

Munich Cancer Registry



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- *Deutsch*

ICD-10 C53: Cervical cancer

Survival

Year of diagnosis	1988-1997	1998-2014
Patients	1,238	3,716
Diseases	1,238	3,719
Cases evaluated	1,182	3,213
Creation date	03/02/2016	
Export date	12/23/2015	
Population (females)	2.36 m	



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Munich, 81377
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<http://www.tumorregister-muenchen.de/en>

http://www.tumorregister-muenchen.de/en/facts/surv/sC53__E-ICD-10-C53-Cervical-cancer-survival.pdf

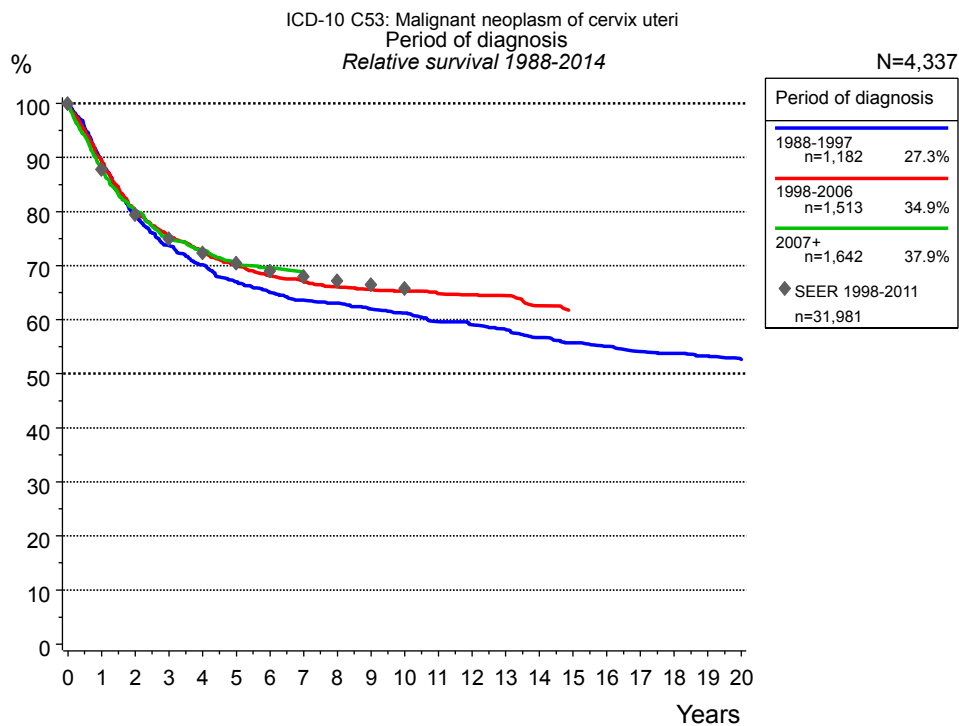


Figure 1a. Relative survival of patients with cervical cancer by period of diagnosis. Included in the evaluation are 4,337 cases diagnosed between 1988 and 2014.

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=1,182		1998-2006 n=1,513		2007+ n=1,642	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	88.1	89.4	88.2	89.2	86.9	87.7
2	76.9	79.1	78.6	80.2	78.9	80.2
3	70.8	73.7	73.5	75.5	73.5	75.1
4	66.7	70.2	70.4	72.8	70.9	72.9
5	62.9	67.0	67.1	70.0	68.2	70.5
6	60.4	65.0	64.9	68.1	67.0	69.6
7	58.5	63.6	63.6	67.0	66.1	68.8
8	57.4	63.1	62.2	66.0		
9	55.8	62.0	61.4	65.6		
10	54.5	61.2	60.7	65.3		
11	52.6	59.6	59.8	64.8		
12	51.6	59.1	59.3	64.6		
13	50.4	58.2	58.7	64.4		
14	48.7	56.7	56.6	62.6		
15	47.5	55.7				
16	46.4	55.1				
17	45.2	54.1				
18	44.7	53.8				
19	43.8	53.3				
20	42.6	52.7				

Table 1b. Observed (obs.) and relative (rel.) survival of patients with cervical cancer by period of diagnosis for period 1988-2014 (N=4,337).

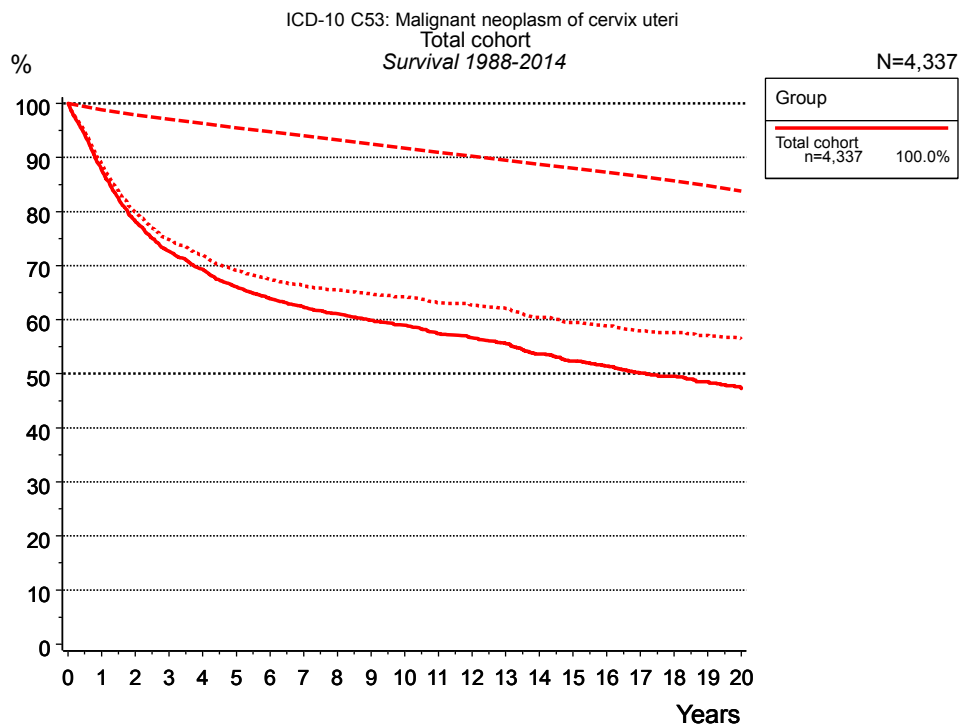


Figure 2a. Observed, expected and relative survival of the total cohort with cervical cancer. Included in the evaluation are 4,337 cases diagnosed between 1988 and 2014.

Years	Group	
	Total cohort n=4,337	
	obs. %	rel. %
0	100.0	100.0
1	87.6	88.7
2	78.2	79.9
3	72.7	74.8
4	69.4	72.0
5	66.1	69.2
6	63.9	67.4
7	62.4	66.3
8	61.1	65.5
9	59.9	64.8
10	58.9	64.2
11	57.4	63.1
12	56.6	62.7
13	55.6	62.1
14	53.7	60.4
15	52.4	59.5
16	51.4	58.9
17	50.1	58.0
18	49.6	57.6
19	48.6	57.1
20	47.3	56.4

Table 2b. Observed (obs.) and relative (rel.) survival of the total cohort with cervical cancer for period 1988-2014 (N=4,337).

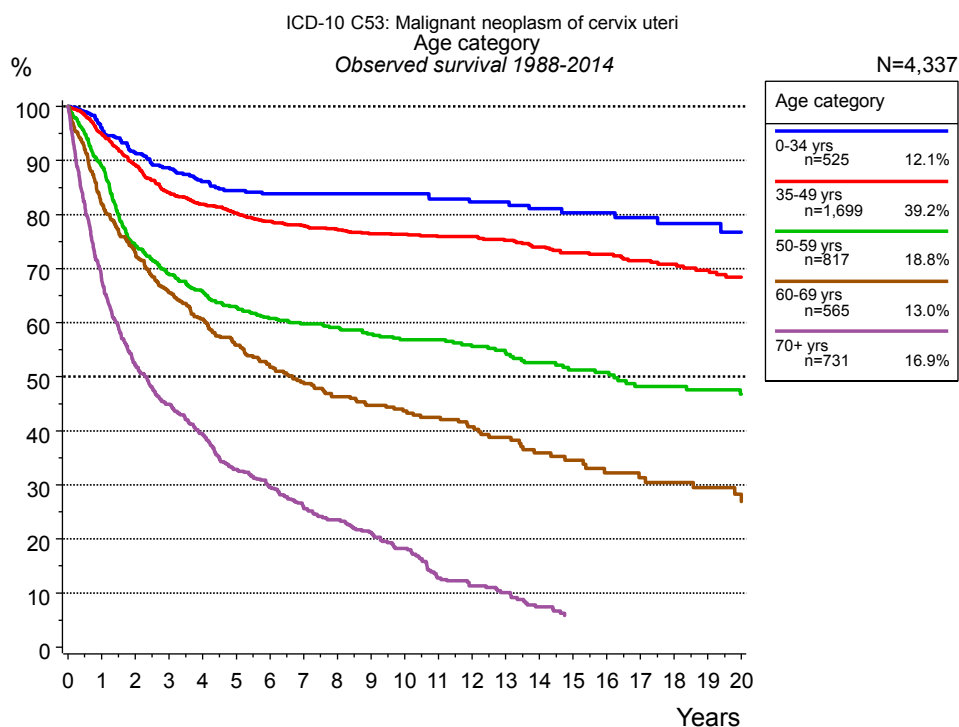


Figure 3a. Observed survival of patients with cervical cancer by age category. Included in the evaluation are 4,337 cases diagnosed between 1988 and 2014.

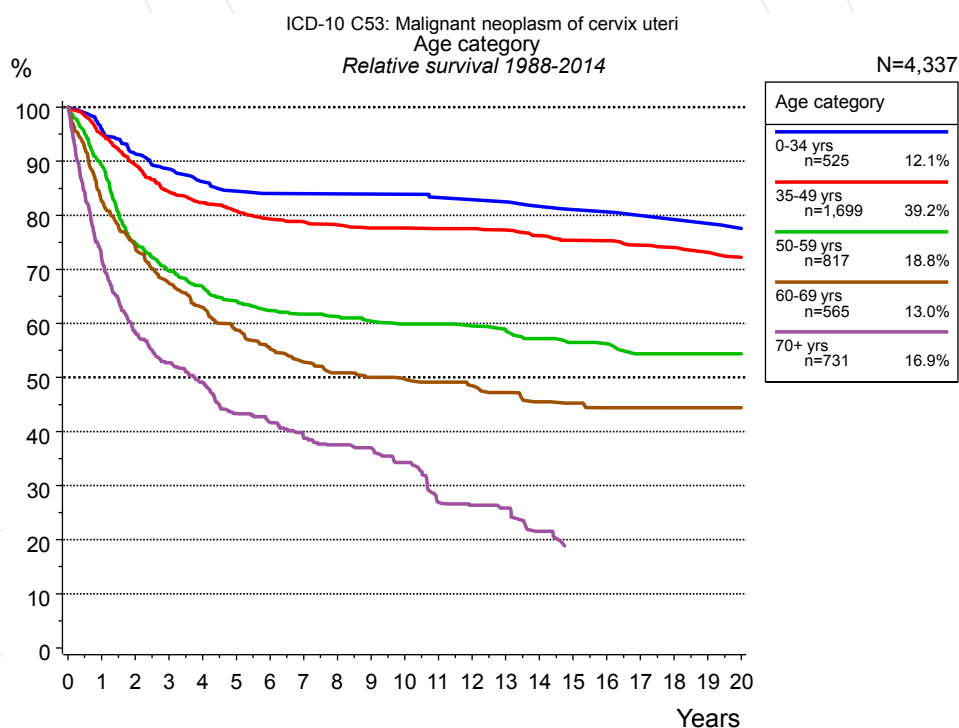


Figure 3b. Relative survival of patients with cervical cancer by age category. Included in the evaluation are 4,337 cases diagnosed between 1988 and 2014.

Years	Age category									
	0-34 yrs n=525		35-49 yrs n=1,699		50-59 yrs n=817		60-69 yrs n=565		70+ yrs n=731	
	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	96.1	96.0	94.9	95.0	88.9	89.2	81.9	82.6	68.0	72.0
2	91.5	91.4	89.2	89.4	74.2	74.7	72.9	74.0	52.2	58.3
3	88.7	88.6	84.1	84.4	68.9	69.7	65.5	67.4	44.9	52.7
4	86.1	86.2	81.9	82.3	65.9	66.8	60.7	63.0	39.5	49.1
5	84.4	84.5	80.3	80.8	62.8	64.2	55.9	58.8	32.9	43.3
6	83.8	84.0	78.7	79.3	60.8	62.4	51.8	55.3	29.5	41.7
7	83.8	84.0	78.0	78.8	59.8	61.7	49.0	52.8	26.0	38.8
8	83.8	84.0	77.3	78.2	59.1	61.3	46.3	50.9	23.5	37.5
9	83.8	83.9	76.5	77.7	57.9	60.4	44.7	50.0	21.3	37.0
10	83.8	83.9	76.3	77.6	56.9	59.9	43.7	49.7	18.3	34.3
11	82.9	83.3	75.9	77.5	56.9	59.9	42.5	49.1	12.8	26.9
12	82.3	82.9	75.9	77.5	55.6	59.6	40.8	48.5	11.4	26.4
13	82.3	82.5	75.2	77.3	54.5	58.7	38.8	47.2	10.1	25.9
14	81.1	81.6	74.0	76.2	52.6	57.2	35.9	45.5	7.4	21.5
15	80.4	81.1	72.9	75.4	51.3	56.5	34.6	45.3	5.9	18.6
16	80.4	80.6	72.6	75.3	50.8	56.3	32.2	44.4		
17	79.5	79.9	71.5	74.5	48.2	54.4	31.4	44.4		
18	78.4	79.2	70.8	74.0	48.2	54.4	30.5	44.4		
19	78.4	78.5	69.7	73.2	47.5	54.4	29.5	44.4		
20	76.8	77.6	68.4	72.2	46.8	54.4	26.9	44.4		

Table 3c. Observed (obs.) and relative (rel.) survival of patients with cervical cancer by age category for period 1988-2014 (N=4,337).

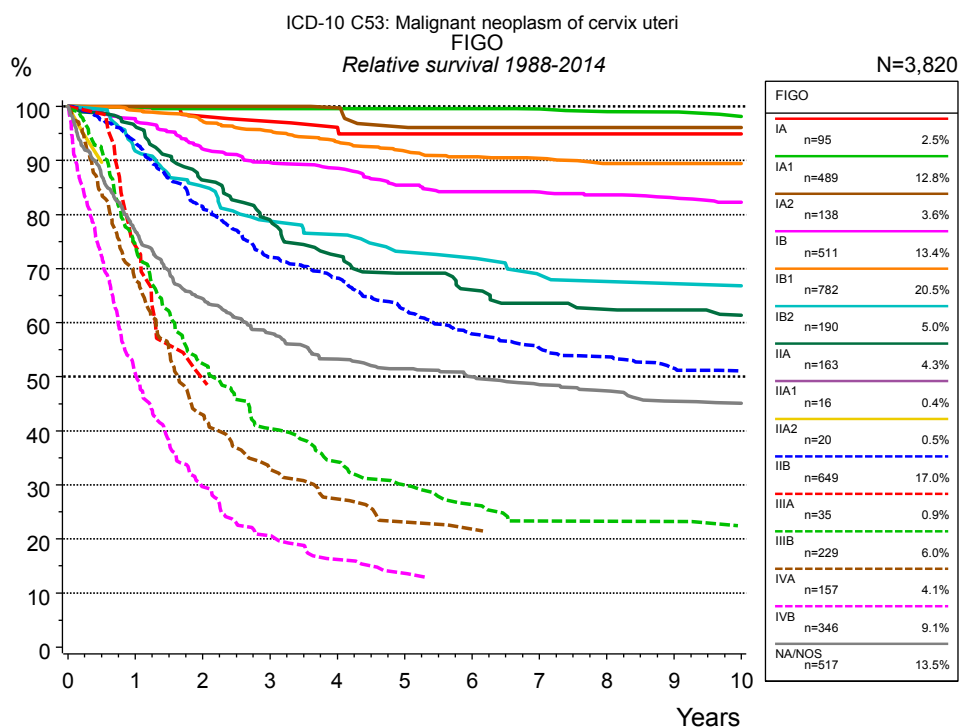


Figure 4a. Relative survival of patients with cervical cancer by FIGO. For 4,054 of 4,337 cases diagnosed between 1988 and 2014 valid data could be obtained for this item. For a total of 3,820 cases an evaluable classification was established. The grey line represents the subgroup of 517 patients with missing values regarding FIGO (11.9% of 4,337 patients, the percent values of all other categories are related to n=3,820).

FIGO															
	IA n=95		IA1 n=489		IA2 n=138		IB n=511		IB1 n=782		IB2 n=190		IIA n=163		
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	100.0	99.8	99.8	99.9	100.0	100.0	97.0	97.7	99.0	99.3	91.0	91.7	95.4	96.3	
2	97.7	98.2	99.3	99.6	100.0	100.0	90.8	92.1	96.5	97.2	84.0	85.2	84.0	86.4	
3	96.5	97.2	99.3	99.6	100.0	100.0	87.7	89.6	94.5	95.5	77.3	78.8	75.8	79.0	
4	95.3	96.1	99.3	99.6	99.1	99.7	86.1	88.6	92.1	93.4	74.5	76.3	68.8	72.4	
5	92.9	94.9	99.0	99.6	95.2	96.1	82.4	85.5	90.0	91.8	70.4	73.1	64.5	69.2	
6	92.9	94.9	98.3	99.6	94.1	96.1	80.6	84.2	88.6	90.7	69.5	72.0	60.9	66.0	
7	91.6	94.9	97.9	99.5	94.1	96.1	80.1	84.2	87.9	90.4	65.4	68.8	57.9	63.6	
8	91.6	94.9	97.0	99.0	94.1	96.1	78.9	83.6	86.3	89.5	64.3	67.6	56.3	62.5	
9	91.6	94.9	96.5	98.9	94.1	96.1	77.7	83.1	86.0	89.5	64.3	67.2	55.4	62.3	
10	91.6	94.9	95.4	98.2	92.5	96.1	76.5	82.3	86.0	89.5	64.3	66.8	53.6	61.4	

FIGO															
cont'd	IIA1 n=16		IIA2 n=20		IIB n=649		IIIA n=35		IIIB n=229		IVA n=157		IVB n=346		
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			89.5	87.3	91.9	93.4	73.5	74.2	72.7	74.2	66.2	67.9	50.0	50.6	
2			89.5	82.4	79.1	81.4	49.1	49.6	50.9	52.5	41.6	43.0	29.1	29.6	
3					69.0	72.1			38.5	40.4	30.6	32.9	20.5	20.6	
4					64.5	68.3			32.5	34.3	25.4	27.4	15.9	16.2	
5					58.0	62.4			27.9	30.0	21.1	23.2	13.7	13.6	
6					53.0	57.9			24.3	26.4	19.8	21.8	12.4	12.6	
7					50.0	55.3			21.0	23.4			12.4	12.3	
8					48.0	53.7			21.0	23.3					
9					45.4	51.6			21.0	23.3					
10					44.2	51.1			19.3	22.4					

<i>cont'd</i>	FIGO	
	NA/NOS n=517	
Years	obs. %	rel. %
0	100.0	100.0
1	74.9	76.9
2	61.6	64.4
3	54.9	58.1
4	49.7	53.3
5	47.5	51.5
6	45.6	50.0
7	43.8	48.5
8	42.3	47.4
9	40.0	45.5
10	39.5	45.1

Table 4b. Observed (obs.) and relative (rel.) survival of patients with cervical cancer by FIGO for period 1988-2014 (N=3,820).

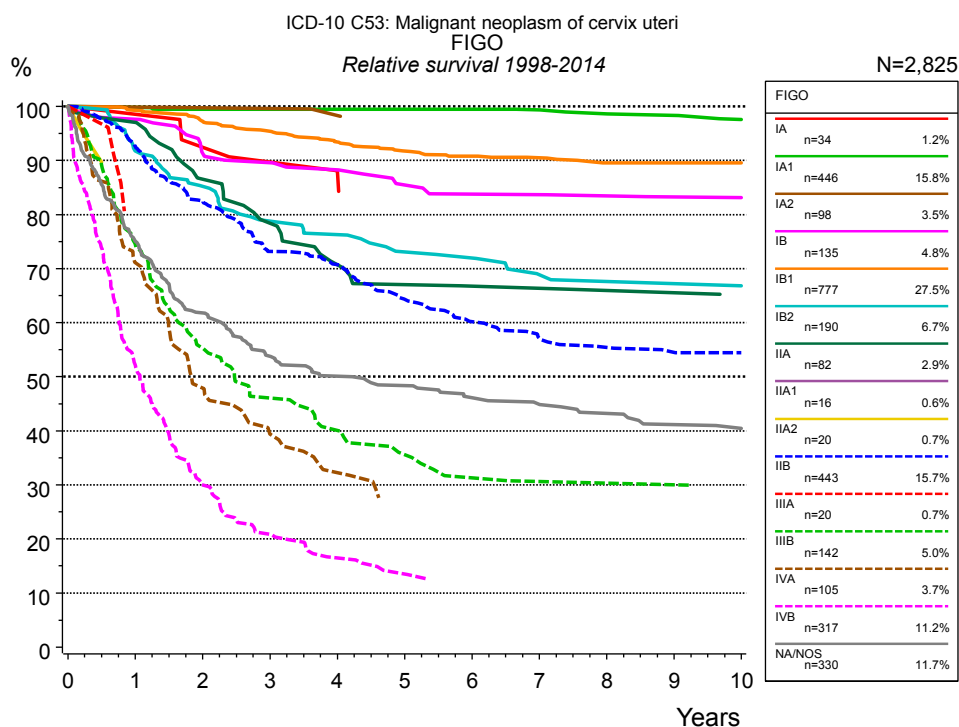


Figure 4c. Relative survival of patients with cervical cancer by FIGO. For 2,957 of 3,155 cases diagnosed between 1998 and 2014 valid data could be obtained for this item. For a total of 2,825 cases an evaluable classification was established. The grey line represents the subgroup of 330 patients with missing values regarding FIGO (10.5% of 3,155 patients, the percent values of all other categories are related to n=2,825).

FIGO															
	IA n=34		IA1 n=446		IA2 n=98		IB n=135		IB1 n=777		IB2 n=190		IIA n=82		
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	100.0	98.6	99.8	99.8	100.0	99.9	97.7	97.7	99.0	99.3	91.0	91.7	97.4	97.1	
2	92.6	92.4	99.2	99.5	100.0	99.7	90.5	91.3	96.5	97.2	84.0	85.2	85.3	86.5	
3	88.9	89.7	99.2	99.5	100.0	99.6	88.8	89.6	94.5	95.4	77.3	78.8	77.0	78.4	
4	88.9	88.1	99.2	99.5	98.7	98.3	87.0	88.3	92.0	93.4	74.5	76.3	68.8	70.7	
5			99.2	99.5			83.0	85.4	90.0	91.8	70.4	73.1	64.5	67.0	
6			98.4	99.5			81.0	83.8	88.7	90.8	69.5	72.0	63.1	66.7	
7			97.9	99.3			81.0	83.7	88.0	90.5	65.4	68.8	63.1	66.3	
8			96.9	98.6			79.8	83.5	86.4	89.6	64.3	67.6	61.3	65.9	
9			96.3	98.3			78.5	83.3	86.0	89.6	64.3	67.2	61.3	65.5	
10			94.8	97.6			78.5	83.1	86.0	89.6	64.3	66.8	59.0	63.4	

FIGO															
cont'd	IIA1 n=16		IIA2 n=20		IIB n=443		IIIA n=20		IIIB n=142		IVA n=105		IVB n=317		
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			89.5	87.3	91.4	92.6			73.3	74.4	69.6	71.1	51.4	52.0	
2			89.5	82.4	80.6	82.5			54.2	55.3	47.0	47.9	29.5	30.0	
3					70.4	73.2			44.6	46.1	37.1	39.4	20.8	20.9	
4					67.5	70.8			38.7	40.1	30.4	32.3	16.3	16.5	
5					60.4	64.3			33.6	35.6	25.1	26.9	13.7	13.5	
6					56.0	60.2			29.2	31.3			12.1	12.3	
7					52.8	57.1			27.9	30.6			12.1	11.9	
8					50.8	55.4			27.9	30.3					
9					49.6	54.5			27.9	30.0					
10					49.0	54.4									

<i>cont'd</i>	FIGO	
	NA/NOS n=330	
Years	obs. %	rel. %
0	100.0	100.0
1	72.8	75.1
2	59.0	61.8
3	50.7	53.8
4	46.7	50.1
5	44.7	48.4
6	42.3	46.1
7	41.0	44.9
8	39.1	43.2
9	36.8	41.2
10	36.2	40.5

Table 4d. Observed (obs.) and relative (rel.) survival of patients with cervical cancer by FIGO for period 1998-2014 (N=2,825).

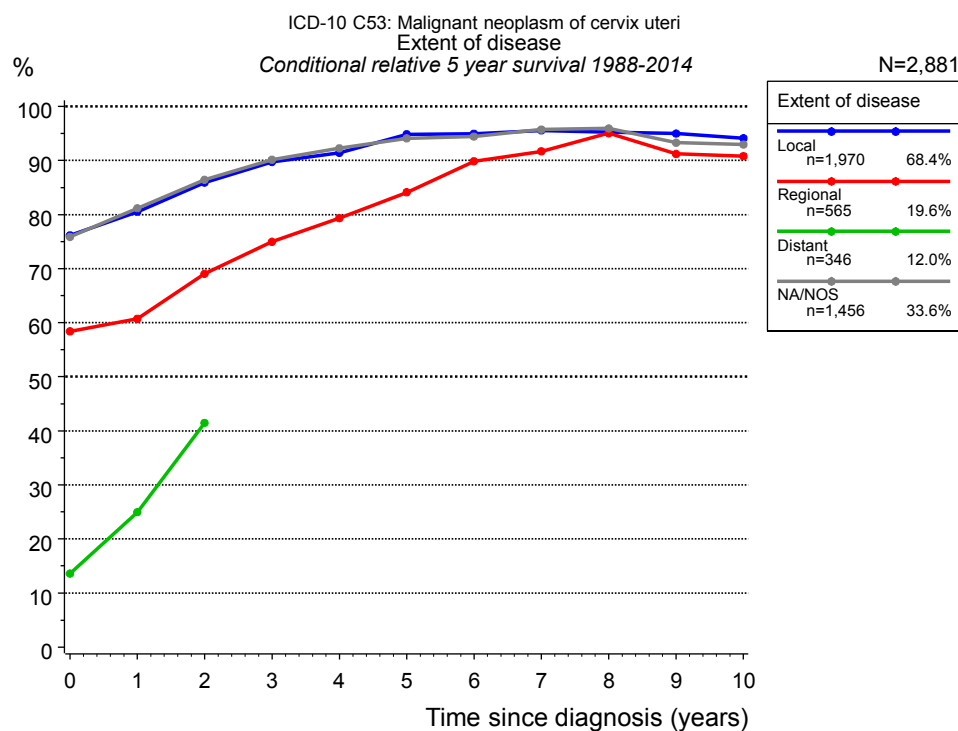


Figure 4e. Conditional relative 5-year survival of patients with cervical cancer by extent of disease. For 4,054 of 4,337 cases diagnosed between 1988 and 2014 valid data could be obtained for this item. For a total of 2,881 cases an evaluable classification was established. The grey line represents the subgroup of 1,456 patients with missing values regarding extent of disease (33.6% of 4,337 patients, the percent values of all other categories are related to n=2,881).

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	1,970	76.2	565	58.4	346	13.6	1,456	75.9
1	1,665	80.5	458	60.7	158	25.0	1,238	81.2
2	1,436	85.9	353	69.0	76	41.5	1,081	86.4
3	1,257	89.7	280	75.0			986	90.1
4	1,114	91.4	239	79.3			903	92.2
5	977	94.8	203	84.1			828	94.1
6	903	95.0	166	89.9			733	94.4
7	817	95.6	142	91.7			621	95.7
8	755	95.2	127	95.1			544	95.9
9	677	95.0	114	91.2			478	93.3
10	614	94.1	101	90.8			414	93.0

Table 4f. Conditional relative 5-year survival of patients with cervical cancer by extent of disease for period 1988-2014 (N=2,881).

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 89.7% (n=1,257).

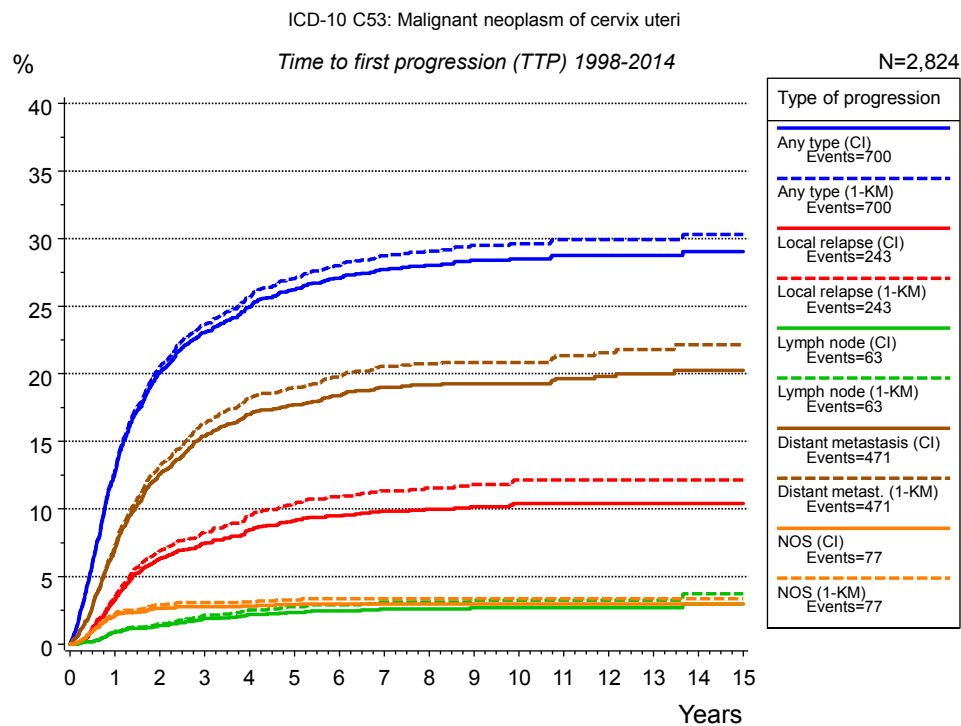


Figure 5a. Time to first progression of 2,824 patients with cervical cancer diagnosed between 1998 and 2014 (M0 only in solid cancers) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency 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=2,824 %	n=2,824 %	n=2,824 %	n=2,824 %	n=2,824 %	n=2,824 %	n=2,824 %
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	12.8	13.0	3.3	3.5	0.9	1.0	7.1
2	20.1	20.5	6.3	6.9	1.4	1.5	12.6
3	23.0	23.6	7.4	8.3	1.9	2.2	15.4
4	24.9	25.6	8.4	9.5	2.2	2.5	17.0
5	26.2	27.0	9.1	10.4	2.4	2.8	17.7
6	27.1	28.0	9.5	10.9	2.5	2.9	18.4
7	27.7	28.7	9.8	11.3	2.6	3.1	19.0
8	28.0	29.1	10.0	11.6	2.6	3.1	19.2
9	28.4	29.5	10.2	11.8	2.7	3.3	19.3
10	28.5	29.6	10.4	12.1	2.7	3.3	19.3
11	28.8	29.9	10.4	12.1	2.7	3.3	19.6
12	28.8	29.9	10.4	12.1	2.7	3.3	19.8
13	28.8	29.9	10.4	12.1	2.7	3.3	20.0
14	29.0	30.3	10.4	12.1	3.0	3.7	20.2
15	29.0	30.3	10.4	12.1	3.0	3.7	20.2

<i>cont'd</i>	Type of progression		
	Distant metast. (1- KM)	NOS (CI)	NOS (1-KM)
	n=2,824	n=2,824	n=2,824
Years	%	%	%
0	0.0	0.0	0.0
1	7.4	2.1	2.2
2	13.2	2.6	2.9
3	16.3	2.8	3.1
4	18.1	2.8	3.1
5	19.0	2.9	3.3
6	19.8	3.0	3.4
7	20.5	3.0	3.4
8	20.7	3.0	3.4
9	20.8	3.0	3.4
10	20.8	3.0	3.4
11	21.4	3.0	3.4
12	21.6	3.0	3.4
13	21.8	3.0	3.4
14	22.1	3.0	3.4
15	22.1	3.0	3.4

Table 5b. Time to first progression of patients with cervical cancer for period 1998-2014 (N=2,824).

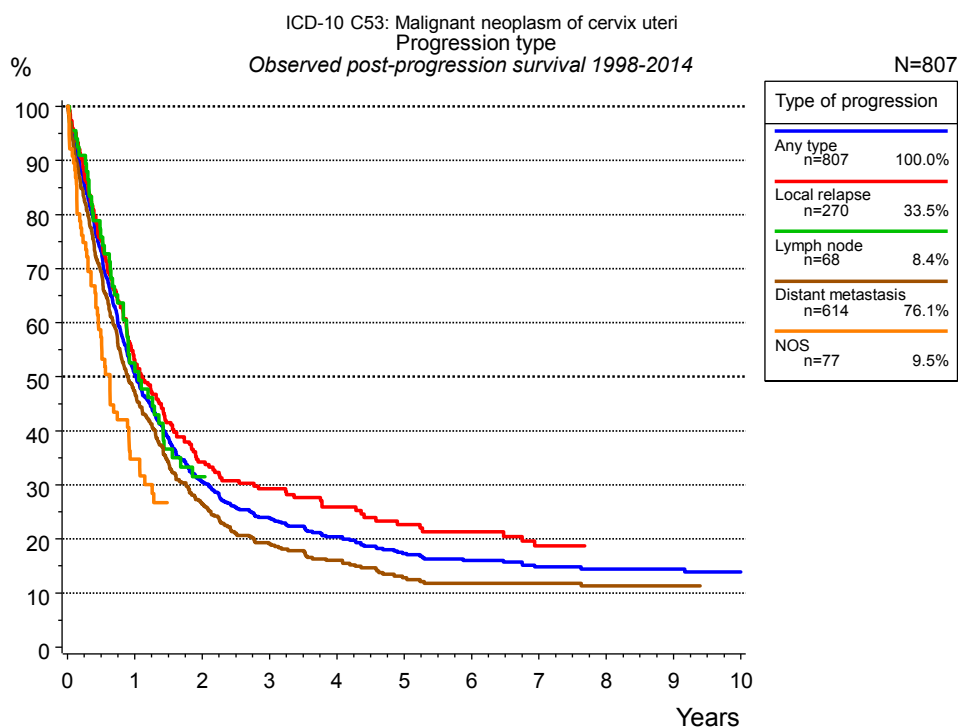


Figure 5c. Observed post-progression survival of 807 patients with cervical cancer diagnosed between 1998 and 2014. These 807 patients with documented progression events during their course of disease represent 25.8 % of the totally 3,130 evaluated cases (incl. M1, n=306, 9.8 %). Patients with cancer relapse documented via death certificates only were excluded (n=199, 6.4 %). 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=807 %	Local relapse n=270 %	Lymph node n=68 %	Distant metastasis n=614 %	NOS n=77 %
0	100.0	100.0	100.0	100.0	100.0
1	50.5	53.2	52.5	47.2	34.8
2	30.5	34.2	31.5	26.4	
3	23.8	29.3		19.1	
4	20.4	25.9		16.1	
5	17.3	22.7		12.8	
6	16.1	21.3		11.8	
7	14.8	18.7		11.8	
8	14.5	18.7		11.3	
9	14.5	18.7		11.3	
10	13.9			11.3	

Table 5d. Observed post-progression survival of patients with cervical cancer for period 1998-2014 (N=807).

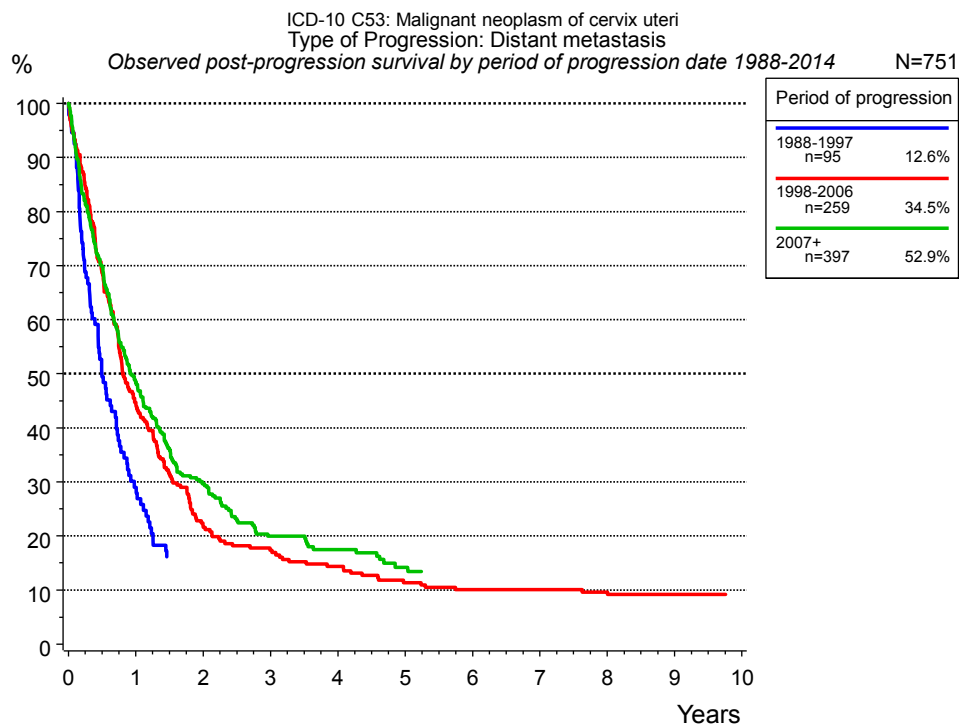


Figure 5e. Observed post-progression (distant metastasis) survival of 751 patients with cervical cancer diagnosed between 1988 and 2014 by period of progression.

Years	Period of progression		
	1988-1997 n=95 %	1998-2006 n=259 %	2007+ n=397 %
0	100.0	100.0	100.0
1	29.0	44.7	48.3
2		22.0	29.7
3		17.4	20.0
4		14.4	17.5
5		11.4	14.2
6		10.1	13.4
7		10.1	13.4
8		9.6	
9		9.2	
10		9.2	

Table 5f. Observed post-progression (distant metastasis) survival of patients with cervical cancer for period 1988-2014 by period of progression (N=751).

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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