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CANCER IN NORTHEASTERN PENNSYLVANIA: INCIDENCE AND MORTALITY OF COMMON CANCERS

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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 over **30** 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, the Bureau of Health Statistics and Research of the Pennsylvania Department of Health, and the National Cancer Institute Surveillance Epidemiology and End Results (SEER) Program. This report describes 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 defined as the **six counties** of Lackawanna, Luzerne, Pike, Susquehanna, Wayne and Wyoming. Data from the SEER program were taken as representative of incidence and mortality rates for the United States as a whole.

In April 2023, the SEER Program reported effects of the Covid-19 pandemic on cancer incidence statistics for the year 2020. Reported incidence was down in April and May but returned to pre-Covid levels by June 2020. As a result, reported cancer incidence rates for 2020 were lower than expected based on 2019 and earlier data. The deficit in incidence varied by cancer site, but for all sites combined was approximately 9.3%. An examination of cancer incidence data for Northeastern Pennsylvania showed a similar drop in cancer cases reported in April and May of 2020, resulting in a 6.3% decrease in incidence for the year as a whole. Because of the small difference between SEER and Northeastern Pennsylvania in the covid-related drop in incidence and the Standardized Incidence Ratios (SIRs) in this report are based on data for a five-year period (2017-2021), any effects of Covid-19 on the calculated SIRs are expected to be quite small. Consequently, no adjustments were made to account for the possible effects of Covid-19 on the SIRs presented here

The Northeast Regional Cancer Institute uses these cancer surveillance data to focus the organization's community and patient services to have the greatest possible impact. Similarly, we hope that the information contained in this report is helpful to you in support of patients at risk of or diagnosed with cancer and their loved ones.

Sincerely,

A handwritten signature in black ink, appearing to read "Samuel M. Lesko", is located below the word "Sincerely,".

Samuel Lesko, MD, MPH
Medical Director

September 2024

Table 1. Standardized incidence ratios by primary cancer site and sex, Northeast Pennsylvania[¶], 2017-2021

Primary site	Cases No.	SIR [†]		
		Both Sexes	Men	Women
All sites	23,914	105*	103*	107*
Brain	283	102	90	117
Breast, female	3,152	-	-	96*
Bronchus & lung	3,576	131*	129*	133*
Colon & rectum	2,084	112*	111*	114*
Esophagus	357	155*	161*	133*
Hodgkin's lymphoma	118	124*	126	121
Kidney & renal pelvis	872	99	100	97
Larynx	229	159*	154*	181*
Leukemia	664	96	94	99
Liver/intra-hepatic bile duct	444	85*	91	70*
Melanoma of the skin	1,049	99	93	107
Multiple myeloma	312	81*	83*	78*
Non-Hodgkin's Lymphoma	942	99	97	101
Oral cavity & pharynx	779	129*	131*	124*
Ovary	268	-	-	103
Pancreas	839	113*	118*	109
Prostate	2,715	-	86*	-
Stomach	319	87*	91	81*
Testis	96	-	100	-
Thyroid	673	125*	122*	126*
Urinary bladder	1,354	134*	135*	134*
Uterine cervix	165	-	-	111
Uterine corpus	944	-	-	125*

¶ 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, female breast, prostate, colon and rectum, and urinary bladder.

Incidence was significantly elevated in northeast Pennsylvania for all sites combined and for 10 specific cancer sites: Bronchus and lung, colon and rectum, esophagus, Hodgkin Lymphoma, larynx, oral cavity and pharynx, pancreas, thyroid (women), urinary bladder, 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): Liver and intra-hepatic bile duct, multiple myeloma, prostate and stomach. 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, Northeast Pennsylvania[¶], 2017-2021

Primary site	Deaths No.	SMR [†]		
		Both Sexes	Men	Women
All sites	8,795	109*	110*	107*
Brain	225	101	96	107
Breast, female	565	-	-	101
Bronchus & lung	2,233	118*	120*	116*
Colon & rectum	785	112*	116*	108
Esophagus	306	145*	151*	123
Hodgkin's lymphoma	14	117	125	100
Kidney & renal pelvis	173	91	90	94
Larynx	55	108	107	110
Leukemia	337	106	108	103
Liver/intra-hepatic bile duct	331	88*	92	80*
Melanoma of the skin	137	127*	121	138*
Multiple myeloma	166	98	99	96
Non-Hodgkin's Lymphoma	287	103	96	113
Oral cavity & pharynx	155	108	102	121
Ovary	163	-	-	90
Pancreas	687	110*	115*	105
Prostate	407	-	93	-
Stomach	138	93	88	100
Testis	3	-	100	-
Thyroid	22	76	50*	107
Urinary bladder	277	119*	124*	109
Uterine cervix	53	-	-	104
Uterine corpus	174	-	-	113

¶ 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, pancreas, female breast and prostate.

Cancer mortality was significantly higher in northeast Pennsylvania than in the US for all sites combined and for six specific sites: Bronchus & lung, colon & rectum, esophagus, melanoma, pancreas, and urinary bladder.

Mortality in northeast Pennsylvania was significantly lower than the US rate for cancer of the liver/intra-hepatic bile duct.

Table 3. Standardized incidence and mortality ratios by primary cancer site, both sexes, Northeast Pennsylvania[¶], 2017-2021

Primary site	Cases No.	SIR (95% CI*)	Deaths No.	SMR (95% CI*)
All sites	23,914	105 (103.5, 106.2)	8,795	109 (106.4, 111.0)
Brain	283	102 (90.3, 114.1)	225	101 (87.7, 114.1)
Breast, female	3,152	96 (92.8, 99.5)	565	101 (92.7, 109.4)
Bronchus & lung	3,576	131 (126.4, 134.9)	2,233	118 (113.2, 123.0)
Colon & rectum	2,084	112 (107.3, 116.9)	785	112 (104.3, 120.0)
Esophagus	357	155 (138.5, 170.6)	306	145 (128.8, 161.3)
Hodgkin's lymphoma	118	124 (101.8, 146.6)	14	117 (55.6, 177.8)
Kidney & renal pelvis	872	99 (92.4, 105.6)	173	91 (77.5, 104.6)
Larynx	229	159 (138.4, 179.6)	55	108 (79.3, 136.3)
Leukemia	664	96 (88.8, 103.4)	337	106 (94.7, 117.3)
Liver/intra-hepatic bile duct	444	85 (76.7, 92.4)	331	88 (78.8, 97.8)
Melanoma of the skin	1,049	99 (92.9, 104.9)	137	127 (105.6, 148.1)
Multiple myeloma	312	81 (71.7, 89.6)	166	98 (82.8, 112.5)
Non-Hodgkin's Lymphoma	942	99 (92.5, 105.2)	287	103 (91.3, 115.2)
Oral cavity & pharynx	779	129 (119.9, 138.0)	155	108 (90.7, 124.6)
Ovary	268	103 (90.7, 115.4)	163	90 (76.2, 103.9)
Pancreas	839	113 (105.6, 120.9)	687	110 (101.9, 118.3)
Prostate	2,715	86 (83.2, 89.7)	407	93 (83.7, 101.7)
Stomach	319	87 (77.4, 96.5)	138	93 (77.2, 108.1)
Testis	96	100 (80.0, 120.0)	3	100 (0.0, 213.2)
Thyroid	673	125 (115.2, 134.1)	22	76 (44.2, 107.6)
Urinary bladder	1,354	134 (127.3, 141.6)	277	119 (105.3, 133.5)
Uterine cervix	165	111 (93.8, 127.6)	53	104 (75.9, 131.9)
Uterine corpus	944	125 (117.4, 133.4)	174	113 (96.2, 129.8)

¶ 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 five specific sites: Bronchus & lung, colon and rectum, esophagus, pancreas, and urinary bladder.

Some notable disparities between incidence and mortality include: Incidence was significantly depressed but mortality was not significantly different from U.S. rates for female breast, multiple myeloma, prostate and stomach. Incidence was significantly elevated but mortality was not for Hodgkin Lymphoma, larynx, oral cavity and pharynx, thyroid, and uterine corpus. However, for two of these sites (larynx and Hodgkin Lymphoma) the number of deaths was small and the confidence intervals did not rule out the possibility of a meaningful elevation in mortality for these sites. Mortality was significantly elevated but incidence was not for melanoma of the skin.

Also, both incidence and mortality were significantly lower than the US rate for cancer of the liver/intra-hepatic bile duct.

Definition of Terms

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 112. This means that the incidence of cancers of the colon and rectum in Northeastern Pennsylvania was 12% 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 nonprofit community-based agency serving seven counties in northeast Pennsylvania with offices located in Scranton and Wilkes-Barre. Focusing on surveillance, community and patient services, and hospital and practice support services, the Cancer Institute invests 100% of its resources locally.

Serving Northeastern Pennsylvania Counties:

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