

Munich Cancer Registry



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ICD-10 C53: Cervical cancer

Survival

Year of diagnosis	1988-1997	1998-2016
Patients	1,257	4,207
Diseases	1,257	4,210
Cases evaluated	1,198	3,618
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/sC53__E-ICD-10-C53-Cervical-cancer-survival.pdf

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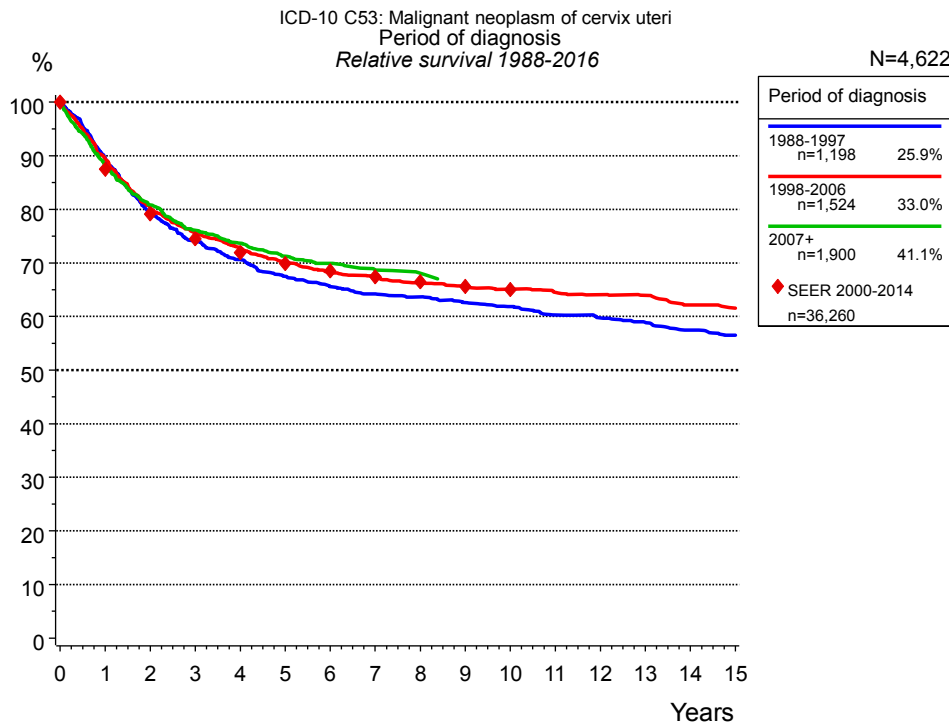


Figure 1a. Relative survival of patients with cervical cancer by period of diagnosis. Included in the evaluation are 4,622 cases diagnosed between 1988 and 2016.

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		1998-2006		2007+	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	88.2	89.5	88.3	89.3	87.4	88.2
2	77.3	79.4	78.8	80.4	79.6	80.8
3	71.2	74.1	73.6	75.6	74.5	76.1
4	67.2	70.6	70.5	72.9	71.7	73.7
5	63.5	67.5	67.3	70.1	68.9	71.2
6	60.9	65.6	65.1	68.3	67.3	69.9
7	59.1	64.2	63.8	67.2	65.8	68.7
8	58.0	63.7	62.4	66.2	64.9	68.0
9	56.4	62.6	61.5	65.7		
10	55.2	61.9	60.5	65.1		
11	53.3	60.3	59.6	64.5		
12	52.3	59.7	58.8	64.1		
13	51.1	58.9	58.2	63.9		
14	49.5	57.5	56.2	62.1		
15	48.3	56.5	55.4	61.5		

Table 1b. Observed (obs.) and relative (rel.) survival of patients with cervical cancer by period of diagnosis for period 1988-2016 (N=4,622).

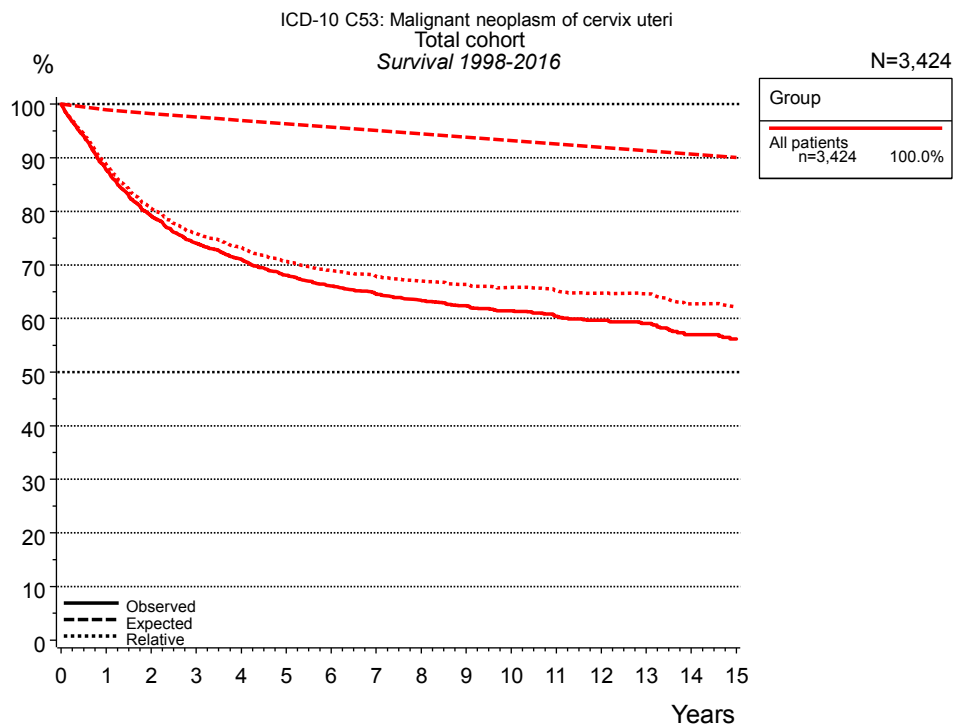


Figure 2a. Observed, expected and relative survival of the total cohort with cervical cancer. Included in the evaluation are 3,424 cases diagnosed between 1998 and 2016.

Years	Group	
	obs. %	rel. %
	All patients n=3,424	
0	100.0	100.0
1	87.8	88.7
2	79.2	80.6
3	74.0	75.9
4	71.1	73.3
5	68.0	70.6
6	66.0	69.0
7	64.6	67.9
8	63.4	67.0
9	62.4	66.4
10	61.4	65.8
11	60.4	65.2
12	59.6	64.8
13	59.1	64.6
14	57.0	62.8
15	56.2	62.2

Table 2b. Observed (obs.) and relative (rel.) survival of the total cohort with cervical cancer for period 1998-2016 (N=3,424).

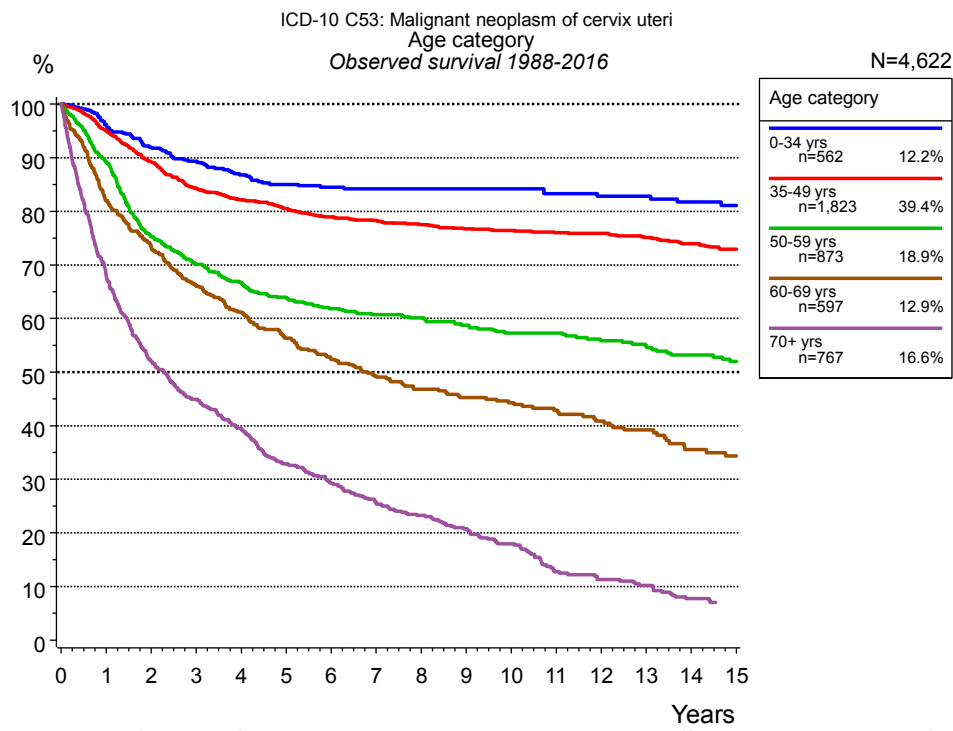


Figure 3a. Observed survival of patients with cervical cancer by age category. Included in the evaluation are 4,622 cases diagnosed between 1988 and 2016.

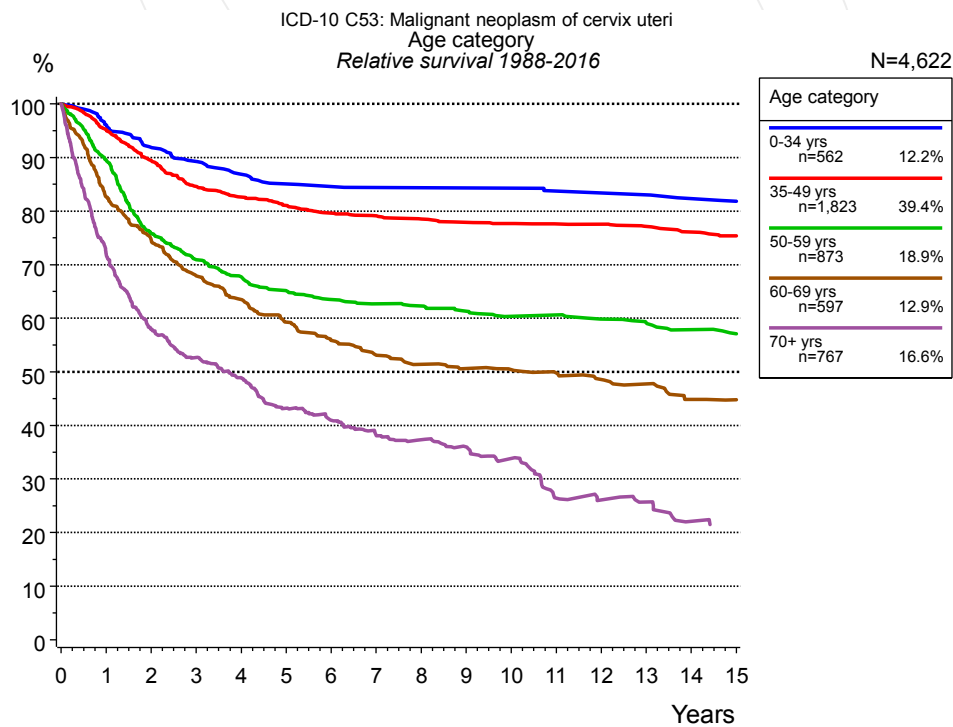


Figure 3b. Relative survival of patients with cervical cancer by age category. Included in the evaluation are 4,622 cases diagnosed between 1988 and 2016.

Years	Age category									
	0-34 yrs n=562		35-49 yrs n=1,823		50-59 yrs n=873		60-69 yrs n=597		70+ yrs n=767	
	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	96.2	96.1	95.1	95.1	89.2	89.5	82.0	82.7	68.0	72.0
2	92.0	91.9	89.2	89.4	75.2	75.8	73.5	74.6	52.0	58.0
3	89.4	89.3	84.3	84.6	70.1	70.9	66.0	67.9	44.9	52.7
4	86.8	86.9	82.2	82.6	66.8	67.8	61.2	63.5	39.5	49.0
5	85.0	85.1	80.5	81.0	63.8	65.1	56.4	59.3	32.9	43.2
6	84.5	84.6	79.0	79.6	61.9	63.5	52.4	55.9	29.2	41.0
7	84.2	84.4	78.3	79.1	60.7	62.7	49.3	53.1	25.7	38.1
8	84.2	84.4	77.6	78.5	60.1	62.3	46.8	51.4	23.2	37.3
9	84.2	84.3	76.8	77.9	58.8	61.3	45.2	50.6	20.8	36.0
10	84.2	84.3	76.4	77.7	57.3	60.4	44.3	50.4	17.9	33.8
11	83.3	83.7	76.0	77.6	57.3	60.6	42.9	49.8	12.7	26.5
12	82.8	83.4	75.9	77.6	55.9	59.8	40.9	48.6	11.3	26.1
13	82.8	83.0	75.1	77.1	54.9	59.2	39.2	47.7	10.1	25.7
14	81.7	82.3	73.9	76.1	53.2	57.9	35.5	44.9	7.7	22.1
15	81.1	81.9	72.9	75.3	52.0	57.1	34.3	44.8		

Table 3c. Observed (obs.) and relative (rel.) survival of patients with cervical cancer by age category for period 1988-2016 (N=4,622).

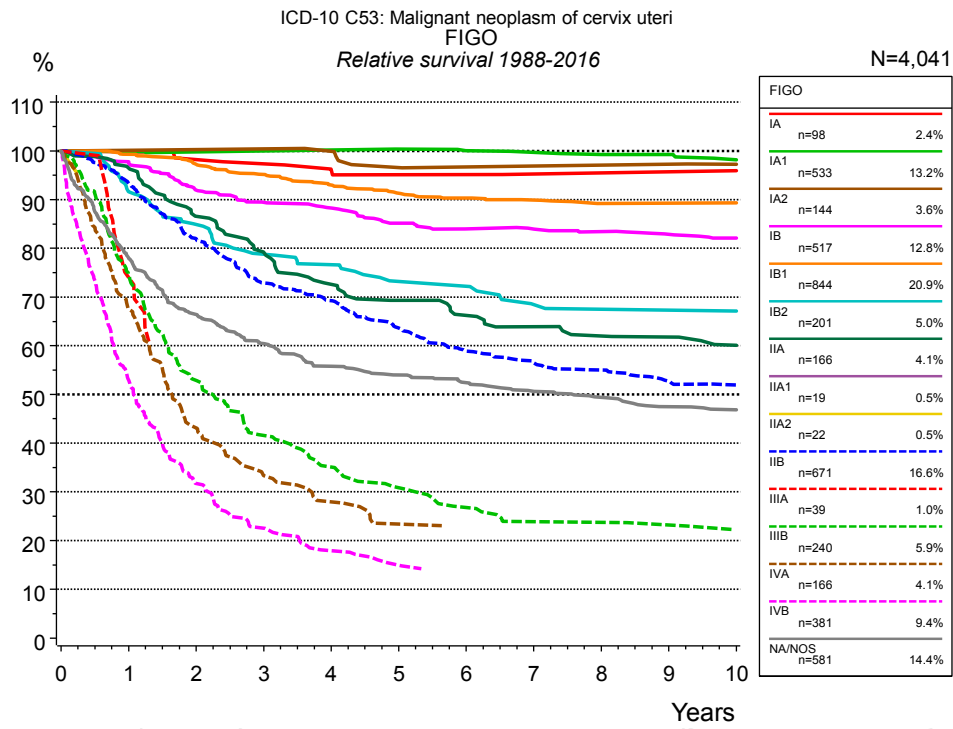


Figure 4a. Relative survival of patients with cervical cancer by FIGO. For 4,295 of 4,622 cases diagnosed between 1988 and 2016 valid data could be obtained for this item. For a total of 4,041 cases an evaluable classification was established. The grey line represents the subgroup of 581 patients with missing values regarding FIGO (12.6 % of 4,622 patients, the percent values of all other categories are related to n=4,041). Subgroups with sample size <20 are omitted from the chart.

Years	FIGO													
	IA n=98		IA1 n=533		IA2 n=144		IB n=517		IB1 n=844		IB2 n=201		IIA n=166	
	obs. %	rel. %	obs. %	rel. %	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	100.0	100.0	100.0	100.0
1	100.0	99.8	99.8	99.9	100.0	100.1	97.0	97.7	99.0	99.3	90.9	91.6	95.4	96.5
2	97.8	98.2	99.4	99.8	100.0	100.3	90.7	92.0	96.5	97.2	83.8	84.9	84.1	86.6
3	96.6	97.3	99.4	100.0	100.0	100.4	87.5	89.5	94.2	95.2	77.3	78.8	75.9	79.2
4	95.5	96.3	99.4	100.2	99.1	99.9	85.8	88.2	91.7	93.0	74.9	76.6	68.9	72.6
5	93.1	95.1	99.1	100.4	95.6	96.6	82.2	85.2	89.6	91.3	70.6	73.2	64.6	69.4
6	93.1	95.2	98.4	100.0	94.6	96.7	80.4	84.0	88.3	90.3	69.8	72.2	61.1	66.2
7	91.9	95.3	98.1	99.7	94.6	96.9	79.9	83.9	87.5	89.9	65.1	68.5	58.2	63.9
8	91.9	95.5	97.3	99.3	94.6	97.1	78.8	83.4	86.2	89.2	64.1	67.5	55.8	62.0
9	91.9	95.7	96.9	99.3	94.6	97.3	77.6	82.9	85.9	89.3	64.1	67.3	55.0	61.8
10	91.9	95.9	95.4	98.2	93.1	97.2	76.3	82.1	85.5	89.3	64.1	67.1	52.5	60.1

<i>cont'd</i>	FIGO													
	IIA2 n=22		IIB n=671		IIIA n=39		IIIB n=240		IVA n=166		IVB n=381		NA/NOS n=581	
Years	obs. %	rel. %	obs. %	rel. %	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	100.0	100.0	100.0	100.0
1			91.9	93.3	73.0	74.0	73.0	74.4	65.9	67.5	52.3	52.9	76.0	77.9
2			79.7	82.0			51.3	52.9	41.7	43.1	31.2	31.7	63.7	66.4
3			69.8	72.9			39.7	41.6	31.1	33.4	22.4	22.6	57.4	60.4
4			65.5	69.3			33.3	35.1	25.9	27.9	17.6	18.0	52.4	55.8
5			59.2	63.6			28.8	30.9	21.2	23.4	14.9	15.0	50.1	54.0
6			54.0	58.9			24.6	26.8					48.1	52.4
7			51.2	56.5			21.6	23.9					46.1	50.6
8			49.2	55.0			21.6	23.7					44.5	49.4
9			46.5	52.7			20.8	23.2					42.3	47.5
10			45.1	51.9			19.1	22.2					41.5	46.9

Table 4b. Observed (obs.) and relative (rel.) survival of patients with cervical cancer by FIGO for period 1988-2016 (N=4,041).

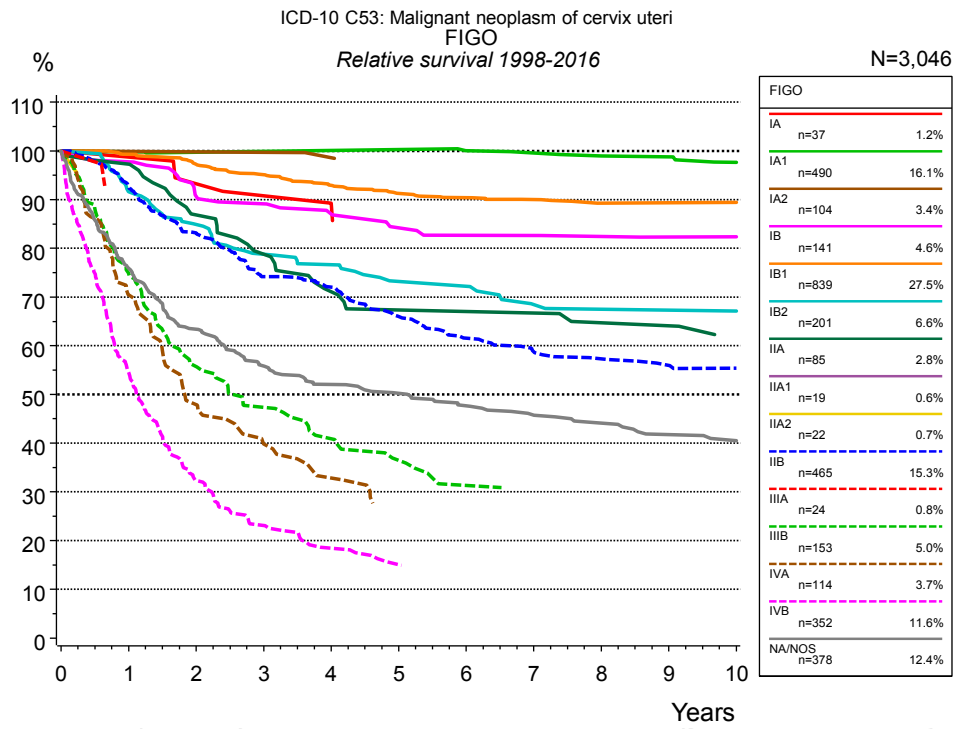


Figure 4c. Relative survival of patients with cervical cancer by FIGO. For 3,198 of 3,424 cases diagnosed between 1998 and 2016 valid data could be obtained for this item. For a total of 3,046 cases an evaluable classification was established. The grey line represents the subgroup of 378 patients with missing values regarding FIGO (11.0 % of 3,424 patients, the percent values of all other categories are related to n=3,046). Subgroups with sample size <20 are omitted from the chart.

Years	FIGO													
	IA n=37		IA1 n=490		IA2 n=104		IB n=141		IB1 n=839		IB2 n=201		IIA n=85	
	obs. %	rel. %	obs. %	rel. %	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	100.0	100.0	100.0	100.0
1	100.0	98.7	99.8	99.8	100.0	99.9	97.8	97.7	99.0	99.3	90.9	91.6	97.5	97.3
2	93.3	93.3	99.3	99.7	100.0	99.8	89.9	90.7	96.5	97.2	83.8	84.9	85.4	86.9
3	90.0	90.8	99.3	99.9	100.0	99.7	88.3	89.1	94.2	95.1	77.3	78.8	77.3	78.8
4	90.0	89.3	99.3	100.1	98.8	98.6	85.7	87.1	91.6	92.9	74.9	76.6	69.0	71.1
5			99.3	100.3			81.9	84.2	89.5	91.3	70.6	73.2	64.8	67.4
6			98.6	100.1			79.9	82.7	88.4	90.4	69.8	72.2	63.4	67.1
7			98.1	99.6			79.9	82.6	87.5	90.0	65.1	68.5	63.4	66.7
8			97.3	99.0			78.8	82.4	86.2	89.3	64.1	67.5	60.2	64.7
9			96.8	98.8			77.6	82.3	85.9	89.4	64.1	67.3	60.2	64.1
10			94.9	97.6			77.6	82.3	85.5	89.4	64.1	67.1	56.3	62.3

<i>cont'd</i>	FIGO													
	IIA2 n=22		IIB n=465		IIIA n=24		IIIB n=153		IVA n=114		IVB n=352		NA/NOS n=378	
Years	obs. %	rel. %	obs. %	rel. %	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	100.0	100.0	100.0	100.0
1			91.3	92.5			73.6	74.7	68.8	70.4	53.9	54.5	73.7	75.9
2			81.3	83.2			54.6	55.7	46.9	47.9	31.8	32.3	60.8	63.4
3			71.5	74.2			45.9	47.4	37.5	39.9	23.0	23.1	52.9	55.8
4			68.8	72.0			39.5	40.9	30.9	32.8	18.1	18.4	48.7	52.0
5			62.1	66.0			34.5	36.5	25.1	27.3	15.1	15.0	46.6	50.2
6			57.3	61.5			29.3	31.3					44.0	47.7
7			54.4	58.7			28.1	30.6					42.0	45.8
8			52.6	57.3			28.1	30.1					40.0	44.1
9			51.0	55.9									37.6	41.7
10			49.9	55.4									36.6	40.6

Table 4d. Observed (obs.) and relative (rel.) survival of patients with cervical cancer by FIGO for period 1998-2016 (N=3,046).

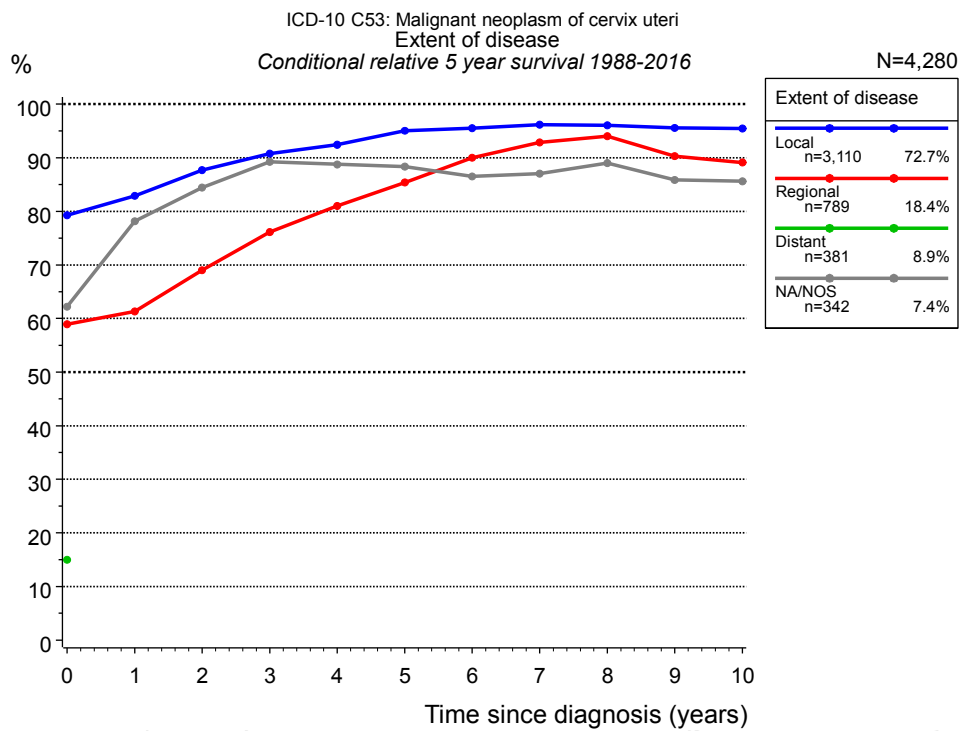


Figure 4e. Conditional relative 5-year survival of patients with cervical cancer by extent of disease. For 4,295 of 4,622 cases diagnosed between 1988 and 2016 valid data could be obtained for this item. For a total of 4,280 cases an evaluable classification was established. The grey line represents the subgroup of 342 patients with missing values regarding extent of disease (7.4 % of 4,622 patients, the percent values of all other categories are related to n=4,280).

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	3,110	79.3	789	59.0	381	15.0	342	62.2
1	2,675	82.9	660	61.3			239	78.2
2	2,339	87.7	512	69.0			204	84.4
3	2,105	90.8	415	76.1			179	89.2
4	1,903	92.4	351	81.0			168	88.8
5	1,699	95.0	307	85.4			161	88.3
6	1,529	95.5	269	90.0			153	86.5
7	1,399	96.2	224	92.8			142	87.0
8	1,238	96.1	194	94.0			131	89.0
9	1,104	95.6	178	90.3			120	85.9
10	980	95.5	167	89.1			111	85.6

Table 4f. Conditional relative 5-year survival of patients with cervical cancer by extent of disease for period 1988-2016 (N=4,280).

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 90.8% (n=2,105).

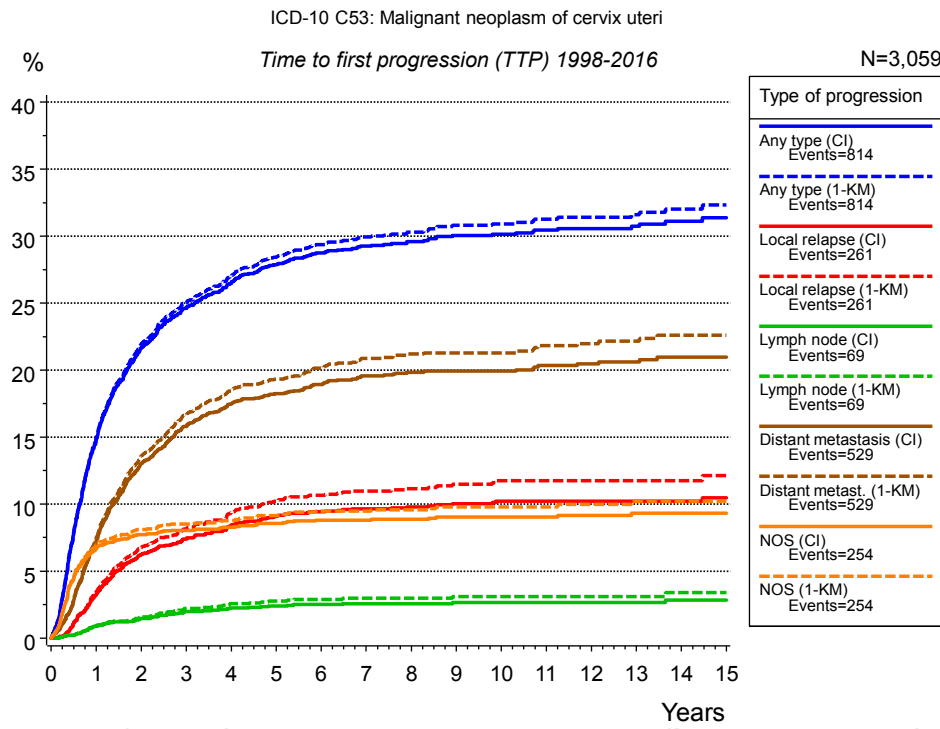


Figure 5a. Time to first progression of 3,059 patients with cervical cancer diagnosed between 1998 and 2016 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency 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=3,059 %	n=3,059 %	n=3,059 %	n=3,059 %	n=3,059 %	n=3,059 %	n=3,059 %
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	14.9	15.0	3.3	3.5	0.9	1.0	7.3
2	21.6	21.9	6.2	6.8	1.5	1.6	13.0
3	24.6	25.0	7.4	8.1	2.0	2.2	15.8
4	26.5	26.9	8.4	9.3	2.2	2.6	17.5
5	27.9	28.4	9.1	10.2	2.4	2.8	18.3
6	28.7	29.4	9.4	10.7	2.5	2.9	18.9
7	29.3	29.9	9.6	11.0	2.6	3.0	19.6
8	29.6	30.3	9.8	11.2	2.6	3.0	19.8
9	30.1	30.8	10.0	11.5	2.6	3.1	19.9
10	30.1	30.9	10.2	11.7	2.6	3.1	19.9
11	30.5	31.3	10.2	11.7	2.6	3.1	20.4
12	30.6	31.4	10.2	11.7	2.6	3.1	20.5
13	30.7	31.6	10.2	11.7	2.6	3.1	20.6
14	31.1	32.0	10.2	11.7	2.8	3.4	21.0
15	31.4	32.3	10.5	12.1	2.8	3.4	21.0

<i>cont'd</i> Years	Type of progression		
	Distant metast. (1- KM)	NOS (CI)	NOS (1-KM)
	n=3,059 %	n=3,059 %	n=3,059 %
0	0.0	0.0	0.0
1	7.6	6.7	7.0
2	13.6	7.7	8.1
3	16.6	8.0	8.5
4	18.4	8.3	8.8
5	19.3	8.5	9.1
6	20.1	8.8	9.5
7	20.9	8.8	9.5
8	21.2	8.9	9.6
9	21.3	9.0	9.8
10	21.3	9.0	9.8
11	21.8	9.0	9.8
12	22.0	9.1	10.0
13	22.2	9.3	10.2
14	22.6	9.3	10.2
15	22.6	9.3	10.2

Table 5b. Time to first progression of patients with cervical cancer for period 1998-2016 (N=3,059).

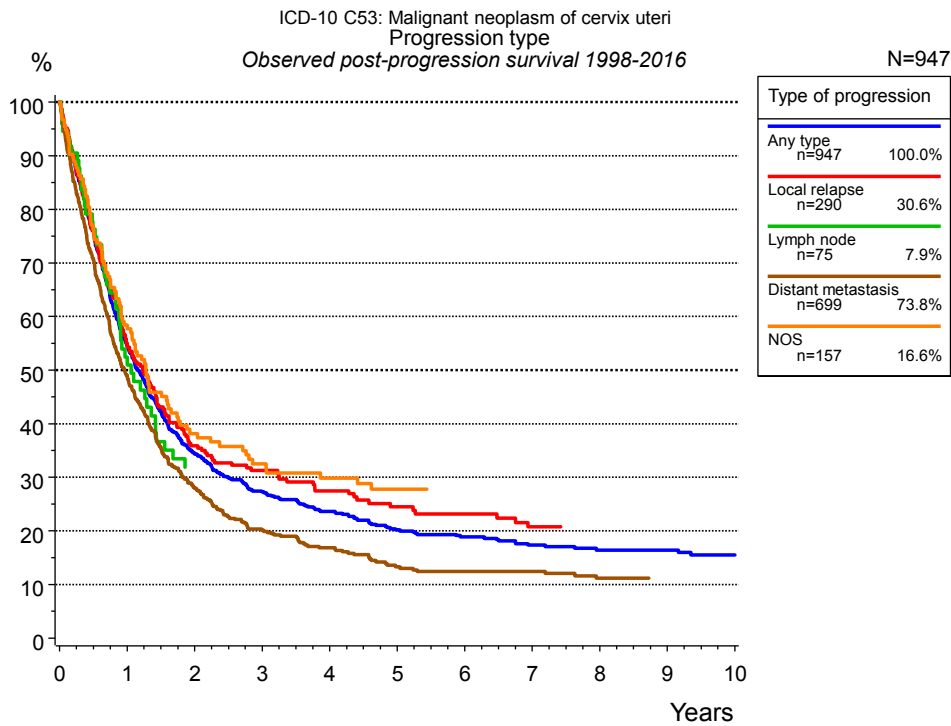


Figure 5c. Observed post-progression survival of 947 patients with cervical cancer diagnosed between 1998 and 2016. These 947 patients with documented progression events during their course of disease represent 27.9 % of the totally 3,400 evaluated cases (incl. M1, n=341, 10.0 %). Patients with cancer relapse documented via death certificates only were excluded (n=208, 6.1 %). 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=947 %	Local relapse n=290 %	Lymph node n=75 %	Distant metastasis n=699 %	NOS n=157 %
0	100.0	100.0	100.0	100.0	100.0
1	54.7	55.0	52.4	48.8	58.4
2	34.4	35.9		27.9	38.2
3	27.3	31.3		20.1	32.5
4	23.6	27.5		16.8	29.9
5	20.2	24.5		13.3	27.8
6	18.9	23.1		12.4	
7	17.3	20.8		12.4	
8	16.4			11.2	
9	16.4				
10	15.5				

Table 5d. Observed post-progression survival of patients with cervical cancer for period 1998-2016 (N=947).

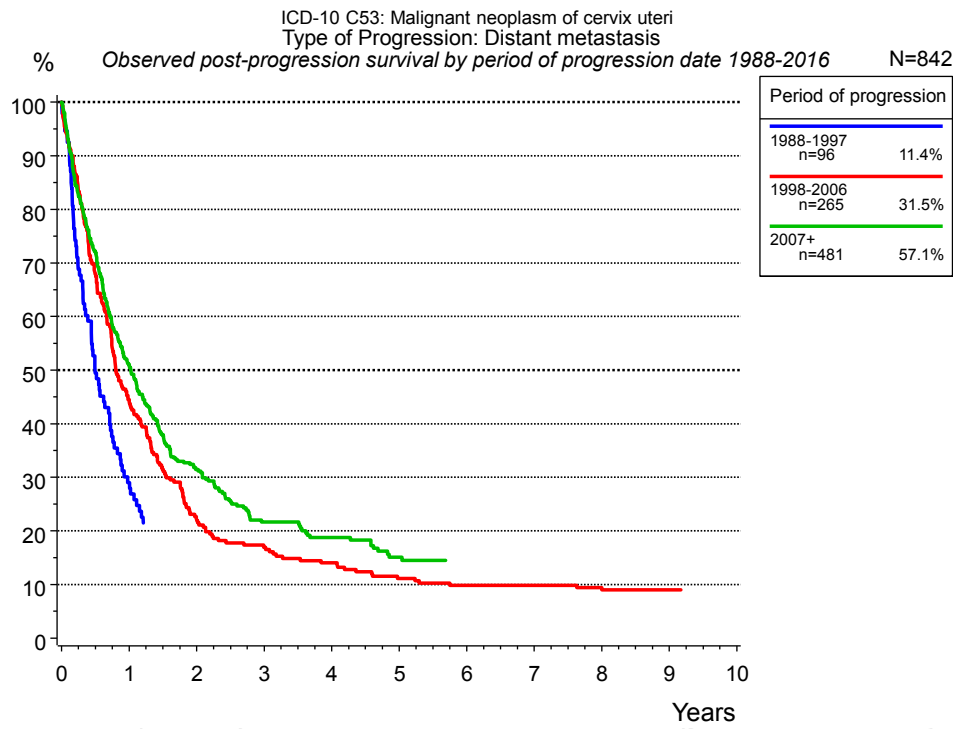


Figure 5e. Observed post-progression (distant metastasis) survival of 842 patients with cervical cancer diagnosed between 1988 and 2016 by period of progression.

Years	Period of progression		
	1988-1997 n=96 %	1998-2006 n=265 %	2007+ n=481 %
0	100.0	100.0	100.0
1	29.0	44.5	50.7
2		22.3	31.5
3		16.9	21.7
4		14.0	18.7
5		11.1	15.1
6		9.8	
7		9.8	
8		9.4	
9		9.0	

Table 5f. Observed post-progression (distant metastasis) survival of patients with cervical cancer for period 1988-2016 by period of progression (N=842).

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

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