Munich Cancer Registry

- Incidence and Mortality
- Selection Matrix
- Homepage
- *Deutsch*

ICD-10 C56: Ovarian cancer

Survival

Year of diagnosis	1988-1997	1998-2020
Patients	1,545	8,693
Diseases	1,545	8,696
Cases evaluated	1,345	6,196

Creation date	04/15/2022
Database export	12/20/2021
Population (females)	2.48 m

Munich Cancer Registry
Cancer Registry Bavaria - Upper Bavaria Regional Center
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Marchioninistr. 15
Munich, 81377
Germany

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

https://www.tumorregister-muenchen.de/en/facts/surv/sC56__E-ICD-10-C56-Ovarian-cancer-survival.pdf

Index of figures and tables

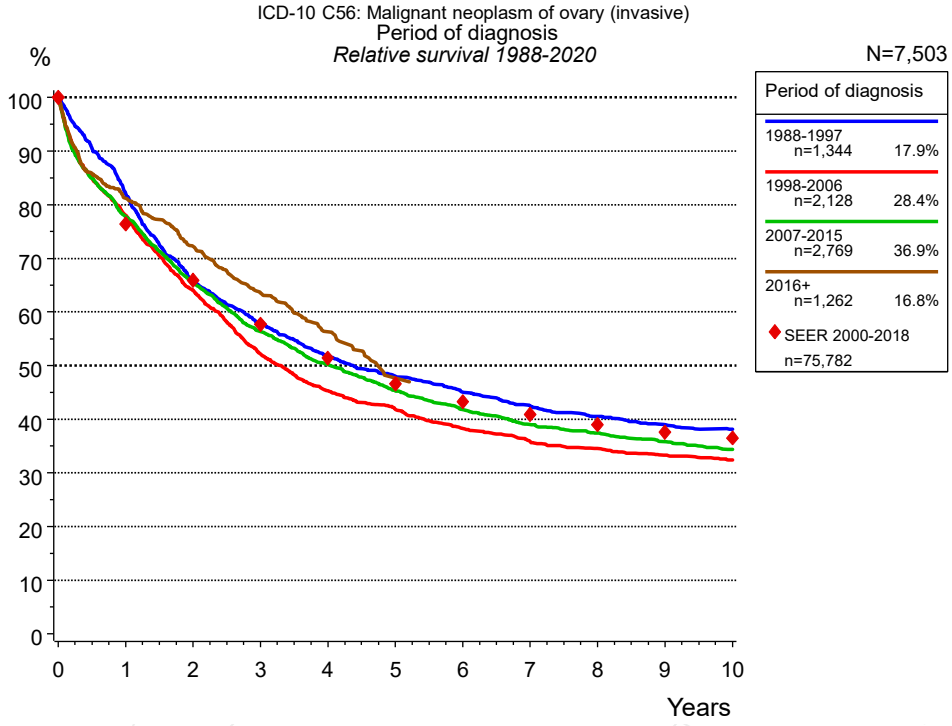

Figure 1a. Relative survival of patients with ovarian cancer by period of diagnosis. Included in the evaluation are 7,503 cases diagnosed between 1988 and 2020.

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 2018, 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.

	Period of diagnosis							
	1988-1997 n=1,344		1998-2006 n=2,128		2007-2015 n=2,769		2016+ n=1,262	
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	80.6	82.1	76.3	78.0	76.2	77.8	79.7	81.2
2	64.0	66.0	61.6	64.0	63.2	65.5	70.0	72.3
3	55.4	57.9	49.5	52.2	53.7	56.3	60.6	63.6
4	48.8	51.8	42.4	45.3	47.0	50.1	52.9	56.3
5	44.6	48.0	38.6	41.8	41.9	45.3	44.6	47.6
6	41.3	45.1	34.8	38.3	38.0	41.7		
7	38.3	42.5	32.1	35.9	35.0	39.0		
8	36.1	40.5	30.4	34.5	33.0	37.4		
9	34.2	39.0	28.9	33.3	31.1	35.9		
10	33.0	38.2	27.7	32.4	29.3	34.3		
Median	3.8		3.0		3.5		4.4	

Table 1b. Observed (obs.) and relative (rel.) survival of patients with ovarian cancer by period of diagnosis for period 1988-2020 (N=7,503).

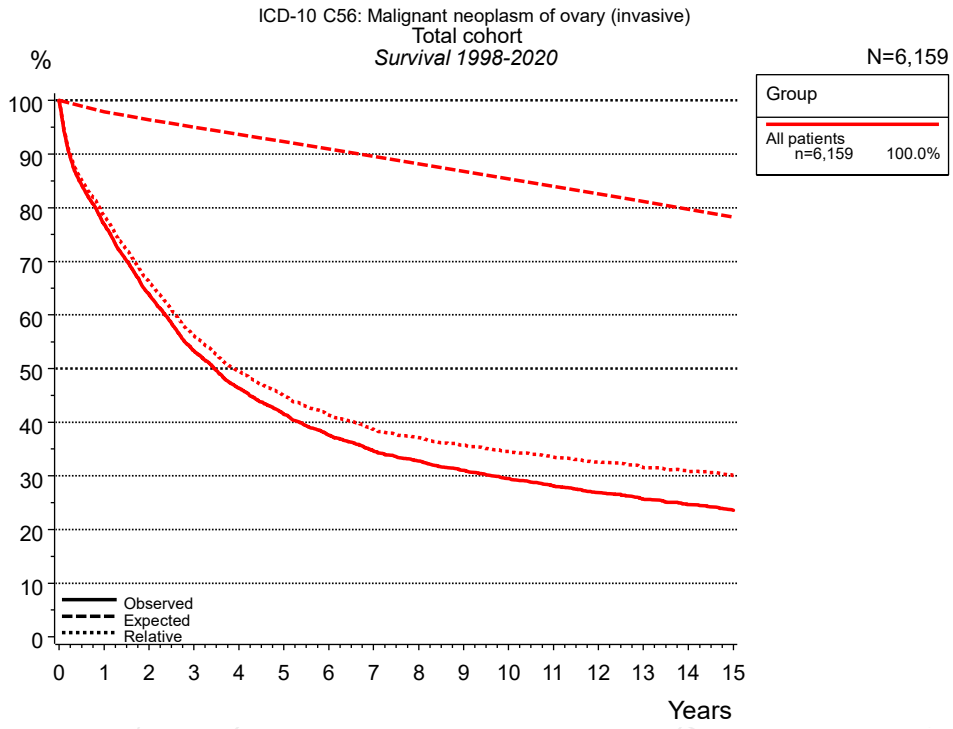

Figure 2a. Observed, expected and relative survival of the total cohort with ovarian cancer. Included in the evaluation are 6,159 cases diagnosed between 1998 and 2020.

	Group	
	All patients n=6,159	
Years	obs. %	rel. %
0	100.0	100.0
1	76.9	78.6
2	63.9	66.2
3	53.4	56.2
4	46.4	49.5
5	41.5	44.9
6	37.6	41.3
7	34.6	38.6
8	32.8	37.1
9	31.0	35.7
10	29.5	34.5
11	28.1	33.5
12	26.9	32.6
13	25.6	31.5
14	24.6	30.8
15	23.6	30.1
Median	3.5	

Table 2b. Observed (obs.) and relative (rel.) survival of the total cohort with ovarian cancer for period 1998-2020 (N=6,159).

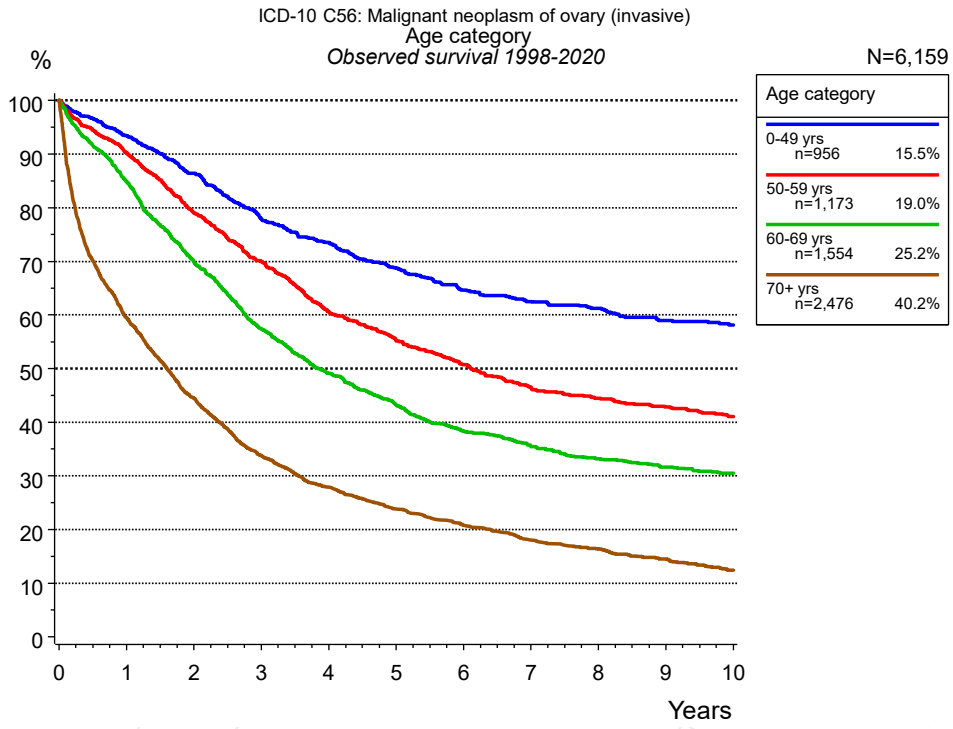

Figure 3a. Observed survival of patients with ovarian cancer by age category. Included in the evaluation are 6,159 cases diagnosed between 1998 and 2020.

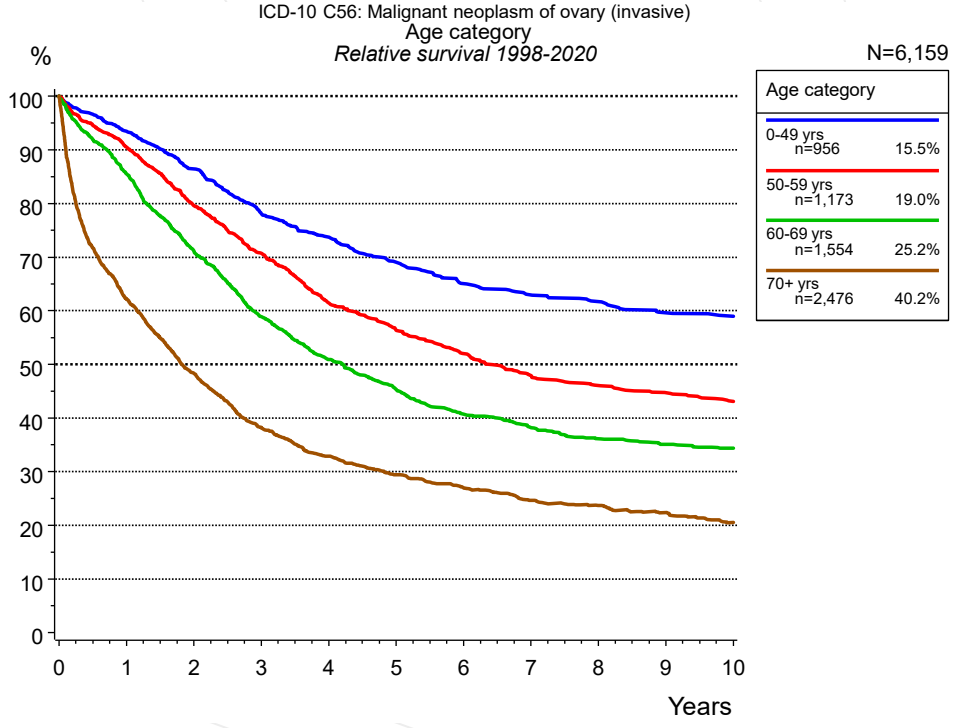

Figure 3b. Relative survival of patients with ovarian cancer by age category. Included in the evaluation are 6,159 cases diagnosed between 1998 and 2020.

	Age category							
	0-49 yrs n=956		50-59 yrs n=1,173		60-69 yrs n=1,554		70+ yrs n=2,476	
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	93.4	93.4	90.2	90.5	84.9	85.5	59.5	62.2
2	86.4	86.5	79.1	79.6	70.0	71.2	44.4	48.3
3	77.9	78.2	70.0	70.7	57.4	58.9	33.8	38.3
4	73.5	73.7	60.5	61.5	49.1	50.9	27.8	32.9
5	68.6	69.1	55.2	56.3	43.2	45.3	23.8	29.4
6	64.6	65.1	50.7	52.0	38.4	40.7	20.8	27.0
7	62.5	63.0	46.5	47.9	35.5	38.2	18.0	24.6
8	61.2	61.7	44.4	46.1	33.2	36.2	16.3	23.7
9	59.0	59.6	42.8	44.7	31.6	35.0	14.5	22.4
10	58.1	59.0	41.1	43.1	30.5	34.4	12.4	20.5
Median			6.1		3.9		1.6	

Table 3c. Observed (obs.) and relative (rel.) survival of patients with ovarian cancer by age category for period 1998-2020 (N=6,159).

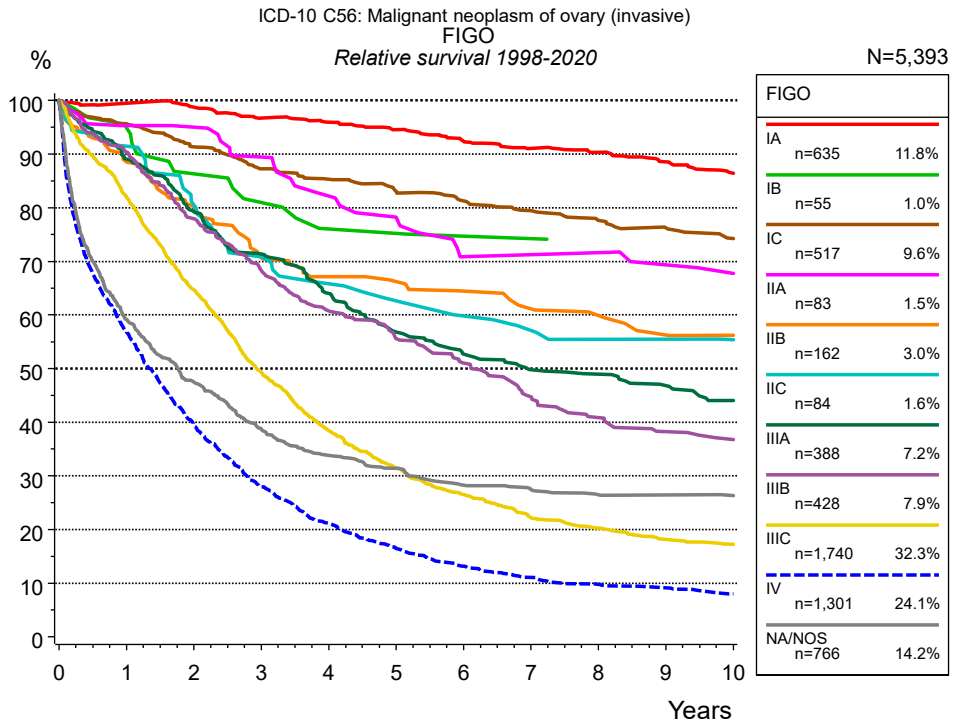

Figure 4a. Relative survival of patients with ovarian cancer by FIGO. For 5,729 of 6,159 cases diagnosed between 1998 and 2020 valid data could be obtained for this item. For a total of 5,393 cases an evaluable classification was established. The grey line represents the subgroup of 766 patients with missing values regarding FIGO (12.4 % of 6,159 patients, the percent values of all other categories are related to n=5,393).

	FIGO													
	IA n=635		IB n=55		IC n=517		IIA n=83		IIB n=162		IIC n=84		IIIA n=388	
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	98.2	99.5	94.4	94.9	94.5	95.6	93.8	95.3	86.6	88.5	90.5	91.5	87.9	89.1
2	96.2	98.8	85.0	86.4	89.2	91.4	92.6	95.0	77.1	80.2	78.4	80.5	77.3	79.3
3	92.9	96.7	79.0	80.9	84.1	87.3	85.9	89.4	67.1	70.6	68.6	70.9	68.8	71.4
4	90.9	96.0	72.8	76.1	81.3	85.3	77.7	82.2	62.4	67.1	62.5	65.8	61.0	64.0
5	88.2	94.5	72.8	75.2	78.2	83.0	71.9	78.2	60.6	66.2	58.7	62.7	53.3	56.8
6	84.9	92.4	70.7	74.7	75.4	81.3	64.2	70.9	57.7	64.5	55.0	59.8	48.9	52.7
7	82.3	91.1	70.7	74.2	72.8	79.4	64.2	71.2	54.5	61.1	52.4	57.1	45.6	49.8
8	80.4	90.3	68.2	73.7	69.9	77.7	64.2	71.6	52.3	59.9	49.8	55.5	44.5	49.0
9	77.5	88.6			67.8	76.3	60.7	69.3	48.6	56.3	49.8	55.5	42.0	46.8
10	74.4	86.4			65.1	74.3	58.6	67.7	47.3	56.2	48.2	55.4	38.8	44.0
Median							14.0		8.4		7.3		5.8	

	FIGO							
cont'd	IIIB n=428		IIIC n=1,740		IV n=1,301		NA/NOS n=766	
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	89.1	90.3	80.6	82.0	55.3	56.9	57.0	59.1
2	75.9	78.0	62.7	64.8	38.0	39.6	44.8	47.5
3	65.8	68.4	47.2	49.3	26.4	28.0	35.9	38.8
4	57.7	60.8	36.2	38.5	19.7	21.2	30.7	33.8
5	51.9	55.6	29.2	31.5	15.0	16.4	28.2	31.4
6	47.0	51.0	24.2	26.5	11.8	13.2	25.0	28.2
7	41.0	44.8	19.9	22.2	9.8	11.1	24.0	27.4
8	36.9	40.8	17.9	20.3	8.5	9.8	22.8	26.4
9	34.0	38.3	15.8	18.1	7.7	9.2	22.4	26.4
10	32.4	36.8	14.8	17.2	6.6	8.0	22.2	26.3
Median	5.5		2.8		1.3		1.5	

Table 4b. Observed (obs.) and relative (rel.) survival of patients with ovarian cancer by FIGO for period 1998-2020 (N=5,393).

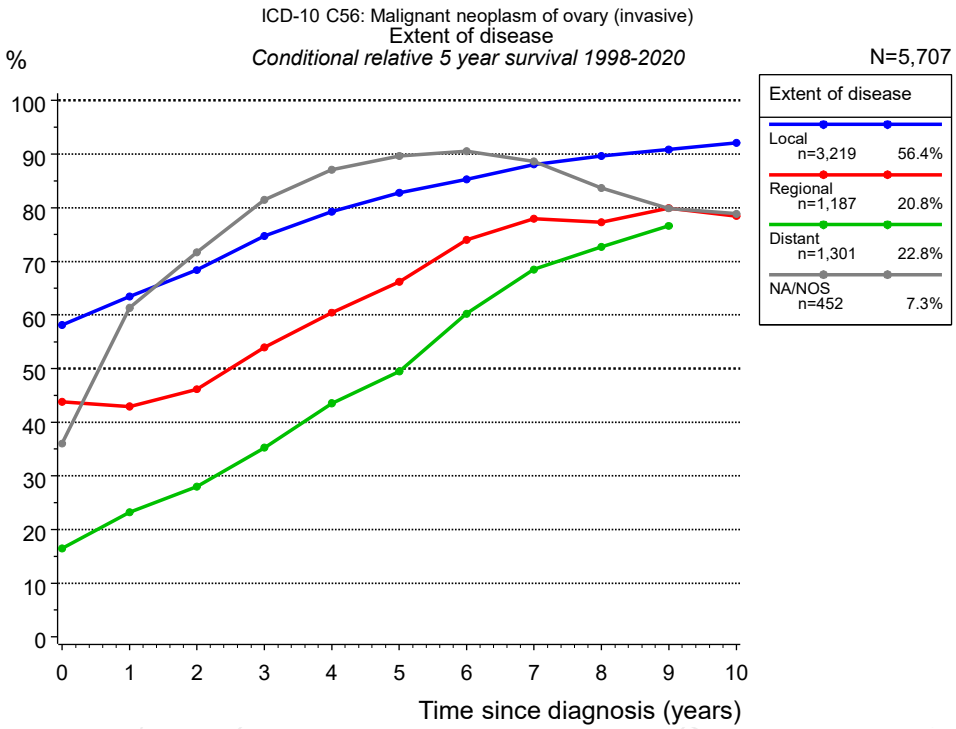

Figure 4c. Conditional relative 5-year survival of patients with ovarian cancer by extent of disease. For 5,729 of 6,159 cases diagnosed between 1998 and 2020 valid data could be obtained for this item. For a total of 5,707 cases an evaluable classification was established. The grey line represents the subgroup of 452 patients with missing values regarding extent of disease (7.3 % of 6,159 patients, the percent values of all other categories are related to n=5,707).

	Extent of disease							
	Local		Regional		Distant		NA/NOS	
Years	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs
0	3,219	58.1	1,187	43.8	1,301	16.4	452	36.0
1	2,631	63.5	1,012	43.0	697	23.2	233	61.3
2	2,177	68.4	820	46.1	458	28.0	182	71.7
3	1,808	74.7	632	53.9	300	35.2	144	81.5
4	1,527	79.3	488	60.4	208	43.6	122	87.1
5	1,319	82.8	383	66.2	149	49.4	111	89.7
6	1,154	85.3	305	74.0	113	60.3	97	90.5
7	1,003	88.1	247	78.0	85	68.5	91	88.7
8	873	89.7	218	77.3	70	72.7	81	83.7
9	751	90.8	178	80.0	58	76.6	72	79.9
10	659	92.1	146	78.4			68	78.9

Table 4d. Conditional relative 5-year survival of patients with ovarian cancer by extent of disease for period 1998-2020 (N=5,707).

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 4a). 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 74.7% (n=1,808).

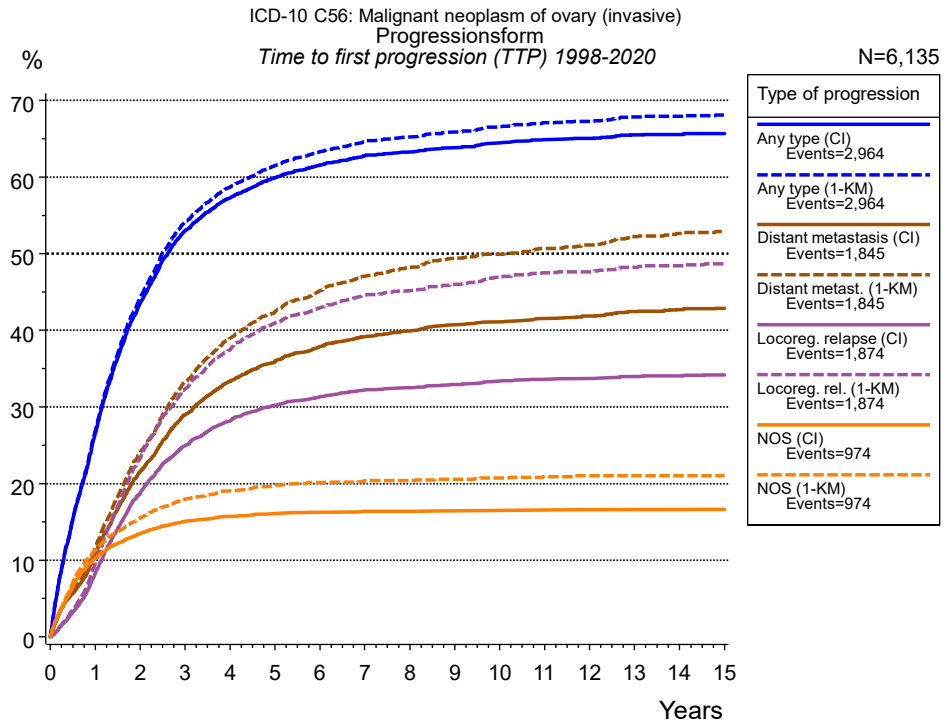

Figure 5a. Time to first progression of 6,135 patients with ovarian cancer diagnosed between 1998 and 2020 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

	Type of progression						
	Any type (CI)	Any type (1-KM)	Distant metastasis (CI)	Distant metast. (1-KM)	Locoreg. relapse (CI)	Locoreg. rel. (1-KM)	NOS (CI)
N	4,906	4,906	4,906	4,906	6,135	6,135	6,135
Events	2,958	2,958	1,844	1,844	1,871	1,871	971
compet.	345		1,258		2,382		3,097
Years	%	%	%	%	%	%	%
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	26.6	26.9	10.8	11.6	8.3	9.6	10.3
2	43.5	44.2	21.6	24.1	18.7	23.2	13.5
3	53.0	54.1	29.0	33.2	25.0	32.4	15.1
4	57.3	58.6	33.3	38.9	28.2	37.5	15.7
5	59.9	61.5	35.9	42.4	30.2	40.9	16.1
6	61.6	63.3	37.9	45.3	31.4	43.0	16.3
7	62.8	64.7	39.2	47.1	32.2	44.6	16.4
8	63.3	65.2	39.9	48.2	32.5	45.2	16.4
9	63.8	65.9	40.7	49.4	32.9	46.0	16.4
10	64.5	66.6	41.1	49.9	33.4	46.9	16.5
11	64.9	67.1	41.5	50.7	33.6	47.5	16.6
12	65.0	67.3	41.8	51.1	33.7	47.6	16.6
13	65.5	67.9	42.5	52.2	34.0	48.2	16.6
14	65.6	67.9	42.7	52.6	34.1	48.4	16.6
15	65.7	68.1	42.9	52.9	34.2	48.7	16.6

Type of progression	
cont'd	NOS (1-KM)
N	6,135
Events	971
compet.	
Years	%
0	0.0
1	11.3
2	15.5
3	18.0
4	19.1
5	19.8
6	20.1
7	20.4
8	20.4
9	20.6
10	20.7
11	20.9
12	21.0
13	21.0
14	21.0
15	21.0

Table 5b. Time to first progression of patients with ovarian cancer for period 1998-2020 (N=6,135), also showing the total of progression events (Events) and of deaths as competing risk (compet.).

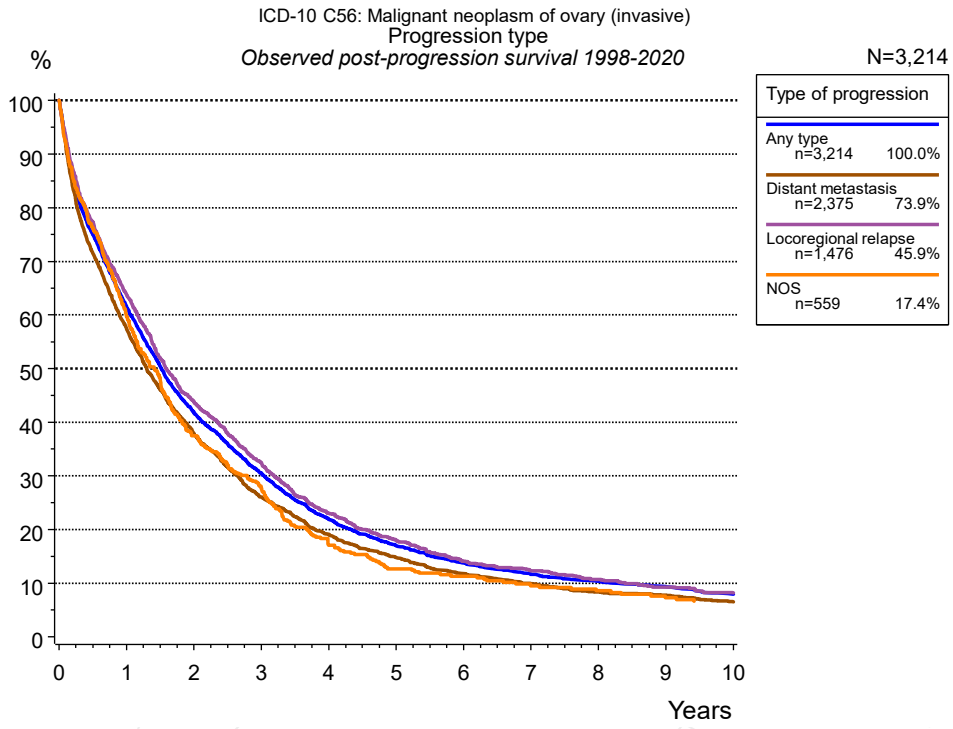

Figure 5c. Observed post-progression survival of 3,214 patients with ovarian cancer diagnosed between 1998 and 2020. These 3,214 patients with documented progression events during their course of disease represent 52.4 % of the totally 6,135 evaluated cases (incl. M1, n=1,229, 20.0 %). Patients with cancer relapse documented via death certificates only were excluded (n=979, 16.0 %). 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 “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 potientially considered in more than one subgroup.

	Type of progression			
	Any type	Distant metastasis	Locoregional relapse	NOS
	n=3,214	n=2,375	n=1,476	n=559
Years	%	%	%	%
0	100.0	100.0	100.0	100.0
1	61.6	57.5	63.9	60.0
2	41.9	37.9	43.9	37.5
3	30.5	26.0	32.5	27.7
4	21.9	19.1	23.0	17.1
5	17.0	14.7	18.0	12.7
6	13.7	11.8	14.1	11.3
7	11.7	9.9	12.3	9.5
8	10.4	8.3	10.7	8.5
9	9.3	7.7	9.3	7.3
10	8.0	6.5	8.1	

Table 5d. Observed post-progression survival of patients with ovarian cancer for period 1998-2020 (N=3,214).

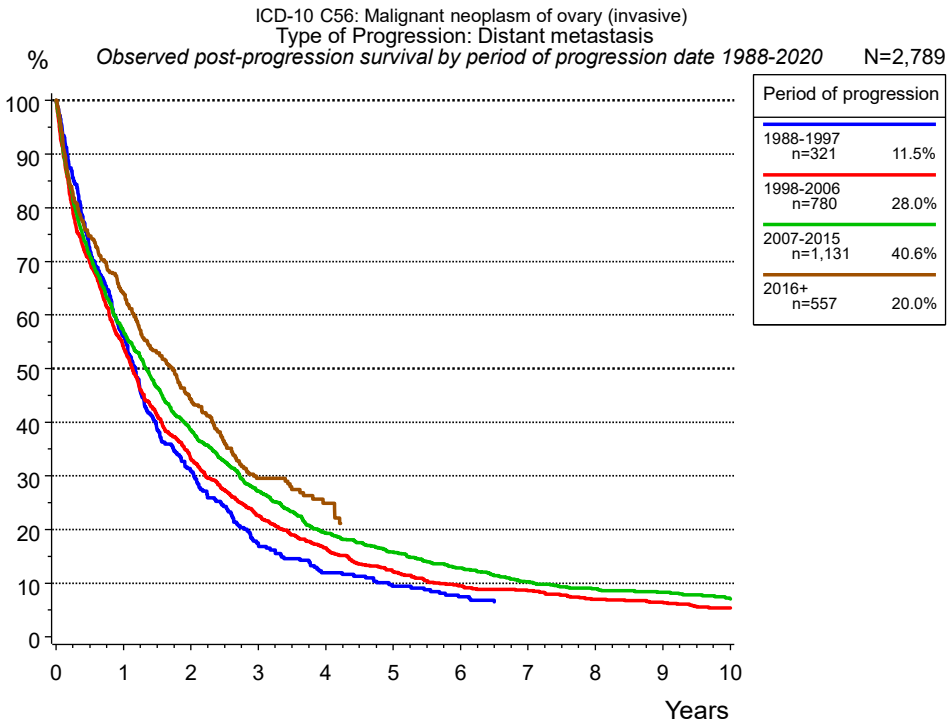

Figure 5e. Observed post-progression (distant metastasis) survival of 2,789 patients with ovarian cancer diagnosed between 1988 and 2020 by period of progression.

	Period of progression			
	1988-1997 n=321	1998-2006 n=780	2007-2015 n=1,131	2016+ n=557
Years	%	%	%	%
0	100.0	100.0	100.0	100.0
1	55.9	54.1	57.0	63.9
2	31.1	33.2	38.6	44.2
3	17.5	22.6	27.2	29.6
4	12.0	16.6	19.4	24.9
5	9.4	12.1	15.8	
6	7.4	9.5	12.8	
7	6.5	8.6	10.2	
8		7.0	8.9	
9		6.5	8.3	
10		5.4	7.0	

Table 5f. Observed post-progression (distant metastasis) survival of patients with ovarian cancer for period 1988-2020 by period of progression (N=2,789).

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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