

Achieving equitable implementation of lung cancer screening in a safety net health system in Texas

Michael Pignone MD MPH
Dell Medical School
University of Texas Austin, TX



CANCER PREVENTION & RESEARCH
INSTITUTE OF TEXAS



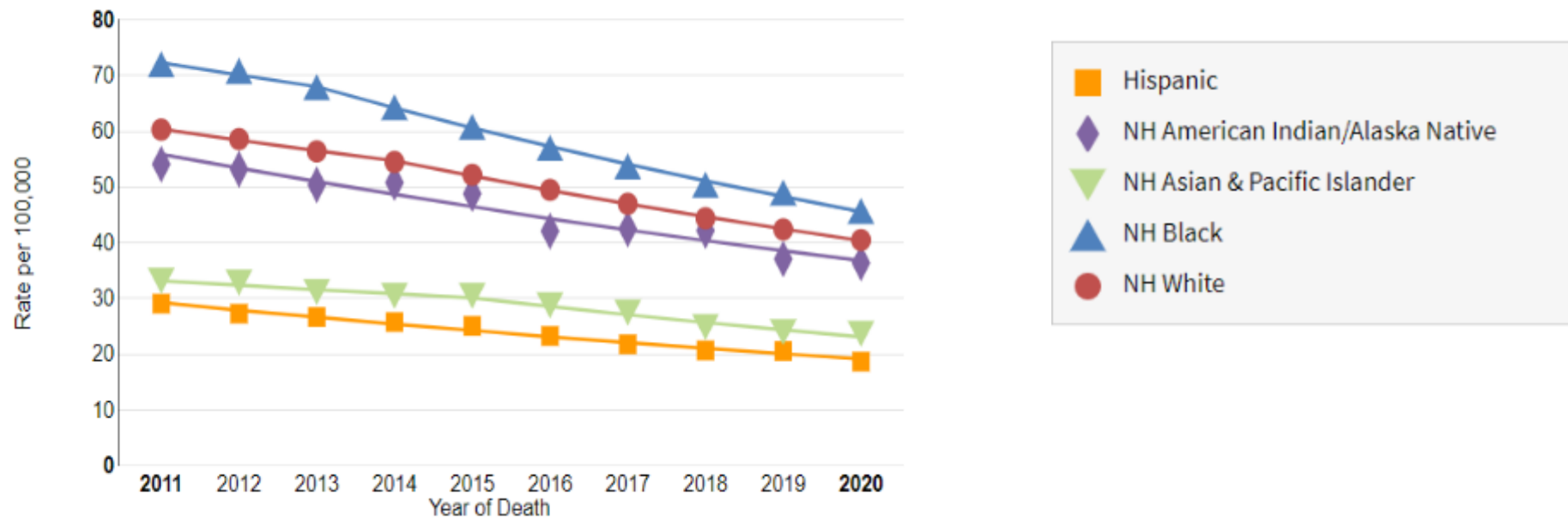
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Lung cancer epidemiology

- Lung cancer: leading cause of cancer death US and global
- US: 238,340 new cases of lung cancer and about 127,070 deaths from lung cancer are expected in 2023
- 80% + smoking-related
- Most lung cancer diagnosed at advanced stages
- Race-ethnic disparities in lung cancer mortality

Disparities in Lung Cancer Mortality by Race/Ethnicity

MALE LUNG AND BRONCHUS CANCER:
AGE-ADJUSTED DEATH RATE PER 100,000 MEN BY RACE/ETHNICITY



U.S. Mortality, Age-Adjusted Rate per 100,000

Lung cancer screening- overview

- LDCT screening decreases lung cancer mortality in high-risk patients
- USPSTF “B” recommendation
 - 2021 recommendation expanded eligibility:
 - Ages 50-80, current or former smoker (quit within 15 years)
 - > 20 pack-years
- Limited uptake to date (< 20%)
- Can screening be implemented equitably?

Barriers to implementation in FQHCs

- Inadequate smoking data to assess eligibility
- Many competing clinical demands
- Transportation barriers
- Cost (for uninsured patient screening and for follow-up care)
- Barriers higher for some populations

Purpose

- To implement lung cancer screening in high-risk patients served by a safety net health system
- To ensure that implementation is equitable: no important demographic differences in uptake

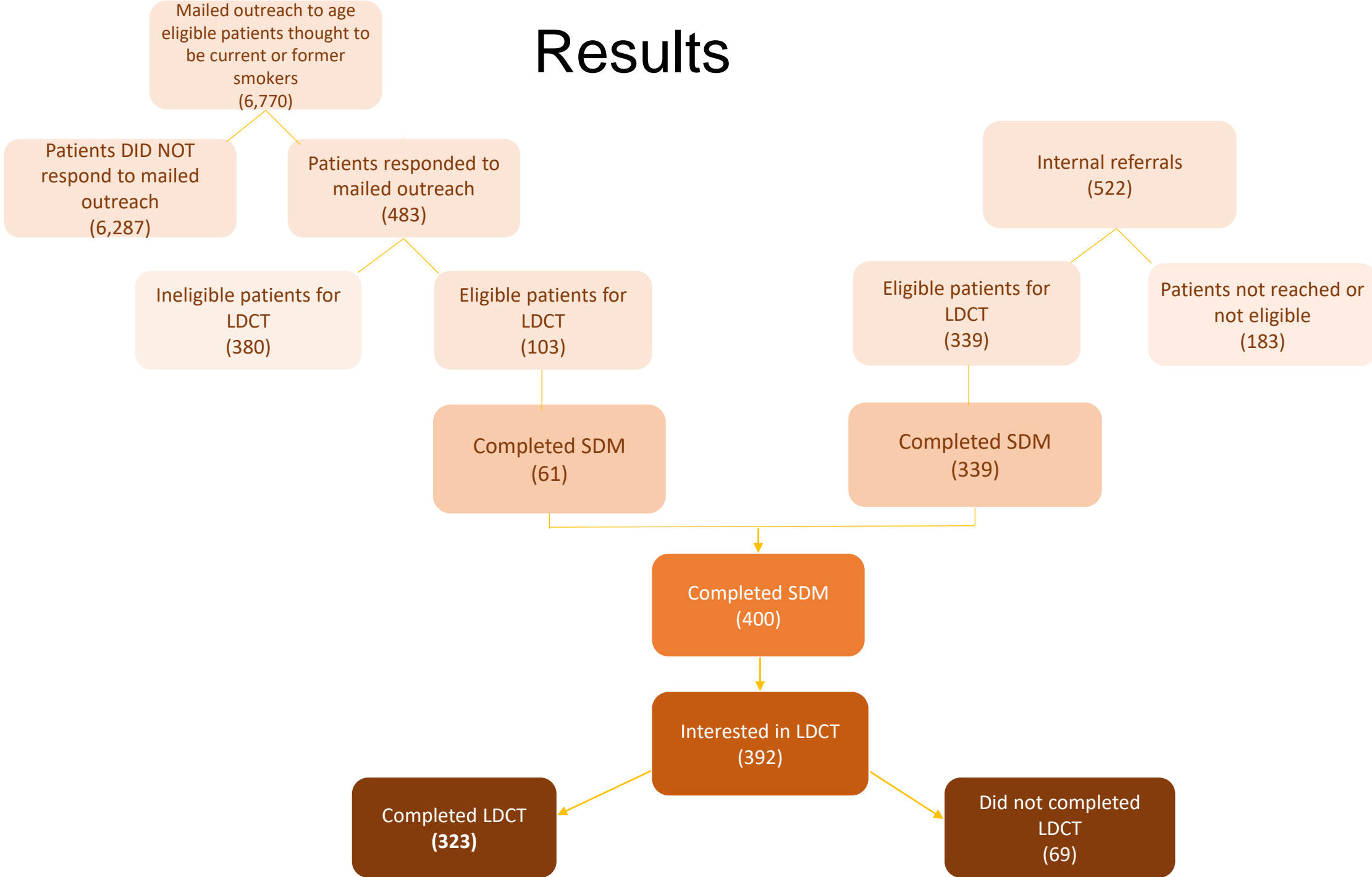
Setting

- Large FQHC system in Central Texas
- 22 sites
- 7,000+ current / former smokers in target age range
 - Estimate 2500 eligible
- No lung screening before program
- Limited smoking cessation services
- EHR transition and COVID

Implementation strategy

- Create registry of high-risk current and former smokers
 - Improve smoking assessment to better assess risk
- Offer intensive, telephone-based intensive smoking cessation to smokers
- Implement shared decision making about CT screening for high-risk patients
 - Telephonic delivery to overcome barriers
 - Social work-trained navigators / decision coaches (English and Spanish)
 - Validated brief decision aid
- Ensure interested patients receive screening and appropriate follow-up
 - No-cost screening
 - Navigation
 - Virtual, multi-disciplinary case conference

Results



Participant demographics

Var	level	N (%)
N		392
Age; mean (sd)		61.1 (6.55)
Gender (%)	Female	155 (39.5)
	Male	237 (60.5)
Race/Eth. (%)	Hispanic/Latino	135 (34.4)
	Black, Non-hisp.	77 (19.6)
	Other/Multi, Non-hisp.	13 (3.3)
	White, Non-hisp.	140 (35.7)
	Unknown/Refused	27 (6.9)
Pref. Language (%)	English	306 (79.9)
	Spanish	72 (18.8)
	Other	5 (1.3)

Var	level	N (%)
N		392
Insurance (%)	Medicare	55 (14.0)
	Medicaid	55 (14.0)
	County	186 (47.4)
	Sliding Scale	35 (8.9)
	Commercial	40 (10.2)
	Grants	1 (0.3)
	Unknown	17 (4.3)
	Other	3 (0.8)
Smk. status (%)	Current Smoker	299 (76.7)*
	Former Smoker	91 (23.3)

* N/As removed for clarity

Few demographic differences in LDCT completion

Var	No LDCT	Completed LDCT	Total
N	69	323 (0.82)	392
Age Group (%)			
Age <60	30 (0.19)	129 (0.81)	159
Age >=60	39 (0.17)	194 (0.83)	233
Gender (%)			
Female	28 (0.18)	127 (0.82)	155
Male	41 (0.17)	196 (0.83)	237
Race/Eth. (%)			
Hispanic/Latino	21 (0.16)	114 (0.84)	135
Black, Non-hisp.	9 (0.12)	68 (0.88)	77
Other/Multi, Non-hisp.	4 (0.31)	9 (0.69)	13
White, Non-hisp.	28 (0.2)	112 (0.8)	140
Unknown/Refused	7 (0.26)	20 (0.74)	27

Var	No LDCT	Completed LDCT	Total
N	69	323 (0.82)	392
Pref. Lang. (%)			
English	63 (0.21)	243 (0.79)	306
Spanish	6 (0.08)	66 (0.92)	72
Other	0 (0)	5 (1)	5
Insurance (%)			
Medicare	8 (0.15)	47 (0.85)	55
Medicaid	13 (0.24)	42 (0.76)	55
County	32 (0.17)	154 (0.83)	186
Sliding Scale	6 (0.17)	29 (0.83)	35
Commercial	6 (0.15)	34 (0.85)	40
Other	4 (0.19)	17 (0.81)	21
Smk. status (%)			
Current Smoker	60 (0.2)	239 (0.8)	299
Former Smoker	9 (0.1)	82 (0.9)	91

* N/As removed for clarity

Odds Ratios for LDCT Completion

	OR	2.50%	97.50%
Age Group	Ref: Age <60		
Age >=60	1.16	0.68	1.95
Gender	Ref: Male		
Female	0.95	0.56	1.62
Race/Eth.	Ref: White, Non-hisp.		
Hispanic/Latino	1.36	0.73	2.55
Black, Non-hisp.	1.89	0.87	4.46
Other/Multi, Non-hisp.	0.56	0.17	2.2
Unknown/Refused	0.71	0.28	1.97

	OR	2.50%	97.50%
Language	Ref: English		
Spanish	2.85	1.27	7.63
Insurance	Ref: Commercial		
Medicare	1.04	0.32	3.26
Medicaid	0.57	0.18	1.61
County	0.85	0.3	2.07
Sliding Scale	0.85	0.24	3
Other	0.75	0.19	3.26
Smk. status	Ref: Current smoker		
Former Smoker	2.29	1.14	5.12

Median time from SDM to completion
= 26.5 days

Screening results (LungRADS)

LDCT Scan Results	N = 392
LungRADS 1 (negative/benign)	190 (48.4%)
LungRADS 2 (benign)	97 (24.7%)
LungRADS 3 (probably benign)	27 (6.9%)
LungRADS 4 (very suspicious)	9* (2.3%)
Not available	69 (17.6%)

* Two cancer diagnoses (0.5%)

Conclusions

- Successful implementation of lung cancer screening in a diverse population of high-risk patients in safety net system
- Few demographic differences in screening completion
- % Abnormal findings c/w prior studies

Implications and next steps

- Current model effective and equitable
- Many eligible patients have not been engaged as yet
- Opportunities to undertake more active outreach and increase referrals
- Expanding program to second system and larger geography

Thanks!

Questions?



Authors:

Michael Pignone, MD, MPH
Nicole Kluz, MPH
Amaris Martinez, BA
LaTasha Vanin, LCSW
Yvonne Queralt, MD
Koonj Shah, MD
Trisha Parekh, DO, MSPH
Patrick Chang, MPH

Michael Pignone, MD, MPH
pignone@austin.utexas.edu

Extra slides

Limited implementation to date in US

- National survey data (BRFSS- self report) 2018
- 26,910 age-eligible respondents
 - 9.9% eligible based on smoking history
- 19.2% of eligible reported CT screening within 12 months
- Significant state-level variation
 - Texas 28.2% highest
- More likely to report screening:
 - Non-high school graduates
 - Retired / Disabled
 - Annual Income > \$30K
 - Has personal physician

Median days from SDM to LDCT= 26.5 days

Var	Median time-to-LDCT
Age group	
Age <60	26 days
Age >=60	27 days
Gender	
Female	28 days
Male	25 days
Race/Ethnicity	
Hispanic/Latino	27 days
Black, Non-hisp.	36 days
Other/Multi, Non-hisp.	24 days
White, Non-hisp.	22 days
Unknown/Refused	24 days

* N/As removed for clarity

Var	Median time-to-LDCT
Pref. Language	
English	24 days
Spanish	29 days
Other	35 days
Insurance	
Medicare	30 days
Medicaid	39 days
MAP	25 days
Sliding Scale	24 days
Commercial	21 days
Other	23 days
Smoking status	
Current Smoker	28 days
Former Smoker	23 days

Follow-up of abnormal screening

Initial Scan	Recommendation/Follow-up	Outcome
4a	3 month follow-up scan	Resolved
4x	3 month CT – nodules resolved	Resolved
4a	Bx – T1bN0M0 cancer; curative surgery Undergoing surveillance	Successful cancer treatment
4b	Bx – T1bN1M0; second primary cancer; immunotherapy	In cancer treatment
4b	3 month CT showed improvement; 6 month CT – nodules resolved	Resolved
4b	3 month scan – nodules resolved	Resolved (deceased)
4a	3 month PET or CT (?????)	Resolved
4b	Bx – no malignancy; return to annual surveillance	Resolved

Should I start having yearly screening for lung cancer?

You are eligible for lung cancer screening if you: are ages 55-77, are a current smoker or quit within the past 15 years, and have smoked at least a pack per day for 30 years.

How do we screen for lung cancer?
We screen for lung cancer using a CT scan. If you decide to be screened for lung cancer, you will need to have a CT scan once a year.

	SCREENED Out of 1000 People	NOT SCREENED Out of 1000 people
Lung cancers diagnosed	42 Lung cancers diagnosed	39 Lung cancers diagnosed
Benefits (over 7 years)		
Risk of dying from lung cancer	18 Lung cancer deaths	21 Lung cancer deaths
Lung cancer deaths prevented	3 Lung cancer deaths prevented	0 Lung cancer deaths prevented
Harms (over 7 years)		
Need for more scans	206 People will need more CT scans	0 People will need more CT scans
Biopsies	14 Biopsies in people who do NOT have lung cancer	0 Biopsies in people who do NOT have lung cancer
Serious complications from biopsies	0-1 Serious complications from biopsies in people who do NOT have lung cancer	0 Serious complications from biopsies in people who do NOT have lung cancer
Over-detection and over-treatment of harmless "cancers"	3 Over-detected and treated cancers	0 Over-detected and treated cancers
Radiation exposure	0-1 Radiation-related cancer (10-20 years later)	0 Radiation-related cancer (10-20 years later)

Should I start having yearly screening for lung cancer?

OTHER THINGS YOU SHOULD THINK ABOUT: • **Anxiety and distress:** Screening can cause anxiety and distress from worrying about lung cancer, especially when the CT scan finds nodules. • **Costs:** The CT screening test is covered by your insurance or our program. Our team will work with you if you require additional tests.

Your Decision

There is a lot to consider before you decide whether you want to be screened for lung cancer. Think about what's most important to you about the benefits and harms. Are you leaning toward or against starting annual lung screening?

Starting annual
lung screening

Leaning Toward

Neutral

Leaning Against

NOT starting
annual lung
screening