Munich Cancer Registry

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ICD-10 C62: Testicular cancer

Survival

Year of diagnosis	1988-1997	1998-2014
Patients	935	3,262
Diseases	950	3,330
Cases evaluated	905	3,073

Creation date	03/02/2016
Export date	12/23/2015
Population (males)	2.28 m

Munich Cancer Registry at Munich Cancer Center
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Munich, 81377
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http://www.tumorregister-muenchen.de/en

http://www.tumorregister-muenchen.de/en/facts/surv/sC62__E-ICD-10-C62-Testicular-cancer-survival.pdf

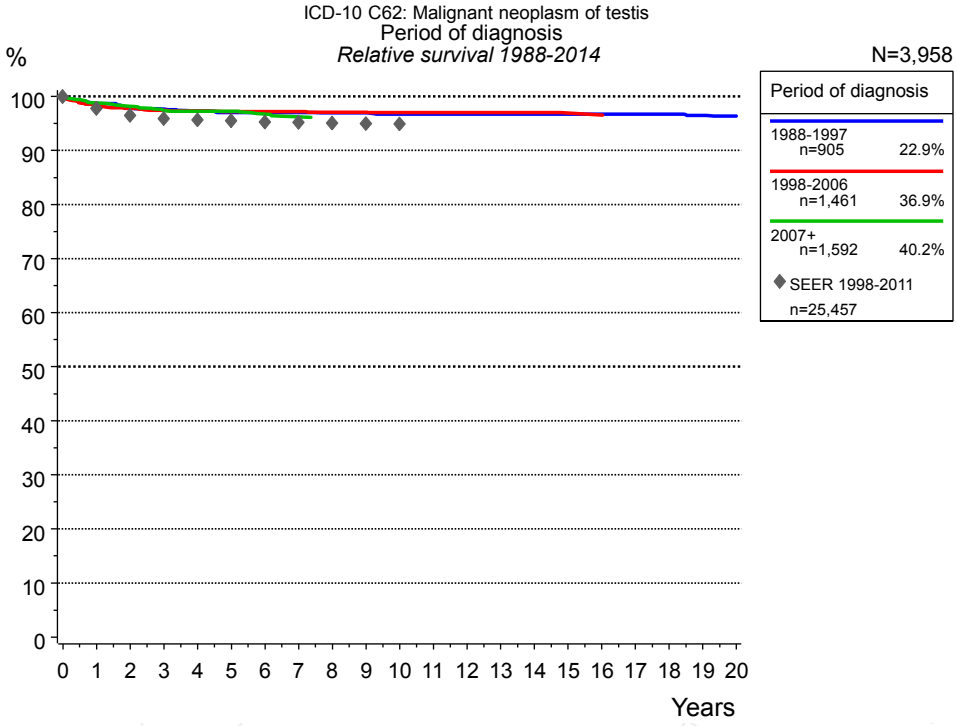

Figure 1a. Relative survival of patients with testicular cancer by period of diagnosis. Included in the evaluation are 3,958 cases diagnosed between 1988 and 2014.

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.

	Period of diagnosis					
	1988-1997 n=905		1998-2006 n=1,461		2007+ n=1,592	
Years	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	98.6	98.8
2	97.4	97.9	97.3	97.8	97.8	98.2
3	96.8	97.6	96.7	97.4	96.7	97.4
4	96.2	97.3	96.3	97.3	96.4	97.2
5	95.7	97.0	95.9	97.2	96.2	97.2
6	95.6	97.0	95.7	97.2	95.4	96.7
7	94.9	97.0	95.3	97.2	94.9	96.2
8	94.5	96.9	94.8	97.1		
9	94.4	96.9	94.5	97.1		
10	93.6	96.7	94.1	97.0		
11	93.5	96.7	93.7	97.0		
12	93.4	96.7	93.7	97.0		
13	93.0	96.7	93.3	97.0		
14	92.6	96.7	92.7	97.0		
15	92.3	96.7	91.9	96.9		
16	91.6	96.7	91.9	96.6		
17	91.3	96.7				
18	90.5	96.7				
19	89.3	96.5				
20	88.9	96.4				

Table 1b. Observed (obs.) and relative (rel.) survival of patients with testicular cancer by period of diagnosis for period 1988-2014 (N=3,958).

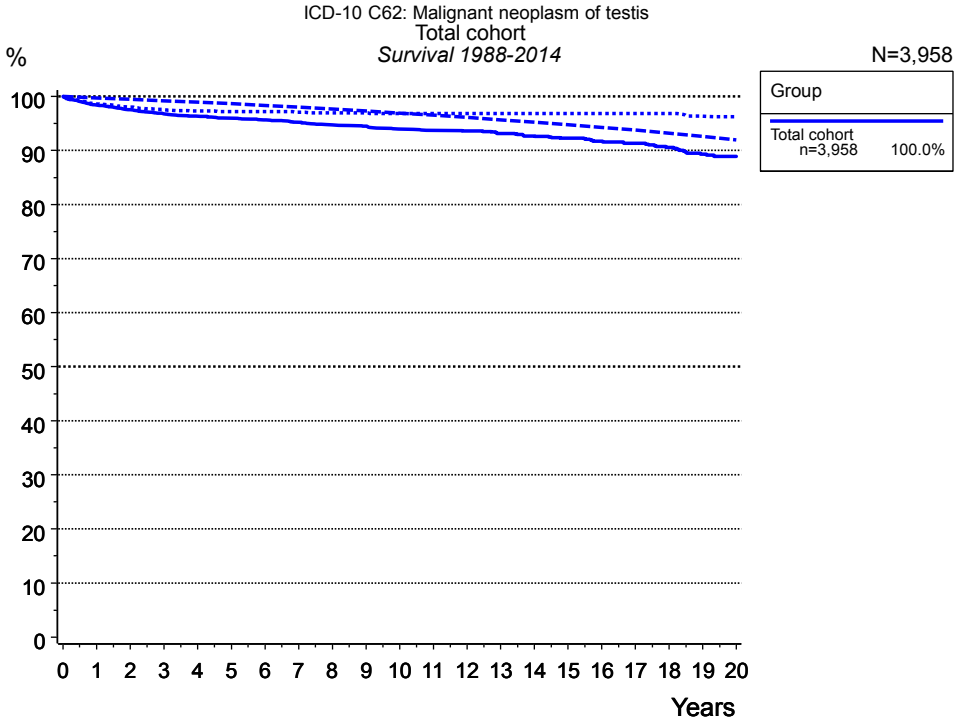

Figure 2a. Observed, expected and relative survival of the total cohort with testicular cancer. Included in the evaluation are 3,958 cases diagnosed between 1988 and 2014.

	Group	
	Total cohort n=3,958	
Years	obs. %	rel. %
0	100.0	100.0
1	98.4	98.6
2	97.5	98.0
3	96.7	97.5
4	96.3	97.3
5	96.0	97.2
6	95.6	97.2
7	95.2	97.1
8	94.7	96.9
9	94.5	96.9
10	93.9	96.8
11	93.7	96.8
12	93.6	96.8
13	93.2	96.8
14	92.7	96.8
15	92.3	96.8
16	91.7	96.8
17	91.3	96.8
18	90.5	96.8
19	89.3	96.3
20	88.9	96.3

Table 2b. Observed (obs.) and relative (rel.) survival of the total cohort with testicular cancer for period 1988-2014 (N=3,958).

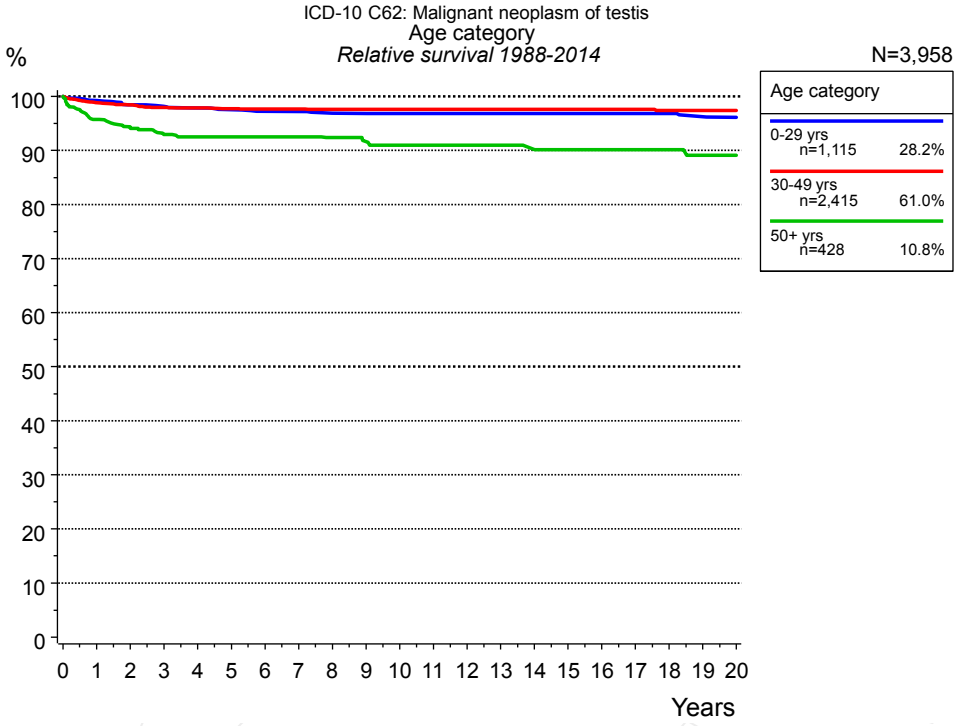

Figure 3a. Relative survival of patients with testicular cancer by age category. Included in the evaluation are 3,958 cases diagnosed between 1988 and 2014.

	Age category					
	0-29 yrs n=1,115		30-49 yrs n=2,415		50+ yrs n=428	
Years	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	99.2	99.2	98.6	98.8	94.6	95.7
2	98.3	98.4	98.1	98.4	91.9	94.2
3	98.0	98.2	97.5	98.0	89.3	92.9
4	97.6	97.9	97.2	97.8	88.0	92.5
5	97.2	97.5	96.9	97.7	87.3	92.5
6	96.8	97.2	96.6	97.7	86.9	92.5
7	96.8	97.2	96.3	97.7	84.0	92.5
8	96.3	96.9	96.1	97.6	82.1	92.4
9	96.3	96.8	96.1	97.6	80.0	91.6
10	96.1	96.8	95.5	97.6	78.3	91.0
11	96.1	96.8	95.2	97.6	77.6	91.0
12	96.1	96.8	95.1	97.6	77.6	91.0
13	96.1	96.8	94.8	97.6	74.6	91.0
14	96.1	96.8	94.5	97.6	71.4	90.2
15	95.8	96.8	94.2	97.6	70.3	90.1
16	95.8	96.8	93.4	97.6	68.9	90.1
17	95.8	96.8	92.7	97.6	68.9	90.1
18	95.8	96.8	91.7	97.4	67.1	90.1
19	94.7	96.3	91.0	97.4	61.1	89.1
20	94.2	96.2	90.7	97.4	61.1	89.1

Table 3b. Observed (obs.) and relative (rel.) survival of patients with testicular cancer by age category for period 1988-2014 (N=3,958).

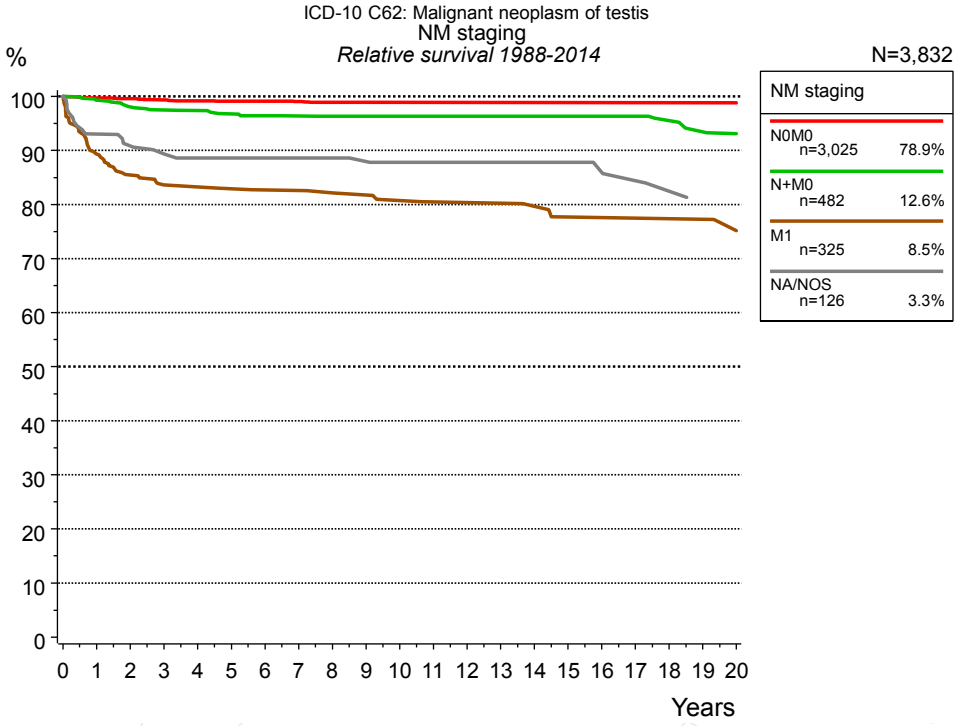

Figure 4a. Relative survival of patients with testicular cancer by NM staging. For 3,833 of 3,958 cases diagnosed between 1988 and 2014 valid data could be obtained for this item. For a total of 3,832 cases an evaluable classification was established. The grey line represents the subgroup of 126 patients with missing values regarding NM staging (3.2% of 3,958 patients, the percent values of all other categories are related to n=3,832).

	NM staging							
	N0M0 n=3,025		N+M0 n=482		M1 n=325		NA/NOS n=126	
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	99.5	99.7	99.1	99.3	89.2	89.3	92.5	93.0
2	99.1	99.6	97.8	98.0	85.2	85.5	89.8	90.8
3	98.6	99.4	97.1	97.5	83.0	83.6	87.0	89.4
4	98.2	99.2	96.8	97.4	82.6	83.2	86.1	88.6
5	97.9	99.1	96.0	96.8	82.2	82.9	86.1	88.6
6	97.7	99.1	95.4	96.4	81.8	82.7	85.0	88.6
7	97.1	99.0	95.1	96.4	81.8	82.6	85.0	88.6
8	96.7	98.9	94.8	96.3	80.7	82.1	83.7	88.6
9	96.5	98.9	94.8	96.3	80.7	81.8	82.4	88.0
10	96.0	98.9	94.4	96.3	79.2	80.7	81.1	87.8
11	95.7	98.9	94.4	96.3	78.5	80.5	81.1	87.8
12	95.6	98.9	94.4	96.3	78.5	80.4	81.1	87.8
13	95.1	98.9	94.4	96.3	78.5	80.2	81.1	87.8
14	94.7	98.9	94.4	96.3	77.3	79.7	79.2	87.8
15	94.4	98.9	94.4	96.3	74.8	77.7	79.2	87.8
16	94.1	98.9	92.9	96.3	74.8	77.6	77.0	85.9
17	93.7	98.9	92.9	96.3	74.8	77.5	74.8	84.4
18	93.2	98.9	90.9	95.5	74.8	77.4	72.3	82.4
19	92.2	98.9	88.7	93.4	74.8	77.2	69.0	80.4
20	92.2	98.9	87.6	93.1	72.6	75.2	69.0	78.6

Table 4b. Observed (obs.) and relative (rel.) survival of patients with testicular cancer by NM staging for period 1988-2014 (N=3,832).

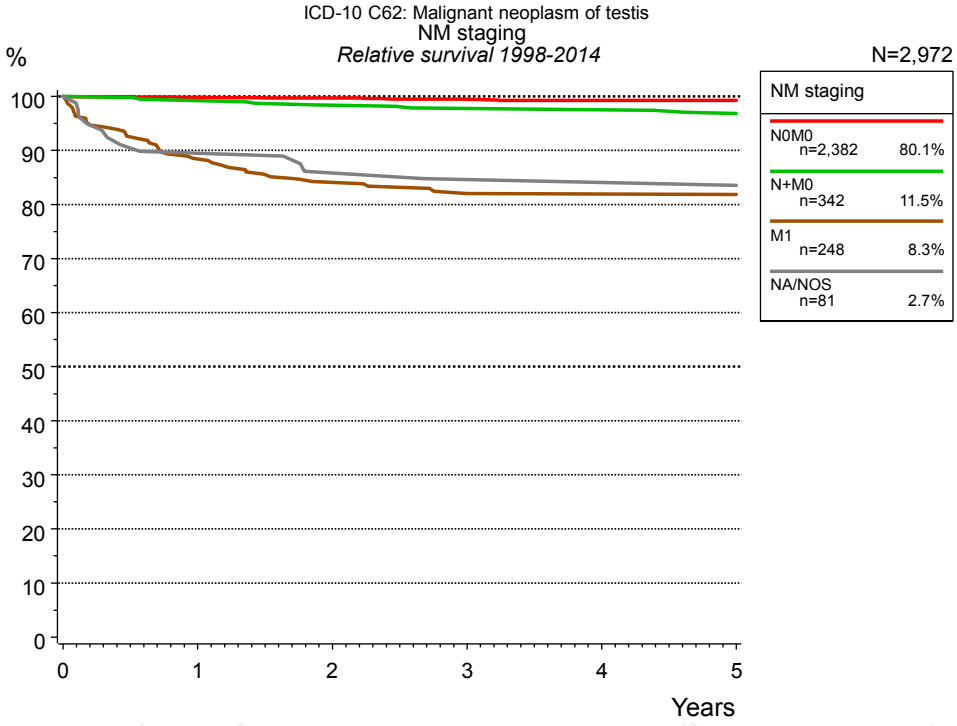

Figure 4c. Relative survival of patients with testicular cancer by NM staging. For 2,972 of 3,053 cases diagnosed between 1998 and 2014 valid data could be obtained for this item. The grey line represents the subgroup of 81 patients with missing values regarding NM staging (2.7% of 3,053 patients, the percent values of all other categories are related to n=2,972).

	NM staging							
	N0M0 n=2,382		N+M0 n=342		M1 n=248		NA/NOS n=81	
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	99.6	99.8	99.1	99.2	88.3	88.4	89.4	89.5
2	99.4	99.7	98.1	98.4	83.9	84.1	85.1	85.8
3	98.7	99.5	97.4	97.8	81.4	82.0	83.5	84.6
4	98.3	99.3	97.0	97.5	81.4	81.9	83.5	84.1
5	98.1	99.3	96.2	96.9	81.4	81.9	83.5	83.5

Table 4d. Observed (obs.) and relative (rel.) survival of patients with testicular cancer by NM staging for period 1998-2014 (N=2,972).

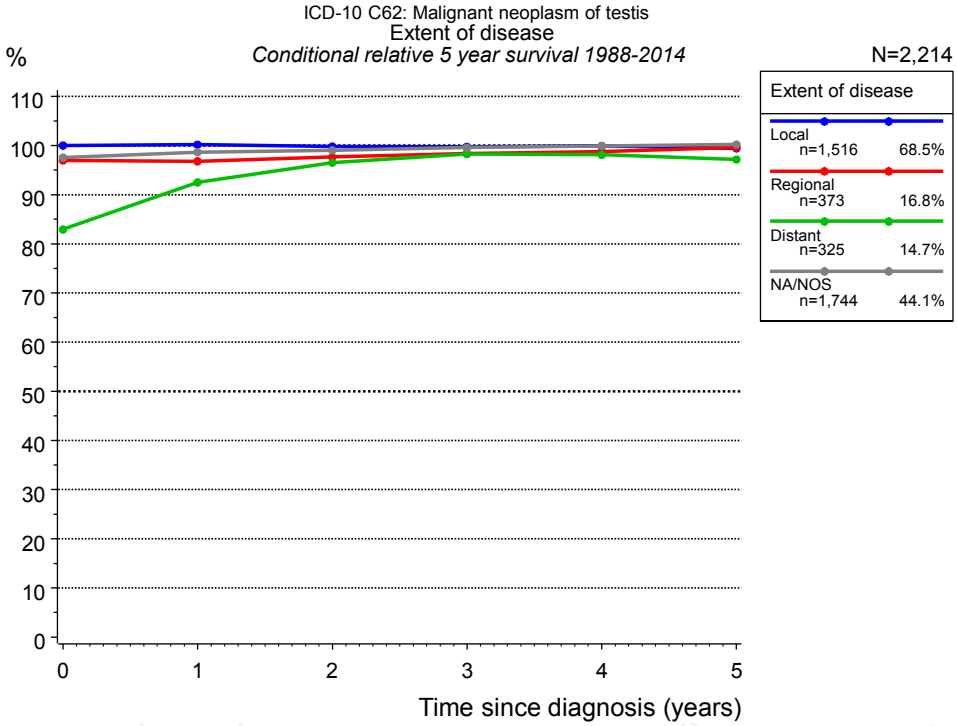

Figure 4e. Conditional relative 5-year survival of patients with testicular cancer by extent of disease. For 3,833 of 3,958 cases diagnosed between 1988 and 2014 valid data could be obtained for this item. For a total of 2,214 cases an evaluable classification was established. The grey line represents the subgroup of 1,744 patients with missing values regarding extent of disease (44.1% of 3,958 patients, the percent values of all other categories are related to n=2,214).

	Extent of disease							
	Local		Regional		Distant		NA/NOS	
Years	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs
0	1,516	100.0	373	97.0	325	82.9	1,744	97.6
1	1,385	100.2	348	96.8	275	92.5	1,583	98.7
2	1,282	99.8	322	97.6	242	96.5	1,460	99.1
3	1,178	99.8	300	98.4	223	98.3	1,343	99.6
4	1,077	99.9	285	98.8	207	98.1	1,242	99.9
5	988	99.4	248	99.6	191	97.2	1,137	100.2

Table 4f. Conditional relative 5-year survival of patients with testicular cancer by extent of disease for period 1988-2014 (N=2,214).

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 99.8% (n=1,178).

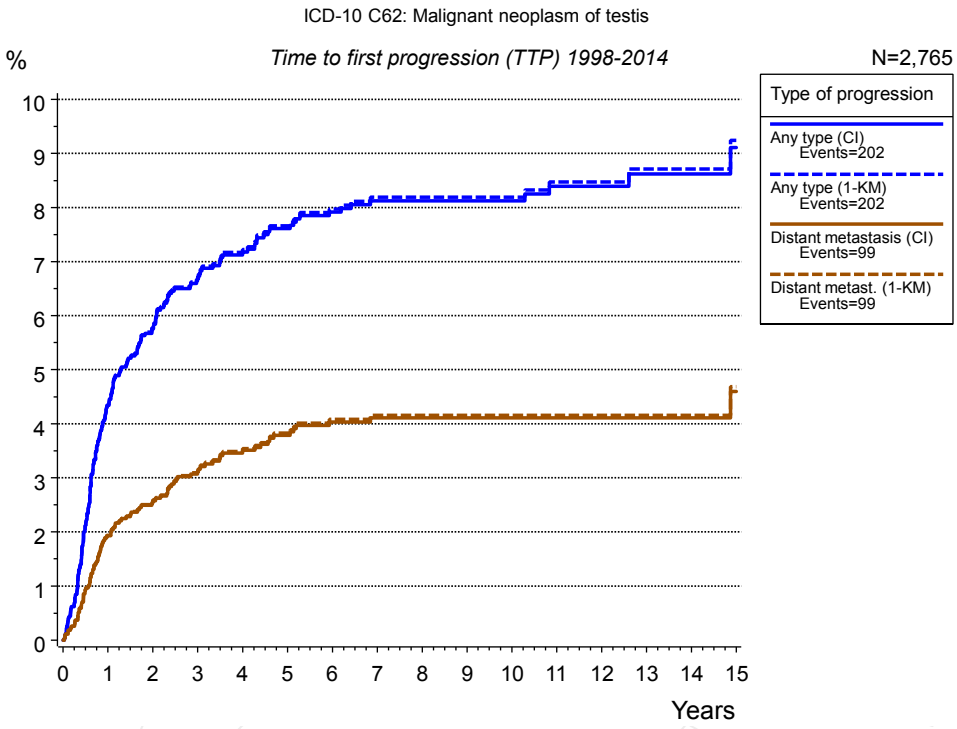

Figure 5a. Time to first progression of 2,765 patients with testicular cancer diagnosed between 1998 and 2014 (M0 only in solid cancers) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

	Type of progression			
	Any type (CI)	Any type (1-KM)	Distant metastasis (CI)	Distant metast. (1-KM)
	n=2,765	n=2,765	n=2,765	n=2,765
Years	%	%	%	%
0	0.0	0.0	0.0	0.0
1	4.3	4.4	1.9	1.9
2	5.8	5.8	2.5	2.5
3	6.7	6.7	3.1	3.1
4	7.1	7.2	3.5	3.5
5	7.6	7.7	3.8	3.8
6	7.9	8.0	4.0	4.1
7	8.1	8.2	4.1	4.2
8	8.1	8.2	4.1	4.2
9	8.1	8.2	4.1	4.2
10	8.1	8.2	4.1	4.2
11	8.4	8.5	4.1	4.2
12	8.4	8.5	4.1	4.2
13	8.6	8.7	4.1	4.2
14	8.6	8.7	4.1	4.2
15	9.1	9.2	4.6	4.7

Table 5b. Time to first progression of patients with testicular cancer for period 1998-2014 (N=2,765).

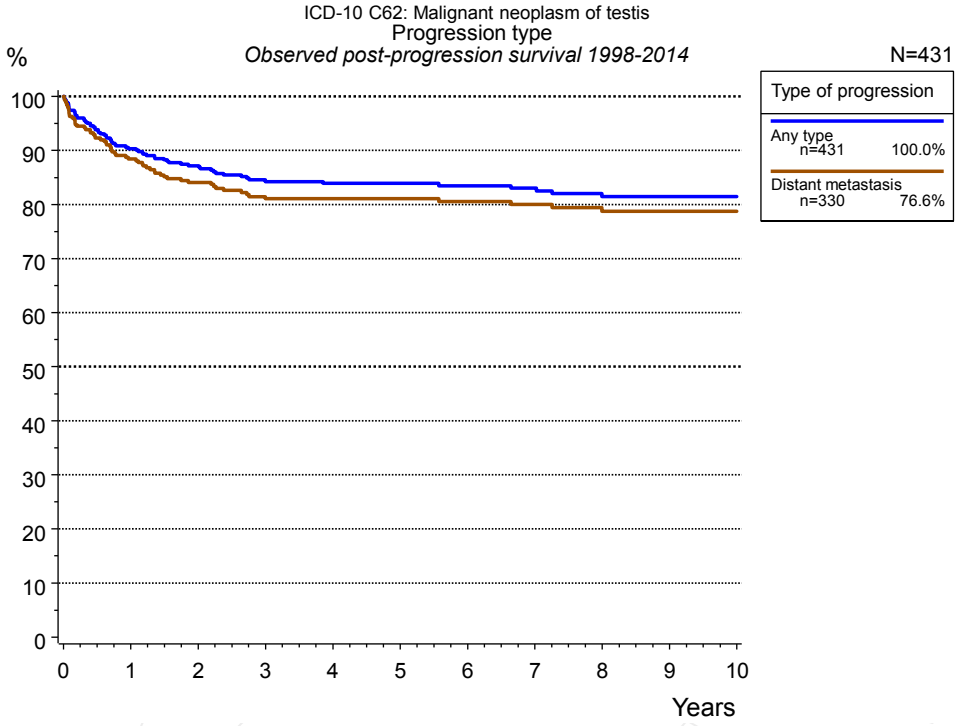

Figure 5c. Observed post-progression survival of 431 patients with testicular cancer diagnosed between 1998 and 2014. These 431 patients with documented progression events during their course of disease represent 14.3 % of the totally 3,007 evaluated cases (incl. M1, n=242, 8.0 %). Patients with cancer 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 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=431	n=330
Years	%	%
0	100.0	100.0
1	90.3	88.4
2	87.2	84.1
3	84.2	81.1
4	83.9	81.1
5	83.9	81.1
6	83.5	80.6
7	83.0	80.0
8	81.4	78.7
9	81.4	78.7
10	81.4	78.7

Table 5d. Observed post-progression survival of patients with testicular cancer for period 1998-2014 (N=431).

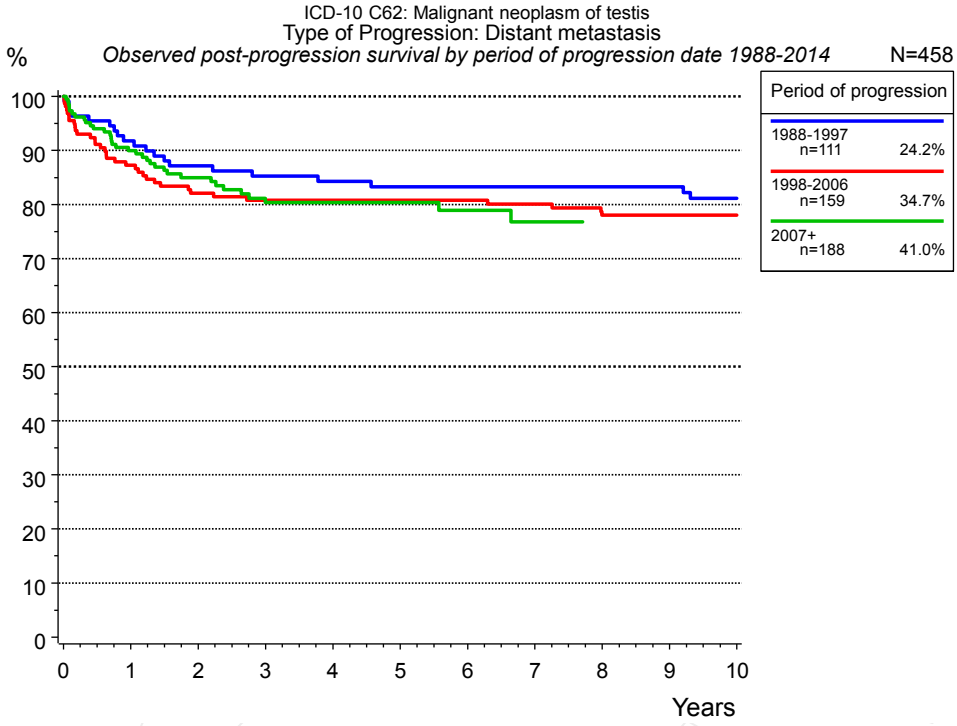

Figure 5e. Observed post-progression (distant metastasis) survival of 458 patients with testicular cancer diagnosed between 1988 and 2014 by period of progression.

	Period of progression		
	1988-1997 n=111	1998-2006 n=159	2007+ n=188
Years	%	%	%
0	100.0	100.0	100.0
1	91.8	87.3	89.9
2	87.1	82.1	85.0
3	85.3	80.8	80.4
4	84.3	80.8	80.4
5	83.2	80.8	80.4
6	83.2	80.8	78.9
7	83.2	80.1	76.8
8	83.2	78.0	76.8
9	83.2	78.0	
10	81.2	78.0	

Table 5f. Observed post-progression (distant metastasis) survival of patients with testicular cancer for period 1988-2014 by period of progression (N=458).

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 C62: Testicular cancer [Internet]. 2016 [updated 2016 Mar 2; cited 2016 May 1]. Available from: http://www.tumorregister-muenchen.de/en/facts/surv/sC62__E-ICD-10-C62-Testicular-cancer-survival.pdf

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