

Chapter 2

Cancers of the Head and Neck

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INTRODUCTION

This chapter provides survival analyses for 40,811 histologically confirmed adult cases of cancers of the head and neck obtained from the Surveillance, Epidemiology, and End Results (SEER) Program of the NCI. These cases included cancers of the lip, oral cavity, oropharynx, hypopharynx, tonsil, salivary glands, nasopharynx, nose, paranasal sinus, and middle ear. The tumors in this chapter all originate from the lining of the upper aerodigestive tract. The cell type of origin for the vast majority of patients is squamous cell. However, this is not the case for cancers of the paranasal sinus and salivary gland cancers, which are primarily of mixed cell types. Head and neck cancers can be divided into several groups. Epidemiologists often treat cancers of the tongue, gum, floor, and other parts of the mouth and of the pharynx as a single group referred to as oral cancer. However, some differences exist among these cancers in terms of epidemiology. Cancers of the lip have very different epidemiologic characteristics from the oral cancers and are generally considered separately. Cancers of the nose and paranasal sinuses have a low risk in the general population and have been associated with occupational and chemical exposures. The most frequently occurring cancers in the head and neck group (1) were tongue (21%), gum and other mouth sites (15%), tonsil (11%), and salivary gland (10%).

Tobacco and alcohol are major risk factors for many of these tumors (2). Prolonged exposure to sunlight, as occurs with farmers and others with outdoor occupations, is a clear contributor to carcinomas of the lip. In India and other parts of Asia, betel nut (arecoline) use and habitual reverse smoking in which the lighted end of the cigarette is held within the oral cavity are other etiologic agents (1).

MATERIALS AND METHODS

The NCI SEER Program contracts individually with central cancer registries, based in organizations such as universities and state health departments, to obtain data on all cancers diagnosed in residents of the registry's catchment area. SEER collects data on all invasive and in situ cancers except basal cell and squamous cell carcinomas of the skin and in situ carcinomas of the uterine cervix.

SEER cancer registries are selected on the basis of two criteria: the registry's ability to operate and maintain a population-based cancer reporting system and the epidemiologic significance of their population subgroups. While some cancer registries have remained in the SEER Program since it began, others have left; additional registries have joined at a later date or left for a period of time and rejoined the Program later. This analysis is based on data from 12 geographic areas, which collectively represent approximately 14% of the total US population and include

Table 2.1: Cancer of the Head and Neck: Number of Cases and Exclusions by Reason, 12 SEER Areas, 1988-2001

Number Selected/Remaining	Number Excluded	Reason for Exclusion/Selection
53,251	0	Select 1988-2001 diagnosis (Los Angeles for 1992-2001 only)
43,661	9,590	Select first primary only
43,413	248	Exclude death certificate only or at autopsy
43,047	366	Exclude unknown race
42,966	81	Exclude alive with no survival time
42,598	368	Exclude children (Ages 0-19)
41,501	1,097	Exclude in situ cancers for all except breast & bladder cancer
41,090	411	Exclude no or unknown microscopic confirmation
40,811	279	Exclude sarcomas

the States of Connecticut, Iowa, New Mexico, Utah, and Hawaii, and the metropolitan areas of Detroit, Atlanta, San Francisco, Seattle, San Jose, and Los Angeles, plus 10 counties in rural Georgia. Los Angeles contributed data for diagnosis years 1992 to 2001, while other areas for diagnosis years from 1988 to 2001.

Survival analyses performed here are based on relative survival rates, defined as observed survival divided by expected survival. Relative survival the effect of the cancer in the cohort, while observed survival takes into account deaths due to all causes. When 5-year relative survival is 100%, a patient has the same chance to live 5 years as a demographically similar cancer-free person.

This chapter used SEER modified American Joint Committee on Cancer (AJCC) staging, 5th edition (3) to classify cancers of the head and neck, with the exception of cancers of the nose, nasal cavity, and middle ear which used SEER historic staging. SEER historic staging categories include in situ, localized, regional, distant and unstaged. Epidemiologists classify an invasive neoplasm confined entirely to the organ of origin as *localized*. They define a neoplasm that has extended either beyond the organ or into regional lymph nodes as *regional*. *Distant* stage describes a neoplasm that has spread to parts of the body remote from the primary tumor. *Unstaged* denotes cancers that lack sufficient information to assign stage.

As shown in Table 2.1, this study excluded the following types of cancer cases: head and neck cancer not the first primary cancer, autopsy or death certificate only (no determination of diagnosis date makes survival impossible to calculate), patients of unknown race, patients alive with no survival time, patients less than 20 years of age, in situ cases, cases without microscopic confirmation, and sarcomas.

RESULTS

Table 2.2 shows the site distribution and ICD-O code (4) of the 40,811 adult cancers in this study. As mentioned previously, the majority of cancers are from the tongue (21%), gum and other mouth sites (15%), tonsil (11%), and salivary gland (10%).

Table 2.3 displays the site-specific demographic characteristics of the patients. Head and neck cancers tend to be diagnosed at older ages. Nasopharynx shows a younger age at diagnosis than other cancers described here, with 40% of cases diagnosed at ages younger than 50. Cancer of the lip is diagnosed more frequently at older ages than cancers at other head and neck sites described here, with approximately 70% of cases diagnosed at age 60 or older. While cancers at all sites are diagnosed more frequently among males, the percentages for males and females are closest for gum and other mouth cancers (54% male) and for salivary gland cancers (56% male). The distribution by sex is most extreme for cancers of the lip (81% male) and hypopharynx (78% male). The racial distribution tends to reflect the general population from these geographic regions (whites 81%, blacks 11%, and other 9%) with the exception of cancer of the lip, found overwhelmingly in whites (98%), and “other cancers of the oral cavity and pharynx,” cancers of the hypopharynx, and cancers of the oropharynx and tonsil, where the percentage of black patients was somewhat elevated (17%, 16%, and 15%, respectively). Although not shown in these data, a significantly larger proportion of patients with nasopharyngeal cancer are of Asian/Pacific Islander, specifically Chinese, origin. These racial differences in nasopharyngeal cancer incidence have been previously noted (5,6). Population data on Asian/Pacific Islanders are available for this data set from 1990 forward. Over this period the makeup of the population is white 79%, black 10%, Asian/Pacific Islanders 10% and American

Table 2.2: Cancers of the Head and Neck: Number and Distribution of Cases by Primary Site, Ages 20+, 12 SEER Areas, 1988-2001

Primary Site	ICD-O	Cases	Percent
Lip	C00.0-C00.9	3,982	9.8
Tongue	C01.9-C02.9	8,637	21.2
Gum & Other Mouth	C03.0-C03.9, C05.0-C06.9	5,946	14.6
Floor of Mouth	C04.0-C04.9	3,286	8.1
Salivary Gland	C07.9-C08.9	4,058	9.9
Oropharynx	C10.0-C10.9	1,081	2.6
Tonsil	C09.0-C09.9	4,420	10.8
Nasopharynx	C11.0-C11.9	2,819	6.9
Hypopharynx	C12.9-C13.9	3,273	8.0
Other Oral Cavity & Pharynx	C14.0, C14.2-C14.8	1,010	2.5
Nose and Middle Ear	C30.0-C30.1	1,091	2.7
Paranasal Sinus	C31.0-C31.9	1,208	3.0
Total		40,811	100.0

Indian/Alaskan Natives 1%. Thus the very high percentage of other (49%) for nasopharyngeal cancer is likely to reflect primarily Asian/Pacific Islanders (7).

Figure 2.1 shows relative survival curves for cancers of various head and neck sites. Table 2.4 provides corresponding numeric data. Patients with lip cancer had the best prognosis, with 5-year relative survival approximately 94%. Cancer of the salivary gland also shows a 5-year relative survival rate (74%) higher than most other head and neck cancers. On the other hand, cancers of the hypopharynx (5-year relative survival rate 30%) and “other cancers of the oral cavity and pharynx” (5-year relative survival rate

30%) have the worst prognoses in terms of relative survival rates. Figure 2.1 and Table 2.4 display a rapidly decreasing slope in relative survival until sometime between 18 and 36 months followed by a leveling off for many head and neck cancer sites. Thus, the usually quoted 5-year relative survival figures may be less significant for patient prognosis than a 2- or 3-year relative survival figure.

Figure 2.2 provides a more detailed look at relative survival curves for several sites that have 5-year relative survival approximately 50 to 60%. Among this group, cancers of the tonsil and oropharynx have the worst relative survival, the only site in this group dipping slightly below 50% at 5

Table 2.3: Cancer of the Head and Neck: Number and Distribution of Cases by Primary Site, Age (20+), Sex and Race, 12 SEER Areas, 1988-2001

Primary Site	Lip		Tongue		Floor of Mouth		Gum & Other Mouth		Oropharynx & Tonsil	
	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
Age (years)										
20-29	45	1.1	106	1.2	5	0.2	86	1.4	12	0.2
30-39	200	5.0	425	4.9	55	1.7	203	3.4	164	3.0
40-49	363	9.1	1,309	15.2	425	12.9	616	10.4	1,060	19.3
50-59	602	15.1	2,134	24.7	872	26.5	1,176	19.8	1,599	29.1
60-69	1,013	25.4	2,191	25.4	1,048	31.9	1,519	25.5	1,488	27.0
70-79	1,064	26.7	1,721	19.9	660	20.1	1,437	24.2	924	16.8
80+	695	17.5	751	8.7	221	6.7	909	15.3	254	4.6
Sex										
Male	3,232	81.2	5,764	66.7	2,261	68.8	3,188	53.6	4,111	74.7
Female	750	18.8	2,873	33.3	1,025	31.2	2,758	46.4	1,390	25.3
Race										
White	3,892	97.7	7,123	82.5	2,741	83.4	4,891	82.3	4,457	81.0
Black	40	1.0	904	10.5	429	13.1	691	11.6	803	14.6
Other	50	1.3	610	7.1	116	3.5	364	6.1	241	4.4

Table 2.3 (continued)

Primary Site	Hypopharynx		Salivary Gland		Nasopharynx		Nose, Paranasal Sinus & Middle Ear		Other Oral Cavity & Pharynx	
	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
Age (years)										
20-29	<5		180	4.4	127	4.5	53	2.3	<5	
30-39	25	0.8	351	8.6	341	12.1	136	5.9	11	1.1
40-49	320	9.8	576	14.2	661	23.4	287	12.5	90	8.9
50-59	819	25.0	667	16.4	648	23.0	417	18.1	233	23.1
60-69	1,117	34.1	883	21.8	603	21.4	561	24.4	336	33.3
70-79	774	23.6	840	20.7	335	11.9	519	22.6	257	25.4
80+	217	6.6	561	13.8	104	3.7	326	14.2	81	8.0
Sex										
Male	2,560	78.2	2,281	56.2	1,961	69.6	1,329	57.8	701	69.4
Female	713	21.8	1,777	43.8	858	30.4	970	42.2	309	30.6
Race										
White	2,508	76.6	3,412	84.1	1,203	42.7	1,842	80.1	805	79.7
Black	536	16.4	318	7.8	226	8.0	223	9.7	176	17.4
Other	229	7.0	328	8.1	1,390	49.3	234	10.2	29	2.9

years. Cancers of the gum and other mouth have the best relative survival, almost 60% at 5 years.

Overall, the 5-year relative survival rate for all patients with head and neck cancers was 57% (Table 2.4). The 5-year relative survival rate for head and neck cancers for whites was 60% and for blacks was 40%. The 5-year relative survival rate for males was 45%, for females 55%. Table 2.5 examines relative survival by site, race, and sex. As a function of race and sex, 5-year relative survival rates tended to be higher for white males and females than black males and females. However, differences in survival rates according to race and sex must be interpreted in light of differences in types of tumors and stage of presentation. In addition, the distribution of other important prognostic factors like comorbidities are not even across race and sex categories and will impact the interpretation of these results (8, 13).

In general, a strong correlation existed between stage at diagnosis and relative survival, with cancers that tend to be diagnosed at more localized stages having higher relative survival. In accord with this, as Table 2.6 shows, cancers of the lip have the highest percentage of cases diagnosed at stage I (83%), which had the highest relative survival at one (100%), three (99%) and five (96%) years after diagnosis. Other cancers in the head and neck group have a much lower percentage of cases diagnosed at stage I. Following lip cancer, cancers of the floor of the mouth, gum and other mouth cancers, and cancers of the salivary gland have between 36% and 40% of cases diagnosed at stage I. Diagnosis of hypopharyngeal cancers occurred at stage I less than 10% of the time, and these cancers have among the lowest relative survival rates of head and neck cancers. Table 2.6 also provides some insight into the

unstaged group of cancers in terms of relative survival as compared to cancers diagnosed at various stages.

Table 2.7 shows 1-, 2- 3-, 5-, 8-, and 10-year relative survival rates by grade for each of the head and neck cancer sites. In most cases, at each time point survival increases with increasing level of differentiation. Exceptions occur for hypopharynx, nasopharynx, oropharynx/tonsil, and “other oral cavity and pharynx” cancers. For some of the head and neck sites, the survival of the unknown group of cancers is between that of grade II and grade III-IV, although for four sites (nasopharynx, other oral cavity and pharynx, hypopharynx, oropharynx/tonsil) it is worse than grade III-IV. For salivary cancer, 39% of cancers do not have a grade assigned. The percentage is also high for lip and for nose, nasal cavity, and middle ear. For these three sites the unknown group as a whole shows survival better than that associated with diagnosis at stages III-IV, and in the case of nose, nasal cavity, and middle ear better than that associated with diagnoses at grade II. In general, relative survival decreases more rapidly with time for grades II and for III-IV than for grade I.

Table 2.8 shows 1-, 2-, 3-, 5-, 8-, and 10-year relative survival by size of tumor for each of the head and neck cancer sites. In general, relative survival decreases at each time point with increasing tumor size. This is less clear cut for cancers of the oropharynx and tonsil and those of the nasopharynx. Cancers at the following sites had 40% or more with unknown tumor size: lip; oropharynx and tonsil; hypopharynx; nasopharynx; nose, nasal cavity, and middle ear; and other oral cavity and pharynx. As is observed for grade, survival decreases more rapidly with time for increasing tumor size.

Figure 2.1: Cancer of the Head and Neck: Relative Survival Rate (%) by Primary Site, Ages 20+, 12 SEER Areas, 1988-2001

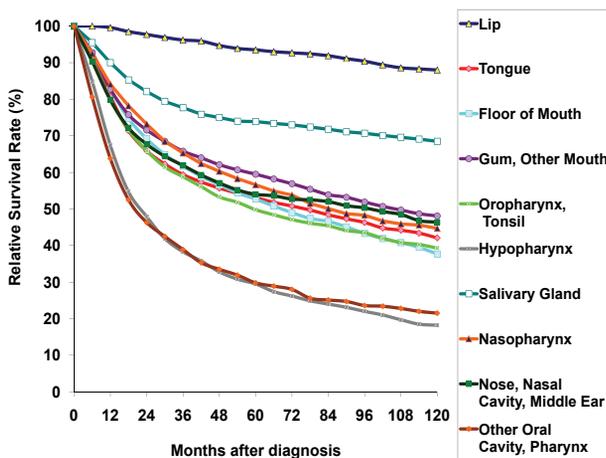
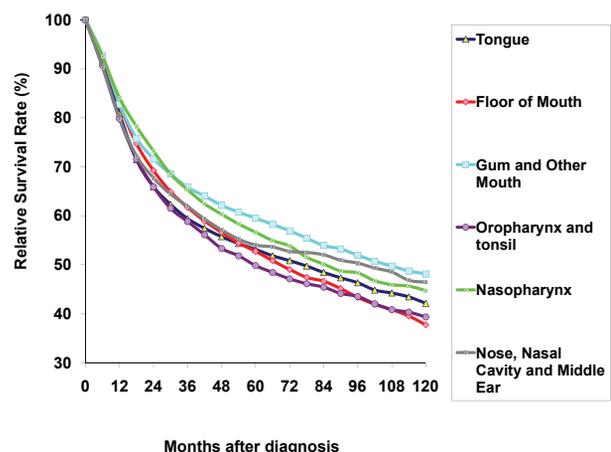


Figure 2.2: Cancer of the Head and Neck: Relative Survival Rate (%) by Primary Site, Ages 20+, 12 SEER Areas, 1988-2001



A discussion of patient relative survival characteristics for individual head and neck sites follows.

Lip

The median survival for cancer of the lip is greater than 120 months (Table 2.6). This is also the case for patients with cancers diagnosed at stage I. Patients diagnosed with cancers at stage II had a median survival of 99 months, stage III had a median survival of 50 months, and those with stage IV diagnoses a median survival time of 37 months (Table 2.6). Figure 2.3 shows relative survival for lip cancer by stage at diagnosis. Even for lip cancers diagnosed at stage IV, relative survival is nearly 50% at 5 years. Only 4% of lip cancers are diagnosed at stages III or IV, while 6% are diagnosed at stage II. The vast majority of lip cancers, 83%, are diagnosed at stage I. Lip cancers of unknown stage show survival patterns only slightly worse than those for all stages combined, indicating a lack of substantial bias.

Tongue

Median survival for tongue cancer is 48 months (Table 2.6). This varies from 95 months for patients diagnosed with stage I cancer to 22 months for those diagnosed with stage IV cancer. Figure 2.4 shows survival of tongue cancers by stage of diagnosis. Five year relative survival rates for tongue cancers diagnosed at stage I is 71%, stage II is 59%, stage III 47%, and stage IV 37%. Approximately 34% of tongue cancers are diagnosed at stage I. This figure has not changed appreciably in three decades, nor has the 5-year relative survival rate. The survival curve for unstaged cancers lies between those diagnosed at stages III and IV.

Tongue cancers are divided into those of the anterior and of the basal portions of the tongue. Cancers of the anterior tongue represent 56% of tongue cancers. Table 2.9 provides data on the stage at diagnosis for cancers of the basal and anterior tongue. Cancers of the anterior tongue

Table 2.4: Cancer of the Head and Neck: Number and Distribution of Cases, and 1-, 2-, 3-, 5-, 8- & 10-Year Relative Survival Rates (%) by Primary Site, Ages 20+, 12 SEER Areas, 1988-2001

Primary Site	Cases	Percent	Relative Survival Rate (%)					
			1-Year	2-Year	3-Year	5-Year	8-Year	10-Year
Total Head & Neck	40,811	100.0	82.5	70.3	64.0	57.1	50.5	46.6
Lip	3,982	9.8	99.6	97.7	96.2	93.5	90.4	88.0
Tongue	8,637	21.2	80.8	65.9	59.4	53.1	46.3	42.1
Gum & Other Mouth	5,946	14.6	82.8	71.6	65.8	59.5	51.9	48.1
Floor of Mouth	3,286	8.1	82.8	69.2	61.7	52.7	43.3	37.7
Oropharynx & Tonsil	5,501	13.5	79.8	65.9	58.8	49.8	43.5	39.3
Hypopharynx	3,273	8.0	67.4	47.9	38.3	29.5	22.0	18.2
Salivary Gland	4,058	9.9	90.0	82.1	77.7	73.9	70.7	68.5
Nasopharynx	2,819	6.9	84.1	73.2	65.3	56.6	48.3	44.7
Nose, Nasal Cavity & Middle Ear	2,299	5.6	79.8	67.7	61.9	54.0	50.3	46.4
Other Oral Cavity & Pharynx	1,010	2.5	63.8	46.3	38.9	29.8	23.6	21.5

Figure 2.3: Cancer of the Lip: Relative Survival Rate (%) by Stage, Ages 20+, 12 SEER Areas, 1988-2001

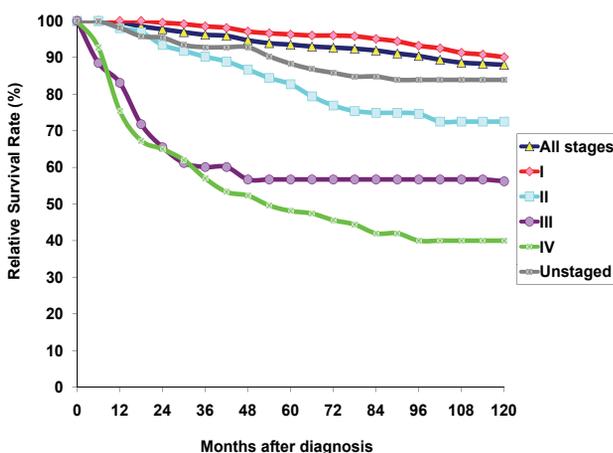
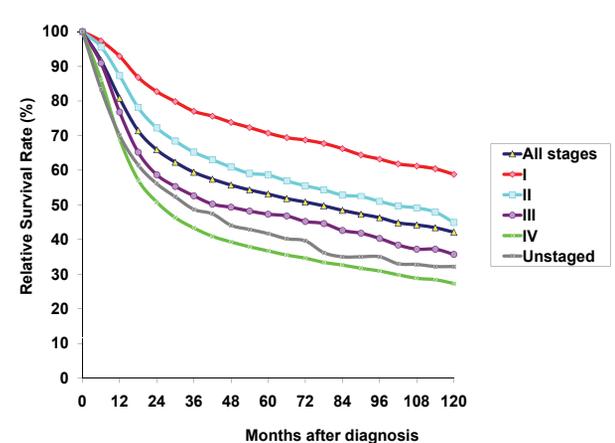


Figure 2.4: Cancer of the Tongue: Relative Survival Rate (%) by Stage, Ages 20+, 12 SEER Areas, 1988-2001



are much more likely to be diagnosed at an earlier stage than cancers of the basal tongue. While 48% of cancers of the anterior tongue are diagnosed at stage I, only 16% of cancers of the base of tongue are diagnosed at stage I. By comparison, 19% of cancers of the anterior tongue are diagnosed at stage IV, while 46% of cancers of the base of tongue are diagnosed at stage IV. A similar percentage of anterior and basal tongue cancers are unstaged: 7% and 6%, respectively. Table 2.10 shows 1-, 2-, 3-, 5-, 8-, and 10-year relative survival rates for cancers of the basal and anterior tongue by stage at diagnosis. For all stages combined, cancers of the anterior tongue have a higher relative survival rate at each time point, with a growing differential as time increases. Although cancers of the anterior tongue have better survival rates when diagnosed at stage I, this does not appear to be the case for cancers diagnosed at stages II, III, or IV. This suggests that the overall differences in survival between cancers of the anterior and basal tongue may be due primarily to the larger percentage of cases of cancer of the anterior tongue diagnosed at stage I.

Floor of Mouth

Median survival for all cancers of the floor of the mouth is 50 months (Table 2.6). This varies from 94 months for those diagnosed with stage I to 19 months for those diagnosed with stage IV cancers. Five-year relative survival rates decrease from 73% for patients with cancers diagnosed at stage I to 30% for patients with cancers diagnosed at stage IV. Figure 2.5 shows relative survival curves for cancer of the floor of the mouth by SEER modified AJCC stage. Unstaged cancers have relative survival rates somewhat between stages III and IV, lower than those for all cancers combined.

Gum and Other Mouth

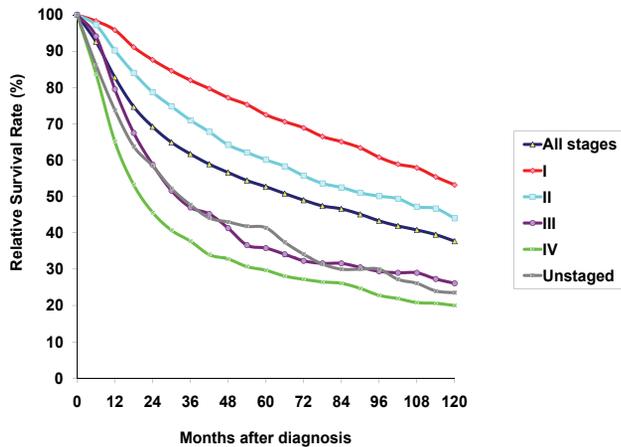
Median survival for all patients with cancers of the “gum and other mouth” category is 59 months. This decreases from 113 months for patients diagnosed with stage I disease to 22 months for patients diagnosed with stage IV disease (Table 2.6). Similarly, five-year relative survival rates

Table 2.5: Cancer of the Head and Neck: Number and Distribution of Cases and 1-, 2-, 3-, 5-, 8-, & 10-Year Relative Survival Rates (%) by Site, Race, and Sex, Ages 20+, 12 SEER Areas, 1988-2001

Site/Race/Sex	Cases	Percent	Relative Survival Rate (%)					
			1-Year	2-Year	3-Year	5-Year	8-Year	10-Year
Lip	3,982	100.0	99.6	97.7	96.2	93.5	90.4	88.0
White Female	708	17.8	99.7	96.7	96.4	93.1	90.0	89.9
White Male	3,184	80.0	99.9	98.2	96.4	93.9	90.6	87.7
Black Female	22	0.6	~	~	~	~	~	~
Black Male	18	0.5	~	~	~	~	~	~
Tongue	8,637	100.0	80.8	65.9	59.4	53.1	46.3	42.1
White Female	2,382	27.6	82.4	68.8	63.0	57.9	49.2	44.5
White Male	4,741	54.9	82.2	67.4	61.0	54.0	48.3	44.5
Black Female	230	2.7	71.2	54.0	46.1	37.8	28.8	27.8
Black Male	674	7.8	66.6	47.1	37.2	30.6	22.7	14.2
Floor of Mouth	3,286	100.0	82.8	69.2	61.7	52.7	43.3	37.7
White Female	882	26.8	83.2	72.4	66.8	59.3	50.2	43.2
White Male	1,859	56.6	84.5	71.7	63.5	53.1	42.9	37.3
Black Female	104	3.2	78.5	57.5	55.1	51.5	35.6	35.6
Black Male	325	9.9	72.6	49.9	39.7	32.0	27.1	23.3
Gum & Other Mouth	5,946	100.0	82.8	71.6	65.8	59.5	51.9	48.1
White Female	2,331	39.2	83.9	75.5	71.0	66.4	61.5	58.1
White Male	2,560	43.1	83.4	71.1	64.5	57.3	47.4	41.9
Black Female	263	4.4	78.8	68.8	65.1	60.2	49.9	47.5
Black Male	428	7.2	74.8	56.8	47.7	38.1	29.8	27.6
Oropharynx & Tonsil	5,501	100.0	79.8	65.9	58.8	49.8	43.5	39.3
White Female	1,151	20.9	81.0	68.2	60.5	51.0	44.4	37.3
White Male	3,306	60.1	81.7	68.4	61.8	53.4	47.0	43.2
Black Female	175	3.2	72.6	52.6	44.9	34.0	29.5	26.9
Black Male	628	11.4	68.3	48.7	38.4	27.8	21.1	18.9

decrease from 81% for those diagnosed with stage I disease to 40% for those diagnosed with stage IV disease. Figure 2.6 shows relative survival curves by stage at diagnosis for those with “gum and other mouth” cancers. For all stages combined, the 1-, 3-, and 5-year relative survival rates are 83%, 66%, and 60%, respectively.

Figure 2.5: Cancer of the Floor of Mouth: Relative Survival Rate (%) by Stage, Ages 20+, 12 SEER Areas, 1988-2001



Oropharynx and Tonsil

Table 2.6 presents survival of cancers of the oropharynx and tonsil stratified by stage at diagnosis. The overall 1-, 3-, and 5-year relative survival rates are 80%, 59%, and 60%, respectively.

Figure 2.6: Cancer of Gum and Other Mouth: Relative Survival Rate (%) by Stage, Ages 20+, 12 SEER Areas, 1988-2001

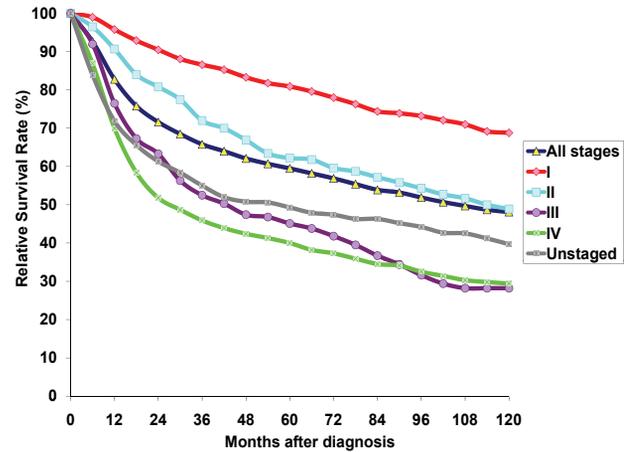


Table 2.5 (continued)

Site/Race/Sex	Cases	Percent	Relative Survival Rate (%)					
			1-Year	2-Year	3-Year	5-Year	8-Year	10-Year
Hypopharynx	3,273	100.0	67.4	47.9	38.3	29.5	22.0	18.2
White Female	591	18.1	70.8	50.5	42.2	33.3	24.2	20.3
White Male	1,917	58.6	68.3	49.9	39.9	30.6	23.1	19.2
Black Female	97	3.0	56.5	33.2	26.6	19.7	15.6	12.6
Black Male	439	13.4	58.8	38.4	27.9	19.9	14.7	11.9
Salivary Gland	4,058	100.0	90.0	82.1	77.7	73.9	70.7	68.5
White Female	1,455	35.9	92.2	85.8	82.5	79.3	75.5	74.2
White Male	1,957	48.2	88.3	78.5	73.9	68.9	65.4	62.3
Black Female	159	3.9	91.5	86.4	80.5	77.4	76.4	76.0
Black Male	159	3.9	82.5	73.2	65.3	64.1	63.6	61.3
Nasopharynx	2,819	100.0	84.1	73.2	65.3	56.6	48.3	44.7
White Female	379	13.4	72.4	59.1	51.2	45.7	39.6	34.0
White Male	824	29.2	78.6	66.5	58.9	49.8	43.2	41.1
Black Female	68	2.4	83.6	68.8	53.9	42.9	35.0	35.0
Black Male	158	5.6	80.3	63.6	55.4	45.8	32.2	31.7
Nose, Nasal Cavity and Middle Ear	2,299	100.0	79.8	67.7	61.9	54.0	50.3	46.4
White Female	774	33.7	79.4	68.0	62.9	56.3	53.7	47.1
White Male	1,068	46.5	81.2	70.1	63.9	56.5	50.8	48.6
Black Female	104	4.5	66.4	47.1	45.0	35.7	31.6	23.3
Black Male	119	5.2	73.9	56.8	49.0	37.2	36.0	36.0
Other Oral Cavity and Pharynx	1,010	100.0	63.8	46.3	38.9	29.8	23.6	21.5
White Female	260	25.7	64.5	49.1	40.6	30.4	26.7	25.8
White Male	545	54.0	67.3	49.0	41.9	32.5	25.1	21.6
Black Female	47	4.7	47.8	23.5	16.7	14.8	7.9	7.9
Black Male	129	12.8	50.4	33.8	26.2	19.3	15.2	12.0

~Statistic not displayed due to less than 25 cases.

50%, respectively. The majority of tumors were diagnosed at stage IV (43%). Approximately equal numbers were diagnosed at stage III (23%) and stage I (19%), with 9% diagnosed at stage II. The median survival for patients diagnosed at stages I to III was between 55 and 63 months, while for those diagnosed with stage IV disease the median survival was 32 months (Table 2.6). Figure 2.7 shows survival curves for cancers of the oropharynx and tonsil by SEER modified AJCC stage at diagnosis.

Hypopharynx

Figure 2.8 illustrates the survival of cancer of the hypopharynx by SEER modified AJCC stage at diagnosis. The majority of patients were diagnosed at stage IV (56%), while 17% were diagnosed at stage III, 12% at stage II and 10% at stage I (Table 2.6). Overall 1-, 3-, and 5-year relative

survival, as reported in Table 2.6 was 67%, 38%, and 30%, respectively. Five-year relative survival by stages varies from 49% for stage I to 23% for stage IV. The median survival for stage I tumors was 42 months, 25 months at stage II, 25 months at stage III, and 17 months at stage IV. The survival pattern for unstaged cancers was similar to that for stage IV.

Salivary Gland

For cancer of the salivary gland, the overall 1-, 3-, and 5-year relative survival rates were 90%, 78%, and 74%, respectively (Table 2.6). Table 2.11 and Figure 2.9 show the relative survival rates for salivary gland cancers by cell type. Patients with mucoepidermoid well differentiated carcinomas and acinar cell carcinomas had the best prognosis,

Table 2.6: Cancer of the Head and Neck: Number and Distribution of Cases, Median Survival Time (Months) and 1-, 2-, 3-, 5-, 8-, & 10-Year Relative Survival Rates (%) by AJCC Stage (5th Edition) and Site, Ages 20+, 12 SEER Areas, 1988-2001

Site/AJCC Stage	Cases	Percent	Median Survival (Months)	Relative Survival Rate (%)					
				1-Year	2-Year	3-Year	5-Year	8-Year	10-Year
Lip	3,982	100.0	> 120	99.6	97.7	96.2	93.5	90.4	88.0
Stage I	3,314	83.2	> 120	100.0	99.5	98.5	96.3	93.2	90.1
Stage II	221	5.5	98.6	98.0	93.4	90.2	82.7	74.6	72.5
Stage III	58	1.5	44.9	83.1	65.5	60.1	56.7	56.7	56.2
Stage IV	87	2.2	37.2	75.4	65.0	57.0	48.1	40.0	40.0
Unstaged	302	7.6	> 120	98.1	95.4	92.8	88.3	83.9	83.9
Tongue	8,637	100.0	47.6	80.8	65.9	59.4	53.1	46.3	42.1
Stage I	2,927	33.9	95.4	92.9	82.7	77.0	70.7	63.2	58.8
Stage II	1,081	12.5	58.4	87.3	72.2	65.2	58.6	51.0	44.9
Stage III	1,416	16.4	32.7	76.8	58.7	52.6	47.3	40.3	35.7
Stage IV	2,647	30.6	22.1	69.1	50.8	43.3	36.7	30.9	27.3
Unstaged	566	6.6	26.6	70.1	56.1	48.7	41.7	35.0	32.2
Floor of Mouth	3,286	100.0	49.7	82.8	69.2	61.7	52.7	43.3	37.7
Stage I	1,324	40.3	93.6	95.8	87.6	82.0	72.5	60.8	53.2
Stage II	435	13.2	63.7	90.2	78.7	71.0	60.1	50.1	44.0
Stage III	326	9.9	29.2	79.5	58.8	47.0	35.8	29.4	26.1
Stage IV	982	29.9	18.9	65.1	45.6	37.7	29.7	22.8	20.0
Unstaged	219	6.7	28.8	73.8	58.4	47.7	41.4	30.0	23.5
Gum & Other Mouth	5,946	100.0	59.2	82.8	71.6	65.8	59.5	51.9	48.1
Stage I	2,244	37.7	112.7	95.8	90.5	86.6	80.9	73.2	68.8
Stage II	712	12.0	66.4	90.7	80.8	72.0	62.2	54.3	48.9
Stage III	394	6.6	30.9	76.5	63.3	52.5	45.1	31.6	28.2
Stage IV	2,075	34.9	22.1	70.0	51.8	45.9	40.0	32.5	29.4
Unstaged	521	8.8	33.1	71.9	61.3	55.0	49.3	44.2	39.7
Oropharynx & Tonsil	5,501	100.0	45.4	79.8	65.9	58.8	49.8	43.5	39.3
Stage I	1,035	18.8	55.2	84.7	73.0	66.6	56.0	48.4	41.9
Stage II	506	9.2	62.9	91.0	77.1	70.8	58.3	51.0	46.1
Stage III	1,236	22.5	58.9	83.7	70.5	64.1	55.4	48.6	43.5
Stage IV	2,350	42.7	32.0	74.1	58.6	50.9	43.4	38.8	36.5
Unstaged	374	6.8	33.1	75.1	61.8	52.2	43.8	35.4	31.6

while patients with squamous cell and adenocarcinoma had the worst prognosis.

Nasopharynx

As shown in Table 2.6, the 1-, 3-, and 5-year relative survival rates for cancer of the nasopharynx were 84%, 65%, and 57%, respectively. Figure 2.10 presents the survival of cancer of the nasopharynx by stage. Among patients diagnosed with cancer of the nasopharynx, 15% were diagnosed at stage I, 6.7% at stage II, 22% at stage III, and 45% at stage IV. The median survival for patients presenting at stage I was over 120 months. This decreased to 47 months for patients presenting at stage IV. Relative survival at 5 years varied from 78% for stage I to 47% for stage IV. Unstaged cases show a survival curve similar to that for all stages.

Figure 2.7: Cancer of the Oropharynx and Tonsil: Relative Survival Rate (%) by Stage, Ages 20+ 12 SEER Areas, 1988-2001

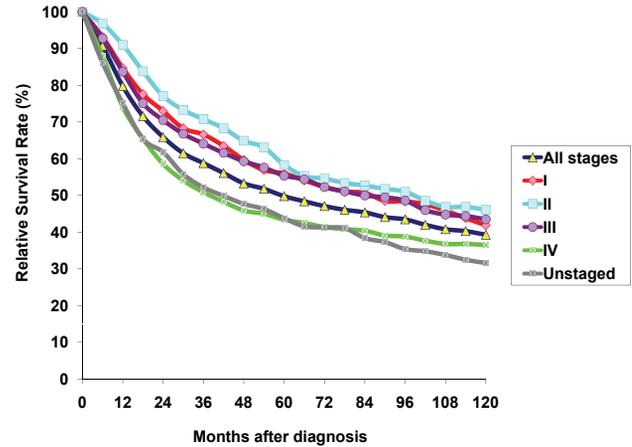


Table 2.6 (continued)

Site/AJCC Stage	Cases	Percent	Median Survival (Months)	Relative Survival Rate (%)					
				1-Year	2-Year	3-Year	5-Year	8-Year	10-Year
Hypopharynx	3,273	100.0	19.7	67.4	47.9	38.3	29.5	22.0	18.2
Stage I	315	9.6	41.5	80.6	67.0	58.5	48.7	32.4	26.7
Stage II	389	11.9	25.3	73.6	55.4	47.0	38.6	31.7	24.9
Stage III	568	17.4	24.9	72.0	55.6	42.7	34.1	24.5	18.8
Stage IV	1,819	55.6	16.5	63.1	41.3	32.2	23.2	17.8	15.0
Unstaged	182	5.6	14.8	59.3	42.2	32.3	26.3	18.4	16.8
Salivary Gland	4,058	100.0	112.2	90.0	82.1	77.7	73.9	70.7	68.5
Stage I	1,457	35.9	> 120	99.4	98.0	96.2	95.7	92.4	91.6
Stage II	630	15.5	106.8	92.0	84.1	81.2	76.7	73.9	67.4
Stage III	188	4.6	98.8	92.1	84.6	80.8	72.6	68.5	57.5
Stage IV	1,032	25.4	27.7	77.1	58.1	47.7	37.2	30.0	27.5
Unstaged	751	18.5	109.3	86.4	80.6	77.5	74.1	73.6	73.6
Nasopharynx	2,819	100.0	67.8	84.1	73.2	65.3	56.6	48.3	44.7
Stage I	424	15.0	> 120	93.5	86.8	81.3	78.4	68.2	62.6
Stage II	189	6.7	76.4	89.8	78.9	71.7	63.7	51.6	51.6
Stage III	615	21.8	72.8	86.5	74.7	67.7	59.5	49.8	46.2
Stage IV	1,276	45.3	46.8	78.2	65.9	57.3	46.7	40.9	37.1
Unstaged	315	11.2	72.3	86.9	77.9	67.9	57.8	47.1	44.6
Nose, Nasal Cavity and Middle Ear	2,299	100.0	47.9	79.8	67.7	61.9	54.0	50.3	46.4
Localized	594	25.8	> 120	95.1	90.2	88.2	82.5	79.8	77.4
Regional	1,181	51.4	37.0	77.7	63.6	55.8	47.3	43.0	37.7
Distant	325	14.1	15.5	59.5	41.9	34.9	25.3	24.8	21.7
Unstaged	199	8.7	47.7	79.4	67.6	63.4	55.5	49.7	45.3
Other Oral Cavity and Pharynx	1,010	100.0	18.1	63.8	46.3	38.9	29.8	23.6	21.5
Stage I	169	16.7	26.7	73.9	55.8	48.6	40.8	36.1	36.1
Stage II	70	6.9	43.2	74.8	69.4	58.7	46.2	33.3	28.2
Stage III	148	14.7	18.0	69.4	43.4	36.8	23.2	21.9	21.0
Stage IV	478	47.3	14.4	56.4	39.0	31.7	22.3	17.8	13.4
Unstaged	145	14.4	20.1	65.2	50.9	43.8	39.3	26.0	23.3

Table 2.7: Cancer of the Head and Neck: Number and Distribution of Cases and 1-, 2-, 3-, 5-, 8-, & 10-Year Relative Survival Rates (%) by Primary Site and Grade, Ages 20+, 12 SEER Areas, 1988-2001

Site/Grade	Cases	Percent	Relative Survival Rate (%)					
			1-Year	2-Year	3-Year	5-Year	8-Year	10-Year
Lip	3,982	100.0	99.6	97.7	96.2	93.5	90.4	88.0
Grade I	1,531	38.4	100.0	99.2	98.1	96.2	94.0	90.3
Grade II	971	24.4	99.1	97.2	95.1	91.3	85.8	84.0
Grades III-IV	186	4.7	93.6	88.1	79.8	73.5	65.3	62.2
Unknown	1,294	32.5	99.2	97.4	96.7	94.2	91.6	88.6
Tongue	8,637	100.0	80.8	65.9	59.4	53.1	46.3	42.1
Grade I	1,428	16.5	86.9	76.4	71.0	65.8	59.1	53.9
Grade II	3,506	40.6	80.7	64.3	57.1	49.8	42.9	38.7
Grades III-IV	2,314	26.8	78.1	61.5	54.3	48.0	41.7	37.9
Unknown	1,389	16.1	79.0	66.8	61.8	56.9	49.4	45.4
Floor of Mouth	3,286	100.0	82.8	69.2	61.7	52.7	43.3	37.7
Grade I	568	17.3	89.5	78.9	72.5	63.4	53.0	45.1
Grade II	1,586	48.3	83.2	68.9	60.5	51.4	41.1	35.4
Grades III-IV	563	17.1	73.4	56.9	49.3	40.1	33.7	30.1
Unknown	569	17.3	84.6	72.5	66.5	58.0	48.4	43.1
Gum & Other Mouth	5,946	100.0	82.8	71.6	65.8	59.5	51.9	48.1
Grade I	1,258	21.2	86.9	79.0	73.8	69.6	63.9	57.4
Grade II	2,557	43.0	83.3	71.3	65.7	59.5	51.2	47.0
Grades III-IV	880	14.8	74.1	56.7	47.9	38.9	31.7	29.1
Unknown	1,251	21.0	84.0	75.3	70.8	64.4	56.0	54.1
Oropharynx & Tonsil	5,501	100.0	79.8	65.9	58.8	49.8	43.5	39.3
Grade I	341	6.2	78.2	65.5	59.7	50.3	39.2	32.8
Grade II	2,132	38.8	78.8	64.9	57.2	47.0	40.7	37.4
Grades III-IV	2,208	40.1	83.5	70.1	63.5	55.2	50.2	46.1
Unknown	820	14.9	73.4	57.4	49.4	42.1	35.1	29.4
Hypopharynx	3,273	100.0	67.4	47.9	38.3	29.5	22.0	18.2
Grade I	173	5.3	66.5	44.6	36.2	25.9	23.2	19.6
Grade II	1,326	40.5	68.3	49.3	40.0	31.0	20.8	17.5
Grades III-IV	1,297	39.6	67.9	48.1	37.7	29.2	23.5	18.7
Unknown	477	14.6	63.6	44.9	35.6	26.6	19.2	16.7
Salivary Gland	4,058	100.0	90.0	82.1	77.7	73.9	70.7	68.5
Grade I	357	8.8	97.4	96.3	94.8	94.6	93.6	93.6
Grade II	897	22.1	95.6	90.7	87.6	86.1	85.9	84.2
Grades III-IV	1,239	30.5	80.8	64.7	57.3	47.8	40.3	34.6
Unknown	1,565	38.6	92.2	87.2	83.3	80.3	76.5	74.9
Nasopharynx	2,819	100.0	84.1	73.2	65.3	56.6	48.3	44.7
Grade I	59	2.1	50.5	46.1	41.4	38.3	31.3	31.3
Grade II	269	9.5	70.7	54.5	48.6	39.6	30.1	25.1
Grades III-IV	1,874	66.5	86.7	76.3	68.0	59.1	51.1	47.7
Unknown	617	21.9	85.0	74.2	66.3	57.5	48.3	44.5
Nose, Nasal Cavity and Middle Ear	2,299	100.0	79.8	67.7	61.9	54.0	50.3	46.4
Grade I	261	11.4	87.0	77.7	74.8	67.2	64.0	60.7
Grade II	475	20.7	80.7	67.7	63.4	56.8	54.3	51.7
Grades III-IV	770	33.5	74.0	60.8	51.8	42.0	38.1	33.3
Unknown	793	34.5	82.4	71.1	66.6	59.8	55.5	50.6
Other Oral Cavity and Pharynx	1,010	100.0	63.8	46.3	38.9	29.8	23.6	21.5
Grade I	65	6.4	63.4	45.7	38.2	30.5	28.4	27.1
Grade II	392	38.8	65.2	43.0	33.9	24.9	20.3	16.6
Grades III-IV	323	32.0	60.9	46.2	41.2	32.2	26.0	24.1
Unknown	230	22.8	65.7	52.7	44.6	34.5	24.1	22.6

Paranasal Sinus

Table 2.12 and Figure 2.11 show the relative survival rates for paranasal sinus cancers according to cell type. Patients with adenoid cystic carcinomas had the best 5-year relative survival (61%), while patients with epithelial neoplasms had the worst 5-year relative survival (32%).

Nose, Paranasal Sinus, and Middle Ear

Figure 2.12 shows the survival of patients with nose, nasal cavity, or middle ear cancer according to SEER historic stage. The overall 1-, 3-, and 5-year relative survival rates, as presented in Table 2.6, were 80%, 62%, and 54%, respectively. Among patients diagnosed with cancer of the nose, nasal cavity, or middle ear, 26% had localized tumors, 51% regional, and 14% distant. The median survival for patients with localized disease at presentation was greater than 120 months; for regional disease it was 37 months, and for distant disease, 16 months. Five-year relative survival by stage varied from 83% for local to 25% for distant disease.

Table 2.8: Cancer of the Head and Neck: Number and Distribution of Cases and 1-, 2-, 3-, 5-, 8-, & 10-Year Relative Survival Rates (%) by Primary Site and Tumor Size, Ages 20+, 12 SEER Areas, 1988-2001

Primary Site/Grade	Cases	Percent	Relative Survival Rate (%)					
			1-Year	2-Year	3-Year	5-Year	8-Year	10-Year
Lip	3,982	100.0	99.6	97.7	96.2	93.5	90.4	88.0
<1 cm	879	22.1	100.0	100.0	99.6	97.3	95.3	92.0
1.0-1.9 cm	901	22.6	100.0	97.1	94.1	91.1	86.5	82.2
2.0-2.9 cm	267	6.7	98.5	92.5	89.9	82.6	80.9	80.8
3.0-3.9 cm	99	2.5	93.8	84.4	82.5	76.0	65.2	60.0
4.0+ cm	87	2.2	79.8	67.1	63.0	63.0	62.7	60.1
Unknown	1,749	43.9	100.0	99.2	98.9	96.3	93.4	91.1
Tongue	8,637	100.0	80.8	65.9	59.4	53.1	46.3	42.1
<1 cm	498	5.8	99.8	92.2	87.6	81.5	74.4	70.0
1.0-1.9 cm	1,329	15.4	94.2	82.8	77.2	71.6	62.4	58.2
2.0-2.9 cm	1,434	16.6	88.2	71.2	64.4	55.8	47.1	41.4
3.0-3.9 cm	1,084	12.6	80.2	63.5	56.1	49.2	42.8	40.1
4.0+ cm	1,459	16.9	67.2	48.2	40.8	34.9	29.0	22.6
Unknown	2,833	32.8	74.5	60.6	54.1	48.6	42.9	39.7
Floor of Mouth	3,286	100.0	82.8	69.2	61.7	52.7	43.3	37.7
<1 cm	214	6.5	97.2	92.6	90.4	81.8	70.4	59.2
1.0-1.9 cm	555	16.9	94.1	86.3	79.6	70.0	57.0	51.8
2.0-2.9 cm	593	18.0	91.6	75.5	66.4	54.8	44.0	38.2
3.0-3.9 cm	404	12.3	83.8	63.9	53.4	42.9	34.4	30.9
4.0+ cm	546	16.6	63.3	46.7	39.2	32.7	25.7	20.4
Unknown	974	29.6	78.5	65.2	58.2	50.2	42.1	36.5
Gum & Other Mouth	5,946	100.0	82.8	71.6	65.8	59.5	51.9	48.1
<1 cm	311	5.2	98.1	93.9	91.3	84.5	78.2	72.3
1.0-1.9 cm	895	15.1	96.2	89.9	85.4	79.8	74.9	70.9
2.0-2.9 cm	982	16.5	87.9	77.3	70.8	64.0	55.0	51.7
3.0-3.9 cm	709	11.9	81.3	65.8	57.9	49.9	40.5	35.6
4.0+ cm	907	15.3	67.8	50.5	43.2	36.7	28.2	23.2
Unknown	2,142	36.0	79.5	68.6	63.5	57.8	49.9	46.9
Oropharynx & Tonsil	5,501	100.0	79.8	65.9	58.8	49.8	43.5	39.3
<1 cm	110	2.0	93.1	84.4	81.1	62.9	62.0	54.1
1.0-1.9 cm	398	7.2	93.9	87.5	83.8	72.0	68.9	64.1
2.0-2.9 cm	728	13.2	89.3	77.4	69.1	58.4	51.4	48.1
3.0-3.9 cm	713	13.0	88.2	73.7	68.5	58.1	50.9	42.8
4.0+ cm	1,075	19.5	73.6	56.3	49.3	42.4	34.4	30.9
Unknown	2,477	45.0	74.5	60.1	51.9	43.8	37.8	34.2

Figure 2.8: Cancer of the Hypopharynx: Relative Survival Rate (%) by Stage, Ages 20+, 12 SEER Areas, 1988-2001

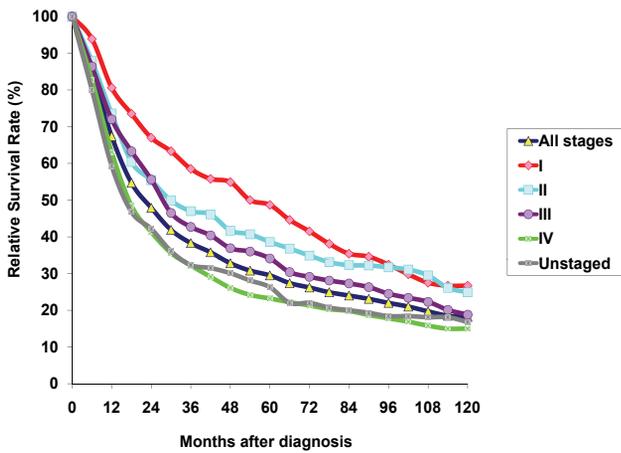


Figure 2.9: Cancer of the Salivary Gland: Relative Survival Rate (%) by Histology, Ages 20+, 12 SEER Areas, 1988-2001

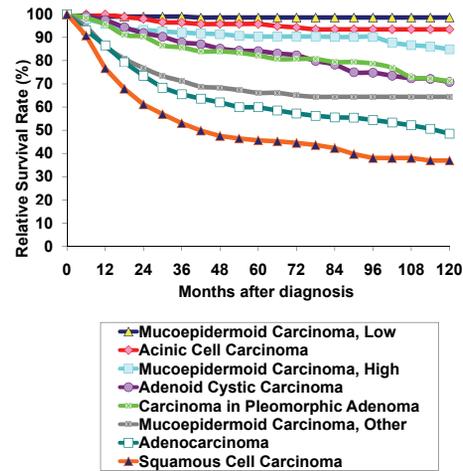


Table 2.8 (continued): Cancer of the Head and Neck: Number and Distribution of Cases and 1-, 2-, 3-, 5-, 8-, & 10-Year Relative Survival Rates (%) by Site and Tumor Size, Ages 20+, 12 SEER Areas, 1988-2001

Site/Grade	Cases	Percent	Relative Survival Rate (%)					
			1-Year	2-Year	3-Year	5-Year	8-Year	10-Year
Hypopharynx	3,273	100.0	67.4	47.9	38.3	29.5	22.0	18.2
<1 cm	45	1.4	86.1	73.3	65.9	50.3	45.8	30.3
1.0-1.9 cm	198	6.0	83.4	67.5	57.6	46.2	38.7	24.6
2.0-2.9 cm	416	12.7	81.5	67.1	55.6	42.6	29.1	24.8
3.0-3.9 cm	409	12.5	78.2	53.5	44.5	35.4	30.4	27.2
4.0+ cm	666	20.3	63.7	42.7	32.5	22.0	17.2	12.3
Unknown	1,539	47.0	59.6	40.2	30.9	24.6	16.3	14.7
Salivary Gland	4,058	100.0	90.0	82.1	77.7	73.9	70.7	68.5
<1 cm	152	3.7	100.0	100.0	99.2	99.2	97.1	88.9
1.0-1.9 cm	830	20.5	98.6	96.6	95.0	92.5	88.5	85.3
2.0-2.9 cm	884	21.8	96.0	90.0	84.1	80.6	78.0	76.1
3.0-3.9 cm	526	13.0	92.8	82.9	75.9	71.0	63.7	62.8
4.0+ cm	728	17.9	77.3	61.3	56.1	49.4	44.3	38.9
Unknown	938	23.1	82.9	73.6	69.1	63.9	63.3	63.3
Nasopharynx	2,819	100.0	84.1	73.2	65.3	56.6	48.3	44.7
<1 cm	35	1.2	89.6	84.2	81.7	72.3	64.6	43.5
1.0-1.9 cm	95	3.4	95.0	86.9	80.2	74.1	69.8	45.4
2.0-2.9 cm	201	7.1	90.1	84.8	81.7	77.7	65.9	62.7
3.0-3.9 cm	161	5.7	88.6	76.4	70.3	58.2	53.6	49.4
4.0+ cm	379	13.4	84.8	73.0	61.1	51.3	44.5	43.8
Unknown	1,948	69.1	82.3	70.8	62.9	54.1	45.1	42.4
Nose, Nasal Cavity and Middle Ear	2,299	100.0	79.8	67.7	61.9	54.0	50.3	46.4
<1 cm	55	2.4	97.1	89.9	89.4	89.4	81.5	74.5
1.0-1.9 cm	125	5.4	91.7	87.3	84.5	82.1	81.5	77.0
2.0-2.9 cm	183	8.0	88.2	75.6	72.3	57.1	53.9	53.9
3.0-3.9 cm	136	5.9	84.1	75.4	67.5	62.2	55.7	55.7
4.0+ cm	384	16.7	77.4	59.8	51.6	43.3	36.8	27.2
Unknown	1,416	61.6	77.2	65.4	59.5	51.5	48.0	44.0
Other Oral Cavity and Pharynx	1,010	100.0	63.8	46.3	38.9	29.8	23.6	21.5
<1 cm	11	1.1	~	~	~	~	~	~
1.0-1.9 cm	44	4.4	78.8	61.6	57.4	40.7	38.6	36.1
2.0-2.9 cm	84	8.3	83.3	66.2	65.0	39.5	34.5	34.5
3.0-3.9 cm	100	9.9	78.0	63.8	47.3	36.9	25.8	23.5
4.0+ cm	208	20.6	59.8	43.3	34.9	27.0	21.1	13.6
Unknown	563	55.7	58.0	39.7	33.0	26.5	20.3	18.7

~ Statistic not displayed due to less than 25 cases.

Table 2.9: Cancer of the Base and Anterior of Tongue: Number and Distribution of Cases by AJCC Stage at Diagnosis (5th Edition), Ages 20+, 12 SEER Areas, 1988-2001

AJCC Stage	Base of Tongue		Anterior of Tongue	
	Cases	Percent	Cases	Percent
Total	3,796	100.0	4,841	100.0
Stage I	605	15.9	2,322	48.0
Stage II	346	9.1	735	15.2
Stage III	859	22.6	557	11.5
Stage IV	1,745	46.0	902	18.6
Unstaged	241	6.3	325	6.7

Table 2.10: Cancer of the Base and Anterior Tongue: 1-, 2-, 3-, 5-, 8-, & 10-Year Relative Survival Rates (%) by AJCC Stage (5th Edition), Ages 20+, 12 SEER Areas, 1988-2001

Stage at Diagnosis	Relative Survival Rate (%)											
	Base of Tongue						Anterior Tongue					
	1-Year	2-Year	3-Year	5-Year	8-Year	10-Year	1-Year	2-Year	3-Year	5-Year	8-Year	10-Year
Total	77.8	62.3	55.3	47.5	40.9	36.8	83.1	68.8	62.6	57.5	50.6	46.2
Stage I	84.3	69.6	62.2	51.5	40.6	35.7	95.2	86.1	80.9	75.9	69.4	65.1
Stage II	89.4	75.1	68.9	60.2	54.7	51.8	86.3	70.8	63.5	57.5	48.7	40.8
Stage III	79.7	64.1	58.0	52.7	46.9	41.4	72.3	50.2	44.0	38.8	30.5	26.8
Stage IV	72.8	56.6	49.3	41.9	36.1	32.5	61.8	39.5	31.7	26.5	20.9	17.3
Unstaged	74.4	59.6	52.0	41.4	35.5	33.1	66.8	53.4	46.2	42.0	34.5	31.1

Table 2.11: Cancer of the Salivary Gland: Number and Distribution of Cases and 1-, 2-, 3-, 5-, 8-, & 10-Year Relative Survival Rates (%) by Histology, Ages 20+, 12 SEER Areas, 1988-2001

Histology	ICD-O-3 Code	Cases	Percent	Relative Survival Rate (%)					
				1-Year	2-Year	3-Year	5-Year	8-Year	10-Year
Total		4,058	100.0	90.0	82.1	77.7	73.9	70.7	68.5
Squamous Cell Carcinoma	8050-8089	695	17.1	76.7	61.1	53.0	45.6	38.0	36.9
Adenocarcinoma	8140-8147,8190, 8255,8260- 8263, 8290,8310,8480,8481, 8560,8570-8574	616	15.2	86.6	73.5	65.5	59.9	54.4	48.5
Adenoid Cystic Carcinoma	8200	546	13.5	97.5	91.9	87.9	84.1	74.8	70.8
Mucoepidermoid Carcinoma, Poorly Differentiated	8430-8439	537	13.2	95.9	93.3	92.1	90.4	90.2	84.9
Acinic (Acinar) Cell Carcinoma	8550-8559	505	12.4	99.9	98.0	96.4	95.8	93.5	93.5
Mucoepidermoid Carcinoma (Other)	8430-8439	273	6.7	86.3	76.8	71.2	66.1	64.4	64.4
Carcinoma in Pleomorphic Adenoma (Malignant Mixed Tumor)	8940-8949	213	5.2	95.7	90.3	85.7	82.2	78.7	71.1
Mucoepidermoid Carcinoma, Well Differentiated	8430-8439	132	3.3	99.0	99.0	99.0	98.6	98.6	98.6
Other	All Others	541	13.3	~	~	~	~	~	~

~ Survival statistics not reported due to heterogeneous composition of remaining cell types

Table 2.12: Cancer of the Paranasal Sinus: Number and Distribution of Cases and 1-, 2-, 3-, 5-, 8-, & 10-Year (Yr) Relative Survival Rates (%) by Histology, Ages 20+, 12 SEER Areas, 1988-2001

Histology	ICD-O-3 Code	Cases	Percent	Relative Survival Rate (%)					
				1-Yr	2-Yr	3-Yr	5-Yr	8-Yr	10-Yr
Total		1,208	100.0	72.0	57.6	50.3	42.0	38.1	34.7
Squamous Cell Carcinoma	8050-8052,8070-8078, 8082-8084	649	53.7	66.4	51.1	42.7	36.3	33.3	30.6
Epithelial Neoplasms	8010-8049	134	11.1	69.6	55.3	47.0	32.1	25.5	25.5
Adenoid Cystic Carcinoma (Cylindroma)	8200	124	10.3	91.1	80.0	76.0	61.1	51.0	45.2
Adenocarcinoma	8140-8147,8255,826082 63,8290,8310,8480-8481, 8560,8570-8574	108	8.9	81.7	68.7	63.2	51.0	50.6	45.8
Other	All Others	193	16.0	74.5	59.2	53.1	48.4	43.9	38.0

Figure 2.10: Cancer of the Nasopharynx: Relative Survival Rate (%) by Stage, Ages 20+, 12 SEER Areas, 1988-2001

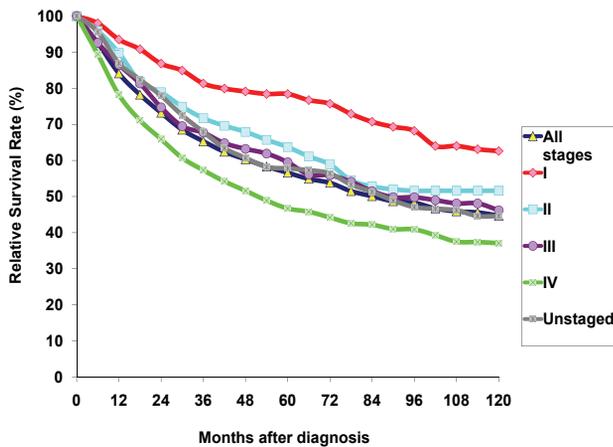


Figure 2.11: Cancer of the Paranasal Sinus: Relative Survival Rate (%) by Histology, Ages 20+, 12 SEER Areas, 1988-2001

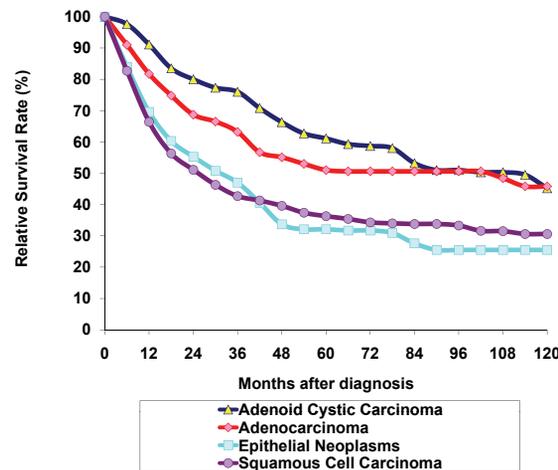
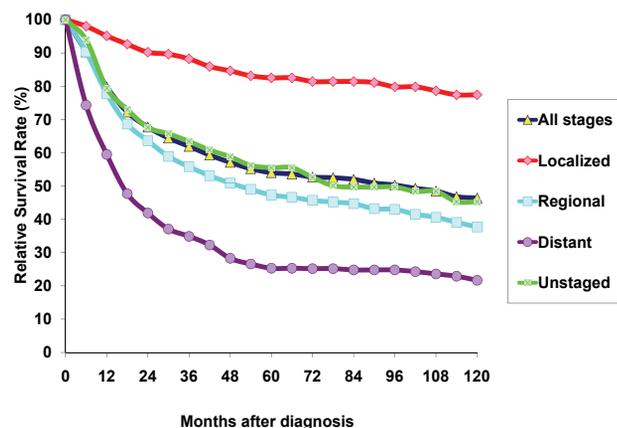


Figure 2.12: Cancer of the Nose, Paranasal Sinus, and Middle Ear: Relative Survival Rate (%) by SEER Historic Stage, Ages 20+, 12 SEER Areas, 1988-2001



DISCUSSION

Head and neck cancers consist of a heterogeneous collection of anatomic sites and cell types. The majority of head and neck cancers are in the oral cavity. In men, cancers of the oral cavity and pharynx account for 3% of all new cancer cases and are the 8th most common cancer site (5).

While 5-year relative survival is most frequently quoted, the survival curves shown here indicate that survival may level off for some head and neck sites before the 5-year time point. Relative survival at 2 or 3 years may convey as much if not more meaning for patient prognosis.

A major limitation of the data is the lack of additional host-based prognostic factors. Several researchers have identified comorbidities (9-16) and performance status (15) as important prognostic factors for patients with head and neck cancers. Since SEER does not routinely collect this information, it is not available for inclusion in this monograph.

REFERENCES

1. Mayne ST, Morse DE, Winn DM. Cancers of the oral cavity and pharynx. In: Schottenfeld D, Fraumeni FJ, eds. Cancer epidemiology and prevention, 3rd edition. Oxford Univ Press, 2006.
2. Alvi A, Myers EN, Johnson JT: Cancer of the Oral Cavity, in Myers EN, Suen JY, eds: Cancer of the Head and Neck. Philadelphia, W.B. Saunders Company; 1996: 321-361.
3. Fleming ID, Cooper JS, Henson DE, Hutter RVP, Kennedy BJ, Murphy GP, O'Sullivan B, Sobin LH, Yarbro, JW (eds). AJCC Cancer Staging Manual, Fifth edition, American Joint Committee on Cancer. Philadelphia: Lippincott-Raven, 1997.
4. International Classification of Diseases for Oncology, Geneva. World Health Organization, 2000.
5. American Cancer Society. Cancer Facts and Figures 2006. Atlanta: American Cancer Society; 2006.
6. Jemal A, Thomas A, Murray T, Thun MJ: Cancer Statistics, 2002. CA.A Cancer Journal for Clinicians 2002; 52: 23-47.
7. Marks JE, Phillips JL, Menck HR: The National Cancer Data Base report on the relationship of race and national origin to the histology of nasopharyngeal carcinoma. Cancer 1998; Aug 1; 83: 582-588.
8. Dominitz JA, Samas GP, Landsman P, Provenzale D: Race, treatment, and survival among colorectal carcinoma patients in an equal-access medical system. Cancer 1998; 82: 2312-2320.
9. Piccirillo JF: Purposes, problems, and proposals for progress in cancer staging. Arch Otolaryngol Head Neck Surg. 1995 Feb;121(2):145-9.
10. Singh B, Bhaya M, Zimble M, et al: Impact of comorbidity on outcome of young patients with head and neck squamous cell carcinoma. Head and Neck surgery 1998; 20: 1-7.
11. Ribeiro KC, Kowalsik LP, Latorre MR: Impact of comorbidity, symptoms and patient's characteristics on the prognosis of oral carcinoma. Arch. Otolaryngol. Head Neck surg. 2000; 126: 1079-1085.

12. Piccirillo JF: Impact of comorbidity and symptoms on the prognosis of patients with oral carcinoma. *Arch Otolaryngol Head Neck Surg* 2000; 126: 1086-1087.
13. Piccirillo JF: Importance of comorbidity in head and neck cancer. *Laryngoscope* 2000; 110: 5923-602.
14. Hall SF, Groome PA, Rothwell D: The impact of comorbidity on the survival of patients with squamous cell carcinoma of the head and neck. *Head & Neck* 2000; 22: 317-322.
15. Reid BC, Alberg AJ, Klassen AC, et al: Comorbidity and survival of elderly head and neck carcinoma patients. *Cancer* 2001; 92:2109-2116.
16. Baatenburg de Jong RJ, Hermans J, Molenaar J, Briaire JJ, le Cessie S: Prediction of survival in patients with head and neck cancer. *Head & Neck* 2001; 23: 718-724.

