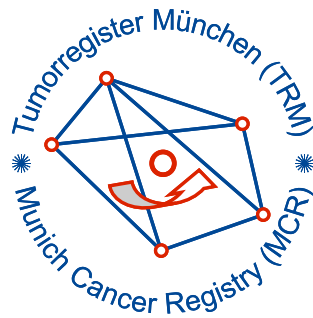


Munich Cancer Registry



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Munich Cancer Registry at Munich Cancer Center
Marchioninstr. 15
Munich, 81377
Germany

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

Cancer statistics: Survival

C81: Hodgkin lymphoma

Year of diagnosis	1988-2013
Patients	2,007
Diseases	2,007
Cases evaluated	1,173
Creation date	05/13/2015
Export date	12/30/2014
Population	4.64 m



http://www.tumorregister-muenchen.de/en/facts/surv/surv_C81__E.pdf

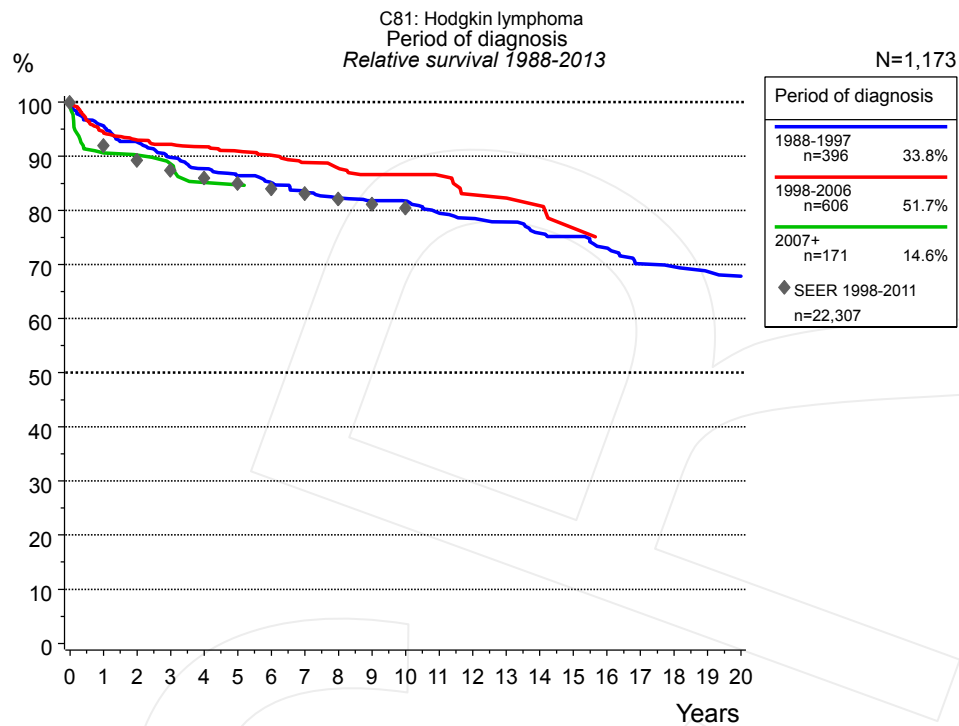


Figure 1a. Relative survival of patients with Hodgkin lymphoma by period of diagnosis. Included in the evaluation are 1,173 cases diagnosed between 1988 and 2013.

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 1988, 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=396		1998-2006 n=606		2007+ n=171	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	94.9	95.6	93.8	94.4	90.3	90.6
2	91.6	92.6	92.1	93.0	88.9	90.2
3	88.2	89.7	90.9	92.2	87.1	88.6
4	85.8	87.7	90.1	91.8	83.1	85.1
5	83.9	86.4	88.7	90.9	83.1	84.7
6	82.3	85.1	87.5	90.2		
7	80.1	83.3	85.8	88.8		
8	78.7	82.3	84.6	87.8		
9	77.9	81.8	83.0	86.6		
10	77.6	81.7	83.0	86.6		
11	75.1	79.5	82.2	86.5		
12	73.8	78.5	78.4	82.9		
13	72.7	77.8	78.4	82.3		
14	70.3	75.8	77.0	80.9		
15	69.5	75.2	73.0	76.7		
16	67.3	73.0				
17	64.0	70.1				
18	63.4	69.6				
19	62.0	68.7				
20	61.2	67.8				

Table 1b. Observed (obs.) and relative (rel.) survival of patients with Hodgkin lymphoma by period of diagnosis for period 1988-2013 (N=1,173).

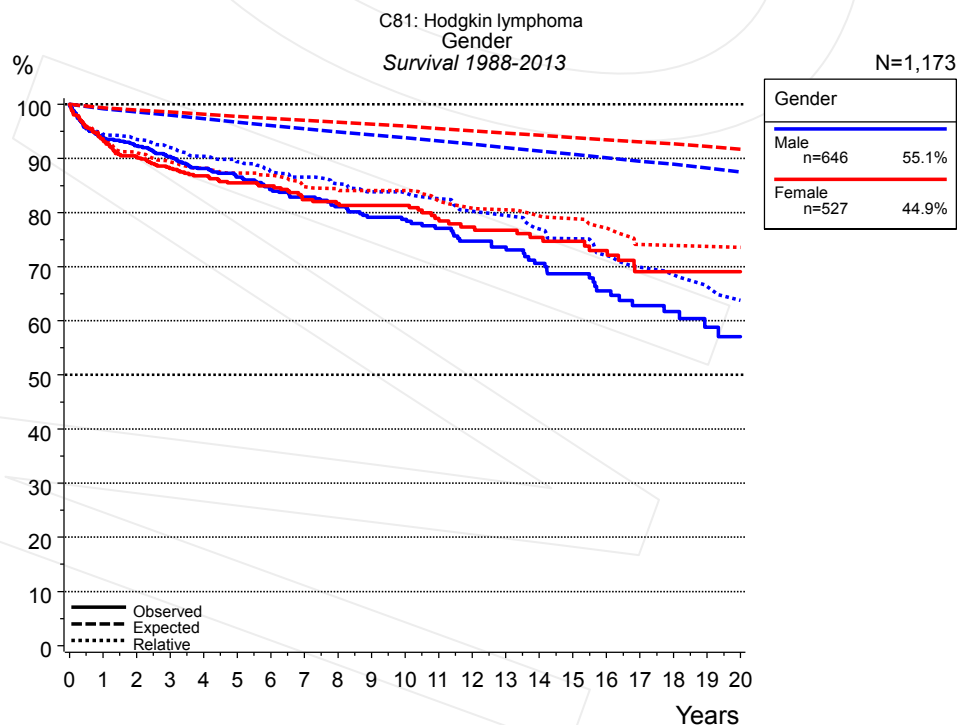


Figure 2a. Survival of patients with Hodgkin lymphoma by gender. Included in the evaluation are 1,173 cases diagnosed between 1988 and 2013.

Years	Gender		Female	
	Male n=646		n=527	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	93.7	94.4	93.7	94.0
2	92.4	93.6	90.3	91.1
3	90.3	92.0	88.2	89.4
4	88.1	90.4	86.8	88.2
5	86.5	89.4	85.5	87.3
6	84.2	87.6	84.9	86.9
7	82.9	86.6	82.4	84.8
8	81.1	85.3	81.7	84.2
9	79.2	83.8	81.3	84.1
10	78.8	83.6	81.3	84.1
11	77.1	82.6	78.9	82.1
12	74.8	80.2	77.4	80.8
13	73.7	79.4	76.8	80.5
14	70.6	77.0	75.4	79.4
15	68.7	75.2	74.7	78.9
16	65.6	72.1	73.0	77.2
17	62.8	69.9	69.1	74.1
18	61.7	68.5	69.1	73.9
19	58.9	66.4	69.1	73.8
20	57.1	63.8	69.1	73.6

Table 2b. Observed (obs.) and relative (rel.) survival of patients with Hodgkin lymphoma by gender for period 1988-2013 (N=1,173).

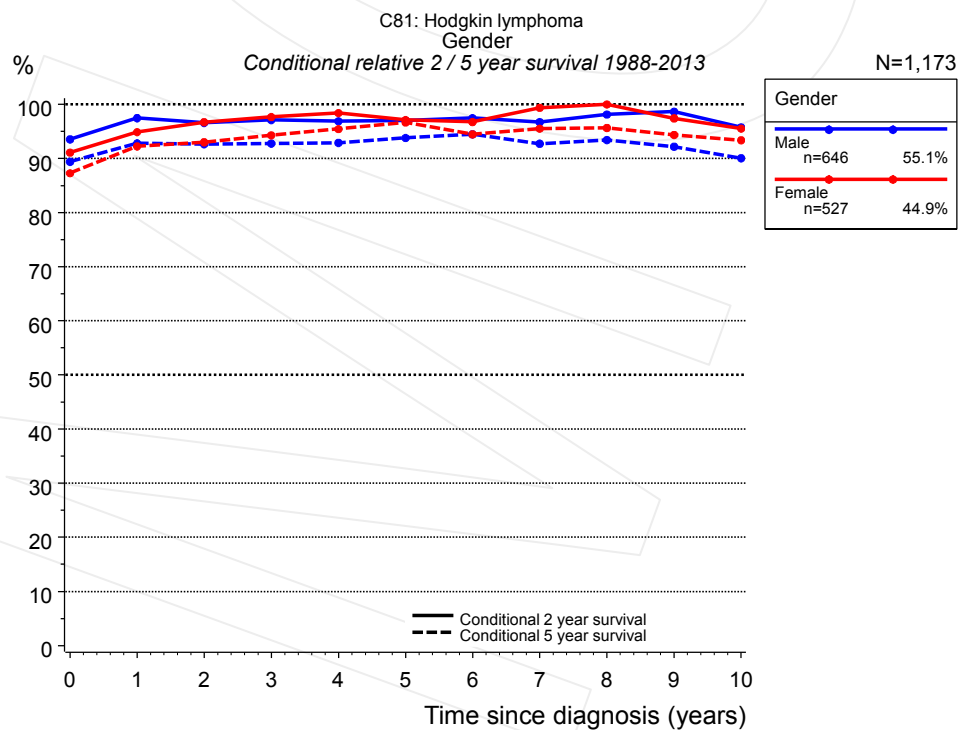


Figure 2c. Conditional relative 2 / 5-year survival of patients with Hodgkin lymphoma by gender. For 1,173 of 1,173 cases diagnosed between 1988 and 2013 valid data could be obtained for this item.

Years	Gender					
	Male			Female		
	n	Cond. surv. % 2 yrs	5 yrs	n	Cond. surv. % 2 yrs	5 yrs
0	646	93.6	89.4	527	91.1	87.3
1	577	97.5	92.8	479	94.9	92.3
2	535	96.6	92.7	437	96.7	93.0
3	467	97.1	92.8	398	97.7	94.3
4	407	96.9	92.9	339	98.4	95.5
5	360	97.0	93.8	308	97.1	96.7
6	320	97.5	94.5	282	96.8	94.5
7	289	96.7	92.8	255	99.4	95.5
8	263	98.1	93.4	236	100.0	95.7
9	236	98.6	92.2	212	97.4	94.4
10	200	95.8	90.1	183	95.5	93.4

Table 2d. Conditional relative 2 / 5-year survival of patients with Hodgkin lymphoma by gender for period 1988-2013 (N=1,173).

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 gender="Male", who are alive at least 3 years after cancer diagnosis, the conditional relative 2-year survival rate is 97.1% (n=467).

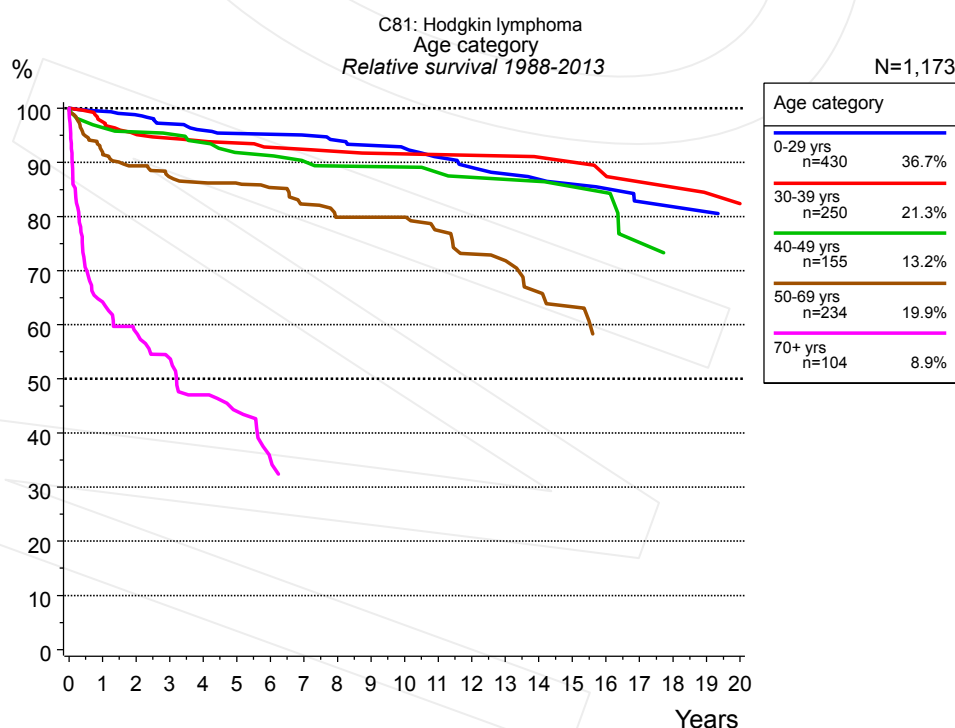


Figure 3a. Relative survival of patients with Hodgkin lymphoma by age category. Included in the evaluation are 1,173 cases diagnosed between 1988 and 2013.

Years	Age category									
	0-29 yrs n=430		30-39 yrs n=250		40-49 yrs n=155		50-69 yrs n=234		70+ yrs n=104	
	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	97.5	97.5	96.8	96.4	91.0	91.8	62.0	64.3
2	98.8	98.8	95.4	95.2	95.5	95.6	87.8	89.4	53.8	58.6
3	97.1	97.1	94.5	94.5	94.8	95.3	84.8	87.3	47.3	53.8
4	95.9	95.9	94.0	93.9	93.2	93.6	83.1	86.3	39.4	47.0
5	95.2	95.3	93.5	93.6	90.6	91.8	81.9	86.2	34.3	44.0
6	95.2	95.2	92.2	92.8	90.6	91.3	79.8	85.3	26.0	35.2
7	94.8	95.1	92.2	92.4	88.4	90.2	76.1	82.3		
8	93.9	94.1	91.5	92.0	87.3	89.3	72.7	79.9		
9	93.0	93.1	90.7	91.7	87.3	89.2	71.7	79.9		
10	92.4	92.6	90.7	91.6	87.3	89.1	71.7	79.9		
11	90.5	91.0	90.7	91.5	85.6	88.1	67.3	77.4		
12	89.1	89.1	90.7	91.3	83.7	87.3	62.6	73.1		
13	87.6	87.9	90.7	91.2	83.7	86.9	61.2	71.9		
14	86.7	86.9	89.1	91.0	83.7	86.5	55.1	66.0		
15	85.8	86.0	89.1	90.1	81.0	85.5	51.8	63.3		
16	84.7	85.2	87.1	87.5	81.0	84.4	45.7	57.5		
17	82.1	82.8	84.9	86.4	70.6	75.2				
18	82.1	81.8	84.9	85.4	66.4	73.0				
19	82.1	80.9	81.2	84.4	66.4	71.9				
20			81.2	82.4	66.4	70.9				

Table 3b. Observed (obs.) and relative (rel.) survival of patients with Hodgkin lymphoma by age category for period 1988-2013 (N=1,173).

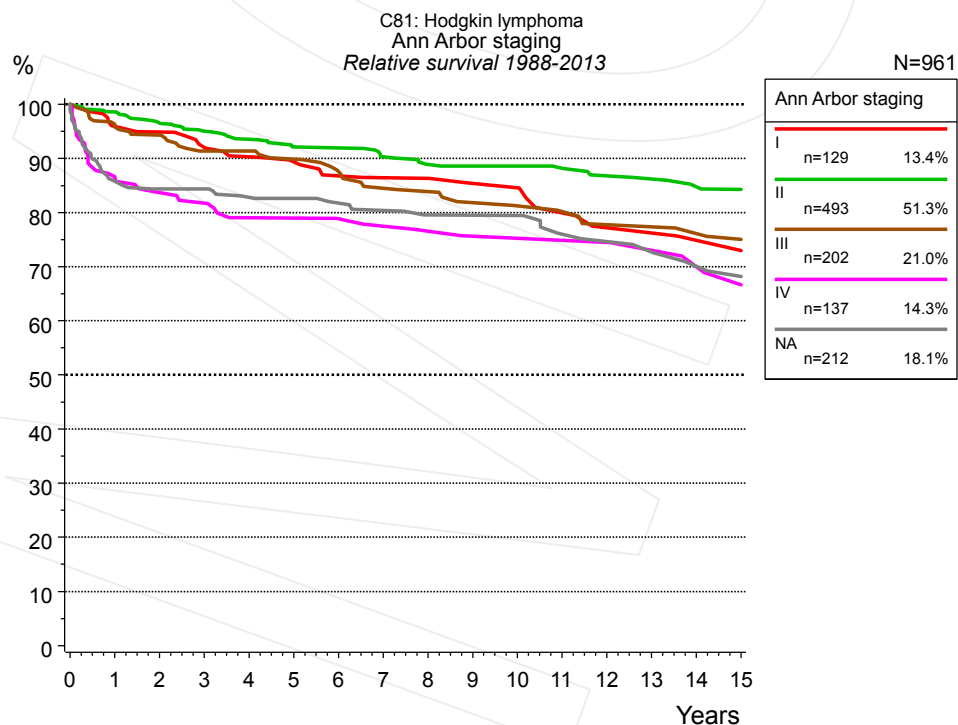


Figure 4a. Relative survival of patients with Hodgkin lymphoma by Ann Arbor staging. For 961 of 1,173 cases diagnosed between 1988 and 2013 valid data could be obtained for this item. The grey line represents the subgroup of 212 patients with missing values regarding Ann Arbor staging (18.1% of 1,173 patients, the percent values of all other categories are related to n=961).

Ann Arbor staging										
Years	I n=129		II n=493		III n=202		IV n=137		NA n=212	
	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	95.3	95.9	98.4	98.6	95.5	96.2	85.7	86.5	85.1	85.8
2	93.7	94.9	96.0	96.6	93.5	94.3	82.5	83.7	83.1	84.4
3	90.2	92.0	94.1	95.1	89.6	91.4	80.8	81.8	83.1	84.4
4	87.4	90.3	92.5	93.5	89.6	91.4	77.1	79.1	80.8	82.8
5	85.5	89.3	90.6	92.2	87.6	89.9	77.1	79.0	80.2	82.6
6	82.3	86.8	90.2	92.0	84.6	87.5	75.8	78.9	78.8	81.7
7	81.1	86.5	88.3	90.3	81.4	84.5	74.5	77.5	77.2	80.4
8	81.1	86.3	86.7	88.9	80.6	83.9	73.2	76.6	75.6	79.6
9	78.3	85.4	86.3	88.6	77.9	81.8	71.6	75.6	75.6	79.5
10	78.3	84.6	86.3	88.6	76.8	81.2	71.6	75.3	75.6	79.5
11	73.0	80.0	85.6	88.1	75.7	80.2	71.6	74.9	71.1	76.0
12	69.0	77.2	83.6	86.8	73.2	77.8	71.6	74.5	69.9	74.6
13	69.0	76.2	82.8	86.2	73.2	77.4	69.1	73.0	68.4	72.7
14	66.4	74.9	81.1	84.8	71.7	76.1	66.3	70.0	65.0	70.1
15	66.4	73.0	80.2	84.3	70.0	75.1	63.2	66.7	63.1	68.2

Table 4b. Observed (obs.) and relative (rel.) survival of patients with Hodgkin lymphoma by Ann Arbor staging for period 1988-2013 (N=961).

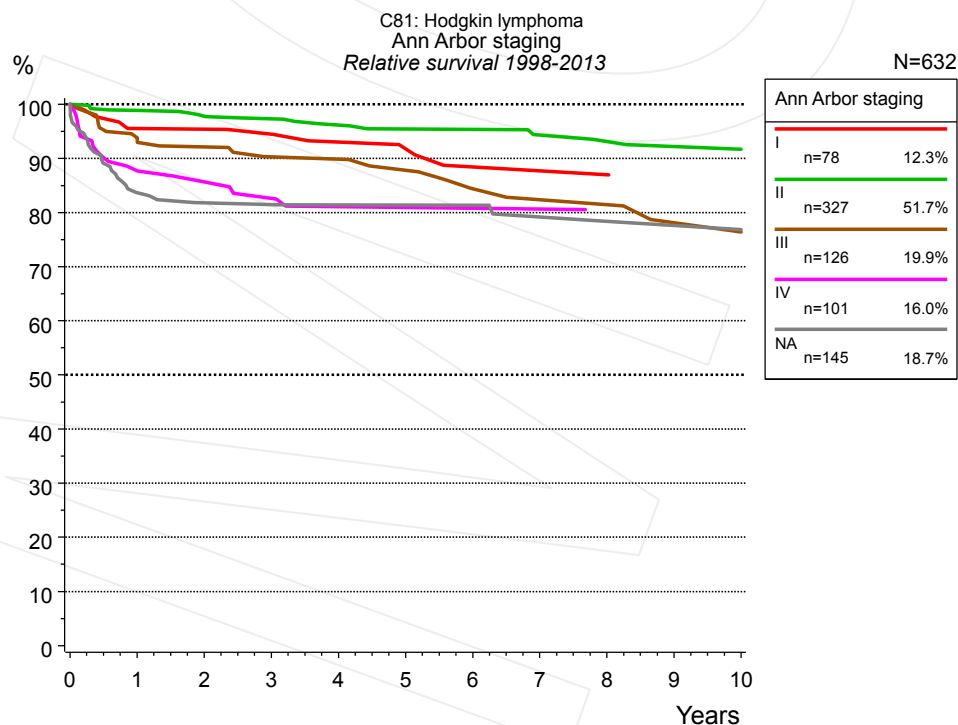


Figure 4c. Relative survival of patients with Hodgkin lymphoma by Ann Arbor staging. For 632 of 777 cases diagnosed between 1998 and 2013 valid data could be obtained for this item. The grey line represents the subgroup of 145 patients with missing values regarding Ann Arbor staging (18.7% of 777 patients, the percent values of all other categories are related to n=632).

Ann Arbor staging											
Years	I n=78		II n=327		III n=126		IV n=101		NA n=145		
	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	94.8	95.5	98.8	98.9	92.8	93.6	87.8	87.7	83.1	83.6	
2	94.8	95.4	97.4	97.8	91.1	92.1	84.4	85.6	80.8	81.8	
3	93.3	94.5	96.7	97.3	88.3	90.3	81.9	82.6	80.8	81.5	
4	90.1	93.0	95.3	96.1	88.3	89.9	79.3	81.1	79.9	81.4	
5	88.1	91.8	94.2	95.4	85.6	87.8	79.3	81.0	79.9	81.4	
6	84.0	88.4	94.2	95.4	80.6	84.4	79.3	80.8	79.9	81.3	
7	84.0	87.7	92.4	94.3	78.8	82.3	79.3	80.7	76.9	79.2	
8	84.0	87.0	91.4	93.1	78.8	81.4			75.0	78.4	
9	80.5	85.5	90.3	92.2	74.0	78.1			75.0	77.6	
10	80.5	84.1	90.3	91.7	74.0	76.4			75.0	76.9	

Table 4d. Observed (obs.) and relative (rel.) survival of patients with Hodgkin lymphoma by Ann Arbor staging for period 1998-2013 (N=632).

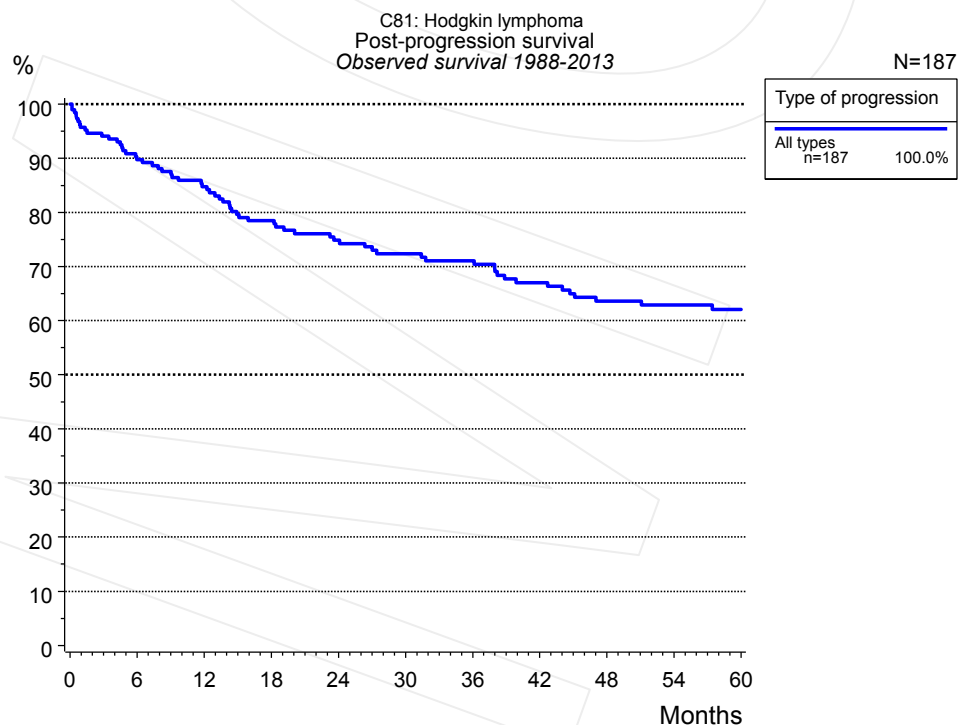


Figure 5a. Observed post-progression survival of 187 patients with Hodgkin lymphoma diagnosed between 1988 and 2013 (incl. M1). These 187 patients with documented progression events during their course of disease represent 15.9% of the totally 1,173 evaluated cases. Patients with cancer relapse documented via death certificates only were excluded (n=42, 3.6%).

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 "All types" 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	
All types n=187	
Months	%
0	100.0
12	84.8
24	74.8
36	71.1
48	63.6
60	62.1

Table 5b. Observed post-progression survival of patients with Hodgkin lymphoma for period 1988-2013 (N=187).

Shortcuts

MCR	Munich Cancer Registry, Germany (Tumorregister München)
NCI	National Cancer Institute, USA
SEER	Surveillance, Epidemiology, and End Results, USA
UICC	Union for International Cancer Control, Geneva
DCO	Death certificate only. The death certificate provides the only notification to the registry.
NA	Not available
NOS	Not otherwise specified
OS	Observed/overall survival (Kaplan-Meier estimate)
RS	Relative survival, compared to the general population, ratio of observed to expected survival (Ederer II method), reflecting excess mortality among cancer patients
AS	Assembled survival chart (observed, expected, relative)
PPS	Post-progression survival, survival since first relapse (Kaplan-Meier estimate)
progression	Date of entry: Date of first locoregional recurrence, distant metastasis, unspecified
	Event: Death of all causes
CS	Conditional survival, survival probability under the condition of surviving a given period of time

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