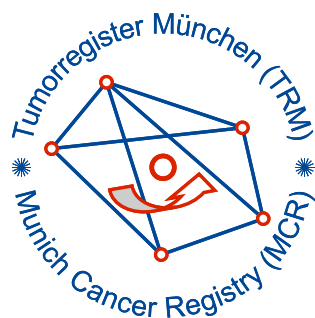


Munich Cancer Registry



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

ICD-10 C64: Kidney cancer

Survival

Year of diagnosis	1988-1997	1998-2016
Patients	2,784	11,292
Diseases	2,815	11,533
Cases evaluated	2,459	8,130
Creation date	08/22/2018	
Export date	08/09/2018	
Population	4.81 m	



Munich Cancer Registry
Cancer Registry Bavaria - Upper Bavaria Regional Center
at Klinikum Grosshadern/IBE
Marchioninstr. 15
Munich, 81377
Germany

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

https://www.tumorregister-muenchen.de/en/facts/surv/sC64__E-ICD-10-C64-Kidney-cancer-survival.pdf

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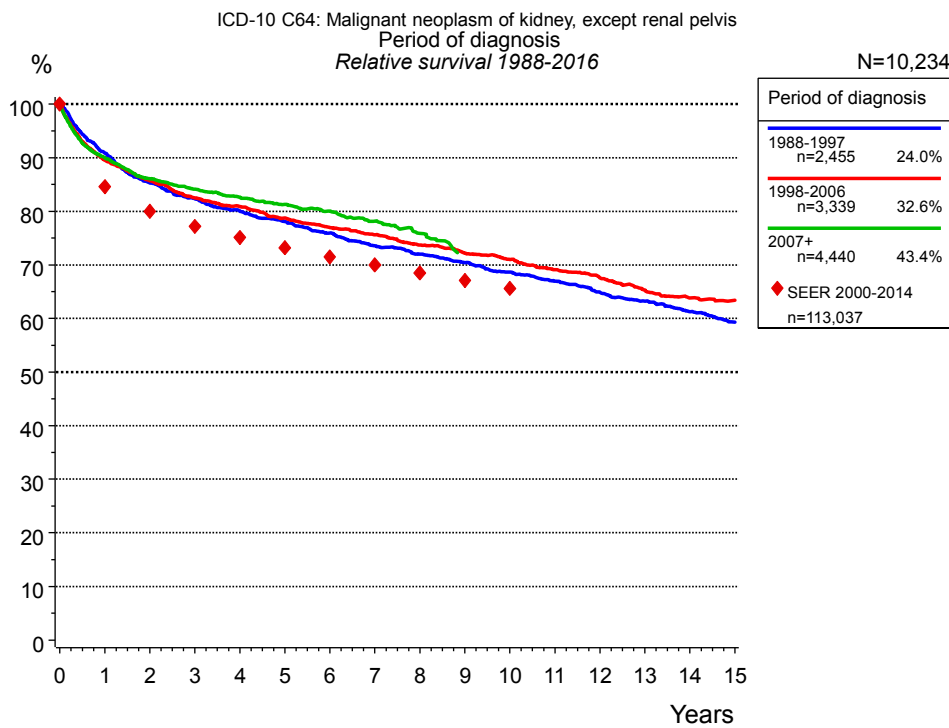


Figure 1a. Relative survival of patients with kidney cancer by period of diagnosis. Included in the evaluation are 10,234 cases diagnosed between 1988 and 2016.

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 2014, 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=2,455		1998-2006 n=3,339		2007+ n=4,440	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	88.7	90.8	87.5	89.5	87.9	89.9
2	81.2	85.3	81.8	85.7	82.2	86.1
3	76.6	82.4	76.9	82.5	78.5	84.1
4	72.7	80.0	73.7	80.9	75.2	82.6
5	69.1	78.1	70.0	78.7	72.1	81.3
6	65.6	75.9	66.7	76.9	69.1	80.0
7	62.0	73.5	63.9	75.6	65.7	78.2
8	59.2	72.0	60.6	73.7	62.0	75.9
9	56.4	70.4	57.7	72.2		
10	53.6	68.6	55.2	71.0		
11	50.9	67.0	52.1	69.1		
12	48.0	64.9	49.5	67.6		
13	45.5	63.2	46.4	65.3		
14	42.9	61.3	43.9	63.8		
15	40.4	59.3	42.4	63.4		

Table 1b. Observed (obs.) and relative (rel.) survival of patients with kidney cancer by period of diagnosis for period 1988-2016 (N=10,234).

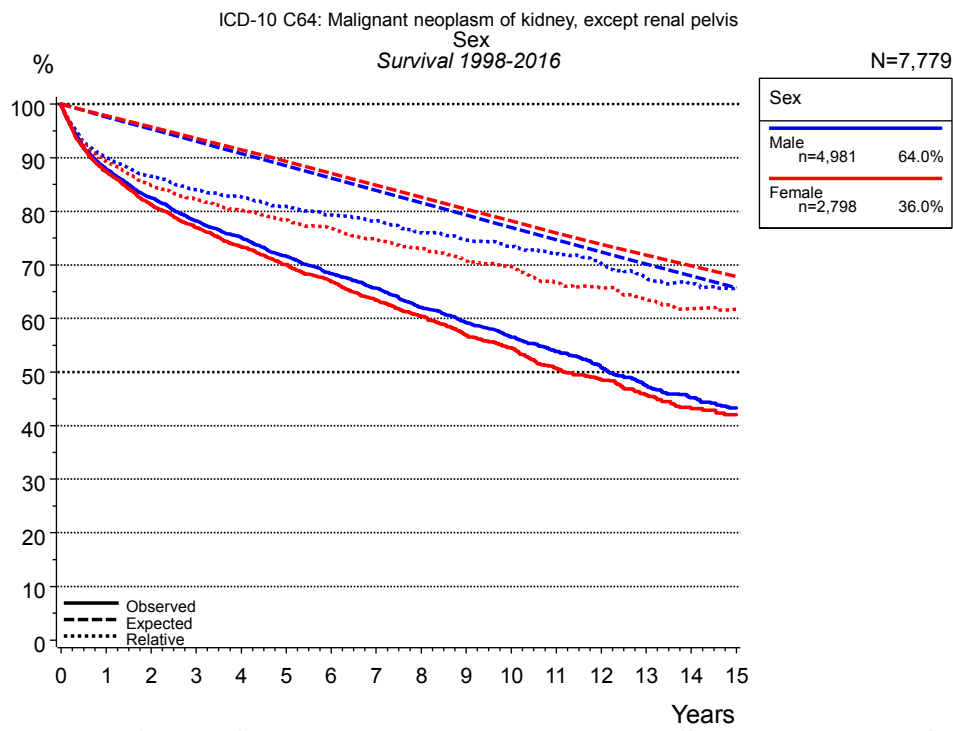


Figure 2a. Survival of patients with kidney cancer by sex. Included in the evaluation are 7,779 cases diagnosed between 1998 and 2016.

Years	Sex			
	Male n=4,981		Female n=2,798	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	87.8	90.0	87.4	89.4
2	82.5	86.5	81.2	84.8
3	78.2	84.0	76.9	82.1
4	75.1	82.7	73.4	80.2
5	71.6	80.9	70.0	78.3
6	68.4	79.3	66.8	76.7
7	65.6	78.2	63.4	74.6
8	62.0	76.0	60.3	73.0
9	59.2	74.7	56.9	70.7
10	56.5	73.3	54.5	69.6
11	53.9	72.0	50.8	66.7
12	50.8	70.2	48.6	65.7
13	47.6	67.7	45.8	63.6
14	45.2	66.4	43.2	61.8
15	43.3	65.6	42.1	61.7

Table 2b. Observed (obs.) and relative (rel.) survival of patients with kidney cancer by sex for period 1998-2016 (N=7,779).

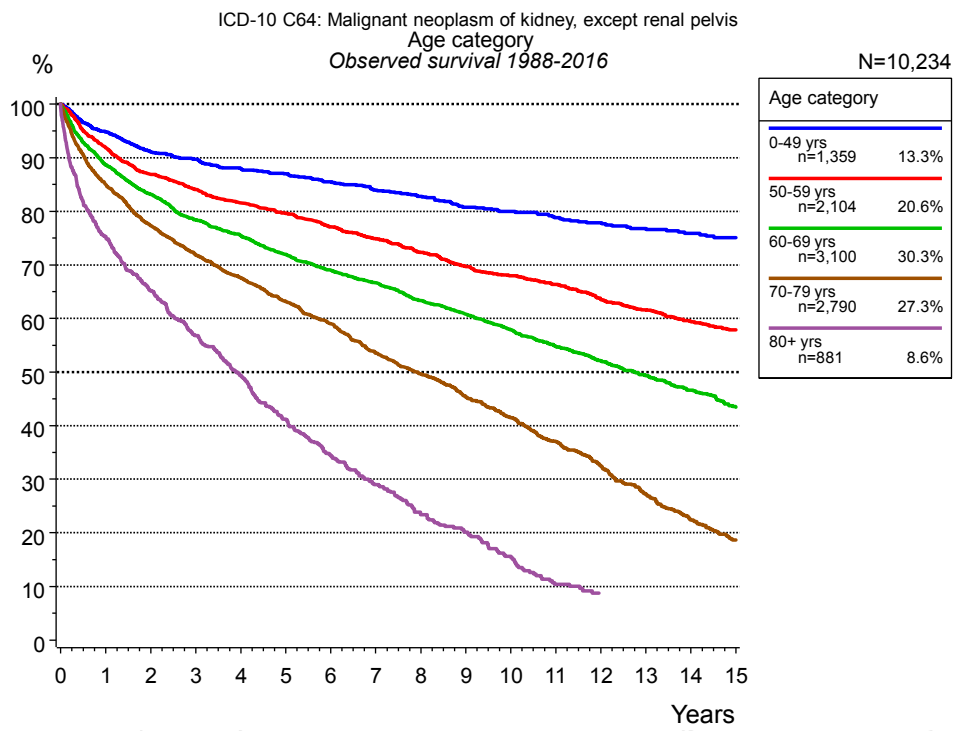


Figure 3a. Observed survival of patients with kidney cancer by age category. Included in the evaluation are 10,234 cases diagnosed between 1988 and 2016.

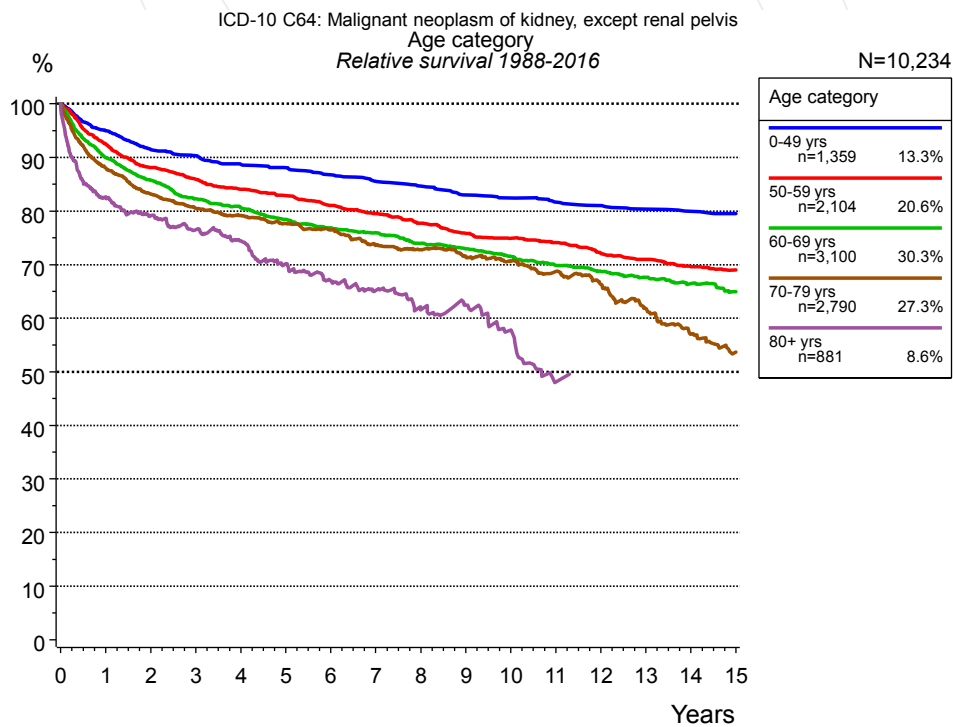


Figure 3b. Relative survival of patients with kidney cancer by age category. Included in the evaluation are 10,234 cases diagnosed between 1988 and 2016.

Years	Age category									
	0-49 yrs n=1,359		50-59 yrs n=2,104		60-69 yrs n=3,100		70-79 yrs n=2,790		80+ yrs n=881	
	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	94.8	95.0	91.8	92.4	88.6	90.0	85.0	88.0	75.2	82.6
2	91.0	91.4	86.9	88.1	83.1	85.7	77.3	83.1	65.2	79.1
3	89.7	90.3	84.1	85.9	78.4	82.3	71.8	80.4	56.8	76.5
4	88.0	88.7	81.6	84.1	75.5	80.6	67.5	79.1	49.4	74.4
5	87.0	88.1	79.6	82.8	72.0	78.4	63.2	77.7	41.2	70.2
6	85.5	86.8	77.1	81.0	69.0	76.8	58.9	76.5	34.5	67.0
7	84.0	85.5	74.9	79.5	66.7	75.9	53.5	73.6	29.0	65.2
8	82.8	84.6	72.3	77.7	63.3	74.0	49.6	72.8	23.4	61.6
9	80.8	83.0	69.7	75.8	60.8	73.0	45.3	71.4	20.1	62.4
10	80.0	82.4	68.0	74.9	57.9	71.5	41.5	70.6	15.7	57.8
11	78.8	81.7	66.3	74.1	54.8	69.9	37.1	68.7	10.4	48.1
12	77.9	81.0	63.6	72.1	52.1	68.8	32.5	66.3		
13	76.8	80.3	61.6	71.0	49.4	67.6	27.3	61.9		
14	75.9	79.9	59.5	69.6	46.6	66.4	22.4	57.0		
15	75.1	79.5	57.9	69.0	43.5	65.0	18.6	53.6		

Table 3c. Observed (obs.) and relative (rel.) survival of patients with kidney cancer by age category for period 1988-2016 (N=10,234).

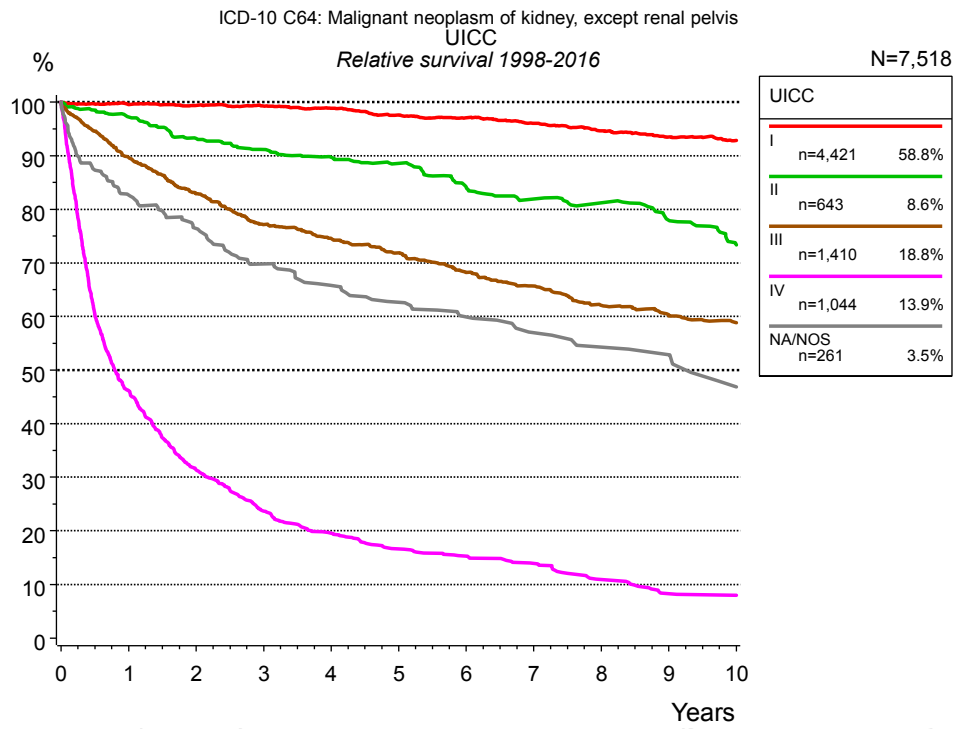


Figure 4a. Relative survival of patients with kidney cancer by UICC. For 7,537 of 7,779 cases diagnosed between 1998 and 2016 valid data could be obtained for this item. For a total of 7,518 cases an evaluable classification was established. The grey line represents the subgroup of 261 patients with missing values regarding UICC (3.4 % of 7,779 patients, the percent values of all other categories are related to n=7,518).

Years	UICC									
	I n=4,421		II n=643		III n=1,410		IV n=1,044		NA/NOS n=261	
	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	97.6	99.6	95.3	97.2	87.1	89.6	44.9	46.1	80.0	82.6
2	95.4	99.4	89.4	93.2	78.3	82.9	29.8	31.4	71.9	76.4
3	93.2	99.3	85.5	91.2	70.7	77.1	22.0	23.7	64.0	69.8
4	90.7	98.8	82.3	89.7	66.3	74.5	17.9	19.5	58.8	65.8
5	87.4	97.6	79.3	88.6	61.9	71.9	14.8	16.6	55.0	62.7
6	84.8	97.0	73.5	84.1	56.9	68.2	13.4	15.3	51.4	59.9
7	81.9	96.0	69.8	81.9	53.0	65.6	11.9	13.9	47.5	57.0
8	78.6	94.6	67.5	81.2	48.4	62.1	9.2	10.9	44.7	54.3
9	75.5	93.5	63.1	78.0	45.1	60.1	6.9	8.3	43.4	52.9
10	72.9	92.8	57.9	73.3	42.7	58.8	6.6	8.0	37.3	46.9

Table 4b. Observed (obs.) and relative (rel.) survival of patients with kidney cancer by UICC for period 1998-2016 (N=7,518).

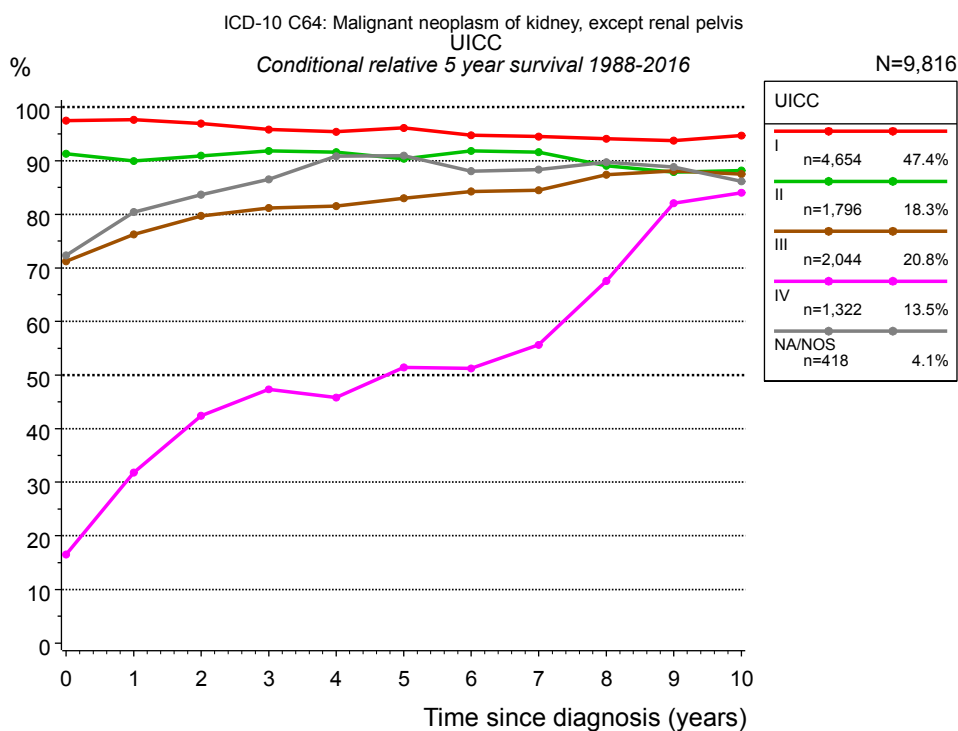


Figure 4c. Conditional relative 5-year survival of patients with kidney cancer by UICC. For 9,847 of 10,234 cases diagnosed between 1988 and 2016 valid data could be obtained for this item. For a total of 9,816 cases an evaluable classification was established. The grey line represents the subgroup of 418 patients with missing values regarding UICC (4.1 % of 10,234 patients, the percent values of all other categories are related to n=9,816).

Years	UICC									
	I		II		III		IV		NA/NOS	
	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs
0	4,654	97.4	1,796	91.3	2,044	71.2	1,322	16.5	418	72.3
1	4,189	97.6	1,659	90.0	1,697	76.3	575	31.8	338	80.4
2	3,826	97.0	1,530	91.0	1,438	79.7	356	42.4	297	83.7
3	3,487	95.8	1,430	91.9	1,240	81.1	246	47.3	268	86.5
4	3,126	95.4	1,345	91.6	1,099	81.5	186	45.8	238	90.8
5	2,756	96.1	1,267	90.3	972	83.0	148	51.4	211	90.9
6	2,403	94.8	1,163	91.9	841	84.2	118	51.3	187	88.0
7	2,070	94.5	1,075	91.6	725	84.5	95	55.6	162	88.3
8	1,740	94.1	1,008	89.1	629	87.4	69	67.5	141	89.7
9	1,446	93.8	941	87.9	529	88.1	52	82.1	129	88.8
10	1,214	94.7	866	88.2	463	87.5	40	84.0	117	86.2

Table 4d. Conditional relative 5-year survival of patients with kidney cancer by UICC for period 1988-2016 (N=9,816).

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 4a). 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 UICC="I", who are alive at least 3 years after cancer diagnosis, the conditional relative 5-year survival rate is 95.8% (n=3,487).

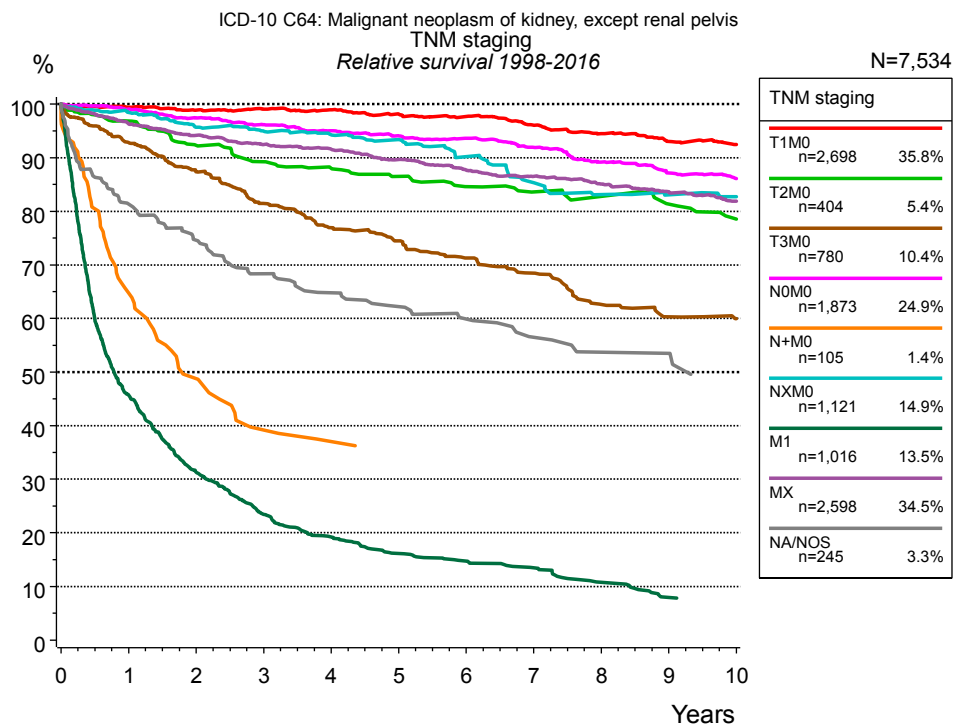


Figure 4e. Relative survival of patients with kidney cancer by TNM staging. For 7,537 of 7,779 cases diagnosed between 1998 and 2016 valid data could be obtained for this item. For a total of 7,534 cases an evaluable classification was established. The accumulated percentage exceeds the 100 % value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 245 patients with missing values regarding TNM staging (3.1 % of 7,779 patients, the percent values of all other categories are related to n=7,534).

Years	TNM staging													
	T1M0 n=2,698		T2M0 n=404		T3M0 n=780		NOM0 n=1,873		N+M0 n=105		NXM0 n=1,121		M1 n=1,016	
	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	97.5	99.4	95.0	96.8	90.2	92.8	97.1	99.0	62.9	64.7	96.4	98.5	44.5	45.6
2	95.0	98.9	88.7	92.3	82.5	87.4	93.4	97.4	47.2	48.7	91.5	95.7	29.8	31.3
3	93.1	99.1	84.1	89.3	74.6	81.5	90.2	96.1	36.9	39.2	88.7	94.9	21.8	23.5
4	91.0	99.0	81.2	88.0	68.3	76.9	87.1	95.0	34.0	37.0	86.1	94.3	17.6	19.2
5	88.0	98.1	78.0	86.5	64.1	74.5	84.2	94.1			83.1	93.4	14.5	16.1
6	85.6	97.7	74.2	84.6	59.4	71.3	81.7	93.6			78.3	90.2	13.0	14.7
7	82.1	96.1	71.6	83.6	55.4	68.5	78.2	91.9			72.4	85.3	11.6	13.5
8	78.5	94.5	69.2	82.8	48.9	62.6	73.8	89.2			68.6	83.1	9.1	10.8
9	75.4	93.1	66.1	81.4	45.5	60.3	70.2	87.1			66.7	83.0	6.6	7.9
10	72.8	92.5	62.7	78.6	43.9	60.0	67.5	86.1			65.1	82.7	6.4	7.6

<i>cont'd</i>	TNM staging			
	MX n=2,598		NA/NOS n=245	
	obs. %	rel. %	obs. %	rel. %
Years				
0	100.0	100.0	100.0	100.0
1	94.2	96.3	78.7	81.3
2	90.0	94.2	70.1	74.6
3	86.3	92.5	62.5	68.4
4	83.4	91.6	57.9	64.8
5	79.6	89.7	54.4	62.2
6	75.8	87.7	51.0	59.9
7	72.9	86.6	46.8	56.5
8	69.7	85.1	43.7	53.7
9	66.4	83.6	43.7	53.5
10	63.2	81.9		

Table 4f. Observed (obs.) and relative (rel.) survival of patients with kidney cancer by TNM staging for period 1998-2016 (N=7,534).

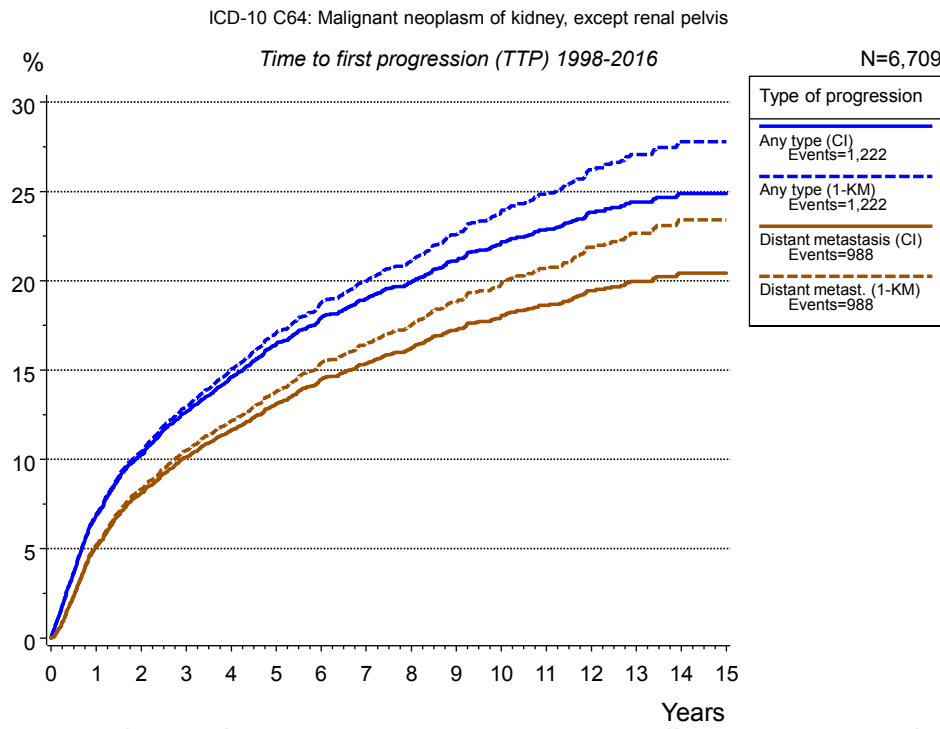


Figure 5a. Time to first progression of 6,709 patients with kidney cancer diagnosed between 1998 and 2016 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

Years	Type of progression			
	Any type (CI)	Any type (1-KM)	Distant metastasis (CI)	Distant metast. (1-KM)
	n=6,709 %	n=6,709 %	n=6,709 %	n=6,709 %
0	0.0	0.0	0.0	0.0
1	6.9	6.9	5.1	5.2
2	10.3	10.4	8.1	8.4
3	12.7	12.9	10.1	10.5
4	14.6	15.1	11.6	12.1
5	16.5	17.1	13.1	13.8
6	17.9	18.7	14.4	15.4
7	19.0	20.0	15.4	16.5
8	19.9	21.1	16.2	17.5
9	21.1	22.6	17.3	18.8
10	22.2	24.0	18.1	19.9
11	22.8	24.8	18.6	20.7
12	23.8	26.2	19.5	21.9
13	24.4	27.1	20.0	22.7
14	24.9	27.8	20.4	23.4
15	24.9	27.8	20.4	23.4

Table 5b. Time to first progression of patients with kidney cancer for period 1998-2016 (N=6,709).

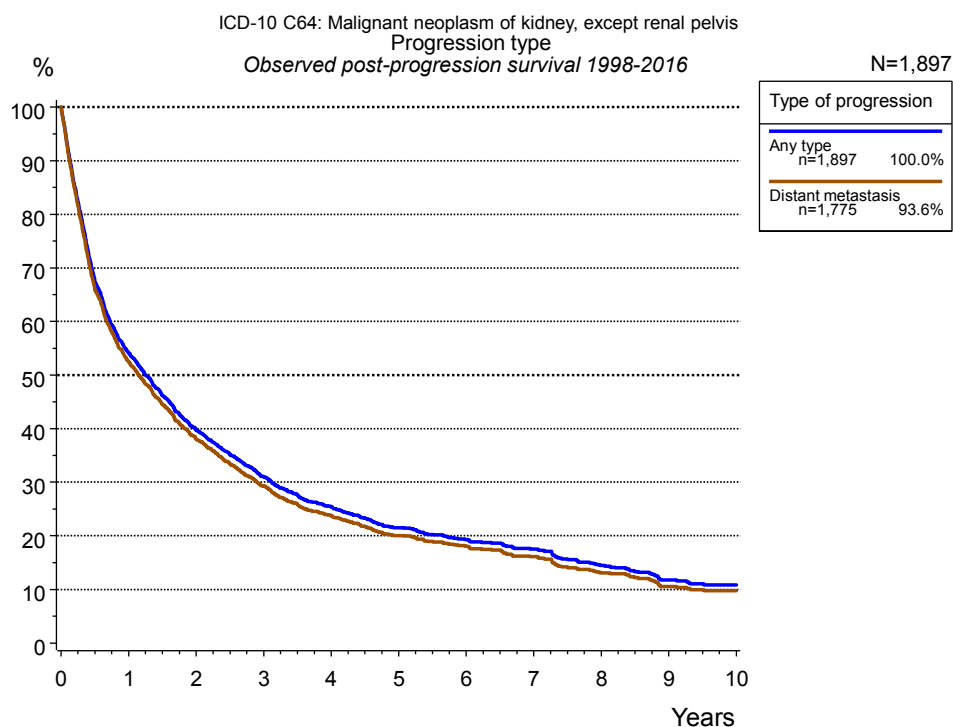


Figure 5c. Observed post-progression survival of 1,897 patients with kidney cancer diagnosed between 1998 and 2016. These 1,897 patients with documented progression events during their course of disease represent 24.6 % of the totally 7,713 evaluated cases (incl. M1, n=1,004, 13.0 %). Patients with cancer relapse documented via death certificates only were excluded (n=329, 4.3 %). 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=1,897 %	Distant metastasis n=1,775 %
0	100.0	100.0
1	54.2	52.4
2	39.8	38.1
3	31.0	29.2
4	25.4	23.7
5	21.5	20.0
6	19.3	18.1
7	17.5	16.1
8	14.5	13.1
9	11.8	10.5
10	10.8	9.7

Table 5d. Observed post-progression survival of patients with kidney cancer for period 1998-2016 (N=1,897).

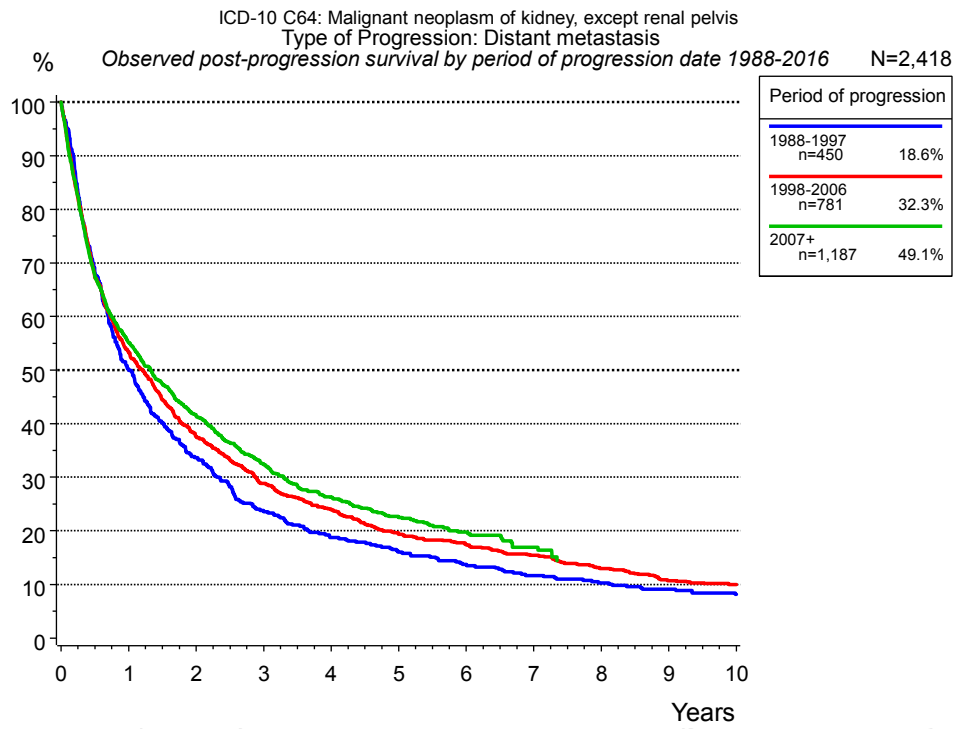


Figure 5e. Observed post-progression (distant metastasis) survival of 2,418 patients with kidney cancer diagnosed between 1988 and 2016 by period of progression.

Years	Period of progression		
	1988-1997 n=450 %	1998-2006 n=781 %	2007+ n=1,187 %
0	100.0	100.0	100.0
1	49.9	53.4	55.1
2	33.7	37.7	41.5
3	23.8	28.8	32.4
4	18.8	23.9	26.2
5	16.0	19.4	22.5
6	13.7	17.5	19.8
7	11.7	15.4	17.0
8	10.3	13.0	
9	9.1	10.7	
10	8.2	10.0	

Table 5f. Observed post-progression (distant metastasis) survival of patients with kidney cancer for period 1988-2016 by period of progression (N=2,418).

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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