

Chapter 6

New Malignancies Following Cancer of the Respiratory Tract

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Synopsis

The risk of subsequent primary cancer was evaluated in 286,675 persons with initial cancers of the respiratory tract diagnosed between 1973 and 2000. Overall risk of a new malignancy was significantly increased among survivors of lung cancer (O/E=1.36, O=11,700, EAR=65 per 10,000 person-years), laryngeal cancer (O/E=1.71, O=5,277, EAR=140), and nasal cavity cancer (O/E=1.44, O=405, EAR=68), but not mesothelioma (O/E=0.98, O=91). The risk of subsequent cancers following lung, laryngeal, and nasal cancers appeared strongly related to tobacco exposures, with excesses for most smoking-related sites. These risks appeared relatively constant over time. When lung cancer was treated initially with radiation, however, there was a delayed increase of esophageal cancer after 5 or more years, suggesting a radiation effect. There was an excess of acute non-lymphocytic leukemia, especially after small cell carcinoma of the lung, which has previously been linked to treatment with alkylating agent chemotherapy. Following laryngeal cancer, the risk was particularly elevated (3- to 6-fold) for subsequent cancers of the buccal cavity, pharynx, and lung. This pattern reflects a “field cancerization” phenomenon involving multiple patches of genetically transformed cells resulting from tobacco exposure (and alcohol for some sites) or the spread and implantation of single clones. Following nasal cavity cancer, excesses of buccal and respiratory tract tumors were consistent with tobacco exposure, although the numbers were small. After mesothelioma, a nearly 7-fold excess of thyroid cancer was observed, but the increase was based on only 3 cases.

Lung and Bronchus Cancer

Primary cancers of the lung and bronchus represent 13% of all cancers occurring in the U.S. (13% in men and 12% in women), with approximately 172,570 new cases diagnosed annually (Jemal et al, 2005). Lung cancer ranks third in incidence (behind breast cancer in women and prostate cancer in men). It is the leading cause of cancer mortality in the U.S., accounting

for 29% of all cancer deaths (31% in men and 27% in women)—more than breast, colon, prostate, and pancreas cancers combined. Lung cancer incidence is greatest for black men, followed by white men, black women, and white women. The relative survival rate remains disappointingly low, with only 15.2% surviving for 5 years. The distribution of cell types in SEER includes squamous (26%), adenocarcinoma (31%, including 3% bronchioloalveolar), small cell (16%), large cell (9%), and others (18%). Among patients in SEER with non-small cell lung cancer (NSCLC) histologies in the current survey, surgery was the initial therapy in 31% of the cases; among those with small cell lung cancer (SCLC), only 5% had surgery. For those with NSCLC, radiation occasionally results in long-term survival, but it is most effective for palliation and local tumor control (Ginsberg et al, 2001). Chemotherapy and newer combined modality and molecular therapies for NSCLC have not had a marked impact on survival during the period of this SEER study (Selvaggi and Seagliotti, 2002; Jemal et al, 2005). Among those with SCLC, combination chemotherapy is the treatment of choice, with radiotherapy often incorporated. At presentation, 30-40% of SCLC patients have limited disease and 60-70% have extensive disease. Five-year relative survival rates are 10-20% in SCLC patients with limited disease and 3-5% in those with extensive disease (Hanna and Einhorn, 2002; Ries et al, 2004; Jemal et al, 2005).

Tobacco smoking is the dominant etiologic factor responsible for the vast majority of lung cancers (Ruano-Ravina et al, 2003). Other exposures also contribute to risk, including asbestos, radon, radiotherapy, polycyclic aromatic hydrocarbons, and nutritional and dietary factors, as well as environmental tobacco smoke (Blot and Fraumeni, 1996; Ruano-Ravina et al, 2003; Alberg et al, 2005). Familial susceptibility to lung cancer has been documented and traced to inherited factors (Bailey-Wilson et al, 2004). Although etiologic factors are not strongly related to lung cancer histology, the dose-response relationship with tobacco exposure is less steep for adenocarcinoma than for other histologies (Suzuki et al, 1990).

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).

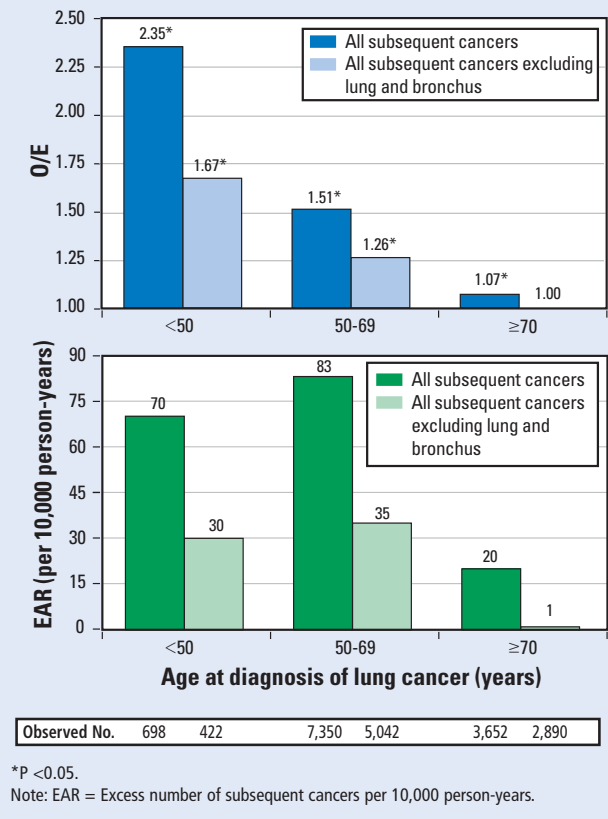
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Results and Discussion

A total of 11,700 subsequent primary cancers were observed in 255,083 patients surviving at least 2 months after an initial cancer of the lung or bronchus diagnosed between 1973 and 2000 (O/E=1.36, 95% CI=1.34-1.39, EAR=65 per 10,000 person-years). In analyses adjusting for the competing risk of death due to other causes, the cumulative incidence of developing any second cancer was 5.7% at 25 years (95% CI=5.5%-5.8%), which included an incidence of 1.7% (1.7%-1.8%) for second cancers of the lung or bronchus. Significantly increased risks were observed for subsequent cancers of the respiratory tract (with 90% of subsequent respiratory tumors occurring in the lung), buccal cavity (including tongue, tonsils, mouth, oropharynx, and hypopharynx), esophagus, stomach, small intestine, colon, rectum, pancreas, bladder, kidney, renal pelvis, and thyroid, as well as for acute non-lymphocytic leukemia (ANLL). The risk of all new malignancies combined decreased when subsequent lung cancers were excluded (O/E=1.17, 95% CI=1.15-1.20, EAR=25). The risk for all subsequent cancers remained elevated up to 20 years after diagnosis, with those surviving 10 or more years showing a 49% increased relative risk of subsequent cancer. The risks of new primary cancers were slightly higher in blacks (O/E=1.47, EAR=88) than in whites (O/E=1.34, EAR=61). Although the relative risk of developing a subsequent neoplasm was higher in women (O/E=1.50, EAR=65) than in men (O/E=1.31, EAR=65), the excess absolute risks were nearly identical. The higher relative risks of new malignancies among women, many of which are smoking-related, were likely due to the fact that a greater proportion of men than women are smokers in the general population (MMWR, 2004) from whom the expected values are derived. The virtually identical absolute risks suggest cautious interpretation of gender effects in the development of subsequent cancers. Relative risks for all subsequent cancers were higher in those diagnosed with lung cancer before age 50 years (O/E=2.35, EAR=70), compared with those between 50 and 69 years of age (O/E=1.51, EAR=83) or older (≥ 70 years, O/E=1.07, EAR=20) (Figure 6.1). This is similar to the pattern observed in data from Finland (Salminen et al, 1995) and Switzerland (Levi et al, 1999). However, in our survey the excess absolute risks were similar among lung cancer survivors diagnosed at ages younger than 70 years (Figure 6.1). In contrast, observed numbers of subsequent cancers were significantly below those expected for cancers of the female genital system (notably uterine corpus and vulva), brain, prostate, and testis, as well as melanoma and chronic lymphocytic leukemia. The lower rates for new cancers of the uterine corpus may reflect decreased estrogen levels associated with tobacco smoking (Michnovicz et al, 1986).

Tobacco smoking is the dominant risk factor underlying the pattern of new malignancies associated with lung cancer. Subsequent lung cancers constituted 29%

Figure 6.1: Observed-to-expected ratio (O/E) and excess absolute risk (EAR) of subsequent primary cancers after cancer of the lung or bronchus, both sexes, SEER 1973-2000.



of all new primary cancers, with increases in risk being highest (greater than 3-fold) in those surviving 5 or more years after initial diagnosis. A similar pattern of smoking-related subsequent cancers has been observed in previous studies of lung cancer (Boice and Fraumeni, 1985; Richardson et al, 1993; Salminen et al, 1995; Tucker et al, 1997), with sustained risk increases beyond 5 years for cancers of the larynx, esophagus, and bladder. The risks of subsequent cancers of the lung and buccal cavity are especially high among lung cancer survivors who continue to smoke cigarettes (Tucker et al, 1997; Johnson, 1998), mandating a high priority for smoking cessation efforts in this group. Some data indicate that smoking cessation following lung cancer lowers the risk of new smoking-related malignancies (Richardson et al, 1993; Ebbert et al, 2003).

Overall, subsequent cancer risks were higher among patients diagnosed with NSCLC (O/E=1.38, EAR=69) than SCLC (O/E=1.13, EAR=21). This pattern has been observed previously, although the number of long-term SCLC survivors was small (Levi et al, 1999). Among 5-or-more-year survivors in our survey, new primary cancer risks were higher among those initially diagnosed with SCLC (O/E=1.87) than with NSCLC (O/E=1.52). The pattern of subsequent cancers after NSCLC and SCLC involved mainly smoking-related cancers, but the risk of ANLL after SCLC (O/E=6.57) was much higher than after NSCLC (O/E=1.47), most

likely due to treatment with alkylating agents, as previously reported (Pedersen-Bjergaard et al, 1985; Sagman et al, 1992; Tucker et al, 1997; Johnson, 1998). In our series, 36 out of 38 patients with subsequent primary ANLL had received chemotherapy as their initial therapy following SCLC. After both NSCLC and SCLC, there was an elevated risk of thyroid cancer within the first year, which probably reflects increased medical surveillance and incidental findings at autopsy, since 34 of the 84 (40%) thyroid cancers were diagnosed at autopsy.

The temporal pattern of increased risks for several cancer sites near the field of radiation appeared consistent with radiation-related effects. After radiation for NSCLC, the relative risk of cancer of the esophagus increased to 6-fold for the 5-9 year follow-up period, and to 11-fold among patients who survived 10 or more years. Similar radiation-related risks were seen for esophageal cancer following SCLC, based on smaller numbers. For laryngeal cancer following NSCLC, an excess of radiation-related tumors was suggested only in the period 5-9 years after initial treatment. For subsequent cancers of the lung following radiation, substantial excesses were limited to the follow-up periods of 5-10 years and greater than 10 years for both SCLC and NSCLC. In previously reported studies, continued tobacco use appeared to interact with radiotherapy (and possibly chemotherapy as well) to augment the risk of second tumors (Tucker et al, 1997).

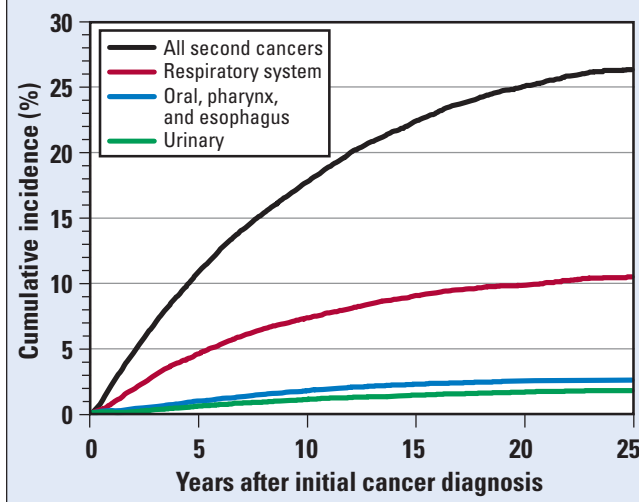
Although the contribution of genetic susceptibility to multiple primary cancers cannot be directly addressed in our study, there was a higher risk of subsequent cancers among lung cancer patients diagnosed at younger ages. The recent finding of a genetic locus that may account for familial lung cancer (Bailey-Wilson et al, 2004) provides an opportunity for further studies of susceptibility factors that contribute to subsequent tumors associated with lung cancer.

Laryngeal Cancer

The larynx accounts for approximately 0.7% of all incident cancers (about 9,880 per year) in the U.S. and 0.7% of all cancer deaths (about 3,770 per year) (Jemal et al, 2005). Laryngeal cancer is 4 times more common in men than women and occurs more frequently in blacks than whites. The overall relative 5-year survival rate for larynx cancer is 65.0%, although patients diagnosed with localized disease have an 83.7% survival rate. The vast majority of cancers of the larynx are squamous cell carcinomas. Treatment may include surgery, radiation, and occasionally chemotherapy or combined modalities.

The major risk factors for laryngeal cancer are tobacco smoking and alcohol consumption. Dietary factors (low consumption of fruits and vegetables, high consumption of processed meats) and certain occupational exposures may contribute as well (Dietz et al, 2004; Levi et al, 2004).

Figure 6.2: Cumulative incidence of developing a second cancer among patients with cancer of the larynx, both sexes, SEER 1973-2000.



Results and Discussion

A total of 5,277 subsequent primary cancers developed among 23,943 patients surviving at least 2 months after an initial cancer of the larynx. The risk of developing any new malignancy was significantly increased by 71% (O/E=1.71, 95% CI=1.66-1.76, EAR=140). The cumulative incidence of developing a second cancer was 26.7% at 25 years (95% CI=25.9%-27.4%) (Figure 6.2). Both the relative and absolute risks of a new neoplasm were greater among women (O/E=2.41, EAR=177) than men (O/E=1.62, EAR=132), and among blacks (O/E=1.98, EAR=203) than whites (O/E=1.68, EAR=135). Although the relative risk for any subsequent tumor was higher in those diagnosed with laryngeal cancer before the age of 50 years (O/E=2.36, EAR=91) compared with older patients (age 50-69, O/E=1.78, EAR=154; age \geq 70, O/E=1.42, EAR=131), the absolute risk was lower in the younger group. Risk of all subsequent cancers decreased over time following diagnosis of the initial cancer, from a 94% excess in the 1- to 4-year interval to a 16% excess at 20 or more years after diagnosis. The risk of developing a subsequent cancer was increased for a variety of sites, including cancers of the buccal cavity and pharynx, esophagus, colon, liver, nasal cavity, lung, larynx, urinary bladder, kidney, and thyroid. Risks were significantly below that expected for prostate cancer, chronic lymphocytic leukemia, and melanoma.

The pattern of tumors associated with laryngeal cancer, with pronounced excesses of tumors in the upper aerodigestive tract (oral cavity, pharynx, esophagus), resembles that in previous surveys (McDonald et al, 1989; Fujita et al, 1998; Gao et al, 2003; Do et al, 2003; Dikshit et al, 2005) implicating "field cancerization" due to tobacco and alcohol exposure, or the spread and implantation of single clones of mutant cells. Tobacco smoking is also likely to have contributed to excess tumors of the lung, bladder, and kidney, while alcohol

is likely to have contributed to an elevated risk of liver cancer (O/E=1.92). The increase in thyroid cancer was limited to the first year following diagnosis, suggesting an effect of increased medical surveillance.

Most (74%) of the patients with cancer of the larynx received radiation as part of the initial treatment. There was some suggestion of a modest increase in risk of subsequent cancer over time in some adjacent irradiated sites, especially the pharynx (O/E=5.88), with most cases occurring 5-9 years (O/E=8.86, O=27) or 10 or more years (O/E=8.19, O=18) after laryngeal cancer diagnosis. These results are consistent with a radiation effect and with the findings of others (Holland et al, 2002; Gao et al, 2003).

Nose, Nasal Cavity, and Middle Ear Cancers

Cancers of the nose, nasal cavity, and middle ear account for only 0.2% of all cancers in the SEER Program. Tobacco use and exposures in wood-dust and metal-related occupations are documented risk factors (Dong and Hemminki, 2001). Additional workplace exposures include nickel, chromates, textiles, radium, leather dust, and petroleum (Blot et al, 1997; Caplan et al, 2000). The 5-year relative survival rate is 52.4%, with substantially lower survival among blacks (32.4%) compared with whites (56.0%). The majority of patients are treated with radiation (65.1%) and/or surgery (69.5%).

Results and Discussion

Among 3,543 2-month survivors with cancers of the nose, nasal cavity, and middle ear, 405 subsequent primary cancers were observed, reflecting a significantly increased risk of new malignancies (O/E=1.44, 95% CI=1.31-1.59, EAR=68). The cumulative incidence of developing a second cancer was 14.4% at 20 years (95% CI=12.9%-16.0%). The overall risk of new malignancies decreased slightly over time. Although the relative risk was slightly higher for women (O/E=1.60) than for men (O/E=1.37), the excess absolute risks were identical (EAR=68). The relative risks were similar for blacks and whites but did not reach statistical significance for blacks. The excess risk of developing subsequent cancers of the buccal cavity, pharynx, larynx, and lung is consistent with the effects of prior tobacco smoking. Based on a small number of cases, there was an increased risk of soft tissue cancers (O/E=5.49, O=6), as well as extranodal non-Hodgkin lymphoma (NHL) (O/E=2.57, O=7), although the risk for NHL overall was not significantly elevated. An increase in NHL has been observed by others (Boice and Fraumeni, 1985; Dong and Hemminki, 2001).

Mesothelioma

Mesothelioma is a rare malignancy that arises from the mesothelial lining of the lung (pleura) or the abdomen

(peritoneum), primarily due to asbestos exposure in the workplace with no effect from smoking (Blot and Fraumeni, 1996). The annual number of mesothelioma cases increased from the 1970s through the mid-1990s but then leveled off in the U.S. (Price and Ware, 2004) and Europe. However, age-adjusted rates for females have been low and constant over the last century. There is no standard curative approach (Khalil et al, 2003), although surgery (van Ruth et al, 2003), chemotherapy (Janne, 2003), and radiotherapy (Senan, 2003) have limited roles. Prognosis is poor following a diagnosis of mesothelioma, with a 5-year relative survival rate of 8.4%.

Results and Discussion

Among 4,106 2-month survivors of mesothelioma, 91 subsequent primary cancers were observed, reflecting no overall increase in subsequent cancer risk (O/E=0.98, 95% CI=0.79-1.20). The cumulative incidence of developing a second cancer among patients with mesothelioma was 2.0% at 10 years (95% CI=1.6%-2.5%).

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Lung and Bronchus Both Sexes

Table 6.1.1: Characteristics of patients with an initial cancer of the lung or bronchus, both sexes, SEER 1973-2000.

Characteristics	Males		Females		Total	
	No.	%	No.	%	No.	%
Number of patients with 1st primary cancer						
Total	161,672	100.0	93,411	100.0	255,083	100.0
Initial treatment						
Any radiation	90,753	56.1	47,327	50.7	138,080	54.1
With surgery	13,219	8.2	6,961	7.5	20,180	7.9
Without surgery	77,534	48.0	40,366	43.2	117,900	46.2
No radiation	70,919	43.9	46,084	49.3	117,003	45.9
With surgery	29,033	18.0	18,931	20.3	47,964	18.8
Without surgery	41,886	25.9	27,153	29.1	69,039	27.1
Race						
White	135,151	83.6	80,844	86.5	215,995	84.7
Black	18,120	11.2	8,245	8.8	26,365	10.3
Other	8,244	5.1	4,210	4.5	12,454	4.9
Unknown	157	0.1	112	0.1	269	0.1
Age at 1st primary cancer diagnosis, years						
< 30	201	0.1	249	0.3	450	0.2
30–49	11,863	7.3	8,248	8.8	20,111	7.9
50–69	90,809	56.2	49,759	53.3	140,568	55.1
70–79	45,278	28.0	25,789	27.6	71,067	27.9
≥ 80	13,521	8.4	9,366	10.0	22,887	9.0
Number of patients with one or more primary cancers						
One primary cancer only	154,642	95.7	89,849	96.2	244,491	95.8
1st and 2nd cancers	6,350	3.9	3,244	3.5	9,594	3.8
1st, 2nd, and 3rd cancers	611	0.4	289	0.3	900	0.4
1st, 2nd, 3rd, and additional cancers	69	0.0	29	0.0	98	0.0
Other statistics						
Median age at 1st cancer diagnosis	66.3	—	66.5	—	66.4	—
Median year of 1st cancer diagnosis	1987.5	—	1990.3	—	1988.5	—
Median person-years at risk	0.6	—	0.8	—	0.7	—
Percent histologically confirmed*						
Both 1st and 2nd cancers	—	93.5	—	94.1	—	93.7
1st, 2nd, and additional cancers	—	93.1	—	93.8	—	93.3
1st cancer only	—	4.4	—	3.7	—	4.2

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

Table 6.1.2: Risk of subsequent primary cancers after cancer of the lung or bronchus, 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			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	2,460	1.09*	4,760	1.40*	2,690	1.57*	1,790	1.49*	11,700	8,580.71	1.36*	64.64
All excluding same site	2,046	1.10*	3,456	1.22*	1,695	1.19*	1,157	1.14*	8,354	7,134.70	1.17*	25.27
Buccal cavity, pharynx	169	2.66*	223	2.43*	104	2.46*	40	1.51*	536	224.15	2.39*	6.46
Lip	13	1.32	19	1.38	7	1.10	4	1.01	43	33.89	1.27	0.19
Tongue	42	3.38*	47	2.59*	15	1.78	11	2.05*	115	44.38	2.59*	1.46
Salivary gland	12	2.44*	6	0.81	6	1.62	1	0.37	25	18.66	1.34	0.13
Mouth	46	2.77*	67	2.79*	35	3.19*	9	1.32	157	58.39	2.69*	2.04
Nasopharynx	2	0.80	9	2.53*	1	0.63	1	1.03	13	8.62	1.51	0.09
Tonsil	24	3.93*	26	2.99*	11	2.84*	6	2.61	67	20.96	3.20*	0.95
Oropharynx	3	1.61	6	2.23	4	3.24	2	2.64	15	6.55	2.29*	0.18
Hypopharynx	16	2.28*	34	3.39*	17	3.77*	6	2.26	73	24.22	3.01*	1.01
Digestive system	590	1.19*	990	1.33*	479	1.30*	342	1.32*	2,401	1,867.36	1.29*	11.06
Esophagus	54	1.95*	96	2.37*	70	3.60*	48	3.61*	268	100.93	2.66*	3.46
Stomach	82	1.53*	118	1.52*	42	1.13	26	1.02	268	193.91	1.38*	1.54
Small intestine	21	3.06*	22	2.10*	6	1.12	0	0.00*	49	26.60	1.84*	0.46
Colon	220	1.01	404	1.22*	199	1.19*	171	1.43*	994	836.00	1.19*	3.27
Rectum, rectosigmoid junction	95	1.08	161	1.24*	73	1.16	35	0.84	364	321.70	1.13*	0.88
Anus, anal canal	3	0.70	4	0.61	2	0.61	5	2.20	14	16.46	0.85	-0.05
Liver	11	0.62	15	0.57*	14	1.07	11	1.15	51	66.58	0.77	-0.32
Gallbladder	5	0.81	5	0.54	4	0.86	1	0.31	15	23.32	0.64	-0.17
Bile ducts, other biliary	11	1.09	18	1.17	4	0.50	12	1.92	45	39.83	1.13	0.11
Pancreas	86	1.44*	141	1.58*	62	1.40*	29	0.93	318	224.60	1.42*	1.94
Respiratory system	496	1.17*	1,457	2.31*	1,073	3.50*	673	3.26*	3,699	1,568.35	2.36*	44.15
Nose, nasal cavity, ear	6	1.78	11	2.21*	5	2.08	2	1.22	24	12.39	1.94*	0.24
Larynx	76	2.49*	130	2.98*	69	3.46*	38	3.13*	313	106.16	2.95*	4.29
Lung, bronchus	414	1.06	1,304	2.25*	995	3.51*	633	3.29*	3,346	1,446.02	2.31*	39.37
Female breast	143	0.78*	319	1.06	160	1.05	131	1.22*	753	746.86	1.01	0.31
Female genital system	41	0.49*	112	0.83*	57	0.87	35	0.79	245	328.81	0.75*	-4.18
Cervix uteri	5	0.54	16	1.14	6	0.95	3	0.79	30	33.36	0.90	-0.17
Corpus uteri	16	0.36*	50	0.71*	26	0.76	14	0.62	106	171.83	0.62*	-3.29
Ovary	16	0.66	42	1.06	21	1.06	14	1.03	93	97.15	0.96	-0.21
Vagina	2	1.65	1	0.51	2	2.01	1	1.40	6	4.88	1.23	0.06
Vulva	1	0.29	2	0.35	1	0.33	3	1.28	7	14.51	0.48*	-0.37
Male genital system	470	0.96	729	0.99	364	0.95	234	0.83*	1,797	1,890.32	0.95*	-3.31
Prostate	469	0.97	717	0.98	362	0.96	233	0.83*	1,781	1,873.36	0.95*	-3.27
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	5.12	0.00*	-0.18
Urinary system	293	1.60*	455	1.66*	209	1.51*	143	1.45*	1,100	695.03	1.58*	8.39
Urinary bladder	169	1.33*	318	1.67*	159	1.65*	113	1.63*	759	482.66	1.57*	5.73
Kidney parenchyma	103	2.30*	113	1.68*	41	1.22	21	0.89	278	169.45	1.64*	2.25
Renal pelvis, other urinary	21	1.82*	24	1.40	9	1.07	9	1.55	63	42.93	1.47*	0.42
Ureter	6	1.57	5	0.88	2	0.71	3	1.57	16	14.23	1.12	0.04
Bone, joints	1	0.53	5	1.78	1	0.75	1	1.14	8	6.90	1.16	0.02
Soft tissue including heart	11	1.31	14	1.11	8	1.28	2	0.44	35	31.82	1.10	0.07
Kaposi sarcoma	2	0.84	3	0.90	0	0.00	1	0.95	6	8.40	0.71	-0.05
Melanoma of skin	33	0.73	45	0.64*	36	1.00	33	1.23	147	178.41	0.82*	-0.65
Eye, orbit	2	0.63	3	0.63	0	0.00	1	0.65	6	11.75	0.51	-0.12
Brain, central nervous system	12	0.53*	32	0.94	6	0.36*	11	1.00	61	84.06	0.73*	-0.48
Thyroid	45	4.17*	23	1.40	9	1.16	7	1.37	84	40.00	2.10*	0.91
Lymphatic, hematopoietic	119	0.73*	282	1.15*	130	1.04	94	1.04	625	623.10	1.00	0.04
Hodgkin lymphoma	5	0.94	4	0.53	2	0.58	2	0.92	13	18.55	0.70	-0.11
Non-Hodgkin lymphoma	51	0.72*	111	1.02	64	1.14	51	1.23	277	277.94	1.00	-0.02
Myeloma	24	0.83	41	0.94	17	0.77	9	0.57	91	110.56	0.82	-0.41
Leukemia	39	0.68*	126	1.47*	47	1.10	32	1.05	244	216.06	1.13	0.58
Acute lymphocytic	2	1.31	4	1.76	2	1.75	0	0.00	8	5.71	1.40	0.05
Chronic lymphocytic	9	0.39*	23	0.66*	12	0.69	12	0.99	56	87.34	0.64*	-0.65
Acute non-lymphocytic	19	1.00	81	2.81*	23	1.58	14	1.32	137	73.05	1.88*	1.33
Chronic myeloid	4	0.52	12	1.05	7	1.22	5	1.20	28	29.03	0.96	-0.02

*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 200,312 PYR and for male cancers on 282,226 PYR.

Lung and Bronchus Both Sexes, Long-term Follow-up

Table 6.1.3: Risk of subsequent primary cancers after cancer of the lung or bronchus, both sexes, long-term follow-up, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<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	O/E	EAR
All subsequent cancers	9,910	1.34*	1,230	1.57*	447	1.39*	113	1.12	11,700	8,580.71	1.36*	64.64
All excluding same site	7,197	1.18*	792	1.21*	292	1.08	73	0.86	8,354	7,134.70	1.17*	25.27
Buccal cavity, pharynx	496	2.51*	33	1.86*	6	0.89	1	0.49	536	224.15	2.39*	6.46
Lip	39	1.30	3	1.13	1	0.99	0	0.00	43	33.89	1.27	0.19
Tongue	104	2.67*	8	2.24	3	2.18	0	0.00	115	44.38	2.59*	1.46
Salivary gland	24	1.50	1	0.58	0	0.00	0	0.00	25	18.66	1.34	0.13
Mouth	148	2.87*	9	1.97	0	0.00	0	0.00	157	58.39	2.69*	2.04
Nasopharynx	12	1.57	1	1.53	0	0.00	0	0.00	13	8.62	1.51	0.09
Tonsil	61	3.27*	4	2.56	1	1.74	1	5.99	67	20.96	3.20*	0.95
Oropharynx	13	2.24*	2	3.92	0	0.00	0	0.00	15	6.55	2.29*	0.18
Hypopharynx	67	3.11*	5	2.74	1	1.53	0	0.00	73	24.22	3.01*	1.01
Digestive system	2,059	1.28*	239	1.42*	79	1.15	24	1.07	2,401	1,867.36	1.29*	11.06
Esophagus	220	2.51*	37	4.27*	9	2.57*	2	1.80	268	100.93	2.66*	3.46
Stomach	242	1.44*	20	1.20	4	0.60	2	0.92	268	193.91	1.38*	1.54
Small intestine	49	2.16*	0	0.00	0	0.00	0	0.00	49	26.60	1.84*	0.46
Colon	823	1.15*	115	1.49*	40	1.26	16	1.53	994	836.00	1.19*	3.27
Rectum, rectosigmoid junction	329	1.18*	25	0.91	8	0.74	2	0.59	364	321.70	1.13*	0.88
Anus, anal canal	9	0.63	2	1.36	2	3.30	1	5.02	14	16.46	0.85	-0.05
Liver	40	0.70*	8	1.31	3	1.17	0	0.00	51	66.58	0.77	-0.32
Gallbladder	14	0.70	0	0.00	1	1.15	0	0.00	15	23.32	0.64	-0.17
Bile ducts, other biliary	33	0.98	8	2.04	4	2.31	0	0.00	45	39.83	1.13	0.11
Pancreas	289	1.50*	21	1.04	7	0.84	1	0.36	318	224.60	1.42*	1.94
Respiratory system	3,026	2.22*	467	3.44*	165	3.05*	41	2.43*	3,699	1,568.35	2.36*	44.15
Nose, nasal cavity, ear	22	2.05*	2	1.88	0	0.00	0	0.00	24	12.39	1.94*	0.24
Larynx	275	2.93*	27	3.27*	10	3.30*	1	1.15	313	106.16	2.95*	4.29
Lung, bronchus	2,713	2.16*	438	3.47*	155	3.07*	40	2.53*	3,346	1,446.02	2.31*	39.37
Female breast	622	0.97	87	1.25*	31	1.08	13	1.39	753	746.86	1.01	0.31
Female genital system	210	0.74*	23	0.80	8	0.69	4	1.08	245	328.81	0.75*	-4.18
Cervix uteri	27	0.91	3	1.17	0	0.00	0	0.00	30	33.36	0.90	-0.17
Corpus uteri	92	0.62*	8	0.54	4	0.68	2	1.07	106	171.83	0.62*	-3.29
Ovary	79	0.95	9	1.02	3	0.83	2	1.71	93	97.15	0.96	-0.21
Vagina	5	1.20	1	2.18	0	0.00	0	0.00	6	4.88	1.23	0.06
Vulva	4	0.33*	2	1.37	1	1.52	0	0.00	7	14.51	0.48*	-0.37
Male genital system	1,563	0.97	163	0.89	60	0.79	11	0.50*	1,797	1,890.32	0.95*	-3.31
Prostate	1,548	0.97	162	0.89	60	0.79	11	0.51*	1,781	1,873.36	0.95*	-3.27
Testis	0	0.00*	0	0.00	0	0.00	0	0.00	0	5.12	0.00*	-0.18
Urinary system	957	1.60*	102	1.60*	38	1.44*	3	0.35	1,100	695.03	1.58*	8.39
Urinary bladder	646	1.56*	79	1.77*	32	1.73*	2	0.33	759	482.66	1.57*	5.73
Kidney parenchyma	257	1.76*	16	1.04	4	0.64	1	0.50	278	169.45	1.64*	2.25
Renal pelvis, other urinary	54	1.45*	7	1.86	2	1.30	0	0.00	63	42.93	1.47*	0.42
Ureter	13	1.05	3	2.41	0	0.00	0	0.00	16	14.23	1.12	0.04
Bone, joints	7	1.16	1	1.75	0	0.00	0	0.00	8	6.90	1.16	0.02
Soft tissue including heart	33	1.21	2	0.69	0	0.00	0	0.00	35	31.82	1.10	0.07
Kaposi sarcoma	5	0.68	1	1.41	0	0.00	0	0.00	6	8.40	0.71	-0.05
Melanoma of skin	114	0.75*	17	1.00	12	1.64	4	1.58	147	178.41	0.82*	-0.65
Eye, orbit	5	0.49	0	0.00	1	2.47	0	0.00	6	11.75	0.51	-0.12
Brain, central nervous system	50	0.68*	8	1.11	3	1.05	0	0.00	61	84.06	0.73*	-0.48
Thyroid	77	2.21*	5	1.49	2	1.52	0	0.00	84	40.00	2.10*	0.91
Lymphatic, hematopoietic	531	1.00	55	0.95	30	1.24	9	1.12	625	623.10	1.00	0.04
Hodgkin lymphoma	11	0.67	2	1.38	0	0.00	0	0.00	13	18.55	0.70	-0.11
Non-Hodgkin lymphoma	226	0.96	26	0.98	19	1.68*	6	1.58	277	277.94	1.00	-0.02
Myeloma	82	0.87	7	0.69	1	0.24	1	0.73	91	110.56	0.82	-0.41
Leukemia	212	1.14	20	1.01	10	1.23	2	0.75	244	216.06	1.13	0.58
Acute lymphocytic	8	1.62	0	0.00	0	0.00	0	0.00	8	5.71	1.40	0.05
Chronic lymphocytic	44	0.58*	9	1.14	3	0.94	0	0.00	56	87.34	0.64*	-0.65
Acute non-lymphocytic	123	1.97*	7	1.03	5	1.74	2	2.07	137	73.05	1.88*	1.33
Chronic myeloid	23	0.93	3	1.12	2	1.79	0	0.00	28	29.03	0.96	-0.02

*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 200,312 PYR and for male cancers on 282,226 PYR.

Table 6.1.4: Risk of subsequent primary cancers after cancer of the lung or bronchus, females, SEER 1973-2000.

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
All subsequent cancers	721	1.13*	1,561	1.49*	951	1.77*	681	1.75*	3,914	2,615.88	1.50*	64.80
All excluding same site	556	1.01	1,093	1.21*	561	1.21*	409	1.23*	2,619	2,253.77	1.16*	18.23
Buccal cavity, pharynx	44	3.74*	54	2.83*	24	2.52*	10	1.53	132	46.90	2.81*	4.25
Lip	0	0.00	6	5.08*	0	0.00	0	0.00	6	3.00	2.00	0.15
Tongue	12	4.63*	15	3.55*	3	1.42	3	2.08	33	10.38	3.18*	1.13
Salivary gland	1	0.82	2	1.00	2	1.97	1	1.35	6	4.97	1.21	0.05
Mouth	14	3.48*	15	2.29*	8	2.44*	3	1.32	40	16.13	2.48*	1.19
Nasopharynx	1	2.07	2	2.60	0	0.00	0	0.00	3	1.87	1.60	0.06
Tonsil	8	7.21*	5	2.84	4	4.82*	0	0.00	17	4.20	4.04*	0.64
Oropharynx	0	0.00	3	5.93*	2	8.01	1	6.39	6	1.22	4.91*	0.24
Hypopharynx	3	3.47	2	1.43	3	4.43	2	4.72	10	3.37	2.97*	0.33
Digestive system	161	1.14	330	1.42*	161	1.33*	132	1.45*	784	586.84	1.34*	9.84
Esophagus	13	3.09*	23	3.34*	16	4.53*	12	4.66*	64	17.19	3.72*	2.34
Stomach	11	1.01	21	1.20	10	1.11	6	0.88	48	44.09	1.09	0.20
Small intestine	6	2.85*	6	1.70	3	1.62	0	0.00	15	8.90	1.69	0.30
Colon	68	0.98	150	1.30*	75	1.24	73	1.59*	366	291.40	1.26*	3.72
Rectum, rectosigmoid junction	26	1.15	51	1.38*	24	1.28	10	0.75	111	91.57	1.21	0.97
Rectum	15	1.02	31	1.29	19	1.55	7	0.79	72	59.92	1.20	0.60
Anus, anal canal	1	0.51	1	0.31	1	0.60	4	3.33	7	8.11	0.86	-0.06
Liver	3	0.94	5	0.95	8	2.88*	5	2.27	21	13.44	1.56	0.38
Gallbladder	2	0.64	4	0.79	1	0.38	1	0.53	8	12.70	0.63	-0.23
Bile ducts, other biliary	5	1.65	5	0.99	1	0.37	6	2.69	17	13.05	1.30	0.20
Pancreas	26	1.39	60	1.94*	21	1.29	13	1.05	120	78.40	1.53*	2.08
Respiratory system	176	1.95*	500	3.30*	407	5.16*	278	4.79*	1,361	378.40	3.60*	49.05
Nose, nasal cavity, ear	1	1.16	2	1.41	2	2.74	0	0.00	5	3.55	1.41	0.07
Larynx	10	3.33*	28	5.75*	15	6.28*	6	3.86*	59	11.82	4.99*	2.36
Lung, bronchus	165	1.92*	468	3.23*	390	5.16*	272	4.87*	1,295	362.12	3.58*	46.57
Female breast	143	0.78*	319	1.06	160	1.05	131	1.22*	753	746.86	1.01	0.31
Female genital system	41	0.49*	112	0.83*	57	0.87	35	0.79	245	328.81	0.75*	-4.18
Cervix uteri	5	0.54	16	1.14	6	0.95	3	0.79	30	33.36	0.90	-0.17
Corpus uteri	16	0.36*	50	0.71*	26	0.76	14	0.62	106	171.83	0.62*	-3.29
Ovary	16	0.66	42	1.06	21	1.06	14	1.03	93	97.15	0.96	-0.21
Vagina	2	1.65	1	0.51	2	2.01	1	1.40	6	4.88	1.23	0.06
Vulva	1	0.29	2	0.35	1	0.33	3	1.28	7	14.51	0.48*	-0.37
Urinary system	69	2.29*	80	1.60*	54	2.05*	33	1.67*	236	126.33	1.87*	5.47
Urinary bladder	31	1.78*	46	1.58*	38	2.49*	25	2.15*	140	73.37	1.91*	3.33
Kidney parenchyma	33	3.23*	27	1.59*	15	1.69	5	0.76	80	42.68	1.87*	1.86
Renal pelvis, other urinary	5	2.02	7	1.71	1	0.47	3	1.89	16	10.28	1.56	0.29
Ureter	1	1.33	0	0.00	0	0.00	1	2.06	2	3.13	0.64	-0.06
Bone, joints	1	1.76	1	1.08	1	2.16	1	3.07	4	2.29	1.75	0.09
Soft tissue including heart	5	2.03	8	1.98	3	1.45	0	0.00	16	10.10	1.58	0.29
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.83	0.00	-0.04
Melanoma of skin	9	0.74	15	0.75	11	1.07	7	0.93	42	50.04	0.84	-0.40
Eye, orbit	0	0.00	0	0.00	0	0.00	1	1.92	1	3.73	0.27	-0.14
Brain, central nervous system	3	0.45	13	1.17	4	0.71	2	0.52	22	27.25	0.81	-0.26
Thyroid	20	3.60*	9	1.01	5	1.17	3	1.05	37	21.58	1.71*	0.77
Lymphatic, hematopoietic	42	0.88	98	1.24*	42	1.01	32	1.02	214	199.21	1.07	0.74
Hodgkin lymphoma	3	2.09	1	0.43	1	0.88	1	1.30	6	5.65	1.06	0.02
Non-Hodgkin lymphoma	19	0.82	39	1.00	20	0.97	20	1.28	98	98.10	1.00	0.00
Myeloma	10	1.18	10	0.71	3	0.41	3	0.55	26	35.18	0.74	-0.46
Leukemia	10	0.69	48	2.01*	18	1.44	8	0.84	84	60.29	1.39*	1.18
Acute lymphocytic	0	0.00	4	5.70*	1	2.75	0	0.00	5	1.75	2.85	0.16
Chronic lymphocytic	1	0.18*	7	0.75	2	0.41	3	0.82	13	23.57	0.55*	-0.53
Acute non-lymphocytic	7	1.36	33	3.87*	10	2.23*	5	1.45	55	21.59	2.55*	1.67
Chronic myeloid	0	0.00	3	0.93	3	1.77	0	0.00	6	8.18	0.73	-0.11

*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.

Lung and Bronchus Males

Table 6.1.5: Risk of subsequent primary cancers after cancer of the lung or bronchus, males, SEER 1973-2000.

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
All subsequent cancers	1,739	1.07*	3,199	1.35*	1,739	1.49*	1,109	1.36*	7,786	5,964.83	1.31*	64.53
All excluding same site	1,490	1.13*	2,363	1.23*	1,134	1.18*	748	1.10*	5,735	4,880.93	1.17*	30.26
Buccal cavity, pharynx	125	2.41*	169	2.33*	80	2.44*	30	1.50*	404	177.25	2.28*	8.03
Lip	13	1.43	13	1.03	7	1.23	4	1.15	37	30.88	1.20	0.22
Tongue	30	3.05*	32	2.30*	12	1.90	8	2.04	82	34.00	2.41*	1.70
Salivary gland	11	2.98*	4	0.75	4	1.49	0	0.00	19	13.69	1.39	0.19
Mouth	32	2.55*	52	2.98*	27	3.50*	6	1.32	117	42.26	2.77*	2.65
Nasopharynx	1	0.49	7	2.51*	1	0.83	1	1.39	10	6.75	1.48	0.12
Tonsil	16	3.21*	21	3.03*	7	2.31	6	3.34*	50	16.76	2.98*	1.18
Oropharynx	3	1.93	3	1.37	2	2.03	1	1.66	9	5.33	1.69	0.13
Hypopharynx	13	2.11*	32	3.71*	14	3.65*	4	1.79	63	20.85	3.02*	1.49
Digestive system	429	1.21*	660	1.29*	318	1.28*	210	1.25*	1,617	1,280.52	1.26*	11.92
Esophagus	41	1.74*	73	2.17*	54	3.39*	36	3.36*	204	83.74	2.44*	4.26
Stomach	71	1.66*	97	1.62*	32	1.13	20	1.07	220	149.82	1.47*	2.49
Small intestine	15	3.16*	16	2.30*	3	0.86	0	0.00	34	17.70	1.92*	0.58
Colon	152	1.02	254	1.18*	124	1.16	98	1.33*	628	544.60	1.15*	2.96
Rectum, rectosigmoid junction	69	1.06	110	1.19	49	1.11	25	0.88	253	230.13	1.10	0.81
Anus, anal canal	2	0.86	3	0.90	1	0.62	1	0.93	7	8.35	0.84	-0.05
Liver	8	0.55	10	0.47*	6	0.58	6	0.82	30	53.14	0.56*	-0.82
Gallbladder	3	1.00	1	0.24	3	1.48	0	0.00	7	10.62	0.66	-0.13
Bile ducts, other biliary	6	0.85	13	1.25	3	0.57	6	1.49	28	26.78	1.05	0.04
Pancreas	60	1.46*	81	1.39*	41	1.47*	16	0.85	198	146.19	1.35*	1.84
Respiratory system	320	0.96	957	2.00*	666	2.92*	395	2.66*	2,338	1,189.95	1.96*	40.68
Nose, nasal cavity, ear	5	1.99	9	2.54*	3	1.79	2	1.81	19	8.84	2.15*	0.36
Larynx	66	2.40*	102	2.63*	54	3.08*	32	3.02*	254	94.34	2.69*	5.66
Lung, bronchus	249	0.82*	836	1.92*	605	2.91*	361	2.64*	2,051	1,083.90	1.89*	34.27
Male breast	2	0.66	3	0.68	3	1.39	3	1.97	11	11.12	0.99	0.00
Male genital system	470	0.96	729	0.99	364	0.95	234	0.83*	1,797	1,890.32	0.95*	-3.31
Prostate	469	0.97	717	0.98	362	0.96	233	0.83*	1,781	1,873.36	0.95*	-3.27
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	5.12	0.00*	-0.18
Urinary system	224	1.46*	375	1.67*	155	1.38*	110	1.39*	864	568.70	1.52*	10.46
Urinary bladder	138	1.26*	272	1.69*	121	1.50*	88	1.53*	619	409.29	1.51*	7.43
Kidney parenchyma	70	2.03*	86	1.71*	26	1.05	16	0.94	198	126.76	1.56*	2.52
Renal pelvis, other urinary	16	1.76*	17	1.30	8	1.27	6	1.42	47	32.65	1.44*	0.51
Ureter	5	1.63	5	1.13	2	0.93	2	1.41	14	11.09	1.26	0.10
Bone, joints	0	0.00	4	2.13	0	0.00	0	0.00	4	4.61	0.87	-0.02
Soft tissue including heart	6	1.01	6	0.70	5	1.20	2	0.67	19	21.71	0.88	-0.10
Kaposi sarcoma	2	0.91	3	0.99	0	0.00	1	1.11	6	7.57	0.79	-0.06
Melanoma of skin	24	0.72	30	0.60*	25	0.97	26	1.34	105	128.37	0.82*	-0.83
Eye, orbit	2	0.89	3	0.93	0	0.00	0	0.00	5	8.02	0.62	-0.11
Brain, central nervous system	9	0.56	19	0.83	2	0.18*	9	1.27	39	56.81	0.69*	-0.63
Thyroid	25	4.77*	14	1.87*	4	1.16	4	1.79	47	18.42	2.55*	1.01
Lymphatic, hematopoietic	77	0.67*	184	1.10	88	1.06	62	1.05	411	423.89	0.97	-0.46
Hodgkin lymphoma	2	0.52	3	0.57	1	0.43	1	0.71	7	12.90	0.54	-0.21
Non-Hodgkin lymphoma	32	0.67*	72	1.02	44	1.23	31	1.19	179	179.84	1.00	-0.03
Myeloma	14	0.68	31	1.04	14	0.95	6	0.58	65	75.38	0.86	-0.37
Leukemia	29	0.68*	78	1.27*	29	0.95	24	1.14	160	155.77	1.03	0.15
Acute lymphocytic	2	1.82	0	0.00	1	1.28	0	0.00	3	3.96	0.76	-0.03
Chronic lymphocytic	8	0.46*	16	0.63	10	0.80	9	1.06	43	63.77	0.67*	-0.74
Acute non-lymphocytic	12	0.86	48	2.37*	13	1.29	9	1.25	82	51.46	1.59*	1.08
Chronic myeloid	4	0.70	9	1.10	4	0.99	5	1.73	22	20.84	1.06	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.

Table 6.1.6: Risk of subsequent primary cancers after cancer of the lung or bronchus, 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			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	95	2.88*	185	2.71*	160	2.47*	258	1.97*	698	297.31	2.35*	70.25
All excluding same site	77	2.67*	111	1.88*	84	1.53*	150	1.37*	422	252.50	1.67*	29.72
Buccal cavity, pharynx	10	6.74*	7	2.39	11	4.16*	5	1.26	33	11.04	2.99*	3.85
Lip	0	0.00	1	3.95	0	0.00	0	0.00	1	0.97	1.03	0.01
Tongue	1	3.21	3	4.73	1	1.71	2	2.24	7	2.42	2.89*	0.80
Salivary gland	1	8.58	1	4.51	0	0.00	0	0.00	2	0.83	2.42	0.21
Mouth	4	10.15*	0	0.00	7	9.91*	1	0.98	12	2.90	4.13*	1.59
Nasopharynx	1	9.23	1	5.11	0	0.00	0	0.00	2	0.64	3.11	0.24
Tonsil	3	14.53*	0	0.00	2	5.53	1	2.05	6	1.46	4.10*	0.80
Oropharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.34	0.00	-0.06
Hypopharynx	0	0.00	1	3.68	1	3.60	1	2.28	3	1.11	2.69	0.33
Digestive system	22	4.48*	30	2.85*	26	2.40*	56	2.45*	134	49.16	2.73*	14.87
Esophagus	5	12.87*	6	7.31*	6	7.21*	11	6.79*	28	3.66	7.65*	4.27
Stomach	6	10.29*	6	5.19*	0	0.00	6	2.87*	18	4.92	3.66*	2.29
Small intestine	2	15.39*	1	3.89	0	0.00	0	0.00	3	1.08	2.77	0.34
Colon	1	0.57	7	1.83	9	2.21*	28	3.04*	45	18.86	2.39*	4.58
Rectum, rectosigmoid junction	3	3.21	1	0.48	9	4.14*	2	0.46	15	9.53	1.57	0.96
Anus, anal canal	1	8.89	0	0.00	1	5.03	2	6.03	4	0.87	4.61*	0.55
Liver	1	3.79	0	0.00	0	0.00	0	0.00	1	2.41	0.41	-0.25
Gallbladder	0	0.00	0	0.00	0	0.00	0	0.00	0	0.48	0.00	-0.08
Bile ducts, other biliary	0	0.00	1	5.54	0	0.00	1	2.15	2	0.92	2.16	0.19
Pancreas	3	5.38*	8	6.53*	1	0.78	4	1.46	16	5.81	2.75*	1.79
Respiratory system	22	4.62*	80	7.64*	81	7.23*	114	4.84*	297	50.01	5.94*	43.30
Nose, nasal cavity, ear	0	0.00	0	0.00	0	0.00	1	5.11	1	0.53	1.88	0.08
Larynx	4	7.97*	6	5.63*	5	4.65*	5	2.68	20	4.51	4.44*	2.72
Lung, bronchus	18	4.33*	74	8.03*	76	7.62*	108	5.03*	276	44.82	6.16*	40.53
Female breast	8	1.06	12	0.78	9	0.73	20	1.14	49	52.96	0.93	-1.51
Female genital system	3	1.03	8	1.32	8	1.61	8	1.12	27	21.05	1.28	2.26
Cervix uteri	0	0.00	4	2.63	3	3.19	1	1.12	8	4.22	1.90	1.44
Corpus uteri	0	0.00	1	0.42	3	1.35	3	0.82	7	9.23	0.76	-0.85
Ovary	3	3.41	3	1.62	2	1.32	4	1.87	12	6.38	1.88	2.13
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.21	0.00	-0.08
Vulva	0	0.00	0	0.00	0	0.00	0	0.00	0	0.61	0.00	-0.23
Male genital system	5	3.68*	8	2.19	4	0.67	21	0.80	38	37.24	1.02	0.25
Prostate	5	5.42*	8	2.66*	4	0.71	21	0.81	38	35.43	1.07	0.84
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	1.46	0.00	-0.47
Urinary system	12	6.25*	10	2.46*	11	2.60*	9	0.97	42	19.52	2.15*	3.94
Urinary bladder	2	2.02	4	1.86	7	2.97*	8	1.40	21	11.19	1.88*	1.72
Kidney parenchyma	10	11.84*	6	3.45*	4	2.37	1	0.32	21	7.44	2.82*	2.38
Renal pelvis, other urinary	0	0.00	0	0.00	0	0.00	0	0.00	0	0.90	0.00	-0.16
Ureter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.23	0.00	-0.04
Bone, joints	0	0.00	1	7.38	0	0.00	0	0.00	1	0.44	2.26	0.10
Soft tissue including heart	0	0.00	1	2.06	1	2.67	1	1.82	3	1.68	1.79	0.23
Kaposi sarcoma	1	1.97	2	2.75	0	0.00	1	3.25	4	1.95	2.05	0.36
Melanoma of skin	0	0.00	5	1.41	0	0.00	6	1.44	11	12.37	0.89	-0.24
Eye, orbit	0	0.00	1	6.93	0	0.00	0	0.00	1	0.54	1.86	0.08
Brain, central nervous system	3	4.31	2	1.53	0	0.00	2	1.28	7	4.62	1.51	0.42
Thyroid	2	2.36	1	0.65	1	0.95	1	0.83	5	4.66	1.07	0.06
Lymphatic, hematopoietic	4	1.37	12	2.11*	5	1.00	6	0.66	27	22.72	1.19	0.75
Hodgkin lymphoma	0	0.00	0	0.00	0	0.00	0	0.00	0	1.65	0.00	-0.29
Non-Hodgkin lymphoma	3	1.99	2	0.68	1	0.39	5	1.10	11	11.52	0.95	-0.09
Myeloma	0	0.00	1	1.49	2	2.84	1	0.68	4	3.17	1.26	0.15
Leukemia	1	1.29	9	5.85*	2	1.43	0	0.00	12	6.38	1.88	0.99
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.34	0.00	-0.06
Chronic lymphocytic	0	0.00	0	0.00	1	2.00	0	0.00	1	2.20	0.45	-0.21
Acute non-lymphocytic	1	3.49	7	12.90*	1	2.19	0	0.00	9	2.17	4.14*	1.20
Chronic myeloid	0	0.00	1	3.50	0	0.00	0	0.00	1	1.04	0.96	-0.01

*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 26,322 PYR and for male cancers on 30,716 PYR.

Lung and Bronchus Both Sexes, 50-69 Years of Age

Table 6.1.7: Risk of subsequent primary cancers after cancer of the lung or bronchus, 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			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	1,313	1.30*	2,777	1.54*	1,932	1.70*	1,328	1.43*	7,350	4,882.82	1.51*	82.84
All excluding same site	1,056	1.29*	1,939	1.32*	1,193	1.27*	854	1.10*	5,042	4,005.81	1.26*	34.79
Buccal cavity, pharynx	110	3.09*	157	2.77*	71	2.37*	29	1.46	367	142.02	2.58*	7.55
Lip	9	2.05	10	1.39	5	1.22	3	1.00	27	18.65	1.45	0.28
Tongue	28	3.87*	30	2.60*	13	2.12*	7	1.74	78	28.93	2.70*	1.65
Salivary gland	8	3.65*	3	0.79	2	0.86	1	0.51	14	10.25	1.37	0.13
Mouth	30	3.18*	53	3.55*	20	2.58*	8	1.58	111	37.19	2.98*	2.48
Nasopharynx	1	0.65	7	2.96*	1	0.87	0	0.00	9	5.77	1.56	0.11
Tonsil	14	3.57*	19	3.17*	8	2.75*	3	1.79	44	14.51	3.03*	0.99
Oropharynx	1	0.85	4	2.18	3	3.18	2	3.47	10	4.53	2.21*	0.18
Hypopharynx	11	2.56*	23	3.39*	13	3.75*	5	2.43	52	16.61	3.13*	1.19
Digestive system	283	1.38*	526	1.45*	338	1.46*	231	1.18*	1,378	995.94	1.38*	12.83
Esophagus	30	2.08*	64	2.69*	55	4.03*	35	3.42*	184	62.08	2.96*	4.09
Stomach	43	2.00*	54	1.46*	29	1.26	15	0.79	141	100.57	1.40*	1.36
Small intestine	12	3.86*	13	2.33*	6	1.70	0	0.00	31	15.19	2.04*	0.53
Colon	90	1.08	196	1.29*	139	1.37*	106	1.18	531	426.87	1.24*	3.50
Rectum, rectosigmoid junction	51	1.29	92	1.34*	48	1.16	28	0.88	219	181.52	1.21*	1.26
Anus, anal canal	1	0.46	2	0.53	1	0.45	3	1.79	7	9.90	0.71	-0.10
Liver	3	0.37	8	0.57	12	1.36	9	1.22	32	38.44	0.83	-0.22
Gallbladder	2	0.93	2	0.49	1	0.37	1	0.41	6	11.34	0.53	-0.18
Bile ducts, other biliary	2	0.54	11	1.61	2	0.43	10	2.16*	25	19.79	1.26	0.17
Pancreas	49	1.96*	79	1.79*	43	1.54*	23	0.97	194	120.93	1.60*	2.45
Respiratory system	316	1.49*	938	2.57*	801	3.67*	507	3.11*	2,562	957.37	2.68*	53.88
Nose, nasal cavity, ear	4	2.43	7	2.59*	4	2.58	1	0.82	16	7.13	2.25*	0.30
Larynx	55	3.06*	82	2.87*	55	3.65*	32	3.40*	224	71.00	3.16*	5.14
Lung, bronchus	257	1.34*	838	2.52*	739	3.68*	474	3.11*	2,308	877.00	2.63*	48.05
Female breast	79	0.83	186	1.07	114	1.10	98	1.25*	477	451.48	1.06	2.12
Female genital system	25	0.54*	69	0.85	39	0.85	24	0.74	157	205.97	0.76*	-4.07
Cervix uteri	3	0.57	9	1.06	3	0.73	2	0.79	17	20.47	0.83	-0.29
Corpus uteri	12	0.47*	32	0.71	18	0.72	11	0.64	73	112.45	0.65*	-3.28
Ovary	8	0.62	25	1.08	16	1.19	8	0.80	57	59.27	0.96	-0.19
Vagina	0	0.00	1	1.02	0	0.00	0	0.00	1	2.65	0.38	-0.14
Vulva	1	0.79	1	0.40	1	0.59	3	1.80	6	7.14	0.84	-0.09
Male genital system	215	1.10	386	1.04	250	0.95	187	0.83*	1,038	1,052.05	0.99	-0.79
Prostate	214	1.11	377	1.03	250	0.96	186	0.83*	1,027	1,042.91	0.98	-0.90
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	2.85	0.00	-0.16
Urinary system	147	1.89*	256	1.85*	148	1.65*	115	1.51*	666	382.08	1.74*	9.53
Urinary bladder	77	1.51*	166	1.81*	112	1.84*	88	1.65*	443	256.64	1.73*	6.26
Kidney parenchyma	59	2.63*	75	1.94*	29	1.24	19	1.05	182	102.51	1.78*	2.67
Renal pelvis, other urinary	11	2.37*	15	1.79*	7	1.29	8	1.77	41	22.92	1.79*	0.61
Ureter	2	1.35	1	0.37	2	1.11	3	2.00	8	7.52	1.06	0.02
Bone, joints	0	0.00	3	1.89	1	1.11	1	1.57	5	4.08	1.23	0.03
Soft tissue including heart	7	1.84	5	0.77	6	1.53	1	0.30	19	17.56	1.08	0.05
Kaposi sarcoma	1	1.06	1	0.71	0	0.00	0	0.00	2	3.62	0.55	-0.05
Melanoma of skin	23	1.00	24	0.60*	27	1.13	22	1.12	96	106.42	0.90	-0.35
Eye, orbit	0	0.00	2	0.75	0	0.00	1	0.86	3	6.96	0.43	-0.13
Brain, central nervous system	6	0.50	17	0.84	5	0.43	7	0.84	35	52.08	0.67*	-0.57
Thyroid	31	5.02*	15	1.49	7	1.33	6	1.72	59	24.99	2.36*	1.14
Lymphatic, hematopoietic	56	0.81	152	1.24*	90	1.14	73	1.07	371	338.51	1.10	1.09
Hodgkin lymphoma	2	0.73	4	0.92	1	0.44	2	1.27	9	10.94	0.82	-0.07
Non-Hodgkin lymphoma	22	0.71	56	1.00	42	1.16	39	1.23	159	154.56	1.03	0.15
Myeloma	15	1.21	17	0.77	10	0.71	5	0.41*	47	60.67	0.77	-0.46
Leukemia	17	0.75	75	1.85*	37	1.40	27	1.18	156	112.33	1.39*	1.47
Acute lymphocytic	1	1.48	2	1.72	2	2.82	0	0.00	5	3.10	1.61	0.06
Chronic lymphocytic	1	0.10*	14	0.82	9	0.82	8	0.88	32	46.84	0.68*	-0.50
Acute non-lymphocytic	10	1.39	49	3.70*	19	2.14*	13	1.61	91	37.41	2.43*	1.80
Chronic myeloid	2	0.65	6	1.13	5	1.47	5	1.63	18	14.85	1.21	0.11

*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 120,427 PYR and for male cancers on 177,384 PYR.

Table 6.1.8: Risk of subsequent primary cancers after cancer of the lung or bronchus, 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			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	1,052	0.87*	1,798	1.17*	598	1.19*	204	1.38*	3,652	3,400.58	1.07*	19.69
All excluding same site	913	0.90*	1,406	1.08*	418	0.97	153	1.18*	2,890	2,876.39	1.00	1.07
Buccal cavity, pharynx	49	1.84*	59	1.84*	22	2.27*	6	2.19	136	71.09	1.91*	5.08
Lip	4	0.75	8	1.26	2	0.98	1	1.67	15	14.27	1.05	0.06
Tongue	13	2.65*	14	2.36*	1	0.58	2	4.34	30	13.02	2.30*	1.33
Salivary gland	3	1.15	2	0.60	4	3.33	0	0.00	9	7.58	1.19	0.11
Mouth	12	1.78	14	1.69	8	3.16*	0	0.00	34	18.29	1.86*	1.23
Nasopharynx	0	0.00	1	0.99	0	0.00	1	13.32	2	2.21	0.91	-0.02
Tonsil	7	3.56*	7	3.06*	1	1.67	2	14.77*	17	4.99	3.41*	0.94
Oropharynx	2	3.07	2	2.59	1	4.70	0	0.00	5	1.69	2.97	0.26
Hypopharynx	5	1.94	10	3.36*	3	3.93	0	0.00	18	6.49	2.77*	0.90
Digestive system	285	0.99	434	1.18*	115	0.91	55	1.36*	889	822.26	1.08*	5.23
Esophagus	19	1.47	26	1.64*	9	1.81	2	1.39	56	35.19	1.59*	1.63
Stomach	33	1.05	58	1.48*	13	0.98	5	1.14	109	88.42	1.23*	1.61
Small intestine	7	1.94	8	1.72	0	0.00	0	0.00	15	10.33	1.45	0.37
Colon	129	0.97	201	1.15	51	0.82	37	1.82*	418	390.27	1.07	2.17
Rectum, rectosigmoid junction	41	0.87	68	1.15	16	0.84	5	0.90	130	130.65	1.00	-0.05
Anus, anal canal	1	0.50	2	0.78	0	0.00	0	0.00	3	5.69	0.53	-0.21
Liver	7	0.76	7	0.60	2	0.53	2	1.85	18	25.73	0.70	-0.61
Gallbladder	3	0.76	3	0.58	3	1.67	0	0.00	9	11.50	0.78	-0.20
Bile ducts, other biliary	9	1.42	6	0.71	2	0.63	1	0.86	18	19.12	0.94	-0.09
Pancreas	34	1.00	54	1.23	18	1.20	2	0.41	108	97.85	1.10	0.79
Respiratory system	158	0.76*	439	1.71*	191	2.47*	52	2.63*	840	560.97	1.50*	21.85
Nose, nasal cavity, ear	2	1.21	4	1.88	1	1.37	0	0.00	7	4.74	1.48	0.18
Larynx	17	1.42	42	3.00*	9	2.37*	1	1.16	69	30.66	2.25*	3.00
Lung, bronchus	139	0.72*	392	1.64*	180	2.47*	51	2.73*	762	524.20	1.45*	18.62
Female breast	56	0.69*	121	1.07	37	0.99	13	1.15	227	242.41	0.94	-2.88
Female genital system	13	0.37*	35	0.74	10	0.66	3	0.66	61	101.79	0.60*	-7.62
Cervix uteri	2	0.66	3	0.75	0	0.00	0	0.00	5	8.67	0.58	-0.68
Corpus uteri	4	0.23*	17	0.72	5	0.70	0	0.00	26	50.14	0.52*	-4.51
Ovary	5	0.47	14	0.96	3	0.62	2	1.34	24	31.50	0.76	-1.40
Vagina	2	3.08	0	0.00	2	5.99	1	8.65	5	2.03	2.47	0.55
Vulva	0	0.00	1	0.33	0	0.00	0	0.00	1	6.76	0.15*	-1.08
Male genital system	250	0.85*	335	0.92	110	0.97	26	0.86	721	801.02	0.90*	-10.80
Prostate	250	0.86*	332	0.92	108	0.96	26	0.87	716	795.02	0.90*	-10.66
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.81	0.00	-0.11
Urinary system	134	1.29*	189	1.43*	50	1.12	19	1.41	392	293.43	1.34*	7.72
Urinary bladder	90	1.19	148	1.54*	40	1.21	17	1.67	295	214.82	1.37*	6.28
Kidney parenchyma	34	1.59*	32	1.18	8	0.93	1	0.42	75	59.50	1.26	1.21
Renal pelvis, other urinary	10	1.46	9	1.05	2	0.71	1	1.18	22	19.11	1.15	0.23
Ureter	4	1.72	4	1.37	0	0.00	0	0.00	8	6.48	1.24	0.12
Bone, joints	1	1.16	1	0.93	0	0.00	0	0.00	2	2.37	0.84	-0.03
Soft tissue including heart	4	0.92	8	1.42	1	0.51	0	0.00	13	12.58	1.03	0.03
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	2.83	0.00	-0.22
Melanoma of skin	10	0.49*	16	0.60*	9	0.96	5	1.64	40	59.62	0.67*	-1.54
Eye, orbit	2	1.30	0	0.00	0	0.00	0	0.00	2	4.26	0.47	-0.18
Brain, central nervous system	3	0.30*	13	1.03	1	0.26	2	1.97	19	27.36	0.69	-0.65
Thyroid	12	3.19*	7	1.46	1	0.71	0	0.00	20	10.36	1.93*	0.76
Lymphatic, hematopoietic	59	0.65*	118	1.00	35	0.86	15	1.17	227	261.88	0.87*	-2.73
Hodgkin lymphoma	3	1.36	0	0.00	1	1.22	0	0.00	4	5.95	0.67	-0.15
Non-Hodgkin lymphoma	26	0.68*	53	1.05	21	1.20	7	1.29	107	111.86	0.96	-0.38
Myeloma	9	0.55	23	1.09	5	0.70	3	1.37	40	46.72	0.86	-0.53
Leukemia	21	0.62*	42	0.97	8	0.53	5	1.00	76	97.34	0.78*	-1.67
Acute lymphocytic	1	1.26	2	1.98	0	0.00	0	0.00	3	2.27	1.32	0.06
Chronic lymphocytic	8	0.60	9	0.53	2	0.34	4	2.08	23	38.30	0.60*	-1.20
Acute non-lymphocytic	8	0.69	25	1.67*	3	0.57	1	0.60	37	33.47	1.11	0.28
Chronic myeloid	2	0.45	5	0.86	2	0.94	0	0.00	9	13.14	0.68	-0.32

*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. EAR for female cancers is based on 53,563 PYR and for male cancers on 74,127 PYR.

Lung and Bronchus Small Cell Carcinoma, Both Sexes

Table 6.1.9: Risk of subsequent primary cancers after small cell carcinoma of the lung or bronchus, 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					
	Number starting interval	Person-years in interval	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR		
All subsequent cancers	39,737	21,197	234	0.72*	324	1.27*	166	1.88*	80	1.86*	804	709.86	1.13*	21.03
All excluding same site			201	0.75*	258	1.22*	102	1.39*	53	1.46*	614	589.67	1.04	5.44
Buccal cavity, pharynx			10	1.08	19	2.84*	7	3.34*	4	4.32*	40	18.95	2.11*	4.70
Lip			0	0.00	2	2.21	1	3.50	1	8.01	4	2.65	1.51	0.30
Tongue			4	2.16	3	2.20	1	2.31	1	5.19	9	3.84	2.35*	1.15
Salivary gland			0	0.00	0	0.00	0	0.00	0	0.00	0	1.52	0.00	-0.34
Mouth			3	1.23	8	4.47*	3	5.35*	0	0.00	14	5.04	2.78*	2.00
Nasopharynx			0	0.00	1	3.76	0	0.00	0	0.00	1	0.74	1.35	0.06
Tonsil			0	0.00	1	1.52	0	0.00	1	11.98	2	1.85	1.08	0.03
Oropharynx			0	0.00	1	5.06	2	32.60*	0	0.00	3	0.56	5.36*	0.55
Hypopharynx			1	0.98	2	2.79	0	0.00	1	11.28	4	2.04	1.96	0.44
Digestive system			47	0.68*	68	1.29	36	1.96*	21	2.30*	172	149.12	1.15	5.11
Esophagus			6	1.57	5	1.77	6	6.45*	1	2.30	18	8.00	2.25*	2.23
Stomach			5	0.71	7	1.36	6	3.52*	1	1.23	19	14.66	1.30	0.97
Small intestine			0	0.00	2	2.52	0	0.00	0	0.00	2	2.21	0.90	-0.05
Colon			19	0.63*	24	1.02	11	1.31	12	2.81*	66	66.54	0.99	-0.12
Rectum, rectosigmoid junction			7	0.56	13	1.39	8	2.55*	3	2.03	31	26.42	1.17	1.02
Anus, anal canal			0	0.00	0	0.00	0	0.00	1	10.71	1	1.49	0.67	-0.11
Liver			1	0.42	2	1.08	1	1.60	0	0.00	4	5.18	0.77	-0.26
Gallbladder			0	0.00	0	0.00	1	4.03	0	0.00	1	1.93	0.52	-0.21
Bile ducts, other biliary			0	0.00	0	0.00	0	0.00	0	0.00	0	3.08	0.00	-0.69
Pancreas			8	0.96	13	2.02*	3	1.33	2	1.76	26	18.14	1.43	1.76
Respiratory system			46	0.75	78	1.69*	72	4.61*	31	4.23*	227	130.37	1.74*	21.59
Nose, nasal cavity, ear			2	4.14	0	0.00	0	0.00	0	0.00	2	1.03	1.95	0.22
Larynx			11	2.50*	12	3.89*	8	8.44*	4	9.95*	35	8.83	3.96*	5.85
Lung, bronchus			33	0.59*	66	1.55*	64	4.41*	27	3.94*	190	120.20	1.58*	15.59
Female breast			9	0.28*	23	0.76	8	0.73	7	1.27	47	79.25	0.59*	-15.07
Female genital system			2	0.13*	7	0.52	4	0.85	4	1.76	17	35.32	0.48*	-8.56
Cervix uteri			0	0.00	3	2.22	0	0.00	1	5.39	4	3.55	1.13	0.21
Corpus uteri			0	0.00*	2	0.28	3	1.20	1	0.85	6	18.85	0.32*	-6.00
Ovary			2	0.46	2	0.51	1	0.71	0	0.00	5	10.35	0.48	-2.50
Vagina			0	0.00	0	0.00	0	0.00	1	28.59	1	0.48	2.09	0.24
Vulva			0	0.00	0	0.00	0	0.00	1	8.68	1	1.38	0.72	-0.18
Male genital system			52	0.81	39	0.81	10	0.60	3	0.37	104	137.38	0.76*	-14.29
Prostate			52	0.81	38	0.80	10	0.60	3	0.37	103	136.05	0.76*	-14.15
Testis			0	0.00	0	0.00	0	0.00	0	0.00	0	0.47	0.00	-0.20
Urinary system			30	1.17	23	1.19	14	2.10*	5	1.53	72	54.83	1.31*	3.84
Urinary bladder			15	0.86	18	1.38	11	2.43*	5	2.26	49	37.19	1.32	2.64
Kidney parenchyma			11	1.67	4	0.79	2	1.15	0	0.00	17	14.25	1.19	0.61
Renal pelvis, other urinary			4	2.51	1	0.84	1	2.45	0	0.00	6	3.39	1.77	0.58
Ureter			1	1.90	0	0.00	1	7.47	0	0.00	2	1.12	1.79	0.20
Bone, joints			0	0.00	0	0.00	0	0.00	0	0.00	0	0.60	0.00	-0.13
Soft tissue including heart			2	1.66	2	2.12	0	0.00	0	0.00	4	2.63	1.52	0.31
Kaposi sarcoma			0	0.00	0	0.00	0	0.00	0	0.00	0	0.69	0.00	-0.15
Melanoma of skin			7	1.00	2	0.35	3	1.53	1	1.02	13	15.63	0.83	-0.59
Eye, orbit			0	0.00	0	0.00	0	0.00	0	0.00	0	1.03	0.00	-0.23
Brain, central nervous system			0	0.00	4	1.50	0	0.00	0	0.00	4	7.46	0.54	-0.77
Thyroid			7	4.04*	3	2.11	2	4.34	0	0.00	12	3.83	3.13*	1.82
Lymphatic, hematopoietic			16	0.69	53	2.91*	8	1.25	3	0.93	80	51.05	1.57*	6.47
Hodgkin lymphoma			2	2.54	0	0.00	0	0.00	0	0.00	2	1.63	1.23	0.08
Non-Hodgkin lymphoma			5	0.48	16	1.90*	2	0.67	2	1.30	25	23.38	1.07	0.36
Myeloma			1	0.25	3	0.95	0	0.00	0	0.00	4	8.88	0.45	-1.09
Leukemia			8	1.01	34	5.60*	6	2.82*	1	0.94	49	17.16	2.86*	7.11
Acute lymphocytic			1	4.57	3	17.59*	1	17.02	0	0.00	5	0.48	10.49*	1.01
Chronic lymphocytic			1	0.31	0	0.00	1	1.16	0	0.00	2	7.01	0.29	-1.12
Acute non-lymphocytic			5	1.90	30	14.62*	3	4.10	0	0.00	38	5.79	6.57*	7.20
Chronic myeloid			0	0.00	1	1.23	1	3.55	1	6.99	3	2.29	1.31	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 21,407 PYR and for male cancers on 23,362 PYR.

Table 6.1.10: Risk of subsequent primary cancers after non-small cell carcinoma of the lung or bronchus, 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			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	2,226	1.15*	4,436	1.40*	2,524	1.56*	1,710	1.47*	10,896	7,870.85	1.38*	69.10
All excluding same site	1,845	1.15*	3,198	1.22*	1,593	1.18*	1,104	1.13*	7,740	6,545.03	1.18*	27.30
Buccal cavity, pharynx	159	2.92*	204	2.40*	97	2.41*	36	1.41	496	205.19	2.42*	6.64
Lip	13	1.53	17	1.32	6	0.99	3	0.78	39	31.24	1.25	0.18
Tongue	38	3.59*	44	2.62*	14	1.75	10	1.93	106	40.54	2.61*	1.50
Salivary gland	12	2.85*	6	0.88	6	1.71	1	0.39	25	17.14	1.46	0.18
Mouth	43	3.04*	59	2.66*	32	3.07*	9	1.37	143	53.35	2.68*	2.05
Nasopharynx	2	0.93	8	2.43*	1	0.67	1	1.07	12	7.88	1.52	0.09
Tonsil	24	4.63*	25	3.11*	11	3.00*	5	2.25	65	19.12	3.40*	1.05
Oropharynx	3	1.88	5	2.00	2	1.70	2	2.74	12	5.99	2.00*	0.14
Hypopharynx	15	2.50*	32	3.44*	17	3.96*	5	1.94	69	22.18	3.11*	1.07
Digestive system	543	1.27*	922	1.34*	443	1.26*	321	1.28*	2,229	1,718.24	1.30*	11.67
Esophagus	48	2.01*	91	2.42*	64	3.46*	47	3.66*	250	92.93	2.69*	3.59
Stomach	77	1.65*	111	1.53*	36	1.01	25	1.01	249	179.25	1.39*	1.59
Small intestine	21	3.58*	20	2.06*	6	1.19	0	0.00*	47	24.38	1.93*	0.52
Colon	201	1.07	380	1.24*	188	1.18*	159	1.38*	928	769.46	1.21*	3.62
Rectum, rectosigmoid junction	88	1.17	148	1.23*	65	1.09	32	0.79	333	295.28	1.13*	0.86
Anus, anal canal	3	0.83	4	0.66	2	0.65	4	1.83	13	14.96	0.87	-0.04
Liver	10	0.66	13	0.53*	13	1.04	11	1.19	47	61.39	0.77	-0.33
Gallbladder	5	0.95	5	0.58	3	0.68	1	0.32	14	21.39	0.65	-0.17
Bile ducts, other biliary	11	1.26	18	1.25	4	0.52	12	1.99*	45	36.75	1.22	0.19
Pancreas	78	1.52*	128	1.54*	59	1.40*	27	0.89	292	206.46	1.41*	1.95
Respiratory system	450	1.24*	1,379	2.36*	1,001	3.44*	642	3.22*	3,472	1,437.99	2.41*	46.46
Nose, nasal cavity, ear	4	1.38	11	2.39*	5	2.19	2	1.26	22	11.37	1.94*	0.24
Larynx	65	2.49*	118	2.91*	61	3.21*	34	2.90*	278	97.33	2.86*	4.13
Lung, bronchus	381	1.14*	1,238	2.30*	931	3.46*	606	3.27*	3,156	1,325.82	2.38*	41.81
Female breast	134	0.88	296	1.09	152	1.07	124	1.22*	706	667.61	1.06	2.15
Female genital system	39	0.57*	105	0.86	53	0.87	31	0.74	228	293.48	0.78*	-3.66
Cervix uteri	5	0.66	13	1.03	6	1.02	2	0.55	26	29.81	0.87	-0.21
Corpus uteri	16	0.44*	48	0.75*	23	0.72	13	0.61	100	152.98	0.65*	-2.96
Ovary	14	0.70	40	1.12	20	1.09	14	1.08	88	86.80	1.01	0.07
Vagina	2	1.97	1	0.56	2	2.16	0	0.00	5	4.41	1.13	0.03
Vulva	1	0.35	2	0.39	1	0.35	2	0.90	6	13.12	0.46*	-0.40
Male genital system	418	0.98	690	1.00	354	0.97	231	0.84*	1,693	1,752.94	0.97	-2.32
Prostate	417	0.99	679	1.00	352	0.97	230	0.85*	1,678	1,737.31	0.97	-2.29
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	4.66	0.00*	-0.18
Urinary system	263	1.66*	432	1.69*	195	1.48*	138	1.45*	1,028	640.20	1.61*	8.86
Urinary bladder	154	1.40*	300	1.70*	148	1.62*	108	1.61*	710	445.47	1.59*	6.04
Kidney parenchyma	92	2.41*	109	1.75*	39	1.22	21	0.92	261	155.20	1.68*	2.42
Renal pelvis, other urinary	17	1.71	23	1.44	8	1.00	9	1.60	57	39.54	1.44*	0.40
Ureter	5	1.52	5	0.94	1	0.37	3	1.63	14	13.11	1.07	0.02
Bone, joints	1	0.62	5	1.93	1	0.80	1	1.19	8	6.30	1.27	0.04
Soft tissue including heart	9	1.25	12	1.03	8	1.35	2	0.46	31	29.18	1.06	0.04
Kaposi sarcoma	2	0.97	3	0.96	0	0.00	1	0.98	6	7.71	0.78	-0.04
Melanoma of skin	26	0.68*	43	0.67*	33	0.97	32	1.24	134	162.78	0.82*	-0.66
Eye, orbit	2	0.74	3	0.69	0	0.00	1	0.68	6	10.73	0.56	-0.11
Brain, central nervous system	12	0.63	28	0.89	6	0.39*	11	1.04	57	76.61	0.74*	-0.45
Thyroid	38	4.19*	20	1.34	7	0.96	7	1.43	72	36.17	1.99*	0.82
Lymphatic, hematopoietic	103	0.74*	229	1.00	122	1.03	91	1.05	545	572.06	0.95	-0.62
Hodgkin lymphoma	3	0.66	4	0.57	2	0.61	2	0.95	11	16.92	0.65	-0.14
Non-Hodgkin lymphoma	46	0.76	95	0.94	62	1.16	49	1.22	252	254.56	0.99	-0.06
Myeloma	23	0.92	38	0.94	17	0.81	9	0.59	87	101.68	0.86	-0.34
Leukemia	31	0.63*	92	1.16	41	1.01	31	1.05	195	198.90	0.98	-0.09
Acute lymphocytic	1	0.77	1	0.47	1	0.92	0	0.00	3	5.24	0.57	-0.05
Chronic lymphocytic	8	0.40*	23	0.71	11	0.67	12	1.03	54	80.33	0.67*	-0.60
Acute non-lymphocytic	14	0.85	51	1.91*	20	1.44	14	1.37	99	67.27	1.47*	0.72
Chronic myeloid	4	0.60	11	1.04	6	1.10	4	0.99	25	26.74	0.93	-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 178,906 PYR and for male cancers on 258,864 PYR.

Lung and Bronchus Small Cell Carcinoma, Both Sexes, Radiotherapy

Table 6.1.11: Risk of subsequent primary cancers after small cell carcinoma of the lung or bronchus, 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			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	126	0.71*	213	1.41*	92	1.93*	52	2.71*	483	394.10	1.23*	33.73
All excluding same site	111	0.76*	166	1.32*	52	1.31	29	1.80*	358	326.93	1.10	11.79
Buccal cavity, pharynx	6	1.15	15	3.72*	6	5.22*	2	4.62	29	10.84	2.68*	6.89
Lip	0	0.00	1	1.90	1	6.61	0	0.00	2	1.47	1.36	0.20
Tongue	3	2.86	2	2.41	1	4.15	0	0.00	6	2.21	2.71	1.44
Salivary gland	0	0.00	0	0.00	0	0.00	0	0.00	0	0.85	0.00	-0.32
Mouth	1	0.72	7	6.50*	2	6.53	0	0.00	10	2.89	3.47*	2.70
Nasopharynx	0	0.00	1	6.14	0	0.00	0	0.00	1	0.43	2.32	0.22
Tonsil	0	0.00	1	2.47	0	0.00	1	24.43	2	1.08	1.84	0.35
Oropharynx	0	0.00	1	8.28	2	58.52*	0	0.00	3	0.32	9.24*	1.02
Hypopharynx	1	1.73	1	2.31	0	0.00	1	23.79	3	1.17	2.56	0.69
Digestive system	26	0.70	40	1.30	20	2.08*	10	2.58*	96	81.48	1.18	5.51
Esophagus	2	0.94	4	2.38	4	8.02*	1	5.15	11	4.50	2.45*	2.47
Stomach	3	0.79	5	1.68	5	5.65*	0	0.00	13	8.01	1.62	1.89
Small intestine	0	0.00	2	4.21	0	0.00	0	0.00	2	1.23	1.62	0.29
Colon	8	0.50*	12	0.88	4	0.92	7	3.92*	31	35.95	0.86	-1.88
Rectum, rectosigmoid junction	5	0.74	8	1.45	5	3.00	1	1.52	19	14.63	1.30	1.66
Anus, anal canal	0	0.00	0	0.00	0	0.00	0	0.00	0	0.85	0.00	-0.32
Liver	0	0.00	1	0.91	0	0.00	0	0.00	1	2.88	0.35	-0.71
Gallbladder	0	0.00	0	0.00	1	7.79	0	0.00	1	1.04	0.96	-0.01
Bile ducts, other biliary	0	0.00	0	0.00	0	0.00	0	0.00	0	1.67	0.00	-0.63
Pancreas	7	1.55	8	2.12	1	0.85	0	0.00	16	9.93	1.61	2.30
Respiratory system	24	0.71	54	1.96*	43	5.07*	25	7.54*	146	72.98	2.00*	27.70
Nose, nasal cavity, ear	1	3.74	0	0.00	0	0.00	0	0.00	1	0.58	1.73	0.16
Larynx	8	3.22*	7	3.76*	3	5.76*	2	10.58*	20	5.06	3.95*	5.67
Lung, bronchus	15	0.49*	47	1.85*	40	5.08*	23	7.44*	125	67.17	1.86*	21.94
Female breast	7	0.38*	18	0.98	3	0.49	6	2.43	34	45.21	0.75	-8.94
Female genital system	2	0.24*	3	0.37	2	0.76	2	1.97	9	20.29	0.44*	-9.01
Cervix uteri	0	0.00	1	1.19	0	0.00	1	12.80	2	2.08	0.96	-0.07
Corpus uteri	0	0.00*	2	0.46	2	1.42	1	1.84	5	10.89	0.46	-4.70
Ovary	2	0.83	0	0.00	0	0.00	0	0.00	2	5.91	0.34	-3.12
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.26	0.00	-0.21
Vulva	0	0.00	0	0.00	0	0.00	0	0.00	0	0.75	0.00	-0.60
Male genital system	28	0.82	24	0.85	3	0.33*	0	0.00*	55	74.79	0.74*	-14.32
Prostate	28	0.83	23	0.82	3	0.34*	0	0.00	54	74.02	0.73*	-14.48
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.29	0.00	-0.21
Urinary system	16	1.16	18	1.59	8	2.23	3	2.04	45	30.22	1.49*	5.61
Urinary bladder	8	0.86	13	1.71	7	2.90*	3	3.02	31	20.34	1.52*	4.05
Kidney parenchyma	6	1.66	4	1.30	1	1.04	0	0.00	11	8.04	1.37	1.12
Renal pelvis, other urinary	2	2.32	1	1.45	0	0.00	0	0.00	3	1.85	1.62	0.44
Ureter	1	3.54	0	0.00	0	0.00	0	0.00	1	0.60	1.66	0.15
Bone, joints	0	0.00	0	0.00	0	0.00	0	0.00	0	0.34	0.00	-0.13
Soft tissue including heart	0	0.00	1	1.77	0	0.00	0	0.00	1	1.48	0.68	-0.18
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.40	0.00	-0.15
Melanoma of skin	4	1.03	1	0.29	3	2.67	0	0.00	8	8.99	0.89	-0.38
Eye, orbit	0	0.00	0	0.00	0	0.00	0	0.00	0	0.58	0.00	-0.22
Brain, central nervous system	0	0.00	4	2.48	0	0.00	0	0.00	4	4.25	0.94	-0.09
Thyroid	4	3.99*	2	2.24	0	0.00	0	0.00	6	2.26	2.66	1.42
Lymphatic, hematopoietic	6	0.48	32	2.98*	4	1.16	3	2.10	45	28.18	1.60*	6.38
Hodgkin lymphoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.94	0.00	-0.36
Non-Hodgkin lymphoma	2	0.35	10	2.00	1	0.61	2	2.87	15	12.98	1.16	0.77
Myeloma	1	0.46	0	0.00	0	0.00	0	0.00	1	4.87	0.21	-1.47
Leukemia	3	0.71	22	6.21*	3	2.66	1	2.16	29	9.39	3.09*	7.44
Acute lymphocytic	0	0.00	1	9.83	1	31.50	0	0.00	2	0.27	7.51	0.66
Chronic lymphocytic	1	0.57	0	0.00	0	0.00	0	0.00	1	3.84	0.26	-1.08
Acute non-lymphocytic	1	0.71	21	17.55*	2	5.17	0	0.00	24	3.16	7.60*	7.91
Chronic myeloid	0	0.00	0	0.00	0	0.00	1	16.24	1	1.25	0.80	-0.10

*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 12,540 PYR and for male cancers on 13,819 PYR.

Lung and Bronchus Small Cell Carcinoma, Both Sexes, No Radiotherapy

Table 6.1.12: Risk of subsequent primary cancers after small cell carcinoma of the lung or bronchus, 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			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	108	0.73*	111	1.07	74	1.83*	28	1.17	321	315.76	1.02	2.84
All excluding same site	90	0.73*	92	1.07	50	1.48*	24	1.19	256	262.73	0.97	-3.66
Buccal cavity, pharynx	4	1.00	4	1.50	1	1.06	2	4.05	11	8.12	1.36	1.57
Lip	0	0.00	1	2.63	0	0.00	1	14.80	2	1.18	1.70	0.45
Tongue	1	1.25	1	1.87	0	0.00	1	9.95	3	1.63	1.84	0.75
Salivary gland	0	0.00	0	0.00	0	0.00	0	0.00	0	0.67	0.00	-0.36
Mouth	2	1.89	1	1.41	1	3.93	0	0.00	4	2.16	1.85	1.00
Nasopharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.31	0.00	-0.17
Tonsil	0	0.00	0	0.00	0	0.00	0	0.00	0	0.76	0.00	-0.41
Oropharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.24	0.00	-0.13
Hypopharynx	0	0.00	1	3.53	0	0.00	0	0.00	1	0.86	1.16	0.07
Digestive system	21	0.66	28	1.27	16	1.83*	11	2.10*	76	67.64	1.12	4.54
Esophagus	4	2.36	1	0.88	2	4.64	0	0.00	7	3.50	2.00	1.90
Stomach	2	0.63	2	0.93	1	1.22	1	2.07	6	6.66	0.90	-0.36
Small intestine	0	0.00	0	0.00	0	0.00	0	0.00	0	0.98	0.00	-0.53
Colon	11	0.78	12	1.20	7	1.73	5	2.02	35	30.59	1.14	2.40
Rectum, rectosigmoid junction	2	0.35	5	1.29	3	2.04	2	2.43	12	11.79	1.02	0.11
Anus, anal canal	0	0.00	0	0.00	0	0.00	1	19.63	1	0.65	1.55	0.19
Liver	1	0.91	1	1.34	1	3.44	0	0.00	3	2.31	1.30	0.38
Gallbladder	0	0.00	0	0.00	0	0.00	0	0.00	0	0.89	0.00	-0.48
Bile ducts, other biliary	0	0.00	0	0.00	0	0.00	0	0.00	0	1.41	0.00	-0.77
Pancreas	1	0.26	5	1.87	2	1.87	2	3.04	10	8.21	1.22	0.97
Respiratory system	22	0.80	24	1.28	29	4.06*	6	1.49	81	57.39	1.41*	12.82
Nose, nasal cavity, ear	1	4.64	0	0.00	0	0.00	0	0.00	1	0.45	2.22	0.30
Larynx	3	1.57	5	4.09*	5	11.71*	2	9.39*	15	3.77	3.98*	6.10
Lung, bronchus	18	0.71	19	1.10	24	3.61*	4	1.06	65	53.03	1.23	6.50
Female breast	2	0.14*	5	0.42*	5	1.03	1	0.33	13	34.05	0.38*	-23.73
Female genital system	0	0.00*	4	0.76	2	0.96	2	1.60	8	15.03	0.53	-7.93
Cervix uteri	0	0.00	2	3.88	0	0.00	0	0.00	2	1.47	1.36	0.60
Corpus uteri	0	0.00	0	0.00	1	0.92	0	0.00	1	7.96	0.13*	-7.85
Ovary	0	0.00	2	1.30	1	1.60	0	0.00	3	4.44	0.68	-1.62
Vagina	0	0.00	0	0.00	0	0.00	1	48.05	1	0.21	4.66	0.89
Vulva	0	0.00	0	0.00	0	0.00	1	14.68	1	0.64	1.57	0.41
Male genital system	24	0.79	15	0.76	7	0.91	3	0.67	49	62.59	0.78	-14.24
Prostate	24	0.79	15	0.76	7	0.91	3	0.68	49	62.03	0.79	-13.66
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.17	0.00	-0.18
Urinary system	14	1.19	5	0.63	6	1.95	2	1.12	27	24.61	1.10	1.30
Urinary bladder	7	0.86	5	0.92	4	1.90	2	1.63	18	16.85	1.07	0.62
Kidney parenchyma	5	1.69	0	0.00	1	1.28	0	0.00	6	6.21	0.97	-0.12
Renal pelvis, other urinary	2	2.73	0	0.00	1	5.14	0	0.00	3	1.54	1.95	0.79
Ureter	0	0.00	0	0.00	1	15.54	0	0.00	1	0.51	1.95	0.27
Bone, joints	0	0.00	0	0.00	0	0.00	0	0.00	0	0.26	0.00	-0.14
Soft tissue including heart	2	3.70	1	2.65	0	0.00	0	0.00	3	1.15	2.60	1.00
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.29	0.00	-0.16
Melanoma of skin	3	0.96	1	0.46	0	0.00	1	2.01	5	6.63	0.75	-0.89
Eye, orbit	0	0.00	0	0.00	0	0.00	0	0.00	0	0.45	0.00	-0.24
Brain, central nervous system	0	0.00	0	0.00	0	0.00	0	0.00	0	3.21	0.00	-1.74
Thyroid	3	4.10	1	1.88	2	10.14*	0	0.00	6	1.57	3.81*	2.40
Lymphatic, hematopoietic	10	0.94	21	2.81*	4	1.34	0	0.00	35	22.87	1.53*	6.59
Hodgkin lymphoma	2	5.92	0	0.00	0	0.00	0	0.00	2	0.69	2.91	0.71
Non-Hodgkin lymphoma	3	0.63	6	1.76	1	0.73	0	0.00	10	10.40	0.96	-0.22
Myeloma	0	0.00	3	2.30	0	0.00	0	0.00	3	4.01	0.75	-0.55
Leukemia	5	1.37	12	4.74*	3	3.00	0	0.00	20	7.78	2.57*	6.64
Acute lymphocytic	1	10.10	2	29.06*	0	0.00	0	0.00	3	0.21	14.28*	1.52
Chronic lymphocytic	0	0.00	0	0.00	1	2.47	0	0.00	1	3.18	0.31	-1.18
Acute non-lymphocytic	4	3.28	9	10.52*	1	2.91	0	0.00	14	2.63	5.33*	6.18
Chronic myeloid	0	0.00	1	2.98	1	7.54	0	0.00	2	1.03	1.94	0.53

*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 8,867 PYR and for male cancers on 9,543 PYR.

Lung and Bronchus Non-small Cell Carcinoma, Both Sexes, Radiotherapy

Table 6.1.13: Risk of subsequent primary cancers after non-small cell carcinoma of the lung or bronchus, 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			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	979	1.04	1,287	1.31*	514	1.73*	264	1.78*	3,044	2,369.95	1.28*	48.20
All excluding same site	887	1.14*	1,015	1.25*	336	1.36*	164	1.32*	2,402	1,959.92	1.23*	31.61
Buccal cavity, pharynx	76	2.77*	61	2.25*	23	2.98*	5	1.41	165	65.89	2.50*	7.09
Lip	3	0.71	5	1.25	0	0.00	0	0.00	8	9.79	0.82	-0.13
Tongue	19	3.54*	9	1.67	6	3.84*	0	0.00	34	13.03	2.61*	1.50
Salivary gland	7	3.42*	2	0.94	0	0.00	0	0.00	9	5.15	1.75	0.28
Mouth	14	1.97*	20	2.85*	6	3.03*	3	3.37	43	17.01	2.53*	1.86
Nasopharynx	2	1.81	4	3.67	0	0.00	0	0.00	6	2.64	2.27	0.24
Tonsil	16	5.97*	9	3.42*	4	5.35*	0	0.00	29	6.40	4.53*	1.62
Oropharynx	2	2.44	2	2.46	1	4.29	0	0.00	5	1.97	2.54	0.22
Hypopharynx	8	2.58*	9	2.96*	5	5.86*	2	5.23	24	7.37	3.25*	1.19
Digestive system	264	1.28*	278	1.31*	116	1.85*	51	1.68*	709	512.12	1.38*	14.08
Esophagus	23	1.90*	28	2.29*	22	6.13*	19	10.77*	92	29.70	3.10*	4.45
Stomach	41	1.80*	36	1.58*	7	1.08	5	1.66	89	55.04	1.62*	2.43
Small intestine	10	3.50*	9	2.95*	1	1.06	0	0.00	20	7.33	2.73*	0.91
Colon	93	1.04	109	1.17	58	2.09*	17	1.26	277	224.27	1.24*	3.77
Rectum, rectosigmoid junction	40	1.09	45	1.21	10	0.93	2	0.39	97	89.63	1.08	0.53
Anus, anal canal	0	0.00	0	0.00	1	1.76	0	0.00	1	4.44	0.23	-0.25
Liver	2	0.26*	5	0.63	5	2.06	1	0.81	13	19.15	0.68	-0.44
Gallbladder	2	0.83	2	0.79	1	1.37	1	2.94	6	6.01	1.00	0.00
Bile ducts, other biliary	6	1.46	5	1.14	3	2.22	0	0.00	14	10.55	1.33	0.25
Pancreas	46	1.86*	39	1.53*	7	0.93	5	1.37	97	61.38	1.58*	2.55
Respiratory system	124	0.69*	325	1.76*	199	3.65*	104	3.92*	752	446.72	1.68*	21.83
Nose, nasal cavity, ear	3	2.11	5	3.46*	1	2.36	0	0.00	9	3.49	2.58*	0.39
Larynx	29	2.16*	44	3.33*	18	4.82*	4	2.33	95	32.11	2.96*	4.50
Lung, bronchus	92	0.56*	272	1.60*	178	3.55*	100	4.08*	642	410.03	1.57*	16.59
Female breast	59	0.87	72	0.94	24	0.99	15	1.27	170	180.92	0.94	-2.15
Female genital system	17	0.55*	27	0.79	8	0.77	7	1.44	59	80.31	0.73*	-4.20
Cervix uteri	3	0.85	5	1.35	1	0.95	2	4.50	11	8.74	1.26	0.45
Corpus uteri	4	0.25*	9	0.51*	6	1.11	4	1.58	23	41.91	0.55*	-3.73
Ovary	8	0.89	10	1.00	0	0.00	1	0.68	19	23.52	0.81	-0.89
Vagina	1	2.25	1	2.02	1	6.59	0	0.00	3	1.16	2.58	0.36
Vulva	0	0.00	1	0.71	0	0.00	0	0.00	1	3.29	0.30	-0.45
Male genital system	200	0.94	219	0.97	57	0.81	32	0.85	508	545.76	0.93	-4.24
Prostate	199	0.94	216	0.97	57	0.82	32	0.86	504	540.57	0.93	-4.10
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	1.69	0.00	-0.19
Urinary system	129	1.67*	169	2.11*	43	1.79*	19	1.57	360	193.45	1.86*	11.91
Urinary bladder	73	1.36*	106	1.92*	28	1.69*	14	1.67	221	133.73	1.65*	6.24
Kidney parenchyma	47	2.49*	52	2.62*	14	2.31*	5	1.62	118	47.87	2.46*	5.02
Renal pelvis, other urinary	9	1.86	11	2.24*	1	0.70	0	0.00	21	11.85	1.77*	0.65
Ureter	4	2.50	3	1.85	1	2.13	0	0.00	8	3.92	2.04	0.29
Bone, joints	0	0.00	2	2.48	0	0.00	0	0.00	2	1.94	1.03	0.00
Soft tissue including heart	7	2.00	6	1.64	1	0.91	0	0.00	14	8.81	1.59	0.37
Kaposi sarcoma	2	1.86	2	1.85	0	0.00	0	0.00	4	2.60	1.54	0.10
Melanoma of skin	14	0.75	13	0.64	5	0.77	4	1.16	36	48.99	0.73	-0.93
Eye, orbit	1	0.76	1	0.75	0	0.00	0	0.00	2	3.24	0.62	-0.09
Brain, central nervous system	9	0.95	8	0.82	1	0.34	1	0.71	19	23.55	0.81	-0.33
Thyroid	21	4.72*	6	1.28	2	1.42	0	0.00	29	11.20	2.59*	1.27
Lymphatic, hematopoietic	44	0.66*	78	1.11	23	1.08	18	1.68	163	169.60	0.96	-0.47
Hodgkin lymphoma	1	0.44	1	0.45	0	0.00	1	3.56	3	5.37	0.56	-0.17
Non-Hodgkin lymphoma	11	0.38*	31	1.00	16	1.66	12	2.41*	70	74.78	0.94	-0.34
Myeloma	13	1.07	10	0.79	0	0.00*	3	1.59	26	30.56	0.85	-0.33
Leukemia	19	0.80	36	1.47*	7	0.96	2	0.56	64	58.90	1.09	0.36
Acute lymphocytic	1	1.57	1	1.51	0	0.00	0	0.00	2	1.59	1.26	0.03
Chronic lymphocytic	3	0.31*	5	0.50	1	0.34	0	0.00	9	23.90	0.38*	-1.07
Acute non-lymphocytic	10	1.27	26	3.17*	4	1.63	2	1.63	42	19.75	2.13*	1.59
Chronic myeloid	3	0.94	1	0.30	2	2.04	0	0.00	6	7.94	0.76	-0.14

*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 50,724 PYR and for male cancers on 89,113 PYR.

Lung and Bronchus Non-small Cell Carcinoma, Both Sexes, No Radiotherapy

Table 6.1.14: Risk of subsequent primary cancers after non-small cell carcinoma of the lung or bronchus, 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			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	1,247	1.26*	3,149	1.45*	2,010	1.52*	1,446	1.43*	7,852	5,500.90	1.43*	78.91
All excluding same site	958	1.16*	2,183	1.21*	1,257	1.14*	940	1.10*	5,338	4,585.11	1.16*	25.27
Buccal cavity, pharynx	83	3.08*	143	2.47*	74	2.28*	31	1.40	331	139.31	2.38*	6.43
Lip	10	2.33*	12	1.36	6	1.21	3	0.89	31	21.44	1.45	0.32
Tongue	19	3.63*	35	3.07*	8	1.24	10	2.25*	72	27.51	2.62*	1.49
Salivary gland	5	2.31	4	0.85	6	2.09	1	0.44	16	11.99	1.33	0.13
Mouth	29	4.13*	39	2.57*	26	3.08*	6	1.05	100	36.34	2.75*	2.14
Nasopharynx	0	0.00	4	1.81	1	0.84	1	1.25	6	5.24	1.15	0.03
Tonsil	8	3.19*	16	2.96*	7	2.39	5	2.66	36	12.72	2.83*	0.78
Oropharynx	1	1.29	3	1.78	1	1.06	2	3.21	7	4.02	1.74	0.10
Hypopharynx	7	2.42	23	3.66*	12	3.49*	3	1.37	45	14.80	3.04*	1.01
Digestive system	279	1.26*	644	1.35*	327	1.13*	270	1.23*	1,520	1,206.12	1.26*	10.54
Esophagus	25	2.12*	63	2.48*	42	2.81*	28	2.53*	158	63.23	2.50*	3.18
Stomach	36	1.51*	75	1.51*	29	1.00	20	0.92	160	124.21	1.29*	1.20
Small intestine	11	3.66*	11	1.65	5	1.22	0	0.00	27	17.06	1.58*	0.33
Colon	108	1.09	271	1.27*	130	0.99	142	1.40*	651	545.19	1.19*	3.55
Rectum, rectosigmoid junction	48	1.25	103	1.24*	55	1.13	30	0.85	236	205.65	1.15*	1.02
Anus, anal canal	3	1.59	4	0.95	1	0.40	4	2.10	12	10.52	1.14	0.05
Liver	8	1.04	8	0.48*	8	0.80	10	1.25	34	42.25	0.80	-0.28
Gallbladder	3	1.05	3	0.49	2	0.55	0	0.00	8	15.38	0.52	-0.25
Bile ducts, other biliary	5	1.08	13	1.30	1	0.16*	12	2.25*	31	26.20	1.18	0.16
Pancreas	32	1.20	89	1.55*	52	1.51*	22	0.83	195	145.07	1.34*	1.68
Respiratory system	326	1.79*	1,054	2.64*	802	3.39*	538	3.11*	2,720	991.27	2.74*	58.02
Nose, nasal cavity, ear	1	0.68	6	1.90	4	2.15	2	1.45	13	7.87	1.65	0.17
Larynx	36	2.85*	74	2.71*	43	2.82*	30	2.99*	183	65.23	2.81*	3.95
Lung, bronchus	289	1.73*	966	2.62*	753	3.44*	506	3.14*	2,514	915.79	2.75*	53.64
Female breast	75	0.90	224	1.15*	128	1.09	109	1.21	536	486.69	1.10*	3.85
Female genital system	22	0.58*	78	0.89	45	0.89	24	0.65*	169	213.17	0.79*	-3.45
Cervix uteri	2	0.49	8	0.89	5	1.03	0	0.00	15	21.07	0.71	-0.47
Corpus uteri	12	0.61	39	0.85	17	0.64	9	0.48*	77	111.07	0.69*	-2.66
Ovary	6	0.55	30	1.17	20	1.31	13	1.14	69	63.28	1.09	0.46
Vagina	1	1.75	0	0.00	1	1.29	0	0.00	2	3.24	0.62	-0.10
Vulva	1	0.60	1	0.26	1	0.42	2	0.99	5	9.83	0.51	-0.38
Male genital system	218	1.03	471	1.02	297	1.01	199	0.84*	1,185	1,207.18	0.98	-1.31
Prostate	218	1.04	463	1.01	295	1.01	198	0.84*	1,174	1,196.74	0.98	-1.34
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	2.97	0.00	-0.17
Urinary system	134	1.66*	263	1.50*	152	1.41*	119	1.43*	668	446.76	1.50*	7.43
Urinary bladder	81	1.44*	194	1.60*	120	1.60*	94	1.60*	489	311.74	1.57*	5.95
Kidney parenchyma	45	2.34*	57	1.34*	25	0.97	16	0.81	143	107.33	1.33*	1.20
Renal pelvis, other urinary	8	1.56	12	1.09	7	1.06	9	1.83	36	27.69	1.30	0.28
Ureter	1	0.59	2	0.54	0	0.00	3	1.85	6	9.20	0.65	-0.11
Bone, joints	1	1.22	3	1.68	1	0.98	1	1.37	6	4.36	1.38	0.06
Soft tissue including heart	2	0.54	6	0.75	7	1.45	2	0.52	17	20.37	0.83	-0.11
Kaposi sarcoma	0	0.00	1	0.49	0	0.00	1	1.13	2	5.11	0.39	-0.10
Melanoma of skin	12	0.61	30	0.68*	28	1.01	28	1.25	98	113.80	0.86	-0.53
Eye, orbit	1	0.72	2	0.66	0	0.00	1	0.78	4	7.48	0.53	-0.12
Brain, central nervous system	3	0.31*	20	0.93	5	0.39*	10	1.09	38	53.06	0.72*	-0.51
Thyroid	17	3.69*	14	1.36	5	0.85	7	1.66	43	24.97	1.72*	0.61
Lymphatic, hematopoietic	59	0.82	151	0.96	99	1.02	73	0.96	382	402.46	0.95	-0.69
Hodgkin lymphoma	2	0.88	3	0.62	2	0.75	1	0.55	8	11.56	0.69	-0.12
Non-Hodgkin lymphoma	35	1.12	64	0.92	46	1.06	37	1.05	182	179.78	1.01	0.07
Myeloma	10	0.78	28	1.00	17	1.00	6	0.45*	61	71.13	0.86	-0.34
Leukemia	12	0.47*	56	1.02	34	1.01	29	1.12	131	139.99	0.94	-0.30
Acute lymphocytic	0	0.00	0	0.00	1	1.13	0	0.00	1	3.64	0.27	-0.09
Chronic lymphocytic	5	0.48	18	0.81	10	0.74	12	1.17	45	56.43	0.80	-0.38
Acute non-lymphocytic	4	0.47	25	1.35	16	1.40	12	1.33	57	47.52	1.20	0.32
Chronic myeloid	1	0.29	10	1.36	4	0.89	4	1.13	19	18.80	1.01	0.01

*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 128,182 PYR and for male cancers on 169,751 PYR.

Larynx Both Sexes

Table 6.2.1: Characteristics of patients with an initial cancer of the larynx, both sexes, SEER 1973-2000.

Characteristics	Males		Females		Total	
	No.	%	No.	%	No.	%
Number of patients with 1st primary cancer						
Total	19,574	100.0	4,369	100.0	23,943	100.0
Initial treatment						
Any radiation	14,370	73.4	3,247	74.3	17,617	73.6
With surgery	6,764	34.6	1,584	36.3	8,348	34.9
Without surgery	7,606	38.9	1,663	38.1	9,269	38.7
No radiation	5,204	26.6	1,122	25.7	6,326	26.4
With surgery	4,196	21.4	874	20.0	5,070	21.2
Without surgery	1,008	5.1	248	5.7	1,256	5.2
Race						
White	16,580	84.7	3,657	83.7	20,237	84.5
Black	2,347	12.0	587	13.4	2,934	12.3
Other	597	3.0	108	2.5	705	2.9
Unknown	50	0.3	17	0.4	67	0.3
Age at 1st primary cancer diagnosis, years						
< 30	31	0.2	32	0.7	63	0.3
30–49	1,991	10.2	556	12.7	2,547	10.6
50–69	12,216	62.4	2,681	61.4	14,897	62.2
70–79	4,209	21.5	834	19.1	5,043	21.1
≥ 80	1,127	5.8	266	6.1	1,393	5.8
Number of patients with one or more primary cancers						
One primary cancer only	15,688	80.1	3,615	82.7	19,303	80.6
1st and 2nd cancers	3,408	17.4	667	15.3	4,075	17.0
1st, 2nd, and 3rd cancers	426	2.2	78	1.8	504	2.1
1st, 2nd, 3rd, and additional cancers	52	0.3	9	0.2	61	0.3
Other statistics						
Median age at 1st cancer diagnosis	63.7	—	62.7	—	63.5	—
Median year of 1st cancer diagnosis	1986.5	—	1988.0	—	1986.8	—
Median person-years at risk	4.5	—	4.3	—	4.5	—
Percent histologically confirmed*						
Both 1st and 2nd cancers	—	94.9	—	96.6	—	95.1
1st, 2nd, and additional cancers	—	94.1	—	96.0	—	94.4
1st cancer only	—	4.8	—	3.4	—	4.5

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

Table 6.2.2: Risk of subsequent primary cancers after cancer of the larynx, 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			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	515	1.75*	2,057	1.94*	1,477	1.68*	1,228	1.44*	5,277	3,087.41	1.71*	140.47
All excluding same site	509	1.76*	2,032	1.95*	1,461	1.68*	1,215	1.45*	5,217	3,042.66	1.71*	139.49
Buccal cavity, pharynx	45	4.66*	188	5.72*	143	5.87*	118	5.90*	494	86.88	5.69*	26.12
Lip	2	1.26	6	1.11	3	0.74	6	1.76	17	14.46	1.18	0.16
Tongue	20	10.73*	55	8.64*	35	7.35*	31	7.84*	141	16.95	8.32*	7.96
Salivary gland	0	0.00	3	1.25	8	4.04*	4	2.02	15	7.03	2.13*	0.51
Mouth	12	4.92*	64	7.79*	40	6.69*	23	4.86*	139	21.36	6.51*	7.55
Nasopharynx	1	2.77	3	2.52	4	4.73*	2	3.01	10	3.06	3.27*	0.45
Tonsil	3	3.10	25	7.78*	19	8.30*	19	10.76*	66	8.24	8.01*	3.71
Oropharynx	2	6.81	4	4.03*	8	10.92*	4	6.76*	18	2.61	6.90*	0.99
Hypopharynx	5	4.46*	13	3.42*	18	6.46*	20	9.34*	56	9.85	5.68*	2.96
Digestive system	74	1.15	336	1.46*	263	1.41*	221	1.26*	894	656.65	1.36*	15.23
Esophagus	13	3.14*	65	4.52*	50	4.41*	40	3.81*	168	40.37	4.16*	8.19
Stomach	12	1.63	26	1.01	28	1.38	17	0.92	83	71.87	1.15	0.71
Small intestine	1	1.13	4	1.26	5	1.87	5	1.89	15	9.38	1.60	0.36
Colon	27	0.99	124	1.26*	97	1.18	91	1.15	339	286.85	1.18*	3.35
Rectum, rectosigmoid junction	8	0.68	46	1.10	39	1.18	25	0.85	118	116.21	1.02	0.12
Anus, anal canal	0	0.00	2	1.13	2	1.42	3	2.35	7	4.95	1.41	0.13
Liver	3	1.25	19	2.22*	11	1.56	15	2.15*	48	24.96	1.92*	1.48
Gallbladder	0	0.00	4	1.79	5	2.78	0	0.00	9	6.33	1.42	0.17
Bile ducts, other biliary	1	0.81	7	1.54	2	0.51	5	1.20	15	13.83	1.08	0.08
Pancreas	9	1.18	38	1.41	23	1.06	18	0.88	88	76.56	1.15	0.73
Respiratory system	198	3.30*	887	4.18*	578	3.43*	433	2.85*	2,096	592.96	3.53*	96.42
Nose, nasal cavity, ear	2	4.31	15	9.32*	3	2.39	0	0.00	20	4.47	4.48*	1.00
Larynx	6	1.21	25	1.48	16	1.27	13	1.27	60	44.75	1.34*	0.98
Lung, bronchus	188	3.45*	841	4.36*	559	3.62*	419	2.99*	2,007	542.33	3.70*	93.96
Female breast	10	0.94	49	1.34	30	1.03	25	0.97	114	101.75	1.12	4.35
Female genital system	7	1.38	22	1.29	18	1.41	9	0.85	56	45.45	1.23	3.75
Cervix uteri	1	1.59	5	2.53	2	1.52	1	1.04	9	4.89	1.84	1.46
Corpus uteri	2	0.75	6	0.67	6	0.90	6	1.10	20	23.75	0.84	-1.33
Ovary	3	2.11	6	1.24	8	2.12	2	0.62	19	13.28	1.43	2.03
Vagina	0	0.00	2	8.33	1	5.26	0	0.00	3	0.67	4.48	0.83
Vulva	0	0.00	2	3.10	1	1.85	0	0.00	3	1.90	1.58	0.39
Male genital system	85	1.13	264	0.93	213	0.84*	208	0.79*	770	874.15	0.88*	-8.15
Prostate	84	1.12	262	0.94	210	0.84*	206	0.79*	762	866.46	0.88*	-8.18
Testis	0	0.00	0	0.00	0	0.00	1	2.59	1	2.31	0.43	-0.10
Urinary system	34	1.30	140	1.47*	108	1.36*	96	1.22	378	279.43	1.35*	6.32
Urinary bladder	19	1.03	91	1.35*	81	1.43*	72	1.27	263	198.90	1.32*	4.11
Kidney parenchyma	15	2.40*	41	1.83*	19	1.04	19	1.09	94	64.37	1.46*	1.90
Renal pelvis, other urinary	0	0.00	8	1.40	8	1.75	5	1.16	21	16.16	1.30	0.31
Ureter	0	0.00	3	1.57	4	2.58	1	0.69	8	5.42	1.48	0.17
Bone, joints	0	0.00	0	0.00	0	0.00	3	5.18*	3	2.41	1.25	0.04
Soft tissue including heart	3	2.69	2	0.51	2	0.63	2	0.64	9	11.32	0.79	-0.15
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	3.60	0.00	-0.23
Melanoma of skin	2	0.32	14	0.62	16	0.83	12	0.60	44	67.95	0.65*	-1.54
Eye, orbit	0	0.00	0	0.00	3	2.53	0	0.00	3	4.22	0.71	-0.08
Brain, central nervous system	2	0.64	10	0.92	7	0.83	7	0.93	26	29.93	0.87	-0.25
Thyroid	13	10.53*	9	2.15	1	0.32	2	0.74	25	11.27	2.22*	0.88
Lymphatic, hematopoietic	26	1.23	89	1.17	60	0.95	50	0.81	225	221.56	1.02	0.22
Hodgkin lymphoma	1	1.29	3	1.18	4	2.20	3	2.04	11	6.61	1.66	0.28
Non-Hodgkin lymphoma	13	1.46	45	1.39*	29	1.06	26	0.94	113	96.13	1.18	1.08
Myeloma	5	1.33	15	1.11	6	0.54	5	0.46	31	39.32	0.79	-0.53
Leukemia	7	0.92	26	0.95	21	0.93	16	0.73	70	79.49	0.88	-0.61
Acute lymphocytic	0	0.00	0	0.00	0	0.00	2	3.80	2	2.05	0.98	0.00
Chronic lymphocytic	1	0.32	2	0.18*	5	0.54	3	0.34*	11	32.63	0.34*	-1.39
Acute non-lymphocytic	6	2.43	14	1.56	9	1.21	6	0.81	35	26.33	1.33	0.56
Chronic myeloid	0	0.00	5	1.37	5	1.67	3	1.01	13	10.64	1.22	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. EAR for female cancers is based on 28,157 PYR and for male cancers on 127,719 PYR.

Larynx Both Sexes, Long-term Follow-up

Table 6.2.3: Risk of subsequent primary cancers after cancer of the larynx, both sexes, long-term follow-up, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis											
	<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	O/E	EAR
All subsequent cancers	4,049	1.81*	795	1.53*	335	1.36*	98	1.16	5,277	3,087.41	1.71*	140.47
All excluding same site	4,002	1.82*	788	1.54*	331	1.36*	96	1.15	5,217	3,042.66	1.71*	139.49
Buccal cavity, pharynx	376	5.62*	76	5.97*	33	6.01*	9	4.98*	494	86.88	5.69*	26.12
Lip	11	1.00	5	2.32	1	1.07	0	0.00	17	14.46	1.18	0.16
Tongue	110	8.47*	18	7.18*	13	11.92*	0	0.00	141	16.95	8.32*	7.96
Salivary gland	11	2.18*	2	1.69	2	3.48	0	0.00	15	7.03	2.13*	0.51
Mouth	116	6.97*	18	5.95*	5	3.89*	0	0.00	139	21.36	6.51*	7.55
Nasopharynx	8	3.34*	1	2.33	0	0.00	1	17.69	10	3.06	3.27*	0.45
Tonsil	47	7.26*	14	12.28*	4	8.42*	1	6.69	66	8.24	8.01*	3.71
Oropharynx	14	6.94*	2	5.27	2	12.42*	0	0.00	18	2.61	6.90*	0.99
Hypopharynx	36	4.67*	12	8.57*	5	8.79*	3	17.36*	56	9.85	5.68*	2.96
Digestive system	673	1.40*	151	1.40*	57	1.14	13	0.72	894	656.65	1.36*	15.23
Esophagus	128	4.28*	26	4.03*	9	3.01*	5	4.75*	168	40.37	4.16*	8.19
Stomach	66	1.24	16	1.40	1	0.19	0	0.00	83	71.87	1.15	0.71
Small intestine	10	1.48	2	1.25	2	2.61	1	3.56	15	9.38	1.60	0.36
Colon	248	1.19*	55	1.14	31	1.38	5	0.61	339	286.85	1.18*	3.35
Rectum, rectosigmoid junction	93	1.07	17	0.92	7	0.85	1	0.35	118	116.21	1.02	0.12
Anus, anal canal	4	1.09	3	3.82	0	0.00	0	0.00	7	4.95	1.41	0.13
Liver	33	1.83*	12	2.88*	2	0.98	1	1.33	48	24.96	1.92*	1.48
Gallbladder	9	1.93	0	0.00	0	0.00	0	0.00	9	6.33	1.42	0.17
Bile ducts, other biliary	10	1.03	4	1.65	1	0.80	0	0.00	15	13.83	1.08	0.08
Pancreas	70	1.25	14	1.13	4	0.69	0	0.00	88	76.56	1.15	0.73
Respiratory system	1,663	3.77*	292	3.09*	102	2.38*	39	2.66*	2,096	592.96	3.53*	96.42
Nose, nasal cavity, ear	20	6.01*	0	0.00	0	0.00	0	0.00	20	4.47	4.48*	1.00
Larynx	47	1.36*	7	1.06	4	1.44	2	2.31	60	44.75	1.34*	0.98
Lung, bronchus	1,588	3.95*	285	3.28*	97	2.44*	37	2.71*	2,007	542.33	3.70*	93.96
Female breast	89	1.17	19	1.21	6	0.80	0	0.00	114	101.75	1.12	4.35
Female genital system	47	1.35	8	1.21	1	0.33	0	0.00	56	45.45	1.23	3.75
Cervix uteri	8	2.04	1	1.60	0	0.00	0	0.00	9	4.89	1.84	1.46
Corpus uteri	14	0.77	6	1.77	0	0.00	0	0.00	20	23.75	0.84	-1.33
Ovary	17	1.69	1	0.50	1	1.07	0	0.00	19	13.28	1.43	2.03
Vagina	3	6.01*	0	0.00	0	0.00	0	0.00	3	0.67	4.48	0.83
Vulva	3	2.19	0	0.00	0	0.00	0	0.00	3	1.90	1.58	0.39
Male genital system	562	0.92*	124	0.77*	66	0.85	18	0.72	770	874.15	0.88*	-8.15
Prostate	556	0.92*	124	0.78*	64	0.83	18	0.73	762	866.46	0.88*	-8.18
Testis	0	0.00	0	0.00	1	10.32	0	0.00	1	2.31	0.43	-0.10
Urinary system	282	1.40*	60	1.27	27	1.19	9	1.07	378	279.43	1.35*	6.32
Urinary bladder	191	1.34*	45	1.32	21	1.27	6	0.97	263	198.90	1.32*	4.11
Kidney parenchyma	75	1.60*	11	1.03	5	1.00	3	1.70	94	64.37	1.46*	1.90
Renal pelvis, other urinary	16	1.35	4	1.52	1	0.82	0	0.00	21	16.16	1.30	0.31
Ureter	7	1.76	1	1.13	0	0.00	0	0.00	8	5.42	1.48	0.17
Bone, joints	0	0.00	2	5.56	1	6.12	0	0.00	3	2.41	1.25	0.04
Soft tissue including heart	7	0.85	2	1.07	0	0.00	0	0.00	9	11.32	0.79	-0.15
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	3.60	0.00	-0.23
Melanoma of skin	32	0.67*	8	0.68	3	0.51	1	0.43	44	67.95	0.65*	-1.54
Eye, orbit	3	0.96	0	0.00	0	0.00	0	0.00	3	4.22	0.71	-0.08
Brain, central nervous system	19	0.85	5	1.07	1	0.47	1	1.36	26	29.93	0.87	-0.25
Thyroid	23	2.69*	0	0.00	2	2.64	0	0.00	25	11.27	2.22*	0.88
Lymphatic, hematopoietic	175	1.10	25	0.67*	23	1.28	2	0.30	225	221.56	1.02	0.22
Hodgkin lymphoma	8	1.56	1	1.07	1	2.47	1	7.51	11	6.61	1.66	0.28
Non-Hodgkin lymphoma	87	1.27*	13	0.79	13	1.60	0	0.00	113	96.13	1.18	1.08
Myeloma	26	0.91	4	0.60	1	0.32	0	0.00	31	39.32	0.79	-0.53
Leukemia	54	0.94	7	0.53	8	1.27	1	0.43	70	79.49	0.88	-0.61
Acute lymphocytic	0	0.00	1	2.98	1	6.82	0	0.00	2	2.05	0.98	0.00
Chronic lymphocytic	8	0.34*	2	0.37	1	0.40	0	0.00	11	32.63	0.34*	-1.39
Acute non-lymphocytic	29	1.54*	3	0.67	2	0.92	1	1.22	35	26.33	1.33	0.56
Chronic myeloid	10	1.31	1	0.56	2	2.31	0	0.00	13	10.64	1.22	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. EAR for female cancers is based on 28,157 PYR and for male cancers on 127,719 PYR.

Table 6.2.4: Risk of subsequent primary cancers after cancer of the larynx, females, SEER 1973-2000.

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
All subsequent cancers	94	2.62*	338	2.71*	238	2.36*	180	1.97*	850	352.54	2.41*	176.67
All excluding same site	93	2.61*	333	2.69*	236	2.36*	178	1.96*	840	350.82	2.39*	173.73
Buccal cavity, pharynx	11	15.74*	32	13.40*	24	13.04*	21	13.61*	88	6.47	13.60*	28.96
Lip	0	0.00	0	0.00	0	0.00	0	0.00	0	0.39	0.00	-0.14
Tongue	7	45.51*	9	17.11*	8	19.67*	4	11.77*	28	1.43	19.63*	9.44
Salivary gland	0	0.00	0	0.00	2	10.57*	1	5.79	3	0.67	4.47	0.83
Mouth	4	16.88*	11	13.55*	3	4.76	6	11.23*	24	2.21	10.84*	7.74
Nasopharynx	0	0.00	1	10.89	1	14.41	0	0.00	2	0.25	8.15	0.62
Tonsil	0	0.00	5	20.72*	4	23.27*	3	23.54*	12	0.61	19.57*	4.04
Oropharynx	0	0.00	1	15.20	2	40.42*	2	51.88*	5	0.17	28.92*	1.71
Hypopharynx	0	0.00	3	16.16*	1	7.26	4	37.44*	8	0.48	16.50*	2.67
Digestive system	13	1.71	59	2.20*	33	1.48*	26	1.25	131	77.46	1.69*	19.01
Esophagus	3	12.14*	17	19.81*	7	10.15*	5	8.04*	32	2.42	13.24*	10.51
Stomach	1	1.75	3	1.51	2	1.24	3	2.02	9	5.67	1.59	1.18
Small intestine	0	0.00	1	2.46	1	2.92	0	0.00	2	1.20	1.67	0.28
Colon	5	1.34	18	1.36	10	0.90	9	0.86	42	38.43	1.09	1.27
Rectum, rectosigmoid junction	1	0.79	11	2.51*	4	1.14	2	0.65	18	12.24	1.47	2.05
Rectum	1	1.22	8	2.82*	3	1.32	1	0.49	13	7.96	1.63	1.79
Anus, anal canal	0	0.00	0	0.00	0	0.00	0	0.00	0	1.10	0.00	-0.39
Liver	0	0.00	0	0.00	2	4.14	0	0.00	2	1.70	1.18	0.11
Gallbladder	0	0.00	1	1.71	0	0.00	0	0.00	1	1.65	0.61	-0.23
Bile ducts, other biliary	0	0.00	0	0.00	0	0.00	1	2.07	1	1.64	0.61	-0.23
Pancreas	3	2.99	8	2.25	7	2.34	6	2.10	24	10.39	2.31*	4.83
Respiratory system	31	6.26*	143	8.12*	107	7.26*	80	5.76*	361	51.18	7.05*	110.03
Nose, nasal cavity, ear	0	0.00	1	6.01	0	0.00	0	0.00	1	0.47	2.12	0.19
Larynx	1	5.22	5	7.78*	2	4.09	2	5.09	10	1.72	5.83*	2.94
Lung, bronchus	30	6.38*	137	8.18*	105	7.45*	78	5.85*	350	48.87	7.16*	106.94
Female breast	10	0.94	49	1.34	30	1.03	25	0.97	114	101.75	1.12	4.35
Female genital system	7	1.38	22	1.29	18	1.41	9	0.85	56	45.45	1.23	3.75
Cervix uteri	1	1.59	5	2.53	2	1.52	1	1.04	9	4.89	1.84	1.46
Corpus uteri	2	0.75	6	0.67	6	0.90	6	1.10	20	23.75	0.84	-1.33
Ovary	3	2.11	6	1.24	8	2.12	2	0.62	19	13.28	1.43	2.03
Vagina	0	0.00	2	8.33	1	5.26	0	0.00	3	0.67	4.48	0.83
Vulva	0	0.00	2	3.10	1	1.85	0	0.00	3	1.90	1.58	0.39
Urinary system	5	3.08	12	2.09*	6	1.25	2	0.44	25	16.77	1.49	2.92
Urinary bladder	1	1.08	7	2.12	2	0.72	1	0.38	11	9.66	1.14	0.48
Kidney parenchyma	4	7.09*	4	2.01	3	1.82	1	0.64	12	5.76	2.08*	2.22
Renal pelvis, other urinary	0	0.00	1	2.15	1	2.58	0	0.00	2	1.35	1.49	0.23
Ureter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.40	0.00	-0.14
Bone, joints	0	0.00	0	0.00	0	0.00	1	13.13	1	0.31	3.25	0.25
Soft tissue including heart	0	0.00	0	0.00	0	0.00	0	0.00	0	1.36	0.00	-0.48
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.11	0.00	-0.04
Melanoma of skin	0	0.00	0	0.00	2	1.06	2	1.14	4	6.69	0.60	-0.96
Eye, orbit	0	0.00	0	0.00	0	0.00	0	0.00	0	0.50	0.00	-0.18
Brain, central nervous system	0	0.00	0	0.00	2	1.89	1	1.09	3	3.70	0.81	-0.25
Thyroid	5	14.75*	1	0.90	0	0.00	0	0.00	6	2.95	2.03	1.08
Lymphatic, hematopoietic	3	1.17	11	1.22	12	1.58	7	0.97	33	26.36	1.25	2.36
Hodgkin lymphoma	0	0.00	0	0.00	1	4.57	1	5.52	2	0.78	2.58	0.43
Non-Hodgkin lymphoma	0	0.00	4	0.92	8	2.17	4	1.12	16	12.83	1.25	1.13
Myeloma	2	4.23	5	3.00	2	1.45	1	0.78	10	4.81	2.08	1.84
Leukemia	1	1.29	2	0.73	1	0.44	1	0.46	5	7.96	0.63	-1.05
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.23	0.00	-0.08
Chronic lymphocytic	1	3.29	0	0.00	0	0.00	0	0.00	1	3.13	0.32	-0.76
Acute non-lymphocytic	0	0.00	2	2.07	1	1.24	1	1.29	4	2.82	1.42	0.42
Chronic myeloid	0	0.00	0	0.00	0	0.00	0	0.00	0	1.09	0.00	-0.39

*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 6.2.5: Risk of subsequent primary cancers after cancer of the larynx, males, SEER 1973-2000.

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
Number starting interval	19,574		16,739		9,442		5,034		19,574			
Person-years in interval	15,032		49,537		35,087		28,062		127,719			
All subsequent cancers	421	1.63*	1,719	1.83*	1,239	1.59*	1,048	1.38*	4,427	2,734.88	1.62*	132.49
All excluding same site	416	1.64*	1,699	1.85*	1,225	1.60*	1,037	1.38*	4,377	2,691.84	1.63*	131.94
Buccal cavity, pharynx	34	3.79*	156	5.12*	119	5.29*	97	5.25*	406	80.41	5.05*	25.49
Lip	2	1.29	6	1.13	3	0.76	6	1.82	17	14.07	1.21	0.23
Tongue	13	7.60*	46	7.88*	27	6.20*	27	7.47*	113	15.52	7.28*	7.63
Salivary gland	0	0.00	3	1.39	6	3.35*	3	1.66	12	6.36	1.89	0.44
Mouth	8	3.64*	53	7.15*	37	6.92*	17	4.05*	115	19.15	6.01*	7.50
Nasopharynx	1	3.00	2	1.82	3	3.86	2	3.29	8	2.81	2.84*	0.41
Tonsil	3	3.35	20	6.73*	15	7.09*	16	9.77*	54	7.62	7.08*	3.63
Oropharynx	2	7.29	3	3.24	6	8.79*	2	3.62	13	2.44	5.34*	0.83
Hypopharynx	5	4.69*	10	2.77*	17	6.41*	16	7.86*	48	9.37	5.12*	3.02
Digestive system	61	1.07	277	1.37*	230	1.40*	195	1.26*	763	579.19	1.32*	14.39
Esophagus	10	2.57*	48	3.55*	43	4.03*	35	3.55*	136	37.96	3.58*	7.68
Stomach	11	1.62	23	0.97	26	1.39	14	0.83	74	66.21	1.12	0.61
Small intestine	1	1.30	3	1.08	4	1.72	5	2.17	13	8.18	1.59	0.38
Colon	22	0.93	106	1.24*	87	1.23	82	1.20	297	248.42	1.20*	3.80
Rectum, rectosigmoid junction	7	0.66	35	0.94	35	1.18	23	0.87	100	103.97	0.96	-0.31
Anus, anal canal	0	0.00	2	1.45	2	1.84	3	3.02	7	3.85	1.82	0.25
Liver	3	1.34	19	2.38*	9	1.37	15	2.31*	46	23.26	1.98*	1.78
Gallbladder	0	0.00	3	1.82	5	3.78*	0	0.00	8	4.69	1.71	0.26
Bile ducts, other biliary	1	0.92	7	1.75	2	0.58	4	1.09	14	12.19	1.15	0.14
Pancreas	6	0.91	30	1.28	16	0.86	12	0.69	64	66.17	0.97	-0.17
Respiratory system	167	3.03*	744	3.83*	471	3.06*	353	2.55*	1,735	541.78	3.20*	93.43
Nose, nasal cavity, ear	2	4.81	14	9.70*	3	2.68	0	0.00	19	3.99	4.76*	1.17
Larynx	5	1.05	20	1.23	14	1.15	11	1.12	50	43.04	1.16	0.55
Lung, bronchus	158	3.17*	704	3.99*	454	3.23*	341	2.68*	1,657	493.46	3.36*	91.10
Male breast	0	0.00	2	1.14	2	1.39	1	0.70	5	5.12	0.98	-0.01
Male genital system	85	1.13	264	0.93	213	0.84*	208	0.79*	770	874.15	0.88*	-8.15
Prostate	84	1.12	262	0.94	210	0.84*	206	0.79*	762	866.46	0.88*	-8.18
Testis	0	0.00	0	0.00	0	0.00	1	2.59	1	2.31	0.43	-0.10
Urinary system	29	1.18	128	1.43*	102	1.37*	94	1.27*	353	262.66	1.34*	7.07
Urinary bladder	18	1.03	84	1.31*	79	1.47*	71	1.31*	252	189.24	1.33*	4.91
Kidney parenchyma	11	1.93	37	1.82*	16	0.96	18	1.13	82	58.60	1.40*	1.83
Renal pelvis, other urinary	0	0.00	7	1.34	7	1.67	5	1.27	19	14.81	1.28	0.33
Ureter	0	0.00	3	1.70	4	2.79	1	0.75	8	5.02	1.59	0.23
Bone, joints	0	0.00	0	0.00	0	0.00	2	3.97	2	2.10	0.95	-0.01
Soft tissue including heart	3	3.07	2	0.58	2	0.72	2	0.72	9	9.96	0.90	-0.08
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	3.49	0.00	-0.27
Melanoma of skin	2	0.36	14	0.69	14	0.81	10	0.55	40	61.26	0.65*	-1.66
Eye, orbit	0	0.00	0	0.00	3	2.87	0	0.00	3	3.71	0.81	-0.06
Brain, central nervous system	2	0.74	10	1.05	5	0.68	6	0.91	23	26.23	0.88	-0.25
Thyroid	8	8.94*	8	2.61*	1	0.43	2	0.99	19	8.32	2.28*	0.84
Lymphatic, hematopoietic	23	1.24	78	1.17	48	0.87	43	0.79	192	195.19	0.98	-0.25
Hodgkin lymphoma	1	1.46	3	1.33	3	1.88	2	1.55	9	5.83	1.54	0.25
Non-Hodgkin lymphoma	13	1.70	41	1.47*	21	0.89	22	0.91	97	83.30	1.16	1.07
Myeloma	3	0.91	10	0.84	4	0.41	4	0.42	21	34.52	0.61*	-1.06
Leukemia	6	0.88	24	0.97	20	0.99	15	0.76	65	71.54	0.91	-0.51
Acute lymphocytic	0	0.00	0	0.00	0	0.00	2	4.29	2	1.81	1.10	0.01
Chronic lymphocytic	0	0.00	2	0.19*	5	0.59	3	0.38	10	29.50	0.34*	-1.53
Acute non-lymphocytic	6	2.74*	12	1.50	8	1.20	5	0.75	31	23.50	1.32	0.59
Chronic myeloid	0	0.00	5	1.53	5	1.87	3	1.12	13	9.55	1.36	0.27

*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 6.2.6: Risk of subsequent primary cancers after cancer of the larynx, 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			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	23	4.31*	99	4.05*	66	2.03*	168	1.90*	356	150.91	2.36*	91.36
All excluding same site	22	4.21*	94	3.93*	66	2.07*	165	1.90*	347	147.98	2.34*	88.65
Buccal cavity, pharynx	4	12.76*	20	14.22*	12	7.06*	27	9.02*	63	6.41	9.82*	25.21
Lip	0	0.00	0	0.00	0	0.00	0	0.00	0	0.64	0.00	-0.28
Tongue	2	29.94*	4	13.09*	3	8.04*	7	10.54*	16	1.41	11.35*	6.50
Salivary gland	0	0.00	0	0.00	1	10.04	1	4.75	2	0.42	4.78	0.70
Mouth	1	12.07	8	21.57*	2	4.46	4	5.38*	15	1.64	9.12*	5.95
Nasopharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.30	0.00	-0.13
Tonsil	0	0.00	6	29.38*	2	8.38	3	8.07*	11	0.86	12.78*	4.52
Oropharynx	0	0.00	0	0.00	1	19.10	2	19.31*	3	0.21	14.34*	1.24
Hypopharynx	1	35.89	0	0.00	2	10.44*	8	22.87*	11	0.71	15.53*	4.58
Digestive system	1	1.07	11	2.46*	5	0.81	22	1.37	39	27.70	1.41*	5.03
Esophagus	0	0.00	4	9.56*	2	3.53	5	3.81*	11	2.38	4.61*	3.84
Stomach	0	0.00	2	3.79	1	1.49	0	0.00	3	2.89	1.04	0.05
Small intestine	0	0.00	0	0.00	0	0.00	1	3.26	1	0.57	1.75	0.19
Colon	1	3.16	1	0.65	0	0.00	9	1.42	11	10.42	1.06	0.26
Rectum, rectosigmoid junction	0	0.00	2	2.32	1	0.81	3	0.97	6	5.36	1.12	0.28
Anus, anal canal	0	0.00	0	0.00	0	0.00	0	0.00	0	0.39	0.00	-0.18
Liver	0	0.00	1	4.22	1	3.26	3	3.82	5	1.38	3.62*	1.61
Gallbladder	0	0.00	0	0.00	0	0.00	0	0.00	0	0.20	0.00	-0.09
Bile ducts, other biliary	0	0.00	0	0.00	0	0.00	1	3.12	1	0.51	1.95	0.22
Pancreas	0	0.00	1	1.84	0	0.00	0	0.00	1	3.32	0.30	-1.03
Respiratory system	9	9.46*	51	10.79*	35	5.20*	60	3.53*	155	29.43	5.27*	55.93
Nose, nasal cavity, ear	0	0.00	1	16.36	0	0.00	0	0.00	1	0.28	3.53	0.32
Larynx	1	8.79	5	9.15*	0	0.00	3	1.96	9	2.93	3.07*	2.70
Lung, bronchus	8	9.78*	45	10.98*	35	5.93*	57	3.72*	145	26.13	5.55*	52.95
Female breast	0	0.00	3	1.15	5	1.80	5	1.01	13	10.99	1.18	3.92
Female genital system	3	11.71*	2	1.87	0	0.00	3	1.49	8	4.47	1.79	6.91
Cervix uteri	0	0.00	1	3.49	0	0.00	1	3.69	2	0.87	2.29	2.21
Corpus uteri	1	12.09	0	0.00	0	0.00	2	1.96	3	2.00	1.50	1.95
Ovary	2	26.99*	0	0.00	0	0.00	0	0.00	2	1.33	1.51	1.32
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.05	0.00	-0.10
Vulva	0	0.00	1	32.82	0	0.00	0	0.00	1	0.13	7.63	1.70
Male genital system	0	0.00	1	0.48	0	0.00*	21	0.86	22	31.46	0.70	-5.46
Prostate	0	0.00	1	0.57	0	0.00*	21	0.87	22	30.51	0.72	-4.91
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.71	0.00	-0.41
Urinary system	1	2.49	4	2.08	1	0.37	9	1.24	15	12.30	1.22	1.20
Urinary bladder	0	0.00	0	0.00	1	0.64	7	1.51	8	7.46	1.07	0.24
Kidney parenchyma	1	5.81	4	5.06*	0	0.00	2	0.87	7	4.29	1.63	1.21
Renal pelvis, other urinary	0	0.00	0	0.00	0	0.00	0	0.00	0	0.55	0.00	-0.25
Ureter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.16	0.00	-0.07
Bone, joints	0	0.00	0	0.00	0	0.00	0	0.00	0	0.20	0.00	-0.09
Soft tissue including heart	0	0.00	0	0.00	0	0.00	0	0.00	0	0.80	0.00	-0.36
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.98	0.00	-0.43
Melanoma of skin	0	0.00	0	0.00	0	0.00	5	1.77	5	5.97	0.84	-0.43
Eye, orbit	0	0.00	0	0.00	0	0.00	0	0.00	0	0.27	0.00	-0.12
Brain, central nervous system	0	0.00	0	0.00	1	1.70	2	1.91	3	2.32	1.30	0.30
Thyroid	1	8.91	2	4.73	1	2.58	1	1.72	5	1.51	3.32*	1.56
Lymphatic, hematopoietic	2	3.51	3	1.25	4	1.42	7	1.13	16	11.98	1.34	1.79
Hodgkin lymphoma	1	14.88	0	0.00	0	0.00	0	0.00	1	0.74	1.34	0.11
Non-Hodgkin lymphoma	1	3.38	2	1.63	2	1.42	2	0.67	7	5.93	1.18	0.48
Myeloma	0	0.00	1	3.45	0	0.00	0	0.00	1	1.80	0.56	-0.36
Leukemia	0	0.00	0	0.00	2	2.50	5	2.62	7	3.50	2.00	1.56
Acute lymphocytic	0	0.00	0	0.00	0	0.00	1	14.68	1	0.16	6.35	0.38
Chronic lymphocytic	0	0.00	0	0.00	0	0.00	1	1.24	1	1.36	0.74	-0.16
Acute non-lymphocytic	0	0.00	0	0.00	1	4.17	3	4.96	4	1.11	3.61	1.29
Chronic myeloid	0	0.00	0	0.00	1	8.17	0	0.00	1	0.52	1.91	0.21

*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 5,112 PYR and for male cancers on 17,338 PYR.

Larynx

Both Sexes, 50-69 Years of Age

Table 6.2.7: Risk of subsequent primary cancers after cancer of the larynx, 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			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	286	1.88*	1,323	2.14*	1,105	1.78*	967	1.43*	3,681	2,063.40	1.78*	153.51
All excluding same site	284	1.91*	1,308	2.16*	1,090	1.79*	957	1.43*	3,639	2,030.38	1.79*	152.66
Buccal cavity, pharynx	32	5.25*	132	5.99*	117	6.51*	88	5.74*	369	61.45	6.01*	29.19
Lip	2	2.42	5	1.60	1	0.36	6	2.25	14	9.36	1.49	0.44
Tongue	14	11.47*	35	7.92*	27	7.46*	24	7.90*	100	12.30	8.13*	8.32
Salivary gland	0	0.00	1	0.74	6	4.64*	3	2.01	10	4.47	2.24*	0.52
Mouth	9	5.67*	46	8.17*	36	8.13*	17	4.73*	108	15.25	7.08*	8.80
Nasopharynx	0	0.00	3	3.57	3	4.69	2	4.01	8	2.22	3.60*	0.55
Tonsil	2	2.94	18	7.71*	17	9.67*	16	12.26*	53	6.08	8.72*	4.45
Oropharynx	2	9.75*	3	4.14	6	10.35*	1	2.19	12	1.97	6.10*	0.95
Hypopharynx	3	3.95	12	4.37*	14	6.35*	12	7.17*	41	7.38	5.55*	3.19
Digestive system	41	1.29	204	1.60*	197	1.57*	173	1.26*	615	422.43	1.46*	18.27
Esophagus	8	3.23*	50	5.38*	35	4.18*	33	3.99*	126	28.42	4.43*	9.26
Stomach	8	2.25	13	0.93	20	1.49	16	1.12	57	45.33	1.26	1.11
Small intestine	1	2.13	1	0.53	3	1.60	3	1.45	8	6.30	1.27	0.16
Colon	10	0.80	70	1.35*	75	1.41*	70	1.13	225	179.28	1.26*	4.34
Rectum, rectosigmoid junction	6	0.96	26	1.05	31	1.34	17	0.73	80	77.35	1.03	0.25
Anus, anal canal	0	0.00	1	0.88	2	1.98	3	3.11	6	3.40	1.76	0.25
Liver	2	1.54	10	1.96	7	1.39	12	2.16*	31	16.98	1.83*	1.33
Gallbladder	0	0.00	2	1.83	3	2.68	0	0.00	5	3.76	1.33	0.12
Bile ducts, other biliary	0	0.00	6	2.61	1	0.41	4	1.25	11	8.51	1.29	0.24
Pancreas	6	1.56	24	1.58*	19	1.29	13	0.81	62	49.73	1.25	1.16
Respiratory system	116	3.38*	607	4.52*	445	3.55*	343	2.80*	1,511	416.29	3.63*	103.89
Nose, nasal cavity, ear	1	3.80	10	10.26*	3	3.49	0	0.00	14	2.97	4.71*	1.05
Larynx	2	0.62	15	1.27	15	1.52	10	1.24	42	33.01	1.27	0.85
Lung, bronchus	111	3.61*	577	4.77*	427	3.74*	332	2.93*	1,447	379.35	3.81*	101.32
Female breast	8	1.23	33	1.38	20	0.97	17	0.91	78	69.59	1.12	4.58
Female genital system	0	0.00	17	1.46	14	1.50	5	0.64	36	32.08	1.12	2.14
Cervix uteri	0	0.00	4	3.04	2	2.24	0	0.00	6	3.24	1.85	1.50
Corpus uteri	0	0.00	5	0.78	4	0.79	3	0.73	12	17.44	0.69	-2.96
Ovary	0	0.00	5	1.55	7	2.59*	2	0.84	14	9.19	1.52	2.62
Vagina	0	0.00	1	6.97	1	7.94	0	0.00	2	0.43	4.61	0.85
Vulva	0	0.00	1	2.94	0	0.00	0	0.00	1	1.14	0.88	-0.08
Male genital system	32	0.93	148	0.95	150	0.83*	174	0.81*	504	585.60	0.86*	-9.38
Prostate	31	0.91	148	0.96	148	0.83*	172	0.81*	499	580.88	0.86*	-9.41
Testis	0	0.00	0	0.00	0	0.00	1	4.28	1	1.35	0.74	-0.04
Urinary system	21	1.61	79	1.48*	77	1.42*	80	1.28*	257	182.83	1.41*	7.04
Urinary bladder	11	1.27	51	1.41*	55	1.46*	60	1.33*	177	127.67	1.39*	4.68
Kidney parenchyma	10	2.77*	23	1.64*	17	1.27	15	1.10	65	44.71	1.45*	1.93
Renal pelvis, other urinary	0	0.00	5	1.60	5	1.60	5	1.45	15	10.45	1.44	0.43
Ureter	0	0.00	2	1.93	2	1.89	1	0.86	5	3.51	1.42	0.14
Bone, joints	0	0.00	0	0.00	0	0.00	3	6.87*	3	1.63	1.84	0.13
Soft tissue including heart	1	1.72	2	0.90	0	0.00	1	0.42	4	7.31	0.55	-0.31
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	1.75	0.00	-0.17
Melanoma of skin	2	0.56	11	0.79	13	0.97	6	0.39*	32	46.22	0.69*	-1.35
Eye, orbit	0	0.00	0	0.00	2	2.38	0	0.00	2	2.86	0.70	-0.08
Brain, central nervous system	1	0.53	8	1.13	6	0.97	4	0.68	19	21.07	0.90	-0.20
Thyroid	10	12.80*	5	1.80	0	0.00	1	0.51	16	7.79	2.05*	0.78
Lymphatic, hematopoietic	15	1.42	50	1.18	38	0.90	40	0.83	143	143.34	1.00	-0.03
Hodgkin lymphoma	0	0.00	0	0.00	3	2.38	3	2.72	6	4.41	1.36	0.15
Non-Hodgkin lymphoma	9	1.95	26	1.41	17	0.92	23	1.06	75	63.28	1.19	1.11
Myeloma	3	1.58	9	1.18	4	0.53	3	0.35	19	25.75	0.74	-0.64
Leukemia	3	0.84	15	1.03	14	0.95	11	0.65	43	49.90	0.86	-0.65
Acute lymphocytic	0	0.00	0	0.00	0	0.00	1	2.55	1	1.28	0.78	-0.03
Chronic lymphocytic	0	0.00	1	0.16*	4	0.64	2	0.29	7	20.94	0.33*	-1.32
Acute non-lymphocytic	3	2.73	6	1.30	5	1.03	3	0.51	17	16.45	1.03	0.05
Chronic myeloid	0	0.00	3	1.59	3	1.59	3	1.30	9	6.55	1.37	0.23

*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 18,362 PYR and for male cancers on 87,013 PYR.

Table 6.2.8: Risk of subsequent primary cancers after cancer of the larynx, 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			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	206	1.50*	635	1.51*	306	1.34*	93	1.08	1,240	873.10	1.42*	130.79
All excluding same site	203	1.49*	630	1.52*	305	1.34*	93	1.08	1,231	864.29	1.42*	130.72
Buccal cavity, pharynx	9	2.77*	36	3.83*	14	3.00*	3	1.78	62	19.02	3.26*	15.32
Lip	0	0.00	1	0.46	2	1.75	0	0.00	3	4.46	0.67	-0.52
Tongue	4	6.94*	16	9.77*	5	6.46*	0	0.00	25	3.24	7.72*	7.76
Salivary gland	0	0.00	2	2.07	1	1.69	0	0.00	3	2.14	1.40	0.31
Mouth	2	2.61	10	4.51*	2	1.82	2	5.14	16	4.47	3.58*	4.11
Nasopharynx	1	10.14	0	0.00	1	8.08	0	0.00	2	0.54	3.71	0.52
Tonsil	1	4.11	1	1.48	0	0.00	0	0.00	2	1.30	1.54	0.25
Oropharynx	0	0.00	1	4.49	1	9.99	1	32.80	3	0.43	6.93*	0.92
Hypopharynx	1	3.00	1	1.09	2	5.09	0	0.00	4	1.76	2.27	0.80
Digestive system	32	1.01	121	1.24*	61	1.11	26	1.19	240	206.52	1.16*	11.93
Esophagus	5	3.15*	11	2.36*	13	5.40*	2	2.21	31	9.56	3.24*	7.64
Stomach	4	1.08	11	0.98	7	1.13	1	0.40	23	23.66	0.97	-0.24
Small intestine	0	0.00	3	2.51	2	3.04	1	3.77	6	2.51	2.39	1.24
Colon	16	1.11	53	1.17	22	0.83	12	1.11	103	97.16	1.06	2.08
Rectum, rectosigmoid junction	2	0.37	18	1.11	7	0.81	5	1.59	32	33.50	0.96	-0.53
Anus, anal canal	0	0.00	1	1.80	0	0.00	0	0.00	1	1.16	0.87	-0.06
Liver	1	0.95	8	2.50*	3	1.76	0	0.00	12	6.59	1.82	1.93
Gallbladder	0	0.00	2	1.80	2	3.15	0	0.00	4	2.37	1.69	0.58
Bile ducts, other biliary	1	1.50	1	0.46	1	0.74	0	0.00	3	4.81	0.62	-0.64
Pancreas	3	0.82	13	1.16	4	0.64	5	2.03	25	23.52	1.06	0.53
Respiratory system	73	2.95*	229	3.13*	98	2.66*	30	2.41*	430	147.24	2.92*	100.80
Nose, nasal cavity, ear	1	5.34	4	6.97*	0	0.00	0	0.00	5	1.21	4.12*	1.35
Larynx	3	1.87	5	1.10	1	0.49	0	0.00	9	8.81	1.02	0.07
Lung, bronchus	69	3.01*	219	3.22*	97	2.82*	30	2.57*	415	136.84	3.03*	99.16
Female breast	2	0.58	13	1.30	5	0.88	3	1.46	23	21.17	1.09	3.92
Female genital system	4	2.64	3	0.70	4	1.74	1	1.23	12	8.91	1.35	6.61
Cervix uteri	1	7.22	0	0.00	0	0.00	0	0.00	1	0.78	1.29	0.48
Corpus uteri	1	1.31	1	0.47	2	1.85	1	2.91	5	4.30	1.16	1.49
Ovary	1	2.20	1	0.77	1	1.37	0	0.00	3	2.76	1.09	0.51
Vagina	0	0.00	1	11.63	0	0.00	0	0.00	1	0.19	5.38	1.74
Vulva	0	0.00	0	0.00	1	5.55	0	0.00	1	0.63	1.59	0.79
Male genital system	53	1.30	115	0.92	63	0.94	13	0.54*	244	257.08	0.95	-5.60
Prostate	53	1.31	113	0.91	62	0.93	13	0.54*	241	255.08	0.94	-6.03
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.25	0.00	-0.11
Urinary system	12	0.94	57	1.42*	30	1.33	7	0.78	106	84.29	1.26*	7.74
Urinary bladder	8	0.84	40	1.33	25	1.45	5	0.72	78	63.77	1.22	5.07
Kidney parenchyma	4	1.62	14	1.87*	2	0.50	2	1.39	22	15.37	1.43	2.36
Renal pelvis, other urinary	0	0.00	3	1.21	3	2.23	0	0.00	6	5.15	1.16	0.30
Ureter	0	0.00	1	1.17	2	4.35	0	0.00	3	1.76	1.71	0.44
Bone, joints	0	0.00	0	0.00	0	0.00	0	0.00	0	0.57	0.00	-0.20
Soft tissue including heart	2	4.15	0	0.00	2	2.32	1	2.67	5	3.22	1.55	0.64
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.87	0.00	-0.31
Melanoma of skin	0	0.00	3	0.41	3	0.70	1	0.53	7	15.77	0.44*	-3.12
Eye, orbit	0	0.00	0	0.00	1	3.56	0	0.00	1	1.08	0.92	-0.03
Brain, central nervous system	1	0.93	2	0.62	0	0.00	1	1.73	4	6.54	0.61	-0.91
Thyroid	2	5.87	2	2.03	0	0.00	0	0.00	4	1.98	2.02	0.72
Lymphatic, hematopoietic	9	0.90	36	1.16	18	1.01	3	0.41	66	66.24	1.00	-0.08
Hodgkin lymphoma	0	0.00	3	4.11	1	2.80	0	0.00	4	1.46	2.74	0.90
Non-Hodgkin lymphoma	3	0.75	17	1.35	10	1.36	1	0.34	31	26.91	1.15	1.46
Myeloma	2	1.11	5	0.89	2	0.64	2	1.60	11	11.77	0.93	-0.28
Leukemia	4	1.02	11	0.90	5	0.71	0	0.00	20	26.09	0.77	-2.17
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.61	0.00	-0.22
Chronic lymphocytic	1	0.64	1	0.21	1	0.36	0	0.00	3	10.33	0.29*	-2.61
Acute non-lymphocytic	3	2.29	8	1.94	3	1.27	0	0.00	14	8.76	1.60	1.87
Chronic myeloid	0	0.00	2	1.21	1	1.02	0	0.00	3	3.56	0.84	-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 4,683 PYR and for male cancers on 23,369 PYR.

Larynx

Both Sexes, Radiotherapy

Table 6.2.9: Risk of subsequent primary cancers after cancer of the larynx, 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			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	387	1.75*	1,525	1.95*	1,050	1.68*	839	1.52*	3,801	2,178.17	1.75*	148.48
All excluding same site	384	1.77*	1,513	1.97*	1,039	1.69*	831	1.52*	3,767	2,146.93	1.75*	148.22
Buccal cavity, pharynx	36	5.06*	133	5.61*	119	7.00*	78	6.03*	366	60.75	6.02*	27.93
Lip	2	1.74	5	1.30	2	0.71	1	0.46	10	9.99	1.00	0.00
Tongue	15	10.86*	39	8.46*	29	8.69*	19	7.44*	102	11.89	8.58*	8.24
Salivary gland	0	0.00	3	1.71	6	4.26*	2	1.55	11	4.96	2.22*	0.55
Mouth	11	6.14*	47	7.95*	35	8.41*	16	5.23*	109	14.92	7.31*	8.61
Nasopharynx	1	3.71	2	2.30	3	5.02*	1	2.29	7	2.17	3.22*	0.44
Tonsil	2	2.79	17	7.31*	14	8.77*	14	12.26*	47	5.78	8.13*	3.77
Oropharynx	1	4.61	3	4.18	8	15.60*	2	5.25	14	1.83	7.66*	1.11
Hypopharynx	4	4.83*	8	2.92*	16	8.27*	15	10.86*	43	6.89	6.25*	3.30
Digestive system	52	1.08	252	1.50*	178	1.35*	149	1.30*	631	462.98	1.36*	15.37
Esophagus	6	1.93	54	5.11*	33	4.11*	33	4.84*	126	28.53	4.42*	8.92
Stomach	11	2.00	20	1.06	17	1.18	10	0.83	58	50.80	1.14	0.66
Small intestine	0	0.00	3	1.27	2	1.05	4	2.33	9	6.64	1.36	0.22
Colon	19	0.93	92	1.27*	64	1.10	57	1.11	232	202.07	1.15*	2.74
Rectum, rectosigmoid junction	5	0.57	32	1.05	26	1.12	17	0.89	80	81.53	0.98	-0.14
Anus, anal canal	0	0.00	1	0.77	1	1.00	1	1.21	3	3.50	0.86	-0.05
Liver	2	1.10	17	2.66*	11	2.17*	10	2.19*	40	17.86	2.24*	2.03
Gallbladder	0	0.00	0	0.00	4	3.13	0	0.00	4	4.48	0.89	-0.04
Bile ducts, other biliary	1	1.07	5	1.49	2	0.72	3	1.10	11	9.82	1.12	0.11
Pancreas	8	1.41	27	1.37	17	1.11	12	0.90	64	53.98	1.19	0.92
Respiratory system	153	3.43*	657	4.25*	419	3.53*	299	3.04*	1,528	416.15	3.67*	101.73
Nose, nasal cavity, ear	1	2.90	11	9.38*	1	1.13	0	0.00	13	3.14	4.14*	0.90
Larynx	3	0.82	12	0.98	11	1.25	8	1.21	34	31.24	1.09	0.25
Lung, bronchus	147	3.63*	631	4.48*	407	3.75*	291	3.20*	1,476	380.78	3.88*	100.20
Female breast	8	0.99	35	1.30	18	0.87	22	1.31	83	72.46	1.15	5.29
Female genital system	5	1.32	14	1.12	11	1.22	8	1.15	38	32.25	1.18	2.89
Cervix uteri	1	2.13	3	2.08	1	1.08	1	1.60	6	3.46	1.73	1.28
Corpus uteri	0	0.00	5	0.76	4	0.85	5	1.39	14	16.83	0.83	-1.42
Ovary	3	2.80	3	0.84	5	1.87	2	0.94	13	9.44	1.38	1.79
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.48	0.00	-0.24
Vulva	0	0.00	2	4.17	1	2.58	0	0.00	3	1.36	2.21	0.83
Male genital system	64	1.11	188	0.89	151	0.84*	146	0.86	549	620.10	0.89*	-7.95
Prostate	63	1.11	186	0.89	149	0.83*	144	0.85	542	614.73	0.88*	-8.14
Testis	0	0.00	0	0.00	0	0.00	1	4.12	1	1.60	0.63	-0.07
Urinary system	24	1.23	111	1.59*	60	1.07	60	1.18	255	196.32	1.30*	5.37
Urinary bladder	14	1.02	76	1.55*	49	1.22	45	1.23	184	139.58	1.32*	4.06
Kidney parenchyma	10	2.13*	29	1.76*	8	0.62	11	0.97	58	45.43	1.28	1.15
Renal pelvis, other urinary	0	0.00	6	1.45	3	0.93	4	1.44	13	11.31	1.15	0.15
Ureter	0	0.00	1	0.72	2	1.84	1	1.07	4	3.79	1.05	0.02
Bone, joints	0	0.00	0	0.00	0	0.00	2	5.36	2	1.68	1.19	0.03
Soft tissue including heart	3	3.60	2	0.70	1	0.45	1	0.49	7	7.99	0.88	-0.09
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	2.53	0.00	-0.23
Melanoma of skin	2	0.43	12	0.72	13	0.95	8	0.62	35	47.94	0.73	-1.18
Eye, orbit	0	0.00	0	0.00	2	2.40	0	0.00	2	2.94	0.68	-0.09
Brain, central nervous system	2	0.87	8	1.02	5	0.84	6	1.24	21	20.95	1.00	0.00
Thyroid	9	9.70*	9	2.93*	1	0.45	0	0.00	19	7.99	2.38*	1.01
Lymphatic, hematopoietic	14	0.89	67	1.20	47	1.05	34	0.85	162	156.23	1.04	0.53
Hodgkin lymphoma	1	1.76	3	1.64	2	1.58	3	3.17	9	4.61	1.95	0.40
Non-Hodgkin lymphoma	5	0.75	34	1.43	22	1.13	16	0.89	77	67.94	1.13	0.83
Myeloma	3	1.06	12	1.21	6	0.76	4	0.56	25	27.81	0.90	-0.26
Leukemia	5	0.88	18	0.90	17	1.06	11	0.78	51	55.87	0.91	-0.45
Acute lymphocytic	0	0.00	0	0.00	0	0.00	2	5.90	2	1.44	1.39	0.05
Chronic lymphocytic	1	0.43	1	0.12*	4	0.61	1	0.18*	7	22.86	0.31*	-1.45
Acute non-lymphocytic	4	2.17	10	1.52	6	1.13	5	1.03	25	18.56	1.35	0.59
Chronic myeloid	0	0.00	4	1.50	5	2.36	1	0.52	10	7.49	1.33	0.23

*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 19,917 PYR and for male cancers on 89,381 PYR.

Table 6.2.10: Risk of subsequent primary cancers after cancer of the larynx, 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			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	128	1.74*	532	1.89*	427	1.67*	389	1.30*	1,476	909.24	1.62*	121.68
All excluding same site	125	1.73*	519	1.88*	422	1.67*	384	1.30*	1,450	895.73	1.62*	119.00
Buccal cavity, pharynx	9	3.55*	55	6.01*	24	3.27*	40	5.65*	128	26.13	4.90*	21.87
Lip	0	0.00	1	0.64	1	0.81	5	4.09*	7	4.47	1.57	0.54
Tongue	5	10.37*	16	9.12*	6	4.21*	12	8.57*	39	5.06	7.70*	7.29
Salivary gland	0	0.00	0	0.00	2	3.48	2	2.89	4	2.07	1.93	0.41
Mouth	1	1.55	17	7.36*	5	2.76	7	4.19*	30	6.44	4.66*	5.06
Nasopharynx	0	0.00	1	3.15	1	4.04	1	4.38	3	0.88	3.39	0.45
Tonsil	1	3.96	8	9.00*	5	7.24*	5	8.02*	19	2.46	7.74*	3.55
Oropharynx	1	13.07	1	3.65	0	0.00	2	9.50*	4	0.78	5.12*	0.69
Hypopharynx	1	3.42	5	4.71*	2	2.35	5	6.57*	13	2.97	4.38*	2.15
Digestive system	22	1.35	84	1.36*	85	1.56*	72	1.17	263	193.68	1.36*	14.88
Esophagus	7	6.74*	11	2.88*	17	5.13*	7	1.91	42	11.85	3.55*	6.47
Stomach	1	0.53	6	0.87	11	1.86	7	1.10	25	21.07	1.19	0.84
Small intestine	1	4.59	1	1.21	3	3.90	1	1.08	6	2.74	2.19	0.70
Colon	8	1.16	32	1.21	33	1.38	34	1.23	107	84.78	1.26*	4.77
Rectum, rectosigmoid junction	3	0.98	14	1.22	13	1.32	8	0.77	38	34.67	1.10	0.71
Anus, anal canal	0	0.00	1	2.13	1	2.44	2	4.45	4	1.45	2.75	0.55
Liver	1	1.74	2	0.92	0	0.00	5	2.09	8	7.10	1.13	0.19
Gallbladder	0	0.00	4	6.66*	1	1.92	0	0.00	5	1.85	2.70	0.68
Bile ducts, other biliary	0	0.00	2	1.70	0	0.00	2	1.39	4	4.01	1.00	0.00
Pancreas	1	0.52	11	1.52	6	0.95	6	0.85	24	22.58	1.06	0.30
Respiratory system	45	2.92*	230	3.99*	159	3.17*	134	2.50*	568	176.82	3.21*	83.98
Nose, nasal cavity, ear	1	8.37	4	9.14*	2	5.41	0	0.00	7	1.32	5.28*	1.22
Larynx	3	2.30	13	2.75*	5	1.30	5	1.37	26	13.52	1.92*	2.68
Lung, bronchus	41	2.94*	210	4.01*	152	3.32*	128	2.59*	531	161.54	3.29*	79.32
Female breast	2	0.78	14	1.48	12	1.42	3	0.34*	31	29.28	1.06	2.08
Female genital system	2	1.58	8	1.76	7	1.87	1	0.27	18	13.20	1.36	5.83
Cervix uteri	0	0.00	2	3.72	1	2.55	0	0.00	3	1.43	2.10	1.91
Corpus uteri	2	2.97	1	0.42	2	1.02	1	0.53	6	6.92	0.87	-1.11
Ovary	0	0.00	3	2.35	3	2.73	0	0.00	6	3.84	1.56	2.62
Vagina	0	0.00	2	32.15*	1	18.33	0	0.00	3	0.19	15.68*	3.41
Vulva	0	0.00	0	0.00	0	0.00	0	0.00	0	0.54	0.00	-0.66
Male genital system	21	1.16	76	1.06	62	0.87	62	0.67*	221	254.05	0.87*	-8.62
Prostate	21	1.17	76	1.07	61	0.86	62	0.67*	220	251.74	0.87*	-8.28
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.72	0.00	-0.19
Urinary system	10	1.50	29	1.13	48	2.07*	36	1.30	123	83.10	1.48*	8.57
Urinary bladder	5	1.07	15	0.83	32	1.94*	27	1.35	79	59.32	1.33*	4.23
Kidney parenchyma	5	3.21*	12	2.03*	11	2.06*	8	1.30	36	18.94	1.90*	3.66
Renal pelvis, other urinary	0	0.00	2	1.28	5	3.69*	1	0.66	8	4.85	1.65	0.68
Ureter	0	0.00	2	3.81	2	4.35	0	0.00	4	1.63	2.45	0.51
Bone, joints	0	0.00	0	0.00	0	0.00	1	4.84	1	0.72	1.38	0.06
Soft tissue including heart	0	0.00	0	0.00	1	1.09	1	0.92	2	3.33	0.60	-0.29
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	1.07	0.00	-0.23
Melanoma of skin	0	0.00	2	0.34	3	0.54	4	0.57	9	20.01	0.45*	-2.36
Eye, orbit	0	0.00	0	0.00	1	2.82	0	0.00	1	1.27	0.79	-0.06
Brain, central nervous system	0	0.00	2	0.67	2	0.79	1	0.37	5	8.98	0.56	-0.85
Thyroid	4	13.08*	0	0.00	0	0.00	2	2.10	6	3.29	1.83	0.58
Lymphatic, hematopoietic	12	2.27*	22	1.09	13	0.71	16	0.74	63	65.32	0.96	-0.50
Hodgkin lymphoma	0	0.00	0	0.00	2	3.63	0	0.00	2	2.00	1.00	0.00
Non-Hodgkin lymphoma	8	3.65*	11	1.30	7	0.89	10	1.03	36	28.18	1.28	1.68
Myeloma	2	2.14	3	0.85	0	0.00	1	0.26	6	11.52	0.52	-1.18
Leukemia	2	1.03	8	1.08	4	0.61	5	0.65	19	23.62	0.80	-0.99
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.61	0.00	-0.13
Chronic lymphocytic	0	0.00	1	0.32	1	0.36	2	0.64	4	9.77	0.41	-1.24
Acute non-lymphocytic	2	3.21	4	1.68	3	1.39	1	0.38	10	7.77	1.29	0.48
Chronic myeloid	0	0.00	1	1.02	0	0.00	2	1.92	3	3.14	0.95	-0.03

*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 8,241 PYR and for male cancers on 38,338 PYR.

Nasal Cavities Both Sexes

Table 6.3.1: Characteristics of patients with an initial cancer of the nose, nasal cavities or middle ear, both sexes, SEER 1973-2000.

Characteristics	Males		Females		Total	
	No.	%	No.	%	No.	%
Number of patients with 1st primary cancer						
Total	2,063	100.0	1,480	100.0	3,543	100.0
Initial treatment						
Any radiation	1,366	66.2	939	63.4	2,305	65.1
With surgery	878	42.6	584	39.5	1,462	41.3
Without surgery	488	23.7	355	24.0	843	23.8
No radiation	697	33.8	541	36.6	1,238	34.9
With surgery	567	27.5	431	29.1	998	28.2
Without surgery	130	6.3	110	7.4	240	6.8
Race						
White	1,683	81.6	1,222	82.6	2,905	82.0
Black	187	9.1	135	9.1	322	9.1
Other	180	8.7	117	7.9	297	8.4
Unknown	13	0.6	6	0.4	19	0.5
Age at 1st primary cancer diagnosis, years						
< 30	89	4.3	85	5.7	174	4.9
30–49	354	17.2	227	15.3	581	16.4
50–69	1,012	49.1	616	41.6	1,628	45.9
70–79	410	19.9	323	21.8	733	20.7
≥ 80	198	9.6	229	15.5	427	12.1
Number of patients with one or more primary cancers						
One primary cancer only	1,835	88.9	1,350	91.2	3,185	89.9
1st and 2nd cancers	198	9.6	118	8.0	316	8.9
1st, 2nd, and 3rd cancers	28	1.4	10	0.7	38	1.1
1st, 2nd, 3rd, and additional cancers	2	0.1	2	0.1	4	0.1
Other statistics						
Median age at 1st cancer diagnosis	62.3	—	65.0	—	63.4	—
Median year of 1st cancer diagnosis	1987.6	—	1988.0	—	1987.8	—
Median person-years at risk	2.5	—	2.9	—	2.7	—
Percent histologically confirmed*						
Both 1st and 2nd cancers	—	90.4	—	96.2	—	92.5
1st, 2nd, and additional cancers	—	90.4	—	96.2	—	92.5
1st cancer only	—	8.8	—	3.8	—	7.0

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

Table 6.3.2: Risk of subsequent primary cancers after cancer of the nose, nasal cavities, or middle ear, 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			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	60	1.71*	154	1.52*	100	1.33*	91	1.32*	405	280.68	1.44*	67.65
All excluding same site	57	1.62*	153	1.51*	98	1.30*	88	1.28*	396	280.26	1.41*	62.98
Buccal cavity, pharynx	6	6.10*	12	4.35*	4	2.09	6	3.84*	28	7.22	3.88*	11.31
Lip	3	19.40*	3	7.07*	0	0.00	1	4.19	7	1.11	6.29*	3.20
Tongue	0	0.00	2	3.68	0	0.00	2	6.27	4	1.43	2.79	1.40
Salivary gland	0	0.00	1	4.35	0	0.00	1	6.40	2	0.64	3.14	0.74
Mouth	3	11.60*	4	5.56*	0	0.00	1	2.53	8	1.87	4.29*	3.34
Nasopharynx	0	0.00	0	0.00	0	0.00	1	16.22	1	0.31	3.23	0.38
Tonsil	0	0.00	0	0.00	0	0.00	0	0.00	0	0.66	0.00	-0.36
Oropharynx	0	0.00	1	12.96	0	0.00	0	0.00	1	0.20	4.94	0.43
Hypopharynx	0	0.00	1	3.48	3	15.24*	0	0.00	4	0.74	5.42*	1.77
Digestive system	12	1.47	33	1.44	28	1.70*	14	0.96	87	62.17	1.40*	13.51
Esophagus	1	2.46	2	1.76	2	2.44	1	1.34	6	3.11	1.93	1.57
Stomach	0	0.00	8	3.23*	0	0.00	3	2.12	11	6.49	1.69	2.45
Small intestine	0	0.00	0	0.00	1	4.36	0	0.00	1	0.86	1.16	0.08
Colon	3	0.82	12	1.17	17	2.27*	4	0.60	36	28.05	1.28	4.33
Rectum, rectosigmoid junction	6	4.22*	5	1.25	4	1.41	3	1.24	18	10.68	1.68	3.98
Anus, anal canal	0	0.00	0	0.00	0	0.00	0	0.00	0	0.55	0.00	-0.30
Liver	0	0.00	2	2.45	1	1.70	0	0.00	3	2.24	1.34	0.41
Gallbladder	0	0.00	0	0.00	0	0.00	0	0.00	0	0.83	0.00	-0.45
Bile ducts, other biliary	0	0.00	1	2.03	1	2.70	0	0.00	2	1.39	1.44	0.33
Pancreas	2	2.05	3	1.10	2	1.02	3	1.72	10	7.38	1.35	1.42
Respiratory system	17	2.75*	48	2.69*	23	1.76*	25	2.15*	113	48.77	2.32*	34.95
Nose, nasal cavity, ear	3	50.50*	1	6.37	2	18.36*	3	31.68*	9	0.42	21.43*	4.67
Larynx	2	4.60	3	2.43	1	1.15	2	2.86	8	3.24	2.47*	2.59
Lung, bronchus	12	2.11*	44	2.68*	20	1.65*	20	1.85*	96	44.99	2.13*	27.76
Female breast	6	1.86	13	1.40	9	1.33	6	0.95	34	25.67	1.32	10.35
Female genital system	0	0.00	6	1.40	1	0.34	3	1.16	10	11.34	0.88	-1.66
Cervix uteri	0	0.00	0	0.00	0	0.00	0	0.00	0	1.28	0.00	-1.59
Corpus uteri	0	0.00	2	0.92	1	0.67	0	0.00	3	5.74	0.52	-3.41
Ovary	0	0.00	2	1.62	0	0.00	2	2.51	4	3.35	1.19	0.80
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.17	0.00	-0.22
Vulva	0	0.00	2	10.41*	0	0.00	1	7.56	3	0.53	5.65*	3.07
Male genital system	5	0.73	14	0.68	9	0.55	11	0.69	39	59.67	0.65*	-20.00
Prostate	5	0.74	14	0.69	9	0.55	11	0.70	39	59.02	0.66*	-19.38
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.27	0.00	-0.26
Urinary system	3	1.06	11	1.34	9	1.46	7	1.23	30	22.87	1.31	3.88
Urinary bladder	3	1.53	7	1.23	7	1.63	6	1.50	23	15.94	1.44	3.84
Kidney parenchyma	0	0.00	2	1.01	2	1.35	0	0.00	4	5.52	0.72	-0.83
Renal pelvis, other urinary	0	0.00	2	3.86	0	0.00	1	3.03	3	1.41	2.13	0.87
Ureter	0	0.00	1	5.78	0	0.00	0	0.00	1	0.47	2.13	0.29
Bone, joints	1	30.59	0	0.00	0	0.00	1	18.30	2	0.24	8.21	0.96
Soft tissue including heart	0	0.00	1	2.52	3	10.37*	2	7.52	6	1.09	5.49*	2.67
Kaposi sarcoma	0	0.00	1	6.47	0	0.00	0	0.00	1	0.39	2.54	0.33
Melanoma of skin	1	1.38	1	0.45	0	0.00	3	1.80	5	6.30	0.79	-0.70
Eye, orbit	1	19.40	0	0.00	0	0.00	0	0.00	1	0.40	2.52	0.33
Brain, central nervous system	0	0.00	1	0.96	1	1.33	1	1.52	3	2.82	1.07	0.10
Thyroid	0	0.00	0	0.00	0	0.00	0	0.00	0	1.51	0.00	-0.82
Lymphatic, hematopoietic	6	2.28	9	1.19	8	1.43	9	1.74	32	20.94	1.53*	6.02
Hodgkin lymphoma	0	0.00	0	0.00	0	0.00	1	7.10	1	0.68	1.48	0.18
Non-Hodgkin lymphoma	4	3.50	4	1.19	3	1.18	5	2.07	16	9.46	1.69	3.56
Myeloma	1	2.20	3	2.36	0	0.00	0	0.00	4	3.53	1.13	0.26
Leukemia	1	1.07	2	0.76	5	2.57	3	1.71	11	7.28	1.51	2.02
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.21	0.00	-0.12
Chronic lymphocytic	0	0.00	0	0.00	2	2.58	2	2.89	4	2.89	1.38	0.60
Acute non-lymphocytic	1	3.20	1	1.12	1	1.52	0	0.00	3	2.47	1.21	0.29
Chronic myeloid	0	0.00	0	0.00	2	7.62	0	0.00	2	0.99	2.03	0.55

*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 8,043 PYR and for male cancers on 10,334 PYR.

Nasal Cavities Females

Table 6.3.3: Risk of subsequent primary cancers after cancer of the nose, nasal cavities, or middle ear, females, SEER 1973-2000.

Subsequent primary cancer	Years after first primary cancer diagnosis													
	<1 year		1-4 years		5-9 years		≥10 years		Total					
	Number starting interval	Person-years in interval	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR		
All subsequent cancers	1,480	1,075	21	1.80*	48	1.45*	41	1.73*	35	1.58*	145	90.63	1.60*	67.60
All excluding same site	1,480	1,075	19	1.63	48	1.45*	39	1.65*	34	1.53*	140	90.50	1.55*	61.54
Buccal cavity, pharynx	3	14.22*	5	8.34*	0	0.00	3	8.02*	11	1.61	6.84*	11.68	11.68	
Lip	1	71.54	0	0.00	0	0.00	1	37.44	2	0.11	18.53*	2.35	2.35	
Tongue	0	0.00	1	7.58	0	0.00	1	11.88	2	0.36	5.62	2.04	2.04	
Salivary gland	0	0.00	0	0.00	0	0.00	0	0.00	0	0.18	0.00	-0.22	-0.22	
Mouth	2	27.24*	3	14.47*	0	0.00	0	0.00	5	0.56	9.01*	5.53	5.53	
Nasopharynx	0	0.00	0	0.00	0	0.00	1	61.43	1	0.07	13.94	1.15	1.15	
Tonsil	0	0.00	0	0.00	0	0.00	0	0.00	0	0.14	0.00	-0.17	-0.17	
Oropharynx	0	0.00	1	65.73	0	0.00	0	0.00	1	0.04	24.74	1.19	1.19	
Hypopharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.11	0.00	-0.13	-0.13	
Digestive system	4	1.41	10	1.28	10	1.85	5	0.99	29	21.13	1.37	9.79	9.79	
Esophagus	0	0.00	2	9.57*	0	0.00	1	7.11	3	0.57	5.24*	3.02	3.02	
Stomach	0	0.00	1	1.52	0	0.00	2	5.23	3	1.71	1.76	1.61	1.61	
Small intestine	0	0.00	0	0.00	1	12.80	0	0.00	1	0.30	3.36	0.87	0.87	
Colon	2	1.42	3	0.78	6	2.22	1	0.40	12	10.50	1.14	1.86	1.86	
Rectum, rectosigmoid junction	1	2.25	2	1.62	2	2.37	1	1.32	6	3.28	1.83	3.39	3.39	
Rectum	1	3.45	2	2.49	1	1.81	0	0.00	4	2.15	1.86	2.30	2.30	
Anus, anal canal	0	0.00	0	0.00	0	0.00	0	0.00	0	0.28	0.00	-0.34	-0.34	
Liver	0	0.00	2	11.26*	0	0.00	0	0.00	2	0.49	4.07	1.88	1.88	
Gallbladder	0	0.00	0	0.00	0	0.00	0	0.00	0	0.48	0.00	-0.59	-0.59	
Bile ducts, other biliary	0	0.00	0	0.00	1	8.05	0	0.00	1	0.48	2.07	0.64	0.64	
Pancreas	1	2.71	0	0.00	0	0.00	0	0.00	1	2.77	0.36	-2.20	-2.20	
Respiratory system	5	3.43*	10	2.35*	8	2.47*	8	2.50*	31	12.15	2.55*	23.44	23.44	
Nose, nasal cavity, ear	2	110.66*	0	0.00	2	61.53*	1	33.31	5	0.13	39.09*	6.06	6.06	
Larynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.38	0.00	-0.47	-0.47	
Lung, bronchus	3	2.16	10	2.47*	6	1.94	7	2.28	26	11.61	2.24*	17.89	17.89	
Female breast	6	1.86	13	1.40	9	1.33	6	0.95	34	25.67	1.32	10.35	10.35	
Female genital system	0	0.00	6	1.40	1	0.34	3	1.16	10	11.34	0.88	-1.66	-1.66	
Cervix uteri	0	0.00	0	0.00	0	0.00	0	0.00	0	1.28	0.00	-1.59	-1.59	
Corpus uteri	0	0.00	2	0.92	1	0.67	0	0.00	3	5.74	0.52	-3.41	-3.41	
Ovary	0	0.00	2	1.62	0	0.00	2	2.51	4	3.35	1.19	0.80	0.80	
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.17	0.00	-0.22	-0.22	
Vulva	0	0.00	2	10.41*	0	0.00	1	7.56	3	0.53	5.65*	3.07	3.07	
Urinary system	0	0.00	1	0.64	2	1.77	0	0.00	3	4.35	0.69	-1.68	-1.68	
Urinary bladder	0	0.00	1	1.07	2	3.01	0	0.00	3	2.57	1.17	0.53	0.53	
Kidney parenchyma	0	0.00	0	0.00	0	0.00	0	0.00	0	1.42	0.00	-1.77	-1.77	
Renal pelvis, other urinary	0	0.00	0	0.00	0	0.00	0	0.00	0	0.36	0.00	-0.45	-0.45	
Ureter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.11	0.00	-0.14	-0.14	
Bone, joints	1	88.32*	0	0.00	0	0.00	0	0.00	1	0.09	11.55	1.14	1.14	
Soft tissue including heart	0	0.00	0	0.00	2	21.17*	2	22.26*	4	0.37	10.95*	4.52	4.52	
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.03	0.00	-0.04	-0.04	
Melanoma of skin	0	0.00	1	1.56	0	0.00	2	4.33	3	1.80	1.67	1.49	1.49	
Eye, orbit	0	0.00	0	0.00	0	0.00	0	0.00	0	0.13	0.00	-0.16	-0.16	
Brain, central nervous system	0	0.00	0	0.00	0	0.00	0	0.00	0	0.93	0.00	-1.16	-1.16	
Thyroid	0	0.00	0	0.00	0	0.00	0	0.00	0	0.86	0.00	-1.07	-1.07	
Lymphatic, hematopoietic	2	2.24	1	0.40	5	2.74	5	2.86	13	6.99	1.86	7.48	7.48	
Hodgkin lymphoma	0	0.00	0	0.00	0	0.00	1	19.76	1	0.22	4.49	0.97	0.97	
Non-Hodgkin lymphoma	2	4.79	1	0.83	2	2.23	2	2.28	7	3.39	2.06	4.48	4.48	
Myeloma	0	0.00	0	0.00	0	0.00	0	0.00	0	1.19	0.00	-1.48	-1.48	
Leukemia	0	0.00	0	0.00	3	5.33*	2	3.79	5	2.18	2.29	3.51	3.51	
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.07	0.00	-0.09	-0.09	
Chronic lymphocytic	0	0.00	0	0.00	0	0.00	1	5.01	1	0.83	1.21	0.21	0.21	
Acute non-lymphocytic	0	0.00	0	0.00	1	4.96	0	0.00	1	0.78	1.28	0.27	0.27	
Chronic myeloid	0	0.00	0	0.00	2	25.76*	0	0.00	2	0.30	6.65	2.11	2.11	

*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 6.3.4: Risk of subsequent primary cancers after cancer of the nose, nasal cavities, or middle ear, males, SEER 1973-2000.

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
All subsequent cancers	39	1.66*	106	1.55*	59	1.14	56	1.20	260	190.05	1.37*	67.69
All excluding same site	38	1.62*	105	1.54*	59	1.15	54	1.16	256	189.76	1.35*	64.10
Buccal cavity, pharynx	3	3.88	7	3.24*	4	2.68	3	2.53	17	5.61	3.03*	11.02
Lip	2	14.22*	3	7.78*	0	0.00	0	0.00	5	1.01	4.97*	3.87
Tongue	0	0.00	1	2.43	0	0.00	1	4.26	2	1.08	1.86	0.89
Salivary gland	0	0.00	1	6.06	0	0.00	1	8.83	2	0.46	4.35	1.49
Mouth	1	5.40	1	1.95	0	0.00	1	3.76	3	1.31	2.29	1.63
Nasopharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.24	0.00	-0.23
Tonsil	0	0.00	0	0.00	0	0.00	0	0.00	0	0.53	0.00	-0.51
Oropharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.16	0.00	-0.16
Hypopharynx	0	0.00	1	4.06	3	17.88*	0	0.00	4	0.63	6.35*	3.26
Digestive system	8	1.50	23	1.52	18	1.63	9	0.94	58	41.04	1.41*	16.41
Esophagus	1	3.02	0	0.00	2	2.97	0	0.00	3	2.54	1.18	0.45
Stomach	0	0.00	7	3.85*	0	0.00	1	0.97	8	4.79	1.67	3.11
Small intestine	0	0.00	0	0.00	0	0.00	0	0.00	0	0.56	0.00	-0.54
Colon	1	0.45	9	1.41	11	2.30*	3	0.72	24	17.55	1.37	6.25
Rectum, rectosigmoid junction	5	5.11*	3	1.08	2	1.00	2	1.20	12	7.41	1.62	4.44
Anus, anal canal	0	0.00	0	0.00	0	0.00	0	0.00	0	0.28	0.00	-0.27
Liver	0	0.00	0	0.00	1	2.15	0	0.00	1	1.75	0.57	-0.73
Gallbladder	0	0.00	0	0.00	0	0.00	0	0.00	0	0.35	0.00	-0.34
Bile ducts, other biliary	0	0.00	1	3.14	0	0.00	0	0.00	1	0.90	1.11	0.09
Pancreas	1	1.65	3	1.76	2	1.61	3	2.82	9	4.62	1.95	4.24
Respiratory system	12	2.54*	38	2.80*	15	1.52	17	2.01*	82	36.62	2.24*	43.91
Nose, nasal cavity, ear	1	24.19	1	9.13	0	0.00	2	30.92*	4	0.29	13.70*	3.59
Larynx	2	5.16	3	2.73	1	1.31	2	3.28	8	2.86	2.80*	4.97
Lung, bronchus	9	2.10	34	2.76*	14	1.56	13	1.68	70	33.37	2.10*	35.44
Male breast	1	22.14	0	0.00	0	0.00	0	0.00	1	0.35	2.82	0.62
Male genital system	5	0.73	14	0.68	9	0.55	11	0.69	39	59.67	0.65*	-20.00
Prostate	5	0.74	14	0.69	9	0.55	11	0.70	39	59.02	0.66*	-19.38
Testis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.27	0.00	-0.26
Urinary system	3	1.32	10	1.51	7	1.39	7	1.52	27	18.52	1.46	8.21
Urinary bladder	3	1.84	6	1.26	5	1.37	6	1.79	20	13.37	1.50	6.41
Kidney parenchyma	0	0.00	2	1.35	2	1.80	0	0.00	4	4.10	0.98	-0.09
Renal pelvis, other urinary	0	0.00	2	5.19	0	0.00	1	4.12	3	1.04	2.87	1.89
Ureter	0	0.00	1	7.62	0	0.00	0	0.00	1	0.36	2.80	0.62
Bone, joints	0	0.00	0	0.00	0	0.00	1	28.97	1	0.16	6.37	0.82
Soft tissue including heart	0	0.00	1	3.80	1	5.14	0	0.00	2	0.73	2.75	1.23
Kaposi sarcoma	0	0.00	1	7.05	0	0.00	0	0.00	1	0.36	2.77	0.62
Melanoma of skin	1	1.95	0	0.00	0	0.00	1	0.83	2	4.49	0.44	-2.41
Eye, orbit	1	29.23	0	0.00	0	0.00	0	0.00	1	0.27	3.76	0.71
Brain, central nervous system	0	0.00	1	1.42	1	1.98	1	2.31	3	1.88	1.59	1.08
Thyroid	0	0.00	0	0.00	0	0.00	0	0.00	0	0.65	0.00	-0.63
Lymphatic, hematopoietic	4	2.30	8	1.60	3	0.79	4	1.17	19	13.96	1.36	4.88
Hodgkin lymphoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.45	0.00	-0.44
Non-Hodgkin lymphoma	2	2.75	3	1.39	1	0.61	3	1.94	9	6.07	1.48	2.84
Myeloma	1	3.38	3	3.58	0	0.00	0	0.00	4	2.34	1.71	1.61
Leukemia	1	1.54	2	1.09	2	1.45	1	0.82	6	5.10	1.18	0.87
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.14	0.00	-0.14
Chronic lymphocytic	0	0.00	0	0.00	2	3.57	1	2.03	3	2.06	1.46	0.91
Acute non-lymphocytic	1	4.74	1	1.64	0	0.00	0	0.00	2	1.69	1.18	0.30
Chronic myeloid	0	0.00	0	0.00	0	0.00	0	0.00	0	0.69	0.00	-0.66

*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.

Mesothelioma Both Sexes

Table 6.4.1: Characteristics of patients with an initial mesothelioma, both sexes, SEER 1973-2000.

Characteristics	Males		Females		Total	
	No.	%	No.	%	No.	%
Number of patients with 1st primary cancer						
Total	3,213	100.0	893	100.0	4,106	100.0
Initial treatment						
Any radiation	732	22.8	173	19.4	905	22.0
With surgery	220	6.8	57	6.4	277	6.7
Without surgery	512	15.9	116	13.0	628	15.3
No radiation	2,481	77.2	720	80.6	3,201	78.0
With surgery	524	16.3	220	24.6	744	18.1
Without surgery	1,957	60.9	500	56.0	2,457	59.8
Race						
White	2,957	92.0	814	91.2	3,771	91.8
Black	136	4.2	52	5.8	188	4.6
Other	114	3.5	25	2.8	139	3.4
Unknown	6	0.2	2	0.2	8	0.2
Age at 1st primary cancer diagnosis, years						
< 30	12	0.4	16	1.8	28	0.7
30–49	229	7.1	117	13.1	346	8.4
50–69	1,560	48.6	388	43.4	1,948	47.4
70–79	1,056	32.9	254	28.4	1,310	31.9
≥ 80	356	11.1	118	13.2	474	11.5
Number of patients with one or more primary cancers						
One primary cancer only	3,149	98.0	874	97.9	4,023	98.0
1st and 2nd cancers	60	1.9	16	1.8	76	1.9
1st, 2nd, and 3rd cancers	4	0.1	2	0.2	6	0.1
1st, 2nd, 3rd, and additional cancers	0	0.0	1	0.1	1	0.0
Other statistics						
Median age at 1st cancer diagnosis	68.6	—	66.8	—	68.3	—
Median year of 1st cancer diagnosis	1989.9	—	1988.8	—	1989.7	—
Median person-years at risk	0.6	—	0.7	—	0.6	—
Percent histologically confirmed*						
Both 1st and 2nd cancers	—	92.2	—	94.7	—	92.8
1st, 2nd, and additional cancers	—	92.2	—	94.7	—	92.8
1st cancer only	—	4.7	—	0.0	—	3.6

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

Table 6.4.2: Risk of subsequent primary cancers after mesothelioma, 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			
	O	O/E	O	O/E	O	O/E	O	O/E	O	E	O/E	EAR
All subsequent cancers	34	0.86	42	1.18	5	0.54	10	1.18	91	92.79	0.98	-3.18
All excluding same site	33	0.84	41	1.15	5	0.54	10	1.18	89	92.49	0.96	-6.21
Buccal cavity, pharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	2.49	0.00	-4.43
Lip	0	0.00	0	0.00	0	0.00	0	0.00	0	0.41	0.00	-0.73
Tongue	0	0.00	0	0.00	0	0.00	0	0.00	0	0.49	0.00	-0.88
Salivary gland	0	0.00	0	0.00	0	0.00	0	0.00	0	0.21	0.00	-0.38
Mouth	0	0.00	0	0.00	0	0.00	0	0.00	0	0.63	0.00	-1.12
Nasopharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.09	0.00	-0.16
Tonsil	0	0.00	0	0.00	0	0.00	0	0.00	0	0.23	0.00	-0.41
Oropharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.07	0.00	-0.13
Hypopharynx	0	0.00	0	0.00	0	0.00	0	0.00	0	0.26	0.00	-0.47
Digestive system	7	0.82	12	1.59	0	0.00	2	1.16	21	19.77	1.06	2.19
Esophagus	0	0.00	1	2.41	0	0.00	0	0.00	1	1.08	0.93	-0.13
Stomach	1	1.10	0	0.00	0	0.00	0	0.00	1	2.04	0.49	-1.84
Small intestine	1	8.62	0	0.00	0	0.00	0	0.00	1	0.28	3.54	1.28
Colon	2	0.53	7	2.07	0	0.00	2	2.54	11	8.83	1.25	3.86
Rectum, rectosigmoid junction	3	1.95	3	2.22	0	0.00	0	0.00	6	3.51	1.71	4.44
Anus, anal canal	0	0.00	0	0.00	0	0.00	0	0.00	0	0.17	0.00	-0.30
Liver	0	0.00	0	0.00	0	0.00	0	0.00	0	0.70	0.00	-1.25
Gallbladder	0	0.00	0	0.00	0	0.00	0	0.00	0	0.23	0.00	-0.40
Bile ducts, other biliary	0	0.00	0	0.00	0	0.00	0	0.00	0	0.43	0.00	-0.76
Pancreas	0	0.00	1	1.12	0	0.00	0	0.00	1	2.33	0.43	-2.37
Respiratory system	4	0.54	7	1.08	1	0.63	2	1.42	14	16.89	0.83	-5.15
Nose, nasal cavity, ear	0	0.00	0	0.00	0	0.00	0	0.00	0	0.14	0.00	-0.24
Larynx	0	0.00	0	0.00	0	0.00	0	0.00	0	1.19	0.00	-2.13
Lung, bronchus	4	0.59	7	1.17	1	0.68	2	1.52	14	15.52	0.90	-2.71
Female breast	1	0.62	2	0.79	1	0.86	0	0.00	4	6.52	0.61	-12.21
Female genital system	0	0.00	2	1.74	0	0.00	1	2.02	3	2.89	1.04	0.52
Cervix uteri	0	0.00	0	0.00	0	0.00	0	0.00	0	0.33	0.00	-1.62
Corpus uteri	0	0.00	0	0.00	0	0.00	1	4.04	1	1.48	0.68	-2.32
Ovary	0	0.00	2	5.99	0	0.00	0	0.00	2	0.85	2.35	5.56
Vagina	0	0.00	0	0.00	0	0.00	0	0.00	0	0.04	0.00	-0.20
Vulva	0	0.00	0	0.00	0	0.00	0	0.00	0	0.12	0.00	-0.60
Male genital system	13	1.24	7	0.83	1	0.60	2	1.28	23	22.21	1.04	2.22
Prostate	13	1.25	6	0.72	1	0.60	2	1.29	22	21.99	1.00	0.03
Testis	0	0.00	1	30.18	0	0.00	0	0.00	1	0.08	12.32	2.59
Urinary system	5	1.39	3	0.98	1	1.42	0	0.00	9	7.99	1.13	1.80
Urinary bladder	2	0.78	1	0.46	1	2.10	0	0.00	4	5.63	0.71	-2.90
Kidney parenchyma	3	3.72	2	2.75	0	0.00	0	0.00	5	1.89	2.65	5.54
Renal pelvis, other urinary	0	0.00	0	0.00	0	0.00	0	0.00	0	0.48	0.00	-0.85
Ureter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.16	0.00	-0.28
Bone, joints	0	0.00	0	0.00	0	0.00	0	0.00	0	0.08	0.00	-0.14
Soft tissue including heart	0	0.00	0	0.00	0	0.00	0	0.00	0	0.35	0.00	-0.63
Kaposi sarcoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.12	0.00	-0.21
Melanoma of skin	1	1.12	3	3.53	0	0.00	1	4.68	5	2.18	2.29	5.02
Eye, orbit	0	0.00	0	0.00	0	0.00	0	0.00	0	0.13	0.00	-0.24
Brain, central nervous system	0	0.00	0	0.00	0	0.00	0	0.00	0	0.95	0.00	-1.69
Thyroid	0	0.00	2	11.14*	0	0.00	1	17.57	3	0.45	6.61*	4.53
Lymphatic, hematopoietic	1	0.35	3	1.15	1	1.45	1	1.60	6	6.80	0.88	-1.43
Hodgkin lymphoma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.22	0.00	-0.39
Non-Hodgkin lymphoma	0	0.00	0	0.00	0	0.00	0	0.00	0	3.04	0.00	-5.41
Myeloma	0	0.00	1	2.26	0	0.00	0	0.00	1	1.15	0.87	-0.27
Leukemia	1	0.96	2	2.19	1	4.34	1	5.01	5	2.39	2.09	4.65
Acute lymphocytic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.06	0.00	-0.11
Chronic lymphocytic	0	0.00	1	2.70	0	0.00	1	12.76	2	0.97	2.07	1.84
Acute non-lymphocytic	1	2.89	0	0.00	1	12.76	0	0.00	2	0.80	2.50	2.13
Chronic myeloid	0	0.00	1	8.12	0	0.00	0	0.00	1	0.32	3.12	1.21

*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 2,065 PYR and for male cancers on 3,552 PYR.

