CASE STUDY

How St. Elizabeth Grew Lung Cancer Screening Rates Exponentially

LDCT screening achieves stage migration while demonstrating value

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Advisory Board

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Overview

The challenge

Nationally, fewer than 6% of eligible patients are screened annually for lung cancer with low-dose CT scans (LDCT), despite strong evidence that it reduces the burden of late-stage diagnosis and mortality from one of the most common and deadliest forms of cancer. The problem is particularly pronounced in Kentucky, which has the country's highest lung cancer incidence rate and one of the worst 5-year survival rates. Like many other organizations, Kentucky-based St. Elizabeth Healthcare's lung cancer screening efforts struggled due to a lack of coordinated attention and resources across the system.

The organization

St. Elizabeth Healthcare is a 5-hospital community health system headquartered in northern Kentucky, with five locations offering cancer services and two additional sites offering imaging services.

The approach

To build a strong lung cancer screening program and deliver high quality care to their at-risk patients, the cancer program relied on a team of dedicated staff to engage a broad base of support and integrate lung cancer screening into routine processes.

The result

St. Elizabeth exponentially increased the volume of annual LDCT screenings and achieved a 36.3% rolling 12-month capture rate of eligible patients attributed to St. Elizabeth PCPs in 2019. They have also seen impressive stage migration, indicating improved clinical outcomes from earlier cancer diagnoses, and demonstrated favorable financial incentives for the screening program's success.

36.3%

Rolling 12-month capture rate of eligible patients in 2019

Source: "Kentucky," *American Lung Association*, https://www.lung.org/research/state-of-lung-cancer/states/kentucky; "Lung Cancer Screening," *National Cancer Institute* (2020), https://progressreport.cancer.gov/detection/lung_cancer; St. Elizabeth Healthcare, Covington, KY.; Oncology Roundtable interviews and analysis.

Approach

How St. Elizabeth grew lung cancer screening rates exponentially

St. Elizabeth Healthcare grew their lung cancer screening program from the ground up by engaging staff to provide comprehensive care, integrating processes, and fostering continued growth with a retail program. This publication details their approach to establishing and growing a lung cancer screening program that has already achieved much-needed victories in early detection.

The four initiatives

How leaders at St. Elizabeth Healthcare developed a successful lung cancer screening program with four key initiatives:

01 Engage and coordinate groups across the organization

02 Dedicate staff and leadership roles for comprehensive, quality care

03 Customize processes in EHR for documentation and billing

04 Build retail screening component to drive growth and accessibility

Source: St. Elizabeth Healthcare, Covington, KY.; Oncology Roundtable interviews and analysis.

01 Engage and coordinate groups across the organization

Driven by the state's high rates of lung cancer incidence and mortality, and encouraged by the results of the landmark National Lung Screening Trial (NLST), a pulmonologist and a radiologist at St. Elizabeth Healthcare in Kentucky came together to develop their lung cancer screening strategy. They attracted the attention and buy-in of the organization's executive leadership and secured appropriate resource allocations for the program in late 2013.

Gaining initial support helped get them off the ground, but St. Elizabeth's team realized that staffing a dedicated team and building a broad base of support from physicians in their system was necessary for meaningful growth.

Team approach fundamental to program's success

St. Elizabeth hired a dedicated thoracic surgeon who drove the program's design forward and led physician outreach. St Elizabeth identified a primary care physician champion and several groups of key providers and associates, including radiologists, pulmonologists, oncologists, data analysts and report writers, process improvement specialists, value-based performance and clinical transformation leaders, and nurse navigators, who collaborated to support the program.

Coordination across this broad, interdisciplinary team was necessary to facilitate program design and operations, increase appropriate referrals, encourage proper documentation, and provide high-quality care to patients.

Source: "National Lung Screening Trial." *National Cancer Institute.* (2014). https://progressreport.cancer.gov/detection/lung_cancer; St. Elizabeth Healthcare, Covington, KY.; Oncology Roundtable interviews and analysis

Outreach and education foster broad support and engagement

St. Elizabeth's primary care physician champion worked with the lung screening program's established foundation—pulmonology, radiology, and thoracic surgery, as well as their nurse navigators—to reach the more than 150 St. Elizabeth primary care physicians, educate them about the program, and encourage them to proactively refer eligible patients.

A key component was educating referring physicians and staff about proper documentation to ensure that the screenings were billable and incidental findings were tagged correctly, and to communicate next steps to manage patient care after screening. Getting each player on-board with the initiative was as important as building the infrastructure of the program itself.

Two techniques proved particularly helpful in motivating physicians to make appropriate referrals to the screening program. First, St. Elizabeth regularly shared the lung screening program's achievements, including patient outcomes and testimonials, and data showing the progress of stage migration in their screened population. Second, the physician champion injected a bit of competition among the referring physicians. He tracked the referrals and on a monthly basis published the rankings of the more than 600 employed physicians in the system who made the most referrals.

Source: St. Elizabeth Healthcare, Covington, KY.; Oncology Roundtable interviews and analysis

ENGAGE AND COORDINATE GROUPS ACROSS THE ORGANIZATION

Figure: Securing support for lung cancer screening program

Buy-in from stakeholders

Develop strategy and secure initial buy-in from:

- Executives
- Clinical groups
- Finance
- Marketing

Outreach to physicians

Coordinate physicians across the care continuum:

- Primary care
- Radiology
- Pulmonology
- Thoracic surgery
- Oncology

Physician engagement

Referral growth

Encourage growth in referrals with data:

- Demonstrating improved clinical outcomes as result of screening
- Tracking individual referral numbers by employed physicians

Process education

Optimize participation in processes by ensuring:

- Appropriate, billable referrals
- Thorough patient identification and intake
- Coordinated communication

Source: St. Elizabeth Healthcare, Covington, KY.; Oncology Roundtable interviews and analysis

02 Dedicate staff and leadership roles for comprehensive, quality care

St. Elizabeth carved out dedicated staff FTEs and clearly defined their responsibilities within the lung cancer screening program to support patient intake and coordination.

Medical Director of Lung Cancer Screening

St. Elizabeth named an official Medical Director of Lung Cancer Screening to oversee the program and sustain its growth and development. Officially recognizing the position and carving out time for it between his other responsibilities allowed him to effectively lead the program and foster its development.

Physicians participate in Lung Nodule Review Board and Clinic

The dedicated thoracic surgeon was committed to developing the program by garnering buy-in from groups across the organization and focusing on quality patient care. He established the Lung Nodule Review Board, which employs a rigorous and programmatic approach to maximizing benefit to St. Elizabeth patients while avoiding unnecessary and potentially harmful downstream procedures.

St. Elizabeth identified a team of physicians to dedicate a portion of their time to the screening program for both a multidisciplinary lung nodule review board and lung cancer clinic. A multidisciplinary team of radiologists, thoracic surgeons, pulmonologists, and primary care physicians run the weekly Lung Nodule Review Board. The board reviews suspicious screening scans from the prior week, as well as incidental and symptomatic scans, and develop a plan for managing each case. Whether the group recommends a surgical procedure or more follow-up scans, their goal is to judiciously reduce harm for patients and identify the most appropriate intervention.

Source: St. Elizabeth Healthcare, Covington, KY.; Oncology Roundtable interviews and analysis

On Thursday afternoons, a thoracic surgeon, pulmonologist, and oncologist hold a multidisciplinary lung cancer clinic. Each week they see between 2-5 patients whose cases were evaluated in the Lung Nodule Review Board. They schedule patients to see the thoracic surgeon, pulmonologist, or oncologist, individually or collectively, depending on the particular case.

Nurse navigators coordinate follow-up and communication

For several years, one full-time nurse navigator staffed the program. In 2019, St. Elizabeth added an additional full-time nurse navigator to support the significant growth in screening volumes.

When a LDCT lung cancer screening is ordered, the EHR automatically flags the order. The central scheduling team or nurse navigator identify ordered LDCT lung cancer screens and reach out to the patient to schedule imaging. The Care Management Team, a department within the broader St. Elizabeth system, ensures that the patients follow through with scheduling their LDCT screening.

Following a patient's lung screening, their radiologist classifies the CT scan findings as category 1-4, based the Lung-RADS criteria, and sends the results to the nurse navigator. The navigator triages patient follow-up based on category:

Nurse navigator responsibilities by scan's Lung-RADS categorization

Category 1, 2	Navigator sends a letter explaining results to the patient's home.
Category 3	Navigator calls patients to deliver findings and schedule 6-month follow-up scan; sends letter explaining screening results.
Category 4	Navigator calls patient to deliver results and recommendation of the Lung Nodule Review Board, and notifies referring physician. Coordinates follow-up with additional imaging, referral, and/or appointment with multidisciplinary clinic the same week.

In addition to carrying out the program's core processes, St. Elizabeth's nurse navigators play a major role in outreach through community events and educating primary care physicians and their staff.

Source: St. Elizabeth Healthcare, Covington, KY.; Oncology Roundtable interviews and analysis

03 Customize processes in EHR for documentation and billing

St. Elizabeth's Informatics Team and EHR Committee were highly engaged in integrating the lung screening processes in the EHR. The teams collaborated to design and implement Best Practice Alerts (BPAs) and Health Maintenance prompts to alert the physicians and staff when a patient met the eligibility criteria for lung cancer screening. These EHR alerts significantly enhance utilization of the testing.

Additionally, the team built out Epic templates and smart phrases, such as *.lungscreening*, and emphasized proper documentation in the EHR. These smart phrases embedded in physician notes and radiology reports allow the screening nurse navigator to identify patients who are eligible for LDCT screening, as well as patients with incidental lung nodule findings. Educating physicians and radiologists on the correct templates and smart phrases to use was crucial to enable nurse navigators to find the patient when they run a report in the EHR.

In addition to streamlining the identification process, thorough documentation is critical for billing and coding. Justifying the patient's eligibility for LDCT lung screening to payers relies on the proper documentation. Additionally, having all elements of the required documentation allows the referring physician to bill and be compensated 0.52 wRVU for counseling the patient on lung cancer screening and engaging in shared decision making.

Source:St. Elizabeth Healthcare, Covington, KY.; Oncology Roundtable interviews and analysis

CUSTOMIZE PROCESSES IN EHR FOR DOCUMENTATION AND BILLING

Relevant coding information:

G0296 – Counseling visit to discuss need for lung cancer screening using LDCT (service is for eligibility determination and shared decision making)

G0297 – LDCT for lung cancer screening

Medicare will deny G0296 and G0297 for claims that do not contain specific ICD-10 codes, for example:

Z87.891 for former smokers (personal history of nicotine dependence)

F17.21 for current smokers (nicotine dependence)

See a full list of nicotine dependence codes

St. Elizabeth continues to assess new opportunities for improved clinician EHR education. For example, they realized that in Epic EHR, the patient's smoking history—a key eligibility criterion—does not update automatically from year to year (i.e., if a patient's smoking history was entered one year ago, the system will not automatically add a year to their total smoking history). As a safeguard, the provider will not be able to place an order for the lung cancer screen without ensuring the smoking history and age criteria are met and properly documented in the EHR. Thorough education and checkpoints built into the EHR can help to improve documentation of smoking history.

Source: "Low Dose CT Lung Cancer Screening FAQ," *American College of Radiology*, https://www.acr.org/Clinical-Resources/Lung-Cancer-Screening-Resources/FAQ; St. Elizabeth Healthcare, Covington, KY.; Oncology Roundtable interviews and analysis

04 Build retail screening component to drive growth and accessibility

In an effort to further promote early lung cancer detection, St. Elizabeth built a retail screening program to reach patients at significant risk of developing lung cancer who may fall outside of payers' screening criteria. The retail screening program provides an option to pay a flat rate of $99 for the screening.

Providers identify patients at risk of developing lung cancer by using the NCCN risk scale. This model divides risk level into low, moderate, and high risk levels. The high risk determination is further broken down into Groups 1 and 2, both of which meet NCCN criteria for annual lung cancer screening. Group 1 is defined by CMS criteria. To determine qualification for Group 2, providers utilize the Tammemagi lung cancer risk prediction model and choose an entry qualification of ≥ 1.3% 6-year probability of contracting lung cancer. Though annual screening is recommended for patients falling within both Group 1 and 2 of the high risk category, payers do not always cover screening for Group 2 patients.

NCCN guidelines for lung cancer screening

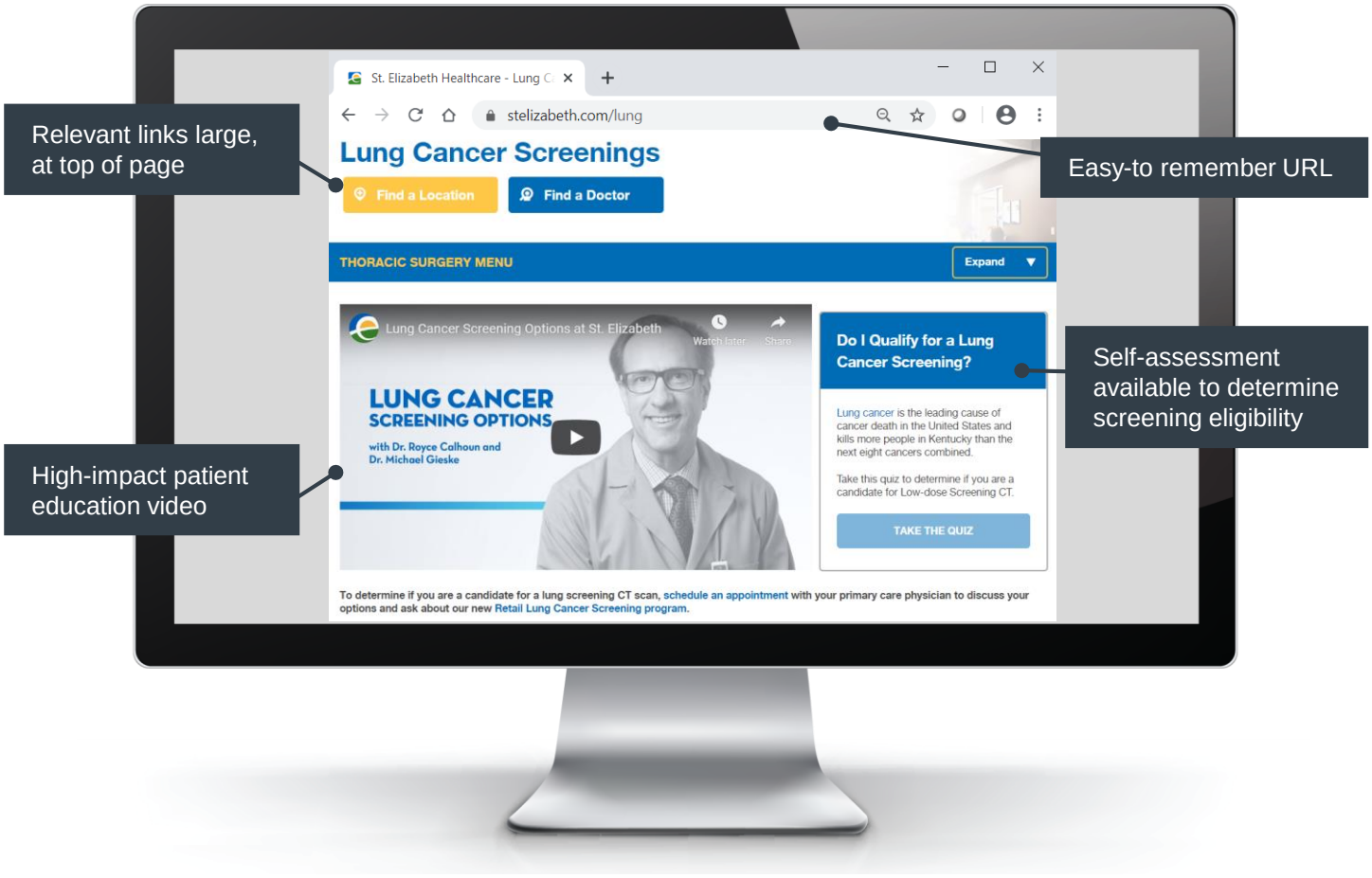
Level of risk	Risk factors		Screening guideline
High risk	Group 1 • 55 to 77 years of age • 30 or more pack years of smoking and has quit within the past 14 years • Current smoker	Group 2 • 50 years of age or older • 20 or more pack years of smoking • Other risk factors (other than second-hand smoke)	Yearly screening is recommended
Moderate risk	• 50 years of age or older • 20 or more pack years of smoking or contact with second-hand smoke • No other risk factors		Not recommended
Low risk	• 49 years of age and younger, and/or • 19 or fewer pack years of smoking		Not recommended

Source: "Lung Cancer Screening,," *NCCN* (2020). https://www.nccn.org/patients/guidelines/content/PDF/lung_screening-patient.pdf#page=18 ; St. Elizabeth Healthcare, Covington, KY.; Oncology Roundtable interviews and analysis

BUILD RETAIL SCREENING COMPONENT TO DRIVE GROWTH AND ACCESSIBILITY

Patients can access the program through a physician referral or St. Elizabeth's website. The website directs patients to take a quiz to preliminarily determine their eligibility for LDCT and instructs them to call their PCP or the lung screening nurse navigator directly. Appointments are then arranged for the required face-to-face encounter.

Figure: Lung cancer screening website marketing



Program leadership anticipates a modest increase in volumes through the retail program, and hope to reach more patients who are eligible for screening through their patient-friendly marketing and intake tool on their website.

Source: "Lung Cancer Screenings," *St. Elizabeth Healthcare*, stelizabeth.com/lung .; St. Elizabeth Healthcare, Covington, KY.; Oncology Roundtable interviews and analysis

Results

St. Elizabeth Healthcare has seen a dramatic increase in LDCT screening volumes, a high capture rate, improved clinical outcomes via stage migration, and benefits to their bottom line since starting the lung cancer screening program.

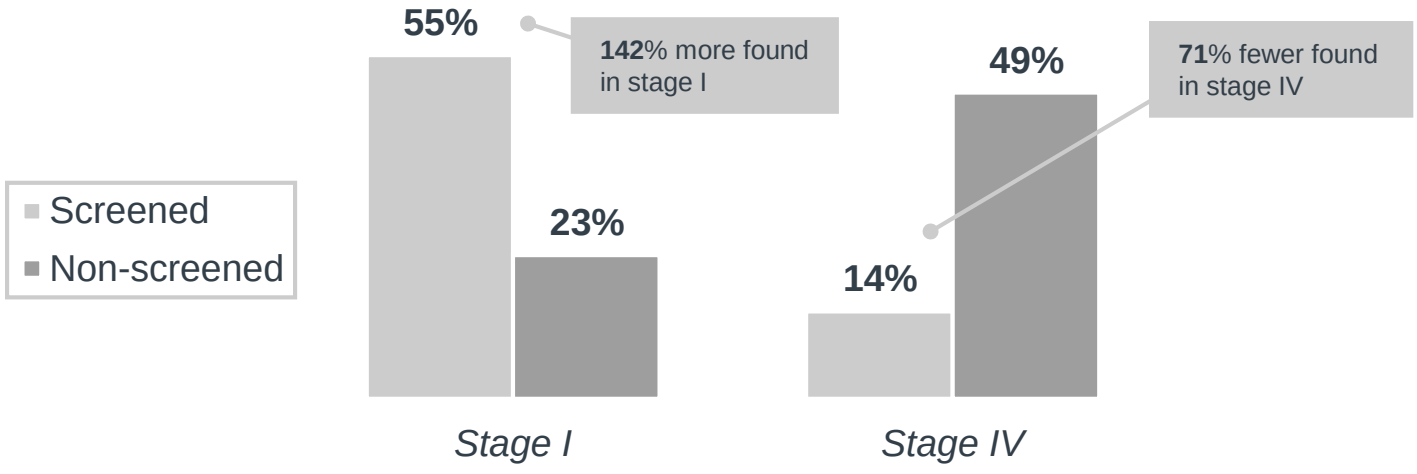
Moving the needle on stage migration

St. Elizabeth physicians observed 71% fewer stage 4 diagnoses and a 142% increase in stage 1 diagnoses in the screened population compared to the non-screened patient population. A new lung cancer is found once every 57 scans, and 86% of these identified cases are found at stage 3 or earlier. The team is very cognizant of minimizing harm from unnecessary downstream procedures, and has carefully tracked a false positive rate of 5.23%.

Stage of lung cancer diagnosis in screened and non-screened populations

2015 – 2019

Screened n = 204; non-screened n = 1700



Source: St. Elizabeth Healthcare, Covington, KY.; Oncology Roundtable interviews and analysis

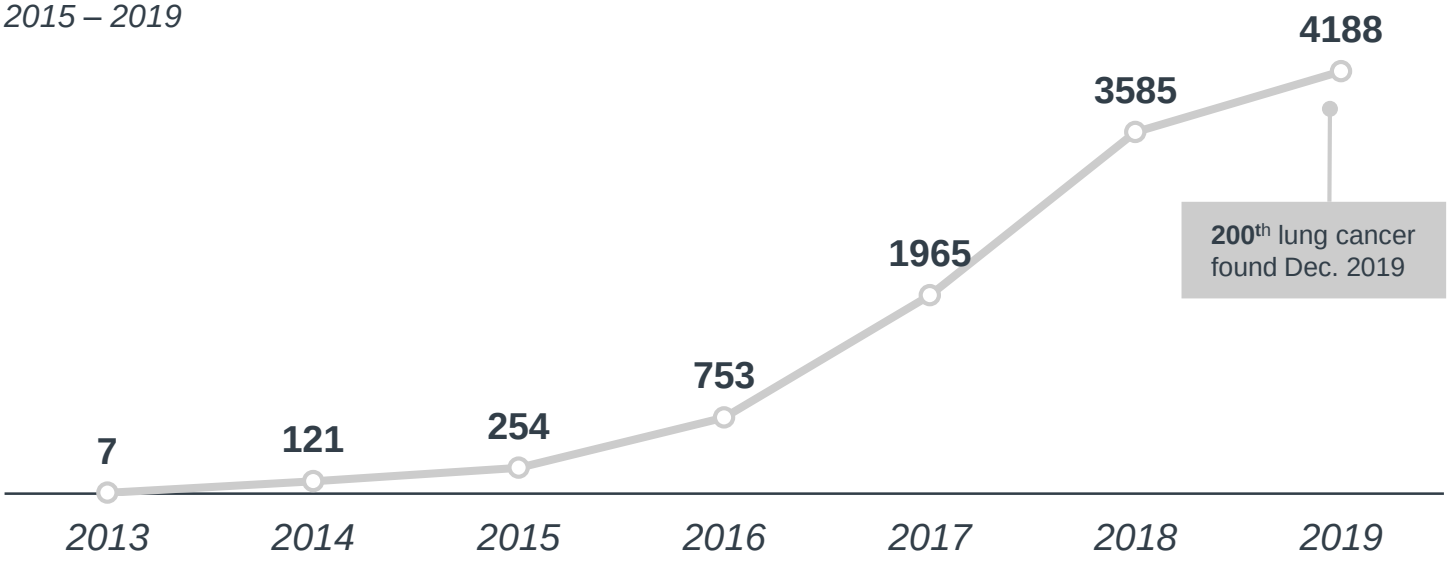
RESULTS

Substantial growth in volumes

St. Elizabeth Healthcare has seen a dramatic increase in LDCT screening volumes since the inception of the program in 2013, totaling over 11,800 scans as of May 2020.

Annual LDCT lung cancer screening volumes

2015 – 2019



Robust capture rates

In 2019, their rolling 12-month capture rate was 36.3% of eligible patients attributed to a St. Elizabeth PCP who completed their LDCT lung cancer screen. In total, since 2013, 69.6% of eligible patients attributed to St. Elizabeth PCPs had ever been screened by LDCT or another qualifying CT of the chest.

36.3% Rolling 12-month capture rate in 2019

69.6% Of total eligible patients screened in their system

Kentucky has become a national leader in state-wide lung cancer screening rates, ranking 4th nationally in the 2019 ALA State of Lung Cancer Report. The team at St. Elizabeth consider their efforts, as well as state-based initiatives they participate in, to be part of this notable success.

Source: "Kentucky," *Lung Cancer Association*, (2019). https://www.lung.org/research/state-of-lung-cancer/states/Kentucky; St. Elizabeth Healthcare, Covington, KY.; Oncology Roundtable interviews and analysis

RESULTS

Screening aligns with program's financial aims

In addition to reducing the burden of late-stage lung cancer, St. Elizabeth has documented a positive ROI from their lung screening program. Primary areas of revenue generation come from increased overall patient volumes and a more favorable surgical case mix from stage migration.

The system saw a 27% increase in thoracic surgery volumes, a significant proportion of which was driven by the LDCT screening program findings. Stage migration has resulted in higher volumes of early stage lung cancers, which are treated with surgery more often and are more profitable than treating late stage cancers.

27%

Increase in thoracic surgery volumes

St. Elizabeth's lung cancer screening program demonstrates how improving the health of the patient population by reducing the burden of late-stage lung cancer also aligns positively with the program's financial aims.

Source: St. Elizabeth Healthcare, Covington, KY.; Oncology Roundtable interviews and analysis

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