

Munich Cancer Registry



- ▶ Incidence and Mortality
- ▶ Selection Matrix
- ▶ Homepage
- ▶ *Deutsch*

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

Survival

Year of diagnosis	1988-1997	1998-2019
Patients	3,117	15,168
Diseases	3,163	15,679
Cases evaluated	2,704	10,309
Creation date	01/27/2021	
Database export	01/07/2021	
Population	4.92 m	



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

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

Index of figures and tables

Fig./Tbl.		Page
1a	Relative survival by period of diagnosis (chart)	3
1b	Survival by period of diagnosis (table)	3
2a	Survival by sex (chart)	4
2b	Survival by sex (table)	4
3a	Observed survival by age category (chart)	5
3b	Relative survival by age category (chart)	5
3c	Survival by age category (table)	6
4a	Relative survival by ICD-10 classification (chart)	7
4b	Survival by ICD-10 classification (table)	7
4c	Relative survival by extent of disease (chart)	8
4d	Survival by extent of disease (table)	8
4g	Conditional survival by extent of disease (chart)	9
4h	Conditional survival by extent of disease (table)	9
5a	Time to first progression (chart)	10
5b	Time to first progression (table)	10
5c	Observed post-progression survival (chart)	11
5d	Observed post-progression survival (table)	11
5e	Observed post-progression survival by period of progression (chart)	12
5f	Observed post-progression survival by period of progression (table)	12

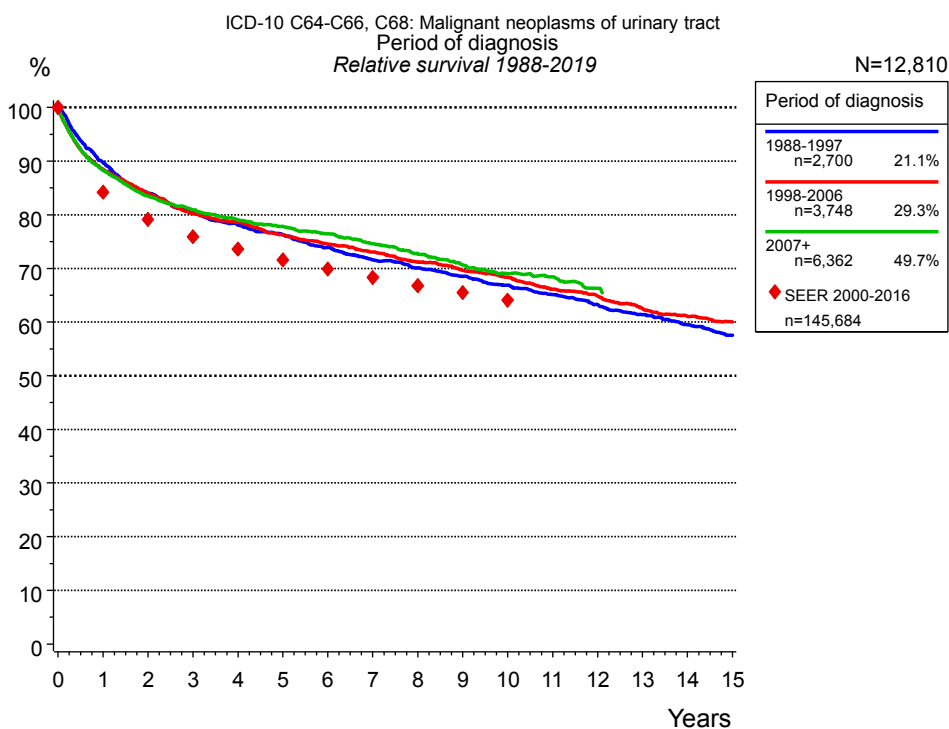


Figure 1a. Relative survival of patients with urinary tract cancer by period of diagnosis. Included in the evaluation are 12,810 cases diagnosed between 1988 and 2019.

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 2016, 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=2,700		1998-2006 n=3,748		2007+ n=6,362	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	87.5	89.7	86.2	88.5	86.2	88.3
2	79.9	84.0	79.9	84.0	79.5	83.5
3	74.8	80.7	74.4	80.2	75.2	80.9
4	70.7	78.1	71.1	78.6	71.6	79.1
5	67.3	76.3	67.3	76.3	68.7	77.8
6	63.6	73.9	64.0	74.5	65.6	76.5
7	60.1	71.6	61.2	73.0	62.3	74.6
8	57.3	70.1	58.0	71.2	59.0	72.7
9	54.6	68.5	55.1	69.6	55.6	70.6
10	51.9	66.9	52.5	68.3	52.7	69.0
11	49.2	65.1	49.3	66.1	50.8	68.4
12	46.5	63.2	46.9	64.8	47.9	66.3
13	43.9	61.4	43.8	62.6		
14	41.4	59.5	41.4	61.0		
15	38.9	57.5	39.4	60.0		
Median	10.7		10.8		11.2	

Table 1b. Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by period of diagnosis for period 1988-2019 (N=12,810).

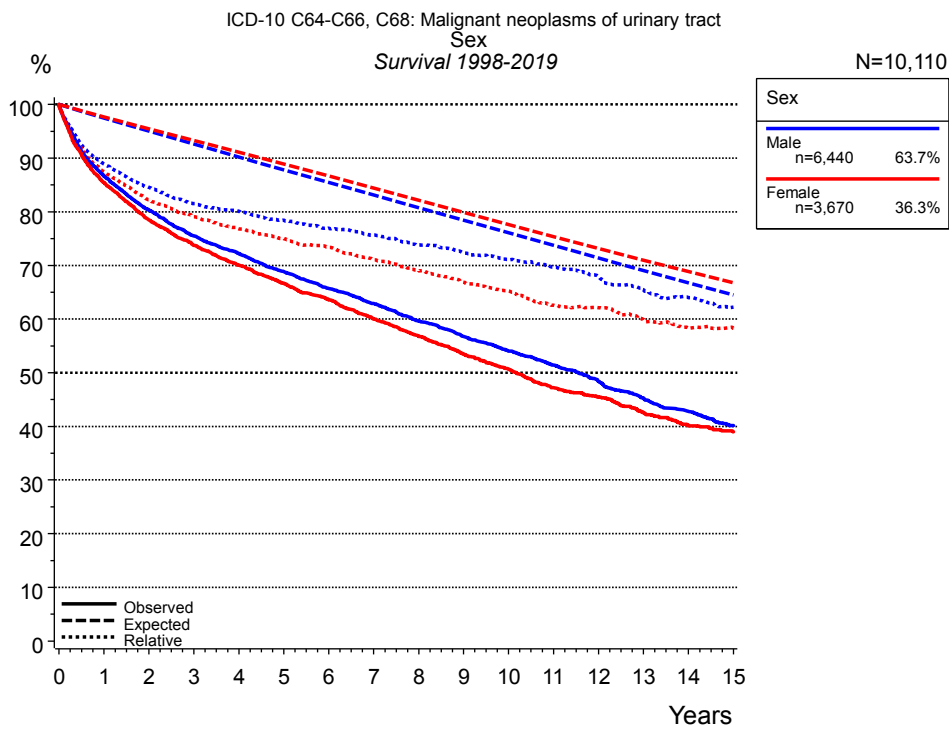


Figure 2a. Survival of patients with urinary tract cancer by sex. Included in the evaluation are 10,110 cases diagnosed between 1998 and 2019.

Years	Sex			
	Male n=6,440		Female n=3,670	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	86.6	88.9	85.4	87.5
2	80.3	84.5	78.4	82.1
3	75.5	81.5	73.7	79.0
4	72.2	80.0	70.0	76.8
5	68.9	78.4	66.7	75.0
6	65.7	76.9	63.6	73.3
7	62.9	75.6	60.0	71.0
8	59.6	73.8	56.7	69.0
9	56.7	72.3	53.5	66.9
10	54.0	71.0	50.7	65.2
11	51.4	69.7	47.2	62.6
12	48.4	67.7	45.5	62.1
13	45.2	65.5	42.6	59.9
14	42.8	64.0	40.1	58.3
15	40.2	62.2	38.9	58.3
Median	11.6		10.2	

Table 2b. Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by sex for period 1998-2019 (N=10,110).

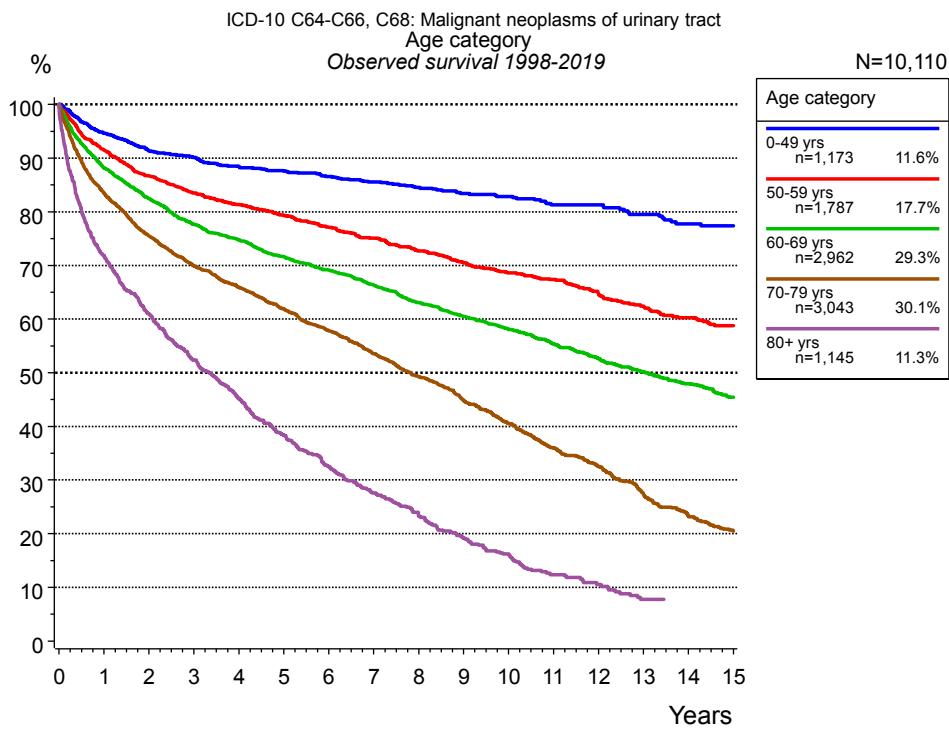


Figure 3a. Observed survival of patients with urinary tract cancer by age category. Included in the evaluation are 10,110 cases diagnosed between 1998 and 2019.

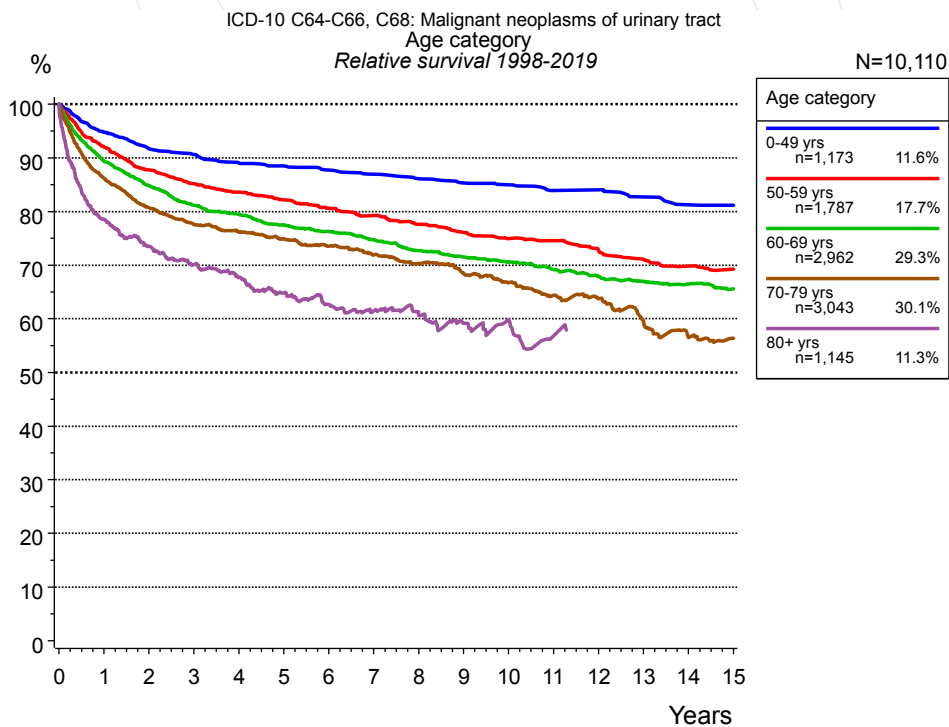


Figure 3b. Relative survival of patients with urinary tract cancer by age category. Included in the evaluation are 10,110 cases diagnosed between 1998 and 2019.

Years	Age category									
	0-49 yrs n=1,173		50-59 yrs n=1,787		60-69 yrs n=2,962		70-79 yrs n=3,043		80+ yrs n=1,145	
	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	94.7	94.8	91.4	92.0	88.2	89.4	83.5	86.2	71.9	78.6
2	91.3	91.7	86.7	87.8	82.4	84.8	75.5	80.7	61.0	73.5
3	90.1	90.6	83.5	85.1	77.7	81.2	69.8	77.5	52.3	70.1
4	88.4	89.1	81.3	83.6	74.8	79.4	65.9	76.2	45.2	67.7
5	87.7	88.5	79.3	82.2	71.7	77.5	61.9	74.9	38.3	64.8
6	86.6	87.7	77.1	80.6	69.1	76.3	57.8	73.5	32.5	62.6
7	85.6	86.9	75.1	79.3	66.3	74.7	53.5	71.9	27.6	61.4
8	84.5	86.1	72.7	77.6	63.0	72.7	49.3	70.3	23.4	60.7
9	83.4	85.3	70.5	76.1	60.5	71.5	44.8	68.4	19.1	59.1
10	82.9	85.0	68.6	75.0	58.0	70.5	40.5	66.7	16.2	59.8
11	81.3	83.9	67.4	74.6	55.4	69.2	36.0	64.4	12.4	56.8
12	81.3	84.0	64.8	72.7	52.6	67.9	32.5	63.8	10.5	60.3
13	79.5	82.7	62.4	71.1	50.1	67.0	27.5	59.6	7.7	57.7
14	77.8	81.3	60.2	69.8	48.0	66.5	23.3	56.5		
15	77.4	81.2	58.8	69.3	45.4	65.6	20.5	56.3		
Median			19.0		13.0		7.8		3.3	

Table 3c. Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by age category for period 1998-2019 (N=10,110).

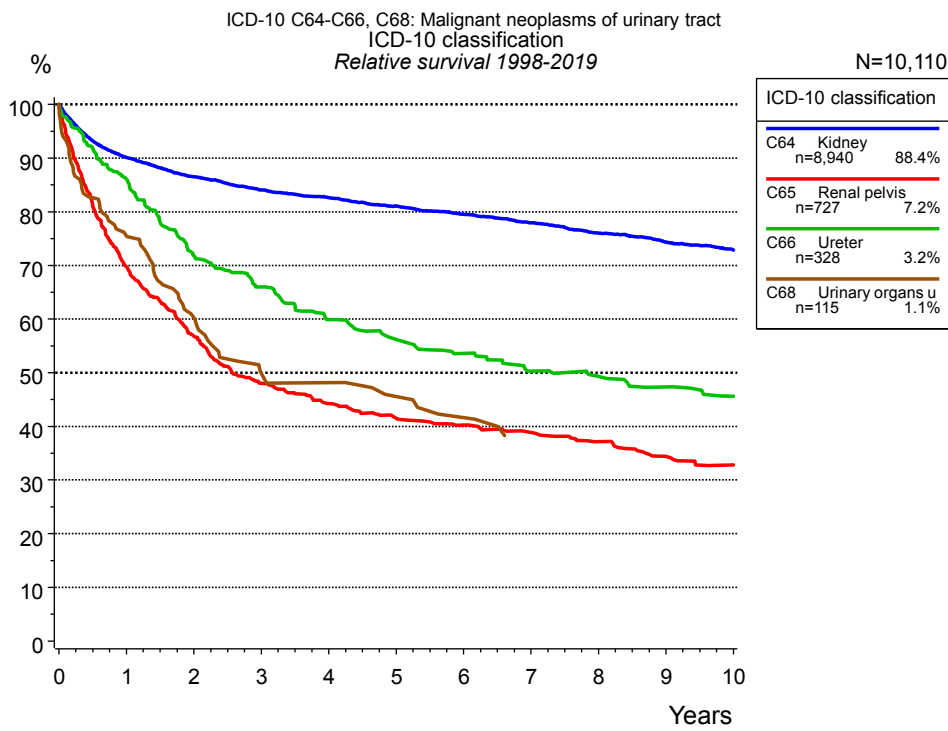


Figure 4a. Relative survival of patients with urinary tract cancer by ICD-10 classification. Included in the evaluation are 10,110 cases diagnosed between 1998 and 2019.

Years	ICD-10 classification							
	C64 Kidney n=8,940		C65 Renal pelvis n=727		C66 Ureter n=328		C68 Urinary organs unspec. n=115	
	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	90.1	67.1	69.7	82.7	86.1	73.6	75.5
2	82.6	86.5	52.8	56.8	66.3	71.8	56.9	60.3
3	78.4	84.1	42.7	48.0	58.5	66.0	45.4	49.9
4	75.3	82.6	37.8	44.2	50.7	59.9	43.3	48.1
5	72.0	81.1	34.1	41.5	45.8	56.2	39.4	45.6
6	68.8	79.5	31.9	40.2	41.8	53.6	35.4	41.6
7	65.7	78.0	29.8	38.9	37.5	50.3		
8	62.4	76.0	27.3	37.2	35.2	49.3		
9	59.3	74.4	24.3	34.4	32.7	47.4		
10	56.5	72.9	22.6	32.8	30.0	45.6		
Median	12.2		2.2		4.3		2.4	

Table 4b. Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by ICD-10 classification for period 1998-2019 (N=10,110).

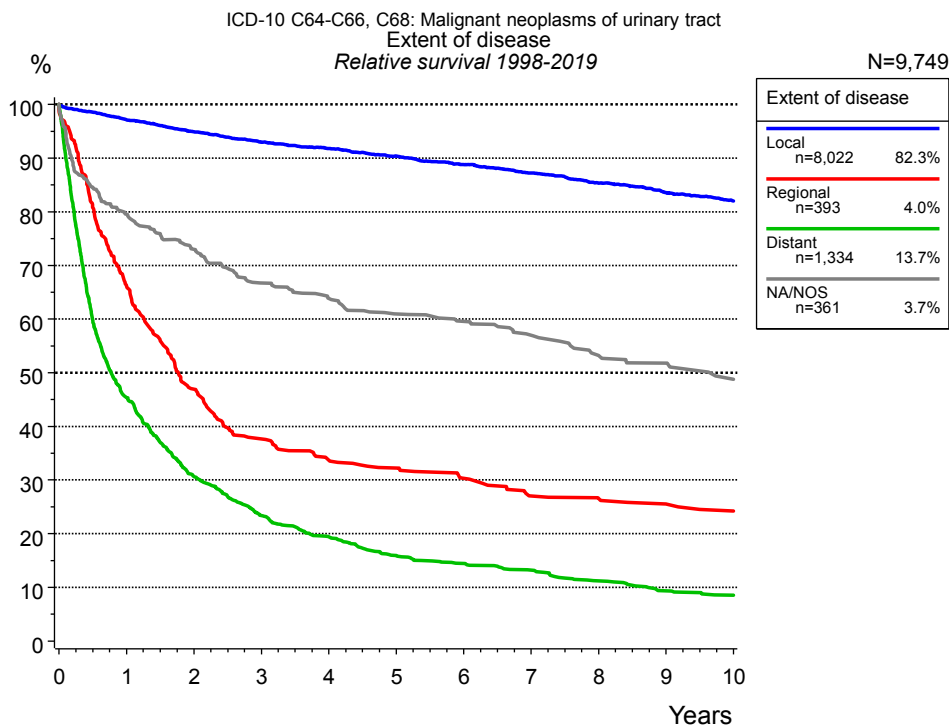


Figure 4c. Relative survival of patients with urinary tract cancer by extent of disease. For 9,768 of 10,110 cases diagnosed between 1998 and 2019 valid data could be obtained for this item. For a total of 9,749 cases an evaluable classification was established. The grey line represents the subgroup of 361 patients with missing values regarding extent of disease (3.6 % of 10,110 patients, the percent values of all other categories are related to n=9,749).

Years	Extent of disease							
	Local n=8,022		Regional n=393		Distant n=1,334		NA/NOS n=361	
	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	94.9	97.1	64.0	66.1	44.1	45.4	76.9	79.5
2	90.5	94.9	44.3	46.9	29.1	30.6	68.4	73.0
3	86.5	93.0	34.7	37.6	21.7	23.4	60.7	66.7
4	83.2	91.8	30.6	33.7	17.7	19.4	56.8	63.8
5	79.8	90.4	28.2	32.2	14.3	15.9	53.0	61.0
6	76.3	88.8	25.7	30.3	12.7	14.4	50.9	59.5
7	73.0	87.2	22.1	27.0	11.3	13.2	47.8	57.0
8	69.4	85.3	21.2	26.6	9.4	11.2	43.9	53.2
9	66.0	83.5	19.8	25.5	7.7	9.3	41.9	51.8
10	62.8	82.0	18.7	24.2	6.9	8.5	38.2	48.7
Median	13.9		1.7		0.7		6.5	

Table 4d. Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by extent of disease for period 1998-2019 (N=9,749).

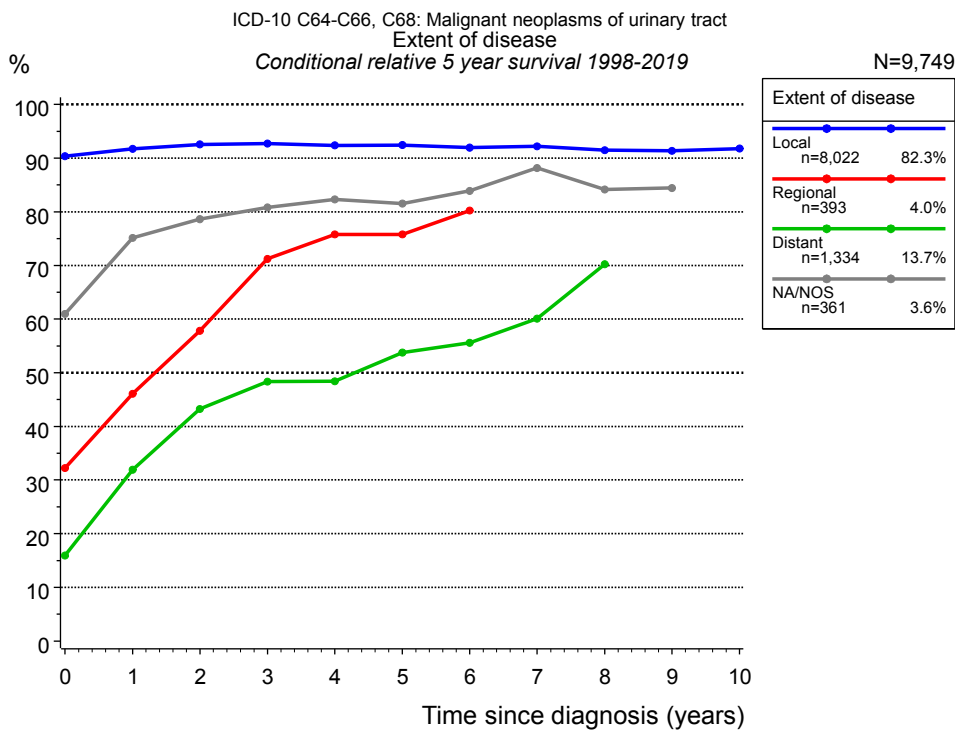


Figure 4g. Conditional relative 5-year survival of patients with urinary tract cancer by extent of disease. For 9,768 of 10,110 cases diagnosed between 1998 and 2019 valid data could be obtained for this item. For a total of 9,749 cases an evaluable classification was established. The grey line represents the subgroup of 361 patients with missing values regarding extent of disease (3.6 % of 10,110 patients, the percent values of all other categories are related to n=9,749).

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	8,022	90.4	393	32.2	1,334	15.9	361	61.0
1	7,117	91.7	237	46.1	565	31.9	259	75.1
2	6,489	92.5	155	57.8	352	43.3	224	78.6
3	5,881	92.7	114	71.2	250	48.3	193	80.8
4	5,362	92.4	94	75.8	188	48.4	169	82.3
5	4,824	92.4	81	75.8	139	53.7	149	81.5
6	4,252	91.9	68	80.3	116	55.5	137	83.9
7	3,733	92.2			99	60.1	119	88.2
8	3,237	91.5			72	70.2	92	84.1
9	2,756	91.4					75	84.4
10	2,319	91.8						

Table 4h. Conditional relative 5-year survival of patients with urinary tract cancer by extent of disease for period 1998-2019 (N=9,749).

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 92.7% (n=5,881).

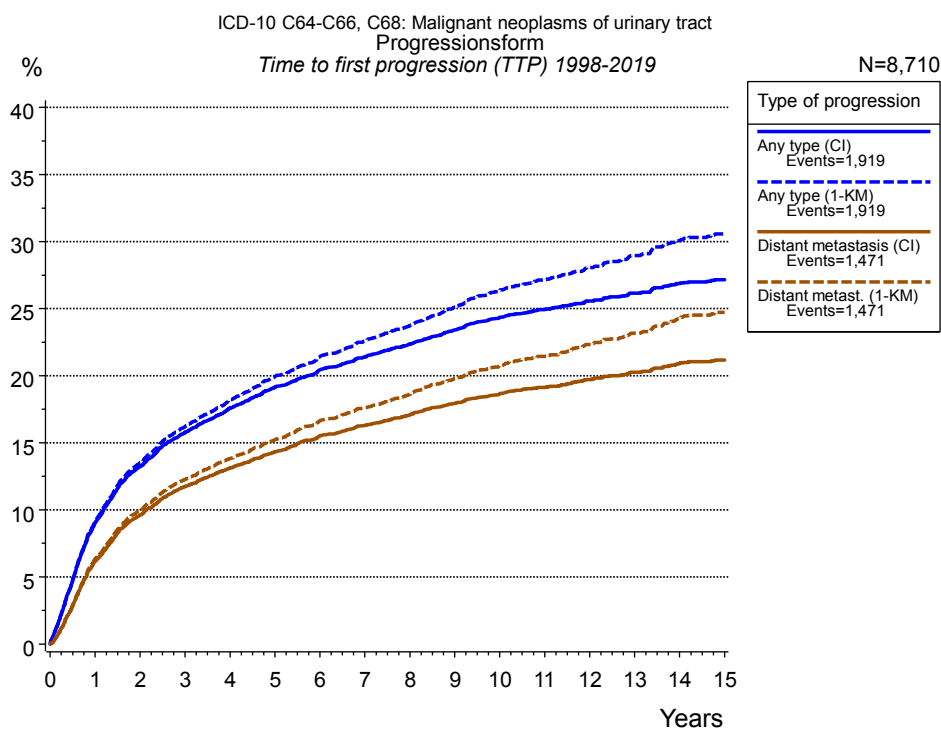


Figure 5a. Time to first progression of 8,710 patients with urinary tract cancer diagnosed between 1998 and 2019 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The 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)
N	8,710	8,710	8,710	8,710
Events	1,898	1,898	1,452	1,452
compet.	1,691		2,020	
Years	%	%	%	%
0	0.0	0.0	0.0	0.0
1	9.1	9.2	6.2	6.3
2	13.2	13.5	9.6	10.0
3	15.8	16.2	11.7	12.3
4	17.6	18.2	13.1	13.8
5	19.1	19.9	14.3	15.2
6	20.4	21.4	15.5	16.6
7	21.4	22.6	16.3	17.6
8	22.3	23.7	17.1	18.6
9	23.4	25.1	18.0	19.8
10	24.4	26.4	18.7	20.8
11	24.9	27.1	19.1	21.4
12	25.6	28.1	19.7	22.3
13	26.2	29.0	20.3	23.2
14	26.9	30.1	20.9	24.3
15	27.2	30.6	21.2	24.7

Table 5b. Time to first progression of patients with urinary tract cancer for period 1998-2019 (N=8,710), also showing the total of progression events (Events) and of deaths as competing risk (compet.).

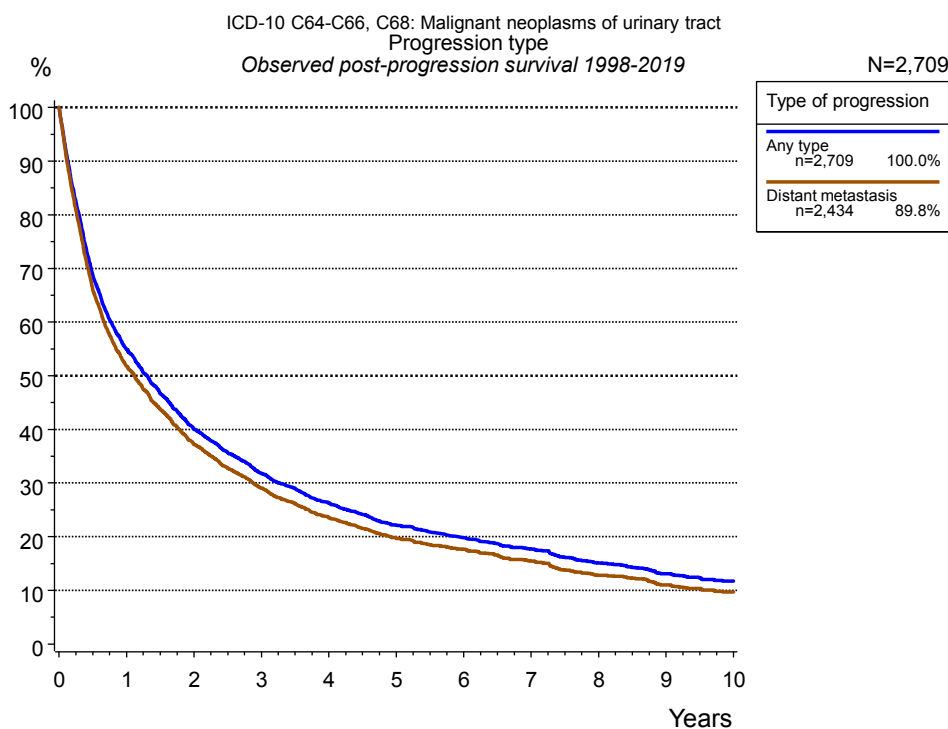


Figure 5c. Observed post-progression survival of 2,709 patients with urinary tract cancer diagnosed between 1998 and 2019. These 2,709 patients with documented progression events during their course of disease represent 27.0 % of the totally 10,024 evaluated cases (incl. M1, n=1,314, 13.1 %). Patients with cancer relapse documented via death certificates only were excluded (n=524, 5.2 %). 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=2,709 %	Distant metastasis n=2,434 %
0	100.0	100.0
1	55.0	51.8
2	40.1	37.3
3	31.8	29.0
4	26.2	23.5
5	22.2	19.7
6	19.8	17.6
7	17.7	15.5
8	15.1	12.8
9	13.1	11.0
10	11.7	9.7

Table 5d. Observed post-progression survival of patients with urinary tract cancer for period 1998-2019 (N=2,709).

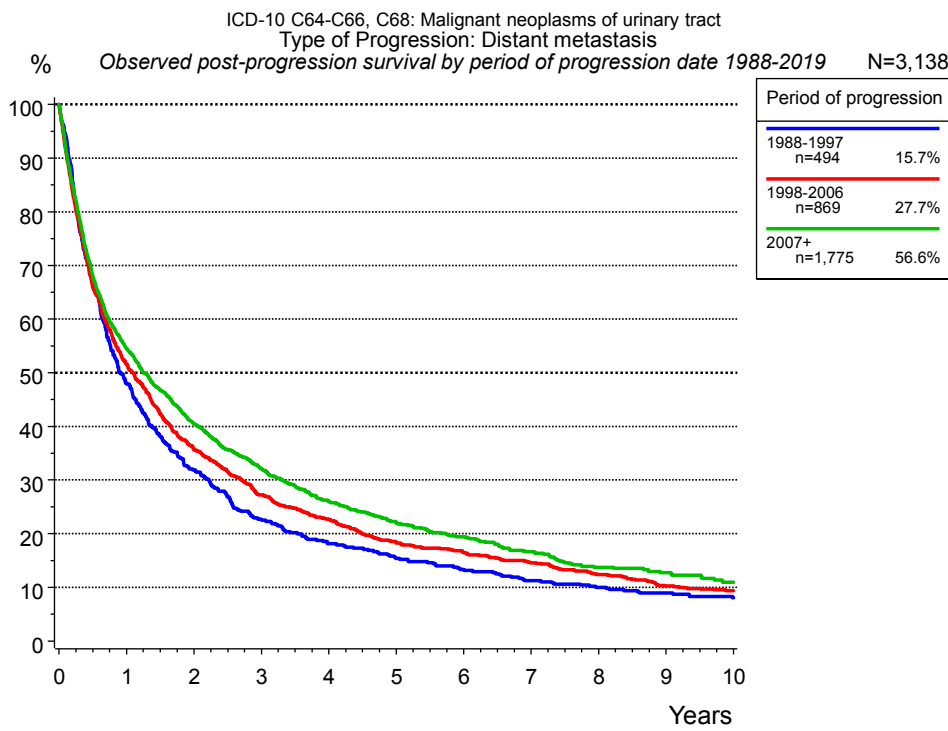


Figure 5e. Observed post-progression (distant metastasis) survival of 3,138 patients with urinary tract cancer diagnosed between 1988 and 2019 by period of progression.

Years	Period of progression		
	1988-1997 n=494 %	1998-2006 n=869 %	2007+ n=1,775 %
0	100.0	100.0	100.0
1	47.9	51.7	54.5
2	31.8	35.8	40.5
3	22.7	27.2	32.2
4	18.1	22.6	26.0
5	15.4	18.3	22.1
6	13.3	16.5	19.4
7	11.2	14.6	16.6
8	10.0	12.4	13.7
9	8.9	10.2	12.7
10	8.1	9.4	11.0

Table 5f. Observed post-progression (distant metastasis) survival of patients with urinary tract cancer for period 1988-2019 by period of progression (N=3,138).

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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