

# Munich Cancer Registry



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

## ICD-10 C88,C90: Immunoprolif. disease

### Survival

Year of diagnosis	1988-1997	1998-2019
Patients	515	6,174
Diseases	515	6,194
Cases evaluated	446	4,082
Creation date	01/28/2021	
Database export	01/07/2021	
Population	4.92 m	



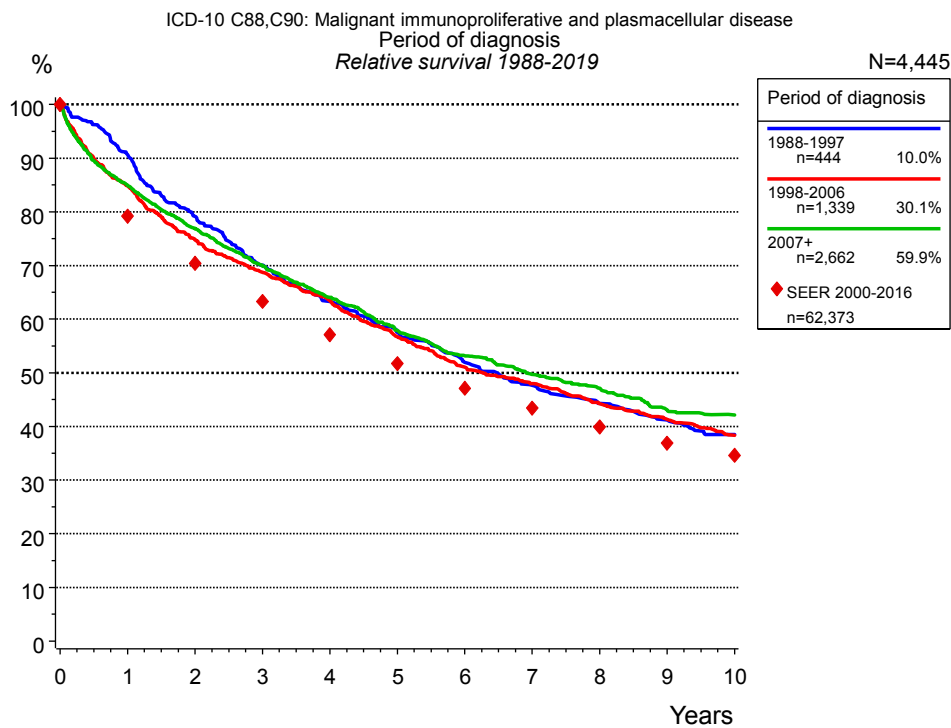
Munich Cancer Registry  
Cancer Registry Bavaria - Upper Bavaria Regional Center  
at Klinikum Grosshadern/IBE  
Marchioninstr. 15  
Munich, 81377  
Germany

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

<https://www.tumorregister-muenchen.de/en/facts/surv/sC8890E-ICD-10-C88-C90-Immunoprolif.-disease-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



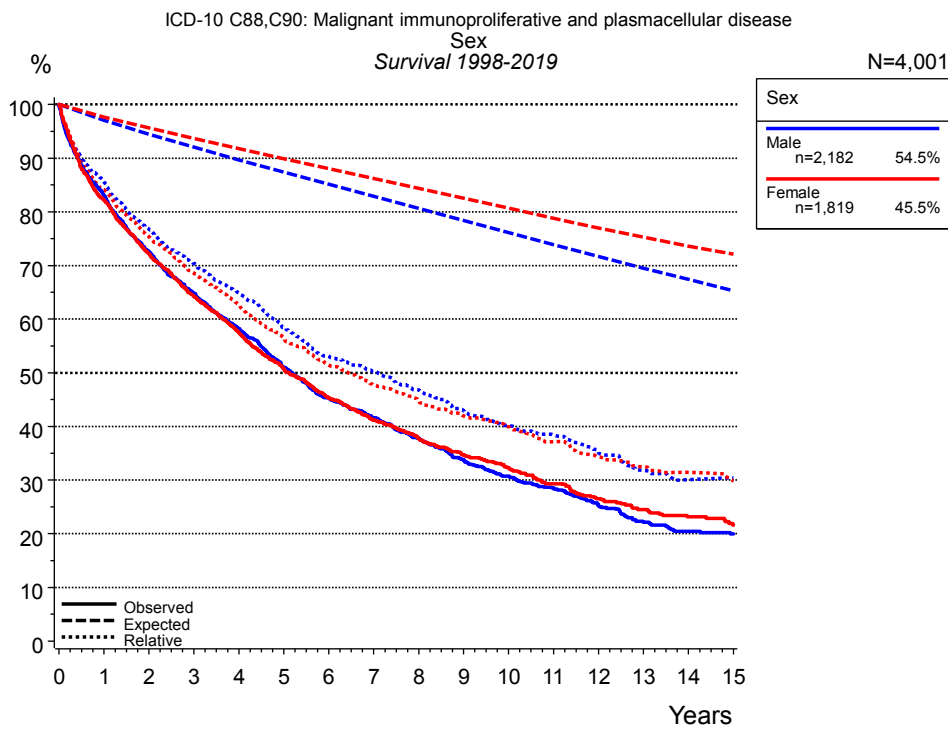
**Figure 1a.** Relative survival of patients with immunoprolif. disease by period of diagnosis. Included in the evaluation are 4,445 cases diagnosed between 1988 and 2019.

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 2016, 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=444		1998-2006 n=1,339		2007+ n=2,662	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	88.5	90.7	82.7	84.9	82.6	84.9
2	75.7	79.1	71.1	74.8	73.1	76.9
3	65.5	70.0	63.9	68.7	64.9	69.9
4	57.8	63.3	57.5	63.4	58.1	64.1
5	51.5	57.5	50.2	56.7	51.3	57.9
6	45.4	51.9	44.1	51.0	46.0	53.2
7	41.0	47.7	40.5	48.0	41.9	49.7
8	37.2	44.3	36.5	44.2	38.8	47.1
9	34.1	41.2	33.3	41.3	34.7	43.1
10	31.0	38.5	30.1	38.3	33.0	42.1
Median	5.3		5.0		5.2	

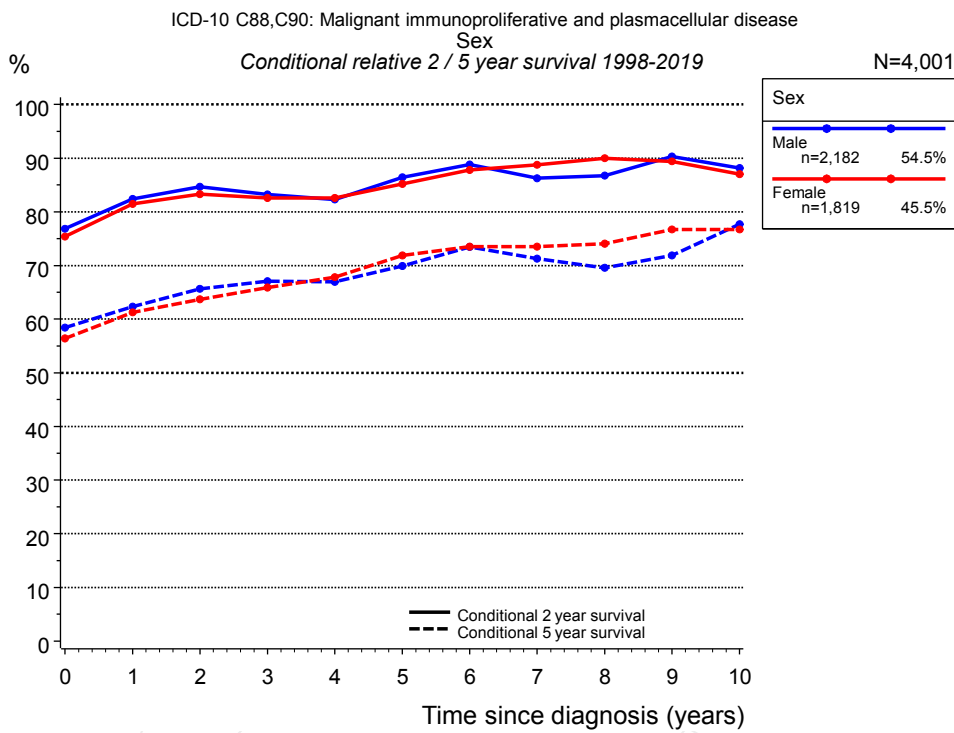
**Table 1b.** Observed (obs.) and relative (rel.) survival of patients with immunoprolif. disease by period of diagnosis for period 1988-2019 (N=4,445).



**Figure 2a.** Survival of patients with immunoprolif. disease by sex. Included in the evaluation are 4,001 cases diagnosed between 1998 and 2019.

Years	Sex			
	Male n=2,182		Female n=1,819	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	83.0	85.5	82.2	84.2
2	72.7	76.9	72.1	75.3
3	64.8	70.4	64.2	68.5
4	58.2	64.9	57.5	62.6
5	51.1	58.4	50.7	56.4
6	45.2	53.1	45.3	51.4
7	41.6	50.2	41.2	47.7
8	37.8	46.8	37.8	44.8
9	33.7	42.9	34.7	42.0
10	30.7	40.2	32.3	39.9
11	28.5	38.4	29.3	37.1
12	25.2	35.1	26.5	34.3
13	22.1	31.8	24.5	32.4
14	20.4	30.1	23.1	31.4
15	19.9	30.4	21.6	29.9
Median	5.2		5.1	

**Table 2b.** Observed (obs.) and relative (rel.) survival of patients with immunoprolif. disease by sex for period 1998-2019 (N=4,001).

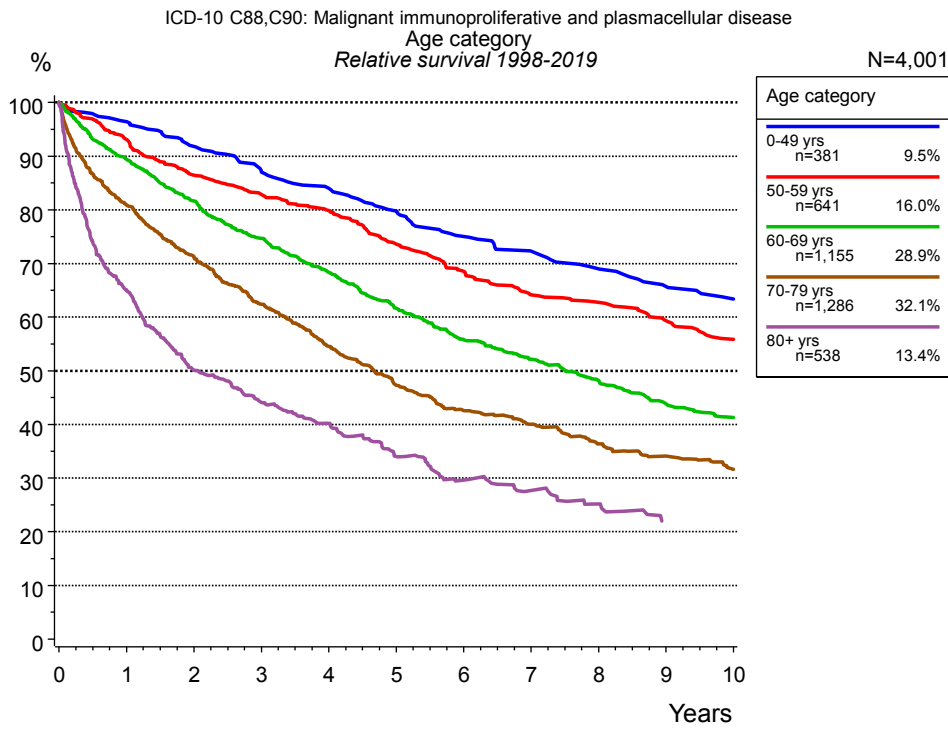


**Figure 2c.** Conditional relative 2 / 5-year survival of patients with immunoprolif. disease by sex. For 4,001 of 4,001 cases diagnosed between 1998 and 2019 valid data could be obtained for this item.

Years	Sex					
	n	Male		Female		
		Cond. surv. %	2 yrs	5 yrs	n	Cond. surv. %
0	2,182	76.9	58.4	1,819	75.3	56.4
1	1,725	82.4	62.3	1,440	81.5	61.3
2	1,452	84.7	65.7	1,205	83.3	63.7
3	1,232	83.3	67.1	1,015	82.6	65.9
4	1,036	82.3	66.9	854	82.6	67.8
5	851	86.5	69.9	696	85.2	71.9
6	697	88.8	73.5	574	87.8	73.5
7	583	86.3	71.3	474	88.8	73.5
8	476	86.8	69.6	387	90.0	74.0
9	373	90.3	71.9	312	89.4	76.7
10	298	88.2	77.7	255	87.0	76.7

**Table 2d.** Conditional relative 2 / 5-year survival of patients with immunoprolif. disease by sex for period 1998-2019 (N=4,001).

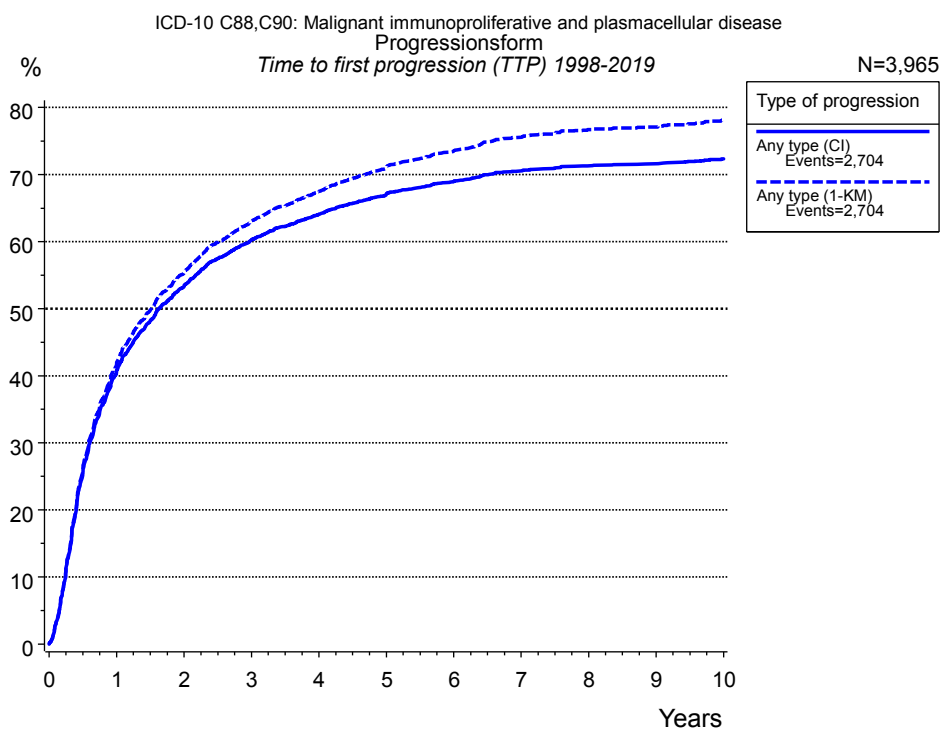
Conditional relative survival rates refer to the relative survival probability, in this case for 2 and 5 years after cancer diagnosis, compared to the age- and sex-matched population (=100 %) under the condition of being alive for a certain time period (x-axis in Figure 2a). The results illustrate to 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 83.3% (n=1,232).



**Figure 3a.** Relative survival of patients with immunoprolif. disease by age category. Included in the evaluation are 4,001 cases diagnosed between 1998 and 2019.

Years	Age category									
	0-49 yrs n=381		50-59 yrs n=641		60-69 yrs n=1,155		70-79 yrs n=1,286		80+ yrs n=538	
	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	96.5	96.4	92.7	93.1	88.3	89.4	78.5	80.9	59.2	65.0
2	91.6	91.8	85.5	86.5	79.5	81.6	66.9	71.2	41.5	50.1
3	86.8	87.1	81.5	82.9	71.7	74.7	56.5	62.4	33.1	44.1
4	83.3	84.0	78.0	79.8	64.5	68.3	47.5	54.6	26.7	40.2
5	79.2	79.8	71.5	73.6	57.2	61.6	39.5	47.3	20.0	34.0
6	74.2	75.1	65.9	68.5	50.9	55.8	33.9	42.6	15.2	29.6
7	71.1	72.3	61.0	64.2	46.6	52.2	30.3	40.0	12.2	27.7
8	68.0	69.0	59.1	62.8	42.2	48.2	26.0	36.4	9.7	25.2
9	64.5	65.7	55.5	59.4	37.5	43.9	23.0	34.1	7.0	21.4
10	62.0	63.4	51.7	55.8	34.5	41.3	19.9	31.6		
Median	19.7		10.5		6.3		3.7		1.5	

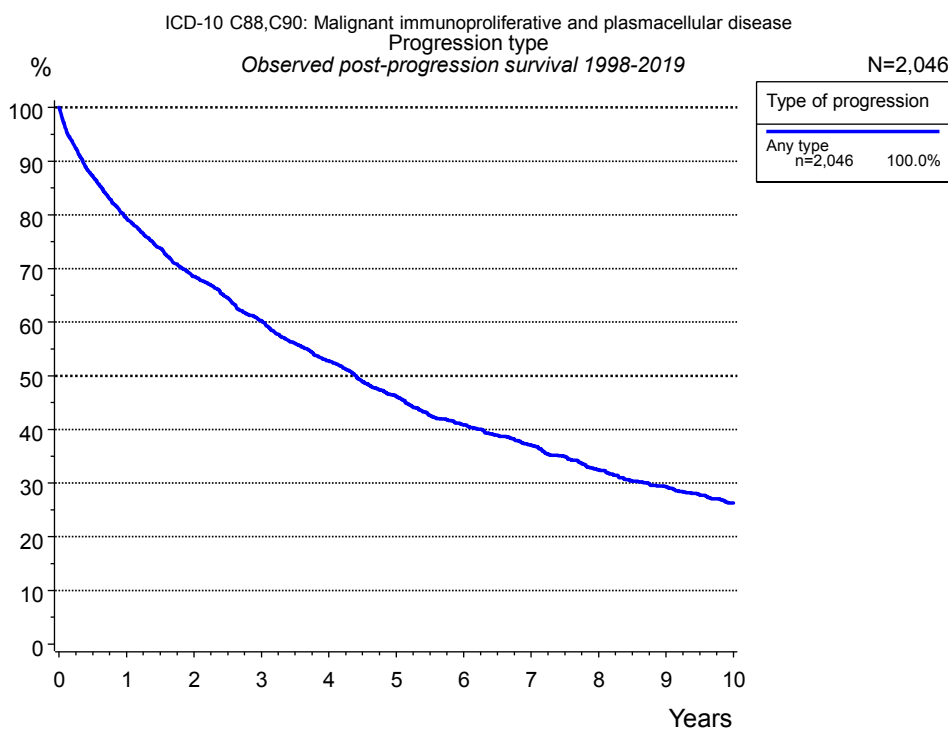
**Table 3b.** Observed (obs.) and relative (rel.) survival of patients with immunoprolif. disease by age category for period 1998-2019 (N=4,001).



**Figure 5a.** Time to first progression of 3,965 patients with immunoprolif. disease diagnosed between 1998 and 2019 (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.

	Type of progression	
	Any type (CI)	Any type (1-KM)
N	3,965	3,965
Events	2,685	2,685
compet.	445	
Years	%	%
0	0.0	0.0
1	40.7	41.8
2	53.3	55.3
3	60.2	63.0
4	64.0	67.4
5	67.1	71.1
6	69.0	73.5
7	70.5	75.6
8	71.4	76.7
9	71.6	77.1
10	72.3	78.1

**Table 5b.** Time to first progression of patients with immunoprolif. disease for period 1998-2019 (N=3,965), also showing the total of progression events (Events) and of deaths as competing risk (compet.).



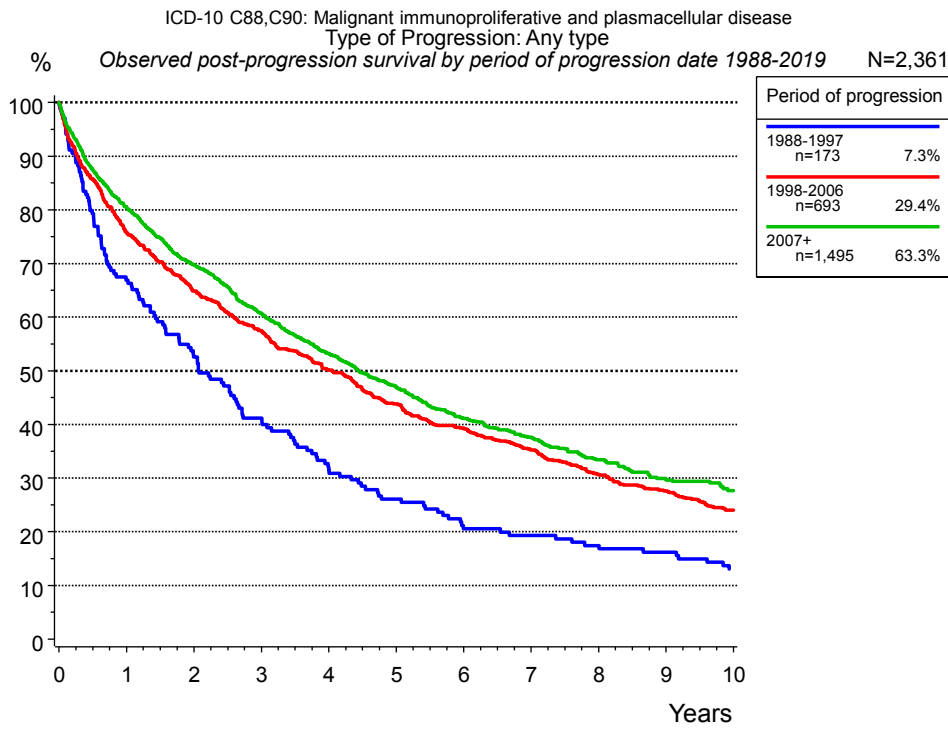
**Figure 5c.** Observed post-progression survival of 2,046 patients with immunoprolif. disease diagnosed between 1998 and 2019. These 2,046 patients with documented progression events during their course of disease represent 51.5 % of the totally 3,969 evaluated cases. Patients with cancer relapse documented via death certificates only were excluded (n=662, 16.7 %).

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=2,046	
Years	%
0	100.0
1	79.4
2	68.5
3	60.2
4	52.8
5	46.1
6	40.9
7	37.1
8	32.5
9	29.2
10	26.3

**Table 5d.** Observed post-progression survival of patients with immunoprolif. disease for period 1998-2019 (N=2,046).





**Figure 5e.** Observed post-progression (any type) survival of 2,361 patients with immunoprolif. disease diagnosed between 1988 and 2019 by period of progression.

Years	Period of progression		
	1988-1997 n=173 %	1998-2006 n=693 %	2007+ n=1,495 %
0	100.0	100.0	100.0
1	66.9	75.7	80.5
2	52.5	64.9	69.7
3	41.2	57.4	60.7
4	31.5	50.1	53.3
5	26.0	43.8	46.8
6	20.5	39.3	41.1
7	19.3	35.2	37.6
8	17.4	30.7	33.4
9	16.2	27.6	29.6
10	13.0	24.0	27.7

**Table 5f.** Observed post-progression (any type) survival of patients with immunoprolif. disease for period 1988-2019 by period of progression (N=2,361).

**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 C88,C90: Immunoprolif. disease [Internet]. 2021 [updated 2021 Jan 28; cited 2021 Mar 1]. Available from: <https://www.tumorregister-muenchen.de/en/facts/surv/sC8890E-ICD-10-C88-C90-Immunoprolif.-disease-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.