

# Munich Cancer Registry



- ▶ Baseline statistics
- ▶ Selection Matrix
- ▶ Homepage
- ▶ *Deutsch*

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

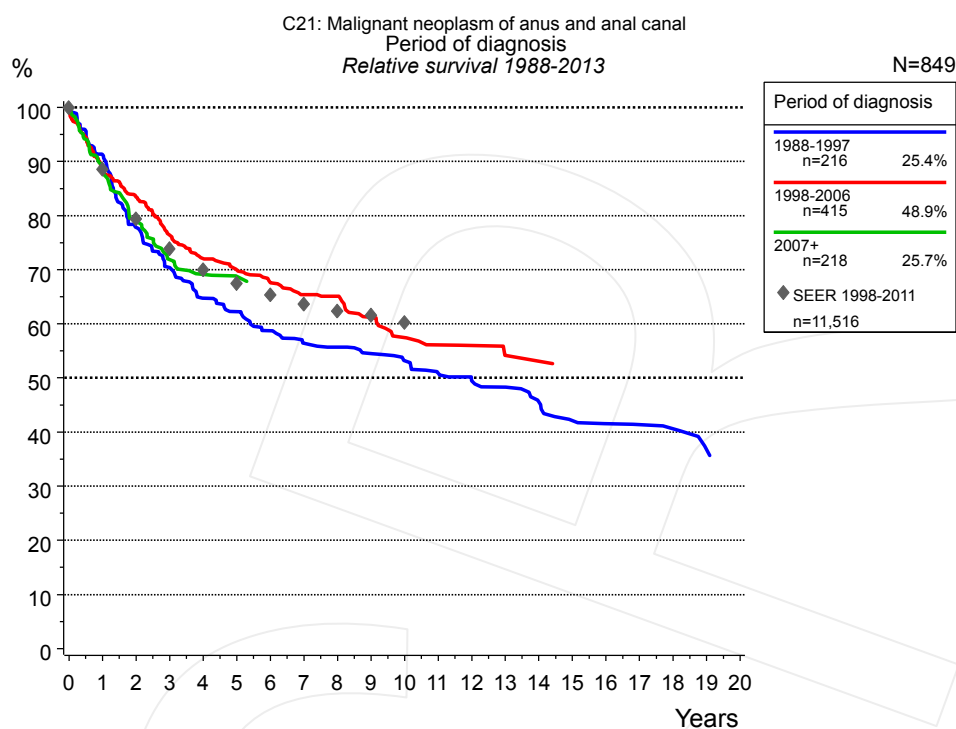
## Cancer statistics: Survival

### C21: Anal cancer

Year of diagnosis	1988-2013
Patients	1,452
Diseases	1,452
Cases evaluated	849
Creation date	05/13/2015
Export date	12/30/2014
Population	4.64 m



[http://www.tumorregister-muenchen.de/en/facts/surv/surv\\_C21\\_\\_E.pdf](http://www.tumorregister-muenchen.de/en/facts/surv/surv_C21__E.pdf)



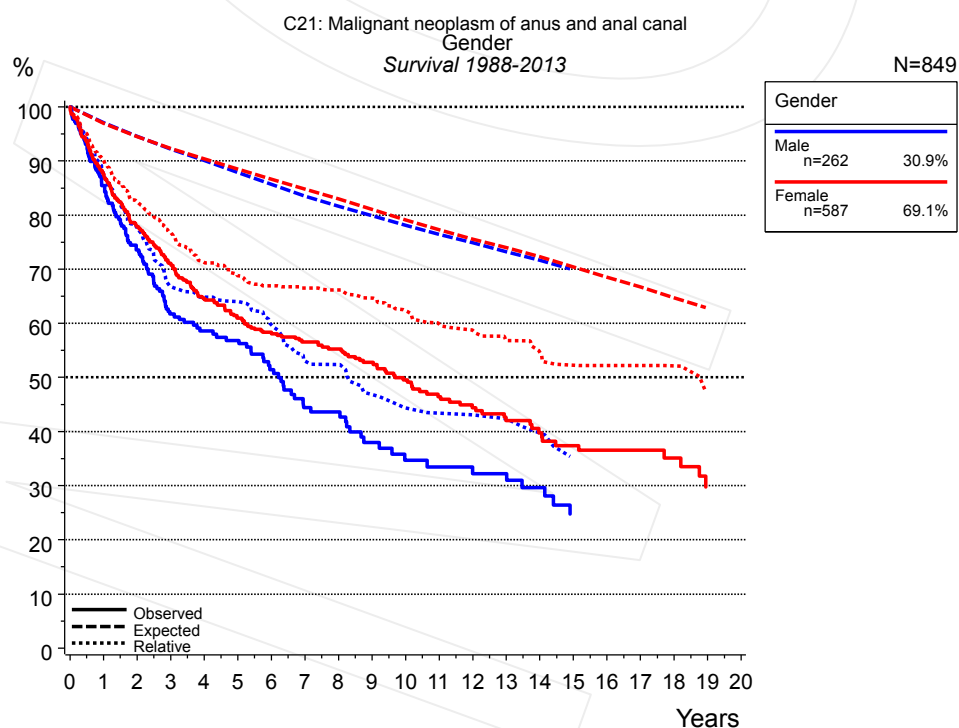
**Figure 1a.** Relative survival of patients with anal cancer by period of diagnosis. Included in the evaluation are 849 cases diagnosed between 1988 and 2013.

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 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.

Years	Period of diagnosis					
	1988-1997 n=216		1998-2006 n=415		2007+ n=218	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	88.4	91.2	86.4	88.6	86.3	88.8
2	73.1	77.9	79.3	83.4	74.9	79.1
3	64.7	70.4	71.0	76.4	66.7	71.8
4	57.7	64.7	65.7	72.0	63.0	69.1
5	54.4	62.3	62.5	69.9	61.0	68.7
6	50.1	58.7	59.4	67.6		
7	46.8	56.4	56.0	65.4		
8	45.3	55.7	55.1	65.1		
9	43.4	54.5	50.6	61.2		
10	40.9	53.2	46.7	57.5		
11	38.4	50.9	44.3	56.1		
12	36.3	49.5	43.3	56.0		
13	35.3	48.4	40.7	54.2		
14	32.2	45.6	40.7	53.1		
15	29.1	42.2	38.2	50.7		
16	27.9	41.6				
17	27.2	41.4				
18	26.3	40.6				
19	23.1	36.8				

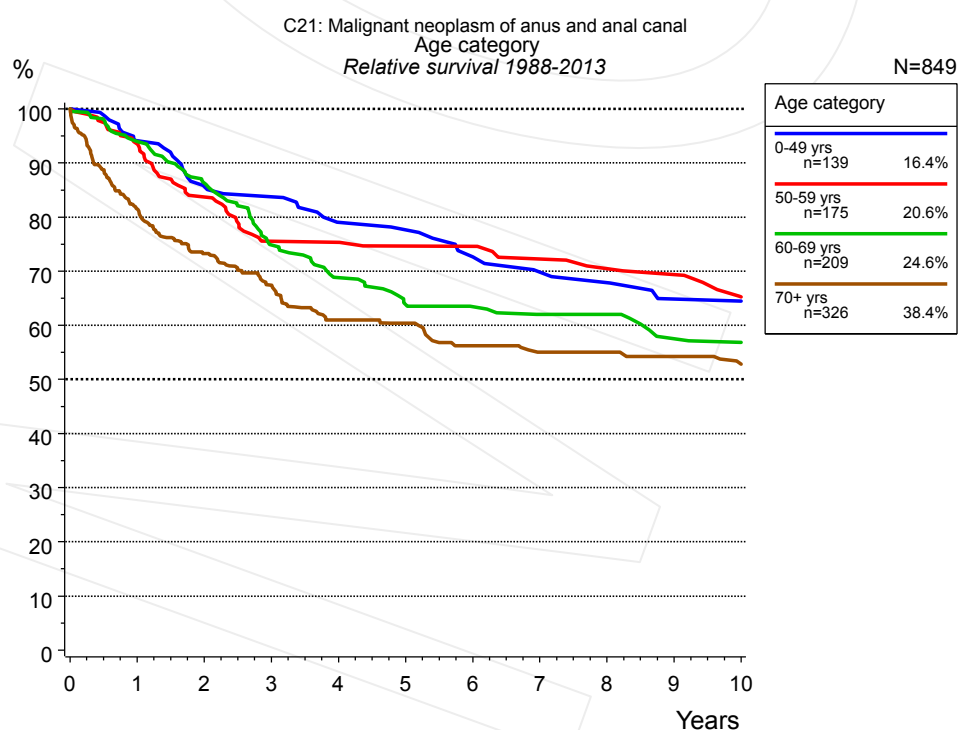
**Table 1b.** Observed (obs.) and relative (rel.) survival of patients with anal cancer by period of diagnosis for period 1988-2013 (N=849).



**Figure 2a.** Survival of patients with anal cancer by gender. Included in the evaluation are 849 cases diagnosed between 1988 and 2013.

Years	Gender			
	Male n=262		Female n=587	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	85.5	87.8	87.5	90.1
2	73.6	77.7	77.9	82.3
3	61.7	66.8	71.1	76.8
4	58.6	64.8	64.5	71.3
5	56.9	64.0	60.9	68.8
6	51.5	59.7	58.3	67.0
7	44.4	53.0	56.6	66.6
8	43.6	52.4	55.3	66.2
9	38.0	46.8	52.8	64.7
10	34.7	44.4	49.6	62.3
11	33.5	43.4	46.4	59.8
12	32.2	43.1	44.4	58.7
13	32.2	42.4	42.0	56.8
14	29.7	39.7	39.8	54.6
15	24.8	34.5	37.4	52.2
16			36.6	52.2
17			36.6	52.2
18			35.1	52.1
19			29.8	47.1

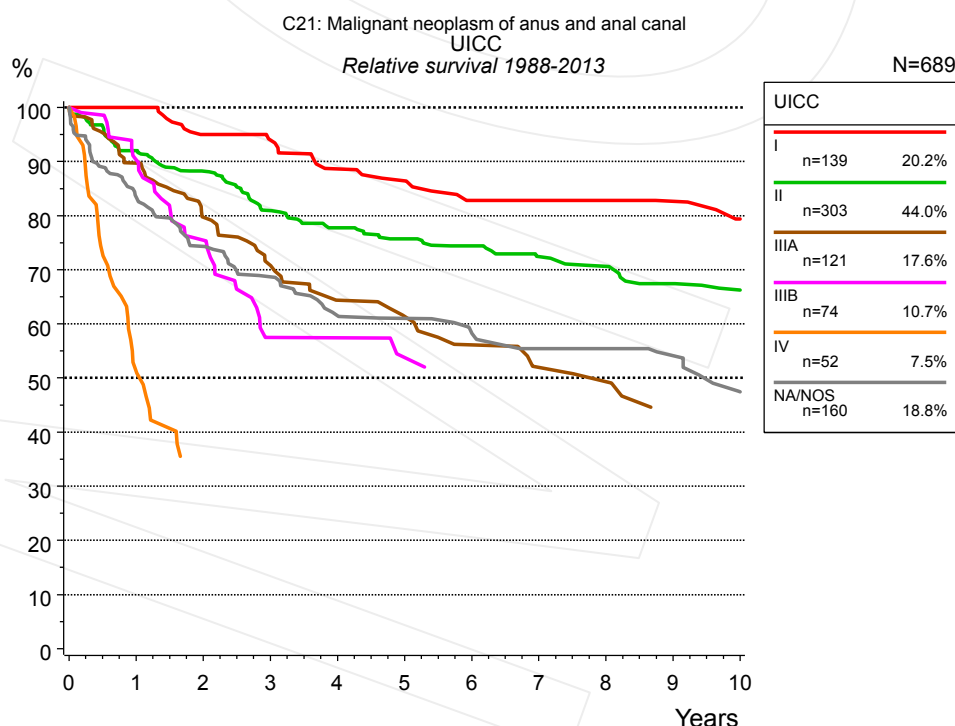
**Table 2b.** Observed (obs.) and relative (rel.) survival of patients with anal cancer by gender for period 1988-2013 (N=849).



**Figure 3a.** Relative survival of patients with anal cancer by age category. Included in the evaluation are 849 cases diagnosed between 1988 and 2013.

Years	Age category							
	0-49 yrs n=139		50-59 yrs n=175		60-69 yrs n=209		70+ yrs n=326	
	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	94.0	94.1	93.5	93.5	93.2	94.0	76.2	81.5
2	85.5	85.6	83.2	83.7	84.5	86.3	64.1	73.3
3	83.9	83.8	74.4	75.5	72.2	74.9	55.7	67.4
4	78.4	79.0	74.4	75.3	65.6	68.8	47.6	61.0
5	77.4	77.6	72.8	74.7	60.2	63.9	44.4	60.4
6	72.9	72.6	72.8	74.6	58.7	63.4	38.1	56.2
7	69.1	69.8	69.7	72.3	56.3	62.0	34.4	55.1
8	67.8	67.9	67.4	70.5	56.3	62.0	33.2	55.1
9	63.5	64.9	66.1	69.3	50.9	57.5	30.4	54.3
10	63.5	64.4	60.6	65.3	49.6	56.9	25.8	52.8

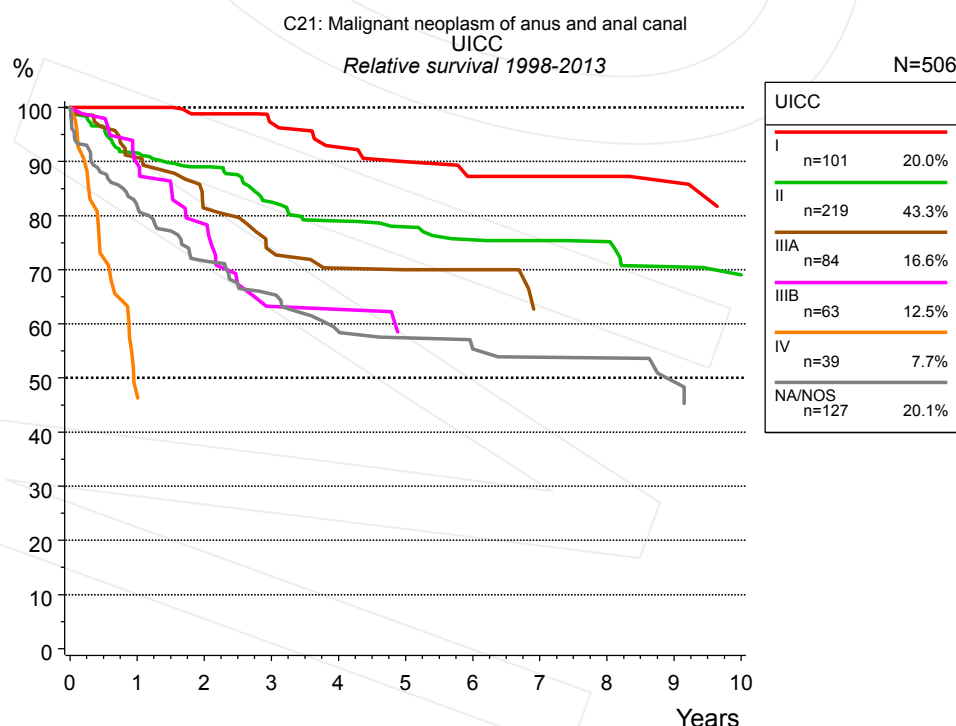
**Table 3b.** Observed (obs.) and relative (rel.) survival of patients with anal cancer by age category for period 1988-2013 (N=849).



**Figure 4a.** Relative survival of patients with anal cancer by UICC. For 724 of 849 cases diagnosed between 1988 and 2013 valid data could be obtained for this item. For a total of 689 cases an evaluable classification was established. The grey line represents the subgroup of 160 patients with missing values regarding UICC (18.8% of 849 patients, the percent values of all other categories are related to n=689).

Years	UICC											
	I n=139		II n=303		IIIA n=121		IIIB n=74		IV n=52		NA/NOS n=160	
	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
1	100.0	100.0	89.9	92.0	87.4	89.7	88.9	90.3	51.0	51.3	80.3	83.5
2	90.6	95.0	84.0	88.2	75.1	79.7	73.1	75.5			69.6	74.3
3	88.0	94.0	75.7	80.9	65.5	70.8	53.6	57.5			62.6	68.7
4	81.6	88.6	71.2	77.8	57.1	64.4	53.6	57.4			54.9	61.5
5	78.5	86.4	68.0	75.7	53.1	61.4	48.2	53.8			53.3	61.0
6	72.8	82.8	65.5	74.4	47.3	56.1	45.5	49.9			50.4	58.3
7	72.8	82.8	62.1	72.4	42.4	52.0					46.3	55.5
8	72.8	82.8	59.7	70.6	40.5	49.3					46.3	55.5
9	69.6	82.6	55.9	67.4	34.5	44.3					43.7	54.1
10	64.5	79.4	53.6	66.3	34.5	43.5					36.7	47.5

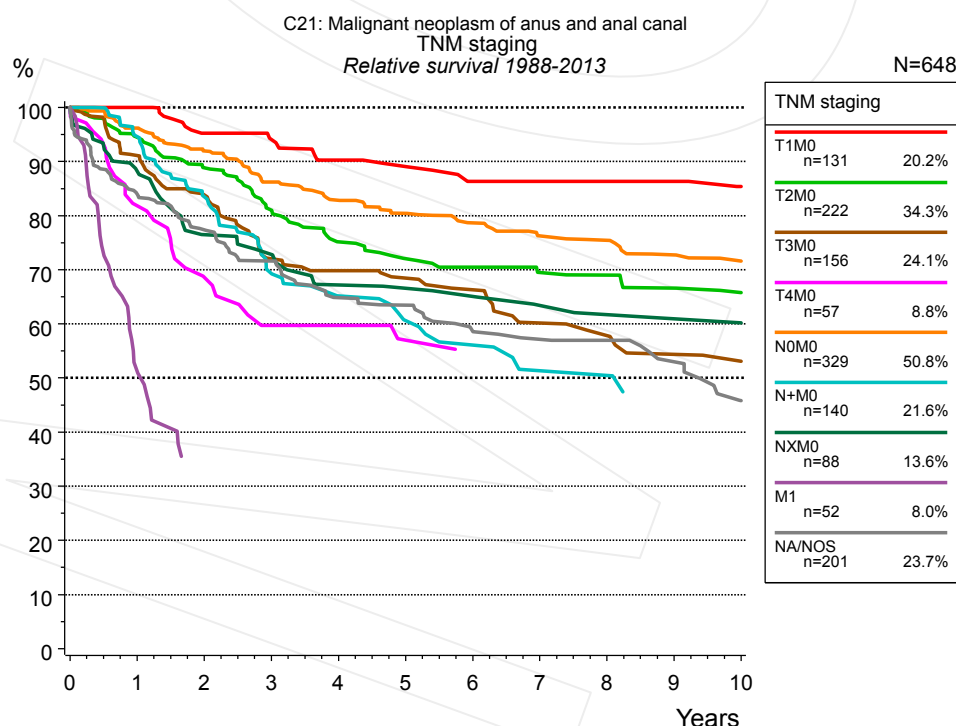
**Table 4b.** Observed (obs.) and relative (rel.) survival of patients with anal cancer by UICC for period 1988-2013 (N=689).



**Figure 4c.** Relative survival of patients with anal cancer by UICC. For 532 of 633 cases diagnosed between 1998 and 2013 valid data could be obtained for this item. For a total of 506 cases an evaluable classification was established. The grey line represents the subgroup of 127 patients with missing values regarding UICC (20.1% of 633 patients, the percent values of all other categories are related to n=506).

Years	UICC											
	I n=101		II n=219		IIIA n=84		IIIB n=63		IV n=39		NA/NOS n=127	
	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
1	100.0	100.0	89.6	91.6	89.1	90.7	88.6	89.6	47.2	46.8	79.1	81.8
2	94.5	98.9	85.2	89.0	77.1	81.4	76.6	78.4			67.9	71.7
3	90.6	97.1	77.5	82.5	68.2	73.3	59.4	63.2			60.6	65.5
4	85.0	92.6	72.6	79.0	63.3	70.3	59.4	62.7			53.4	58.6
5	81.9	90.0	70.4	77.9	60.9	70.0	52.4	57.5			51.1	57.4
6	76.1	87.3	67.1	75.5	60.9	70.0					49.6	55.4
7	76.1	87.3	66.1	75.4	51.3	62.2					46.5	53.8
8	76.1	87.3	64.9	75.2							46.5	53.7
9	73.2	86.2	59.7	70.5							42.0	49.3
10	65.7	81.4	57.8	69.0								

**Table 4d.** Observed (obs.) and relative (rel.) survival of patients with anal cancer by UICC for period 1998-2013 (N=506).



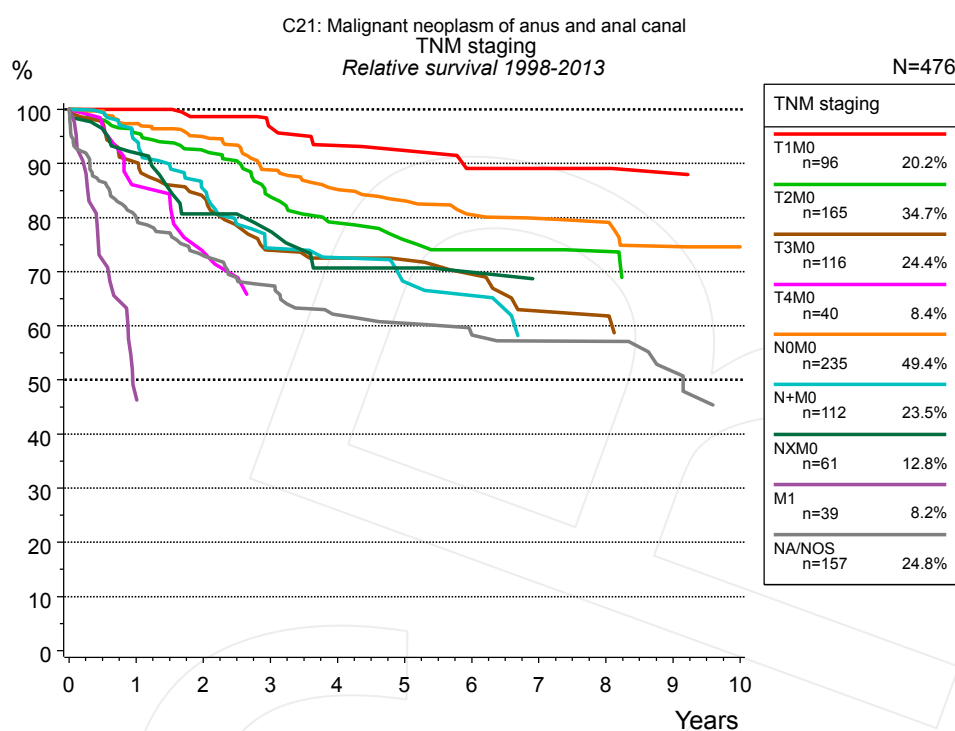
**Figure 4e.** Relative survival of patients with anal cancer by TNM staging. For 724 of 849 cases diagnosed between 1988 and 2013 valid data could be obtained for this item. For a total of 648 cases an evaluable classification was established. The accumulated percentage exceeds the 100% value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 201 patients with missing values regarding TNM staging (23.7% of 849 patients, the percent values of all other categories are related to n=648).

Years	TNM staging													
	T1M0 n=131		T2M0 n=222		T3M0 n=156		T4M0 n=57		N0M0 n=329		N+M0 n=140		NXM0 n=88	
	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	100.0	92.7	94.5	88.8	91.1	80.2	81.8	94.4	96.2	92.7	94.6	85.6	88.3
2	90.8	95.3	85.1	88.9	79.3	83.8	65.4	68.6	88.0	92.0	79.7	83.5	71.6	76.5
3	87.9	94.1	76.5	81.0	66.4	72.0	55.5	59.7	81.0	86.2	65.2	69.3	67.6	72.8
4	82.9	90.3	69.3	75.2	63.3	69.8	55.5	59.7	76.4	82.8	59.3	65.1	60.4	67.2
5	80.7	89.1	65.2	72.1	60.4	68.5	50.3	57.0	72.7	80.4	54.0	60.6	58.8	66.6
6	75.5	86.3	63.0	70.5	57.2	66.3	47.5	54.7	69.4	78.7	49.8	56.1	57.2	65.1
7	75.5	86.3	60.3	69.5	50.5	60.1			65.7	76.2	44.0	51.3	53.3	63.4
8	75.5	86.3	59.4	69.0	48.0	57.8			64.0	75.4	44.0	50.5	51.2	61.7
9	72.1	86.3	56.5	66.6	43.8	54.4			60.3	72.7	39.0	47.1	49.0	60.9
10	68.4	85.4	54.2	65.8	42.1	53.1			57.6	71.6	39.0	46.6	49.0	60.2

Years	TNM staging			
	M1 n=52		NA/NOS n=201	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	51.0	51.3	80.9	84.0
2			72.3	77.4
3			65.1	71.6
4			57.2	64.8
5			55.2	63.5
6			50.1	58.6
7			47.6	57.1
8			46.7	56.9
9			42.4	53.0
10			35.2	45.8

**Table 4f.** Observed (obs.) and relative (rel.) survival of patients with anal cancer by TNM staging for period 1988-2013 (N=1,175).



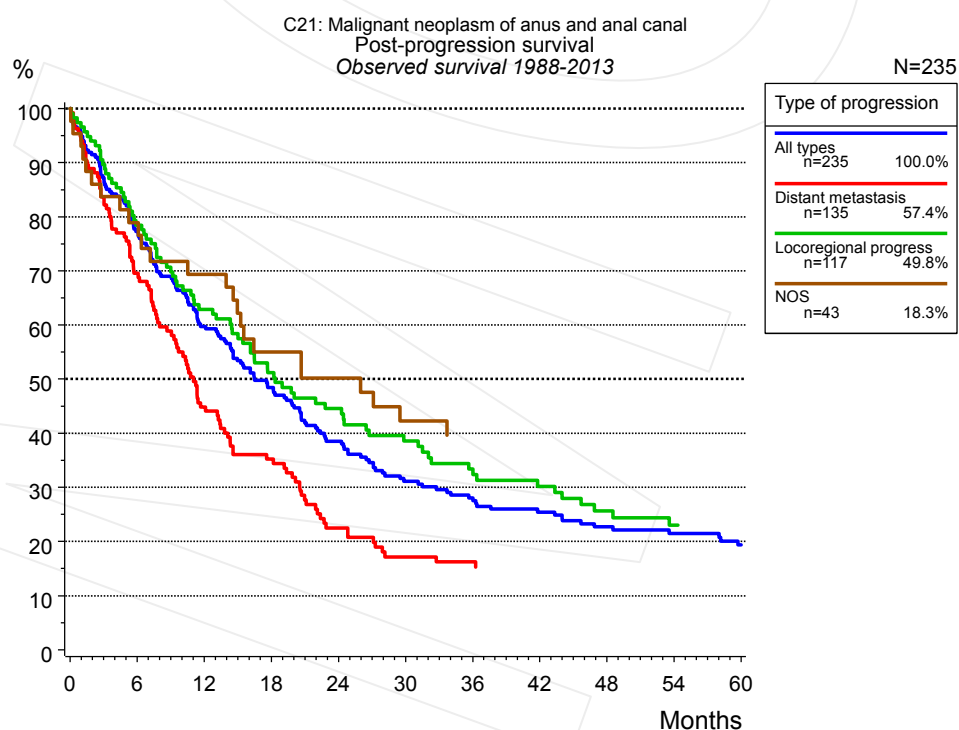


**Figure 4g.** Relative survival of patients with anal cancer by TNM staging. For 532 of 633 cases diagnosed between 1998 and 2013 valid data could be obtained for this item. For a total of 476 cases an evaluable classification was established. The accumulated percentage exceeds the 100% value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 157 patients with missing values regarding TNM staging (24.8% of 633 patients, the percent values of all other categories are related to n=476).

TNM staging															
	T1M0 n=96		T2M0 n=165		T3M0 n=116		T4M0 n=40		N0M0 n=235		N+M0 n=112		NXM0 n=61		
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	100.0	93.8	95.6	88.4	90.2	84.3	85.9	95.6	97.4	92.6	94.2	89.3	91.9	
2	94.1	98.6	88.6	92.4	79.9	83.8	70.7	73.7	91.0	94.9	81.9	85.3	76.0	80.7	
3	89.8	96.7	79.3	83.9	69.0	74.0	61.9	65.7	83.7	88.8	69.7	74.4	72.0	77.5	
4	85.4	93.3	73.1	79.0	66.6	72.5	61.9	65.4	79.1	85.2	67.0	72.6	62.8	70.7	
5	83.7	92.4	68.8	75.9	65.0	72.2			75.7	83.1	61.2	68.1	62.8	70.7	
6	77.1	89.1	66.5	74.1	61.5	69.5			71.6	80.5	59.2	65.6	60.1	69.9	
7	77.1	89.1	66.5	74.1	53.7	62.7			69.6	79.8	49.7	57.6	56.3	68.2	
8	77.1	89.1	64.7	73.7	53.7	61.9			68.6	79.1	49.7	55.7			
9	73.9	88.2	58.6	68.9	48.4	56.6			63.5	74.6					
10	69.8	87.3	58.6	68.8					61.9	74.6					

cont'd Years	TNM staging			
	M1 n=39		NA/NOS n=157	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	47.2	46.8	77.3	80.0
2			69.0	73.0
3			62.3	67.5
4			55.7	62.0
5			53.8	60.5
6			51.5	58.3
7			49.0	57.2
8			49.0	57.2
9			43.3	51.6

**Table 4h.** Observed (obs.) and relative (rel.) survival of patients with anal cancer by TNM staging for period 1998-2013 (N=864).



**Figure 5a.** Observed post-progression survival of 235 patients with anal cancer diagnosed between 1988 and 2013 (incl. M1). These 235 patients with documented progression events during their course of disease represent 27.7% of the totally 849 evaluated cases. Patients with cancer relapse documented via death certificates only were excluded (n=63, 7.4%). 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 "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 potentially considered in more than one subgroup.

Months	Type of progression			
	All types n=235 %	Distant metastasis n=135 %	Locoregional progress n=117 %	NOS n=43 %
0	100.0	100.0	100.0	100.0
12	59.7	44.9	62.9	69.4
24	38.5	22.5	44.5	50.2
36	28.1	16.3	33.4	
48	22.7		25.7	
60	19.3			

**Table 5b.** Observed post-progression survival of patients with anal cancer for period 1988-2013 (N=235).

**Shortcuts**

MCR	Munich Cancer Registry, Germany (Tumorregister München)
NCI	National Cancer Institute, USA
SEER	Surveillance, Epidemiology, and End Results, USA
UICC	Union for International Cancer Control, Geneva
DCO	Death certificate only. The death certificate provides the only notification to the registry.
NA	Not available
NOS	Not otherwise specified
OS	Observed/overall survival (Kaplan-Meier estimate)
RS	Relative survival, compared to the general population, ratio of observed to expected survival (Ederer II method), reflecting excess mortality among cancer patients
AS	Assembled survival chart (observed, expected, relative)
PPS	Post-progression survival, survival since first relapse (Kaplan-Meier estimate)
progression	Date of entry: Date of first locoregional recurrence, distant metastasis, unspecified
	Event: Death of all causes
CS	Conditional survival, survival probability under the condition of surviving a given period of time

**Recommended Citation**

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### Index of figures and tables

Fig./Tbl.		Page
1a	Relative survival by period of diagnosis (chart)	2
1b	Survival by period of diagnosis (table)	3
2a	Survival by gender (chart)	3
2b	Survival by gender (table)	4
3a	Relative survival by age category (chart)	4
3b	Survival by age category (table)	5
4a	Relative survival by UICC 1988+ (chart)	5
4b	Survival by UICC 1988+ (table)	6
4c	Relative survival by UICC 1998+ (chart)	6
4d	Survival by UICC 1998+ (table)	7
4e	Relative survival by TNM staging 1988+ (chart)	7
4f	Survival by TNM staging 1988+ (table)	8
4g	Relative survival by TNM staging 1998+ (chart)	9
4h	Survival by TNM staging 1998+ (table)	9
5a	Observed post-progression survival (chart)	10
5b	Observed post-progression survival (table)	11