

# Munich Cancer Registry



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## ICD-10 C53-C55: Uterine cancer

### Survival

Year of diagnosis	1988-1997	1998-2016
Patients	3,427	14,138
Diseases	3,436	14,204
Cases evaluated	3,149	11,628
Creation date	08/22/2018	
Export date	08/09/2018	
Population (females)	2.43 m	



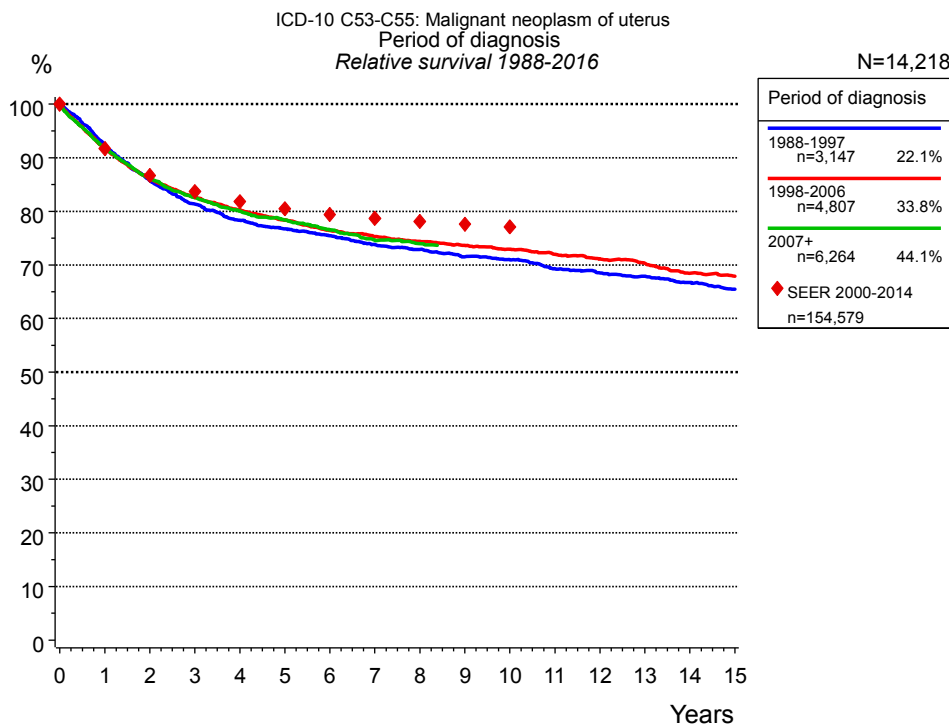
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<https://www.tumorregister-muenchen.de/en>

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

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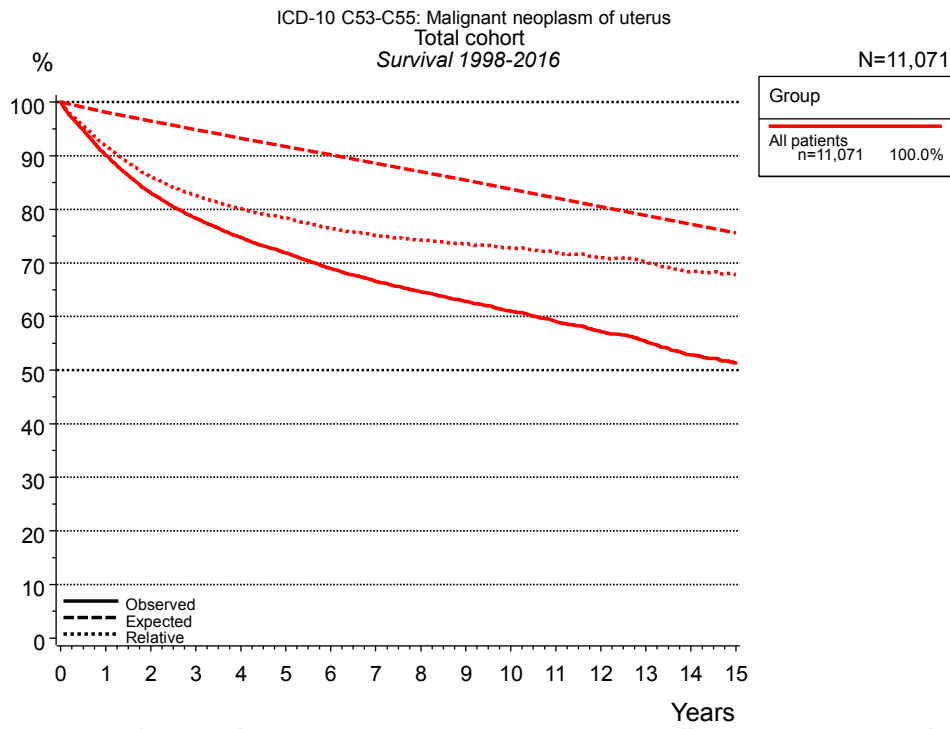
**Figure 1a.** Relative survival of patients with uterine cancer by period of diagnosis. Included in the evaluation are 14,218 cases diagnosed between 1988 and 2016.

The survival results of the SEER program (Surveillance, Epidemiology, and End Results) of the American National Cancer Institute (NCI) are summarized as the period of diagnosis from 2000 to 2014, and are represented by colored diamonds in order to facilitate comparisons between MCR and SEER.

The presented survival curves are derived from clinical records with valid follow-up informations, which means that death certificate cases (DCO) cases are omitted from the analysis. With this one restriction, the MCR has provided population-based statistics since 1998, collecting data on all cancer cases in the region of southern Bavaria. Historical data of previous time periods can be heavily selected, therefore, univariate survival comparisons of the presented time periods must be carefully considered. Nonetheless, all calculable survival curves are depicted to facilitate the comparison of long time follow-up analyses of relative survival between particular cancers.

Years	Period of diagnosis					
	1988-1997 n=3,147		1998-2006 n=4,807		2007+ n=6,264	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	90.5	92.5	90.0	91.8	90.2	91.8
2	82.1	85.7	82.9	86.1	83.2	86.1
3	76.2	81.3	78.1	82.6	78.5	82.5
4	71.9	78.3	74.6	80.3	74.9	80.0
5	69.0	76.7	71.5	78.4	72.2	78.4
6	66.4	75.4	68.6	76.4	69.4	76.5
7	63.6	73.8	66.3	75.3	66.6	74.7
8	61.5	72.9	64.4	74.4	64.9	74.0
9	59.1	71.5	62.5	73.6		
10	57.4	71.0	60.7	72.9		
11	54.8	69.3	58.8	72.0		
12	53.1	68.5	56.9	71.1		
13	51.4	67.9	55.1	70.3		
14	49.4	66.7	52.5	68.5		
15	47.4	65.4	51.1	67.9		

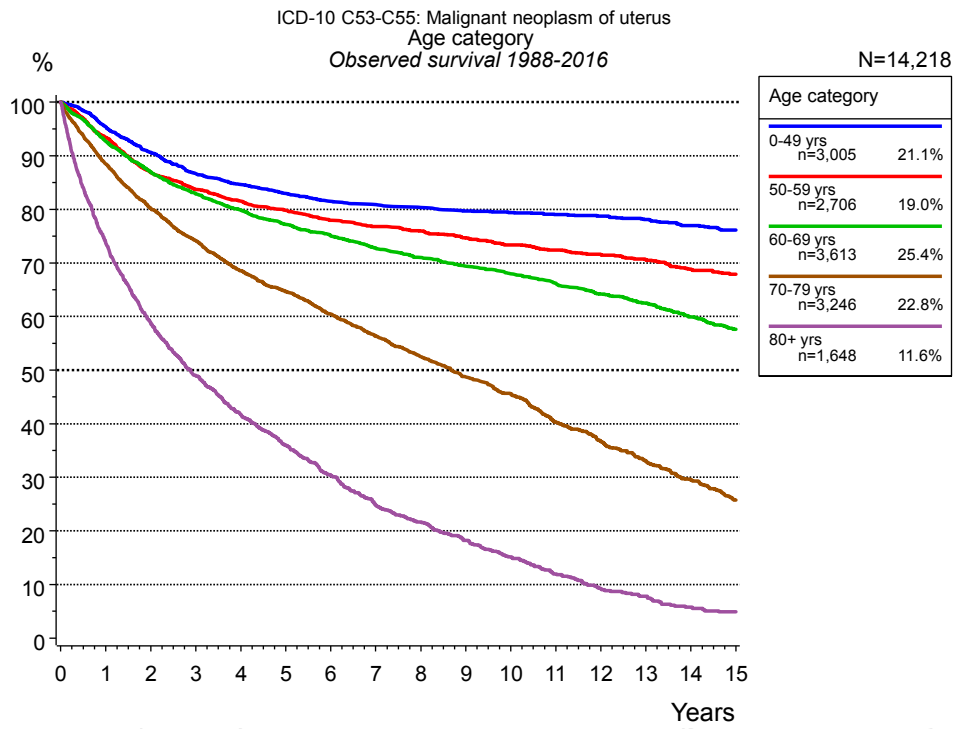
**Table 1b.** Observed (obs.) and relative (rel.) survival of patients with uterine cancer by period of diagnosis for period 1988-2016 (N=14,218).



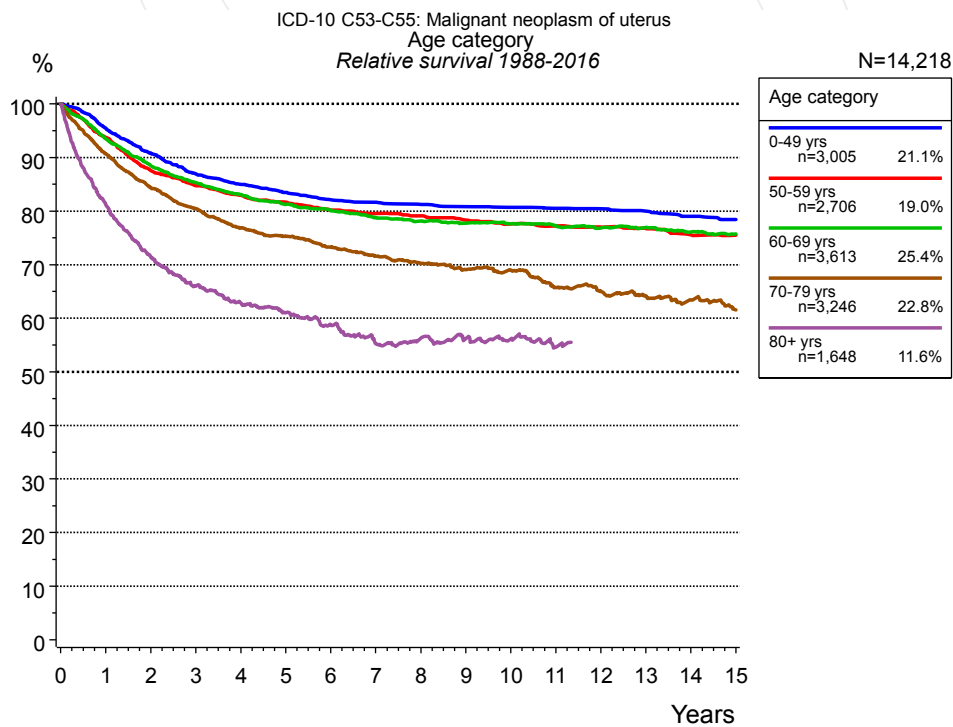
**Figure 2a.** Observed, expected and relative survival of the total cohort with uterine cancer. Included in the evaluation are 11,071 cases diagnosed between 1998 and 2016.

Years	Group	
	obs. %	rel. %
0	100.0	100.0
1	90.1	91.8
2	83.1	86.1
3	78.3	82.6
4	74.8	80.2
5	71.9	78.3
6	68.9	76.4
7	66.6	75.1
8	64.6	74.3
9	62.8	73.6
10	61.0	72.8
11	59.1	71.9
12	57.2	71.0
13	55.4	70.2
14	52.8	68.4
15	51.4	67.8

**Table 2b.** Observed (obs.) and relative (rel.) survival of the total cohort with uterine cancer for period 1998-2016 (N=11,071).



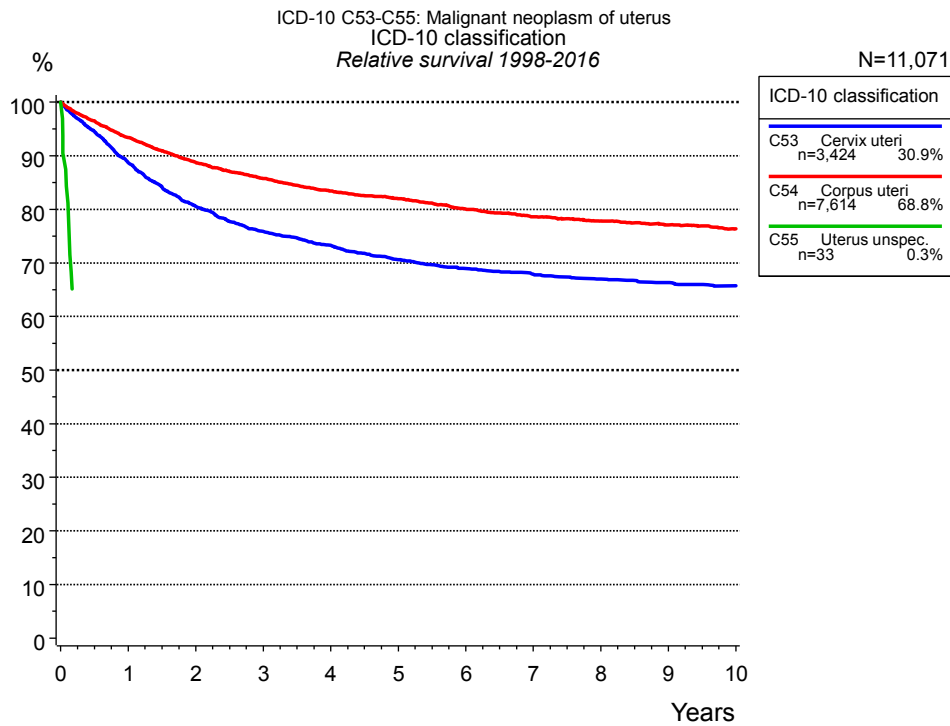
**Figure 3a.** Observed survival of patients with uterine cancer by age category. Included in the evaluation are 14,218 cases diagnosed between 1988 and 2016.



**Figure 3b.** Relative survival of patients with uterine cancer by age category. Included in the evaluation are 14,218 cases diagnosed between 1988 and 2016.

Years	Age category									
	0-49 yrs n=3,005		50-59 yrs n=2,706		60-69 yrs n=3,613		70-79 yrs n=3,246		80+ yrs n=1,648	
	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	95.5	93.4	93.7	92.7	93.5	88.5	90.6	73.7	81.2
2	90.6	90.8	86.9	87.5	87.0	88.5	80.2	84.4	58.8	71.5
3	86.7	87.0	83.7	84.7	82.9	85.3	74.1	80.4	49.0	66.1
4	84.6	85.0	81.5	82.9	79.8	83.1	68.5	76.9	41.7	62.8
5	83.0	83.5	79.8	81.6	77.1	81.3	64.7	75.3	35.9	61.0
6	81.5	82.1	77.9	80.2	75.0	80.1	60.4	73.3	30.4	58.8
7	80.9	81.6	76.8	79.5	72.7	78.8	56.4	71.6	24.8	55.2
8	80.4	81.3	75.9	79.1	71.0	78.1	52.5	70.2	21.7	56.3
9	79.7	80.8	74.6	78.3	69.4	77.7	48.7	69.1	18.2	56.2
10	79.4	80.7	73.4	77.6	67.9	77.6	45.6	69.0	15.1	56.2
11	79.0	80.5	72.4	77.2	66.2	77.3	40.3	65.7	12.0	54.6
12	78.8	80.4	71.6	77.0	64.2	76.9	36.7	65.0	9.2	52.7
13	78.1	80.0	70.6	76.7	62.5	76.9	33.1	64.1	7.8	55.7
14	77.0	79.0	68.8	75.6	59.9	76.1	29.5	63.4	5.8	54.1
15	76.1	78.4	67.9	75.5	57.6	75.7	25.7	61.6	4.9	60.4

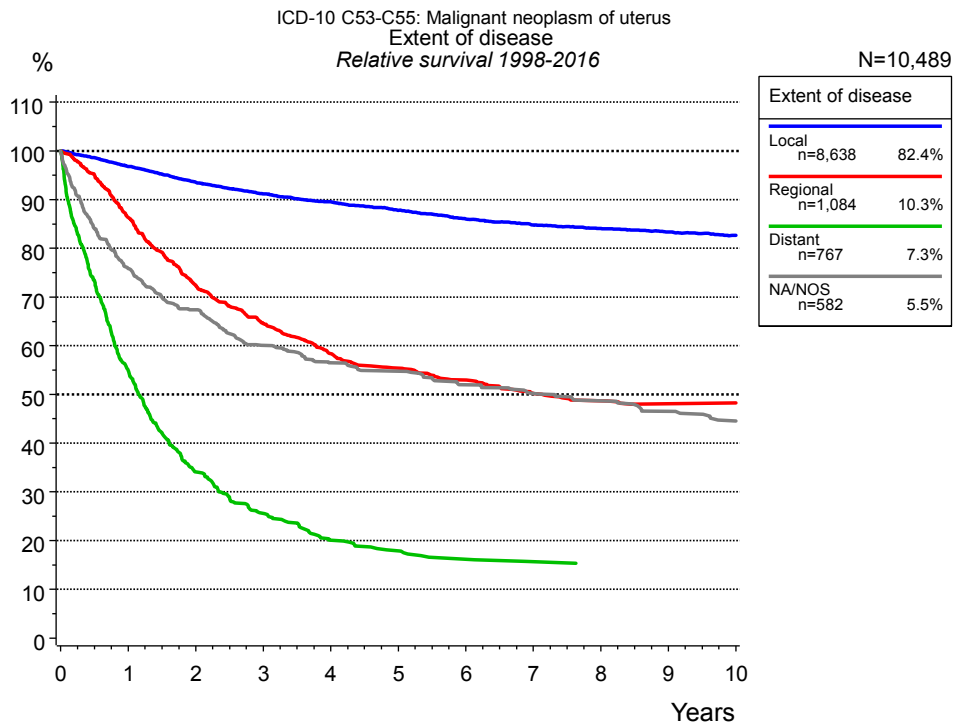
**Table 3c.** Observed (obs.) and relative (rel.) survival of patients with uterine cancer by age category for period 1988-2016 (N=14,218).



**Figure 4a.** Relative survival of patients with uterine cancer by ICD-10 classification. Included in the evaluation are 11,071 cases diagnosed between 1998 and 2016.

Years	ICD-10 classification					
	C53 Cervix uteri n=3,424		C54 Corpus uteri n=7,614		C55 Uterus unsp. n=33	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	87.8	88.7	91.3	93.4		
2	79.2	80.6	85.0	88.8		
3	74.0	75.9	80.4	85.7		
4	71.1	73.3	76.6	83.4		
5	68.0	70.6	73.7	82.0		
6	66.0	69.0	70.4	80.0		
7	64.6	67.9	67.6	78.6		
8	63.4	67.0	65.4	77.8		
9	62.4	66.4	63.2	77.1		
10	61.4	65.8	61.0	76.3		

**Table 4b.** Observed (obs.) and relative (rel.) survival of patients with uterine cancer by ICD-10 classification for period 1998-2016 (N=11,071).

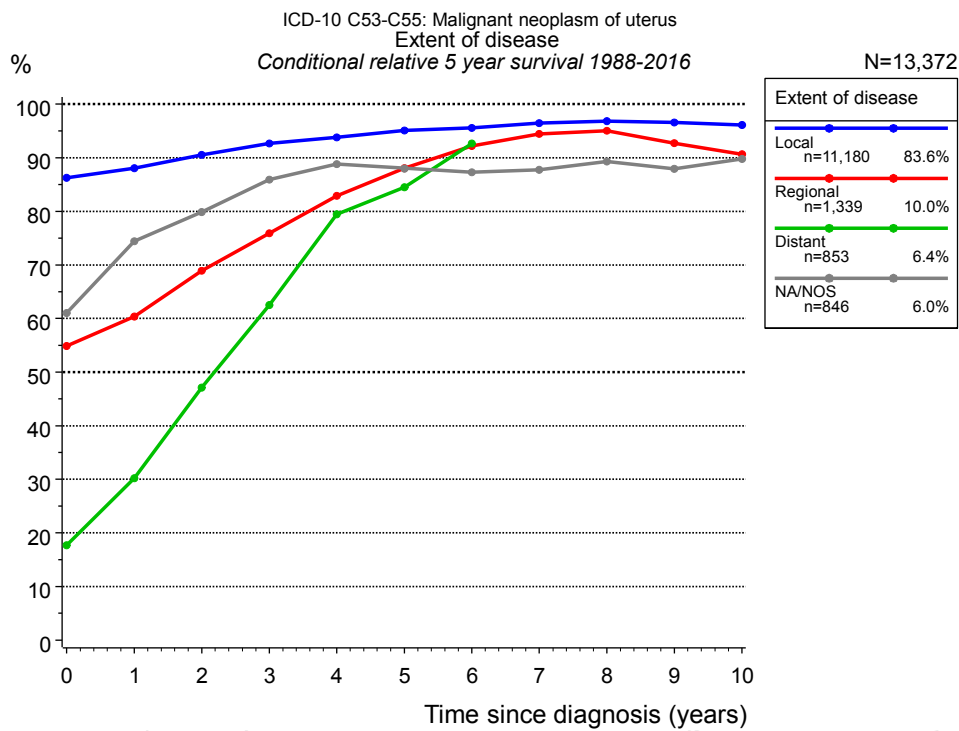


**Figure 4c.** Relative survival of patients with uterine cancer by extent of disease. For 10,533 of 11,071 cases diagnosed between 1998 and 2016 valid data could be obtained for this item. For a total of 10,489 cases an evaluable classification was established. The grey line represents the subgroup of 582 patients with missing values regarding extent of disease (5.3 % of 11,071 patients, the percent values of all other categories are related to n=10,489).

Years	Extent of disease							
	Local n=8,638		Regional n=1,084		Distant n=767		NA/NOS n=582	
	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	95.0	96.8	85.4	86.3	53.9	54.9	73.0	75.9
2	90.3	93.6	70.8	72.4	33.0	34.1	63.3	67.4
3	86.5	91.2	62.5	64.6	24.5	25.6	55.2	60.0
4	83.4	89.5	56.0	58.4	18.9	20.1	51.0	56.5
5	80.4	87.8	52.6	55.4	16.8	17.9	48.7	54.8
6	77.4	86.0	49.8	53.0	14.9	16.2	45.6	52.0
7	74.9	84.8	46.8	50.2	14.2	15.7	43.5	50.2
8	72.9	84.1	44.9	48.7	13.7	15.3	41.6	48.7
9	70.9	83.4	43.9	48.1	13.7	15.1	39.4	46.5
10	68.8	82.6	43.6	48.3			37.2	44.5

**Table 4d.** Observed (obs.) and relative (rel.) survival of patients with uterine cancer by extent of disease for period 1998-2016 (N=10,489).



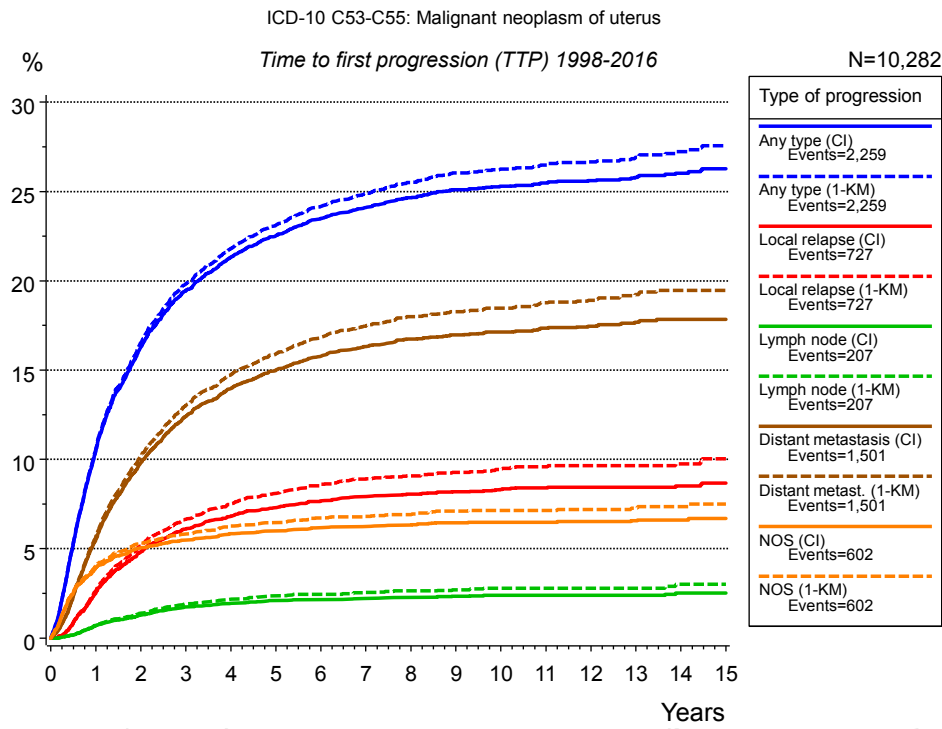


**Figure 4e.** Conditional relative 5-year survival of patients with uterine cancer by extent of disease. For 13,428 of 14,218 cases diagnosed between 1988 and 2016 valid data could be obtained for this item. For a total of 13,372 cases an evaluable classification was established. The grey line represents the subgroup of 846 patients with missing values regarding extent of disease (6.0 % of 14,218 patients, the percent values of all other categories are related to n=13,372).

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	11,180	86.3	1,339	54.9	853	17.7	846	61.1
1	9,899	88.1	1,065	60.4	401	30.2	610	74.4
2	8,820	90.5	820	68.9	219	47.1	522	79.9
3	7,879	92.7	671	75.9	138	62.5	455	85.9
4	7,096	93.8	555	82.9	89	79.4	409	88.8
5	6,364	95.1	476	88.1	68	84.5	378	88.0
6	5,679	95.6	414	92.2	54	92.7	347	87.3
7	5,055	96.5	344	94.5			319	87.7
8	4,441	96.8	293	95.0			291	89.3
9	3,896	96.6	260	92.7			263	87.9
10	3,431	96.1	237	90.7			240	89.8

**Table 4f.** Conditional relative 5-year survival of patients with uterine cancer by extent of disease for period 1988-2016 (N=13,372).

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 92.7% (n=7,879).

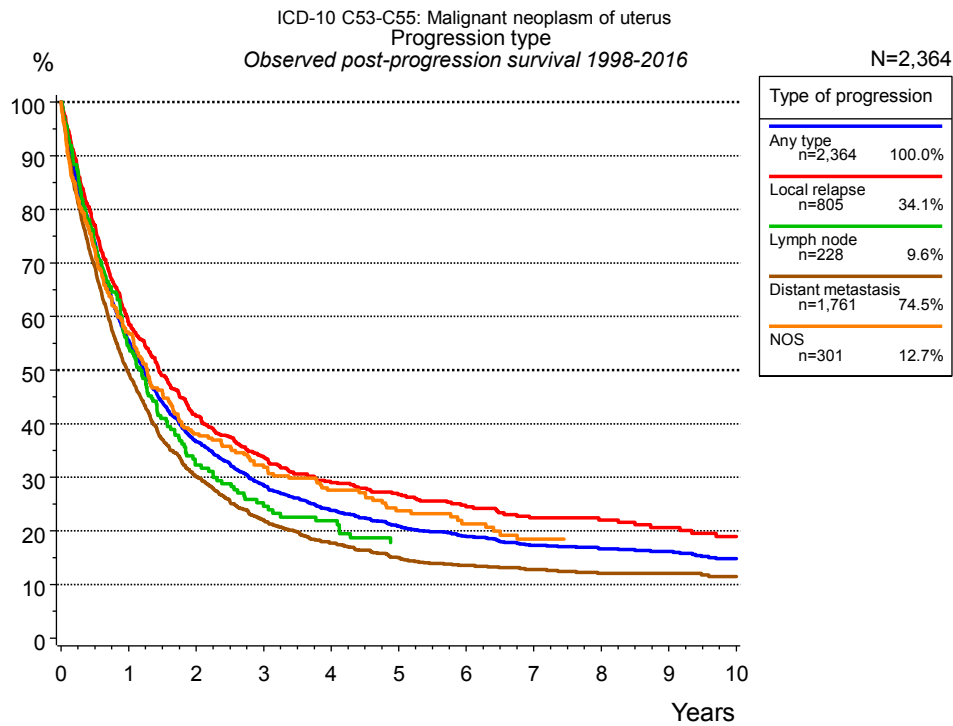


**Figure 5a.** Time to first progression of 10,282 patients with uterine cancer diagnosed between 1998 and 2016 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

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=10,282 %	n=10,282 %	n=10,282 %	n=10,282 %	n=10,282 %	n=10,282 %	n=10,282 %
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	10.5	10.6	2.5	2.6	0.7	0.7	5.5
2	16.3	16.5	4.8	5.2	1.3	1.4	9.8
3	19.4	19.8	6.1	6.7	1.7	1.9	12.4
4	21.3	21.8	6.8	7.5	1.9	2.2	14.0
5	22.5	23.1	7.3	8.1	2.1	2.4	15.0
6	23.5	24.2	7.7	8.6	2.2	2.5	15.8
7	24.1	24.9	7.9	8.9	2.2	2.6	16.3
8	24.7	25.5	8.1	9.1	2.3	2.6	16.7
9	25.1	26.0	8.2	9.3	2.3	2.7	17.0
10	25.3	26.3	8.3	9.5	2.4	2.8	17.1
11	25.5	26.5	8.4	9.6	2.4	2.8	17.3
12	25.6	26.7	8.4	9.6	2.4	2.8	17.5
13	25.8	26.9	8.4	9.6	2.4	2.8	17.7
14	26.0	27.2	8.5	9.8	2.5	3.0	17.8
15	26.3	27.6	8.7	10.0	2.5	3.0	17.8

<i>cont'd</i>	Type of progression		
	Distant metast. (1- KM)	NOS (CI)	NOS (1-KM)
	n=10,282 %	n=10,282 %	n=10,282 %
Years			
0	0.0	0.0	0.0
1	5.7	3.9	4.1
2	10.2	5.1	5.3
3	13.0	5.5	5.8
4	14.7	5.8	6.3
5	15.9	6.0	6.5
6	16.8	6.2	6.7
7	17.5	6.2	6.8
8	18.0	6.3	6.9
9	18.3	6.5	7.1
10	18.5	6.5	7.1
11	18.8	6.5	7.1
12	18.9	6.5	7.2
13	19.2	6.6	7.3
14	19.5	6.6	7.4
15	19.5	6.7	7.5

**Table 5b.** Time to first progression of patients with uterine cancer for period 1998-2016 (N=10,282).

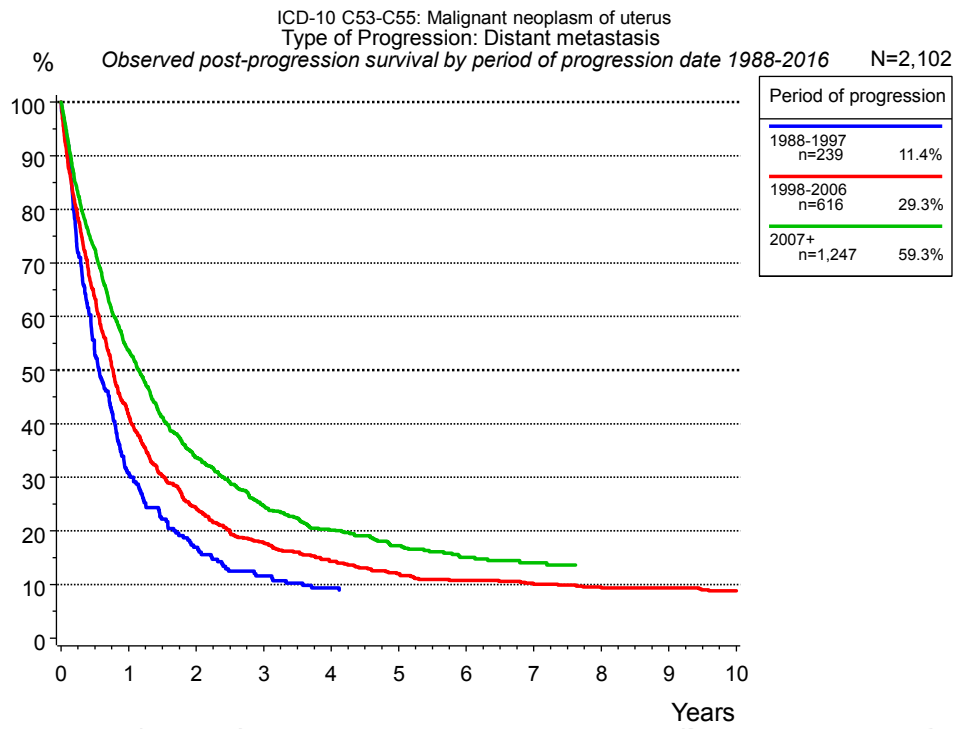


**Figure 5c.** Observed post-progression survival of 2,364 patients with uterine cancer diagnosed between 1998 and 2016. These 2,364 patients with documented progression events during their course of disease represent 21.4 % of the totally 11,026 evaluated cases (incl. M1, n=744, 6.7 %). Patients with cancer relapse documented via death certificates only were excluded (n=639, 5.8 %). 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=2,364 %	Local relapse n=805 %	Lymph node n=228 %	Distant metastasis n=1,761 %	NOS n=301 %
0	100.0	100.0	100.0	100.0	100.0
1	55.4	58.8	54.6	49.4	57.1
2	36.6	41.4	32.3	30.1	38.1
3	28.4	33.8	24.6	21.9	31.9
4	23.8	29.0	21.9	17.7	27.6
5	20.8	26.8		15.0	23.8
6	18.9	24.5		13.5	21.3
7	17.3	22.4		12.8	18.4
8	16.6	22.0		12.0	
9	16.1	20.6		12.0	
10	14.8	18.9		11.4	

**Table 5d.** Observed post-progression survival of patients with uterine cancer for period 1998-2016 (N=2,364).



**Figure 5e.** Observed post-progression (distant metastasis) survival of 2,102 patients with uterine cancer diagnosed between 1988 and 2016 by period of progression.

Years	Period of progression		
	1988-1997 n=239 %	1998-2006 n=616 %	2007+ n=1,247 %
0	100.0	100.0	100.0
1	30.9	41.6	53.6
2	16.9	24.3	33.6
3	11.6	17.8	24.7
4	9.3	14.3	20.2
5	8.9	12.0	17.2
6		10.8	15.0
7		10.1	14.1
8		9.5	
9		9.3	
10		8.8	

**Table 5f.** Observed post-progression (distant metastasis) survival of patients with uterine cancer for period 1988-2016 by period of progression (N=2,102).

## 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

Munich Cancer Registry. Survival ICD-10 C53-C55: Uterine cancer [Internet]. 2018 [updated 2018 Aug 22; cited 2018 Oct 1]. Available from: <https://www.tumorregister-muenchen.de/en/facts/surv/sC5355E-ICD-10-C53-C55-Uterine-cancer-survival.pdf>

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