AN INFORMATICS INTERVENTION TO ACHIEVE EQUITY IN THE CANCER CARE SYSTEM

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DISCLOSURE

• No financial conflicts to disclose
THE PROBLEM
Racial disparities in lung cancer surgery are well described and have been persistent for 20+ years.

Heckler Report, 1985
14% excess cancer deaths

Bach, et al, NEJM, 1999
76.7% NHW vs 64.0% NHB

Cykert, et al, JAMA, 2010
66% NHW vs 55% NHB

67.4% NHW vs 56% NHB
FACTORS ASSOCIATED WITH DECISIONS TO UNDERGO SURGERY AMONG PATIENTS WITH NEWLY DIAGNOSED EARLY STAGE LUNG CANCER.


• Surgery within 4 months of diagnosis
  Tissue confirmed only (N = 339)
  Caucasian 75%*
  African-American 63%

*p = .03
FACTORS CONTRIBUTING TO TREATMENT DISPARITIES

• Uneven interpretation of comorbid illnesses (implicit bias) – non-African American physicians were not willing to perform risky procedures on patients with whom they felt less comfortable

• Poor perceptions of communication – AA patients were less apt to go to surgery if they rated shared communication more poorly

• AA patients who lacked a regular source of care were markedly less likely to go to surgery
SOLUTIONS
COMMUNITY INPUT
Our mission is to establish structures and processes that respond to, empower, and facilitate communities in defining and resolving issues related to disparities in health.
THE COMMUNITY ANALYSIS

• The solution must be system-level and include:
  - transparency (in real time that can effect treatment)
  - accountability
  - enhanced communication
A SYSTEM-BASED INTERVENTION TO REDUCE BLACK-WHITE DISPARITIES IN THE TREATMENT OF EARLY STAGE LUNG CANCER

Citation:
FIVE PARTICIPATING CENTERS

• Lineberger Cancer Center, The University of North Carolina

• Leo Jenkins Cancer Center, East Carolina University and the Vidant Health System

• Palmetto Health Cancer Center affiliated with the University of South Carolina SOM

• UPMC Hillman Cancer Center, the University of Pittsburgh School of Medicine

• Cone Health Cancer Center
WHO IS ELIGIBLE FOR THE INTERVENTION GROUP?

• All lung cancer patients with Stage 1 and 2 disease, aged 18 – 85 years

• Exclusions: pregnant, non-English speaking, cognitive impairment
SYSTEM-LEVEL INTERVENTIONS

(1) A real time warning system derived from electronic health records (Real Time Transparency)
   - missed appointments
   - anticipated milestones in care not achieved

(2) Feedback to clinical teams regarding completion of cancer treatment according to race (Accountability)

(3) The ACCURE navigator (AN) who was specially trained in particular barriers and beliefs that limit care for African-Americans and participated in anti-racism training (Enhanced Communication)
ANALYSIS

- Retrospective control group 2007-2012
- Concurrent control group (for secular trends) 2014-2015
- Within intervention group comparison
RESULTS – WITHIN GROUP COMPARISONS: RETROSPECTIVE CONTROL ONLY

• Rate of Lung Cancer Surgery or Radiation for Cure (unadjusted)
  - Black Patients 69.0
  - White Patients 77.8
  \( p < 0.001 \)

• Odds Ratio (95% CI) of Black Patients Undergoing Lung Cancer Surgery or Radiation for Cure controlling for age, Charlson Score, gender, income, clinical stage and study site:
  - OR 0.66 (0.51 – 0.85)
  \( p = 0.001 \)
RESULTS – WITHIN GROUP COMPARISONS: INTERVENTION ONLY

• Rate of Lung Cancer Surgery or Radiation for Cure (unadjusted)
  - Black Patients  96.5
  - White Patients  95.1
  \( p = 0.56 \)

• Odds Ratio (95% CI) of Black Patients Undergoing Lung Cancer Surgery or Radiation for Cure controlling for age, Charlson Score, gender, income, clinical stage and study site:
  - OR 2.05 (0.41 – 10.4)
  \( p = 0.39 \)
RESULTS – BETWEEN GROUP COMPARISONS

REFERENT GROUP – WHITE RETROSPECTIVE

• Odds Ratio (95% CI) for Patients Undergoing Lung Cancer Surgery or Radiation for Cure controlling for age, Charlson Score, gender, income, clinical stage, and study site:

  - Black Retrospective Group  OR 0.66 (0.51, 0.85)  p = 0.002

  - Black Intervention Group  OR 11.8 (2.9, 49.2)  p = 0.001

  - White Intervention Group  OR 5.78 (3.0, 11.2)  p < 0.001
RESULTS – BETWEEN GROUP COMPARISONS

REFERENT GROUP – WHITE CONCURRENT

- Odds Ratio (95% CI) for Patients Undergoing Lung Cancer Surgery controlling for age, Charlson Score, gender, income, clinical stage, and study site:

  - Black Intervention Group       OR 2.6 (1.6, 4.3)  p < 0.001
A MORAL TO THE STORY

• To remedy systematic, institutional-level racism:
  1) WORK WITH AFFECTED COMMUNITIES TO DETERMINE APPROPRIATE OUTCOME MEASURES
  2) MUST MEASURE OUTCOMES ACCORDING TO RACE (OR OTHER DISADVANTAGED POPULATION)
  3) APPLY INTERVENTIONS (IN REAL TIME) THAT INCLUDE TRANSPARENCY AND ACCOUNTABILITY AND EXCELLENT COMMUNICATION
  4) MEASURE AGAIN, ITERATE, MEASURE AGAIN....
HOW MIGHT AI FIT IN?

• Entering patients into the real time registry
  - every abnormal CT would be overwhelming
  - only including patients who make it to the multi-disciplinary thoracic oncology conference isn’t inclusive enough

• Identifying patients most likely to benefit from comprehensive, pro-active, racially-sensitive navigation

• Fine tuning the gray areas of co-morbid illness
Achieving True Health Equity – The Three Legged Stool

SDOH

The Medical System

The Physiology of Racism