

Munich Cancer Registry



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ICD-10 C60-C68: Urologic cancer

Survival

Year of diagnosis	1988-1997	1998-2019
Patients	13,462	87,966
Diseases	13,836	92,298
Cases evaluated	12,189	70,759
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/sC6068E-ICD-10-C60-C68-Urologic-cancer-survival.pdf>

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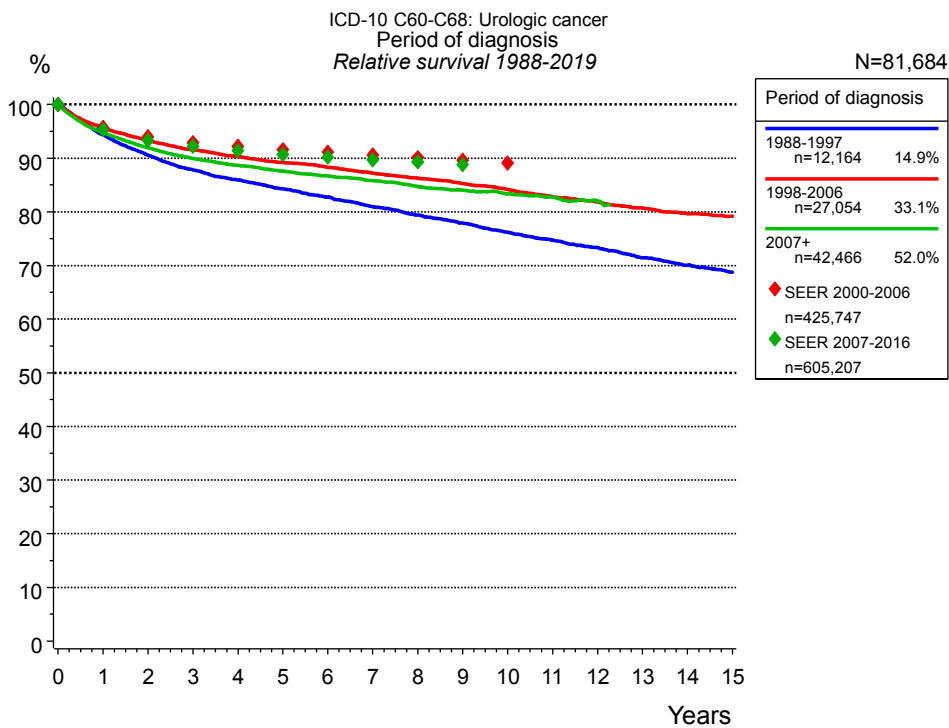


Figure 1a. Relative survival of patients with urologic cancer by period of diagnosis. Included in the evaluation are 81,684 cases diagnosed between 1988 and 2019.

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=12,164		1998-2006 n=27,054		2007+ n=42,466	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	90.6	94.4	92.5	95.6	91.9	94.7
2	83.6	90.5	87.4	93.3	86.6	91.9
3	78.1	87.8	83.0	91.5	82.2	89.9
4	73.6	85.9	79.3	90.3	78.6	88.7
5	69.5	84.3	75.8	89.2	75.3	87.6
6	65.7	82.7	72.5	88.3	72.1	86.7
7	62.0	80.9	69.2	87.2	69.0	85.8
8	58.6	79.4	66.1	86.3	65.7	84.7
9	55.4	77.9	63.0	85.3	62.8	84.0
10	52.2	76.2	59.9	84.2	60.0	83.3
11	49.4	74.8	56.6	82.8	57.3	82.8
12	46.7	73.3	53.8	81.8	54.5	82.0
13	43.9	71.4	50.9	80.7		
14	41.4	70.0	48.1	79.6		
15	39.1	68.7	45.7	79.1		
Median	10.8		13.3			

Table 1b. Observed (obs.) and relative (rel.) survival of patients with urologic cancer by period of diagnosis for period 1988-2019 (N=81,684).

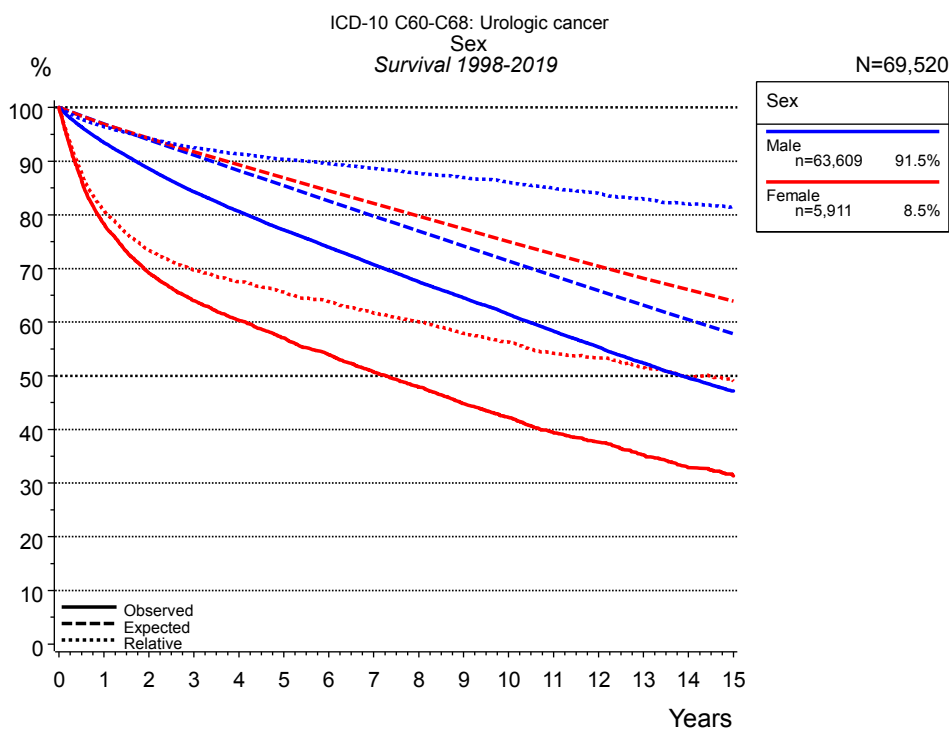


Figure 2a. Survival of patients with urologic cancer by sex. Included in the evaluation are 69,520 cases diagnosed between 1998 and 2019.

Years	Sex			
	Male n=63,609		Female n=5,911	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	93.4	96.4	78.3	80.8
2	88.6	94.3	69.2	73.4
3	84.3	92.5	64.0	69.7
4	80.6	91.4	60.3	67.5
5	77.2	90.4	57.0	65.6
6	73.9	89.5	53.9	63.8
7	70.7	88.6	50.7	61.7
8	67.5	87.7	47.9	60.0
9	64.5	86.9	44.8	57.9
10	61.5	86.1	42.2	56.3
11	58.3	85.0	39.4	54.2
12	55.3	84.0	37.6	53.3
13	52.4	82.9	35.2	51.6
14	49.6	82.0	32.8	49.7
15	47.1	81.5	31.3	49.0
Median	13.8		7.3	

Table 2b. Observed (obs.) and relative (rel.) survival of patients with urologic cancer by sex for period 1998-2019 (N=69,520).

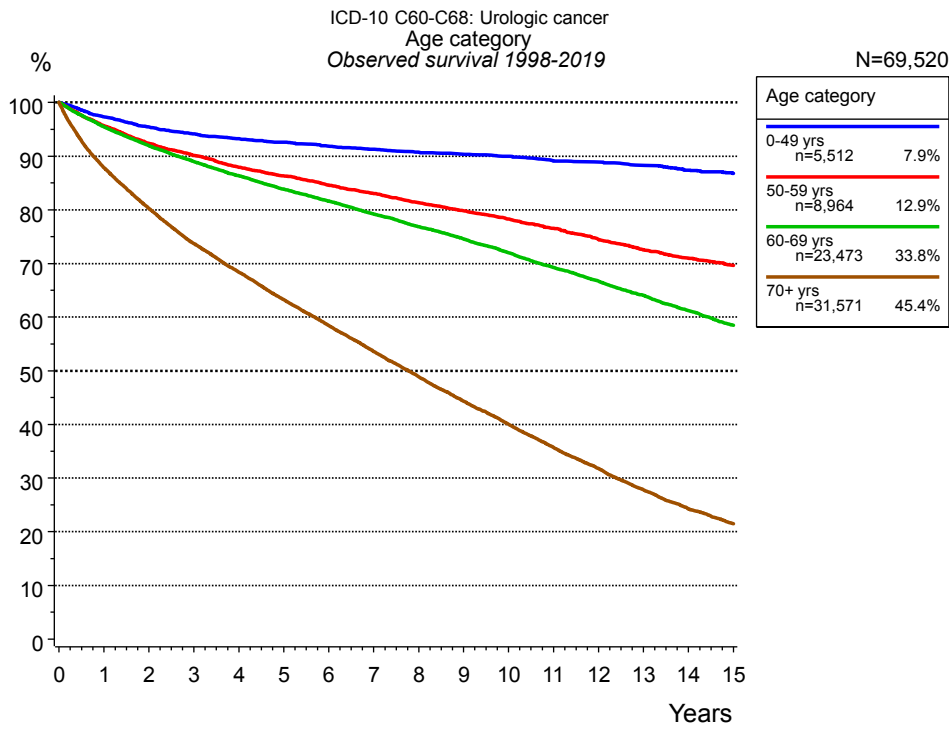


Figure 3a. Observed survival of patients with urologic cancer by age category. Included in the evaluation are 69,520 cases diagnosed between 1998 and 2019.

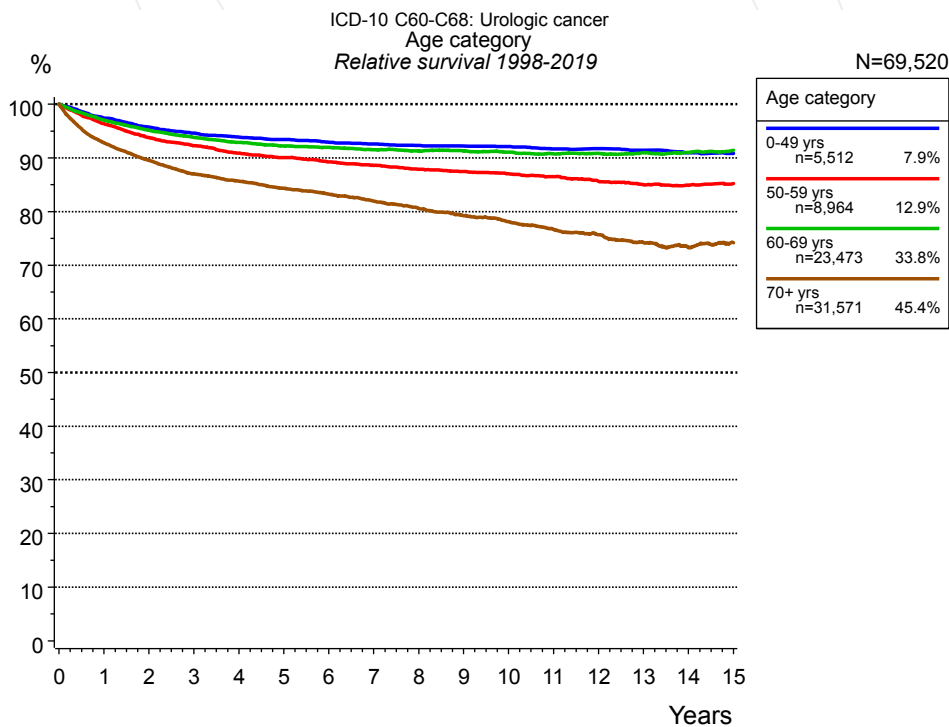


Figure 3b. Relative survival of patients with urologic cancer by age category. Included in the evaluation are 69,520 cases diagnosed between 1998 and 2019.

Years	Age category							
	0-49 yrs n=5,512		50-59 yrs n=8,964		60-69 yrs n=23,473		70+ yrs n=31,571	
	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	95.6	96.3	95.4	97.0	87.8	92.8
2	95.4	95.7	92.4	93.8	92.0	95.2	80.3	89.5
3	94.1	94.6	90.1	92.2	89.0	93.8	73.7	87.0
4	93.2	93.9	87.9	90.9	86.3	92.9	68.4	85.7
5	92.6	93.5	86.3	90.1	83.9	92.3	63.3	84.3
6	91.8	92.9	84.6	89.2	81.6	91.9	58.4	83.2
7	91.3	92.6	83.0	88.6	79.2	91.5	53.6	81.9
8	90.7	92.3	81.3	87.9	76.8	91.3	48.9	80.6
9	90.4	92.2	79.8	87.4	74.6	91.3	44.3	79.2
10	90.0	92.1	78.2	87.0	72.0	91.0	40.0	78.1
11	89.1	91.6	76.5	86.5	69.3	90.8	35.7	76.7
12	88.9	91.7	74.5	85.6	66.7	90.9	31.8	75.7
13	88.3	91.4	72.5	85.0	64.0	91.0	27.8	74.2
14	87.4	90.9	70.9	84.9	61.2	91.0	24.3	73.3
15	86.8	90.8	69.6	85.2	58.5	91.4	21.5	74.2
Median					18.0		7.8	

Table 3c. Observed (obs.) and relative (rel.) survival of patients with urologic cancer by age category for period 1998-2019 (N=69,520).

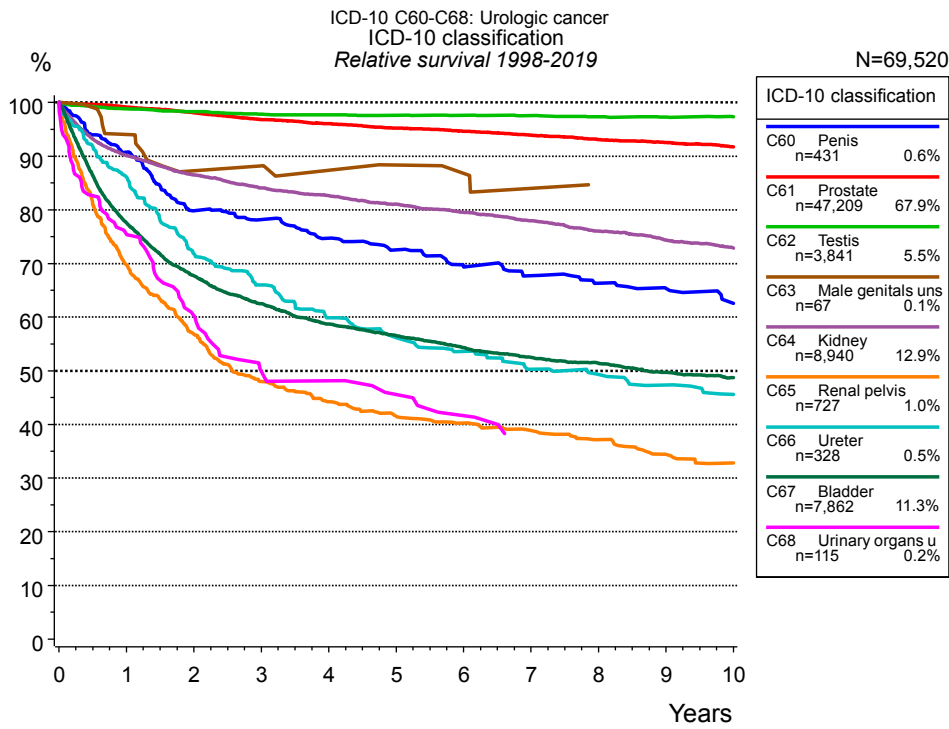


Figure 4a. Relative survival of patients with urologic cancer by ICD-10 classification. Included in the evaluation are 69,520 cases diagnosed between 1998 and 2019.

Years	ICD-10 classification														
	C60 Penis		C61 Prostate		C62 Testis		C63 Male genitals unsp.		C64 Kidney		C65 Renal pelvis		C66 Ureter		
	n=431	n=47,209	n=3,841	n=67	n=8,940	n=727	n=328	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	100.0
1	87.7	90.7	96.0	99.1	98.6	98.8	92.1	94.0	88.0	90.1	67.1	69.7	82.7	86.1	
2	74.5	79.8	91.9	98.1	97.9	98.3	82.0	87.3	82.6	86.5	52.8	56.8	66.3	71.8	
3	70.7	78.2	87.7	96.8	97.1	97.8	82.0	88.2	78.4	84.1	42.7	48.0	58.5	66.0	
4	65.6	74.7	84.0	96.1	96.7	97.7	77.6	87.4	75.3	82.6	37.8	44.2	50.7	59.9	
5	61.6	72.5	80.4	95.2	96.4	97.6	75.3	88.4	72.0	81.1	34.1	41.5	45.8	56.2	
6	56.9	69.3	77.0	94.6	96.1	97.6	72.8	86.8	68.8	79.5	31.9	40.2	41.8	53.6	
7	53.9	67.7	73.5	93.9	95.7	97.6	67.8	84.0	65.7	78.0	29.8	38.9	37.5	50.3	
8	51.0	66.3	70.0	93.1	95.2	97.3	64.7	84.4	62.4	76.0	27.3	37.2	35.2	49.3	
9	48.6	65.4	66.7	92.6	94.8	97.3			59.3	74.4	24.3	34.4	32.7	47.4	
10	45.1	62.6	63.3	91.7	94.5	97.4			56.5	72.9	22.6	32.8	30.0	45.6	
Median	8.4		14.1						12.2		2.2		4.3		

ICD-10 classification				
<i>cont'd</i>	C67 Bladder n=7,862		C68 Urinary organs unspec. n=115	
Years	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	74.1	77.6	73.6	75.5
2	62.1	67.7	56.9	60.3
3	55.2	62.5	45.4	49.9
4	49.9	58.7	43.3	48.1
5	46.3	56.5	39.4	45.6
6	42.8	54.3	35.4	41.6
7	39.7	52.5		
8	37.4	51.4		
9	34.8	49.6		
10	32.8	48.7		
Median	4.0		2.4	

Table 4b. Observed (obs.) and relative (rel.) survival of patients with urologic cancer by ICD-10 classification for period 1998-2019 (N=69,520).

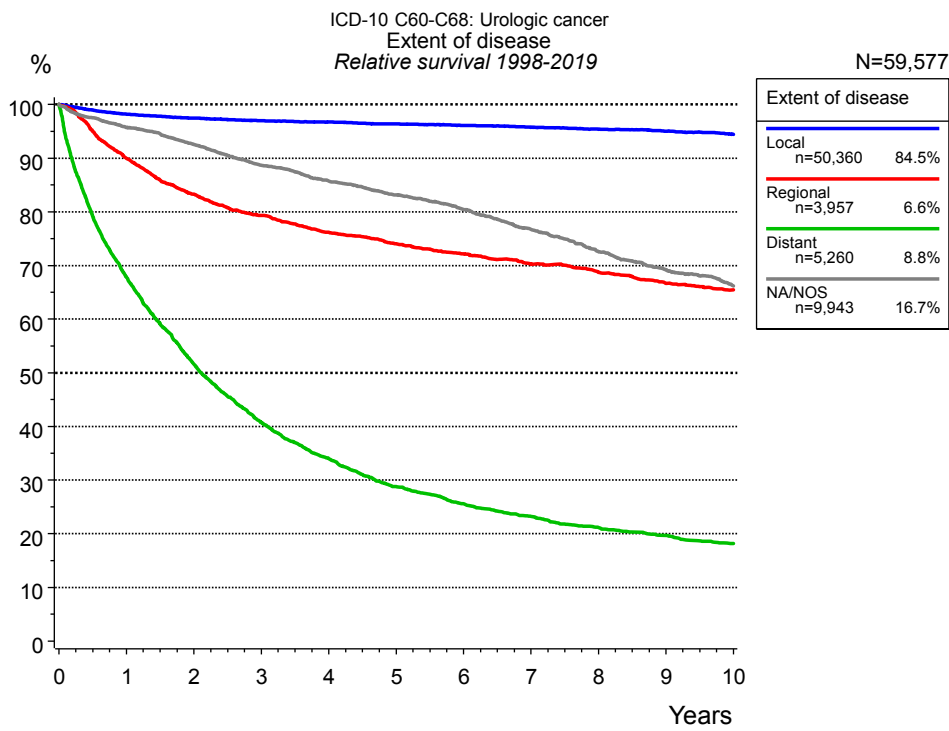


Figure 4c. Relative survival of patients with urologic cancer by extent of disease. For 59,744 of 69,520 cases diagnosed between 1998 and 2019 valid data could be obtained for this item. For a total of 59,577 cases an evaluable classification was established. The grey line represents the subgroup of 9,943 patients with missing values regarding extent of disease (14.3 % of 69,520 patients, the percent values of all other categories are related to n=59,577).

Years	Extent of disease							
	Local n=50,360		Regional n=3,957		Distant n=5,260		NA/NOS n=9,943	
	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	88.0	90.0	65.5	67.8	91.2	95.7
2	92.2	97.5	79.7	83.3	48.2	51.6	83.9	92.5
3	89.2	97.0	74.2	79.3	36.9	40.7	76.5	88.7
4	86.4	96.7	69.7	76.2	29.9	34.0	70.3	85.8
5	83.6	96.4	66.2	74.1	24.6	28.8	64.6	83.1
6	80.8	96.1	62.9	72.2	21.2	25.5	59.1	80.4
7	77.9	95.8	59.8	70.3	18.8	23.2	53.3	76.7
8	75.1	95.4	56.9	68.7	16.6	21.1	47.6	72.6
9	72.3	95.1	53.7	66.7	15.1	19.7	42.8	69.2
10	69.2	94.5	51.3	65.5	13.6	18.2	38.5	66.2
Median	16.6		10.5		1.9		7.6	

Table 4d. Observed (obs.) and relative (rel.) survival of patients with urologic cancer by extent of disease for period 1998-2019 (N=59,577).

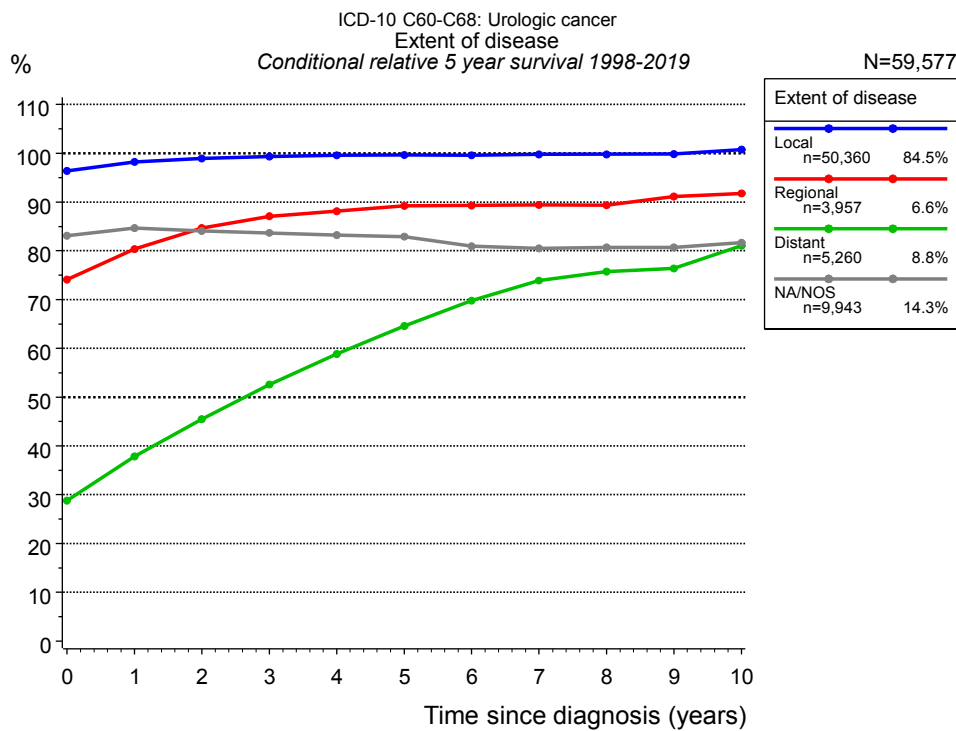


Figure 4g. Conditional relative 5-year survival of patients with urologic cancer by extent of disease. For 59,744 of 69,520 cases diagnosed between 1998 and 2019 valid data could be obtained for this item. For a total of 59,577 cases an evaluable classification was established. The grey line represents the subgroup of 9,943 patients with missing values regarding extent of disease (14.3 % of 69,520 patients, the percent values of all other categories are related to n=59,577).

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	50,360	96.4	3,957	74.1	5,260	28.8	9,943	83.1
1	45,285	98.2	3,269	80.3	3,276	37.9	8,500	84.6
2	41,854	98.9	2,797	84.7	2,250	45.5	7,493	84.1
3	38,562	99.4	2,420	87.1	1,592	52.6	6,510	83.7
4	35,569	99.6	2,117	88.1	1,183	58.9	5,737	83.2
5	32,492	99.6	1,816	89.3	891	64.6	4,966	82.9
6	29,254	99.6	1,550	89.3	698	69.8	4,224	80.9
7	26,004	99.8	1,325	89.4	557	73.9	3,454	80.5
8	22,986	99.8	1,125	89.4	445	75.7	2,715	80.7
9	20,132	99.8	937	91.1	357	76.4	2,136	80.7
10	17,456	100.7	785	91.7	278	81.1	1,726	81.7

Table 4h. Conditional relative 5-year survival of patients with urologic cancer by extent of disease for period 1998-2019 (N=59,577).

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 99.4% (n=38,562).

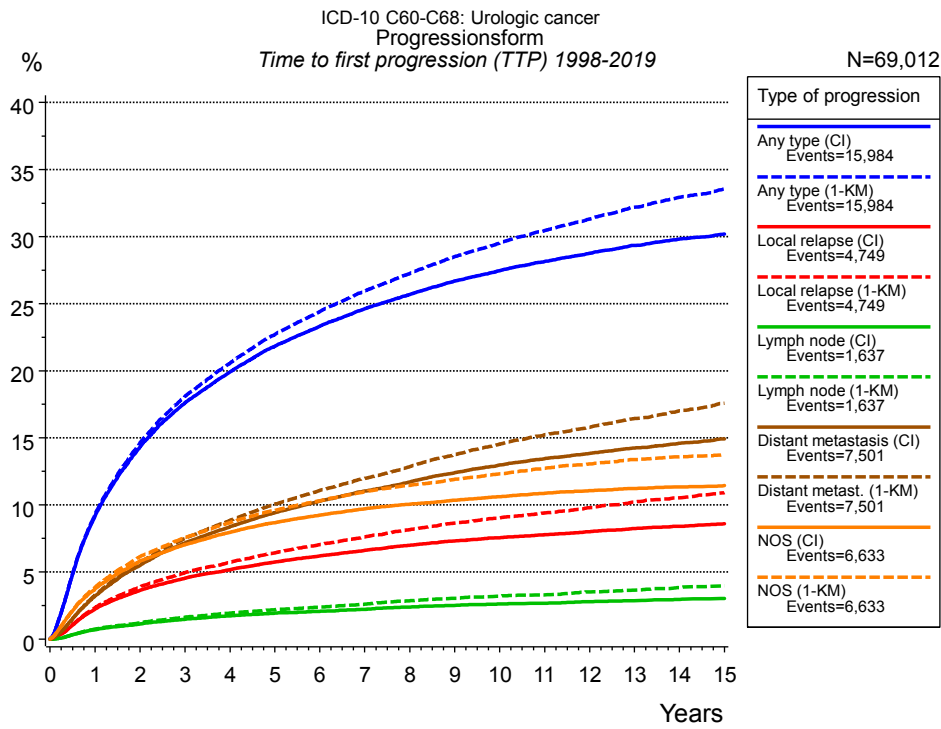


Figure 5a. Time to first progression of 69,012 patients with urologic cancer diagnosed between 1998 and 2019 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

	Type of progression						
	Any type (CI)	Any type (1-KM)	Local relapse (CI)	Local relapse (1-KM)	Lymph node (CI)	Lymph node (1-KM)	Distant metastasis (CI)
N	63,828	63,828	69,009	69,009	69,011	69,011	63,835
Events	15,849	15,849	4,695	4,695	1,619	1,619	7,390
Events compet.	11,908		23,008		24,877		15,567
Years	%	%	%	%	%	%	%
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	9.2	9.3	2.2	2.3	0.7	0.7	3.2
2	14.3	14.6	3.6	3.9	1.1	1.2	5.5
3	17.6	18.1	4.5	4.9	1.5	1.6	7.2
4	19.9	20.6	5.2	5.7	1.7	1.9	8.4
5	21.8	22.7	5.7	6.4	1.9	2.2	9.4
6	23.3	24.4	6.2	7.0	2.1	2.4	10.3
7	24.6	26.0	6.6	7.6	2.2	2.6	11.0
8	25.7	27.2	7.0	8.2	2.4	2.8	11.7
9	26.7	28.5	7.3	8.7	2.5	3.0	12.4
10	27.5	29.5	7.6	9.0	2.6	3.2	13.0
11	28.2	30.5	7.8	9.4	2.7	3.3	13.5
12	28.8	31.3	8.0	9.8	2.8	3.5	13.8
13	29.4	32.2	8.2	10.2	2.9	3.7	14.2
14	29.8	32.9	8.4	10.5	3.0	3.8	14.6
15	30.2	33.6	8.6	10.9	3.0	4.0	14.9

<i>cont'd</i>	Type of progression		
	Distant metast. (1- KM)	NOS (CI)	NOS (1-KM)
N	63,835	69,008	69,008
Events	7,390	6,600	6,600
compet.		21,992	
Years	%	%	%
0	0.0	0.0	0.0
1	3.3	3.7	3.9
2	5.7	5.8	6.1
3	7.5	7.0	7.6
4	8.8	8.0	8.7
5	10.1	8.7	9.6
6	11.1	9.2	10.3
7	12.0	9.7	11.0
8	12.9	10.1	11.5
9	13.8	10.4	11.9
10	14.5	10.6	12.3
11	15.2	10.9	12.7
12	15.8	11.1	13.1
13	16.4	11.2	13.4
14	17.0	11.4	13.6
15	17.6	11.4	13.8

Table 5b. Time to first progression of patients with urologic cancer for period 1998-2019 (N=69,012), also showing the total of progression events (Events) and of deaths as competing risk (compet.).

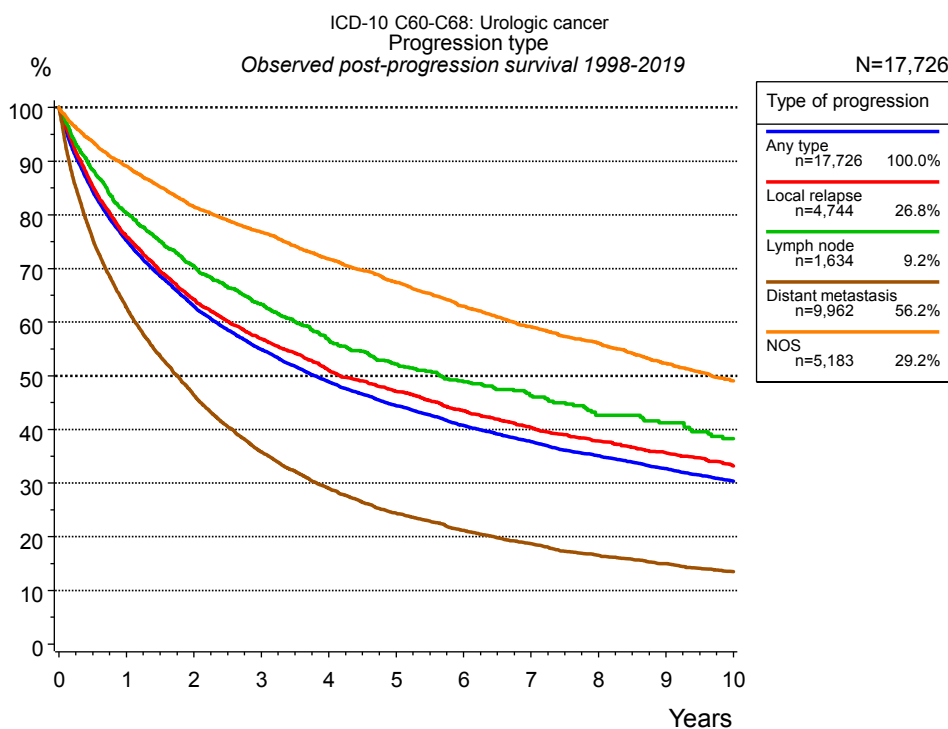


Figure 5c. Observed post-progression survival of 17,726 patients with urologic cancer diagnosed between 1998 and 2019. These 17,726 patients with documented progression events during their course of disease represent 25.7 % of the totally 69,012 evaluated cases (incl. M1, n=5,184, 7.5 %). Patients with cancer relapse documented via death certificates only were excluded (n=3,442, 5.0 %). 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=17,726 %	Local relapse n=4,744 %	Lymph node n=1,634 %	Distant metastasis n=9,962 %	NOS n=5,183 %
0	100.0	100.0	100.0	100.0	100.0
1	75.2	76.0	80.3	62.7	89.0
2	63.0	64.3	70.4	46.4	81.5
3	54.9	56.9	63.2	35.8	76.7
4	48.9	51.0	56.7	29.0	71.8
5	44.4	47.0	52.2	24.3	67.4
6	40.7	43.5	48.9	21.2	63.0
7	37.7	40.4	46.3	18.7	59.1
8	35.1	37.8	42.7	16.5	56.1
9	32.7	35.6	41.2	15.0	52.3
10	30.3	33.2	38.3	13.5	49.0

Table 5d. Observed post-progression survival of patients with urologic cancer for period 1998-2019 (N=17,726).

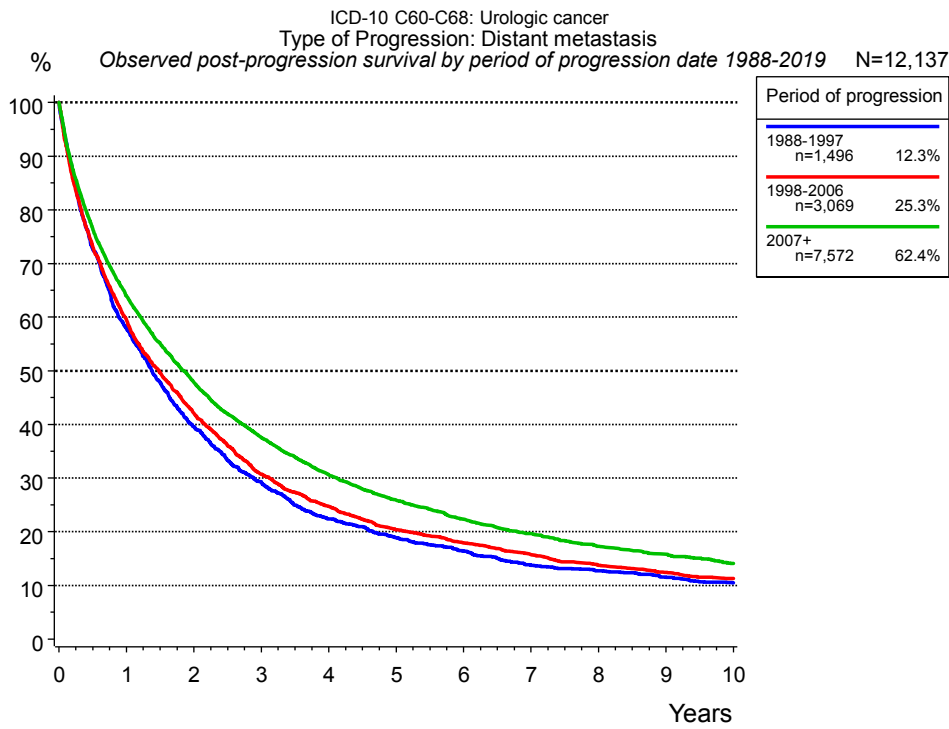


Figure 5e. Observed post-progression (distant metastasis) survival of 12,137 patients with urologic cancer diagnosed between 1988 and 2019 by period of progression.

Years	Period of progression		
	1988-1997 n=1,496 %	1998-2006 n=3,069 %	2007+ n=7,572 %
0	100.0	100.0	100.0
1	57.8	59.5	63.9
2	39.6	42.1	47.9
3	29.3	30.7	37.5
4	22.4	24.7	30.6
5	18.9	20.3	25.9
6	16.4	17.9	22.3
7	13.7	15.8	19.6
8	12.7	13.7	17.3
9	11.5	12.4	15.8
10	10.4	11.3	14.1

Table 5f. Observed post-progression (distant metastasis) survival of patients with urologic cancer for period 1988-2019 by period of progression (N=12,137).

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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