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AN ACCREDITED CONTINUING EDUCATION SERIES WITH THE EXPERTS

# Addressing Disparities in Cancer Care and Incorporating Precision Medicine for Minority Populations

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ENDORSED BY



# Disparities in Cancer Care: Lung Cancer



Moderator & Course Director

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Associate Director, Diversity Affairs  
Sidney Kimmel Cancer Center at Jefferson  
**116<sup>th</sup> President National Medical Association**



Presenters

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Associate Director of the Cancer Equity Program  
Assistant Professor of Medicine, Harvard Medical School  
Dana-Farber Cancer Institute  
Boston, Massachusetts



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Professor  
Director, Division of Thoracic Surgery  
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# Faculty Disclosures

## **Edith Mitchell, MD, MACP, FCPP, FRCP**

**Consultant:** AstraZeneca, Bristol Myers Squibb, Genentech, Merck & Co., Inc., Pfizer Inc., Taiho Oncology, Inc.

**Clinical Research:** Amgen, Genentech

## **Planning Committee**

The following planning committee members have nothing to disclose:

**UNMC:** Brenda Ram, CMP, CHCP

**Bio Ascend:** Chloe Dunnam; Lucja Grajkowska, PhD; Kraig Steubing

## **Narjust Duma, MD**

**Advisory Board:** AstraZeneca, Janssen, Pfizer Inc

## **Nathaniel Evans III, MD**

**Consultant:** Intuitive Surgical (Proctor)



# Learning Objectives

- Review racial difference in the outcomes in patients with cancer, including patients with both hematologic and solid tumors
- Evaluate sociodemographic, physician, and hospital factors that can help identify potentially modifiable patient and health care system factors that may underlie persistent racial disparities in receipt and quality of therapy
- Develop efforts to improve access to care, enhance diversity in the healthcare workforce, navigate minority cancer patients through the healthcare system, and enhance adherence to cancer-specific best practice

# Disparities in Lung Cancer

**Narjust Duma, MD**  
**Associate Director of Cancer Care Equity**  
**Thoracic Oncologist**  
**Lowe Center For Thoracic Oncology**  
**Dana-Farber Cancer Institute**  
**September 2021**

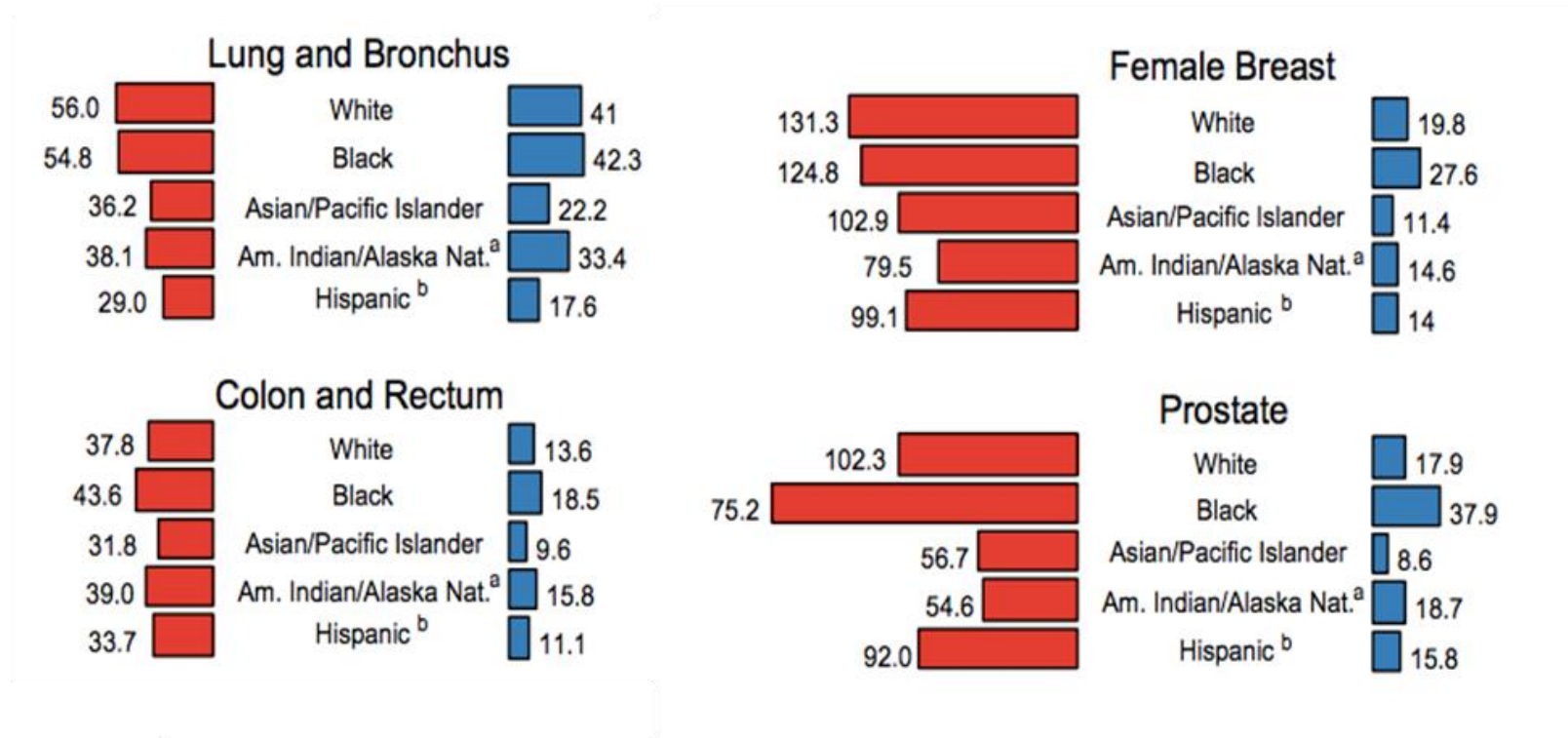
# Cancer Disparities

## Incidence

## Mortality

## Incidence

## Mortality



SEER Cancer Incidence and US Death Rates, 2013-2017  
By Cancer Site and Race/Ethnicity

# Lung Cancer Health Disparities

- Adverse differences between certain population groups in cancer measures:
  - Incidence (LGBTBQ, others)
  - Stage at diagnosis
  - Mortality
  - Survivorship
  - Screening rates
  - Access to clinical trials
  - End of life



And many more...



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O'Keefe, et al. "Health disparities and cancer: racial disparities in cancer mortality in the United States, 2000–2010." *Frontiers in public health* (2015)

Green, et al. "Cancer health disparities." *Fundamentals of Cancer Prevention*. Springer Berlin Heidelberg (2014)

[www.cancer.gov](http://www.cancer.gov)



## Which U.S. Population Groups Experience Cancer Health Disparities?

According to the National Cancer Institute cancer health disparities in the United States are adverse differences in cancer measures such as number of new cases, number of deaths, cancer-related health complications, survivorship and quality of life after cancer treatment, screening rates, and stage at diagnosis that exist among certain population groups including:

racial and ethnic minority groups;



individuals of different ancestry;



individuals of low socioeconomic status;



individuals with disabilities;



individuals who lack or have limited health insurance coverage;



residents in certain geographic locations, including rural areas;



members of the lesbian, gay, bisexual, and transgender community;



immigrants;



refugees or asylum seekers;

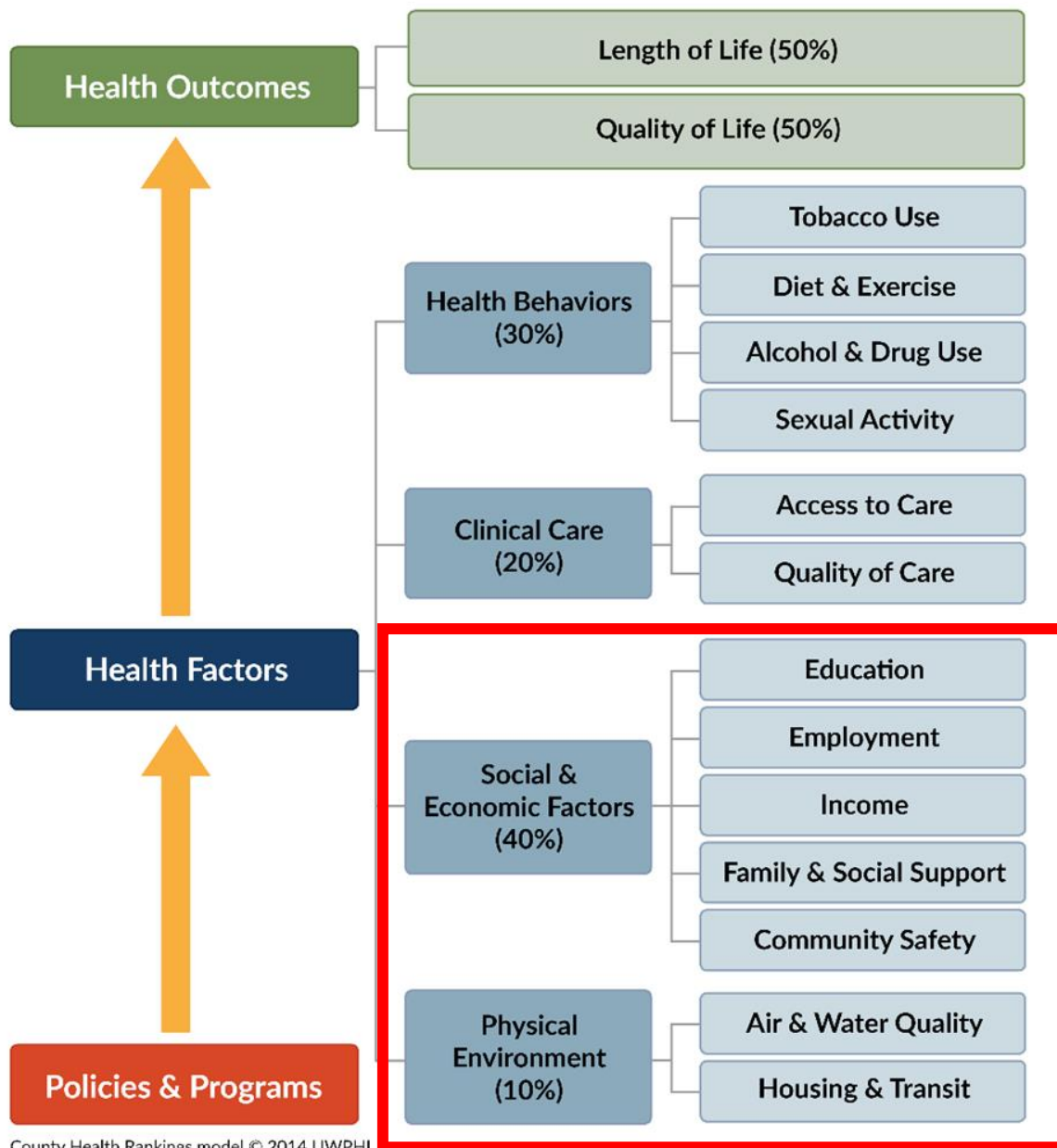


adolescents and young adults; and



the elderly.





County Health Rankings model © 2014 UWPHI

**80% of a Healthy Outcome is **NOT** determined by Clinical Care – when someone is Sick**



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# Practical Barriers to Healthcare

- Lack finances to purchase needed health services and treatments (e.g., medications, diagnostic tests, health provider fees)
- Transportation difficulties (e.g., no car)
- Difficulties taking leave from work to seek care (e.g., no paid leave available, employer will not allow time off)
- Difficulties arranging childcare



# NSCLC and Race

The incidence rates and mortality rates of lung cancer are highest in Black men

Over the past 40 years there has been a decrease in lung cancer incidence and mortality in all races

Black men are still more likely to have lung cancer when smoking habits are adjusted for



# Lung Cancer and Income



- Low income takes on special importance in lung cancer:  
Double jeopardy phenomenon
  - Low income increased risk due to tobacco
  - Low income increases risk of dying
- Income is directly related to stage of disease at presentation
- Stage at presentation drives mortality





ORIGINAL STUDY | [VOLUME 21, ISSUE 3, E115-E129, MAY 01, 2020](#)

# Influence of Sociodemographic Factors on Treatment Decisions in Non–Small-Cell Lung Cancer

[Narjust Duma](#)   • [Dame W. Idossa](#) • [Urshila Durani](#) • ... [Alex A. Adjei](#) • [Ronald S. Go](#) •  
[Sikander Ailawadhi](#) • [Show all authors](#)

Published: August 30, 2019 • DOI: <https://doi.org/10.1016/j.cllic.2019.08.005> •



# Lung-Cancer Screening

- The most effective way to dramatically improve outcomes in NSCLC is early detection
- Multiple trials have shown a significant improvement in lung- cancer survival with lung screening, despite screening at limited time points throughout the trials



# Gender/Racial Differences in NLST Outcomes

- LDCT screening in NLST decreased mortality for all groups but even more so in African Americans
- Black patients were younger, with more co morbidities and less educated, but had a greater benefit
- Looking at screening rates in other diseases, raised the question of utilization of screening in vulnerable populations



# More benefit from lung cancer screening?

Female v Male Ratio (%)	
NLST	41/59
NELSON	16/84

Percent LC Mortality Decrease			
Trial	Men	Women	50:50 M/F
NLST	8%	27%	18%
NELSON	26%	39-61%	33 – 44%

But less likely to be screened 😞



# Lung Cancer Screening Discussions

	N	Events	Age-Adjusted			Multivariable-Adjusted <sup>11</sup>		
Sex <sup>2</sup>			OR	Upper CI	Lower CI	OR	Upper CI	Lower CI
Female	2356	176	0.72	0.53	0.99	0.64	0.45	0.92
Male	1851	199	1.00	reference		1.00	reference	
Race <sup>3</sup>								
Hispanic	467	53	1.32	0.88	1.98	1.81	1.09	3.01
Non-Hispanic White	2887	238	1.00	reference		1.00	reference	
Non-Hispanic Black	600	59	1.48	0.99	2.22	1.53	0.98	2.37
Non-Hispanic Asian or Other Race	253	25	1.37	0.78	2.41	2.16	1.12	4.17
Race/Sex <sup>4</sup>								
Hispanic male	204	31	1.34	0.77	2.35	1.61	0.83	3.10
Hispanic female	263	22	0.85	0.45	1.63	1.13	0.55	2.34
NH-White male	1328	132	1.00	reference		1.00	reference	
NH-White female	1559	106	0.66	0.46	0.94	0.55	0.37	0.82
NH-Black male	209	27	1.34	0.65	2.76	1.18	0.52	2.65
NH-Black female	391	32	1.14	0.71	1.84	1.07	0.63	1.83
NH-Asian/other male	110	9	0.82	0.36	1.86	1.12	0.42	2.95
NH-Asian/other female	143	16	1.44	0.59	3.51	2.26	0.82	6.24
Survey Cycle <sup>5</sup>								
4.2 (2013)	1272	153	1.00			1.00		
4.4 (2015)	1486	107	0.43	0.31	0.61	0.41	0.27	0.61
5.1 (2017)	1449	115	0.64	0.45	0.89	0.64	0.44	0.93

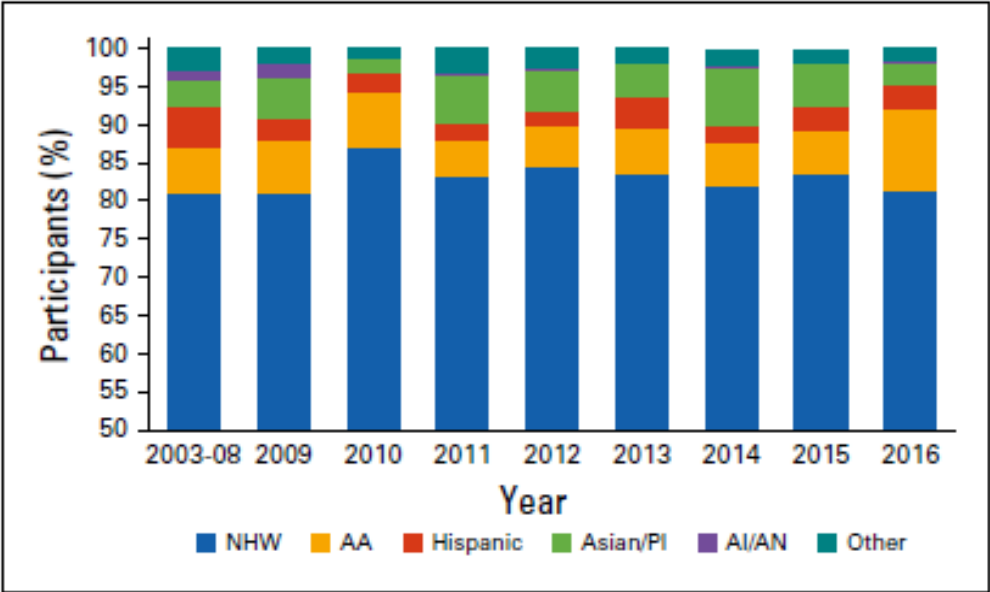


# **Inclusion in Lung Cancer Clinical Trials**

# Representation in Clinical Trials - Challenge

- Decline in the recruitment of minorities, women and the elderly in the past 14 years

Racial/Ethnic Group	No. of Trial Enrollees		2013 Cancer Prevalence	EF
	No.	%	%	%
All cancers				
Non-Hispanic white	46,431	83.4	79.0	1.2
African American	3,270	6.0	10.0	0.7
Hispanic	1,484	2.6	7.0	0.4
Asian/Pacific Islander	2,982	5.3	3.3	1.9
American Indian/Alaskan Native	190	0.3	0.3	1.3
Other	1,332	2.4		



Duma, Narjust, et al. "Representation of Minorities and Women in Oncology Clinical Trials: Review of the Past 14 Years." Journal of oncology practice 14.1 (2017)



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# Limited to Subgroups – Challenge

Most studies focused on a population subgroup, in a specific geographic location, limiting the generalizability of the findings



[www.sphweb.bumc.bu.edu](http://www.sphweb.bumc.bu.edu)



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# Lung Cancer Biomarker Testing



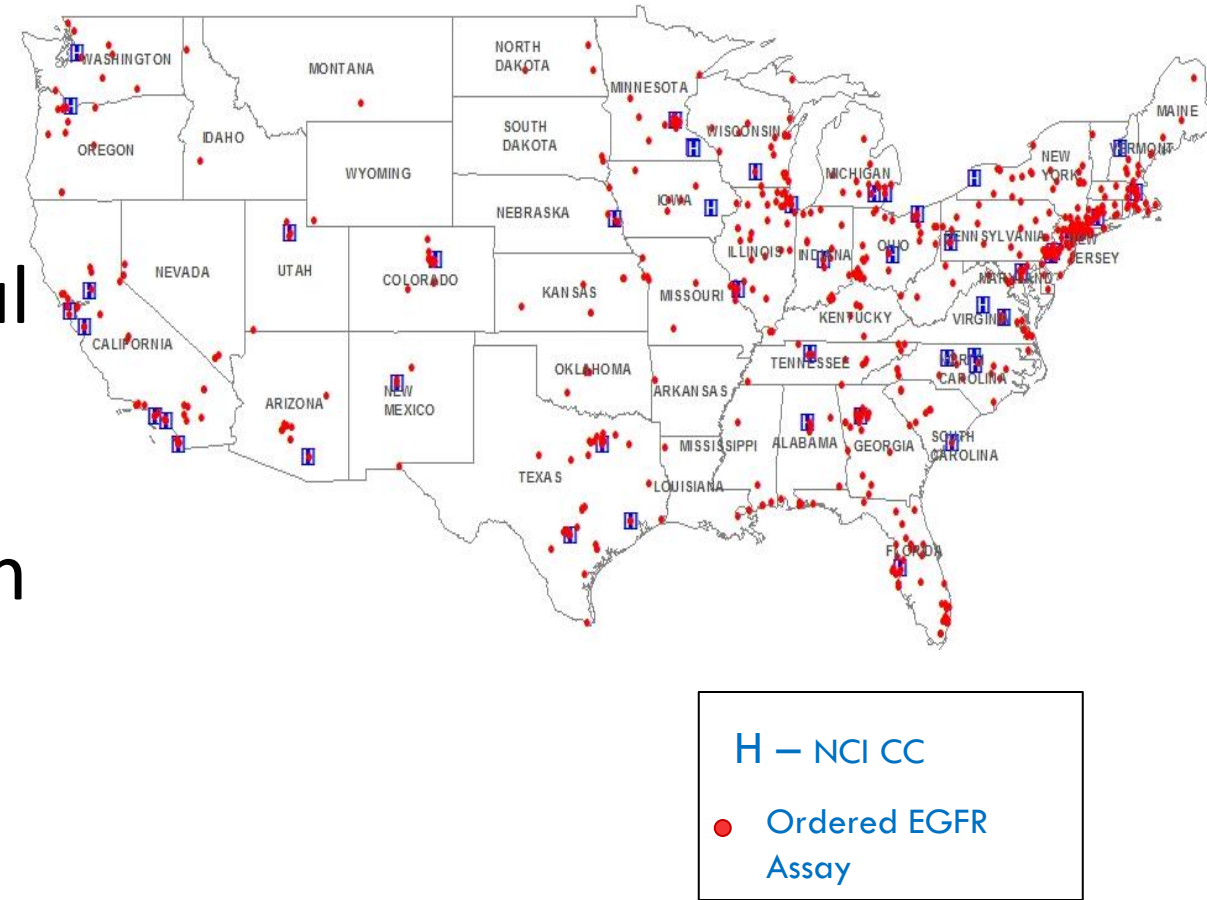
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# Institutions Adopting EGFR assay

- Medicare claims data from 2010-2013
- Geographic area was most powerful predictor
- Medicaid status
- Race (Black patients less likely Asian patients more likely)
- Distance from NCI cancer center





# Molecular Testing Update

- Kehl et. al. JNCI 2019

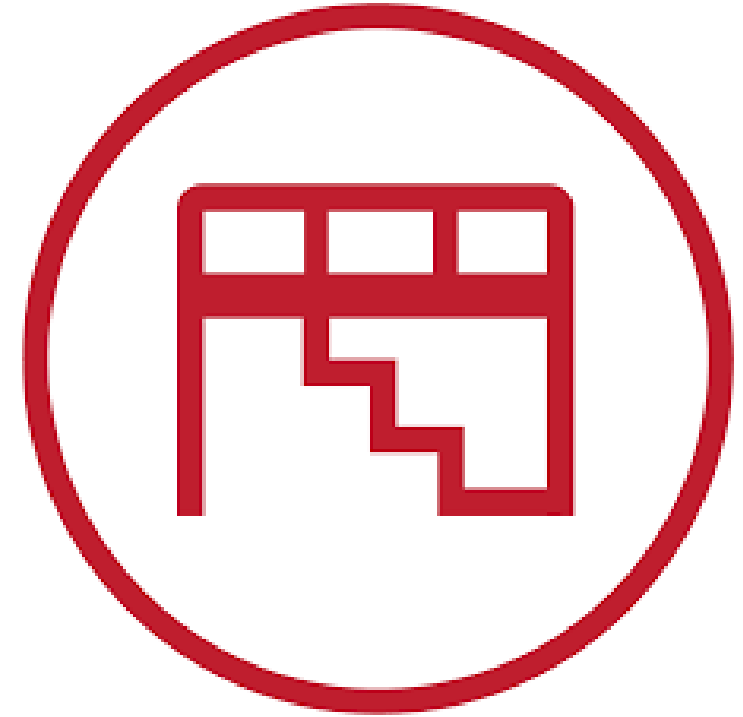
SEER-Medicare 2008-2013 molecular testing adenocarcinoma over 5000 pts.

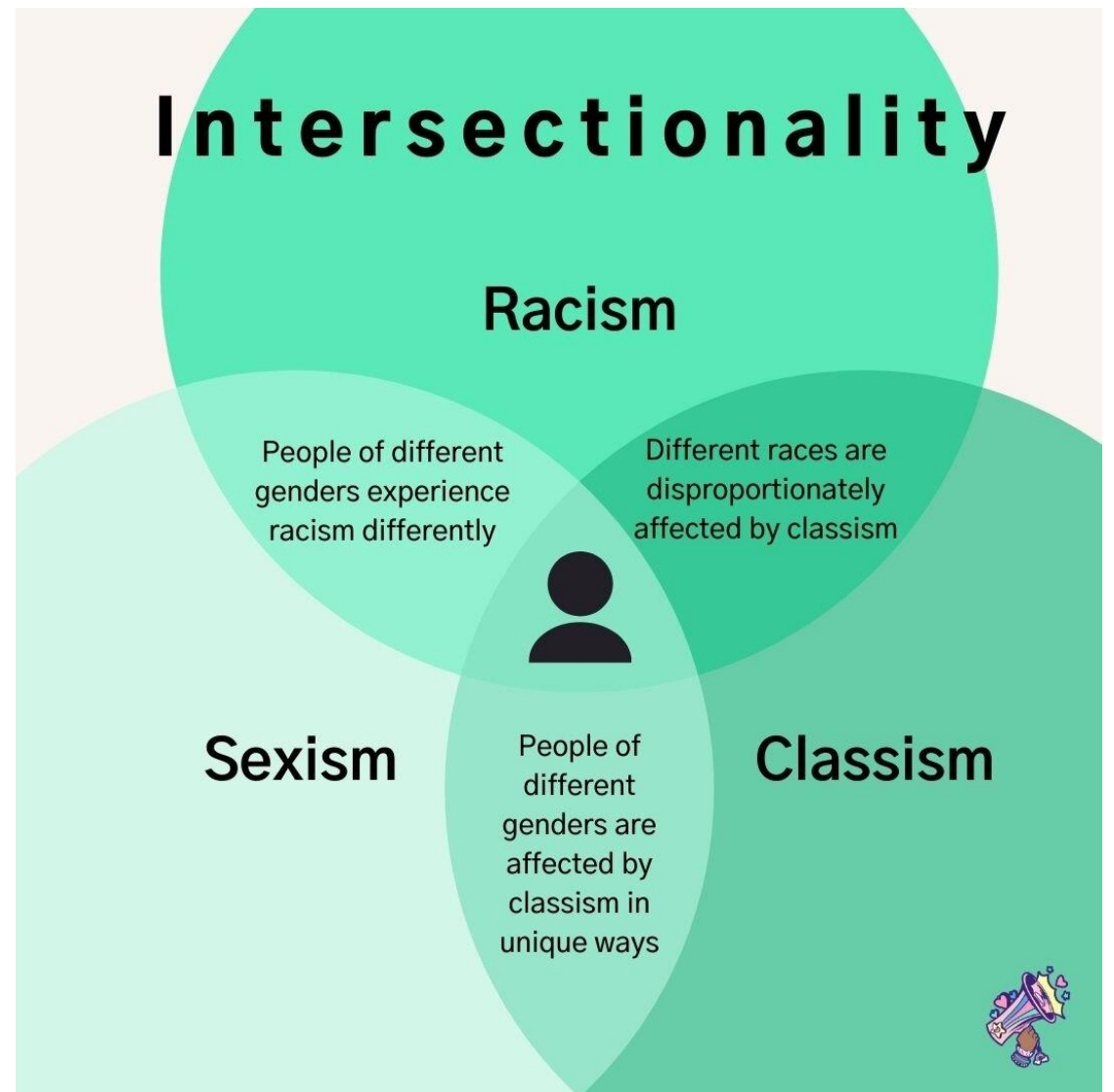
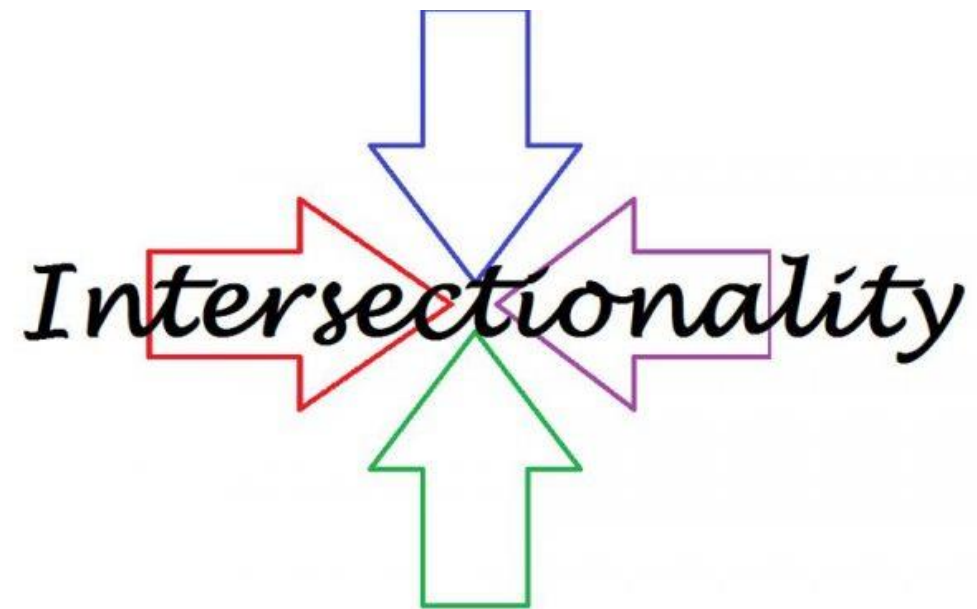
- AA 14% White 26% Asian 33%
- 20% poorest census tract vs 30 % top income tract
- Testing rates for all improved over time
- Dual eligible Medicaid, race, poverty were significant
- Being seen at an NCI center powerful positive effect



# Multilevel Approach - Challenge

- It is not all about stage at diagnosis!
- Biobanks – Majority samples are from non-Hispanic White patients
- Palliative care - Hospice





**The COVID-19 pandemic has disrupted the spectrum of cancer care, including delaying diagnoses and treatment and halting clinical trials**



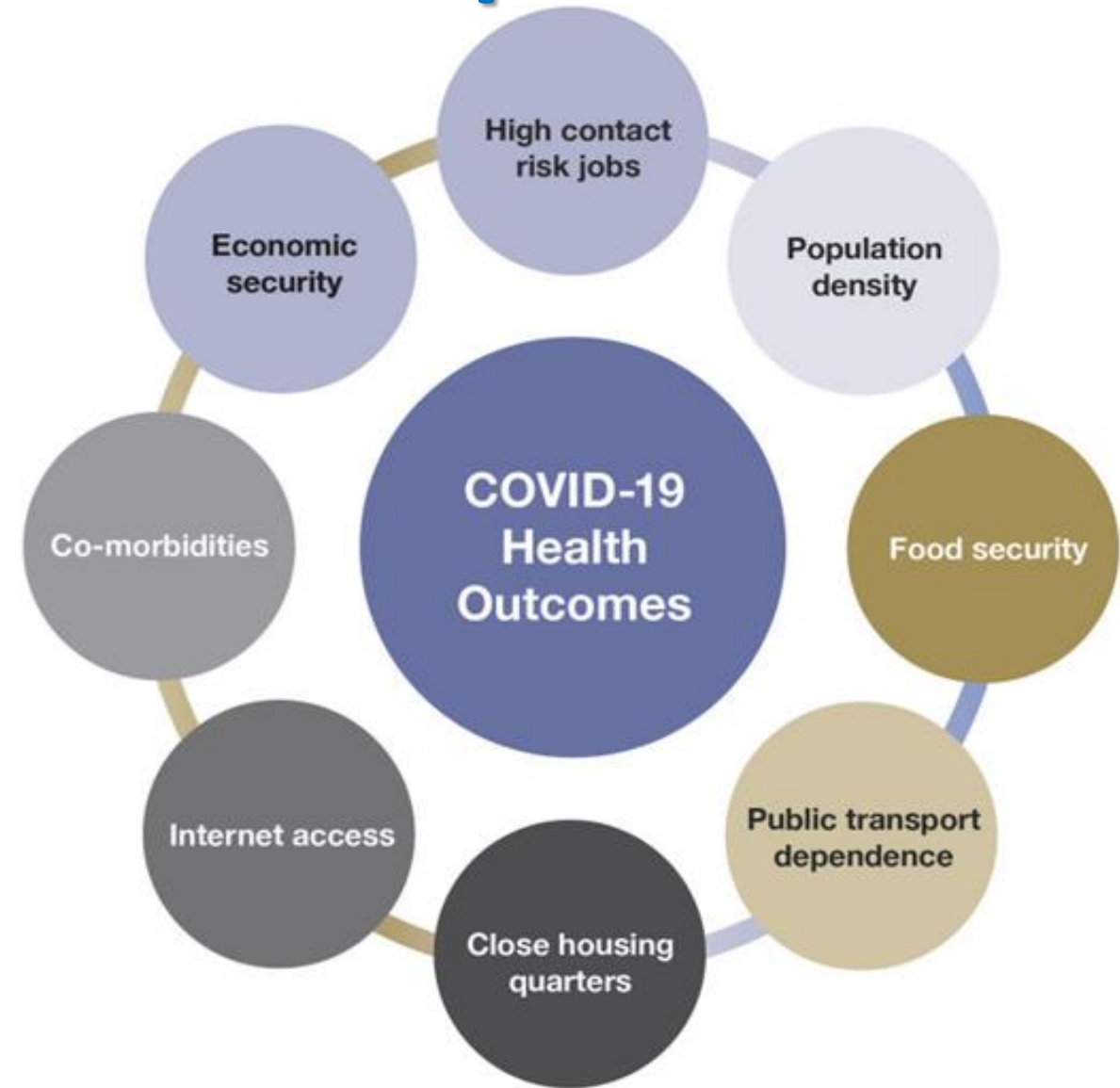
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# Widened Disparities Gap

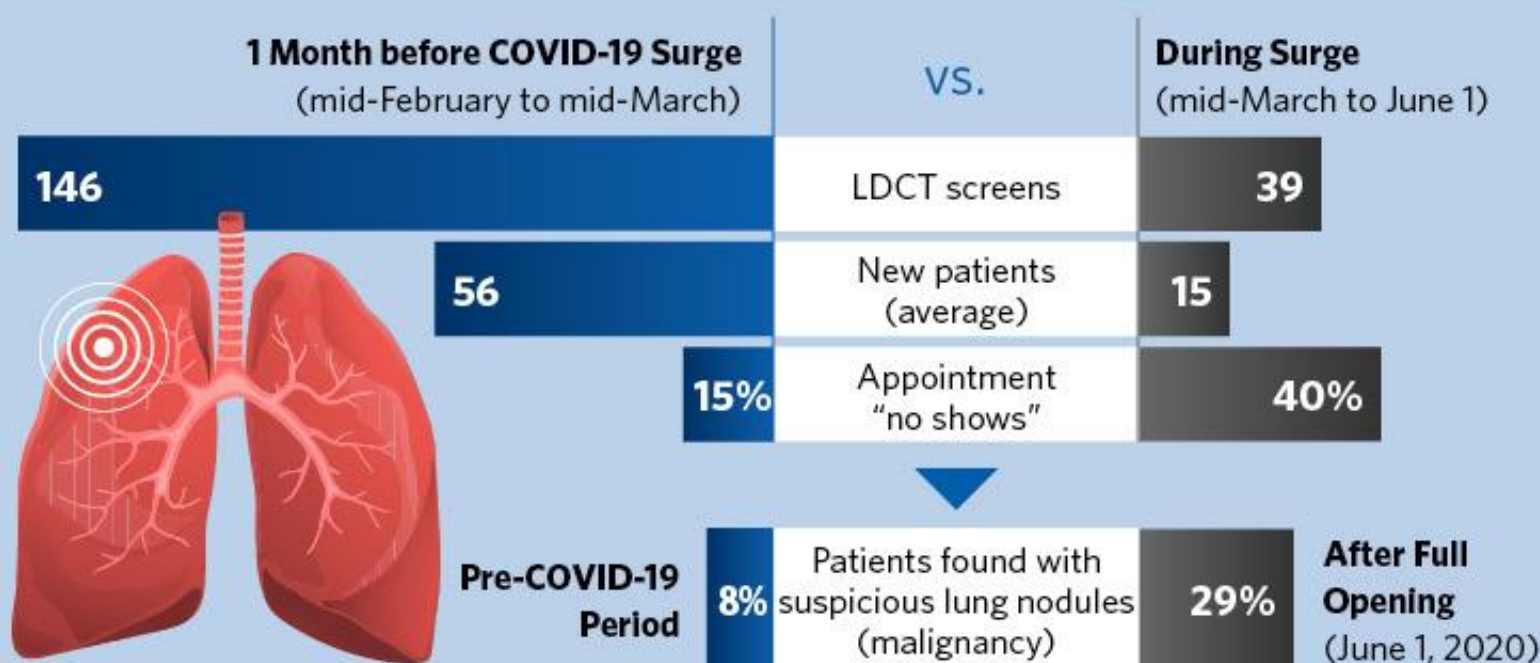
- Loss of Job/Economic Insecurity
- Population Density
- Public Transport Dependency
- High Contact Risk Jobs
- Comorbidities
- **Digital Divide**
- Fear
- Loss of Insurance





# COVID-19: Delays in Lung Cancer Screening Associated with Rise in Malignancy Rates at a Single Institution

During COVID-19 restrictions, patient visits decreased for low-dose computed tomography (LDCT) lung cancer screening  
**2020 Timeline** / March 13 ▶ **LDCT suspended** / May 5 ▶ **phased reopening** / June 1 ▶ **full opening**



Steps taken to increase patient visits

- **More patient education—why screening is safe**
- **Move screening from hospital to outpatient center**
- **Social distancing in waiting rooms, screening areas**
- **Space appointments further apart**

*journalacs.org*

Van Haren RM, et al. *J Am Coll Surg* 2020. doi.org/10.1016/j.jamcollsurg.2020.12.002  
Study conducted at University of Cincinnati College of Medicine



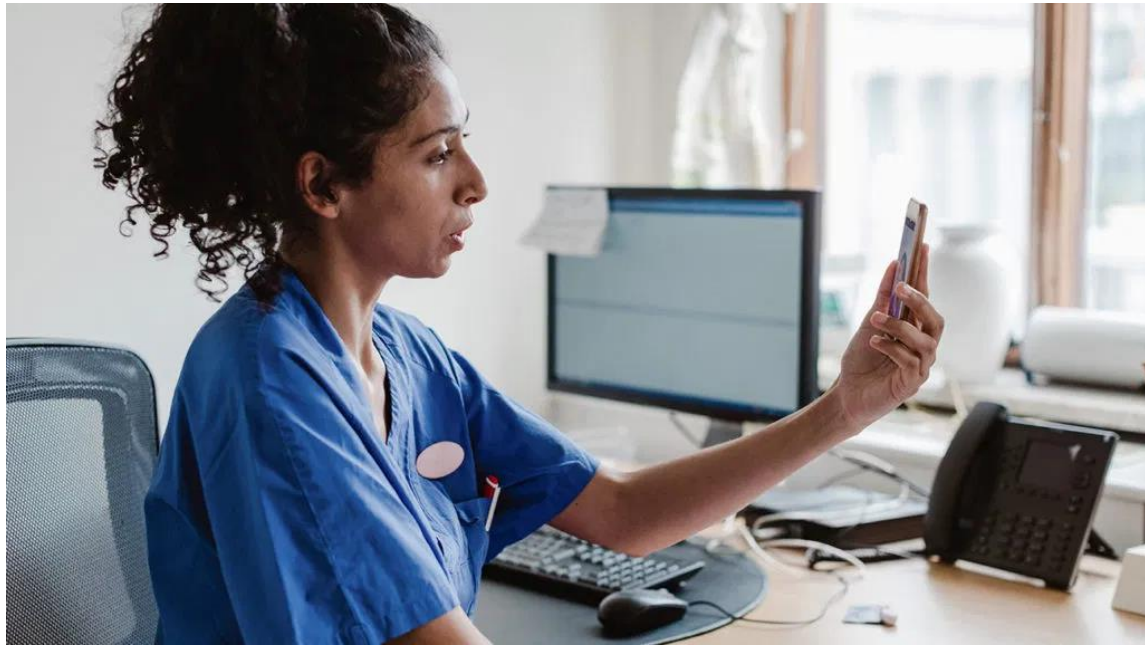
**JACS**

Journal of the  
American College of Surgeons

Physician bias:

“Poor compliance”

“Lack of understanding” – Language Barrier?



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# How to measure systemic racism and discrimination during crisis?



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create EQUITY**



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# Disparities in Lung Cancer

Screening, Diagnosis, Treatment and Outcomes

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Professor of Surgery

Director, Division of Thoracic and Esophageal Surgery

@NateEvansMD

Sept 8, 2021



# Disclosures

- None



(well... I am a Thoracic Surgeon and Surgery is the most effective treatment for lung cancer)







# Lung Cancer

## Estimated New Cases

			Males	Females			
Prostate	191,930	21%			Breast	276,480	30%
Lung & bronchus	116,300	13%			Lung & bronchus	112,520	12%
Colon & rectum	78,300	9%			Colon & rectum	69,650	8%
Urinary bladder	62,100	7%			Uterine corpus	65,620	7%
Melanoma of the skin	60,190	7%			Thyroid	40,170	4%
Kidney & renal pelvis	45,520	5%			Melanoma of the skin	40,160	4%
Non-Hodgkin lymphoma	42,380	5%			Non-Hodgkin lymphoma	34,860	4%
Oral cavity & pharynx	38,380	4%			Kidney & renal pelvis	28,230	3%
Leukemia	35,470	4%			Pancreas	27,200	3%
Pancreas	30,400	3%			Leukemia	25,060	3%
All Sites	893,660	100%			All Sites	912,930	100%

## Estimated Deaths

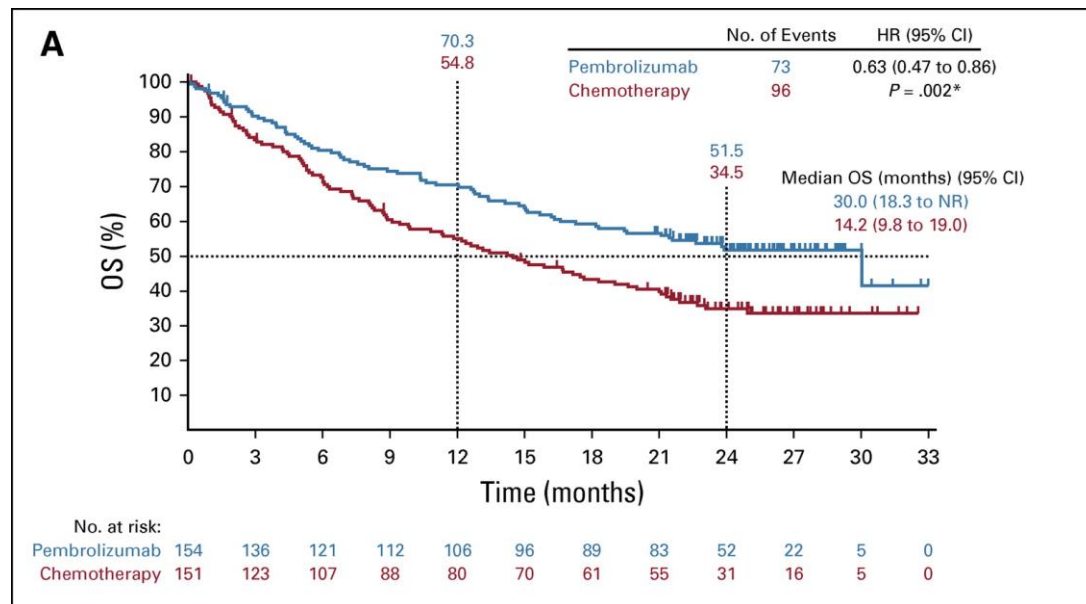
			Males	Females			
Lung & bronchus	72,500	23%			Lung & bronchus	63,220	22%
Prostate	33,330	10%			Breast	42,170	15%
Colon & rectum	28,630	9%			Colon & rectum	24,570	9%
Pancreas	24,640	8%			Pancreas	22,410	8%
Liver & intrahepatic bile duct	20,020	6%			Ovary	13,940	5%
Leukemia	13,420	4%			Uterine corpus	12,590	4%
Esophagus	13,100	4%			Liver & intrahepatic bile duct	10,140	4%
Urinary bladder	13,050	4%			Leukemia	9,680	3%
Non-Hodgkin lymphoma	11,460	4%			Non-Hodgkin lymphoma	8,480	3%
Brain & other nervous system	10,190	3%			Brain & other nervous system	7,830	3%
All Sites	321,160	100%			All Sites	285,360	100%



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# Checkpoint inhibitors/Immunotherapy are great!



- Results From Clinical Trials
- About KEYTRUDA
- Cost Info & Financial Help
- Patient Support
- Sign Up for Support
- Chat

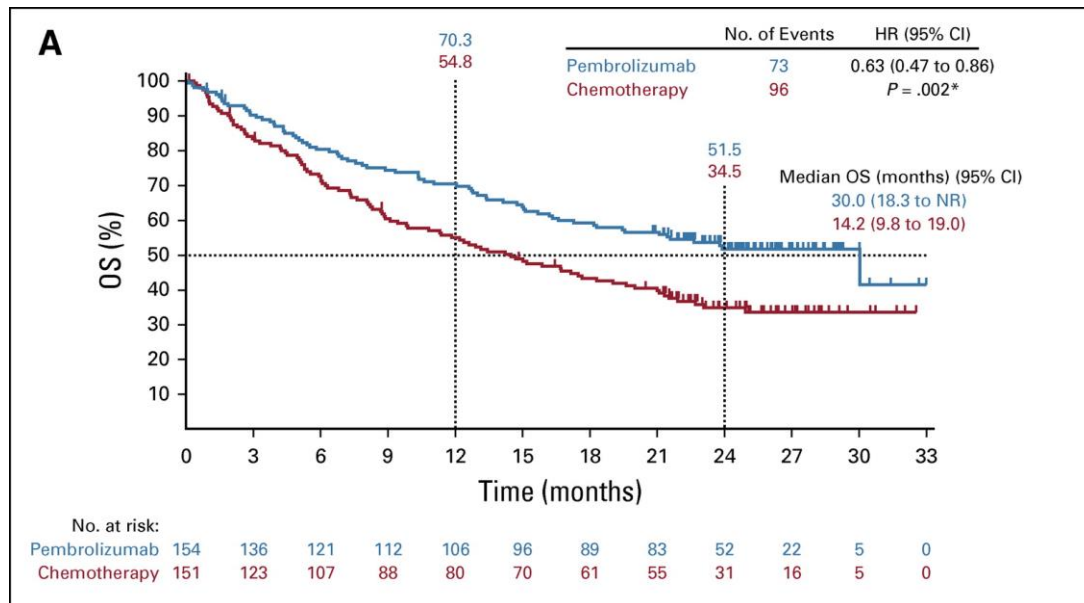
Advanced non-small cell lung cancer

**USED TO TREAT MORE PATIENTS WITH ADVANCED LUNG CANCER THAN ANY OTHER IMMUNOTHERAPY**

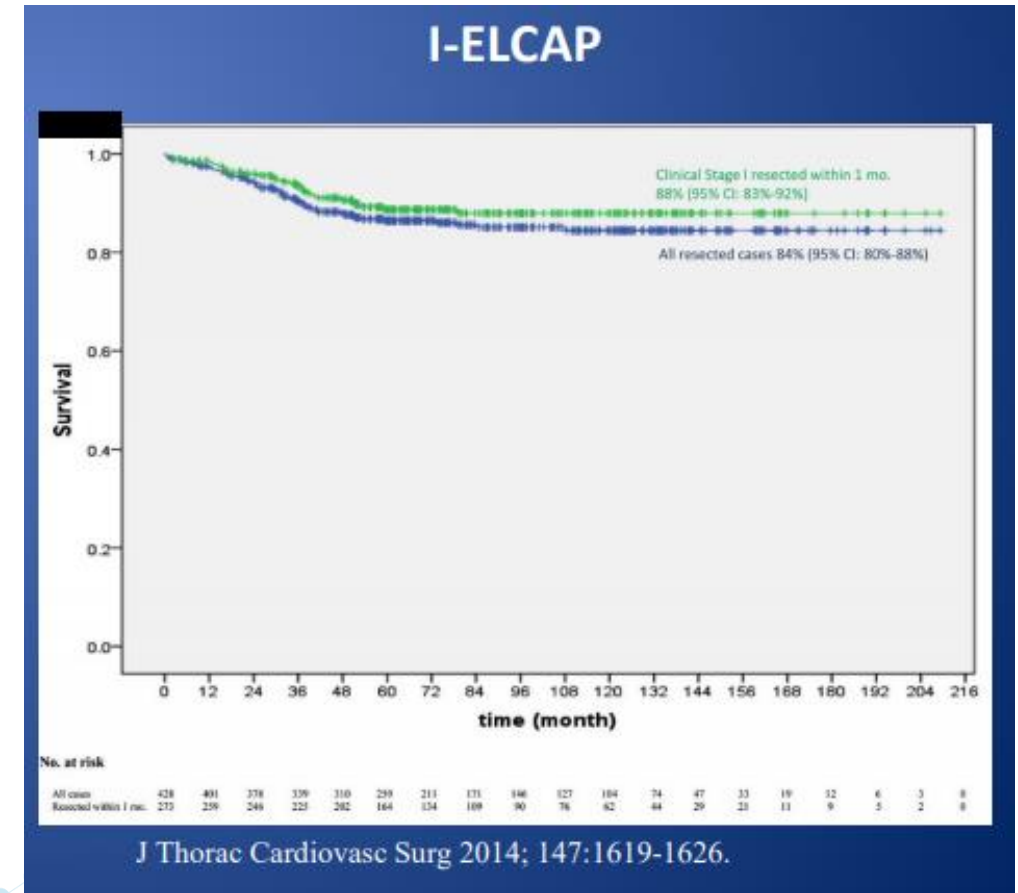
IT'S TRU. **KEYTRUDA.**

J Clin Oncol 37:537-546.

# Checkpoint inhibitors/Immunotherapy are great! But...

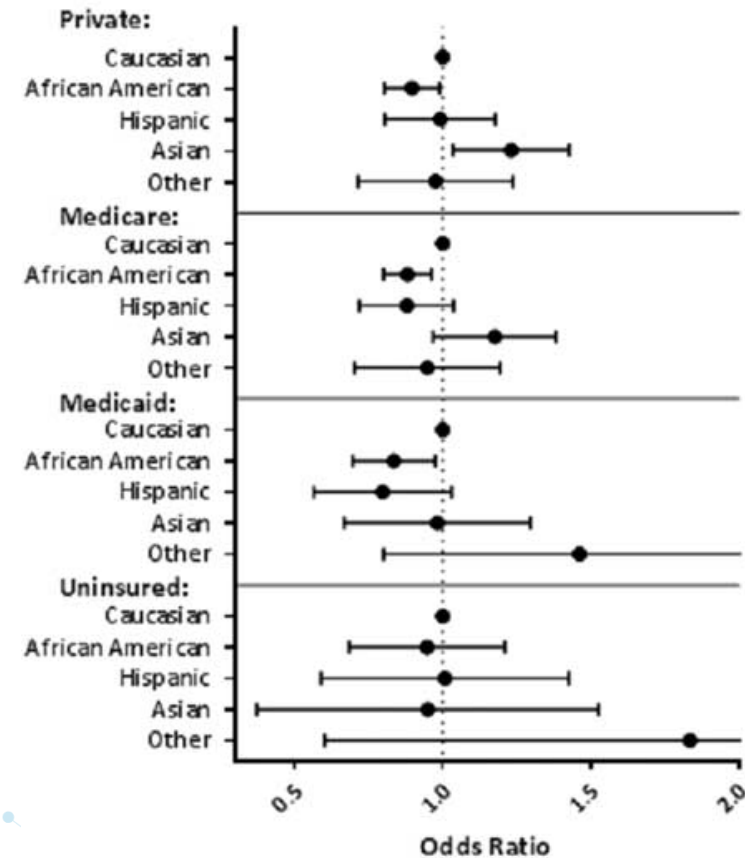


J Clin Oncol 37:537-546.



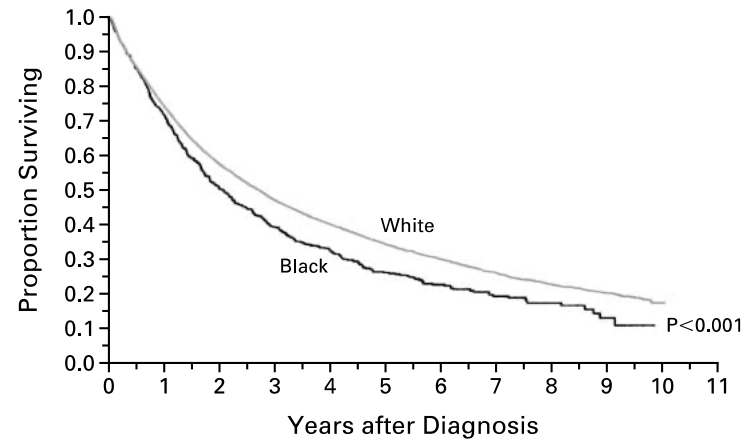
# Disparities in Immunotherapy Use

- NCBD Study
- ~500,000 patients
- 2004-2015



J Immunother 2019;42:55-64

# Surgery is a big part of the problem (and the solution)



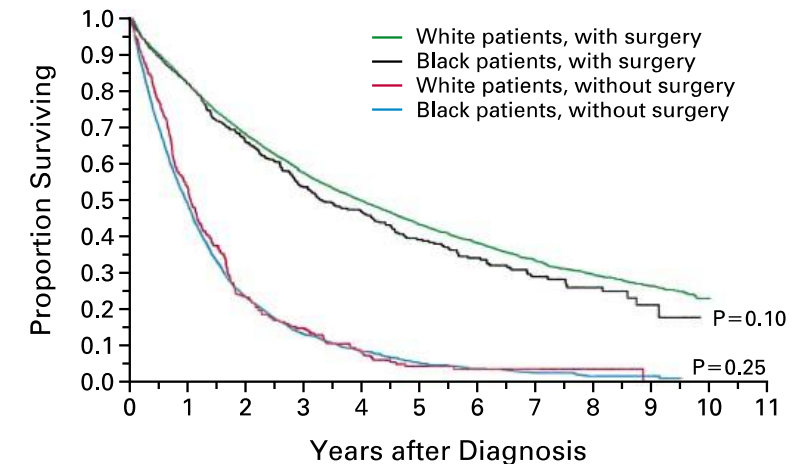
NO. OF PATIENTS AT RISK

	10,124	4953	2365	1099	413	12
White patients	860	361	159	71	31	0
Black patients						

**Figure 2.** Survival of Medicare Beneficiaries 65 Years of Age or Older Who Were Given a Diagnosis of Stage I or II Non-Small-Cell Lung Cancer between 1985 and 1993, According to Race.



## RACIAL DIFFERENCES IN THE TREATMENT OF EARLY-STAGE LUNG CANCER



NO. OF PATIENTS AT RISK

White, surgery	7763	4495	2255	1069	407	12
Black, surgery	550	301	145	69	30	0
White, no surgery	2361	458	110	30	6	0
Black, no surgery	310	60	14	2	1	0

**Figure 1.** Survival of Medicare Beneficiaries 65 Years of Age or Older Who Were Given a Diagnosis of Stage I or II Non-Small-Cell Lung Cancer between 1985 and 1993, According to Treatment and Race.

# Guideline concordant care

## Disparities in Receiving Guideline-Concordant Treatment for Lung Cancer in the United States

Erik F. Blom<sup>1,2\*</sup>, Kevin ten Haaf<sup>1</sup>, Douglas A. Arenberg<sup>2</sup>, and Harry J. de Koning<sup>1</sup>

<sup>1</sup>Department of Public Health, Erasmus MC, University Medical Center Rotterdam, Rotterdam, the Netherlands; and <sup>2</sup>Division of Pulmonary and Critical Care Medicine, University of Michigan, Ann Arbor, Michigan

ORCID ID: 0000-0002-2016-5668 (E.F.B.).

“Many patients with lung cancer in the United States received no treatment or less intensive treatment than recommended. Particularly, elderly patients with lung cancer and non-Hispanic black patients are less likely to receive guideline-concordant treatment.”

Ann Am Thorac Soc Vol 17, No 2, pp 186–194, Feb 2020




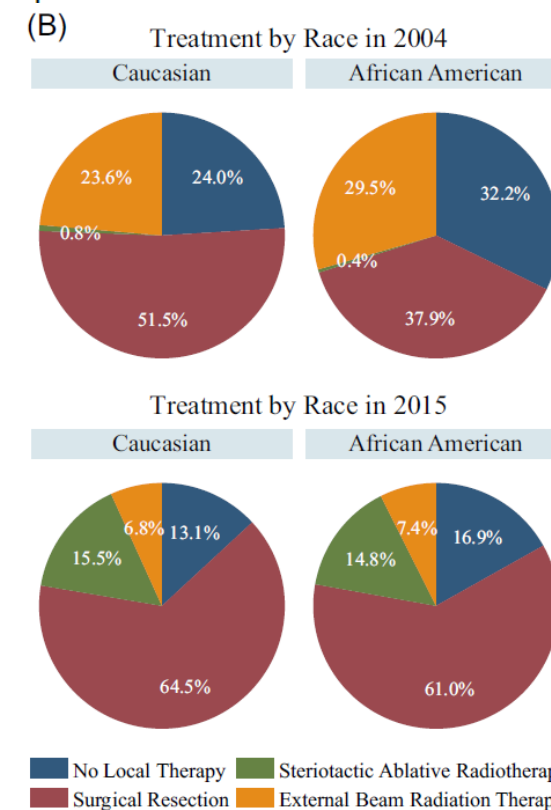
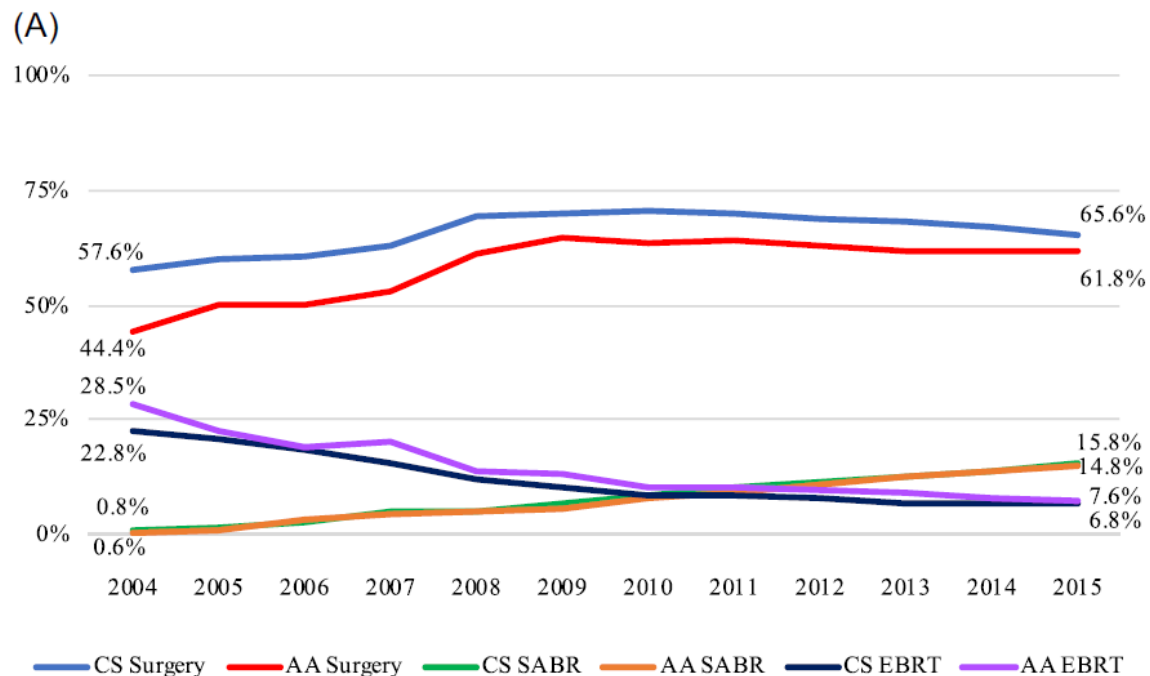
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# Racial disparities in local therapy for early stage non-small-cell lung cancer

Waseem Lutfi MD<sup>1</sup>  | Deirdre Martinez-Meehan MPH<sup>2</sup> | Ibrahim Sultan MD<sup>2</sup> |  
Nathaniel Evans III<sup>3</sup> | Rajeev Dhupar MD, MBA<sup>2,4</sup> | James D. Luketich  
Neil A. Christie MD<sup>2</sup> | Olugbenga T. Okusanya MD<sup>3</sup>



# The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812

AUGUST 4, 2011

VOL. 365 NO. 5

## Reduced Lung-Cancer Mortality with Low-Dose Computed Tomographic Screening

The National Lung Screening Trial Research Team\*



**Table 1.** Selected Baseline Characteristics of the Study Participants.\*

Characteristic	Low-Dose CT Group (N = 26,722)	Radiography Group (N = 26,732)
	number (percent)	
Age at randomization		
<55 yr†	2 (<0.1)	4 (<0.1)
55–59 yr	11,440 (42.8)	11,420 (42.7)
60–64 yr	8,170 (30.6)	8,198 (30.7)
65–69 yr	4,756 (17.8)	4,762 (17.8)
70–74 yr	2,353 (8.8)	2,345 (8.8)
≥75 yr†	1 (<0.1)	3 (<0.1)
Sex		
Male	15,770 (59.0)	15,762 (59.0)
Female	10,952 (41.0)	10,970 (41.0)
Race or ethnic group‡		
White	24,289 (90.9)	24,260 (90.8)
Black	1,195 (4.5)	1,181 (4.4)
Asian	559 (2.1)	536 (2.0)
American Indian or Alaska Native	92 (0.3)	98 (0.4)
Native Hawaiian or other Pacific Islander	91 (0.3)	102 (0.4)
More than one race or ethnic group	333 (1.2)	346 (1.3)
Data missing	163 (0.6)	209 (0.8)
Hispanic ethnic group‡		
Hispanic or Latino	479 (1.8)	456 (1.7)
Neither Hispanic nor Latino	26,079 (97.6)	26,039 (97.4)
Data missing	164 (0.6)	237 (0.9)
Smoking status		
Current	12,862 (48.1)	12,900 (48.3)
Former	13,860 (51.9)	13,832 (51.7)

N Engl J Med 2011;365:395-409

# Inadequate risk assessment tools

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**Research Letter** | Oncology

## Association of Race With Lung Cancer Risk Among Adults Undergoing Lung Cancer Screening

Christine S. Shusted, MPH; Nathaniel R. Evans, MD; Hee-Soon Juon, MSN, PhD; Gregory C. Kane, MD; Julie A. Barta, MD

Studied the validity of well-established cancer risk calculators

Common risk calculators failed to predict lung cancer in African American patients

*JAMA Network Open, 4(4), e214509*



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# Disparities in Lung Cancer Screening

- Black patients have higher risk of cancer per pack year smoked
- Black patients are less likely to be “eligible” for lung cancer screening
- Black patients less likely to be referred for screening or to complete follow-up



# Increase Lung Cancer Screening in Vulnerable Populations

- **Support**

- Bristol Myers Squibb Foundation support for a 5-year initiative to enhance lung cancer screening through the Jefferson Health System

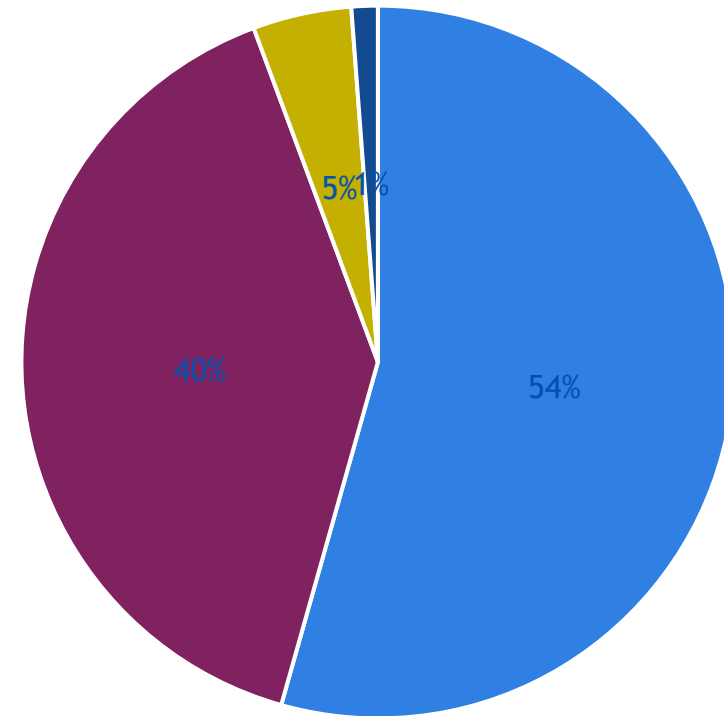
- **Aims**

- Engage a health system, health plans, patients, and other stakeholders in a **“learning community”** dedicated to increasing lung cancer screening in vulnerable populations
- Develop and test an outreach intervention strategy that would identify and address barriers to population use of a centralized screening program
- Catalyze support for intervention implementation
- Evaluate learning community engagement and implementation processes and outcomes

# TJUH Lung Cancer Screening program

- 2018-2020
- 1365 patients screened
- 33 lung cancers identified
- 21/33 were early stage

TJUH Lung Cancer Screening Program



■ White ■ Black ■ Asian ■ Other





# What can be done

- Acknowledgment
  - Disparities persist
- Education
  - Patients and Providers
- Specialization/Centralization
  - “Low quality” care disproportionately effects minority patients
- Representation
  - Diverse, culturally competent care teams





Olugbanga Okusanya, MD



Nathaniel Evans, MD



Tyler Grenda, MD



Scott Cowan, MD

# Thank You



Sung Whang, DNP



# **Sidney Kimmel Cancer Center**

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