Munich Cancer Registry

Munich Cancer Registry at Munich Cancer Center
Marchioninistr. 15
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Germany

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

Cancer statistics: Survival

C56, D39.1: Ovarian cancer

Year of diagnosis	1988-2012
Patients	8,314
Diseases	8,334
Cases evaluated	4,657
Creation date	03/25/2014
Export date	02/12/2014
Population (females)	2.3 m

C56, D39.1: Malignant neoplasm of ovary (incl. borderline)
Period of diagnosis
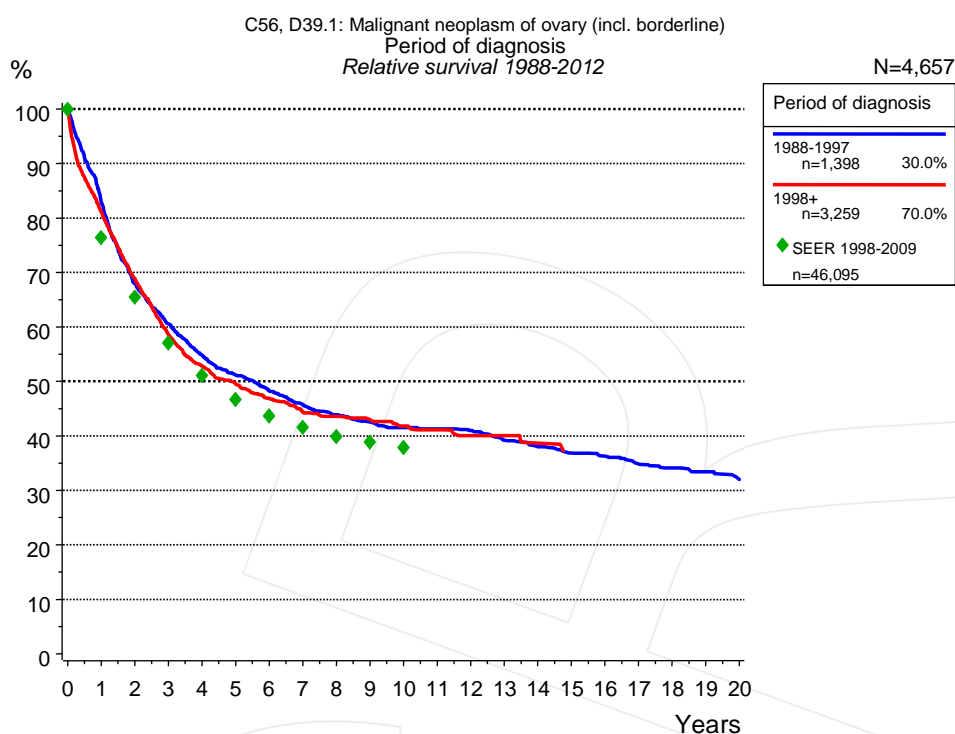*Relative survival 1988-2012*　　　　　　　　　N=4,657

Figure 1a. Relative survival of patients with ovarian cancer by period of diagnosis. Included in the evaluation are 4,657 cases diagnosed between 1988 and 2012.

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 1988, 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.

	Period of diagnosis			
	1988-1997 n=1,398		1998+ n=3,259	
Years	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	81.5	83.0	79.5	81.1
2	65.8	68.0	66.4	68.8
3	57.8	60.5	55.8	58.6
4	51.5	54.8	49.6	52.8
5	47.4	51.1	46.0	49.5
6	44.1	48.2	42.9	46.9
7	41.2	45.7	40.2	44.5
8	38.9	43.9	38.9	43.5
9	37.2	42.5	37.8	43.0
10	35.9	41.5	36.2	41.8
11	35.2	41.3	35.1	41.1
12	34.2	41.0	33.6	40.1
13	32.3	39.2	32.9	40.1
14	30.7	38.0	31.4	38.7
15	29.4	36.8		
16	28.5	36.3		
17	27.0	34.8		
18	26.0	34.1		
19	25.1	33.4		
20	23.6	32.0		

Table 1b. Observed (obs.) and relative (rel.) survival of patients with ovarian cancer by period of diagnosis for period 1988-2012 (N=4,657).

C56, D39.1: Malignant neoplasm of ovary (incl. borderline)
Total cohort
Survival 1988-2012

N=4,657

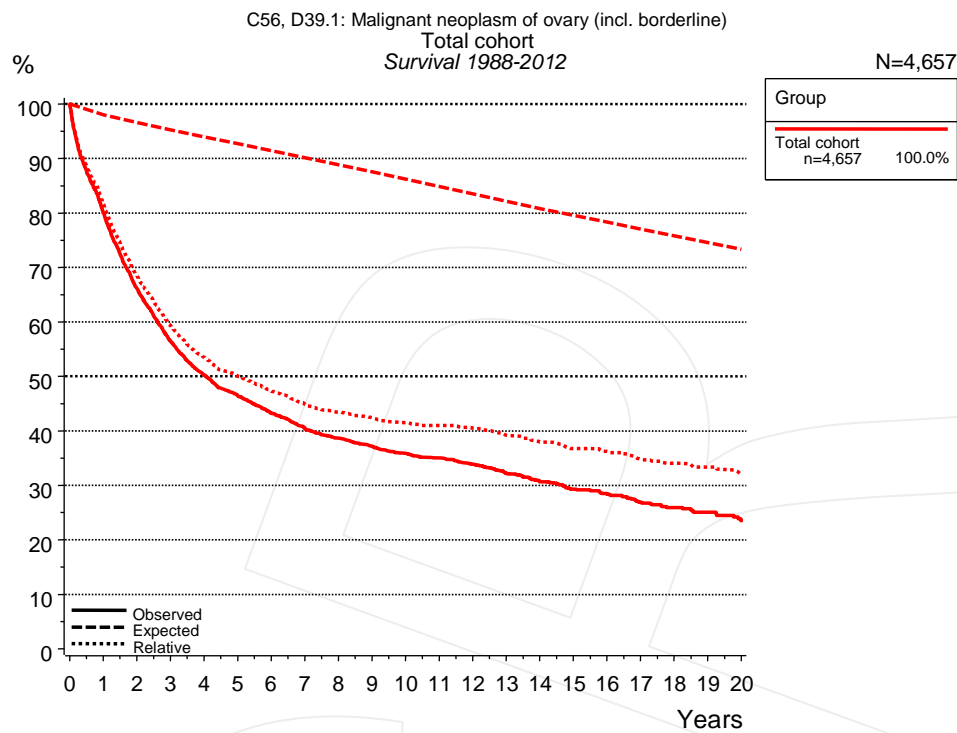| Group		
Total cohort		
n=4,657		
Years	obs. %	rel. %
0	100.0	100.0
1	80.1	81.7
2	66.2	68.5
3	56.5	59.3
4	50.3	53.5
5	46.4	50.1
6	43.2	47.3
7	40.4	44.8
8	38.6	43.4
9	37.2	42.4
10	35.8	41.5
11	35.0	41.0
12	33.9	40.5
13	32.2	39.2
14	30.7	38.0
15	29.3	36.8
16	28.4	36.2
17	26.9	34.8
18	25.9	34.1
19	25.1	33.4
20	23.5	32.0

Figure 2a. Observed, expected and relative survival of the total cohort with ovarian cancer. Included in the evaluation are 4,657 cases diagnosed between 1988 and 2012.

Table 2b. Observed (obs.) and relative (rel.) survival of the total cohort with ovarian cancer for period 1988-2012 (N=4,657).

C56, D39.1: Malignant neoplasm of ovary (incl. borderline)
Age category
Relative survival 1988-2012

N=4,657

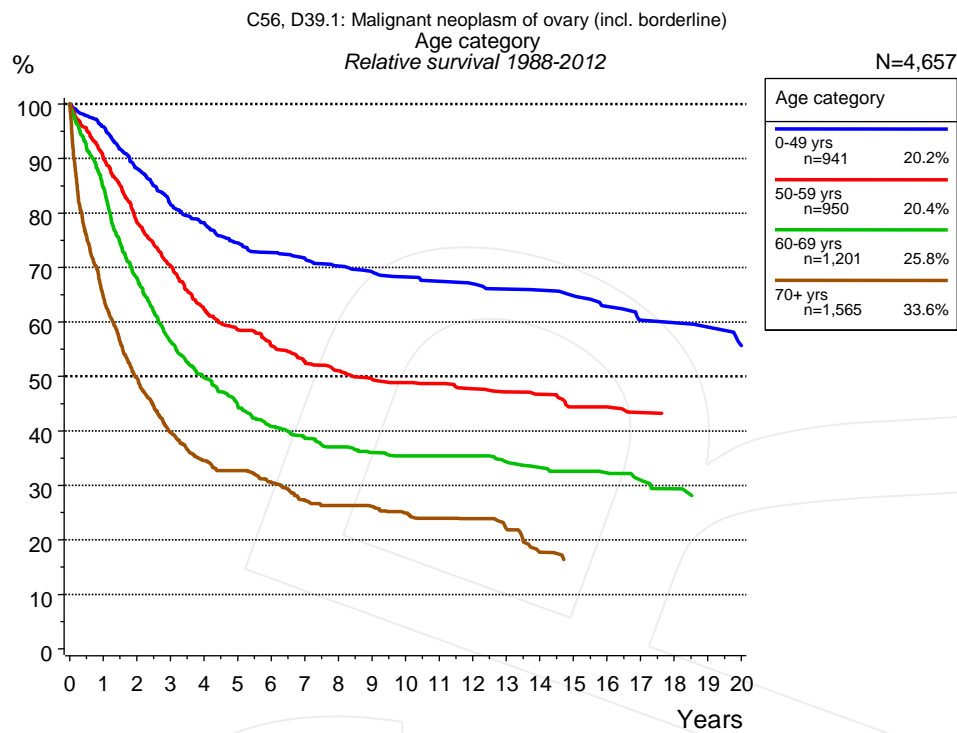| Age category		
0-49 yrs		
n=941	20.2%	
50-59 yrs		
n=950	20.4%	
60-69 yrs		
n=1,201	25.8%	
70+ yrs		
n=1,565	33.6%	

Figure 3a. Relative survival of patients with ovarian cancer by age category. Included in the evaluation are 4,657 cases diagnosed between 1988 and 2012.
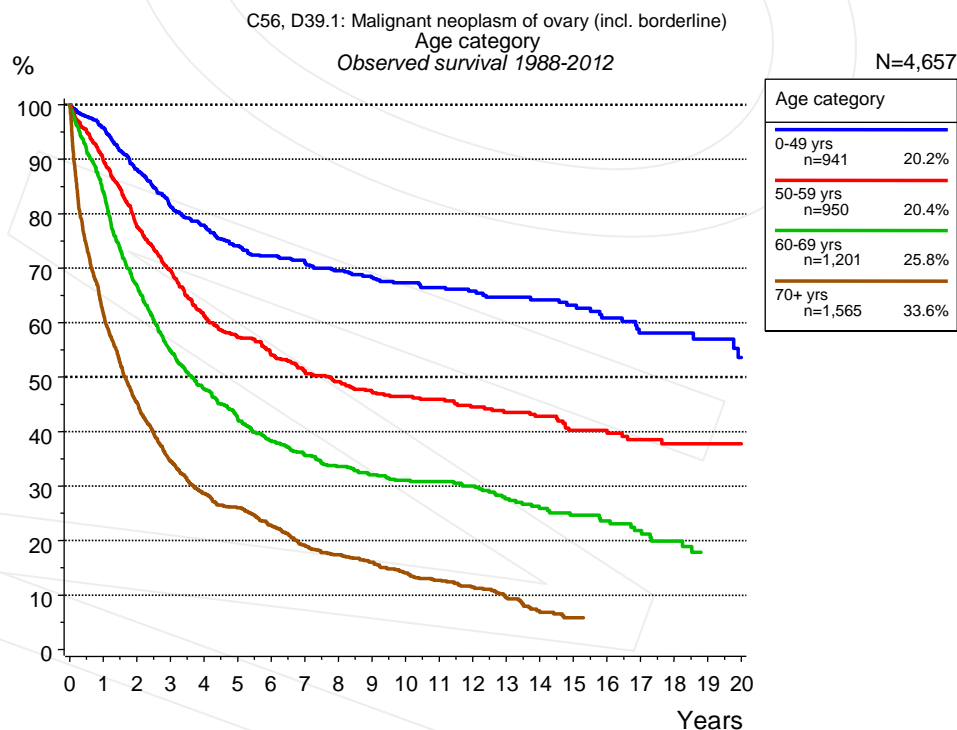
C56, D39.1: Malignant neoplasm of ovary (incl. borderline)
Age category
Observed survival 1988-2012

N=4,657

Age category		
0-49 yrs		
n=941	20.2%	
50-59 yrs		
n=950	20.4%	
60-69 yrs		
n=1,201	25.8%	
70+ yrs		
n=1,565	33.6%	

Figure 3b. Observed survival of patients with ovarian cancer by age category. Included in the evaluation are 4,657 cases diagnosed between 1988 and 2012.

| | Age category | | | | | | | |
| | 0-49 yrs n=941 | | 50-59 yrs n=950 | | 60-69 yrs n=1,201 | | 70+ yrs n=1,565 | |
Years	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	95.8	95.8	89.8	90.1	84.0	84.7	61.6	64.7
2	88.1	88.2	77.6	78.2	66.8	68.1	45.3	49.7
3	81.4	81.6	69.5	70.4	54.9	56.4	34.6	39.7
4	77.9	78.2	61.2	62.3	47.8	49.8	28.7	34.5
5	74.1	74.5	57.3	58.6	42.4	44.7	26.0	32.7
6	72.2	72.7	54.0	55.6	38.3	40.9	22.8	30.6
7	71.0	71.7	51.2	52.8	35.6	38.6	19.1	27.2
8	69.5	70.3	49.1	51.0	33.6	37.0	17.4	26.3
9	68.3	69.2	47.3	49.5	32.1	36.0	16.0	26.2
10	67.3	68.3	46.4	48.9	31.0	35.4	14.0	24.9
11	66.4	67.5	45.9	48.7	30.8	35.4	12.7	24.0
12	65.8	67.0	44.5	47.7	30.0	35.4	11.4	23.9
13	64.6	66.1	43.5	47.1	27.7	34.3	9.5	22.1
14	64.2	65.8	42.8	46.7	25.9	33.2	6.8	17.7
15	63.2	64.8	40.2	44.4	24.6	32.6	5.8	16.4
16	60.8	62.8	39.7	44.4	23.6	32.3		
17	58.1	60.3	38.5	43.4	21.8	30.9		
18	58.1	59.9	37.8	43.2	19.9	29.4		
19	56.9	59.1	37.8	43.2	17.9	28.1		
20	53.6	55.7	37.8	43.2				

Table 3c. Observed (obs.) and relative (rel.) survival of patients with ovarian cancer by age category for period 1988-2012 (N=4,657).
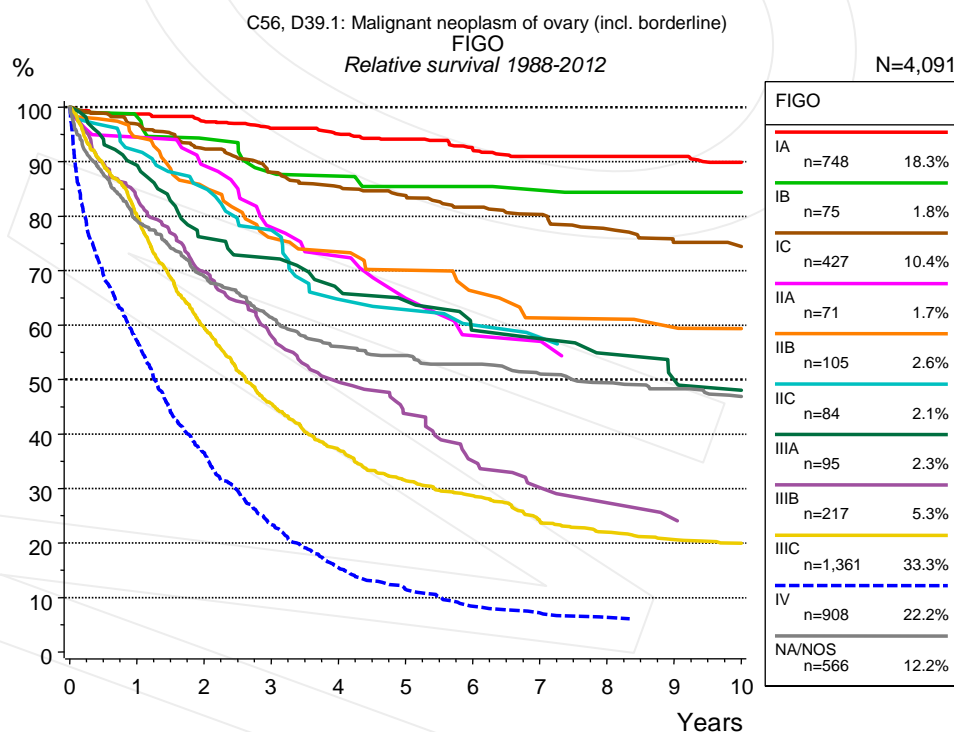

Figure 4a. Relative survival of patients with ovarian cancer by FIGO. For 4,261 of 4,657 cases diagnosed between 1988 and 2012 valid data could be obtained for this item. For a total of 4,091 cases an evaluable classification was established. The grey line represents the subgroup of 566 patients with missing values regarding FIGO (12.2% of 4,657 patients, the percent values of all other categories are related to n=4,091).

	IA n=748		IB n=75		IC n=427		IIA n=71		IIB n=105		IIC n=84		IIIA n=95	
FIGO														
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	97.6	98.7	97.2	98.2	95.7	96.9	92.9	94.5	93.0	94.6	91.5	92.0	89.2	89.3
2	95.0	97.4	91.3	94.2	90.1	92.4	86.4	89.3	83.1	85.4	83.8	85.1	74.3	76.0
3	92.7	96.2	85.1	87.9	84.7	88.0	74.4	78.0	72.5	76.0	75.4	77.4	70.6	72.2
4	90.5	95.1	83.5	87.3	81.3	85.4	69.0	72.7	69.9	73.4	61.2	64.8	63.9	66.5
5	88.6	94.1	79.9	85.5	78.9	83.7	59.4	64.9	65.3	70.1	59.5	62.8	61.1	64.4
6	85.5	92.2	79.9	85.5	75.9	81.6	52.5	58.1	60.1	66.2	55.8	60.1	54.6	59.0
7	83.4	91.0	77.8	84.7	73.9	80.3	52.5	57.0	54.7	61.3	53.7	57.7	52.9	57.5
8	82.6	91.0	75.3	84.4	70.3	77.6	47.3	53.0	54.7	61.1	51.6	56.4	49.1	54.7
9	81.2	91.0	75.3	84.4	67.1	75.2			52.7	59.6	51.6	56.1	44.8	49.8
10	78.7	89.8	75.3	84.4	65.8	74.4			50.6	59.3	51.6	55.8	42.7	48.1

FIGO								
cont'd	IIIB n=217		IIIC n=1,361		IV n=908		NA/NOS n=566	
Years	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	81.9	83.2	78.9	80.1	55.4	57.1	77.3	79.1
2	67.8	69.8	57.7	59.6	35.0	36.6	66.0	69.0
3	55.8	58.0	43.6	45.6	22.1	23.4	58.0	61.4
4	47.8	49.6	34.9	37.1	14.4	15.5	52.2	56.1
5	40.8	43.7	29.3	31.5	10.6	11.5	50.1	54.4
6	32.6	35.1	26.3	28.7	7.6	8.4	47.9	52.8
7	28.3	30.2	21.6	24.0	6.4	7.2	45.7	51.0
8	25.3	27.4	19.6	22.0	5.6	6.3	43.6	49.4
9	22.7	24.3	18.2	20.6	5.3	5.8	42.0	48.3
10			17.4	20.0			40.2	46.9

Table 4b. Observed (obs.) and relative (rel.) survival of patients with ovarian cancer by FIGO for period 1988-2012 (N=4,091).

C56, D39.1: Malignant neoplasm of ovary (incl. borderline)
FIGO
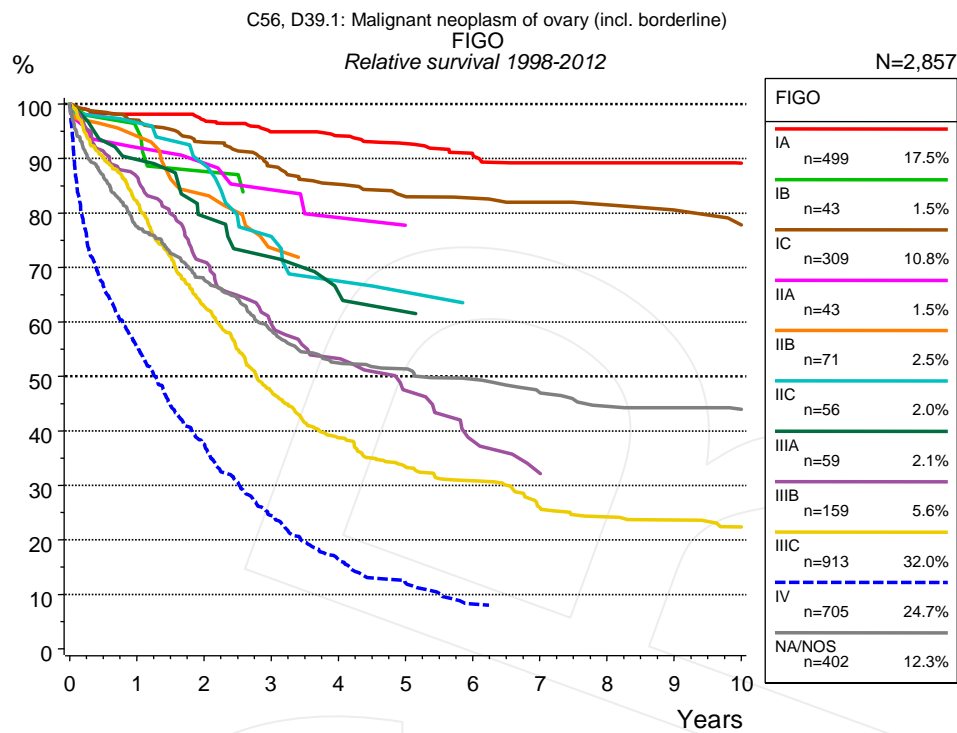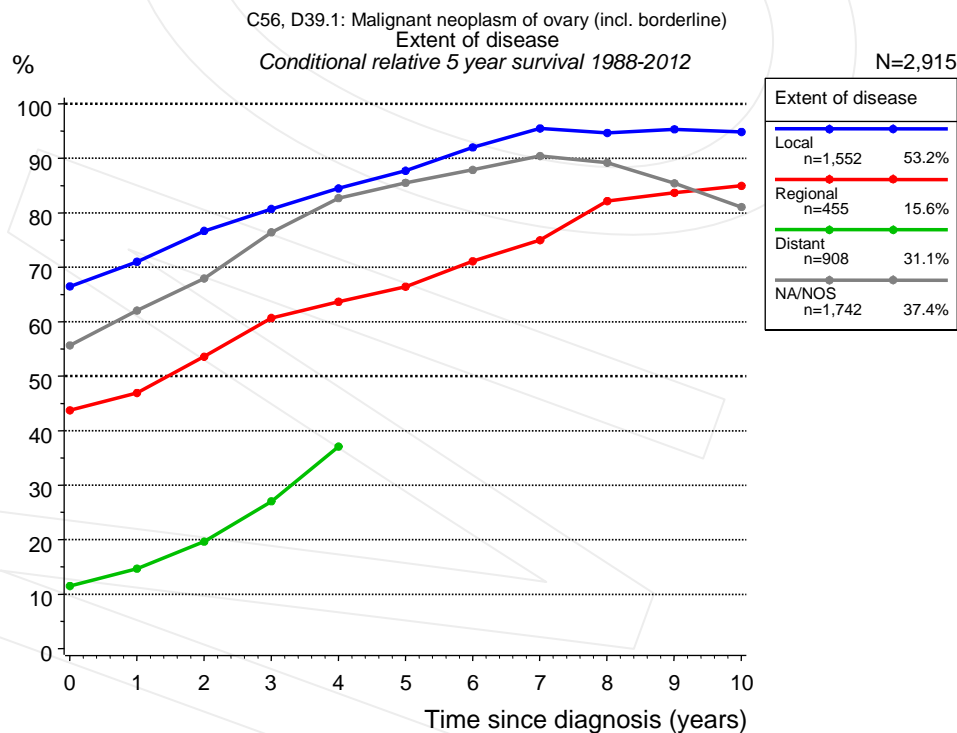*Relative survival 1998-2012*

N=2,857

Figure 4c. Relative survival of patients with ovarian cancer by FIGO. For 2,963 of 3,259 cases diagnosed between 1998 and 2012 valid data could be obtained for this item. For a total of 2,857 cases an evaluable classification was established. The grey line represents the subgroup of 402 patients with missing values regarding FIGO (12.3% of 3,259 patients, the percent values of all other categories are related to n=2,857).

	FIGO													
	IA n=499		IB n=43		IC n=309		IIA n=43		IIB n=71		IIC n=56		IIIA n=59	
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	97.1	98.1	95.0	95.4	96.0	97.0	90.6	92.0	92.5	94.1	96.4	96.6	89.6	89.8
2	95.0	97.0	87.1	87.6	90.9	93.0	87.7	89.2	81.9	83.3	88.2	88.9	77.9	79.4
3	91.9	94.9	80.9	83.0	85.4	88.5	81.5	84.3	70.1	73.6	74.8	75.7	71.4	71.9
4	90.3	94.2	80.9	81.1	81.6	85.3	74.4	79.1	67.8	71.9	65.7	67.5	63.9	65.4
5	88.1	92.7	80.9	79.1	78.8	83.0	70.3	77.8	67.8	71.9	62.7	65.5	61.2	61.9
6	85.3	90.6	80.9	77.2	77.5	82.7			67.8	71.9	59.0	62.9		
7	83.1	89.2	80.9	75.3	76.0	82.0			67.8	71.9				
8	83.1	89.2	80.9	73.3	75.1	81.5			67.8	71.9				
9	82.1	89.2	80.9	71.4	72.5	80.5								
10	80.8	89.1	80.9	69.5	70.4	77.8								

	FIGO							
cont'd	IIIB n=159		IIIC n=913		IV n=705		NA/NOS n=402	
Years	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	85.4	86.6	80.8	82.1	53.8	55.4	75.4	77.5
2	69.3	71.0	60.9	62.8	35.9	37.6	64.6	67.8
3	57.5	59.6	45.2	47.3	22.9	24.4	55.0	58.4
4	51.1	53.3	36.5	38.8	15.3	16.4	48.6	52.5
5	44.2	47.4	31.1	33.4	11.1	12.1	47.1	51.4
6	35.6	38.2	28.4	30.9	7.5	8.2	44.5	49.5
7	30.9	32.2	23.3	25.9			42.0	47.0
8	29.1	30.4	21.7	24.2			39.0	44.5
9			20.9	23.6			38.4	44.3
10			19.3	22.4			37.5	44.0

Table 4d. Observed (obs.) and relative (rel.) survival of patients with ovarian cancer by FIGO for period 1998-2012 (N=2,857).

C56, D39.1: Malignant neoplasm of ovary (incl. borderline)
Extent of disease
Conditional relative 5 year survival 1988-2012

Figure 4e. Conditional relative 5-year survival of patients with ovarian cancer by extent of disease. For 4,261 of 4,657 cases diagnosed between 1988 and 2012 valid data could be obtained for this item. For a total of 2,915 cases an evaluable classification was established. The grey line represents the subgroup of 1,742 patients with missing values regarding extent of disease (37.4% of 4,657 patients, the percent values of all other categories are related to n=2,915).

	Extent of disease							
	Local		Regional		Distant		NA/NOS	
		Cond. surv. %		Cond. surv. %		Cond. surv. %		Cond. surv. %
Years	n	5 yrs	n	5 yrs	n	5 yrs	n	5 yrs
0	1,552	66.5	455	43.7	908	11.5	1,742	55.7
1	1,297	71.0	363	46.9	476	14.7	1,397	62.0
2	1,073	76.7	250	53.6	264	19.6	1,099	67.9
3	924	80.7	173	60.7	151	27.0	857	76.4
4	788	84.5	141	63.7	87	37.1	665	82.7
5	691	87.7	113	66.4			551	85.5
6	590	92.0	96	71.1			462	87.9
7	527	95.5	80	75.0			380	90.4
8	468	94.7	68	82.2			326	89.2
9	415	95.3	60	83.7			277	85.4
10	377	94.8	51	85.0			228	81.1

Table 4f. Conditional relative 5-year survival of patients with ovarian cancer by extent of disease for period 1988-2012 (N=2,915).

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 80.7% (n=924).
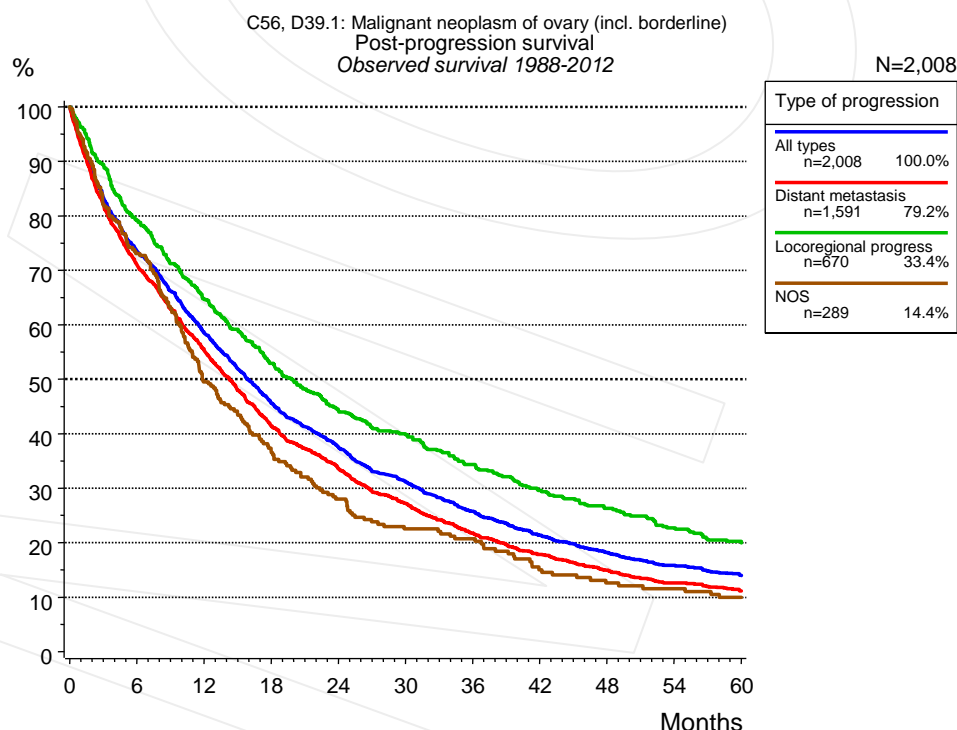

Figure 5a. Observed post-progression survival of 2,008 patients with ovarian cancer diagnosed between 1988 and 2012 (incl. M1). These 2,008 patients with documented progression events during their course of disease represent 43.1% of the totally 4,657 evaluated cases. Patients with cancer relapse documented via death certificates only were excluded (n=498, 10.7%). Multiple progression types on different sites are included in the evaluation even when not occuring

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 "All types" 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 potientially considered in more than one subgroup.

	Type of progression			
	All types	Distant metastasis	Locoregional progress	NOS
	n=2,008	n=1,591	n=670	n=289
Months	%	%	%	%
0	100.0	100.0	100.0	100.0
12	58.5	55.3	64.8	49.5
24	37.6	33.6	44.4	28.0
36	25.8	21.8	34.4	20.7
48	18.2	15.0	26.3	12.6
60	14.0	11.1	20.0	10.0

Table 5b. Observed post-progression survival of patients with ovarian cancer for period 1988-2012 (N=2,008).

Shortcuts

AS	Assembled survival chart (observed, expected, relative)
CS	Conditional survival
DCO	Death certificate only. The death certificate provides the only notification to the registry.
MCR	Munich Cancer Registry, Germany (Tumorregister München)
NA	Not available
NCI	National Cancer Institute, USA
NOS	Not otherwise specified
OS	Observed/overall survival (Kaplan-Meier estimate)
PPS	Post-progression survival
RS	Relative Survival. Ratio of observed and expected survival (derived from the normal population)
SEER	Surveillance, Epidemiology, and End Results, USA
TTP	Time to progression
	Date of entry: Date of diagnosis
	Event (Progression): First local recurrence, lymph node relapse or distant metastasis, unspecified recurrence
	First all-cause recurrence is illustrated by survival curves (Kaplan-Meier estimate).
	First local recurrence, lymph node relapse or distant metastasis are depicted cumulatively, where applicable ("reverse" Kaplan-Meier estimate).
UICC	Union for International Cancer Control, Geneva

Recommended Citation

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