

# Munich Cancer Registry



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## ICD-10 C62: Testicular cancer

### Survival

Year of diagnosis	1988-1997	1998-2016
Patients	940	3,621
Diseases	956	3,694
Cases evaluated	909	3,407
Creation date	08/22/2018	
Export date	08/09/2018	
Population (males)	2.38 m	



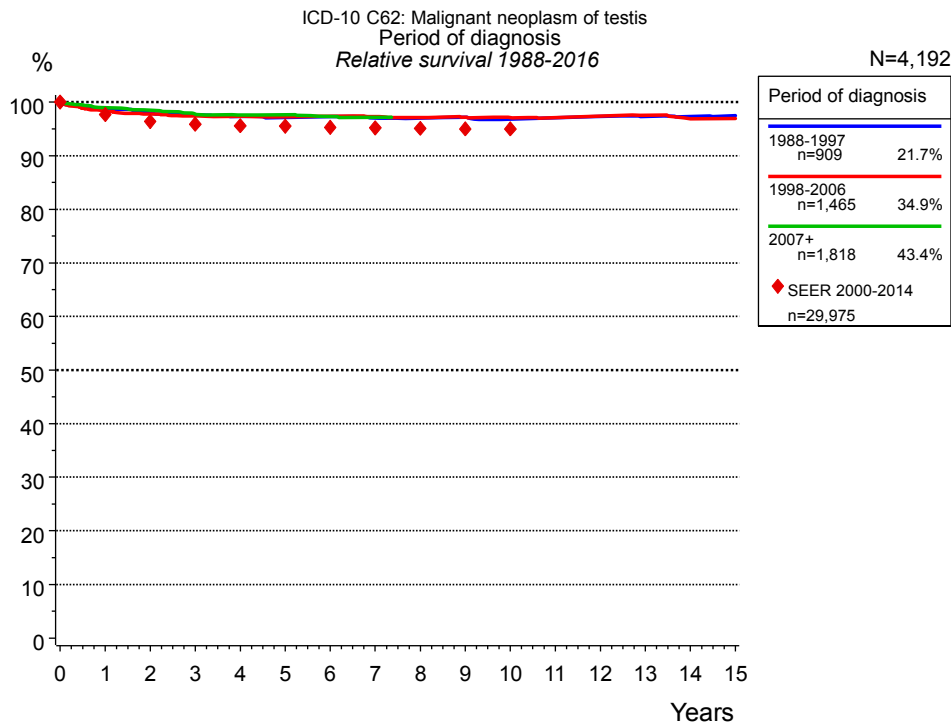
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<https://www.tumorregister-muenchen.de/en>

[https://www.tumorregister-muenchen.de/en/facts/surv/sC62\\_\\_E-ICD-10-C62-Testicular-cancer-survival.pdf](https://www.tumorregister-muenchen.de/en/facts/surv/sC62__E-ICD-10-C62-Testicular-cancer-survival.pdf)

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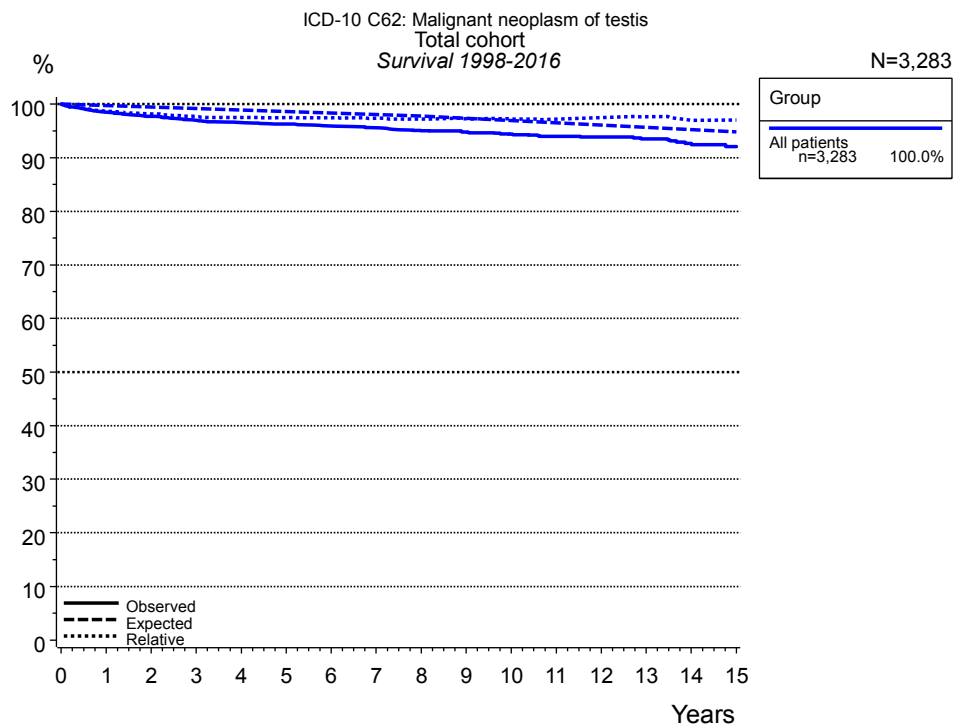
**Figure 1a.** Relative survival of patients with testicular cancer by period of diagnosis. Included in the evaluation are 4,192 cases diagnosed between 1988 and 2016.

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=909		1998-2006 n=1,465		2007+ n=1,818	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	98.4	98.7	98.1	98.3	98.8	99.0
2	97.4	97.9	97.3	97.8	98.1	98.5
3	96.8	97.7	96.7	97.4	97.1	97.8
4	96.2	97.3	96.3	97.3	96.7	97.6
5	95.7	97.1	95.9	97.2	96.5	97.6
6	95.6	97.3	95.7	97.3	96.0	97.3
7	94.9	97.0	95.4	97.3	95.6	97.1
8	94.6	97.0	94.8	97.1		
9	94.4	97.2	94.6	97.2		
10	93.7	96.8	94.1	97.1		
11	93.5	97.1	93.7	97.1		
12	93.4	97.3	93.6	97.4		
13	93.0	97.3	93.3	97.5		
14	92.6	97.3	92.4	96.9		
15	92.3	97.5	91.9	96.9		

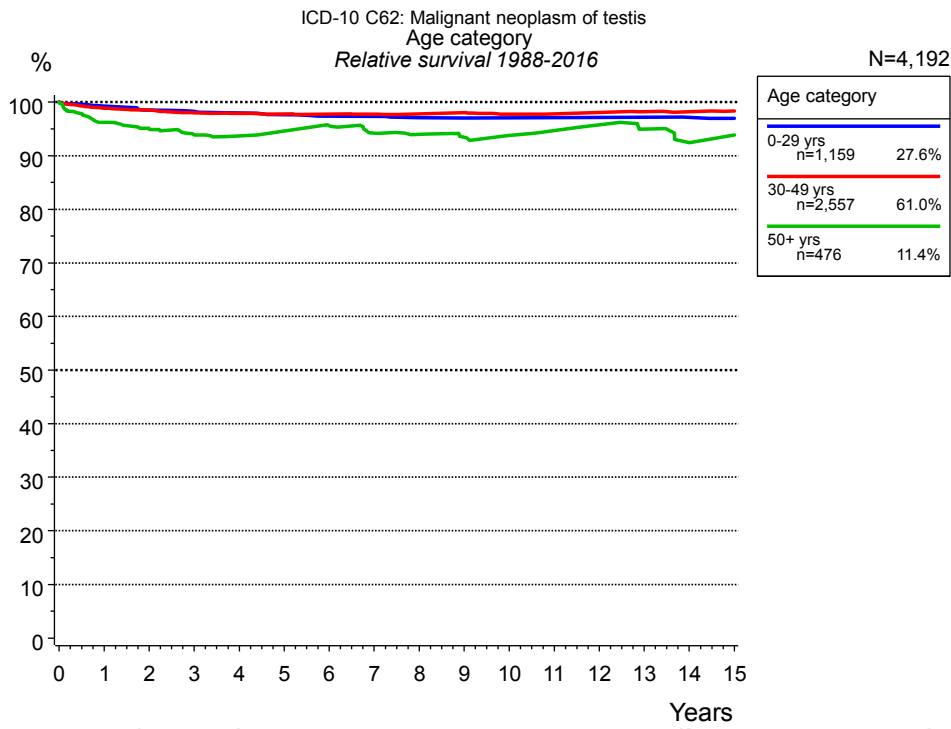
**Table 1b.** Observed (obs.) and relative (rel.) survival of patients with testicular cancer by period of diagnosis for period 1988-2016 (N=4,192).



**Figure 2a.** Observed, expected and relative survival of the total cohort with testicular cancer. Included in the evaluation are 3,283 cases diagnosed between 1998 and 2016.

Years	Group	
	obs. %	rel. %
	All patients n=3,283	
0	100.0	100.0
1	98.5	98.7
2	97.7	98.2
3	96.9	97.7
4	96.5	97.5
5	96.3	97.5
6	95.9	97.4
7	95.6	97.4
8	95.0	97.2
9	94.8	97.3
10	94.4	97.2
11	94.0	97.2
12	93.9	97.5
13	93.5	97.6
14	92.7	97.0
15	92.1	97.0

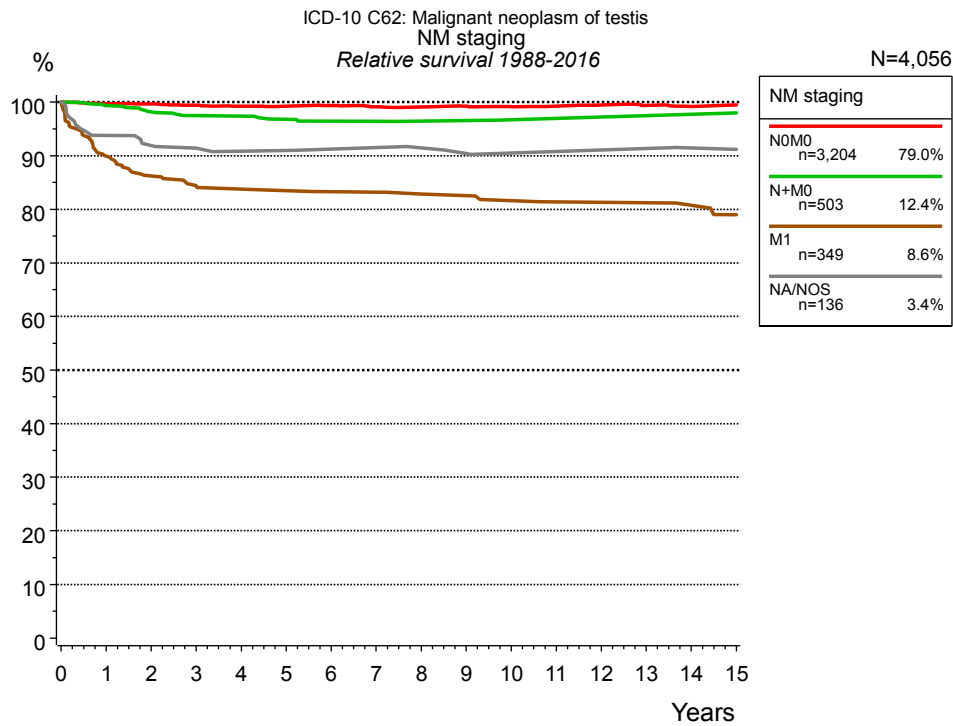
**Table 2b.** Observed (obs.) and relative (rel.) survival of the total cohort with testicular cancer for period 1998-2016 (N=3,283).



**Figure 3a.** Relative survival of patients with testicular cancer by age category. Included in the evaluation are 4,192 cases diagnosed between 1988 and 2016.

Years	Age category					
	0-29 yrs n=1,159		30-49 yrs n=2,557		50+ yrs n=476	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	99.3	99.3	98.7	98.8	95.1	96.3
2	98.4	98.5	98.2	98.5	92.7	94.9
3	98.1	98.3	97.6	98.0	90.3	93.8
4	97.8	98.0	97.2	97.9	89.1	93.7
5	97.4	97.7	96.9	97.8	88.5	94.6
6	97.0	97.4	96.7	97.8	88.1	95.6
7	97.0	97.4	96.4	97.8	85.4	94.2
8	96.5	97.1	96.2	97.8	83.7	94.0
9	96.5	97.0	96.2	98.0	81.8	93.4
10	96.3	97.1	95.6	97.8	80.2	93.8
11	96.3	97.1	95.2	97.8	79.6	94.7
12	96.3	97.2	95.1	98.1	78.9	95.8
13	96.3	97.2	94.9	98.2	76.3	95.0
14	96.0	97.2	94.5	98.2	73.4	92.4
15	95.7	97.0	94.2	98.4	72.3	93.8

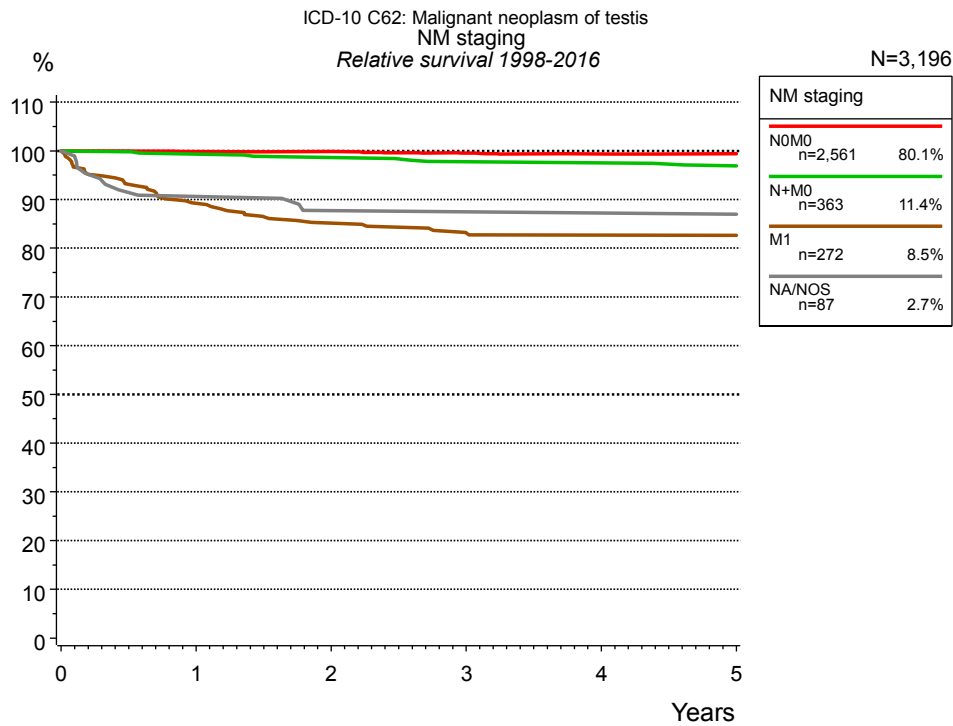
**Table 3b.** Observed (obs.) and relative (rel.) survival of patients with testicular cancer by age category for period 1988-2016 (N=4,192).



**Figure 4a.** Relative survival of patients with testicular cancer by NM staging. For 4,057 of 4,192 cases diagnosed between 1988 and 2016 valid data could be obtained for this item. For a total of 4,056 cases an evaluable classification was established. The grey line represents the subgroup of 136 patients with missing values regarding NM staging (3.2 % of 4,192 patients, the percent values of all other categories are related to n=4,056).

Years	NM staging							
	NOMO n=3,204		N+M0 n=503		M1 n=349		NA/NOS n=136	
	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	99.5	99.7	99.2	99.4	89.8	89.9	93.2	93.8
2	99.2	99.7	97.9	98.2	86.0	86.2	90.9	91.9
3	98.7	99.4	97.0	97.5	83.9	84.4	89.2	91.4
4	98.2	99.2	96.8	97.4	83.2	83.8	88.3	90.9
5	97.9	99.3	96.0	96.8	82.8	83.5	88.3	91.0
6	97.7	99.4	95.5	96.5	82.4	83.3	87.3	91.2
7	97.2	99.2	95.2	96.4	82.4	83.2	87.3	91.5
8	96.8	99.1	94.9	96.5	81.4	82.8	86.2	91.5
9	96.6	99.2	94.9	96.6	81.4	82.5	85.0	90.4
10	96.1	99.1	94.5	96.7	80.1	81.6	83.8	90.5
11	95.8	99.2	94.5	97.0	79.4	81.4	83.8	90.8
12	95.7	99.5	94.5	97.2	79.4	81.3	83.8	91.1
13	95.1	99.4	94.5	97.5	79.4	81.2	83.8	91.3
14	94.6	99.2	94.5	97.8	78.3	80.7	82.2	91.4
15	94.3	99.5	94.5	98.0	76.0	79.0	82.2	91.2

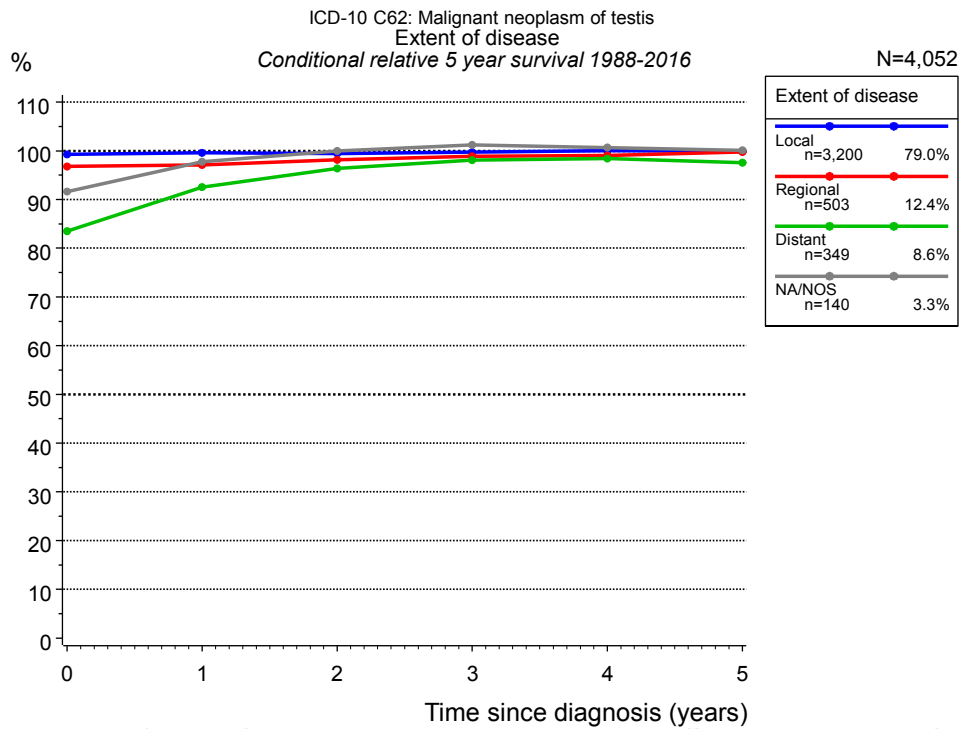
**Table 4b.** Observed (obs.) and relative (rel.) survival of patients with testicular cancer by NM staging for period 1988-2016 (N=4,056).



**Figure 4c.** Relative survival of patients with testicular cancer by NM staging. For 3,196 of 3,283 cases diagnosed between 1998 and 2016 valid data could be obtained for this item. The grey line represents the subgroup of 87 patients with missing values regarding NM staging (2.7 % of 3,283 patients, the percent values of all other categories are related to n=3,196).

Years	NM staging							
	NOM0 n=2,561		N+M0 n=363		M1 n=272		NA/NOS n=87	
	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	99.6	99.8	99.1	99.3	89.2	89.2	90.5	90.6
2	99.4	99.9	98.3	98.6	85.0	85.2	86.8	87.7
3	98.8	99.5	97.3	97.7	82.7	83.2	86.8	87.5
4	98.3	99.3	96.9	97.5	82.2	82.7	86.8	87.2
5	98.1	99.4	96.2	96.9	82.2	82.7	86.8	87.0

**Table 4d.** Observed (obs.) and relative (rel.) survival of patients with testicular cancer by NM staging for period 1998-2016 (N=3,196).



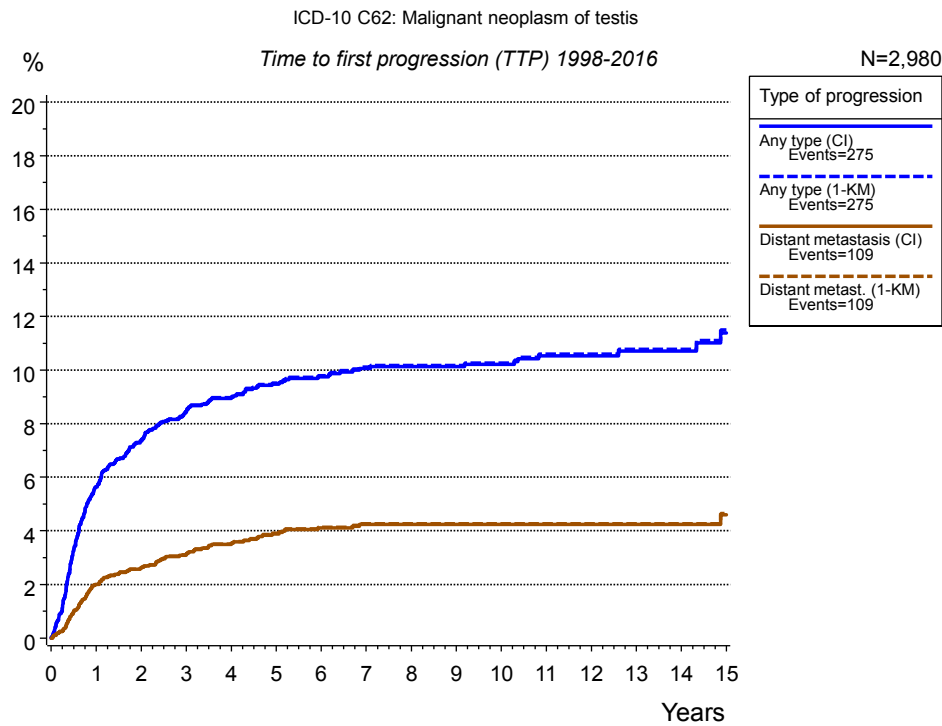
**Figure 4e.** Conditional relative 5-year survival of patients with testicular cancer by extent of disease. For 4,057 of 4,192 cases diagnosed between 1988 and 2016 valid data could be obtained for this item. For a total of 4,052 cases an evaluable classification was established. The grey line represents the subgroup of 140 patients with missing values regarding extent of disease (3.3 % of 4,192 patients, the percent values of all other categories are related to n=4,052).

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	3,200	99.2	503	96.8	349	83.5	140	91.7
1	2,913	99.6	485	97.1	287	92.5	126	97.7
2	2,715	99.5	446	98.1	263	96.4	118	99.9
3	2,510	99.7	415	98.9	234	98.1	107	101.2
4	2,297	100.0	396	99.0	218	98.4	101	100.7
5	2,097	99.9	367	99.8	206	97.6	91	100.1

**Table 4f.** Conditional relative 5-year survival of patients with testicular cancer by extent of disease for period 1988-2016 (N=4,052).

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 4c). 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 99.7% (n=2,510).

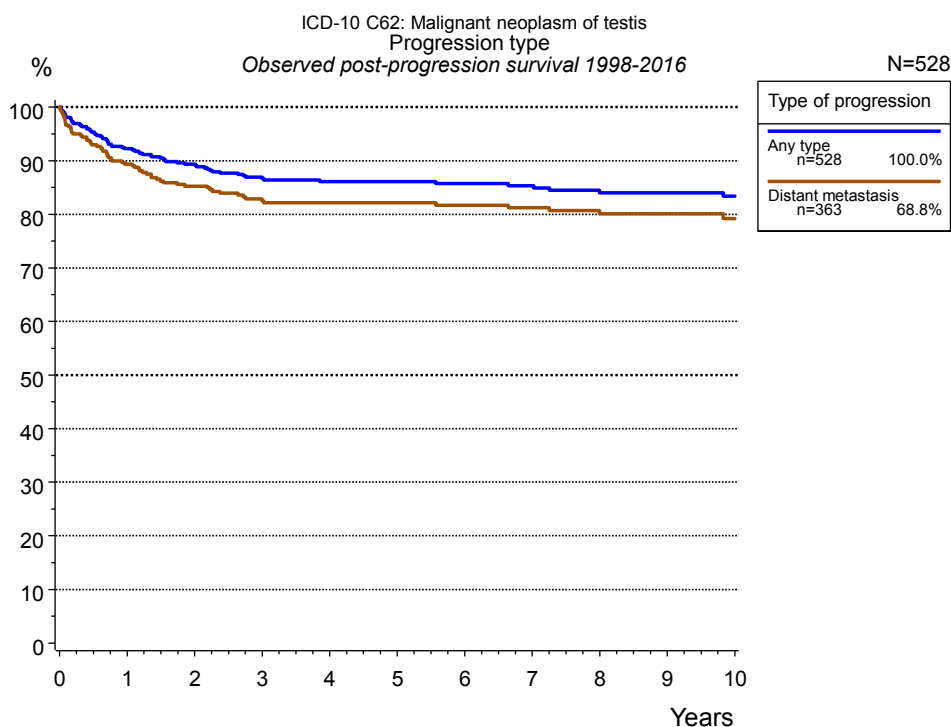




**Figure 5a.** Time to first progression of 2,980 patients with testicular cancer diagnosed between 1998 and 2016 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The 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=2,980 %	n=2,980 %	n=2,980 %	n=2,980 %
0	0.0	0.0	0.0	0.0
1	5.6	5.6	2.0	2.0
2	7.4	7.4	2.6	2.6
3	8.5	8.5	3.1	3.1
4	8.9	9.0	3.5	3.5
5	9.5	9.5	3.9	3.9
6	9.8	9.8	4.1	4.1
7	10.1	10.1	4.2	4.3
8	10.1	10.2	4.2	4.3
9	10.1	10.2	4.2	4.3
10	10.2	10.3	4.2	4.3
11	10.5	10.6	4.2	4.3
12	10.5	10.6	4.2	4.3
13	10.7	10.8	4.2	4.3
14	10.7	10.8	4.2	4.3
15	11.4	11.5	4.6	4.6

**Table 5b.** Time to first progression of patients with testicular cancer for period 1998-2016 (N=2,980).

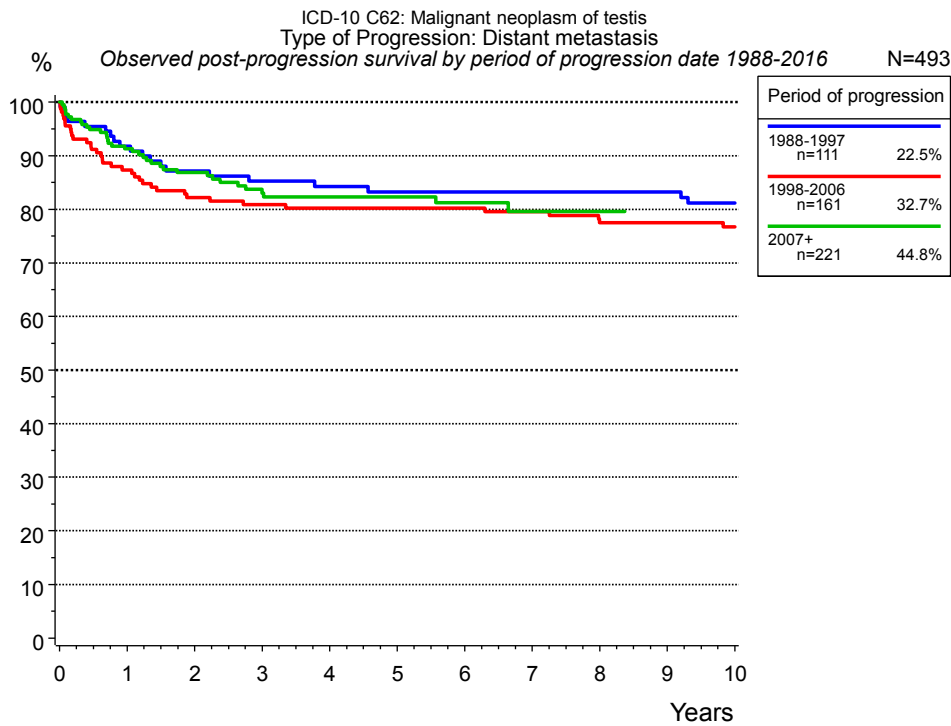


**Figure 5c.** Observed post-progression survival of 528 patients with testicular cancer diagnosed between 1998 and 2016. These 528 patients with documented progression events during their course of disease represent 16.3 % of the totally 3,246 evaluated cases (incl. M1, n=266, 8.2 %). Patients with cancer relapse documented via death certificates only were excluded (n=13, 0.4 %). 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=528 %	Distant metastasis n=363 %
0	100.0	100.0
1	92.2	89.4
2	89.4	85.3
3	86.7	82.5
4	86.1	82.2
5	86.1	82.2
6	85.7	81.7
7	85.3	81.2
8	84.0	80.1
9	84.0	80.1
10	83.4	79.2

**Table 5d.** Observed post-progression survival of patients with testicular cancer for period 1998-2016 (N=528).



**Figure 5e.** Observed post-progression (distant metastasis) survival of 493 patients with testicular cancer diagnosed between 1988 and 2016 by period of progression.

Years	Period of progression		
	1988-1997 n=111 %	1998-2006 n=161 %	2007+ n=221 %
0	100.0	100.0	100.0
1	91.8	87.3	91.3
2	87.1	82.2	86.8
3	85.3	80.9	83.0
4	84.3	80.2	82.3
5	83.2	80.2	82.3
6	83.2	80.2	81.2
7	83.2	79.6	79.6
8	83.2	77.5	79.6
9	83.2	77.5	
10	81.2	76.7	

**Table 5f.** Observed post-progression (distant metastasis) survival of patients with testicular cancer for period 1988-2016 by period of progression (N=493).

## 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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