MetroHealth

Patients Are Referred for Lung Cancer Screening Based on Risk, but Demographic Disparities Persist

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Background

- USPSTF lung cancer screening guidelines are simple and objective
  - Relatively poor sensitivity and specificity
- Complex predictive models are better, but not great
  - Tammemägi *et al*: $PLCO_{M2012}$
  - Katki *et al*: LCRAT

Goals

- Prepare for EHR-integrated risk prediction
- Did providers have an intuition for which USPSTF-eligible patients were high risk?
  - Would a built-in risk calculator be useful?

Methods

- Retrospective cohort study
- Urban, safety-net medical system in Cuyahoga county of northeast Ohio
- All outpatient encounters with Internal Medicine, Family Medicine, Geriatrics, and Pulmonology since 2013
- Eligible for screening if…
  - Meet USPSTF criteria
  - No chest CTs within one year

  } 6316 patients

  - Only included encounters with providers who screened at least 10% of their eligible patients

  } 215/757 providers
  2169/3407 LDCT orders

Results

- Linear regression
  - Outcome: referral for LDCT

Variable	Adjusted Odds Ratio (95% CI)	*P* Value
$PLCO_{M2012}$ lung cancer risk		
Q1 (lowest risk)	Reference group	
Q2	1.79 (1.50-2.13)	< 0.001
Q3	2.28 (1.89-2.75)	< 0.001
Q4 (highest risk)	3.30 (2.63-4.15)	< 0.001
Age	0.93 (0.92-0.95)	< 0.001

Results

Variable	Adjusted Odds Ratio (95% CI)	*P* Value
Race/Ethnicity		
White	Reference group	
Black	0.69 (0.60-0.80)	< 0.001
Hispanic	1.29 (0.97-1.70)	0.078
ADI		
Q1 (lowest ADI)	0.78 (0.64-0.95)	0.012
Q2	0.92 (0.76-1.10)	0.359
Q3	Reference group	
Q4	0.92 (0.77-1.10)	0.383
Q5 (highest ADI)	0.87 (0.72-1.04)	0.115

Results

- Forward-selected model:
  - $PLCO_{M2012}$
  - Age
  - Race/ethnicity
  - ~~ADI~~
  - ~~Insurance~~

- When outcome was *completion* of screening:
  - Black and Hispanic patients were less likely than White patients to **complete** screening once it was ordered

Take-home Points

- Provider screening practices correlated with calculated risk of lung cancer
- There is a non-risk related, race-based disparity in screening referrals
  - People who are Black are **less likely** to have screening ordered than those who are White

Future Directions

- Why are patients who identify as Black less likely to have screening ordered?
  - Is this difference consistent among providers and specialties?
- Why are the most socioeconomically *advantaged* people least likely to be screened?
- Do providers risk stratify patients within each race/ethnicity?
- Will an EHR-calculated lung cancer risk change behaviors?

Acknowledgments

- Yasir Tarabichi, MD, MSCR
- Yosra Adie, MPH
- David Kaelber, MD, PhD, MPH, FAAP, FACP
- Family and friends

- ATS Abstract Scholarship
  Assembly on Behavioral Science and Health Services Research

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