

Lung Cancer in New Hampshire

Issue Brief / December 2016



Background

In 2016, it is estimated that 1,140 New Hampshire residents will be diagnosed with lung cancer and 770 will die from it.

Cancer of the lung and bronchus (herein referred to as lung cancer) is the most common type of cancer affecting both sexes and is the leading cause of cancer-related deaths. Over six percent of the US population will be diagnosed with lung cancer at some point in their lifetime. In 2016, it is estimated

Key Findings:

- While the overall rate of lung cancer among New Hampshire residents is decreasing, the rate among females is increasing.
- Smoking is the number one risk factor for lung cancer. Rates of smoking are significantly higher among New Hampshire adults with lower educational attainment and among those with lower income.
- Radon exposure is the second leading cause of lung cancer. Homes in New Hampshire are four times as likely to have elevated levels of radon compared with the United States.
- Lung cancer screening is now available for people who meet certain criteria.

that there will be 224,390 new lung cancer cases and 158,080 lung cancer deaths nationwide.¹ In New Hampshire, it is estimated that 1,140 will be diagnosed with lung cancer and 770 will die from it in 2016.²

This issue brief includes data about lung cancer incidence, mortality, and survival in New Hampshire. In addition, it provides information about risk factors associated with lung cancer as well as information about screening and prevention. Data included in this issue brief come from the New

Hampshire State Cancer Registry, the Behavioral Risk Factor Surveillance System, and the New Hampshire Department of Environmental Services.

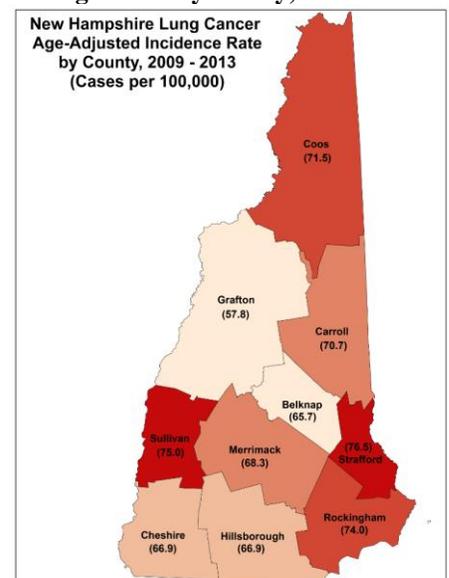
Incidence of Lung Cancer in New Hampshire

In New Hampshire, the overall lung cancer incidence rate is declining.

The overall incidence rate for lung cancer in New Hampshire has declined from 71.74 cases per 100,000 population in the year 2000 to 66.58 cases per 100,000 population in 2013. Over the past 5 years, rates have been declining at an average of 2.2% per year.³

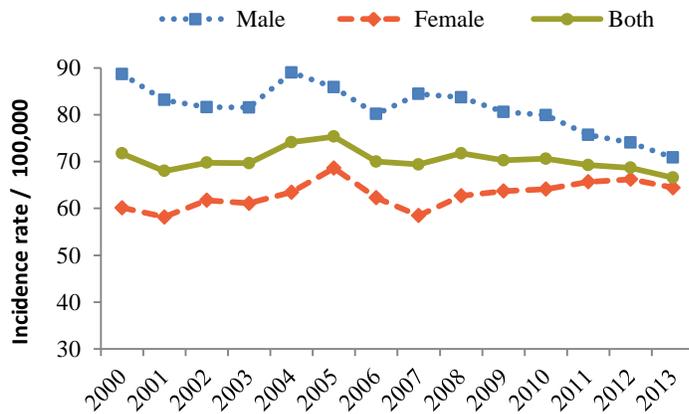
Lung cancer incidence rates in New Hampshire vary by geography. While the 5-year (2009–2013) age-adjusted incidence rate of lung cancer in New Hampshire was 69.04 cases per 100,000 population, some counties experienced lower rates and others experienced higher rates (Figure 1). Grafton County experienced a significantly lower rate at 57.75 cases per 100,000 population. The counties experiencing the highest incidence rates of lung cancer were Strafford County at 76.5 cases per 100,000 population and Sullivan County at 75.0 cases per 100,000 population.⁴

Figure 1: Age-adjusted incidence rate of lung cancer by county, 2009–2013



Source: WISDOM, NH DHHS

Figure 2: Trends in age-adjusted incidence rate by sex, 2009–2013



Source: New Hampshire State Cancer Registry

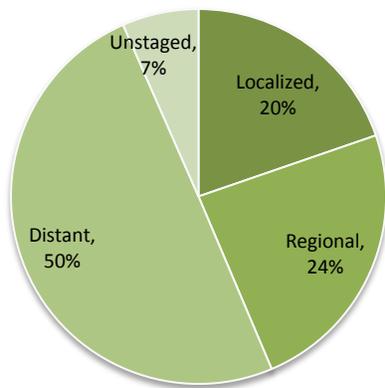
While the overall rate of lung cancer in New Hampshire is declining, there is variance by sex. Consistent with and contributing to the decrease in the overall incidence rate, the rate of lung cancer among males in New Hampshire has decreased from 88.69 per 100,000 population in the year 2000 to a rate of 70.85 per 100,000 population in 2013. During that same time period, the rate among females in New Hampshire increased from 60.13 to 64.43 cases per 100,000 population.³

Lung Cancer Stage of Diagnosis, Survival, and Mortality in New Hampshire

The 5-year survival rate for lung cancer is higher in New Hampshire compared with the nation.

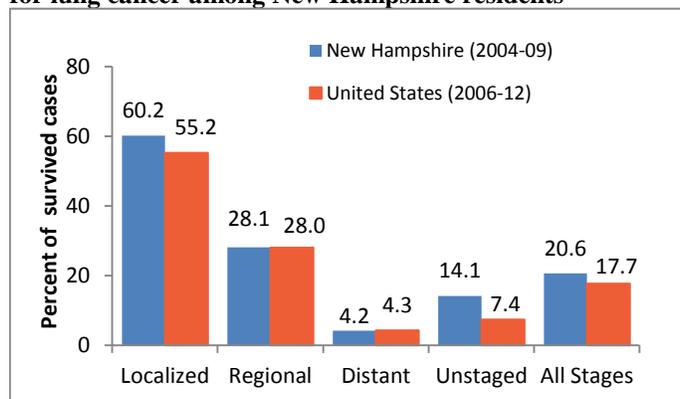
Compared with many other types of screening-amenable cancers, including prostate, breast, and colorectal cancer, lung cancer is less likely to be diagnosed at the localized stage; however, when compared with national data specific to lung cancer, cases in New Hampshire are more likely to be diagnosed at the localized stage than those nationwide. From 2009 to 2013, 20% of lung cancer cases in New Hampshire were diagnosed at the localized stage, compared with 16% at the national level from 2006 to 2012.⁵ Likely attributable to early diagnosis, the New Hampshire 5-year survival rate for all stage lung cancer is higher than the national rate (21% vs 18%).⁶

Figure 4: Lung cancer stage at diagnosis among New Hampshire residents, 2009–2013



Source: WISDOM, NH DHHS

Figure 4: Five-year relative survival by stage at diagnosis for lung cancer among New Hampshire residents



Source: CDC, United States Survival Monograph

Lung cancer mortality rates varied by county. Between 2010 and 2014, the overall State age-adjusted mortality rate for lung cancer was 44.6 deaths per 100,000 population. The rate in Strafford County was significantly higher at 55.0 deaths per 100,000 population, and significantly lower in Grafton County at 36.2 deaths per 100,000 population.⁴

Risk Factors Associated with Lung Cancer

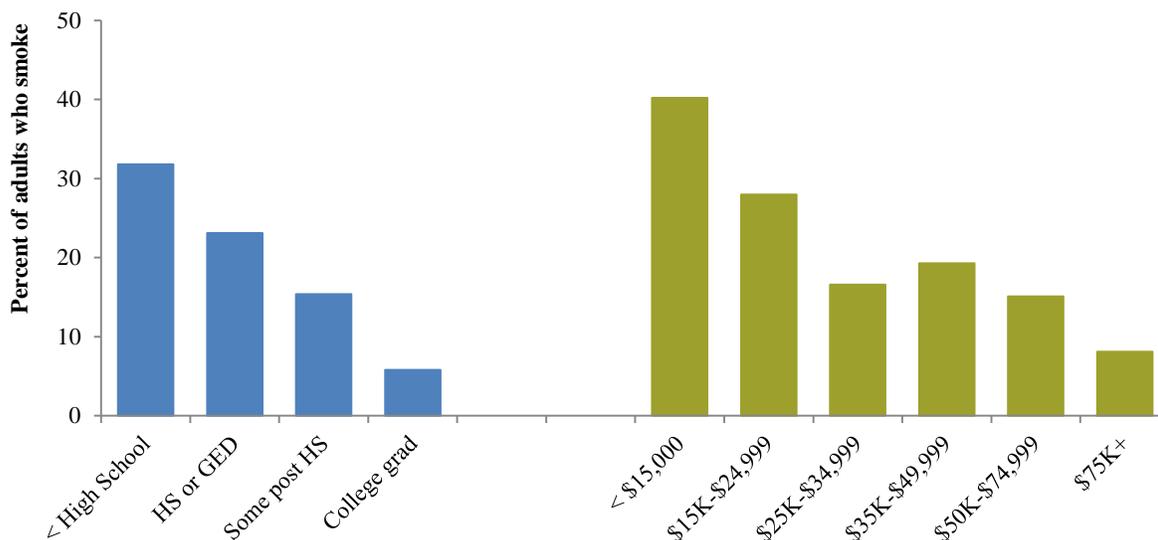
Smoking

Cigarette smoking is the leading cause of lung cancer.

In the United States, cigarette smoking is linked to about 80% to 90% of lung cancers.⁷ In 2015, approximately 16% of New Hampshire adults reported that they currently smoke.⁸

According to the New Hampshire Behavioral Risk Factor Surveillance System (BRFSS), smoking is significantly higher among individuals who have less than a high school education (32%). The data show that the rate of smoking decreases as educational attainment increases. Similarly, data show that the smoking rate is significantly higher among individuals whose household income is less than \$15,000 per year (40%), and that the rate of smoking decreases as household income increases.

Figure 5: Current adult smokers in New Hampshire by educational attainment and annual household income, 2015



Source: NH Behavioral Risk Factor Surveillance System (BRFSS), 2015

Exposure to secondhand smoke (smoke that is inhaled involuntarily from tobacco being smoked by others) is also a risk factor for developing lung cancer. According to data from the CDC's State Cancer Profiles, 84% of New Hampshire adults report that they do not allow people to smoke anywhere inside their home, 82% report that they work in non-smoking environments, and 100% of the population in New Hampshire benefits from smoke-free restaurant laws.⁹

Radon in Air

Thirty percent of homes in New Hampshire have elevated concentrations of radon in air.

After smoking, radon is the next leading cause of lung cancer in the United States. Radon is a naturally occurring radioactive gas arising from soil and bedrock. It can seep into homes through openings or cracks in the foundation. Radon gas has no taste, color, or odor and must be tested for in order to be detected. Radon decays quickly and gives off tiny radioactive particles. When these particles are inhaled they can damage the cells that line the lungs.

Long-term exposure to radon inhalation can lead to lung cancer. According to estimates from the United States Environmental Protection Agency (EPA), radon gas is responsible for approximately 20,000 lung cancer-related deaths each year in the United States.¹⁰ Exposure to the combination of radon gas and cigarette smoke creates a greater risk of lung cancer than exposure to either factor alone.

Nationally, nearly 1 out of every 15 homes (7%) is thought to have an elevated rate of radon. In New Hampshire, that proportion is much higher, with 30% of homes having radon concentrations in the air that is above the EPA recommended level of 4.0 picocuries per liter (pCi/L) or higher.¹¹

Radon in Water

All private wells should be tested for radon.

Less frequently, radon can enter the home through running water used for drinking and bathing. The New Hampshire Department of Environmental Services recommends that water from private wells with radon concentrations at or above 10,000 pCi/L have water treated to remove radon in conjunction with air mitigation. If the radon concentration is between 2,000-10,000 pCi/L, the treatment of water may be advisable if air concentration in the home exceeds 4 pCi/L. When radon is below 4,000 pCi/L, the air and water in the home should be retested every three to five years.¹¹

Other Risk Factors

Other risk factors associated with lung cancer include occupational or environmental exposures to silica and asbestos; exposure to certain heavy metals such as arsenic, chromium, and cadmium; exposure to organic chemicals and radiation; and genetic factors, family history, and history of pulmonary fibrosis or chronic obstructive pulmonary disease (COPD).

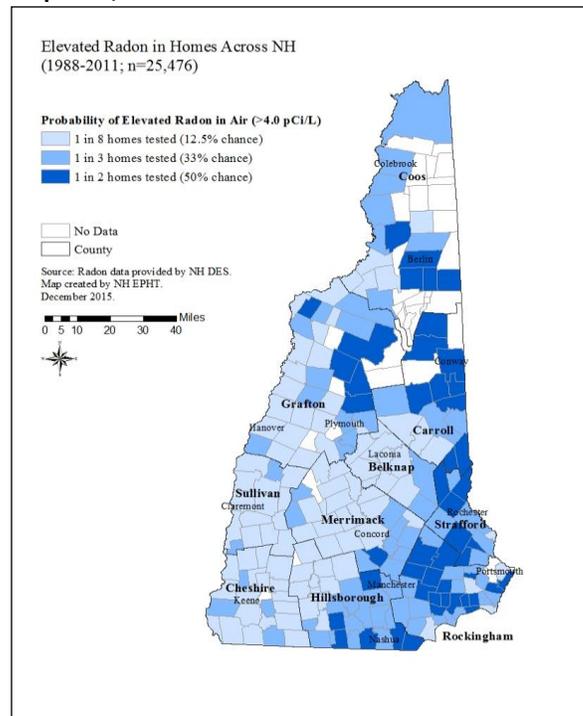
Lung Cancer Screening

The aim of lung cancer screening is to find lung cancer in earlier stages when it is easier to treat. In December 2013, the US Preventive Services Task Force recommended annual screening for lung cancer with low-dose computed tomography (LDCT) for people who:

- Have a history of heavy smoking, **and**
- Smoke now or have quit within the past 15 years, **and**
- Are 55 to 80 years of age

Heavy smoking is defined as having a smoking history of 30 pack years or more. A pack year means that someone has smoked an average of one pack of cigarettes per day for one year; for example, a person could have smoked on pack per day for 30 years, or 2 packs per day for 15 years. It is recommended

Figure 6: Elevated radon in homes across New Hampshire, 1988–2011



Source: NH Department of Environmental Services and the NH Environmental Public Health Tracking Program

that screening be discontinued once a person has not smoked for 15 years or once a person develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery.¹²

Conclusions

- Lung cancer is the leading cause of cancer-related deaths in the United States and in New Hampshire. While the incidence rate of lung cancer in New Hampshire is declining overall and among males, the rate among females is increasing.
- Smoking is the number one risk factor associated with lung cancer. The second leading risk factor is exposure to radon gas. Homes in New Hampshire are four times more likely to have elevated levels of radon as compared with homes throughout the United States. To reduce the incidence of lung cancer, concerted efforts are needed to reduce smoking and exposure to second-hand smoke and to encourage testing and mitigation for radon in air and water.
- Screening for lung cancer according to the United States Preventive Services Task should help to diagnose lung cancer earlier when treatment is likely to be more effective and lead to better survival rates.

Prepared by:

Regina Flynn, Whitney Hammond, Monawar Hosain, and Karen Paddleford

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Contact Information:

Regina Flynn, BS
Program Coordinator
Comprehensive Cancer Control Program
New Hampshire Department of Health and Human Services
Division of Public Health Services
29 Hazen Drive, Concord, NH 03301
Telephone: 603-271-4473
TDD Access Relay: 800-735-2964
rflynn@dhhs.state.nh.us