

Building a Lung Cancer Screening Program in Real Life: Economic Considerations

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BROWN

Alpert Medical School

Economics: Its all about your perspective!

▶ Global Health

- NLST, Nelson
- Access to screening and care
- Smoking cessation/Vaping/Air Quality

▶ US Public Health

- USPSTF/Insurance/Medicare/Medicaid

▶ Academic/Research/Oncology Center

- Lung cancer screening clinics
- “FREE CT SCANS...”

▶ Local Hospital

- Down Stream revenues

▶ Individual Radiology Practices

- Quality/ACR registry/IT solutions/Grass roots

Global perspective: LCS Economics



Cherian Verghese, Cristina Redko, and Brian Fink
Journal of Global Oncology 2018 :4, 1–7

Screening for Lung Cancer Has Limited Effectiveness Globally and Distracts From Much Needed Efforts to Reduce the Critical Worldwide Prevalence of Smoking and Related Morbidity and Mortality

Table 4. Take Home Points

Lung Cancer Screening Versus Smoking Reduction

Lung cancer screening with low dose CT scans is cost prohibitive.

Morbidity and mortality from smoking is not limited to lung cancer.

Reducing the prevalence of smoking is more important than screening for lung cancer.


Education, taxation policies, and raising the legal age for smoking are cost-effective solutions.

Globally: Not there yet...

- ▶ National Lung Cancer Screening Trial
 - ▶ Nelson Trial

 - ▶ How to implement and fund screening programs?

 - ▶ Access to CT scan?

 - ▶ Radiologist availability?
 - International teleradiology collaborative
- 

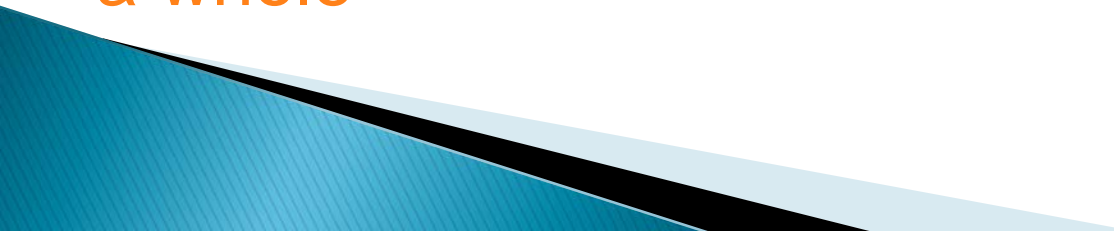
Its all about perspective!

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- ▶ **US Public Health**
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**Economics from United States
Perspective: LCS is a no brainer,
right?**



WHO criteria for screening

- ▶ The condition should be an **important health problem** for the individual and community
 - ▶ There should be an **accepted treatment** or useful intervention for patients with the disease
 - ▶ The natural history of the disease should be adequately understood
 - ▶ There should be a latent or asymptomatic stage
 - ▶ There should be a suitable and acceptable **screening test**
 - ▶ Facilities for diagnosis and treatment should be available
 - ▶ Treatment started at an early stage should be of more benefit than treatment started later
 - ▶ **The cost should be economically balanced in relation to possible expenditure on medical care as a whole**
- 

By Bruce S. Pyenson, Marcia S. Sander, Yiding Jiang, Howard Kahn, and James L. Mulshine

An Actuarial Analysis Shows That Offering Lung Cancer Screening As An Insurance Benefit Would Save Lives At Relatively Low Cost

DOI: [10.1377/hlthaff.2011.0814](https://doi.org/10.1377/hlthaff.2011.0814)

HEALTH AFFAIRS 31,
NO. 4 (2012): 770-779

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The People-to-People Health
Foundation, Inc.

ABSTRACT Lung cancer screening is not established as a public health practice, yet the results of a recent large randomized controlled trial showed that screening with low-dose spiral computed tomography reduces lung cancer mortality. Using actuarial models, this study estimated the costs and benefits of annual lung cancer screening offered as a commercial insurance benefit in the high-risk US population ages 50–64. Assuming current commercial reimbursement rates for treatment,

month in 2012 dollars. The cost per life-year saved would be below \$19,000, an amount that compares favorably with screening for cervical, breast, and colorectal cancers. Our results suggest that commercial insurers should consider lung cancer screening of high-risk individuals

to be high-value coverage and provide it as a benefit to people who are at least fifty years old and have a smoking history of thirty pack-years or more. We also believe that payers and patients should demand screening from high-quality, low-cost providers, thus helping set an example of efficient system innovation.

11/6/2014

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Cost-Effectiveness of CT Screening in the National Lung Screening Trial

William C. Black, M.D., Ilana F. Gareen, Ph.D., Samir S. Soneji, Ph.D.,
JoRean D. Sicks, M.S., Emmett B. Keeler, Ph.D., Denise R. Aberle, M.D.,
Arash Naeim, M.D., Timothy R. Church, Ph.D., Gerard A. Silvestri, M.D.,
Jeremy Gorelick, Ph.D., and Constantine Gatsonis, Ph.D.,
for the National Lung Screening Trial Research Team*

LCS is Cost Effective!

- ▶ Cost=\$1,631 per person\$81,000
- ▶ Benefit=0.0316 life-years per person
- ▶ \$81,000 (95% CI 52K-186K) per QALY

- ▶ Lungcanceralliance.org
 - Milliman I-IV
 - 70,00 lives saved
 - Lung cancer screening more effective than colorectal, breast and cervical
 - Lung \$11,798-26016
 - Colon \$18,705-28,958
 - Breast \$31,309-51,274
 - Cervical \$50,162-75,181
 - CT screening per Medicare member: \$1 /month

Health Affairs 1 / 2019

By David D. Kim, Joshua T. Cohen, John B. Wong, Babak Mohit, A. Mark Fendrick, David M. Kent, and Peter J. Neumann

Targeted Incentive Programs For Lung Cancer Screening Can Improve Population Health And Economic Efficiency

untargeted incentive programs or doing nothing. We found that compared to the status quo, an untargeted incentive program that increased overall LDCT screening from 3,900 (baseline) to 10,000 per 100,000 eligible people would save 12,300 life-years and accrue a net monetary benefit (NMB) of \$771 million over a lifetime horizon. Increasing screening by the same amount but targeting higher-risk people would yield an additional 2,470–6,600 life-years and an additional \$210–\$560 million NMB, depending on the extent of the risk-targeting.

The Financial Implications of Lung Cancer Screening: Is It Worth It?

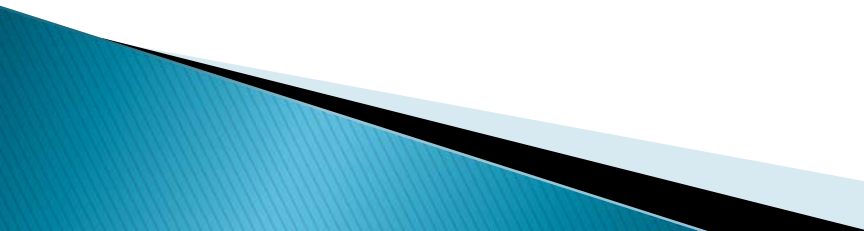


Samira Shojaee, MD,^a Anil Vachani, MD, MS,^b Patrick Nana-Sinkam, MD^{a,*}

- ▶ Cost of false positive work up
- ▶ Over-screening lower risk individuals*****
- ▶ Non-curative chemotherapy and immunotherapy agents in USA are 2–10 times more expensive when compared to Canada
- ▶ Easy to create an imbalance in cost/benefit

Cost-effectiveness of screening for lung cancer with low-dose computed tomography: a systematic literature review

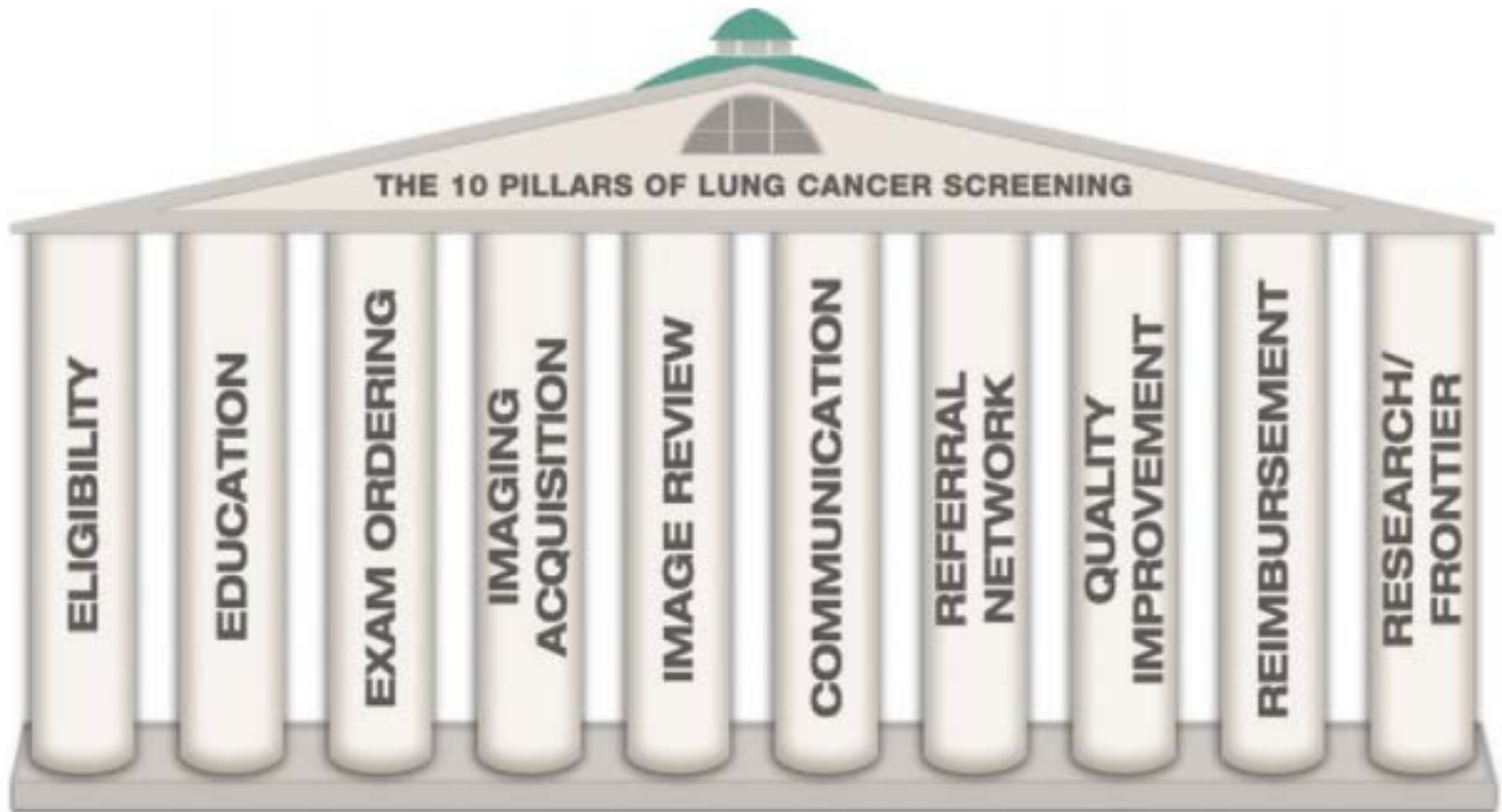
Anna Puggina¹, Athanasios Broumas², Walter Ricciardi¹, Stefania Boccia¹

- ▶ 9 economic studies reviewed
 - ▶ Quality-Adjusted Life-Year (QALY)
 - \$1,464 – \$149,000
 - ▶ Cost effectiveness of LCS is highly debatable
- 

Its all about perspective!

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Academic Vision of LCS



Fintelmann FJ, et al. Radiographics. 2015 Nov-Dec;35(7):1893-908.

Create Your Pro Forma

▶ Expenses

- Highly variable per academic/research/oncology center

▶ Income

- Must know your patient payer mix & individual contracts with insurance carriers
- Will Medicaid cover your patients?

Get paid for what you do!

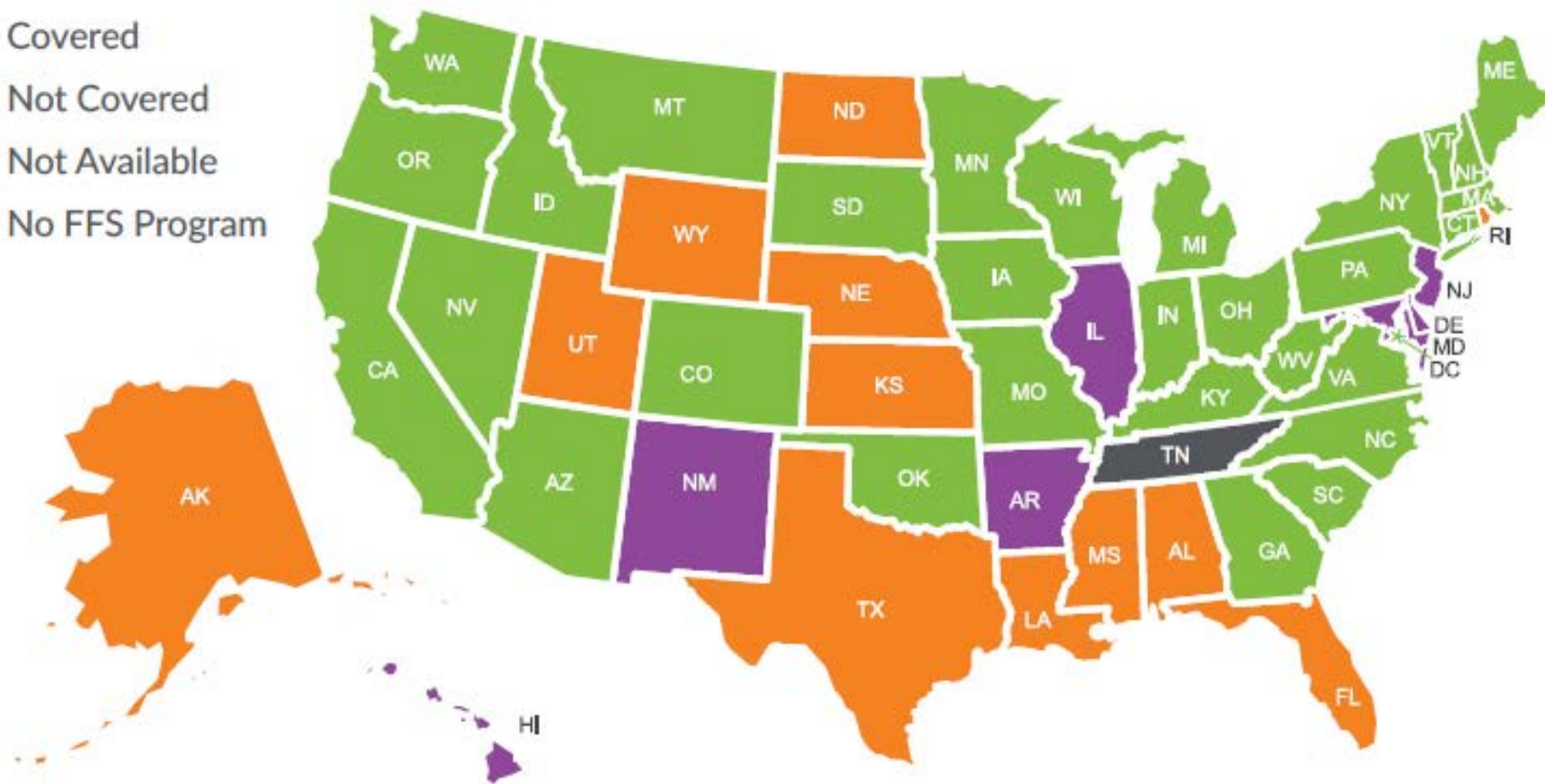
- ▶ Running a free CT screening service is not financially advisable no matter what the downstream revenues might look like...

STR (3/25/19)


American Lung Association

Figure 1: Coverage of Lung Cancer Screening in State Medicaid Fee-for-Service Programs


- Covered
- Not Covered
- Not Available
- No FFS Program



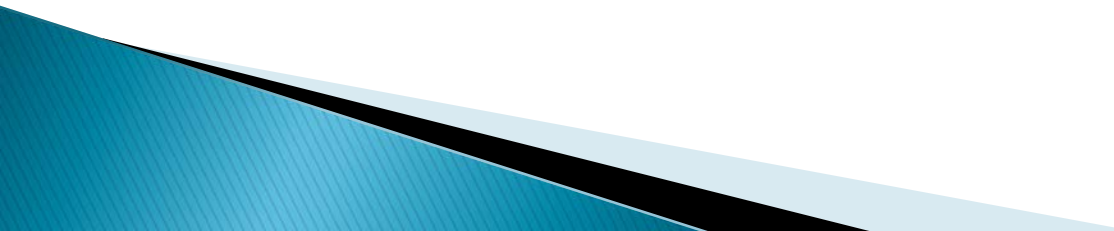
Call to Action: 11 Orange States

- ▶ Alabama
 - ▶ Alaska
 - ▶ Florida
 - ▶ Kansas
 - ▶ Louisiana
 - ▶ Mississippi
 - ▶ Nebraska
 - ▶ North Dakota
 - ▶ Texas
 - ▶ Utah
 - ▶ Wyoming
- 

April 10, 2019 email to RIRS leadership

- ▶ “FYI– RI in one of the only states where Lung Cancer Screening is not covered by Medicaid Fee–for–Service. I will be making calls on behalf of the RIRS to change this!”
 - ▶ Called RIDOH, transferred to Medicaid office and left a detailed messages with appropriate exam codes
 - ▶ Not hopeful that this would help at all...
- 

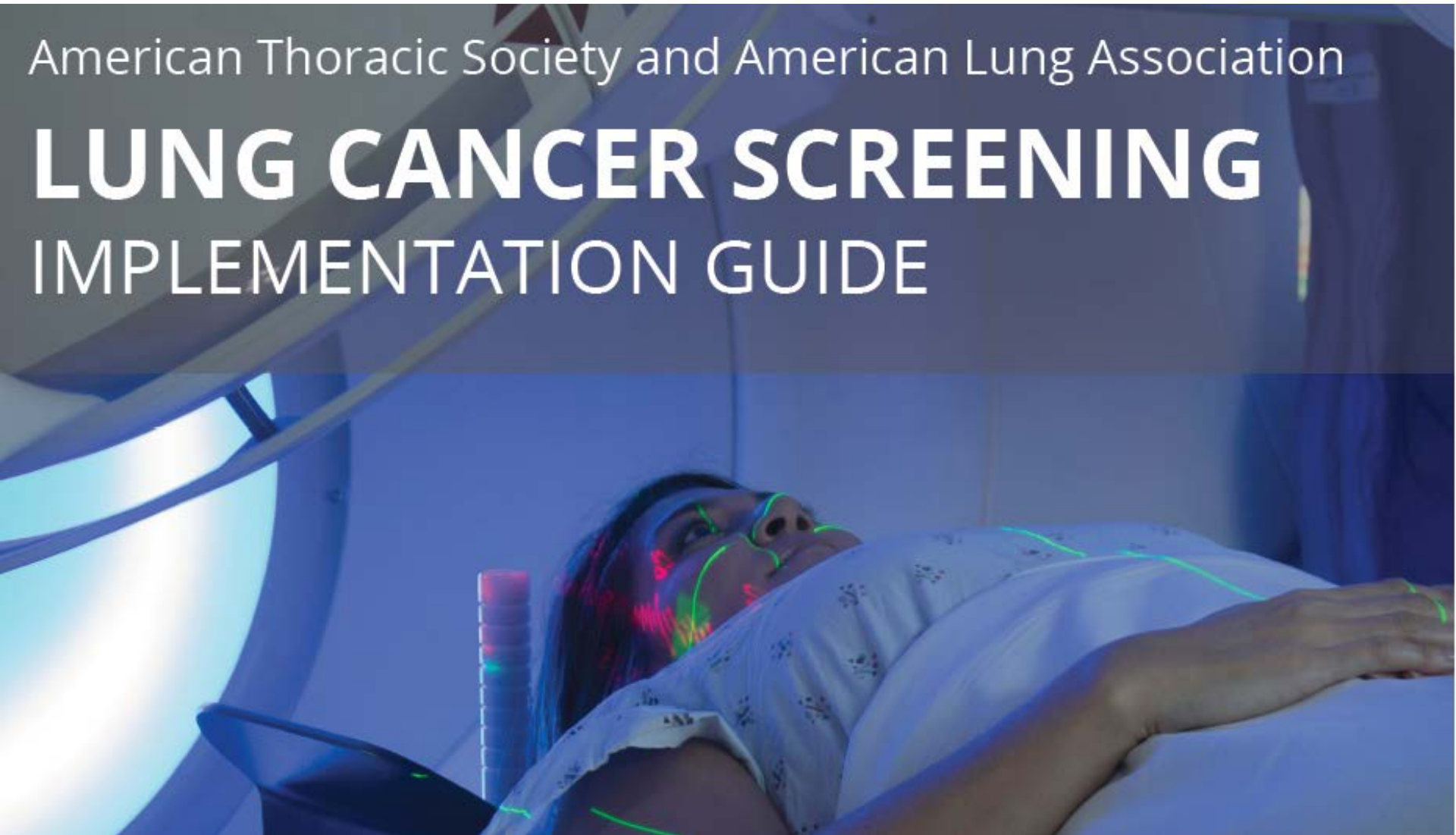
April 17, 2017 exactly 1 week later

- ▶ Cell phone rings
 - ▶ “Hello Dr. Healey I just wanted to let you know we looked into your complaint and RI Medicaid will begin coverage of those codes immediately.”
 - ▶ True story!!!
- 

Comprehensive guide 111 pages

American Thoracic Society and American Lung Association

LUNG CANCER SCREENING IMPLEMENTATION GUIDE

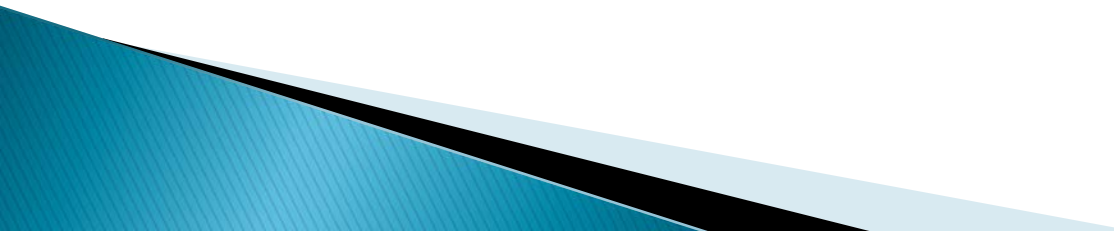


Recommendations of ATS/ACCP/ALA

- ▶ EMR–Based clinical reminders \$\$\$\$\$
- ▶ LCS human review–Hire a LCS coordinator \$\$\$
- ▶ LCS steering committee regular meetings \$\$\$\$
- ▶ ACR registry data management \$

- ▶ Provider education
- ▶ CT technologist education
- ▶ Dictation templates for lung–RADS
- ▶ Tumor board integration
- ▶ Nodule follow–up process
- ▶ Smoking cessation

LCS Program Costs

- ▶ Centralized program \$\$\$\$\$
 - ▶ Decentralized program \$
 - ▶ Hybrid program \$\$
- 

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 - Down stream revenues
- ▶ **Local Hospital (Not for profit/for profit)**
 - Down Stream revenues
- ▶ **Radiology Practices (private practice/hybrid model)**
 - Quality/ACR registry/IT solutions/Grass roots

November 7, 2007

2% of all cancer caused by CT scans!!!

The NEW ENGLAND JOURNAL *of* MEDICINE

REVIEW ARTICLE

CURRENT CONCEPTS

Computed Tomography — An Increasing Source of Radiation Exposure

David J. Brenner, Ph.D., D.Sc., and Eric J. Hall, D.Phil., D.Sc.

My CT Business Has a Problem...

- ▶ Tremendous financial impact on radiology
- ▶ CT utilization since 2007
- ▶ CT needs a financial savior...
 - Wishlist
 - Non-contrast study (No MD coverage & No IV)
 - Mobile patients
 - Generate follow-up scans

CT's Financial Aid?

**IF EVERYONE AT HIGH RISK WERE SCREENED,
ABOUT 25,000 LIVES COULD
BE SAVED BY THE SCAN.**

SavedByTheScan.org



...Meet Reality!



Opportunity to create a “valuable” product viable throughout our network...

- ▶ 3 competing health care systems (non-profit and for profit)
- ▶ 1 local major academic medical center
 - plus satellite locations from separate competing medical centers/academic institutions
- ▶ 7 hospitals
- ▶ 15 Imaging centers owned and operated by Radiologists of Alpert Medical School of Brown University and Rhode Island Medical Imaging (RIMI) foundation

Establish cohesive product...OWN LCS!

- ▶ Start with system you have most control over!
 - Assume this to be outpatient imaging centers...NOT academic medical centers!
- ▶ CT Screening protocol/ Billing codes
- ▶ Follow-up protocols/ Billing codes
- ▶ Electronic & paper +/- verbal orders
- ▶ Scheduling time slots initial and follow-up
- ▶ Patient history questionnaire distribution/recording
- ▶ Powerscribe template
 - Include information for easy ACR registry transfer
 - Include IT fix for follow-up tracking/reporting/QA
 - Include IT fix for automated patient letter generation
- ▶ Smoking cessation
- ▶ Integration with Hospital based care systems

Establish Outpatient Business Plan

- ▶ Know your current costs per NCCT Chest exam
 - Technical component (Equipment/labor/contracts)
 - Scheduling/Billing/Collection/Marketing/Admin
 - Professional component (time/study & variables)
- ▶ Estimate your future costs
 - Letters
 - Vendor product for CAD/ACR registry/tracking (\$160,000)
- ▶ Know your patient population (55–75 / 80 with details of insurance carrier)
- ▶ Estimate your revenue per case
 - TC \$189.71 PC \$52.56

Lifespan BOD presentation 2016: Lung Cancer Scope

- ▶ CDC USA 2011: 207,000 diagnosed & 157,000 deaths
 - > breast+prostate+colon+lymphoma
- ▶ 85% of pts who acquire lung cancer will die from it
- ▶ >94 million current and former smokers in the U.S. at high risk for lung cancer

Rhode Island Demographics

- ▶ Age 55-75 CDC 2010 → 204,468
 - up >40% since 2000
- ▶ Up to 25% current/former smokers: 51,117
- ▶ 5% or 2,556 would have hospital based intervention recommended

Downstream Health Care Consumption

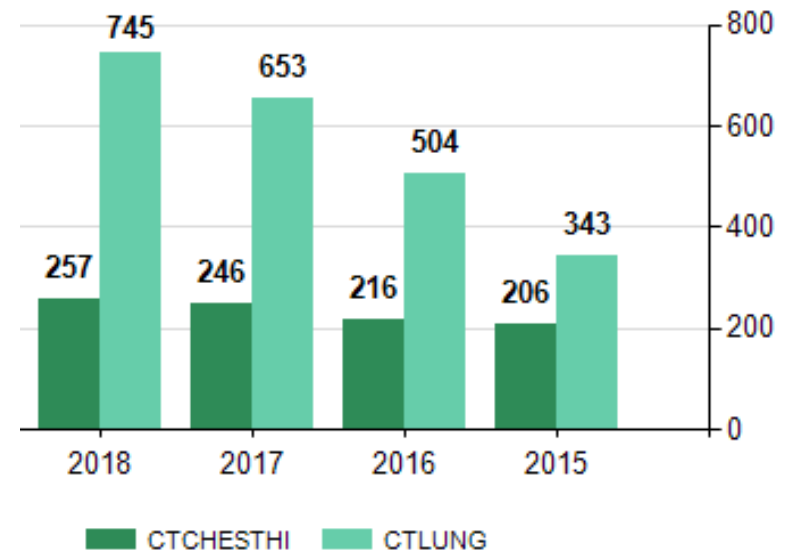
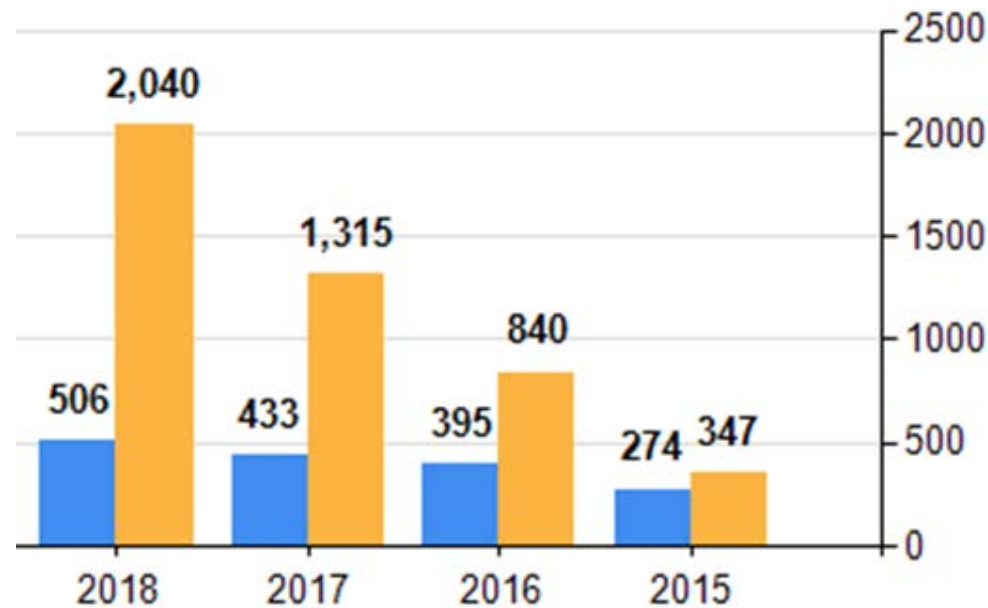
Diagnostic

- ▶ Pulmonary Consult
 - Pulmonary Function
- ▶ PET-CT
- ▶ Brain MRI
- ▶ CT guided or trans-bronchial biopsy
- ▶ Pathology
 - Surgical
 - Cytology
 - Genetic
 - Microbiology

Therapeutic

- ▶ Surgery
- ▶ Ablation
- ▶ Radiation SBRT
- ▶ Chemotherapy
- ▶ Physical Therapy
- ▶ Occupational Therapy
- ▶ Nutrition
- ▶ Life long follow-up: CV disease

Growth of LCS at 2 centers in RI



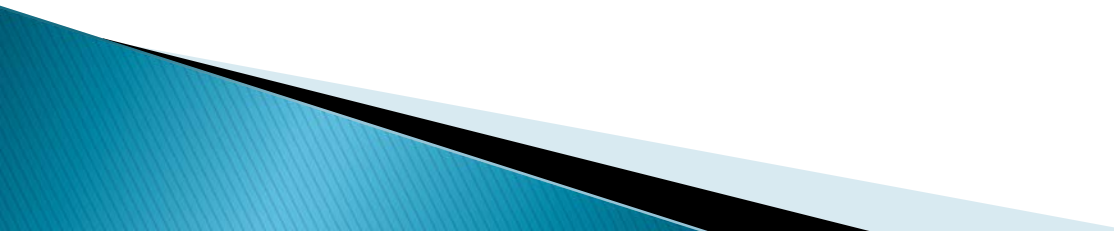
Local Lung Cancer Screening Heroes are Needed!

▶ Could it be you?

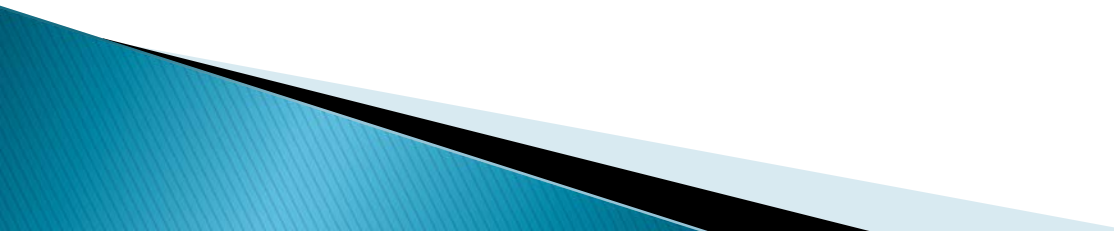
Economic and Billing Issues

- ▶ Credits: Drs. White & Dwyer
- ▶ A “1-pager” will be published on the ACR website soon
- ▶ What is the appropriate timing for the next annual screening CT after a diagnostic CT?
- ▶ **Category 3:** If unchanged/smaller at 6 months, the next recommended follow up is a chest CT in 12 months
- ▶ ***Decision: Code as category 2 negative screen with next LCS CT at 12 months (resets the screening calendar)***
- ▶ **Category 4A:** There was universal concern about waiting 12 months after an unchanged 3 month interim CT due the risk of cancer. No one supported 12 months due to the risk of lung cancer. Discussion was 6 months, 9 months or to allow 6–9 months based on size within the category, morphology and lung cancer risk.
- ▶ ***Decision: recommend 6–9 months; if unchanged or smaller then becomes category 2 negative screen with next LCS CT in 12 months (resets the screening calendar)***


Economic and Billing Issues

- ▶ Credits: Drs. White & Dwyer
 - ▶ What are the appropriate codes for a screening CT versus a diagnostic CT?
 - ▶ A screening CT should be coded as a G0297
 - ▶ The interval 3 or 6 month diagnostic CT should be coded at CPT 71250
- 

Economic and Billing Issues

- ▶ Credits: Drs. White & Dwyer
 - ▶ Are patients excluded from annual screening if they have had a Chest CT in the past year?
 - ▶ Only for the Baseline initial Screening CT
 - ▶ However if a patient has a diagnostic chest CT for other reasons, many insurance companies will not authorize the next annual screening CT until 1 year after the diagnostic CT
- 

Economic and Billing Issues

- ▶ Credits: Drs. White & Dwyer
 - ▶ What Z code should be used to support the medical necessity for the LCS CT (G0297) and for the Shared Decision making visit (G0296)?
 - ▶ The easiest ICD-10 code to use is “Z87.891 Personal history of nicotine dependence”
 - ▶ The F17.21 series (Nicotine dependence, cigarettes) can also be used
- 

Economic and Billing Issues

- ▶ Credits: Drs. White & Dwyer
- ▶ Can LCS CT be offered to patients who do not meet eligibility requirements for insurance coverage?
- ▶ Many programs offer LCS CT to patients who meet the NCCN Group 2 criteria (at least age 50, 20 pack years of smoking, and another risk factor)
- ▶ What code should be used for self-pay patients? Should self-pay patients be entered into the ACR LCS Registry?
- ▶ The G0297 code should be used and these patients should be entered into the Registry

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