

# Munich Cancer Registry



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## ICD-10 C81: Hodgkin lymphoma

### Survival

Year of diagnosis	1988-1997	1998-2019
Patients	471	2,156
Diseases	471	2,156
Cases evaluated	456	1,885
Creation date	01/27/2021	
Database export	01/07/2021	
Population	4.92 m	



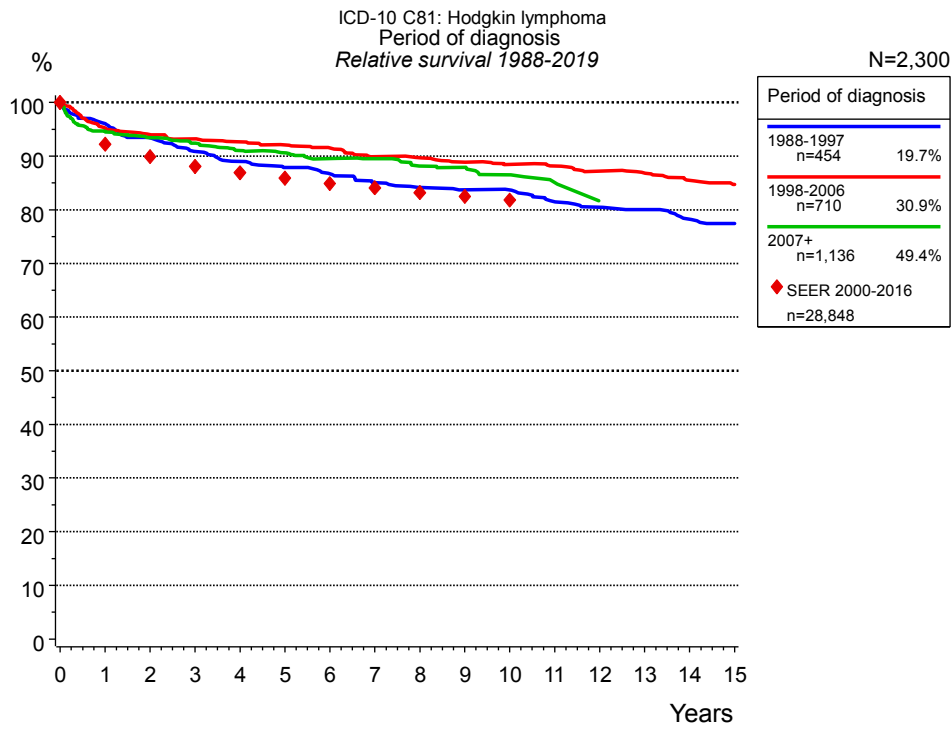
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<https://www.tumorregister-muenchen.de/en>

[https://www.tumorregister-muenchen.de/en/facts/surv/sC81\\_\\_E-ICD-10-C81-Hodgkin-lymphoma-survival.pdf](https://www.tumorregister-muenchen.de/en/facts/surv/sC81__E-ICD-10-C81-Hodgkin-lymphoma-survival.pdf)

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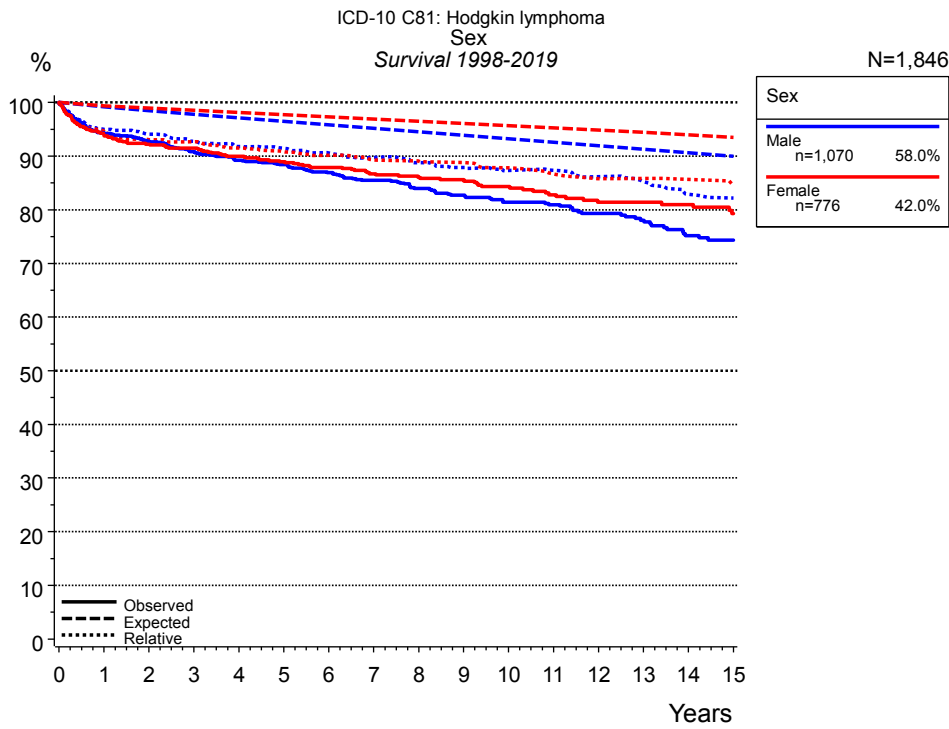
**Figure 1a.** Relative survival of patients with Hodgkin lymphoma by period of diagnosis. Included in the evaluation are 2,300 cases diagnosed between 1988 and 2019.

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=454		1998-2006 n=710		2007+ n=1,136	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	95.5	96.1	94.6	95.2	93.8	94.6
2	92.5	93.4	93.2	94.0	92.2	93.4
3	89.4	90.9	92.0	93.2	90.6	92.4
4	87.2	89.0	90.9	92.6	88.6	91.0
5	85.5	87.9	90.0	92.1	87.7	90.6
6	84.0	86.7	89.0	91.5	86.1	89.5
7	82.0	85.1	86.9	89.9	85.6	89.5
8	80.8	84.2	86.4	89.7	83.6	88.2
9	80.0	83.8	85.3	88.9	83.0	87.9
10	79.7	83.7	84.2	88.4	81.3	86.5
11	77.3	81.5	83.5	88.2	79.5	85.1
12	76.0	80.5	82.1	87.2		
13	75.1	80.0	81.4	86.8		
14	73.2	78.3	79.6	85.5		
15	72.0	77.5	78.3	84.7		
Median						

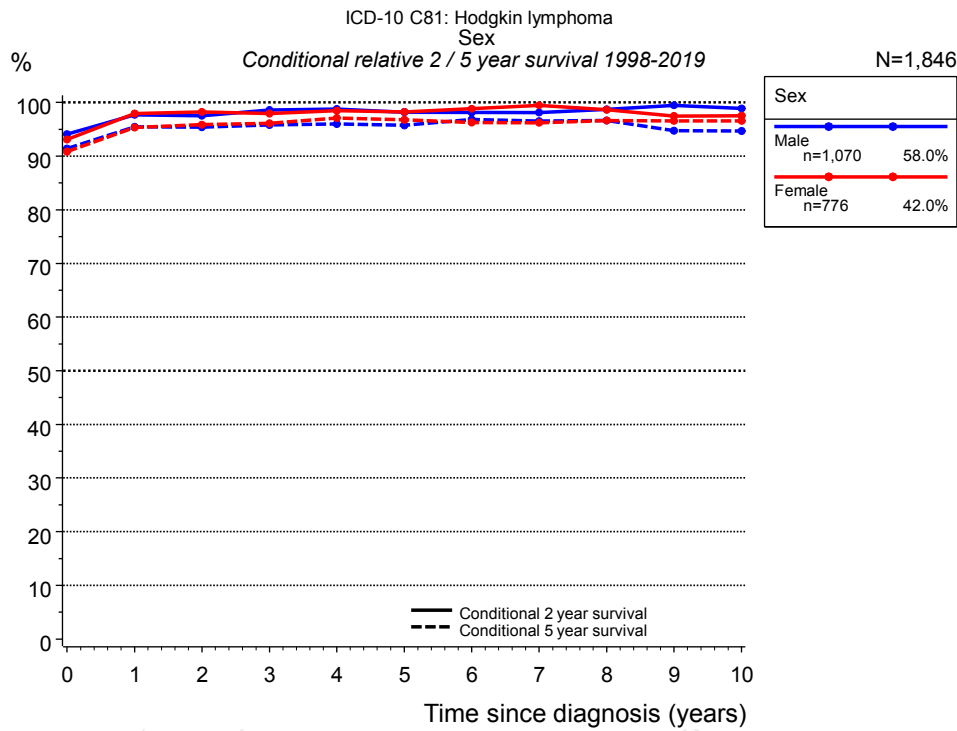
**Table 1b.** Observed (obs.) and relative (rel.) survival of patients with Hodgkin lymphoma by period of diagnosis for period 1988-2019 (N=2,300).



**Figure 2a.** Survival of patients with Hodgkin lymphoma by sex. Included in the evaluation are 1,846 cases diagnosed between 1998 and 2019.

Years	Sex			
	Male n=1,070		Female n=776	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	94.2	95.0	94.0	94.5
2	92.8	94.1	92.2	93.1
3	90.8	92.8	91.5	92.7
4	89.2	91.8	90.0	91.5
5	88.4	91.4	89.0	90.8
6	86.9	90.6	87.9	90.1
7	85.5	89.7	86.7	89.3
8	84.0	88.8	86.1	89.1
9	82.7	87.9	85.6	88.8
10	81.4	87.3	84.3	87.8
11	80.9	87.3	82.8	86.7
12	79.3	86.2	81.4	85.8
13	78.1	85.3	81.4	85.8
14	75.2	82.9	81.0	85.7
15	74.3	82.2	79.3	84.8
Median				

**Table 2b.** Observed (obs.) and relative (rel.) survival of patients with Hodgkin lymphoma by sex for period 1998-2019 (N=1,846).

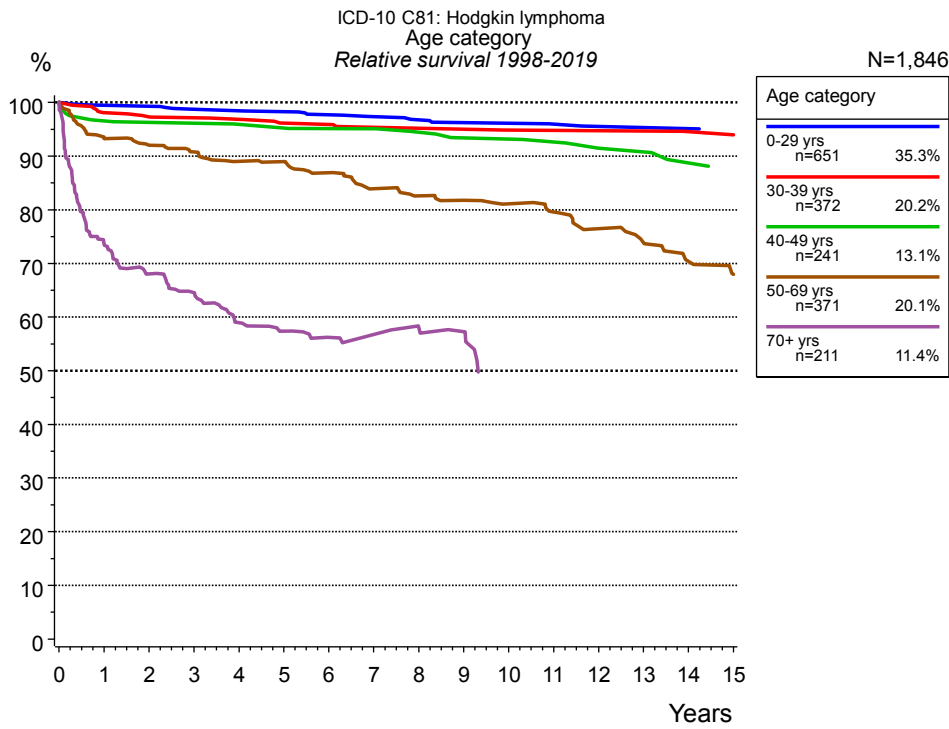


**Figure 2c.** Conditional relative 2 / 5-year survival of patients with Hodgkin lymphoma by sex. For 1,846 of 1,846 cases diagnosed between 1998 and 2019 valid data could be obtained for this item.

Years	Sex					
	n	Male		Female		n
		Cond. surv. % 2 yrs	5 yrs	Cond. surv. % 2 yrs	5 yrs	
0	1,070	94.1	91.4	776	93.1	90.8
1	941	97.7	95.5	683	98.0	95.3
2	886	97.5	95.4	646	98.2	95.9
3	822	98.6	95.8	608	97.9	96.1
4	750	98.8	96.0	560	98.5	97.1
5	696	98.2	95.8	516	98.3	96.8
6	623	98.1	96.8	471	98.8	96.3
7	551	98.1	96.5	425	99.5	96.2
8	486	98.7	96.6	379	98.7	96.6
9	419	99.5	94.8	341	97.5	96.6
10	371	98.9	94.7	296	97.5	96.6

**Table 2d.** Conditional relative 2 / 5-year survival of patients with Hodgkin lymphoma by sex for period 1998-2019 (N=1,846).

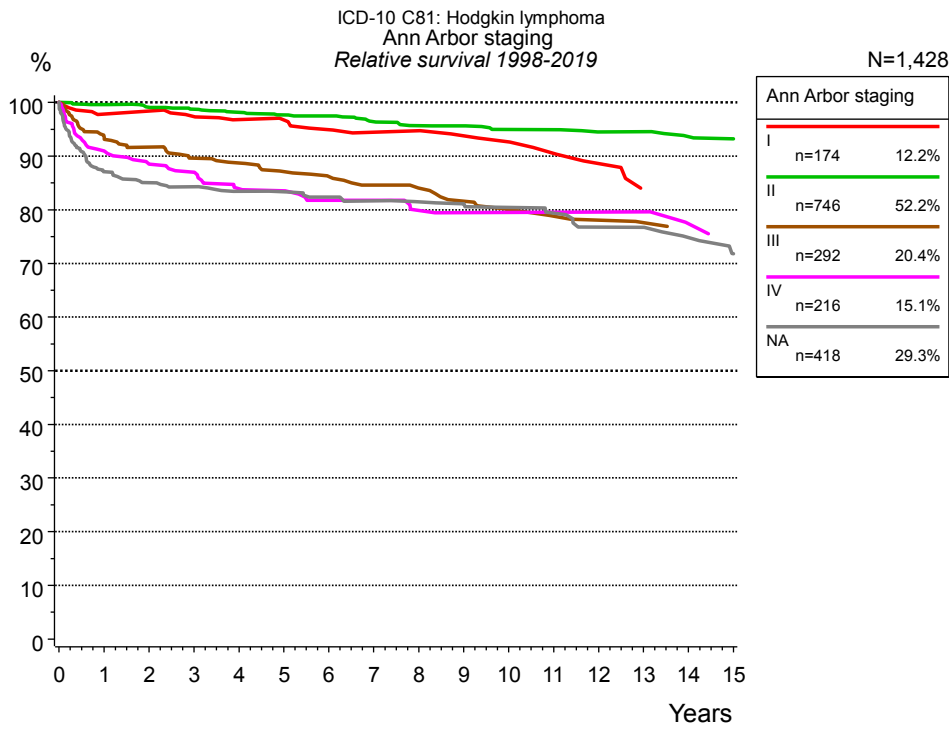
Conditional relative survival rates refer to the relative survival probability, in this case for 2 and 5 years after cancer diagnosis, compared to the age- and sex-matched population (=100 %) under the condition of being alive for a certain time period (x-axis in Figure 2a). The results illustrate to 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 98.6% (n=822).



**Figure 3a.** Relative survival of patients with Hodgkin lymphoma by age category. Included in the evaluation are 1,846 cases diagnosed between 1998 and 2019.

Years	Age category									
	0-29 yrs n=651		30-39 yrs n=372		40-49 yrs n=241		50-69 yrs n=371		70+ yrs n=211	
	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	99.5	99.5	98.0	98.1	96.6	96.5	92.7	93.5	70.7	73.6
2	99.4	99.3	97.4	97.3	96.1	96.2	90.7	92.0	62.6	68.1
3	98.6	98.7	97.1	97.1	95.7	96.1	88.5	90.8	57.1	64.6
4	98.5	98.5	96.8	96.9	95.2	95.9	85.8	89.0	49.6	58.9
5	98.3	98.3	95.8	96.2	94.6	95.2	85.1	89.0	45.8	57.4
6	97.6	97.7	95.8	95.9	94.1	95.1	82.1	86.9	42.4	56.2
7	97.1	97.4	94.9	95.3	94.1	95.1	78.0	83.9	40.9	56.7
8	96.6	96.8	94.5	95.2	92.7	94.5	75.7	82.6	38.9	57.9
9	96.0	96.3	94.5	95.0	91.2	93.4	74.2	81.8	36.8	57.2
10	96.0	96.2	93.9	94.9	91.2	93.2	72.0	81.1		
11	95.6	96.0	93.9	94.8	90.3	92.6	69.5	79.6		
12	95.2	95.6	93.9	94.8	88.0	91.5	65.5	76.5		
13	95.2	95.4	93.9	94.7	88.0	90.8	62.3	73.9		
14	95.2	95.1	92.9	94.6	85.2	88.7	57.8	70.4		
15			92.9	94.0			54.4	68.0		
Median							18.1		3.9	

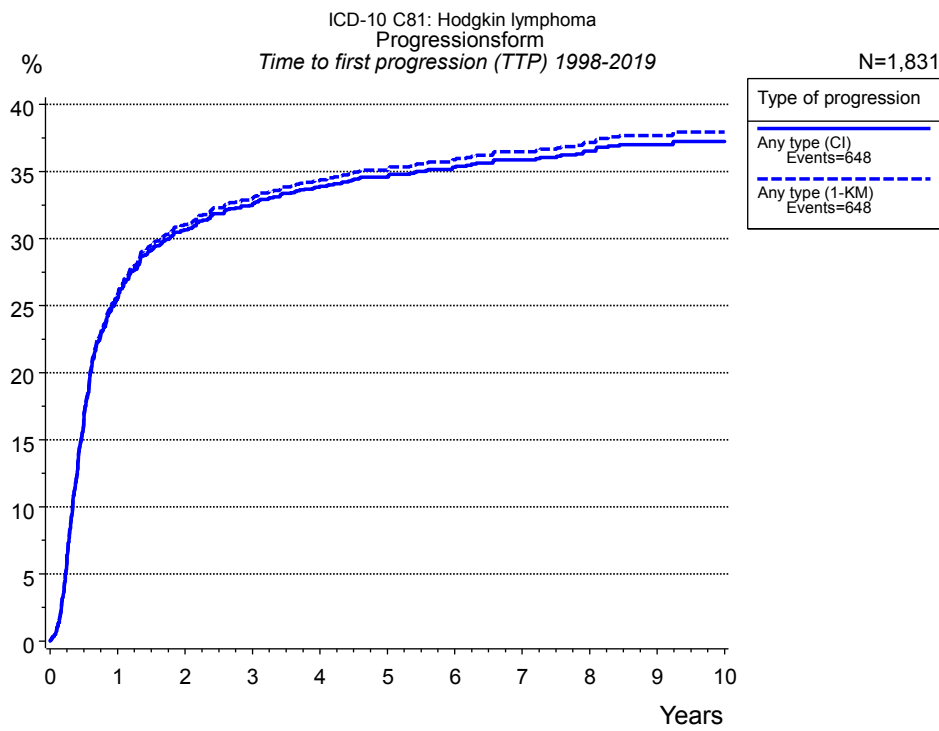
**Table 3b.** Observed (obs.) and relative (rel.) survival of patients with Hodgkin lymphoma by age category for period 1998-2019 (N=1,846).



**Figure 4a.** Relative survival of patients with Hodgkin lymphoma by Ann Arbor staging. For 1,428 of 1,846 cases diagnosed between 1998 and 2019 valid data could be obtained for this item. The grey line represents the subgroup of 418 patients with missing values regarding Ann Arbor staging (22.6 % of 1,846 patients, the percent values of all other categories are related to n=1,428).

Years	Ann Arbor staging									
	I n=174		II n=746		III n=292		IV n=216		NA n=418	
	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	97.0	97.9	99.3	99.6	92.6	93.4	90.7	91.0	86.2	87.1
2	97.0	98.4	98.4	99.1	90.4	91.7	87.7	88.5	83.7	85.1
3	95.1	97.3	97.7	98.7	87.7	89.6	85.7	87.0	82.6	84.3
4	93.1	96.8	96.7	98.2	86.4	88.7	82.0	83.9	81.0	83.4
5	92.3	96.7	95.9	97.7	84.2	87.1	81.5	83.5	80.6	83.3
6	89.9	94.9	95.4	97.5	82.7	86.2	79.0	81.7	79.1	82.4
7	88.2	94.5	94.0	96.4	80.7	84.6	79.0	81.7	77.9	81.7
8	88.2	94.7	92.9	95.7	79.5	84.1	76.6	79.9	76.9	81.5
9	85.9	93.8	92.6	95.6	77.1	81.6	75.7	79.5	76.4	81.1
10	84.6	92.6	91.5	95.0	75.0	80.1	75.7	79.5	74.7	80.5
11	81.8	90.5	91.2	95.0	73.5	78.8	75.7	79.5	73.4	79.4
12	78.7	88.6	90.1	94.5	72.6	78.1	75.7	79.6	70.4	76.8
13			90.1	94.5	71.7	77.6	75.7	79.6	70.4	76.7
14			88.6	93.6	70.6	76.5	71.7	77.4	67.5	74.8
15			88.1	93.2	70.6	75.7	69.5	75.0	64.0	71.8
Median										

**Table 4b.** Observed (obs.) and relative (rel.) survival of patients with Hodgkin lymphoma by Ann Arbor staging for period 1998-2019 (N=1,428).

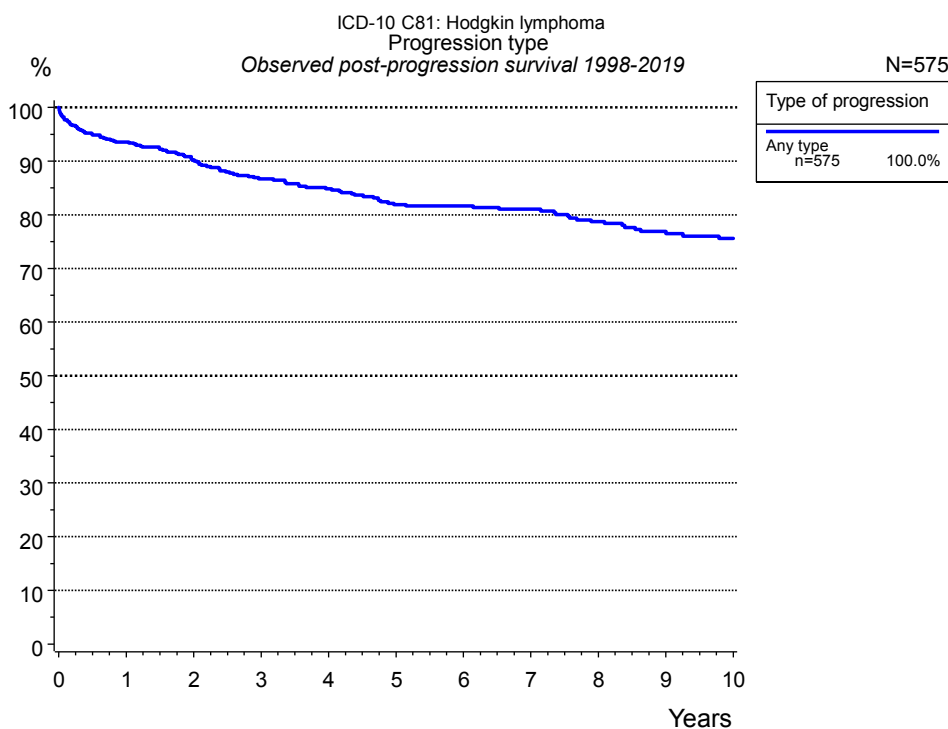


**Figure 5a.** Time to first progression of 1,831 patients with Hodgkin lymphoma diagnosed between 1998 and 2019 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

	Type of progression	
	Any type (CI)	Any type (1-KM)
N	1,831	1,831
Events	636	636
compet.	85	
Years	%	%
0	0.0	0.0
1	25.5	25.8
2	30.6	31.0
3	32.5	32.9
4	33.8	34.3
5	34.6	35.1
6	35.3	35.9
7	35.9	36.5
8	36.5	37.2
9	37.0	37.7
10	37.2	37.9

**Table 5b.** Time to first progression of patients with Hodgkin lymphoma for period 1998-2019 (N=1,831), also showing the total of progression events (Events) and of deaths as competing risk (compet.).



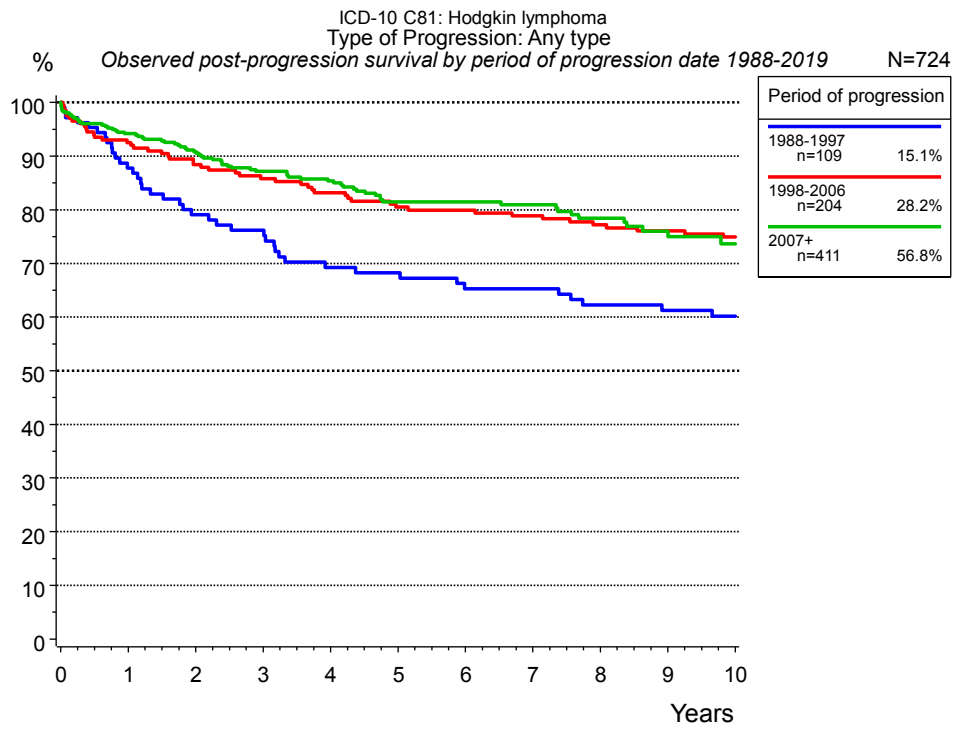


**Figure 5c.** Observed post-progression survival of 575 patients with Hodgkin lymphoma diagnosed between 1998 and 2019. These 575 patients with documented progression events during their course of disease represent 31.4 % of the totally 1,831 evaluated cases. Patients with cancer relapse documented via death certificates only were excluded (n=73, 4.0 %).

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	
Years	Any type n=575 %
0	100.0
1	93.5
2	90.2
3	86.7
4	84.8
5	81.9
6	81.6
7	81.0
8	78.7
9	76.9
10	75.6

**Table 5d.** Observed post-progression survival of patients with Hodgkin lymphoma for period 1998-2019 (N=575).



**Figure 5e.** Observed post-progression (any type) survival of 724 patients with Hodgkin lymphoma diagnosed between 1988 and 2019 by period of progression.

Years	Period of progression		
	1988-1997 n=109 %	1998-2006 n=204 %	2007+ n=411 %
0	100.0	100.0	100.0
1	87.7	92.5	94.2
2	79.1	88.4	90.8
3	76.2	85.8	87.1
4	69.3	83.2	85.4
5	68.3	80.5	81.5
6	65.3	80.0	81.5
7	65.3	78.9	80.9
8	62.3	77.2	78.4
9	61.2	76.1	76.0
10	60.2	74.9	73.6

**Table 5f.** Observed post-progression (any type) survival of patients with Hodgkin lymphoma for period 1988-2019 by period of progression (N=724).

## 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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