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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,

Samuel Lesko, MD, MPH
Medical Director

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Table 1. Standardized incidence ratios by primary cancer site and sex, Northeast Pennsylvania[¶], 2018-2022

Primary site	Cases No.	SIR [†]		
		Both Sexes	Men	Women
All sites	24,263	104*	103*	105*
Brain	283	102	89	118
Breast, female	3,242	-	-	97
Bronchus & lung	3,574	132*	133*	132*
Colon & rectum	2,037	107*	108*	107*
Esophagus	364	156*	160*	141*
Hodgkin's lymphoma	119	125*	130	119
Kidney & renal pelvis	892	99	100	97
Larynx	234	165*	159*	189*
Leukemia	677	95	98	91
Liver/intra-hepatic bile duct	474	89*	94	77*
Melanoma of the skin	1,080	98	92*	106
Multiple myeloma	287	72*	79*	63*
Non-Hodgkin's Lymphoma	891	92*	89*	96
Oral cavity & pharynx	788	127*	131*	116*
Ovary	251	-	-	96
Pancreas	870	115*	116*	113*
Prostate	2,948	-	90*	-
Stomach	323	85*	94	71*
Testis	94	-	95	-
Thyroid	693	128*	118*	132*
Urinary bladder	1,362	135*	136*	134*
Uterine cervix	163	-	-	109
Uterine corpus	951	-	-	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, urinary bladder, and uterine corpus.

Reported incidence was significantly lower in northeast Pennsylvania than the US rate for five sites: Liver and intra-hepatic bile duct, multiple myeloma, Non-Hodgkin's Lymphoma, 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[¶], 2018-2022

Primary site	Deaths No.	SMR [†]		
		Both Sexes	Men	Women
All sites	8,772	109*	110*	109*
Brain	210	94	92	96
Breast, female	561	-	-	102
Bronchus & lung	2,203	120*	120*	120*
Colon & rectum	797	115*	118*	112*
Esophagus	304	144*	149*	127
Hodgkin's lymphoma	15	125	138	100
Kidney & renal pelvis	186	98	91	112
Larynx	66	127	129	118
Leukemia	318	101	101	101
Liver/intra-hepatic bile duct	341	90	96	81*
Melanoma of the skin	135	125*	124	127
Multiple myeloma	148	89	91	85
Non-Hodgkin's Lymphoma	270	100	95	106
Oral cavity & pharynx	170	116	115	120
Ovary	156	-	-	88
Pancreas	666	107	108	105
Prostate	421	-	95	-
Stomach	122	85*	79*	93
Testis	3	-	75	-
Thyroid	19	66*	54*	75
Urinary bladder	272	119*	118*	120
Uterine cervix	55	-		110
Uterine corpus	169	-		107

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

Mortality in northeast Pennsylvania was significantly lower than the US rate for cancer of the stomach and thyroid.

Table 3. Standardized incidence and mortality ratios by primary cancer site, both sexes, Northeast Pennsylvania[¶], 2018-2022

Primary site	Cases No.	SIR (95% CI*)	Deaths No.	SMR (95% CI*)
All sites	24,263	104 (103.0, 105.6)	8,772	109 (107.1, 111.7)
Brain	283	102 (89.9, 113.7)	210	94 (81.1, 106.4)
Breast, female	3,242	97 (94.1, 100.8)	561	102 (93.4, 110.2)
Bronchus & lung	3,574	132 (128.0, 136.7)	2,203	120 (115.0, 125.1)
Colon & rectum	2,037	107 (102.8, 112.1)	797	115 (107.0, 123.0)
Esophagus	364	156 (140.2, 172.3)	304	144 (127.9, 160.3)
Hodgkin's lymphoma	119	125 (102.8, 147.8)	15	125 (61.7, 188.3)
Kidney & renal pelvis	892	99 (92.3, 105.3)	186	98 (84.3, 112.6)
Larynx	234	165 (143.7, 185.9)	66	127 (96.3, 157.5)
Leukemia	677	95 (87.8, 102.1)	318	101 (89.6, 111.7)
Liver/intra-hepatic bile duct	474	89 (80.6, 96.6)	341	90 (80.9, 100.1)
Melanoma of the skin	1,080	98 (91.9, 103.6)	135	125 (103.9, 146.1)
Multiple myeloma	287	72 (63.6, 80.3)	148	89 (74.3, 102.9)
Non-Hodgkin's Lymphoma	891	92 (86.0, 98.1)	270	100 (87.8, 111.5)
Oral cavity & pharynx	788	127 (118.0, 135.8)	170	116 (98.9, 133.9)
Ovary	251	96 (84.0, 107.7)	156	88 (73.9, 101.4)
Pancreas	870	115 (107.0, 122.2)	666	107 (98.6, 114.8)
Prostate	2,948	90 (86.6, 93.0)	421	95 (86.4, 104.6)
Stomach	323	85 (75.5, 94.0)	122	85 (69.7, 99.8)
Testis	94	95 (75.8, 114.1)	3	75 (0.0, 159.9)
Thyroid	693	128 (118.6, 137.6)	19	66 (36.1, 95.0)
Urinary bladder	1,362	135 (128.1, 142.4)	272	119 (104.7, 133.9)
Uterine cervix	163	109 (92.0, 125.4)	55	110 (80.9, 139.1)
Uterine corpus	951	125 (116.9, 132.7)	169	107 (90.8, 123.1)

[¶] 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 four specific sites: Bronchus & lung, colon and rectum, esophagus, 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 liver/intra-hepatic bile duct, multiple myeloma, Non-Hodgkin's Lymphoma, and prostate. 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.

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 107. This means that the incidence of cancers of the colon and rectum in Northeastern Pennsylvania was 7% 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.

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