

# Munich Cancer Registry



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

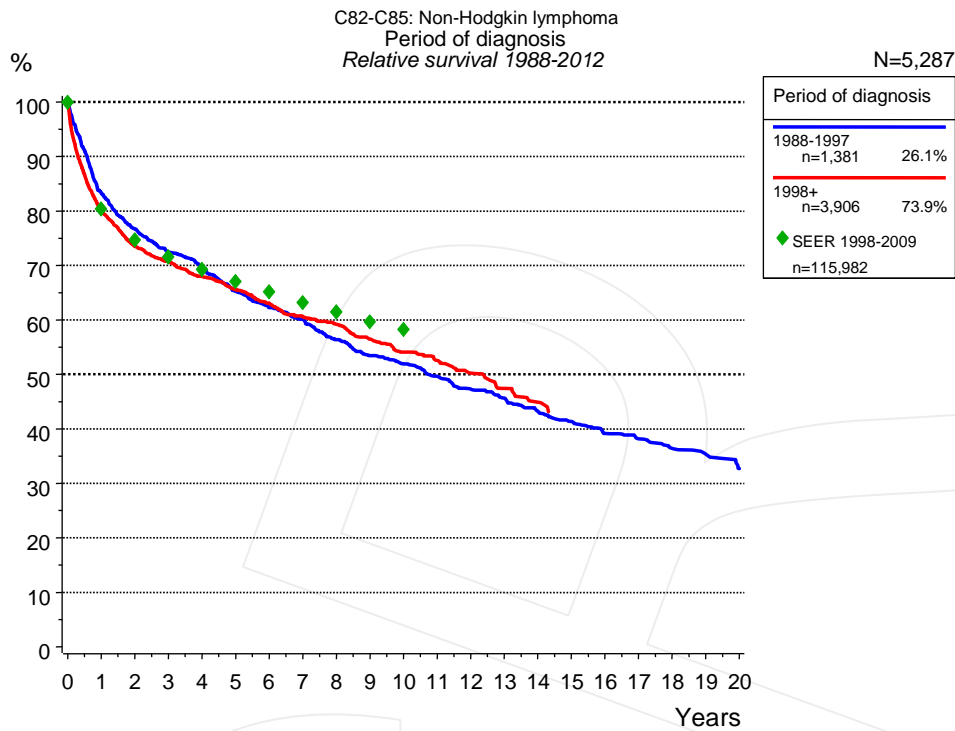
## Cancer statistics: Survival

### C82-C85: NHL

|                   |            |
|-------------------|------------|
| Year of diagnosis | 1988-2012  |
| Patients          | 9,807      |
| Diseases          | 9,853      |
| Cases evaluated   | 5,287      |
| Creation date     | 03/25/2014 |
| Export date       | 02/12/2014 |
| Population        | 4.5 m      |



[http://www.tumorregister-muenchen.de/en/facts/surv/surv\\_C8285E.pdf](http://www.tumorregister-muenchen.de/en/facts/surv/surv_C8285E.pdf)



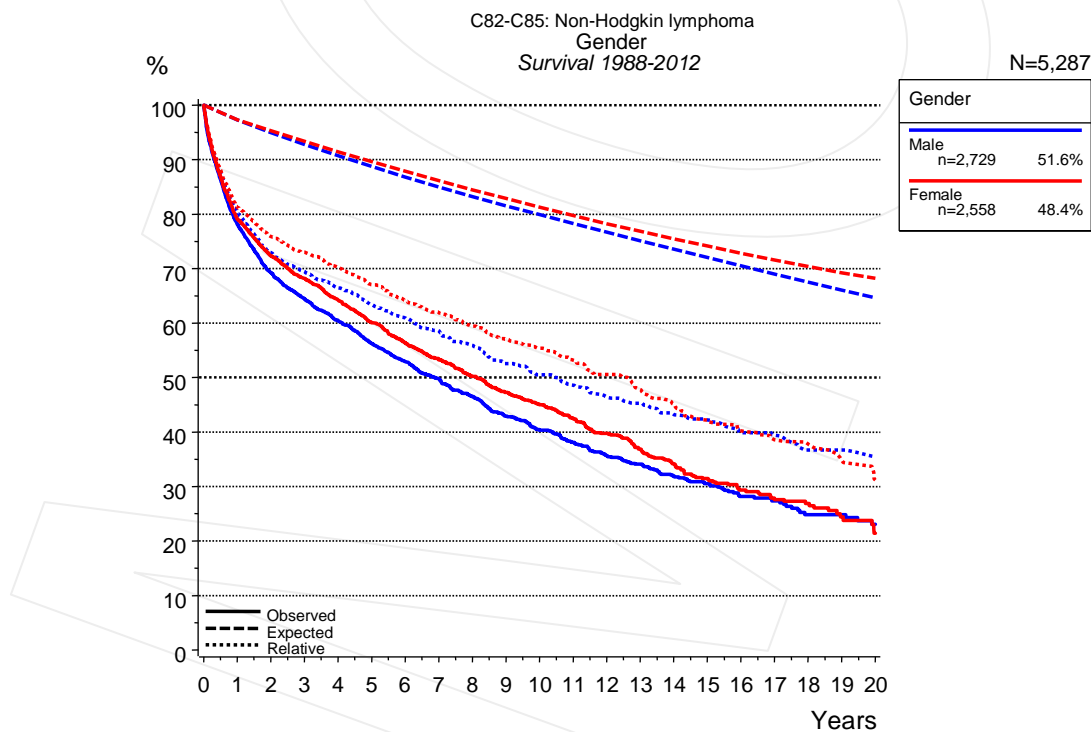
**Figure 1a.** Relative survival of patients with nHL by period of diagnosis. Included in the evaluation are 5,287 cases diagnosed between 1988 and 2012.

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 2009, and are represented by green 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<br>n=1,381 |        | 1998+<br>n=3,906 |        |
|       | obs. %               | rel. % | obs. %           | rel. % |
| 0     | 100.0                | 100.0  | 100.0            | 100.0  |
| 1     | 81.1                 | 83.1   | 77.7             | 79.9   |
| 2     | 73.2                 | 76.7   | 69.8             | 73.5   |
| 3     | 67.6                 | 72.4   | 65.9             | 70.8   |
| 4     | 63.8                 | 69.7   | 61.8             | 67.9   |
| 5     | 58.4                 | 65.2   | 58.4             | 65.5   |
| 6     | 54.6                 | 62.3   | 55.0             | 63.0   |
| 7     | 51.6                 | 60.1   | 51.8             | 60.6   |
| 8     | 47.5                 | 56.4   | 49.5             | 59.2   |
| 9     | 44.1                 | 53.4   | 46.4             | 56.5   |
| 10    | 42.0                 | 51.9   | 43.6             | 54.1   |
| 11    | 39.4                 | 49.6   | 41.6             | 52.5   |
| 12    | 36.8                 | 47.3   | 38.9             | 50.3   |
| 13    | 34.9                 | 45.6   | 36.0             | 47.4   |
| 14    | 32.5                 | 43.2   | 33.7             | 44.9   |
| 15    | 30.5                 | 41.4   |                  |        |
| 16    | 28.2                 | 39.1   |                  |        |
| 17    | 27.0                 | 38.2   |                  |        |
| 18    | 25.4                 | 36.4   |                  |        |
| 19    | 24.2                 | 35.3   |                  |        |
| 20    | 21.9                 | 32.7   |                  |        |

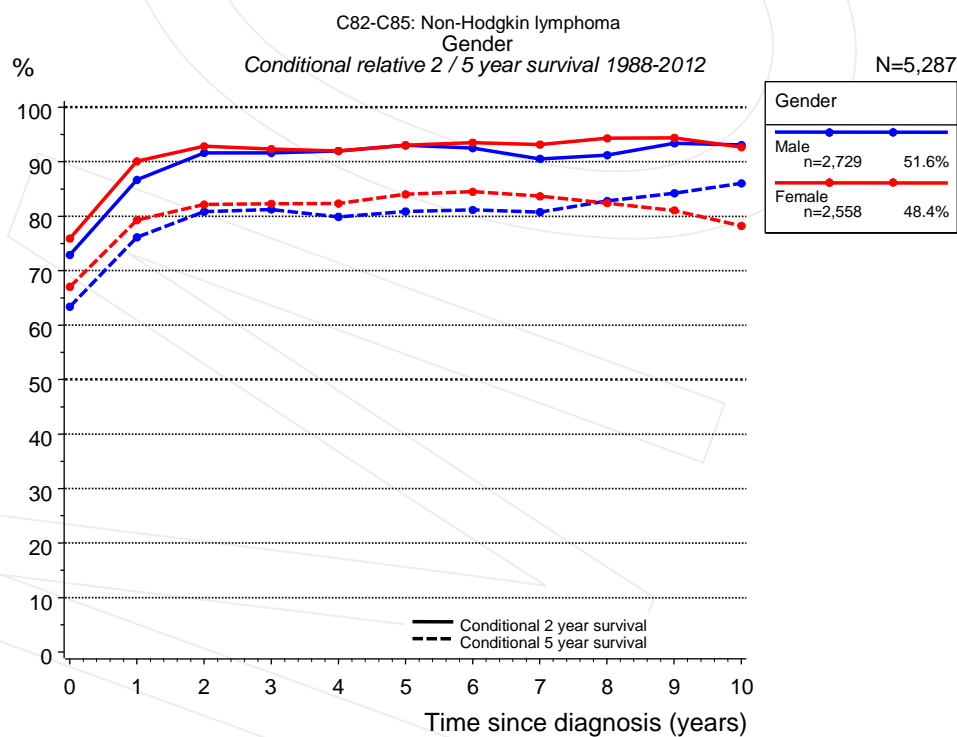
**Table 1b.** Observed (obs.) and relative (rel.) survival of patients with nHL by period of diagnosis for period 1988-2012 (N=5,287).



**Figure 2a.** Survival of patients with nHL by gender. Included in the evaluation are 5,287 cases diagnosed between 1988 and 2012.

| Years | Gender          |        |                   |        |
|-------|-----------------|--------|-------------------|--------|
|       | Male<br>n=2,729 |        | Female<br>n=2,558 |        |
|       | obs. %          | rel. % | obs. %            | rel. % |
| 0     | 100.0           | 100.0  | 100.0             | 100.0  |
| 1     | 78.1            | 80.3   | 79.1              | 81.2   |
| 2     | 69.2            | 72.9   | 72.3              | 75.9   |
| 3     | 64.5            | 69.5   | 68.2              | 73.0   |
| 4     | 60.5            | 66.6   | 64.2              | 70.2   |
| 5     | 56.2            | 63.4   | 60.1              | 67.0   |
| 6     | 52.9            | 60.9   | 56.3              | 64.1   |
| 7     | 49.8            | 58.5   | 53.3              | 61.9   |
| 8     | 46.5            | 55.9   | 50.2              | 59.4   |
| 9     | 42.9            | 52.6   | 47.3              | 57.0   |
| 10    | 40.3            | 50.5   | 45.1              | 55.4   |
| 11    | 38.1            | 48.6   | 42.5              | 53.2   |
| 12    | 35.6            | 46.4   | 39.7              | 50.6   |
| 13    | 34.1            | 45.3   | 36.9              | 47.8   |
| 14    | 31.9            | 43.2   | 34.2              | 45.1   |
| 15    | 30.5            | 42.2   | 31.5              | 42.2   |
| 16    | 28.2            | 39.9   | 29.3              | 40.2   |
| 17    | 27.3            | 39.4   | 27.6              | 38.5   |
| 18    | 24.8            | 36.7   | 26.9              | 37.8   |
| 19    | 24.8            | 36.7   | 24.4              | 34.7   |
| 20    | 23.0            | 35.5   | 21.4              | 31.2   |

**Table 2b.** Observed (obs.) and relative (rel.) survival of patients with nHL by gender for period 1988-2012 (N=5,287).

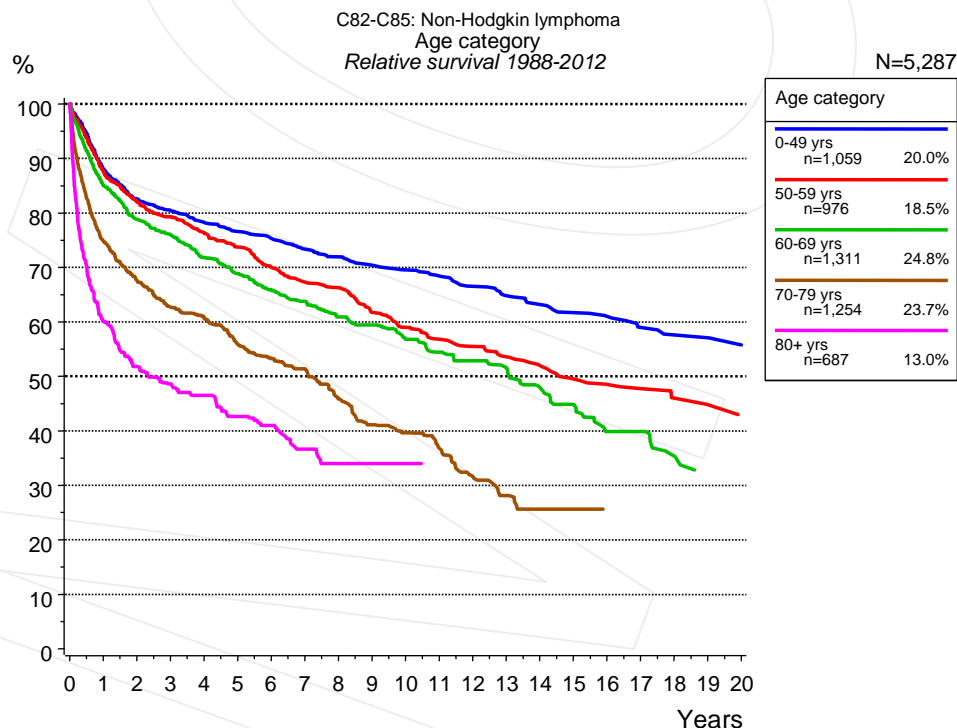


**Figure 2c.** Conditional relative 2 / 5-year survival of patients with nHL by gender. For 5,287 of 5,287 cases diagnosed between 1988 and 2012 valid data could be obtained for this item.

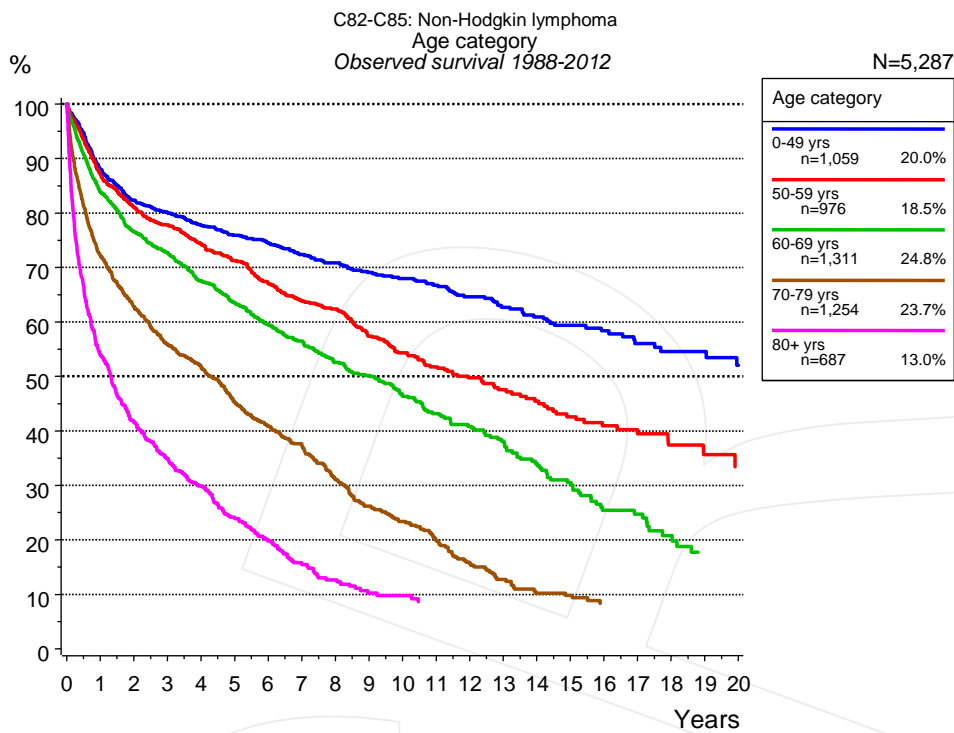
| Years | Gender |                        |       |       |                        |       |
|-------|--------|------------------------|-------|-------|------------------------|-------|
|       | n      | Male                   |       | n     | Female                 |       |
|       |        | Cond. surv. %<br>2 yrs | 5 yrs |       | Cond. surv. %<br>2 yrs | 5 yrs |
| 0     | 2,729  | 72.9                   | 63.4  | 2,558 | 75.9                   | 67.0  |
| 1     | 2,034  | 86.7                   | 76.1  | 1,945 | 90.1                   | 79.3  |
| 2     | 1,642  | 91.6                   | 80.8  | 1,653 | 92.8                   | 82.1  |
| 3     | 1,396  | 91.6                   | 81.2  | 1,448 | 92.3                   | 82.3  |
| 4     | 1,170  | 92.0                   | 79.9  | 1,218 | 92.0                   | 82.3  |
| 5     | 973    | 93.0                   | 80.9  | 1,005 | 93.0                   | 84.0  |
| 6     | 805    | 92.5                   | 81.1  | 842   | 93.5                   | 84.5  |
| 7     | 702    | 90.5                   | 80.8  | 732   | 93.1                   | 83.7  |
| 8     | 586    | 91.2                   | 82.8  | 618   | 94.3                   | 82.4  |
| 9     | 486    | 93.4                   | 84.2  | 522   | 94.4                   | 81.1  |
| 10    | 409    | 93.1                   | 86.0  | 434   | 92.7                   | 78.2  |

**Table 2d.** Conditional relative 2 / 5-year survival of patients with nHL by gender for period 1988-2012 (N=5,287).

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 91.6% (n=1,396).



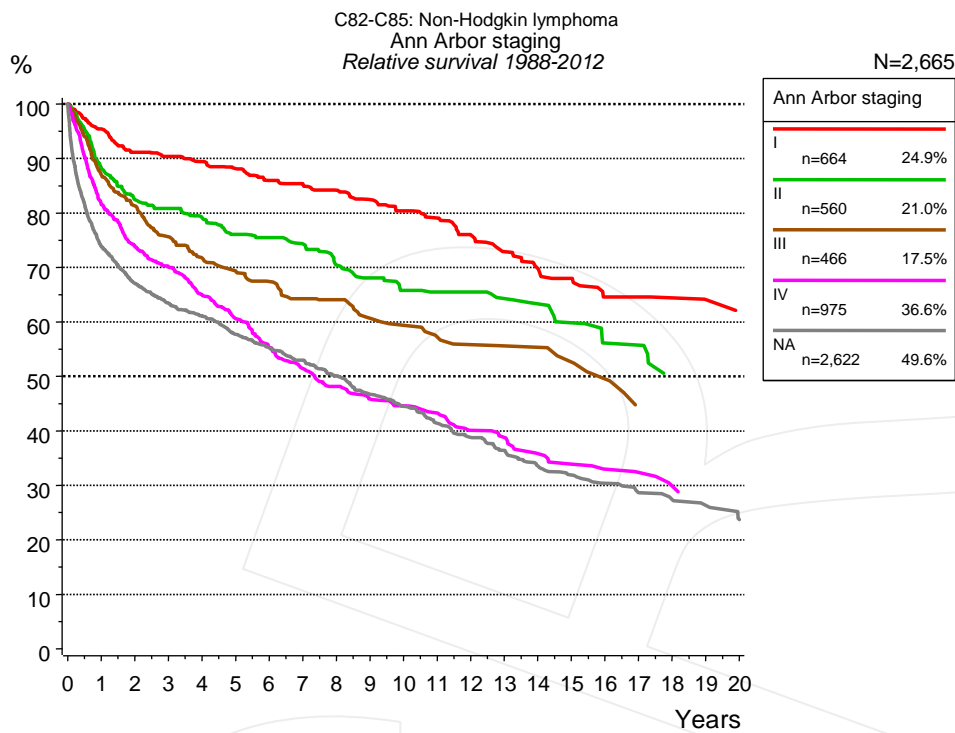
**Figure 3a.** Relative survival of patients with nHL by age category. Included in the evaluation are 5,287 cases diagnosed between 1988 and 2012.



**Figure 3b.** Observed survival of patients with nHL by age category. Included in the evaluation are 5,287 cases diagnosed between 1988 and 2012.

| Years | Age category        |        |                    |        |                      |        |                      |        |                  |        |
|-------|---------------------|--------|--------------------|--------|----------------------|--------|----------------------|--------|------------------|--------|
|       | 0-49 yrs<br>n=1,059 |        | 50-59 yrs<br>n=976 |        | 60-69 yrs<br>n=1,311 |        | 70-79 yrs<br>n=1,254 |        | 80+ yrs<br>n=687 |        |
|       | 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     | 88.0                | 88.1   | 87.0               | 87.5   | 83.8                 | 85.0   | 72.1                 | 74.7   | 53.9             | 60.1   |
| 2     | 82.4                | 82.6   | 81.0               | 82.0   | 76.5                 | 78.8   | 62.8                 | 67.6   | 41.5             | 51.8   |
| 3     | 80.1                | 80.4   | 77.8               | 79.3   | 72.7                 | 76.0   | 55.8                 | 62.7   | 34.9             | 48.6   |
| 4     | 77.8                | 78.3   | 74.4               | 76.3   | 67.5                 | 71.8   | 51.7                 | 60.7   | 29.9             | 46.5   |
| 5     | 75.9                | 76.6   | 71.2               | 73.7   | 63.5                 | 68.8   | 45.2                 | 55.9   | 23.9             | 42.6   |
| 6     | 74.5                | 75.3   | 66.9               | 69.9   | 59.6                 | 65.9   | 40.8                 | 53.3   | 19.8             | 41.0   |
| 7     | 72.4                | 73.4   | 63.8               | 67.3   | 56.5                 | 63.8   | 37.3                 | 51.4   | 15.4             | 36.6   |
| 8     | 70.8                | 71.9   | 62.3               | 66.3   | 52.5                 | 60.9   | 31.1                 | 45.8   | 12.6             | 34.0   |
| 9     | 69.0                | 70.4   | 57.4               | 61.7   | 50.2                 | 59.4   | 26.2                 | 41.1   | 10.2             | 34.0   |
| 10    | 68.0                | 69.5   | 54.3               | 59.0   | 46.3                 | 56.8   | 23.4                 | 39.6   | 9.7              | 34.0   |
| 11    | 66.7                | 68.4   | 51.7               | 56.8   | 43.2                 | 54.4   | 20.0                 | 36.8   |                  |        |
| 12    | 64.6                | 66.5   | 49.7               | 55.5   | 40.8                 | 52.9   | 15.6                 | 31.6   |                  |        |
| 13    | 62.7                | 64.8   | 47.5               | 53.6   | 38.1                 | 51.6   | 12.7                 | 28.1   |                  |        |
| 14    | 60.9                | 63.2   | 45.5               | 51.9   | 34.0                 | 47.9   | 10.2                 | 25.6   |                  |        |
| 15    | 59.3                | 61.7   | 42.6               | 49.5   | 30.5                 | 44.8   | 9.8                  | 25.6   |                  |        |
| 16    | 58.3                | 61.0   | 40.9               | 48.5   | 25.4                 | 39.9   |                      |        |                  |        |
| 17    | 56.0                | 59.0   | 39.4               | 47.7   | 24.7                 | 39.9   |                      |        |                  |        |
| 18    | 54.5                | 57.6   | 37.4               | 46.0   | 20.8                 | 35.3   |                      |        |                  |        |
| 19    | 54.5                | 57.1   | 35.6               | 44.8   | 17.7                 | 31.8   |                      |        |                  |        |
| 20    | 52.0                | 55.8   | 33.4               | 42.9   |                      |        |                      |        |                  |        |

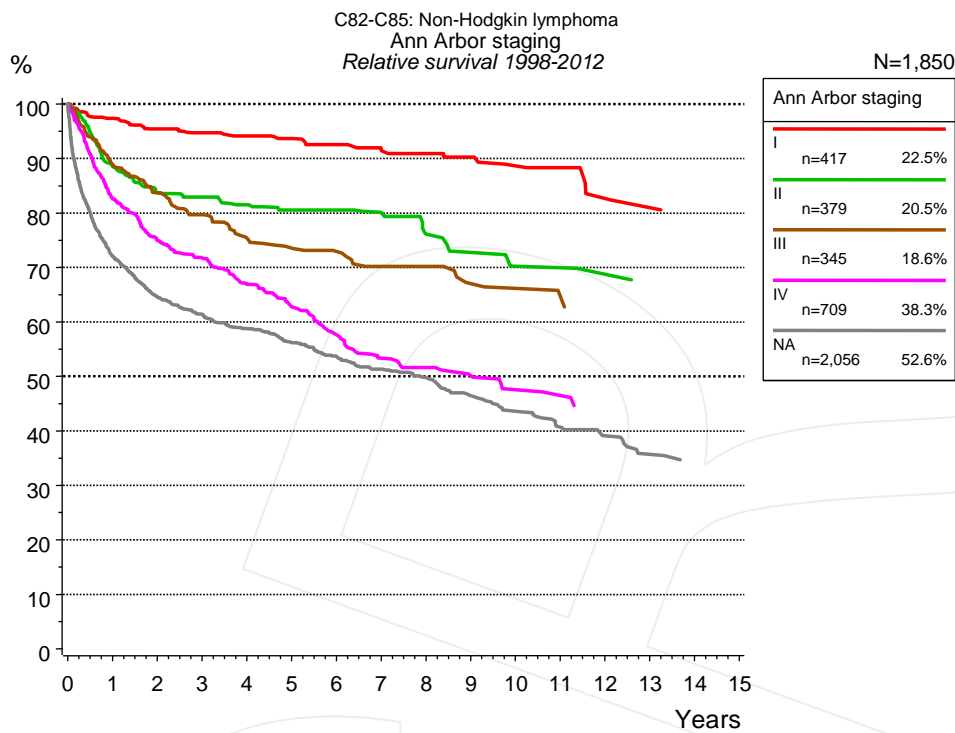
**Table 3c.** Observed (obs.) and relative (rel.) survival of patients with nHL by age category for period 1988-2012 (N=5,287).



**Figure 4a.** Relative survival of patients with nHL by Ann Arbor staging. For 2,667 of 5,287 cases diagnosed between 1988 and 2012 valid data could be obtained for this item. For a total of 2,665 cases an evaluable classification was established. The grey line represents the subgroup of 2,622 patients with missing values regarding Ann Arbor staging (49.6% of 5,287 patients, the percent values of all other categories are related to n=2,665).

| Years | Ann Arbor staging |        |        |        |         |        |        |        |        |        |
|-------|-------------------|--------|--------|--------|---------|--------|--------|--------|--------|--------|
|       | I                 |        | II     |        | III     |        | IV     |        | NA     |        |
|       | n=664             | n=560  | n=466  | n=975  | n=2,622 |        |        |        |        |        |
| 0     | obs. %            | rel. % | obs. % | rel. % | obs. %  | rel. % | obs. % | rel. % | obs. % | rel. % |
| 1     | 93.5              | 95.4   | 86.0   | 88.0   | 85.3    | 87.0   | 80.0   | 81.5   | 71.4   | 73.9   |
| 2     | 87.6              | 91.2   | 79.0   | 82.4   | 78.3    | 81.3   | 71.2   | 73.8   | 63.1   | 67.1   |
| 3     | 85.1              | 90.4   | 76.1   | 80.8   | 71.9    | 75.6   | 66.6   | 70.1   | 58.2   | 63.4   |
| 4     | 82.4              | 89.5   | 73.1   | 79.1   | 66.7    | 71.7   | 60.6   | 64.8   | 54.7   | 61.1   |
| 5     | 79.4              | 88.1   | 69.0   | 76.0   | 63.7    | 69.4   | 55.6   | 60.6   | 50.3   | 57.7   |
| 6     | 75.8              | 86.0   | 67.5   | 75.4   | 60.8    | 67.4   | 50.1   | 55.4   | 47.0   | 55.2   |
| 7     | 73.7              | 85.2   | 64.9   | 74.3   | 57.2    | 64.3   | 45.6   | 51.4   | 44.1   | 52.9   |
| 8     | 71.2              | 84.2   | 60.5   | 70.4   | 56.3    | 64.1   | 42.2   | 48.2   | 40.6   | 50.1   |
| 9     | 68.2              | 82.4   | 57.7   | 68.0   | 52.4    | 60.7   | 39.5   | 45.8   | 37.0   | 46.7   |
| 10    | 65.3              | 80.4   | 54.8   | 65.7   | 50.1    | 59.4   | 37.9   | 44.6   | 34.5   | 44.5   |
| 11    | 62.7              | 79.1   | 53.8   | 65.5   | 47.8    | 57.2   | 36.4   | 43.3   | 31.5   | 41.4   |
| 12    | 58.8              | 76.0   | 53.2   | 65.5   | 46.2    | 55.8   | 32.8   | 40.1   | 28.9   | 38.8   |
| 13    | 55.2              | 72.9   | 51.3   | 64.3   | 45.1    | 55.6   | 31.6   | 38.8   | 26.6   | 36.4   |
| 14    | 52.1              | 69.7   | 49.7   | 63.3   | 45.1    | 55.3   | 28.4   | 35.8   | 23.9   | 33.5   |
| 15    | 49.9              | 68.0   | 46.4   | 59.8   | 42.5    | 52.6   | 26.4   | 33.9   | 22.3   | 31.9   |
| 16    | 45.9              | 64.6   | 42.3   | 56.1   | 39.7    | 49.5   | 25.2   | 33.0   | 20.7   | 30.4   |
| 17    | 45.9              | 64.6   | 42.3   | 55.7   | 34.5    | 44.7   | 24.4   | 32.4   | 19.0   | 28.7   |
| 18    | 44.8              | 64.4   | 36.9   | 50.2   | 34.5    | 43.6   | 22.3   | 29.8   | 18.1   | 27.4   |
| 19    | 42.9              | 64.1   | 36.9   | 48.7   | 34.5    | 42.5   |        |        | 17.0   | 26.3   |
| 20    | 40.9              | 61.8   | 36.9   | 47.2   |         |        |        |        | 14.8   | 23.7   |

**Table 4b.** Observed (obs.) and relative (rel.) survival of patients with nHL by Ann Arbor staging for period 1988-2012 (N=2,665).

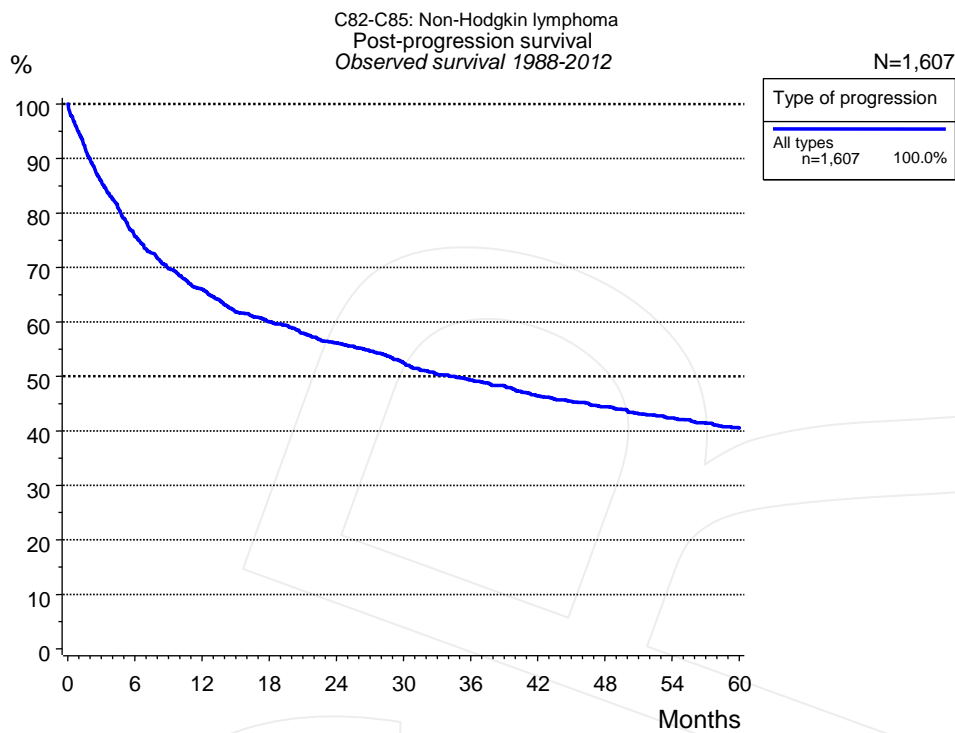


**Figure 4c.** Relative survival of patients with nHL by Ann Arbor staging. For 1,851 of 3,906 cases diagnosed between 1998 and 2012 valid data could be obtained for this item. For a total of 1,850 cases an evaluable classification was established. The grey line represents the subgroup of 2,056 patients with missing values regarding Ann Arbor staging (52.6% of 3,906 patients, the percent values of all other categories are related to n=1,850).

| Years | Ann Arbor staging |        |        |        |         |        |        |        |        |        |
|-------|-------------------|--------|--------|--------|---------|--------|--------|--------|--------|--------|
|       | I                 |        | II     |        | III     |        | IV     |        | NA     |        |
|       | n=417             | n=379  | n=345  | n=709  | n=2,056 |        |        |        |        |        |
|       | 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     | 95.4              | 97.3   | 86.5   | 88.5   | 87.2    | 88.9   | 80.9   | 82.6   | 69.7   | 72.1   |
| 2     | 92.0              | 95.4   | 80.1   | 83.7   | 80.5    | 83.7   | 72.1   | 74.9   | 60.8   | 64.6   |
| 3     | 89.6              | 94.7   | 78.5   | 82.9   | 75.3    | 79.7   | 67.9   | 71.7   | 56.4   | 61.4   |
| 4     | 87.5              | 94.1   | 75.5   | 81.5   | 69.6    | 75.4   | 62.1   | 66.9   | 52.7   | 58.8   |
| 5     | 85.3              | 93.7   | 73.3   | 80.5   | 66.9    | 73.5   | 57.4   | 62.8   | 49.1   | 56.2   |
| 6     | 82.6              | 92.6   | 72.1   | 80.5   | 65.0    | 72.9   | 52.0   | 57.6   | 45.7   | 53.7   |
| 7     | 80.0              | 91.5   | 70.0   | 80.0   | 61.6    | 70.2   | 47.2   | 53.3   | 42.9   | 51.3   |
| 8     | 78.6              | 90.9   | 65.4   | 76.1   | 60.7    | 70.2   | 45.2   | 51.6   | 40.5   | 49.8   |
| 9     | 76.1              | 90.3   | 62.2   | 72.8   | 56.5    | 67.0   | 43.2   | 50.2   | 37.1   | 46.5   |
| 10    | 72.8              | 88.7   | 58.4   | 70.2   | 55.4    | 66.1   | 40.4   | 47.6   | 34.1   | 43.6   |
| 11    | 71.4              | 88.3   | 58.4   | 69.9   | 52.7    | 64.6   | 39.3   | 46.5   | 31.4   | 40.7   |
| 12    | 65.4              | 82.7   | 56.2   | 68.7   | 50.1    | 60.8   | 36.8   | 44.1   | 29.4   | 39.1   |
| 13    | 63.6              | 80.9   |        |        |         |        | 36.8   | 43.2   | 26.6   | 35.7   |
| 14    | 60.6              | 76.1   |        |        |         |        |        |        |        |        |

**Table 4d.** Observed (obs.) and relative (rel.) survival of patients with nHL by Ann Arbor staging for period 1998-2012 (N=1,850).





**Figure 5a.** Observed post-progression survival of 1,607 patients with nHL diagnosed between 1988 and 2012 (incl. M1). These 1,607 patients with documented progression events during their course of disease represent 30.4% of the totally 5,287 evaluated cases. Patients with cancer relapse documented via death certificates only were excluded (n=799, 15.1%).

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<br>n=1,607 |       |
| Months               | %     |
| 0                    | 100.0 |
| 12                   | 66.0  |
| 24                   | 56.1  |
| 36                   | 49.3  |
| 48                   | 44.4  |
| 60                   | 40.5  |

**Table 5b.** Observed post-progression survival of patients with nHL for period 1988-2012 (N=1,607).

**Shortcuts**

|      |  |
|------|--|
| AS   | Assembled survival chart (observed, expected, relative)  |
| CS   | Conditional survival   |
| DCO  | Death certificate only. The death certificate provides the only notification to the registry.  |
| MCR  | Munich Cancer Registry, Germany (Tumorregister München)  |
| NA   | Not available  |
| NCI  | National Cancer Institute, USA   |
| NOS  | Not otherwise specified  |
| OS   | Observed/overall survival (Kaplan-Meier estimate)  |
| PPS  | Post-progression survival  |
| RS   | Relative Survival. Ratio of observed and expected survival (derived from the normal population)  |
| SEER | Surveillance, Epidemiology, and End Results, USA   |
| TTP  | Time to progression<br>Date of entry: Date of diagnosis<br>Event (Progression): First local recurrence, lymph node relapse or distant metastasis, unspecified recurrence<br>First all-cause recurrence is illustrated by survival curves (Kaplan-Meier estimate).<br>First local recurrence, lymph node relapse or distant metastasis are depicted cumulatively, where applicable ("reverse" Kaplan-Meier estimate). |
| UICC | Union for International Cancer Control, Geneva   |

**Recommended Citation**

Munich Cancer Registry. Survival C82-C85: NHL [Internet]. 2014 [updated 2014 Mar 25; cited 2014 May 1]. Available from: [http://www.tumorregister-muenchen.de/en/facts/surv/surv\\_C8285E.pdf](http://www.tumorregister-muenchen.de/en/facts/surv/surv_C8285E.pdf)

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| 4a        | Relative survival by Ann Arbor staging 1988+ (chart) | 7    |
| 4b        | Survival by Ann Arbor staging 1988+ (table)          | 7    |
| 4c        | Relative survival by Ann Arbor staging 1998+ (chart) | 8    |
| 4d        | Survival by Ann Arbor staging 1998+ (table)          | 8    |
| 5a        | Observed post-progression survival (chart)           | 9    |
| 5b        | Observed post-progression survival (table)           | 9    |