Lung Cancer Screening, Incidentals and Fast Track Thoracic Clinic: Where do we go from here?

Raffaele J. Marchigiani, MD

Sentara Surgery Specialists Leigh, Thoracic Surgery

Sentara Cancer Network Thoracic Committee Co-Chair

Sentara High Performance Team Cancer Liaison Physician

Professor, EVMS Department of Surgery

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Background

- Lung Cancer is the leading cancer killer in the US for men and women
- ACS: 2016 -→ 224,000 new lung cancer cases
- ACS: 2016: ---→ 158,000 lung cancer associated deaths in US

- 75% patients present with advanced or metastatic disease not amenable to cure

- Despite recent therapeutic advances, five year survival rates average 18%

- Could survival improve if we catch these cancers earlier?

Cost

- Cancer is expensive both in cost of care and lost productivity due to early death
- Lung cancer care in 2015 cost 13.4 billion
- Lost productivity due to early death from lung cancer was 36.1 billion 2005

Prevention is still the key

- Prevention still the key to reducing incidence of lung cancer
- 85% lung cancer still caused by smoking
- Smoking rate in the US remains 15%

- Does LDCT present a teachable moment to the patient who continues to smoke?

Lung cancer screening makes sense

- High morbidity
- High mortality
- Significant prevalence
- Known risk factors
- Lengthy pre clinical phase
- Therapy most effective in early stage disease

Lung cancer screening has potential benefit

Lung cancer screening has potential benefit

- 8.6 million American qualify as high risk for lung cancer
- If we screened half of these people estimate that over 13,000 lung cancer deaths could be prevented

Screening Concerns

- A clean CT → more cigarettes
- Socio-economic inequality/ lack of access when it comes to screening
- Adherence with recommendations as far as shared decision making / LDCT f/up / patient compliance
- Cost effectiveness

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Potential harms of lung cancer screening

- Evaluation/ intervention on false positive results
- Radiation exposure
- Patient stress/ distress
- Overdiagnosis (13-22%)
- What about incidentals? How do they affect our population?

Problem in Hampton Roads

- Numerous patient examples of taking more than 90 days to get from suspicious finding to the initiation of treatment in Hampton Roads
- PCPs often refer to the wrong provider first – i.e. med onc who then refers to pulmonologist who then orders further testing
- Navigation is available for CT Lung Screening, but not for other incidental and suspicious findings
- Imaging software in HR has not had the ability to flag these patients and produce a list of appropriate patients
- Coordination of appropriate testing before pulmonary visit is lacking

- BACKGROUND (From Oncology HPT, March 2017):
- Lung Cancer Charts Abstracted between 10/1/17 through 1/31/18
- • 143 total patients (all stages)
- 19 patients from 60 days to 89 days (13%) from date action recommended to treatment
- 22 patients with 90 days or greater (15%) from date action recommended to treatment
- • Most delayed patients were early stage patients
- 60-89 – 11 of 19 patients were stage I/II
- > 90 – 14 of 22 patients were Stage I/II
- Reasons for delay:
- Patient related barriers/ Smoking Cessation
  - Patient indecision
  - Patient refuses to quit smoking
  - Patient transportation issues
- Communication among providers
  - Referred to wrong provider
  - Cardiac clearance
  - Time to Cardiothoracic and pulmonology referral
  - Coordination of care (CT -> PET -> Biopsy -> Office Visits)
- Procedural delays
  - Time to biopsy
  - Time to PET or communication of results
  - Time to surgery
- Outside hospital delays prior to referring to Sentara for specialty care
- Negative first biopsy
-
- Potential Action Items:
- Ensure patients are referred to oncology navigator as early as possible to assist with patient compliance and tobacco cessation. Recommendation: Ordering physician or staff notifies ONN or radiologist notifies ONN of incidental finding.
- Pulmonary-led (or Thoracic Surgery) clinic model to triage nodules + suspicious findings quickly.
- PCP Education to ensure specialist referral is made as soon as nodule is found – Pathway or order set creation. PCP can enlist Nurse Navigator to help determine correct specialist. If Nurse Navigator is involved, can ensure PCP is notified of results and offer services.
- Work with Imaging to develop a diagnostic navigator role in Hampton Roads to support gap between finding to biopsy
- To assist with ONN referrals: ONN for each facility to provide contact info to adjacent Pulmonary office, Thoracic surgeons office, MedOnc office, PCP offices, Hospitalists, Endoscopy, IR, and inpatient Med/Onc/Surgical departments.

Fast Track Thoracic Clinic (FTTC) Goal

- Navigate patients with new suspicious lung findings on all imaging reports to decrease time from abnormal findings to treatment and to improve patient compliance
  - LDCT screenings
  - Incidental finding on CXR or CT
  - Suspicious findings on symptomatic patients
  - Could be ordered from multiple departments – ED, PCP orders, pre-op
- Has been extremely successful at SMJH in improving TAT and patient satisfaction

Criteria for FTTC

- Set verbiage for Imaging reports
- Pulmonology or Thoracic Surgery Leader Identified to address issues as they arise
- Dedicated navigator + Implementation of navigation pathway
- Pulmonologist/Thoracic Surgeon sees patients within **7 calendar days**

Proposed Regional Teams

SCH, SWRMC

- Navigator: Alice Crandall
- Imaging: TDI
- SCH/SWRMC: Dr. Aljafaareh

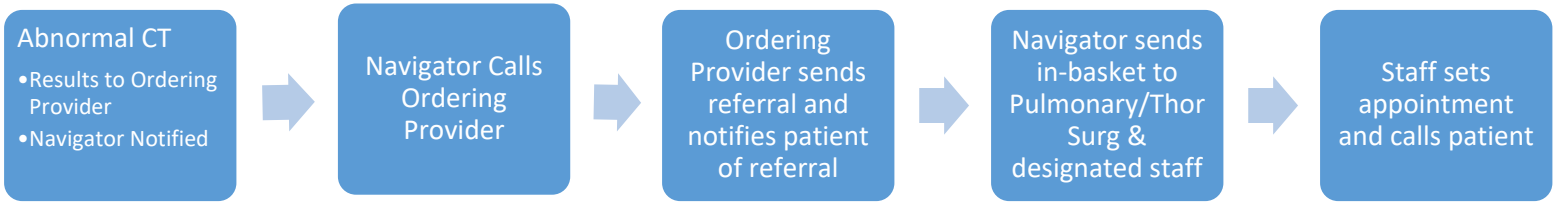
SNGH, SLH

- Navigator: Cathy Finuliar
- Imaging: MCR
- SNGH: Jennifer Ward
- SLH: Dr. Mary Baker

SOH, SPAH, SVBGH

- Navigator: Lindsay Rushing
- Imaging: HRR
- SOH: Dr. Barakat
- SPAH: Dr. Gegick
- SVBGH: Dr. Imad

Organization and Process



Macro on Imaging Report:

"Consider contacting the Lung Navigator at "xxx-xxx-xxxx" to facilitate an appointment with the fast track thoracic clinic."

Navigator Script:

"I was notified that your patient had a suspicious finding on their imaging report (CXR/CT/MRI/etc.) with a recommendation for the patient to see a specialist. I'm calling to help fast track a referral to pulmonary or thoracic surgery. If you can tell me who you would like the patient to see, I can get them an appointment within 7-10 days."

- Abnormal CT
  - Radiologist dictates report with Macro for suspicious nodules
  - Results to Ordering Provider (OP)
  - Lung Navigator notified via Clarity Report
- Lung Navigator Calls Ordering Provider.
  - Navigator ensures OP is aware of results and inform him/her of FTTC
  - OP notifies navigator of Pulm/Thoracic Surgeon to whom patient is being referred to.
    - If Patient is already established with a Pulmonologist, the navigator may notify OP of this.
- Ordering Provider sends referral as through normal process, review results with patient, and notifies patient of referral.
- Navigator notifies Pulmonary/Thoracic Surgery and/or designated staff via preferred contact method.
- Staff sets appointment and calls patient.
- Navigator continues to follow peripherally to ensure patient follows through the recommended plan of care (POC). If malignancy is confirmed and patient has been made aware, Lung navigator notifies appropriate facility Oncology Nurse Navigator (ONN). ONN contacts patient and offers navigation support.

- **WHAT IF…**
-
- **Ordering Provider refers to Pulm/Thoracic Surgeon that is not affiliated with Sentara Cancer Network**
  - The Lung Navigator will document referral preference.
  - The Ordering Provider will refer to their normal channels.
  - After 2 weeks, the Lung Navigator will call office where referral is sent by OP to ensure patient followed through recommended POC, document progress, and sign off as appropriate.
- **Ordering Provider does not have a preference.**
  - The Lung Navigator will review patient's preferred facility based on where patient goes for scans and care, as evidenced by what is documented on the patient's chart.
  - ONN will inform OP of Pulm/Thoracic Surgeon who are participating with FTTC program based on the patient's preferred region.
  - The OP may give preference based on the patient's region; if not, ONN notifies participating Pulm/Thoracic Surgeon (based on patient's region) and they will call patient with the soonest available appointment.
- **Ordering Provider is not available (on vacation or out of office)**
  - The Lung Navigator will call office and speak to the on-call/covering Provider.
  - If covering Provider does not have a preference for referral, navigator will document attempt and re-attempt to contact ordering Provider when he/she returns.

- **FTTC Regional Teams – Contacts with Preferred Communication Sheet**
-
- **Hampton Roads**
-
- **SCH, SWRMC**
- Navigator: Alice Crandall, Tel# 757-827-2206
- Imaging: TDI
- **SCH/SWRMC** Champion: Dr. Almotasembellah Aljafaareh MD, SMG (prefers contact via **EPIC in-basket**)
- Send MD an in-basket **AND** call office directly to notify them of patient needing Fast Track appointment:
- Lashay and Candis (Front Desk) 757-827-2341
  Escalate as needed to Laura Kins (Practice Manager) 757-827-2350
- SCH/SWRMC Director: RONALD BIESZCZAD
-
- **SNGH, SLH**
- Navigator: Cathy Finuliar, Tel# 757-261-5405
- Imaging: MCR
- **SNGH** Champion: Jennifer Ward NP, SMG (prefers contact via **EPIC in-basket, routing ONN's note**).
- NP will return message with information regarding appointments.
- SNGH Director: MEREDITH B STRAND
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- **SLH** Champion: Dr. Mary Baker MD, SMG (prefers contact via **EPIC in-basket, routing ONN's note to Dr. Baker MD, Grace Justiniano-Jabon RN, and Joanne Ferraro LPN**).
- Lung Navigator will send patient info via **EPIC in-basket, routing navigator's note to Dr. Baker MD, Grace Justiniano-Jabon RN, and Joanne Ferraro LPN**.
- Pulm nurses (Joanne and Grace) will forward to Pulm MD who is in clinic at that time message is received.
- Pulm MD will review and determine whether to schedule patient for an appointment in clinic or schedule for EBUS. If plan is for EBUS, instead of scheduling patient for an office visit, Pulm MD may just meet with patient prior to procedure.
- Pulm nurses will call patient with appointment details (for clinic or EBUS) within 48 hours and will cc ONN on note with info on appointment offered and actual appointment.
- SLH Director: CHERNELLE N HILL

- **SOH, SPAH, SVBGH**
- Navigator: Lindsay Rushing, Tel# 757-507-0667
- Imaging: HRR
- **SOH** Champion: Dr. Habib Barakat MD, Bayview (prefers contact via habibandserena@verizon.net and cc Tangy's email boydta@bayviewphysicians.com. If she does not respond quickly then follow-up with a phone call.)
-
- Dr. Barakat is in the office one week, then rounding the next week, and so on. If he is out of the office the pt. would be scheduled with one of his partners. Tangy will be the point of contact for pt. to be scheduled, and she would prefer an email. If she does not respond quickly then follow-up with a phone call.
-
- Tarteskikar "Tangy" Boyd
- Lakeview Pulmonary & Critical Care
- 2000 Meade Pkwy, Ste 110
- Suffolk, VA 23434
- Phone 757-934-9389
- Fax 757-539-6237
- boydta@bayviewphysicians.com
-
- SOH Director: LYNNE WHITLOCK
-
- **SPAH** Champion: Dr. Stephen Gegick MD, SMG (prefers contact via **EPIC in-basket**). Back-up contacts are Leah Rose RN and Monique Bond LPN – also via EPIC in-basket.
- SPAH Director: SAMANTHA C KERN
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- **SVBGH** Champions:
- Dr. Melhem Imad MD, Bayview (prefers contact via email mimad.md@gmail.com)
  If you need to follow-up, call his cell 757-777-5594 and office 757) 481 – 2515 (ask for Janet)
- Dr. Peter Birk MD (prefers contact via **call to his office 757-481-2669**). May be able to offer same day appointments.
- SVBGH Director: AMANDA M COLLEY

- **LDCT – Hampton Roads**
- **LDCT Navigators:** Melissa Bell/Gayle Banks-Jackson (prefers contact via **EPIC in-basket**)
- If a patient shows up on Clarity report and LDCT navigator has not noted on patient, send in-basket. Most often, LDCT navigator may have already communicated with ordering physician. ONN just needs to note this follow peripherally as with other Diagnostic patients.
- If you need to call: Melissa Bell Tel# 757-934-4409; Gayle Banks-Jackson Tel# 757-934-4182
-

- Steps in Continuum of care chart

The Research Behind Lung Cancer Screening

- **Chest radiograph screening**
  - Prostate, lung, colorectal, ovarian (PLCO) trial – NO value in screening asymptomatic population (over 150,000 subjects)
- **Chest CT screening**
  - Several single arm studies performed internationally
  - Early lung cancer action project (ELCAP)
    - 1000 participant
    - 2.7% malignancy detected by CT vs. 0.7% by CXR
- **NLST**
  - NCI funded to show CT vs CXR benefit
  - 53, 454 high risk patients in 33 centers
  - First trial to demonstrate a mortality benefit

NLST trial

- 53,454 subjects
- Evenly divided between CXR and CT Lung Screening
- 3 annual screening exams
- Primary endpoint – lung cancer specific mortality rates
- Trial stopped early when mortality benefit realized

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NLST

- 20% mortality reduction in CT arm
- Number needed to screen with LDCT to prevent one lung cancer death was 320
- Rate of detection did not diminish between screening years→ ongoing screening is important

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Low-dose CT scanning for lung cancer screening: Follow-up diagnostic procedures in the NLST

	Lung cancer confirmed (649)				Lung cancer not confirmed (17,053)			
	Procedure	Major complication*	Intermediate complication¶	Death△	Procedure	Major complication*	Intermediate complication¶	Death△
Thoracotomy thoracoscopy mediastinoscopy	509	71	81	5	164	9	13	2
Bronchoscopy	76	2	5	4	227	2	9	4
Needle biopsy	33	0	7	1	66	0	6	0
No procedure	31	2	2	0	16,596	1	16	5

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NLST - Results

LDCT arm results breakdown over time					
Year	Positive	Positive screen with lung cancer	Overall screen with lung cancer	Negative	Negative with sig. incidentals
1	27.3%	3.8%	1%	62.4%	10.2%
2	27.9%	2.4%	0.7%	65.9%	6.1%
3	16.8%	5.2%	0.9%	77.3%	5.8%

NLST - Results

Group	Lung cancer deaths	Lung cancer mortality per 100,000 person years	Reduction in lung cancer mortality
LDCT	354	245	20.3%
CXR	442	308	None

*There was also a 6.7% reduction in all-cause mortality in the CT arm.

NLST - results

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NLST - summary

- LDCT more sensitive for lung cancer than CXR
- LDCT arm benefited from a 20% lung cancer mortality reduction
- Early stage cancers more likely to be detected with LDCT

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Regional Eligibility - Projections

- Based on population and tobacco use projections by age, the following number of patients would be eligible in 2016:
  - Hampton Roads region - 52,978
  - Northern Virginia - 9,846
  - Harrisonburg - 7,107
  - Charlottesville - 9,025
  - South Boston/Halifax - 2,960
  - Elizabeth City - 4,453

TOTAL = 86,369 patients

Lung cancer screening programs: not a solo operation

Lung Cancer Screening Saves Lives

Early detection leads to 20% fewer lung cancer deaths each year. For men and woman alike, lung cancer remains the number one cancer killer in the U.S.

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FOR LUNG CANCER SCREENING

Offering Responsible Screening & Care

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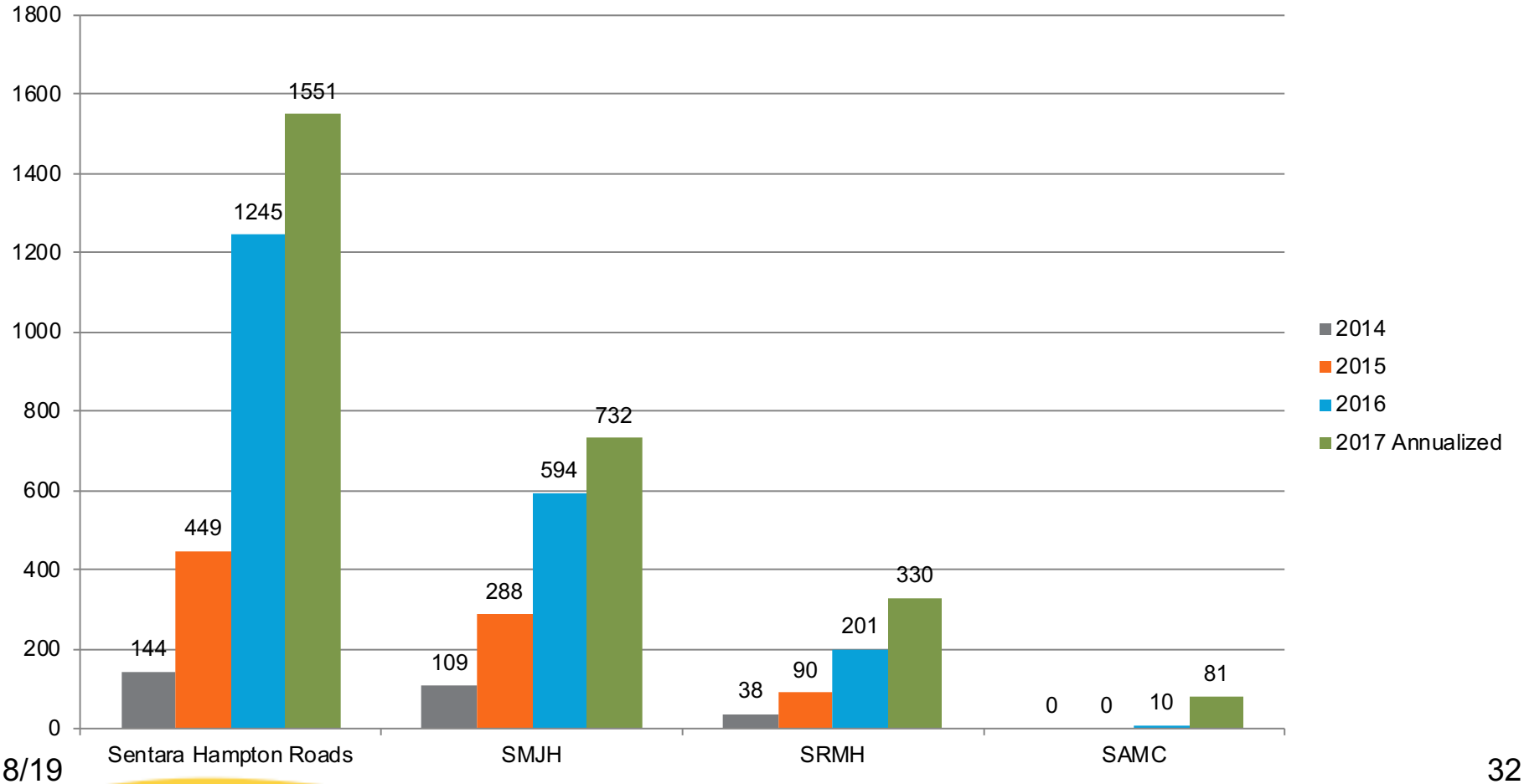
Sentara Cancer Network CT Lung Screening Volume 2014 to 2017 (annualized based on Jan-Apr volumes)



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US Preventive Services Task Force Recommendation

- 2004 conclusion – “Insufficient evidence” to support screening recommendation
- Updated decision December 2013:

Population	Recommendation	Grade (What's This?)
Adults Aged 55-80, with a History of Smoking	The USPSTF recommends annual screening for lung cancer with low-dose computed tomography (LDCT) in adults aged 55 to 80 years who have a 30 pack-year smoking history and currently smoke or have quit 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.	B

Centers for Medicare & Medicaid Services (CMS) Recommendation Overview

Final National Coverage Determination on Screening for Lung Cancer with Low Dose Computed Tomography (LDCT)

- Effective 2/5/15
- Eligibility:
  - Age: 55-77 years old
  - Asymptomatic
  - 30 pack year, current smoker or quit with 15 years
- Requirements:
  - Lung cancer screening counseling and shared decision making visit
  - Written order for the test
  - Radiologist qualifications
  - Registry requirement – reporting system (Lung-RADS)

CMS Eligibility

- Age: 55-77 years old
- Asymptomatic
- 30 pack year, current smoker or quit with 15 years

As of July 5th, 2016, the Centers for Medicare and Medicaid Services (CMS) revised the approved ICD-10 diagnosis codes included in the CT Lung Screening National Coverage Determination (NCD).

For current smokers:

F17.210 Nicotine dependence, cigarettes, uncomplicated

F17.211 Nicotine dependence, cigarettes, in remission

F17.213 Nicotine dependence, cigarettes, with withdrawal

F17.218 Nicotine dependence, cigarettes, with other nicotine-induced disorders

F17.219 Nicotine dependence, cigarettes, with unspecified nicotine-induced disorders

For former smokers:

Z87.891 Personal history of nicotine dependence

CMS Requirements: Shared decision-making visit (Initial exam)

- Determination of beneficiary eligibility
- Discussion of benefits
  - 20% lung cancer mortality reduction
  - Large majority did NOT experience reduced lung cancer mortality
- Discussion of harms
  - Over-diagnosis – approximately 10%; unnecessary treatment
  - High false positive rate
  - Radiation risk
- Need for adherence to follow-up exams
- Ability and willingness to undergo treatment
- Cigarette smoking cessation
- Written order for exam

Shared decision-making visit resources

ACR Website

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- Accreditation
- Centers of Excellence
- Lung Cancer Screening
- Appropriateness Criteria®
- Practice Parameters
- Quality Measurement

Lung Cancer Screening Resources

ACR to Host Lung Cancer Screening Webinar on Coverage and Payment

Medicare and private insurer coverage and provider reimbursement for low-dose CT lung cancer screening will be addressed April 6 at a free webinar, sponsored by the American College of Radiology and supported by the Radiology Business Management Association and the Lung Cancer Alliance.

To register for the fee webinar, read here.

Shouldiscreen.

We can help you.

Deciding whether or not to go through lung cancer CT screening is not easy. Here, there is up to date information provided by doctors to help you make an informed choice.

BENEFITS AND HARMS OF SCREENING

Find out about lung cancer CT screening and how it can help you decrease your chances of having lung cancer.

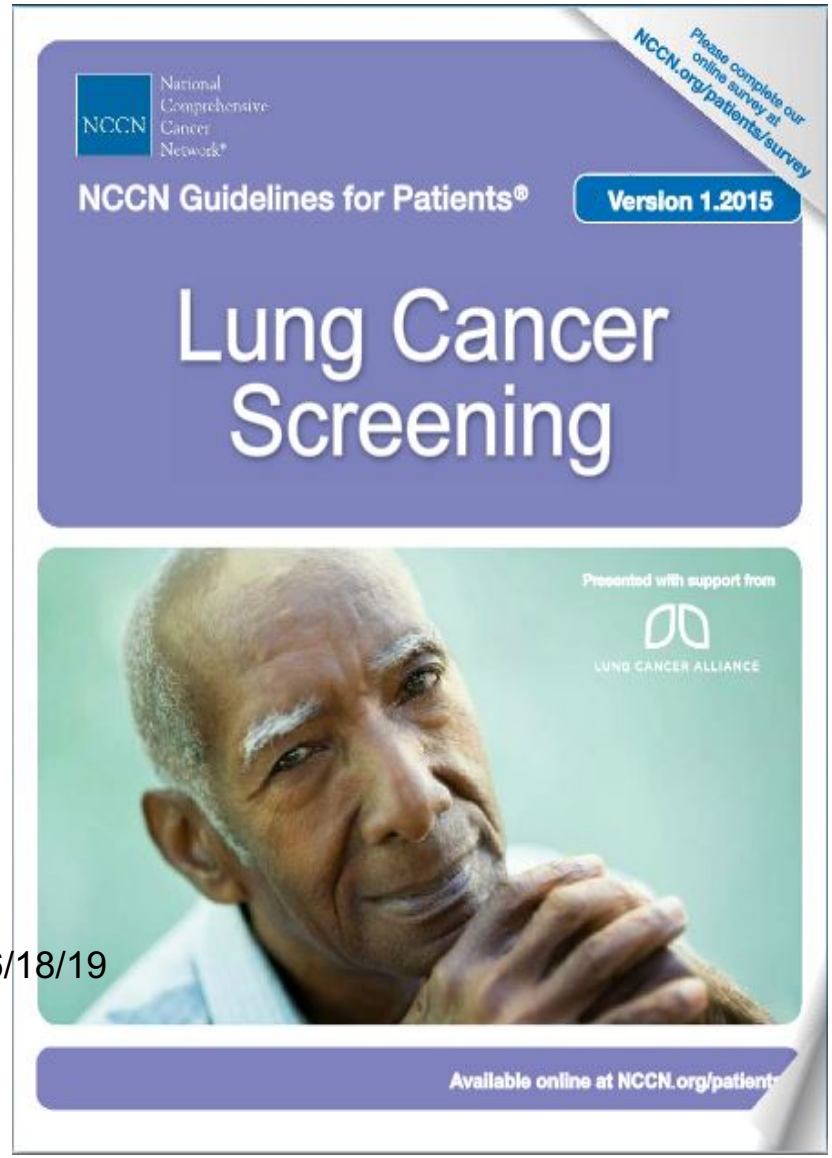
LEARN MORE →

LUNG CANCER RISK CALCULATOR

Do you want to know if you should be screened? Use our calculator to see your personalized lung cancer risk.

USE IT →

Shared decision-making visit resources



Lung Cancer Screening Shared Decision Making Tool

Yearly lung screening with a low dose CT has been shown to save lives by finding lung cancer early, when it is easier to treat. This handout answers many questions that people have about low dose CT lung screening. If you have additional questions, please call our CT lung screening navigator at 1-855-EARLY-DX (1-855-327-5939).

What is the goal of low dose CT lung screening?

The goal of CT lung screening is to save lives by detecting lung cancer at an early stage. Without CT lung screening lung cancer is usually not found until a person develops symptoms. At that time, the cancer is much harder to treat and the prognosis is worse.

Who should get a low dose CT lung screening exam?

Medicare and the US Preventative Task Force recommend low dose CT lung screening for high risk patients as defined below. Those who have symptoms of a lung condition at the time of screening, such as a new cough or shortness of breath, are not eligible.

- **Medicare:** 55-77 with 30 pack year smoking history and is a current smoker or has quit within the last 15 years
- **USPTF:** 55-80 with 30 pack year smoking history and is a current smoker or has quit within the last 15 years (Eligibility criteria may vary depending on your insurance plan. Please confirm with you insurance company and speak with our navigator. We have provided the link below to help guide you in the process.)

Lung Cancer Insurance Chart: **http://bit.do/InsuranceChart**

What if I have symptoms?

Certain symptoms can be a sign that you have a condition in your lungs that should be evaluated and treated, if necessary, by your healthcare provider. These symptoms include fever, chest pain, a new or changing cough, shortness of breath that you have never felt before, coughing up blood, or unexplained weight loss. If you have any of these symptoms please let you healthcare provider know as low dose CT lung screening is not appropriate and may actually delay treatment you might need.

I am in one of the high-risk groups but have been diagnosed with cancer in the past. Is low dose CT lung screening appropriate for me?

It depends. In some cases low dose CT lung screening will not be appropriate, such as when your doctor is already following your cancer with low dose CT scan studies. Your provider will help determine if low dose CT lung screening is right for you.

I think I qualify for low dose CT lung screening. What should I do next?

Discuss lung screening with your healthcare provider and see if low dose CT is right for you. Please note that we will need an order from your healthcare provider to conduct the test.

How effective is low dose CT lung screening at preventing death from lung cancer?

Studies have shown that a low dose CT lung screening can lower the risk of death from lung cancer by 20% in people who are at high risk.

How is the exam performed?

Low dose CT lung screening is one of the easiest screening exams you can have. The exam takes less than 10 seconds. No medications are given, and no needles are used. You can eat before and after the exam. You do not even need to get changed as long as the clothing on your chest does not contain metal. You must, however, be able to hold your breath for at least 6 seconds while the chest scan is being taken.

CMS Requirements:
A Written Order

Low-Dose CT Lung Screening Order Form

Fax to 995-7343 or 995-7941
Call Navigator 934-4409 for Any questions

Screening Criteria

Medicare: 55-77 with 30 pack year cigarette smoking history and is a current smoker or has quit within the last 15 years

USPTF (Private Insurers): 55-80 with 30 pack year cigarette smoking history and is a current smoker or has quit within the last 15 years

Patient Name:_____MRN:_____ DOB:_____

Patient's Phone Number:_____ Patient's Height:_____ Patient's Weight:_____

Packs per day:_____ x Years Smoked _____ = Packs Years:_____(30 pack year minimum)

Current smoker: Y N If not smoking, how many years quit?_____(15 year maximum)

History of Lung Cancer Y N

CT LUNG SCREENING- LOW DOSE (HCPCS G0297) □ Initial Screening □ Routine Annual Screening

Diagnosis:

- □ Personal History of Nicotine Dependence (Former Smoker)
- □ Nicotine Dependence, Cigarettes (Current Smoker)
- □ Other _____

CT LUNG SCREENING FOLLOW UP -LOW DOSE (CPT 71250)
For 3, 6 or 9 month follow-up recommended from a previous lung screening

Diagnosis:

- □ Pulmonary Nodule
- □ Other _____

By signing this order you are certifying that:

- The patient has participated in a shared decision making session during which potential risks and benefits of CT Lung Screening were discussed.
- The patient was informed of the importance of adherence to annual screening, impact of comorbidities, and ability/willingness to undergo diagnosis and treatment.
- The patient was informed of the importance of smoking cessation and/or maintaining smoking abstinence, including the offer of Medicare-covered tobacco cessation counseling services, if applicable.
- The patient is asymptomatic (no symptoms such as fever, chest pain, new shortness of breath, new changing cough, coughing up blood, or unexplained significant weight loss).

Ordering MD signature:_____Date/Time:_____

Ordering MD (print name):_____Phone:_____

National Provider Identity (NPI):_____Fax: _____

MDORD537 (11/2016)

Subsequent exams

- Shared decision making component not needed
- Still need a written order, and must document the following every time:
  - Beneficiary date of birth
  - Actual pack - year smoking history (number)
  - Current smoking status, and for former smokers, the number of years since quitting smoking
  - Statement that the beneficiary is asymptomatic (no signs or symptoms of lung cancer)
  - National Provider Identifier (NPI) of the ordering practitioner

Registry requirement

- Purpose: Practice audit and data gathering for future screening modifications
  - Total # of screens
  - Distribution of positive and negative exams (Lung-Rads)
  - PPV
  - Cancer Detection Rate
  - Radiation Dose
- ACR Lung cancer screening registry (LCSR)
  - Part of National Radiology Data Registry (NRDR)
  - Sentara joined and began reporting data in November 2015

Lung cancer screening registry

American College of Radiology (ACR) Lung Cancer Screening Registry (LCSR)

Data Type	*Minimum Required Data Elements*
Facility	Identifier
Radiologist (reading)	National Provider Identifier (NPI)
Patient	Identifier
Ordering Practitioner	National Provider Identifier (NPI)
CT scanner	Manufacturer, Model.
Indication	Lung cancer LDCT screening – absence of signs or symptoms of lung cancer
System	Lung nodule identification, classification and reporting system
Smoking history	Current status (current, former, never). If former smoker, years since quitting. Pack-years as reported by the ordering practitioner. For current smokers, smoking cessation interventions available.
Effective radiation dose	CT Dose Index (CTDIvol).
Screening	Screen date Initial screen or subsequent screen

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Results - Lung-RADS

- ACR created Lung Imaging Reporting and Data System
- Quality assurance tool
- Standardize reporting
- Standardize management recommendations
- Facilitate outcome monitoring (Registry requirement)
- Specific to Low-Dose CT Lung Screening – not to be confused with Fleischner Criteria which targets follow-up/management of incidental nodules found on a non-screening CT

Category	Category Descriptor	Category	Findings	Management	Probability of Malignancy	Estimated Population Prevalence
Incomplete	-	0	prior chest CT examination(s) being located for comparison part or all of lungs cannot be evaluated	Additional lung cancer screening CT images and/or comparison to prior chest CT examinations is needed	n/a	1%
Negative	No nodules and definitely benign nodules	1	no lung nodules nodule(s) with specific calcifications: complete, central, popcorn, concentric rings and fat containing nodules	Continue annual screening with LDCT in 12 months	< 1%	90%
Benign Appearance or Behavior	Nodules with a very low likelihood of becoming a clinically active cancer due to size or lack of growth	2	solid nodule(s): < 6 mm new < 4 mm part solid nodule(s): < 6 mm total diameter on baseline screening non solid nodule(s) (GGN): < 20 mm OR ≥ 20 mm and unchanged or slowly growing category 3 or 4 nodules unchanged for ≥ 3 months			
Probably Benign	Probably benign finding(s) - short term follow up suggested; includes nodules with a low likelihood of becoming a clinically active cancer	3	solid nodule(s): ≥ 6 to < 8 mm at baseline OR new 4 mm to < 6 mm part solid nodule(s) ≥ 6 mm total diameter with solid component < 6 mm OR new < 6 mm total diameter non solid nodule(s) (GGN) ≥ 20 mm on baseline CT or new	6 month LDCT	1-2%	5%
Suspicious	Findings for which additional diagnostic testing and/or tissue sampling is recommended	4A	solid nodule(s): ≥ 8 to < 15 mm at baseline OR growing < 8 mm OR new 6 to < 8 mm part solid nodule(s: ≥ 6 mm with solid component ≥ 6 mm to < 8 mm OR with a new or growing < 4 mm solid component endobronchial nodule	3 month LDCT; PET/CT may be used when there is a ≥ 8 mm solid component	5-15%	2%
		4B	solid nodule(s) ≥ 15 mm OR new or growing, and ≥ 8 mm part solid nodule(s) with: a solid component ≥ 8 mm OR a new or growing ≥ 4 mm solid component	chest CT with or without contrast, PET/CT and/or tissue sampling depending on the *probability of malignancy and comorbidities. PET/CT may be used when there is a ≥ 8 mm solid component.	> 15%	2%
		4X	Category 3 or 4 nodules with additional features or imaging findings that increases the suspicion of malignancy			
Other	Clinically Significant or Potentially Clinically Significant Findings (non lung cancer)	S	modifier - may add on to category 0-4 coding	As appropriate to the specific finding	n/a	10%
Prior Lung Cancer	Modifier for patients with a prior diagnosis of lung cancer who return to screening	C	modifier - may add on to category 0-4 coding	-	-	-

Lung-RADS – negative/benign

Negative	No nodules and definitely benign nodules	1	no lung nodules	Continue annual screening with LDCT in 12 months
			nodule(s) with specific calcifications: complete, central, popcorn, concentric rings and fat containing nodules	
Benign Appearance or Behavior	Nodules with a very low likelihood of becoming a clinically active cancer due to size or lack of growth	2	solid nodule(s): < 6 mm new < 4 mm	
			part solid nodule(s): < 6 mm total diameter on baseline screening	
			non solid nodule(s) (GGN): < 20 mm OR ≥ 20 mm and unchanged or slowly growing	
			category 3 or 4 nodules unchanged for ≥ 3 months	

- Probability of malignancy <1%
- Estimated population prevalence 90%
- Many "+" in NLST study

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Lung-RADS – probably benign

Probably Benign	Probably benign finding(s) - short term follow up suggested; includes nodules with a low likelihood of becoming a clinically active cancer	3	solid nodule(s): ≥ 6 to < 8 mm at baseline OR new 4 mm to < 6 mm	6 month LDCT
			part solid nodule(s) ≥ 6 mm total diameter with solid component < 6 mm OR new < 6 mm total diameter	
			non solid nodule(s) (GGN) ≥ 20 mm on baseline CT or new	

- Still only get a follow-up CT
- Probability of malignancy 1-2%
- Estimated population prevalence 10%

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Lung-RADS – suspicious

Suspicious	Findings for which additional diagnostic testing and/or tissue sampling is recommended	4A	solid nodule(s): ≥ 8 to < 15 mm at baseline OR growing < 8 mm OR new 6 to < 8 mm	3 month LDCT; PET/CT may be used when there is a ≥ 8 mm solid component
			part solid nodule(s: ≥ 6 mm with solid component ≥ 6 mm to < 8 mm OR with a new or growing < 4 mm solid component	
			endobronchial nodule	
		4B	solid nodule(s) ≥ 15 mm OR new or growing, and ≥ 8 mm	chest CT with or without contrast, PET/CT and/or tissue sampling depending on the *probability of malignancy and comorbidities. PET/CT may be used when there is a ≥ 8 mm solid component.
			part solid nodule(s) with: a solid component ≥ 8 mm OR a new or growing ≥ 4 mm solid component	
		4X	Category 3 or 4 nodules with additional features or imaging findings that increases the suspicion of malignancy	

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Lung-RADS – suspicious

4A	solid nodule(s): ≥ 8 to < 15 mm at baseline OR growing < 8 mm OR new 6 to < 8 mm	3 month LDCT; PET/CT may be used when there is a ≥ 8 mm solid component
	part solid nodule(s: ≥ 6 mm with solid component ≥ 6 mm to < 8 mm OR with a new or growing < 4 mm solid component	
	endobronchial nodule	

- Probability of malignancy 5-15%
- Estimated population prevalence 2%

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Lung-RADS – suspicious

4B	solid nodule(s) ≥ 15 mm OR new or growing, and ≥ 8 mm	chest CT with or without contrast, PET/CT and/or tissue sampling depending on the *probability of malignancy and comorbidities. PET/CT may be used when there is a ≥ 8 mm solid component.
	part solid nodule(s) with: a solid component ≥ 8 mm OR a new or growing ≥ 4 mm solid component	
4X	Category 3 or 4 nodules with additional features or imaging findings that increases the suspicion of malignancy	

- Probability of malignancy >15%
- Estimated population prevalence 2%

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Lung-RADS - modifiers

- S modifier – Clinically significant or potentially clinically significant findings (non lung cancer)
  - Aortic aneurysm, upper abdominal mass
  - Estimated population prevalence – 10%
- C modifier – prior lung cancer, returned to screening

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According to the American Cancer Society, the **5-year survival rate** for non-small cell lung cancer **is almost 50% for a Stage 1 diagnosis**, compared to 30% for Stage 2, 14% for Stage 3, and 1% for Stage 4. *

Scientists have found a **20% reduction in deaths from lung cancer** among current or former heavy smokers who were screened with low-dose computed tomography (CT) versus those screened by chest X-ray. **

Lung cancer screening saves 1 life for every 320 screenings completed, as estimated by the U.S. Preventive Services Task Force. For breast cancer, mammography saves one life for every 1,339 screenings for women ages 50 – 59. For colon cancer, colorectal screening saves one life for every 500 screenings.

52% of lung cancers detected with **Sentara Cancer Network Lung Cancer Screenings in Hampton Roads are early stage** (I/II) diagnosis. ***

According to the Virginia Department of Health, the **incidence rate for lung cancer in parts of Hampton Roads is higher** than both the state and national incidence rate.

* *Survival rates calculated from the National Cancer Institute's SEER database, based on people who were diagnosed with NSCLC between 1988 and 2001.*

** *Results from the National Lung Screening Trial (NLST), a randomized trial of over 55,000 participants, sponsored by the National Cancer Institute (NCI) and conducted by the American College of Radiology Imaging Network (ACRIN) and the Lung Screening Study group.*

*** *From Sentara Cancer Network data annualized through November 30, 2016; there were 19 lung cancers diagnosed as a result of 1,002 screenings.*

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