

Chapter 3

New Malignancies Following Cancer of the Buccal Cavity and Pharynx

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Synopsis

The risk of subsequent primary cancer was assessed in more than 56,000 patients diagnosed with cancers of the buccal cavity or pharynx—including lip, tongue, salivary gland, mouth, nasopharynx, tonsil, oropharynx, and hypopharynx cancers—between 1973 and 2000. The overall risk of new malignancies was significantly elevated among survivors of cancers of the lip (O/E=1.16, O=1,814, EAR=34 per 10,000 person-years), oral cavity and pharynx (tongue, tonsil, mouth, oropharynx and hypopharynx) (O/E=2.45, O=7,076, EAR=231), salivary gland (O/E=1.25, O=644, EAR=33), and nasopharynx (O/E=1.49, O=267, EAR=47). Tobacco smoking and/or alcohol consumption probably account for the excess risks of many new malignancies, including tumors of the buccal cavity and pharynx, esophagus, larynx, lung, nasal cavity, stomach, urinary bladder, pancreas, and liver. Exposure to ultraviolet radiation from sunlight exposure probably contributed to the excess risk of melanoma following cancer of the lip. In addition, Epstein-Barr virus infection may have played a role in the increase of non-Hodgkin lymphoma following nasopharyngeal cancer, and human papillomavirus infection may have been a factor in the excess of anogenital tumors following certain types of oral cancer.

Lip Cancer

Cancer of the lip is relatively rare, accounting for less than 10% of all cancers of the buccal cavity and pharynx. More than 95% of lip cancers are squamous cell carcinomas, and most occur on the lower lip (Moore et al, 1999; Veness, 2001). Lip cancer is extremely rare in the black population, probably due to the protective effects of skin pigmentation on sun exposure (Moore et al, 1999), and it is 5 times more common in white men than women, probably because women have less occupational sun exposure and use more lip protection (de Visscher and van der Waal, 1998). Most patients present with early-stage disease; thus the 5- and 10-year relative survival rates have been high in recent years, 92.9% and 90.0%, respectively. Surgery alone, the preferred treatment for comparatively superficial disease,

Abbreviations: O=observed number of subsequent (2nd, 3rd, etc.) primary cancers; O/E=ratio of observed to expected cancers; CI=confidence interval; PYR=person-years at risk; EAR=excess absolute risk (excess cancers per 10,000 person-years, calculated as [(O-E)/PYR]×10,000).

is used for the majority of patients (Veness, 2001). Patients with more advanced disease often receive radiotherapy alone to avoid unacceptable disfigurement or loss of function. Adjuvant radiotherapy has been used for patients presenting with regional or nodal metastasis (Veness, 2001).

The best-documented risk factors for lip cancer are prolonged ultraviolet (UV) radiation exposure from sunlight, use of tobacco products, and fair complexion. Other suspected risk factors include genetic susceptibility, immunosuppression, low socioeconomic status, poor oral hygiene, and perhaps heavy alcohol consumption (de Visscher and van der Waal, 1998; Moore et al, 1999).

Results and Discussion

There was a small increased risk of all new malignancies combined among the 8,188 2-month survivors of lip cancer (O/E=1.16, O=1,814, 95% CI=1.11-1.22, EAR=34 per 10,000 person-years). The cumulative incidence of developing a second cancer following lip cancer adjusting for the competing risk of death due to other causes was 26.8% at 25 years (95% CI=25.6%-28.0%). Elevated risk was limited to the first 10 years of follow-up. Patients diagnosed at younger than age 50 years had a 43% higher relative risk of new malignancies, whereas patients ages 70 years and older had a 13% increased risk. Nonetheless, the excess absolute cancer risk was more than 40% higher in the older patients compared with the younger patients. The relative risk of subsequent primary cancers was similar in males and females, but the excess absolute risk was higher in men (EAR=35) than in women (EAR=28). Significantly elevated risks of 3-fold or greater were seen for subsequent cancers of the buccal cavity (especially the lip, salivary gland, and mouth), as well as for Hodgkin lymphoma. Risks were also significantly elevated, but to a lesser extent, for cancers of the larynx and lung, as well as for melanoma of the skin. In contrast, the risk for subsequent brain cancer was significantly decreased after lip cancer. The increased risks for new malignancies of the buccal cavity

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and respiratory system were found in a previous survey of lip cancer (Winn and Blot, 1985).

Tobacco use is a risk factor for primary cancers of the lip, oral cavity, and respiratory system and likely contributes to the tendency toward multiple cancers at these sites (Day and Blot, 1992; de Visscher and van der Waal, 1998). The role of tobacco is underscored by the significant reciprocal excess of lip cancer following other cancers of the buccal cavity, although significant excesses of lip cancer were not seen following cancers of the lung in this survey.

The elevated risk of cutaneous melanoma after lip cancer, which was limited to males, is consistent with the role of UV radiation following occupational and other exposures to sunlight, especially in light-skinned individuals (de Visscher and van der Waal, 1998; Armstrong and Krickler, 2001).

In addition, an elevated risk for Hodgkin lymphoma was seen following lip cancer, although the reasons are unclear. It is interesting, however, that a significant reciprocal excess of lip cancer was noted after Hodgkin lymphoma and other lymphoproliferative malignancies, mainly non-Hodgkin lymphoma (NHL) and chronic lymphocytic leukemia. Increased risk of subsequent lip cancer has been previously observed following NHL (Brennan et al, 2000) and following transplantation (King et al, 1995; Curtis et al, 1997), suggesting the role of underlying immunologic alterations.

Cancers of the Oral Cavity and Pharynx

Cancers of the tongue, tonsil, mouth, hypopharynx, and oropharynx are grouped for this section and hereafter referred to as cancers of the oral cavity and pharynx. Together, these primarily squamous cell cancers account for about 1% of all cancers. The 5-year relative survival rate is slightly higher for females (61.5%) than males (57.8%), and higher for whites (61.2%) than blacks (39.5%). Surgery or radiation therapy is standard treatment for early disease (Barzan et al, 1998; Forastiere et al, 2001). Advanced disease requires surgery, usually with postoperative radiotherapy. Recently, multiple-modality treatments that include chemotherapy have been employed to achieve organ preservation and improve survival (Barzan et al, 1998; Forastiere et al, 2001).

The major risk factors for oral and pharyngeal cancer are use of alcohol and tobacco, which increase risk multiplicatively when combined (Blot et al, 1988; Franceschi et al, 1999). Other factors include poor oral hygiene and dentition, poor diet with insufficient fresh fruits and vegetables, and/or low socioeconomic status, even after adjusting for other risk factors (Greenberg et al, 1991; Brown et al, 2001). Recent studies have linked human papillomavirus infection (HPV) to a subset of oral cancers, predominantly those located in the tonsillar area or oropharynx (Gillison and Shah, 2003).

Results and Discussion

Among the 39,501 2-month survivors of cancers of the oral cavity and pharynx, 7,076 subsequent primary cancers were observed (O/E=2.45, O=7,076, 95% CI=2.39-2.51, EAR=231). The cumulative incidence of developing any second cancer was 21.4% at 25 years (95% CI=20.8%-21.9%), which includes a 4.5% incidence of second cancers of the oral cavity and pharynx (Figure 3.1). Subsequent cancer risks were elevated about 2- to 3-fold for initial cancers of the tongue, tonsil, mouth, oropharynx, and hypopharynx. Because patterns of subsequent cancers were similar across subsites of the oral cavity and pharynx, we combined them for purposes of discussion, but the data tables also show risks separately by individual sites. In the cohort of all oral cavity and pharyngeal cancers, only slight variations in subsequent cancer risks were seen across latency periods and by gender. However, susceptibility to a subsequent cancer varied substantially by age at diagnosis, with the highest relative risks (a nearly 5-fold increase) observed for patients diagnosed with oral and pharyngeal cancer at ages younger than 50 years (Figure 3.2). In contrast, absolute risks were highest in those diagnosed at ages 50 to 69 years (Figure 3.2). Blacks had a higher risk of new malignancies than whites. Although more than 60% of the patients with cancers of the oral cavity and pharynx received initial radiotherapy, this therapy did not appear to have a major effect on the risk of subsequent cancers arising in the radiotherapy field or in sites receiving scatter radiation.

For all oral and pharyngeal cancers combined, the increased risks of subsequent subsites of oral/pharyngeal cancer and esophageal cancer were very high, ranging from 16- to 33-fold. In addition, risks were significantly elevated, but to a lesser extent (4- to 7-fold), for new cancers of the lip, salivary glands, and nasopharynx. Risks were also significantly elevated for subsequent

Figure 3.1: Cumulative incidence of developing a second cancer among patients with cancer of the oral cavity or pharynx (tongue, mouth, tonsil, oropharynx, hypopharynx), both sexes, SEER 1973-2000.

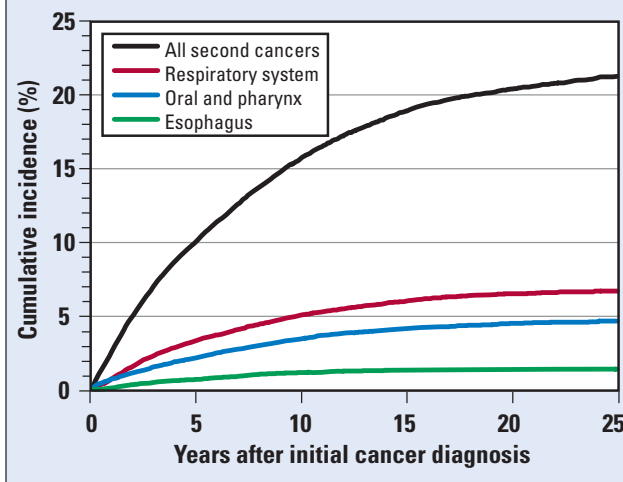
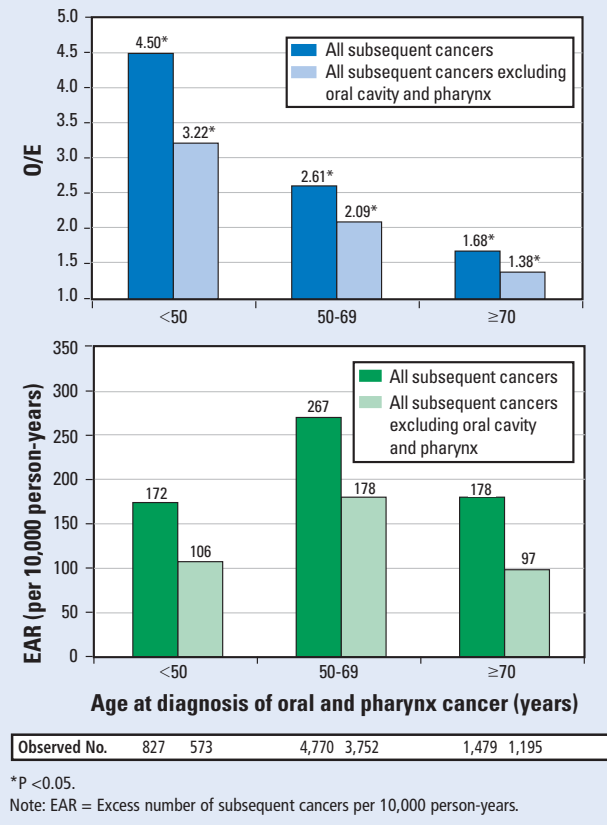


Figure 3.2: Observed-to-expected ratio (O/E) and excess absolute risk (EAR) of subsequent primary cancers after cancer of the oral cavity and pharynx, both sexes, SEER 1973-2000.



malignancies of the nasal cavity, larynx, and lung (4- to 6-fold); for malignancies of the colon, rectum, stomach, liver, pancreas, and urinary bladder (1.2- to 3-fold); and for non-melanoma eye cancer (5-fold). In addition, significant or borderline significant elevated risks were found for new malignancies of the anogenital region (anus, cervix, vagina, vulva, and penis). Taken together, these findings resemble other studies of oral and pharyngeal cancers indicating elevated risks for subsequent oral, esophageal, respiratory, digestive, and anogenital cancers (Tepperman and Fitzpatrick, 1981; Schou et al, 1985; Winn and Blot, 1985; Day and Blot, 1992; Day et al, 1994; Macfarlane et al, 1995; Crosher

and McIlroy, 1998; Hemminki et al, 2001; Rafferty and O'Dwyer, 2001).

Tobacco and/or alcohol consumption, the major causes of oral/pharynx cancer, probably account for much of the increased risk of subsequent oral/pharynx and esophageal cancers (La Vecchia et al, 1997), in addition to contributing to new malignancies of the larynx, liver, nasal cavity, lung, stomach, urinary bladder, and pancreas (Day and Blot, 1992). The modestly elevated risks of colon (O/E=1.17) and rectal (O/E=1.32) cancers may also reflect alcohol consumption, smoking, and possibly dietary deficiencies (e.g., folic acid) (Potter, 1999; Giovannucci, 2002). The tendency toward multicentric cancers of the upper aerodigestive system appears to involve "field cancerization" mechanisms resulting from the interplay of smoking, alcohol, dietary factors, and genetic alterations.

The elevated risk of anogenital tumors following oral and pharyngeal cancer may be attributed in part to HPV infection, especially because significant reciprocal excesses of oral cancer were seen following cancers of the anus, cervix, vulva, and penis (Table 3.A). Several recent studies have suggested that HPV infection, the major risk factor for cancers of the anogenital tract, is also involved in certain subsites of oral cancer, particularly the tonsils and the base of the tongue (Gillison and Shah, 2003; Herrero et al, 2003). Smoking may also be involved, as it is a risk factor for cervical as well as oral cancers. Finally, the 5-fold elevated risk of non-melanoma eye cancer, based on 4 cases of squamous cell carcinoma of the conjunctiva and lacrimal ducts, deserves further study, in light of the possible role of HPV infection in conjunctival squamous cell carcinomas (Gillison and Shah, 2003).

Salivary Gland Cancers

Malignant tumors of the salivary gland are a heterogeneous and uncommon group, constituting somewhat more than 10% of all buccal cavity and pharyngeal cancers. Standard treatment is surgical excision (Shrestha et al, 1996) and prognosis is generally good, with 5- and 10-year relative survival rates of 75.3% and 70.5%, respectively. Approximately 50% of SEER patients received adjuvant radiation therapy to minimize

Table 3.A: Risk of a subsequent oral and pharyngeal cancer following a primary anogenital cancer.

First primary anogenital cancer site	Subsequent primary oral and pharyngeal cancer site											
	Tonsil		Tongue		Mouth		Hypopharynx		Oropharynx		All buccal cavity and pharynx	
	O	O/E	O	O/E	O	O/E	O	O/E	O	O/E	O	O/E
Anus	7	8.1*	9	4.6*	5	1.9	1	1.2	0	0.0	24	2.6*
Cervix uteri	13	3.9*	10	1.3	20	1.8*	8	3.4*	1	1.2	65	1.9*
Vulva	1	1.6	7	3.8*	9	3.1*	2	4.0	0	0.0	21	2.5*
Penis	2	3.0	5	3.7*	4	2.3	2	2.5	0	0.0	17	2.3*

Abbreviations: O=observed number of subsequent (2nd, 3rd, etc.) primary cancers; O/E=ratio of observed to expected cancers.

*P < 0.05 (95% confidence interval does not include 1.0).

disfigurement and recurrence, while chemotherapy was reserved for advanced and recurrent disease (Shrestha et al, 1996).

The only well-established risk factor for salivary gland cancer is ionizing radiation (Land et al, 1996; Saku et al, 1997; Modan et al, 1998). Positive associations, however, have been reported in certain industries, including rubber manufacturing and woodworking in the automobile industry, and also with occupational exposure to nickel and radioactive materials (Horn-Ross et al, 1997; Swanson and Burns, 1997; Sun et al, 1999). There is uncertainty about the possible role of smoking, alcohol, and UV exposures (Horn-Ross et al, 1997; Muscat and Wynder, 1998; Hayes et al, 1999).

Results and Discussion

Of the 5,551 individuals who survived at least 2 months after a diagnosis of salivary gland cancer, 644 new malignancies were observed (O/E=1.25, O=644, 95% CI=1.16-1.35, EAR=33). The estimated cumulative incidence of second cancer was 17.3% at 25 years (95% CI=15.8%-18.8%). A 37% increased risk of subsequent cancer was observed for the period 1 to 5 years after salivary gland cancer diagnosis, but the increased risk declined to 11% among long-term survivors (≥ 10 years). The overall risk was similar in younger (ages <60 years) and older patients (≥ 60 years), but it was slightly higher in males compared with females. No significant excess of subsequent primary cancer was observed in the small proportion of black patients. Significantly elevated risks were observed for subsequent cancers of the buccal cavity (i.e., salivary gland, lip, tongue, and mouth), respiratory system (particularly lung and bronchus), male breast, and thyroid gland. These findings are generally consistent with previous population-based surveys of salivary gland cancers in Connecticut (Winn and Blot, 1985) and in the SEER Program through 1992 (Sun et al, 1999).

The risk of subsequent buccal cavity cancer was elevated by 3-fold or greater and may be related in part to diagnostic surveillance. The risk of subsequent lung cancer was increased about 60% for reasons that are unclear, although radiotherapy and smoking may have played a role. However, the risk of subsequent thyroid cancer was increased about 3-fold following salivary gland cancer, and a 2.8-fold increased risk of subsequent salivary gland cancer was seen after an initial thyroid cancer. This reciprocal association may be related in part to heightened medical screening of the head and neck area, radiotherapy, or earlier radiation exposures affecting both of these radiosensitive organs. The excess of male breast cancer, based on 3 cases, occurred in men treated with initial radiotherapy, but the short latency period for 2 of the cases appeared inconsistent with a radiation effect. Although salivary gland tumors have been linked to female breast cancer in some previous studies (Horn-Ross et al, 1999), no relationship was seen in this survey, except for a nonsignificant 51%

excess for those younger than 35 years of age, based on only 4 cases.

Nasopharyngeal Cancer

Nasopharyngeal cancer (NPC) is relatively rare in the U.S., constituting less than 10% of cancers of the buccal cavity and pharynx. The incidence rate is greater in men than women, and in blacks than whites. The highest rates are seen in Asian populations, especially Chinese (Hildesheim and Levine, 1993). The overall 5-year relative survival rate is about 57.5%. The main histologic types of NPC are squamous cell, nonkeratinizing, and undifferentiated carcinomas (McDermott et al, 2001). Radiation therapy has been the treatment of choice, although in recent years it has been combined with chemotherapy for more advanced tumors (Forastiere et al, 2001).

The causal factors for this tumor include immunogenetic predisposition, Epstein-Barr virus (EBV) infection, and consumption of preserved foods or salted fish containing nitrosamines (Lu et al, 1990; Hildesheim and Levine, 1993; McDermott et al, 2001). Long-term smoking and occupational exposure to wood and formaldehyde may also increase risk, but eating fruit appears protective (Hildesheim and Levine, 1993; Vaughan et al, 1996; Farrow et al, 1998).

Results and Discussion

Among the 3,651 individuals who survived at least 2 months following nasopharyngeal cancer, 267 subsequent primary cancers were observed, resulting in a significant 49% excess (O/E=1.49, O=267, 95% CI=1.31-1.68, EAR=47). Approximately 10% of patients with NPC developed a second cancer within 20 years of follow-up (cumulative incidence=10.1%, 95% CI=8.8%-11.4%). Subsequent primary cancer risks were substantially higher for short-term (<10 years) than long-term survivors (≥ 10 years). Patients younger than 60 years of age at initial diagnosis had a substantially greater relative risk of new malignancies than older patients, but a lower excess absolute risk. Risks did not differ substantially by sex or race. About 90% of patients received radiotherapy, which limited our ability to compare subsequent primary cancer risks with the non-irradiated group. Risks were significantly increased for subsequent cancers of the buccal cavity and pharynx (especially the tongue and nasopharynx), esophagus, lung, nasal cavities and sinuses, and bone and joints, as well as for NHL. A previous survey of NPC revealed elevated risks for second cancers of the head and neck (Wang et al, 2000), but not for other sites with excess rates in our study.

The reasons for the associations observed are unclear, but tobacco use (Vaughan et al, 1996; McDermott et al, 2001) may have contributed to the excess risks of cancers of the buccal cavity, esophagus, and lung. However, it is possible that tumors arising close to the pharynx may

have been initially misclassified as NPC. In addition, radiotherapy probably contributed to the excess of bone tumors, which arose in irradiated fields involving the head in the 2 patients receiving initial radiotherapy. EBV infection, which has been etiologically linked to NPC (Hildesheim and Levine, 1993; McDermott et al, 2001) and NHL, may have contributed to this combination of multiple cancers.

References

- Armstrong BK, Kricker A. 2001. The epidemiology of UV induced skin cancer. *J Photochem Photobiol B* 63(1-3):8-18.
- Barzan L, Tirelli U, Lefebvre JL. 1998. Head and neck cancer. *Crit Rev Oncol Hematol* 27(2):155-156.
- Blot WJ, McLaughlin JK, Winn DM, et al. 1988. Smoking and drinking in relation to oral and pharyngeal cancer. *Cancer Res* 48(11):3282-3287.
- Brennan P, Coates M, Armstrong B, et al. 2000. Second primary neoplasms following non-Hodgkin's lymphoma in New South Wales, Australia. *Br J Cancer* 82(7):1344-1347.
- Brown LM, Gridley G, Diehl SR, et al. 2001. Family cancer history and susceptibility to oral carcinoma in Puerto Rico. *Cancer* 92(8):2102-2108.
- Crosher R, McLroy R. 1998. The incidence of other primary tumours in patients with oral cancer in Scotland. *Br J Oral Maxillofac Surg* 36(1):58-62.
- Curtis RE, Rowlings PA, Deeg HJ, et al. 1997. Solid cancers after bone marrow transplantation. *N Engl J Med* 336(13):897-904.
- Day GL, Blot WJ. 1992. Second primary tumors in patients with oral cancer. *Cancer* 70(1):14-19.
- Day GL, Blot WJ, Shore RE, et al. 1994. Second cancers following oral and pharyngeal cancer: patients' characteristics and survival patterns. *Eur J Cancer B Oral Oncol* 30B(6):381-386.
- de Visscher JG, van der Waal I. 1998. Etiology of cancer of the lip. A review. *Int J Oral Maxillofac Surg* 27(3):199-203.
- Farrow DC, Vaughan TL, Berwick M, et al. 1998. Diet and nasopharyngeal cancer in a low-risk population. *Int J Cancer* 78(6):675-679.
- Forastiere A, Koch W, Trotti A, et al. 2001. Head and neck cancer. *N Engl J Med* 345(26):1890-1900.
- Franceschi S, Levi F, La Vecchia C, et al. 1999. Comparison of the effect of smoking and alcohol drinking between oral and pharyngeal cancer. *Int J Cancer* 83(1):1-4.
- Gillison ML, Shah KV. 2003. Chapter 9: Role of mucosal human papillomavirus in nongenital cancers. *J Natl Cancer Inst Monogr* 31:57-65.
- Giovannucci E. 2002. Epidemiologic studies of folate and colorectal neoplasia: a review. *J Nutr* 132(8 Suppl):2350S-2355S.
- Greenberg RS, Haber MJ, Clark WS, et al. 1991. The relation of socioeconomic status to oral and pharyngeal cancer. *Epidemiology* 2(3):194-200.
- Hayes RB, Bravo-Otero E, Kleinman DV, et al. 1999. Tobacco and alcohol use and oral cancer in Puerto Rico. *Cancer Causes Control* 10(1):27-33.
- Hemminki K, Jiang Y, Dong C. 2001. Second primary cancers after anogenital, skin, oral, esophageal and rectal cancers: etiological links? *Int J Cancer* 93(2):294-298.
- Herrero R, Castellsague X, Pawlita M, et al. 2003. Human papillomavirus and oral cancer: the International Agency for Research on Cancer multicenter study. *J Natl Cancer Inst* 95(23):1772-1783.
- Hildesheim A, Levine PH. 1993. Etiology of nasopharyngeal carcinoma: a review. *Epidemiol Rev* 15(2):466-485.
- Horn-Ross PL, Ljung BM, Morrow M. 1997. Environmental factors and the risk of salivary gland cancer. *Epidemiology* 8(4):414-419.
- Horn-Ross PL, Morrow M, Ljung BM. 1999. Menstrual and reproductive factors for salivary gland cancer risk in women. *Epidemiology* 10(5):528-530.
- King GN, Healy CM, Glover MT, et al. 1995. Increased prevalence of dysplastic and malignant lip lesions in renal-transplant recipients. *N Engl J Med* 332(16):1052-1057.
- Land CE, Saku T, Hayashi Y, et al. 1996. Incidence of salivary gland tumors among atomic bomb survivors, 1950-1987. Evaluation of radiation-related risk. *Radiat Res* 146(1):28-36.
- La Vecchia C, Tavani A, Franceschi S, et al. 1997. Epidemiology and prevention of oral cancer. *Oral Oncol* 33(5):302-312.
- Lu SJ, Day NE, Degos L, et al. 1990. Linkage of a nasopharyngeal carcinoma susceptibility locus to the HLA region. *Nature* 346(6283):470-471.
- Macfarlane GJ, McCredie M, Pompe-Kirn V, et al. 1995. Second cancers occurring after cancers of the mouth and pharynx: data from three population-based registries in Australia, Scotland and Slovenia. *Eur J Cancer B Oral Oncol* 31B(5):315-318.
- McDermott AL, Dutt SN, Watkinson JC. 2001. The aetiology of nasopharyngeal carcinoma. *Clin Otolaryngol Allied Sci* 26(2):82-92.
- Modan B, Chetrit A, Alfandary E, et al. 1998. Increased risk of salivary gland tumors after low-dose irradiation. *Laryngoscope* 108(7):1095-1097.
- Moore S, Johnson N, Pierce A, et al. 1999. The epidemiology of lip cancer: a review of global incidence and aetiology. *Oral Dis* 5(3):185-195.
- Muscat JE, Wynder EL. 1998. A case/control study of risk factors for major salivary gland cancer. *Otolaryngol Head Neck Surg* 118(2):195-198.
- Potter JD. 1999. Colorectal cancer: molecules and populations. *J Natl Cancer Inst* 91(11):916-932.
- Rafferty MA, O'Dwyer TP. 2001. Secondary primary malignancies in head and neck squamous cell carcinoma. *J Laryngol Otol* 115(12):988-991.
- Saku T, Hayashi Y, Takahara O, et al. 1997. Salivary gland tumors among atomic bomb survivors, 1950-1987. *Cancer* 79(8):1465-1475.

Schou G, Storm HH, Jensen OM. 1985. Second cancer following cancers of the buccal cavity and pharynx in Denmark, 1943-80. *Natl Cancer Inst Monogr* 68:253-276.

Shrestha P, Huang JW, Takai Y, et al. 1996. Primary epithelial tumors of salivary glands—histogenesis, histomorphological and immunohistochemical implications—diagnosis and clinical management. *Crit Rev Oncol Hematol* 23(3):239-260.

Sun EC, Curtis R, Melbye M, et al. 1999. Salivary gland cancer in the United States. *Cancer Epidemiol Biomarkers Prev* 8(12):1095-1100.

Swanson GM, Burns PB. 1997. Cancers of the salivary gland: workplace risks among women and men. *Ann Epidemiol* 7(6):369-374.

Tepperman BS, Fitzpatrick PJ. 1981. Second respiratory and upper digestive tract cancers after oral cancer. *Lancet* 2(8246):547-549.

Vaughan TL, Shapiro JA, Burt RD, et al. 1996. Nasopharyngeal cancer in a low-risk population: defining risk factors by histological type. *Cancer Epidemiol Biomarkers Prev* 5(8):587-593.

Veness M. 2001. Lip cancer: important management issues. *Australas J Dermatol* 42(1):30-32.

Wang CC, Chen ML, Hsu KH, et al. 2000. Second malignant tumors in patients with nasopharyngeal carcinoma and their association with Epstein-Barr virus. *Int J Cancer* 87(2):228-231.

Winn DM, Blot WJ. 1985. Second cancer following cancers of the buccal cavity and pharynx in Connecticut, 1935-1982. *Natl Cancer Inst Monogr* 68:25-48.

Table 3.1.1: Characteristics of patients with an initial cancer of the lip, both sexes, SEER 1973-2000.

Characteristics	Males		Females		Total	
	No.	%	No.	%	No.	%
Number of patients with 1st primary cancer						
Total	7,077	100.0	1,111	100.0	8,188	100.0
Initial treatment						
Any radiation	428	6.0	97	8.7	525	6.4
With surgery	242	3.4	60	5.4	302	3.7
Without surgery	186	2.6	37	3.3	223	2.7
No radiation	6,649	94.0	1,014	91.3	7,663	93.6
With surgery	6,116	86.4	914	82.3	7,030	85.9
Without surgery	533	7.5	100	9.0	633	7.7
Race						
White	6,925	97.9	1,055	95.0	7,980	97.5
Black	24	0.3	19	1.7	43	0.5
Other	40	0.6	16	1.4	56	0.7
Unknown	88	1.2	21	1.9	109	1.3
Age at 1st primary cancer diagnosis, years						
< 30	77	1.1	15	1.4	92	1.1
30–49	926	13.1	128	11.5	1,054	12.9
50–69	3,333	47.1	374	33.7	3,707	45.3
70–79	1,780	25.2	309	27.8	2,089	25.5
≥ 80	961	13.6	285	25.7	1,246	15.2
Number of patients with one or more primary cancers						
One primary cancer only	5,610	79.3	969	87.2	6,579	80.3
1st and 2nd cancers	1,292	18.3	132	11.9	1,424	17.4
1st, 2nd, and 3rd cancers	161	2.3	10	0.9	171	2.1
1st, 2nd, 3rd, and additional cancers	14	0.2	0	0.0	14	0.2
Other statistics						
Median age at 1st cancer diagnosis	66.4	—	71.5	—	67.0	—
Median year of 1st cancer diagnosis	1984.1	—	1987.9	—	1984.6	—
Median person-years at risk	7.6	—	6.2	—	7.5	—
Percent histologically confirmed*						
Both 1st and 2nd cancers	—	94.0	—	90.8	—	93.7
1st, 2nd, and additional cancers	—	92.8	—	90.8	—	92.7
1st cancer only	—	5.3	—	8.5	—	5.6

*Percent histologically confirmed among patients who developed a subsequent primary cancer.

Lip
Both Sexes

Table 3.1.2: Risk of subsequent primary cancers after cancer of the lip, both sexes, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	8,188		7,689		5,374		3,156		8,188			
Number starting interval	6,607		25,889		20,897		20,240		73,634			
Person-years in interval	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	131	1.09	645	1.29*	532	1.19*	506	1.02	1,814	1,562.42	1.16*	34.17
All excluding same site	126	1.06	616	1.24*	512	1.16*	485	0.98	1,739	1,553.50	1.12*	25.19
Buccal cavity, pharynx	15	4.07*	65	4.42*	44	3.62*	34	2.83*	158	42.59	3.71*	15.67
Lip	5	6.09*	29	9.10*	20	7.87*	21	8.85*	75	8.92	8.41*	8.97
Tongue	0	0.00	5	1.88	6	2.67	1	0.43	12	7.86	1.53	0.56
Salivary gland	1	3.41	9	7.33*	5	4.53*	4	3.14	19	3.90	4.87*	2.05
Mouth	9	10.04*	18	5.04*	8	2.75*	8	2.88*	43	10.15	4.24*	4.46
Nasopharynx	0	0.00	0	0.00	1	2.76	0	0.00	1	1.27	0.78	-0.04
Tonsil	0	0.00	2	1.60	2	1.96	0	0.00	4	3.58	1.12	0.06
Oropharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	1.13	0.00	-0.15
Hypopharynx	0	0.00	2	1.33	2	1.61	0	0.00	4	4.31	0.93	-0.04
Digestive system	18	0.65	111	0.98	106	1.07	97	0.93	332	344.49	0.96	-1.70
Esophagus	2	1.45	6	1.05	6	1.18	7	1.19	21	18.06	1.16	0.40
Stomach	2	0.64	15	1.20	9	0.86	9	0.85	35	36.71	0.95	-0.23
Small intestine	0	0.00	2	1.44	0	0.00	2	1.34	4	4.46	0.90	-0.06
Colon	7	0.56	42	0.82	53	1.17	48	1.00	150	156.81	0.96	-0.92
Rectum, rectosigmoid junction	5	0.97	26	1.24	19	1.07	14	0.78	64	61.67	1.04	0.32
Anus, anal canal	1	5.35	1	1.30	1	1.48	3	4.12	6	2.36	2.54	0.49
Liver	1	1.19	1	0.28	2	0.63	6	1.56	10	11.39	0.88	-0.19
Gallbladder	0	0.00	2	1.66	1	1.01	1	1.04	4	3.46	1.16	0.07
Bile ducts, other biliary	0	0.00	3	1.27	3	1.40	3	1.16	9	7.66	1.18	0.18
Pancreas	0	0.00	11	0.84	12	1.08	4	0.34*	27	39.12	0.69	-1.65
Respiratory system	26	1.14	158	1.68*	148	1.81*	123	1.41*	455	285.25	1.60*	23.05
Nose, nasal cavity, ear	1	5.37	1	1.32	1	1.54	3	4.35	6	2.29	2.62	0.50
Larynx	3	1.71	15	2.11*	12	2.01*	9	1.53	39	20.70	1.88*	2.49
Lung, bronchus	22	1.06	141	1.65*	135	1.80*	111	1.38*	409	261.52	1.56*	20.03
Female breast	4	1.27	14	1.15	11	1.12	11	1.24	40	34.03	1.18	6.75
Female genital system	3	2.10	4	0.74	4	0.96	1	0.28	12	14.58	0.82	-2.92
Cervix uteri	0	0.00	1	1.85	0	0.00	0	0.00	1	1.35	0.74	-0.40
Corpus uteri	1	1.40	3	1.11	3	1.46	0	0.00	7	7.28	0.96	-0.32
Ovary	1	2.37	0	0.00	0	0.00	1	0.88	2	4.46	0.45	-2.78
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.25	0.00	-0.28
Vulva	0	0.00	0	0.00	1	3.92	0	0.00	1	0.87	1.15	0.15
Male genital system	30	0.97	139	1.04	111	0.88	125	0.81*	405	446.32	0.91	-6.38
Prostate	29	0.95	138	1.04	110	0.88	124	0.81*	401	441.87	0.91	-6.31
Testis	0	0.00	0	0.00	0	0.00	1	3.14	1	1.46	0.69	-0.07
Urinary system	7	0.59	65	1.32*	46	1.05	39	0.78	157	154.67	1.02	0.32
Urinary bladder	6	0.69	46	1.27	37	1.14	31	0.84	120	114.23	1.05	0.78
Kidney parenchyma	0	0.00	12	1.21	6	0.67	6	0.58	24	31.45	0.76	-1.01
Renal pelvis, other urinary	1	1.36	7	2.32	3	1.17	2	0.75	13	8.99	1.45	0.54
Ureter	0	0.00	1	0.97	1	1.13	2	2.19	4	3.08	1.30	0.12
Bone, joints	0	0.00	1	2.33	1	2.83	0	0.00	2	1.25	1.60	0.10
Soft tissue including heart	0	0.00	2	1.05	0	0.00	2	1.04	4	5.94	0.67	-0.26
Kaposi sarcoma	1	5.30	1	1.29	0	0.00	0	0.00	2	2.28	0.88	-0.04
Melanoma of skin	5	1.99	18	1.66	8	0.78	22	1.68*	53	36.81	1.44*	2.20
Eye, orbit	0	0.00	2	2.60	0	0.00	0	0.00	2	2.30	0.87	-0.04
Brain, central nervous system	1	0.83	0	0.00*	1	0.23	2	0.43	4	15.05	0.27*	-1.50
Thyroid	0	0.00	3	1.78	1	0.70	1	0.67	5	5.03	0.99	0.00
Lymphatic, hematopoietic	15	1.66	44	1.17	40	1.19	39	1.03	138	118.14	1.17	2.70
Hodgkin lymphoma	3	9.34*	6	4.86*	2	2.07	1	1.08	12	3.45	3.48*	1.16
Non-Hodgkin lymphoma	9	2.44*	23	1.48	15	1.05	13	0.77	60	50.56	1.19	1.28
Myeloma	1	0.68	1	0.16*	6	1.11	9	1.47	17	19.09	0.89	-0.28
Leukemia	2	0.56	14	0.95	17	1.32	16	1.15	49	45.04	1.09	0.54
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	1.14	0.00	-0.16
Chronic lymphocytic	0	0.00	8	1.32	4	0.75	7	1.25	19	18.46	1.03	0.07
Acute non-lymphocytic	1	0.87	3	0.63	7	1.68	6	1.30	17	14.68	1.16	0.31
Chronic myeloid	1	2.10	2	1.03	4	2.37	2	1.06	9	6.00	1.50	0.41

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 8,839 PYR and for male cancers on 64,795 PYR.

Table 3.1.3: Risk of subsequent primary cancers after cancer of the lip, females, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	1,111 886		1,026 3,348		670 2,526		366 2,079		1,111 8,839			
Number starting interval Person-years in interval	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	18	1.52	61	1.33*	44	1.20	29	0.89	152	126.88	1.20*	28.42
All excluding same site	17	1.44	58	1.27	42	1.14	29	0.89	146	126.69	1.15	21.84
Buccal cavity, pharynx	2	9.64*	5	6.27*	7	11.12*	1	1.84	15	2.18	6.88*	14.50
Lip	1	56.63	3	44.54*	2	37.09*	0	0.00	6	0.19	32.36*	6.58
Tongue	0	0.00	0	0.00	2	14.42*	0	0.00	2	0.48	4.19	1.72
Salivary gland	0	0.00	0	0.00	0	0.00	1	15.24	1	0.26	3.90	0.84
Mouth	1	13.50	2	6.99	3	13.29*	0	0.00	6	0.78	7.69*	5.91
Nasopharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.07	0.00	-0.08
Tonsil	0	0.00	0	0.00	0	0.00	0	0.00	0	0.16	0.00	-0.18
Oropharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.05	0.00	-0.06
Hypopharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.13	0.00	-0.14
Digestive system	4	1.28	14	1.17	10	1.05	8	1.01	36	32.61	1.10	3.84
Esophagus	0	0.00	0	0.00	0	0.00	0	0.00	0	0.82	0.00	-0.93
Stomach	0	0.00	2	2.14	0	0.00	1	1.80	3	2.46	1.22	0.62
Small intestine	0	0.00	0	0.00	0	0.00	0	0.00	0	0.42	0.00	-0.48
Colon	1	0.62	7	1.13	6	1.21	2	0.49	16	16.88	0.95	-1.00
Rectum, rectosigmoid junction	2	4.13	3	1.63	2	1.42	1	0.88	8	4.87	1.64	3.54
Rectum	2	6.29	3	2.48	1	1.08	1	1.31	7	3.22	2.17	4.27
Anus, anal canal	0	0.00	0	0.00	0	0.00	0	0.00	0	0.39	0.00	-0.44
Liver	1	17.77	0	0.00	0	0.00	2	12.44*	3	0.61	4.90	2.70
Gallbladder	0	0.00	0	0.00	0	0.00	0	0.00	0	0.75	0.00	-0.84
Bile ducts, other biliary	0	0.00	0	0.00	0	0.00	1	5.06	1	0.75	1.33	0.28
Pancreas	0	0.00	1	0.65	2	1.61	1	0.94	4	4.24	0.94	-0.27
Respiratory system	3	2.21	11	2.03*	9	1.96	4	0.88	27	15.89	1.70*	12.57
Nose, nasal cavity, ear	1	62.02	0	0.00	0	0.00	0	0.00	1	0.18	5.71	0.93
Larynx	1	24.14	0	0.00	0	0.00	0	0.00	1	0.45	2.24	0.63
Lung, bronchus	1	0.77	11	2.12*	9	2.05	4	0.92	25	15.22	1.64*	11.06
Female breast	4	1.27	14	1.15	11	1.12	11	1.24	40	34.03	1.18	6.75
Female genital system	3	2.10	4	0.74	4	0.96	1	0.28	12	14.58	0.82	-2.92
Cervix uteri	0	0.00	1	1.85	0	0.00	0	0.00	1	1.35	0.74	-0.40
Corpus uteri	1	1.40	3	1.11	3	1.46	0	0.00	7	7.28	0.96	-0.32
Ovary	1	2.37	0	0.00	0	0.00	1	0.88	2	4.46	0.45	-2.78
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.25	0.00	-0.28
Vulva	0	0.00	0	0.00	1	3.92	0	0.00	1	0.87	1.15	0.15
Urinary system	1	1.67	1	0.43	2	1.06	2	1.18	6	6.53	0.92	-0.60
Urinary bladder	1	2.67	1	0.69	2	1.70	1	0.97	5	4.04	1.24	1.09
Kidney parenchyma	0	0.00	0	0.00	0	0.00	1	1.89	1	1.94	0.52	-1.06
Renal pelvis, other urinary	0	0.00	0	0.00	0	0.00	0	0.00	0	0.55	0.00	-0.63
Ureter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.17	0.00	-0.20
Bone, joints	0	0.00	0	0.00	0	0.00	0	0.00	0	0.11	0.00	-0.13
Soft tissue including heart	0	0.00	0	0.00	0	0.00	0	0.00	0	0.50	0.00	-0.57
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.07	0.00	-0.08
Melanoma of skin	0	0.00	3	3.50	0	0.00	0	0.00	3	2.45	1.22	0.62
Eye, orbit	0	0.00	0	0.00	0	0.00	0	0.00	0	0.19	0.00	-0.21
Brain, central nervous system	0	0.00	0	0.00	0	0.00	0	0.00	0	1.22	0.00	-1.38
Thyroid	0	0.00	2	5.94	0	0.00	0	0.00	2	0.90	2.22	1.24
Lymphatic, hematopoietic	1	1.04	6	1.60	1	0.33	2	0.74	10	10.45	0.96	-0.50
Hodgkin lymphoma	0	0.00	1	9.50	0	0.00	0	0.00	1	0.27	3.64	0.82
Non-Hodgkin lymphoma	0	0.00	3	1.72	1	0.69	1	0.75	5	4.97	1.01	0.03
Myeloma	1	6.29	0	0.00	0	0.00	0	0.00	1	1.70	0.59	-0.80
Leukemia	0	0.00	2	1.56	0	0.00	1	1.15	3	3.50	0.86	-0.56
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.09	0.00	-0.11
Chronic lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	1.37	0.00	-1.55
Acute non-lymphocytic	0	0.00	1	2.29	0	0.00	1	3.27	2	1.20	1.66	0.90
Chronic myeloid	0	0.00	1	5.70	0	0.00	0	0.00	1	0.48	2.09	0.59

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000.

Table 3.1.4: Risk of subsequent primary cancers after cancer of the lip, males, SEER 1973-2000.

Number starting interval Person-years in interval Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
	7,077		6,663		4,704		2,790		7,077			
	5,722		22,541		18,371		18,161		64,795			
All subsequent cancers	113	1.05	584	1.29*	488	1.19*	477	1.03	1,662	1,435.54	1.16*	34.95
All excluding same site	109	1.02	558	1.24*	470	1.16*	456	0.99	1,593	1,426.81	1.12*	25.65
Buccal cavity, pharynx	13	3.74*	60	4.31*	37	3.21*	33	2.87*	143	40.41	3.54*	15.83
Lip	4	4.98*	26	8.34*	18	7.24*	21	9.03*	69	8.73	7.90*	9.30
Tongue	0	0.00	5	2.02	4	1.90	1	0.46	10	7.39	1.35	0.40
Salivary gland	1	3.72	9	7.93*	5	4.86*	3	2.48	18	3.64	4.94*	2.22
Mouth	8	9.73*	16	4.87*	5	1.86	8	3.10*	37	9.37	3.95*	4.26
Nasopharynx	0	0.00	0	0.00	1	2.92	0	0.00	1	1.20	0.83	-0.03
Tonsil	0	0.00	2	1.68	2	2.05	0	0.00	4	3.42	1.17	0.09
Oropharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	1.08	0.00	-0.17
Hypopharynx	0	0.00	2	1.38	2	1.66	0	0.00	4	4.18	0.96	-0.03
Digestive system	14	0.57*	97	0.95	96	1.08	89	0.92	296	311.88	0.95	-2.45
Esophagus	2	1.53	6	1.11	6	1.24	7	1.23	21	17.24	1.22	0.58
Stomach	2	0.69	13	1.12	9	0.92	8	0.80	32	34.25	0.93	-0.35
Small intestine	0	0.00	2	1.61	0	0.00	2	1.46	4	4.04	0.99	-0.01
Colon	6	0.55	35	0.77	47	1.17	46	1.05	134	139.92	0.96	-0.91
Rectum, rectosigmoid junction	3	0.64	23	1.21	17	1.04	13	0.78	56	56.79	0.99	-0.12
Anus, anal canal	1	6.62	1	1.58	1	1.78	3	4.80	6	1.97	3.05*	0.62
Liver	0	0.00	1	0.30	2	0.66	4	1.09	7	10.78	0.65	-0.58
Gallbladder	0	0.00	2	2.18	1	1.30	1	1.26	4	2.71	1.48	0.20
Bile ducts, other biliary	0	0.00	3	1.43	3	1.56	2	0.84	8	6.90	1.16	0.17
Pancreas	0	0.00	10	0.87	10	1.01	3	0.28*	23	34.88	0.66*	-1.83
Respiratory system	23	1.08	147	1.66*	139	1.80*	119	1.44*	428	269.36	1.59*	24.48
Nose, nasal cavity, ear	0	0.00	1	1.43	1	1.67	3	4.65	5	2.11	2.37	0.45
Larynx	2	1.16	15	2.16*	12	2.06*	9	1.56	38	20.25	1.88*	2.74
Lung, bronchus	21	1.08	130	1.61*	126	1.79*	107	1.41*	384	246.30	1.56*	21.25
Male breast	0	0.00	1	1.19	1	1.34	0	0.00	2	2.66	0.75	-0.10
Male genital system	30	0.97	139	1.04	111	0.88	125	0.81*	405	446.32	0.91	-6.38
Prostate	29	0.95	138	1.04	110	0.88	124	0.81*	401	441.87	0.91	-6.31
Testis	0	0.00	0	0.00	0	0.00	1	3.14	1	1.46	0.69	-0.07
Urinary system	6	0.54	64	1.37*	44	1.05	37	0.77	151	148.15	1.02	0.44
Urinary bladder	5	0.60	45	1.29	35	1.12	30	0.84	115	110.19	1.04	0.74
Kidney parenchyma	0	0.00	12	1.30	6	0.71	5	0.51	23	29.52	0.78	-1.01
Renal pelvis, other urinary	1	1.47	7	2.49	3	1.25	2	0.79	13	8.44	1.54	0.70
Ureter	0	0.00	1	1.04	1	1.20	2	2.29	4	2.91	1.38	0.17
Bone, joints	0	0.00	1	2.58	1	3.11	0	0.00	2	1.14	1.76	0.13
Soft tissue including heart	0	0.00	2	1.16	0	0.00	2	1.12	4	5.43	0.74	-0.22
Kaposi sarcoma	1	5.48	1	1.33	0	0.00	0	0.00	2	2.22	0.90	-0.03
Melanoma of skin	5	2.17	15	1.50	8	0.83	22	1.76*	50	34.36	1.46*	2.41
Eye, orbit	0	0.00	2	2.86	0	0.00	0	0.00	2	2.12	0.95	-0.02
Brain, central nervous system	1	0.92	0	0.00*	1	0.25	2	0.47	4	13.83	0.29*	-1.52
Thyroid	0	0.00	1	0.74	1	0.86	1	0.78	3	4.12	0.73	-0.17
Lymphatic, hematopoietic	14	1.73	38	1.12	39	1.28	37	1.05	128	107.69	1.19	3.13
Hodgkin lymphoma	3	10.25*	5	4.43*	2	2.24	1	1.16	11	3.17	3.47*	1.21
Non-Hodgkin lymphoma	9	2.78*	20	1.45	14	1.09	12	0.77	55	45.59	1.21	1.45
Myeloma	0	0.00	1	0.18	6	1.22	9	1.58	16	17.39	0.92	-0.21
Leukemia	2	0.61	12	0.89	17	1.44	15	1.15	46	41.54	1.11	0.69
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	1.05	0.00	-0.16
Chronic lymphocytic	0	0.00	8	1.44	4	0.82	7	1.32	19	17.09	1.11	0.30
Acute non-lymphocytic	1	0.97	2	0.46	7	1.83	5	1.16	15	13.48	1.11	0.23
Chronic myeloid	1	2.32	1	0.56	4	2.58	2	1.13	8	5.52	1.45	0.38

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000.

Table 3.1.5: Risk of subsequent primary cancers after cancer of the lip, both sexes, <50 years of age, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	1,146 936		1,102 3,994		901 3,866		655 5,584		1,146 14,380			
Number starting interval Person-years in interval	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	5	2.80	17	1.68	31	1.89*	78	1.23	131	91.53	1.43*	27.45
All excluding same site	4	2.26	15	1.49	27	1.66*	74	1.18	120	91.03	1.32*	20.15
Buccal cavity, pharynx	2	20.63*	2	3.53	7	8.00*	8	3.61*	19	3.75	5.06*	10.60
Lip	1	56.46	2	22.59*	4	34.74*	4	14.19*	11	0.50	21.86*	7.30
Tongue	0	0.00	0	0.00	1	5.26	0	0.00	1	0.83	1.20	0.12
Salivary gland	0	0.00	0	0.00	0	0.00	1	6.15	1	0.27	3.69	0.51
Mouth	1	42.58	0	0.00	1	4.43	3	5.67*	5	0.92	5.44*	2.84
Nasopharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.16	0.00	-0.11
Tonsil	0	0.00	0	0.00	0	0.00	0	0.00	0	0.46	0.00	-0.32
Oropharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.11	0.00	-0.08
Hypopharynx	0	0.00	0	0.00	1	11.73	0	0.00	1	0.37	2.67	0.44
Digestive system	0	0.00	3	1.69	6	1.94	13	1.14	22	16.59	1.33	3.76
Esophagus	0	0.00	0	0.00	0	0.00	0	0.00	0	1.23	0.00	-0.86
Stomach	0	0.00	2	9.39*	1	2.95	2	1.83	5	1.68	2.97	2.31
Small intestine	0	0.00	0	0.00	0	0.00	0	0.00	0	0.33	0.00	-0.23
Colon	0	0.00	0	0.00	3	2.63	5	1.11	8	6.37	1.26	1.13
Rectum, rectosigmoid junction	0	0.00	1	2.65	0	0.00	4	1.71	5	3.46	1.45	1.07
Anus, anal canal	0	0.00	0	0.00	0	0.00	1	7.30	1	0.22	4.49	0.54
Liver	0	0.00	0	0.00	0	0.00	0	0.00	0	0.75	0.00	-0.52
Gallbladder	0	0.00	0	0.00	0	0.00	0	0.00	0	0.11	0.00	-0.07
Bile ducts, other biliary	0	0.00	0	0.00	1	17.62	0	0.00	1	0.34	2.98	0.46
Pancreas	0	0.00	0	0.00	1	2.71	1	0.76	2	1.95	1.03	0.04
Respiratory system	2	6.83	1	0.53	10	2.96*	29	2.42*	42	17.55	2.39*	17.00
Nose, nasal cavity, ear	0	0.00	0	0.00	0	0.00	2	19.46*	2	0.17	11.51*	1.27
Larynx	0	0.00	0	0.00	3	7.65*	2	1.78	5	1.78	2.81	2.24
Lung, bronchus	2	8.03	1	0.62	7	2.39	25	2.33*	35	15.54	2.25*	13.53
Female breast	0	0.00	2	2.95	0	0.00	2	1.36	4	3.09	1.29	5.99
Female genital system	0	0.00	1	3.59	0	0.00	0	0.00	1	1.25	0.80	-1.64
Cervix uteri	0	0.00	0	0.00	0	0.00	0	0.00	0	0.21	0.00	-1.42
Corpus uteri	0	0.00	1	9.41	0	0.00	0	0.00	1	0.58	1.73	2.80
Ovary	0	0.00	0	0.00	0	0.00	0	0.00	0	0.39	0.00	-2.56
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.01	0.00	-0.08
Vulva	0	0.00	0	0.00	0	0.00	0	0.00	0	0.04	0.00	-0.24
Male genital system	0	0.00	0	0.00	1	0.47	10	0.53*	11	21.81	0.50*	-8.40
Prostate	0	0.00	0	0.00	1	0.54	9	0.49*	10	20.94	0.48*	-8.50
Testis	0	0.00	0	0.00	0	0.00	1	5.70	1	0.70	1.42	0.23
Urinary system	0	0.00	1	1.07	1	0.63	4	0.68	6	8.57	0.70	-1.79
Urinary bladder	0	0.00	1	1.83	0	0.00	3	0.78	4	5.47	0.73	-1.02
Kidney parenchyma	0	0.00	0	0.00	1	1.80	1	0.57	2	2.72	0.73	-0.50
Renal pelvis, other urinary	0	0.00	0	0.00	0	0.00	0	0.00	0	0.38	0.00	-0.26
Ureter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.12	0.00	-0.08
Bone, joints	0	0.00	0	0.00	0	0.00	0	0.00	0	0.14	0.00	-0.10
Soft tissue including heart	0	0.00	0	0.00	0	0.00	1	3.68	1	0.50	1.99	0.35
Kaposi sarcoma	0	0.00	1	3.91	0	0.00	0	0.00	1	0.82	1.23	0.13
Melanoma of skin	1	6.24	2	2.53	1	0.99	5	1.99	9	4.47	2.01	3.15
Eye, orbit	0	0.00	0	0.00	0	0.00	0	0.00	0	0.20	0.00	-0.14
Brain, central nervous system	0	0.00	0	0.00	0	0.00	0	0.00	0	1.60	0.00	-1.11
Thyroid	0	0.00	0	0.00	1	4.52	1	2.42	2	0.89	2.25	0.77
Lymphatic, hematopoietic	0	0.00	4	3.40	4	2.42	3	0.63	11	7.83	1.40	2.20
Hodgkin lymphoma	0	0.00	1	6.84	0	0.00	0	0.00	1	0.53	1.88	0.33
Non-Hodgkin lymphoma	0	0.00	3	4.92	2	2.35	2	0.84	7	3.97	1.76	2.11
Myeloma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.99	0.00	-0.69
Leukemia	0	0.00	0	0.00	2	4.23	1	0.67	3	2.35	1.28	0.45
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.11	0.00	-0.08
Chronic lymphocytic	0	0.00	0	0.00	0	0.00	1	1.58	1	0.92	1.09	0.05
Acute non-lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.74	0.00	-0.51
Chronic myeloid	0	0.00	0	0.00	1	14.21	0	0.00	1	0.34	2.98	0.46

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 1,513 PYR and for male cancers on 12,868 PYR.

Lip
50-69 Years of Age

Table 3.1.6: Risk of subsequent primary cancers after cancer of the lip, both sexes, 50-69 years of age, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	3,707		3,566		2,786		1,827		3,707			
Number starting interval	3,028		12,702		11,466		12,144		39,341			
Person-years in interval	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	54	1.34*	269	1.31*	300	1.22*	349	1.00	972	840.12	1.16*	33.52
All excluding same site	53	1.33	261	1.28*	290	1.19*	334	0.96	938	835.51	1.12*	26.05
Buccal cavity, pharynx	5	2.98	27	3.56*	22	2.97*	23	2.83*	77	24.81	3.10*	13.27
Lip	1	3.43	8	6.01*	10	7.35*	15	9.24*	34	4.61	7.38*	7.47
Tongue	0	0.00	3	2.01	3	2.06	1	0.64	7	4.84	1.45	0.55
Salivary gland	0	0.00	2	4.28	3	5.61*	2	2.43	7	1.92	3.65*	1.29
Mouth	4	9.37*	11	5.81*	3	1.67	5	2.69	23	5.97	3.85*	4.33
Nasopharynx	0	0.00	0	0.00	1	4.26	0	0.00	1	0.78	1.28	0.06
Tonsil	0	0.00	2	2.69	2	2.94	0	0.00	4	2.25	1.78	0.45
Oropharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.74	0.00	-0.19
Hypopharynx	0	0.00	1	1.11	0	0.00	0	0.00	1	2.81	0.36	-0.46
Digestive system	4	0.47	37	0.87	58	1.16	64	0.90	163	172.85	0.94	-2.50
Esophagus	0	0.00	1	0.37	5	1.65	6	1.45	12	10.44	1.15	0.40
Stomach	0	0.00	4	0.88	4	0.77	6	0.84	14	17.81	0.79	-0.97
Small intestine	0	0.00	1	1.69	0	0.00	2	1.95	3	2.43	1.23	0.14
Colon	1	0.29	13	0.73	28	1.29	30	0.92	72	75.44	0.95	-0.87
Rectum, rectosigmoid junction	2	1.11	11	1.25	11	1.12	8	0.64	32	32.84	0.97	-0.21
Anus, anal canal	0	0.00	1	2.83	1	2.63	2	4.25	4	1.28	3.13	0.69
Liver	1	3.33	0	0.00	1	0.55	3	1.10	5	6.34	0.79	-0.34
Gallbladder	0	0.00	0	0.00	1	2.39	1	1.59	2	1.47	1.36	0.14
Bile ducts, other biliary	0	0.00	2	2.49	0	0.00	3	1.75	5	3.66	1.37	0.34
Pancreas	0	0.00	4	0.80	7	1.22	3	0.37	14	19.81	0.71	-1.48
Respiratory system	15	1.62	91	2.01*	88	1.76*	83	1.32*	277	167.63	1.65*	27.80
Nose, nasal cavity, ear	0	0.00	1	3.02	1	2.87	1	2.16	3	1.21	2.47	0.45
Larynx	3	3.37	12	2.97*	6	1.50	6	1.44	27	13.09	2.06*	3.53
Lung, bronchus	12	1.45	77	1.89*	81	1.78*	76	1.30*	246	152.92	1.61*	23.66
Female breast	0	0.00	5	1.12	8	1.76	8	1.47	21	15.43	1.36	14.57
Female genital system	2	3.97	0	0.00	1	0.49	1	0.45	4	6.93	0.58	-7.67
Cervix uteri	0	0.00	0	0.00	0	0.00	0	0.00	0	0.60	0.00	-1.56
Corpus uteri	0	0.00	0	0.00	1	0.89	0	0.00	1	3.80	0.26	-7.32
Ovary	1	7.22	0	0.00	0	0.00	1	1.44	2	2.04	0.98	-0.10
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.09	0.00	-0.24
Vulva	0	0.00	0	0.00	0	0.00	0	0.00	0	0.27	0.00	-0.72
Male genital system	9	0.99	40	0.76	68	0.95	96	0.85	213	246.33	0.86*	-9.38
Prostate	9	1.00	40	0.77	68	0.95	96	0.86	213	244.28	0.87*	-8.81
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.56	0.00	-0.16
Urinary system	3	0.77	27	1.37	23	0.97	26	0.75	79	82.07	0.96	-0.78
Urinary bladder	3	1.12	20	1.45	20	1.18	22	0.85	65	59.24	1.10	1.46
Kidney parenchyma	0	0.00	6	1.27	2	0.38	3	0.42	11	18.13	0.61	-1.81
Renal pelvis, other urinary	0	0.00	1	0.84	1	0.73	1	0.53	3	4.70	0.64	-0.43
Ureter	0	0.00	0	0.00	1	2.06	1	1.51	2	1.64	1.22	0.09
Bone, joints	0	0.00	1	5.08	1	4.90	0	0.00	2	0.68	2.96	0.34
Soft tissue including heart	0	0.00	2	2.68	0	0.00	1	0.79	3	3.01	1.00	0.00
Kaposi sarcoma	1	21.86	0	0.00	0	0.00	0	0.00	1	0.71	1.41	0.07
Melanoma of skin	4	3.80*	8	1.57	3	0.52	13	1.50	28	20.60	1.36	1.88
Eye, orbit	0	0.00	1	2.82	0	0.00	0	0.00	1	1.28	0.78	-0.07
Brain, central nervous system	0	0.00	0	0.00	1	0.38	2	0.63	3	8.89	0.34*	-1.50
Thyroid	0	0.00	3	3.52	0	0.00	0	0.00	3	2.81	1.07	0.05
Lymphatic, hematopoietic	9	3.11*	20	1.38	22	1.28	25	0.97	76	60.42	1.26	3.96
Hodgkin lymphoma	2	15.05*	1	1.76	1	1.89	1	1.69	5	1.82	2.75	0.81
Non-Hodgkin lymphoma	6	4.71*	12	1.89	9	1.18	7	0.60	34	26.86	1.27	1.81
Myeloma	0	0.00	1	0.43	2	0.71	8	1.87	11	9.86	1.12	0.29
Leukemia	1	0.97	6	1.15	10	1.59	9	0.96	26	21.88	1.19	1.05
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.54	0.00	-0.14
Chronic lymphocytic	0	0.00	4	1.76	2	0.75	4	1.06	10	9.20	1.09	0.20
Acute non-lymphocytic	1	3.18	1	0.61	5	2.44	3	0.94	10	7.21	1.39	0.71
Chronic myeloid	0	0.00	0	0.00	2	2.56	1	0.79	3	2.82	1.06	0.05

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 3,821 PYR and for male cancers on 35,520 PYR.

Table 3.1.7: Risk of subsequent primary cancers after cancer of the lip, both sexes, ≥70 years of age, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	3,335		3,021		1,687		674		3,335			
Number starting interval	Person-years in interval		2,643		9,193		5,565		2,512		19,913	
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	72	0.92	359	1.26*	201	1.09	79	0.93	711	630.77	1.13*	40.29
All excluding same site	69	0.89	340	1.20*	195	1.07	77	0.91	681	626.96	1.09*	27.14
Buccal cavity, pharynx	8	4.20*	36	5.49*	15	3.88*	3	1.77	62	14.03	4.42*	24.09
Lip	3	5.86*	19	10.76*	6	5.64*	2	4.28	30	3.81	7.88*	13.15
Tongue	0	0.00	2	1.92	2	3.34	0	0.00	4	2.19	1.83	0.91
Salivary gland	1	5.25	7	9.75*	2	3.91	1	3.46	11	1.71	6.44*	4.67
Mouth	4	8.97*	7	4.56*	4	4.50*	0	0.00	15	3.26	4.61*	5.90
Nasopharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.34	0.00	-0.17
Tonsil	0	0.00	0	0.00	0	0.00	0	0.00	0	0.87	0.00	-0.44
Oropharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.28	0.00	-0.14
Hypopharynx	0	0.00	1	1.79	1	3.43	0	0.00	2	1.13	1.77	0.44
Digestive system	14	0.74	71	1.03	42	0.92	20	0.93	147	155.04	0.95	-4.04
Esophagus	2	2.47	5	1.73	1	0.55	1	1.15	9	6.39	1.41	1.31
Stomach	2	0.92	9	1.17	4	0.81	1	0.42	16	17.21	0.93	-0.61
Small intestine	0	0.00	1	1.33	0	0.00	0	0.00	1	1.70	0.59	-0.35
Colon	6	0.67	29	0.88	22	0.98	13	1.21	70	75.00	0.93	-2.51
Rectum, rectosigmoid junction	3	0.91	14	1.20	8	1.11	2	0.64	27	25.37	1.06	0.82
Anus, anal canal	1	9.29	0	0.00	0	0.00	0	0.00	1	0.86	1.16	0.07
Liver	0	0.00	1	0.52	1	0.80	3	5.09*	5	4.30	1.16	0.35
Gallbladder	0	0.00	2	2.37	0	0.00	0	0.00	2	1.88	1.06	0.06
Bile ducts, other biliary	0	0.00	1	0.65	2	1.81	0	0.00	3	3.66	0.82	-0.33
Pancreas	0	0.00	7	0.90	4	0.79	0	0.00	11	17.37	0.63	-3.20
Respiratory system	9	0.68	66	1.41*	50	1.77*	11	0.92	136	100.07	1.36*	18.04
Nose, nasal cavity, ear	1	9.12	0	0.00	0	0.00	0	0.00	1	0.90	1.11	0.05
Larynx	0	0.00	3	1.06	3	1.91	1	1.70	7	5.83	1.20	0.59
Lung, bronchus	8	0.66	63	1.45*	47	1.78*	10	0.90	128	93.06	1.38*	17.55
Female breast	4	1.99	7	0.99	3	0.67	1	0.52	15	15.50	0.97	-1.43
Female genital system	1	1.15	3	1.01	3	1.67	0	0.00	7	6.40	1.09	1.71
Cervix uteri	0	0.00	1	3.86	0	0.00	0	0.00	1	0.54	1.85	1.31
Corpus uteri	1	2.41	2	1.44	2	2.52	0	0.00	5	2.91	1.72	5.97
Ovary	0	0.00	0	0.00	0	0.00	0	0.00	0	2.03	0.00	-5.80
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.15	0.00	-0.42
Vulva	0	0.00	0	0.00	1	5.92	0	0.00	1	0.56	1.79	1.26
Male genital system	21	0.97	99	1.23*	42	0.80	19	0.81	181	178.19	1.02	1.72
Prostate	20	0.93	98	1.23	41	0.79	19	0.82	178	176.65	1.01	0.82
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.19	0.00	-0.12
Urinary system	4	0.52	37	1.30	22	1.17	9	0.99	72	64.04	1.12	4.00
Urinary bladder	3	0.51	25	1.14	17	1.16	6	0.84	51	49.52	1.03	0.74
Kidney parenchyma	0	0.00	6	1.25	3	0.98	2	1.43	11	10.60	1.04	0.20
Renal pelvis, other urinary	1	2.02	6	3.37*	2	1.79	1	1.93	10	3.91	2.56*	3.06
Ureter	0	0.00	1	1.64	0	0.00	1	6.05	2	1.33	1.51	0.34
Bone, joints	0	0.00	0	0.00	0	0.00	0	0.00	0	0.43	0.00	-0.22
Soft tissue including heart	0	0.00	0	0.00	0	0.00	0	0.00	0	2.42	0.00	-1.22
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.76	0.00	-0.38
Melanoma of skin	0	0.00	8	1.62	4	1.14	4	2.02	16	11.75	1.36	2.13
Eye, orbit	0	0.00	1	2.63	0	0.00	0	0.00	1	0.83	1.21	0.09
Brain, central nervous system	1	1.71	0	0.00	0	0.00	0	0.00	1	4.56	0.22	-1.79
Thyroid	0	0.00	0	0.00	0	0.00	0	0.00	0	1.32	0.00	-0.66
Lymphatic, hematopoietic	6	1.01	20	0.91	14	0.95	11	1.52	51	49.88	1.02	0.56
Hodgkin lymphoma	1	6.51	4	7.67*	1	3.37	0	0.00	6	1.09	5.48*	2.46
Non-Hodgkin lymphoma	3	1.31	8	0.93	4	0.68	4	1.36	19	19.73	0.96	-0.37
Myeloma	1	1.01	0	0.00	4	1.65	1	0.85	6	8.25	0.73	-1.13
Leukemia	1	0.40	8	0.87	5	0.82	6	2.00	20	20.81	0.96	-0.41
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.49	0.00	-0.25
Chronic lymphocytic	0	0.00	4	1.09	2	0.82	2	1.66	8	8.34	0.96	-0.17
Acute non-lymphocytic	0	0.00	2	0.67	2	1.01	3	3.18	7	6.73	1.04	0.13
Chronic myeloid	1	2.99	2	1.61	1	1.19	1	2.37	5	2.84	1.76	1.08

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 3,505 PYR and for male cancers on 16,408 PYR.

Oral and Pharynx Both Sexes

Table 3.2.1: Characteristics of patients with an initial cancer of the oral cavity or pharynx (tongue, mouth, tonsil, oropharynx, hypopharynx), both sexes, SEER 1973-2000.

Characteristics	Males		Females		Total	
	No.	%	No.	%	No.	%
Number of patients with 1st primary cancer						
Total	26,258	100.0	13,243	100.0	39,501	100.0
Initial treatment						
Any radiation	17,261	65.7	7,348	55.5	24,609	62.3
With surgery	8,568	32.6	3,524	26.6	12,092	30.6
Without surgery	8,693	33.1	3,824	28.9	12,517	31.7
No radiation	8,997	34.3	5,895	44.5	14,892	37.7
With surgery	7,255	27.6	5,055	38.2	12,310	31.2
Without surgery	1,742	6.6	840	6.3	2,582	6.5
Race						
White	21,665	82.5	11,358	85.8	33,023	83.6
Black	3,448	13.1	1,240	9.4	4,688	11.9
Other	1,096	4.2	567	4.3	1,663	4.2
Unknown	49	0.2	78	0.6	127	0.3
Age at 1st primary cancer diagnosis, years						
< 30	204	0.8	228	1.7	432	1.1
30–49	4,202	16.0	1,645	12.4	5,847	14.8
50–69	15,823	60.3	6,925	52.3	22,748	57.6
70–79	4,589	17.5	2,883	21.8	7,472	18.9
≥ 80	1,440	5.5	1,562	11.8	3,002	7.6
Number of patients with one or more primary cancers						
One primary cancer only	22,113	84.2	11,315	85.4	33,428	84.6
1st and 2nd cancers	3,592	13.7	1,642	12.4	5,234	13.3
1st, 2nd, and 3rd cancers	478	1.8	236	1.8	714	1.8
1st, 2nd, 3rd, and additional cancers	75	0.3	50	0.4	125	0.3
Other statistics						
Median age at 1st cancer diagnosis	61.4	—	64.3	—	62.3	—
Median year of 1st cancer diagnosis	1987.4	—	1987.1	—	1987.3	—
Median person-years at risk	2.1	—	3.0	—	2.3	—
Percent histologically confirmed*						
Both 1st and 2nd cancers	—	95.2	—	95.0	—	95.1
1st, 2nd, and additional cancers	—	94.5	—	94.3	—	94.5
1st cancer only	—	4.4	—	4.6	—	4.4

*Percent histologically confirmed among patients who developed a subsequent primary cancer.

Table 3.2.2: Risk of subsequent primary cancers after cancer of the oral cavity or pharynx (tongue, mouth, tonsil, oropharynx, hypopharynx), both sexes, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	39,501		29,707		13,108		6,132		39,501			
Number starting interval	Person-years in interval		Person-years in interval		Person-years in interval		Person-years in interval		Person-years in interval			
	28,564		75,465		45,956		31,319		181,304			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	902	2.30*	2,981	2.71*	1,934	2.50*	1,259	2.02*	7,076	2,891.21	2.45*	230.82
All excluding same site	722	1.88*	2,364	2.19*	1,471	1.93*	963	1.57*	5,520	2,835.93	1.95*	148.04
Buccal cavity, pharynx	201	16.19*	701	21.46*	507	24.89*	324	23.23*	1,733	79.40	21.83*	91.21
Lip	8	4.37*	21	4.39*	11	3.67*	9	4.35*	49	11.68	4.20*	2.06
Tongue	47	19.14*	206	31.58*	149	36.18*	91	32.01*	493	15.94	30.92*	26.31
Salivary gland	2	2.25	13	5.26*	7	4.09*	2	1.43	24	6.46	3.71*	0.97
Mouth	91	27.82*	265	30.92*	195	36.81*	127	35.25*	678	20.74	32.69*	36.25
Nasopharynx	2	4.07	13	10.28*	5	6.59*	2	3.96	22	3.02	7.28*	1.05
Tonsil	23	17.99*	56	17.02*	48	24.54*	25	20.24*	152	7.76	19.59*	7.96
Oropharynx	5	13.47*	20	20.53*	14	23.29*	18	45.27*	57	2.34	24.32*	3.01
Hypopharynx	14	10.19*	70	19.58*	57	26.27*	35	25.44*	176	8.49	20.72*	9.24
Digestive system	201	2.29*	565	2.33*	386	2.30*	221	1.66*	1,373	631.29	2.17*	40.91
Esophagus	88	17.31*	234	17.33*	166	18.56*	71	10.39*	559	34.36	16.27*	28.94
Stomach	14	1.47	47	1.86*	22	1.30	14	1.09	97	64.62	1.50*	1.79
Small intestine	2	1.67	3	0.89	3	1.25	4	1.98	12	8.99	1.33	0.17
Colon	47	1.24	133	1.25*	91	1.20	58	0.94	329	282.34	1.17*	2.57
Rectum, rectosigmoid junction	14	0.89	60	1.38*	43	1.48*	28	1.29	145	109.96	1.32*	1.93
Anus, anal canal	3	3.81	6	2.69	1	0.65	2	1.66	12	5.77	2.08*	0.34
Liver	13	4.21*	28	3.31*	21	3.60*	11	2.26*	73	22.26	3.28*	2.80
Gallbladder	2	1.81	2	0.65	2	0.94	0	0.00	6	7.99	0.75	-0.11
Bile ducts, other biliary	2	1.15	10	2.04	7	1.95	7	2.18	26	13.44	1.93*	0.69
Pancreas	16	1.52	41	1.42*	30	1.49*	24	1.48	111	75.74	1.47*	1.94
Respiratory system	228	3.06*	1,042	5.10*	597	4.31*	362	3.42*	2,229	522.76	4.26*	94.11
Nose, nasal cavity, ear	2	3.21	8	4.74*	6	5.36*	1	1.17	17	4.28	3.97*	0.70
Larynx	28	4.82*	109	7.14*	62	6.53*	40	6.35*	239	36.87	6.48*	11.15
Lung, bronchus	197	2.91*	919	4.92*	525	4.12*	319	3.24*	1,960	480.30	4.08*	81.61
Female breast	43	1.38	102	1.09	64	0.93	60	1.04	269	251.57	1.07	2.45
Female genital system	19	1.27	41	0.94	26	0.86	18	0.76	104	112.41	0.93	-1.18
Cervix uteri	6	3.33*	9	1.83	2	0.65	2	0.93	19	11.97	1.59	0.99
Corpus uteri	7	0.90	12	0.53*	8	0.52	6	0.50	33	58.05	0.57*	-3.52
Ovary	3	0.71	9	0.72	13	1.45	8	1.09	33	33.05	1.00	-0.01
Vagina	2	9.19*	4	6.28*	1	2.16	0	0.00	7	1.70	4.11*	0.74
Vulva	1	1.62	6	3.23*	2	1.42	1	0.78	10	5.16	1.94	0.68
Male genital system	83	1.03	229	1.00	146	0.86	119	0.83*	577	620.87	0.93	-3.98
Prostate	80	1.01	226	1.00	145	0.86	118	0.83*	569	614.32	0.93	-4.11
Testis	0	0.00	0	0.00	0	0.00	1	3.28	1	2.58	0.39	-0.14
Urinary system	35	1.09	91	1.02	88	1.40*	54	1.06	268	235.35	1.14*	1.80
Urinary bladder	24	1.09	63	1.02	64	1.47*	38	1.07	189	162.47	1.16*	1.46
Kidney parenchyma	10	1.24	22	0.98	21	1.35	13	1.05	66	58.52	1.13	0.41
Renal pelvis, other urinary	1	0.50	6	1.08	3	0.79	3	1.01	13	14.36	0.91	-0.07
Ureter	0	0.00	2	1.09	2	1.57	1	1.02	5	4.76	1.05	0.01
Bone, joints	0	0.00	2	2.01	3	4.70	1	2.15	6	2.47	2.43	0.19
Soft tissue including heart	0	0.00	5	1.18	7	2.41	1	0.42	13	11.07	1.17	0.11
Kaposi sarcoma	1	1.50	4	2.37	1	1.03	0	0.00	6	3.92	1.53	0.11
Melanoma of skin	16	1.90*	20	0.82	14	0.81	17	1.18	67	64.53	1.04	0.14
Eye, orbit	1	1.68	3	1.83	1	0.92	2	2.45	7	4.14	1.69	0.16
Brain, central nervous system	7	1.64	8	0.68	2	0.26*	6	1.03	23	29.69	0.77	-0.37
Thyroid	12	5.78*	7	1.21	2	0.53	2	0.71	23	14.44	1.59*	0.47
Lymphatic, hematopoietic	28	0.97	75	0.93	50	0.88	28	0.60*	181	213.29	0.85*	-1.78
Hodgkin lymphoma	0	0.00	1	0.35	3	1.73	0	0.00	4	6.87	0.58	-0.16
Non-Hodgkin lymphoma	17	1.36	36	1.00	24	0.93	19	0.87	96	95.92	1.00	0.00
Myeloma	2	0.40	9	0.65	9	0.92	5	0.62	25	36.79	0.68	-0.65
Leukemia	9	0.89	29	1.03	14	0.71	4	0.25*	56	73.71	0.76*	-0.98
Acute lymphocytic	0	0.00	1	1.26	0	0.00	0	0.00	1	2.04	0.49	-0.06
Chronic lymphocytic	1	0.24	6	0.52	3	0.37	0	0.00*	10	29.88	0.33*	-1.10
Acute non-lymphocytic	6	1.81	17	1.83*	4	0.61	1	0.18	28	24.62	1.14	0.19
Chronic myeloid	1	0.73	4	1.06	4	1.52	1	0.46	10	9.94	1.01	0.00

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 71,137 PYR and for male cancers on 110,166 PYR.

Oral and Pharynx Both Sexes, Long-term Follow-up

Table 3.2.3: Risk of subsequent primary cancers after cancer of the oral cavity or pharynx (tongue, mouth, tonsil, oropharynx, hypopharynx), both sexes, long-term follow-up, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis										EAR	
	<10 years		10-14 years		15-19 years		≥20 years		Total			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E		
Number starting interval	39,501		6,132		2,583		879		39,501			
Person-years in interval	149,984		20,816		8,018		2,485		181,304			
All subsequent cancers	5,817	2.56*	895	2.22*	281	1.68*	83	1.59*	7,076	2,891.21	2.45*	230.82
All excluding same site	4,557	2.05*	684	1.72*	215	1.31*	64	1.25	5,520	2,835.93	1.95*	148.04
Buccal cavity, pharynx	1,409	21.53*	232	24.85*	71	20.02*	21	19.67*	1,733	79.40	21.83*	91.21
Lip	40	4.16*	8	5.79*	1	1.90	0	0.00	49	11.68	4.20*	2.06
Tongue	402	30.69*	65	34.26*	23	31.72*	3	13.58*	493	15.94	30.92*	26.31
Salivary gland	22	4.34*	1	1.12	1	2.66	0	0.00	24	6.46	3.71*	0.97
Mouth	551	32.15*	87	36.14*	27	29.38*	13	47.07*	678	20.74	32.69*	36.25
Nasopharynx	20	7.95*	2	5.91	0	0.00	0	0.00	22	3.02	7.28*	1.05
Tonsil	127	19.46*	17	20.16*	7	23.06*	1	11.33	152	7.76	19.59*	7.96
Oropharynx	39	20.04*	14	52.01*	3	30.30*	1	33.97	57	2.34	24.32*	3.01
Hypopharynx	141	19.81*	28	29.58*	6	17.88*	1	10.67	176	8.49	20.72*	9.24
Digestive system	1,152	2.31*	152	1.76*	51	1.43*	18	1.57	1,373	631.29	2.17*	40.91
Esophagus	488	17.73*	54	12.10*	11	6.10*	6	10.53*	559	34.36	16.27*	28.94
Stomach	83	1.60*	11	1.31	3	0.88	0	0.00	97	64.62	1.50*	1.79
Small intestine	8	1.15	3	2.33	1	1.81	0	0.00	12	8.99	1.33	0.17
Colon	271	1.23*	36	0.91	16	0.97	6	1.12	329	282.34	1.17*	2.57
Rectum, rectosigmoid junction	117	1.33*	15	1.05	9	1.59	4	2.28	145	109.96	1.32*	1.93
Anus, anal canal	10	2.19*	1	1.28	1	3.08	0	0.00	12	5.77	2.08*	0.34
Liver	62	3.57*	8	2.59*	3	2.25	0	0.00	73	22.26	3.28*	2.80
Gallbladder	6	0.95	0	0.00	0	0.00	0	0.00	6	7.99	0.75	-0.11
Bile ducts, other biliary	19	1.86*	5	2.51	1	1.10	1	3.25	26	13.44	1.93*	0.69
Pancreas	87	1.46*	17	1.63	6	1.38	1	0.71	111	75.74	1.47*	1.94
Respiratory system	1,867	4.48*	252	3.64*	91	3.26*	19	2.20*	2,229	522.76	4.26*	94.11
Nose, nasal cavity, ear	16	4.66*	1	1.81	0	0.00	0	0.00	17	4.28	3.97*	0.70
Larynx	199	6.51*	28	6.51*	12	7.72*	0	0.00	239	36.87	6.48*	11.15
Lung, bronchus	1,641	4.30*	221	3.44*	79	3.03*	19	2.34*	1,960	480.30	4.08*	81.61
Female breast	209	1.08	45	1.23	11	0.69	4	0.77	269	251.57	1.07	2.45
Female genital system	86	0.97	12	0.79	4	0.62	2	0.97	104	112.41	0.93	-1.18
Cervix uteri	17	1.73*	2	1.41	0	0.00	0	0.00	19	11.97	1.59	0.99
Corpus uteri	27	0.59*	5	0.65	1	0.31	0	0.00	33	58.05	0.57*	-3.52
Ovary	25	0.97	5	1.07	2	1.00	1	1.55	33	33.05	1.00	-0.01
Vagina	7	5.31*	0	0.00	0	0.00	0	0.00	7	1.70	4.11*	0.74
Vulva	9	2.32*	0	0.00	1	2.77	0	0.00	10	5.16	1.94	0.68
Male genital system	458	0.96	88	0.94	24	0.63*	7	0.64	577	620.87	0.93	-3.98
Prostate	451	0.95	87	0.94	24	0.63*	7	0.65	569	614.32	0.93	-4.11
Testis	0	0.00	1	4.63	0	0.00	0	0.00	1	2.58	0.39	-0.14
Urinary system	214	1.16*	37	1.13	13	0.95	4	0.90	268	235.35	1.14*	1.80
Urinary bladder	151	1.19*	27	1.18	9	0.94	2	0.64	189	162.47	1.16*	1.46
Kidney parenchyma	53	1.15	8	1.00	4	1.21	1	0.95	66	58.52	1.13	0.41
Renal pelvis, other urinary	10	0.88	2	1.04	0	0.00	1	3.92	13	14.36	0.91	-0.07
Ureter	4	1.06	1	1.56	0	0.00	0	0.00	5	4.76	1.05	0.01
Bone, joints	5	2.50	1	3.30	0	0.00	0	0.00	6	2.47	2.43	0.19
Soft tissue including heart	12	1.38	1	0.66	0	0.00	0	0.00	13	11.07	1.17	0.11
Kaposi sarcoma	6	1.81	0	0.00	0	0.00	0	0.00	6	3.92	1.53	0.11
Melanoma of skin	50	1.00	14	1.54	1	0.25	2	1.47	67	64.53	1.04	0.14
Eye, orbit	5	1.50	1	1.88	1	4.60	0	0.00	7	4.14	1.69	0.16
Brain, central nervous system	17	0.71	4	1.05	1	0.66	1	2.09	23	29.69	0.77	-0.37
Thyroid	21	1.81*	2	1.09	0	0.00	0	0.00	23	14.44	1.59*	0.47
Lymphatic, hematopoietic	153	0.92	21	0.70	6	0.47	1	0.24	181	213.29	0.85*	-1.78
Hodgkin lymphoma	4	0.70	0	0.00	0	0.00	0	0.00	4	6.87	0.58	-0.16
Non-Hodgkin lymphoma	77	1.04	13	0.94	5	0.84	1	0.50	96	95.92	1.00	0.00
Myeloma	20	0.70	4	0.77	1	0.46	0	0.00	25	36.79	0.68	-0.65
Leukemia	52	0.90	4	0.39	0	0.00*	0	0.00	56	73.71	0.76*	-0.98
Acute lymphocytic	1	0.61	0	0.00	0	0.00	0	0.00	1	2.04	0.49	-0.06
Chronic lymphocytic	10	0.42*	0	0.00*	0	0.00	0	0.00	10	29.88	0.33*	-1.10
Acute non-lymphocytic	27	1.41	1	0.29	0	0.00	0	0.00	28	24.62	1.14	0.19
Chronic myeloid	9	1.16	1	0.72	0	0.00	0	0.00	10	9.94	1.01	0.00

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 71,137 PYR and for male cancers on 110,166 PYR.

Table 3.2.4: Risk of subsequent primary cancers after cancer of the oral cavity or pharynx (tongue, mouth, tonsil, oropharynx, hypopharynx), females, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	13,243 9,746		10,326 28,162		5,239 18,932		2,643 14,298		13,243 71,137			
Number starting interval Person-years in interval	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	268	2.45*	903	2.75*	628	2.58*	477	2.29*	2,276	890.42	2.56*	194.78
All excluding same site	208	1.93*	686	2.12*	471	1.96*	360	1.75*	1,725	878.26	1.96*	119.03
Buccal cavity, pharynx	70	33.39*	240	38.81*	168	38.24*	134	38.33*	612	16.17	37.85*	83.76
Lip	4	31.30*	4	10.40*	3	10.29*	6	22.99*	17	1.06	15.96*	2.24
Tongue	19	41.24*	72	52.90*	50	51.15*	32	41.35*	173	3.57	48.42*	23.82
Salivary gland	2	9.28*	4	6.23*	0	0.00	1	2.49	7	1.72	4.06*	0.74
Mouth	35	48.30*	109	51.09*	72	47.53*	61	49.95*	277	5.59	49.52*	38.15
Nasopharynx	0	0.00	3	12.31*	2	11.70*	2	14.69*	7	0.63	11.03*	0.89
Tonsil	4	19.72*	14	24.08*	17	43.88*	9	33.36*	44	1.44	30.53*	5.98
Oropharynx	0	0.00	5	30.65*	5	43.63*	7	84.32*	17	0.41	40.98*	2.33
Hypopharynx	2	13.17*	17	37.95*	13	42.28*	8	35.55*	40	1.13	35.33*	5.46
Digestive system	50	1.98*	157	2.09*	131	2.32*	80	1.63*	418	206.05	2.03*	29.79
Esophagus	23	31.70*	55	25.47*	56	34.70*	29	21.04*	163	5.88	27.73*	22.09
Stomach	1	0.50	12	2.05*	8	1.87	0	0.00	21	15.81	1.33	0.73
Small intestine	1	2.93	1	0.96	2	2.48	0	0.00	4	2.95	1.36	0.15
Colon	16	1.28	43	1.15	35	1.24	23	0.93	117	103.03	1.14	1.96
Rectum, rectosigmoid junction	4	0.98	17	1.40	12	1.37	12	1.68	45	32.15	1.40*	1.81
Rectum	4	1.50	13	1.65	11	1.92	7	1.47	35	21.03	1.66*	1.96
Anus, anal canal	0	0.00	2	1.97	1	1.32	0	0.00	3	2.76	1.09	0.03
Liver	1	1.92	6	3.82*	2	1.64	3	2.58	12	4.48	2.68*	1.06
Gallbladder	1	1.69	2	1.16	1	0.80	0	0.00	4	4.58	0.87	-0.08
Bile ducts, other biliary	0	0.00	4	2.51	3	2.39	1	0.84	8	4.57	1.75	0.48
Pancreas	3	0.92	15	1.53	11	1.47	11	1.65	40	27.19	1.47*	1.80
Respiratory system	58	4.11*	264	6.02*	185	5.45*	135	4.44*	642	122.32	5.25*	73.05
Nose, nasal cavity, ear	1	6.64	1	2.23	2	6.02	0	0.00	4	1.22	3.28	0.39
Larynx	4	7.91*	19	12.58*	14	13.02*	17	20.70*	54	3.91	13.80*	7.04
Lung, bronchus	53	3.95*	243	5.81*	168	5.17*	118	4.04*	582	116.88	4.98*	65.38
Female breast	43	1.38	102	1.09	64	0.93	60	1.04	269	251.57	1.07	2.45
Female genital system	19	1.27	41	0.94	26	0.86	18	0.76	104	112.41	0.93	-1.18
Cervix uteri	6	3.33*	9	1.83	2	0.65	2	0.93	19	11.97	1.59	0.99
Corpus uteri	7	0.90	12	0.53*	8	0.52	6	0.50	33	58.05	0.57*	-3.52
Ovary	3	0.71	9	0.72	13	1.45	8	1.09	33	33.05	1.00	-0.01
Vagina	2	9.19*	4	6.28*	1	2.16	0	0.00	7	1.70	4.11*	0.74
Vulva	1	1.62	6	3.23*	2	1.42	1	0.78	10	5.16	1.94	0.68
Urinary system	7	1.37	22	1.42	15	1.27	12	1.14	56	42.98	1.30	1.83
Urinary bladder	5	1.65	15	1.64	8	1.15	6	0.97	34	25.33	1.34	1.22
Kidney parenchyma	2	1.21	5	0.99	7	1.80	4	1.15	18	14.09	1.28	0.55
Renal pelvis, other urinary	0	0.00	2	1.53	0	0.00	2	2.37	4	3.56	1.12	0.06
Ureter	0	0.00	1	2.49	0	0.00	0	0.00	1	1.10	0.91	-0.01
Bone, joints	0	0.00	0	0.00	1	4.67	0	0.00	1	0.80	1.25	0.03
Soft tissue including heart	0	0.00	2	1.57	2	2.12	0	0.00	4	3.48	1.15	0.07
Kaposi sarcoma	0	0.00	1	8.78	0	0.00	0	0.00	1	0.32	3.09	0.10
Melanoma of skin	2	0.98	5	0.80	3	0.65	6	1.48	16	16.99	0.94	-0.14
Eye, orbit	0	0.00	2	4.01	0	0.00	0	0.00	2	1.29	1.55	0.10
Brain, central nervous system	2	1.74	3	0.86	0	0.00	2	0.97	7	9.21	0.76	-0.31
Thyroid	3	3.04	3	1.04	1	0.50	0	0.00	7	7.48	0.94	-0.07
Lymphatic, hematopoietic	9	1.11	32	1.30	19	1.01	10	0.60	70	68.34	1.02	0.23
Hodgkin lymphoma	0	0.00	1	1.27	1	1.84	0	0.00	2	2.02	0.99	0.00
Non-Hodgkin lymphoma	6	1.56	17	1.44	8	0.87	5	0.60	36	33.12	1.09	0.40
Myeloma	1	0.70	4	0.93	3	0.92	3	1.04	11	11.90	0.92	-0.13
Leukemia	2	0.77	10	1.29	7	1.20	2	0.39	21	21.30	0.99	-0.04
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.63	0.00	-0.09
Chronic lymphocytic	1	0.99	4	1.32	3	1.31	0	0.00	8	8.31	0.96	-0.04
Acute non-lymphocytic	0	0.00	5	1.83	0	0.00	1	0.54	6	7.53	0.80	-0.21
Chronic myeloid	1	2.78	1	0.94	1	1.25	1	1.43	4	2.92	1.37	0.15

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000.

Oral and Pharynx Males

Table 3.2.5: Risk of subsequent primary cancers after cancer of the oral cavity or pharynx (tongue, mouth, tonsil, oropharynx, hypopharynx), males, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	26,258 18,818		19,381 47,303		7,869 27,024		3,489 17,022		26,258 110,166			
Number starting interval Person-years in interval	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	634	2.24*	2,078	2.69*	1,306	2.46*	782	1.89*	4,800	2,000.79	2.40*	254.09
All excluding same site	514	1.86*	1,678	2.23*	1,000	1.92*	603	1.48*	3,795	1,957.67	1.94*	166.78
Buccal cavity, pharynx	131	12.69*	461	17.41*	339	21.22*	190	18.18*	1,121	63.23	17.73*	96.02
Lip	4	2.35	17	3.87*	8	2.96*	3	1.66	32	10.61	3.02*	1.94
Tongue	28	14.03*	134	25.95*	99	31.52*	59	28.52*	320	12.37	25.87*	27.92
Salivary gland	0	0.00	9	4.92*	7	5.63*	1	1.00	17	4.74	3.59*	1.11
Mouth	56	21.99*	156	24.23*	123	32.51*	66	27.72*	401	15.15	26.47*	35.02
Nasopharynx	2	4.90	10	9.79*	3	5.10*	0	0.00	15	2.39	6.29*	1.15
Tonsil	19	17.66*	42	15.50*	31	19.76*	16	16.58*	108	6.32	17.09*	9.23
Oropharynx	5	15.77*	15	18.49*	9	18.50*	11	34.97*	40	1.93	20.73*	3.46
Hypopharynx	12	9.82*	53	16.95*	44	23.63*	27	23.46*	136	7.36	18.47*	11.68
Digestive system	151	2.42*	408	2.45*	255	2.28*	141	1.67*	955	425.25	2.25*	48.09
Esophagus	65	14.91*	179	15.78*	110	15.01*	42	7.70*	396	28.48	13.90*	33.36
Stomach	13	1.73	35	1.80*	14	1.11	14	1.52	76	48.81	1.56*	2.47
Small intestine	1	1.17	2	0.86	1	0.63	4	3.17	8	6.04	1.32	0.18
Colon	31	1.21	90	1.30*	56	1.17	35	0.95	212	179.31	1.18*	2.97
Rectum, rectosigmoid junction	10	0.85	43	1.38	31	1.52*	16	1.10	100	77.80	1.29*	2.01
Anus, anal canal	3	6.65*	4	3.30	0	0.00	2	3.55	9	3.01	2.99*	0.54
Liver	12	4.67*	22	3.19*	19	4.12*	8	2.16	61	17.78	3.43*	3.92
Gallbladder	1	1.96	0	0.00	1	1.13	0	0.00	2	3.41	0.59	-0.13
Bile ducts, other biliary	2	1.66	6	1.81	4	1.71	6	2.98*	18	8.87	2.03*	0.83
Pancreas	13	1.79	26	1.36	19	1.51	13	1.37	71	48.55	1.46*	2.04
Respiratory system	170	2.82*	778	4.85*	412	3.94*	227	3.01*	1,587	400.44	3.96*	107.71
Nose, nasal cavity, ear	1	2.11	7	5.65*	4	5.08*	1	1.76	13	3.07	4.24*	0.90
Larynx	24	4.52*	90	6.54*	48	5.70*	23	4.20*	185	32.96	5.61*	13.80
Lung, bronchus	144	2.65*	676	4.67*	357	3.76*	201	2.91*	1,378	363.42	3.79*	92.10
Male breast	0	0.00	2	1.36	1	1.01	1	1.29	4	3.79	1.05	0.02
Male genital system	83	1.03	229	1.00	146	0.86	119	0.83*	577	620.87	0.93	-3.98
Prostate	80	1.01	226	1.00	145	0.86	118	0.83*	569	614.32	0.93	-4.11
Testis	0	0.00	0	0.00	0	0.00	1	3.28	1	2.58	0.39	-0.14
Urinary system	28	1.04	69	0.93	73	1.43*	42	1.04	212	192.36	1.10	1.78
Urinary bladder	19	1.00	48	0.92	56	1.54*	32	1.09	155	137.14	1.13	1.62
Kidney parenchyma	8	1.25	17	0.97	14	1.20	9	1.02	48	44.43	1.08	0.32
Renal pelvis, other urinary	1	0.63	4	0.94	3	1.06	1	0.47	9	10.79	0.83	-0.16
Ureter	0	0.00	1	0.70	2	2.06	1	1.38	4	3.66	1.09	0.03
Bone, joints	0	0.00	2	2.89	2	4.71	1	3.46	5	1.67	3.00	0.30
Soft tissue including heart	0	0.00	3	1.01	5	2.56	1	0.65	9	7.60	1.18	0.13
Kaposi sarcoma	1	1.59	3	1.91	1	1.14	0	0.00	5	3.59	1.39	0.13
Melanoma of skin	14	2.19*	15	0.83	11	0.87	11	1.06	51	47.54	1.07	0.31
Eye, orbit	1	2.34	1	0.87	1	1.35	2	3.73	5	2.85	1.76	0.20
Brain, central nervous system	5	1.60	5	0.60	2	0.38	4	1.07	16	20.48	0.78	-0.41
Thyroid	9	8.26*	4	1.39	1	0.56	2	1.65	16	6.96	2.30*	0.82
Lymphatic, hematopoietic	19	0.92	43	0.77	31	0.81	18	0.60*	111	144.95	0.77*	-3.08
Hodgkin lymphoma	0	0.00	0	0.00	2	1.68	0	0.00	2	4.85	0.41	-0.26
Non-Hodgkin lymphoma	11	1.26	19	0.79	16	0.96	14	1.04	60	62.80	0.96	-0.25
Myeloma	1	0.28	5	0.52	6	0.92	2	0.39	14	24.88	0.56*	-0.99
Leukemia	7	0.93	19	0.93	7	0.51	2	0.19*	35	52.41	0.67*	-1.58
Acute lymphocytic	0	0.00	1	1.78	0	0.00	0	0.00	1	1.41	0.71	-0.04
Chronic lymphocytic	0	0.00	2	0.24*	0	0.00*	0	0.00*	2	21.57	0.09*	-1.78
Acute non-lymphocytic	6	2.49	12	1.83	4	0.89	0	0.00	22	17.09	1.29	0.45
Chronic myeloid	0	0.00	3	1.11	3	1.64	0	0.00	6	7.02	0.86	-0.09

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000.

Table 3.2.6: Risk of subsequent primary cancers after cancer of the oral cavity or pharynx (tongue, mouth, tonsil, oropharynx, hypopharynx), both sexes, <50 years of age, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	6,279		5,062		2,626		1,435		6,279			
Number starting interval	4,739		13,896		9,924		8,831		37,391			
Person-years in interval	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	79	6.68*	291	6.71*	242	5.16*	215	2.64*	827	183.62	4.50*	172.07
All excluding same site	51	4.50*	210	5.03*	156	3.44*	156	1.96*	573	178.03	3.22*	105.63
Buccal cavity, pharynx	32	50.11*	91	42.28*	93	44.80*	63	24.76*	279	7.41	37.65*	72.63
Lip	3	55.35*	1	5.47	0	0.00	1	4.46	5	0.63	7.96*	1.17
Tongue	6	42.53*	27	55.68*	33	69.81*	19	32.95*	85	1.68	50.74*	22.28
Salivary gland	0	0.00	0	0.00	3	21.56*	0	0.00	3	0.53	5.65*	0.66
Mouth	15	90.23*	30	54.69*	33	62.08*	22	34.30*	100	1.89	52.97*	26.24
Nasopharynx	0	0.00	4	30.40*	2	17.35*	1	7.79	7	0.42	16.85*	1.76
Tonsil	5	50.64*	9	27.74*	12	39.61*	10	30.73*	36	1.05	34.24*	9.35
Oropharynx	1	53.15	3	46.74*	3	47.90*	0	0.00	7	0.23	30.62*	1.81
Hypopharynx	1	17.58	12	58.86*	5	23.12*	8	29.12*	26	0.75	34.58*	6.75
Digestive system	21	10.81*	51	7.08*	43	5.31*	35	2.47*	150	31.43	4.77*	31.71
Esophagus	16	86.91*	32	50.22*	24	35.10*	15	14.51*	87	2.54	34.27*	22.59
Stomach	0	0.00	2	2.50	1	1.22	4	3.05	7	3.17	2.21	1.03
Small intestine	0	0.00	0	0.00	0	0.00	1	3.45	1	0.71	1.41	0.08
Colon	4	6.13*	4	1.59	7	2.36	7	1.25	22	11.74	1.87*	2.74
Rectum, rectosigmoid junction	0	0.00	6	4.29*	3	1.87	4	1.48	13	6.06	2.14*	1.86
Anus, anal canal	0	0.00	0	0.00	0	0.00	0	0.00	0	0.55	0.00	-0.15
Liver	1	8.27	4	9.64*	4	9.37*	0	0.00	9	1.68	5.37*	1.96
Gallbladder	0	0.00	1	17.96	1	14.71	0	0.00	2	0.28	7.23	0.46
Bile ducts, other biliary	0	0.00	0	0.00	2	13.85*	1	3.45	3	0.59	5.07*	0.64
Pancreas	0	0.00	2	2.37	1	1.04	3	1.76	6	3.74	1.60	0.60
Respiratory system	7	3.76*	104	14.80*	69	8.48*	58	4.06*	238	31.32	7.60*	55.28
Nose, nasal cavity, ear	0	0.00	0	0.00	1	10.66	0	0.00	1	0.35	2.88	0.17
Larynx	2	9.36*	11	14.22*	16	19.17*	12	10.22*	41	3.00	13.68*	10.16
Lung, bronchus	5	3.11*	92	15.03*	52	7.24*	46	3.55*	195	27.87	7.00*	44.70
Female breast	3	1.66	7	1.03	9	1.30	15	1.43	34	26.09	1.30	5.66
Female genital system	1	1.39	2	0.72	3	1.08	5	1.18	11	10.50	1.05	0.36
Cervix uteri	1	4.22	2	2.64	0	0.00	0	0.00	3	2.19	1.37	0.58
Corpus uteri	0	0.00	0	0.00	2	1.68	0	0.00	2	4.55	0.44	-1.82
Ovary	0	0.00	0	0.00	1	1.18	4	3.14	5	3.15	1.58	1.32
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.11	0.00	-0.08
Vulva	0	0.00	0	0.00	0	0.00	0	0.00	0	0.31	0.00	-0.22
Male genital system	3	4.06	5	1.45	8	1.39	14	0.83	30	26.82	1.12	1.36
Prostate	2	3.93	5	1.77	8	1.49	14	0.84	29	25.34	1.14	1.57
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	1.23	0.00	-0.52
Urinary system	1	1.25	3	1.00	7	2.10	7	1.21	18	12.91	1.39	1.36
Urinary bladder	1	2.46	1	0.63	2	1.08	3	0.86	7	7.34	0.95	-0.09
Kidney parenchyma	0	0.00	2	1.56	4	2.99	4	1.97	10	5.01	2.00	1.33
Renal pelvis, other urinary	0	0.00	0	0.00	1	7.31	0	0.00	1	0.56	1.78	0.12
Ureter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.14	0.00	-0.04
Bone, joints	0	0.00	1	10.34	2	25.79*	0	0.00	3	0.30	10.16*	0.72
Soft tissue including heart	0	0.00	0	0.00	0	0.00	1	2.79	1	1.11	0.90	-0.03
Kaposi sarcoma	1	3.58	2	2.78	1	2.47	0	0.00	4	1.63	2.45	0.63
Melanoma of skin	1	1.36	4	1.59	1	0.45	4	1.46	10	8.24	1.21	0.47
Eye, orbit	0	0.00	0	0.00	0	0.00	0	0.00	0	0.34	0.00	-0.09
Brain, central nervous system	0	0.00	2	2.16	0	0.00	4	4.00*	6	3.02	1.99	0.80
Thyroid	3	10.56*	2	2.13	0	0.00	1	1.20	6	2.82	2.13	0.85
Lymphatic, hematopoietic	1	0.81	7	1.69	2	0.51	3	0.52	13	15.00	0.87	-0.54
Hodgkin lymphoma	0	0.00	0	0.00	0	0.00	0	0.00	0	1.15	0.00	-0.31
Non-Hodgkin lymphoma	1	1.55	4	1.85	2	1.00	3	1.05	10	7.66	1.30	0.62
Myeloma	0	0.00	2	4.24	0	0.00	0	0.00	2	2.07	0.97	-0.02
Leukemia	0	0.00	1	0.92	0	0.00	0	0.00	1	4.12	0.24	-0.84
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.24	0.00	-0.06
Chronic lymphocytic	0	0.00	1	3.14	0	0.00	0	0.00	1	1.43	0.70	-0.12
Acute non-lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	1.36	0.00	-0.36
Chronic myeloid	0	0.00	0	0.00	0	0.00	0	0.00	0	0.67	0.00	-0.18

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 13,982 PYR and for male cancers on 23,409 PYR.

Oral and Pharynx Both Sexes, 50-69 Years of Age

Table 3.2.7: Risk of subsequent primary cancers after cancer of the oral cavity or pharynx (tongue, mouth, tonsil, oropharynx, hypopharynx), both sexes, 50-69 years of age, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	22,748		17,545		7,944		3,881		22,748			
Number starting interval	16,714		45,245		28,430		19,700		110,089			
Person-years in interval	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	532	2.64*	1,968	3.08*	1,361	2.60*	909	1.95*	4,770	1,829.69	2.61*	267.09
All excluding same site	427	2.18*	1,570	2.52*	1,054	2.05*	701	1.53*	3,752	1,791.15	2.09*	178.12
Buccal cavity, pharynx	116	14.90*	458	21.10*	335	23.31*	232	23.14*	1,141	53.89	21.17*	98.75
Lip	3	3.11	13	4.65*	7	3.51*	8	5.18*	31	7.29	4.25*	2.15
Tongue	34	21.42*	137	30.86*	94	31.93*	67	32.95*	332	11.00	30.17*	29.16
Salivary gland	0	0.00	11	7.94*	3	2.78	2	2.03	16	3.90	4.10*	1.10
Mouth	45	21.70*	162	28.36*	124	33.37*	85	32.95*	416	14.08	29.54*	36.51
Nasopharynx	1	3.08	9	10.39*	3	5.62*	1	2.94	14	2.06	6.78*	1.08
Tonsil	14	15.74*	37	15.68*	31	21.85*	14	16.60*	96	5.51	17.42*	8.22
Oropharynx	4	15.53*	12	16.99*	10	21.93*	16	54.98*	42	1.71	24.55*	3.66
Hypopharynx	8	8.49*	50	19.25*	48	28.78*	26	25.38*	132	6.23	21.18*	11.42
Digestive system	117	2.82*	355	2.73*	272	2.56*	158	1.61*	902	375.98	2.40*	47.78
Esophagus	57	18.73*	159	18.25*	124	19.58*	49	9.61*	389	23.19	16.77*	33.23
Stomach	6	1.36	25	1.87*	12	1.15	7	0.75	50	37.59	1.33	1.13
Small intestine	1	1.60	1	0.51	2	1.25	3	2.02	7	5.67	1.24	0.12
Colon	21	1.27	76	1.41*	64	1.38*	42	0.93	203	162.22	1.25*	3.70
Rectum, rectosigmoid junction	8	0.98	35	1.39	32	1.64*	20	1.24	95	68.86	1.38*	2.37
Anus, anal canal	3	6.87*	4	2.98	1	0.97	2	2.34	10	3.66	2.73*	0.58
Liver	9	5.49*	18	3.63*	13	3.30*	11	3.04*	51	14.16	3.60*	3.35
Gallbladder	2	4.81	1	0.72	0	0.00	0	0.00	3	4.24	0.71	-0.11
Bile ducts, other biliary	0	0.00	8	3.35*	3	1.43	5	2.16	16	7.53	2.12*	0.77
Pancreas	10	1.98	27	1.72*	21	1.64*	18	1.51	76	45.45	1.67*	2.77
Respiratory system	156	3.62*	755	5.77*	450	4.47*	276	3.37*	1,637	356.38	4.59*	116.33
Nose, nasal cavity, ear	2	5.76	6	6.00*	3	4.13	0	0.00	11	2.69	4.09*	0.75
Larynx	21	5.39*	86	7.89*	43	5.93*	26	5.50*	176	26.78	6.57*	13.55
Lung, bronchus	132	3.41*	661	5.58*	401	4.34*	248	3.25*	1,442	326.07	4.42*	101.37
Female breast	27	1.67*	61	1.15	42	0.95	37	0.91	167	154.12	1.08	3.15
Female genital system	11	1.30	31	1.17	20	0.99	10	0.60	72	71.78	1.00	0.05
Cervix uteri	3	2.96	7	2.44	2	1.06	2	1.53	14	7.07	1.98*	1.69
Corpus uteri	4	0.85	10	0.68	5	0.45	4	0.45	23	39.27	0.59*	-3.98
Ovary	3	1.33	7	0.96	11	1.88	3	0.58	24	20.52	1.17	0.85
Vagina	0	0.00	2	6.50	1	3.74	0	0.00	3	0.94	3.19	0.50
Vulva	1	4.56	4	5.19*	1	1.38	1	1.16	7	2.58	2.71*	1.08
Male genital system	39	1.01	133	1.00	104	0.85	88	0.79*	364	405.73	0.90*	-6.03
Prostate	39	1.02	131	1.00	103	0.85	87	0.78*	360	402.14	0.90*	-6.09
Testis	0	0.00	0	0.00	0	0.00	1	7.87	1	1.15	0.87	-0.02
Urinary system	13	0.81	52	1.02	61	1.46*	38	0.99	164	147.22	1.11	1.52
Urinary bladder	8	0.76	35	1.04	44	1.55*	28	1.04	115	99.67	1.15	1.39
Kidney parenchyma	5	1.08	15	1.06	15	1.38	7	0.77	42	38.78	1.08	0.29
Renal pelvis, other urinary	0	0.00	2	0.66	2	0.80	3	1.32	7	8.77	0.80	-0.16
Ureter	0	0.00	1	1.01	2	2.37	1	1.31	4	2.90	1.38	0.10
Bone, joints	0	0.00	1	1.69	1	2.37	1	3.09	3	1.54	1.95	0.13
Soft tissue including heart	0	0.00	4	1.70	5	2.77	0	0.00	9	6.63	1.36	0.22
Kaposi sarcoma	0	0.00	1	1.64	0	0.00	0	0.00	1	1.48	0.67	-0.04
Melanoma of skin	10	2.09	7	0.47*	8	0.70	9	0.89	34	41.05	0.83	-0.64
Eye, orbit	0	0.00	2	2.00	1	1.36	1	1.66	4	2.67	1.50	0.12
Brain, central nervous system	4	1.57	4	0.53	2	0.37	2	0.47	12	19.79	0.61	-0.71
Thyroid	7	5.75*	3	0.85	0	0.00	1	0.57	11	8.90	1.24	0.19
Lymphatic, hematopoietic	15	1.08	39	0.89	34	0.94	22	0.64*	110	128.56	0.86	-1.69
Hodgkin lymphoma	0	0.00	1	0.60	2	1.83	0	0.00	3	4.16	0.72	-0.11
Non-Hodgkin lymphoma	9	1.44	20	1.01	14	0.85	13	0.81	56	58.74	0.95	-0.25
Myeloma	1	0.40	4	0.52	8	1.25	5	0.83	18	22.64	0.80	-0.42
Leukemia	5	1.08	14	0.96	10	0.82	4	0.34*	33	43.02	0.77	-0.91
Acute lymphocytic	0	0.00	1	2.38	0	0.00	0	0.00	1	1.17	0.85	-0.02
Chronic lymphocytic	0	0.00	2	0.32	2	0.39	0	0.00*	4	18.02	0.22*	-1.27
Acute non-lymphocytic	4	2.77	8	1.71	3	0.74	1	0.25	16	14.26	1.12	0.16
Chronic myeloid	0	0.00	3	1.58	3	1.92	1	0.64	7	5.65	1.24	0.12

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 40,888 PYR and for male cancers on 69,200 PYR.

Table 3.2.8: Risk of subsequent primary cancers after cancer of the oral cavity or pharynx (tongue, mouth, tonsil, oropharynx, hypopharynx), both sexes, ≥70 years of age, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis													
	<1 year		1-4 years		5-9 years		≥10 years		Total					
	10,474		7,100		2,538		816		10,474					
Number starting interval	Person-years in interval		7,110		16,324		7,602		2,788		33,824			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR		
All subsequent cancers	291	1.63*	722	1.72*	331	1.62*	135	1.80*	1,479	877.90	1.68*	177.71		
All excluding same site	244	1.38*	584	1.41*	261	1.29*	106	1.43*	1,195	866.75	1.38*	97.05		
Buccal cavity, pharynx	53	13.28*	152	17.27*	79	20.16*	29	21.06*	313	18.09	17.30*	87.19		
Lip	2	2.46	7	3.87*	4	4.80*	0	0.00	13	3.75	3.46*	2.73		
Tongue	7	9.61*	42	26.25*	22	31.35*	5	21.44*	76	3.26	23.29*	21.50		
Salivary gland	2	5.10	2	2.14	1	2.03	0	0.00	5	2.04	2.46	0.88		
Mouth	31	30.05*	73	31.61*	38	36.19*	20	52.38*	162	4.77	33.94*	46.48		
Nasopharynx	1	7.92	0	0.00	0	0.00	0	0.00	1	0.54	1.85	0.14		
Tonsil	4	13.78*	10	16.48*	5	21.33*	1	15.12	20	1.20	16.70*	5.56		
Oropharynx	0	0.00	5	24.57*	1	12.15	2	84.89*	8	0.40	19.79*	2.25		
Hypopharynx	5	13.32*	8	10.35*	4	14.01*	1	13.01	18	1.51	11.91*	4.88		
Digestive system	63	1.42*	159	1.52*	71	1.32*	28	1.34	321	223.89	1.43*	28.71		
Esophagus	15	8.08*	43	10.36*	18	9.34*	7	9.99*	83	8.63	9.61*	21.99		
Stomach	8	1.64	20	1.79*	9	1.61	3	1.36	40	23.86	1.68*	4.77		
Small intestine	1	1.92	2	1.63	1	1.62	0	0.00	4	2.61	1.53	0.41		
Colon	22	1.06	53	1.05	20	0.75	9	0.85	104	108.37	0.96	-1.29		
Rectum, rectosigmoid junction	6	0.82	19	1.13	8	1.00	4	1.40	37	35.04	1.06	0.58		
Anus, anal canal	0	0.00	2	2.72	0	0.00	0	0.00	2	1.56	1.28	0.13		
Liver	3	2.26	6	1.94	4	2.72	0	0.00	13	6.42	2.02*	1.95		
Gallbladder	0	0.00	0	0.00	1	1.18	0	0.00	1	3.47	0.29	-0.73		
Bile ducts, other biliary	2	2.07	2	0.83	2	1.48	1	1.67	7	5.32	1.32	0.50		
Pancreas	6	1.14	12	0.97	8	1.26	3	1.19	29	26.55	1.09	0.72		
Respiratory system	65	2.21*	183	2.76*	78	2.63*	28	2.91*	354	135.06	2.62*	64.73		
Nose, nasal cavity, ear	0	0.00	2	3.39	2	6.69	1	8.88	5	1.25	4.00*	1.11		
Larynx	5	2.94	12	3.34*	3	2.13	2	4.97	22	7.10	3.10*	4.40		
Lung, bronchus	60	2.19*	166	2.68*	72	2.58*	25	2.76*	323	126.36	2.56*	58.14		
Female breast	13	0.99	34	1.01	13	0.73	8	1.19	68	71.36	0.95	-2.07		
Female genital system	7	1.21	8	0.55	3	0.42	3	1.11	21	30.13	0.70	-5.61		
Cervix uteri	2	3.62	0	0.00	0	0.00	0	0.00	2	2.71	0.74	-0.44		
Corpus uteri	3	1.05	2	0.29	1	0.30	2	1.79	8	14.23	0.56	-3.83		
Ovary	0	0.00	2	0.45	1	0.44	1	1.12	4	9.38	0.43	-3.31		
Vagina	2	17.08*	2	6.60	0	0.00	0	0.00	4	0.66	6.10*	2.06		
Vulva	0	0.00	2	1.99	1	1.66	0	0.00	3	2.27	1.32	0.45		
Male genital system	41	1.01	91	0.99	34	0.81	17	1.23	183	188.32	0.97	-3.03		
Prostate	39	0.96	90	0.99	34	0.82	17	1.24	180	186.84	0.96	-3.90		
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.20	0.00	-0.11		
Urinary system	21	1.38	36	1.01	20	1.13	9	1.36	86	75.21	1.14	3.19		
Urinary bladder	15	1.35	27	1.03	18	1.37	7	1.40	67	55.45	1.21	3.41		
Kidney parenchyma	5	1.63	5	0.70	2	0.59	2	1.70	14	14.73	0.95	-0.22		
Renal pelvis, other urinary	1	0.97	4	1.66	0	0.00	0	0.00	5	5.03	0.99	-0.01		
Ureter	0	0.00	1	1.22	0	0.00	0	0.00	1	1.71	0.59	-0.21		
Bone, joints	0	0.00	0	0.00	0	0.00	0	0.00	0	0.63	0.00	-0.19		
Soft tissue including heart	0	0.00	1	0.64	2	2.49	0	0.00	3	3.34	0.90	-0.10		
Kaposi sarcoma	0	0.00	1	2.79	0	0.00	0	0.00	1	0.80	1.24	0.06		
Melanoma of skin	5	1.72	9	1.26	5	1.36	4	2.60	23	15.24	1.51	2.29		
Eye, orbit	1	4.22	1	1.84	0	0.00	1	10.93	3	1.13	2.66	0.55		
Brain, central nervous system	3	2.08	2	0.59	0	0.00	0	0.00	5	6.88	0.73	-0.55		
Thyroid	2	3.48	2	1.50	2	3.31	0	0.00	6	2.72	2.20	0.97		
Lymphatic, hematopoietic	12	0.88	29	0.89	14	0.83	3	0.46	58	69.73	0.83	-3.47		
Hodgkin lymphoma	0	0.00	0	0.00	1	2.93	0	0.00	1	1.57	0.64	-0.17		
Non-Hodgkin lymphoma	7	1.24	12	0.87	8	1.11	3	1.08	30	29.52	1.02	0.14		
Myeloma	1	0.42	3	0.53	1	0.35	0	0.00	5	12.08	0.41*	-2.09		
Leukemia	4	0.77	14	1.13	4	0.63	0	0.00	22	26.57	0.83	-1.35		
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.63	0.00	-0.19		
Chronic lymphocytic	1	0.48	3	0.61	1	0.40	0	0.00	5	10.43	0.48	-1.60		
Acute non-lymphocytic	2	1.13	9	2.13	1	0.46	0	0.00	12	8.99	1.33	0.89		
Chronic myeloid	1	1.45	1	0.60	1	1.12	0	0.00	3	3.62	0.83	-0.18		

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 16,268 PYR and for male cancers on 17,556 PYR.

Oral and Pharynx Both Sexes, Radiotherapy

Table 3.2.9: Risk of subsequent primary cancers after cancer of the oral cavity or pharynx (tongue, mouth, tonsil, oropharynx, hypopharynx), both sexes, with initial radiotherapy, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	24,609		17,568		6,472		2,686		24,609			
Number starting interval	Person-years in interval		17,546		40,322		21,557		12,846		92,270	
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	537	2.22*	1,669	2.82*	983	2.67*	566	2.14*	3,755	1,466.29	2.56*	248.04
All excluding same site	448	1.89*	1,374	2.38*	774	2.14*	440	1.69*	3,036	1,436.89	2.11*	173.31
Buccal cavity, pharynx	97	12.31*	334	18.47*	227	22.79*	141	23.29*	799	41.97	19.04*	82.04
Lip	2	1.74	7	2.68*	1	0.69	6	6.71*	16	6.11	2.62*	1.07
Tongue	28	17.91*	111	30.61*	81	40.16*	38	30.80*	258	8.44	30.57*	27.05
Salivary gland	0	0.00	5	3.77*	3	3.70	1	1.70	9	3.27	2.75*	0.62
Mouth	44	21.38*	119	25.40*	83	32.42*	53	34.39*	299	10.84	27.57*	31.23
Nasopharynx	2	6.37	7	9.92*	5	13.33*	0	0.00	14	1.62	8.65*	1.34
Tonsil	8	9.65*	26	13.88*	16	16.34*	11	20.06*	61	4.23	14.42*	6.15
Oropharynx	1	4.17	8	14.53*	5	16.62*	9	50.89*	23	1.27	18.13*	2.36
Hypopharynx	8	8.99*	31	15.35*	24	22.07*	15	24.32*	78	4.61	16.90*	7.95
Digestive system	131	2.45*	322	2.52*	207	2.63*	95	1.69*	755	316.47	2.39*	47.53
Esophagus	63	19.26*	142	18.78*	101	22.96*	38	12.71*	344	18.22	18.88*	35.31
Stomach	9	1.52	26	1.92*	12	1.50	4	0.73	51	32.97	1.55*	1.95
Small intestine	0	0.00	2	1.10	0	0.00	2	2.34	4	4.57	0.88	-0.06
Colon	29	1.27	73	1.31*	44	1.25	22	0.86	168	139.19	1.21*	3.12
Rectum, rectosigmoid junction	10	1.03	34	1.47*	15	1.09	10	1.08	69	55.89	1.23	1.42
Anus, anal canal	2	4.18	4	3.40	0	0.00	1	2.01	7	2.87	2.44	0.45
Liver	6	3.05*	15	3.18*	11	3.85*	5	2.36	37	11.67	3.17*	2.75
Gallbladder	2	3.14	1	0.66	2	2.11	0	0.00	5	3.79	1.32	0.13
Bile ducts, other biliary	2	1.92	5	1.95	4	2.41	0	0.00	11	6.60	1.67	0.48
Pancreas	8	1.25	20	1.31	18	1.92*	12	1.77	58	37.88	1.53*	2.18
Respiratory system	142	3.03*	654	5.84*	330	4.91*	178	3.87*	1,304	272.09	4.79*	111.84
Nose, nasal cavity, ear	1	2.59	3	3.29	2	3.75	0	0.00	6	2.19	2.74	0.41
Larynx	13	3.46*	56	6.50*	26	5.46*	20	7.08*	115	19.96	5.76*	10.30
Lung, bronchus	128	3.00*	590	5.78*	300	4.85*	157	3.68*	1,175	249.26	4.71*	100.33
Female breast	29	1.70*	47	1.06	31	1.06	25	1.14	132	112.61	1.17	6.13
Female genital system	8	0.97	18	0.87	11	0.85	3	0.33*	40	50.93	0.79	-3.45
Cervix uteri	4	3.99*	6	2.55	2	1.53	1	1.25	13	5.47	2.38*	2.38
Corpus uteri	1	0.23	3	0.28*	4	0.60	1	0.21	9	26.59	0.34*	-5.56
Ovary	1	0.43	2	0.34	4	1.05	0	0.00	7	14.82	0.47*	-2.47
Vagina	1	8.51	2	6.81	1	5.19	0	0.00	4	0.75	5.32*	1.03
Vulva	1	3.08	4	4.79*	0	0.00	1	2.14	6	2.20	2.73	1.20
Male genital system	46	0.88	129	0.99	68	0.80	56	0.87	299	331.52	0.90	-5.36
Prostate	45	0.87	126	0.98	67	0.80	55	0.86	293	328.01	0.89	-5.78
Testis	0	0.00	0	0.00	0	0.00	1	8.03	1	1.39	0.72	-0.06
Urinary system	25	1.25	52	1.07	45	1.49*	26	1.19	148	120.91	1.22*	2.94
Urinary bladder	15	1.10	32	0.96	35	1.68*	19	1.24	101	83.25	1.21	1.92
Kidney parenchyma	9	1.77	16	1.29	9	1.19	6	1.13	40	30.38	1.32	1.04
Renal pelvis, other urinary	1	0.81	4	1.35	1	0.55	1	0.79	7	7.28	0.96	-0.03
Ureter	0	0.00	1	1.02	1	1.65	0	0.00	2	2.40	0.83	-0.04
Bone, joints	0	0.00	1	1.87	2	6.61	1	5.16	4	1.26	3.18	0.30
Soft tissue including heart	0	0.00	1	0.44	6	4.39*	0	0.00	7	5.60	1.25	0.15
Kaposi sarcoma	0	0.00	3	3.22	1	2.20	0	0.00	4	2.05	1.95	0.21
Melanoma of skin	7	1.34	10	0.75	9	1.09	7	1.16	33	32.79	1.01	0.02
Eye, orbit	1	2.74	2	2.28	1	1.94	0	0.00	4	2.10	1.90	0.21
Brain, central nervous system	3	1.14	6	0.94	1	0.27	2	0.81	12	15.20	0.79	-0.35
Thyroid	8	6.41*	4	1.32	2	1.15	1	0.89	15	7.13	2.10*	0.85
Lymphatic, hematopoietic	19	1.08	43	1.00	26	0.97	13	0.66	101	106.97	0.94	-0.65
Hodgkin lymphoma	0	0.00	0	0.00	0	0.00	0	0.00	0	3.53	0.00	-0.38
Non-Hodgkin lymphoma	11	1.44	21	1.10	15	1.24	10	1.10	57	47.92	1.19	0.98
Myeloma	1	0.32	5	0.67	4	0.86	1	0.29	11	18.63	0.59	-0.83
Leukemia	7	1.13	17	1.14	7	0.76	2	0.30	33	36.90	0.89	-0.42
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	1.02	0.00	-0.11
Chronic lymphocytic	1	0.40	3	0.49	1	0.27	0	0.00	5	15.03	0.33*	-1.09
Acute non-lymphocytic	5	2.48	10	2.04	2	0.65	0	0.00	17	12.27	1.39	0.51
Chronic myeloid	0	0.00	3	1.50	3	2.45	1	1.10	7	4.97	1.41	0.22

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 31,656 PYR and for male cancers on 60,614 PYR.

Table 3.2.10: Risk of subsequent primary cancers after cancer of the oral cavity or pharynx (tongue, mouth, tonsil, oropharynx, hypopharynx), both sexes, without initial radiotherapy, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis													
	<1 year		1-4 years		5-9 years		≥10 years		Total					
	14,892		12,139		6,636		3,446		14,892					
Number starting interval	Person-years in interval		11,018		35,143		24,399		18,473		89,033			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR		
All subsequent cancers	365	2.43*	1,312	2.57*	951	2.34*	693	1.94*	3,321	1,424.92	2.33*	212.96		
All excluding same site	274	1.86*	990	1.98*	697	1.74*	523	1.48*	2,484	1,399.03	1.78*	121.86		
Buccal cavity, pharynx	104	22.92*	367	25.17*	280	26.90*	183	23.18*	934	37.42	24.96*	100.70		
Lip	6	8.77*	14	6.46*	10	6.49*	3	2.56	33	5.57	5.93*	3.08		
Tongue	19	21.27*	95	32.78*	68	32.36*	53	32.94*	235	7.50	31.33*	25.55		
Salivary gland	2	5.86	8	7.00*	4	4.45*	1	1.24	15	3.19	4.70*	1.33		
Mouth	47	38.73*	146	37.58*	112	40.91*	74	35.90*	379	9.90	38.29*	41.46		
Nasopharynx	0	0.00	6	10.73*	0	0.00	2	7.11	8	1.40	5.71*	0.74		
Tonsil	15	33.35*	30	21.17*	32	32.75*	14	20.39*	91	3.53	25.78*	9.82		
Oropharynx	4	30.49*	12	28.34*	9	29.99*	9	40.77*	34	1.08	31.61*	3.70		
Hypopharynx	6	12.40*	39	25.09*	33	30.50*	20	26.35*	98	3.88	25.26*	10.57		
Digestive system	70	2.05*	243	2.13*	179	2.00*	126	1.63*	618	314.82	1.96*	34.05		
Esophagus	25	13.80*	92	15.49*	65	14.30*	33	8.58*	215	16.14	13.32*	22.34		
Stomach	5	1.38	21	1.79*	10	1.13	10	1.36	46	31.65	1.45*	1.61		
Small intestine	2	4.41	1	0.65	3	2.39	2	1.72	8	4.42	1.81	0.40		
Colon	18	1.19	60	1.17	47	1.15	36	1.00	161	143.15	1.12	2.01		
Rectum, rectosigmoid junction	4	0.66	26	1.29	28	1.83*	18	1.44	76	54.07	1.41*	2.46		
Anus, anal canal	1	3.24	2	1.90	1	1.21	1	1.41	5	2.90	1.73	0.24		
Liver	7	6.24*	13	3.47*	10	3.36*	6	2.19	36	10.59	3.40*	2.85		
Gallbladder	0	0.00	1	0.65	0	0.00	0	0.00	1	4.20	0.24	-0.36		
Bile ducts, other biliary	0	0.00	5	2.14	3	1.55	7	3.72*	15	6.84	2.19*	0.92		
Pancreas	8	1.95	21	1.54	12	1.12	12	1.28	53	37.87	1.40*	1.70		
Respiratory system	86	3.13*	388	4.21*	267	3.75*	184	3.08*	925	250.67	3.69*	75.74		
Nose, nasal cavity, ear	1	4.21	5	6.43*	4	6.83*	1	2.03	11	2.09	5.26*	1.00		
Larynx	15	7.28*	53	7.98*	36	7.60*	20	5.75*	124	16.91	7.33*	12.03		
Lung, bronchus	69	2.75*	329	3.89*	225	3.42*	162	2.91*	785	231.04	3.40*	62.22		
Female breast	14	0.99	55	1.11	33	0.83	35	0.98	137	138.96	0.99	-0.50		
Female genital system	11	1.63	23	1.01	15	0.87	15	1.02	64	61.48	1.04	0.64		
Cervix uteri	2	2.50	3	1.17	0	0.00	1	0.75	6	6.50	0.92	-0.13		
Corpus uteri	6	1.72	9	0.76	4	0.46	5	0.68	24	31.46	0.76	-1.89		
Ovary	2	1.05	7	1.06	9	1.74	8	1.76	26	18.23	1.43	1.97		
Vagina	1	9.98	2	5.82	0	0.00	0	0.00	3	0.95	3.15	0.52		
Vulva	0	0.00	2	1.96	2	2.40	0	0.00	4	2.96	1.35	0.26		
Male genital system	37	1.32	100	1.02	78	0.92	63	0.80	278	289.35	0.96	-2.29		
Prostate	35	1.27	100	1.03	78	0.93	63	0.81	276	286.31	0.96	-2.08		
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	1.19	0.00	-0.24		
Urinary system	10	0.83	39	0.96	43	1.32	28	0.97	120	114.44	1.05	0.62		
Urinary bladder	9	1.08	31	1.10	29	1.29	19	0.94	88	79.22	1.11	0.99		
Kidney parenchyma	1	0.34	6	0.59	12	1.50	7	1.00	26	28.14	0.92	-0.24		
Renal pelvis, other urinary	0	0.00	2	0.77	2	1.00	2	1.17	6	7.08	0.85	-0.12		
Ureter	0	0.00	1	1.16	1	1.49	1	1.78	3	2.35	1.28	0.07		
Bone, joints	0	0.00	1	2.17	1	2.98	0	0.00	2	1.21	1.65	0.09		
Soft tissue including heart	0	0.00	4	2.03	1	0.65	1	0.72	6	5.48	1.10	0.06		
Kaposi sarcoma	1	4.15	1	1.33	0	0.00	0	0.00	2	1.87	1.07	0.01		
Melanoma of skin	9	2.80*	10	0.90	5	0.55	10	1.19	34	31.74	1.07	0.25		
Eye, orbit	0	0.00	1	1.31	0	0.00	2	4.23	3	2.04	1.47	0.11		
Brain, central nervous system	4	2.46	2	0.37	1	0.25	4	1.20	11	14.49	0.76	-0.39		
Thyroid	4	4.83*	3	1.09	0	0.00	1	0.59	8	7.31	1.09	0.08		
Lymphatic, hematopoietic	9	0.81	32	0.85	24	0.80	15	0.55*	80	106.32	0.75*	-2.96		
Hodgkin lymphoma	0	0.00	1	0.76	3	3.30	0	0.00	4	3.34	1.20	0.07		
Non-Hodgkin lymphoma	6	1.23	15	0.89	9	0.66	9	0.71	39	48.01	0.81	-1.01		
Myeloma	1	0.52	4	0.62	5	0.97	4	0.86	14	18.15	0.77	-0.47		
Leukemia	2	0.51	12	0.91	7	0.67	2	0.22*	23	36.81	0.62*	-1.55		
Acute lymphocytic	0	0.00	1	2.69	0	0.00	0	0.00	1	1.01	0.99	0.00		
Chronic lymphocytic	0	0.00	3	0.56	2	0.47	0	0.00	5	14.85	0.34*	-1.11		
Acute non-lymphocytic	1	0.77	7	1.60	2	0.57	1	0.31	11	12.35	0.89	-0.15		
Chronic myeloid	1	1.87	1	0.56	1	0.71	0	0.00	3	4.97	0.60	-0.22		

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 39,481 PYR and for male cancers on 49,552 PYR.

Tongue Both Sexes

Table 3.3.1: Characteristics of patients with an initial cancer of the tongue, both sexes, SEER 1973-2000.

Characteristics	Males		Females		Total	
	No.	%	No.	%	No.	%
Number of patients with 1st primary cancer						
Total	7,733	100.0	3,950	100.0	11,683	100.0
Initial treatment						
Any radiation	4,848	62.7	2,077	52.6	6,925	59.3
With surgery	2,302	29.8	1,081	27.4	3,383	29.0
Without surgery	2,546	32.9	996	25.2	3,542	30.3
No radiation	2,885	37.3	1,873	47.4	4,758	40.7
With surgery	2,362	30.5	1,631	41.3	3,993	34.2
Without surgery	523	6.8	242	6.1	765	6.5
Race						
White	6,501	84.1	3,388	85.8	9,889	84.6
Black	861	11.1	309	7.8	1,170	10.0
Other	354	4.6	227	5.7	581	5.0
Unknown	17	0.2	26	0.7	43	0.4
Age at 1st primary cancer diagnosis, years						
< 30	99	1.3	88	2.2	187	1.6
30–49	1,415	18.3	559	14.2	1,974	16.9
50–69	4,473	57.8	1,970	49.9	6,443	55.1
70–79	1,337	17.3	846	21.4	2,183	18.7
≥ 80	409	5.3	487	12.3	896	7.7
Number of patients with one or more primary cancers						
One primary cancer only	6,652	86.0	3,431	86.9	10,083	86.3
1st and 2nd cancers	951	12.3	451	11.4	1,402	12.0
1st, 2nd, and 3rd cancers	106	1.4	60	1.5	166	1.4
1st, 2nd, 3rd, and additional cancers	24	0.3	8	0.2	32	0.3
Other statistics						
Median age at 1st cancer diagnosis	60.8	—	64.2	—	61.8	—
Median year of 1st cancer diagnosis	1988.3	—	1988.0	—	1988.2	—
Median person-years at risk	2.0	—	2.7	—	2.2	—
Percent histologically confirmed*						
Both 1st and 2nd cancers	—	95.2	—	95.2	—	95.2
1st, 2nd, and additional cancers	—	94.8	—	93.6	—	94.4
1st cancer only	—	4.5	—	4.6	—	4.6

*Percent histologically confirmed among patients who developed a subsequent primary cancer.

Table 3.3.2: Risk of subsequent primary cancers after cancer of the tongue, both sexes, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	11,683		8,750		3,802		1,811		11,683			
Number starting interval	8,439		21,905		13,388		9,445		53,177			
Person-years in interval	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	252	2.23*	749	2.41*	506	2.28*	328	1.81*	1,835	826.02	2.22*	189.74
All excluding same site	247	2.20*	716	2.32*	477	2.17*	306	1.70*	1,746	821.47	2.13*	173.86
Buccal cavity, pharynx	53	15.14*	167	18.40*	148	25.64*	84	20.49*	452	22.45	20.14*	80.78
Lip	4	7.71*	6	4.52*	0	0.00	2	3.27	12	3.31	3.62*	1.63
Tongue	5	7.10*	33	18.04*	29	24.72*	22	26.04*	89	4.55	19.55*	15.88
Salivary gland	1	3.89	5	7.12*	1	2.03	0	0.00	7	1.86	3.76*	0.97
Mouth	30	32.85*	65	27.49*	65	43.67*	32	30.60*	192	5.81	33.04*	35.01
Nasopharynx	0	0.00	1	2.71	0	0.00	0	0.00	1	0.90	1.11	0.02
Tonsil	4	11.20*	18	19.80*	22	40.00*	11	30.38*	55	2.18	25.25*	9.93
Oropharynx	1	9.68	5	18.61*	4	23.60*	7	61.06*	17	0.66	25.91*	3.07
Hypopharynx	4	10.54*	21	21.50*	21	34.74*	10	25.02*	56	2.36	23.72*	10.09
Digestive system	56	2.24*	143	2.09*	101	2.09*	57	1.45*	357	180.93	1.97*	33.11
Esophagus	21	14.75*	48	12.86*	47	18.57*	17	8.50*	133	9.68	13.73*	23.19
Stomach	1	0.37	18	2.52*	5	1.02	5	1.30	29	18.62	1.56*	1.95
Small intestine	0	0.00	0	0.00	0	0.00	0	0.00	0	2.56	0.00	-0.48
Colon	21	1.93*	42	1.39*	19	0.87	18	1.00	100	80.85	1.24*	3.60
Rectum, rectosigmoid junction	3	0.67	13	1.07	13	1.56	5	0.78	34	31.43	1.08	0.48
Anus, anal canal	1	4.38	2	3.15	0	0.00	0	0.00	3	1.65	1.82	0.25
Liver	4	4.48*	10	4.10*	5	2.89	2	1.33	21	6.56	3.20*	2.72
Gallbladder	0	0.00	0	0.00	1	1.62	0	0.00	1	2.30	0.43	-0.24
Bile ducts, other biliary	2	3.96	2	1.41	3	2.81	3	3.12	10	3.96	2.53*	1.14
Pancreas	3	1.00	8	0.98	8	1.39	6	1.27	25	21.63	1.16	0.63
Respiratory system	62	2.95*	252	4.44*	134	3.43*	75	2.45*	523	147.44	3.55*	70.63
Nose, nasal cavity, ear	1	5.62	1	2.10	1	3.09	0	0.00	3	1.23	2.44	0.33
Larynx	10	6.16*	23	5.49*	14	5.26*	6	3.28*	53	10.30	5.14*	8.03
Lung, bronchus	51	2.66*	227	4.37*	116	3.22*	69	2.43*	463	135.54	3.42*	61.58
Female breast	8	0.88	31	1.16	20	1.05	18	1.13	77	70.89	1.09	3.01
Female genital system	2	0.46	12	0.98	6	0.73	7	1.07	27	31.36	0.86	-2.15
Cervix uteri	0	0.00	1	0.72	1	1.18	1	1.65	3	3.36	0.89	-0.18
Corpus uteri	1	0.45	4	0.63	0	0.00*	2	0.61	7	16.03	0.44*	-4.44
Ovary	0	0.00	3	0.84	5	2.01	3	1.48	11	9.29	1.18	0.84
Vagina	1	15.81	2	10.97*	0	0.00	0	0.00	3	0.49	6.18*	1.24
Vulva	0	0.00	2	3.68	0	0.00	1	2.77	3	1.50	2.00	0.74
Male genital system	27	1.17	64	0.99	36	0.73	36	0.86	163	178.42	0.91	-4.69
Prostate	26	1.14	64	1.01	36	0.74	36	0.87	162	176.42	0.92	-4.39
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.87	0.00	-0.26
Urinary system	14	1.51	23	0.91	24	1.33	20	1.33	81	67.71	1.20	2.50
Urinary bladder	10	1.58	14	0.81	19	1.52	14	1.33	57	46.78	1.22	1.92
Kidney parenchyma	4	1.72	7	1.09	4	0.89	5	1.38	20	16.83	1.19	0.60
Renal pelvis, other urinary	0	0.00	2	1.28	1	0.91	1	1.15	4	4.10	0.98	-0.02
Ureter	0	0.00	1	1.93	1	2.71	0	0.00	2	1.37	1.46	0.12
Bone, joints	0	0.00	1	3.51	1	5.43	0	0.00	2	0.71	2.81	0.24
Soft tissue including heart	0	0.00	2	1.64	3	3.57	0	0.00	5	3.22	1.55	0.33
Kaposi sarcoma	1	4.77	1	1.87	1	3.20	0	0.00	3	1.26	2.38	0.33
Melanoma of skin	7	2.76*	4	0.56	6	1.18	7	1.61	24	19.16	1.25	0.91
Eye, orbit	1	5.78	0	0.00	0	0.00	1	4.16	2	1.19	1.68	0.15
Brain, central nervous system	2	1.62	3	0.89	1	0.45	4	2.34	10	8.54	1.17	0.27
Thyroid	4	6.41*	2	1.17	0	0.00	0	0.00	6	4.29	1.40	0.32
Lymphatic, hematopoietic	8	0.96	26	1.13	14	0.85	8	0.58	56	61.53	0.91	-1.04
Hodgkin lymphoma	0	0.00	1	1.21	0	0.00	0	0.00	1	2.00	0.50	-0.19
Non-Hodgkin lymphoma	5	1.36	11	1.06	9	1.20	7	1.09	32	27.97	1.14	0.76
Myeloma	0	0.00	4	1.03	3	1.08	1	0.43	8	10.41	0.77	-0.45
Leukemia	3	1.03	10	1.26	2	0.35	0	0.00*	15	21.16	0.71	-1.16
Acute lymphocytic	0	0.00	1	4.32	0	0.00	0	0.00	1	0.60	1.67	0.08
Chronic lymphocytic	0	0.00	0	0.00	1	0.44	0	0.00	1	8.50	0.12*	-1.41
Acute non-lymphocytic	2	2.09	6	2.27	1	0.53	0	0.00	9	7.11	1.27	0.35
Chronic myeloid	0	0.00	2	1.87	0	0.00	0	0.00	2	2.86	0.70	-0.16

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 20,315 PYR and for male cancers on 32,861 PYR.

Gum and Mouth Both Sexes

Table 3.4.1: Characteristics of patients with an initial cancer of the gum or mouth, both sexes, SEER 1973-2000.

Characteristics	Males		Females		Total	
	No.	%	No.	%	No.	%
Number of patients with 1st primary cancer						
Total	9,287	100.0	6,014	100.0	15,301	100.0
Initial treatment						
Any radiation	4,798	51.7	2,632	43.8	7,430	48.6
With surgery	2,708	29.2	1,393	23.2	4,101	26.8
Without surgery	2,090	22.5	1,239	20.6	3,329	21.8
No radiation	4,489	48.3	3,382	56.2	7,871	51.4
With surgery	3,909	42.1	3,027	50.3	6,936	45.3
Without surgery	580	6.2	355	5.9	935	6.1
Race						
White	7,760	83.6	5,206	86.6	12,966	84.7
Black	1,159	12.5	527	8.8	1,686	11.0
Other	345	3.7	239	4.0	584	3.8
Unknown	23	0.2	42	0.7	65	0.4
Age at 1st primary cancer diagnosis, years						
< 30	87	0.9	125	2.1	212	1.4
30–49	1,383	14.9	673	11.2	2,056	13.4
50–69	5,553	59.8	2,933	48.8	8,486	55.5
70–79	1,655	17.8	1,404	23.3	3,059	20.0
≥ 80	609	6.6	879	14.6	1,488	9.7
Number of patients with one or more primary cancers						
One primary cancer only	7,480	80.5	5,040	83.8	12,520	81.8
1st and 2nd cancers	1,529	16.5	817	13.6	2,346	15.3
1st, 2nd, and 3rd cancers	239	2.6	129	2.1	368	2.4
1st, 2nd, 3rd, and additional cancers	39	0.4	28	0.5	67	0.4
Other statistics						
Median age at 1st cancer diagnosis	61.8	—	65.7	—	63.2	—
Median year of 1st cancer diagnosis	1986.1	—	1986.9	—	1986.4	—
Median person-years at risk	2.9	—	4.0	—	3.3	—
Percent histologically confirmed*						
Both 1st and 2nd cancers	—	95.1	—	94.7	—	95.0
1st, 2nd, and additional cancers	—	94.4	—	94.3	—	94.4
1st cancer only	—	4.2	—	5.0	—	4.5

*Percent histologically confirmed among patients who developed a subsequent primary cancer.

Table 3.4.2: Risk of subsequent primary cancers after cancer of the gum or mouth, both sexes, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	15,301		12,248		6,203		3,088		15,301			
Number starting interval	Person-years in interval		Person-years in interval		Person-years in interval		Person-years in interval		Person-years in interval			
	11,407		33,704		22,375		16,073		83,559			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	371	2.34*	1,328	2.67*	946	2.53*	667	2.10*	3,312	1,347.46	2.46*	235.11
All excluding same site	331	2.10*	1,193	2.42*	853	2.29*	588	1.86*	2,965	1,337.89	2.22*	194.73
Buccal cavity, pharynx	89	18.28*	350	24.28*	242	24.95*	181	25.86*	862	35.98	23.96*	98.85
Lip	3	4.10	13	6.05*	10	7.05*	7	6.87*	33	5.32	6.21*	3.31
Tongue	21	22.07*	105	36.84*	64	32.74*	46	32.34*	236	7.18	32.88*	27.38
Salivary gland	1	2.79	5	4.51*	4	4.86*	2	2.82	12	3.00	4.00*	1.08
Mouth	40	30.46*	135	35.05*	93	36.27*	79	42.93*	347	9.57	36.26*	40.38
Nasopharynx	0	0.00	7	12.95*	2	5.69	2	8.16	11	1.33	8.30*	1.16
Tonsil	13	26.84*	27	19.13*	21	22.80*	8	13.01*	69	3.43	20.11*	7.85
Oropharynx	4	28.16*	11	26.08*	5	17.67*	8	40.20*	28	1.05	26.77*	3.23
Hypopharynx	4	7.64*	33	21.32*	30	29.34*	20	29.25*	87	3.78	23.03*	9.96
Digestive system	72	1.99*	241	2.17*	192	2.34*	112	1.64*	617	297.64	2.07*	38.22
Esophagus	35	17.88*	96	16.35*	76	18.03*	36	10.55*	243	15.46	15.72*	27.23
Stomach	5	1.29	14	1.22	11	1.35	4	0.62	34	29.97	1.13	0.48
Small intestine	2	4.16	2	1.33	3	2.59	4	3.85*	11	4.18	2.63*	0.82
Colon	17	1.06	59	1.19	50	1.34	29	0.91	155	134.99	1.15	2.40
Rectum, rectosigmoid junction	4	0.62	31	1.57*	22	1.56	17	1.55	74	51.34	1.44*	2.71
Anus, anal canal	1	3.07	2	1.96	1	1.31	1	1.58	5	2.75	1.82	0.27
Liver	5	4.21*	9	2.47*	11	4.06*	6	2.51	31	9.92	3.12*	2.52
Gallbladder	0	0.00	1	0.67	1	0.92	0	0.00	2	3.98	0.50	-0.24
Bile ducts, other biliary	0	0.00	6	2.67	4	2.30	3	1.83	13	6.34	2.05*	0.80
Pancreas	3	0.69	20	1.50	13	1.32	11	1.32	47	35.92	1.31	1.33
Respiratory system	103	3.51*	416	4.59*	291	4.40*	199	3.72*	1,009	239.43	4.21*	92.10
Nose, nasal cavity, ear	1	3.98	2	2.63	3	5.57*	0	0.00	6	1.98	3.03*	0.48
Larynx	13	5.85*	60	9.08*	39	8.78*	24	7.70*	136	16.39	8.30*	14.31
Lung, bronchus	88	3.29*	353	4.26*	248	4.07*	175	3.52*	864	220.46	3.92*	77.02
Female breast	22	1.50	48	1.01	30	0.81	33	1.02	133	131.68	1.01	0.36
Female genital system	11	1.56	24	1.08	18	1.11	11	0.82	64	58.79	1.09	1.41
Cervix uteri	3	3.60	5	2.01	1	0.59	1	0.83	10	6.21	1.61	1.02
Corpus uteri	5	1.37	8	0.70	7	0.84	4	0.59	24	30.29	0.79	-1.70
Ovary	2	1.01	4	0.63	7	1.44	5	1.21	18	17.32	1.04	0.18
Vagina	1	9.45	2	6.07	1	3.98	0	0.00	4	0.90	4.43*	0.84
Vulva	0	0.00	4	4.13*	2	2.62	0	0.00	6	2.76	2.17	0.88
Male genital system	29	0.97	102	1.06	80	1.04	55	0.80	266	272.22	0.98	-1.34
Prostate	28	0.95	100	1.06	79	1.03	55	0.80	262	269.44	0.97	-1.60
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	1.02	0.00	-0.22
Urinary system	8	0.63	45	1.13	41	1.38	24	0.95	118	107.61	1.10	1.24
Urinary bladder	4	0.46	33	1.20	30	1.46	17	0.96	84	74.30	1.13	1.16
Kidney parenchyma	4	1.27	10	1.01	10	1.35	6	0.97	30	26.62	1.13	0.40
Renal pelvis, other urinary	0	0.00	2	0.79	1	0.55	1	0.67	4	6.69	0.60	-0.32
Ureter	0	0.00	0	0.00	0	0.00	1	2.03	1	2.21	0.45	-0.14
Bone, joints	0	0.00	0	0.00	2	6.48	0	0.00	2	1.14	1.75	0.10
Soft tissue including heart	0	0.00	1	0.53	4	2.86	1	0.83	6	5.14	1.17	0.10
Kaposi sarcoma	0	0.00	3	4.37	0	0.00	0	0.00	3	1.65	1.82	0.16
Melanoma of skin	7	2.13	12	1.13	6	0.74	8	1.11	33	29.25	1.13	0.45
Eye, orbit	0	0.00	1	1.34	0	0.00	1	2.42	2	1.92	1.04	0.01
Brain, central nervous system	3	1.76	2	0.38	1	0.27	2	0.68	8	13.68	0.58	-0.68
Thyroid	7	8.31*	4	1.54	1	0.54	2	1.37	14	6.77	2.07*	0.87
Lymphatic, hematopoietic	9	0.77	32	0.87	20	0.72	14	0.59*	75	99.89	0.75*	-2.98
Hodgkin lymphoma	0	0.00	0	0.00	2	2.39	0	0.00	2	3.15	0.63	-0.14
Non-Hodgkin lymphoma	5	0.98	17	1.05	7	0.56	7	0.63	36	44.79	0.80	-1.05
Myeloma	0	0.00	3	0.47	4	0.84	3	0.72	10	17.29	0.58	-0.87
Leukemia	4	0.96	12	0.93	7	0.73	4	0.50	27	34.66	0.78	-0.92
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.95	0.00	-0.11
Chronic lymphocytic	0	0.00	4	0.76	1	0.26	0	0.00	5	14.06	0.36*	-1.08
Acute non-lymphocytic	3	2.19	8	1.88	3	0.94	1	0.36	15	11.58	1.30	0.41
Chronic myeloid	1	1.77	0	0.00	1	0.78	1	0.91	3	4.67	0.64	-0.20

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 37,019 PYR and for male cancers on 46,540 PYR.

Tonsil

Both Sexes

Table 3.5.1: Characteristics of patients with an initial cancer of the tonsil, both sexes, SEER 1973-2000.

Characteristics	Males		Females		Total	
	No.	%	No.	%	No.	%
Number of patients with 1st primary cancer						
Total	4,178	100.0	1,710	100.0	5,888	100.0
Initial treatment						
Any radiation	3,501	83.8	1,389	81.2	4,890	83.1
With surgery	1,687	40.4	537	31.4	2,224	37.8
Without surgery	1,814	43.4	852	49.8	2,666	45.3
No radiation	677	16.2	321	18.8	998	16.9
With surgery	444	10.6	218	12.7	662	11.2
Without surgery	233	5.6	103	6.0	336	5.7
Race						
White	3,400	81.4	1,429	83.6	4,829	82.0
Black	643	15.4	218	12.7	861	14.6
Other	129	3.1	54	3.2	183	3.1
Unknown	6	0.1	9	0.5	15	0.3
Age at 1st primary cancer diagnosis, years						
< 30	11	0.3	9	0.5	20	0.3
30–49	888	21.3	257	15.0	1,145	19.4
50–69	2,518	60.3	1,050	61.4	3,568	60.6
70–79	601	14.4	297	17.4	898	15.3
≥ 80	160	3.8	97	5.7	257	4.4
Number of patients with one or more primary cancers						
One primary cancer only	3,612	86.5	1,458	85.3	5,070	86.1
1st and 2nd cancers	500	12.0	210	12.3	710	12.1
1st, 2nd, and 3rd cancers	58	1.4	32	1.9	90	1.5
1st, 2nd, 3rd, and additional cancers	8	0.2	10	0.6	18	0.3
Other statistics						
Median age at 1st cancer diagnosis	59.1	—	61.7	—	59.9	—
Median year of 1st cancer diagnosis	1988.8	—	1986.4	—	1988.1	—
Median person-years at risk	2.0	—	2.6	—	2.1	—
Percent histologically confirmed*						
Both 1st and 2nd cancers	—	94.9	—	96.0	—	95.2
1st, 2nd, and additional cancers	—	94.2	—	95.2	—	94.5
1st cancer only	—	4.8	—	3.6	—	4.4

*Percent histologically confirmed among patients who developed a subsequent primary cancer.

Table 3.5.2: Risk of subsequent primary cancers after cancer of the tonsil, both sexes, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	5,888		4,388		1,757		707		5,888			
Number starting interval	4,251		10,723		5,820		3,346		24,140			
Person-years in interval	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	133	2.50*	421	2.92*	249	2.66*	144	2.16*	947	357.64	2.65*	244.14
All excluding same site	129	2.43*	417	2.90*	246	2.63*	140	2.11*	932	356.53	2.61*	238.39
Buccal cavity, pharynx	30	16.76*	97	21.37*	74	28.43*	32	20.87*	233	10.47	22.26*	92.19
Lip	1	4.04	1	1.60	0	0.00	0	0.00	2	1.46	1.37	0.22
Tongue	9	25.00*	36	38.87*	37	69.02*	13	40.94*	95	2.14	44.39*	38.47
Salivary gland	0	0.00	1	3.05	2	9.57*	0	0.00	3	0.80	3.73	0.91
Mouth	11	23.66*	36	30.71*	21	31.48*	10	25.56*	78	2.70	28.94*	31.20
Nasopharynx	0	0.00	1	5.73	3	31.09*	0	0.00	4	0.40	10.06*	1.49
Tonsil	4	19.74*	4	8.06*	3	11.30*	4	28.28*	15	1.11	13.57*	5.76
Oropharynx	0	0.00	4	28.64*	4	50.51*	0	0.00	8	0.32	25.08*	3.18
Hypopharynx	3	14.86*	10	19.72*	4	14.07*	1	6.41	18	1.15	15.66*	6.98
Digestive system	30	2.62*	73	2.39*	45	2.29*	23	1.66*	171	75.54	2.26*	39.54
Esophagus	10	13.55*	30	15.88*	17	14.86*	8	10.79*	65	4.51	14.41*	25.06
Stomach	4	3.19	9	2.80*	3	1.52	1	0.77	17	7.74	2.20*	3.84
Small intestine	0	0.00	0	0.00	0	0.00	0	0.00	0	1.13	0.00	-0.47
Colon	2	0.41	14	1.07	14	1.61	4	0.63	34	32.94	1.03	0.44
Rectum, rectosigmoid junction	4	1.91	5	0.90	4	1.15	3	1.30	16	13.45	1.19	1.06
Anus, anal canal	1	9.12	1	3.35	0	0.00	1	7.74	3	0.73	4.13	0.94
Liver	3	6.98*	6	5.22*	4	5.48*	2	3.80	15	2.83	5.29*	5.04
Gallbladder	1	7.70	1	2.84	0	0.00	0	0.00	2	0.88	2.28	0.47
Bile ducts, other biliary	0	0.00	0	0.00	0	0.00	0	0.00	0	1.56	0.00	-0.65
Pancreas	5	3.61*	7	1.91	3	1.28	4	2.39	19	9.08	2.09*	4.11
Respiratory system	29	2.80*	167	6.09*	82	4.76*	53	4.59*	331	66.56	4.97*	109.54
Nose, nasal cavity, ear	0	0.00	3	13.41*	1	7.32	1	11.03	5	0.54	9.31*	1.85
Larynx	2	2.35	20	9.27*	6	4.83*	7	9.85*	35	4.96	7.06*	12.44
Lung, bronchus	27	2.88*	143	5.72*	75	4.75*	44	4.10*	289	60.90	4.75*	94.49
Female breast	8	2.07	15	1.34	11	1.45	5	0.84	39	28.59	1.36	12.65
Female genital system	4	2.09	4	0.75	1	0.30	0	0.00	9	13.02	0.69	-4.88
Cervix uteri	2	8.10	3	4.73	0	0.00	0	0.00	5	1.44	3.47*	4.33
Corpus uteri	1	0.99	0	0.00	1	0.57	0	0.00	2	6.84	0.29	-5.89
Ovary	1	1.90	1	0.67	0	0.00	0	0.00	2	3.76	0.53	-2.14
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.19	0.00	-0.23
Vulva	0	0.00	0	0.00	0	0.00	0	0.00	0	0.52	0.00	-0.63
Male genital system	10	0.89	32	1.02	13	0.61	16	1.01	71	79.92	0.89	-5.61
Prostate	10	0.90	32	1.03	13	0.61	15	0.96	70	79.00	0.89	-5.66
Testis	0	0.00	0	0.00	0	0.00	1	30.22	1	0.41	2.45	0.37
Urinary system	9	2.06	8	0.68	9	1.17	7	1.28	33	29.32	1.13	1.53
Urinary bladder	7	2.38	6	0.75	5	0.95	5	1.31	23	20.00	1.15	1.24
Kidney parenchyma	2	1.74	1	0.32	4	2.03	1	0.74	8	7.59	1.05	0.17
Renal pelvis, other urinary	0	0.00	1	1.43	0	0.00	1	3.19	2	1.73	1.16	0.11
Ureter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.57	0.00	-0.23
Bone, joints	0	0.00	0	0.00	0	0.00	1	19.85	1	0.32	3.17	0.28
Soft tissue including heart	0	0.00	0	0.00	0	0.00	0	0.00	0	1.39	0.00	-0.58
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.58	0.00	-0.24
Melanoma of skin	1	0.82	2	0.58	0	0.00	1	0.63	4	8.46	0.47	-1.85
Eye, orbit	0	0.00	0	0.00	1	7.45	0	0.00	1	0.52	1.91	0.20
Brain, central nervous system	0	0.00	3	1.86	0	0.00	0	0.00	3	3.84	0.78	-0.35
Thyroid	0	0.00	0	0.00	1	2.13	0	0.00	1	1.86	0.54	-0.36
Lymphatic, hematopoietic	5	1.29	10	0.95	10	1.47	4	0.81	29	26.13	1.11	1.19
Hodgkin lymphoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.90	0.00	-0.37
Non-Hodgkin lymphoma	5	2.93	4	0.85	5	1.61	3	1.30	17	11.85	1.43	2.13
Myeloma	0	0.00	1	0.55	2	1.70	1	1.18	4	4.52	0.89	-0.21
Leukemia	0	0.00	5	1.40	3	1.30	0	0.00	8	8.86	0.90	-0.36
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.25	0.00	-0.11
Chronic lymphocytic	0	0.00	2	1.37	1	1.06	0	0.00	3	3.62	0.83	-0.26
Acute non-lymphocytic	0	0.00	2	1.71	0	0.00	0	0.00	2	2.94	0.68	-0.39
Chronic myeloid	0	0.00	1	2.08	2	6.51	0	0.00	3	1.20	2.51	0.75

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 8,223 PYR and for male cancers on 15,917 PYR.

Oropharynx Both Sexes

Table 3.6.1: Characteristics of patients with an initial cancer of the oropharynx, both sexes, SEER 1973-2000.

Characteristics	Males		Females		Total	
	No.	%	No.	%	No.	%
Number of patients with 1st primary cancer						
Total	1,064	100.0	414	100.0	1,478	100.0
Initial treatment						
Any radiation	855	80.4	330	79.7	1,185	80.2
With surgery	287	27.0	92	22.2	379	25.6
Without surgery	568	53.4	238	57.5	806	54.5
No radiation	209	19.6	84	20.3	293	19.8
With surgery	108	10.2	46	11.1	154	10.4
Without surgery	101	9.5	38	9.2	139	9.4
Race						
White	868	81.6	358	86.5	1,226	82.9
Black	168	15.8	41	9.9	209	14.1
Other	27	2.5	15	3.6	42	2.8
Unknown	1	0.1	0	0.0	1	0.1
Age at 1st primary cancer diagnosis, years						
< 30	2	0.2	4	1.0	6	0.4
30–49	139	13.1	43	10.4	182	12.3
50–69	691	64.9	243	58.7	934	63.2
70–79	183	17.2	94	22.7	277	18.7
≥ 80	49	4.6	30	7.2	79	5.3
Number of patients with one or more primary cancers						
One primary cancer only	921	86.6	361	87.2	1,282	86.7
1st and 2nd cancers	125	11.7	45	10.9	170	11.5
1st, 2nd, and 3rd cancers	17	1.6	8	1.9	25	1.7
1st, 2nd, 3rd, and additional cancers	1	0.1	0	0.0	1	0.1
Other statistics						
Median age at 1st cancer diagnosis	62.3	—	63.7	—	62.6	—
Median year of 1st cancer diagnosis	1987.5	—	1987.1	—	1987.4	—
Median person-years at risk	1.3	—	1.5	—	1.4	—
Percent histologically confirmed*						
Both 1st and 2nd cancers	—	97.2	—	94.3	—	96.4
1st, 2nd, and additional cancers	—	95.8	—	94.3	—	95.4
1st cancer only	—	2.8	—	5.7	—	3.6

*Percent histologically confirmed among patients who developed a subsequent primary cancer.

Table 3.6.2: Risk of subsequent primary cancers after cancer of the oropharynx, both sexes, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	1,478 988		957 2,110		309 1,029		133 684		1,478 4,812			
Number starting interval Person-years in interval	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	42	2.99*	110	3.50*	42	2.38*	29	1.98*	223	77.73	2.87*	301.90
All excluding same site	42	3.00*	110	3.50*	42	2.39*	28	1.91*	222	77.66	2.86*	299.97
Buccal cavity, pharynx	11	23.82*	27	27.42*	4	8.28*	11	32.53*	53	2.27	23.37*	105.43
Lip	0	0.00	0	0.00	0	0.00	0	0.00	0	0.34	0.00	-0.71
Tongue	4	43.58*	13	65.47*	2	20.42*	5	74.36*	24	0.46	52.68*	48.93
Salivary gland	0	0.00	1	14.27	0	0.00	0	0.00	1	0.17	5.73	1.72
Mouth	4	33.31*	8	31.74*	0	0.00	3	35.65*	15	0.58	25.89*	29.97
Nasopharynx	0	0.00	1	27.60	0	0.00	0	0.00	1	0.08	12.25	1.91
Tonsil	0	0.00	0	0.00	0	0.00	0	0.00	0	0.23	0.00	-0.47
Oropharynx	0	0.00	0	0.00	0	0.00	1	105.27*	1	0.07	14.10	1.93
Hypopharynx	3	56.80*	3	26.81*	2	38.09*	1	29.95	9	0.25	35.91*	18.18
Digestive system	9	2.96*	22	3.35*	9	2.46*	8	2.60*	48	16.36	2.93*	65.76
Esophagus	5	26.13*	10	24.45*	5	24.11*	3	18.68*	23	0.97	23.75*	45.79
Stomach	1	3.02	2	2.95	1	2.80	1	3.48	5	1.66	3.02	6.95
Small intestine	0	0.00	0	0.00	0	0.00	0	0.00	0	0.24	0.00	-0.50
Colon	0	0.00	4	1.42	1	0.61	3	2.10	8	7.17	1.12	1.71
Rectum, rectosigmoid junction	2	3.57	3	2.46	1	1.52	1	1.92	7	2.96	2.37	8.40
Anus, anal canal	0	0.00	0	0.00	0	0.00	0	0.00	0	0.15	0.00	-0.31
Liver	0	0.00	1	4.06	0	0.00	0	0.00	1	0.60	1.67	0.83
Gallbladder	0	0.00	0	0.00	0	0.00	0	0.00	0	0.18	0.00	-0.38
Bile ducts, other biliary	0	0.00	1	7.73	0	0.00	0	0.00	1	0.34	2.97	1.38
Pancreas	1	2.74	1	1.28	1	2.30	0	0.00	3	1.95	1.54	2.19
Respiratory system	10	3.60*	38	6.18*	18	5.44*	5	1.95	71	14.80	4.80*	116.79
Nose, nasal cavity, ear	0	0.00	0	0.00	0	0.00	0	0.00	0	0.12	0.00	-0.24
Larynx	3	13.26*	3	6.17*	1	4.26	1	6.39	8	1.10	7.25*	14.33
Lung, bronchus	7	2.78*	34	6.07*	17	5.59*	4	1.68	62	13.54	4.58*	100.70
Female breast	4	4.39*	3	1.40	1	0.71	1	0.87	9	5.61	1.60	21.70
Female genital system	1	2.27	0	0.00	0	0.00	0	0.00	1	2.52	0.40	-9.72
Cervix uteri	1	19.38	0	0.00	0	0.00	0	0.00	1	0.25	3.94	4.78
Corpus uteri	0	0.00	0	0.00	0	0.00	0	0.00	0	1.34	0.00	-8.58
Ovary	0	0.00	0	0.00	0	0.00	0	0.00	0	0.74	0.00	-4.71
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.03	0.00	-0.22
Vulva	0	0.00	0	0.00	0	0.00	0	0.00	0	0.10	0.00	-0.65
Male genital system	6	1.92	5	0.69	3	0.74	3	0.84	17	17.97	0.95	-2.99
Prostate	6	1.94	5	0.70	3	0.75	3	0.85	17	17.79	0.96	-2.42
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.07	0.00	-0.22
Urinary system	0	0.00	4	1.52	2	1.35	0	0.00	6	6.57	0.91	-1.19
Urinary bladder	0	0.00	3	1.66	1	0.98	0	0.00	4	4.54	0.88	-1.13
Kidney parenchyma	0	0.00	1	1.48	1	2.70	0	0.00	2	1.64	1.22	0.75
Renal pelvis, other urinary	0	0.00	0	0.00	0	0.00	0	0.00	0	0.39	0.00	-0.81
Ureter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.13	0.00	-0.27
Bone, joints	0	0.00	1	35.02	0	0.00	0	0.00	1	0.07	14.81	1.94
Soft tissue including heart	0	0.00	1	8.42	0	0.00	0	0.00	1	0.29	3.42	1.47
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.10	0.00	-0.21
Melanoma of skin	0	0.00	0	0.00	0	0.00	0	0.00	0	1.81	0.00	-3.76
Eye, orbit	0	0.00	0	0.00	0	0.00	0	0.00	0	0.11	0.00	-0.24
Brain, central nervous system	0	0.00	0	0.00	0	0.00	0	0.00	0	0.83	0.00	-1.72
Thyroid	0	0.00	1	6.39	0	0.00	0	0.00	1	0.37	2.71	1.31
Lymphatic, hematopoietic	1	0.99	3	1.33	3	2.35	0	0.00	7	5.64	1.24	2.83
Hodgkin lymphoma	0	0.00	0	0.00	1	25.07	0	0.00	1	0.19	5.33	1.69
Non-Hodgkin lymphoma	0	0.00	2	1.99	0	0.00	0	0.00	2	2.54	0.79	-1.12
Myeloma	1	5.59	0	0.00	0	0.00	0	0.00	1	0.97	1.03	0.07
Leukemia	0	0.00	1	1.30	2	4.56	0	0.00	3	1.94	1.54	2.19
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.05	0.00	-0.11
Chronic lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.80	0.00	-1.67
Acute non-lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.64	0.00	-1.34
Chronic myeloid	0	0.00	1	9.72	1	17.41	0	0.00	2	0.26	7.72	3.62

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 1,562 PYR and for male cancers on 3,250 PYR.

Hypopharynx Both Sexes

Table 3.7.1: Characteristics of patients with an initial cancer of the hypopharynx, both sexes, SEER 1973-2000.

Characteristics	Males		Females		Total	
	No.	%	No.	%	No.	%
Number of patients with 1st primary cancer						
Total	3,996	100.0	1,155	100.0	5,151	100.0
Initial treatment						
Any radiation	3,259	81.6	920	79.7	4,179	81.1
With surgery	1,584	39.6	421	36.5	2,005	38.9
Without surgery	1,675	41.9	499	43.2	2,174	42.2
No radiation	737	18.4	235	20.3	972	18.9
With surgery	432	10.8	133	11.5	565	11.0
Without surgery	305	7.6	102	8.8	407	7.9
Race						
White	3,136	78.5	977	84.6	4,113	79.8
Black	617	15.4	145	12.6	762	14.8
Other	241	6.0	32	2.8	273	5.3
Unknown	2	0.1	1	0.1	3	0.1
Age at 1st primary cancer diagnosis, years						
< 30	5	0.1	2	0.2	7	0.1
30–49	377	9.4	113	9.8	490	9.5
50–69	2,588	64.8	729	63.1	3,317	64.4
70–79	813	20.3	242	21.0	1,055	20.5
≥ 80	213	5.3	69	6.0	282	5.5
Number of patients with one or more primary cancers						
One primary cancer only	3,448	86.3	1,025	88.7	4,473	86.8
1st and 2nd cancers	487	12.2	119	10.3	606	11.8
1st, 2nd, and 3rd cancers	58	1.5	7	0.6	65	1.3
1st, 2nd, 3rd, and additional cancers	3	0.1	4	0.3	7	0.1
Other statistics						
Median age at 1st cancer diagnosis	63.4	—	63.4	—	63.4	—
Median year of 1st cancer diagnosis	1986.9	—	1986.2	—	1986.7	—
Median person-years at risk	1.3	—	1.5	—	1.3	—
Percent histologically confirmed*						
Both 1st and 2nd cancers	—	95.1	—	95.4	—	95.1
1st, 2nd, and additional cancers	—	94.3	—	95.4	—	94.5
1st cancer only	—	4.6	—	3.1	—	4.3

*Percent histologically confirmed among patients who developed a subsequent primary cancer.

Table 3.7.2: Risk of subsequent primary cancers after cancer of the hypopharynx, both sexes, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	5,151 3,478		3,364 7,024		1,037 3,343		393 1,772		5,151 15,617			
Number starting interval Person-years in interval	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	104	1.93*	373	3.17*	191	2.82*	91	2.11*	759	282.36	2.69*	305.21
All excluding same site	104	1.94*	370	3.15*	191	2.83*	88	2.04*	753	281.41	2.68*	301.98
Buccal cavity, pharynx	18	10.03*	60	16.43*	39	21.54*	16	16.37*	133	8.23	16.15*	79.89
Lip	0	0.00	1	1.85	1	3.54	0	0.00	2	1.25	1.60	0.48
Tongue	8	22.93*	19	26.38*	17	47.66*	5	26.20*	49	1.62	30.31*	30.34
Salivary gland	0	0.00	1	3.85	0	0.00	0	0.00	1	0.63	1.60	0.24
Mouth	6	13.05*	21	22.57*	16	35.12*	3	12.45*	46	2.09	22.04*	28.12
Nasopharynx	2	26.97*	3	20.80*	0	0.00	0	0.00	5	0.31	15.93*	3.00
Tonsil	2	10.77*	7	18.86*	2	11.55*	2	23.00*	13	0.82	15.91*	7.80
Oropharynx	0	0.00	0	0.00	1	18.19	2	68.12*	3	0.25	11.90*	1.76
Hypopharynx	0	0.00	3	6.96*	0	0.00	3	29.09*	6	0.96	6.28*	3.23
Digestive system	34	2.87*	86	3.38*	39	2.70*	21	2.31*	180	60.82	2.96*	76.31
Esophagus	17	21.96*	50	31.24*	21	24.81*	7	13.48*	95	3.74	25.40*	58.44
Stomach	3	2.19	4	1.42	2	1.31	3	3.23	12	6.63	1.81	3.44
Small intestine	0	0.00	1	2.78	0	0.00	0	0.00	1	0.87	1.15	0.08
Colon	7	1.41	14	1.29	7	1.09	4	0.96	32	26.39	1.21	3.59
Rectum, rectosigmoid junction	1	0.46	8	1.73	3	1.19	2	1.36	14	10.78	1.30	2.06
Anus, anal canal	0	0.00	1	4.69	0	0.00	0	0.00	1	0.50	2.01	0.32
Liver	1	2.14	2	2.01	1	1.87	1	2.93	5	2.34	2.14	1.70
Gallbladder	1	7.97	0	0.00	0	0.00	0	0.00	1	0.65	1.54	0.22
Bile ducts, other biliary	0	0.00	1	1.98	0	0.00	1	4.71	2	1.25	1.61	0.48
Pancreas	4	2.85	5	1.67	5	2.95	3	2.78	17	7.17	2.37*	6.29
Respiratory system	24	2.20*	169	7.26*	72	5.67*	30	3.93*	295	54.53	5.41*	153.99
Nose, nasal cavity, ear	0	0.00	2	11.14*	1	10.51	0	0.00	3	0.42	7.17*	1.65
Larynx	0	0.00	3	1.64	2	2.20	2	4.09	7	4.12	1.70	1.84
Lung, bronchus	24	2.42*	162	7.64*	69	5.91*	27	3.82*	282	49.85	5.66*	148.65
Female breast	1	0.38	5	0.81	2	0.54	3	1.31	11	14.78	0.74	-9.42
Female genital system	1	0.79	1	0.35	1	0.62	0	0.00	3	6.72	0.45	-9.26
Cervix uteri	0	0.00	0	0.00	0	0.00	0	0.00	0	0.71	0.00	-1.76
Corpus uteri	0	0.00	0	0.00	0	0.00	0	0.00	0	3.56	0.00	-8.85
Ovary	0	0.00	1	1.21	1	2.07	0	0.00	2	1.95	1.03	0.13
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.10	0.00	-0.24
Vulva	1	22.03	0	0.00	0	0.00	0	0.00	1	0.28	3.62	1.80
Male genital system	11	0.85	26	0.89	14	0.78	9	0.73	60	72.33	0.83	-10.63
Prostate	10	0.78	25	0.86	14	0.79	9	0.74	58	71.67	0.81	-11.79
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.21	0.00	-0.18
Urinary system	4	0.87	11	1.10	12	2.07*	3	0.80	30	24.13	1.24	3.76
Urinary bladder	3	0.95	7	1.01	9	2.21*	2	0.75	21	16.84	1.25	2.66
Kidney parenchyma	0	0.00	3	1.21	2	1.45	1	1.17	6	5.84	1.03	0.10
Renal pelvis, other urinary	1	3.53	1	1.64	1	2.92	0	0.00	3	1.45	2.07	0.99
Ureter	0	0.00	1	4.93	1	8.64	0	0.00	2	0.48	4.15	0.97
Bone, joints	0	0.00	0	0.00	0	0.00	0	0.00	0	0.23	0.00	-0.15
Soft tissue including heart	0	0.00	1	2.29	0	0.00	0	0.00	1	1.04	0.96	-0.02
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.33	0.00	-0.21
Melanoma of skin	1	0.93	2	0.81	2	1.43	1	1.09	6	5.85	1.03	0.10
Eye, orbit	0	0.00	2	11.97*	0	0.00	0	0.00	2	0.39	5.18	1.03
Brain, central nervous system	2	3.52	0	0.00	0	0.00	0	0.00	2	2.79	0.72	-0.51
Thyroid	1	4.15	0	0.00	0	0.00	0	0.00	1	1.15	0.87	-0.10
Lymphatic, hematopoietic	5	1.31	4	0.48	3	0.62	2	0.64	14	20.11	0.70	-3.91
Hodgkin lymphoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.63	0.00	-0.40
Non-Hodgkin lymphoma	2	1.23	2	0.55	3	1.41	2	1.44	9	8.78	1.03	0.14
Myeloma	1	1.45	1	0.67	0	0.00	0	0.00	2	3.61	0.55	-1.03
Leukemia	2	1.47	1	0.34	0	0.00	0	0.00	3	7.09	0.42	-2.62
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.19	0.00	-0.12
Chronic lymphocytic	1	1.79	0	0.00	0	0.00	0	0.00	1	2.91	0.34	-1.22
Acute non-lymphocytic	1	2.26	1	1.03	0	0.00	0	0.00	2	2.35	0.85	-0.22
Chronic myeloid	0	0.00	0	0.00	0	0.00	0	0.00	0	0.95	0.00	-0.61

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 4,018 PYR and for male cancers on 11,599 PYR.

Salivary Gland Both Sexes

Table 3.8.1: Characteristics of patients with an initial cancer of the salivary gland, both sexes, SEER 1973-2000.

Characteristics	Males		Females		Total	
	No.	%	No.	%	No.	%
Number of patients with 1st primary cancer						
Total	3,008	100.0	2,543	100.0	5,551	100.0
Initial treatment						
Any radiation	1,747	58.1	1,197	47.1	2,944	53.0
With surgery	1,531	50.9	1,094	43.0	2,625	47.3
Without surgery	216	7.2	103	4.1	319	5.7
No radiation	1,261	41.9	1,346	52.9	2,607	47.0
With surgery	1,143	38.0	1,223	48.1	2,366	42.6
Without surgery	118	3.9	123	4.8	241	4.3
Race						
White	2,622	87.2	2,167	85.2	4,789	86.3
Black	206	6.8	207	8.1	413	7.4
Other	165	5.5	153	6.0	318	5.7
Unknown	15	0.5	16	0.6	31	0.6
Age at 1st primary cancer diagnosis, years						
< 30	176	5.9	251	9.9	427	7.7
30–49	572	19.0	652	25.6	1,224	22.1
50–69	1,260	41.9	866	34.1	2,126	38.3
70–79	629	20.9	458	18.0	1,087	19.6
≥ 80	371	12.3	316	12.4	687	12.4
Number of patients with one or more primary cancers						
One primary cancer only	2,639	87.7	2,323	91.3	4,962	89.4
1st and 2nd cancers	335	11.1	203	8.0	538	9.7
1st, 2nd, and 3rd cancers	31	1.0	17	0.7	48	0.9
1st, 2nd, 3rd, and additional cancers	3	0.1	0	0.0	3	0.1
Other statistics						
Median age at 1st cancer diagnosis	62.7	—	59.3	—	61.3	—
Median year of 1st cancer diagnosis	1988.9	—	1988.4	—	1988.7	—
Median person-years at risk	3.6	—	6.2	—	4.7	—
Percent histologically confirmed*						
Both 1st and 2nd cancers	—	96.5	—	95.0	—	95.9
1st, 2nd, and additional cancers	—	95.7	—	94.5	—	95.2
1st cancer only	—	3.0	—	4.5	—	3.6

*Percent histologically confirmed among patients who developed a subsequent primary cancer.

Table 3.8.2: Risk of subsequent primary cancers after cancer of the salivary gland, both sexes, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	5,551 4,240		4,715 14,064		2,737 10,571		1,598 10,524		5,551 39,399			
Number starting interval Person-years in interval	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	81	1.49*	240	1.37*	158	1.17	165	1.11	644	513.68	1.25*	33.08
All excluding same site	80	1.47*	233	1.34*	158	1.17	162	1.09	633	512.48	1.24*	30.59
Buccal cavity, pharynx	7	4.82*	19	4.20*	9	2.72*	12	3.62*	47	12.59	3.73*	8.73
Lip	2	8.39	4	5.74*	3	6.30*	2	4.53	11	1.85	5.94*	2.32
Tongue	1	3.58	1	1.13	3	4.48	3	4.32	8	2.53	3.16*	1.39
Salivary gland	1	7.43	7	17.02*	0	0.00	3	8.74*	11	1.20	9.17*	2.49
Mouth	1	2.65	6	5.04*	1	1.14	3	3.42	11	3.33	3.31*	1.95
Nasopharynx	0	0.00	0	0.00	1	7.47	0	0.00	1	0.51	1.95	0.12
Tonsil	1	7.58	0	0.00	0	0.00	1	3.24	2	1.17	1.72	0.21
Oropharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.34	0.00	-0.09
Hypopharynx	1	7.00	1	2.24	1	3.13	0	0.00	3	1.21	2.48	0.45
Digestive system	17	1.38	47	1.21	26	0.88	28	0.89	118	112.64	1.05	1.36
Esophagus	0	0.00	0	0.00	5	3.57*	1	0.66	6	5.38	1.12	0.16
Stomach	2	1.54	3	0.75	2	0.68	0	0.00	7	11.21	0.62	-1.07
Small intestine	0	0.00	0	0.00	0	0.00	1	2.01	1	1.61	0.62	-0.15
Colon	10	1.78	25	1.40	8	0.58	21	1.43	64	51.81	1.24	3.09
Rectum, rectosigmoid junction	0	0.00	9	1.34	2	0.40	4	0.78	15	18.98	0.79	-1.01
Anus, anal canal	0	0.00	0	0.00	3	10.35*	0	0.00	3	1.09	2.75	0.48
Liver	0	0.00	3	2.34	1	1.02	0	0.00	4	3.78	1.06	0.06
Gallbladder	0	0.00	0	0.00	0	0.00	0	0.00	0	1.59	0.00	-0.40
Bile ducts, other biliary	0	0.00	1	1.20	0	0.00	1	1.31	2	2.52	0.79	-0.13
Pancreas	5	3.42*	6	1.29	5	1.40	0	0.00*	16	13.55	1.18	0.62
Respiratory system	14	1.52	60	2.05*	32	1.44	27	1.13	133	84.61	1.57*	12.28
Nose, nasal cavity, ear	0	0.00	1	3.83	0	0.00	1	4.79	2	0.75	2.67	0.32
Larynx	0	0.00	1	0.51	3	2.14	0	0.00	4	5.36	0.75	-0.35
Lung, bronchus	14	1.65	58	2.15*	29	1.41	26	1.16	127	78.28	1.62*	12.37
Female breast	5	0.97	17	0.92	16	0.99	21	1.07	59	59.60	0.99	-0.29
Female genital system	1	0.42	6	0.71	10	1.44	5	0.63	22	25.77	0.85	-1.82
Cervix uteri	0	0.00	0	0.00	3	3.40	0	0.00	3	3.23	0.93	-0.11
Corpus uteri	0	0.00	4	0.96	2	0.59	3	0.77	9	12.64	0.71	-1.76
Ovary	1	1.45	2	0.82	5	2.39	2	0.81	10	7.70	1.30	1.11
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.39	0.00	-0.19
Vulva	0	0.00	0	0.00	0	0.00	0	0.00	0	1.23	0.00	-0.59
Male genital system	16	1.46	37	1.10	28	1.13	30	1.08	111	97.15	1.14	7.40
Prostate	16	1.48	37	1.11	28	1.14	30	1.10	111	95.88	1.16	8.07
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.64	0.00	-0.34
Urinary system	5	1.12	12	0.87	10	0.96	13	1.16	40	39.94	1.00	0.01
Urinary bladder	4	1.28	6	0.62	6	0.84	7	0.92	23	27.56	0.83	-1.16
Kidney parenchyma	1	0.96	6	1.79	4	1.53	6	2.04	17	9.93	1.71	1.79
Renal pelvis, other urinary	0	0.00	0	0.00	0	0.00	0	0.00	0	2.45	0.00	-0.62
Ureter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.80	0.00	-0.20
Bone, joints	0	0.00	0	0.00	1	8.07	0	0.00	1	0.47	2.11	0.13
Soft tissue including heart	0	0.00	0	0.00	0	0.00	2	3.27	2	2.09	0.96	-0.02
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	1	3.89	1	0.93	1.08	0.02
Melanoma of skin	3	2.43	6	1.47	7	2.14	2	0.52	18	12.41	1.45	1.42
Eye, orbit	1	12.36	1	3.90	0	0.00	1	4.93	3	0.73	4.10	0.58
Brain, central nervous system	1	1.79	4	2.20	0	0.00	3	2.03	8	5.25	1.52	0.70
Thyroid	3	9.03*	4	3.52	2	2.22	2	1.99	11	3.37	3.26*	1.94
Lymphatic, hematopoietic	5	1.21	18	1.36	14	1.36	11	0.97	48	39.01	1.23	2.28
Hodgkin lymphoma	1	6.31	2	3.93	0	0.00	1	2.83	4	1.39	2.88	0.66
Non-Hodgkin lymphoma	2	1.11	8	1.36	5	1.07	5	0.93	20	17.73	1.13	0.58
Myeloma	0	0.00	3	1.36	2	1.17	1	0.53	6	6.51	0.92	-0.13
Leukemia	2	1.35	5	1.08	7	1.99	4	1.07	18	13.38	1.35	1.17
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.40	0.00	-0.10
Chronic lymphocytic	2	3.41	0	0.00	3	2.17	2	1.38	7	5.25	1.33	0.44
Acute non-lymphocytic	0	0.00	3	1.91	2	1.68	1	0.77	6	4.55	1.32	0.37
Chronic myeloid	0	0.00	1	1.57	1	2.07	0	0.00	2	1.85	1.08	0.04

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 20,673 PYR and for male cancers on 18,727 PYR.

Salivary Gland Females

Table 3.8.3: Risk of subsequent primary cancers after cancer of the salivary gland, females, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	2,543		2,228		1,435		887		2,543			
Number starting interval	1,976		7,052		5,689		5,956		20,673			
Person-years in interval	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	25	1.37	85	1.32*	57	1.03	70	1.05	237	205.14	1.16*	15.41
All excluding same site	25	1.38	80	1.24	57	1.03	67	1.00	229	204.72	1.12	11.75
Buccal cavity, pharynx	1	3.04	8	6.91*	4	4.11*	6	5.37*	19	3.58	5.31*	7.46
Lip	0	0.00	0	0.00	0	0.00	0	0.00	0	0.25	0.00	-0.12
Tongue	0	0.00	0	0.00	2	9.29*	1	3.99	3	0.79	3.81	1.07
Salivary gland	0	0.00	5	37.08*	0	0.00	3	22.09*	8	0.42	18.94*	3.67
Mouth	0	0.00	3	7.58*	0	0.00	2	5.26	5	1.22	4.09*	1.83
Nasopharynx	0	0.00	0	0.00	1	23.63	0	0.00	1	0.16	6.44	0.41
Tonsil	1	35.37	0	0.00	0	0.00	0	0.00	1	0.30	3.31	0.34
Oropharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.09	0.00	-0.04
Hypopharynx	0	0.00	0	0.00	1	15.61	0	0.00	1	0.23	4.31	0.37
Digestive system	7	1.63	19	1.27	10	0.79	13	0.88	49	46.73	1.05	1.10
Esophagus	0	0.00	0	0.00	1	2.91	1	2.41	2	1.27	1.57	0.35
Stomach	1	2.86	0	0.00	0	0.00	0	0.00	1	3.63	0.28	-1.27
Small intestine	0	0.00	0	0.00	0	0.00	0	0.00	0	0.68	0.00	-0.33
Colon	3	1.40	13	1.73	4	0.63	9	1.21	29	23.45	1.24	2.68
Rectum, rectosigmoid junction	0	0.00	2	0.84	1	0.51	2	0.91	5	7.22	0.69	-1.08
Rectum	0	0.00	1	0.64	0	0.00	2	1.36	3	4.75	0.63	-0.85
Anus, anal canal	0	0.00	0	0.00	3	17.51*	0	0.00	3	0.63	4.75	1.15
Liver	0	0.00	0	0.00	0	0.00	0	0.00	0	1.02	0.00	-0.49
Gallbladder	0	0.00	0	0.00	0	0.00	0	0.00	0	1.03	0.00	-0.50
Bile ducts, other biliary	0	0.00	1	3.15	0	0.00	1	2.81	2	1.04	1.91	0.46
Pancreas	3	5.45*	3	1.56	1	0.60	0	0.00	7	6.12	1.14	0.43
Respiratory system	3	1.37	13	1.63	5	0.70	10	1.09	31	26.48	1.17	2.19
Nose, nasal cavity, ear	0	0.00	0	0.00	0	0.00	0	0.00	0	0.28	0.00	-0.13
Larynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.83	0.00	-0.40
Lung, bronchus	3	1.44	13	1.72	5	0.73	10	1.14	31	25.30	1.23	2.76
Female breast	5	0.97	17	0.92	16	0.99	21	1.07	59	59.60	0.99	-0.29
Female genital system	1	0.42	6	0.71	10	1.44	5	0.63	22	25.77	0.85	-1.82
Cervix uteri	0	0.00	0	0.00	3	3.40	0	0.00	3	3.23	0.93	-0.11
Corpus uteri	0	0.00	4	0.96	2	0.59	3	0.77	9	12.64	0.71	-1.76
Ovary	1	1.45	2	0.82	5	2.39	2	0.81	10	7.70	1.30	1.11
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.39	0.00	-0.19
Vulva	0	0.00	0	0.00	0	0.00	0	0.00	0	1.23	0.00	-0.59
Urinary system	1	1.17	5	1.65	1	0.38	3	0.93	10	9.71	1.03	0.14
Urinary bladder	1	1.95	4	2.23	0	0.00	1	0.53	6	5.72	1.05	0.14
Kidney parenchyma	0	0.00	1	1.03	1	1.16	2	1.81	4	3.21	1.25	0.38
Renal pelvis, other urinary	0	0.00	0	0.00	0	0.00	0	0.00	0	0.79	0.00	-0.38
Ureter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.24	0.00	-0.12
Bone, joints	0	0.00	0	0.00	1	18.10	0	0.00	1	0.20	4.89	0.38
Soft tissue including heart	0	0.00	0	0.00	0	0.00	0	0.00	0	0.85	0.00	-0.41
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.08	0.00	-0.04
Melanoma of skin	1	2.63	2	1.44	2	1.63	1	0.66	6	4.52	1.33	0.72
Eye, orbit	0	0.00	0	0.00	0	0.00	0	0.00	0	0.29	0.00	-0.14
Brain, central nervous system	0	0.00	1	1.46	0	0.00	1	1.49	2	2.13	0.94	-0.06
Thyroid	2	9.91*	3	4.10	1	1.63	2	2.85	8	2.25	3.56*	2.78
Lymphatic, hematopoietic	4	2.86	7	1.42	7	1.64	5	0.97	23	15.78	1.46	3.49
Hodgkin lymphoma	1	17.60	0	0.00	0	0.00	0	0.00	1	0.58	1.73	0.20
Non-Hodgkin lymphoma	2	3.08	4	1.72	2	0.98	4	1.56	12	7.58	1.58	2.14
Myeloma	0	0.00	1	1.20	1	1.39	0	0.00	2	2.66	0.75	-0.32
Leukemia	1	2.20	2	1.26	4	3.00	1	0.63	8	4.96	1.61	1.47
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.16	0.00	-0.08
Chronic lymphocytic	1	5.82	0	0.00	3	5.92*	1	1.69	5	1.87	2.67	1.51
Acute non-lymphocytic	0	0.00	1	1.78	1	2.11	0	0.00	2	1.77	1.13	0.11
Chronic myeloid	0	0.00	0	0.00	0	0.00	0	0.00	0	0.70	0.00	-0.34

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000.

Table 3.8.4: Risk of subsequent primary cancers after cancer of the salivary gland, males, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	3,008 2,264		2,487 7,012		1,302 4,883		711 4,567		3,008 18,727			
Number starting interval Person-years in interval	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	56	1.54*	155	1.41*	101	1.27*	95	1.15	407	308.54	1.32*	52.58
All excluding same site	55	1.52*	153	1.39*	101	1.27*	95	1.16	404	307.76	1.31*	51.39
Buccal cavity, pharynx	6	5.33*	11	3.27*	5	2.14	6	2.73	28	9.02	3.11*	10.14
Lip	2	9.26*	4	6.46*	3	7.32*	2	5.55	11	1.61	6.85*	5.02
Tongue	1	4.80	1	1.57	1	2.20	2	4.50	5	1.74	2.87	1.74
Salivary gland	1	10.56	2	7.24	0	0.00	0	0.00	3	0.78	3.86	1.19
Mouth	1	3.77	3	3.78	1	1.83	1	2.01	6	2.11	2.85*	2.08
Nasopharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.36	0.00	-0.19
Tonsil	0	0.00	0	0.00	0	0.00	1	4.56	1	0.86	1.16	0.07
Oropharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.26	0.00	-0.14
Hypopharynx	1	8.24	1	2.71	0	0.00	0	0.00	2	0.98	2.04	0.54
Digestive system	10	1.24	28	1.17	16	0.94	15	0.89	69	65.90	1.05	1.65
Esophagus	0	0.00	0	0.00	4	3.78*	0	0.00	4	4.10	0.98	-0.05
Stomach	1	1.05	3	1.07	2	1.02	0	0.00	6	7.58	0.79	-0.84
Small intestine	0	0.00	0	0.00	0	0.00	1	3.83	1	0.93	1.07	0.04
Colon	7	2.02	12	1.16	4	0.54	12	1.66	35	28.36	1.23	3.55
Rectum, rectosigmoid junction	0	0.00	7	1.61	1	0.33	2	0.69	10	11.75	0.85	-0.94
Anus, anal canal	0	0.00	0	0.00	0	0.00	0	0.00	0	0.46	0.00	-0.25
Liver	0	0.00	3	3.09	1	1.41	0	0.00	4	2.75	1.45	0.67
Gallbladder	0	0.00	0	0.00	0	0.00	0	0.00	0	0.55	0.00	-0.30
Bile ducts, other biliary	0	0.00	0	0.00	0	0.00	0	0.00	0	1.47	0.00	-0.79
Pancreas	2	2.19	3	1.11	4	2.09	0	0.00	9	7.43	1.21	0.84
Respiratory system	11	1.57	47	2.21*	27	1.79*	17	1.15	102	58.13	1.75*	23.43
Nose, nasal cavity, ear	0	0.00	1	5.78	0	0.00	1	8.39	2	0.47	4.24	0.82
Larynx	0	0.00	1	0.59	3	2.56	0	0.00	4	4.53	0.88	-0.28
Lung, bronchus	11	1.73	45	2.33*	24	1.75*	16	1.18	96	52.98	1.81*	22.97
Male breast	1	14.36	1	4.77	0	0.00	1	6.35	3	0.59	5.09*	1.29
Male genital system	16	1.46	37	1.10	28	1.13	30	1.08	111	97.15	1.14	7.40
Prostate	16	1.48	37	1.11	28	1.14	30	1.10	111	95.88	1.16	8.07
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.64	0.00	-0.34
Urinary system	4	1.11	7	0.65	9	1.15	10	1.25	30	30.23	0.99	-0.12
Urinary bladder	3	1.15	2	0.26*	6	1.07	6	1.04	17	21.84	0.78	-2.59
Kidney parenchyma	1	1.30	5	2.11	3	1.72	4	2.17	13	6.73	1.93*	3.35
Renal pelvis, other urinary	0	0.00	0	0.00	0	0.00	0	0.00	0	1.66	0.00	-0.89
Ureter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.56	0.00	-0.30
Bone, joints	0	0.00	0	0.00	0	0.00	0	0.00	0	0.27	0.00	-0.14
Soft tissue including heart	0	0.00	0	0.00	0	0.00	2	6.01	2	1.24	1.61	0.41
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	1	4.34	1	0.84	1.19	0.08
Melanoma of skin	2	2.34	4	1.49	5	2.45	1	0.43	12	7.89	1.52	2.20
Eye, orbit	1	18.88	1	6.30	0	0.00	1	8.88	3	0.44	6.86*	1.37
Brain, central nervous system	1	2.72	3	2.64	0	0.00	2	2.46	6	3.13	1.92	1.54
Thyroid	1	7.68	1	2.47	1	3.50	0	0.00	3	1.12	2.68	1.00
Lymphatic, hematopoietic	1	0.37	11	1.33	7	1.16	6	0.97	25	23.23	1.08	0.95
Hodgkin lymphoma	0	0.00	2	6.47	0	0.00	1	5.21	3	0.81	3.69	1.17
Non-Hodgkin lymphoma	0	0.00	4	1.13	3	1.14	1	0.35	8	10.15	0.79	-1.15
Myeloma	0	0.00	2	1.46	1	1.00	1	0.98	4	3.85	1.04	0.08
Leukemia	1	0.97	3	0.98	3	1.38	3	1.39	10	8.42	1.19	0.84
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.24	0.00	-0.13
Chronic lymphocytic	1	2.42	0	0.00	0	0.00	1	1.16	2	3.38	0.59	-0.74
Acute non-lymphocytic	0	0.00	2	1.99	1	1.40	1	1.38	4	2.78	1.44	0.65
Chronic myeloid	0	0.00	1	2.41	1	3.38	0	0.00	2	1.15	1.74	0.45

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000.

Salivary Gland

Both Sexes, <60 Years of Age

Table 3.8.5: Risk of subsequent primary cancers after cancer of the salivary gland, both sexes, <60 years of age, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	2,629		2,389		1,611		1,085		2,629			
Number starting interval	2,085		7,720		6,665		8,081		24,551			
Person-years in interval	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	17	2.15*	52	1.53*	49	1.17	93	1.06	211	171.65	1.23*	16.03
All excluding same site	17	2.16*	48	1.41*	49	1.18	91	1.04	205	171.23	1.20*	13.76
Buccal cavity, pharynx	1	3.13	7	5.48*	3	2.19	9	4.10*	20	5.16	3.88*	6.04
Lip	0	0.00	2	15.63*	1	7.32	2	8.17	5	0.54	9.22*	1.82
Tongue	0	0.00	0	0.00	1	3.37	1	2.07	2	1.12	1.78	0.36
Salivary gland	0	0.00	4	40.90*	0	0.00	2	10.12*	6	0.42	14.13*	2.27
Mouth	0	0.00	1	2.97	1	2.76	3	5.36*	5	1.34	3.73*	1.49
Nasopharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.27	0.00	-0.11
Tonsil	0	0.00	0	0.00	0	0.00	1	4.17	1	0.60	1.67	0.16
Oropharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.16	0.00	-0.06
Hypopharynx	1	32.17	0	0.00	0	0.00	0	0.00	1	0.52	1.91	0.19
Digestive system	4	3.02	9	1.56	10	1.38	6	0.38*	29	30.19	0.96	-0.48
Esophagus	0	0.00	0	0.00	2	4.32	1	1.08	3	1.87	1.61	0.46
Stomach	0	0.00	0	0.00	1	1.43	0	0.00	1	2.86	0.35	-0.76
Small intestine	0	0.00	0	0.00	0	0.00	0	0.00	0	0.57	0.00	-0.23
Colon	2	3.99	4	1.79	1	0.34	3	0.44	10	12.48	0.80	-1.01
Rectum, rectosigmoid junction	0	0.00	1	0.85	1	0.70	2	0.70	4	5.74	0.70	-0.71
Anus, anal canal	0	0.00	0	0.00	2	18.30*	0	0.00	2	0.44	4.58	0.64
Liver	0	0.00	2	7.84	1	3.24	0	0.00	3	1.29	2.32	0.70
Gallbladder	0	0.00	0	0.00	0	0.00	0	0.00	0	0.35	0.00	-0.14
Bile ducts, other biliary	0	0.00	0	0.00	0	0.00	0	0.00	0	0.61	0.00	-0.25
Pancreas	2	12.88*	2	2.97	2	2.33	0	0.00	6	3.62	1.66	0.97
Respiratory system	5	3.76*	10	1.73	13	1.79	17	1.12	45	29.51	1.53*	6.31
Nose, nasal cavity, ear	0	0.00	0	0.00	0	0.00	0	0.00	0	0.27	0.00	-0.11
Larynx	0	0.00	0	0.00	1	1.66	0	0.00	1	2.26	0.44	-0.52
Lung, bronchus	5	4.25*	10	1.94	12	1.82	17	1.22	44	26.89	1.64*	6.97
Female breast	0	0.00	7	1.17	4	0.57	14	1.09	25	27.19	0.92	-1.67
Female genital system	0	0.00	2	0.73	4	1.31	4	0.77	10	11.63	0.86	-1.24
Cervix uteri	0	0.00	0	0.00	0	0.00	0	0.00	0	1.94	0.00	-1.48
Corpus uteri	0	0.00	2	1.62	2	1.40	3	1.14	7	5.56	1.26	1.10
Ovary	0	0.00	0	0.00	2	2.23	1	0.64	3	3.43	0.87	-0.33
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.13	0.00	-0.10
Vulva	0	0.00	0	0.00	0	0.00	0	0.00	0	0.35	0.00	-0.27
Male genital system	1	1.31	3	0.83	6	1.04	19	1.13	29	26.94	1.08	1.80
Prostate	1	1.44	3	0.89	6	1.08	19	1.15	29	26.20	1.11	2.45
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.56	0.00	-0.49
Urinary system	0	0.00	2	0.90	2	0.72	8	1.27	12	11.82	1.01	0.07
Urinary bladder	0	0.00	0	0.00	1	0.59	3	0.74	4	7.36	0.54	-1.37
Kidney parenchyma	0	0.00	2	2.48	1	1.05	5	2.63	8	3.85	2.08	1.69
Renal pelvis, other urinary	0	0.00	0	0.00	0	0.00	0	0.00	0	0.62	0.00	-0.25
Ureter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.19	0.00	-0.08
Bone, joints	0	0.00	0	0.00	0	0.00	0	0.00	0	0.22	0.00	-0.09
Soft tissue including heart	0	0.00	0	0.00	0	0.00	1	2.77	1	0.81	1.23	0.08
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.65	0.00	-0.27
Melanoma of skin	0	0.00	1	0.69	3	2.00	0	0.00	4	5.92	0.68	-0.78
Eye, orbit	0	0.00	0	0.00	0	0.00	1	7.81	1	0.28	3.56	0.29
Brain, central nervous system	1	6.94	1	1.75	0	0.00	1	1.00	3	2.30	1.30	0.28
Thyroid	2	12.92*	3	4.99*	2	3.52	2	2.50	9	2.13	4.23*	2.80
Lymphatic, hematopoietic	1	1.58	3	1.15	2	0.66	7	1.12	13	12.54	1.04	0.19
Hodgkin lymphoma	1	15.37	1	4.20	0	0.00	1	3.90	3	0.77	3.92	0.91
Non-Hodgkin lymphoma	0	0.00	1	0.79	1	0.68	2	0.64	4	6.17	0.65	-0.88
Myeloma	0	0.00	0	0.00	0	0.00	1	0.99	1	1.87	0.53	-0.36
Leukemia	0	0.00	1	1.31	1	1.12	3	1.58	5	3.74	1.34	0.51
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.17	0.00	-0.07
Chronic lymphocytic	0	0.00	0	0.00	0	0.00	1	1.36	1	1.40	0.72	-0.16
Acute non-lymphocytic	0	0.00	1	3.84	1	3.34	1	1.50	3	1.29	2.33	0.70
Chronic myeloid	0	0.00	0	0.00	0	0.00	0	0.00	0	0.55	0.00	-0.22

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 13,138 PYR and for male cancers on 11,414 PYR.

Table 3.8.6: Risk of subsequent primary cancers after cancer of the salivary gland, both sexes, ≥60 years of age, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis													
	<1 year		1-4 years		5-9 years		≥10 years		Total					
	2,922		2,326		1,126		513		2,922					
Number starting interval	Person-years in interval		2,155		6,344		3,906		2,443		14,848			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR		
All subsequent cancers	64	1.37*	188	1.34*	109	1.17	72	1.18	433	342.03	1.27*	61.27		
All excluding same site	63	1.35*	185	1.32*	109	1.17	71	1.16	428	341.25	1.25*	58.42		
Buccal cavity, pharynx	6	5.29*	12	3.70*	6	3.09*	3	2.68	27	7.43	3.63*	13.18		
Lip	2	9.74*	2	3.51	2	5.89	0	0.00	6	1.31	4.58*	3.16		
Tongue	1	4.72	1	1.63	2	5.37	2	9.43*	6	1.41	4.25*	3.09		
Salivary gland	1	9.18	3	9.57*	0	0.00	1	6.86	5	0.78	6.45*	2.85		
Mouth	1	3.39	5	5.86*	0	0.00	0	0.00	6	1.99	3.02*	2.70		
Nasopharynx	0	0.00	0	0.00	1	16.30	0	0.00	1	0.24	4.13	0.51		
Tonsil	1	10.86	0	0.00	0	0.00	0	0.00	1	0.57	1.77	0.29		
Oropharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.19	0.00	-0.13		
Hypopharynx	0	0.00	1	3.14	1	5.68	0	0.00	2	0.69	2.91	0.88		
Digestive system	13	1.18	38	1.14	16	0.71	22	1.39	89	82.45	1.08	4.41		
Esophagus	0	0.00	0	0.00	3	3.20	0	0.00	3	3.51	0.85	-0.34		
Stomach	2	1.73	3	0.88	1	0.45	0	0.00	6	8.34	0.72	-1.58		
Small intestine	0	0.00	0	0.00	0	0.00	1	4.87	1	1.04	0.96	-0.03		
Colon	8	1.57	21	1.35	7	0.65	18	2.29*	54	39.33	1.37*	9.88		
Rectum, rectosigmoid junction	0	0.00	8	1.44	1	0.28	2	0.89	11	13.23	0.83	-1.50		
Anus, anal canal	0	0.00	0	0.00	1	5.54	0	0.00	1	0.65	1.53	0.23		
Liver	0	0.00	1	0.97	0	0.00	0	0.00	1	2.48	0.40	-1.00		
Gallbladder	0	0.00	0	0.00	0	0.00	0	0.00	0	1.24	0.00	-0.84		
Bile ducts, other biliary	0	0.00	1	1.37	0	0.00	1	2.42	2	1.90	1.05	0.07		
Pancreas	3	2.30	4	1.01	3	1.11	0	0.00	10	9.93	1.01	0.04		
Respiratory system	9	1.14	50	2.13*	19	1.27	10	1.13	88	55.10	1.60*	22.16		
Nose, nasal cavity, ear	0	0.00	1	5.06	0	0.00	1	11.44	2	0.48	4.16	1.02		
Larynx	0	0.00	1	0.71	2	2.51	0	0.00	3	3.10	0.97	-0.06		
Lung, bronchus	9	1.24	48	2.21*	17	1.22	9	1.08	83	51.39	1.62*	21.29		
Female breast	5	1.32	10	0.80	12	1.30	7	1.02	34	32.41	1.05	2.11		
Female genital system	1	0.57	4	0.70	6	1.53	1	0.36	12	14.14	0.85	-2.84		
Cervix uteri	0	0.00	0	0.00	3	8.82*	0	0.00	3	1.29	2.33	2.27		
Corpus uteri	0	0.00	2	0.68	0	0.00	0	0.00	2	7.08	0.28	-6.74		
Ovary	1	1.97	2	1.20	3	2.51	1	1.12	7	4.26	1.64	3.63		
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.27	0.00	-0.35		
Vulva	0	0.00	0	0.00	0	0.00	0	0.00	0	0.88	0.00	-1.16		
Male genital system	15	1.47	34	1.13	22	1.15	11	1.01	82	70.21	1.17	16.13		
Prostate	15	1.48	34	1.14	22	1.16	11	1.02	82	69.68	1.18	16.85		
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.09	0.00	-0.12		
Urinary system	5	1.27	10	0.86	8	1.05	5	1.01	28	28.12	1.00	-0.08		
Urinary bladder	4	1.42	6	0.72	5	0.91	4	1.11	19	20.20	0.94	-0.81		
Kidney parenchyma	1	1.18	4	1.58	3	1.81	1	0.96	9	6.09	1.48	1.96		
Renal pelvis, other urinary	0	0.00	0	0.00	0	0.00	0	0.00	0	1.83	0.00	-1.23		
Ureter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.61	0.00	-0.41		
Bone, joints	0	0.00	0	0.00	1	14.92	0	0.00	1	0.25	3.95	0.50		
Soft tissue including heart	0	0.00	0	0.00	0	0.00	1	4.00	1	1.28	0.78	-0.19		
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	1	18.22	1	0.27	3.67	0.49		
Melanoma of skin	3	3.43	5	1.90	4	2.26	2	1.65	14	6.49	2.16*	5.06		
Eye, orbit	1	15.54	1	5.24	0	0.00	0	0.00	2	0.45	4.43	1.04		
Brain, central nervous system	0	0.00	3	2.40	0	0.00	2	4.12	5	2.95	1.69	1.38		
Thyroid	1	5.64	1	1.87	0	0.00	0	0.00	2	1.24	1.61	0.51		
Lymphatic, hematopoietic	4	1.14	15	1.41	12	1.65	4	0.78	35	26.47	1.32	5.74		
Hodgkin lymphoma	0	0.00	1	3.69	0	0.00	0	0.00	1	0.63	1.60	0.25		
Non-Hodgkin lymphoma	2	1.34	7	1.52	4	1.25	3	1.32	16	11.57	1.38	2.98		
Myeloma	0	0.00	3	1.61	2	1.57	0	0.00	5	4.63	1.08	0.25		
Leukemia	2	1.54	4	1.03	6	2.29	1	0.54	13	9.64	1.35	2.26		
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.23	0.00	-0.16		
Chronic lymphocytic	2	3.81	0	0.00	3	2.86	1	1.40	6	3.85	1.56	1.45		
Acute non-lymphocytic	0	0.00	2	1.53	1	1.12	0	0.00	3	3.26	0.92	-0.18		
Chronic myeloid	0	0.00	1	1.94	1	2.84	0	0.00	2	1.30	1.54	0.47		

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 7,535 PYR and for male cancers on 7,313 PYR.

Nasopharynx Both Sexes

Table 3.9.1: Characteristics of patients with an initial cancer of the nasopharynx, both sexes, SEER 1973-2000.

Characteristics	Males		Females		Total	
	No.	%	No.	%	No.	%
Number of patients with 1st primary cancer						
Total	2,526	100.0	1,125	100.0	3,651	100.0
Initial treatment						
Any radiation	2,277	90.1	1,002	89.1	3,279	89.8
With surgery	340	13.5	174	15.5	514	14.1
Without surgery	1,937	76.7	828	73.6	2,765	75.7
No radiation	249	9.9	123	10.9	372	10.2
With surgery	60	2.4	38	3.4	98	2.7
Without surgery	189	7.5	85	7.6	274	7.5
Race						
White	1,338	53.0	620	55.1	1,958	53.6
Black	228	9.0	96	8.5	324	8.9
Other	952	37.7	402	35.7	1,354	37.1
Unknown	8	0.3	7	0.6	15	0.4
Age at 1st primary cancer diagnosis, years						
< 30	196	7.8	125	11.1	321	8.8
30–49	758	30.0	329	29.2	1,087	29.8
50–69	1,238	49.0	458	40.7	1,696	46.5
70–79	276	10.9	153	13.6	429	11.8
≥ 80	58	2.3	60	5.3	118	3.2
Number of patients with one or more primary cancers						
One primary cancer only	2,359	93.4	1,049	93.2	3,408	93.3
1st and 2nd cancers	148	5.9	73	6.5	221	6.1
1st, 2nd, and 3rd cancers	17	0.7	3	0.3	20	0.5
1st, 2nd, 3rd, and additional cancers	2	0.1	0	0.0	2	0.1
Other statistics						
Median age at 1st cancer diagnosis	54.5	—	55.7	—	54.8	—
Median year of 1st cancer diagnosis	1988.4	—	1988.4	—	1988.4	—
Median person-years at risk	2.7	—	3.2	—	2.8	—
Percent histologically confirmed*						
Both 1st and 2nd cancers	—	92.2	—	94.7	—	93.0
1st, 2nd, and additional cancers	—	92.2	—	94.7	—	93.0
1st cancer only	—	7.8	—	3.9	—	6.6

*Percent histologically confirmed among patients who developed a subsequent primary cancer.

Table 3.9.2: Risk of subsequent primary cancers after cancer of the nasopharynx, both sexes, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	3,651 2,698		2,901 7,608		1,296 4,589		646 3,810		3,651 18,705			
Number starting interval Person-years in interval	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	38	1.66*	94	1.44*	79	1.72*	56	1.24	267	179.49	1.49*	46.79
All excluding same site	38	1.67*	93	1.43*	77	1.68*	55	1.22	263	178.79	1.47*	45.02
Buccal cavity, pharynx	2	2.56	6	2.82*	4	2.95	5	4.36*	17	5.41	3.14*	6.20
Lip	0	0.00	0	0.00	0	0.00	0	0.00	0	0.57	0.00	-0.31
Tongue	1	6.77	3	7.39*	1	3.81	4	17.21*	9	1.05	8.59*	4.25
Salivary gland	0	0.00	0	0.00	1	9.35	0	0.00	1	0.42	2.38	0.31
Mouth	1	5.34	1	1.99	0	0.00	0	0.00	2	1.27	1.57	0.39
Nasopharynx	0	0.00	1	3.58	2	11.53*	1	7.13	4	0.69	5.79*	1.77
Tonsil	0	0.00	1	5.01	0	0.00	0	0.00	1	0.50	2.00	0.27
Oropharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.14	0.00	-0.07
Hypopharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.60	0.00	-0.32
Digestive system	7	1.29	23	1.48	13	1.21	10	0.98	53	41.96	1.26	5.90
Esophagus	4	13.02*	3	3.54	2	3.49	2	3.81	11	2.25	4.88*	4.68
Stomach	0	0.00	1	0.49	3	2.14	1	0.80	5	5.42	0.92	-0.23
Small intestine	0	0.00	0	0.00	0	0.00	0	0.00	0	0.56	0.00	-0.30
Colon	2	0.94	12	1.98*	1	0.24	5	1.21	20	16.56	1.21	1.84
Rectum, rectosigmoid junction	0	0.00	3	1.08	4	2.11	1	0.58	8	7.40	1.08	0.32
Anus, anal canal	0	0.00	0	0.00	0	0.00	0	0.00	0	0.34	0.00	-0.18
Liver	0	0.00	0	0.00	0	0.00	1	1.39	1	2.86	0.35	-0.99
Gallbladder	0	0.00	0	0.00	1	7.34	0	0.00	1	0.54	1.86	0.25
Bile ducts, other biliary	1	8.45	1	2.81	0	0.00	0	0.00	2	1.00	2.00	0.53
Pancreas	0	0.00	3	1.75	2	1.68	0	0.00	5	4.67	1.07	0.18
Respiratory system	8	1.86	31	2.58*	27	3.30*	16	2.10*	82	32.11	2.55*	26.67
Nose, nasal cavity, ear	1	22.89	2	16.36*	1	12.08	0	0.00	4	0.32	12.40*	1.97
Larynx	0	0.00	1	1.14	1	1.78	1	2.17	3	2.23	1.35	0.41
Lung, bronchus	7	1.79	28	2.55*	25	3.32*	15	2.12*	75	29.47	2.55*	24.34
Female breast	4	2.27	3	0.57	5	1.37	7	1.71	19	14.72	1.29	6.66
Female genital system	0	0.00	1	0.41	3	1.83	2	1.17	6	6.66	0.90	-1.03
Cervix uteri	0	0.00	0	0.00	2	7.37	0	0.00	2	1.08	1.85	1.43
Corpus uteri	0	0.00	1	0.84	0	0.00	1	1.22	2	3.21	0.62	-1.89
Ovary	0	0.00	0	0.00	1	2.14	1	1.98	2	1.90	1.05	0.16
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.09	0.00	-0.14
Vulva	0	0.00	0	0.00	0	0.00	0	0.00	0	0.24	0.00	-0.37
Male genital system	3	0.68	11	0.84	6	0.59	7	0.68	27	37.95	0.71	-8.91
Prostate	3	0.69	11	0.85	6	0.60	7	0.69	27	37.32	0.72	-8.40
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.36	0.00	-0.29
Urinary system	5	2.87	6	1.21	1	0.29	3	0.89	15	13.54	1.11	0.78
Urinary bladder	3	2.61	3	0.93	0	0.00	1	0.45	7	8.89	0.79	-1.01
Kidney parenchyma	2	4.12	2	1.43	1	1.02	2	2.12	7	3.81	1.84	1.71
Renal pelvis, other urinary	0	0.00	1	3.19	0	0.00	0	0.00	1	0.85	1.18	0.08
Ureter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.29	0.00	-0.15
Bone, joints	0	0.00	0	0.00	2	45.17*	1	24.73	3	0.18	16.41*	1.51
Soft tissue including heart	0	0.00	0	0.00	1	5.00	0	0.00	1	0.79	1.26	0.11
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.41	0.00	-0.22
Melanoma of skin	1	2.23	0	0.00	1	1.12	1	1.05	3	3.57	0.84	-0.30
Eye, orbit	0	0.00	0	0.00	0	0.00	0	0.00	0	0.21	0.00	-0.11
Brain, central nervous system	1	3.88	2	2.77	2	4.22	0	0.00	5	1.89	2.64	1.66
Thyroid	2	9.78*	1	1.66	0	0.00	0	0.00	3	1.56	1.93	0.77
Lymphatic, hematopoietic	4	2.38	8	1.67	10	3.00*	2	0.61	24	13.10	1.83*	5.82
Hodgkin lymphoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.53	0.00	-0.28
Non-Hodgkin lymphoma	4	5.24*	5	2.24	5	3.17*	2	1.23	16	6.19	2.58*	5.24
Myeloma	0	0.00	1	1.26	1	1.81	0	0.00	2	2.17	0.92	-0.09
Leukemia	0	0.00	2	1.28	4	3.73*	0	0.00	6	4.22	1.42	0.95
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.17	0.00	-0.09
Chronic lymphocytic	0	0.00	0	0.00	1	2.70	0	0.00	1	1.45	0.69	-0.24
Acute non-lymphocytic	0	0.00	1	1.74	1	2.49	0	0.00	2	1.57	1.28	0.23
Chronic myeloid	0	0.00	1	4.32	1	6.42	0	0.00	2	0.62	3.22	0.74

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000. EAR for female cancers is based on 6,422 PYR and for male cancers on 12,283 PYR.

Nasopharynx Females

Table 3.9.3: Risk of subsequent primary cancers after cancer of the nasopharynx, females, SEER 1973-2000.

Number starting interval Person-years in interval Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	1,125 829		890 2,447		434 1,599		246 1,547		1,125 6,422			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	13	2.20*	21	1.22	19	1.58	26	1.90*	79	48.88	1.62*	46.90
All excluding same site	13	2.20*	21	1.22	18	1.50	25	1.83*	77	48.78	1.58*	43.95
Buccal cavity, pharynx	0	0.00	2	6.14	1	4.62	2	8.68	5	0.89	5.64*	6.41
Lip	0	0.00	0	0.00	0	0.00	0	0.00	0	0.04	0.00	-0.07
Tongue	0	0.00	2	28.58*	0	0.00	1	19.05	3	0.19	15.51*	4.37
Salivary gland	0	0.00	0	0.00	0	0.00	0	0.00	0	0.10	0.00	-0.16
Mouth	0	0.00	0	0.00	0	0.00	0	0.00	0	0.27	0.00	-0.42
Nasopharynx	0	0.00	0	0.00	1	37.74	1	40.92	2	0.11	18.97*	2.95
Tonsil	0	0.00	0	0.00	0	0.00	0	0.00	0	0.07	0.00	-0.11
Oropharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.02	0.00	-0.03
Hypopharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.06	0.00	-0.09
Digestive system	4	3.04	4	1.05	2	0.75	5	1.63	15	10.86	1.38	6.45
Esophagus	3	86.04*	1	9.99	1	14.46	1	12.76	6	0.28	21.24*	8.90
Stomach	0	0.00	0	0.00	0	0.00	1	3.31	1	1.12	0.89	-0.19
Small intestine	0	0.00	0	0.00	0	0.00	0	0.00	0	0.15	0.00	-0.24
Colon	1	1.64	3	1.73	0	0.00	3	2.11	7	4.97	1.41	3.16
Rectum, rectosigmoid junction	0	0.00	0	0.00	1	2.39	0	0.00	1	1.71	0.59	-1.10
Rectum	0	0.00	0	0.00	0	0.00	0	0.00	0	1.13	0.00	-1.75
Anus, anal canal	0	0.00	0	0.00	0	0.00	0	0.00	0	0.14	0.00	-0.21
Liver	0	0.00	0	0.00	0	0.00	0	0.00	0	0.42	0.00	-0.65
Gallbladder	0	0.00	0	0.00	0	0.00	0	0.00	0	0.26	0.00	-0.40
Bile ducts, other biliary	0	0.00	0	0.00	0	0.00	0	0.00	0	0.27	0.00	-0.42
Pancreas	0	0.00	0	0.00	0	0.00	0	0.00	0	1.39	0.00	-2.16
Respiratory system	1	1.39	6	2.80*	2	1.29	5	2.70	14	6.27	2.23*	12.04
Nose, nasal cavity, ear	0	0.00	1	38.02	0	0.00	0	0.00	1	0.07	13.83	1.44
Larynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.20	0.00	-0.31
Lung, bronchus	1	1.46	5	2.46	2	1.35	5	2.81	13	5.98	2.17*	10.94
Female breast	4	2.27	3	0.57	5	1.37	7	1.71	19	14.72	1.29	6.66
Female genital system	0	0.00	1	0.41	3	1.83	2	1.17	6	6.66	0.90	-1.03
Cervix uteri	0	0.00	0	0.00	2	7.37	0	0.00	2	1.08	1.85	1.43
Corpus uteri	0	0.00	1	0.84	0	0.00	1	1.22	2	3.21	0.62	-1.89
Ovary	0	0.00	0	0.00	1	2.14	1	1.98	2	1.90	1.05	0.16
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.09	0.00	-0.14
Vulva	0	0.00	0	0.00	0	0.00	0	0.00	0	0.24	0.00	-0.37
Urinary system	1	4.06	1	1.42	0	0.00	2	3.31	4	2.06	1.95	3.03
Urinary bladder	0	0.00	0	0.00	0	0.00	0	0.00	0	1.14	0.00	-1.77
Kidney parenchyma	1	11.64	1	3.95	0	0.00	2	9.18*	4	0.74	5.39*	5.07
Renal pelvis, other urinary	0	0.00	0	0.00	0	0.00	0	0.00	0	0.18	0.00	-0.28
Ureter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.06	0.00	-0.09
Bone, joints	0	0.00	0	0.00	0	0.00	1	77.10*	1	0.05	19.89	1.48
Soft tissue including heart	0	0.00	0	0.00	0	0.00	0	0.00	0	0.21	0.00	-0.33
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.01	0.00	-0.02
Melanoma of skin	0	0.00	0	0.00	0	0.00	1	3.97	1	0.84	1.20	0.26
Eye, orbit	0	0.00	0	0.00	0	0.00	0	0.00	0	0.06	0.00	-0.09
Brain, central nervous system	1	16.43	0	0.00	0	0.00	0	0.00	1	0.49	2.04	0.79
Thyroid	1	10.19	0	0.00	0	0.00	0	0.00	1	0.81	1.23	0.29
Lymphatic, hematopoietic	0	0.00	4	3.34	5	5.87*	1	0.99	10	3.48	2.88*	10.16
Hodgkin lymphoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.13	0.00	-0.21
Non-Hodgkin lymphoma	0	0.00	3	5.14*	2	4.75	1	1.93	6	1.72	3.49*	6.67
Myeloma	0	0.00	0	0.00	1	6.47	0	0.00	1	0.61	1.63	0.60
Leukemia	0	0.00	1	2.83	2	8.24	0	0.00	3	1.01	2.97	3.10
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.05	0.00	-0.07
Chronic lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.33	0.00	-0.51
Acute non-lymphocytic	0	0.00	1	7.13	1	10.24	0	0.00	2	0.40	4.97	2.49
Chronic myeloid	0	0.00	0	0.00	1	27.80	0	0.00	1	0.15	6.70	1.32

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000.

Table 3.9.4: Risk of subsequent primary cancers after cancer of the nasopharynx, males, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<1 year		1-4 years		5-9 years		≥10 years		Total			
	2,526 1,869		2,011 5,162		862 2,990		400 2,263		2,526 12,283			
Number starting interval Person-years in interval	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	25	1.48	73	1.52*	60	1.76*	30	0.95	188	130.60	1.44*	46.73
All excluding same site	25	1.49	72	1.50*	59	1.74*	30	0.96	186	130.02	1.43*	45.58
Buccal cavity, pharynx	2	3.00	4	2.22	3	2.63	3	3.27	12	4.52	2.65*	6.09
Lip	0	0.00	0	0.00	0	0.00	0	0.00	0	0.53	0.00	-0.43
Tongue	1	8.08	1	2.98	1	4.65	3	16.67*	6	0.85	7.02*	4.19
Salivary gland	0	0.00	0	0.00	1	12.13	0	0.00	1	0.32	3.14	0.55
Mouth	1	6.58	1	2.48	0	0.00	0	0.00	2	1.00	2.00	0.81
Nasopharynx	0	0.00	1	4.19	1	6.80	0	0.00	2	0.59	3.41	1.15
Tonsil	0	0.00	1	5.80	0	0.00	0	0.00	1	0.43	2.33	0.47
Oropharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.12	0.00	-0.10
Hypopharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.54	0.00	-0.44
Digestive system	3	0.73	19	1.62	11	1.35	5	0.70	38	31.10	1.22	5.61
Esophagus	1	3.67	2	2.68	1	1.98	1	2.24	5	1.97	2.54	2.47
Stomach	0	0.00	1	0.61	3	2.67	0	0.00	4	4.30	0.93	-0.24
Small intestine	0	0.00	0	0.00	0	0.00	0	0.00	0	0.40	0.00	-0.33
Colon	1	0.66	9	2.08	1	0.33	2	0.74	13	11.59	1.12	1.15
Rectum, rectosigmoid junction	0	0.00	3	1.38	3	2.03	1	0.79	7	5.69	1.23	1.07
Anus, anal canal	0	0.00	0	0.00	0	0.00	0	0.00	0	0.20	0.00	-0.16
Liver	0	0.00	0	0.00	0	0.00	1	1.69	1	2.44	0.41	-1.17
Gallbladder	0	0.00	0	0.00	1	13.51	0	0.00	1	0.28	3.54	0.58
Bile ducts, other biliary	1	11.33	1	3.79	0	0.00	0	0.00	2	0.73	2.74	1.03
Pancreas	0	0.00	3	2.43	2	2.36	0	0.00	5	3.28	1.52	1.40
Respiratory system	7	1.96	25	2.54*	25	3.77*	11	1.91	68	25.84	2.63*	34.32
Nose, nasal cavity, ear	1	28.52	1	10.42	1	15.37	0	0.00	3	0.25	11.98*	2.24
Larynx	0	0.00	1	1.24	1	1.95	1	2.44	3	2.03	1.48	0.79
Lung, bronchus	6	1.86	23	2.58*	23	3.81*	10	1.89	62	23.49	2.64*	31.35
Male breast	0	0.00	0	0.00	0	0.00	0	0.00	0	0.23	0.00	-0.19
Male genital system	3	0.68	11	0.84	6	0.59	7	0.68	27	37.95	0.71	-8.91
Prostate	3	0.69	11	0.85	6	0.60	7	0.69	27	37.32	0.72	-8.40
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.36	0.00	-0.29
Urinary system	4	2.67	5	1.18	1	0.34	1	0.36	11	11.49	0.96	-0.40
Urinary bladder	3	2.97	3	1.06	0	0.00	1	0.53	7	7.75	0.90	-0.61
Kidney parenchyma	1	2.50	1	0.87	1	1.26	0	0.00	3	3.06	0.98	-0.05
Renal pelvis, other urinary	0	0.00	1	3.97	0	0.00	0	0.00	1	0.67	1.49	0.27
Ureter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.23	0.00	-0.19
Bone, joints	0	0.00	0	0.00	2	61.51*	0	0.00	2	0.13	15.09*	1.52
Soft tissue including heart	0	0.00	0	0.00	1	6.80	0	0.00	1	0.58	1.72	0.34
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.40	0.00	-0.32
Melanoma of skin	1	2.88	0	0.00	1	1.44	0	0.00	2	2.73	0.73	-0.60
Eye, orbit	0	0.00	0	0.00	0	0.00	0	0.00	0	0.16	0.00	-0.13
Brain, central nervous system	0	0.00	2	3.67	2	5.66	0	0.00	4	1.40	2.86	2.12
Thyroid	1	9.40	1	3.35	0	0.00	0	0.00	2	0.75	2.68	1.02
Lymphatic, hematopoietic	4	3.16	4	1.11	5	2.02	1	0.44	14	9.63	1.45	3.56
Hodgkin lymphoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.39	0.00	-0.32
Non-Hodgkin lymphoma	4	7.07*	2	1.21	3	2.59	1	0.91	10	4.47	2.24*	4.50
Myeloma	0	0.00	1	1.72	0	0.00	0	0.00	1	1.55	0.64	-0.45
Leukemia	0	0.00	1	0.83	2	2.41	0	0.00	3	3.21	0.94	-0.17
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.13	0.00	-0.10
Chronic lymphocytic	0	0.00	0	0.00	1	3.43	0	0.00	1	1.12	0.89	-0.10
Acute non-lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	1.16	0.00	-0.95
Chronic myeloid	0	0.00	1	5.60	0	0.00	0	0.00	1	0.47	2.12	0.43

*P < 0.05. Notes: See Appendices for definitions of cancer sites and "all excluding same site." Abbreviations: O = observed number of subsequent (2nd, 3rd, etc.) primary cancers; E = expected number of subsequent primary cancers; O/E = ratio of observed to expected cancers; PYR = person-years at risk; EAR = excess absolute risk per 10,000 person-years = [(O-E)/PYR] × 10,000.

