

# Munich Cancer Registry



- Incidence and Mortality
- Selection Matrix
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- *Deutsch*

## ICD-10 C60-C68: Urologic cancer

### Survival

Year of diagnosis	1988-1997	1998-2020
Patients	13,463	92,022
Diseases	13,837	96,715
Cases evaluated	12,188	74,035
Creation date	04/15/2022	
Database export	12/20/2021	
Population	4.92 m	



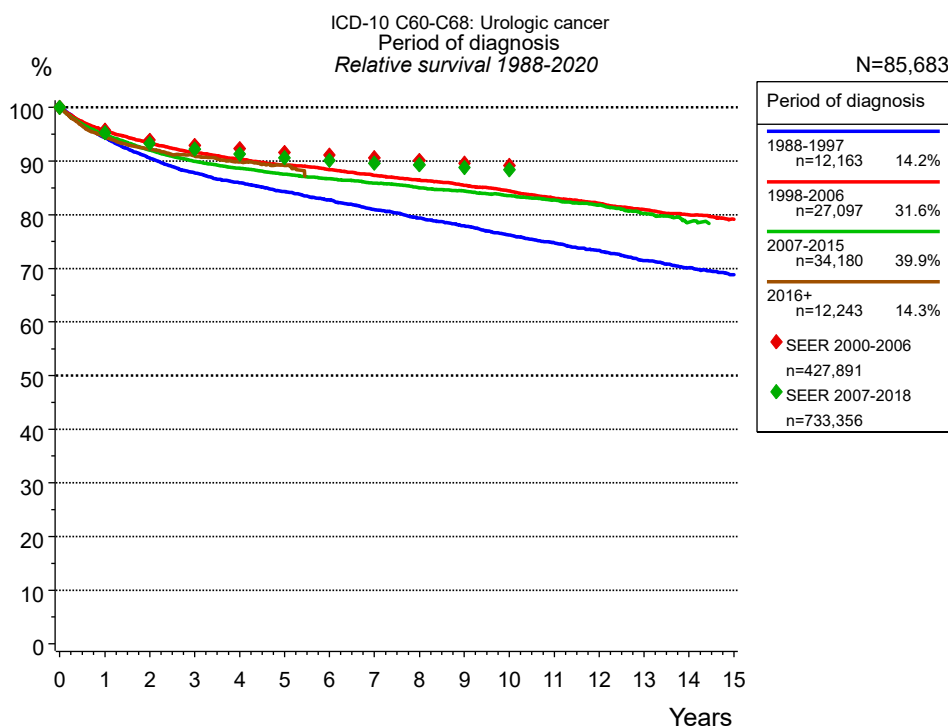
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<https://www.tumorregister-muenchen.de/en>

<https://www.tumorregister-muenchen.de/en/facts/surv/sC6068E-ICD-10-C60-C68-Urologic-cancer-survival.pdf>

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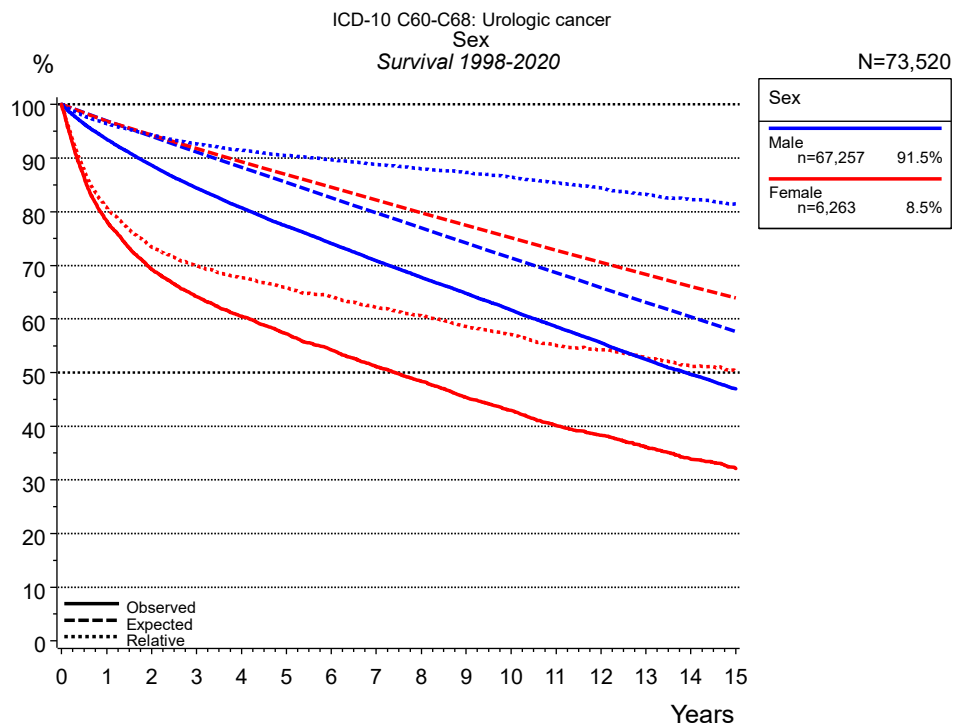
**Figure 1a.** Relative survival of patients with urologic cancer by period of diagnosis. Included in the evaluation are 85,683 cases diagnosed between 1988 and 2020.

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.

Years	Period of diagnosis							
	1988-1997 n=12,163		1998-2006 n=27,097		2007-2015 n=34,180		2016+ n=12,243	
	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	90.6	94.4	92.6	95.7	92.0	94.8	91.7	94.4
2	83.6	90.5	87.4	93.3	86.7	92.0	87.0	92.2
3	78.1	87.8	83.1	91.6	82.2	89.9	83.3	90.9
4	73.6	85.9	79.4	90.4	78.6	88.7	79.7	89.8
5	69.5	84.3	75.9	89.3	75.2	87.6	76.7	89.2
6	65.7	82.7	72.6	88.4	72.0	86.7		
7	62.0	80.9	69.3	87.3	68.9	85.8		
8	58.6	79.4	66.2	86.4	65.8	85.0		
9	55.4	77.9	63.1	85.5	63.0	84.4		
10	52.3	76.2	60.1	84.4	60.0	83.5		
11	49.4	74.8	56.9	83.1	57.1	82.7		
12	46.7	73.3	54.0	82.1	54.2	81.8		
13	43.9	71.5	51.1	81.0	51.0	80.3		
14	41.4	70.1	48.3	80.0	47.7	78.6		
15	39.2	68.8	45.7	79.1				
Median	10.8		13.4		13.3			

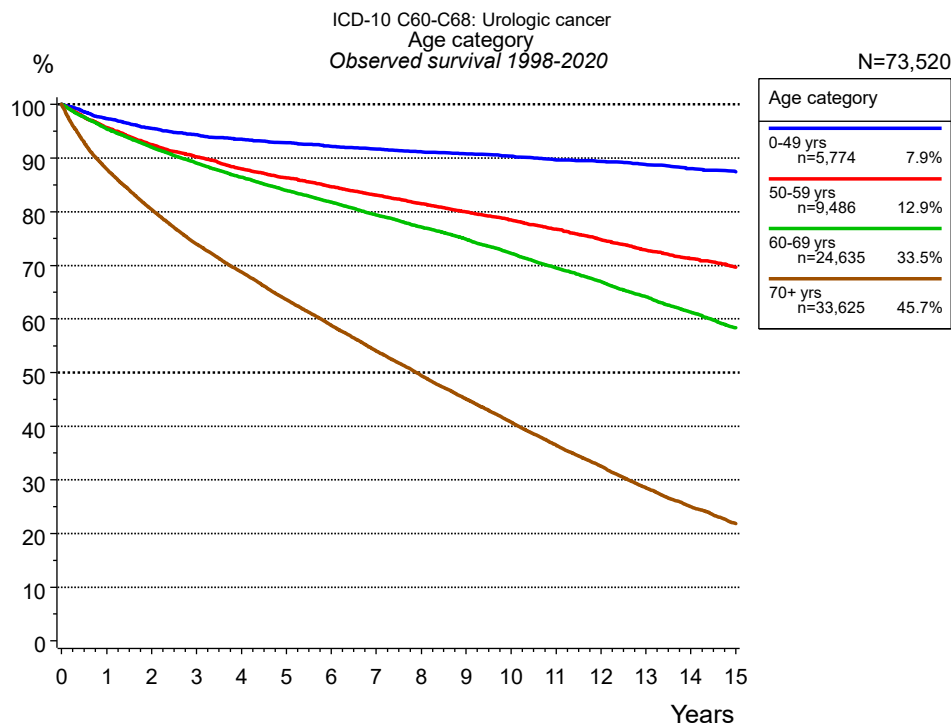
**Table 1b.** Observed (obs.) and relative (rel.) survival of patients with urologic cancer by period of diagnosis for period 1988-2020 (N=85,683).



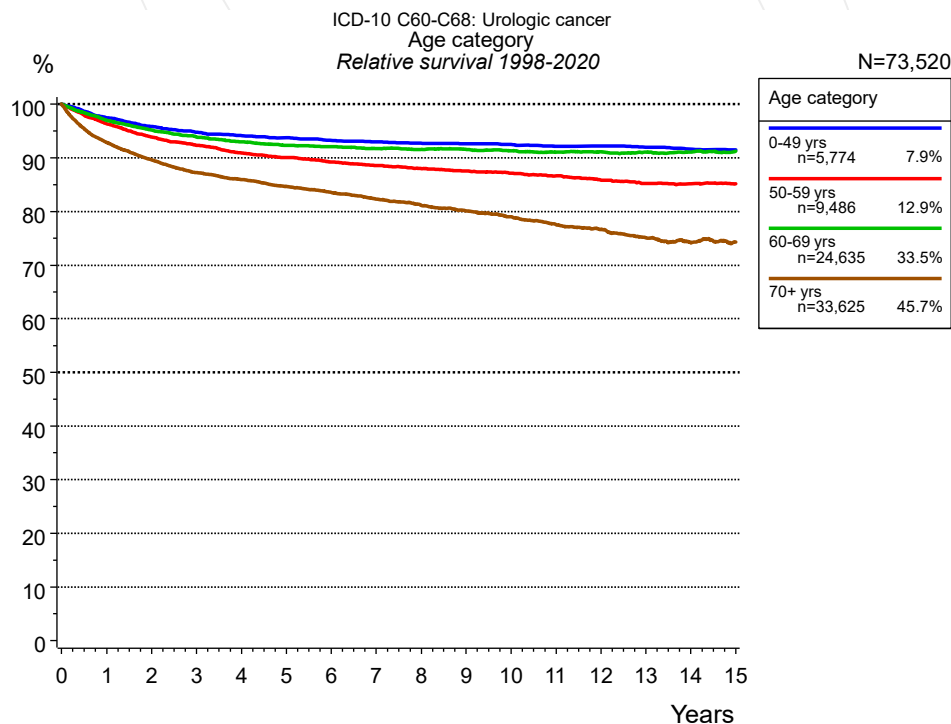
**Figure 2a.** Survival of patients with urologic cancer by sex. Included in the evaluation are 73,520 cases diagnosed between 1998 and 2020.

Years	Sex			
	Male n=67,257		Female n=6,263	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	93.5	96.4	78.3	80.8
2	88.7	94.3	69.2	73.4
3	84.4	92.6	64.2	69.9
4	80.7	91.5	60.5	67.7
5	77.3	90.5	57.3	65.8
6	74.1	89.7	54.2	64.1
7	70.9	88.8	51.1	62.2
8	67.7	88.0	48.4	60.6
9	64.8	87.3	45.4	58.6
10	61.7	86.4	42.9	57.1
11	58.6	85.4	40.1	55.1
12	55.6	84.4	38.3	54.3
13	52.5	83.2	36.1	52.8
14	49.7	82.3	33.8	51.1
15	47.0	81.5	32.1	50.2
Median	13.9		7.4	

**Table 2b.** Observed (obs.) and relative (rel.) survival of patients with urologic cancer by sex for period 1998-2020 (N=73,520).



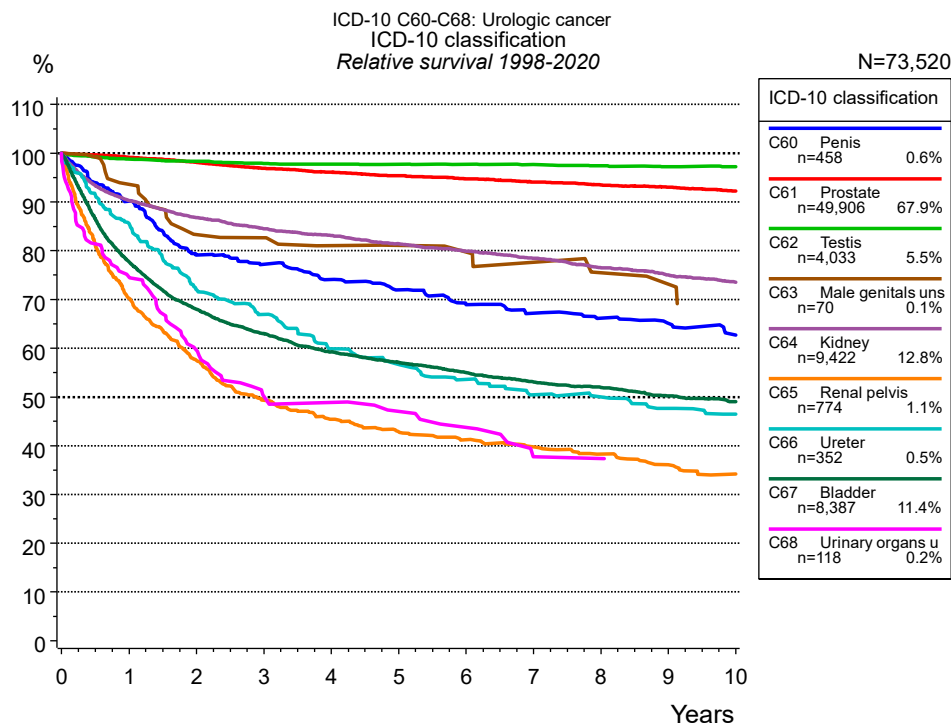
**Figure 3a.** Observed survival of patients with urologic cancer by age category. Included in the evaluation are 73,520 cases diagnosed between 1998 and 2020.



**Figure 3b.** Relative survival of patients with urologic cancer by age category. Included in the evaluation are 73,520 cases diagnosed between 1998 and 2020.

Years	Age category							
	0-49 yrs n=5,774		50-59 yrs n=9,486		60-69 yrs n=24,635		70+ yrs n=33,625	
	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	97.3	97.5	95.7	96.4	95.4	97.0	87.9	92.8
2	95.5	95.9	92.5	93.8	92.0	95.2	80.4	89.6
3	94.3	94.8	90.2	92.3	89.1	93.9	74.0	87.2
4	93.5	94.1	88.0	90.9	86.4	93.0	68.7	85.9
5	92.9	93.7	86.3	90.1	84.0	92.3	63.6	84.7
6	92.2	93.2	84.6	89.2	81.8	92.1	58.8	83.5
7	91.7	93.0	83.0	88.6	79.4	91.7	54.0	82.3
8	91.1	92.7	81.5	88.0	77.1	91.5	49.4	81.1
9	90.8	92.6	80.0	87.6	74.8	91.6	45.0	80.1
10	90.3	92.5	78.5	87.2	72.2	91.3	40.7	79.0
11	89.6	92.1	76.8	86.7	69.5	91.1	36.4	77.5
12	89.4	92.2	74.8	85.9	66.9	91.1	32.5	76.6
13	88.8	92.0	72.8	85.2	64.1	91.1	28.5	75.1
14	88.0	91.6	71.3	85.2	61.3	91.1	24.9	74.2
15	87.5	91.5	69.7	85.1	58.3	91.2	21.9	74.3
Median					17.7		7.9	

**Table 3c.** Observed (obs.) and relative (rel.) survival of patients with urologic cancer by age category for period 1998-2020 (N=73,520).



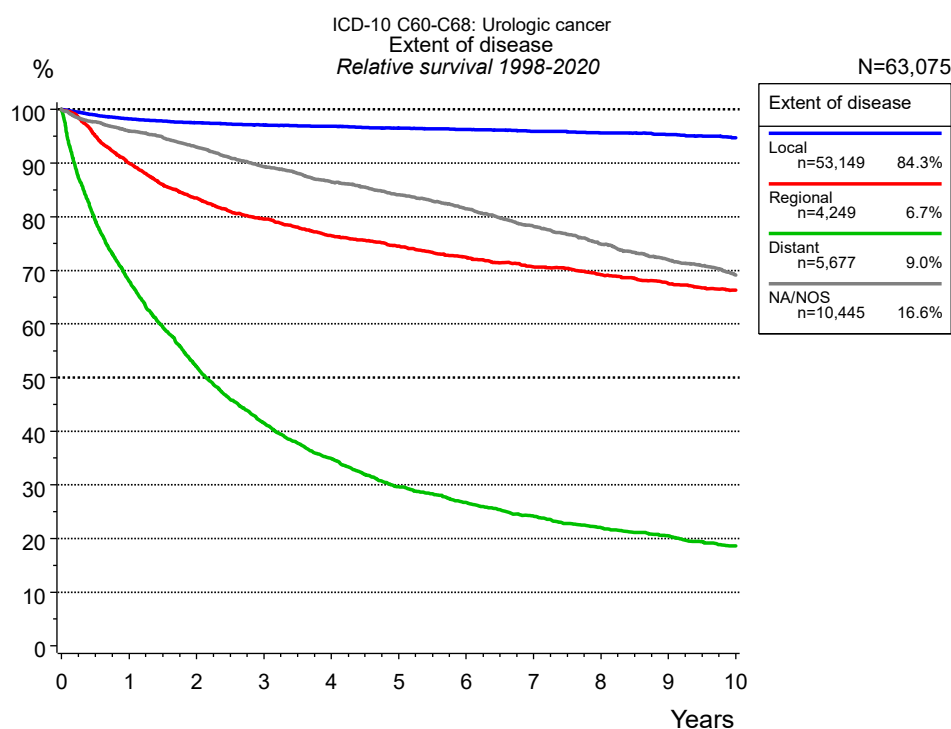
**Figure 4a.** Relative survival of patients with urologic cancer by ICD-10 classification. Included in the evaluation are 73,520 cases diagnosed between 1998 and 2020.

ICD-10 classification														
	C60 Penis		C61 Prostate		C62 Testis		C63 Male genitals unspec.		C64 Kidney		C65 Renal pelvis		C66 Ureter	
	n=458		n=49,906		n=4,033		n=70		n=9,422		n=774		n=352	
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	87.2	90.2	96.0	99.1	98.5	98.8	91.2	93.5	88.2	90.3	67.6	70.2	82.1	85.5
2	73.9	79.1	91.9	98.1	97.9	98.4	77.9	83.3	82.9	86.8	53.3	57.4	66.5	72.0
3	69.9	77.2	87.8	96.9	97.2	97.9	76.4	82.6	78.8	84.5	43.9	49.3	59.4	67.0
4	65.1	74.1	84.1	96.1	96.8	97.8	71.6	81.0	75.7	83.1	38.9	45.4	50.8	59.9
5	61.1	71.9	80.5	95.4	96.5	97.7	69.6	81.1	72.3	81.4	35.3	42.8	46.3	56.7
6	56.5	68.9	77.1	94.8	96.2	97.7	67.4	79.7	69.1	79.9	32.8	41.2	41.9	53.6
7	53.4	67.2	73.6	94.1	95.8	97.7	63.0	77.6	66.1	78.5	30.4	39.7	37.7	50.5
8	50.8	66.2	70.2	93.4	95.2	97.4	58.4	75.5	62.8	76.5	28.2	38.3	35.7	50.0
9	48.2	65.1	67.0	93.0	94.8	97.3	55.9	73.1	59.7	75.0	25.6	36.1	32.7	47.7
10	44.9	62.7	63.6	92.2	94.4	97.3			56.9	73.5	23.5	34.2	30.4	46.5
Median	8.4		14.2				10.0		12.3		2.2		4.3	

ICD-10 classification				
<i>cont'd</i>	C67 Bladder n=8,387		C68 Urinary organs unspec. n=118	
Years	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	74.2	77.7	72.6	74.6
2	62.4	68.0	56.2	59.6
3	55.6	63.0	45.7	50.1
4	50.4	59.2	43.8	48.9
5	46.7	57.1	40.7	47.1
6	43.3	55.0	37.3	43.8
7	40.2	53.1	30.5	37.8
8	37.8	51.9	30.5	37.4
9	35.1	50.2		
10	33.0	49.1		
Median	4.1		2.4	

**Table 4b.** Observed (obs.) and relative (rel.) survival of patients with urologic cancer by ICD-10 classification for period 1998-2020 (N=73,520).

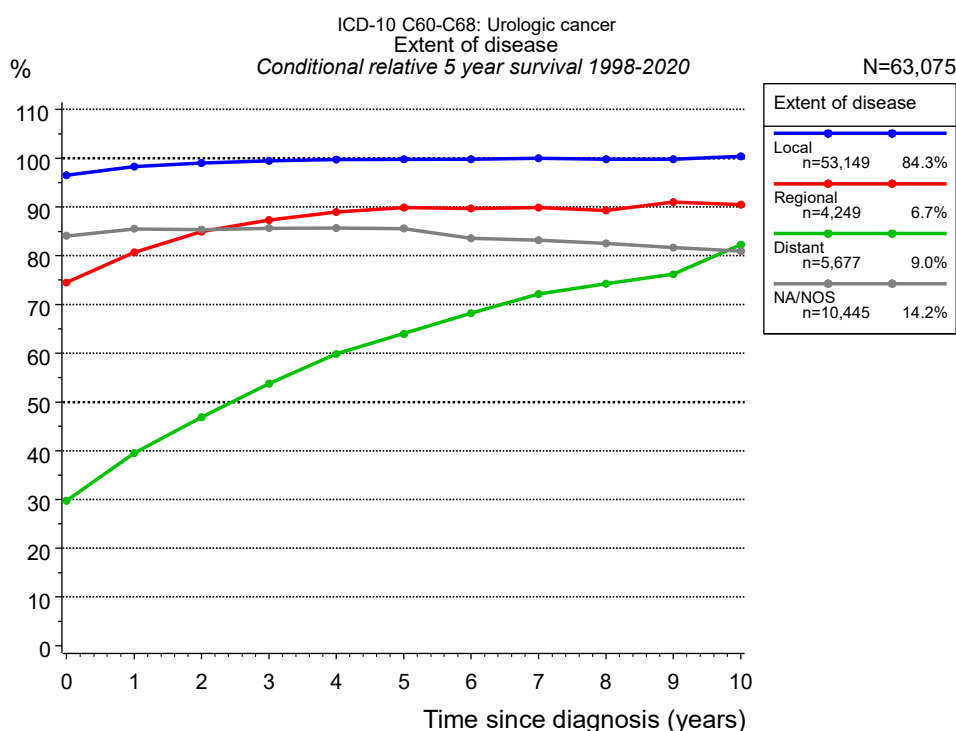




**Figure 4c.** Relative survival of patients with urologic cancer by extent of disease. For 63,254 of 73,520 cases diagnosed between 1998 and 2020 valid data could be obtained for this item. For a total of 63,075 cases an evaluable classification was established. The grey line represents the subgroup of 10,445 patients with missing values regarding extent of disease (14.2 % of 73,520 patients, the percent values of all other categories are related to n=63,075).

Years	Extent of disease							
	Local n=53,149		Regional n=4,249		Distant n=5,677		NA/NOS n=10,445	
	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	95.5	98.2	87.9	90.0	65.6	67.9	91.4	96.0
2	92.3	97.5	79.8	83.5	48.6	52.0	84.4	93.0
3	89.3	97.1	74.4	79.6	37.6	41.5	77.2	89.4
4	86.5	96.9	69.8	76.5	30.7	34.9	71.1	86.5
5	83.7	96.6	66.4	74.5	25.3	29.7	65.6	84.1
6	80.9	96.3	63.0	72.5	22.1	26.7	60.2	81.5
7	78.0	95.9	59.8	70.6	19.5	24.1	54.7	78.2
8	75.2	95.6	56.9	69.1	17.3	22.0	49.5	74.9
9	72.4	95.3	54.0	67.5	15.7	20.5	44.9	71.9
10	69.4	94.8	51.6	66.3	13.8	18.6	40.7	69.2
Median	16.5		10.6		1.9		7.9	

**Table 4d.** Observed (obs.) and relative (rel.) survival of patients with urologic cancer by extent of disease for period 1998-2020 (N=63,075).

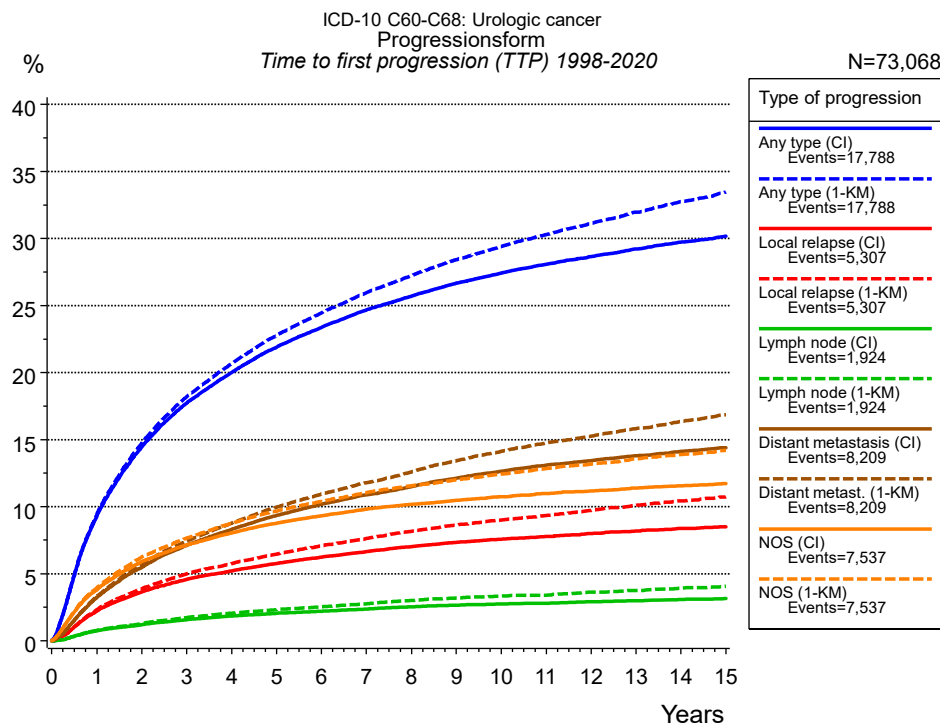


**Figure 4g.** Conditional relative 5-year survival of patients with urologic cancer by extent of disease. For 63,254 of 73,520 cases diagnosed between 1998 and 2020 valid data could be obtained for this item. For a total of 63,075 cases an evaluable classification was established. The grey line represents the subgroup of 10,445 patients with missing values regarding extent of disease (14.2 % of 73,520 patients, the percent values of all other categories are related to n=63,075).

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	53,149	96.6	4,249	74.5	5,677	29.7	10,445	84.1
1	48,963	98.3	3,623	80.7	3,638	39.5	9,213	85.5
2	45,898	99.0	3,179	84.9	2,591	46.9	8,298	85.4
3	42,594	99.5	2,798	87.3	1,902	53.8	7,268	85.7
4	39,448	99.7	2,467	88.9	1,436	59.8	6,392	85.7
5	36,291	99.8	2,172	89.9	1,077	63.9	5,615	85.5
6	33,292	99.8	1,911	89.7	853	68.2	4,933	83.5
7	30,334	100.0	1,650	89.9	685	72.1	4,220	83.2
8	27,268	99.8	1,408	89.3	549	74.3	3,535	82.5
9	24,171	99.8	1,201	91.0	453	76.2	2,896	81.7
10	21,262	100.4	1,023	90.5	361	82.3	2,285	80.9

**Table 4h.** Conditional relative 5-year survival of patients with urologic cancer by extent of disease for period 1998-2020 (N=63,075).

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 99.5% (n=42,594).

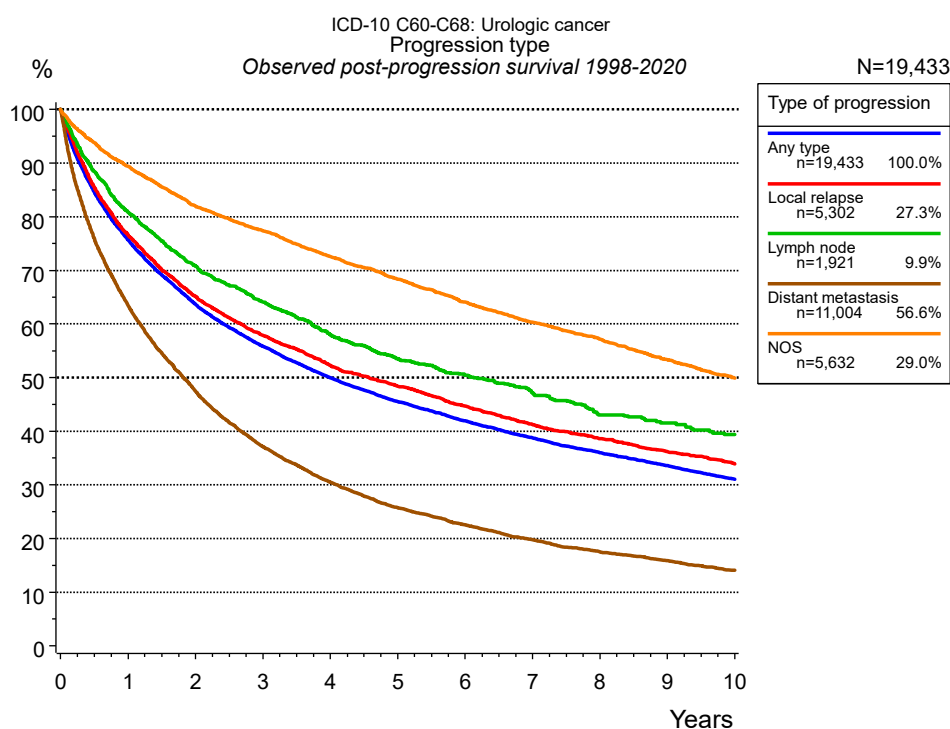


**Figure 5a.** Time to first progression of 73,068 patients with urologic cancer diagnosed between 1998 and 2020 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

		Type of progression					
		Any type (CI)	Any type (1-KM)	Local relapse (CI)	Local relapse (1-KM)	Lymph node (CI)	Lymph node (1-KM)
N	67,470	67,470	67,470	73,065	73,065	73,067	73,067
Events	17,528	17,528	17,528	5,224	5,224	1,897	1,897
compet.	13,729			26,294		28,345	
Years	%	%	%	%	%	%	%
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	9.3	9.4	2.2	2.3	0.8	0.8	3.2
2	14.5	14.8	3.6	3.9	1.2	1.3	5.5
3	17.7	18.2	4.6	5.0	1.6	1.7	7.1
4	20.0	20.7	5.2	5.8	1.8	2.1	8.3
5	21.9	22.8	5.8	6.4	2.1	2.3	9.3
6	23.4	24.4	6.2	7.1	2.2	2.5	10.2
7	24.7	26.0	6.6	7.6	2.4	2.8	10.9
8	25.7	27.2	7.0	8.2	2.5	3.0	11.5
9	26.7	28.4	7.3	8.7	2.7	3.2	12.1
10	27.4	29.4	7.6	9.0	2.7	3.3	12.6
11	28.1	30.3	7.8	9.3	2.8	3.4	13.1
12	28.6	31.1	8.0	9.7	2.9	3.6	13.4
13	29.2	32.0	8.2	10.1	3.0	3.8	13.8
14	29.7	32.7	8.4	10.4	3.1	3.9	14.1
15	30.2	33.5	8.5	10.7	3.1	4.1	14.4

<i>cont'd</i>	Type of progression		
	Distant metast. (1- KM)	NOS (CI)	NOS (1-KM)
N	67,477	73,064	73,064
Events	8,047	7,427	7,427
compet.		24,951	
Years	%	%	%
0	0.0	0.0	0.0
1	3.3	3.8	4.0
2	5.7	5.9	6.2
3	7.4	7.1	7.7
4	8.8	8.0	8.8
5	10.0	8.8	9.7
6	10.9	9.3	10.4
7	11.8	9.8	11.1
8	12.6	10.2	11.6
9	13.4	10.5	12.0
10	14.1	10.7	12.4
11	14.8	11.0	12.8
12	15.3	11.2	13.2
13	15.8	11.4	13.6
14	16.4	11.6	13.9
15	16.8	11.7	14.2

**Table 5b.** Time to first progression of patients with urologic cancer for period 1998-2020 (N=73,068), also showing the total of progression events (Events) and of deaths as competing risk (compet.).

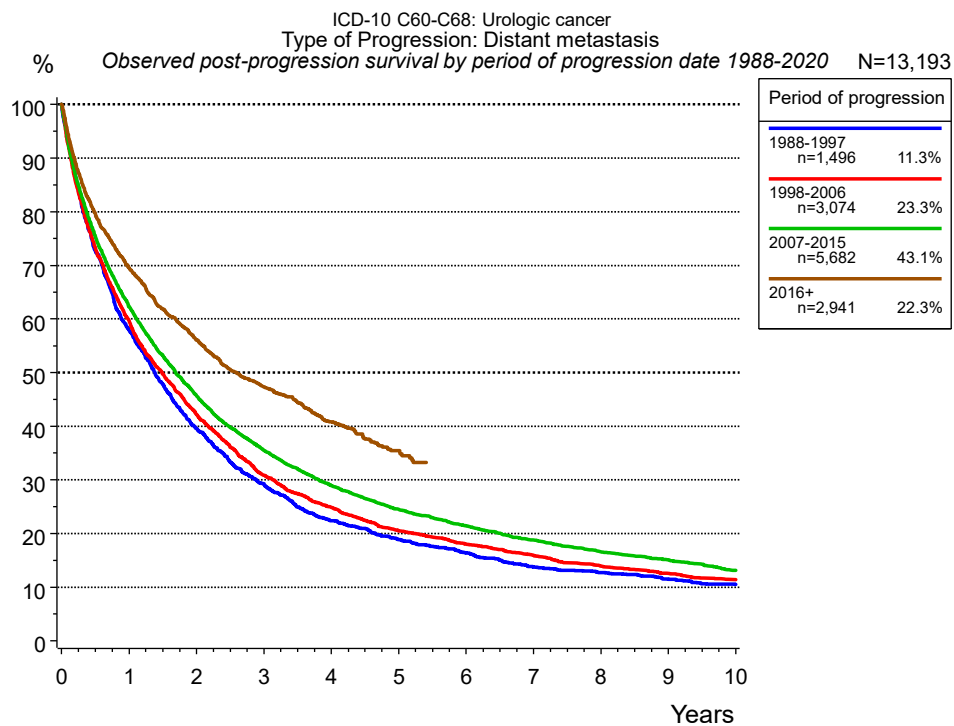


**Figure 5c.** Observed post-progression survival of 19,433 patients with urologic cancer diagnosed between 1998 and 2020. These 19,433 patients with documented progression events during their course of disease represent 26.6 % of the totally 73,068 evaluated cases (incl. M1, n=5,598, 7.7 %). Patients with cancer relapse documented via death certificates only were excluded (n=3,953, 5.4 %). 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 “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=19,433 %	Local relapse n=5,302 %	Lymph node n=1,921 %	Distant metastasis n=11,004 %	NOS n=5,632 %
0	100.0	100.0	100.0	100.0	100.0
1	75.6	76.5	80.8	63.4	89.4
2	63.7	65.2	70.8	47.5	82.0
3	55.8	57.8	64.0	37.1	77.3
4	50.0	52.2	58.0	30.5	72.6
5	45.5	48.3	53.6	25.7	68.3
6	41.9	44.7	50.4	22.5	64.1
7	38.8	41.3	47.1	19.8	60.3
8	36.0	38.6	43.0	17.5	57.2
9	33.6	36.2	41.5	15.9	53.3
10	31.0	33.9	39.4	14.1	49.9

**Table 5d.** Observed post-progression survival of patients with urologic cancer for period 1998-2020 (N=19,433).



**Figure 5e.** Observed post-progression (distant metastasis) survival of 13,193 patients with urologic cancer diagnosed between 1988 and 2020 by period of progression.

Years	Period of progression			
	1988-1997 n=1,496 %	1998-2006 n=3,074 %	2007-2015 n=5,682 %	2016+ n=2,941 %
0	100.0	100.0	100.0	100.0
1	57.8	59.5	62.2	69.5
2	39.6	42.2	45.7	56.1
3	29.3	30.8	35.5	47.4
4	22.4	24.9	28.9	40.8
5	18.9	20.5	24.5	35.4
6	16.4	18.1	21.4	
7	13.7	15.9	18.7	
8	12.7	13.9	16.5	
9	11.5	12.6	15.1	
10	10.4	11.4	13.1	

**Table 5f.** Observed post-progression (distant metastasis) survival of patients with urologic cancer for period 1988-2020 by period of progression (N=13,193).

## 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

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