Munich Cancer Registry

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

ICD-10 C64: Kidney cancer

Survival

Year of diagnosis	1988-1997	1998-2020
Patients	2,787	13,268
Diseases	2,818	13,576
Cases evaluated	2,459	9,493

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

Munich Cancer Registry
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https://www.tumorregister-muenchen.de/en

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

Index of figures and tables

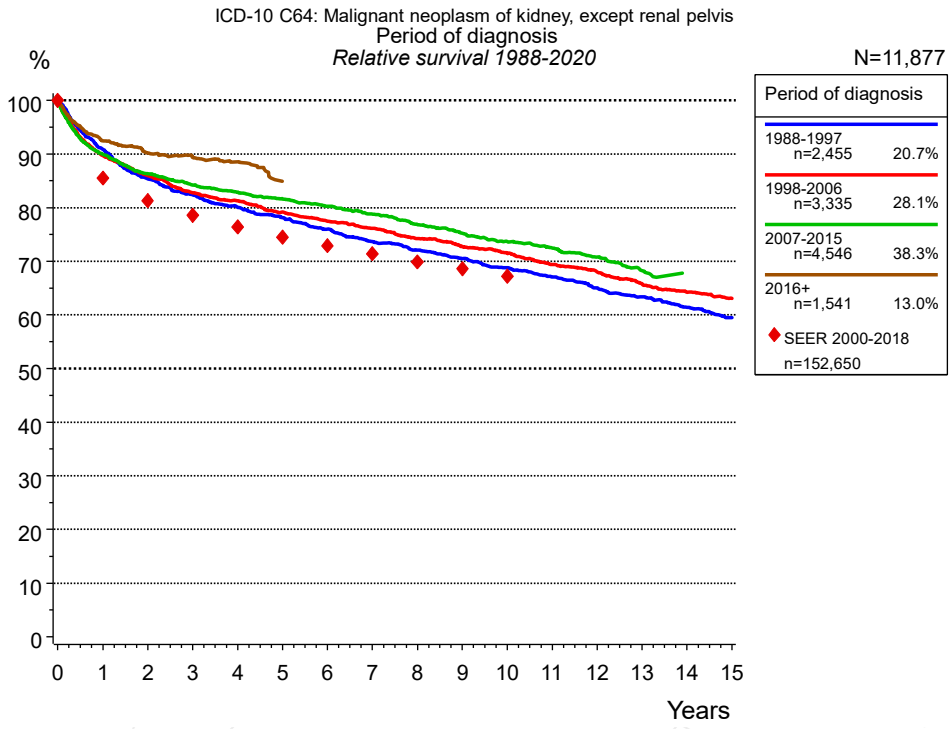

Figure 1a. Relative survival of patients with kidney cancer by period of diagnosis. Included in the evaluation are 11,877 cases diagnosed between 1988 and 2020.

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=2,455		1998-2006 n=3,335		2007-2015 n=4,546		2016+ n=1,541	
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	88.7	90.8	87.7	89.7	87.9	89.9	90.5	92.4
2	81.3	85.3	82.1	85.9	82.4	86.3	86.4	90.2
3	76.7	82.4	77.3	82.8	78.5	84.2	83.6	89.4
4	72.8	80.1	74.1	81.3	75.4	82.9	80.8	88.5
5	69.2	78.2	70.4	79.1	72.4	81.6		
6	65.7	76.0	67.2	77.4	69.3	80.3		
7	62.1	73.6	64.4	76.1	66.2	78.8		
8	59.3	72.1	61.1	74.2	62.8	76.8		
9	56.5	70.5	58.3	72.8	59.7	75.2		
10	53.7	68.8	55.6	71.5	56.8	73.6		
11	51.0	67.1	52.4	69.3	54.2	72.5		
12	48.2	65.0	49.8	68.0	51.2	70.8		
13	45.7	63.4	46.8	65.8	47.8	68.2		
14	43.1	61.4	44.2	64.2				
15	40.5	59.5	42.0	63.1				
Median	11.4		12.0		12.4			

Table 1b. Observed (obs.) and relative (rel.) survival of patients with kidney cancer by period of diagnosis for period 1988-2020 (N=11,877).

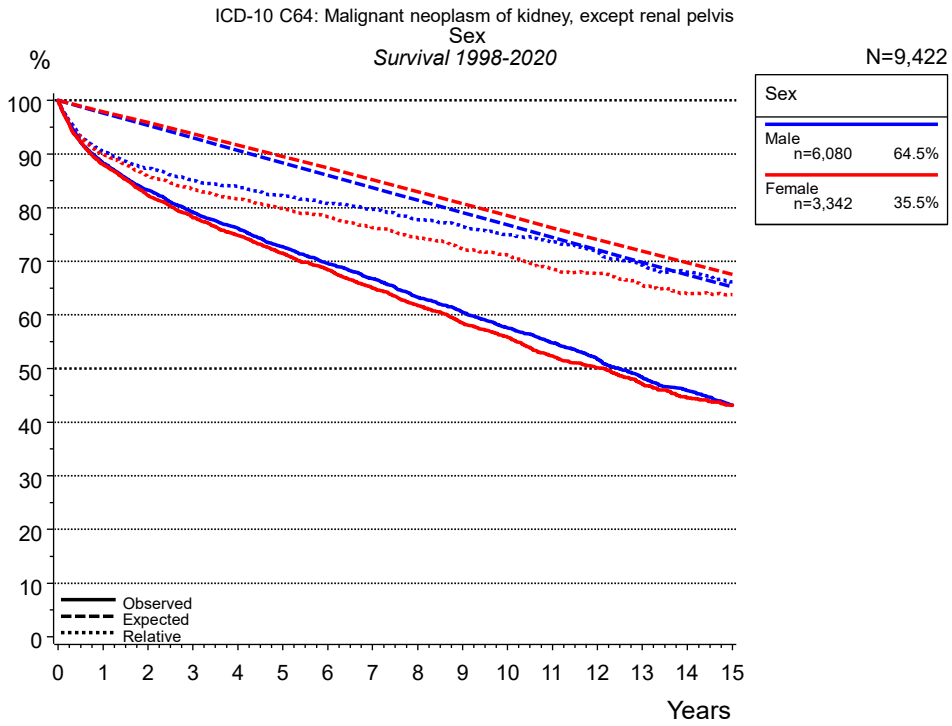

Figure 2a. Survival of patients with kidney cancer by sex. Included in the evaluation are 9,422 cases diagnosed between 1998 and 2020.

	Sex			
	Male n=6,080		Female n=3,342	
Years	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	88.3	90.4	88.1	90.0
2	83.3	87.3	82.2	85.8
3	79.2	85.1	78.2	83.3
4	76.1	83.9	74.8	81.6
5	72.7	82.3	71.6	79.9
6	69.6	80.8	68.3	78.2
7	66.7	79.7	65.0	76.2
8	63.3	77.7	61.8	74.4
9	60.5	76.4	58.4	72.4
10	57.5	74.9	55.9	71.1
11	54.8	73.6	52.3	68.6
12	51.7	71.7	50.1	67.7
13	48.4	69.3	47.1	65.6
14	45.9	67.9	44.5	63.9
15	43.2	66.2	43.1	63.8
Median	12.5		12.1	

Table 2b. Observed (obs.) and relative (rel.) survival of patients with kidney cancer by sex for period 1998-2020 (N=9,422).

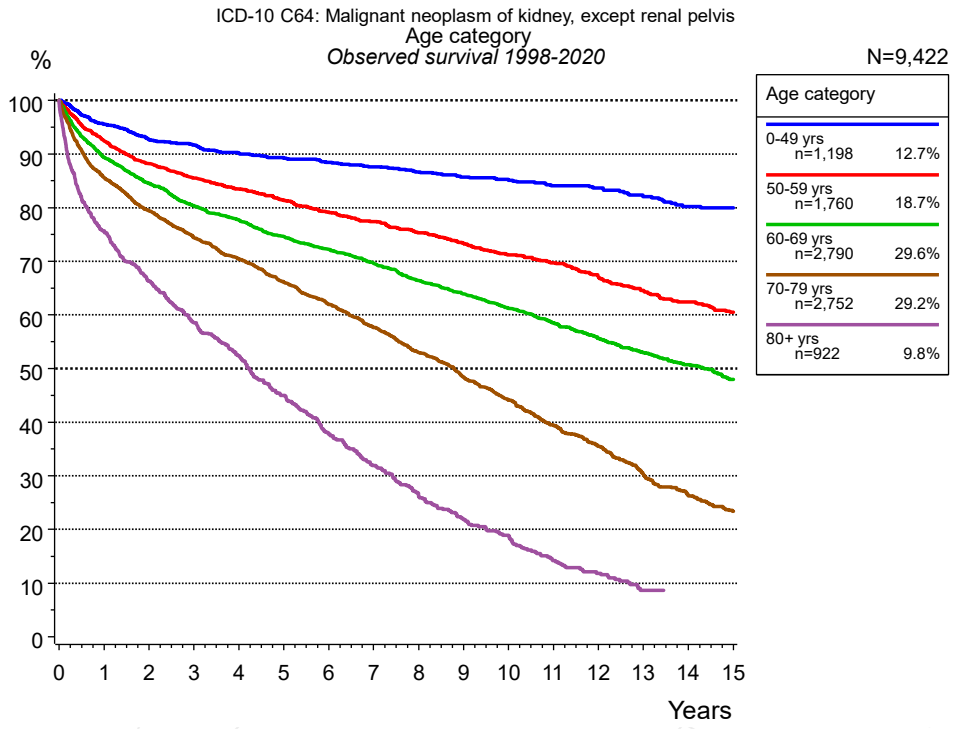

Figure 3a. Observed survival of patients with kidney cancer by age category. Included in the evaluation are 9,422 cases diagnosed between 1998 and 2020.

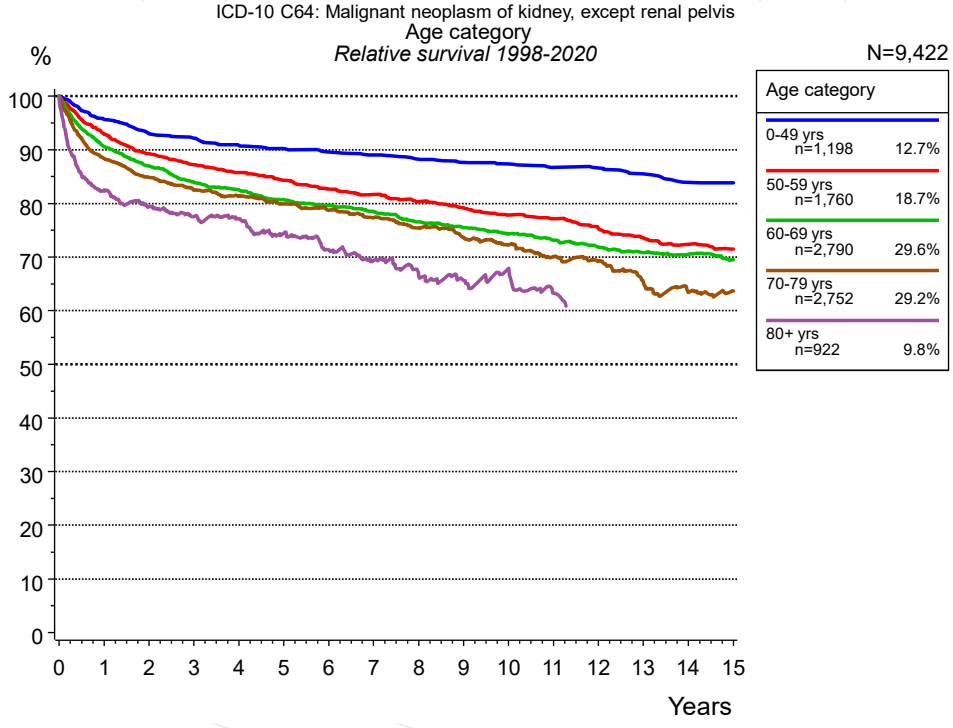

Figure 3b. Relative survival of patients with kidney cancer by age category. Included in the evaluation are 9,422 cases diagnosed between 1998 and 2020.

	Age category									
	0-49 yrs n=1,198		50-59 yrs n=1,760		60-69 yrs n=2,790		70-79 yrs n=2,752		80+ yrs n=922	
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	95.5	95.7	92.4	92.9	89.4	90.6	85.6	88.3	75.6	82.5
2	92.6	93.0	88.2	89.3	84.5	86.9	79.4	84.8	66.3	79.4
3	91.7	92.2	85.5	87.2	80.4	84.0	74.4	82.5	58.5	77.5
4	90.2	90.8	83.5	85.8	77.7	82.6	70.4	81.4	52.4	77.1
5	89.4	90.2	81.4	84.3	74.7	80.8	66.1	79.9	44.9	74.5
6	88.5	89.6	79.2	82.7	72.2	79.7	61.9	78.7	37.9	71.3
7	87.7	89.1	77.4	81.7	69.6	78.4	57.7	77.3	31.9	69.4
8	86.6	88.3	75.3	80.4	66.4	76.5	53.0	75.4	26.2	66.5
9	85.7	87.6	73.3	79.1	63.9	75.5	48.4	73.7	21.8	65.6
10	85.1	87.4	71.2	77.8	61.1	74.3	44.1	72.3	18.9	67.9
11	84.1	86.7	69.7	77.1	58.5	73.2	39.5	70.1	14.2	63.3
12	83.7	86.6	67.2	75.4	55.6	71.9	35.6	69.2	11.8	65.8
13	82.1	85.5	64.6	73.6	52.9	70.9	30.5	65.5	8.6	62.3
14	80.3	83.9	62.4	72.4	50.7	70.5	26.4	63.4		
15	80.0	83.9	60.5	71.4	48.0	69.5	23.4	63.7		
Median			19.9		14.4		8.8		4.2	

Table 3c. Observed (obs.) and relative (rel.) survival of patients with kidney cancer by age category for period 1998-2020 (N=9,422).

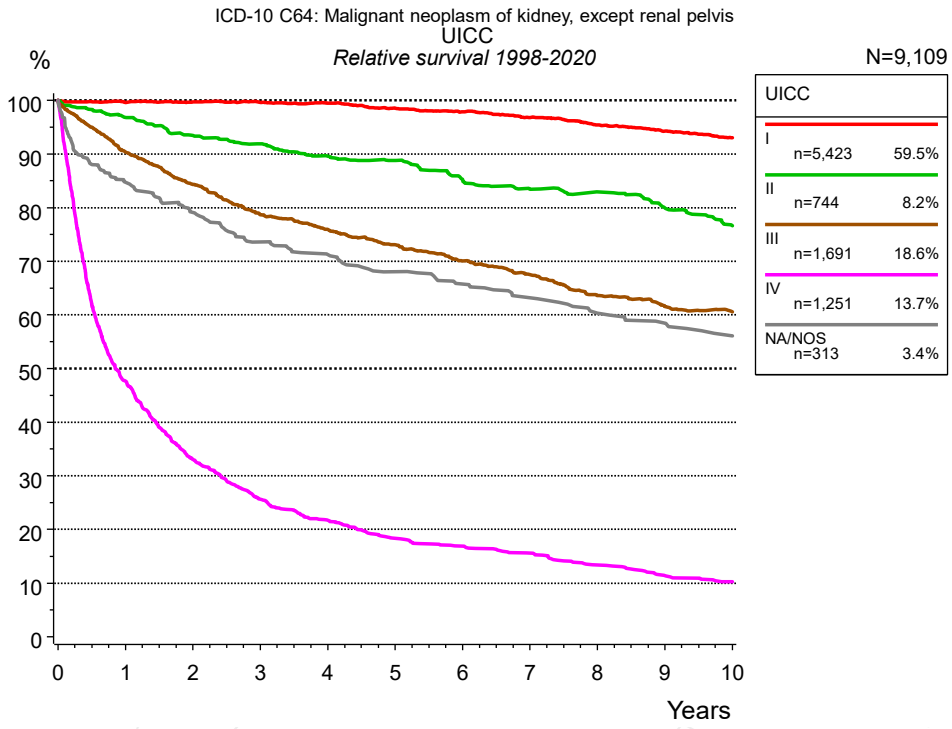

Figure 4a. Relative survival of patients with kidney cancer by UICC. For 9,134 of 9,422 cases diagnosed between 1998 and 2020 valid data could be obtained for this item. For a total of 9,109 cases an evaluable classification was established. The grey line represents the subgroup of 313 patients with missing values regarding UICC (3.3 % of 9,422 patients, the percent values of all other categories are related to n=9,109).

	UICC									
	I		II		III		IV		NA/NOS	
	n=5,423		n=744		n=1,691		n=1,251		n=313	
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	97.7	99.6	94.9	96.8	87.8	90.4	46.3	47.6	82.3	84.7
2	95.7	99.7	89.6	93.4	79.6	84.3	31.4	33.0	74.8	79.1
3	93.6	99.6	86.3	91.9	72.1	78.7	23.8	25.6	67.8	73.6
4	91.3	99.5	82.3	89.6	67.5	75.9	19.8	21.7	64.2	71.3
5	88.2	98.5	79.8	88.8	62.9	73.1	16.4	18.3	60.1	68.0
6	85.4	97.9	74.7	85.2	58.3	70.0	14.8	16.9	57.0	65.8
7	82.4	96.8	71.4	83.4	54.4	67.5	13.3	15.6	53.8	63.2
8	79.0	95.4	69.4	83.0	49.5	63.6	11.2	13.4	50.7	60.3
9	75.9	94.3	65.3	79.9	46.2	61.6	9.3	11.4	48.4	58.5
10	72.8	93.0	61.1	76.6	43.8	60.6	8.2	10.2	45.3	56.1
Median	17.4		13.0		7.8		0.8		8.2	

Table 4b. Observed (obs.) and relative (rel.) survival of patients with kidney cancer by UICC for period 1998-2020 (N=9,109).

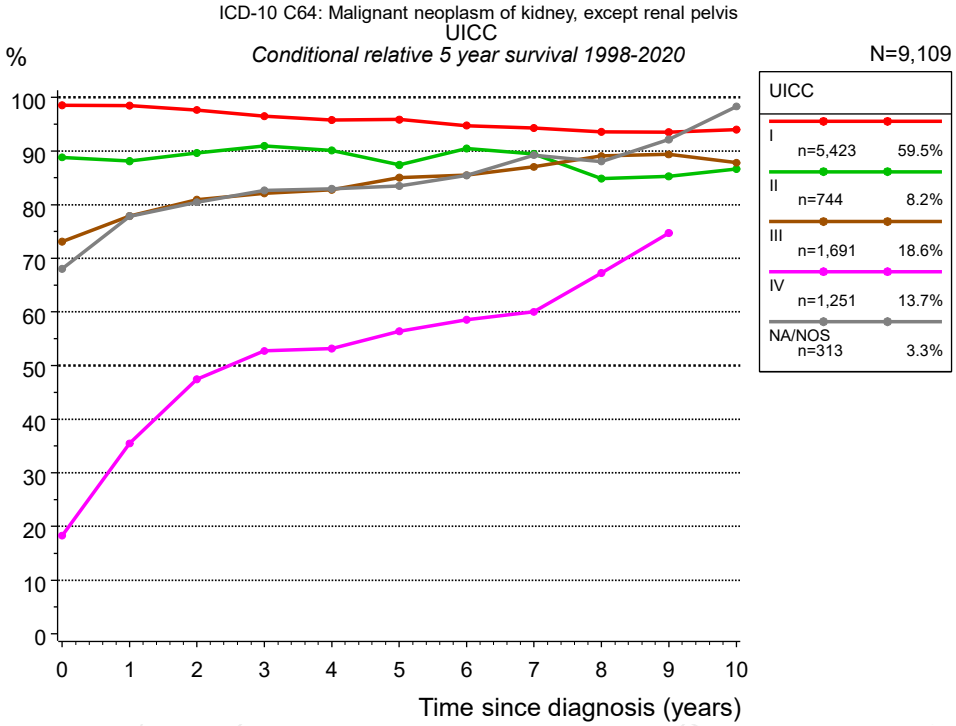

Figure 4c. Conditional relative 5-year survival of patients with kidney cancer by UICC. For 9,134 of 9,422 cases diagnosed between 1998 and 2020 valid data could be obtained for this item. For a total of 9,109 cases an evaluable classification was established. The grey line represents the subgroup of 313 patients with missing values regarding UICC (3.3 % of 9,422 patients, the percent values of all other categories are related to n=9,109).

	UICC									
	I		II		III		IV		NA/NOS	
Years	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	5,423	98.5	744	88.8	1,691	73.1	1,251	18.3	313	68.0
1	5,056	98.5	674	88.1	1,446	77.9	573	35.5	242	77.8
2	4,785	97.7	624	89.6	1,269	80.9	370	47.5	217	80.5
3	4,468	96.5	581	90.9	1,097	82.1	272	52.7	193	82.6
4	4,152	95.8	534	90.1	981	82.8	215	53.1	174	83.0
5	3,795	95.9	501	87.4	868	85.0	169	56.4	160	83.5
6	3,469	94.8	442	90.5	766	85.5	140	58.5	146	85.4
7	3,118	94.3	398	89.5	672	87.0	116	60.0	129	89.3
8	2,760	93.6	356	84.8	561	89.1	89	67.2	113	88.0
9	2,445	93.5	310	85.2	473	89.4	69	74.7	100	92.1
10	2,133	94.0	266	86.6	421	87.8			78	98.3

Table 4d. Conditional relative 5-year survival of patients with kidney cancer by UICC for period 1998-2020 (N=9,109).

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=4,468).

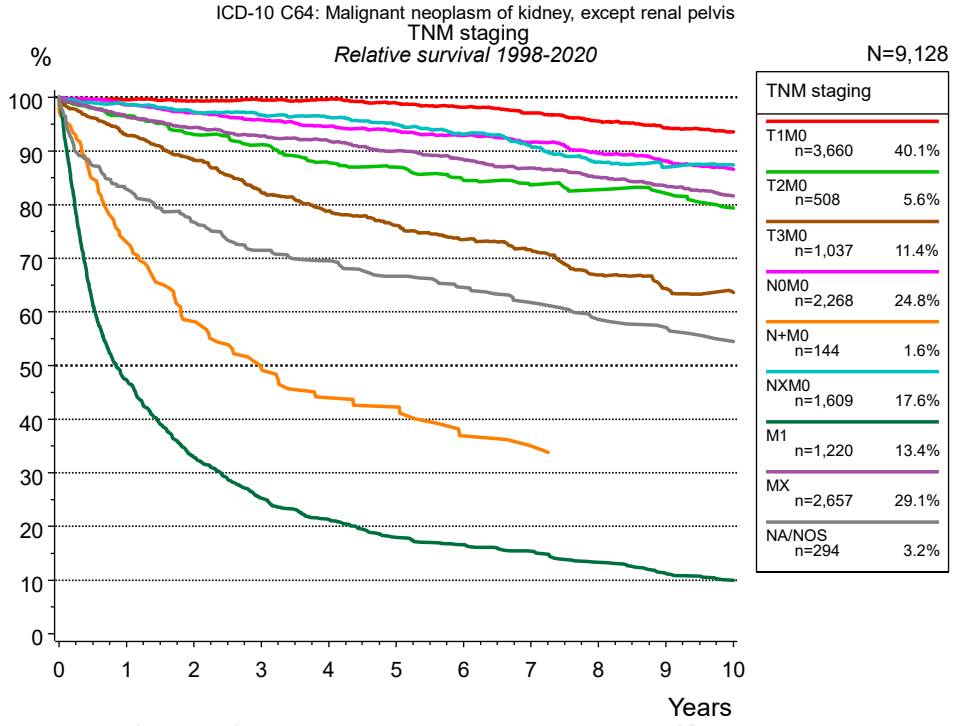

Figure 4e. Relative survival of patients with kidney cancer by TNM staging. For 9,134 of 9,422 cases diagnosed between 1998 and 2020 valid data could be obtained for this item. For a total of 9,128 cases an evaluable classification was established. The accumulated percentage exceeds the 100 % value because patients are potientially considered in more than one subgroup. The grey line represents the subgroup of 294 patients with missing values regarding TNM staging (3.1 % of 9,422 patients, the percent values of all other categories are related to n=9,128).

	TNM staging													
	T1M0 n=3,660		T2M0 n=508		T3M0 n=1,037		N0M0 n=2,268		N+M0 n=144		NXM0 n=1,609		M1 n=1,220	
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	97.6	99.5	94.7	96.6	90.3	93.0	96.7	98.6	70.9	73.0	96.6	98.7	46.0	47.3
2	95.4	99.3	89.5	93.1	83.2	88.3	93.2	97.1	55.6	58.2	93.0	97.2	31.3	32.9
3	93.5	99.5	86.0	91.2	75.3	82.3	89.9	95.8	45.9	49.5	90.5	96.7	23.5	25.3
4	91.5	99.7	81.1	87.8	69.8	78.8	86.8	94.6	39.6	44.0	88.0	96.4	19.4	21.3
5	88.7	98.9	78.7	87.0	65.4	76.1	84.0	93.8	37.6	42.3	84.4	94.9	16.1	18.0
6	85.8	98.2	74.9	84.5	61.0	73.5	81.1	92.9	31.3	36.8	80.7	93.2	14.6	16.6
7	82.6	97.0	72.4	83.7	57.5	71.5	78.0	91.6	29.0	35.0	76.6	90.9	13.2	15.4
8	79.2	95.5	70.5	82.8	51.9	66.9	74.3	89.6			72.1	88.0	11.2	13.3
9	76.0	94.3	68.0	82.1	48.3	64.4	71.0	88.1			69.4	87.0	9.3	11.3
10	73.2	93.6	64.5	79.4	45.8	63.5	67.8	86.6			67.7	87.4	8.1	10.0
Median	17.4		13.2		8.8		15.8		2.6		15.1		0.8	

TNM staging				
cont'd	MX		NA/NOS	
	n=2,657		n=294	
Years	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	94.2	96.4	80.4	82.9
2	90.2	94.4	72.3	76.7
3	86.6	92.8	65.6	71.5
4	83.6	91.9	62.5	69.6
5	79.9	90.0	58.6	66.7
6	76.3	88.4	55.7	64.6
7	72.9	86.8	52.2	61.8
8	69.5	85.0	49.0	58.6
9	66.3	83.5	47.0	57.1
10	62.9	81.6	43.7	54.5
Median	14.3		7.6	

Table 4f. Observed (obs.) and relative (rel.) survival of patients with kidney cancer by TNM staging for period 1998-2020 (N=9,128).

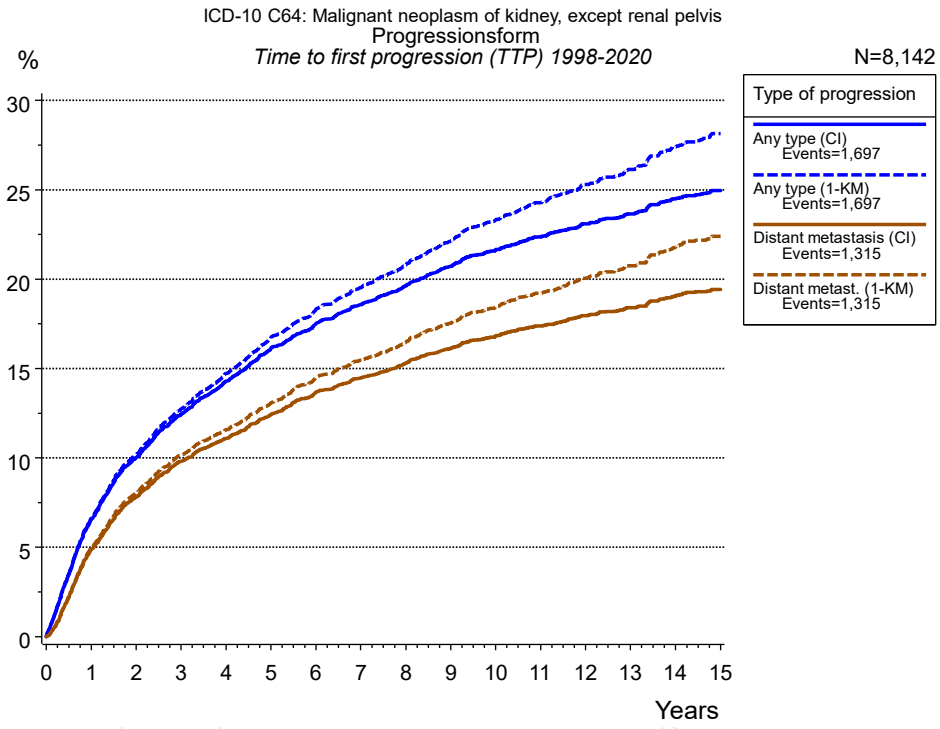

Figure 5a. Time to first progression of 8,142 patients with kidney cancer diagnosed between 1998 and 2020 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency 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	8,142	8,142	8,142	8,142
Events	1,657	1,657	1,287	1,287
compet.	1,643		1,912	
Years	%	%	%	%
0	0.0	0.0	0.0	0.0
1	6.6	6.6	4.9	5.0
2	10.0	10.2	7.8	8.0
3	12.4	12.7	9.8	10.2
4	14.3	14.7	11.1	11.6
5	16.1	16.7	12.4	13.1
6	17.5	18.3	13.7	14.5
7	18.6	19.5	14.5	15.5
8	19.6	20.8	15.3	16.5
9	20.7	22.1	16.1	17.6
10	21.7	23.3	16.8	18.5
11	22.4	24.3	17.4	19.2
12	23.1	25.3	18.0	20.1
13	23.7	26.1	18.4	20.7
14	24.5	27.4	19.1	21.8
15	25.0	28.1	19.4	22.4

Table 5b. Time to first progression of patients with kidney cancer for period 1998-2020 (N=8,142), also showing the total of progression events (Events) and of deaths as competing risk (compet.).

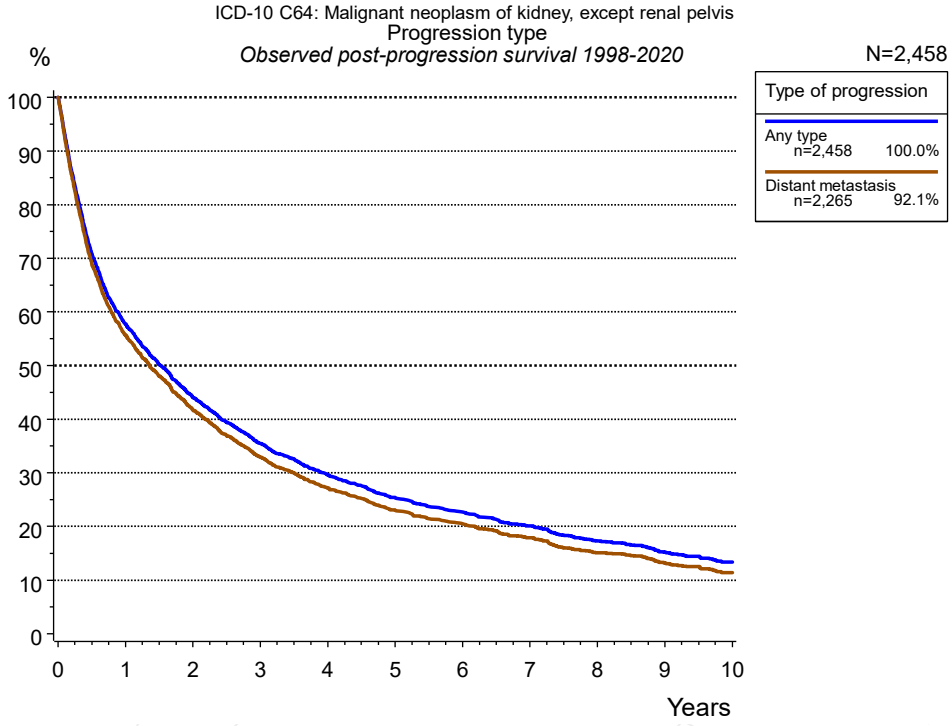

Figure 5c. Observed post-progression survival of 2,458 patients with kidney cancer diagnosed between 1998 and 2020. These 2,458 patients with documented progression events during their course of disease represent 26.3 % of the totally 9,347 evaluated cases (incl. M1, n=1,205, 12.9 %). Patients with cancer relapse documented via death certificates only were excluded (n=444, 4.8 %). 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=2,458	n=2,265
Years	%	%
0	100.0	100.0
1	57.8	55.7
2	44.1	41.8
3	35.5	32.9
4	29.6	27.1
5	25.4	23.0
6	22.7	20.5
7	20.1	17.9
8	17.3	15.1
9	15.2	13.2
10	13.4	11.4

Table 5d. Observed post-progression survival of patients with kidney cancer for period 1998-2020 (N=2,458).

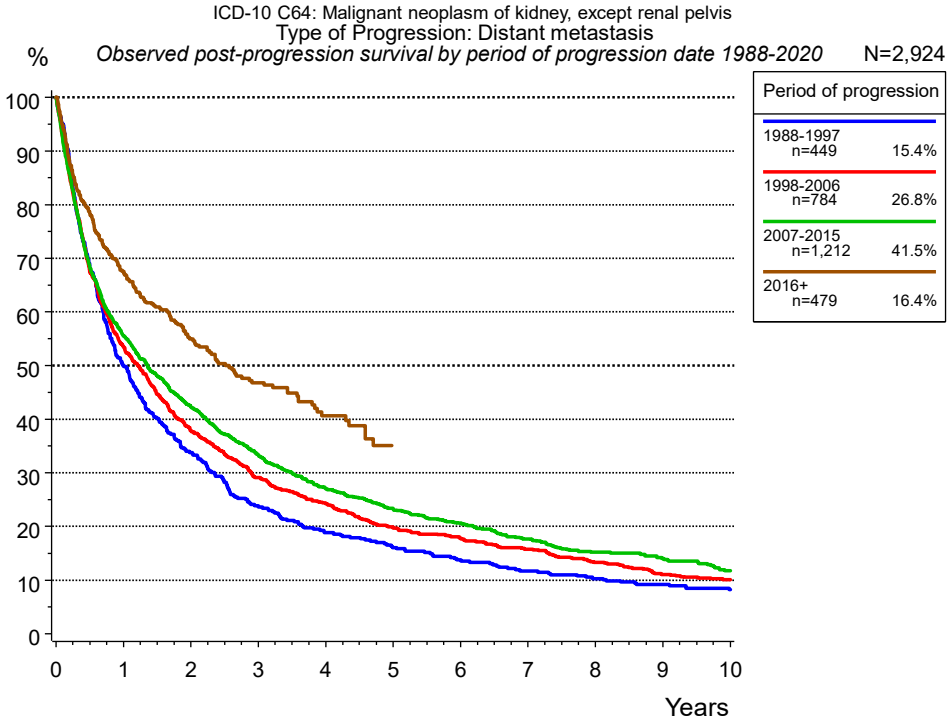

Figure 5e. Observed post-progression (distant metastasis) survival of 2,924 patients with kidney cancer diagnosed between 1988 and 2020 by period of progression.

	Period of progression			
	1988-1997 n=449	1998-2006 n=784	2007-2015 n=1,212	2016+ n=479
Years	%	%	%	%
0	100.0	100.0	100.0	100.0
1	49.8	53.6	55.5	67.6
2	33.7	37.9	42.3	55.0
3	23.9	29.1	33.4	46.8
4	18.8	24.2	27.1	40.6
5	16.1	19.7	23.2	
6	13.8	17.8	20.6	
7	11.7	15.8	17.7	
8	10.3	13.3	15.2	
9	9.1	11.1	14.0	
10	8.2	10.1	11.8	

Table 5f. Observed post-progression (distant metastasis) survival of patients with kidney cancer for period 1988-2020 by period of progression (N=2,924).

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

Munich Cancer Registry. Survival ICD-10 C64: Kidney cancer [Internet]. 2022 [updated 2022 Apr 15; cited 2022 Jun 1]. Available from: https://www.tumorregister-muenchen.de/en/facts/surv/sC64__E-ICD-10-C64-Kidney-cancer-survival.pdf

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