.3	71.5	78.9
5	67.3	76.2	67.0	75.9	68.1	77.2
6	63.5	73.8	63.6	74.0	65.5	76.3
7	60.0	71.5	60.8	72.6	63.2	75.7
8	57.2	70.0	57.6	70.7		
9	54.5	68.4	54.8	69.2		
10	51.8	66.7	52.4	68.2		
11	49.1	65.0	49.8	66.8		
12	46.4	63.1	47.4	65.6		
13	43.7	61.2	44.8	63.8		
14	41.2	59.3	42.8	62.9		
15	38.7	57.3	41.5	62.7		
16	36.7	56.0				
17	34.6	54.4				
18	33.2	53.8				
19	31.7	52.9				
20	29.9	51.6				

Table 1b. Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by period of diagnosis for period 1988-2014 (N=10,793).

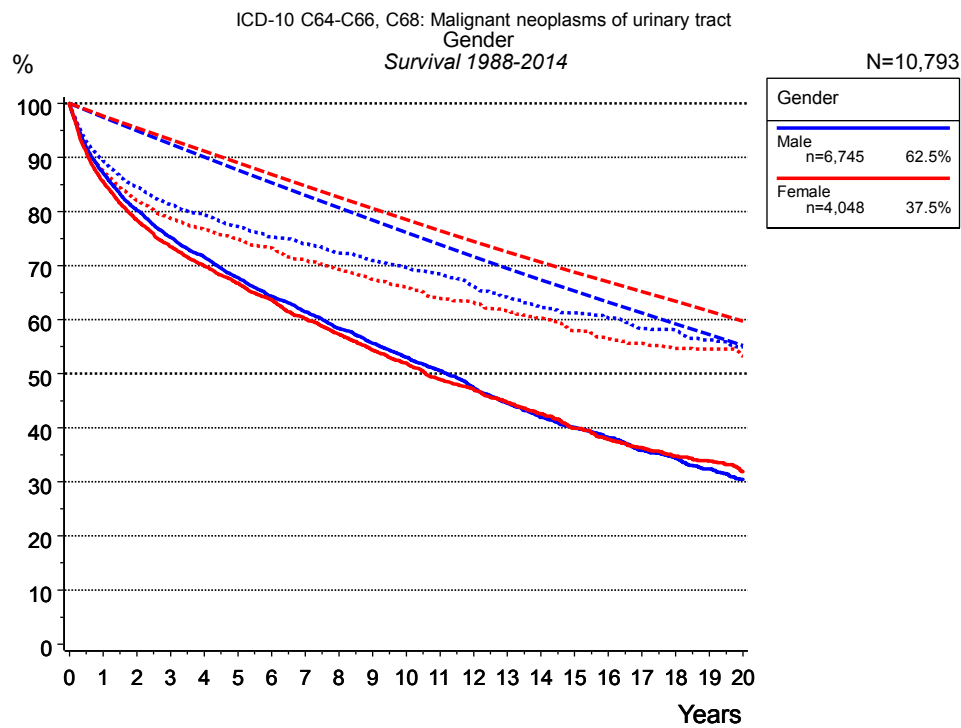


Figure 2a. Survival of patients with urinary tract cancer by gender. Included in the evaluation are 10,793 cases diagnosed between 1988 and 2014.

Years	Gender			
	Male n=6,745		Female n=4,048	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	87.0	89.3	85.5	87.6
2	80.3	84.5	78.4	82.1
3	75.2	81.3	73.5	78.7
4	71.6	79.4	69.9	76.6
5	67.8	77.3	66.7	74.9
6	64.3	75.3	63.6	73.2
7	61.4	74.0	60.2	71.0
8	58.4	72.3	57.3	69.3
9	55.6	71.0	54.3	67.5
10	53.0	69.6	52.0	66.1
11	50.6	68.4	49.0	64.0
12	47.5	66.2	47.1	63.2
13	44.6	64.2	44.8	61.6
14	41.9	62.2	42.6	60.2
15	40.0	61.2	39.9	58.0
16	38.2	60.3	37.9	56.4
17	35.8	58.4	36.4	55.6
18	34.3	57.9	34.7	54.7
19	32.4	56.3	33.8	54.5
20	30.5	55.0	31.9	53.3

Table 2b. Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by gender for period 1988-2014 (N=10,793).

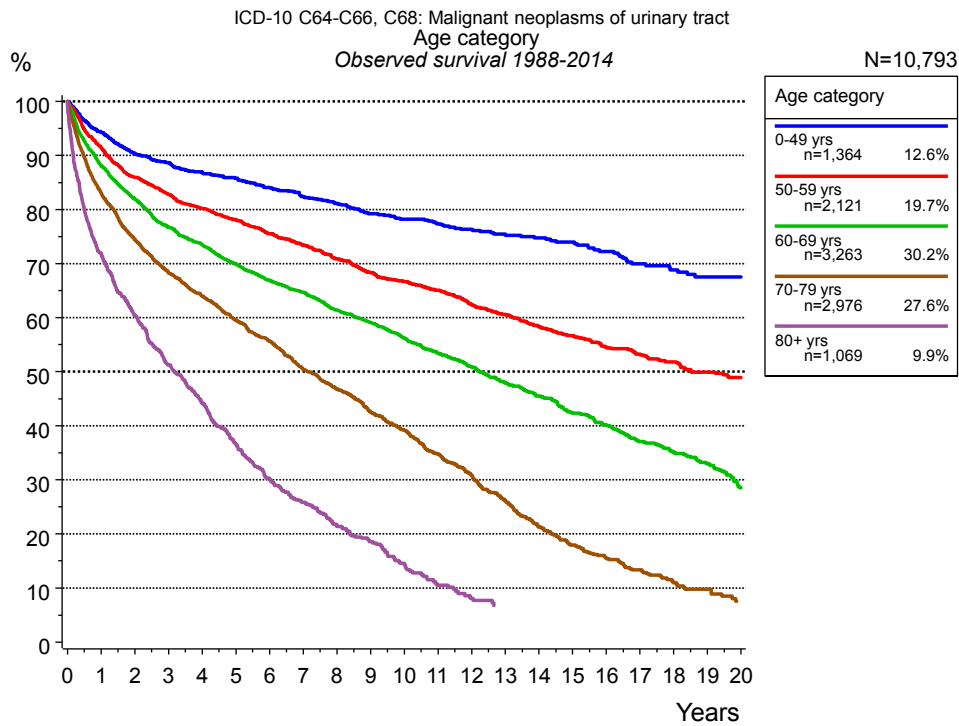


Figure 3a. Observed survival of patients with urinary tract cancer by age category. Included in the evaluation are 10,793 cases diagnosed between 1988 and 2014.

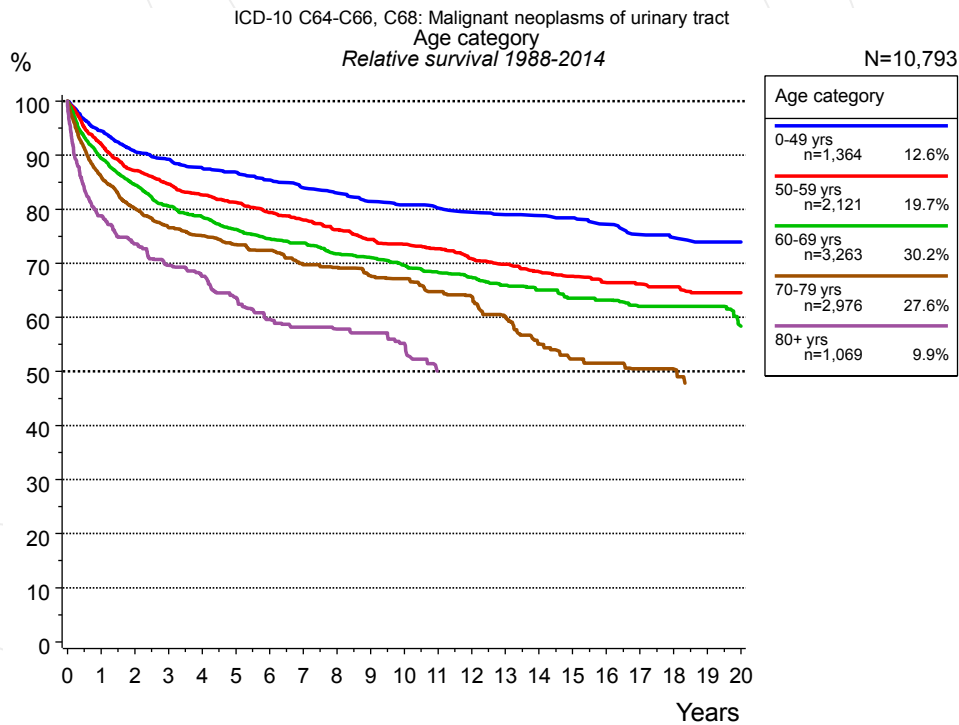


Figure 3b. Relative survival of patients with urinary tract cancer by age category. Included in the evaluation are 10,793 cases diagnosed between 1988 and 2014.

Years	Age category									
	0-49 yrs n=1,364		50-59 yrs n=2,121		60-69 yrs n=3,263		70-79 yrs n=2,976		80+ yrs n=1,069	
	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	94.3	94.5	91.4	92.0	88.1	89.4	83.0	86.0	71.8	78.8
2	90.2	90.7	85.9	87.1	81.9	84.5	74.5	80.2	60.4	73.6
3	88.7	89.2	82.8	84.6	76.8	80.5	68.2	76.6	51.3	69.6
4	86.9	87.6	80.2	82.6	73.5	78.6	64.0	75.1	44.2	67.6
5	85.8	86.9	78.0	81.2	69.9	76.3	59.6	73.5	36.7	63.6
6	84.1	85.4	75.5	79.4	66.9	74.5	55.6	72.4	30.2	59.6
7	82.4	83.9	73.4	78.0	64.7	73.7	50.4	69.8	25.9	58.2
8	81.1	83.0	70.9	76.2	61.4	71.8	46.9	69.2	21.4	57.8
9	79.2	81.4	68.3	74.4	59.1	71.0	42.6	67.7	18.5	57.1
10	78.2	80.8	66.7	73.5	56.2	69.6	39.2	67.2	14.5	55.2
11	77.3	80.2	65.1	72.7	53.4	68.3	34.8	64.8	10.5	50.1
12	76.3	79.5	62.4	70.8	50.9	67.4	30.8	63.9		
13	75.5	79.0	60.6	69.8	47.9	65.9	26.2	60.2		
14	74.7	78.9	58.4	68.4	45.5	65.1	21.3	55.1		
15	74.0	78.4	56.6	67.6	42.3	63.5	18.0	52.3		
16	72.2	77.2	54.6	66.4	40.1	63.2	15.5	51.5		
17	70.0	75.3	53.3	66.2	37.1	62.0	13.4	50.5		
18	68.8	74.7	51.8	65.7	35.1	62.0	11.0	50.4		
19	67.5	73.9	49.9	64.5	33.0	62.0				
20	67.5	73.9	48.9	64.5	28.5	58.4				

Table 3c. Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by age category for period 1988-2014 (N=10,793).

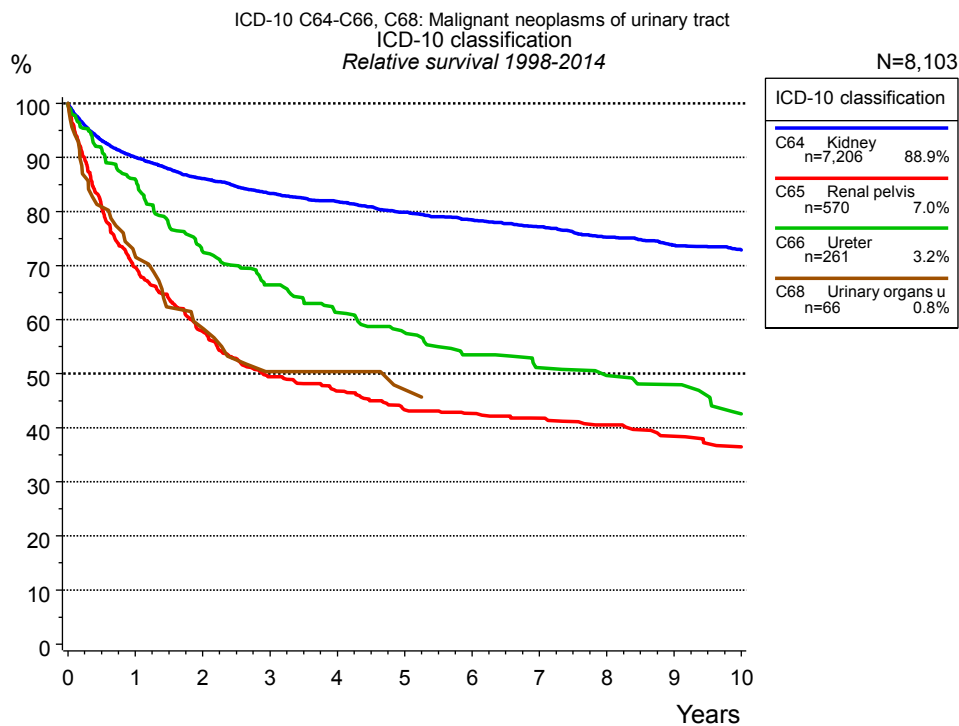


Figure 4a. Relative survival of patients with urinary tract cancer by ICD-10 classification. Included in the evaluation are 8,103 cases diagnosed between 1998 and 2014.

ICD-10 classification								
Years	C64 Kidney n=7,206		C65 Renal pelvis n=570		C66 Ureter n=261		C68 Urinary organs unspec. n=66	
	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	88.0	90.0	67.0	69.7	82.4	85.9	70.8	71.8
2	82.2	86.1	53.6	57.8	67.0	72.6	55.9	58.4
3	77.8	83.4	43.9	49.5	58.8	66.4	45.3	50.4
4	74.5	81.8	39.9	46.8	51.9	61.3	45.3	50.4
5	71.0	79.9	35.5	43.3	47.2	57.6	40.5	47.0
6	67.8	78.4	33.8	42.6	42.0	53.5		
7	65.0	77.1	32.0	41.8	38.5	51.1		
8	61.7	75.2	29.9	40.5	36.0	49.7		
9	58.8	73.8	27.5	38.4	34.2	48.0		
10	56.5	72.9	25.4	36.5	28.8	42.5		

Table 4b. Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by ICD-10 classification for period 1998-2014 (N=8,103).

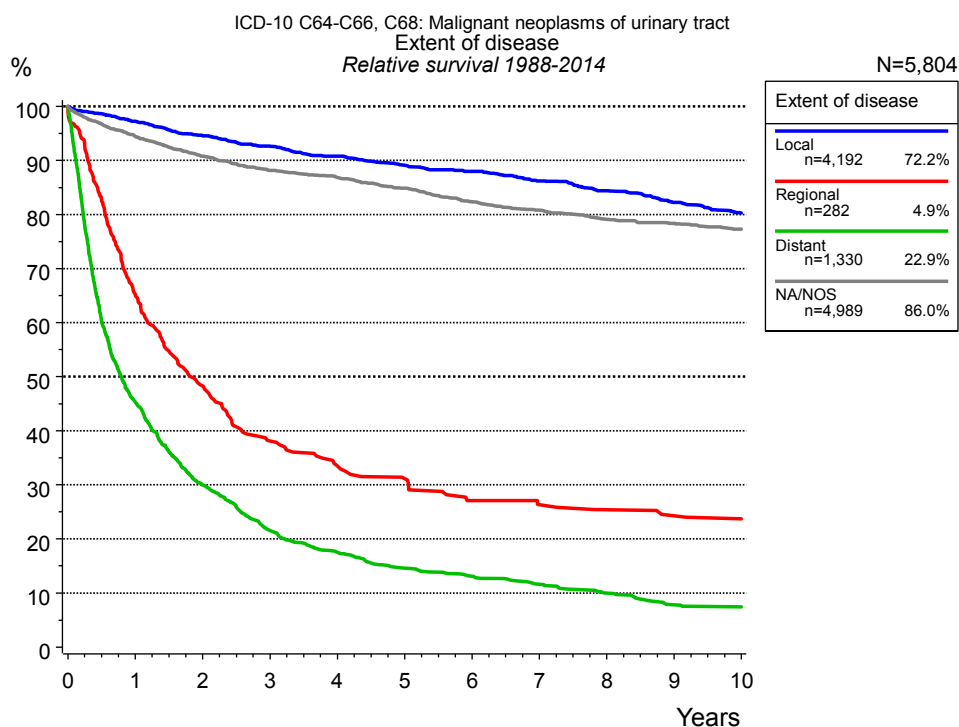


Figure 4c. Relative survival of patients with urinary tract cancer by extent of disease. For 10,357 of 10,793 cases diagnosed between 1988 and 2014 valid data could be obtained for this item. For a total of 5,804 cases an evaluable classification was established. The grey line represents the subgroup of 4,989 patients with missing values regarding extent of disease (46.2% of 10,793 patients, the percent values of all other categories are related to n=5,804).

Years	Extent of disease							
	Local n=4,192		Regional n=282		Distant n=1,330		NA/NOS n=4,989	
	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	95.0	97.3	63.4	65.1	44.1	45.3	92.0	94.4
2	90.2	94.5	46.0	48.3	28.5	30.0	86.3	90.8
3	86.3	92.6	35.3	38.1	20.1	21.6	81.6	88.1
4	82.5	90.8	30.5	33.5	16.0	17.5	78.4	86.8
5	79.0	89.1	27.5	31.1	13.0	14.6	74.5	84.8
6	76.1	88.0	23.2	27.1	11.5	13.1	70.4	82.4
7	72.5	86.2	22.1	26.3	10.0	11.6	67.2	80.8
8	69.2	84.4	20.9	25.4	8.4	10.0	64.0	79.1
9	65.6	82.2	19.7	24.3	6.5	7.8	61.6	78.3
10	62.4	80.3	19.1	23.7	6.0	7.5	59.0	77.3

Table 4d. Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by extent of disease for period 1988-2014 (N=5,804).

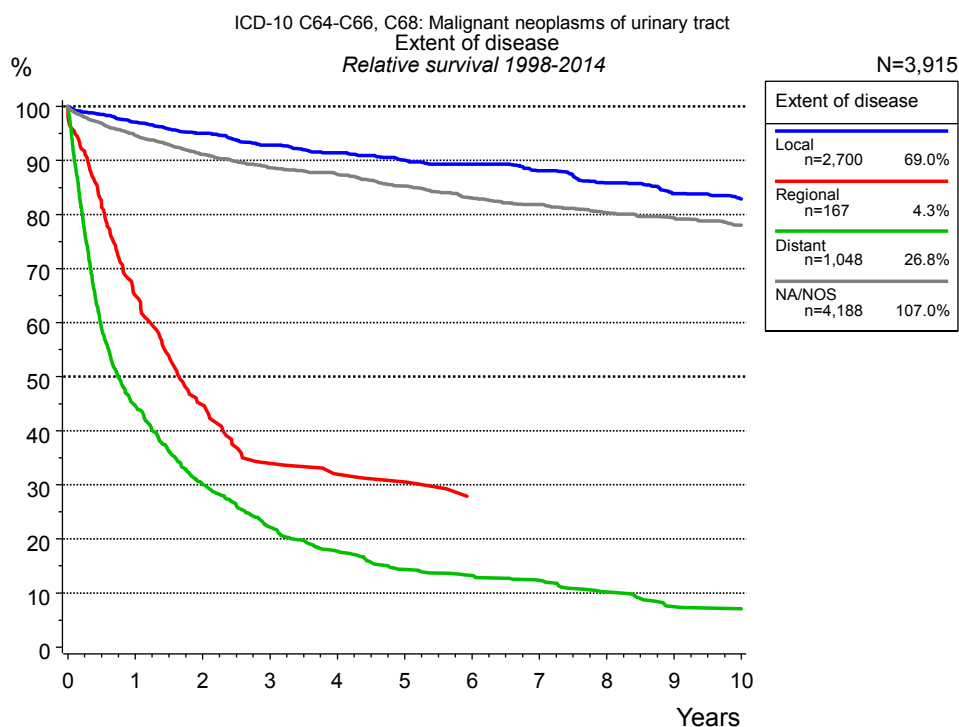


Figure 4e. Relative survival of patients with urinary tract cancer by extent of disease. For 7,824 of 8,103 cases diagnosed between 1998 and 2014 valid data could be obtained for this item. For a total of 3,915 cases an evaluable classification was established. The grey line represents the subgroup of 4,188 patients with missing values regarding extent of disease (51.7% of 8,103 patients, the percent values of all other categories are related to n=3,915).

Years	Extent of disease							
	Local n=2,700		Regional n=167		Distant n=1,048		NA/NOS n=4,188	
	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	95.0	97.1	62.9	65.0	43.5	44.6	92.3	94.6
2	90.7	95.0	42.7	44.8	28.6	30.0	86.7	91.1
3	86.6	92.8	31.5	34.0	20.6	22.2	82.2	88.6
4	83.3	91.4	28.5	32.0	16.3	17.8	79.0	87.4
5	79.8	90.1	27.5	30.5	12.9	14.4	75.1	85.3
6	77.5	89.3	23.5	27.8	11.7	13.2	71.0	83.0
7	74.0	88.1			10.6	12.3	68.2	81.8
8	70.2	85.9			8.6	10.2	65.0	80.3
9	66.7	83.9			6.3	7.5	62.4	79.4
10	64.0	82.9			6.0	7.1	59.6	78.1

Table 4f. Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by extent of disease for period 1998-2014 (N=3,915).

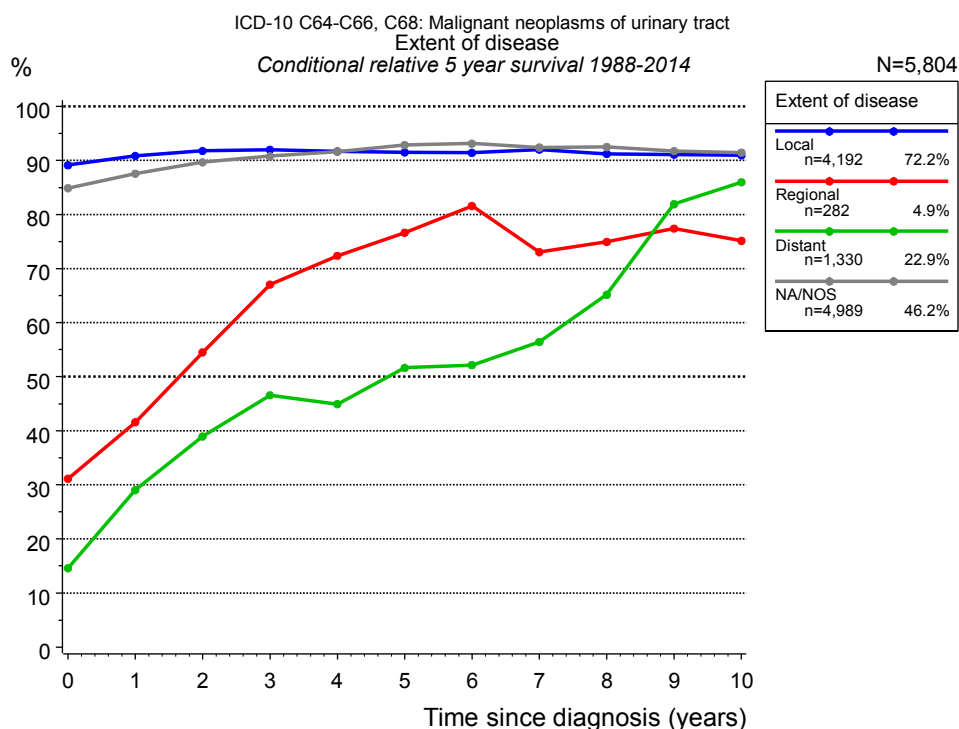


Figure 4g. Conditional relative 5-year survival of patients with urinary tract cancer by extent of disease. For 10,357 of 10,793 cases diagnosed between 1988 and 2014 valid data could be obtained for this item. For a total of 5,804 cases an evaluable classification was established. The grey line represents the subgroup of 4,989 patients with missing values regarding extent of disease (46.2% of 10,793 patients, the percent values of all other categories are related to n=5,804).

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	4,192	89.1	282	31.1	1,330	14.6	4,989	84.9
1	3,733	90.8	167	41.6	559	29.1	4,315	87.6
2	3,360	91.8	111	54.5	346	39.0	3,835	89.7
3	3,025	92.0	78	67.0	230	46.6	3,410	90.8
4	2,706	91.7	62	72.4	173	44.9	3,080	91.6
5	2,400	91.5	52	76.6	126	51.7	2,708	92.8
6	2,191	91.4	42	81.6	102	52.2	2,278	93.1
7	1,970	92.0	38	73.1	78	56.4	1,923	92.4
8	1,756	91.2	35	74.9	62	65.2	1,616	92.5
9	1,581	91.1	33	77.4	42	81.9	1,359	91.7
10	1,430	91.0	30	75.1	32	86.0	1,102	91.4

Table 4h. Conditional relative 5-year survival of patients with urinary tract cancer by extent of disease for period 1988-2014 (N=5,804).

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 4e). 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 92.0% (n=3,025).

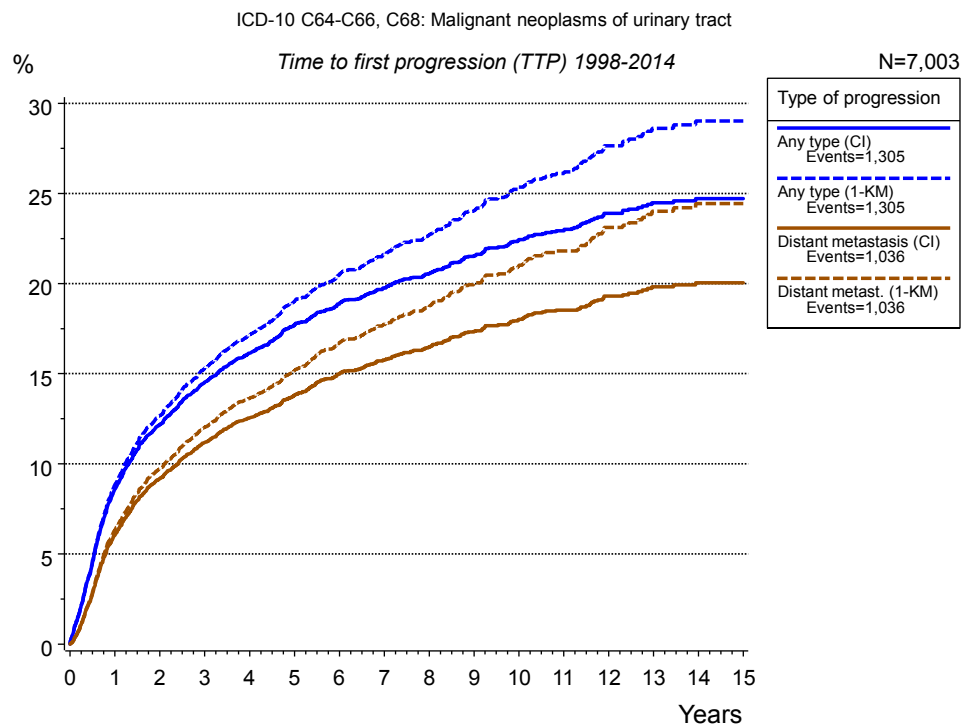


Figure 5a. Time to first progression of 7,003 patients with urinary tract cancer diagnosed between 1998 and 2014 (M0 only in solid cancers) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

Years	Type of progression			
	Any type (CI)	Any type (1-KM)	Distant metastasis (CI)	Distant metastasis (1-KM)
	n=7,003 %	n=7,003 %	n=7,003 %	n=7,003 %
0	0.0	0.0	0.0	0.0
1	8.6	8.9	6.1	6.3
2	12.2	12.7	9.2	9.7
3	14.5	15.3	11.2	12.0
4	16.2	17.2	12.6	13.6
5	17.7	19.0	13.8	15.2
6	18.9	20.5	15.0	16.7
7	19.8	21.6	15.8	17.7
8	20.5	22.7	16.5	18.7
9	21.5	24.1	17.4	20.0
10	22.4	25.4	18.0	21.0
11	22.9	26.1	18.5	21.8
12	23.9	27.6	19.3	23.1
13	24.5	28.6	19.8	24.0
14	24.7	29.0	20.1	24.4
15	24.7	29.0	20.1	24.4

Table 5b. Time to first progression of patients with urinary tract cancer for period 1998-2014 (N=7,003).

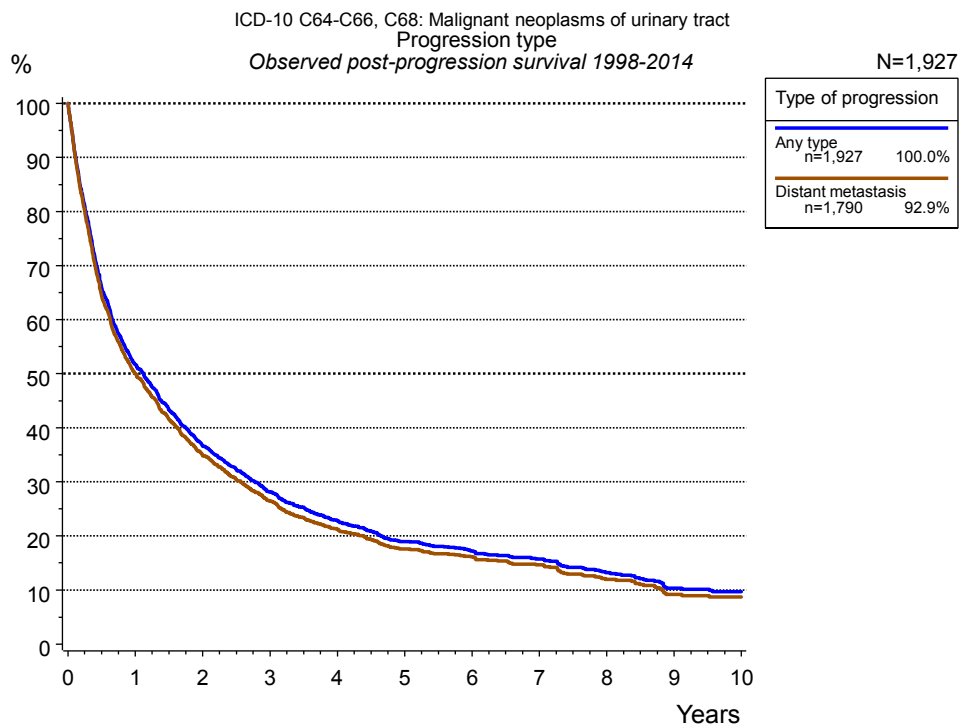


Figure 5c. Observed post-progression survival of 1,927 patients with urinary tract cancer diagnosed between 1998 and 2014. These 1,927 patients with documented progression events during their course of disease represent 24.0 % of the totally 8,031 evaluated cases (incl. M1, n=1,028, 12.8 %). Patients with cancer relapse documented via death certificates only were excluded (n=406, 5.1 %). Multiple progression types on different sites are included in the evaluation even when not occurring synchronously.

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=1,927 %	Distant metastasis n=1,790 %
0	100.0	100.0
1	51.7	50.0
2	36.7	35.0
3	28.1	26.4
4	22.8	21.2
5	19.0	17.6
6	17.2	16.1
7	15.7	14.7
8	13.2	12.0
9	10.4	9.2
10	9.7	8.7

Table 5d. Observed post-progression survival of patients with urinary tract cancer for period 1998-2014 (N=1,927).

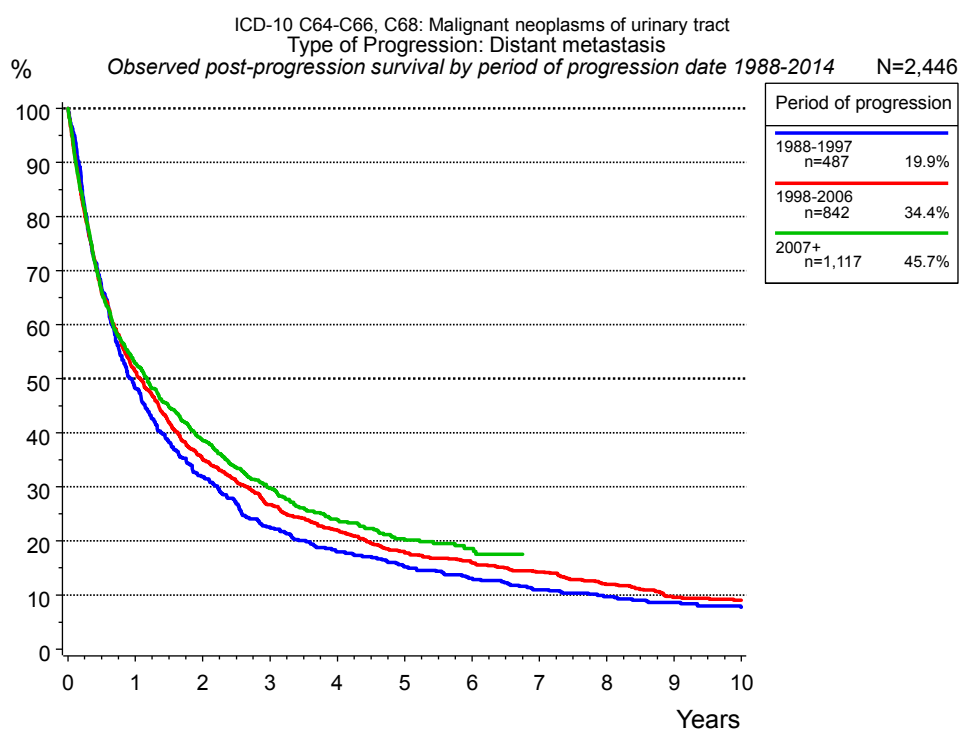


Figure 5e. Observed post-progression (distant metastasis) survival of 2,446 patients with urinary tract cancer diagnosed between 1988 and 2014 by period of progression.

Years	Period of progression		
	1988-1997 n=487	1998-2006 n=842	2007+ n=1,117
0	100.0	100.0	100.0
1	48.1	51.4	52.8
2	31.9	35.1	38.6
3	22.6	26.7	29.7
4	17.9	21.9	23.9
5	15.2	17.8	20.2
6	13.1	16.0	18.6
7	11.0	14.3	17.5
8	9.7	12.0	
9	8.6	9.6	
10	7.8	9.0	

Table 5f. Observed post-progression (distant metastasis) survival of patients with urinary tract cancer for period 1988-2014 by period of progression (N=2,446).

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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