

Munich Cancer Registry



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

ICD-10 C60: Penile cancer

Survival

Year of diagnosis	1988-1997	1998-2014
Patients	77	394
Diseases	77	394
Cases evaluated	72	311
Creation date	03/02/2016	
Export date	12/23/2015	
Population (males)	2.28 m	



Munich Cancer Registry at Munich Cancer Center
Marchioninstr. 15
Munich, 81377
Germany

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

http://www.tumorregister-muenchen.de/en/facts/surv/sC60__E-ICD-10-C60-Penile-cancer-survival.pdf

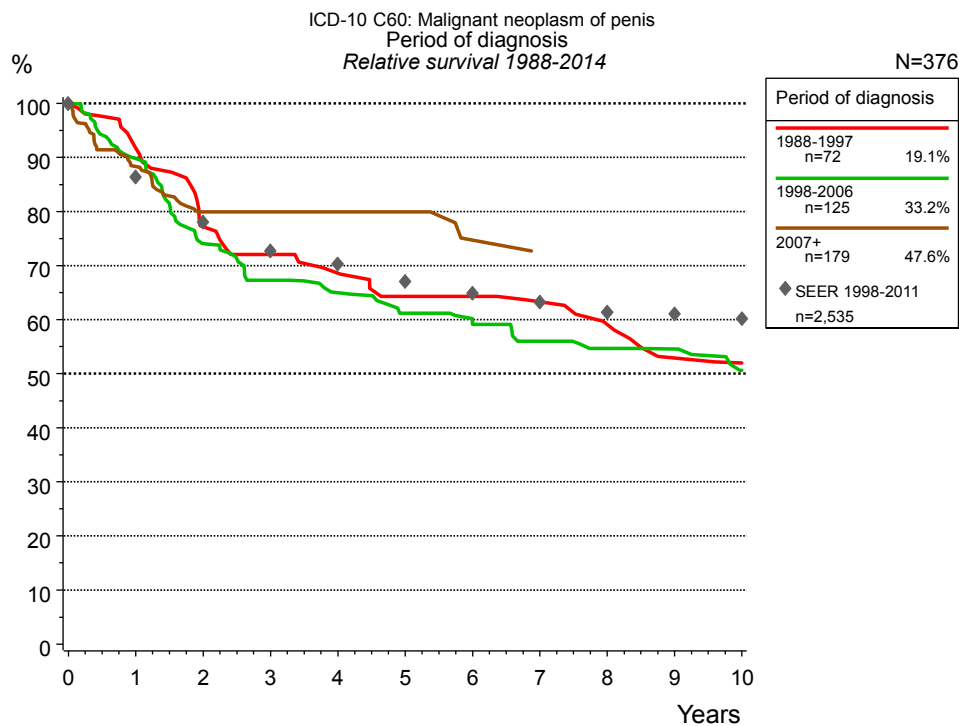


Figure 1a. Relative survival of patients with penile cancer by period of diagnosis. Included in the evaluation are 376 cases diagnosed between 1988 and 2014.

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 1998 to 2011, and are represented by gray 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=72		1998-2006 n=125		2007+ n=179	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	88.5	91.7	86.7	89.8	86.0	88.3
2	72.5	77.2	68.3	74.0	75.4	79.9
3	66.7	72.1	60.7	67.3	74.6	79.9
4	62.4	68.6	56.4	65.0	71.7	79.9
5	56.4	64.3	51.2	61.2	70.2	79.9
6	56.4	64.3	47.7	59.1	63.4	74.7
7	53.4	63.3	44.3	56.0		
8	48.8	59.1	41.7	54.7		
9	42.7	52.9	40.8	54.6		
10	41.1	52.0	35.6	50.6		

Table 1b. Observed (obs.) and relative (rel.) survival of patients with penile cancer by period of diagnosis for period 1988-2014 (N=376).

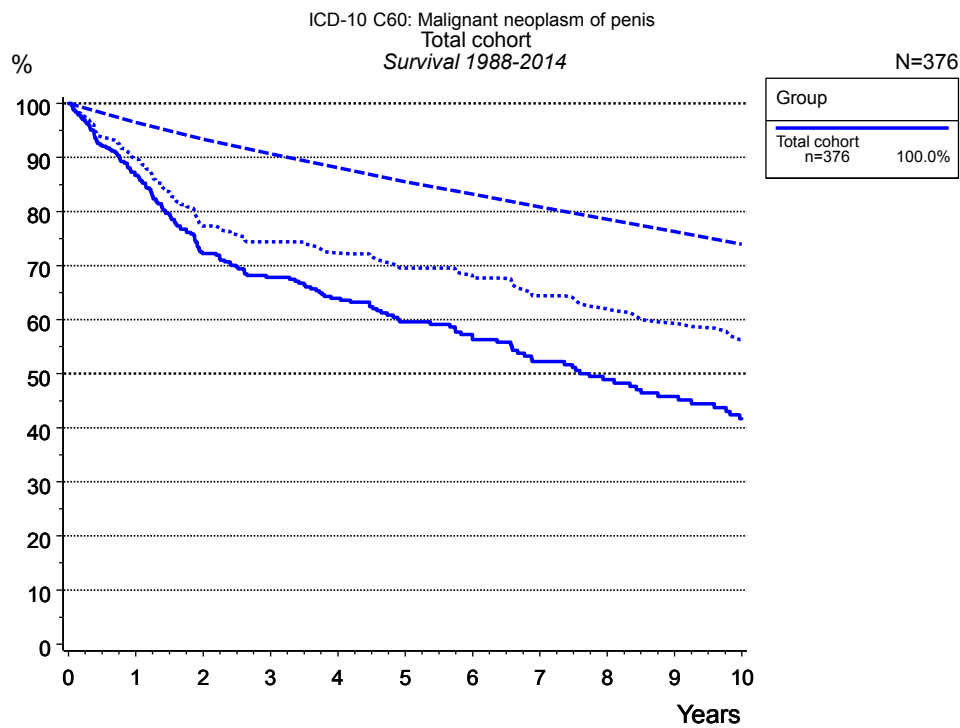


Figure 2a. Observed, expected and relative survival of the total cohort with penile cancer. Included in the evaluation are 376 cases diagnosed between 1988 and 2014.

Years	Group	
	Total cohort n=376	
	obs. %	rel. %
0	100.0	100.0
1	86.7	89.8
2	72.2	77.3
3	67.8	74.4
4	64.0	72.3
5	59.6	69.5
6	56.3	67.7
7	52.2	64.4
8	48.9	61.9
9	45.8	59.3
10	41.7	56.3

Table 2b. Observed (obs.) and relative (rel.) survival of the total cohort with penile cancer for period 1988-2014 (N=376).

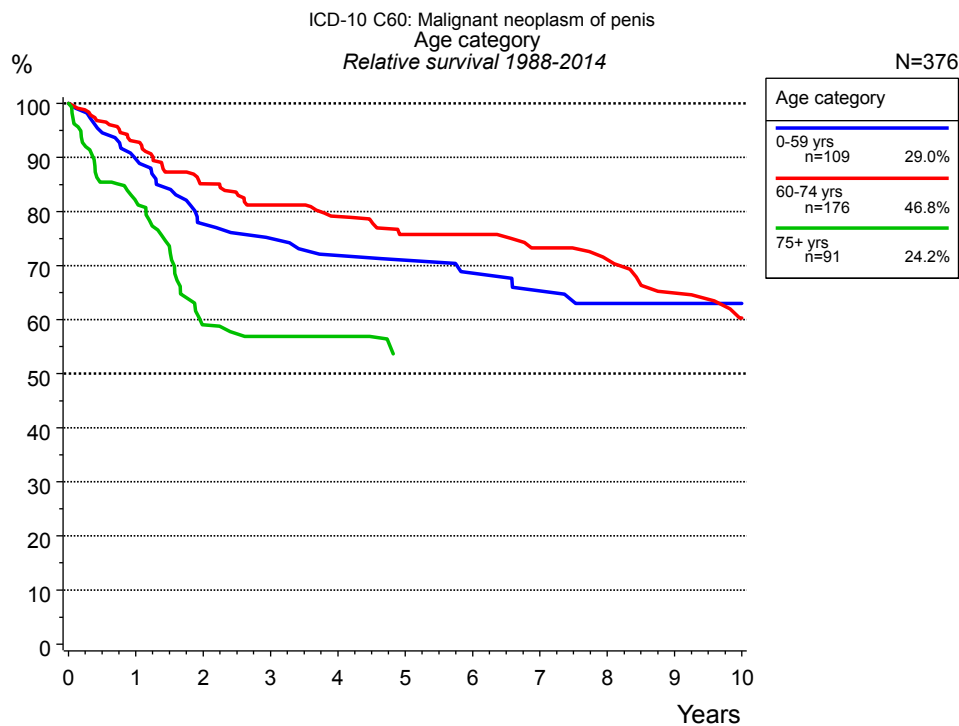


Figure 3a. Relative survival of patients with penile cancer by age category. Included in the evaluation are 376 cases diagnosed between 1988 and 2014.

Years	Age category					
	0-59 yrs n=109		60-74 yrs n=176		75+ yrs n=91	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	89.3	89.7	91.2	92.9	74.4	81.9
2	77.1	77.7	81.3	85.1	48.4	59.1
3	73.8	75.0	76.1	81.2	44.0	56.9
4	70.3	71.9	71.7	79.1	40.7	56.9
5	69.0	71.0	66.6	75.8	33.0	53.7
6	66.0	68.6	64.7	75.8		
7	62.8	65.3	60.5	73.3		
8	59.4	63.0	56.9	71.1		
9	59.4	63.0	50.3	64.9		
10	59.4	63.0	44.3	60.3		

Table 3b. Observed (obs.) and relative (rel.) survival of patients with penile cancer by age category for period 1988-2014 (N=376).

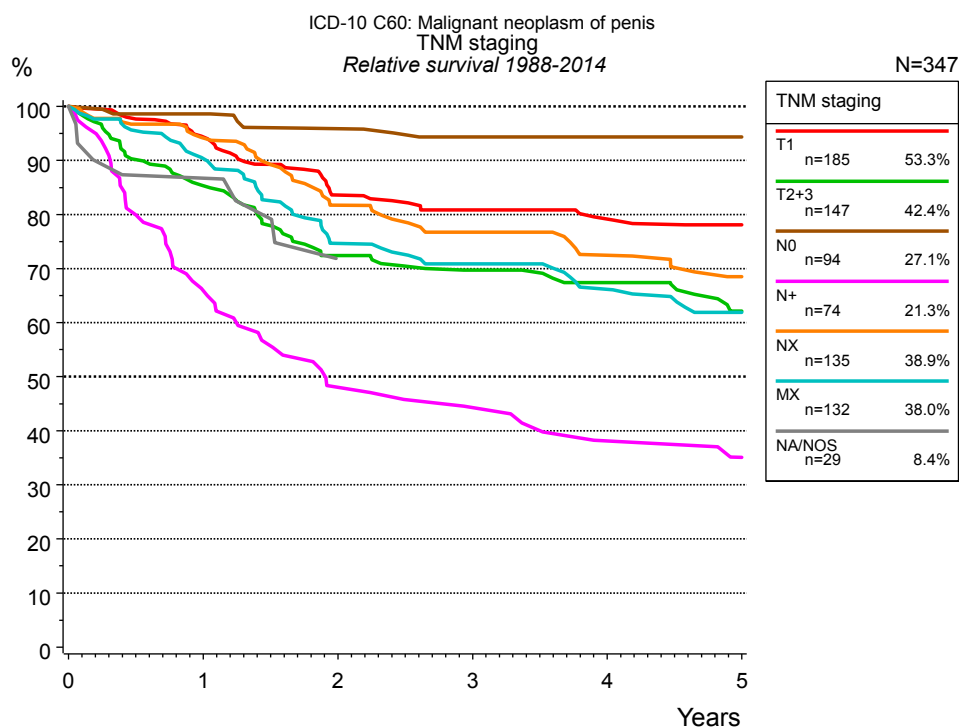


Figure 4a. Relative survival of patients with penile cancer by TNM staging. For 350 of 376 cases diagnosed between 1988 and 2014 valid data could be obtained for this item. For a total of 347 cases an evaluable classification was established. The accumulated percentage exceeds the 100% value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 29 patients with missing values regarding TNM staging (7.7 % of 376 patients, the percent values of all other categories are related to n=347).

TNM staging														
Years	T1 n=185		T2+3 n=147		N0 n=94		N+ n=74		NX n=135		MX n=132		NA/NOS n=29	
	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	91.4	94.3	82.4	85.3	97.9	98.6	64.9	65.9	89.8	94.1	86.6	90.4	85.6	86.7
2	78.5	83.6	67.8	72.4	92.2	95.9	46.4	48.0	74.9	81.7	69.0	74.7	65.2	71.8
3	74.6	80.9	63.1	69.7	88.6	94.3	41.9	44.3	68.5	76.7	64.0	70.9	65.2	70.6
4	70.9	79.1	59.4	67.4	88.6	94.3	35.3	38.1	62.4	72.5	58.1	66.2		
5	68.5	78.1	52.4	62.1	84.3	94.3	31.8	35.1	56.6	68.5	52.6	61.9		

Table 4b. Observed (obs.) and relative (rel.) survival of patients with penile cancer by TNM staging for period 1988-2014 (N=767).

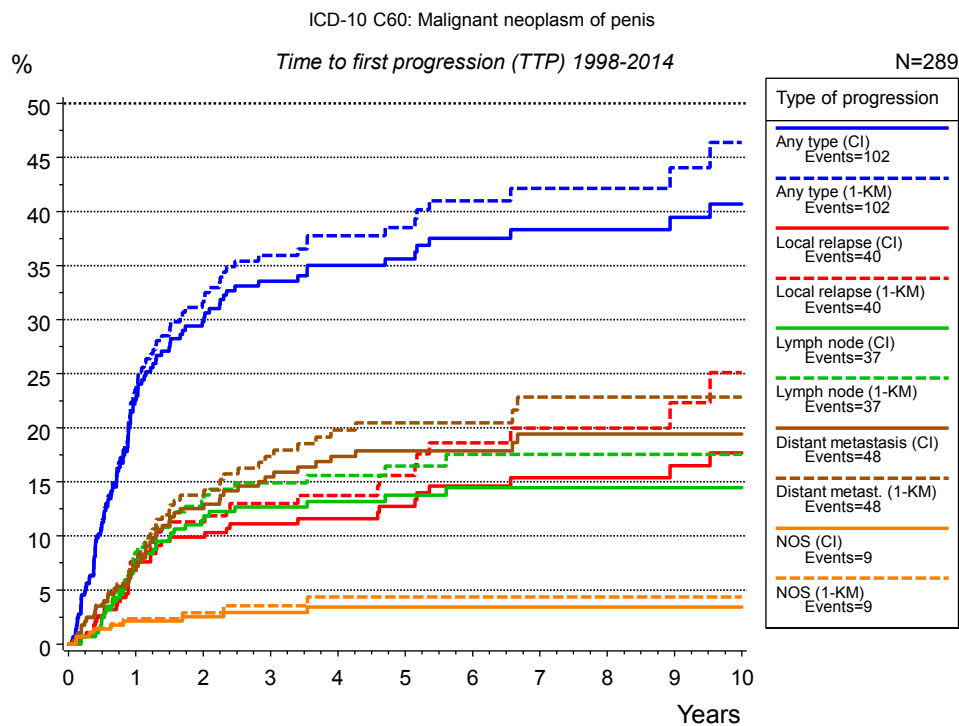


Figure 5a. Time to first progression of 289 patients with penile cancer diagnosed between 1998 and 2014 (M0 only in solid cancers) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

Years	Type of progression						
	Any type (CI)	Any type (1-KM)	Local relapse (CI)	Local relapse (1-KM)	Lymph node (CI)	Lymph node (1-KM)	Distant metastasis (CI)
	n=289 %	n=289 %	n=289 %	n=289 %	n=289 %	n=289 %	n=289 %
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	22.6	23.6	7.2	8.1	7.6	8.5	6.8
2	29.8	31.6	9.9	11.3	11.5	13.3	12.5
3	33.6	35.9	11.1	13.0	12.7	14.9	15.5
4	35.0	37.7	11.6	13.7	13.2	15.6	17.4
5	35.6	38.5	12.8	15.6	13.8	16.5	17.9
6	37.5	41.0	14.6	18.6	14.5	17.6	17.9
7	38.3	42.1	15.4	20.0	14.5	17.6	19.4
8	38.3	42.1	15.4	20.0	14.5	17.6	19.4
9	39.5	44.1	16.5	22.3	14.5	17.6	19.4
10	40.7	46.4	17.7	25.1	14.5	17.6	19.4

<i>cont'd</i>	Type of progression		
	Distant metast. (1- KM)	NOS (CI)	NOS (1-KM)
	n=289	n=289	n=289
Years	%	%	%
0	0.0	0.0	0.0
1	7.3	2.1	2.3
2	13.8	2.5	2.9
3	17.4	2.9	3.6
4	19.8	3.4	4.4
5	20.5	3.4	4.4
6	20.5	3.4	4.4
7	22.8	3.4	4.4
8	22.8	3.4	4.4
9	22.8	3.4	4.4
10	22.8	3.4	4.4

Table 5b. Time to first progression of patients with penile cancer for period 1998-2014 (N=289).

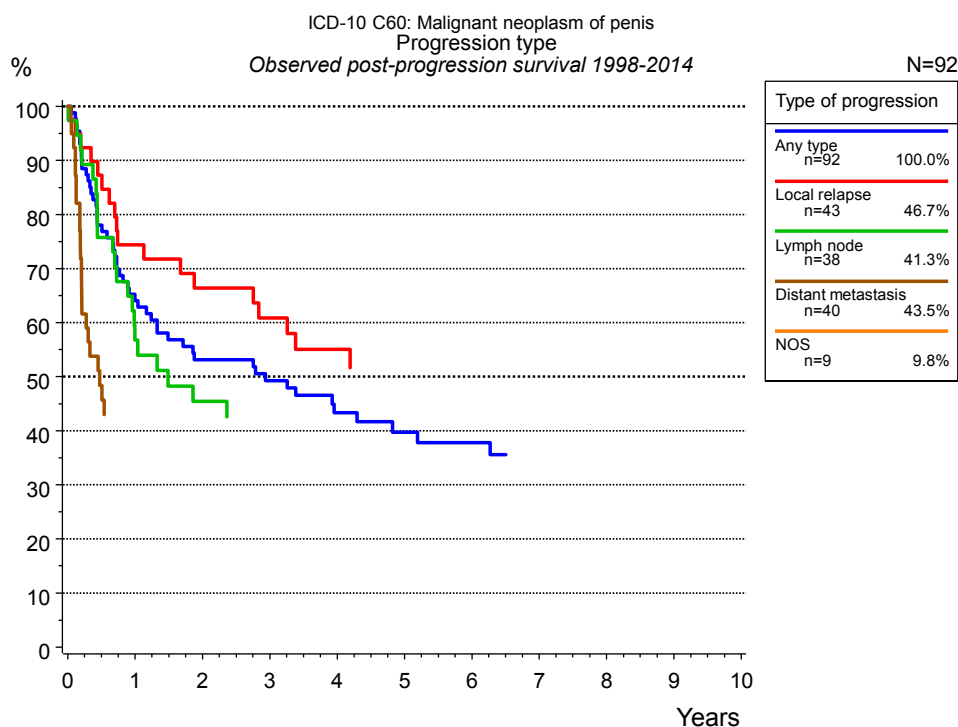


Figure 5c. Observed post-progression survival of 92 patients with penile cancer diagnosed between 1998 and 2014. These 92 patients with documented progression events during their course of disease represent 30.6 % of the totally 301 evaluated cases (incl. M1, n=12, 4.0 %). Patients with cancer relapse documented via death certificates only were excluded (n=22, 7.3 %). 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. Subgroups with sample size <15 are dropped from the chart.

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=92 %	Local relapse n=43 %	Lymph node n=38 %	Distant metastasis n=40 %	NOS n=9 %
0	100.0	100.0	100.0	100.0	100.0
1	64.1	74.4	56.8		
2	53.1	66.4	45.4		
3	49.2	60.9			
4	43.3	55.1			
5	39.8	51.7			
6	37.8	51.7			
7	35.6				
8	35.6				
9	35.6				
10	35.6				

Table 5d. Observed post-progression survival of patients with penile cancer for period 1998-2014 (N=92).

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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Index of figures and tables

Fig./Tbl.		Page
1a	Relative survival by period of diagnosis (chart)	2
1b	Survival by period of diagnosis (table)	2
2a	Survival of total cohort (chart)	3
2b	Survival of total cohort (table)	3
3a	Relative survival by age category (chart)	4
3b	Survival by age category (table)	4
4a	Relative survival by TNM staging (chart)	5
4b	Survival by TNM staging (table)	5
5a	Time to first progression (chart)	6
5b	Time to first progression (table)	6
5c	Observed post-progression survival (chart)	8
5d	Observed post-progression survival (table)	8