

# Munich Cancer Registry



- ▶ Survival
- ▶ Selection Matrix
- ▶ Homepage
- ▶ *Deutsch*

## ICD-10 C83.1: Mantle cell lymphoma

### Incidence and Mortality

Year of diagnosis	1998-2016
Patients	604
Diseases	604
Creation date	08/21/2018
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/base/bC831\\_E-ICD-10-C83.1-Mantle-cell-lymphoma-incidence-and-mortality.pdf](https://www.tumorregister-muenchen.de/en/facts/base/bC831_E-ICD-10-C83.1-Mantle-cell-lymphoma-incidence-and-mortality.pdf)

### Index of figures and tables

Fig./Tbl.		Page
1	Annual cases, mult. malignancies, follow-up / yr	4
2	Incidence by year of diagnosis	7
3	Age distribution parameters by year of diagnosis	8
4	Age distribution by 5-year age group and sex	9
5	Age-specific incidence, proportion malignancies	10
6	Age distribution and age-specific incidence (chart)	11
6a	Age-specific incidence internationally (chart)	12
7	Standardized incidence ratio of further malignancies	13
8a	Map of cancer incidence (WS) by county (chart)	15
8b	Standardized incidence ratio (SIR) by county (chart)	16
9a	Pts incident cohorts and mortality / yr	17
9b	Incidence and mortality by year of diagnosis	18
9c	Cancer-related deaths, death certification available / yr	19
10	Medians of age at death / yr	20
11	Mortality by year of death	22
12	Distribution of age at death	23
13	Age-specific mortality	24
14	Further malignancies in deaths	25
15	Age-specific mortality (first primaries)	27
16	Age-specific mortality (single primaries)	28
17	Age distribution and age-specific mortality (chart)	29
18a	Map of cancer mortality (WS) by county (chart)	30
18b	Standardized mortality ratio (SMR) by county (chart)	31

**Global Statements about the statistics on the Internet –  
Baseline Statistics** (grey button ) , **Survival** (red button )

In these analyses, the clinics and physicians of Upper Bavaria and the city and county of Landshut<sup>#</sup>, with a total of 4.69 million inhabitants, account for the frequency of cancer diseases<sup>##</sup> and the achieved long term results. Additionally, the long term survival evaluated by the Munich Cancer Registry (MCR) is compared with the results of the population-based registry in the USA (SEER), which is useful for checking the consistency of the data on an international level.

In comparing several tables, inconsistent figures may be detected. This is based on the fact that different patient cohorts are included in the base calculation, for example when proportions of multiple tumors or DCO-cases<sup>###</sup> are concerned. In other cases the individual tumor diagnosis is the basis for calculation, for example with incidence.

The foot notes describe the currentness of the data. The baseline statistics and survival data are updated annually. This yearly analysis comprises the Annual Report of the MCR.

Clinics and physicians have access to essentially more detailed data, with which they can check, compare and in the best case optimize their own data and results.

We would be pleased to receive corrections, critique and useful suggestions. Just send an e-mail to [tumor@ibe.med.uni-muenchen.de](mailto:tumor@ibe.med.uni-muenchen.de).

Munich Cancer Registry, August 2018

<sup>#</sup> Base data has been collected since 1998. An increase in new diseases is apparent, which is an effect of two extensions in the MCR catchment area (from a base population of 2.65 million to 4.10 in 2002, and to 4.69 million in 2007).

<sup>##</sup> Due to the high frequency and good prognosis of non-malignant skin cancer (C44), no systematic ascertainment is performed for this diagnosis. C44 is not designated as a primary, but rather as a secondary tumor.

<sup>###</sup> DCO (death certificate only) identifies a cancer case that first becomes available to the MCR through the death certificate.

### ICD-10 codes (ICD-10 2015) used for specifying cancer site

Code	Description
------	-------------

C83.1	Mantle cell lymphoma
-------	----------------------

... or ...

### Morphology codes (ICD-O-3 2011) used for specifying cancer site

Code	Description
------	-------------

9673/3	Mantle cell lymphoma
--------	----------------------

## INCIDENCE

Table 1

Cases with invasive cancer by year of diagnosis, proportions of further malignancies, deaths, and active follow-up (ALL PATIENTS)

Year of diagnosis	All cases n	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	9	22.2	12.2	88.9	100.0
1999	14	13.0	12.3	78.6	100.0
2000	18	14.6	12.6	88.9	100.0
2001	25	13.6	12.6	84.0	96.0
2002	18	13.1	11.9	77.8	100.0 #
2003	21	14.3	11.5	71.4	95.2
2004	29	14.2	11.6	82.8	100.0
2005	33	13.2	11.2	51.5	84.8
2006	46	15.5	11.1	65.2	93.5
2007	43	14.5	9.6	65.1	86.0 #
2008	43	14.4	8.7	65.1	79.1
2009	39	15.1	7.0	48.7	64.1
2010	49	16.3	6.9	51.0	83.7
2011	35	16.1	7.9	62.9	77.1
2012	45	15.8	9.4	44.4	75.6
2013	45	17.4	8.8	37.8	75.6
2014	39	17.4	9.8	38.5	71.8
2015	28	17.3	11.3	35.7	100.0
2016	25	17.9	4.0	24.0	72.0 ##
1998-2016	604	17.9	12.2	57.3	84.3

604 cases diagnosed 1998-2016 are related to a total of 604 patients. Currently, in 171 (28.3 %) of these 604 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 121 / 39 / 11 (20.0 % / 6.5 % / 1.8 %) patients exist having 2 / 3 / 4+ malignancies.

# The increases of incident cases in 2002 and 2007 reflect the expansion to additional registry areas.

## Please be aware that data of recent annual patient cohorts may not yet be fully processed. The years under evaluation can be retrieved from the respective headings.

How to interpret:

In 2014, a subgroup of 39 cases has been diagnosed, of which 17.4 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 9.8 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

Cases with invasive cancer by year of diagnosis, proportions of further malignancies, deaths, and active follow-up (MALES)

Year of diagnosis	Males n	Males %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	5	55.6	40.0	12.6	100.0	100.0
1999	9	64.3	21.4	12.5	77.8	100.0
2000	11	61.1	24.0	12.8	81.8	100.0
2001	16	64.0	17.1	12.9	87.5	100.0
2002	15	83.3	16.1	12.4	80.0	100.0 #
2003	16	76.2	16.7	12.1	68.8	93.8
2004	20	69.0	15.2	12.0	90.0	100.0
2005	26	78.8	13.6	11.5	50.0	84.6
2006	35	76.1	13.7	11.5	71.4	91.4
2007	32	74.4	13.5	10.4	71.9	87.5 #
2008	33	76.7	14.2	9.3	66.7	78.8
2009	23	59.0	13.7	8.0	43.5	60.9
2010	32	65.3	15.4	7.4	46.9	87.5
2011	26	74.3	15.7	8.2	61.5	73.1
2012	35	77.8	15.0	9.8	45.7	74.3
2013	30	66.7	17.0	8.1	33.3	70.0
2014	30	76.9	17.0	8.7	33.3	66.7
2015	22	78.6	16.8	10.3	40.9	100.0
2016	17	68.0	18.0	0.0	11.8	58.8 ##
1998-2016	433	71.7	18.0	12.6	57.0	82.9

433 cases diagnosed 1998-2016 are related to a total of 433 patients. Currently, in 127 (29.3 %) of these 433 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 94 / 25 / 8 (21.7 % / 5.8 % / 1.8 %) patients exist having 2 / 3 / 4+ malignancies.

# The increases of incident cases in 2002 and 2007 reflect the expansion to additional registry areas.

## Please be aware that data of recent annual patient cohorts may not yet be fully processed. The years under evaluation can be retrieved from the respective headings.

How to interpret:

In 2014, a subgroup of 30 cases has been diagnosed, of which 17.0 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 8.7 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1b

Cases with invasive cancer by year of diagnosis, proportions of further malignancies, deaths, and active follow-up (FEMALES)

Year of diagnosis	Females n	Females %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	4	44.4	0.0	11.3	75.0	100.0
1999	5	35.7	0.0	11.6	80.0	100.0
2000	7	38.9	0.0	11.9	100.0	100.0
2001	9	36.0	8.0	11.8	77.8	88.9
2002	3	16.7	7.1	10.5	66.7	100.0 #
2003	5	23.8	9.1	10.0	80.0	100.0
2004	9	31.0	11.9	10.4	66.7	100.0
2005	7	21.2	12.2	10.3	57.1	85.7
2006	11	23.9	20.0	10.0	45.5	100.0
2007	11	25.6	16.9	7.3	45.5	81.8 #
2008	10	23.3	14.8	7.1	60.0	80.0
2009	16	41.0	18.6	4.5	56.3	68.8
2010	17	34.7	18.4	5.6	58.8	76.5
2011	9	25.7	17.1	7.1	66.7	88.9
2012	10	22.2	18.0	8.5	40.0	80.0
2013	15	33.3	18.2	10.5	46.7	86.7
2014	9	23.1	18.5	13.0	55.6	88.9
2015	6	21.4	18.4	14.3	16.7	100.0
2016	8	32.0	17.5	12.5	50.0	100.0 ##
1998-2016	171	28.3	17.5	11.3	57.9	87.7

171 cases diagnosed 1998-2016 are related to a total of 171 patients. Currently, in 44 (25.7 %) of these 171 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 27 / 14 / 3 (15.8 % / 8.2 % / 1.8 %) patients exist having 2 / 3 / 4+ malignancies.

# The increases of incident cases in 2002 and 2007 reflect the expansion to additional registry areas.

## Please be aware that data of recent annual patient cohorts may not yet be fully processed. The years under evaluation can be retrieved from the respective headings.

How to interpret:

In 2014, a subgroup of 9 cases has been diagnosed, of which 18.5 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 13.0 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis  
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,  
and from 4.10 to 4.81 m as of 2007, respectively)

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	5	4	0.5	0.3	0.3	0.2	0.4	0.2	0.5	0.3
1999	9	5	0.8	0.4	0.5	0.2	0.7	0.2	0.8	0.3
2000	11	7	1.0	0.6	0.6	0.3	0.8	0.5	1.0	0.6
2001	16	9	1.4	0.7	0.8	0.4	1.2	0.6	1.5	0.7
2002	15	3	0.8	0.2	0.5	0.1	0.7	0.1	0.8	0.1
2003	16	5	0.9	0.3	0.5	0.1	0.7	0.2	0.8	0.2
2004	20	9	1.1	0.5	0.6	0.2	0.9	0.3	1.0	0.4
2005	26	7	1.4	0.4	0.8	0.2	1.1	0.2	1.5	0.3
2006	35	11	1.8	0.5	0.9	0.2	1.4	0.3	1.9	0.4
2007	32	11	1.4	0.5	0.8	0.2	1.2	0.3	1.4	0.4
2008	33	10	1.5	0.4	0.7	0.2	1.1	0.3	1.4	0.4
2009	23	16	1.0	0.7	0.5	0.3	0.7	0.5	0.9	0.6
2010	32	17	1.4	0.7	0.7	0.4	1.0	0.5	1.3	0.6
2011	26	9	1.2	0.4	0.6	0.2	0.9	0.2	1.0	0.3
2012	35	10	1.5	0.4	0.7	0.2	1.1	0.3	1.4	0.3
2013	30	15	1.3	0.6	0.7	0.2	1.0	0.4	1.2	0.5
2014	30	9	1.3	0.4	0.7	0.2	1.0	0.3	1.2	0.3
2015	22	6	0.9	0.2	0.5	0.1	0.7	0.1	0.9	0.2
2016	17	8	0.7	0.3	0.3	0.1	0.4	0.2	0.6	0.2
1998-2016	433	171	1.2	0.4	0.6	0.2	0.9	0.3	1.1	0.4

The computation of the incidence measures includes all cancers, irrespective of first or subsequent malignancy.

Table 3

Age distribution parameters by year of diagnosis (ALL PATIENTS)

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	9	67.7	13.1	49.9	90.2	49.9	61.0	66.7	72.0	90.2
1999	14	63.1	14.7	35.1	88.1	43.2	54.3	65.0	74.2	78.7
2000	18	66.5	10.2	46.4	81.4	49.9	63.4	66.7	73.5	80.1
2001	25	65.5	9.7	51.5	90.3	55.2	57.7	63.5	70.4	79.2
2002	18	60.3	11.0	39.2	82.4	45.2	54.8	59.9	65.2	82.0
2003	21	66.5	9.3	48.5	80.9	54.7	58.5	66.9	74.4	77.6
2004	29	65.7	14.0	36.9	92.0	38.8	58.2	65.9	74.1	88.1
2005	33	66.3	15.1	22.8	88.2	45.8	58.2	69.8	76.5	81.7
2006	46	69.6	11.2	38.0	87.3	51.8	62.9	71.7	77.6	80.8
2007	43	68.5	9.6	47.7	90.7	54.5	61.0	69.2	76.0	78.0
2008	43	69.5	10.3	47.2	88.5	50.7	67.0	70.4	76.3	82.1
2009	39	67.5	9.4	40.6	80.6	51.8	64.7	68.7	73.5	78.5
2010	49	66.4	12.3	42.1	88.1	47.5	55.2	70.1	75.3	80.7
2011	35	67.7	9.8	43.3	86.8	52.7	63.1	69.1	73.5	79.5
2012	45	68.8	11.9	26.0	90.2	54.1	65.0	72.0	75.7	77.7
2013	45	69.8	10.6	42.0	88.1	57.1	65.5	70.2	76.9	82.9
2014	39	66.5	11.6	41.1	96.9	51.8	58.7	64.5	74.2	80.1
2015	28	68.3	12.2	37.4	86.4	50.4	62.3	69.0	78.6	83.3
2016	25	75.1	8.2	54.5	86.7	66.8	71.3	75.2	81.9	84.5
1998-2016	604	67.7	11.4	22.8	96.9	51.8	61.0	69.2	75.9	80.9

Table 3a

Age distribution parameters by year of diagnosis (MALES)

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	5	64.5	7.4	53.3	72.0	53.3	61.0	66.7	69.3	72.0
1999	9	59.2	9.7	43.2	74.2	43.2	54.3	59.9	65.3	74.2
2000	11	66.1	9.2	46.4	80.1	56.5	63.4	66.0	73.5	74.0
2001	16	67.3	10.2	55.2	90.3	55.9	59.4	64.4	73.8	81.8
2002	15	60.7	11.9	39.2	82.4	45.2	54.8	59.6	65.4	82.0
2003	16	65.3	8.5	48.5	79.5	54.7	57.5	66.9	71.7	74.7
2004	20	65.6	12.7	36.9	92.0	45.5	61.7	65.7	73.6	76.7
2005	26	65.7	15.8	22.8	88.2	45.7	58.2	69.9	76.5	81.7
2006	35	68.6	11.6	38.0	87.3	49.4	62.2	71.1	77.5	79.6
2007	32	67.8	9.6	47.7	90.7	54.5	60.8	68.4	74.7	78.0
2008	33	68.7	10.6	47.2	88.5	50.0	67.4	70.1	75.1	81.3
2009	23	67.5	8.3	44.3	80.2	62.4	65.2	68.0	71.0	77.0
2010	32	68.0	12.2	42.4	88.1	48.4	60.0	71.2	76.5	80.7
2011	26	66.2	10.7	43.3	86.8	51.9	58.5	67.5	72.1	81.0
2012	35	68.6	11.8	26.0	87.1	54.1	65.0	71.8	75.7	77.3
2013	30	68.7	10.6	42.0	85.6	53.3	65.0	69.8	74.3	81.9
2014	30	64.8	11.0	41.1	85.2	50.8	57.3	63.9	73.8	79.6
2015	22	67.4	10.6	45.2	84.8	54.5	61.0	67.1	76.3	81.5
2016	17	73.6	8.7	54.5	86.7	55.9	70.8	73.9	80.5	82.1
1998-2016	433	67.1	11.1	22.8	92.0	50.5	60.7	68.8	74.7	79.7



Table 3b

Age distribution parameters by year of diagnosis (FEMALES)

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	4	71.8	18.6	49.9	90.2	49.9	56.5	73.5	87.0	90.2
1999	5	70.1	20.4	35.1	88.1	35.1	72.7	76.0	78.7	88.1
2000	7	67.1	12.3	49.9	81.4	49.9	51.8	68.4	78.9	81.4
2001	9	62.4	8.5	51.5	79.2	51.5	57.6	61.2	66.0	79.2
2002	3	58.0	5.2	52.1	61.8	52.1	52.1	60.1	61.8	61.8
2003	5	70.3	11.8	52.8	80.9	52.8	63.5	76.5	77.6	80.9
2004	9	66.1	17.5	38.8	89.0	38.8	54.8	68.4	79.7	89.0
2005	7	68.3	13.2	48.4	83.1	48.4	54.0	69.8	81.7	83.1
2006	11	72.6	9.8	57.6	85.3	62.7	62.9	74.6	83.3	83.9
2007	11	70.5	9.6	51.7	84.8	57.5	65.9	72.6	76.7	77.1
2008	10	72.2	9.4	52.5	84.6	59.3	67.0	72.6	78.9	83.5
2009	16	67.7	11.0	40.6	80.6	51.8	60.9	69.1	76.3	79.3
2010	17	63.2	12.3	42.1	81.9	42.2	52.6	63.6	72.0	80.5
2011	9	72.2	4.9	64.1	79.5	64.1	69.1	73.2	75.4	79.5
2012	10	69.4	12.9	44.1	90.2	50.6	61.1	73.3	77.5	83.9
2013	15	72.0	10.5	47.7	88.1	57.7	65.5	73.4	81.0	82.9
2014	9	72.3	12.1	63.4	96.9	63.4	63.7	64.5	78.9	96.9
2015	6	71.9	17.6	37.4	86.4	37.4	70.8	78.7	79.4	86.4
2016	8	78.2	6.5	66.8	84.9	66.8	73.2	80.5	83.4	84.9
1998-2016	171	69.3	12.0	35.1	96.9	52.1	63.2	70.8	78.7	83.1

Table 4

Age distribution by 5-year age group and sex for period 2007-2016

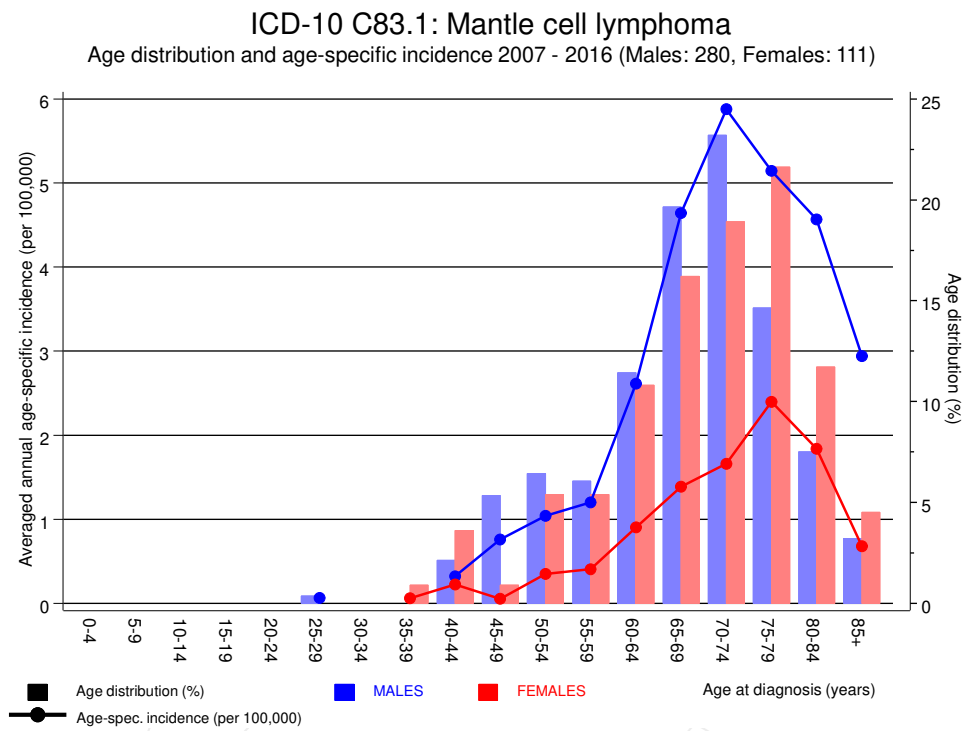
Age at diagnosis Years	Cases n	Males			Females				
		%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24									
25-29	1	0.3	0.3	1	0.4	0.4			0.0
30-34	0	0.0	0.3			0.4			0.0
35-39	1	0.3	0.5			0.4	1	0.9	0.9
40-44	10	2.6	3.1	6	2.1	2.5	4	3.6	4.5
45-49	16	4.1	7.2	15	5.4	7.9	1	0.9	5.4
50-54	24	6.1	13.3	18	6.4	14.3	6	5.4	10.8
55-59	23	5.9	19.2	17	6.1	20.4	6	5.4	16.2
60-64	44	11.3	30.4	32	11.4	31.8	12	10.8	27.0
65-69	73	18.7	49.1	55	19.6	51.4	18	16.2	43.2
70-74	86	22.0	71.1	65	23.2	74.6	21	18.9	62.2
75-79	65	16.6	87.7	41	14.6	89.3	24	21.6	83.8
80-84	34	8.7	96.4	21	7.5	96.8	13	11.7	95.5
85+	14	3.6	100.0	9	3.2	100.0	5	4.5	100.0
All ages	391	100.0		280	100.0		111	100.0	

Table 5

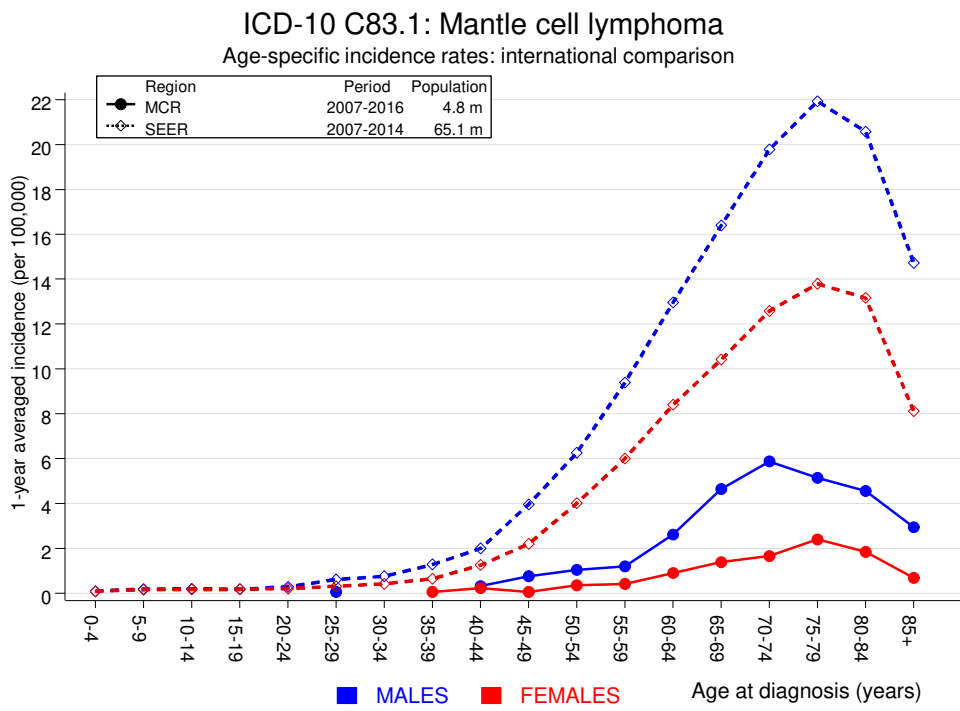
Age-specific incidence and proportion of all cancers for period 2007-2016

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid.	Females Age- spec. incid.	Males Prop.all cancers n=113978 %	Females Prop.all cancers n=112253 %
0- 4						
5- 9						
10-14						
15-19						
20-24						
25-29	1		0.1		0.1	
30-34						
35-39		1		0.1		0.0
40-44	6	4	0.3	0.2	0.3	0.1
45-49	15	1	0.8	0.1	0.4	0.0
50-54	18	6	1.0	0.4	0.3	0.1
55-59	17	6	1.2	0.4	0.2	0.1
60-64	32	12	2.6	0.9	0.2	0.1
65-69	55	18	4.6	1.4	0.3	0.1
70-74	65	21	5.9	1.7	0.3	0.1
75-79	41	24	5.1	2.4	0.2	0.2
80-84	21	13	4.6	1.8	0.2	0.1
85+	9	5	2.9	0.7	0.1	0.0
All ages	280	111			0.2	0.1
Incidence						
Raw			1.2	0.5		
WS			0.6	0.2		
ES			0.9	0.3		
BRD-S			1.1	0.4		

The age-specific incidence characterizes the disease risk in a particular age group. The age distribution depends on the patient population frequency in each age group and reflects the tangible clinical picture of everyday patients care (see following chart).



**Figure 6.** Age distribution (males: mean=67.9 yrs, median=69.7 yrs; females: mean=70.1 yrs, median=72.0 yrs) and age-specific incidence.



**Figure 6a.** Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:  
 Surveillance, Epidemiology, and End Results (SEER) Program SEER\*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2014, based on the November 2013 submission. <http://www.seer.cancer.gov>.

Table 7a

Standardized incidence ratio (SIR, with 95% confidence limits),  
excess absolute risk (EAR) and DCO rate of further malignancies  
for period 1998–2016

## MALES

Diagnosis	Observed	Expected	SIR	CI		EAR	DCO %
	n	n		95%	95%		
C03–C06 Oral cavity	2	0.2	10.4	1.3	37.6 #	12.9	
C16 Stomach	2	0.9	2.2	0.3	8.1	7.9	
C18 Colon	3	2.2	1.4	0.3	4.0	5.8	
C33–C34 Lung	6	2.8	2.2	0.8	4.7	23.1	16.7
C61 Prostate	5	6.6	0.8	0.2	1.8	-11.7	
C76–C79 CUP	2	0.4	5.3	0.6	19.0	11.6	
C91–C96 Leukaemia	3	0.4	8.0	1.7	23.4 #	18.7	
Others, specified	10	4.5	2.2	1.1	4.1 #	39.1	
Not observed	0	5.3	0.0	0.0	0.7 #	-38.0	
All further malignancies	33	23.3	1.4	1.0	2.0	69.4	3.0
Patients		414					
Median age at next malignancy (years)		72.1					
Person-years		1401					
Mean observation time (years)		3.4					
Median observation time (years)		2.3					

# The occurrence of further malignancy listed is statistically significant.

Observed further malignancies with count 1 are pooled in category "Others, specified".

Table 7b

Standardized incidence ratio (SIR, with 95% confidence limits),  
excess absolute risk (EAR) and DCO rate of further malignancies  
for period 1998–2016

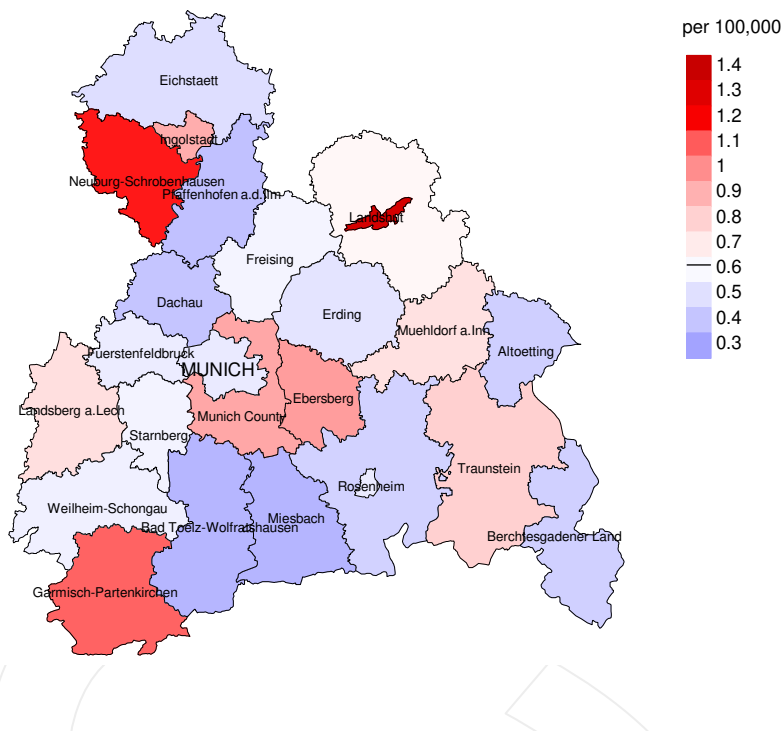
## FEMALES

Diagnosis	Observed	Expected	SIR	CI		EAR	DCO %
	n	n		95%	95%		
C18 Colon	2	0.6	3.3	0.4	12.0	25.5	
C33–C34 Lung	5	0.5	10.6	3.4	24.8 #	82.5	20.0
C50 Breast	3	1.9	1.6	0.3	4.7	20.5	
Others, specified	4	0.6	6.9	1.9	17.8 #	62.4	
Not observed	0	2.7	0.0	0.0	1.3	-49.9	
All further malignancies	14	6.3	2.2	1.2	3.8 #	141.0	7.1
Patients		164					
Median age at next malignancy (years)		76.2					
Person-years		549					
Mean observation time (years)		3.3					
Median observation time (years)		2.3					

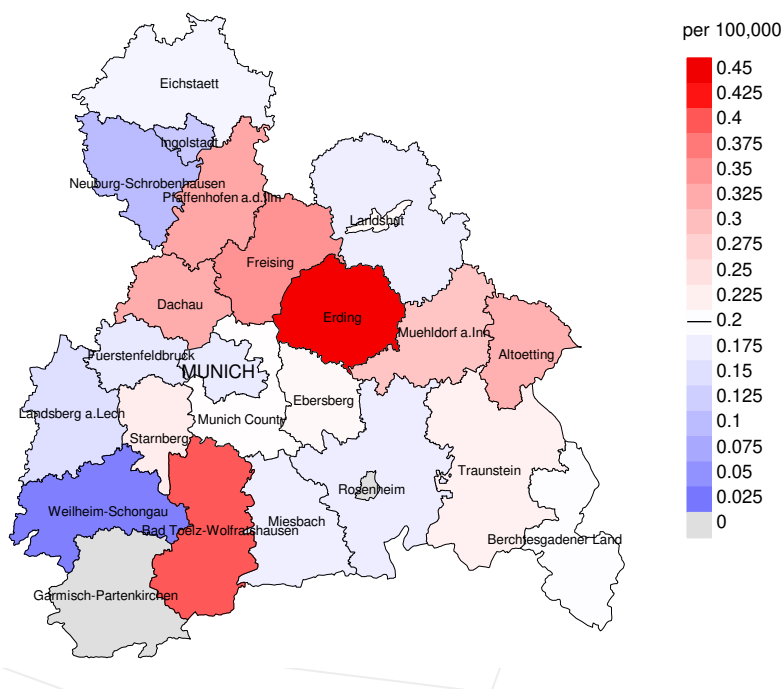
# The occurrence of further malignancy listed is statistically significant.

Observed further malignancies with count 1 are pooled in category "Others, specified".

Average incidence (world standard population) 2007 - 2016: Males



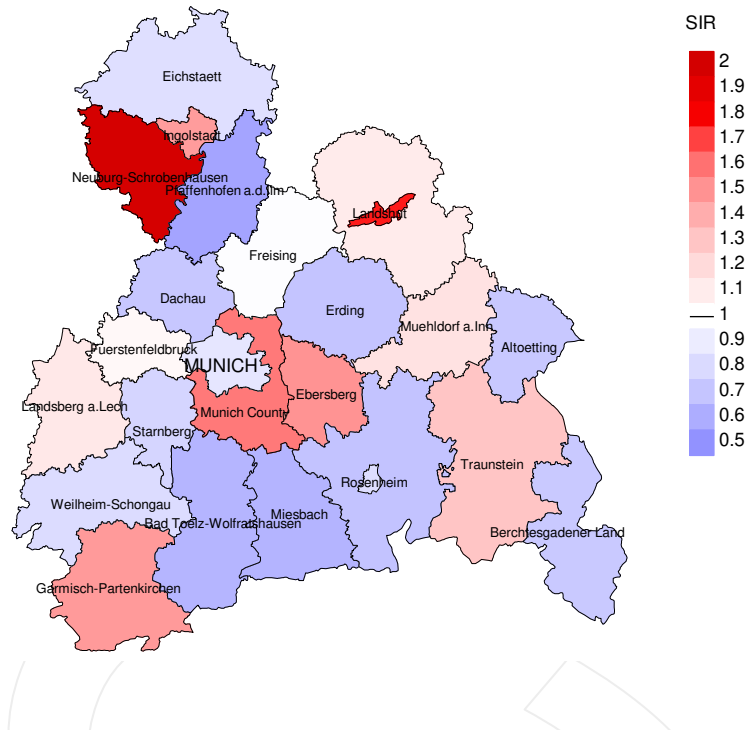
Average incidence (world standard population) 2007 - 2016: Females



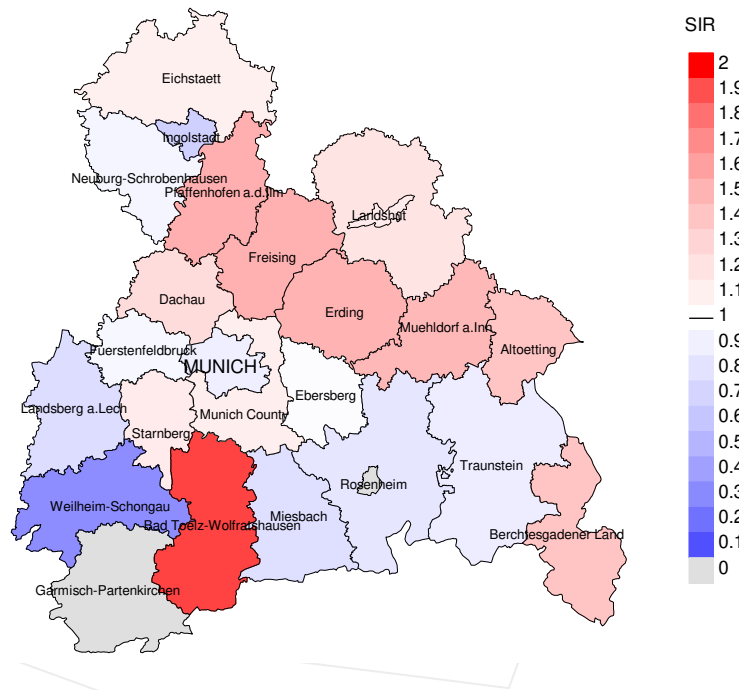
**Figure 8a.** Map of cancer incidence (world standard population) by county averaged for period 2007 to 2016. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.6/100,000 WS N=280, females 0.2/100,000 WS N=111).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 3 women were identified with newly diagnosed mantle cell lymphoma. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 0.2/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 1.2/100,000.

Standardized incidence ratio (SIR) 2007 - 2016: Males



Standardized incidence ratio (SIR) 2007 - 2016: Females



**Figure 8b.** Map of standardized incidence ratio (SIR) by county averaged for period 2007 to 2016. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=280, females N=111).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 3 women were identified with newly diagnosed mantle cell lymphoma. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.99. Though, the value of this parameter may vary with an underlying probability of 99% between 0.11 and 3.62, and is therefore not statistically striking.



## MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status,  
and deaths among the annual cohorts

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,  
and from 4.10 to 4.81 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	9	100.0	8	88.9	100.0
1999	14	100.0	11	78.6	90.9
2000	18	100.0	16	88.9	100.0
2001	25	96.0	21	84.0	100.0
2002	18	100.0	14	77.8	100.0
2003	21	95.2	15	71.4	100.0
2004	29	100.0	24	82.8	100.0
2005	33	84.8	17	51.5	100.0
2006	46	93.5	30	65.2	96.7
2007	43	86.0	28	65.1	96.4
2008	43	79.1	28	65.1	100.0
2009	39	64.1	19	48.7	100.0
2010	49	83.7	25	51.0	100.0
2011	35	77.1	22	62.9	100.0
2012	45	75.6	20	44.4	90.0
2013	45	75.6	17	37.8	100.0
2014	39	71.8	15	38.5	93.3
2015	28	100.0	10	35.7	100.0
2016	25	72.0	6	24.0	83.3
1998-2016	604	84.3	346	57.3	98.0

Table 9b

Annual cohorts of incident cancers and deaths,  
and cases deceased within the same year of being diagnosed with cancer

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,  
and from 4.10 to 4.81 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Deaths in same year n	Prop. deaths in same year %
1998	9	15		
1999	14	5	1	7.1
2000	18	11	1	5.6
2001	25	9	1	4.0
2002	18	9	1	5.6
2003	21	15	1	4.8
2004	29	23	3	10.3
2005	33	27	5	15.2
2006	46	19	2	4.3
2007	43	17	3	7.0
2008	43	33	4	9.3
2009	39	28	3	7.7
2010	49	29	4	8.2
2011	35	32	2	5.7
2012	45	33	7	15.6
2013	45	36	8	17.8
2014	39	34	6	15.4
2015	28	29	5	17.9
2016	25	33	5	20.0
1998-2016	604	437	62	10.3

Table 9c

Annual cohorts of deaths, and proportion of cancer-related and non-cancer-related deaths

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.81 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1998	15	73.3	26.7	100.0
1999	5	60.0	40.0	100.0
2000	11	81.8	18.2	88.9
2001	9	88.9	11.1	100.0
2002	9	88.9	11.1	100.0
2003	15	93.3	6.7	100.0
2004	23	78.3	21.7	91.3
2005	27	92.6	7.4	100.0
2006	19	94.7	5.3	100.0
2007	17	76.5	23.5	100.0
2008	33	78.8	21.2	96.8
2009	28	92.9	7.1	100.0
2010	29	89.7	10.3	100.0
2011	32	81.3	18.8	84.4
2012	33	87.9	12.1	97.0
2013	36	83.3	16.7	91.2
2014	34	85.3	14.7	94.1
2015	29	86.2	13.8	79.3
2016	33	84.8	15.2	93.9
1998-2016	437	85.1	14.9	94.7

Table 10a

Medians of age at death according to the grouping in Table 9  
MALES

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	10	67.4	64.6	84.2	64.7
1999	4	75.8	86.1	63.3	75.8
2000	6	72.2	72.3	65.3	72.2
2001	6	66.3	66.3		66.3
2002	6	78.6	82.3	75.0	78.6
2003	13	69.2	68.1	91.9	69.2
2004	11	69.4	69.4	74.3	69.4
2005	21	73.6	72.9	83.4	73.6
2006	12	65.7	66.6	59.8	65.7
2007	14	71.0	71.9	61.2	71.0
2008	26	71.8	69.5	78.8	73.2
2009	25	75.0	75.1	69.5	75.0
2010	12	71.3	71.5	70.4	71.3
2011	22	75.5	77.3	67.6	76.4
2012	24	76.1	76.4	68.9	75.8
2013	27	73.4	72.6	82.5	72.7
2014	24	73.6	73.4	74.1	74.0
2015	21	76.5	72.9	82.8	72.5
2016	21	78.3	77.7	84.4	78.3
1998–2016	305	73.4	72.9	74.1	72.9

Deaths of patients are considered to be cancer-related, in case that fact was recorded on the death certificate, or patients had suffered from metastasis or recurrence.

Table 10b

Medians of age at death according to the grouping in Table 9  
FEMALES

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	5	71.9	67.7	86.6	71.9
1999	1	90.5	90.5		90.5
2000	5	85.5	84.4	85.5	84.4
2001	3	77.9	76.2	88.6	77.9
2002	3	62.2	62.2		62.2
2003	2	77.9	77.9		77.9
2004	12	80.7	79.2	90.8	79.2
2005	6	73.4	73.4		73.4
2006	7	78.8	78.8		78.8
2007	3	66.7	66.7		66.7
2008	7	82.0	82.0		83.6
2009	3	74.4	71.6	79.3	74.4
2010	17	73.7	73.7	76.1	73.7
2011	10	77.8	77.2	89.1	77.2
2012	9	69.2	69.0	89.5	69.2
2013	9	81.4	81.4	81.4	81.4
2014	10	73.8	71.6	79.2	73.8
2015	8	72.1	72.1	75.5	69.0
2016	12	78.9	78.9		78.9
1998–2016	132	78.2	76.8	85.5	77.9

By 2010, life expectancy at birth was 77.5 years for boys and 82.6 years for girls.

Deaths of patients are considered to be cancer-related, in case that fact was recorded on the death certificate, or patients had suffered from metastasis or recurrence.

Table 11a

Mortality measures (cancer-related death) and mortality-incidence-index  
by year of death

MALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	7	0.6	1.40	0.4	1.34	0.6	1.34	0.6	1.34
1999	2	0.2	0.22	0.1	0.16	0.2	0.23	0.2	0.28
2000	5	0.4	0.45	0.2	0.41	0.4	0.49	0.5	0.52
2001	6	0.5	0.38	0.3	0.40	0.4	0.38	0.5	0.37
2002	5	0.3	0.33	0.1	0.24	0.2	0.30	0.4	0.44
2003	12	0.6	0.75	0.4	0.68	0.5	0.72	0.7	0.79
2004	8	0.4	0.40	0.2	0.35	0.3	0.35	0.4	0.41
2005	19	1.0	0.73	0.5	0.65	0.8	0.72	1.1	0.72
2006	11	0.6	0.31	0.3	0.33	0.5	0.32	0.6	0.32
2007	10	0.5	0.31	0.2	0.25	0.3	0.28	0.5	0.31
2008	19	0.9	0.58	0.4	0.62	0.7	0.60	0.8	0.59
2009	24	1.1	1.04	0.5	0.92	0.8	1.07	1.1	1.19
2010	11	0.5	0.34	0.2	0.29	0.3	0.32	0.5	0.34
2011	18	0.8	0.69	0.3	0.54	0.6	0.64	0.8	0.77
2012	21	0.9	0.60	0.4	0.51	0.6	0.58	0.9	0.66
2013	22	1.0	0.73	0.4	0.65	0.7	0.69	0.9	0.75
2014	20	0.9	0.67	0.4	0.50	0.5	0.55	0.8	0.67
2015	19	0.8	0.86	0.4	0.75	0.5	0.78	0.8	0.88
2016	16	0.7	0.94	0.2	0.79	0.4	0.83	0.6	0.93
1998-2016	255	0.7	0.59	0.3	0.52	0.5	0.56	0.7	0.62

Table 11b

Mortality measures (cancer-related death) and mortality-incidence-index  
by year of death

FEMALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	4	0.3	1.00	0.2	0.96	0.2	1.03	0.3	1.01
1999	1	0.1	0.20	0.0	0.10	0.0	0.12	0.0	0.11
2000	4	0.3	0.57	0.1	0.30	0.2	0.35	0.2	0.38
2001	2	0.2	0.22	0.1	0.15	0.1	0.17	0.2	0.23
2002	3	0.2	1.00	0.1	0.68	0.1	0.70	0.1	0.88
2003	2	0.1	0.40	0.0	0.32	0.1	0.33	0.1	0.37
2004	10	0.5	1.11	0.2	0.73	0.3	0.87	0.4	1.09
2005	6	0.3	0.86	0.1	0.68	0.2	0.76	0.3	0.86
2006	7	0.3	0.64	0.1	0.49	0.2	0.55	0.3	0.61
2007	3	0.1	0.27	0.1	0.29	0.1	0.27	0.1	0.24
2008	7	0.3	0.70	0.1	0.54	0.2	0.60	0.2	0.59
2009	2	0.1	0.13	0.0	0.12	0.1	0.11	0.1	0.10
2010	15	0.6	0.88	0.2	0.60	0.4	0.66	0.5	0.83
2011	8	0.3	0.89	0.1	0.61	0.2	0.70	0.3	0.86
2012	8	0.3	0.80	0.2	0.84	0.2	0.83	0.3	0.84
2013	8	0.3	0.53	0.1	0.33	0.2	0.41	0.3	0.55
2014	9	0.4	1.00	0.1	0.79	0.2	0.86	0.3	1.02
2015	6	0.2	1.00	0.1	1.27	0.2	1.16	0.2	1.14
2016	12	0.5	1.50	0.1	1.29	0.2	1.40	0.3	1.26
1998-2016	117	0.3	0.68	0.1	0.53	0.2	0.58	0.2	0.65

Table 12

Age distribution of age at death (cancer-related) for period 2007-2016  
(incl. multiple malignancies)

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24									
25-29	1	0.4	0.4	1	0.6	0.6			0.0
30-34	0	0.0	0.4			0.6			0.0
35-39	0	0.0	0.4			0.6			0.0
40-44	0	0.0	0.4			0.6			0.0
45-49	6	2.3	2.7	5	2.8	3.3	1	1.3	1.3
50-54	8	3.1	5.8	6	3.3	6.7	2	2.6	3.8
55-59	12	4.7	10.5	9	5.0	11.7	3	3.8	7.7
60-64	19	7.4	17.8	13	7.2	18.9	6	7.7	15.4
65-69	37	14.3	32.2	26	14.4	33.3	11	14.1	29.5
70-74	43	16.7	48.8	33	18.3	51.7	10	12.8	42.3
75-79	60	23.3	72.1	41	22.8	74.4	19	24.4	66.7
80-84	46	17.8	89.9	29	16.1	90.6	17	21.8	88.5
85+	26	10.1	100.0	17	9.4	100.0	9	11.5	100.0
All ages	258	100.0		180	100.0		78	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers  
for period 2007–2016  
(incl. multiple malignancies)

Age at death Years	Males		Females		Males		Females	
	n	n	Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index	Prop.all cancers %	Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29	1		0.1	1.00			1.4	
30-34								
35-39								
40-44								
45-49	5	1	0.3	0.33	0.1	1.00	0.4	0.1
50-54	6	2	0.3	0.33	0.1	0.33	0.3	0.1
55-59	9	3	0.6	0.53	0.2	0.50	0.3	0.1
60-64	13	6	1.1	0.41	0.5	0.50	0.3	0.2
65-69	26	11	2.2	0.47	0.8	0.61	0.4	0.2
70-74	33	10	3.0	0.51	0.8	0.48	0.4	0.1
75-79	41	19	5.1	1.00	1.9	0.79	0.5	0.3
80-84	29	17	6.3	1.38	2.4	1.31	0.4	0.2
85+	17	9	5.6	1.89	1.2	1.80	0.3	0.1
All ages	180	78					0.3	0.2
Mortality								
Raw			0.8	0.64	0.3	0.70		
WS			0.3	0.55	0.1	0.56		
ES			0.5	0.60	0.2	0.60		
BRD-S			0.8	0.67	0.3	0.67		
PYLL-70								
per 100,000			2.7		0.8			
ES			2.3		0.7			
AYLL-70			8.9		7.3			



Table 14a

Further malignancies in deaths in period 1998–2016  
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03–C06 Oral cavity	2	2.0					2	100.0
C09–C10 Oropharynx	2	2.0	1	50.0			1	50.0
C16 Stomach	6	5.9	2	33.3			4	66.7
C18 Colon	12	11.9	5	41.7	4	33.3	3	25.0
C19–C20 Rectum	2	2.0	2	100.0				
C22 Liver	2	2.0					2	100.0
C33–C34 Lung	8	7.9	1	12.5	2	25.0	5	62.5
C43 Malign. melanoma	7	6.9	5	71.4			2	28.6
C44 Skin others	18	17.8	2	11.1	3	16.7	13	72.2
C61 Prostate	14	13.9	12	85.7	1	7.1	1	7.1
C64 Kidney	3	3.0	2	66.7			1	33.3
C67 Bladder	2	2.0	1	50.0			1	50.0
C76–C79 CUP	2	2.0					2	100.0
C82–C85 NHL	5	5.0			1	20.0	4	80.0
C90 Mult. myeloma	2	2.0					2	100.0
C91–C96 Leukaemia	3	3.0			1	33.3	2	66.7
Others, specified	11	10.9	4	36.4			7	63.6
All further malignancies	101	100.0	37	36.6	12	11.9	52	51.5

Further malignancies with number of cases 1 are pooled in category “Others, specified”.

ICD-10 C44 (Other malignant neoplasms of skin) is not systematically recorded by MCR and therefore not considered for evaluation as a particular primary but at least as a further malignancy.

Table 14b

Further malignancies in deaths in period 1998-2016  
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C16 Stomach	3	6.7	1	33.3			2	66.7
C18 Colon	5	11.1	3	60.0			2	40.0
C19-C20 Rectum	1	2.2	1	100.0				
C33-C34 Lung	7	15.6	1	14.3	1	14.3	5	71.4
C43 Malign. melanoma	3	6.7	2	66.7			1	33.3
C44 Skin others	5	11.1					5	100.0
C46,C49 Soft tissue	1	2.2					1	100.0
C50 Breast	6	13.3	4	66.7			2	33.3
C53 Cervix uteri	1	2.2	1	100.0				
C54 Corpus uteri	1	2.2	1	100.0				
C55,C57 Fem. genitals un	2	4.4	2	100.0				
C56 Ovary	1	2.2					1	100.0
C64 Kidney	2	4.4	2	100.0				
C81 Hodgkin lymphoma	1	2.2					1	100.0
C82-C85 NHL	6	13.3					6	100.0
All further malignancies	45	100.0	18	40.0	1	2.2	26	57.8

ICD-10 C44 (Other malignant neoplasms of skin) is not systematically recorded by MCR and therefore not considered for evaluation as a particular primary but at least as a further malignancy.

Table 15

Age-specific mortality (cancer-related) and proportion of all cancers  
for period 2007-2016  
(First primaries only \*)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	Males MI-index	Females Age- spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29	1		0.1	1.00			1.5	
30-34								
35-39								
40-44								
45-49	5	1	0.3	0.33	0.1	1.00	0.5	0.1
50-54	5	1	0.3	0.31	0.1	0.20	0.3	0.1
55-59	6	3	0.4	0.43	0.2	0.60	0.2	0.1
60-64	13	6	1.1	0.45	0.5	0.55	0.3	0.2
65-69	25	10	2.1	0.56	0.8	0.77	0.4	0.2
70-74	26	7	2.4	0.54	0.6	0.44	0.4	0.1
75-79	32	16	4.0	1.10	1.6	0.80	0.5	0.3
80-84	25	12	5.4	1.92	1.7	1.00	0.5	0.2
85+	13	7	4.2	2.17	1.0	2.33	0.3	0.1
All ages	151	63					0.4	0.2
Mortality								
Raw			0.7	0.68	0.3	0.69		
WS			0.3	0.57	0.1	0.57		
ES			0.5	0.62	0.1	0.61		
BRD-S			0.6	0.71	0.2	0.66		
PYLL-70								
per 100,000			2.4		0.7			
ES			2.0		0.6			
AYLL-70			8.7		7.0			

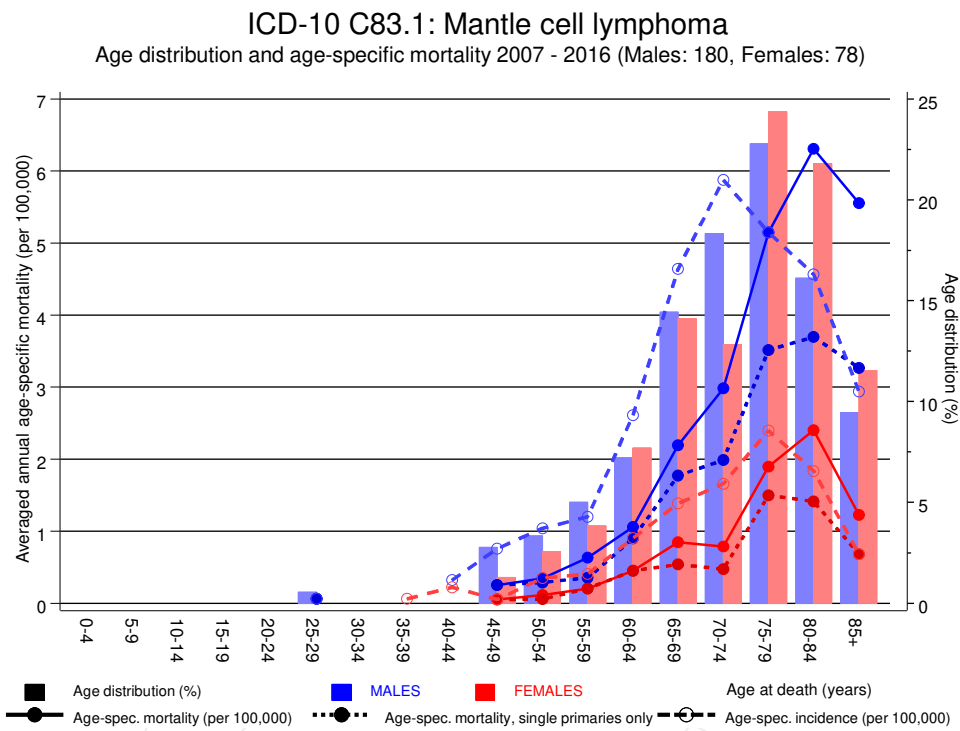
\* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers  
for period 2007-2016  
(**Single primaries only** \*)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	Males MI-index	Females Age- spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29	1		0.1	1.00			1.5	
30-34								
35-39								
40-44								
45-49	5	1	0.3	0.33	0.1	1.00	0.5	0.1
50-54	5	1	0.3	0.31	0.1	0.20	0.3	0.1
55-59	5	3	0.4	0.38	0.2	0.60	0.2	0.1
60-64	11	6	0.9	0.39	0.5	0.55	0.3	0.2
65-69	21	7	1.8	0.57	0.5	0.64	0.4	0.2
70-74	22	6	2.0	0.54	0.5	0.40	0.3	0.1
75-79	28	15	3.5	1.08	1.5	0.79	0.4	0.3
80-84	17	10	3.7	1.55	1.4	1.00	0.3	0.2
85+	10	5	3.3	1.67	0.7	1.67	0.2	0.1
All ages	125	54					0.3	0.2
Mortality								
Raw			0.5	0.63	0.2	0.64		
WS			0.2	0.53	0.1	0.53		
ES			0.4	0.57	0.1	0.56		
BRD-S			0.5	0.65	0.2	0.61		
PYLL-70								
per 100,000			2.2		0.7			
ES			1.9		0.6			
AYLL-70			9.2		7.8			

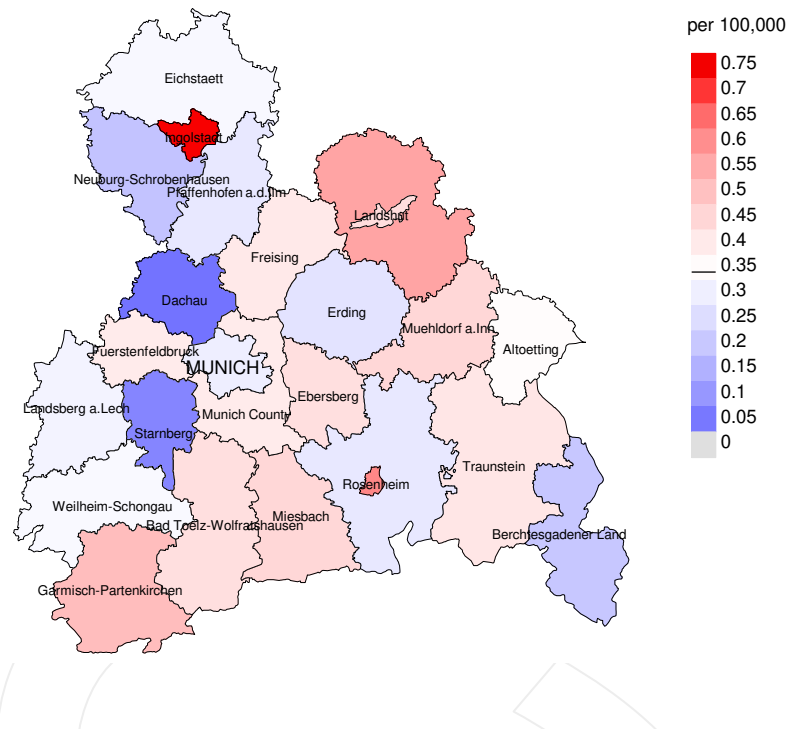
\* See corresponding tables with multiple malignancies.



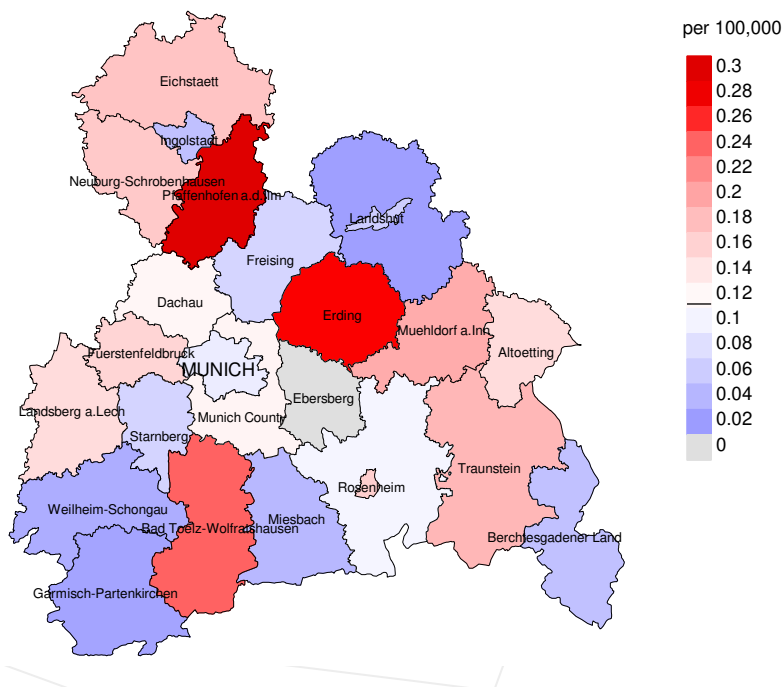
**Figure 17.** Distribution of age at death (bars; males: mean=68.9 yrs, median=70.6 yrs; females: mean=70.7 yrs, median=71.9 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at mantle cell lymphoma-related death (see Table 10) should be considered.

Average mortality (world standard population) 2007 - 2016: Males



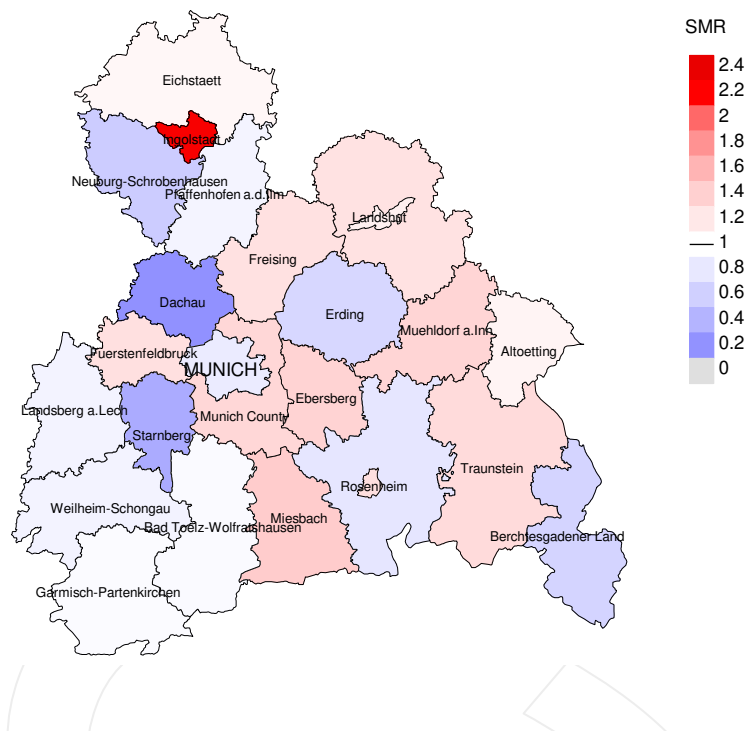
Average mortality (world standard population) 2007 - 2016: Females



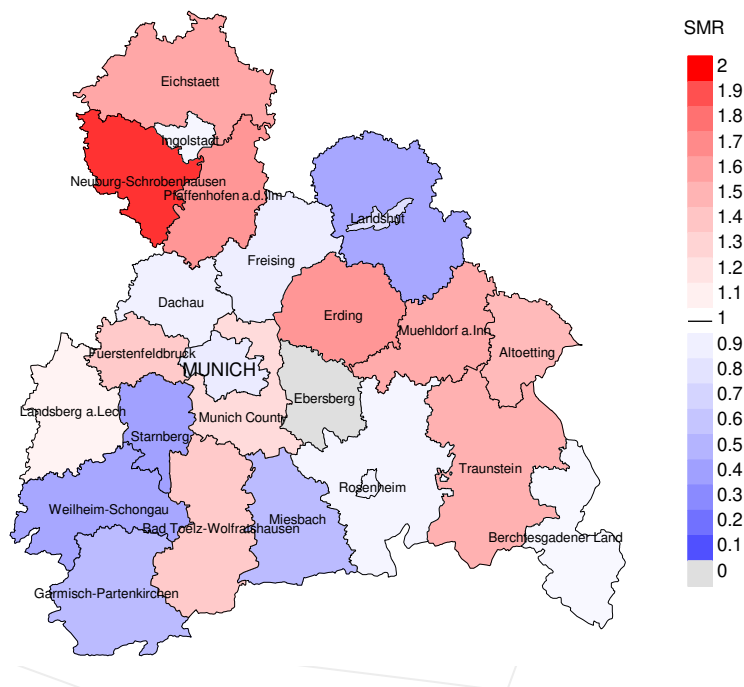
**Figure 18a.** Map of cancer mortality (world standard population) by county averaged for period 2007 to 2016. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.3/100,000 WS N=180, females 0.1/100,000 WS N=78).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 0 women died from mantle cell lymphoma. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.0/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 0.0/100,000.

Standardized mortality ratio (SMR) 2007 - 2016: Males



Standardized mortality ratio (SMR) 2007 - 2016: Females



**Figure 18b.** Map of standardized mortality ratio (SMR) by county averaged for period 2007 to 2016. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=180, females N=78).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 0 women died from mantle cell lymphoma. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.00. Though, the value of this parameter may vary with an underlying probability of 99% between 0.00 and 2.54, and is therefore not statistically striking.

### Statistical Notes

In all tables and figures the respective reference values should be carefully considered. The incidence rates include diagnoses (with multiple primary), and death certificate only (DCO) cases, where applicable. For mortality statistics patients, diagnoses and progressive course of disease are presented. In the calculations, all courses of disease are considered whereby progressions occurred and/or death certificate identified progressive cancers were ascertained. Additionally there are three groups of disease course to consider:

#### 1. All multiple primaries included

The mortality statistic describes the tumor-specific death, independent of any malignancy. The patient perspective, induced secondary malignancies, and the problem of multiple malignancies from the same primary tumor all have reasons for their inclusion.

#### 2. First singular primary (no information about other prior or synchronous malignancy)

The mortality statistic describes the cancer-related death for patients who have no therapeutic restrictions due to a previous or synchronous cancer. These statistics are comparable to studies that have exclusion criteria based on a second malignancy.

#### 3. Single primary (no information about other prior, syn- or metachronous malignancy)

The mortality statistic describes the tumor-specific death that occurs without any impact through secondary primaries, earlier, synchronous, later or induced. Precisely the difference between disease group 1 and 2 highlight the magnitude of the problem of secondary malignancies.

For this reason differences appear concerning official mono-causal mortality statistics. To judge the maximum deviation, 2 further tables are presented. In the first table the distribution of secondary malignancies before, at or after the described cancer are shown, that could be an alternative cause of death. In the second table, the age-specific mortality rates for all courses of disease, without designation of secondary malignancies are shown.

A previously minimally acknowledged statistic is the **age at death**, which allows for a good assessment of the quality of classification of the apparent tumor-specific death. For assumed tumor-independent deaths, the age of death should be estimated from the age of diagnosis and the normal life expectancy, whereas tumor-dependent deaths can be estimated from the age of diagnosis plus the average tumor-specific life expectancy. The comparison of different tumors demonstrates this association, if the causes of cancer and the competing cause of death are independent of each other (e.g. breast and colon versus head/neck and lung).

The index from mortality and incidence (Mortality-Incidence ratio, **MI-index**) is a statistic that allows for the evaluation of the quality of data. For diseases with poor prognoses, comparable values are obtained from all age groups, because to a large extent, the numerator and denominator contain the same cases. For tumors with a good prognosis, increasing and decreasing incidence and age-specific differences in prognosis can more strongly alter the MI- index. Additionally, attention should be paid to the confidence intervals where fewer cases are reported.

The complexity of problems identified here emphasizes the importance of relative survival data for the appropriate analysis of long term results.

As a measurement of the burden of disease, the number of potential life years loss due to premature deaths in a cohort can be calculated (**PYLL**, potential years of life lost, standardized per 100,000 persons or per European standard) as well as the average loss of life years per individual (**AYLL**, average years of life lost). Depending upon the analytic aim (health economy, prevention, health care research) different methods exist for the generation of these measurements. In the results presented here, the age for a premature death is considered to be before 70 years, according to the guidelines of the OECD and the WHO (as seen in the abbreviation PYLL-70 or AYLL-70).



**Shortcuts**

MCR	Munich Cancer Registry (Tumorregister München)
GEKID	Association of Population-based Cancer Registries in Germany (Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V.)
SEER	Surveillance, Epidemiology, and End Results (USA)
DCO	Death certificate only
BRD-S	German standard population
ES	European standard population (old)
WS	World standard population
SIR	Standardized incidence ratio
CI	Confidence interval
EAR	Excess absolute risk = excess cancer cases (O - E) per 10,000 person-years
PYLL-70	Potential years of life lost prior to age 70 given a person dies before that age
AYLL-70	Average years of life lost prior to age 70 given a person dies before that age
SMR	Standardized mortality ratio
MI-index	Ratio between mortality and incidence
FRG	Federal Republic of Germany

**Recommended Citation**

Munich Cancer Registry. ICD-10 C83.1: Mantle cell lymphoma - Incidence and Mortality [Internet]. 2018 [updated 2018 Aug 21; cited 2018 Oct 1]. Available from: [https://www.tumorregister-muenchen.de/en/facts/base/bC831\\_E-ICD-10-C83.1-Mantle-cell-lymphoma-incidence-and-mortality.pdf](https://www.tumorregister-muenchen.de/en/facts/base/bC831_E-ICD-10-C83.1-Mantle-cell-lymphoma-incidence-and-mortality.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.