

# Munich Cancer Registry



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## ICD-10 C53-C55: Uterine cancer

### Survival

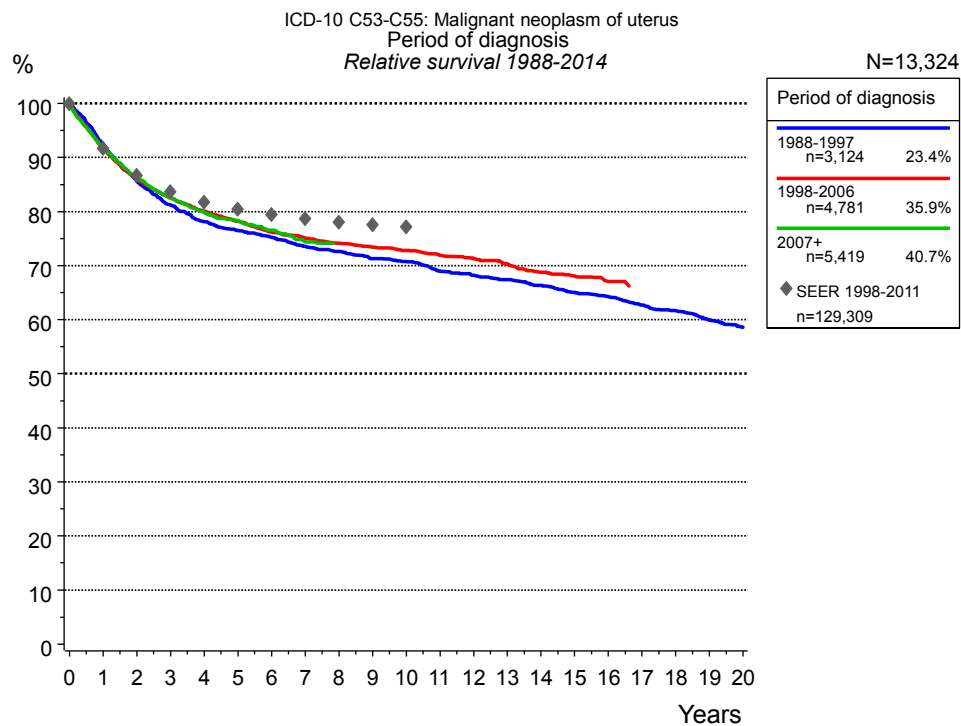
Year of diagnosis	1988-1997	1998-2014
Patients	3,397	12,491
Diseases	3,405	12,545
Cases evaluated	3,126	10,324
Creation date	03/02/2016	
Export date	12/23/2015	
Population (females)	2.36 m	



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Germany

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

<http://www.tumorregister-muenchen.de/en/facts/surv/sC5355E-ICD-10-C53-C55-Uterine-cancer-survival.pdf>



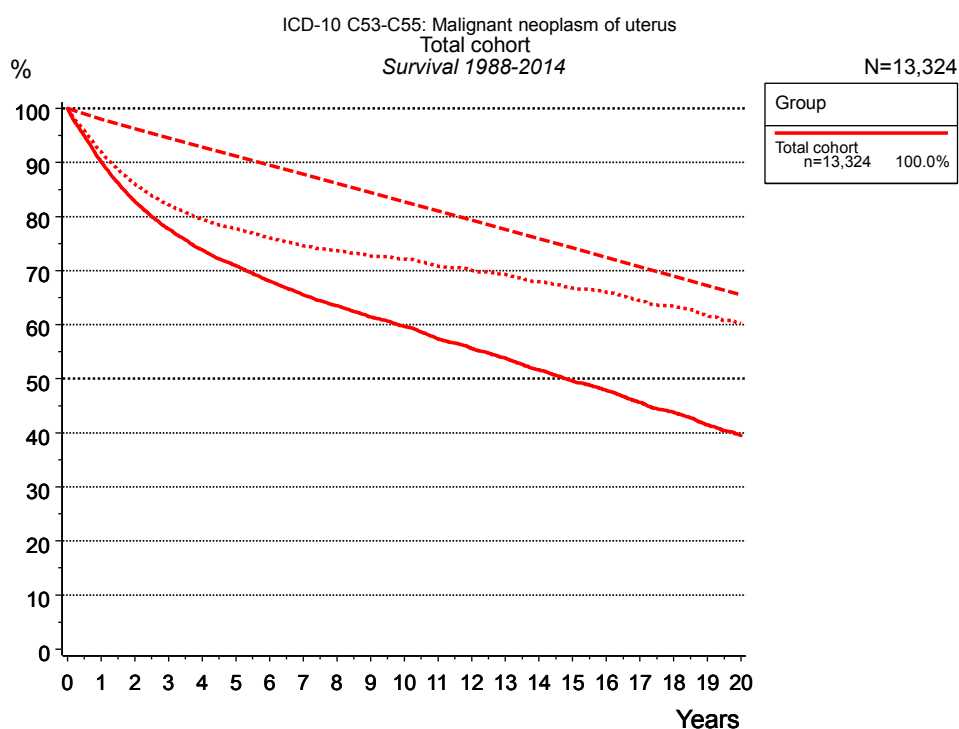
**Figure 1a.** Relative survival of patients with uterine cancer by period of diagnosis. Included in the evaluation are 13,324 cases diagnosed between 1988 and 2014.

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 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=3,124		1998-2006 n=4,781		2007+ n=5,419	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	90.4	92.4	89.9	91.7	90.2	91.8
2	82.0	85.6	82.8	86.0	83.3	86.3
3	76.1	81.2	78.0	82.5	78.5	82.5
4	71.7	78.1	74.5	80.1	74.7	79.9
5	68.7	76.5	71.4	78.2	72.0	78.3
6	66.2	75.2	68.4	76.2	69.3	76.6
7	63.4	73.6	66.1	75.1	66.4	74.4
8	61.3	72.7	64.1	74.1		
9	58.8	71.3	62.3	73.5		
10	57.1	70.7	60.7	72.8		
11	54.5	69.0	58.7	71.9		
12	52.7	68.2	57.0	71.3		
13	51.0	67.4	55.1	70.3		
14	49.0	66.3	52.7	68.8		
15	47.0	65.1	51.2	68.1		
16	45.3	64.2	49.2	67.1		
17	43.1	62.7				
18	41.4	61.7				
19	39.2	60.0				
20	37.3	58.6				

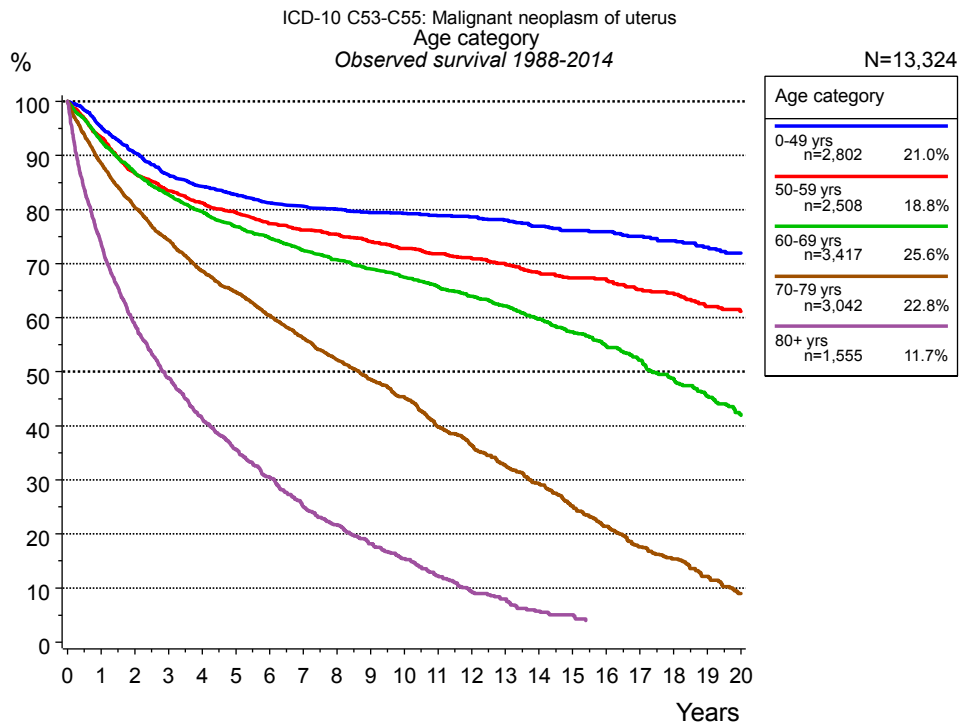
**Table 1b.** Observed (obs.) and relative (rel.) survival of patients with uterine cancer by period of diagnosis for period 1988-2014 (N=13,324).



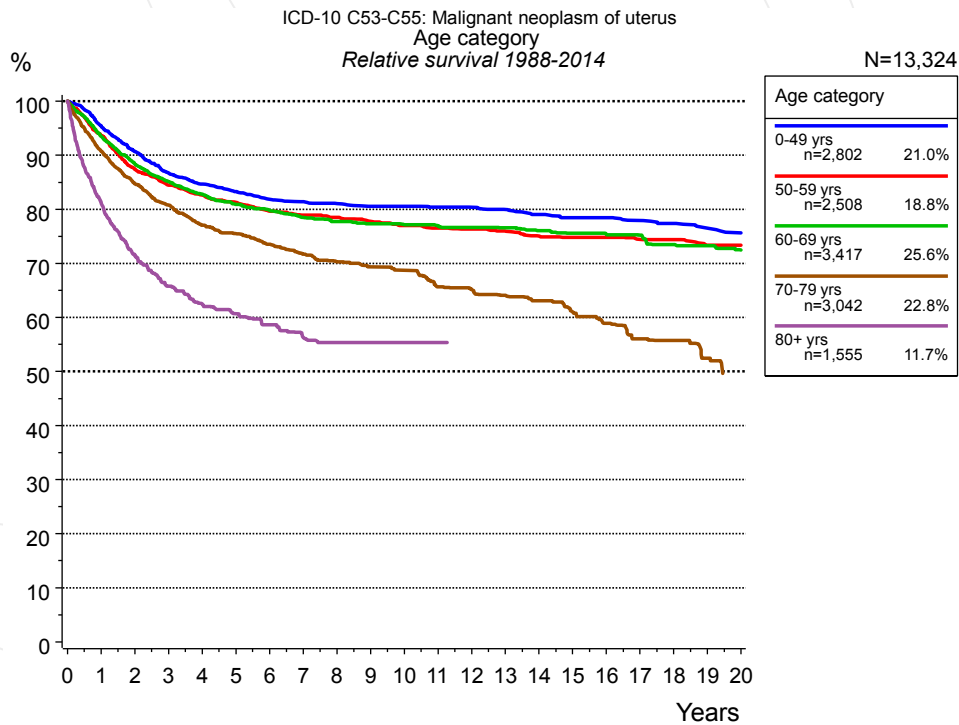
**Figure 2a.** Observed, expected and relative survival of the total cohort with uterine cancer. Included in the evaluation are 13,324 cases diagnosed between 1988 and 2014.

Years	Group	
	Total cohort n=13,324	
	obs. %	rel. %
0	100.0	100.0
1	90.1	91.9
2	82.8	86.0
3	77.7	82.2
4	73.8	79.5
5	70.9	77.7
6	68.1	76.0
7	65.5	74.6
8	63.5	73.7
9	61.4	72.7
10	59.7	72.1
11	57.4	70.8
12	55.6	70.1
13	53.8	69.3
14	51.6	68.0
15	49.6	66.8
16	47.9	66.0
17	45.6	64.5
18	43.8	63.5
19	41.5	61.6
20	39.5	60.2

**Table 2b.** Observed (obs.) and relative (rel.) survival of the total cohort with uterine cancer for period 1988-2014 (N=13,324).



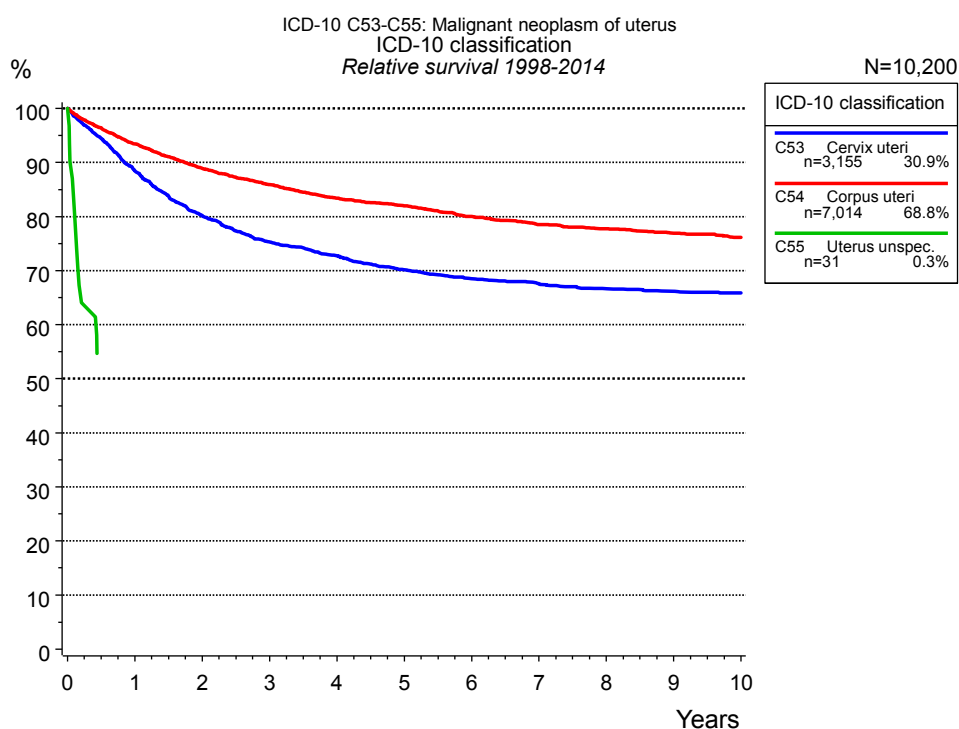
**Figure 3a.** Observed survival of patients with uterine cancer by age category. Included in the evaluation are 13,324 cases diagnosed between 1988 and 2014.



**Figure 3b.** Relative survival of patients with uterine cancer by age category. Included in the evaluation are 13,324 cases diagnosed between 1988 and 2014.

Years	Age category									
	0-49 yrs n=2,802		50-59 yrs n=2,508		60-69 yrs n=3,417		70-79 yrs n=3,042		80+ yrs n=1,555	
	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	95.4	93.3	93.7	92.7	93.5	88.5	90.7	73.6	81.1
2	90.5	90.7	86.7	87.4	86.9	88.4	80.5	84.7	58.7	71.5
3	86.4	86.7	83.4	84.4	82.7	85.1	74.3	80.7	48.9	65.8
4	84.3	84.7	81.2	82.6	79.6	82.8	68.6	77.1	41.4	62.5
5	82.7	83.3	79.4	81.2	76.8	80.9	64.7	75.5	35.6	60.6
6	81.2	81.9	77.4	79.6	74.7	79.8	60.4	73.5	30.5	58.7
7	80.6	81.4	76.2	78.9	72.5	78.5	56.2	71.7	25.1	56.3
8	80.1	81.0	75.4	78.5	70.7	77.8	52.2	70.3	21.7	55.4
9	79.5	80.6	74.0	77.7	69.0	77.3	48.5	69.3	18.2	55.4
10	79.3	80.6	72.8	77.0	67.4	77.2	45.4	68.7	15.4	55.4
11	78.8	80.4	71.8	76.5	65.8	77.0	39.8	65.6	12.2	55.4
12	78.7	80.4	71.0	76.3	63.9	76.6	36.4	65.2		
13	78.0	80.0	69.9	76.0	62.2	76.6	32.7	64.0		
14	76.9	79.1	68.3	75.0	59.7	76.0	29.3	63.0		
15	76.1	78.5	67.3	74.8	57.4	75.6	25.2	61.0		
16	75.9	78.5	67.2	74.8	54.6	75.3	21.4	58.9		
17	75.1	77.9	65.2	74.4	52.1	75.2	17.6	56.0		
18	74.3	77.4	64.5	74.4	48.6	73.5	15.4	55.7		
19	73.0	76.5	62.1	73.4	45.5	73.3	12.1	52.5		
20	71.9	75.6	61.2	73.4	41.9	72.4				

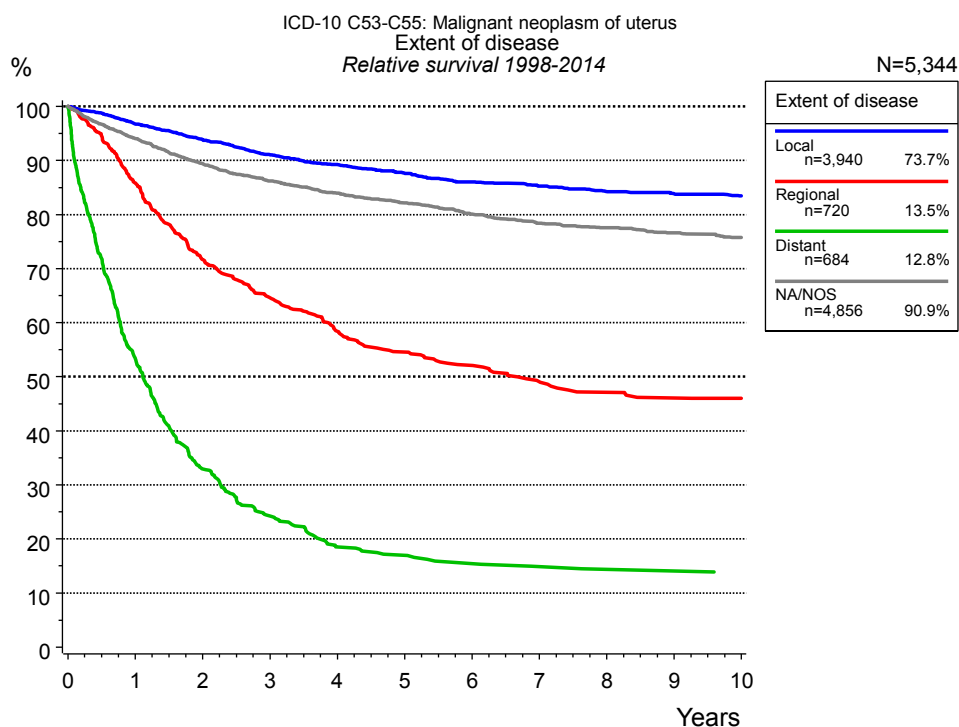
**Table 3c.** Observed (obs.) and relative (rel.) survival of patients with uterine cancer by age category for period 1988-2014 (N=13,324).



**Figure 4a.** Relative survival of patients with uterine cancer by ICD-10 classification. Included in the evaluation are 10,200 cases diagnosed between 1998 and 2014.

ICD-10 classification						
Years	C53 Cervix uteri n=3,155		C54 Corpus uteri n=7,014		C55 Uterus unspec. n=31	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	87.5	88.4	91.3	93.4	53.3	53.5
2	78.7	80.2	85.1	88.9		
3	73.5	75.3	80.5	85.9		
4	70.5	72.8	76.5	83.4		
5	67.5	70.2	73.6	82.0		
6	65.6	68.5	70.3	80.0		
7	64.3	67.6	67.4	78.5		
8	63.0	66.6	65.2	77.7		
9	62.1	66.2	63.0	77.0		
10	61.5	65.9	60.9	76.2		

**Table 4b.** Observed (obs.) and relative (rel.) survival of patients with uterine cancer by ICD-10 classification for period 1998-2014 (N=10,200).

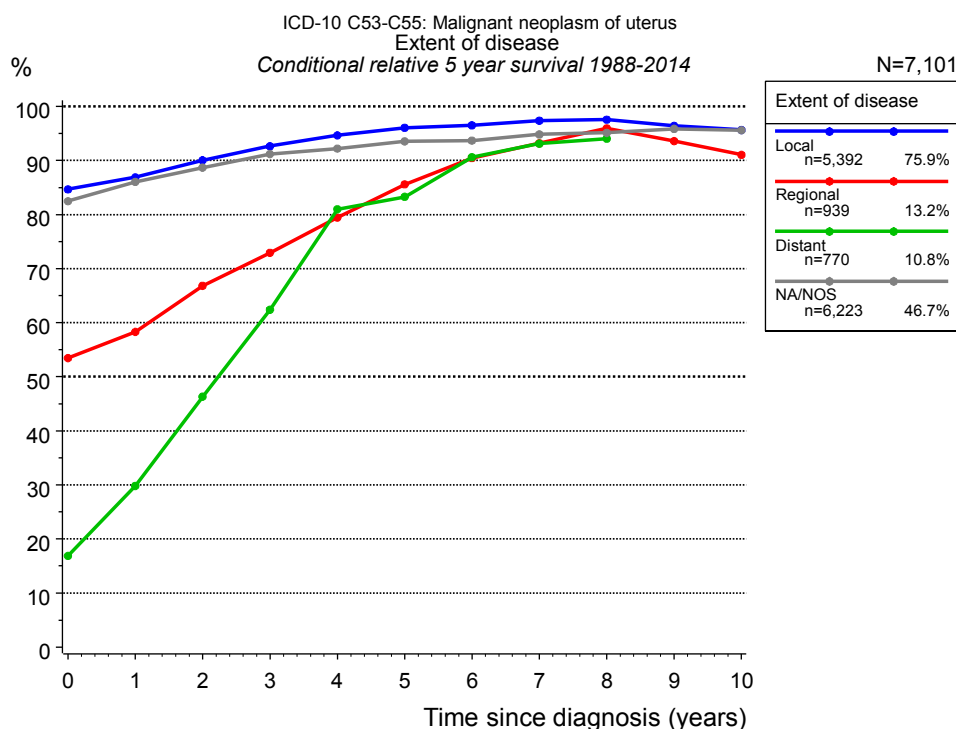


**Figure 4c.** Relative survival of patients with uterine cancer by extent of disease. For 9,718 of 10,200 cases diagnosed between 1998 and 2014 valid data could be obtained for this item. For a total of 5,344 cases an evaluable classification was established. The grey line represents the subgroup of 4,856 patients with missing values regarding extent of disease (47.6% of 10,200 patients, the percent values of all other categories are related to n=5,344).

Years	Extent of disease							
	Local n=3,940		Regional n=720		Distant n=684		NA/NOS n=4,856	
	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
1	95.3	96.7	84.9	85.8	52.3	53.3	91.9	94.0
2	91.1	93.8	70.1	71.7	31.9	33.0	85.6	89.4
3	87.1	91.0	62.4	64.6	23.2	24.3	81.0	86.2
4	84.1	89.3	55.9	58.4	17.4	18.5	77.4	84.0
5	81.3	87.6	51.7	54.6	15.9	17.0	74.3	82.2
6	78.6	86.0	48.9	52.1	14.3	15.4	71.0	80.1
7	76.6	85.3	45.7	49.0	13.5	14.9	68.2	78.4
8	74.4	84.2	43.4	47.1	12.9	14.4	66.3	77.6
9	72.7	83.9	42.1	46.1	12.9	14.1	64.1	76.6
10	71.1	83.4	41.5	46.0	12.1	13.1	62.1	75.7

**Table 4d.** Observed (obs.) and relative (rel.) survival of patients with uterine cancer by extent of disease for period 1998-2014 (N=5,344).



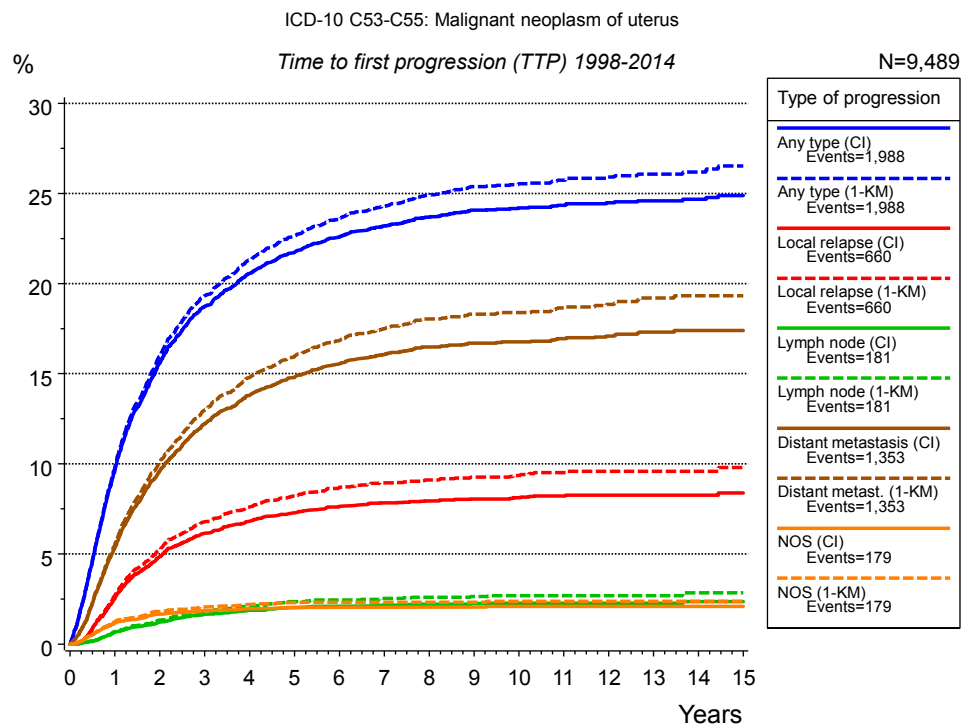


**Figure 4e.** Conditional relative 5-year survival of patients with uterine cancer by extent of disease. For 12,612 of 13,324 cases diagnosed between 1988 and 2014 valid data could be obtained for this item. For a total of 7,101 cases an evaluable classification was established. The grey line represents the subgroup of 6,223 patients with missing values regarding extent of disease (46.7% of 13,324 patients, the percent values of all other categories are related to n=7,101).

Years	Extent of disease							
	Local		Regional		Distant		NA/NOS	
	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs
0	5,392	84.7	939	53.5	770	16.9	6,223	82.5
1	4,756	86.9	743	58.3	358	29.8	5,420	86.0
2	4,161	90.1	564	66.8	195	46.3	4,803	88.7
3	3,687	92.6	449	72.9	120	62.4	4,296	91.2
4	3,265	94.6	362	79.5	75	81.0	3,871	92.2
5	2,885	96.0	301	85.6	61	83.3	3,494	93.5
6	2,611	96.5	250	90.5	49	90.6	3,048	93.7
7	2,345	97.4	209	93.2	38	93.1	2,615	94.8
8	2,074	97.6	182	96.0	32	94.0	2,295	95.1
9	1,848	96.4	158	93.6			1,998	95.9
10	1,648	95.6	139	91.1			1,735	95.6

**Table 4f.** Conditional relative 5-year survival of patients with uterine cancer by extent of disease for period 1988-2014 (N=7,101).

Conditional relative survival rates refer to the relative survival probability, in this case for 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 4c). 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 extent of disease="Local", who are alive at least 3 years after cancer diagnosis, the conditional relative 5-year survival rate is 92.6% (n=3,687).

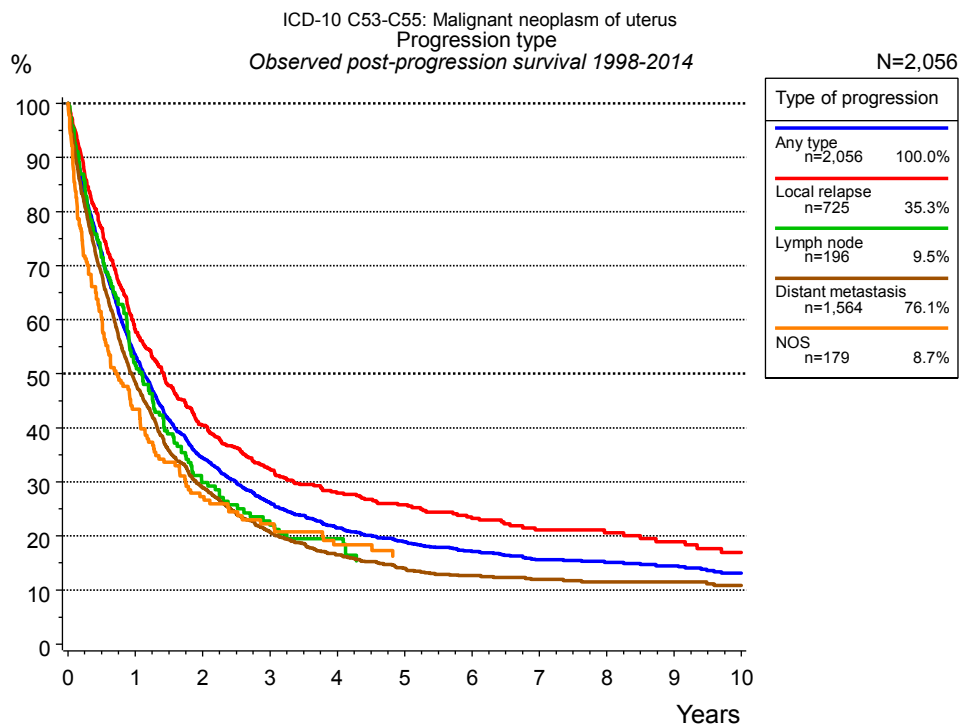


**Figure 5a.** Time to first progression of 9,489 patients with uterine cancer diagnosed between 1998 and 2014 (M0 only in solid cancers) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

Years	Type of progression						
	Any type (CI)	Any type (1-KM)	Local relapse (CI)	Local relapse (1-KM)	Lymph node (CI)	Lymph node (1-KM)	Distant metastasis (CI)
	n=9,489 %	n=9,489 %	n=9,489 %	n=9,489 %	n=9,489 %	n=9,489 %	n=9,489 %
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	9.7	9.8	2.5	2.7	0.7	0.7	5.4
2	15.6	16.0	4.9	5.3	1.2	1.3	9.6
3	18.7	19.3	6.2	6.8	1.7	1.9	12.2
4	20.6	21.3	6.8	7.6	1.9	2.1	13.8
5	21.7	22.6	7.3	8.2	2.0	2.4	14.8
6	22.6	23.6	7.7	8.7	2.1	2.4	15.5
7	23.2	24.3	7.8	8.9	2.2	2.5	16.1
8	23.7	24.9	8.0	9.1	2.2	2.6	16.5
9	24.1	25.4	8.1	9.3	2.2	2.6	16.7
10	24.2	25.5	8.1	9.4	2.3	2.7	16.8
11	24.4	25.7	8.2	9.5	2.3	2.7	17.0
12	24.5	25.9	8.3	9.6	2.3	2.7	17.1
13	24.6	26.1	8.3	9.6	2.3	2.7	17.3
14	24.7	26.2	8.3	9.6	2.4	2.9	17.4
15	24.9	26.5	8.4	9.8	2.4	2.9	17.4

<i>cont'd</i>	Type of progression		
	Distant metast. (1- KM)	NOS (CI)	NOS (1-KM)
	n=9,489	n=9,489	n=9,489
Years	%	%	%
0	0.0	0.0	0.0
1	5.6	1.2	1.2
2	10.1	1.7	1.8
3	13.0	1.9	2.1
4	14.8	2.0	2.2
5	15.9	2.0	2.3
6	16.8	2.1	2.3
7	17.5	2.1	2.3
8	18.0	2.1	2.3
9	18.3	2.1	2.3
10	18.4	2.1	2.4
11	18.7	2.1	2.4
12	18.9	2.1	2.4
13	19.2	2.1	2.4
14	19.3	2.1	2.4
15	19.3	2.1	2.4

**Table 5b.** Time to first progression of patients with uterine cancer for period 1998-2014 (N=9,489).

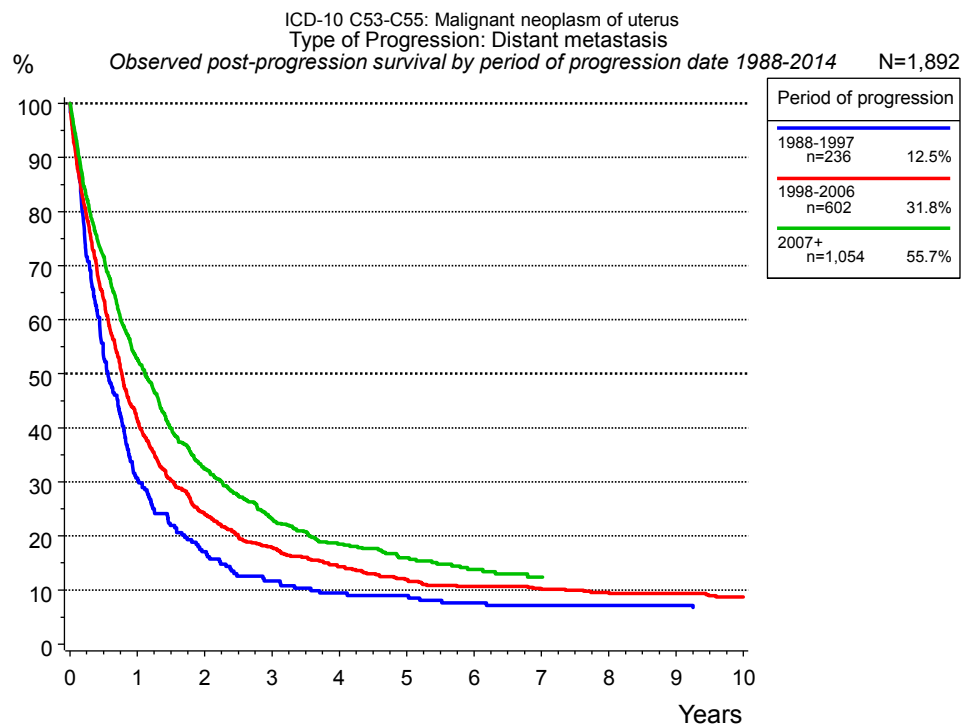


**Figure 5c.** Observed post-progression survival of 2,056 patients with uterine cancer diagnosed between 1998 and 2014. These 2,056 patients with documented progression events during their course of disease represent 20.3 % of the totally 10,151 evaluated cases (incl. M1, n=662, 6.5 %). Patients with cancer relapse documented via death certificates only were excluded (n=594, 5.9 %). Multiple progression types on different sites are included in the evaluation even when not occurring synchronously. The NOS (not otherwise specified) class is included under the condition, that it is the one and only progression type during the course of disease.

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.

Years	Type of progression				
	Any type n=2,056 %	Local relapse n=725 %	Lymph node n=196 %	Distant metastasis n=1,564 %	NOS n=179 %
0	100.0	100.0	100.0	100.0	100.0
1	53.4	58.1	52.0	48.4	43.5
2	34.4	40.5	29.9	28.9	27.3
3	26.1	32.3	22.0	20.7	22.3
4	21.5	28.0	19.5	16.5	18.4
5	19.0	25.8		14.0	16.2
6	17.1	23.2		12.7	
7	15.6	21.1		12.0	
8	15.1	20.6		11.5	
9	14.5	19.0		11.5	
10	13.2	17.0		10.8	

**Table 5d.** Observed post-progression survival of patients with uterine cancer for period 1998-2014 (N=2,056).



**Figure 5e.** Observed post-progression (distant metastasis) survival of 1,892 patients with uterine cancer diagnosed between 1988 and 2014 by period of progression.

Years	Period of progression		
	1988-1997 n=236	1998-2006 n=602	2007+ n=1,054
	%	%	%
0	100.0	100.0	100.0
1	30.7	41.5	52.7
2	17.1	24.2	32.4
3	11.7	17.9	23.1
4	9.4	14.3	18.5
5	9.0	12.0	15.9
6	7.6	10.7	13.8
7	7.2	10.1	12.4
8	7.2	9.6	12.4
9	7.2	9.4	
10	6.7	8.7	

**Table 5f.** Observed post-progression (distant metastasis) survival of patients with uterine cancer for period 1988-2014 by period of progression (N=1,892).

## 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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### Index of figures and tables

Fig./Tbl.	Page
1a Relative survival by period of diagnosis (chart)	2
1b Survival by period of diagnosis (table)	3
2a Survival of total cohort (chart)	4
2b Survival of total cohort (table)	4
3a Observed survival by age category (chart)	5
3b Relative survival by age category (chart)	5
3c Survival by age category (table)	6
4a Relative survival by ICD-10 classification (chart)	7
4b Survival by ICD-10 classification (table)	7
4c Relative survival by extent of disease (chart)	8
4d Survival by extent of disease (table)	8
4e Conditional survival by extent of disease (chart)	9
4f Conditional survival by extent of disease (table)	9
5a Time to first progression (chart)	10
5b Time to first progression (table)	10
5c Observed post-progression survival (chart)	12
5d Observed post-progression survival (table)	12
5e Observed post-progression survival by period of progression (chart)	13
5f Observed post-progression survival by period of progression (table)	13