

Munich Cancer Registry



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

ICD-10 C90.0: Multiple myeloma

Survival

Year of diagnosis	1988-1997	1998-2016
Patients	33	2,024
Diseases	33	2,024
Cases evaluated	28	1,567
Creation date	08/22/2018	
Export date	08/09/2018	
Population	4.81 m	



Munich Cancer Registry
Cancer Registry Bavaria - Upper Bavaria Regional Center
at Klinikum Grosshadern/IBE
Marchioninstr. 15
Munich, 81377
Germany

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

https://www.tumorregister-muenchen.de/en/facts/surv/sC900_E-ICD-10-C90.0-Multiple-myeloma-survival.pdf

Index of figures and tables

Fig./Tbl.		Page
1a	Relative survival by period of diagnosis (chart)	3
1b	Survival by period of diagnosis (table)	3
2a	Survival by sex (chart)	4
2b	Survival by sex (table)	4
2c	Conditional survival by sex (chart)	5
2d	Conditional survival by sex (table)	5
3a	Relative survival by age category (chart)	6
3b	Survival by age category (table)	6
5a	Time to first progression (chart)	7
5b	Time to first progression (table)	7
5c	Observed post-progression survival (chart)	8
5d	Observed post-progression survival (table)	8
5e	Observed post-progression survival by period of progression (chart)	9
5f	Observed post-progression survival by period of progression (table)	9

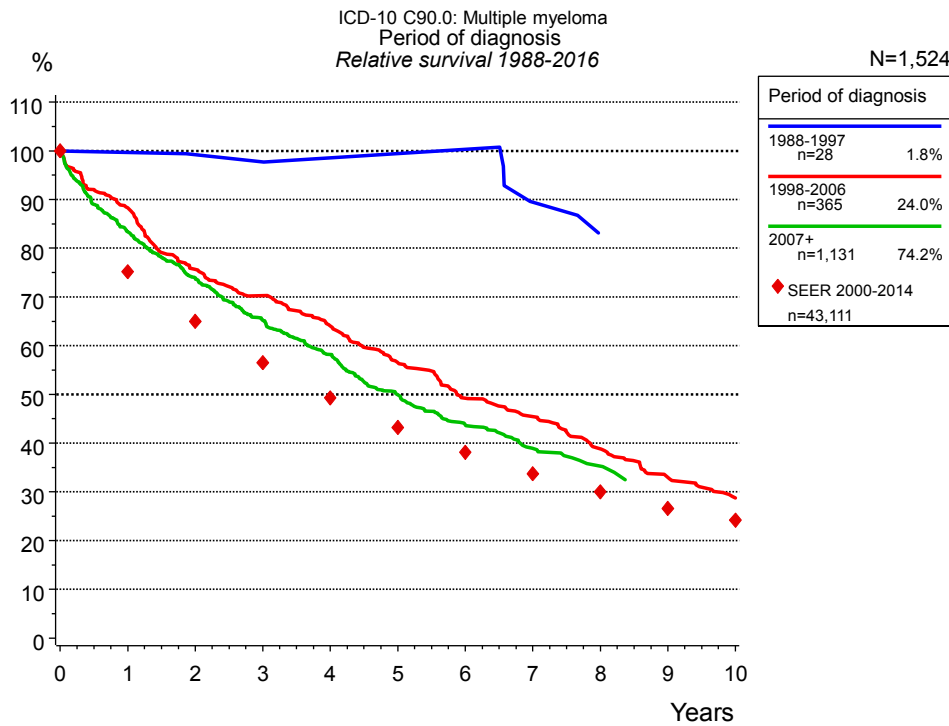


Figure 1a. Relative survival of patients with multiple myeloma by period of diagnosis. Included in the evaluation are 1,524 cases diagnosed between 1988 and 2016.

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=28		1998-2006 n=365		2007+ n=1,131	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	100.0	99.7	86.5	88.3	81.2	83.4
2	96.4	99.2	72.3	75.7	70.4	73.9
3	96.4	97.7	65.8	70.3	60.7	65.2
4	92.9	98.6	58.5	64.0	53.0	58.2
5	92.9	99.4	50.5	56.5	44.6	49.9
6	92.9	100.3	43.1	49.2	38.1	43.7
7	78.6	89.4	38.8	45.4	33.0	38.9
8	71.4	83.1	32.8	38.8	29.8	35.3
9	71.4	82.7	27.4	32.9		
10	71.4	82.2	23.1	28.7		

Table 1b. Observed (obs.) and relative (rel.) survival of patients with multiple myeloma by period of diagnosis for period 1988-2016 (N=1,524).

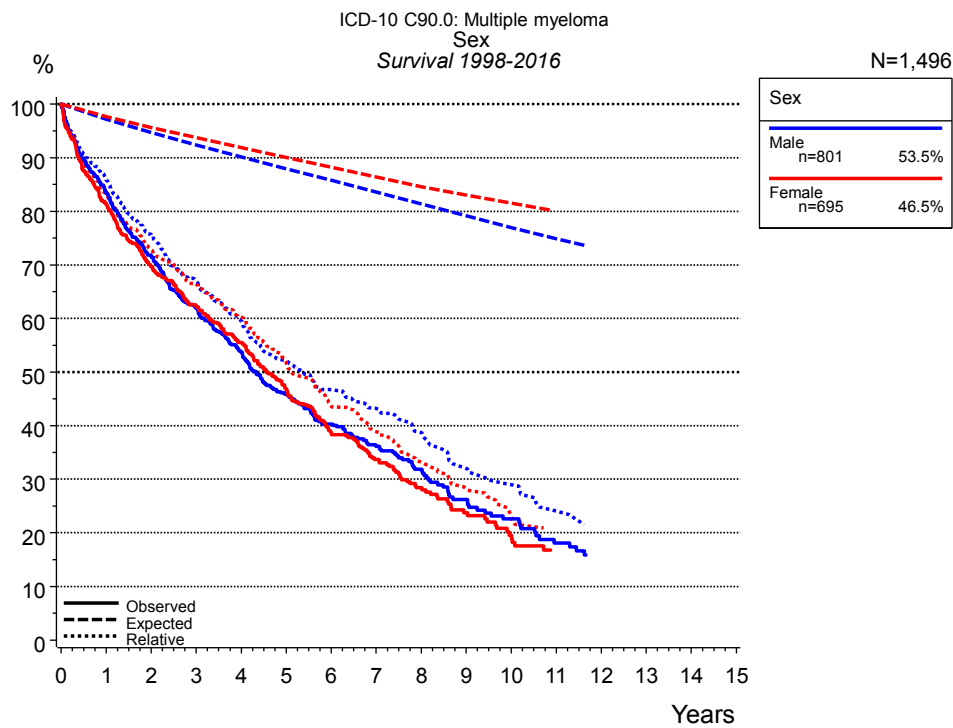


Figure 2a. Survival of patients with multiple myeloma by sex. Included in the evaluation are 1,496 cases diagnosed between 1998 and 2016.

Years	Sex			
	Male n=801		Female n=695	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	83.5	85.8	81.4	83.2
2	71.8	75.7	69.8	72.8
3	62.0	67.0	62.2	66.3
4	53.7	59.6	55.5	60.2
5	45.9	52.1	46.7	51.8
6	40.3	46.7	38.6	43.6
7	36.2	43.2	33.7	38.8
8	31.9	38.7	28.4	33.2
9	26.3	32.0	23.7	28.2
10	22.6	29.0	19.5	23.2
11	18.1	24.1	16.8	20.3

Table 2b. Observed (obs.) and relative (rel.) survival of patients with multiple myeloma by sex for period 1998-2016 (N=1,496).

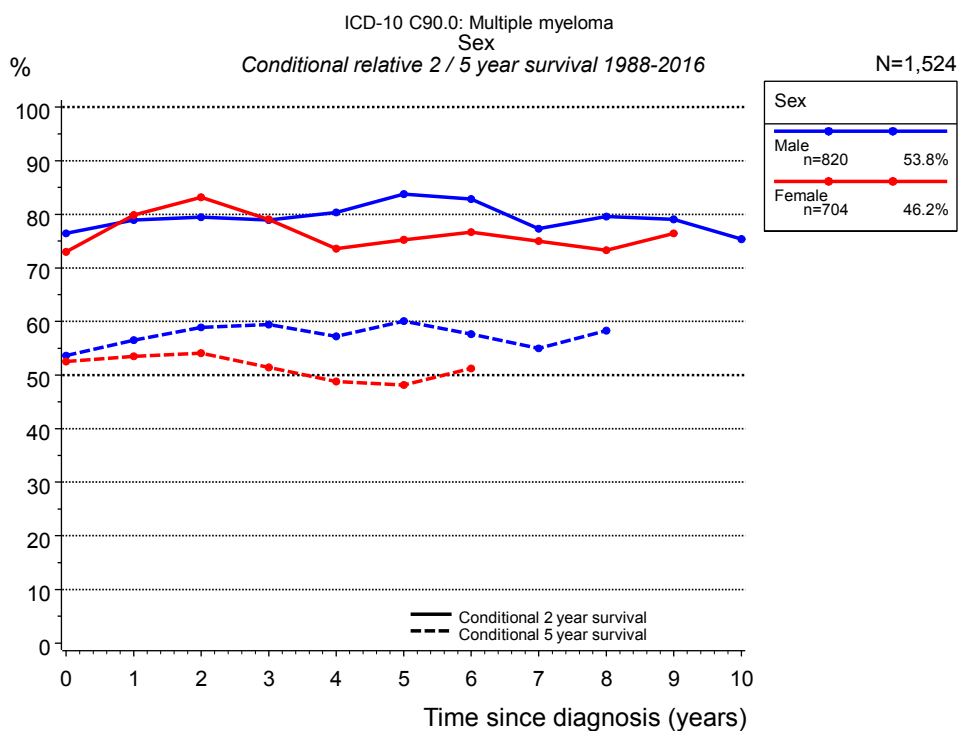


Figure 2c. Conditional relative 2 / 5-year survival of patients with multiple myeloma by sex. For 1,524 of 1,524 cases diagnosed between 1988 and 2016 valid data could be obtained for this item.

Years	Sex					
	n	Male		Female		
		Cond. surv. %	2 yrs	5 yrs	n	Cond. surv. %
0	820	76.4	53.6	704	73.0	52.6
1	647	78.9	56.5	546	79.8	53.5
2	520	79.5	58.9	426	83.2	54.1
3	415	78.9	59.4	346	79.1	51.4
4	323	80.3	57.2	277	73.6	48.8
5	244	83.8	60.1	209	75.3	48.2
6	187	82.8	57.7	155	76.7	51.2
7	143	77.3	55.0	116	75.0	
8	96	79.6	58.3	80	73.3	
9	66	79.1		49	76.4	
10	53	75.4				

Table 2d. Conditional relative 2 / 5-year survival of patients with multiple myeloma by sex for period 1988-2016 (N=1,524).

Conditional relative survival rates refer to the relative survival probability, in this case for 2 and 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 2a). 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 sex="Male", who are alive at least 3 years after cancer diagnosis, the conditional relative 2-year survival rate is 78.9% (n=415).

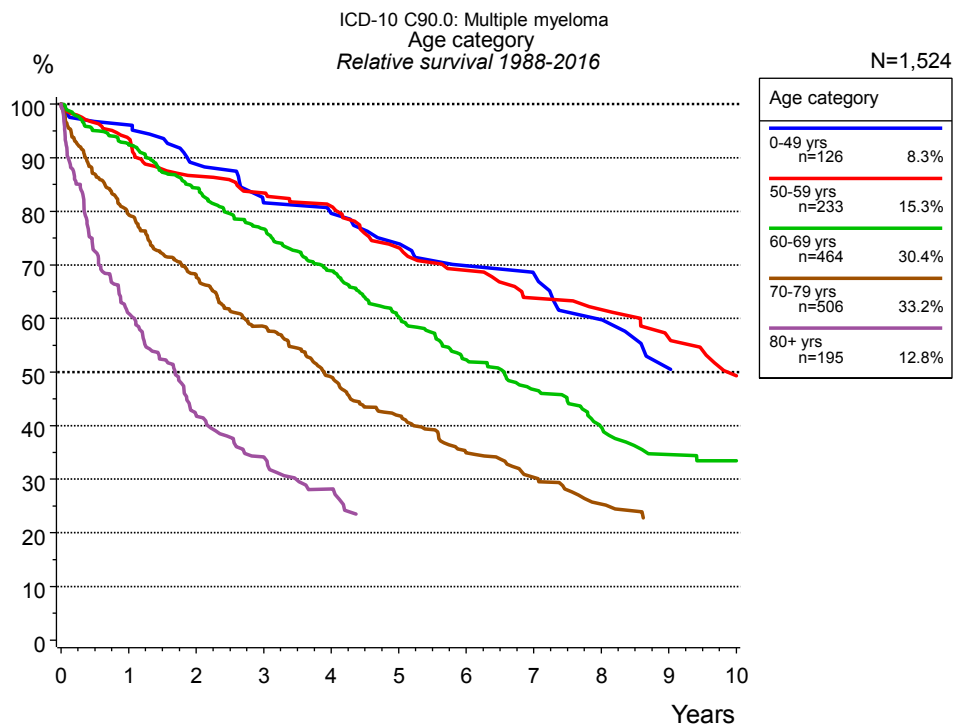


Figure 3a. Relative survival of patients with multiple myeloma by age category. Included in the evaluation are 1,524 cases diagnosed between 1988 and 2016.

Years	Age category									
	0-49 yrs n=126		50-59 yrs n=233		60-69 yrs n=464		70-79 yrs n=506		80+ yrs n=195	
	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	96.7	96.1	93.3	93.6	91.4	92.5	77.1	79.4	56.0	60.9
2	88.8	88.8	85.8	86.6	82.2	84.4	64.2	68.2	35.4	41.8
3	81.1	81.6	82.4	83.4	73.7	76.7	53.1	58.5	26.4	34.2
4	78.9	79.6	79.4	80.9	65.2	68.9	43.0	49.1	19.7	28.2
5	74.2	74.0	71.6	73.2	56.0	60.3	35.2	41.9		
6	69.1	69.8	66.7	69.0	47.9	52.3	27.9	34.9		
7	67.4	68.4	60.9	63.8	41.8	46.7	23.2	30.4		
8	60.4	59.8	58.6	61.6	35.0	39.7	18.6	25.4		
9	51.7	50.7	53.4	56.3	29.8	34.6				
10			46.4	49.3	28.2	33.5				

Table 3b. Observed (obs.) and relative (rel.) survival of patients with multiple myeloma by age category for period 1988-2016 (N=1,524).

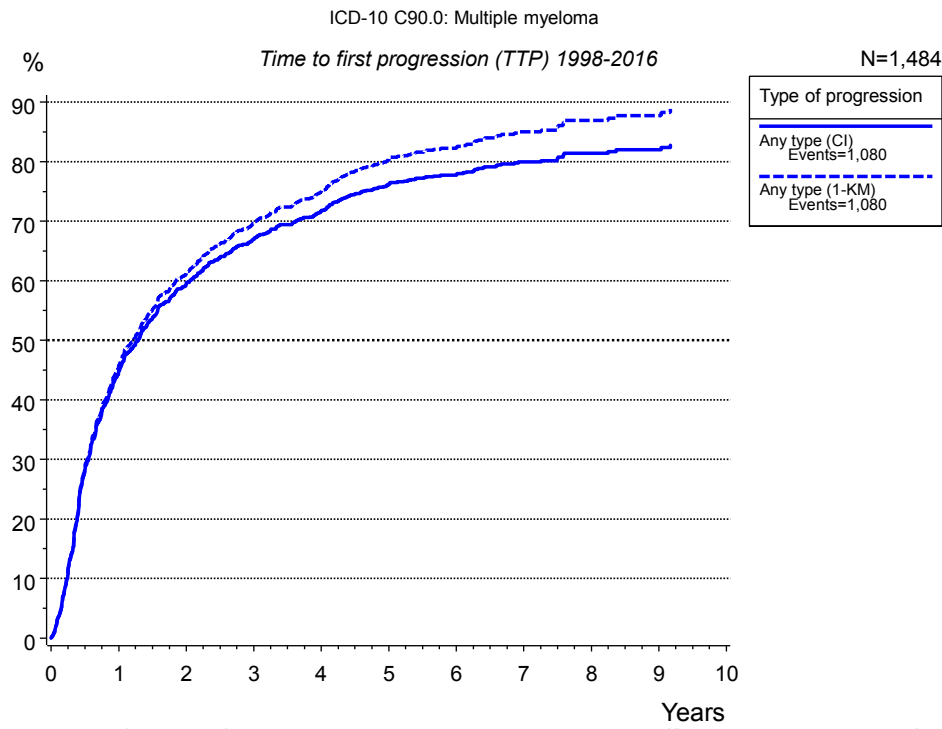


Figure 5a. Time to first progression of 1,484 patients with multiple myeloma diagnosed between 1998 and 2016 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

Years	Type of progression	
	Any type (CI)	Any type (1-KM)
	n=1,484 %	n=1,484 %
0	0.0	0.0
1	44.9	45.9
2	59.4	61.2
3	67.0	69.6
4	71.6	74.9
5	76.1	80.2
6	77.7	82.2
7	80.0	85.0
8	81.4	86.9
9	82.0	87.7

Table 5b. Time to first progression of patients with multiple myeloma for period 1998-2016 (N=1,484).

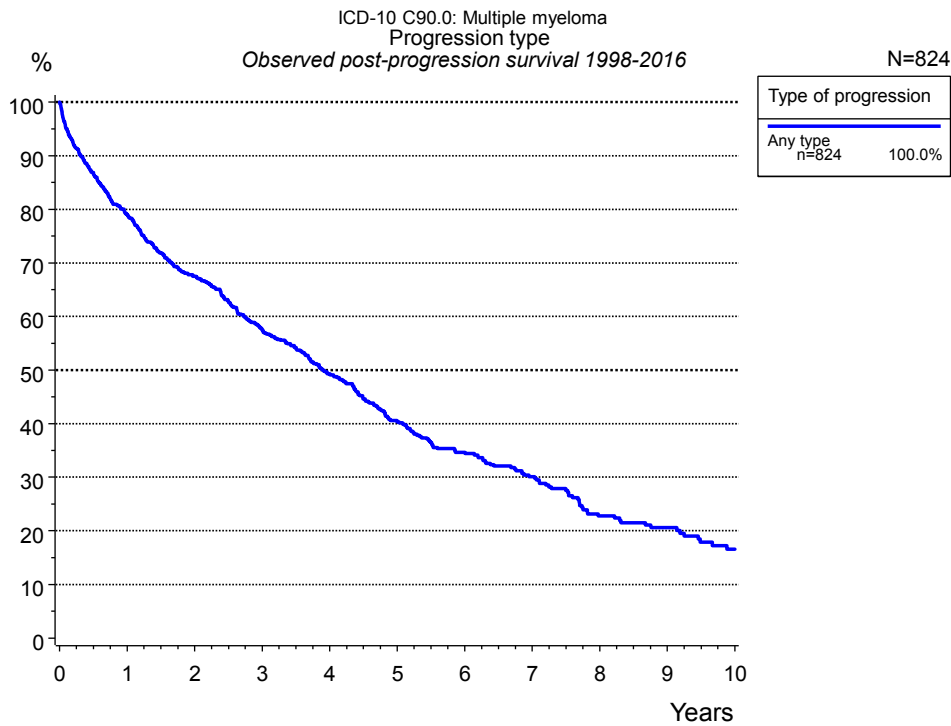


Figure 5c. Observed post-progression survival of 824 patients with multiple myeloma diagnosed between 1998 and 2016. These 824 patients with documented progression events during their course of disease represent 55.5 % of the totally 1,485 evaluated cases. Patients with cancer relapse documented via death certificates only were excluded (n=257, 17.3 %).

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.

Type of progression	
Any type n=824	
Years	%
0	100.0
1	79.0
2	67.5
3	57.5
4	49.3
5	40.4
6	34.6
7	30.1
8	22.8
9	20.6
10	16.6

Table 5d. Observed post-progression survival of patients with multiple myeloma for period 1998-2016 (N=824).

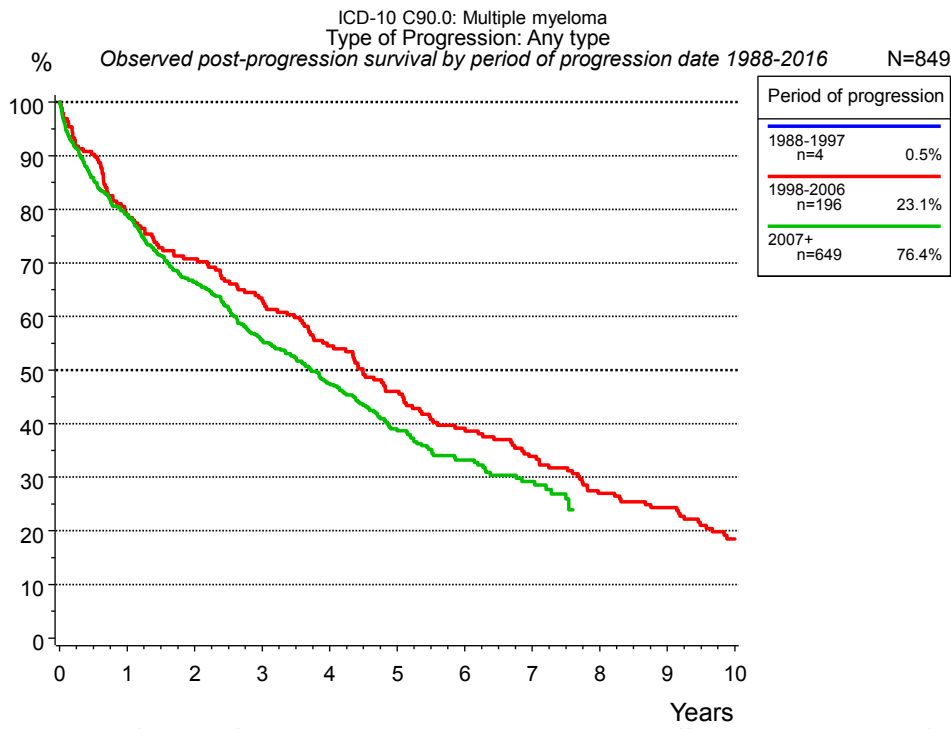


Figure 5e. Observed post-progression (any type) survival of 849 patients with multiple myeloma diagnosed between 1988 and 2016 by period of progression.

Years	Period of progression	
	1998-2006 n=196 %	2007+ n=649 %
0	100.0	100.0
1	79.0	78.9
2	70.7	66.4
3	62.9	55.5
4	54.5	47.5
5	46.0	38.7
6	39.1	33.2
7	33.9	29.2
8	27.0	
9	24.3	
10	18.5	

Table 5f. Observed post-progression (any type) survival of patients with multiple myeloma for period 1988-2016 by period of progression (N=849).

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 C90.0: Multiple myeloma [Internet]. 2018 [updated 2018 Aug 22; cited 2018 Oct 1]. Available from: https://www.tumorregister-muenchen.de/en/facts/surv/sC900_E-ICD-10-C90.0-Multiple-myeloma-survival.pdf

Copyright

The content of the public web site provided by the Munich Cancer Registry is available worldwide and free of charge. All documents are free to download, utilize, copy, print-out and distribute, providing that the MCR is referenced.

Disclaimer

The Munich Cancer Registry reserves the right to not be responsible for the topicality, correctness, completeness or quality of the information provided. Liability claims regarding damage caused by the use of any information provided, including any kind of information which is incomplete or incorrect, will therefore be rejected.