

## **Lung Cancer Screening: Making it the New Norm for Early Detection and Improved Survival**

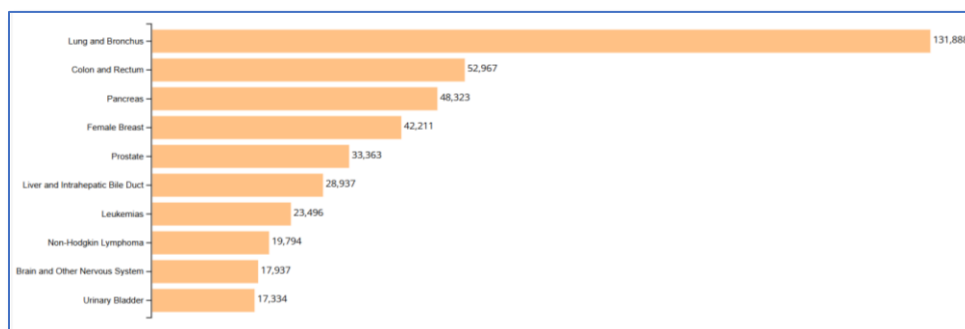
**By Susan P. Opar MD, FAAFP; Heather Dacus, DO, MPH; Mary Reid BSN, MSPH, PhD and Whitney Mendel, MSW, PhD**

A 62-year-old white female with a 40-year history of smoking an average of one pack per day, comes in for a routine primary care visit. Lung cancer screening has been offered over the past several years and she continues to decline stating, “if it’s going to happen, it’s going to happen.” She declines again during today’s visit. She has no current signs or symptoms of lung cancer. She currently takes a medication for cholesterol and is otherwise healthy.

As primary care providers, you may experience similar encounters in your clinic. Why is counseling for lung cancer screening important? What are the guidelines? What are the risks and how well are we doing across New York State (NYS) to screen those at high risk for lung cancer? This article provides insights for us to consider as primary care providers.

### **Lung cancer burden in the United States and New York State**

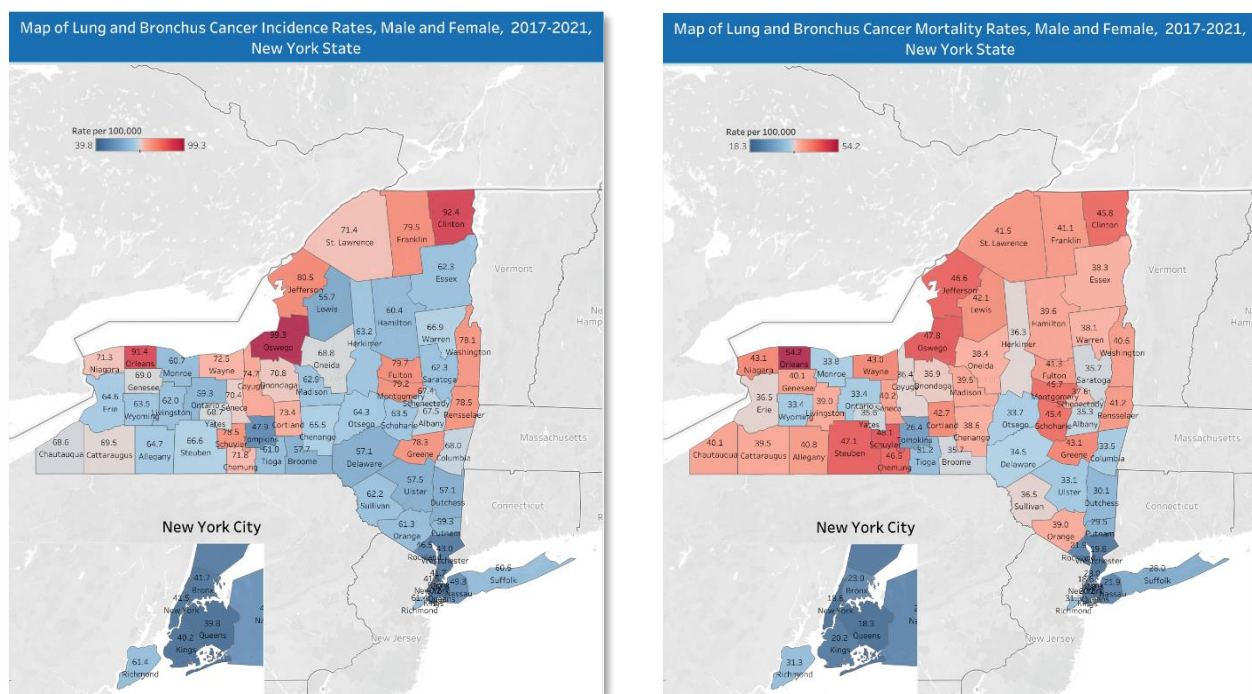
Lung cancer is the leading cause of cancer death and causes more deaths than colon, breast, and prostate cancers combined (refer to Figure 1).<sup>1</sup> In 2024, an estimated 125,070 people in the United States (US) and approximately 6,100 people in NYS died of lung cancer.<sup>2</sup>



**Figure 1** Top 10 cancers by number of cancer deaths United States, 2022

Source <https://www.cdc.gov/cancer/dataviz/>, released in June 2024.

Lung cancer incidence rates are lower in New York City (NYC) and surrounding areas compared to Upstate NY and mortality from lung cancer follows a similar pattern.<sup>3</sup> In 2021, the incidence of lung cancer in NYC was 40.4/100,000 compared to 57.6/100,000 in NYS excluding NYC and the mortality from lung cancer was 18.1/100,000 in NYC and 29.4/100,000 in NYS excluding NYC.<sup>4</sup> Refer to Figure 2 for county-specific incidence and mortality rates.



**Figure 2.** Incidence and mortality of lung cancer in New York State by county

Source: <https://www.health.ny.gov/statistics/cancer/registry/ratebyCounty.htm>

### Lung cancer causes

Approximately 1.6 million New Yorkers smoke. This represents approximately 11.3% of the NYS population.<sup>5</sup> From 1997 to 2022, smoking rates in the US decreased by 53%.<sup>5</sup> However, cigarette smoking remains the leading cause of preventable death and disease in the US and is the cause of 80% to 90% of lung cancer deaths.<sup>6,7</sup> People who smoke are 15 to 30 times more likely to be diagnosed with lung cancer and die from lung cancer compared to those without a smoking history.<sup>7</sup> People without a smoking history have a 20 to 30% higher chance of developing lung cancer if they are exposed to secondhand smoke.<sup>8</sup> Radon is responsible for approximately 3-14% of lung cancer cases and is the second leading cause of lung cancer among individuals with a smoking history and the leading cause of lung cancer in people who do not smoke.<sup>9</sup> Occupational exposures (asbestos, arsenic, diesel exhaust, chromium), outdoor air pollution, a personal or family history of lung cancer, a history of radiation to the chest, and non-cancer lung disease such as chronic obstructive pulmonary disease and pulmonary fibrosis also increase the risk of lung cancer.<sup>7</sup>

### Screening for lung cancer and the supporting research

Several randomized trials have demonstrated the benefit of lung cancer screening. The **National Lung Cancer Screening Trial (NLST)**, sponsored by the National Cancer Institute and the American College of Radiology, enrolled 53,454 participants, and found a **20% reduction** in lung cancer-specific mortality in the lung cancer screening cohort using low-dose computed tomography (LDCT).<sup>10</sup> Lung cancer screening was associated with a 6.7% reduction in all-cause mortality due to the detection of other health conditions found on screening. In the trial, 70% of cases of lung cancers were diagnosed at an early stage among those screened compared to 34% of cases in the unscreened population.

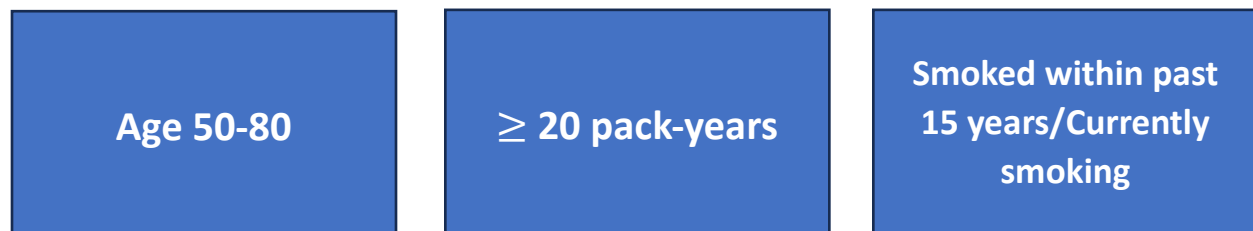
The **Multicentric Italian Lung Detection (MILD)** study included 4,099 high risk participants randomized to either annual lung cancer screening with LDCT, biennial LDCT, or no screening. An **overall 39% reduction** in lung cancer-specific mortality was found for patients who received lung cancer screening.<sup>11</sup> When annual screening continued past five years, lung cancer-specific mortality reduced by **58%**.<sup>11</sup>

In the **NELSON Trial**, LDCT was compared to unscreened, high-risk patients in 15,789 participants. A **25% reduction** in lung cancer-specific mortality occurred in the screened population.<sup>12</sup>

Studies have shown the number of people who need to be screened to save one life with lung cancer screening is 208 compared to mammography screening for breast cancer which ranges from 377 to 1,904 based on age, and for colorectal cancer screening, flexible sigmoidoscopy is noted to be 850, and fecal occult blood testing at 1,000.<sup>13,14,15</sup>

### Lung cancer screening recommendations

The United States Preventive Services Task Force (USPSTF) recommends with a “B” rating (i.e., with moderate certainty) annual lung cancer screening with LDCT in persons at high risk of lung cancer. High-risk eligibility for screening includes persons ages 50 to 80 years with at least a 20 pack-year smoking history who currently smoke or have quit smoking within the past 15 years. Screening should be discontinued once a person has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery.<sup>16</sup> A pack-year calculator can be found at <https://www.lungcheck.org/providers#calculator>.



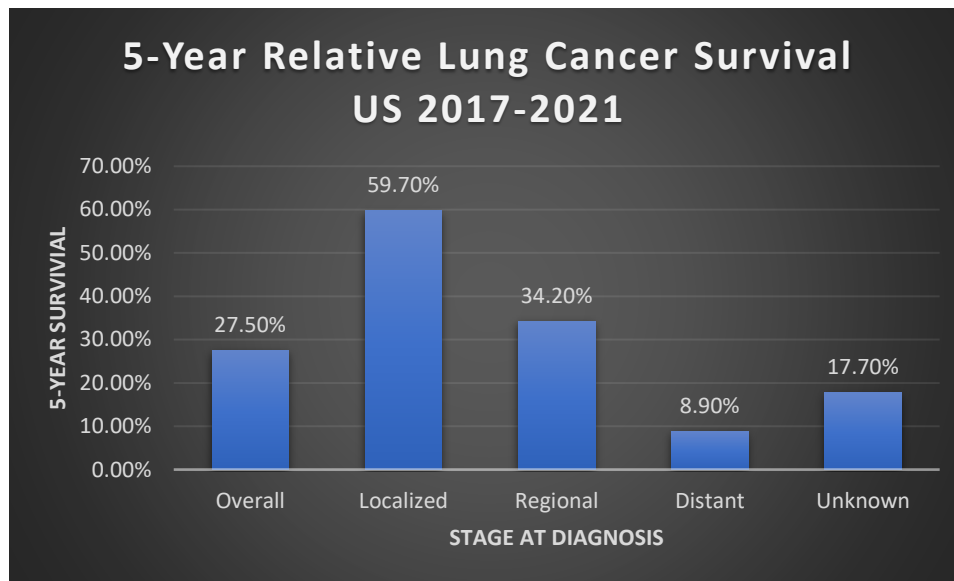
**Figure 3.** USPSTF lung cancer screening qualifications

In March 2021, the American Academy of Family Physicians updated their recommendations in support of the USPSTF recommendation for lung cancer screening.<sup>17</sup> Many professional organizations recommend annual LDCT screening for individuals at high risk for lung cancer based on their age and smoking history. These include the National Comprehensive Cancer Network (NCCN), the American College of Radiology, the American Cancer Society, and the American Lung Association. Some organizations’ recommendations differ from the USPSTF recommendation. For example, the National Comprehensive Cancer Network guideline for lung cancer screening does not place a cut off above 15 years since quitting smoking and includes individuals who have smoked for 20+ years, not just a 20 pack-year history.<sup>18</sup>

### Screening benefits/survival

Early detection and diagnosis through lung cancer screening is an important tool that can allow treatment to begin when lung cancer is most curable. The current survival rate for all stages of lung cancer in the US is poor at 27.5%.<sup>19</sup> The 5-year survival rate is 33.9% in NYS, higher than the national rate.<sup>20</sup> From 2017 to 2021, early-stage diagnosis accounted for only 28.1% of cases in the US.<sup>19</sup>

Unfortunately, almost 45% of patients continue to be diagnosed at a late stage, when, as shown in Figure 4, only 8.9% of these patients will be alive at 5 years.<sup>19</sup> When patients present with lung cancer symptoms such as digital clubbing, weight loss, hemoptysis, persistent cough, chest pain, a hoarse voice, worsening shortness of breath, and recurrent pneumonia or bronchitis, lung cancer treatment success is greatly reduced.<sup>21</sup> The goal of screening is to find lung cancer before it can become difficult to treat and when it is associated with higher survival rates. One study showed a five-year survival rate of 92% for patients who were diagnosed with stage 1 lung cancer and underwent surgical resection within one month.<sup>22</sup> In NYS, over the past five years, the early diagnosis rate has improved by 10% and the survival rate has improved by 32%.<sup>20</sup> Increasing screening awareness and education and supporting patient access and follow up to quality lung cancer screening is needed to continue to improve these rates.



**Figure 4.** Lung cancer survival at 5 years based on cancer location

Source: [www.cdc.gov/united-states-cancer-statistics/publications/lung-cancer-stat-bite.html](http://www.cdc.gov/united-states-cancer-statistics/publications/lung-cancer-stat-bite.html)

### Lung cancer screening shared decision-making

A shared decision process for lung cancer screening is recommended prior to patients pursuing LDCT.<sup>23</sup> Shared decision-making should include:

- Determining a patient's eligibility.
- Using one or more decision aids to explain lung cancer screening, for example: <https://www.cancer.org/content/dam/cancer-org/cancer-control/en/booklets-flyers/lung-cancer-screening-patient-decision-aid.pdf>.
- Discussing with the patient the importance of annual screening, reviewing the impact of comorbidities, and discussing the patient's ability and willingness to pursue diagnosis and treatment if a screening test identifies anything abnormal.
- Understanding a patient may not be appropriate for screening if they have multiple and serious comorbid conditions, especially if they are close to the upper limit for screening age.
- Emphasizing the importance of remaining nonsmoking if the patient formerly used tobacco products and offering smoking cessation for individuals living with tobacco use disorder.

Other examples of shared decision-making tools are available including this one recommended by the National Comprehensive Cancer Network: <https://shouldiscreen.com/English/home>.

Patients may feel shame and guilt when discussing lung cancer screening. Primary care providers should use appropriate language to reduce stigma and allow patients to feel comfortable pursuing screening. One way to actively prevent stigmatizing individuals is in the words we use when discussing tobacco use and lung cancer screening. Language guides are available to assist and can be found at <https://www.iaslc.org/IASLCLanguageGuide>. For example, using “a person with active tobacco use” instead of “a smoker” identifies the patient as a person and not as a disorder. More information on reducing stigma can be found at <https://cancercontrolap.org/news/lung-cancer-awareness-month-campaign/#best-practices-for-communicating-about-lung-cancer>.

### **Potential risks of lung cancer screening**

In high-risk patients, the potential benefit of screening outweighs the potential risks.<sup>24</sup> When providers accurately identify appropriate candidates for screening and when radiologists use lung nodule reporting systems such as the American College of Radiology’s Lung-RADS (<https://www.acr.org/Clinical-Resources/Clinical-Tools-and-Reference/Reporting-and-Data-Systems/Lung-RADS>) to categorize and communicate findings, these risks can be reduced.<sup>25</sup> Proper education and risk assessment are essential to reduce the risks associated with lung cancer screening. Potential risks of lung cancer screening include:<sup>18,26</sup>

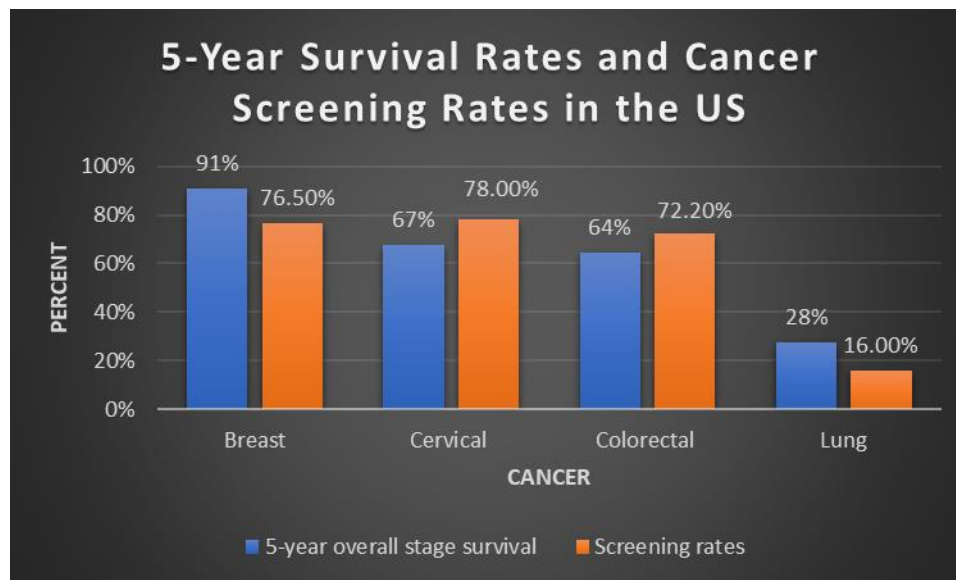
- False positives, approximately 12-14% of LDCTs, and reduces with subsequent screening.
- Following slow-growing, indolent disease that may never cause symptoms or death.
- Incidental findings which may need further evaluation, estimated at 6% of LDCTs.
- Diagnostic procedure complications.
- Radiation exposure, although one LDCT scan is equal to approximately six months of natural background radiation by living on Earth, and slightly higher than a mammogram.
- Increased anxiety while awaiting testing and results.
- Financial costs.

### **Screening uptake**

National survey data from the Behavioral Risk Factor Surveillance System (BRFSS) 2022 estimates 13.6 million people in the US are eligible for lung cancer screening per USPSTF criteria.<sup>27</sup> New York State has the sixth largest population of eligible lung cancer screening candidates in the nation, estimated to be nearly 700,000 adults.<sup>27</sup> Even though lung cancer screening is a USPSTF recommendation, there has been very low uptake. Across the US, 8 out of 10 eligible people are not screened.<sup>27</sup> New York State ranks 11<sup>th</sup> in lung cancer screening rates among all states.<sup>20</sup> In NYS, it is estimated only **19.3%** of high-risk persons have been screened, demonstrating the need for more primary care providers to identify patients who are eligible to be screened, engage them in a shared-decision making conversation, and recommend annual lung cancer screening.<sup>20</sup> There is also a need for improving lung cancer screening public education and access to screening.

Figure 5 shows how lung cancer five-year survival rates and lung cancer screening prevalence compare to other cancers in the US.<sup>20,28,29</sup> Lung cancer screening rates are lagging far behind those of breast, cervical, and colorectal cancer screening. If we are not screening for lung cancer, we will not see a

decrease in mortality and we will continue to see advanced-stage lung cancers where cure can be limited. With an increase in screening, the expectation is to see a shift to lower stage cancers and an improvement in mortality rates.



**Figure 5.** Survival rate and screening rate comparison

Source: <https://gis.cdc.gov/Cancer/USCS/#/Survival/> and <https://progressreport.cancer.gov/detection>

### Disparities in lung cancer screening outcomes

Unfortunately, in NYS, as in many locations across the country, compared to White New Yorkers, Black New Yorkers have a lower 5-year lung cancer survival rate, a lower rate of diagnosis at an early stage, a lower rate of pursuing surgery, and a higher rate of not receiving treatment.<sup>20</sup> The Latino community also suffers from disparities regarding lower rates of surgery and diagnosis at an early stage.<sup>20</sup> To avoid widening health disparities, tailored and responsive counseling strategies should be implemented. Some examples to improve access to and acceptance of lung cancer screening include deploying mobile radiology units to ease transportation burdens; finding low-cost, efficient transportation for patients; setting up screening sites in community clinics with high rates of lung cancer and smoking; using motivational interviewing strategies to make the screening discussion patient-focused; learning about cultural values of minority groups in your community; utilizing community leaders and events to increase education about screening; providing educational materials in the languages of your patient population; and utilizing translation services.<sup>25,30</sup>

### Coverage and quality measurement

The USPSTF 'B' recommendation for lung cancer screening requires coverage under the Affordable Care Act for individuals determined to be at high risk.<sup>31</sup> The Centers for Medicare and Medicaid Services reimburses for annual LDCT for high-risk individuals up through age 77 years if providers engage these individuals in a shared decision-making process.<sup>23</sup> New York State Medicaid fee-for-service programs also cover annual lung cancer screening. Some cost sharing for procedures and follow up care may exist. Legislation is in the NYS Legislature to remove cost-sharing and require mandatory health insurance coverage for follow up diagnostic services after an abnormal LDCT screening exam.<sup>32</sup>

According to the National Committee for Quality Assurance, quality measure development for lung cancer screening is underway and expected to be released sometime in 2026.<sup>27,33</sup> The Healthcare Effectiveness Data and Information Set, or HEDIS, is a tool utilized by more than 90% of US health plans to measure quality and performance aspects of health care and services focusing on prevention, screening, and chronic disease management.<sup>34</sup> Measurement data is used to identify how often insurers are providing evidence-based care, monitor quality improvement, and allow comparison with other plans.<sup>35</sup> More than 235 million people in the US are enrolled in health plans reporting quality results using HEDIS.<sup>34</sup> **With lung cancer screening anticipated to become a HEDIS measure in 2026**, primary care will need to be comfortable adding lung cancer screening to their care plans and into clinical workflows for appropriate patients. Primary care practices that want to build screening into patient care can find screening clinical workflow models at <https://hcp.go2.org/workflow-models/>. Lung cancer screening billing assistance can be found at <https://www.lung.org/getmedia/bd0af1bf-1cd8-4fd0-9f8f-47e55c783448/ala-lung-cancer-screening-billing-guide-final> and includes CPT, ICD 10, and procedure codes to use for shared decision making, documenting smoking history and smoking cessation interventions.

### **The New York State Lung Cancer Screening Action Team**

To combat the devastating effects of lung cancer in NYS, the NYS Cancer Consortium formed the Lung Cancer Screening Action Team (LCSAT). The LCSAT is taking the lead on mobilizing multi-level resources and statewide partnerships aimed at increasing lung cancer screening using guideline-driven, evidence-based strategies. The LCSAT has already worked to establish a NY Lung Cancer Screening locator (<https://www.nylungcancerscreening.com/>) and is currently partnering with the NYS Quitline to counsel high-risk individuals about the importance of lung cancer screening. Primary care providers can be a voice on this Action Team and are encouraged to become a part of it by visiting: <https://sites.google.com/view/nys-lcsat-public/home>.

Lung cancer screening resources jointly developed by the NYS Quitline and LCSAT can be found at <https://www.nysmokefree.com/print-materials/>.

### **Conclusions**

- Lung cancer is the leading cause of cancer mortality with a low 5-year survival rate. Primary care physicians must generate an urgency for lung cancer screening. Alongside breast, colorectal, and cervical cancer screening, lung cancer screening must become a new norm.
- Lung cancer screening can find cancers early and increase survival. Current low screening rates highlight the need for improvement in lung cancer screening awareness and utilization.
- When primary care physicians discuss yearly lung cancer screening with their patients, they can raise awareness, offer screening to appropriate patients, address tobacco cessation, and save lives.

| <b>Resources</b>                                                                                                                                                                                                                                                     |
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| Comprehensive Cancer Control resource listing: <a href="https://cccnationalpartners.org/wp-content/uploads/2024/10/CCCNP-LuCaS-Resource-List-10.01.2024.pdf">https://cccnationalpartners.org/wp-content/uploads/2024/10/CCCNP-LuCaS-Resource-List-10.01.2024.pdf</a> |
| NYS Quitline: 1-866-NY-QUITS (1-866-697-8487), text QUITNOW to 333888, or visit <a href="https://www.nysmokefree.com">nysmokefree.com</a>                                                                                                                            |

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| American Cancer Society: <a href="https://www.cancer.org/content/dam/cancer-org/cancer-control/en/booklets-flyers/lung-cancer-screening-patient-decision-aid.pdf">https://www.cancer.org/content/dam/cancer-org/cancer-control/en/booklets-flyers/lung-cancer-screening-patient-decision-aid.pdf</a> |
| GO2 For Lung Cancer patient education video: English: <a href="https://youtu.be/i0tvWY22gGc">https://youtu.be/i0tvWY22gGc</a> Spanish: Spanish: <a href="https://vimeo.com/901685865">https://vimeo.com/901685865</a>                                                                                |
| Blueprint for lung cancer screening programs: <a href="https://www.elcn-lung-cancer-screening-taskforce-blueprint-march-2024.pdf">*elcn-lung-cancer-screening-taskforce-blueprint-march-2024.pdf</a>                                                                                                 |
| American Lung Association quiz and information for patients: <a href="http://www.lung.org/lung-health-diseases/lung-disease-lookup/lung-cancer/saved-by-the-scan">www.lung.org/lung-health-diseases/lung-disease-lookup/lung-cancer/saved-by-the-scan</a>                                            |
| NY Lung Cancer Screening locator: <a href="https://www.nylungcancerscreening.com/">https://www.nylungcancerscreening.com/</a>                                                                                                                                                                        |

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**Susan P. Opar MD, FAAFP** is a US Army trained family physician at the Albany Stratton VAMC, Albany Medical Center Assistant Professor of Family Medicine, and is currently interning at the NYS Department of Health Bureau of Cancer Prevention and Control as part of her work towards obtaining a master's in public health degree from the University at Albany's College of Integrated Health Sciences.

**Heather Dacus, DO, MPH** is a preventive medicine physician at the New York State Department of Health and serves as Director of the Bureau of Cancer Prevention and Control. She has nearly 20 years of public health experience overseeing statewide cancer screening and prevention initiatives. Dr. Dacus is a longtime steering committee member of the NYS Cancer Consortium.

**Mary Reid BSN, MSPH, PhD** is a cancer epidemiologist, Distinguished Professor of Oncology, Chief of Cancer Screening and Survivorship, and Director of Collaborative Research at Roswell Park Comprehensive Cancer Center. She has over 20 years of experience directing cancer screening and surveillance studies on upper aero-digestive cancers, particularly those evaluating the natural history of epithelial premalignant lesions.

**Whitney Mendel, MSW, PhD** is Outreach and Engagement Manager with the Department of Medicine in Cancer Screening at Roswell Park Comprehensive Cancer Center. She coordinates both the NYS Cancer Consortium's Lung Cancer Screening Action Team and the Western New York Lung Cancer Screening Collaborative and is leading a state-wide environmental scan for lung cancer screening. Prior to joining the Roswell team, Whitney was an associate professor in public health at Daemen University where she led the program's community education track and served as the practicum coordinator.