

# Munich Cancer Registry



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## ICD-10 C45: Mesothelioma

### Survival

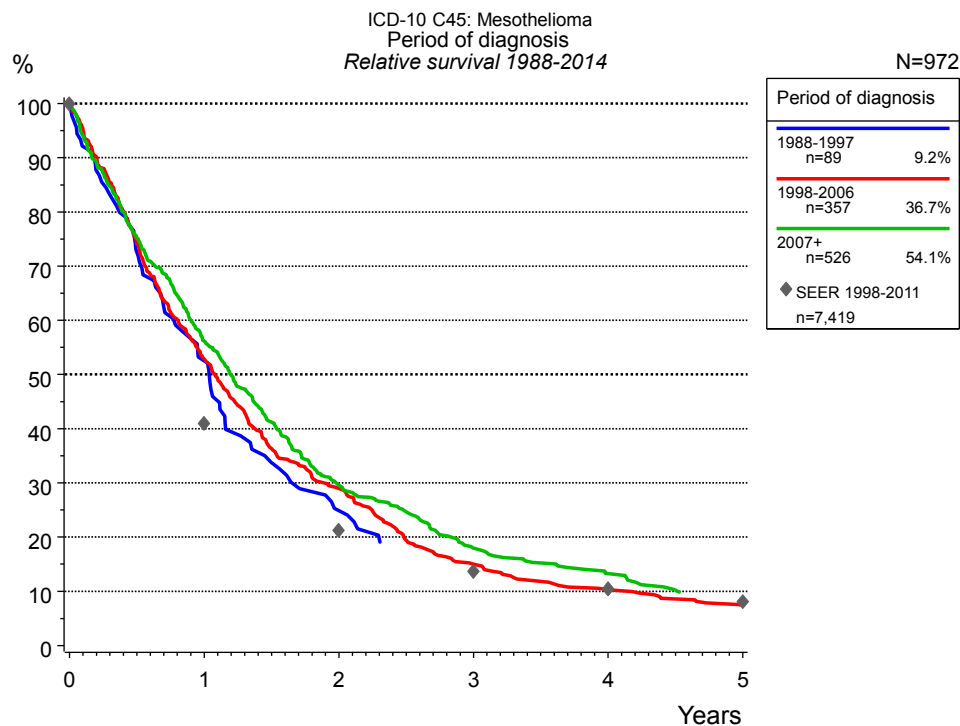
Year of diagnosis	1988-1997	1998-2014
Patients	97	1,236
Diseases	97	1,238
Cases evaluated	89	887
Creation date	04/11/2016	
Export date	12/23/2015	
Population	4.64 m	



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

[http://www.tumorregister-muenchen.de/en/facts/surv/sC45\\_\\_E-ICD-10-C45-Mesothelioma-survival.pdf](http://www.tumorregister-muenchen.de/en/facts/surv/sC45__E-ICD-10-C45-Mesothelioma-survival.pdf)



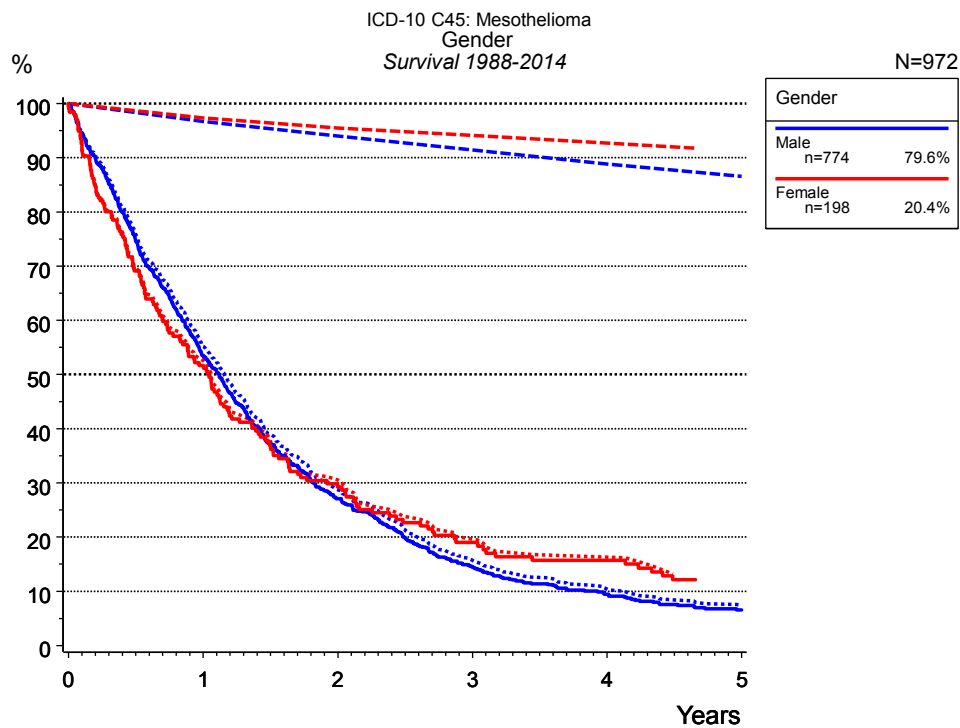
**Figure 1a.** Relative survival of patients with mesothelioma by period of diagnosis. Included in the evaluation are 972 cases diagnosed between 1988 and 2014.

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=89		1998-2006 n=357		2007+ n=526	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	52.2	52.5	51.3	52.8	54.4	56.2
2	24.3	24.9	27.8	29.0	27.7	29.6
3			14.2	15.0	16.3	17.9
4			9.6	10.3	11.7	13.3
5			6.8	7.4	8.5	9.6

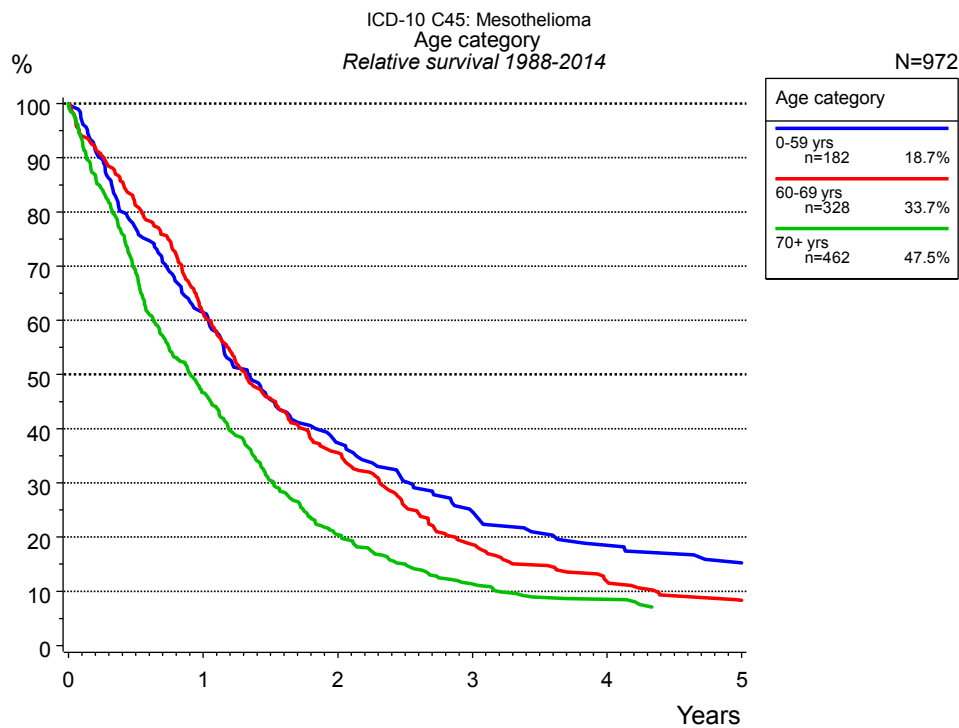
**Table 1b.** Observed (obs.) and relative (rel.) survival of patients with mesothelioma by period of diagnosis for period 1988-2014 (N=972).



**Figure 2a.** Survival of patients with mesothelioma by gender. Included in the evaluation are 972 cases diagnosed between 1988 and 2014.

Years	Gender			
	Male n=774		Female n=198	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	53.4	55.2	51.7	52.6
2	27.1	28.7	29.2	30.6
3	14.5	15.7	19.0	19.7
4	9.5	10.4	15.7	16.3
5	6.6	7.5	12.1	12.5

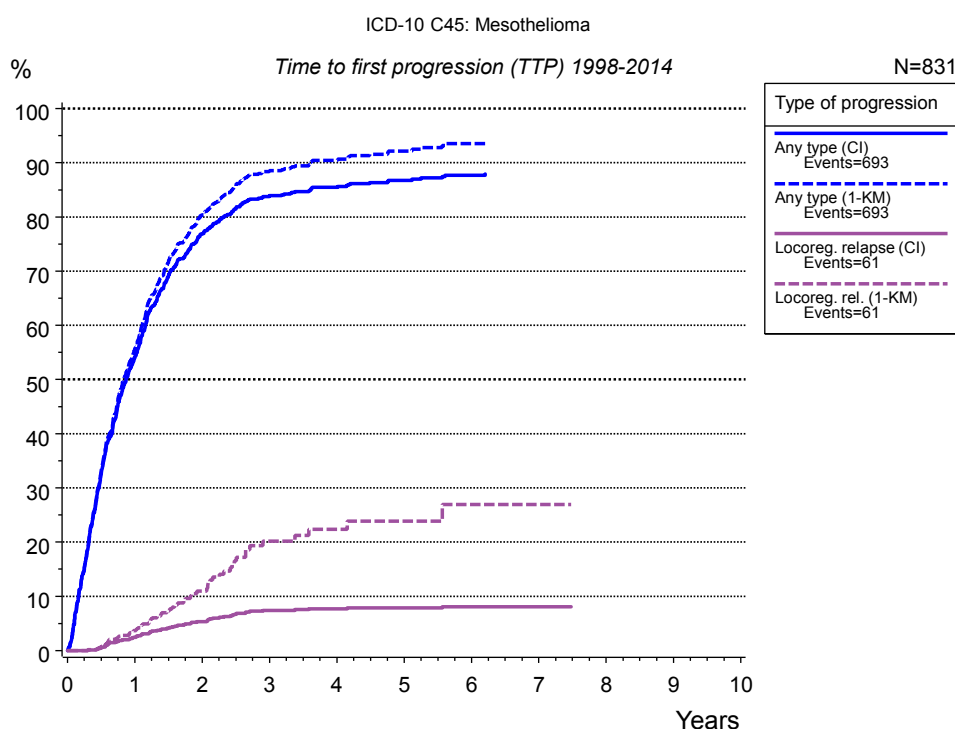
**Table 2b.** Observed (obs.) and relative (rel.) survival of patients with mesothelioma by gender for period 1988-2014 (N=972).



**Figure 3a.** Relative survival of patients with mesothelioma by age category. Included in the evaluation are 972 cases diagnosed between 1988 and 2014.

Years	Age category					
	0-59 yrs n=182		60-69 yrs n=328		70+ yrs n=462	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	61.4	61.5	60.4	61.3	44.3	46.7
2	37.0	37.4	34.4	35.6	18.6	20.5
3	24.7	24.7	17.9	18.6	9.8	11.4
4	18.5	18.5	11.5	11.8	7.2	8.5
5	15.4	15.2	7.7	8.3		

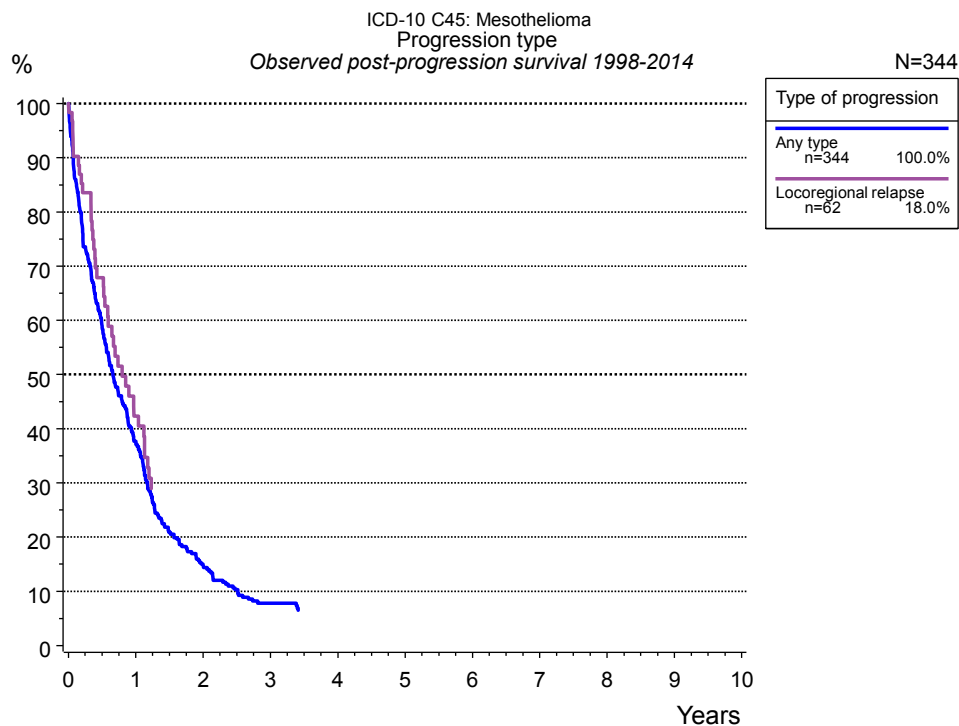
**Table 3b.** Observed (obs.) and relative (rel.) survival of patients with mesothelioma by age category for period 1988-2014 (N=972).



**Figure 5a.** Time to first progression of 831 patients with mesothelioma 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)	Locoreg. relapse (CI)	Locoreg. rel. (1-KM)
	n=831 %	n=831 %	n=831 %	n=831 %
0	0.0	0.0	0.0	0.0
1	54.2	55.7	2.5	3.7
2	76.9	80.4	5.3	11.0
3	83.9	88.5	7.4	20.2
4	85.5	90.5	7.7	22.4
5	86.8	92.1	7.9	23.9
6	87.7	93.6	8.1	26.9
7			8.1	26.9
8			8.1	26.9
9			8.1	26.9
10			8.1	26.9

**Table 5b.** Time to first progression of patients with mesothelioma for period 1998-2014 (N=831).

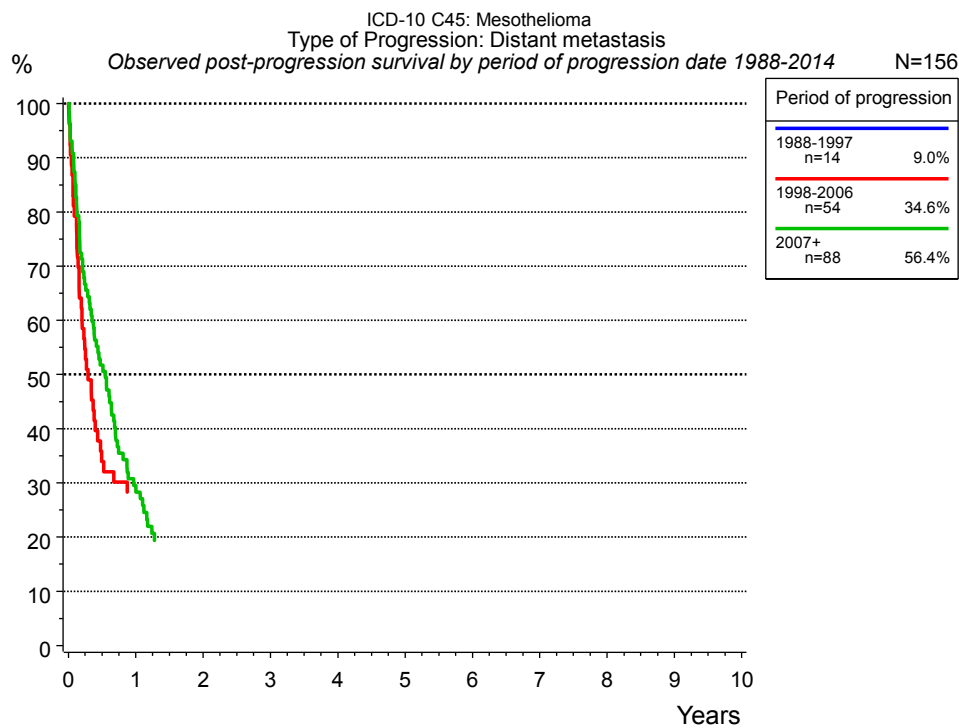


**Figure 5c.** Observed post-progression survival of 344 patients with mesothelioma diagnosed between 1998 and 2014. These 344 patients with documented progression events during their course of disease represent 39.1 % of the totally 879 evaluated cases (incl. M1, n=48, 5.5 %). Patients with cancer relapse documented via death certificates only were excluded (n=397, 45.2 %). 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=344 %	Locoregional relapse n=62 %
0	100.0	100.0
1	37.7	42.3
2	14.7	
3	7.8	

**Table 5d.** Observed post-progression survival of patients with mesothelioma for period 1998-2014 (N=344).



**Figure 5e.** Observed post-progression (distant metastasis) survival of 156 patients with mesothelioma diagnosed between 1988 and 2014 by period of progression.

Years	Period of progression		
	1988-1997 n=14	1998-2006 n=54	2007+ n=88
0	100.0	100.0	100.0
1		28.3	29.6

**Table 5f.** Observed post-progression (distant metastasis) survival of patients with mesothelioma for period 1988-2014 by period of progression (N=156).

## 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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