Munich Cancer Registry

- Incidence and Mortality
- Selection Matrix
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- *Deutsch*

ICD-10 C64-C68: Urinary tract cancer

Survival

Year of diagnosis	1988-1997	1998-2020
Patients	5,269	28,339
Diseases	5,359	29,660
Cases evaluated	4,567	19,217

Creation date	04/15/2022
Database export	12/20/2021
Population	4.92 m

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

https://www.tumorregister-muenchen.de/en/facts/surv/sC6468E-ICD-10-C64-C68-Urinary-tract-cancer-survival.pdf

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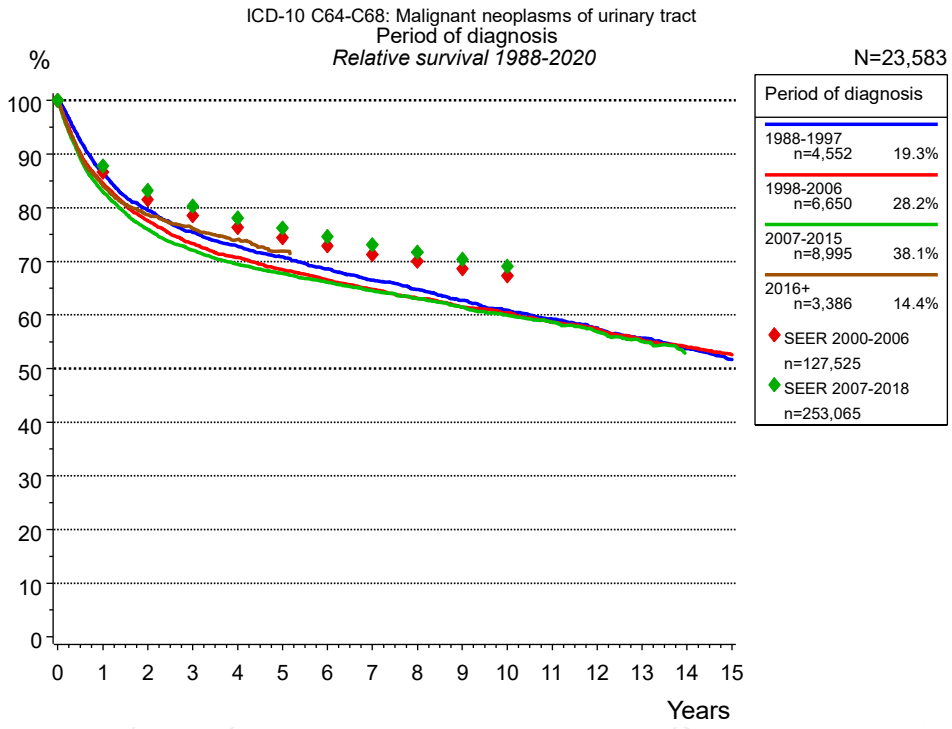

Figure 1a. Relative survival of patients with urinary tract cancer by period of diagnosis. Included in the evaluation are 23,583 cases diagnosed between 1988 and 2020.

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 2018, 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.

	Period of diagnosis							
	1988-1997 n=4,552		1998-2006 n=6,650		2007-2015 n=8,995		2016+ n=3,386	
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	83.6	86.6	81.7	84.6	80.2	83.0	81.3	84.1
2	74.3	79.5	72.6	77.5	71.2	75.9	73.7	78.6
3	68.3	75.4	66.6	73.3	65.6	72.1	69.3	76.1
4	64.0	72.8	62.4	70.7	61.3	69.4	65.4	74.1
5	60.4	70.9	58.6	68.5	58.1	67.8	61.5	71.9
6	56.7	68.6	55.3	66.5	54.9	66.1		
7	53.3	66.5	52.2	64.7	51.9	64.5		
8	50.4	64.8	49.3	63.1	49.2	63.0		
9	47.4	62.7	46.5	61.4	46.3	61.5		
10	44.6	60.9	44.2	60.3	43.7	59.9		
11	42.1	59.2	41.6	58.6	41.3	58.6		
12	39.7	57.6	39.3	57.3	38.7	56.8		
13	37.2	55.7	36.7	55.4	36.1	55.0		
14	34.8	53.7	34.5	53.9				
15	32.4	51.6	32.4	52.6				
Median	8.1		7.7		7.7			

Table 1b. Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by period of diagnosis for period 1988-2020 (N=23,583).

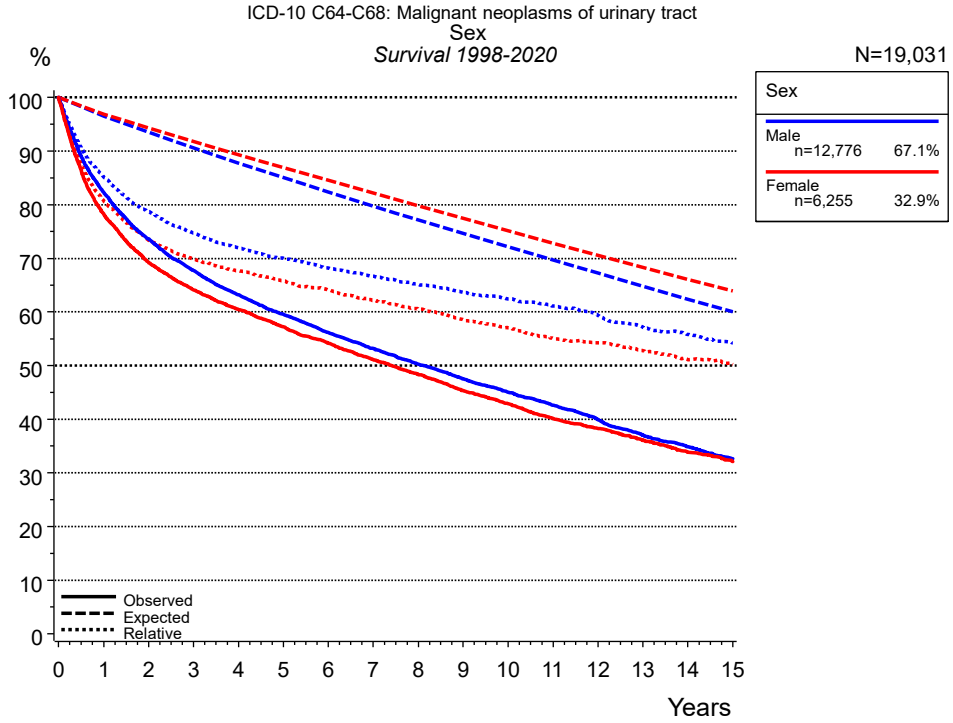

Figure 2a. Survival of patients with urinary tract cancer by sex. Included in the evaluation are 19,031 cases diagnosed between 1998 and 2020.

	Sex			
	Male n=12,776		Female n=6,255	
Years	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	82.3	85.2	78.2	80.8
2	73.6	78.7	69.2	73.3
3	67.7	74.7	64.1	69.9
4	63.2	72.0	60.4	67.6
5	59.5	70.0	57.2	65.8
6	56.2	68.2	54.2	64.1
7	53.1	66.6	51.1	62.2
8	50.2	65.1	48.4	60.6
9	47.5	63.6	45.4	58.6
10	45.0	62.4	42.9	57.1
11	42.6	61.1	40.1	55.1
12	39.9	59.3	38.3	54.2
13	37.1	57.1	36.1	52.8
14	34.8	55.8	33.8	51.1
15	32.6	54.3	32.1	50.2
Median	8.1		7.4	

Table 2b. Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by sex for period 1998-2020 (N=19,031).

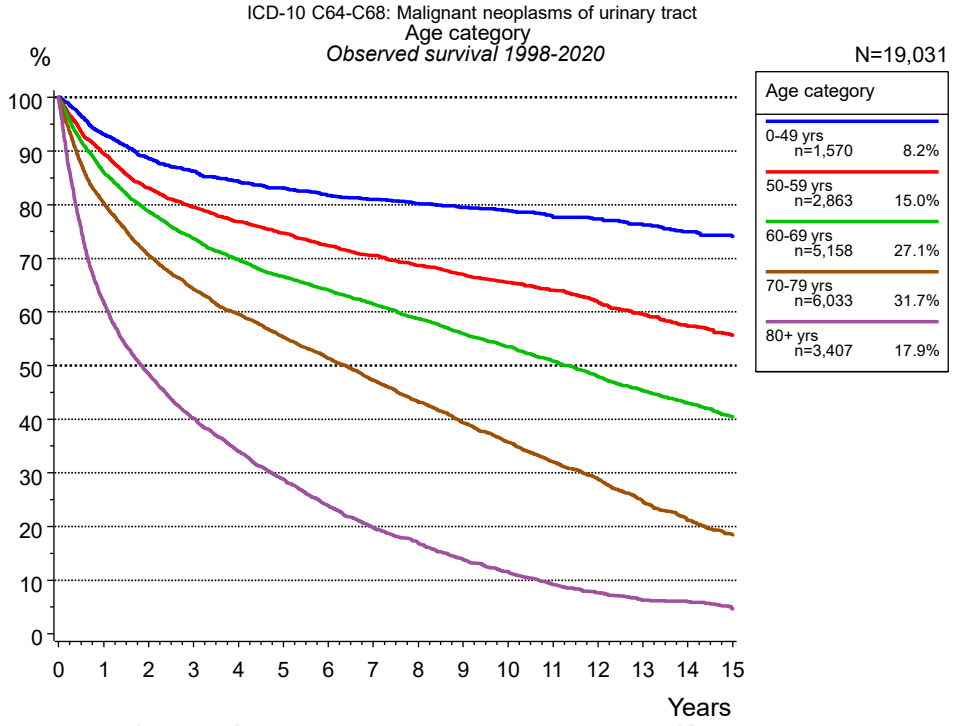

Figure 3a. Observed survival of patients with urinary tract cancer by age category. Included in the evaluation are 19,031 cases diagnosed between 1998 and 2020.

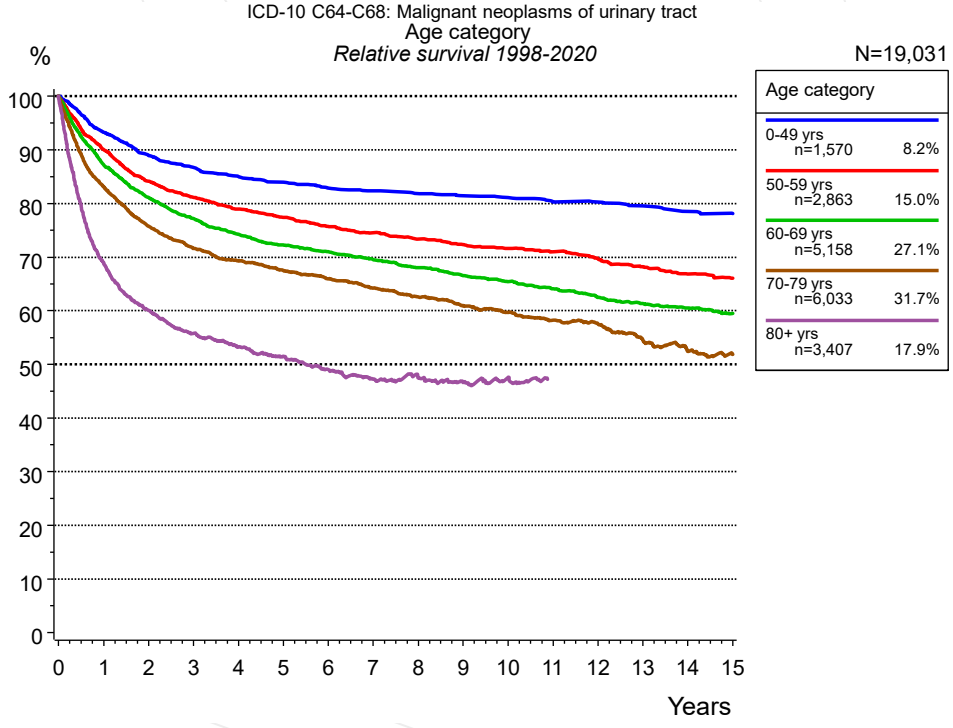

Figure 3b. Relative survival of patients with urinary tract cancer by age category. Included in the evaluation are 19,031 cases diagnosed between 1998 and 2020.

	Age category									
	0-49 yrs n=1,570		50-59 yrs n=2,863		60-69 yrs n=5,158		70-79 yrs n=6,033		80+ yrs n=3,407	
Years	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	93.1	93.2	89.5	90.0	86.0	87.2	80.3	83.1	61.9	68.9
2	88.6	89.0	83.1	84.1	78.8	81.1	70.6	75.7	48.5	60.0
3	86.2	86.7	79.6	81.1	73.7	77.1	64.2	71.6	40.2	55.8
4	84.4	85.0	76.8	79.0	69.7	74.3	59.5	69.3	34.0	53.3
5	83.1	84.0	74.6	77.4	66.6	72.3	55.3	67.5	28.8	51.4
6	81.7	82.8	72.3	75.7	64.1	71.0	51.3	65.9	23.9	49.1
7	81.0	82.4	70.5	74.5	61.4	69.6	47.3	64.2	19.8	47.2
8	80.2	81.8	68.7	73.4	58.7	68.1	43.3	62.6	16.8	47.5
9	79.5	81.4	67.0	72.4	55.9	66.5	39.4	61.0	13.8	46.7
10	78.8	81.1	65.4	71.6	53.4	65.4	35.7	59.7	11.6	47.6
11	77.7	80.3	64.0	71.0	50.8	64.1	32.1	58.2	9.1	46.6
12	77.4	80.3	61.9	69.7	47.9	62.5	28.9	57.5	7.6	49.7
13	76.3	79.6	59.6	68.2	45.3	61.3	24.8	54.6	6.3	52.9
14	74.9	78.6	57.4	66.8	43.0	60.5	21.2	52.4	5.9	66.7
15	74.1	78.1	55.7	66.1	40.4	59.5	18.5	51.9	4.7	70.7
Median			18.4		11.3		6.4		1.9	

Table 3c. Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by age category for period 1998-2020 (N=19,031).

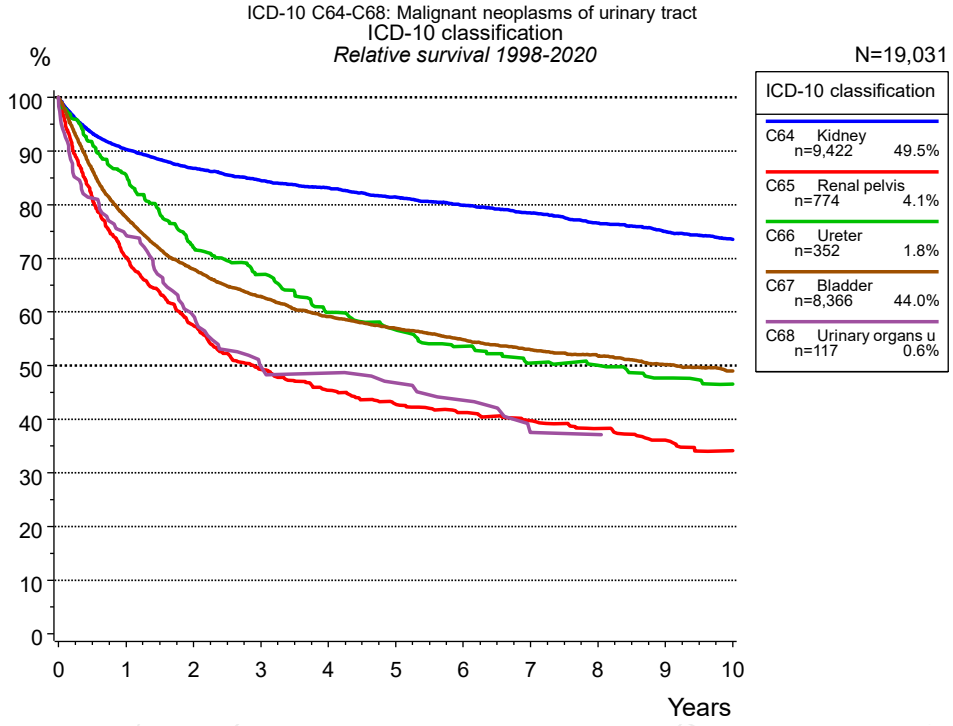

Figure 4a. Relative survival of patients with urinary tract cancer by ICD-10 classification. Included in the evaluation are 19,031 cases diagnosed between 1998 and 2020.

	ICD-10 classification									
	C64 Kidney n=9,422		C65 Renal pelvis n=774		C66 Ureter n=352		C67 Bladder n=8,366		C68 Urinary organs unspec. n=117	
Years	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	88.2	90.3	67.6	70.2	82.1	85.5	74.1	77.6	72.4	74.3
2	82.9	86.8	53.3	57.4	66.5	72.0	62.3	67.9	55.8	59.2
3	78.8	84.5	43.9	49.3	59.4	67.0	55.5	62.9	45.3	49.8
4	75.7	83.1	38.9	45.4	50.8	59.9	50.2	59.1	43.5	48.6
5	72.3	81.4	35.3	42.8	46.3	56.7	46.6	57.0	40.4	46.8
6	69.1	79.9	32.8	41.2	41.9	53.6	43.2	54.8	37.1	43.5
7	66.1	78.5	30.4	39.7	37.7	50.5	40.1	53.0	30.3	37.6
8	62.8	76.5	28.2	38.3	35.7	50.0	37.7	51.9	30.3	37.2
9	59.7	75.0	25.6	36.1	32.7	47.7	35.1	50.2		
10	56.9	73.5	23.5	34.2	30.4	46.5	32.9	49.0		
Median	12.3		2.2		4.3		4.1		2.4	

Table 4b. Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by ICD-10 classification for period 1998-2020 (N=19,031).

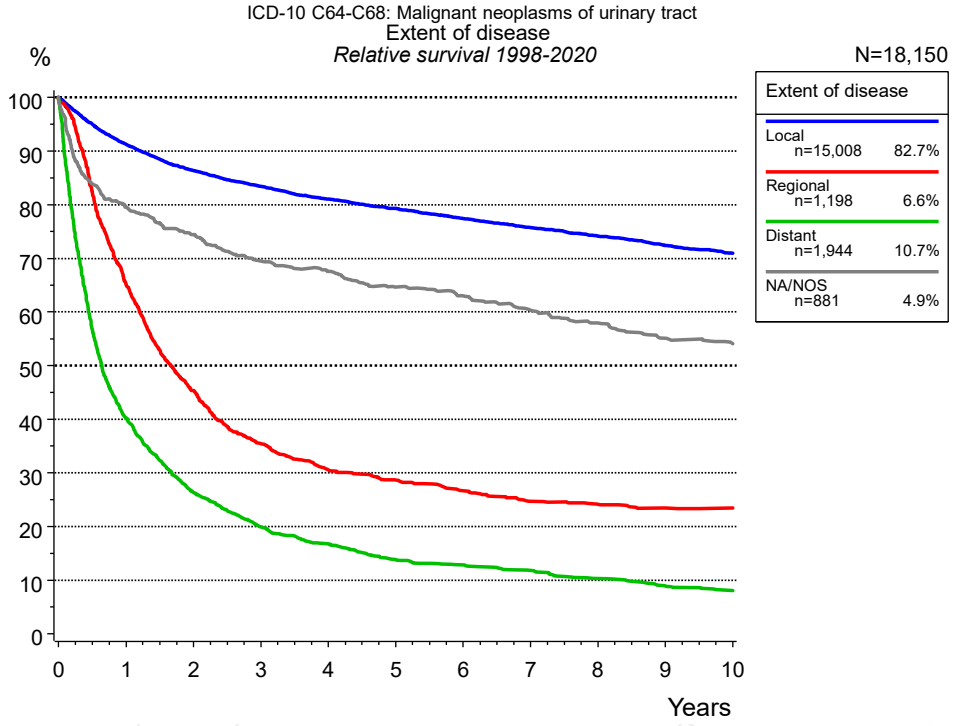

Figure 4c. Relative survival of patients with urinary tract cancer by extent of disease. For 18,184 of 19,031 cases diagnosed between 1998 and 2020 valid data could be obtained for this item. For a total of 18,150 cases an evaluable classification was established. The grey line represents the subgroup of 881 patients with missing values regarding extent of disease (4.6 % of 19,031 patients, the percent values of all other categories are related to n=18,150).

	Extent of disease							
	Local n=15,008		Regional n=1,198		Distant n=1,944		NA/NOS n=881	
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	88.2	91.2	63.2	65.0	39.0	40.2	76.3	79.6
2	80.9	86.3	43.0	45.4	25.0	26.3	68.9	74.4
3	75.8	83.4	32.7	35.5	18.5	19.9	62.2	69.5
4	71.5	81.1	27.5	30.6	15.2	16.8	58.6	67.6
5	67.8	79.3	25.1	28.7	12.3	13.8	54.3	64.6
6	64.2	77.4	22.7	26.7	11.2	12.8	51.3	63.0
7	60.8	75.7	20.3	24.7	10.0	11.8	47.7	60.3
8	57.7	74.1	19.3	24.1	8.6	10.3	44.6	57.9
9	54.5	72.4	18.2	23.4	7.3	9.0	41.3	55.1
10	51.7	70.9	17.8	23.5	6.5	8.1	39.4	54.1
Median	10.5		1.5		0.6		6.3	

Table 4d. Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by extent of disease for period 1998-2020 (N=18,150).

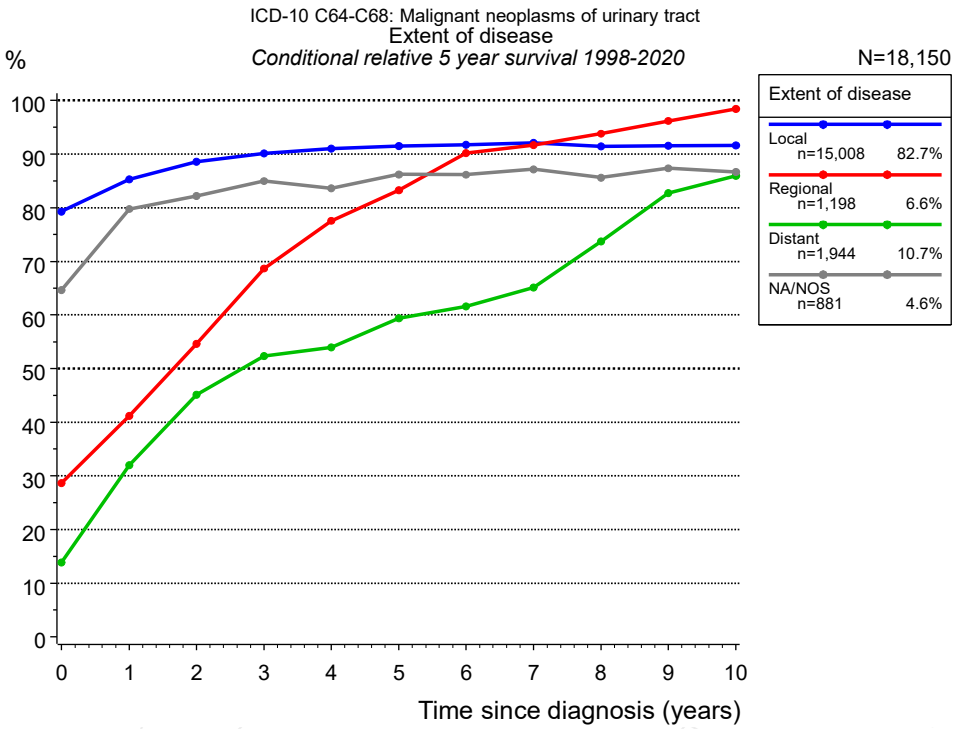

Figure 4g. Conditional relative 5-year survival of patients with urinary tract cancer by extent of disease. For 18,184 of 19,031 cases diagnosed between 1998 and 2020 valid data could be obtained for this item. For a total of 18,150 cases an evaluable classification was established. The grey line represents the subgroup of 881 patients with missing values regarding extent of disease (4.6 % of 19,031 patients, the percent values of all other categories are related to n=18,150).

Extent of disease								
	Local		Regional		Distant		NA/NOS	
Years	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs
0	15,008	79.3	1,198	28.7	1,944	13.8	881	64.6
1	12,780	85.2	737	41.2	744	32.0	643	79.7
2	11,349	88.6	484	54.6	452	45.2	571	82.2
3	10,122	90.1	346	68.7	320	52.3	498	85.0
4	9,083	91.0	269	77.5	247	54.0	443	83.6
5	8,147	91.5	222	83.2	183	59.4	400	86.2
6	7,283	91.7	189	90.2	151	61.6	359	86.1
7	6,447	92.1	150	91.7	125	65.1	320	87.2
8	5,635	91.4	128	93.8	97	73.7	285	85.6
9	4,904	91.6	102	96.2	75	82.7	251	87.3
10	4,250	91.6	88	98.4	60	85.9	216	86.6

Table 4h. Conditional relative 5-year survival of patients with urinary tract cancer by extent of disease for period 1998-2020 (N=18,150).

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 90.1% (n=10,122).

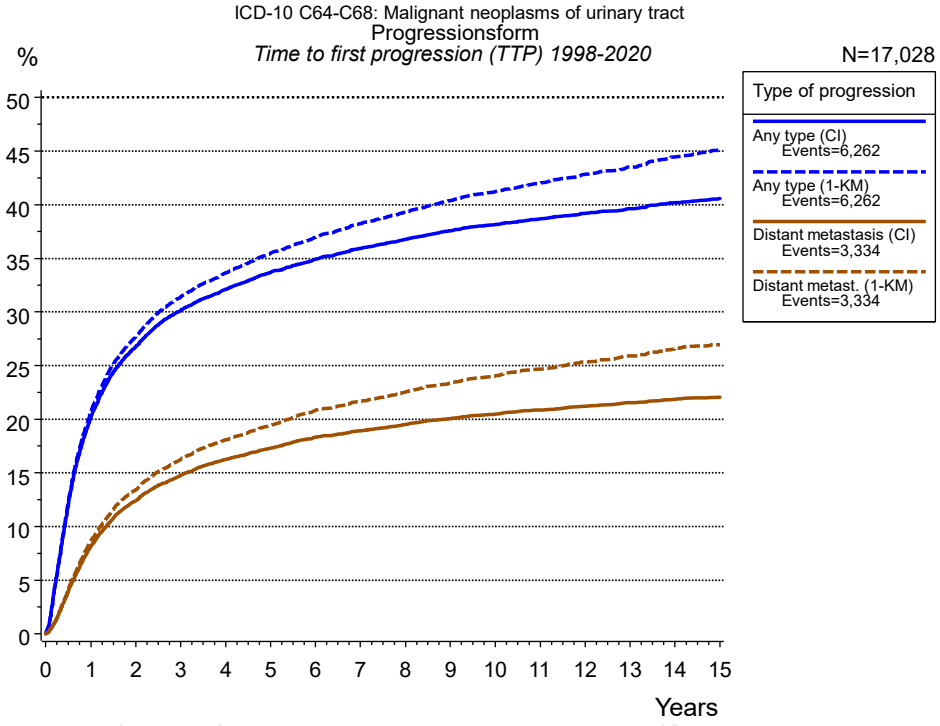

Figure 5a. Time to first progression of 17,028 patients with urinary tract cancer diagnosed between 1998 and 2020 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The 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	17,025	17,025	17,028	17,028
Events	6,210	6,210	3,298	3,298
compet.	3,552		5,645	
Years	%	%	%	%
0	0.0	0.0	0.0	0.0
1	20.2	20.7	8.1	8.6
2	26.8	27.7	12.4	13.4
3	30.1	31.4	14.8	16.2
4	32.1	33.6	16.3	18.1
5	33.7	35.5	17.3	19.5
6	34.9	37.0	18.3	20.8
7	35.9	38.2	18.9	21.7
8	36.8	39.3	19.5	22.5
9	37.6	40.4	20.1	23.4
10	38.2	41.2	20.5	24.1
11	38.7	42.0	20.9	24.7
12	39.2	42.8	21.2	25.3
13	39.6	43.5	21.5	25.9
14	40.2	44.5	21.9	26.6
15	40.6	45.2	22.0	27.0

Table 5b. Time to first progression of patients with urinary tract cancer for period 1998-2020 (N=17,028), also showing the total of progression events (Events) and of deaths as competing risk (compet.).

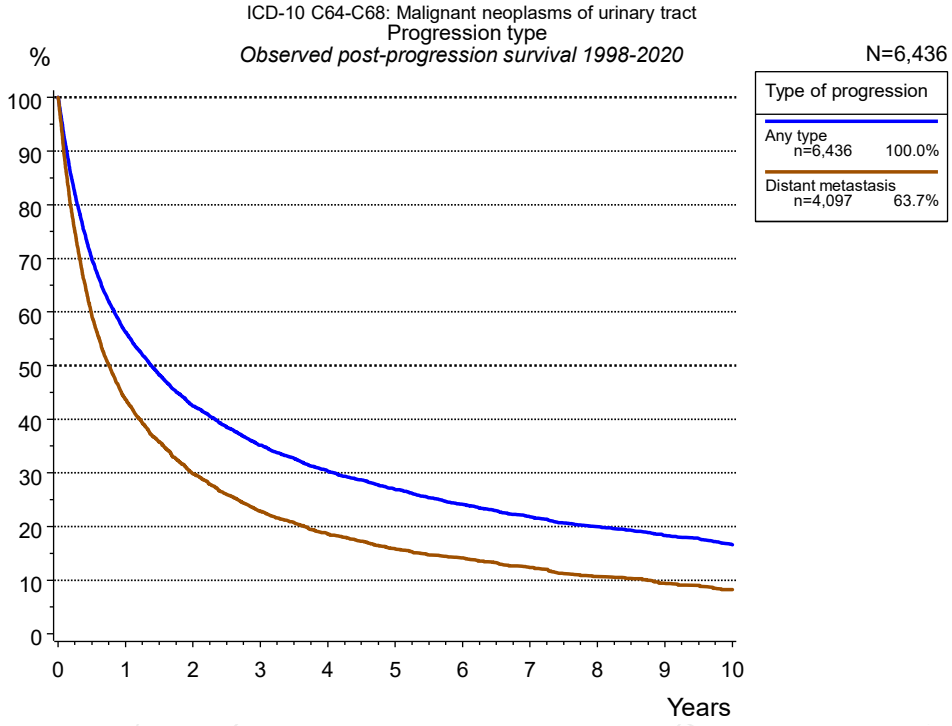

Figure 5c. Observed post-progression survival of 6,436 patients with urinary tract cancer diagnosed between 1998 and 2020. These 6,436 patients with documented progression events during their course of disease represent 34.0 % of the totally 18,918 evaluated cases (incl. M1, n=1,893, 10.0 %). Patients with cancer relapse documented via death certificates only were excluded (n=1,719, 9.1 %). Multiple progression types on different sites are included in the evaluation even when not occuring 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 potientially considered in more than one subgroup.

	Type of progression	
	Any type	Distant metastasis
	n=6,436	n=4,097
Years	%	%
0	100.0	100.0
1	56.3	43.7
2	42.5	29.8
3	35.2	22.8
4	30.3	18.6
5	26.9	15.8
6	24.1	14.1
7	21.8	12.3
8	20.0	10.7
9	18.3	9.4
10	16.6	8.2

Table 5d. Observed post-progression survival of patients with urinary tract cancer for period 1998-2020 (N=6,436).

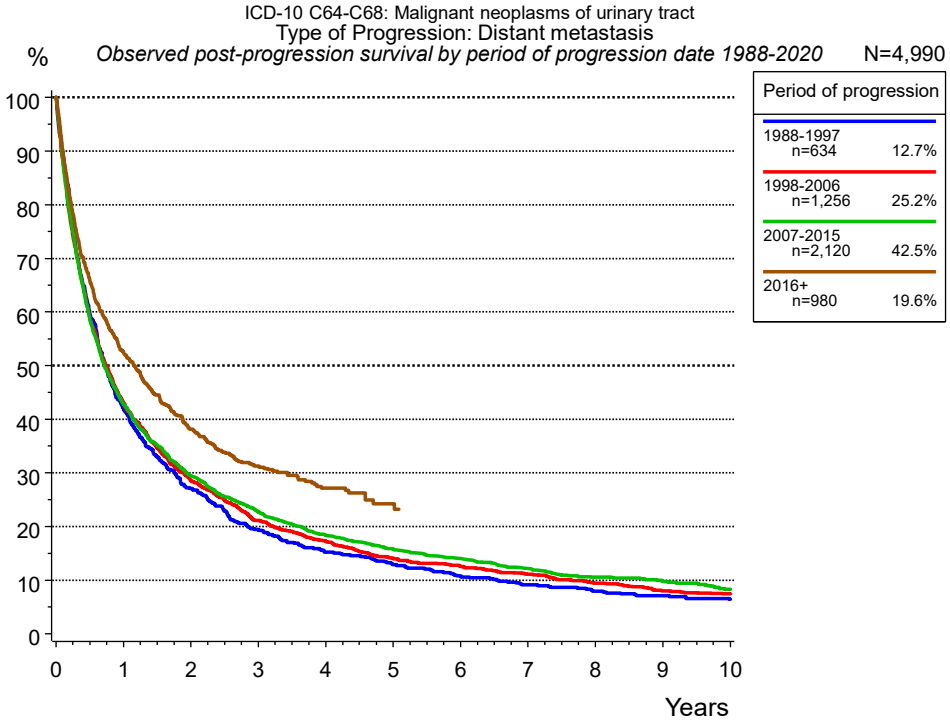

Figure 5e. Observed post-progression (distant metastasis) survival of 4,990 patients with urinary tract cancer diagnosed between 1988 and 2020 by period of progression.

	Period of progression			
	1988-1997 n=634	1998-2006 n=1,256	2007-2015 n=2,120	2016+ n=980
Years	%	%	%	%
0	100.0	100.0	100.0	100.0
1	41.8	43.1	42.7	52.5
2	27.1	28.6	29.5	38.2
3	19.5	21.1	22.7	31.3
4	15.2	17.2	18.4	27.1
5	12.9	14.0	15.7	24.2
6	10.8	12.6	14.0	
7	9.1	11.1	12.1	
8	7.9	9.5	10.6	
9	7.1	8.0	9.8	
10	6.4	7.4	8.3	

Table 5f. Observed post-progression (distant metastasis) survival of patients with urinary tract cancer for period 1988-2020 by period of progression (N=4,990).

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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