

Munich Cancer Registry



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ICD-10 C64: Kidney cancer

Survival

Year of diagnosis	1988-1997	1998-2019
Patients	2,787	12,738
Diseases	2,818	13,022
Cases evaluated	2,459	9,119
Creation date	01/27/2021	
Database export	01/07/2021	
Population	4.92 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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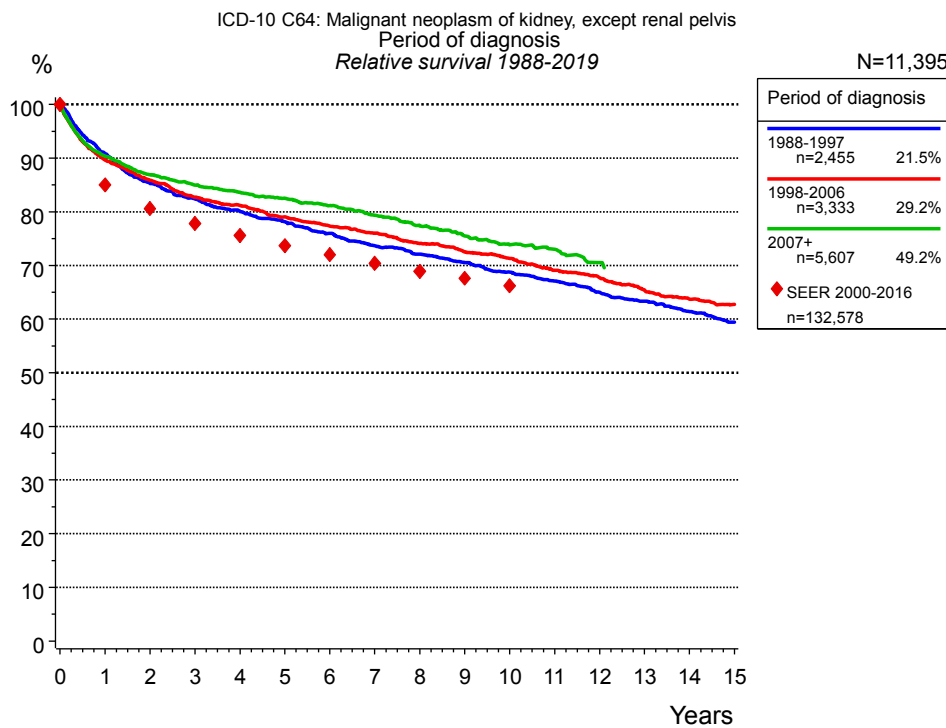


Figure 1a. Relative survival of patients with kidney cancer by period of diagnosis. Included in the evaluation are 11,395 cases diagnosed between 1988 and 2019.

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=2,455		1998-2006 n=3,333		2007+ n=5,607	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	88.7	90.8	87.6	89.7	88.3	90.4
2	81.3	85.3	82.0	85.9	83.0	86.9
3	76.7	82.4	77.2	82.7	79.3	85.0
4	72.8	80.1	74.0	81.2	76.1	83.6
5	69.2	78.1	70.3	79.0	73.2	82.5
6	65.7	76.0	67.0	77.3	70.2	81.2
7	62.1	73.6	64.2	76.0	66.8	79.3
8	59.3	72.1	60.9	74.1	63.3	77.3
9	56.5	70.5	58.1	72.6	60.0	75.5
10	53.7	68.8	55.4	71.3	56.9	73.8
11	51.0	67.1	52.2	69.1	54.7	73.0
12	48.1	65.0	49.6	67.7	51.5	70.5
13	45.6	63.3	46.4	65.4		
14	43.0	61.4	43.8	63.7		
15	40.4	59.4	41.7	62.7		
Median	11.4		11.9			

Table 1b. Observed (obs.) and relative (rel.) survival of patients with kidney cancer by period of diagnosis for period 1988-2019 (N=11,395).

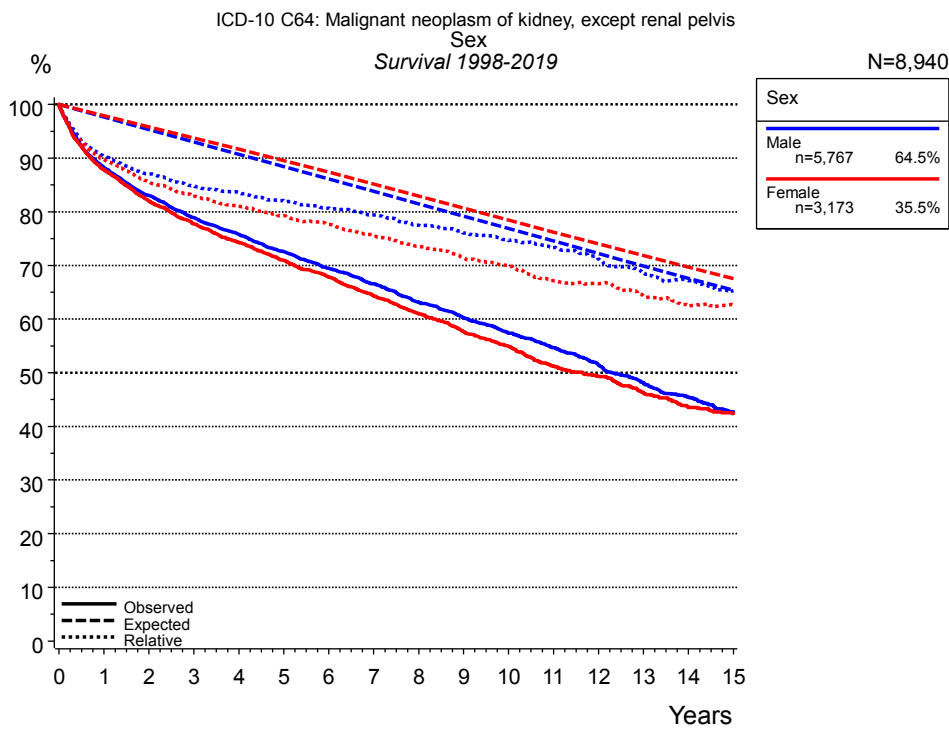


Figure 2a. Survival of patients with kidney cancer by sex. Included in the evaluation are 8,940 cases diagnosed between 1998 and 2019.

Years	Sex			
	Male n=5,767		Female n=3,173	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	88.2	90.3	87.8	89.7
2	83.0	87.0	81.9	85.5
3	78.9	84.8	77.7	82.8
4	75.8	83.5	74.3	81.0
5	72.6	82.1	71.0	79.3
6	69.4	80.6	67.8	77.6
7	66.6	79.4	64.3	75.5
8	63.1	77.5	61.0	73.4
9	60.2	76.0	57.7	71.4
10	57.4	74.6	54.9	69.9
11	54.7	73.3	51.3	67.2
12	51.4	71.1	49.4	66.6
13	48.1	68.7	46.3	64.4
14	45.4	67.1	43.5	62.5
15	42.7	65.3	42.4	62.7
Median	12.3		11.6	

Table 2b. Observed (obs.) and relative (rel.) survival of patients with kidney cancer by sex for period 1998-2019 (N=8,940).

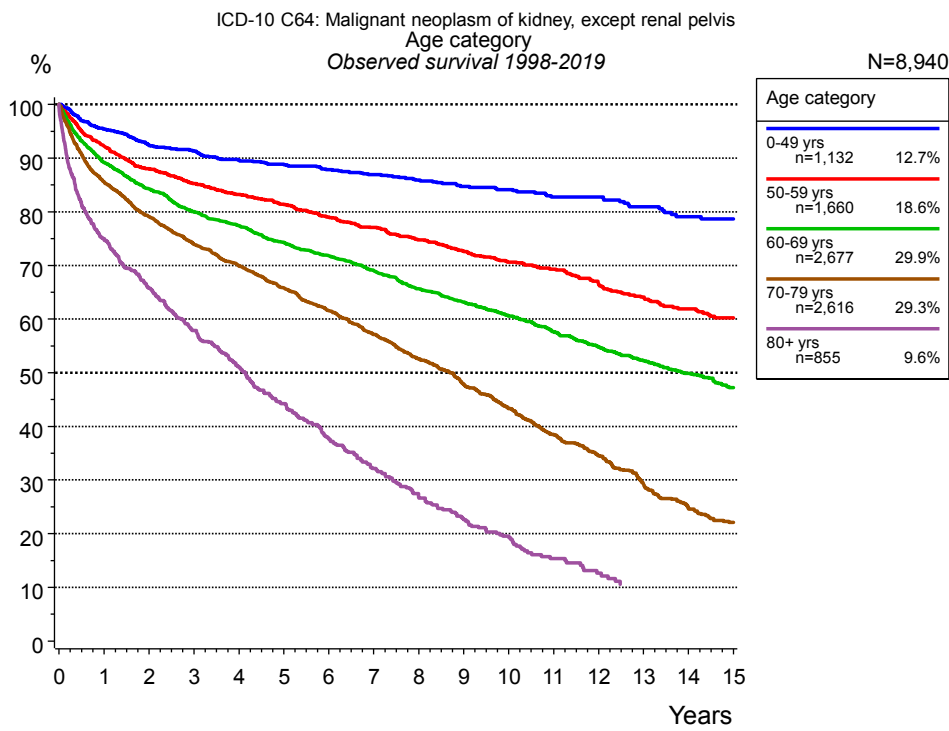


Figure 3a. Observed survival of patients with kidney cancer by age category. Included in the evaluation are 8,940 cases diagnosed between 1998 and 2019.

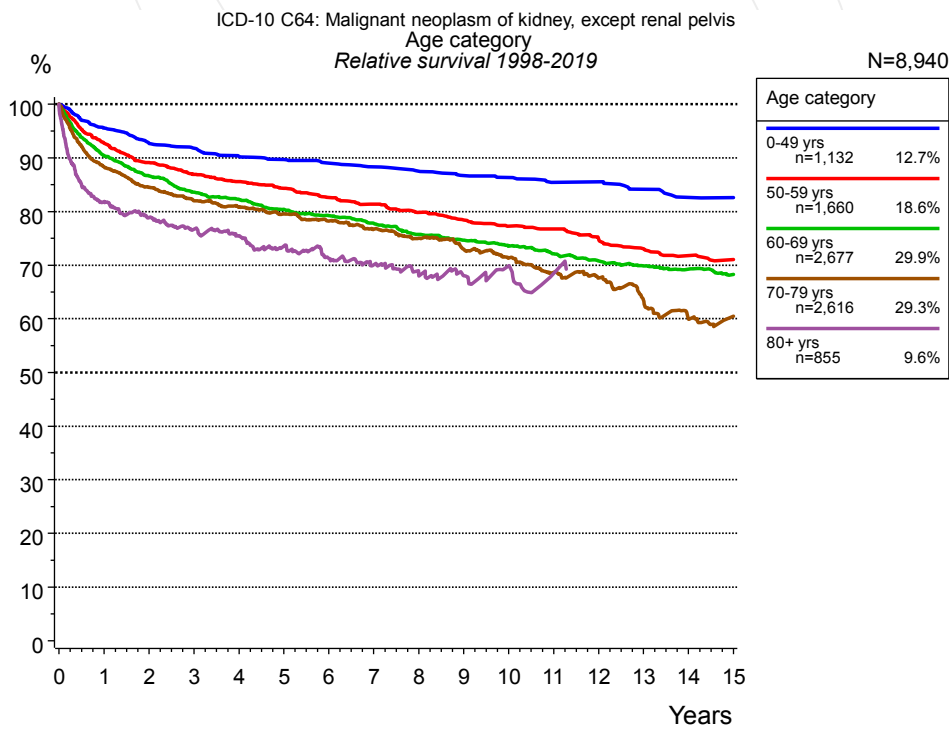


Figure 3b. Relative survival of patients with kidney cancer by age category. Included in the evaluation are 8,940 cases diagnosed between 1998 and 2019.

Years	Age category									
	0-49 yrs n=1,132		50-59 yrs n=1,660		60-69 yrs n=2,677		70-79 yrs n=2,616		80+ yrs n=855	
	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	95.4	95.5	92.2	92.7	89.1	90.4	85.5	88.3	75.0	81.9
2	92.3	92.7	88.0	89.1	84.2	86.6	79.1	84.5	65.8	78.9
3	91.3	91.8	85.2	86.9	80.0	83.6	73.9	82.0	57.9	76.7
4	89.7	90.3	83.2	85.5	77.4	82.3	69.9	80.8	51.1	75.4
5	88.9	89.7	81.3	84.3	74.3	80.4	65.7	79.5	44.3	73.6
6	87.9	89.0	79.0	82.6	71.8	79.2	61.5	78.2	37.7	71.2
7	86.9	88.3	77.1	81.4	69.0	77.8	57.1	76.7	32.2	70.1
8	85.9	87.5	74.8	79.8	65.6	75.7	52.6	75.0	26.9	68.1
9	84.7	86.7	72.6	78.4	63.1	74.6	47.8	73.0	22.6	68.0
10	84.2	86.3	70.6	77.2	60.5	73.6	43.3	71.3	19.5	69.9
11	82.8	85.4	69.3	76.7	57.7	72.1	38.5	68.7	15.4	68.4
12	82.8	85.5	66.7	74.9	54.8	70.8	34.5	67.6	12.6	70.0
13	81.0	84.2	64.1	73.0	52.2	69.8	29.4	63.6		
14	79.1	82.7	61.9	71.8	49.9	69.3	24.7	59.9		
15	78.7	82.6	60.3	71.1	47.2	68.3	22.1	60.5		
Median			20.7		13.9		8.7		4.1	

Table 3c. Observed (obs.) and relative (rel.) survival of patients with kidney cancer by age category for period 1998-2019 (N=8,940).

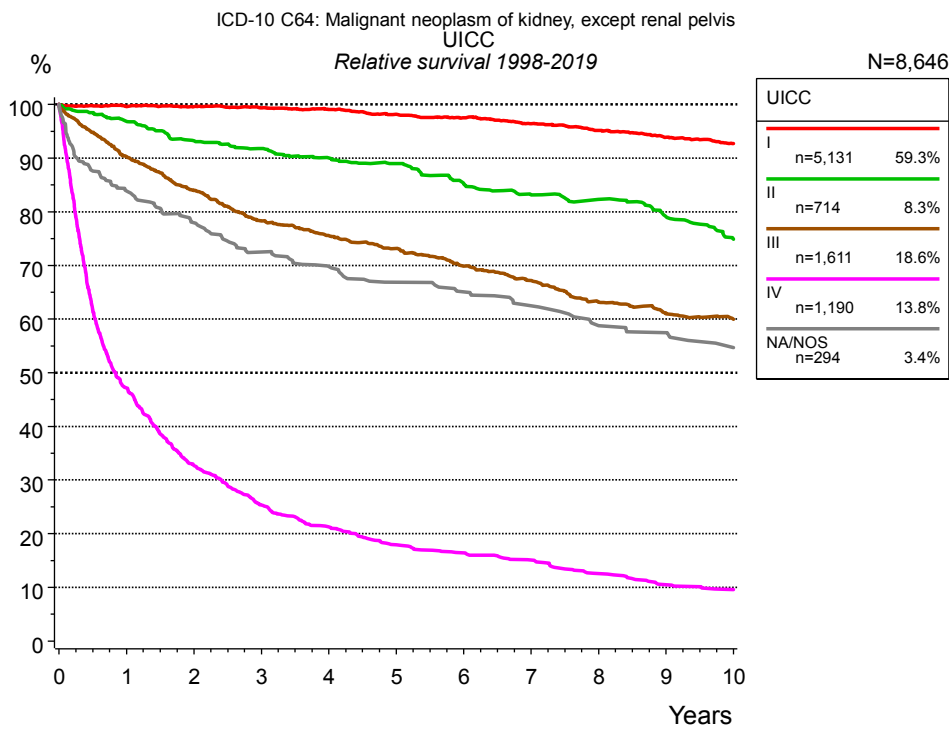


Figure 4a. Relative survival of patients with kidney cancer by UICC. For 8,668 of 8,940 cases diagnosed between 1998 and 2019 valid data could be obtained for this item. For a total of 8,646 cases an evaluable classification was established. The grey line represents the subgroup of 294 patients with missing values regarding UICC (3.3 % of 8,940 patients, the percent values of all other categories are related to n=8,646).

Years	UICC									
	I n=5,131		II n=714		III n=1,611		IV n=1,190		NA/NOS n=294	
	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	97.7	99.6	94.9	96.9	87.7	90.2	45.8	47.1	81.5	83.9
2	95.6	99.6	89.4	93.2	79.2	83.9	31.1	32.7	73.7	77.9
3	93.3	99.4	86.1	91.8	71.7	78.3	23.5	25.3	66.9	72.5
4	90.9	99.1	82.7	90.1	67.1	75.6	19.4	21.3	62.9	69.8
5	87.9	98.2	80.0	89.0	63.0	73.2	16.0	17.9	59.2	66.9
6	85.2	97.5	74.8	85.3	58.2	69.9	14.4	16.4	56.6	65.1
7	82.1	96.4	71.1	83.1	54.2	67.2	12.9	15.1	53.3	62.5
8	78.9	95.1	68.7	82.3	49.1	63.2	10.5	12.6	49.6	58.8
9	75.7	93.9	64.4	79.1	45.8	61.0	8.6	10.5	47.8	57.5
10	72.7	92.7	59.5	74.9	43.4	60.0	7.8	9.6	44.0	54.7
Median	17.9		12.9		7.8		0.8		7.9	

Table 4b. Observed (obs.) and relative (rel.) survival of patients with kidney cancer by UICC for period 1998-2019 (N=8,646).

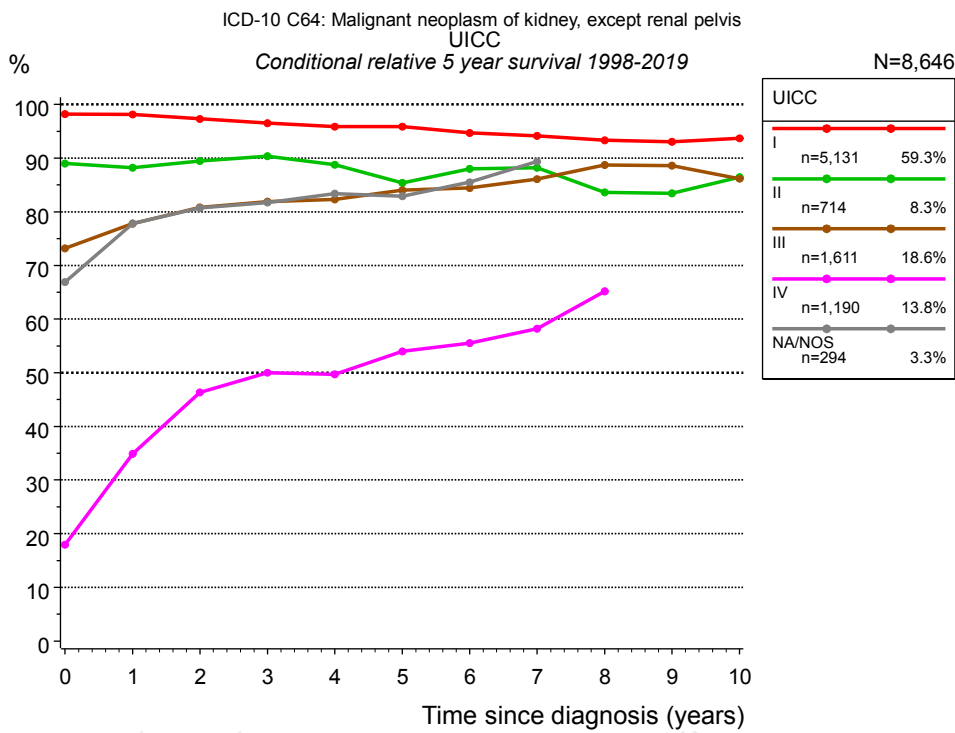


Figure 4c. Conditional relative 5-year survival of patients with kidney cancer by UICC. For 8,668 of 8,940 cases diagnosed between 1998 and 2019 valid data could be obtained for this item. For a total of 8,646 cases an evaluable classification was established. The grey line represents the subgroup of 294 patients with missing values regarding UICC (3.3 % of 8,940 patients, the percent values of all other categories are related to n=8,646).

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	5,131	98.2	714	89.0	1,611	73.2	1,190	17.9	294	66.9
1	4,662	98.1	635	88.2	1,341	77.8	525	34.9	223	77.8
2	4,348	97.3	581	89.5	1,160	80.8	338	46.3	197	80.7
3	4,015	96.5	540	90.3	997	81.9	245	50.0	174	81.7
4	3,697	95.9	492	88.8	887	82.3	187	49.7	154	83.3
5	3,348	95.9	447	85.4	781	84.0	140	54.0	136	82.9
6	2,992	94.7	386	88.0	659	84.5	119	55.5	126	85.5
7	2,653	94.2	339	88.2	555	86.1	102	58.2	110	89.4
8	2,311	93.3	300	83.6	468	88.7	73	65.2		
9	1,978	93.0	256	83.4	390	88.6				
10	1,670	93.6	208	86.5	328	86.2				

Table 4d. Conditional relative 5-year survival of patients with kidney cancer by UICC for period 1998-2019 (N=8,646).

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 96.5% (n=4,015).

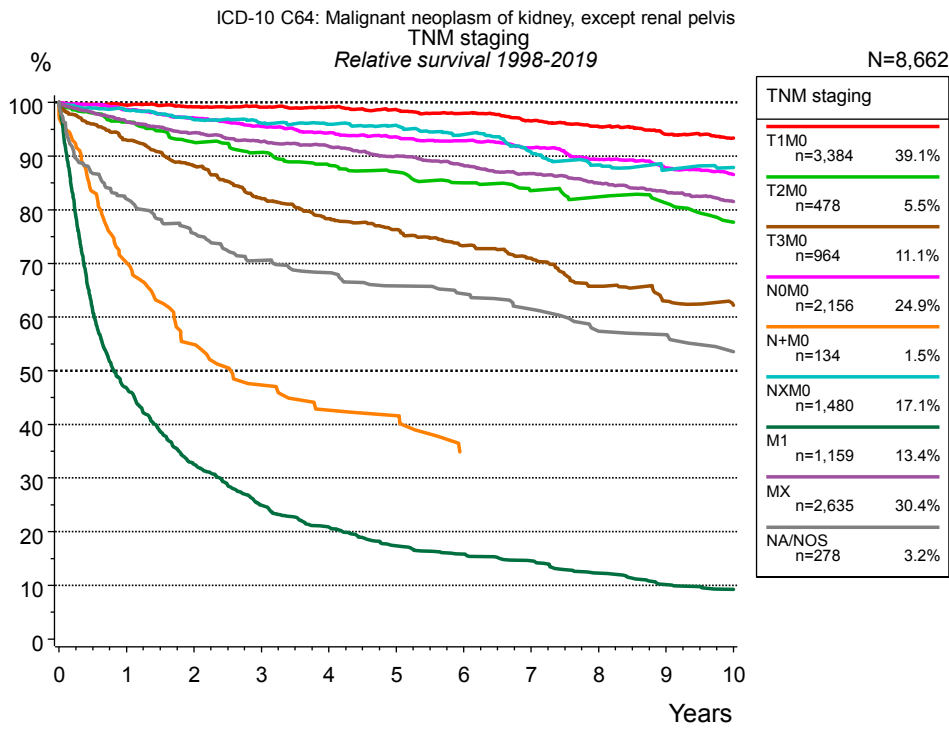


Figure 4e. Relative survival of patients with kidney cancer by TNM staging. For 8,668 of 8,940 cases diagnosed between 1998 and 2019 valid data could be obtained for this item. For a total of 8,662 cases an evaluable classification was established. The accumulated percentage exceeds the 100 % value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 278 patients with missing values regarding TNM staging (3.1 % of 8,940 patients, the percent values of all other categories are related to n=8,662).

Years	TNM staging													
	T1M0 n=3,384		T2M0 n=478		T3M0 n=964		NOM0 n=2,156		N+M0 n=134		NXM0 n=1,480		M1 n=1,159	
	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	97.6	99.5	94.5	96.4	90.4	93.0	96.8	98.7	68.1	70.2	96.5	98.6	45.5	46.7
2	95.2	99.2	88.9	92.6	83.1	88.1	93.1	97.1	52.6	54.9	92.5	96.7	30.9	32.5
3	93.2	99.1	85.5	90.7	75.1	82.1	89.7	95.5	44.0	47.4	89.8	96.2	23.2	24.9
4	91.1	99.1	81.6	88.4	69.5	78.3	86.5	94.3	38.7	42.7	87.4	95.9	19.0	20.8
5	88.5	98.6	78.8	87.0	65.6	76.3	83.8	93.6	37.6	41.6	85.0	95.7	15.6	17.3
6	85.7	98.0	75.1	85.0	61.0	73.3	81.1	92.8	29.9	34.8	81.3	94.0	13.9	15.8
7	82.3	96.6	72.2	83.5	57.3	71.0	77.9	91.5			76.5	90.7	12.5	14.5
8	79.3	95.5	69.8	82.4	51.1	65.8	74.1	89.4			72.5	88.4	10.3	12.3
9	75.9	94.1	67.0	81.3	47.3	63.0	70.7	87.8			69.7	87.5	8.4	10.1
10	73.2	93.4	62.7	77.7	44.9	62.2	67.8	86.6			68.4	87.9	7.5	9.2
Median	18.5		13.0		8.5		15.9		2.2		15.7		0.8	

<i>cont'd</i>	TNM staging			
	MX n=2,635		NA/NOS n=278	
	obs. %	rel. %	obs. %	rel. %
Years				
0	100.0	100.0	100.0	100.0
1	94.2	96.4	79.6	82.0
2	90.2	94.3	71.4	75.6
3	86.5	92.7	64.9	70.6
4	83.6	91.8	61.6	68.3
5	79.9	90.0	58.1	65.8
6	76.2	88.2	55.7	64.3
7	72.9	86.7	52.2	61.5
8	69.4	84.9	48.2	57.4
9	66.2	83.3	46.9	56.7
10	62.9	81.5	42.8	53.6
Median	13.9		7.6	

Table 4f. Observed (obs.) and relative (rel.) survival of patients with kidney cancer by TNM staging for period 1998-2019 (N=8,662).

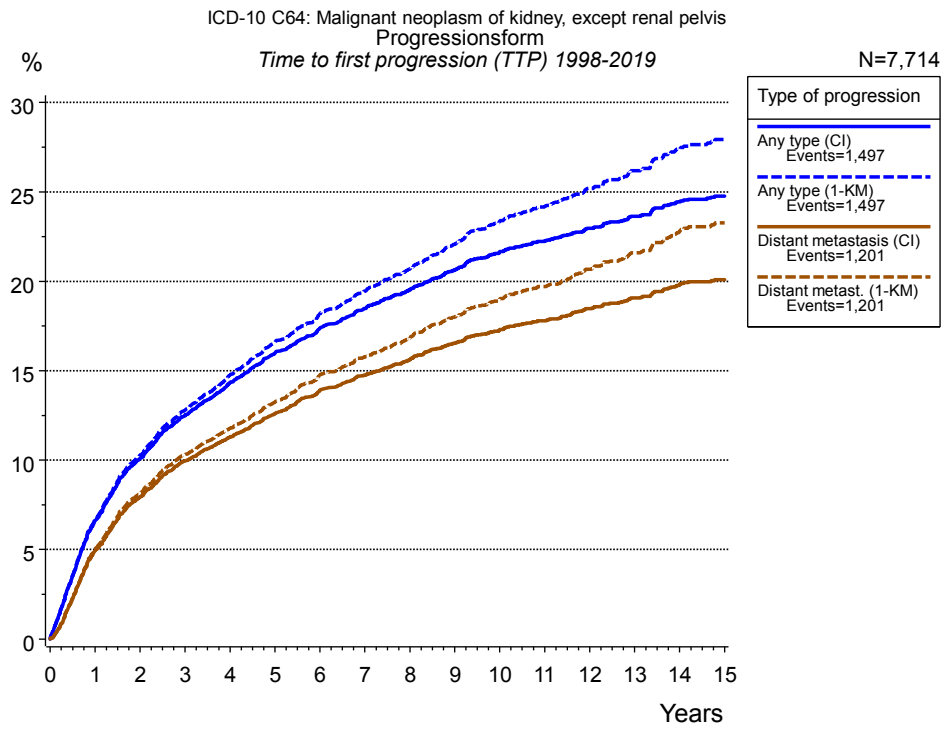


Figure 5a. Time to first progression of 7,714 patients with kidney cancer diagnosed between 1998 and 2019 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency 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	7,714	7,714	7,714	7,714
Events	1,476	1,476	1,182	1,182
compet.	1,421		1,631	
Years	%	%	%	%
0	0.0	0.0	0.0	0.0
1	6.6	6.7	4.9	5.0
2	10.1	10.3	7.9	8.2
3	12.5	12.8	10.0	10.3
4	14.3	14.8	11.3	11.8
5	16.0	16.6	12.6	13.3
6	17.4	18.1	13.9	14.7
7	18.5	19.4	14.8	15.8
8	19.5	20.7	15.6	16.8
9	20.7	22.1	16.6	18.0
10	21.7	23.4	17.3	19.0
11	22.2	24.2	17.8	19.7
12	23.0	25.2	18.5	20.7
13	23.6	26.2	19.1	21.6
14	24.4	27.4	19.8	22.8
15	24.8	27.9	20.1	23.3

Table 5b. Time to first progression of patients with kidney cancer for period 1998-2019 (N=7,714), also showing the total of progression events (Events) and of deaths as competing risk (compet.).

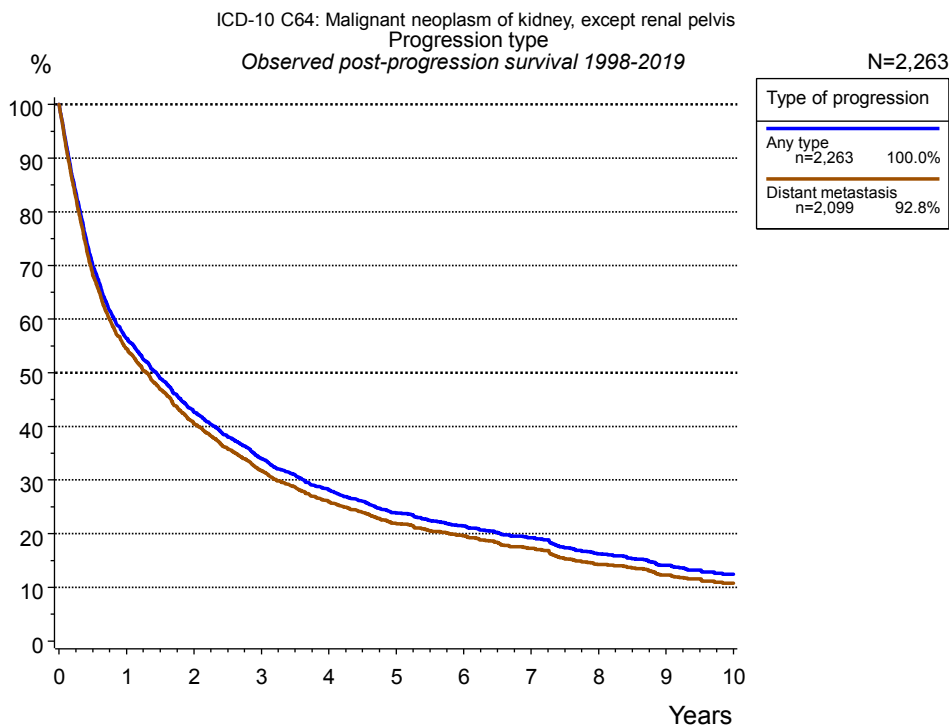


Figure 5c. Observed post-progression survival of 2,263 patients with kidney cancer diagnosed between 1998 and 2019. These 2,263 patients with documented progression events during their course of disease represent 25.5 % of the totally 8,860 evaluated cases (incl. M1, n=1,146, 12.9 %). Patients with cancer relapse documented via death certificates only were excluded (n=380, 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=2,263 %	Distant metastasis n=2,099 %
0	100.0	100.0
1	56.4	54.4
2	42.7	40.6
3	34.0	31.7
4	28.1	25.9
5	23.9	21.9
6	21.4	19.6
7	19.3	17.3
8	16.2	14.2
9	14.1	12.3
10	12.4	10.8

Table 5d. Observed post-progression survival of patients with kidney cancer for period 1998-2019 (N=2,263).

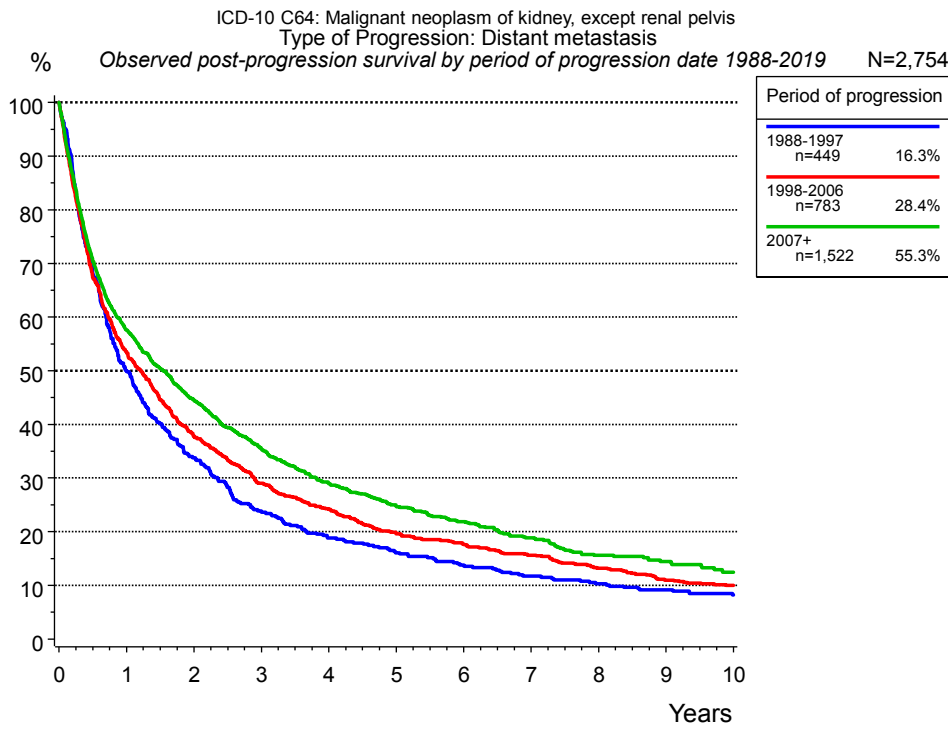


Figure 5e. Observed post-progression (distant metastasis) survival of 2,754 patients with kidney cancer diagnosed between 1988 and 2019 by period of progression.

Years	Period of progression		
	1988-1997 n=449 %	1998-2006 n=783 %	2007+ n=1,522 %
0	100.0	100.0	100.0
1	49.8	53.5	57.5
2	33.7	37.8	44.5
3	23.9	29.0	35.5
4	18.8	24.1	29.0
5	16.1	19.6	24.7
6	13.8	17.7	21.9
7	11.7	15.6	18.9
8	10.3	13.2	15.6
9	9.1	11.0	14.4
10	8.2	10.0	12.4

Table 5f. Observed post-progression (distant metastasis) survival of patients with kidney cancer for period 1988-2019 by period of progression (N=2,754).

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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