

Munich Cancer Registry



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ICD-10 C00-C14: HN cancer

Survival

Year of diagnosis	1988-1997	1998-2020
Patients	2,526	11,617
Diseases	2,582	12,084
Cases evaluated	2,286	9,047
Creation date	04/15/2022	
Database export	12/20/2021	
Population	4.92 m	



Munich Cancer Registry
Cancer Registry Bavaria - Upper Bavaria Regional Center
at Klinikum Grosshadern/IBE
Marchioninstr. 15
Munich, 81377
Germany

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

<https://www.tumorregister-muenchen.de/en/facts/surv/sC0014E-ICD-10-C00-C14-HN-cancer-survival.pdf>

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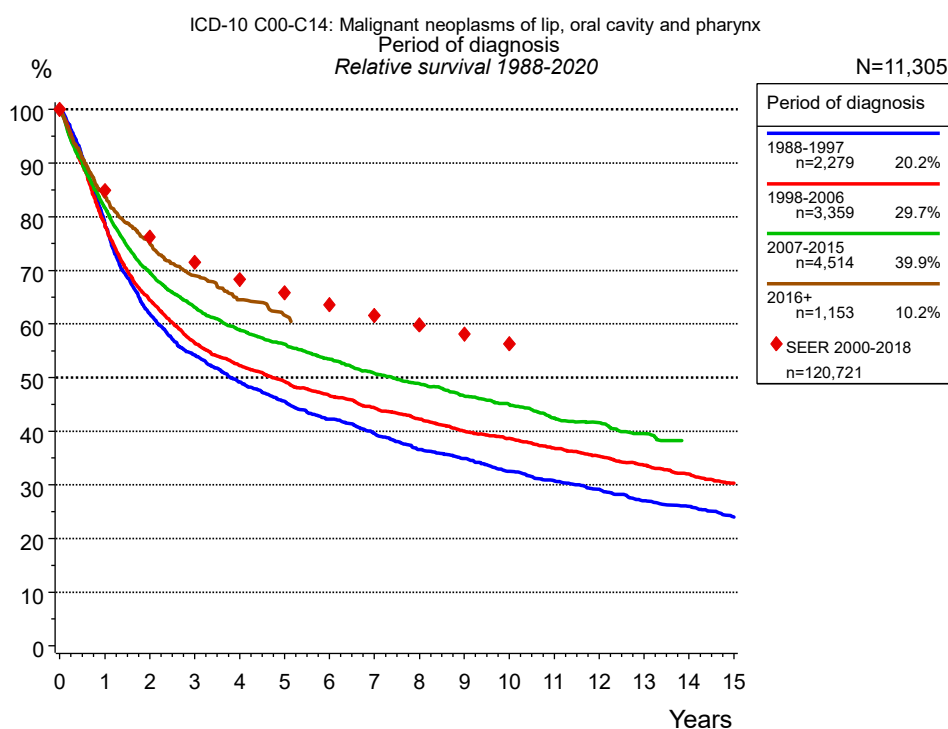


Figure 1a. Relative survival of patients with HN cancer by period of diagnosis. Included in the evaluation are 11,305 cases diagnosed between 1988 and 2020.

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.

Years	Period of diagnosis							
	1988-1997 n=2,279		1998-2006 n=3,359		2007-2015 n=4,514		2016+ n=1,153	
	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	77.4	78.8	77.2	78.5	80.2	81.7	81.9	83.7
2	59.9	61.9	62.3	64.4	67.2	69.6	72.0	74.9
3	51.5	54.2	53.7	56.4	59.9	63.1	65.0	69.0
4	45.9	49.2	48.9	52.3	54.9	58.9	59.6	64.5
5	41.9	45.6	45.3	49.2	51.4	56.2	55.8	61.6
6	38.1	42.3	42.2	46.7	48.1	53.5		
7	35.1	39.6	39.4	44.4	44.8	50.8		
8	31.9	36.6	37.0	42.3	42.2	48.8		
9	29.9	34.9	34.3	40.0	39.4	46.6		
10	27.4	32.5	32.5	38.6	37.3	45.0		
11	25.5	30.8	30.4	36.9	34.4	42.5		
12	23.7	29.2	28.5	35.4	33.0	41.6		
13	21.6	27.1	26.6	33.6	30.6	39.6		
14	20.4	26.0	24.7	32.0				
15	18.4	24.0	22.9	30.3				
Median	3.3		3.8		5.4			

Table 1b. Observed (obs.) and relative (rel.) survival of patients with HN cancer by period of diagnosis for period 1988-2020 (N=11,305).

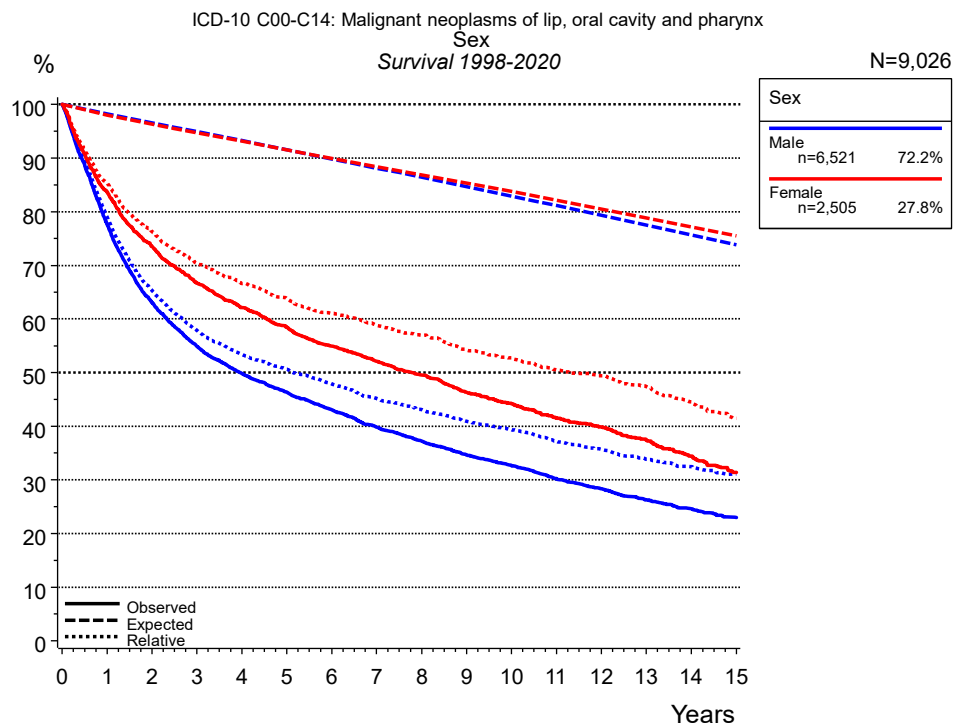


Figure 2a. Survival of patients with HN cancer by sex. Included in the evaluation are 9,026 cases diagnosed between 1998 and 2020.

Years	Sex			
	Male n=6,521		Female n=2,505	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	77.7	79.0	83.6	85.3
2	63.0	65.3	73.5	76.3
3	54.9	57.8	66.6	70.3
4	49.8	53.4	62.1	66.6
5	46.3	50.6	58.5	63.9
6	43.1	47.9	54.9	61.0
7	39.8	45.2	52.1	58.8
8	37.2	43.1	49.5	57.0
9	34.6	40.9	46.3	54.2
10	32.7	39.3	44.2	52.7
11	30.3	37.3	41.5	50.5
12	28.4	35.7	39.8	49.4
13	26.2	33.8	37.4	47.4
14	24.6	32.5	34.4	44.5
15	23.0	31.1	31.4	41.5
Median	4.0		7.8	

Table 2b. Observed (obs.) and relative (rel.) survival of patients with HN cancer by sex for period 1998-2020 (N=9,026).

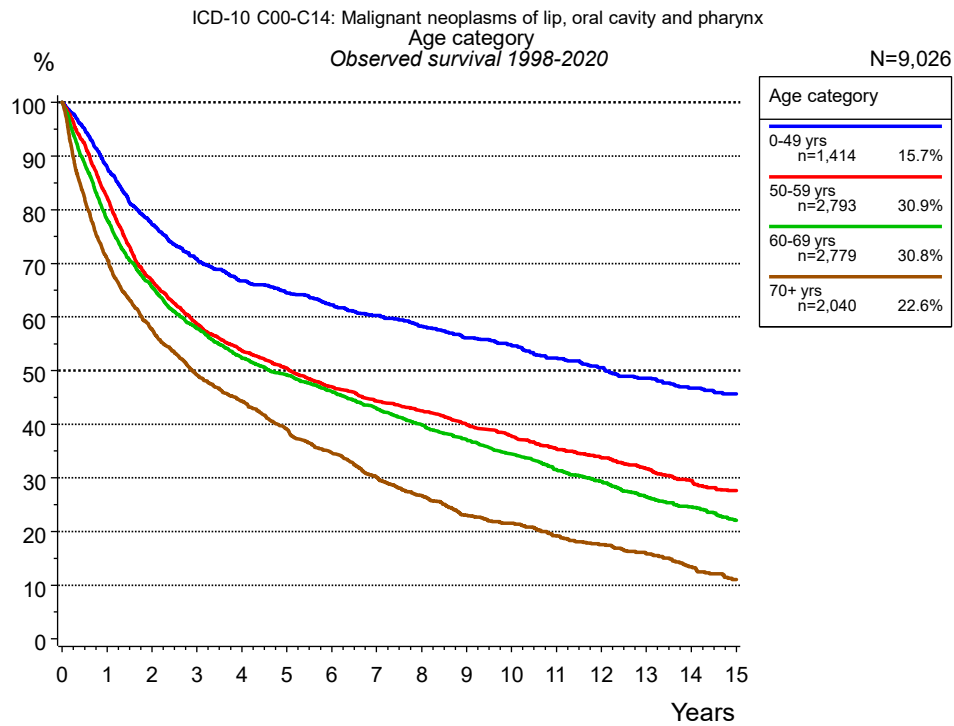


Figure 3a. Observed survival of patients with HN cancer by age category. Included in the evaluation are 9,026 cases diagnosed between 1998 and 2020.

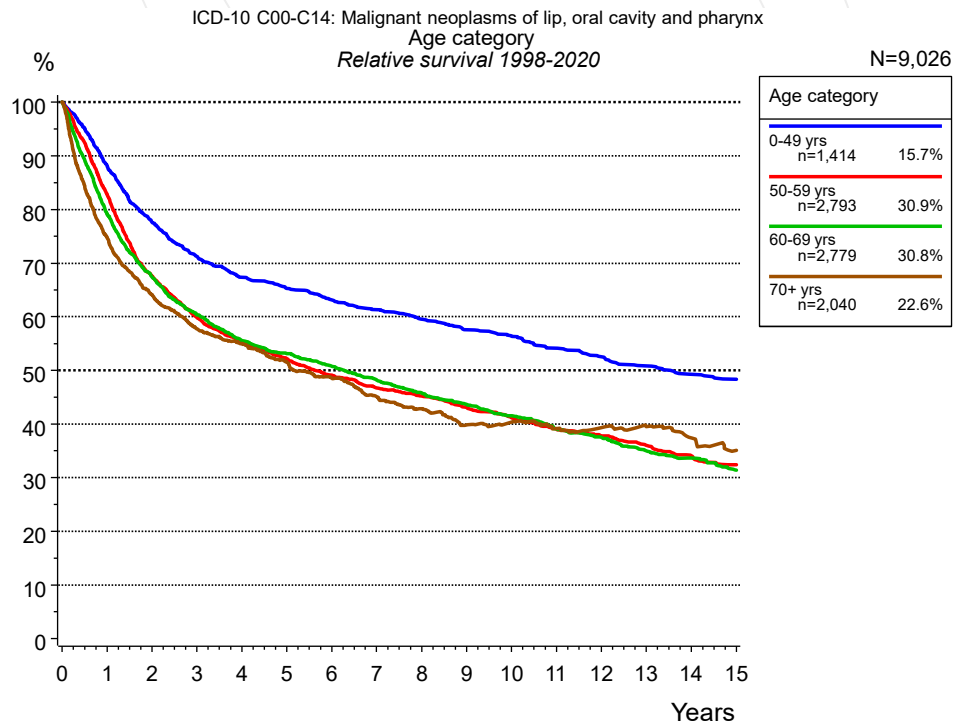


Figure 3b. Relative survival of patients with HN cancer by age category. Included in the evaluation are 9,026 cases diagnosed between 1998 and 2020.

Years	Age category							
	0-49 yrs n=1,414		50-59 yrs n=2,793		60-69 yrs n=2,779		70+ yrs n=2,040	
	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	88.0	88.1	82.3	82.8	78.1	79.2	70.9	74.8
2	77.3	77.6	66.7	67.5	65.6	67.4	57.7	64.1
3	70.8	71.3	58.7	59.8	57.8	60.3	49.2	57.8
4	66.7	67.3	53.8	55.2	52.3	55.5	44.3	55.0
5	64.5	65.3	50.4	52.2	49.1	53.1	39.1	51.5
6	62.2	63.2	47.0	49.1	46.1	50.8	34.7	48.6
7	60.3	61.4	44.3	46.7	42.9	48.2	30.1	45.1
8	58.2	59.5	42.4	45.2	39.9	45.8	26.6	42.8
9	56.1	57.6	39.9	43.0	37.1	43.6	23.0	39.8
10	54.7	56.4	37.8	41.2	34.4	41.5	21.6	40.3
11	52.4	54.2	35.4	39.1	31.5	39.1	19.2	39.2
12	50.5	52.5	33.8	37.8	29.4	37.6	17.5	39.3
13	48.6	50.8	31.7	36.0	26.4	35.0	15.8	39.5
14	46.8	49.3	29.5	34.1	24.6	33.6	13.4	37.4
15	45.7	48.4	27.6	32.4	22.1	31.4	11.1	35.0
Median	12.1		5.1		4.6		2.9	

Table 3c. Observed (obs.) and relative (rel.) survival of patients with HN cancer by age category for period 1998-2020 (N=9,026).

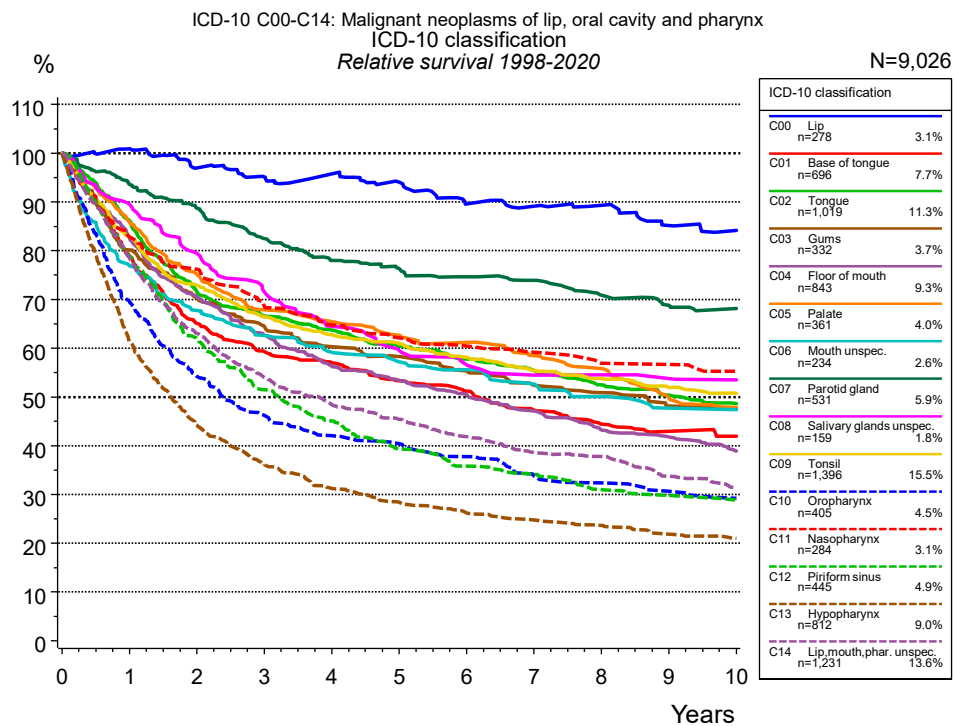


Figure 4a. Relative survival of patients with HN cancer by ICD-10 classification. Included in the evaluation are 9,026 cases diagnosed between 1998 and 2020.

ICD-10 classification														
	C00 Lip n=278		C01 Base of tongue n=696		C02 Tongue n=1,019		C03 Gums n=332		C04 Floor of mouth n=843		C05 Palate n=361		C06 Mouth unspec. n=234	
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	96.7	100.9	77.5	78.8	84.7	86.1	78.0	80.2	81.7	82.8	84.8	85.8	74.4	76.9
2	88.5	97.0	63.1	65.1	69.1	71.6	66.7	70.3	68.8	70.5	73.1	75.1	64.4	67.8
3	83.2	95.1	56.5	59.3	63.3	66.6	60.0	64.6	60.4	62.6	65.4	67.9	58.2	62.6
4	80.2	95.7	53.3	57.0	59.5	63.7	54.8	60.3	53.7	56.3	62.1	65.4	53.7	59.2
5	75.4	94.0	48.9	53.3	55.5	60.5	51.7	58.3	50.3	53.4	58.7	62.6	50.5	57.2
6	68.5	89.6	46.2	51.2	52.2	57.8	48.0	55.3	46.9	50.5	56.5	61.2	48.1	55.6
7	65.8	89.1	41.8	47.3	49.2	55.4	44.5	52.4	43.1	47.1	53.0	58.4	44.5	52.7
8	63.4	89.3	38.4	44.4	45.8	52.5	41.9	50.9	39.0	43.2	50.1	55.8	41.2	50.1
9	58.2	85.2	36.5	43.0	43.1	50.3	38.4	48.2	37.2	41.8	43.7	49.9	38.1	47.7
10	55.5	84.1	35.0	41.9	40.7	48.6	36.9	47.6	34.0	38.9	41.5	47.8	37.4	47.4
Median	11.2		4.7		6.7		5.4		5.1		8.0		5.1	

cont'd	ICD-10 classification														
	C07 Parotid gland		C08 Salivary glands unspec.		C09 Tonsil		C10 Oropharynx		C11 Nasopharynx		C12 Piriform sinus		C13 Hypopharynx		
	n=531		n=159		n=1,396		n=405		n=284		n=445		n=812		
	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	100.0
1	90.9	93.6	87.6	89.5	81.6	82.9	68.8	69.6	82.0	82.8	77.9	78.9	60.4	61.4	
2	84.1	88.7	76.1	79.4	70.7	72.9	52.7	54.2	74.7	76.2	60.2	62.0	42.9	44.2	
3	76.1	82.4	67.7	71.6	63.4	66.4	44.4	46.2	66.5	68.7	49.3	51.5	34.7	36.2	
4	70.2	77.9	59.6	64.5	59.2	62.8	39.8	42.0	62.1	64.8	42.5	45.1	29.3	31.3	
5	67.1	76.3	54.2	59.5	56.5	61.0	37.9	40.4	59.1	62.1	36.2	39.3	26.3	28.4	
6	64.2	74.6	51.1	56.5	53.1	58.1	34.9	37.7	56.8	60.5	32.5	35.8	23.9	26.2	
7	62.3	73.9	47.7	54.5	49.9	55.5	30.6	33.8	54.7	59.2	30.5	34.2	22.2	24.8	
8	58.3	70.9	47.7	54.5	47.6	53.8	29.2	32.4	51.8	57.0	27.2	31.0	21.0	23.7	
9	55.5	68.8	46.5	53.8	45.0	52.0	27.3	30.6	51.2	56.7	25.6	29.8	19.3	21.9	
10	53.8	68.1	45.2	53.5	43.2	50.8	25.6	29.2	49.1	55.3	24.2	28.6	17.9	21.0	
Median	12.3		6.2		6.9		2.3		9.4		2.9		1.6		

ICD-10 classification		
C14		
<i>cont'd</i>	Lip, mouth, pharynx unspec. n=1,231	
Years	obs. %	rel. %
0	100.0	100.0
1	77.4	78.5
2	61.2	63.0
3	51.8	54.0
4	45.9	48.5
5	42.1	45.4
6	38.2	41.8
7	34.7	38.6
8	33.5	37.9
9	29.2	33.7
10	26.8	31.5
Median	3.2	

Table 4b. Observed (obs.) and relative (rel.) survival of patients with HN cancer by ICD-10 classification for period 1998-2020 (N=9,026).

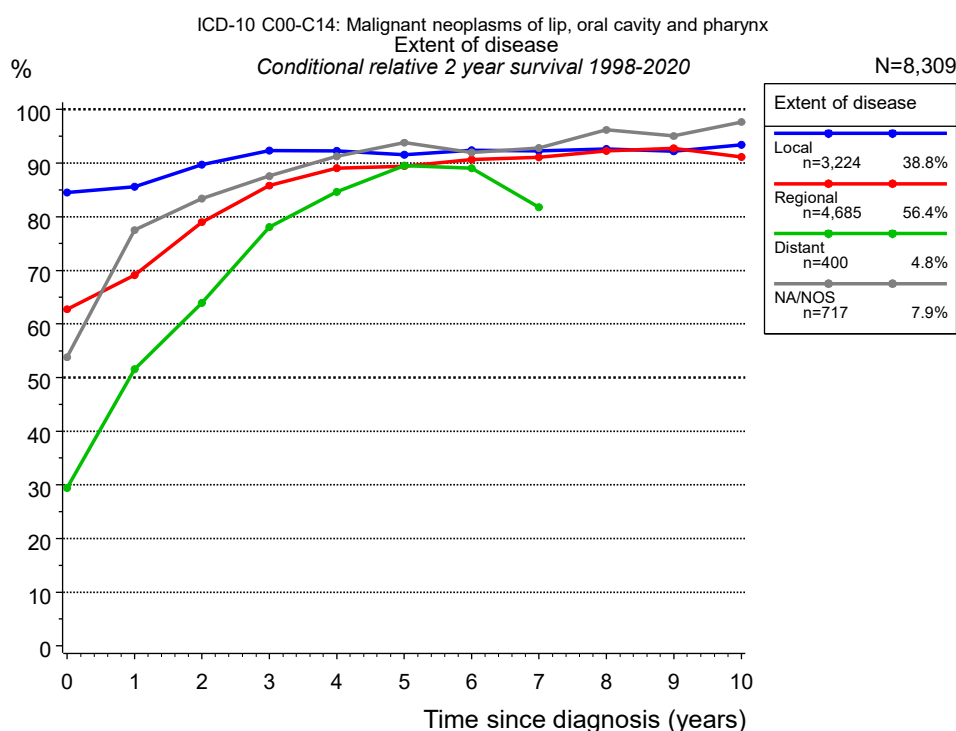


Figure 4c. Conditional relative 2-year survival of patients with HN cancer by extent of disease. For 8,336 of 9,026 cases diagnosed between 1998 and 2020 valid data could be obtained for this item. For a total of 8,309 cases an evaluable classification was established. The grey line represents the subgroup of 717 patients with missing values regarding extent of disease (7.9 % of 9,026 patients, the percent values of all other categories are related to n=8,309).

Years	Extent of disease							
	Local		Regional		Distant		NA/NOS	
	n	Cond. surv. % 2 yrs	n	Cond. surv. % 2 yrs	n	Cond. surv. % 2 yrs	n	Cond. surv. % 2 yrs
0	3,224	84.5	4,685	62.7	400	29.4	717	53.8
1	2,857	85.6	3,550	69.1	167	51.5	416	77.5
2	2,505	89.7	2,739	79.0	108	64.0	344	83.3
3	2,253	92.3	2,262	85.8	75	78.1	292	87.6
4	2,027	92.2	1,953	89.1	56	84.6	253	91.2
5	1,833	91.5	1,698	89.4	49	89.5	225	93.8
6	1,612	92.4	1,449	90.7	40	89.0	202	92.0
7	1,429	92.3	1,233	91.0	35	81.8	186	92.8
8	1,247	92.6	1,068	92.3			160	96.2
9	1,061	92.2	901	92.7			144	95.0
10	907	93.4	768	91.1			128	97.6

Table 4d. Conditional relative 2-year survival of patients with HN cancer by extent of disease for period 1998-2020 (N=8,309).

Conditional relative survival rates refer to the relative survival probability, in this case for 2 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 2-year survival rate is 92.3% (n=2,253).

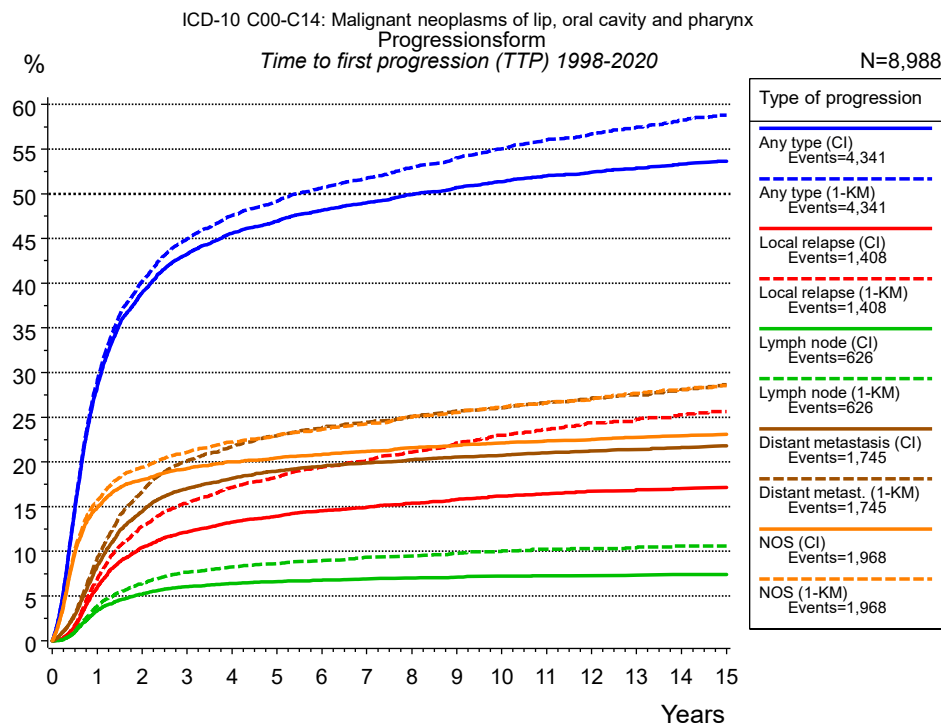


Figure 5a. Time to first progression of 8,988 patients with HN cancer diagnosed between 1998 and 2020 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

		Type of progression					
		Any type (CI)	Any type (1-KM)	Local relapse (CI)	Local relapse (1-KM)	Lymph node (CI)	Lymph node (1-KM)
N	8,608	8,608	8,608	8,988	8,988	8,988	8,988
Events	4,313	4,313	4,313	1,397	1,397	625	625
compet.	1,596			4,553		5,166	
Years	%	%	%	%	%	%	%
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	28.5	29.1	6.0	6.9	3.4	3.9	8.4
2	38.9	40.2	10.5	12.9	5.2	6.4	14.4
3	43.3	44.9	12.2	15.4	6.0	7.7	17.1
4	45.6	47.6	13.3	17.2	6.4	8.3	18.2
5	46.9	49.2	13.9	18.3	6.6	8.6	19.0
6	48.2	50.6	14.5	19.4	6.7	8.9	19.5
7	49.0	51.8	14.9	20.2	7.0	9.4	19.9
8	49.9	53.0	15.4	21.1	7.0	9.5	20.2
9	50.7	54.0	15.8	22.1	7.1	9.8	20.6
10	51.4	55.0	16.2	23.0	7.2	10.0	20.8
11	52.0	56.0	16.5	23.6	7.3	10.2	21.0
12	52.4	56.7	16.8	24.4	7.3	10.3	21.2
13	52.9	57.4	16.9	24.8	7.3	10.4	21.4
14	53.4	58.3	17.1	25.3	7.4	10.6	21.6
15	53.6	58.8	17.2	25.6	7.4	10.6	21.8

<i>cont'd</i>	Type of progression		
	Distant metast. (1- KM)	NOS (CI)	NOS (1-KM)
N	8,611	8,985	8,985
Events	1,738	1,950	1,950
compet.		3,915	
Years	%	%	%
0	0.0	0.0	0.0
1	9.3	14.9	15.7
2	16.6	18.0	19.4
3	20.1	19.3	21.1
4	21.7	20.0	22.2
5	23.0	20.5	23.0
6	23.8	20.9	23.7
7	24.4	21.2	24.3
8	25.1	21.6	25.0
9	25.7	21.9	25.6
10	26.1	22.1	26.1
11	26.6	22.4	26.7
12	27.1	22.5	27.0
13	27.5	22.8	27.7
14	28.1	22.9	28.1
15	28.7	23.1	28.6

Table 5b. Time to first progression of patients with HN cancer for period 1998-2020 (N=8,988), also showing the total of progression events (Events) and of deaths as competing risk (compet.).

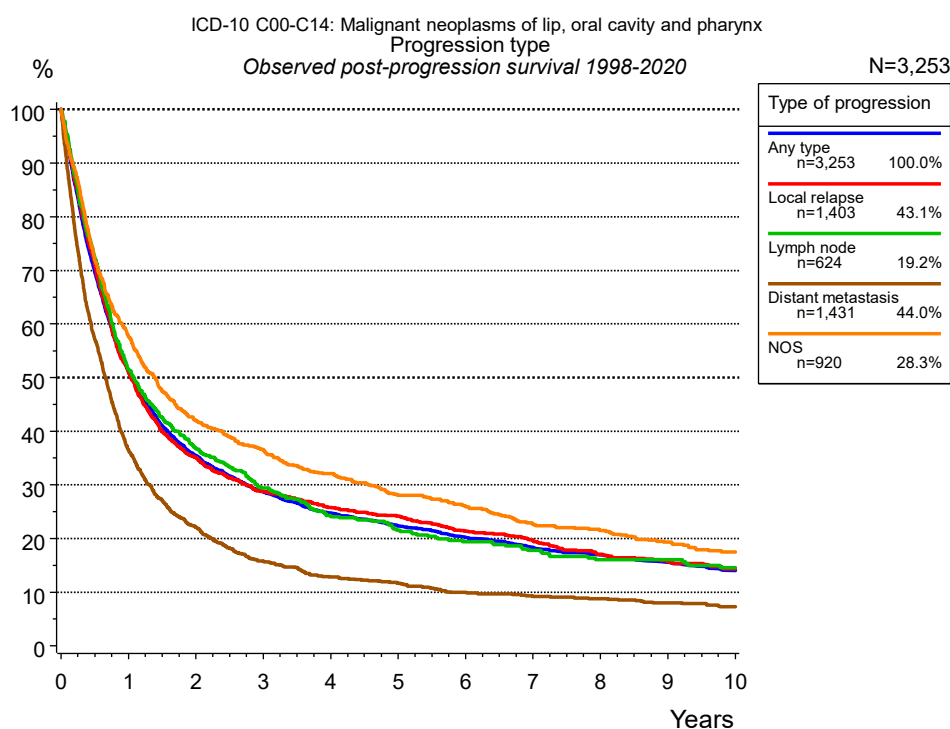


Figure 5c. Observed post-progression survival of 3,253 patients with HN cancer diagnosed between 1998 and 2020. These 3,253 patients with documented progression events during their course of disease represent 36.2 % of the totally 8,988 evaluated cases (incl. M1, n=380, 4.2 %). Patients with cancer relapse documented via death certificates only were excluded (n=1,468, 16.3 %). 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=3,253 %	Local relapse n=1,403 %	Lymph node n=624 %	Distant metastasis n=1,431 %	NOS n=920 %
0	100.0	100.0	100.0	100.0	100.0
1	51.1	50.9	51.6	36.6	57.6
2	35.5	35.0	36.8	22.1	42.1
3	28.8	28.8	29.4	15.7	36.6
4	24.7	25.8	24.3	12.8	32.1
5	22.3	24.2	21.6	11.6	28.0
6	20.2	21.4	19.4	9.9	26.0
7	18.4	19.7	17.8	9.1	22.7
8	16.9	17.1	16.0	8.8	21.5
9	15.6	15.7	16.0	8.0	19.3
10	14.0	14.3	14.6	7.3	17.5

Table 5d. Observed post-progression survival of patients with HN cancer for period 1998-2020 (N=3,253).

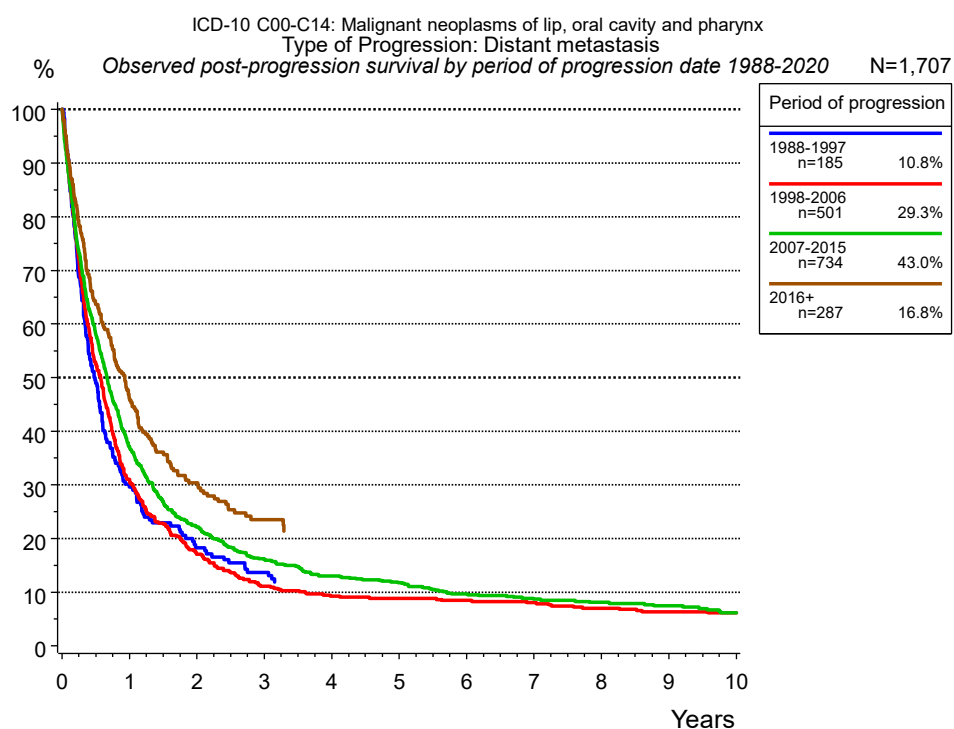


Figure 5e. Observed post-progression (distant metastasis) survival of 1,707 patients with HN cancer diagnosed between 1988 and 2020 by period of progression.

Years	Period of progression			
	1988-1997 n=185 %	1998-2006 n=501 %	2007-2015 n=734 %	2016+ n=287 %
0	100.0	100.0	100.0	100.0
1	29.6	31.0	37.2	46.2
2	18.3	17.1	22.2	30.4
3	13.7	11.1	16.1	23.5
4		9.3	13.0	
5		8.9	11.8	
6		8.5	9.7	
7		8.0	8.7	
8		7.0	8.1	
9		6.3	7.4	
10		6.1	6.1	

Table 5f. Observed post-progression (distant metastasis) survival of patients with HN cancer for period 1988-2020 by period of progression (N=1,707).

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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