

Cancer in Northeastern Pennsylvania: Incidence and Mortality of Common Cancers

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*“Easing the burden of cancer in
Northeastern Pennsylvania”*



Dear Community Members,

The Northeast Regional Cancer Institute, a community-based nonprofit organization, is pleased to present this report on cancer incidence and mortality in Northeastern Pennsylvania. For more than 20 years, the Cancer Institute has worked to ease the burden of cancer by focusing on the areas of community & patient services and survivorship. The Cancer Institute invests 100% of its resources in this region.

The Cancer Surveillance Program at the Cancer Institute compiled this report using data from the organization's Regional Cancer Registry and the Bureau of Health Statistics and Research of the Pennsylvania Department of Health. Characterized in this report are cancer incidence and mortality in Northeastern Pennsylvania relative to the United States for the 23 most common cancer sites. For the purpose of this report, Northeastern Pennsylvania is made up of six counties including Lackawanna, Luzerne, Pike, Susquehanna, Wayne and Wyoming.

The Northeast Regional Cancer Institute uses the local cancer surveillance data it generates to focus the organization's community and patient services so that they may have the greatest possible impact. Similarly, we hope that the information contained in this report is helpful to you in your efforts against cancer.

Sincerely,

A handwritten signature in black ink that reads "Samuel M. Lesko". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

*Samuel Lesko, MD, MPH
Medical Director*

Table 1. Standardized incidence ratios by primary cancer site and sex, Northeastern Pennsylvania[†], 2006-2010

Primary site	Cases No.	SIR [†]		
		Both Sexes	Men	Women
All sites	23,346	107*	104*	110*
Brain	302	112	107	117
Breast, female	2,932	-	-	94*
Bronchus & lung	3,317	115*	127*	102
Colon & rectum	2,493	118*	119*	117*
Esophagus	308	140*	148*	113
Hodgkin's lymphoma	138	127*	120	135*
Kidney & renal pelvis	712	103	104	101
Larynx	205	137*	126*	179*
Leukemia	634	106	104	109
Liver/intra-hepatic bile duct	271	75*	73*	80*
Melanoma of the skin	751	76*	74*	79*
Multiple myeloma	289	98	104	91
Non-Hodgkin's Lymphoma	903	95	94	96
Oral cavity & pharynx	589	118*	126*	104
Ovary	365	-	-	113*
Pancreas	627	102	109	95
Prostate	2,707	-	79*	-
Stomach	355	103	104	102
Testis	130	-	135*	-
Thyroid	798	158*	128*	168*
Urinary bladder	1,251	124*	120*	133*
Uterine cervix	190	-	-	142*
Uterine corpus	889	-	-	136*

[†] Limited to Lackawanna, Luzerne, Pike, Susquehanna, Wayne and Wyoming counties.
[†] Standardized incidence ratio = observed / expected cases X 100.
* Significantly different from 100, p < 0.05.

Table 1 Summary

The five most commonly diagnosed cancer sites in northeast Pennsylvania were (starting with the most common): bronchus and lung, breast, prostate, colon and rectum, and urinary bladder.

Incidence was significantly elevated in northeast Pennsylvania for all sites combined and for 12 specific cancer sites for both sexes (unless otherwise noted): bronchus and lung (men), colon and rectum, esophagus (men), Hodgkin's disease (women), larynx, oral cavity and pharynx (men), ovary, testis, thyroid, urinary bladder, uterine cervix, and uterine corpus.

Reported incidence was significantly lower in northeast Pennsylvania than the US rate for four sites for both sexes combined (unless otherwise noted): breast (women), liver and intra-hepatic bile duct, melanoma of the skin, and prostate. Note, previous analyses suggest that cancers of the breast, prostate, skin, lymph node, and blood (e.g., leukemia) may be under reported. Caution should be used when interpreting incidence rates for these sites.

Table 2. Standardized mortality ratios by primary cancer site and sex, Northeastern Pennsylvania[†], 2006-2010

Primary site	Deaths No.	SMR [†]		
		Both Sexes	Men	Women
All sites	9,076	106*	110*	103
Brain	182	95	94	95
Breast, female	599	-	-	98
Bronchus & lung	2,328	97	104	90*
Colon & rectum	930	116*	121*	111*
Esophagus	260	127*	135*	100
Hodgkin's lymphoma	25	132	160	100
Kidney & renal pelvis	208	109	111	105
Larynx	66	116	123	92
Leukemia	379	113*	109	117
Liver/intra-hepatic bile duct	226	84*	85*	82
Melanoma of the skin	144	113	121	100
Multiple myeloma	157	95	99	90
Non-Hodgkin's Lymphoma	322	103	104	103
Oral cavity & pharynx	134	114	117	108
Ovary	254	-	-	113
Pancreas	568	106	109	102
Prostate	446	-	104	-
Stomach	199	116*	116	116
Testis	8	-	267	-
Thyroid	14	54*	40	63
Urinary bladder	235	109	114	96
Uterine cervix	57	-	-	108
Uterine corpus	154	-	-	127*

[†] Limited to Lackawanna, Luzerne, Pike, Susquehanna, Wayne and Wyoming counties.
[†] Standardized mortality ratio = observed / expected deaths X 100.
* Significantly different from 100, p < 0.05.

Table 2 Summary

The five cancer sites resulting in the highest number of cancer deaths in northeast Pennsylvania were (starting with the most common): bronchus and lung, colon and rectum, breast (women), pancreas, and prostate.

Cancer mortality was significantly higher in northeast Pennsylvania than in the US for all sites combined (men) and for five specific sites: colon & rectum, esophagus (men), leukemia, stomach, and uterine corpus.

Mortality in northeast Pennsylvania was significantly lower than the US rate for three sites: bronchus & lung (women), liver/intra-hepatic bile duct (men), and thyroid.

Table 3. Standardized incidence and mortality ratios by primary cancer site, both sexes, Northeastern Pennsylvania[†], 2006-2010

Primary site	Cases No.	SIR (95% CI*)	Deaths No.	SMR (95% CI*)
All sites	23,346	107 (105.7, 108.4)	9,076	106 (104.1, 108.5)
Brain	302	112 (99.2, 124.5)	182	95 (81.0, 108.6)
Breast, female	2,932	94 (90.9, 97.8)	599	98 (89.7, 105.4)
Bronchus & lung	3,317	115 (110.8, 118.6)	2,328	97 (93.2, 101.1)
Colon & rectum	2,493	118 (113.4, 122.7)	930	116 (108.1, 123.0)
Esophagus	308	140 (124.4, 155.6)	260	127 (111.7, 142.6)
Hodgkin's lymphoma	138	127 (105.5, 147.7)	25	132 (80.0, 183.2)
Kidney & renal pelvis	712	103 (95.1, 110.1)	208	109 (94.1, 123.7)
Larynx	205	137 (118.0, 155.4)	66	116 (87.9, 143.7)
Leukemia	634	106 (97.9, 114.5)	379	113 (101.4, 124.2)
Liver/intra-hepatic bile duct	271	75 (66.3, 84.2)	226	84 (73.1, 95.0)
Melanoma of the skin	751	76 (70.8, 81.7)	144	113 (94.9, 131.9)
Multiple myeloma	289	98 (87.0, 109.6)	157	95 (79.8, 109.4)
Non-Hodgkin's lymphoma	903	95 (88.7, 101.0)	322	103 (91.9, 114.5)
Oral cavity & pharynx	589	118 (108.3, 127.3)	134	114 (94.3, 132.8)
Ovary	365	113 (101.7, 125.0)	254	113 (99.0, 126.8)
Pancreas	627	102 (93.8, 109.8)	568	106 (96.9, 114.3)
Prostate	2,707	79 (75.7, 81.6)	446	104 (94.1, 113.4)
Stomach	355	103 (92.5, 113.9)	199	116 (100.2, 132.5)
Testis	130	135 (112.1, 158.7)	8	267 (81.9, 451.5)
Thyroid	798	158 (147.1, 169.0)	14	54 (25.6, 82.1)
Urinary bladder	1,251	124 (116.8, 130.5)	235	109 (94.9, 122.7)
Uterine cervix	190	142 (121.6, 162.0)	57	108 (79.6, 135.5)
Uterine corpus	889	136 (126.6, 144.4)	154	127 (107.2, 147.4)

[†] Limited to Lackawanna, Luzerne, Pike, Susquehanna, Wayne and Wyoming counties.
 * Confidence interval.
 Figures in **bold font** are significantly different from 100.

Table 3 Summary

Cancer incidence and mortality were significantly elevated in northeast Pennsylvania for all sites combined and at three specific sites for both sexes combined (unless otherwise noted): colon and rectum, esophagus, and uterine corpus.

Some notable disparities between incidence and mortality include: mortality was significantly elevated, but incidence was not significantly elevated for leukemia and stomach cancer, incidence was significantly depressed but mortality was not significantly different from U.S. rates for breast (women), melanoma, and prostate, and incidence was significantly elevated but mortality was not for cancers of the bronchus and lung, Hodgkin's lymphoma, larynx, oral cavity and pharynx, ovary, testis, urinary bladder, and uterine cervix. However, for several sites (Hodgkin's lymphoma, larynx, oral cavity and pharynx, ovary, testis) the number of deaths was small limiting the ability of these data to detect significant elevations in mortality for these sites.

Confidence Interval

The standardized incidence and mortality ratios described in this report are point estimates of cancer incidence and mortality in Northeastern Pennsylvania compared to the United States. Although these are the best estimates of cancer experience in Northeastern Pennsylvania, it is important to recognize the potential for uncertainty in these estimates due to random or sampling error or variability. The size of the uncertainty in these ratios is reflected in confidence interval. The 95% confidence interval is the range of values that will include the true ratio 95% of the time. Compared to narrow confidence intervals, wider confidence intervals reflect greater uncertainty in value of the true ratio.

Primary Site

The cancer cases in this report were examined by primary site. The primary site is the tissue or organ where the cancer was shown to originate as evidenced by microscopic examination of tissue, radiologic examination (x-ray, CT scan, or MRI), endoscopy (e.g., colonoscopy), or clinical examination.

Standardized Incidence and Mortality Ratios

The incidence ratios in this report (Tables 1 & 3) are the calculated best estimates of the incidence of each cancer in Northeastern Pennsylvania relative to the corresponding incidence in the United States and take the age and racial make-up of the population into account. Similarly, mortality ratios (shown in Tables 2 & 3) compare cancer mortality rates in NEPA to the United States mortality. These ratios are calculated by dividing the number of cancer cases (or deaths) that actually occurred in Northeastern Pennsylvania by the number of cases (or deaths) expected if Northeastern Pennsylvania had exactly the same cancer risk (or mortality) as the United States. The ratios shown in Tables 1-3 are expressed as a percentage of the corresponding United States rate. For example, the standardized incidence ratio (SIR) for colon and rectal cancer, shown in Table 1, was 118. This means that the incidence of cancers of the colon and rectum in Northeastern Pennsylvania was 18% higher than the same figure for the United States.

This report uses data provided by the Bureau of Health Statistics and Research, Pennsylvania Department of Health. The Department specifically disclaims responsibility for any analyses, interpretations or conclusions.



The Northeast Regional Cancer Institute is a non-profit, community-based agency working to ease the burden of cancer in Northeastern Pennsylvania. Focusing on research, education & survivorship the Cancer Institute invests all of its resources in this region.

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