The Geographical Management of Cancer Health Disparities Program (GMaP)

Stephanie B Wheeler

University of North Carolina at Chapel Hill

Health Policy & Management

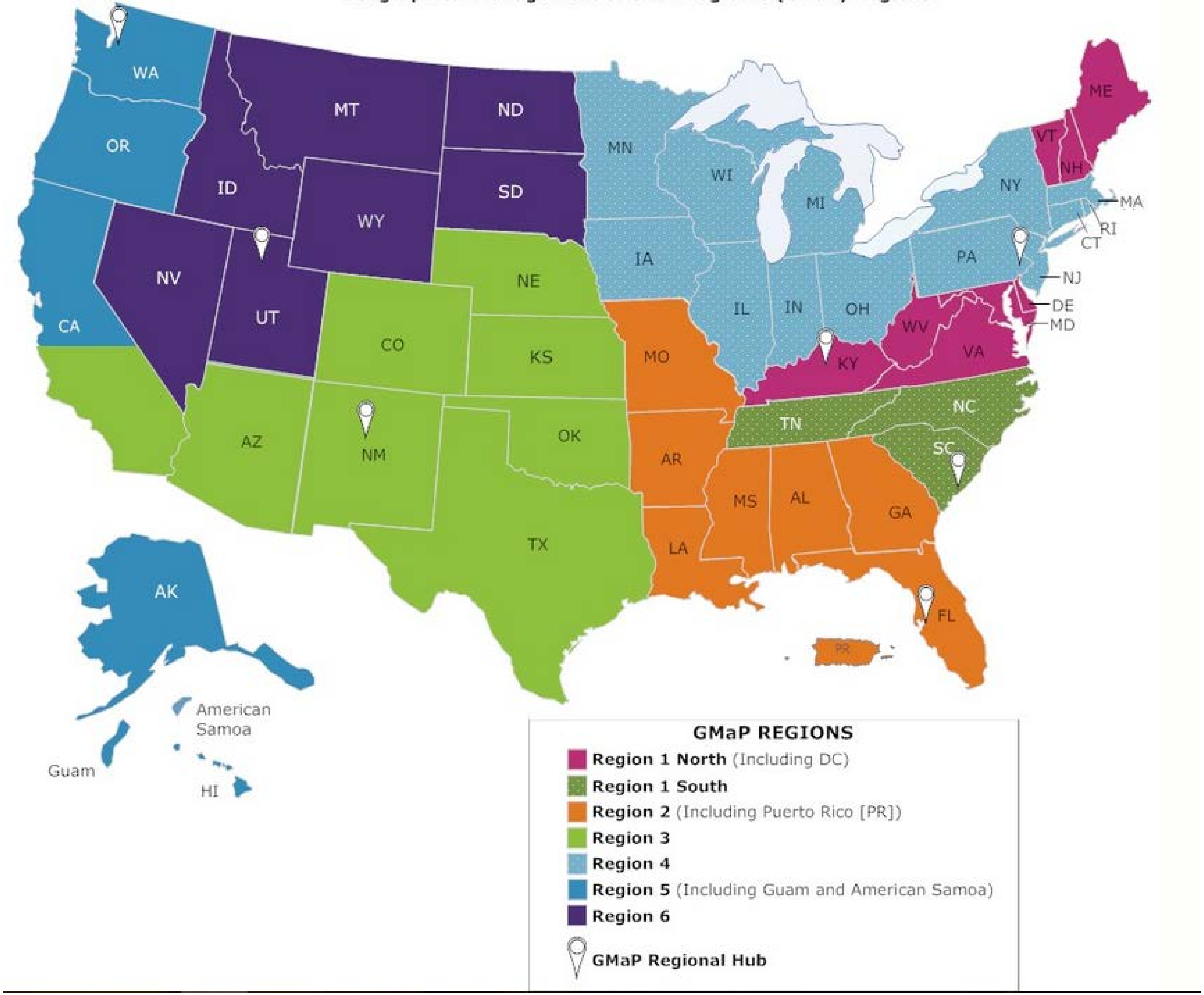
What is GMaP?

- A national program funded by NCI's Center to Reduce Cancer Health Disparities (CRCHD) designed to facilitate collaboration, resource-sharing, and capacity-building among cancer health equity researchers, trainees, outreach workers and organizations.
  - Advance the science of cancer health equity research
  - Promote the development of the next generation of cancer health equity researchers
  - Contribute to measurable reductions in cancer health inequity in GMaP regions

What is GMaP?

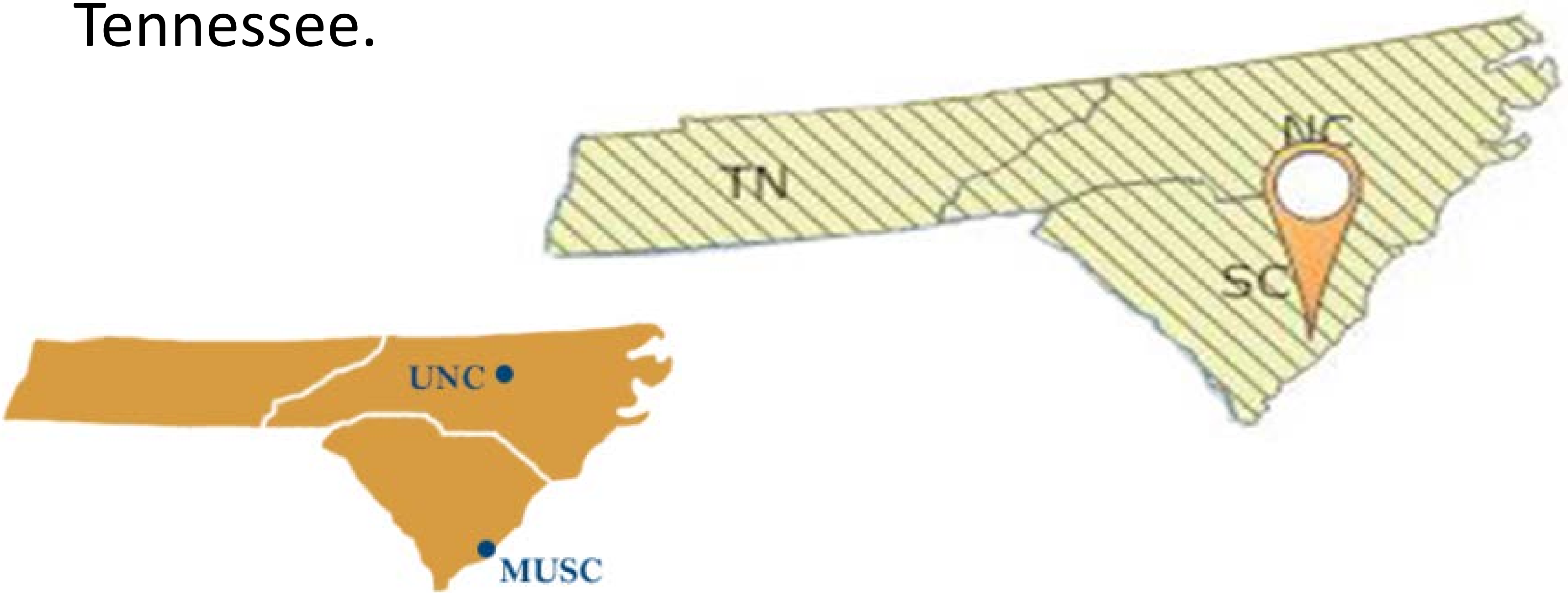
- The 7 regional GMaP hubs are designed to bring together CHD investigators, underrepresented trainees and students, community health educators, and community members to work together to:
  - Share information, resources, and tools
  - Enhance access to resources, professional opportunities and mentoring for underrepresented and early-career investigators and trainees/students
  - Strengthen regional community education and outreach efforts that contribute to achieving GMaP goals

Geographical Management of CHD Programs (GMaP) Regions



GMaP Region 1-South

- The Region 1 South (R1S) hub is based at the MUSC Hollings Cancer Center in Charleston, South Carolina.
  - MUSC and UNC jointly manage operations for R1S
- R1S serves North Carolina, South Carolina, and Tennessee.



GMaP Region 1-South

Role	Name
Principal Investigator	Anthony J. Alberg – Medical University of South Carolina, Charleston, South Carolina
Project Director	Chanita Hughes-Halbert – Medical University of South Carolina
Project Director	Stephanie Wheeler – University of North Carolina at Chapel Hill
Regional Coordinating Directors	LaShanta J. Rice – Medical University of South Carolina Anissa I. Vines – University of North Carolina at Chapel Hill

GMaP Region 1-South

- **Goal #1:** Establish regional infrastructure to integrate and support cancer health disparities (CHD) research and enhance community engagement
- **Goal #2:** Disseminate information about CHD across Region to stimulate disparities research and educate public health stakeholders, academic investigators, and community members about determinants of disparities in medically underserved populations and effective interventions to combat disparities
- **Goal #3:** Increase the pool of investigators in CHD research through professional development, mentoring, and education

GMaP Region 1-South Services

- Member E-Newsletter
  - Provides information about cancer health disparities news, events, training/resources, funding and job opportunities
  - E-Blasts share targeted time-sensitive information

GMaP Region 1-South Services

- Career Development Activities
  - Annual Symposium
  - Travel Awards
  - Mentoring Networks
  - Webinars
  - Grant Preparation Support
    - Grantsmanship Webinars
    - Mock Grant Reviews
    - Facilitating mentoring linkages

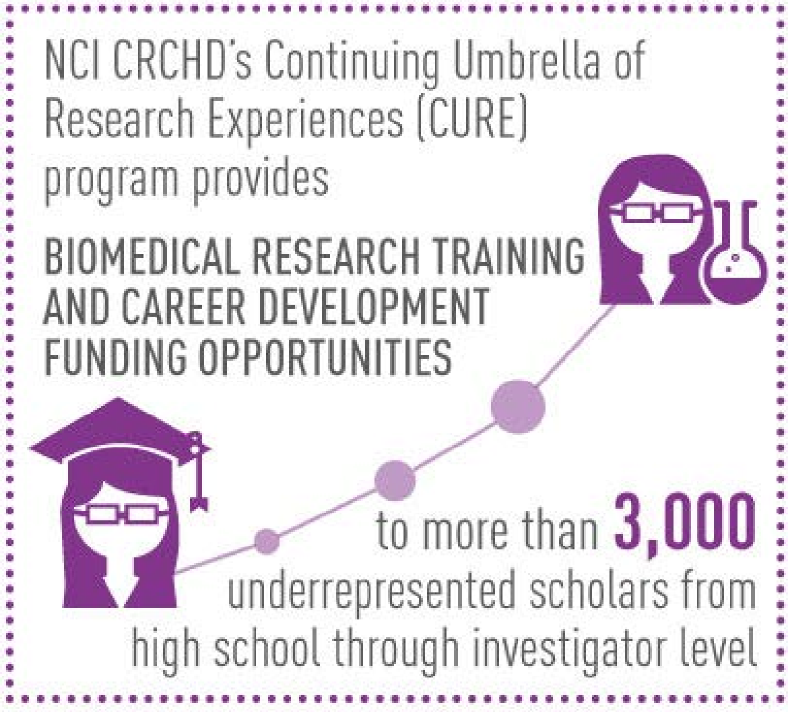
CRCHD Opportunities

- CRCHD provides ***directed funding opportunities*** for research training and career development of students and investigators from underrepresented racial and ethnic groups, individuals with disabilities, and individuals from disadvantaged backgrounds, and for involving minority institutions in cancer research, research training, education, and outreach.

CRCHD Opportunities

- Continuing Umbrella of Research Experiences (CURE)

CRCHD offers funding for the training of high school, undergraduate, graduate, post-baccalaureate, post-master, postdoctoral, and junior investigators across the country.



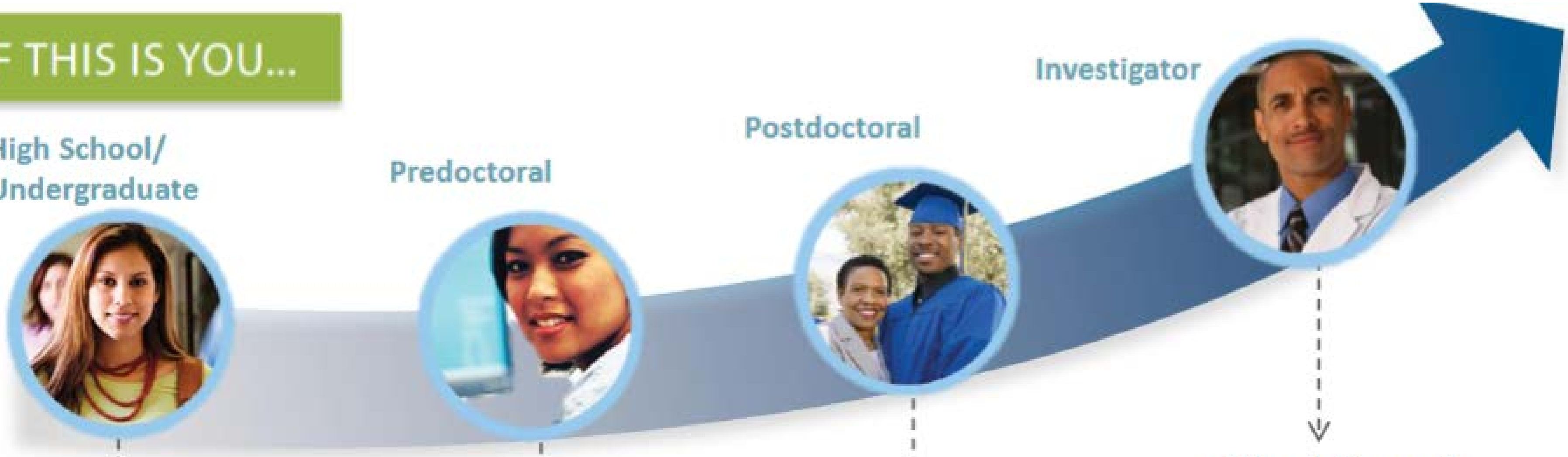
NCI CRCHD's Continuing Umbrella of Research Experiences (CURE) program provides

BIOMEDICAL RESEARCH TRAINING AND CAREER DEVELOPMENT FUNDING OPPORTUNITIES

to more than **3,000** underrepresented scholars from high school through investigator level

www.cancer.gov

IF THIS IS YOU...



High School/ Undergraduate

Predoctoral

Postdoctoral

Investigator

...HERE'S WHAT CURE OFFERS

High School/ Undergraduate

- Diversity Research Supplements
- Supplements to the CURE (P30S)

Predoctoral

- Diversity Research Supplements
- National Research Service Awards (NRSA) (F31)
- Supplements to the CURE (R25TS, T32S)

Postdoctoral

- Diversity Research Supplements
- Mentored Career Development Awards (K01, K08, K23)
- Non-Mentored Career Development Award (K22)
- Supplements to the CURE (R25TS, T32S, K12S)

Investigator

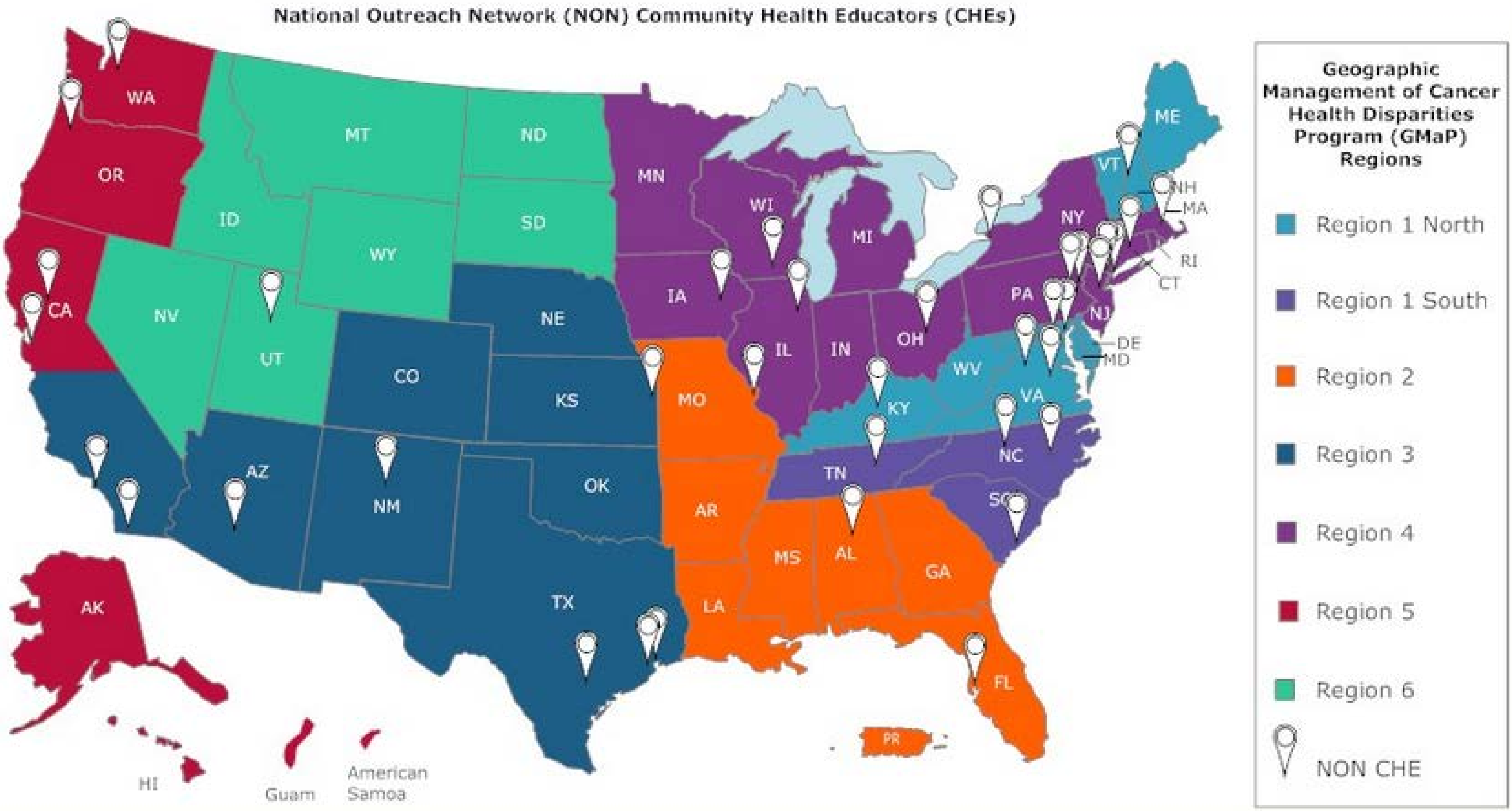
- Diversity Research Supplements
- Mentored Career Development Awards (K01, K08, K23)
- Non-Mentored Career Development Award (K22)
- Supplements to the CURE (K12S)
- Exploratory Grant (Diversity) (R21)

National Outreach Network (NON)

- The National Outreach Network (NON) seeks to strengthen NCI's ability to develop and disseminate culturally appropriate, evidence-based cancer information that is tailored to the specific needs and expectations of underserved communities, working through NON community health educators (CHEs) located at NCI-designated Cancer Centers.

NON CHEs

- CHEs are individuals experienced in communications, comprehensive cancer control, training, program planning, and evaluation
- CHEs work with NCI-Designated Cancer Center staff, the community, GMaP hubs, and NCI program staff to conduct the following activities
  - Local education and outreach activities
  - Community partnership
  - Assist in advancing NCI/GMaP priorities



National Outreach Network (NON) Community Health Educators (CHEs)

Contact us…

- We're here to help!

- Dr. Hughes Halbert: hughesha@musc.edu
- Dr. Wheeler: Stephanie_Wheeler@unc.edu
- Dr. Rice: ricela@musc.edu
- Dr. Vines: avines@email.unc.edu

Perspectives on Challenges to Cancer Equity

Lisa C. Richardson, MD, MPH • Division Director

Southeast Cancer Health Disparities Symposium •
March 17, 2017

Division of Cancer Prevention and Control

RELIABLE | TRUSTED | SCIENTIFIC

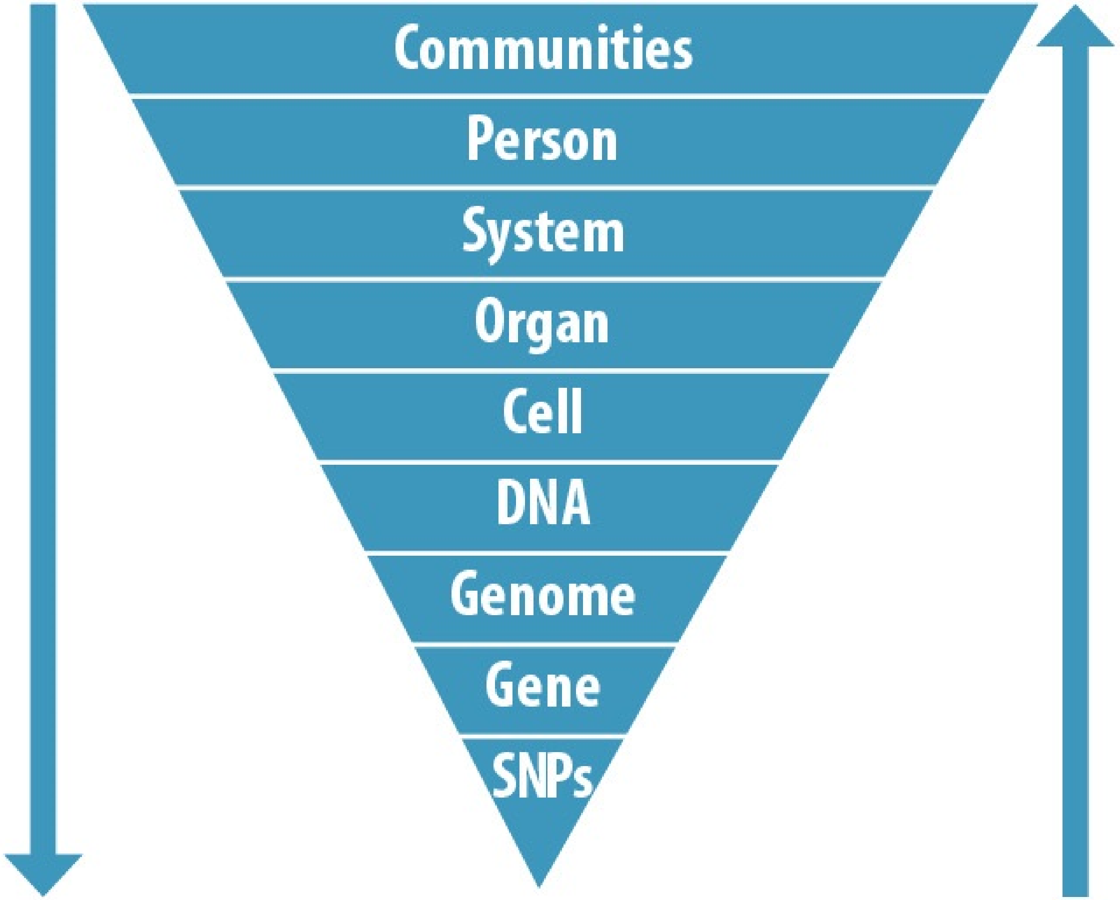

GOOOOD MORNING EVERYBODY!

Cancer Health Disparities - Defined

- NCI defines as "adverse differences in cancer incidence, prevalence, death, survivorship or burden of cancer or related health conditions that exist among **specific population groups** in the United States
- Population groups: age, disability, education, ethnicity, gender, geographic location, income, or race.

People who are poor, lack health insurance, and are medically underserved (have limited or no access to effective health care)—regardless of ethnic and racial background—often bear a greater burden of disease than the general population

Bidirectional Relationships



What do we mean by cancer risk?

- Risk is the probability that an event will occur.
- Cancer incidence rates are measures of population risk.
- We reduce cancer risk in a population by reducing the number of new cancer cases.
- **Risk reduction = cancer prevention**.

Risk Factors

Population

Socioeconomic

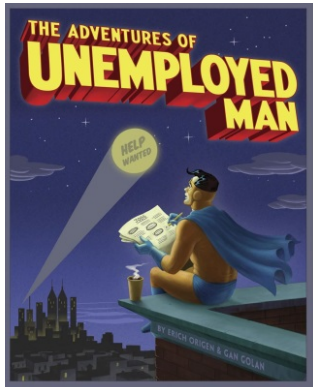
Health System

State

Health Behaviors

PCP Density

Unemployed



Low-Income
Uninsured

Urban Rural Density

Alcohol

Smoking

What Is A Lifestyle Factor?

- Modifiable habits and ways of life that can greatly influence overall health and well-being, including fertility

Don't Smoke

Eat Healthy

Exercise Regularly

Limit Alcohol

Fewer Chronic Conditions and Live Longer

Ford et al, Am J Public Health. 2011;101:1922–1929. doi:10.2105/AJPH.2011.300167

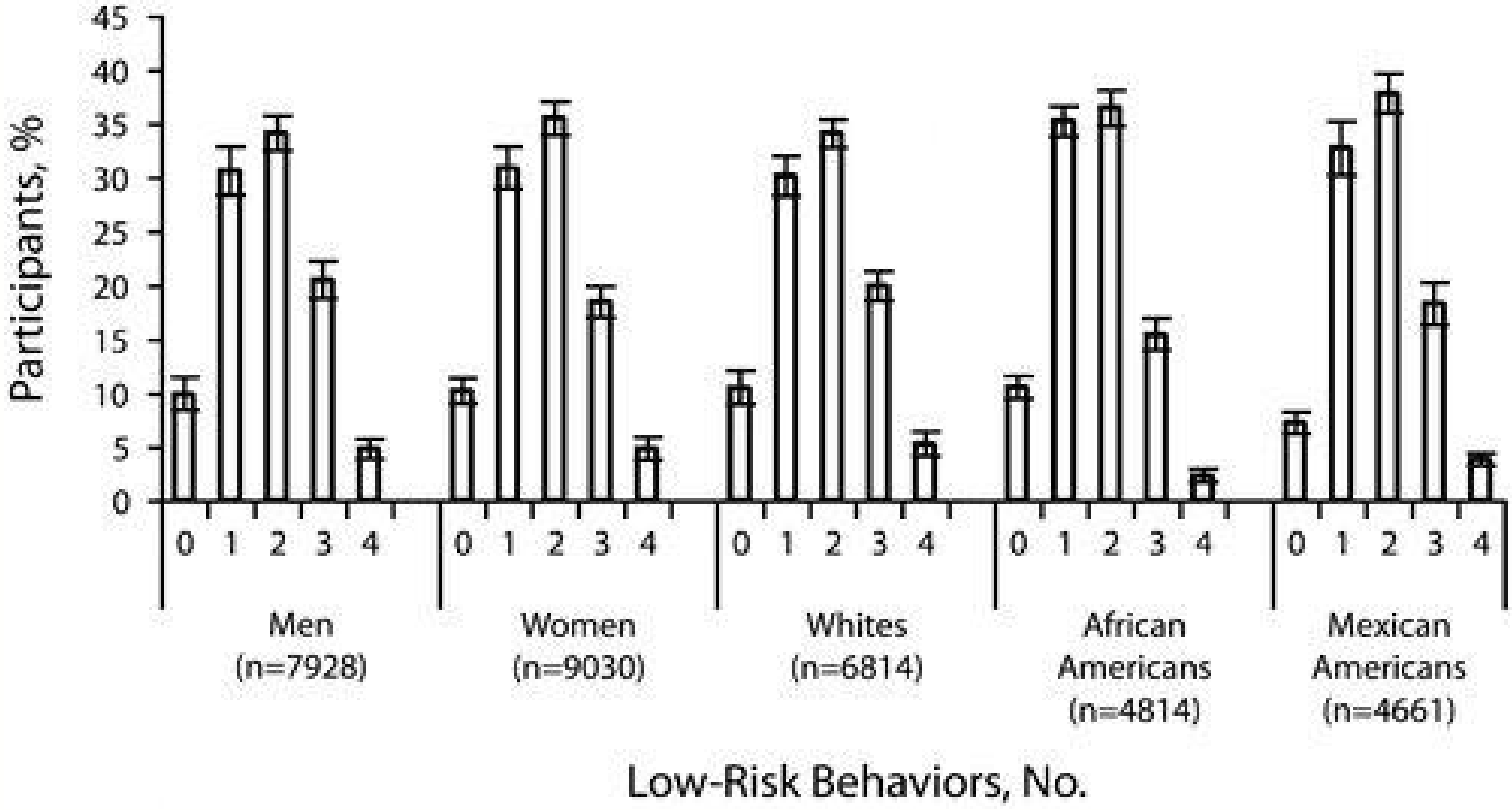


FIGURE 1— Distribution of low-risk lifestyle behaviors among participants aged 17 years or older at baseline: National Health and Nutrition Examination Survey III Mortality Study, United States, 1988–2006. *Note*. Bars represent a 95% confidence interval.

Ford et al. Am J Public Health. 2011;101:1922–1929. doi:10.2105/AJPH.2011.300167

Powerful Benefit of Low Risk Lifestyle Factors

- Mortality from malignant neoplasms
  AHR=0.34; 95% CI=0.20, 0.56 [4 low risk factors versus none]

- 4 high risk lifestyle factors accounted for 14.4 years of chronological age for malignant neoplasms

- Population attributable fraction was 34% for mortality for malignant neoplasms (using the category of no high risk behaviors as referent)

Ford et al, Am J Public Health. 2011;101:1922–1929. doi:10.2105/AJPH.2011.300167

Age-Adjusted Cancer Death Rates For Blacks And Whites

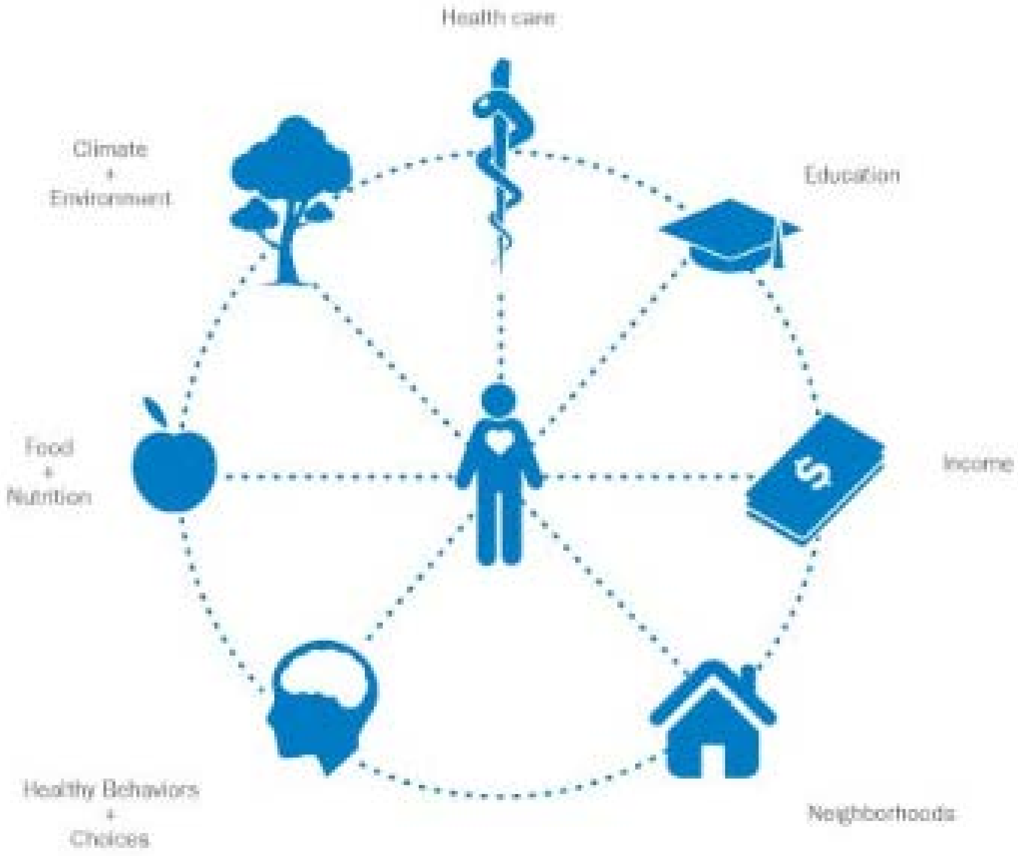
	1950	**1960**	**1970**	**1980**	**1990**	**2000**
• White	194.6	193.1	196.7	204.2	211.6	197.2
• Black	176.4	199.1	225.3	256.4	279.5	248.5
• Difference	-18.2	6.0	28.6	52.2	67.9	51.3
• **Ratio**	**0.9**	**1.0**	**1.2**	**1.3**	**1.3**	**1.3**

SOURCE: National Center for Health Statistics, *Health, United States 2003.*

NOTES: Deaths per 100,000 population, "Difference" is calculated as black death rates minus white deaths rates for each cause of death. "Ratio" refers to the ratio of black deaths to white deaths.

Williams, D.R. Health Affairs, 2005

Social, environmental and individual factors influence our health as well as the opportunity to make healthy choices.



And inequities in these factors have **greater impact** on the health of

people of color.

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Within the U.S., we have shocking differences in life expectancy based on...

Where we live

15 years

Our income

10 years

Our education

9 years

Our race

7 years

Even our **most advantaged people**

live shorter lives than peers in other countries.

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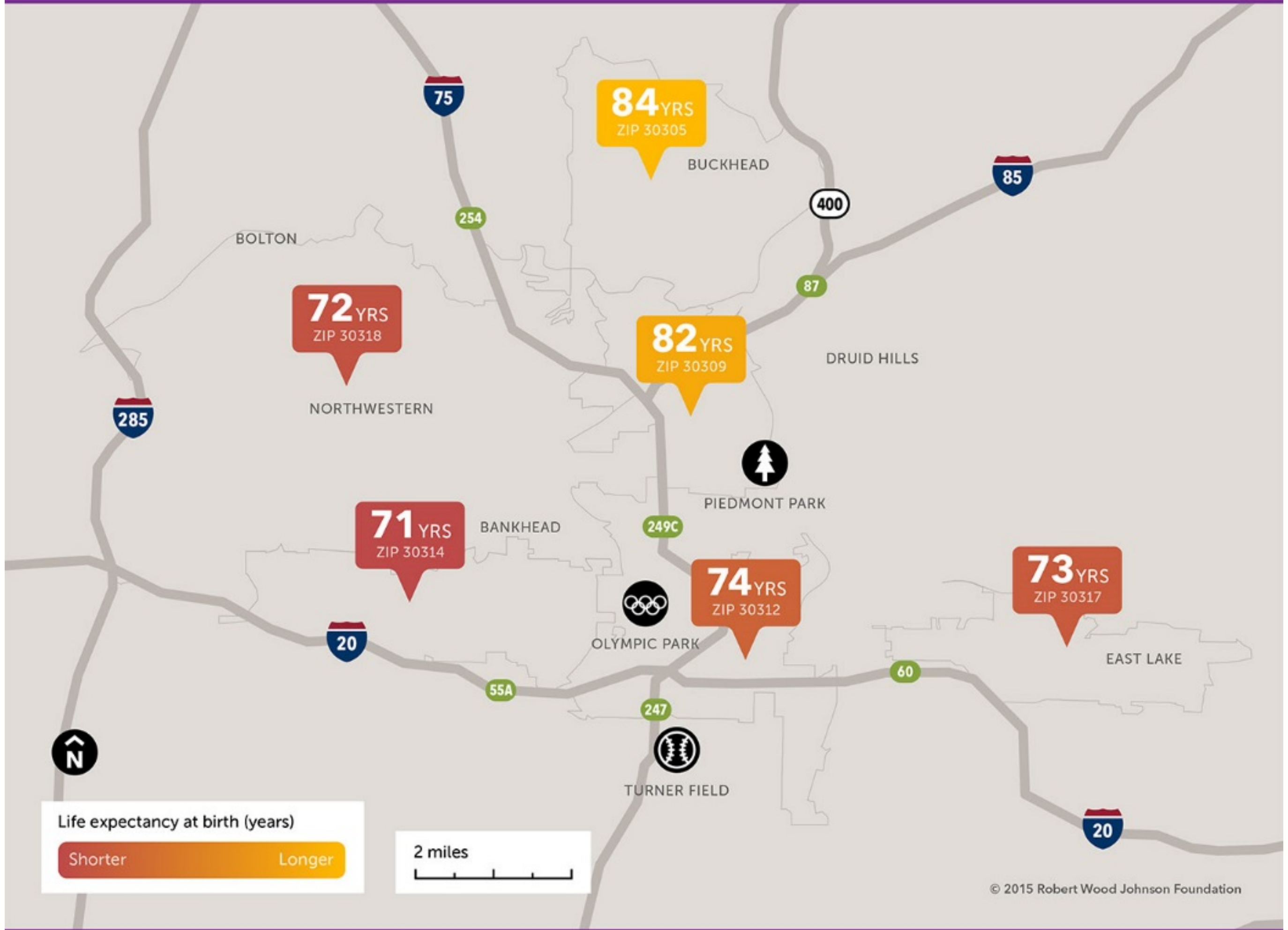
ATLANTA, GEORGIA

Short Distances to Large Gaps in Health

Follow the discussion

#CloseHealthGaps



VCU
VIRGINIA COMMONWEALTH UNIVERSITY

Center on Society and Health

Robert Wood Johnson Foundation

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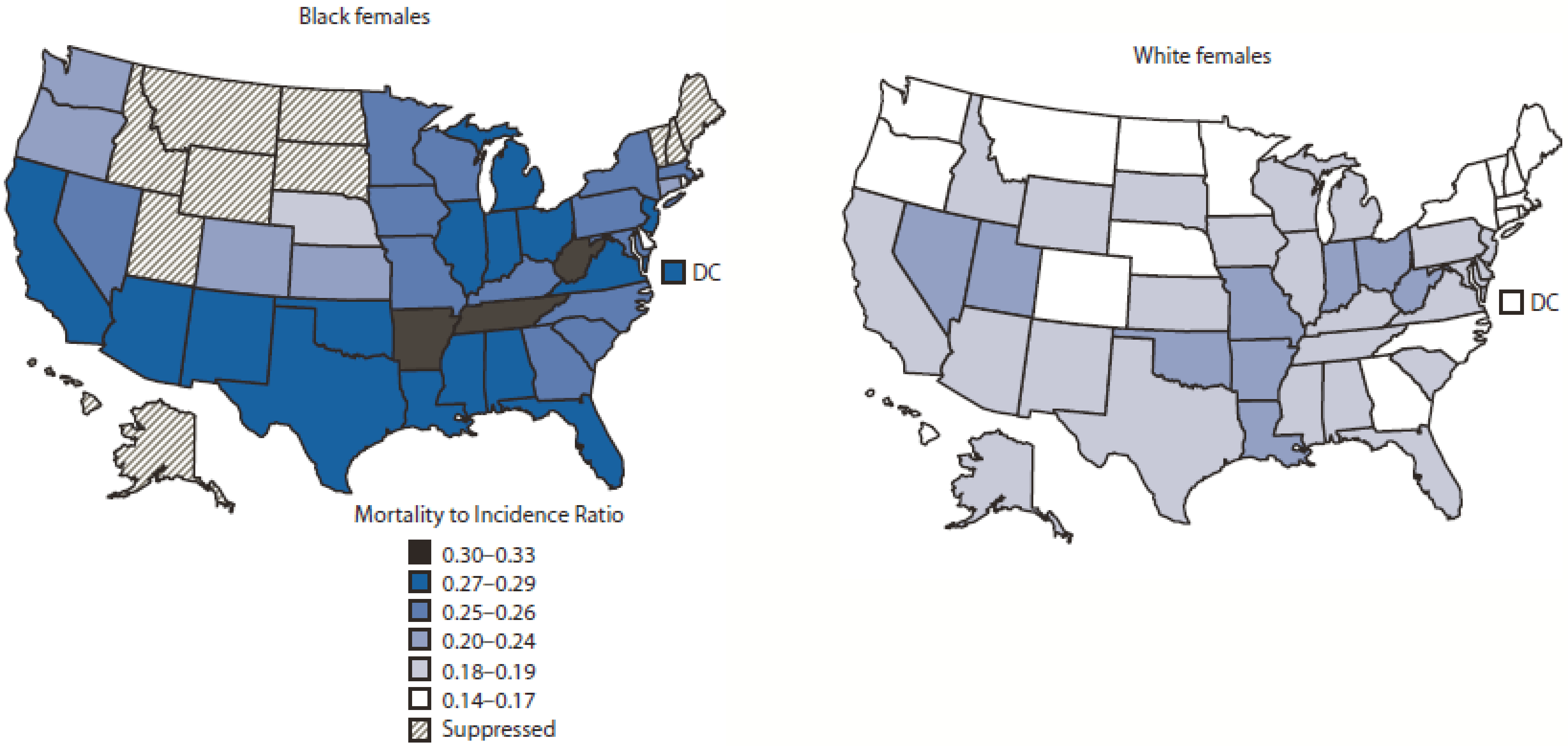
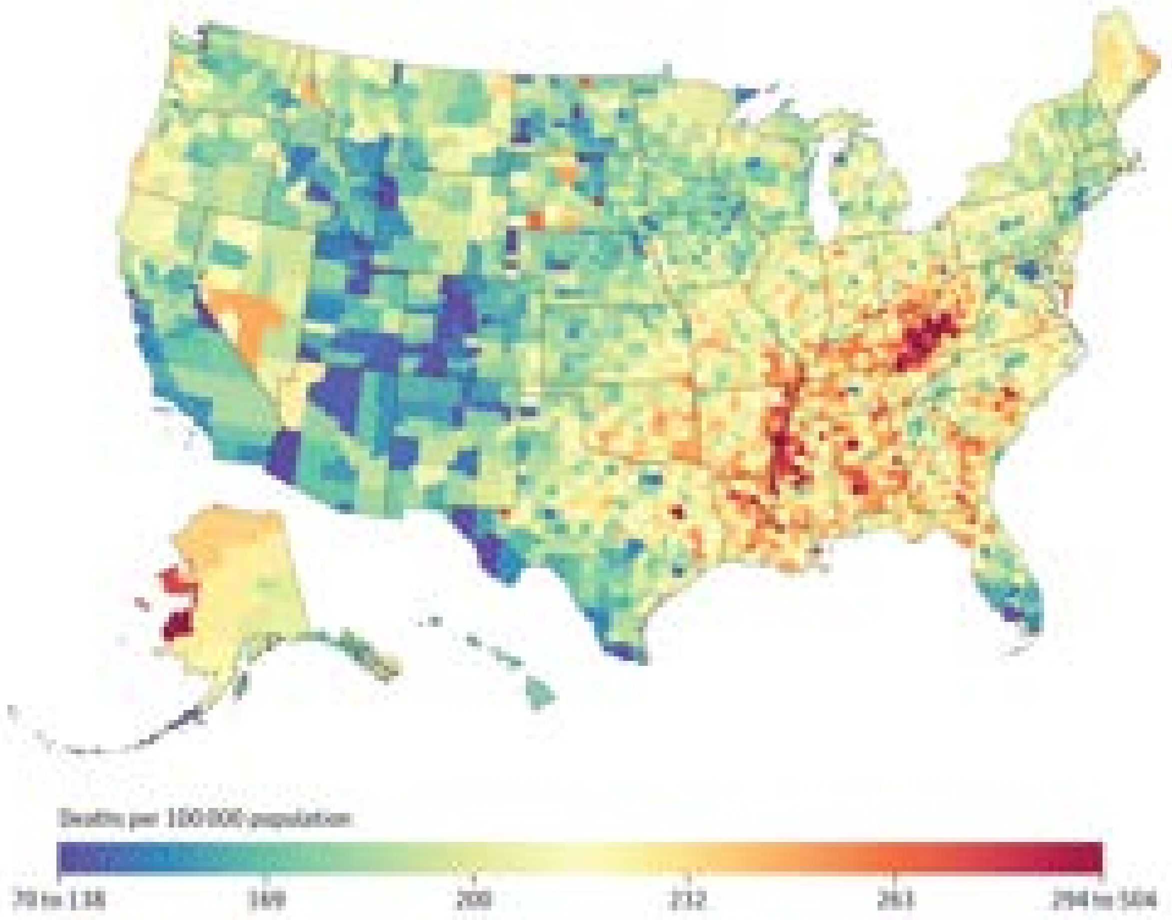
Williams, D.R. Health Affairs, 2005

Breast Cancer Mortality to Incidence Ratios Among Black and White Females – United States, 2005 – 2009



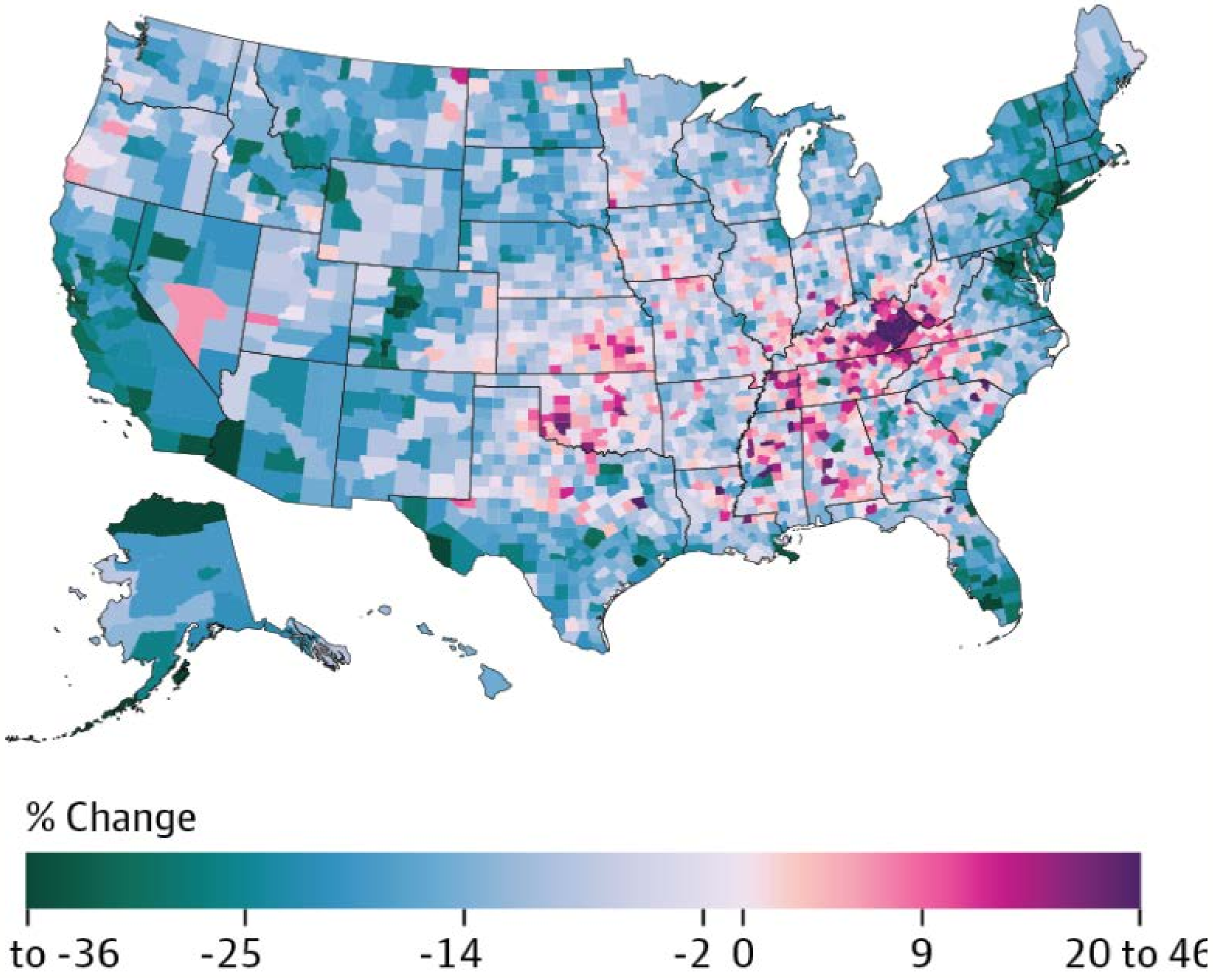
* The mortality to incidence ratio (MIR) was calculated as the age-adjusted mortality rate divided by the age-adjusted incidence rate. The MIR is a population-based measure of fatality/prognosis after diagnosis and can be used to compare groups with disparate incidence or mortality rates. The difference in MIRs can be used as an estimate of excess deaths. An MIR of 0.14 indicates that for every 100 breast cancer cases, 14 breast cancer deaths occurred. Overall, the MIR among black females was 0.27, compared with 0.18 among white females.

Age-Standardized Mortality Rate from Neoplasms (Both sexes), 2014



JAMA. 2017;317(4):388-406. doi:10.1001/jama.2016.20324

Percent change in Age-Standardized Mortality Rate from Neoplasms (Both sexes), 1980 – 2014



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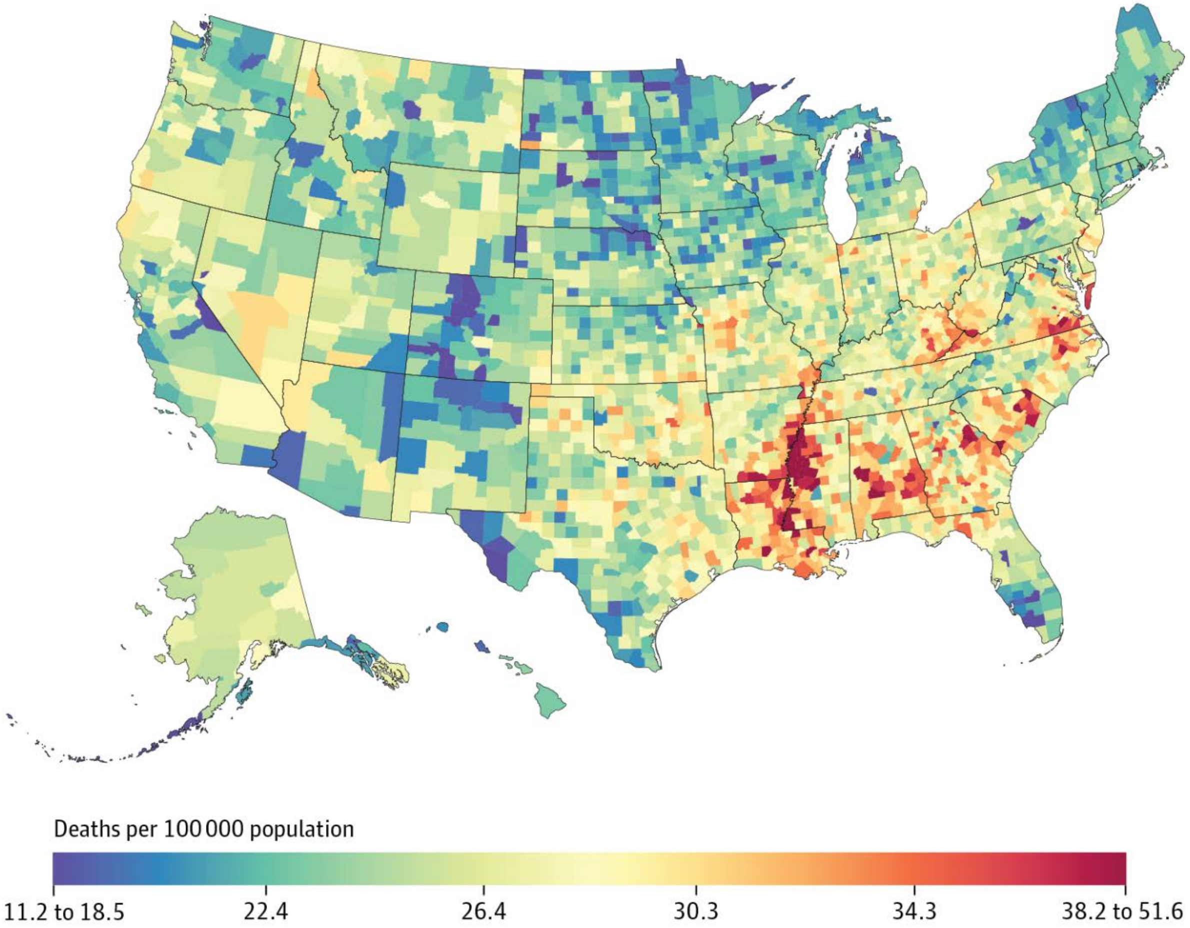
Age-Standardized Mortality Rate from Breast Cancer (Females only), 2014



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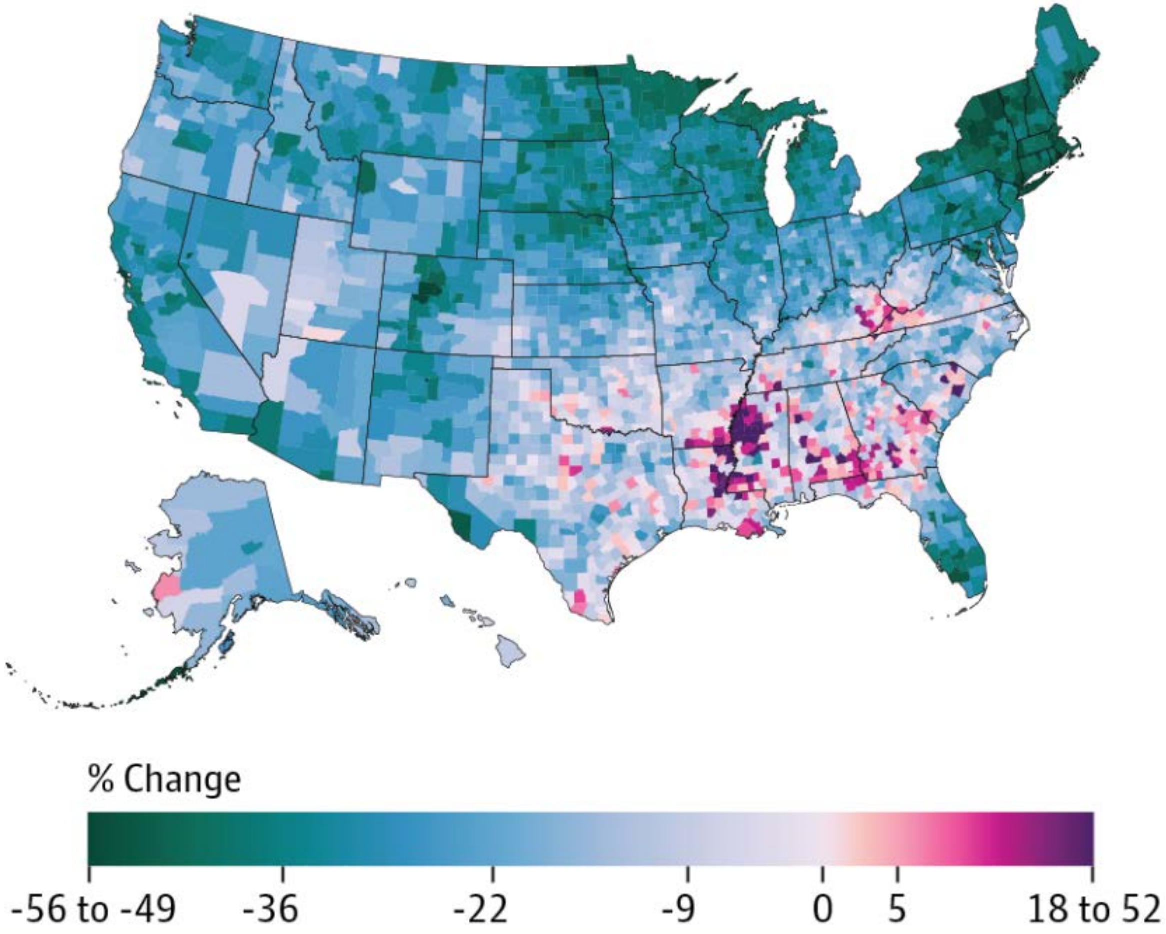
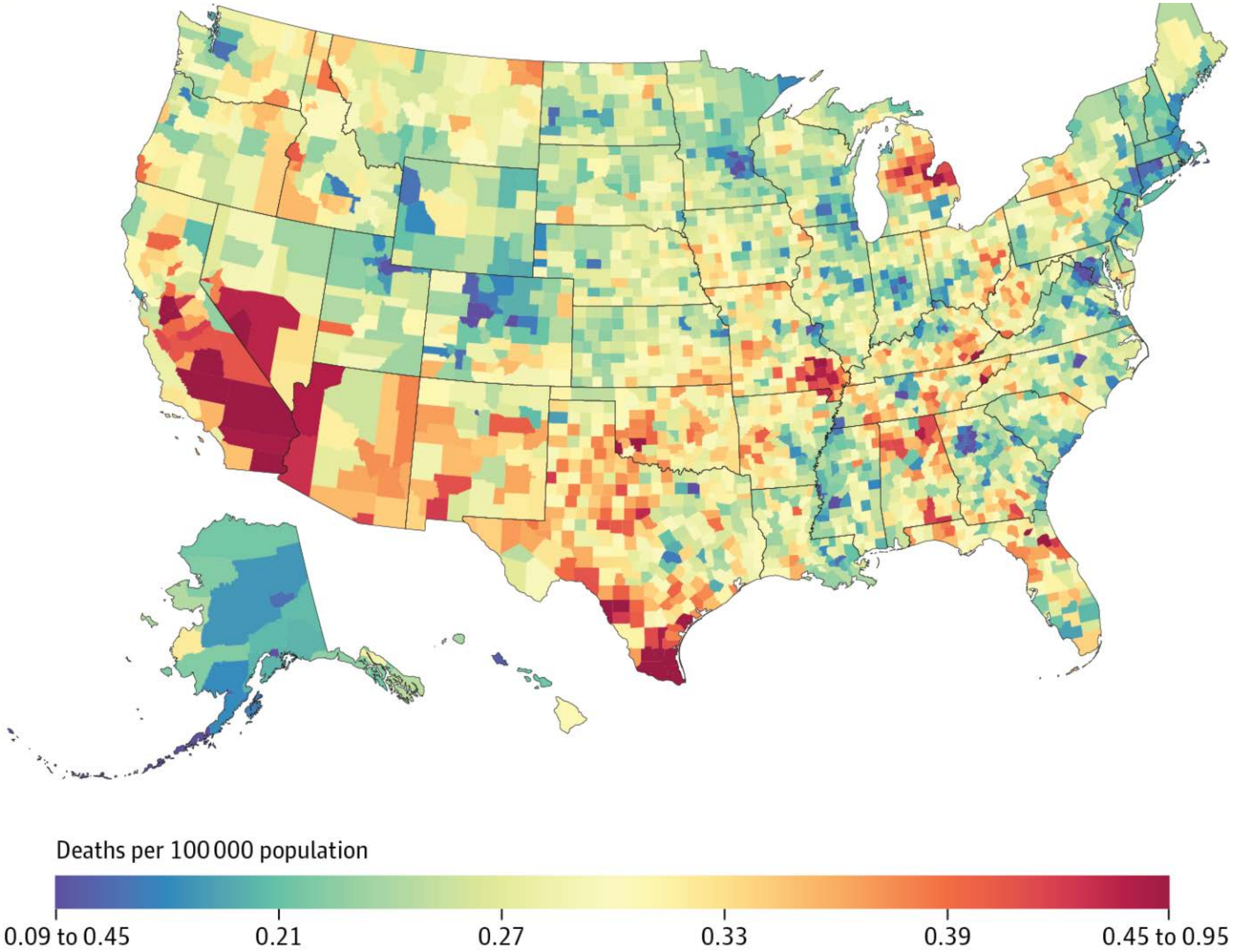


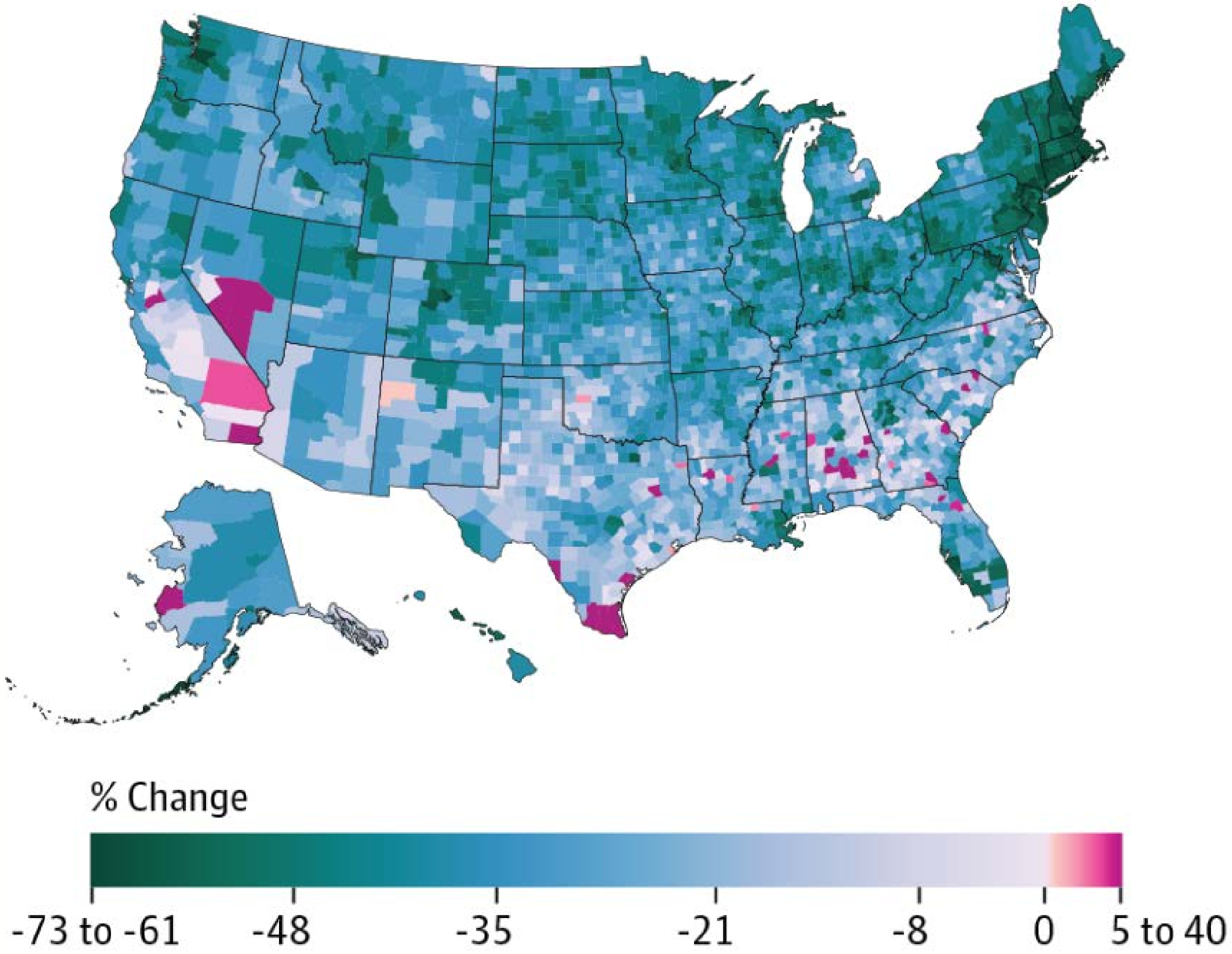
JAMA. 2017;317(4):388-406. doi:10.1001/jama.2016.20324

Age-Standardized Mortality Rate for Testicular Cancer (Males only), 2014



JAMA. 2017;317(4):388-406. doi:10.1001/jama.2016.20324

Percent change in Age-Standardized Mortality Rate from Testicular Cancer (Males only), 1980 – 2014



JAMA. 2017;317(4):388-406. doi:10.1001/jama.2016.20324

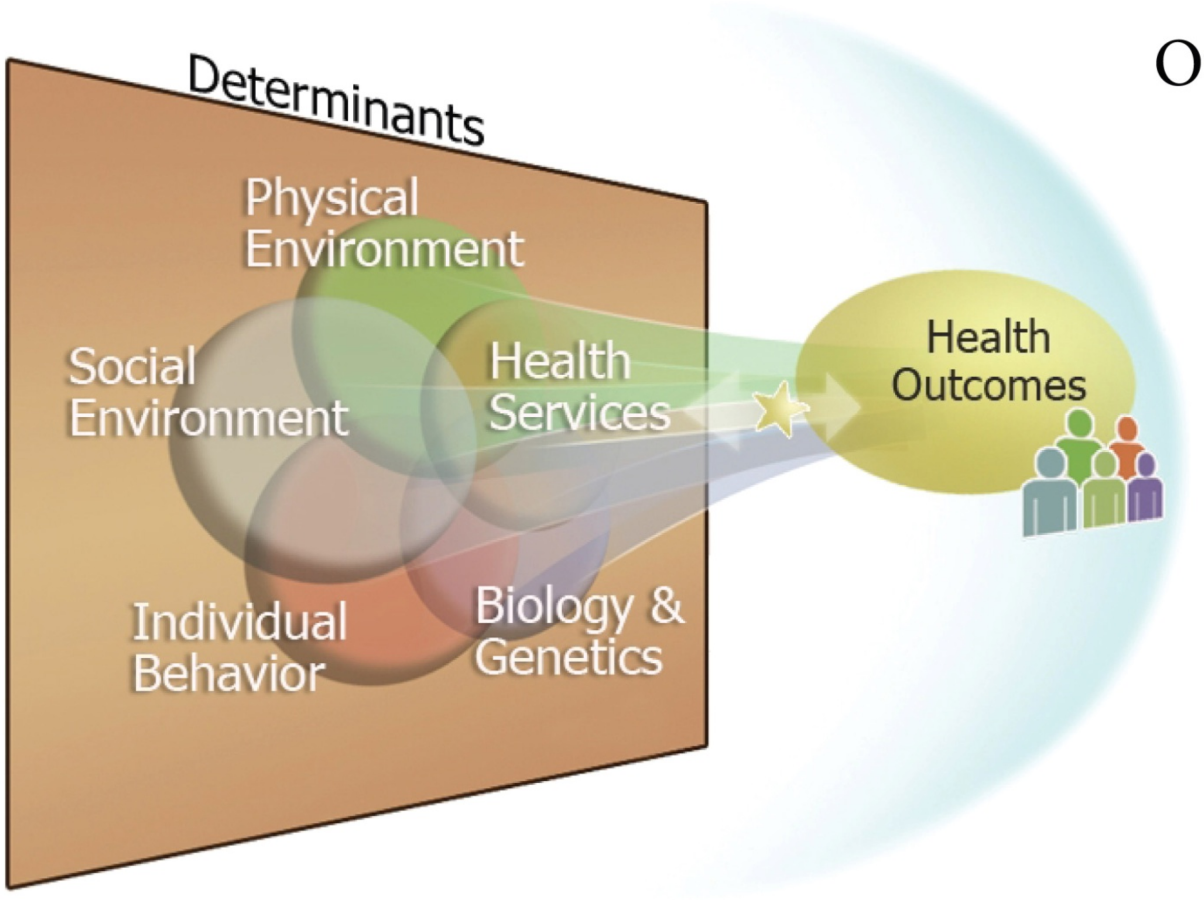
Intersection of Lifestyle Factors and Disparities?

- Assume differences in risk factors lead to cancer disparities …
- But, what is the role of:
  - Socioeconomic factors (SES)?
  - Social determinants of health?
  - Culture?

How do we or can we discover how SES leads to the disparities (differences) in long-term outcomes like morbidity or mortality?

Healthy People 2020

A society in which all people live long, healthy lives



Overarching Goals:

- Attain high quality, longer lives free of preventable disease, disability, injury, and premature death.
- Achieve health equity, eliminate disparities, and improve the health of all groups
- Create social and physical environments that promote good health for all.
- Promote quality of life, healthy development and healthy behaviors across all life stages.

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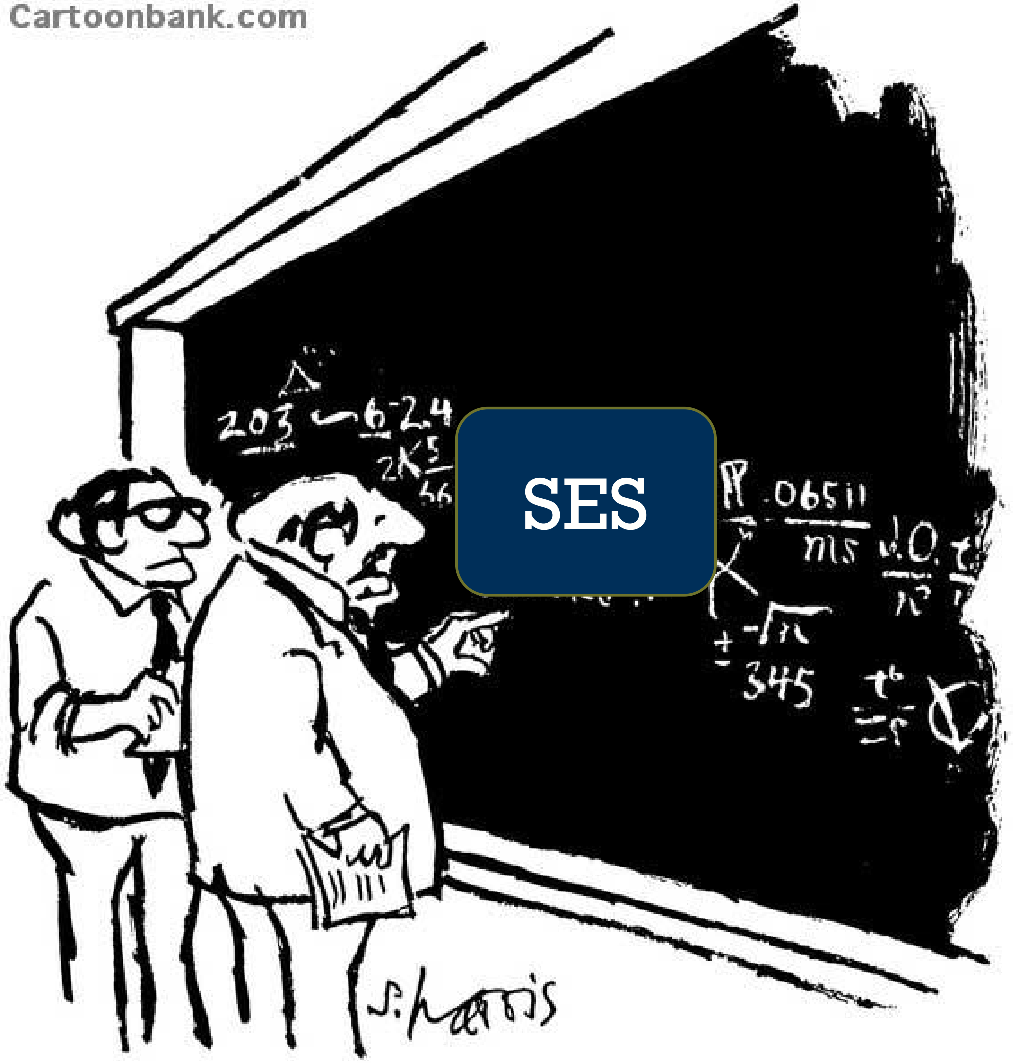


SES

"I think you should be more explicit here in step two."

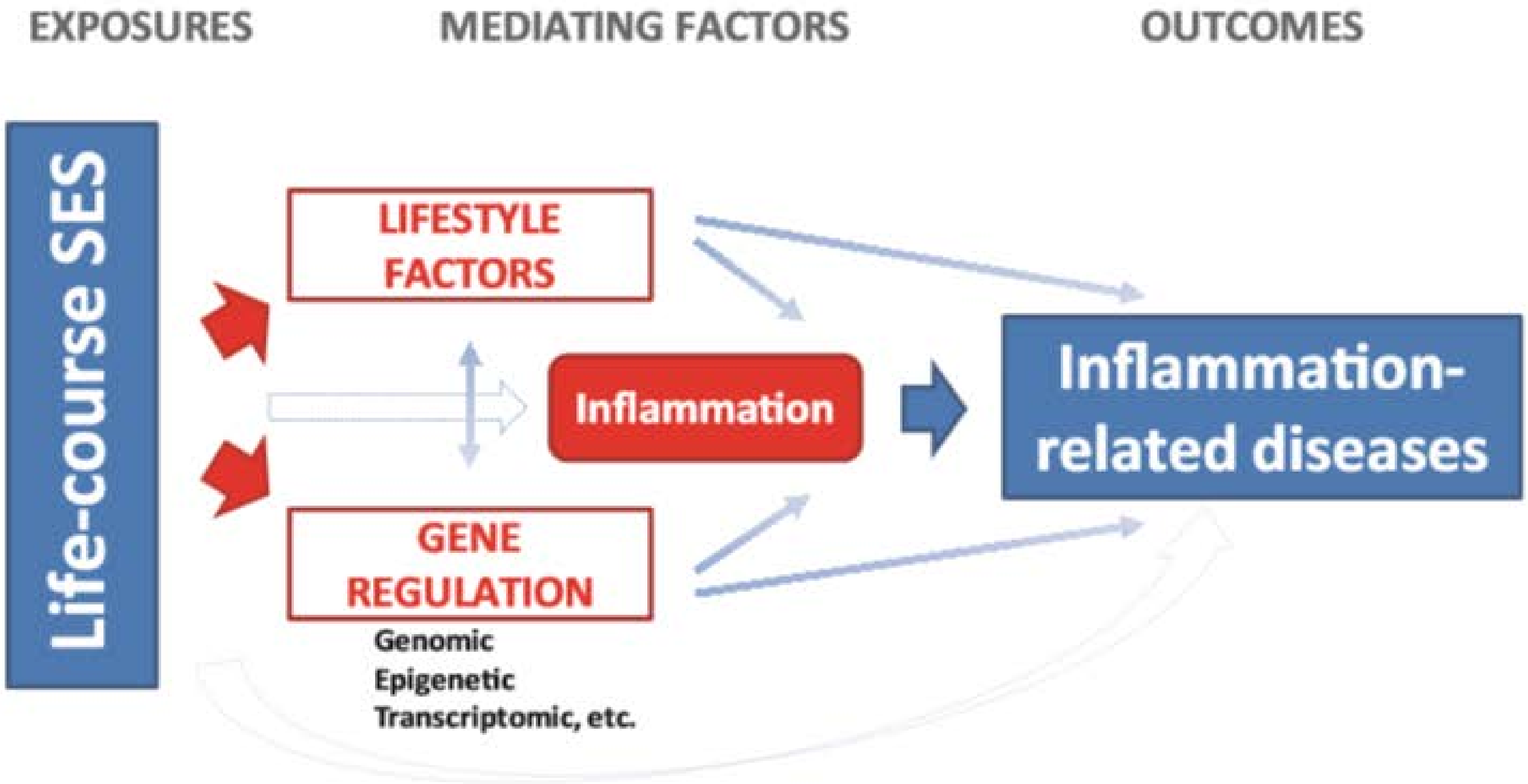
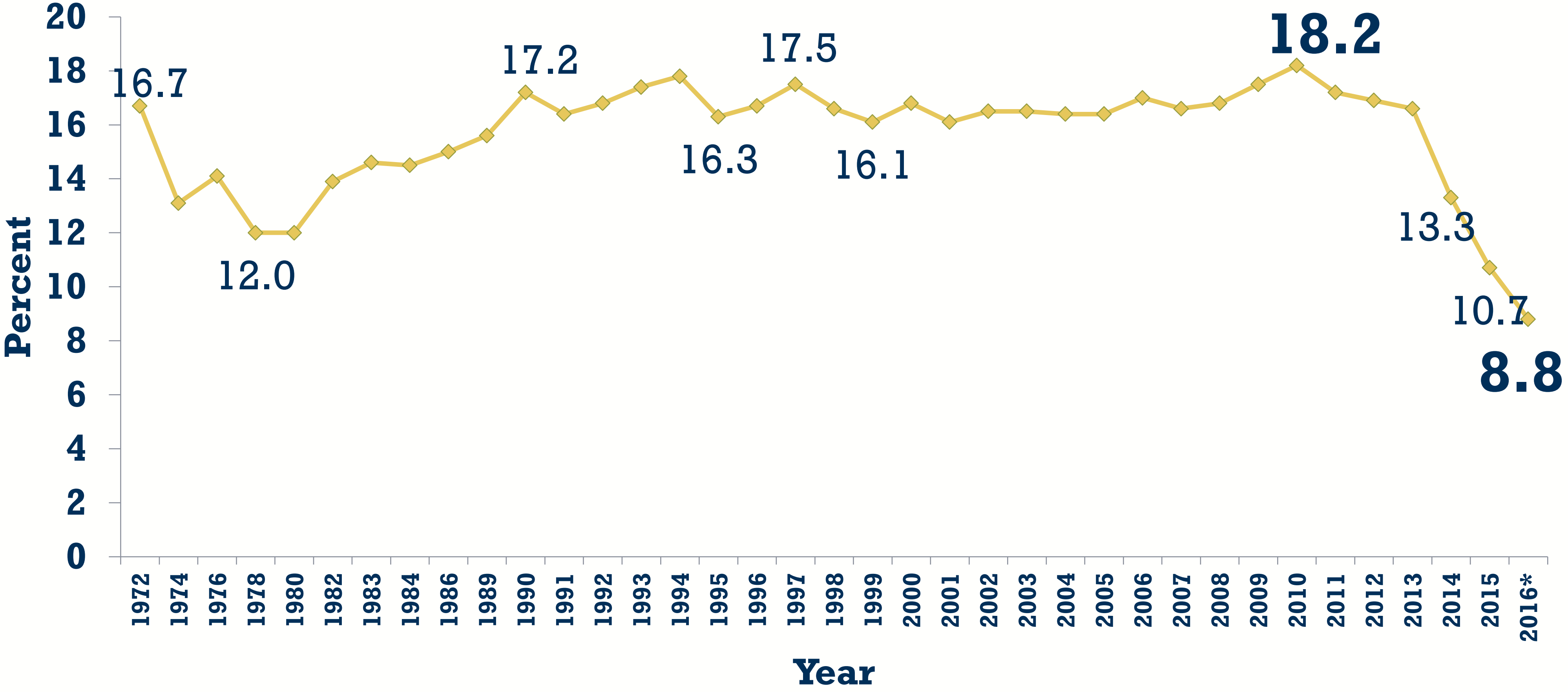


Figure 1. Theoretical framework of our study. Life-course socioeconomic status (SES) is associated with inflammation-related diseases. Two sorts of interrelated factors potentially mediate this association: lifestyle factors and gene regulation of immune responses. In this study, we assess the relationship between life-course SES and one mechanism of gene regulation, DNA methylation.

International Journal of Epidemiology, 2015, 1320–1330

Uninsured Percent Among Nonelderly Population, 1972-2015



Note: 2015 data is for Q1 only.

Source: CDC/NCHS, National Health Interview Survey

ACA has led to changes in the demographics of who is insured

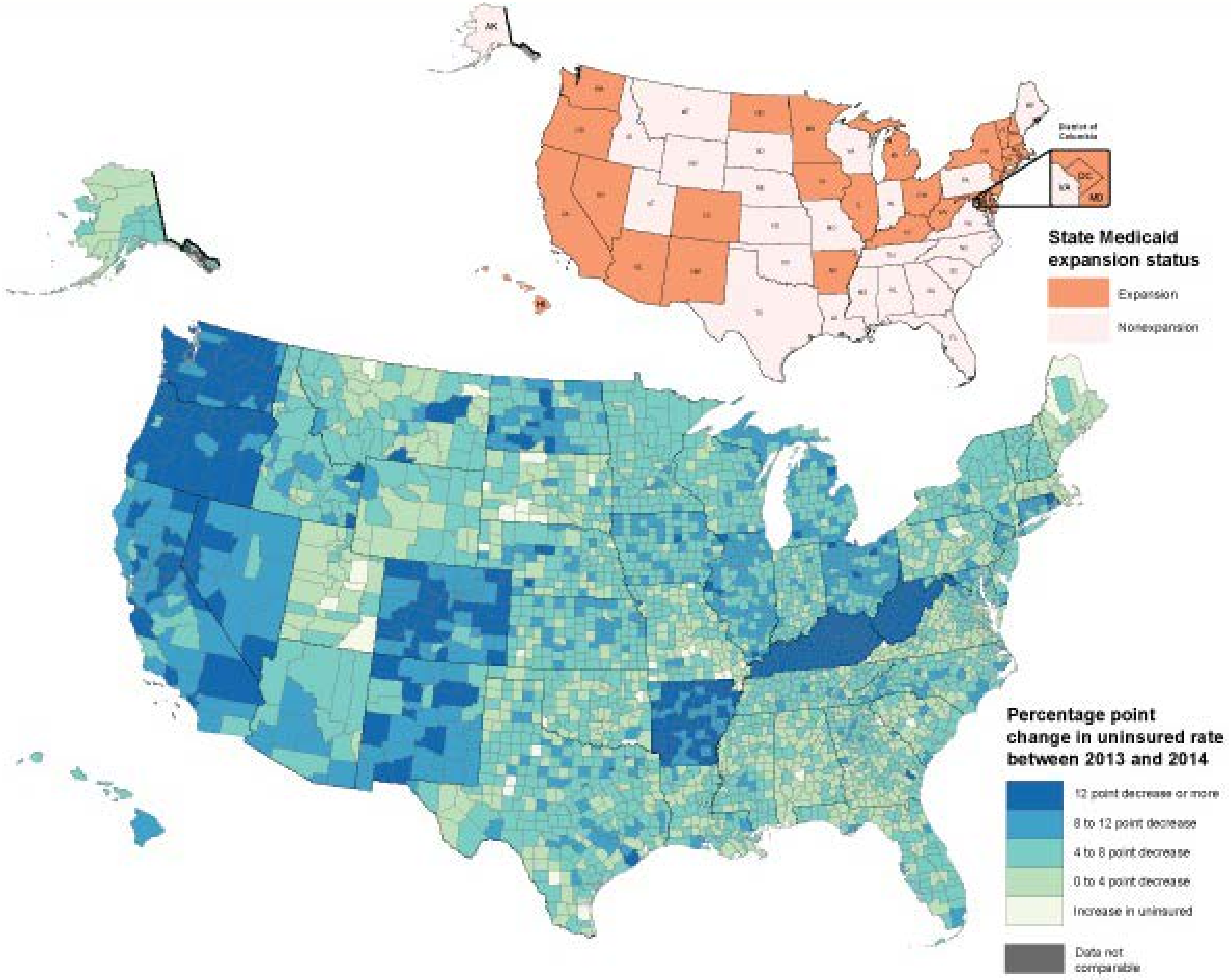
Coverage gains from 2013-2015 were particularly large among poor and low-income individuals and people of color.

Decrease in the uninsured rate for poor and near poor individuals (-10.0)

Decrease in the uninsured rate for Hispanics (-9.5) and Blacks (-7.7)

Larger Decreases in states that chose to expand Medicaid (-6.7)

Source: Kaiser Family Foundation Brief "Key Facts about the Uninsured Population. September, 2016.



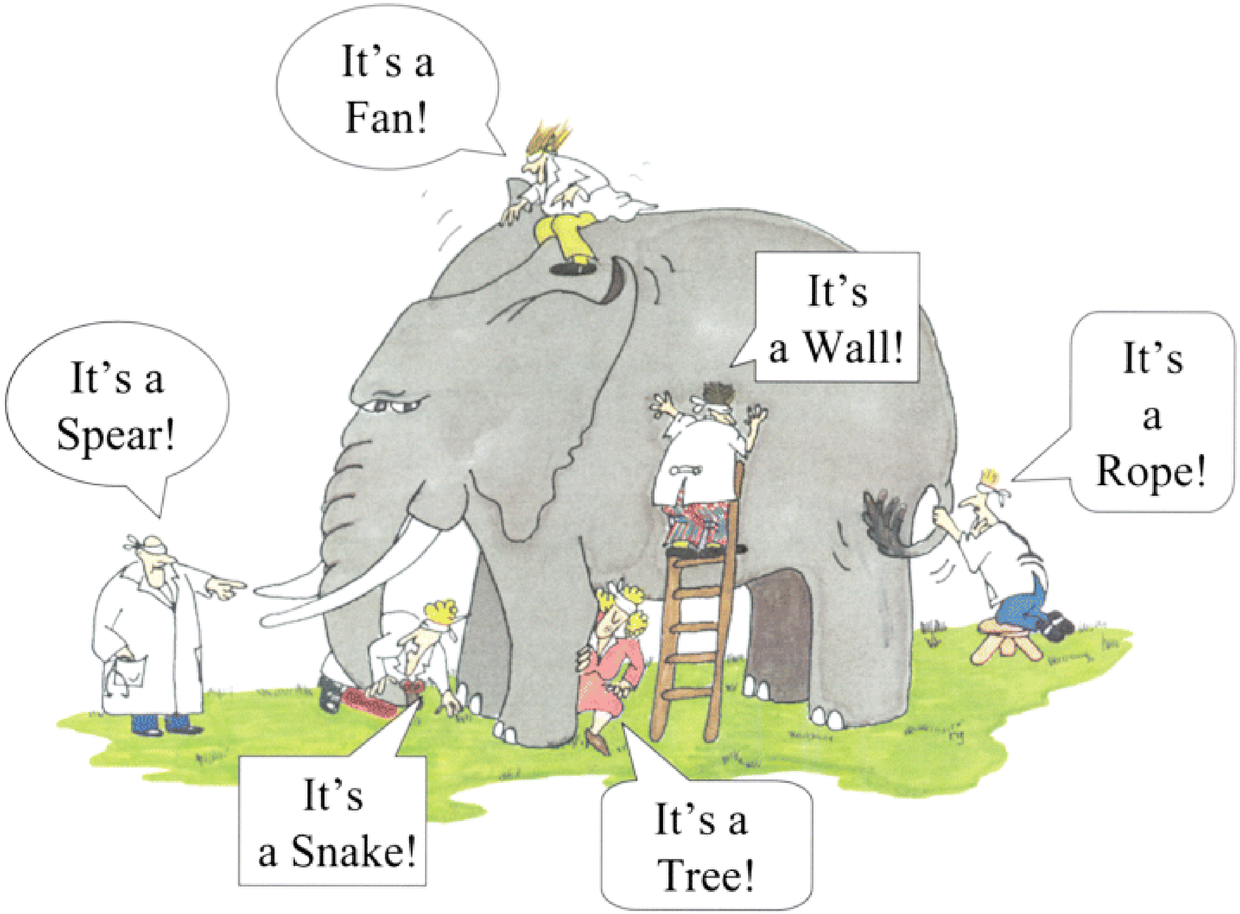
2013-2014 Change in Uninsured Rate for Low-Income Adults Ages 18-64

US Census Bureau, 2016
http://www.census.gov/newsroom/press-releases/2016/cb16-86.html

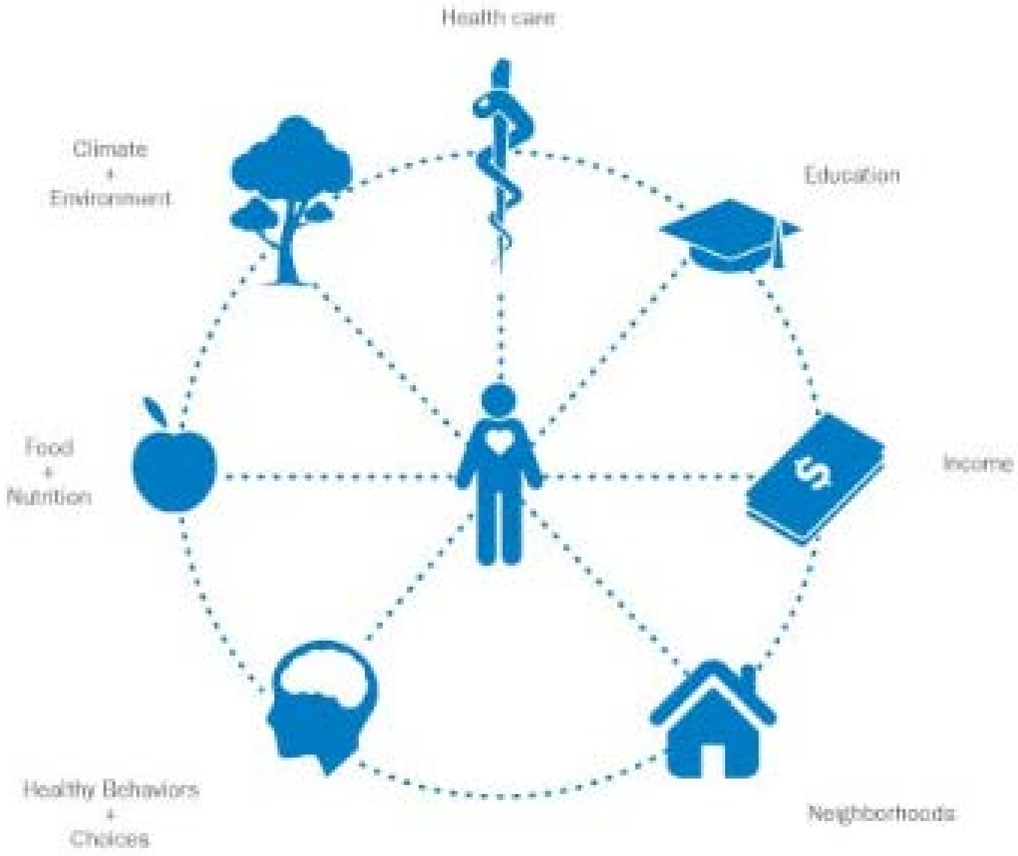
Even with coverage, barriers persist

- Barriers to screening include:
  - lack of knowledge about recommended screening
  - cultural and language barriers
  - unfamiliarity with utilizing the healthcare system for preventive services
  - unwillingness to undergo colonoscopy due to its complexity and uncomfortable preparation
  - providers may forget to recommend screening or may not know when patients are due for screening

Seeing opportunities for prevention requires working across disciplines and sectors



Social, environmental and individual factors influence our health as well as the opportunity to make healthy choices.



And inequities in these factors have **greater impact** on the health of

people of color.

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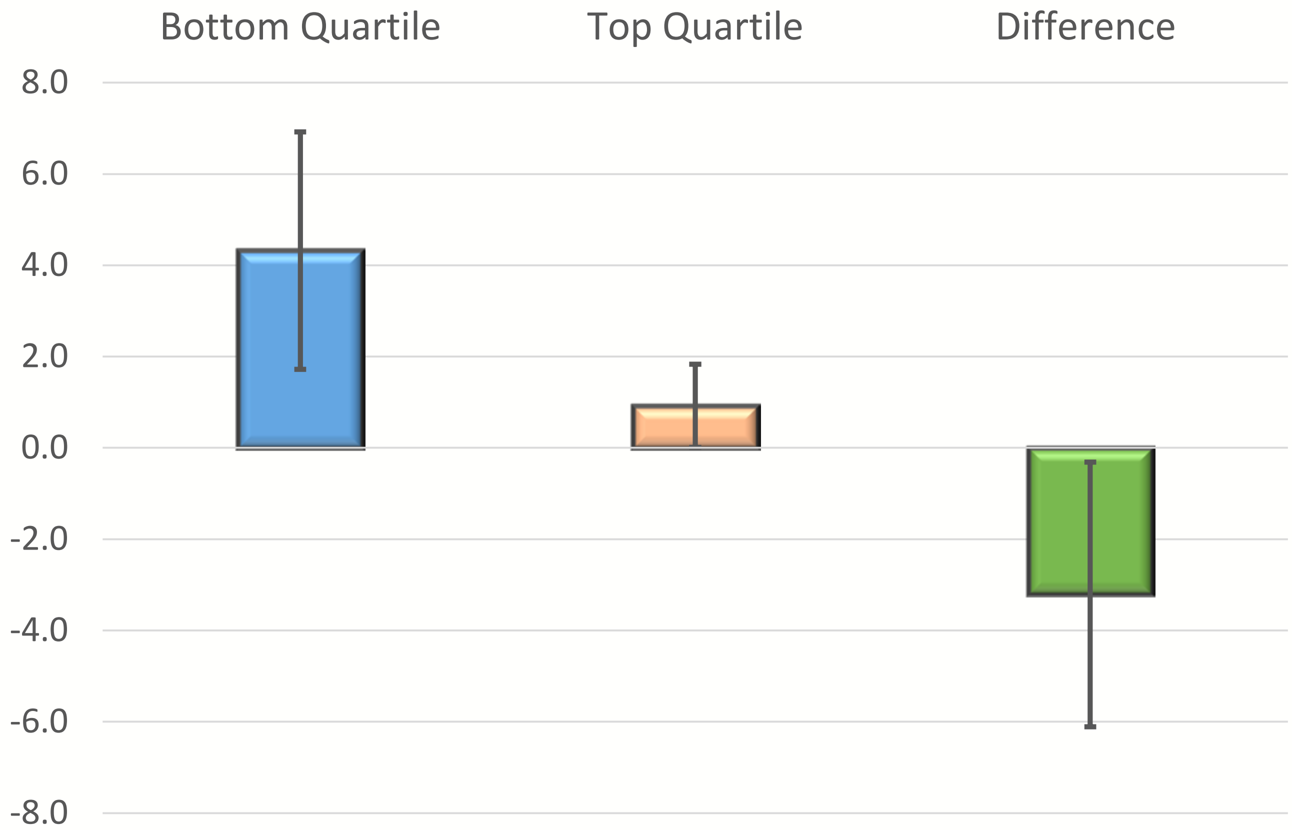
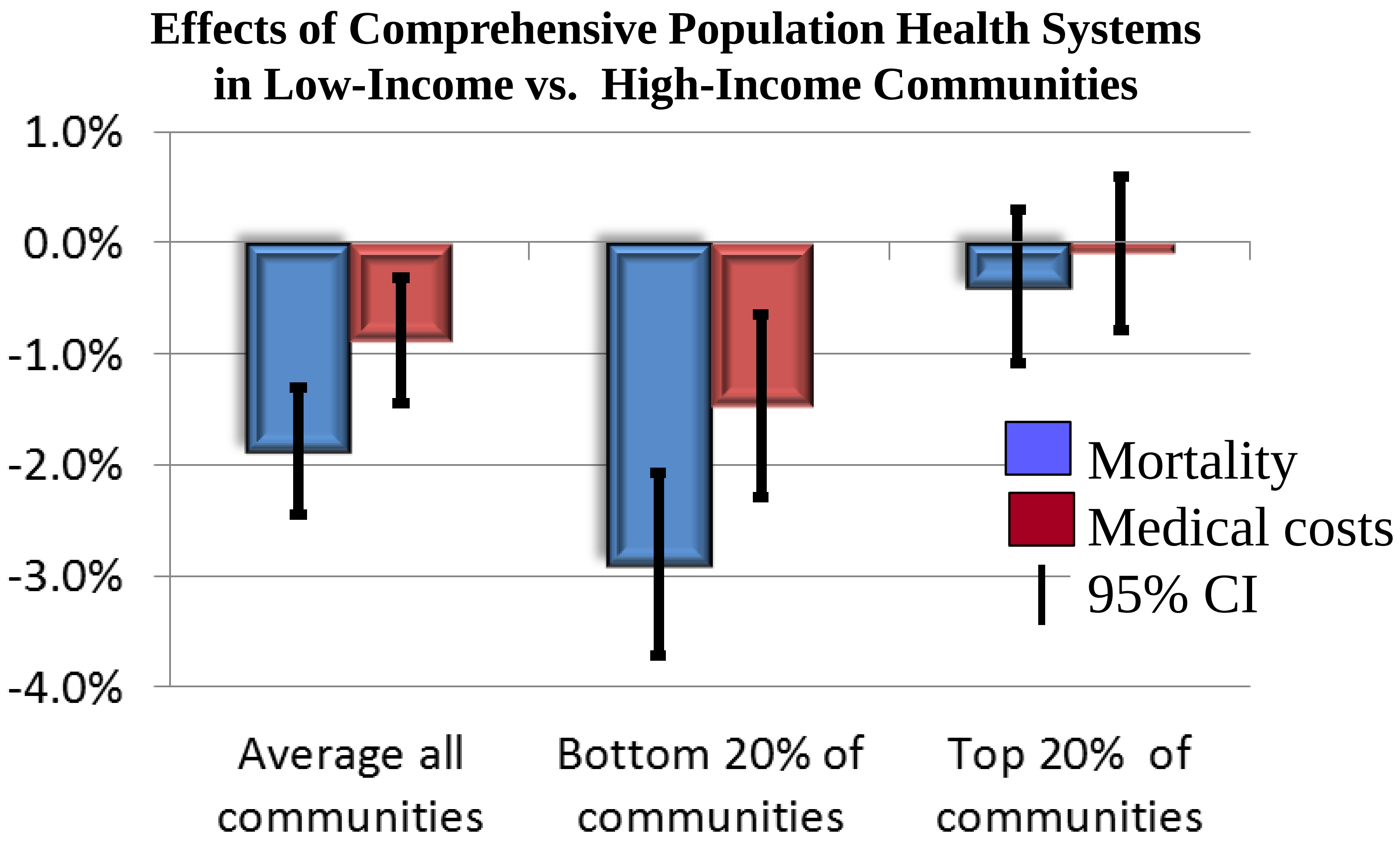
Economic effects attributable to multi-sector work

Impact of Comprehensive Systems
on Life Expectancy by Income (Chetty), 2001-2014



Models also control for racial composition, unemployment, health insurance coverage, educational attainment, age composition, and state and year fixed effects. N=1019 community-years. Vertical lines are 95% confidence intervals

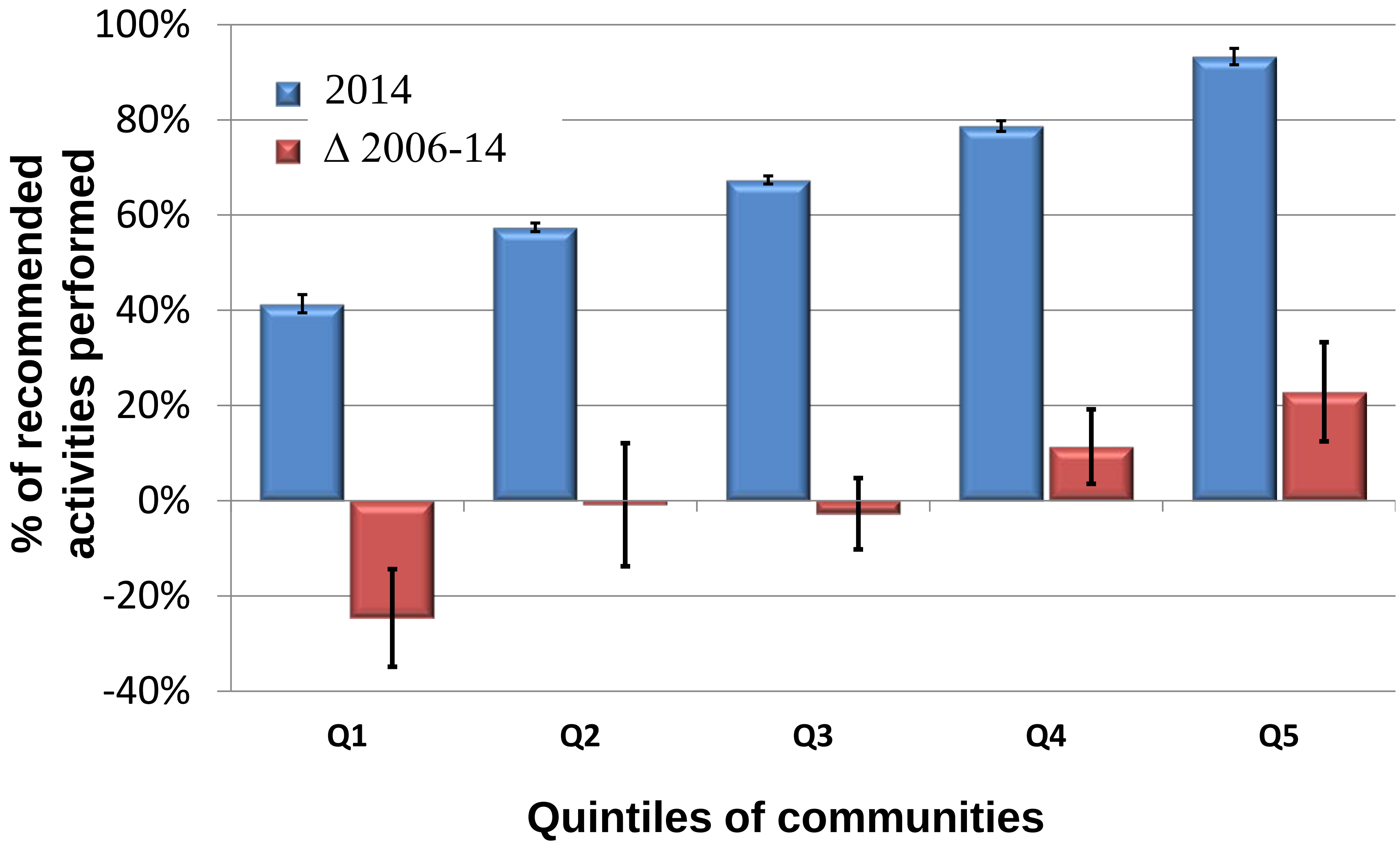
Making the case for equity: larger gains in low-resource communities



Log IV regression estimates controlling for community-level and state-level characteristics

Equity in population health delivery systems

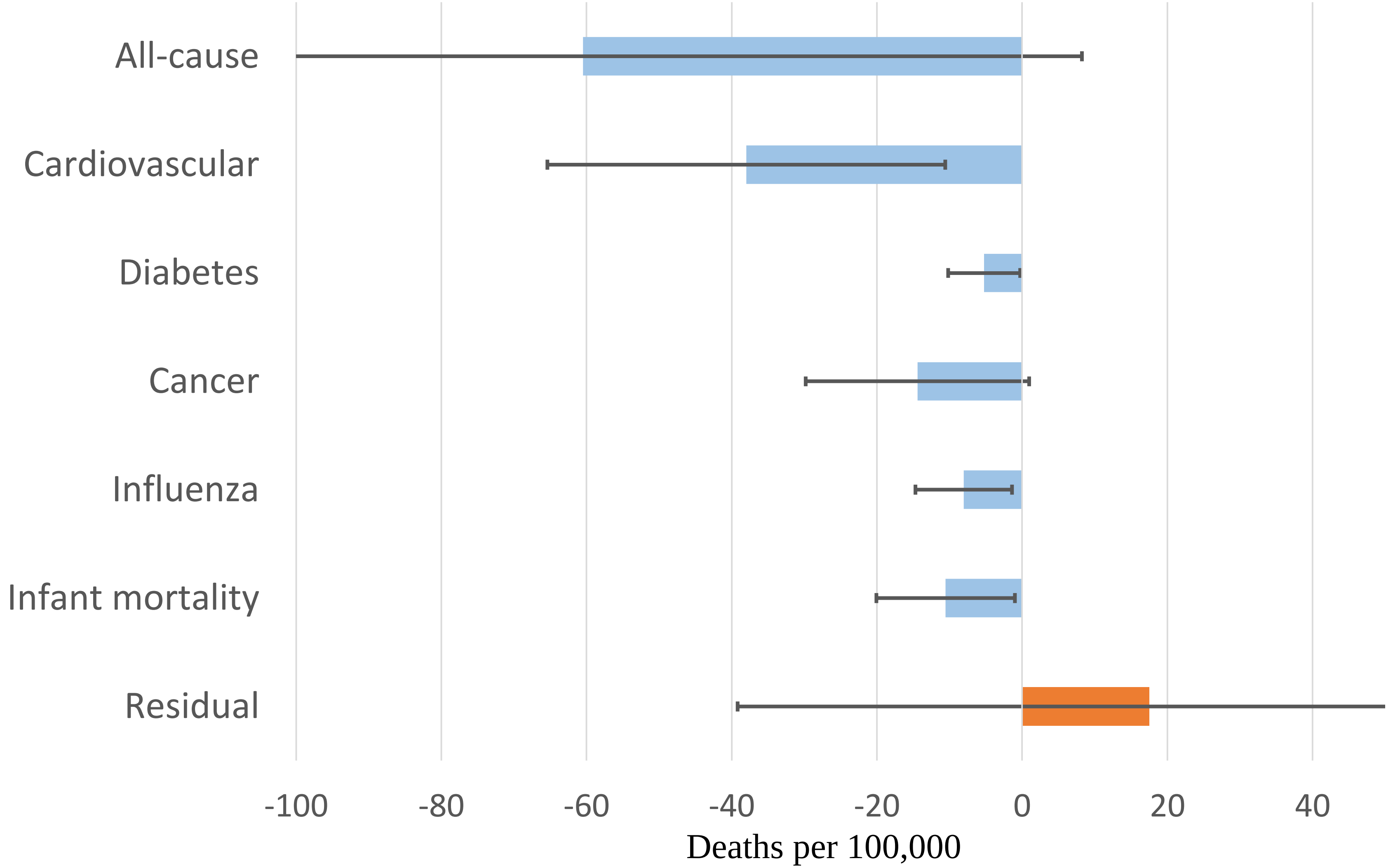
Delivery of recommended population health activities



Mays GP, Hogg RA. Economic shocks and public health protections in US metropolitan areas. Am J Public Health. 2015;105 Suppl 2:S280-7.

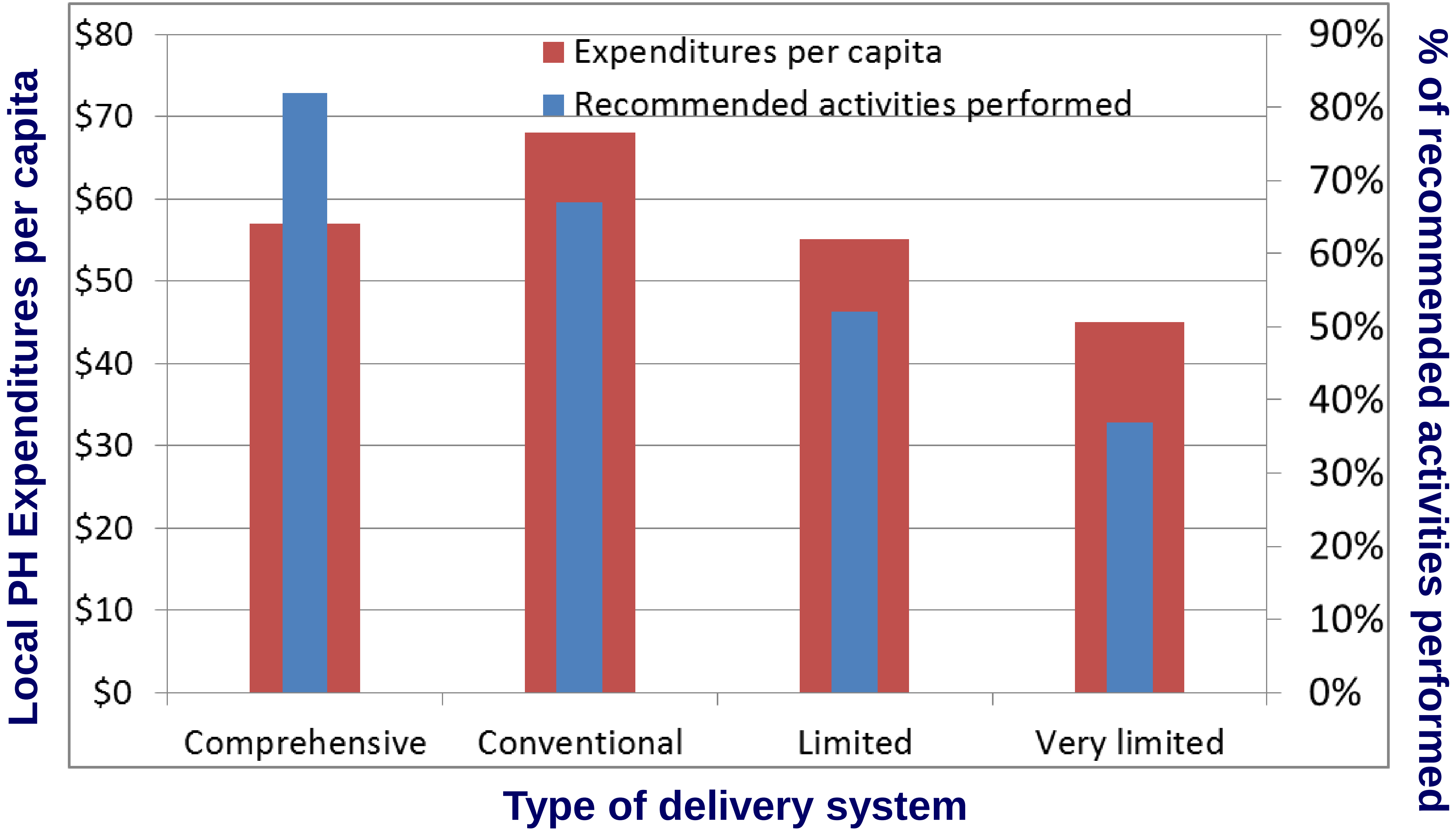
Long-run health effects attributable to comprehensive systems

IV Estimates on Mortality, 1998-2014



Models also control for racial composition, unemployment, health insurance coverage, educational attainment, age composition, and state and year fixed effects. N=1019 community-years

Comprehensive systems do more with less

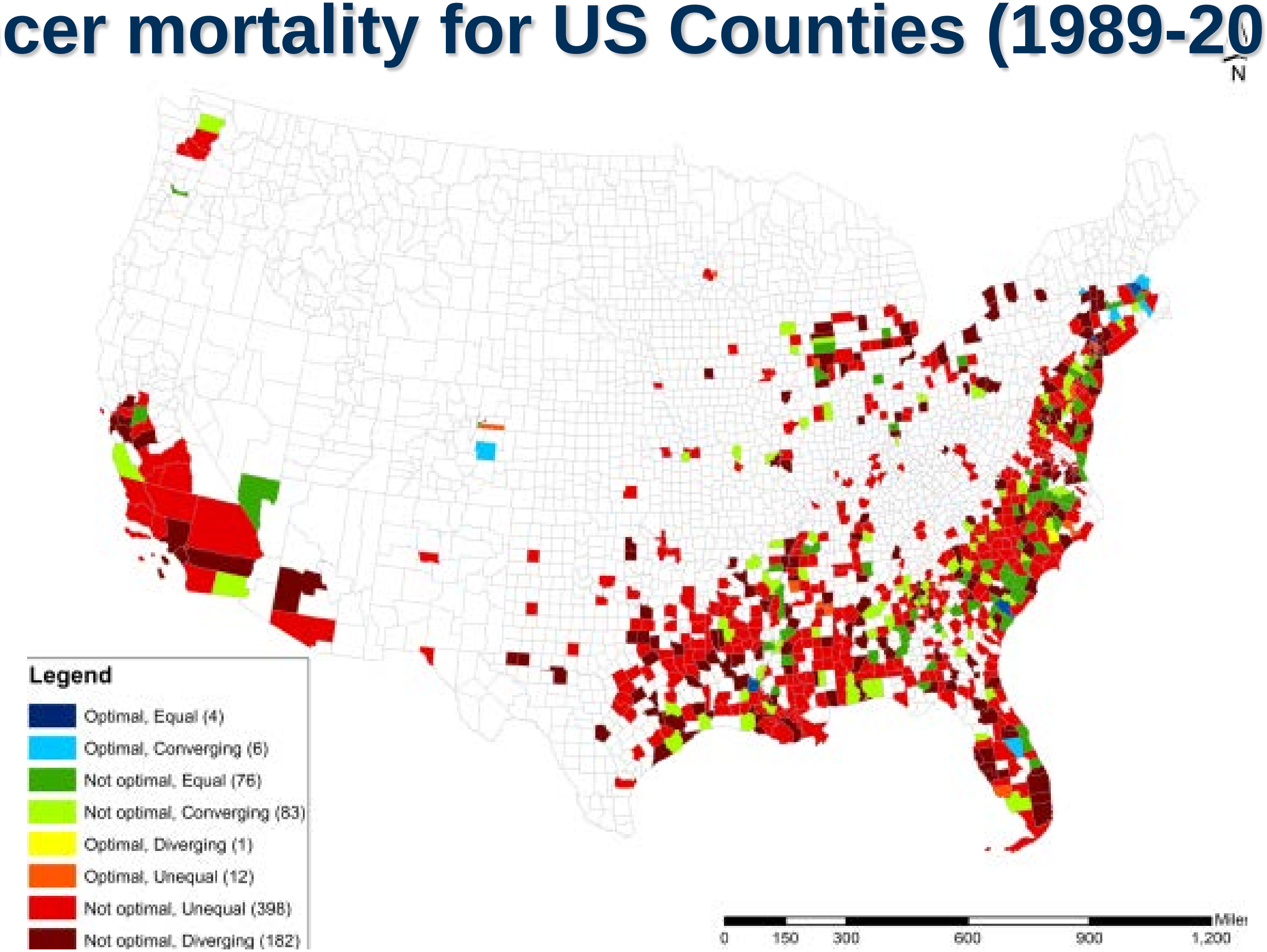


Financing sources & models

- Dedicated state and local government allocations (CO, OH, OR, WA)
- Medicaid administrative match/claiming (ME, AR, OR)
- Hospital community benefit allocations (MA, ME, MI)
- AHC/ACO shared savings models (WA, MN)
- Community health trusts (MA)
- Public/private joint ventures (KY, OH, NC)

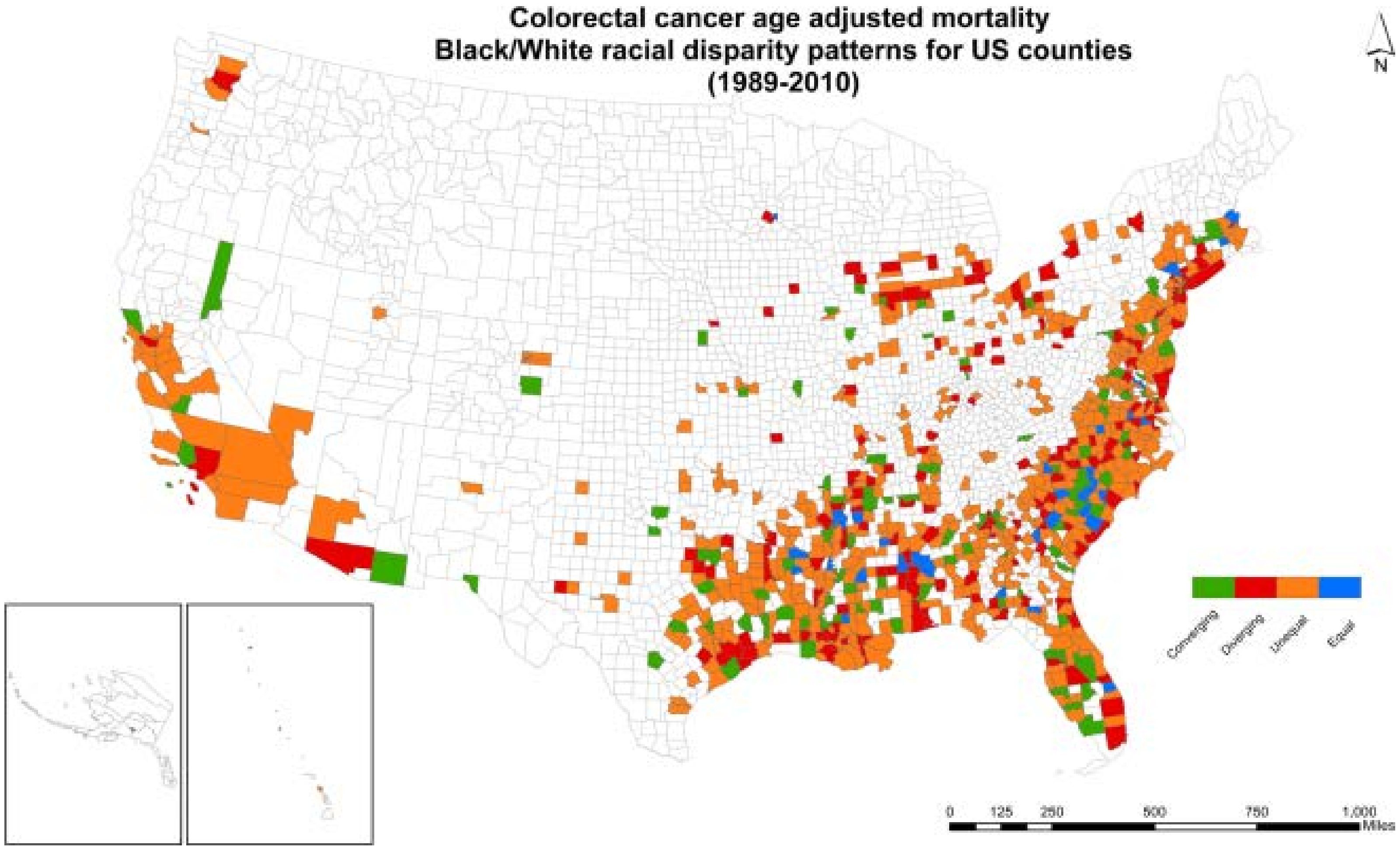
Where do we go in the future?

Black/white racial disparity trends, age-adjusted breast cancer mortality for US Counties (1989-2010)



Cancer Volume 121, Issue 16, pages 2765-2774, 23 APR 2015 DOI: 10.1002/cncr.29405
http://onlinelibrary.wiley.com/doi/10.1002/cncr.29405/full#cncr29405-fig-0002

Counties eliminating racial disparities in colorectal cancer mortality



Cancer Volume 122, Issue 11, pages 1735-1748, 11 MAR 2016 DOI: 10.1002/cncr.29958
http://onlinelibrary.wiley.com/doi/10.1002/cncr.29958/full#cncr29958-fig-0001

What is “modifiable”?

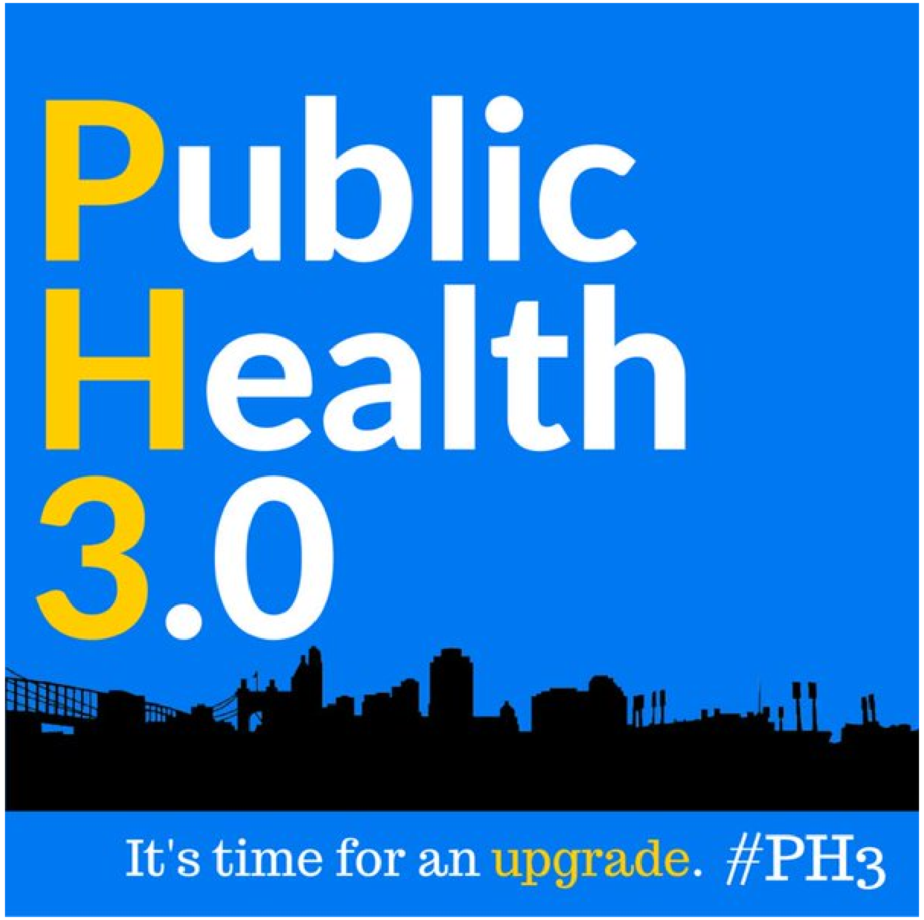
Non-modifiable

- Age
- Race/ethnicity
- Genetics
- Poverty

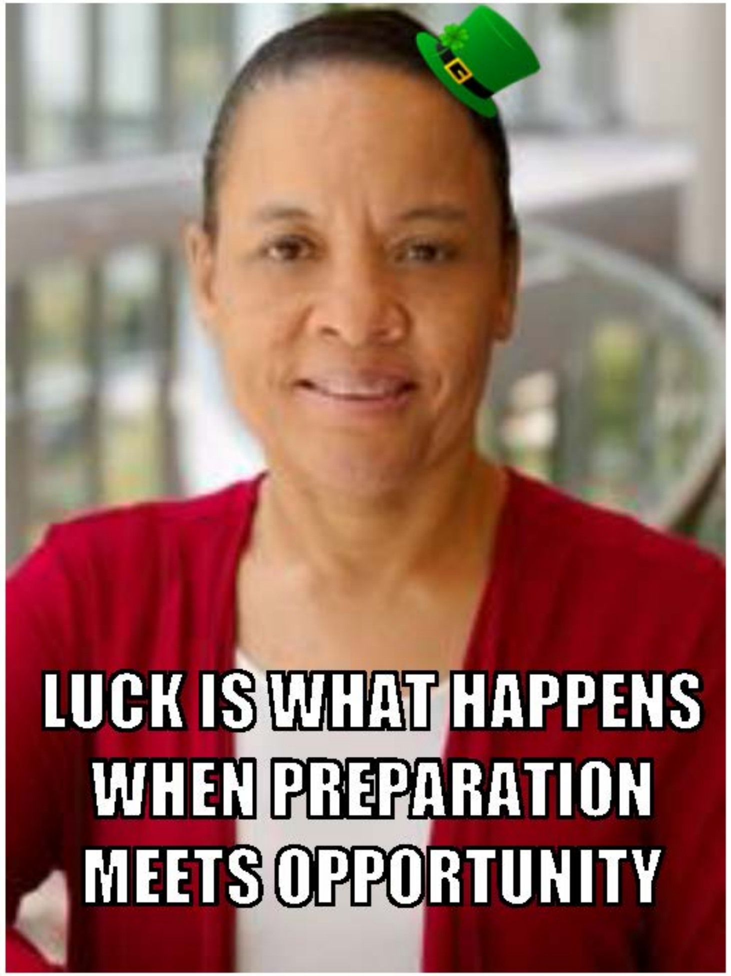
Potentially modifiable

- Factors that accelerate aging
- Policies that prohibit discrimination
- Gene expression (epi-genetics)
- Educational and economic opportunities

Public Health 3.0: Focus on the Social Determinants of Health



HAPPY ST. PATTY'S DAY



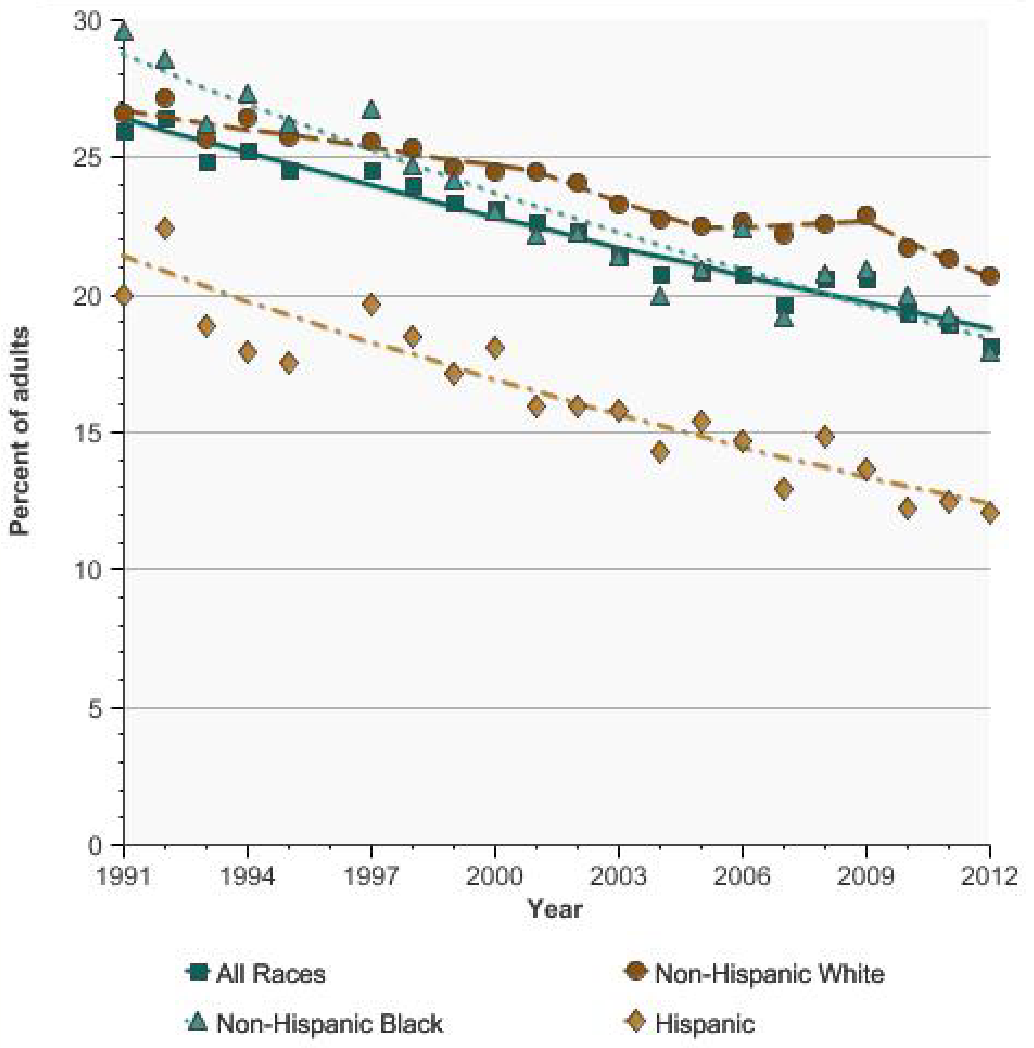
Follow DCPC Online!

@CDC_Cancer

CDC Breast Cancer

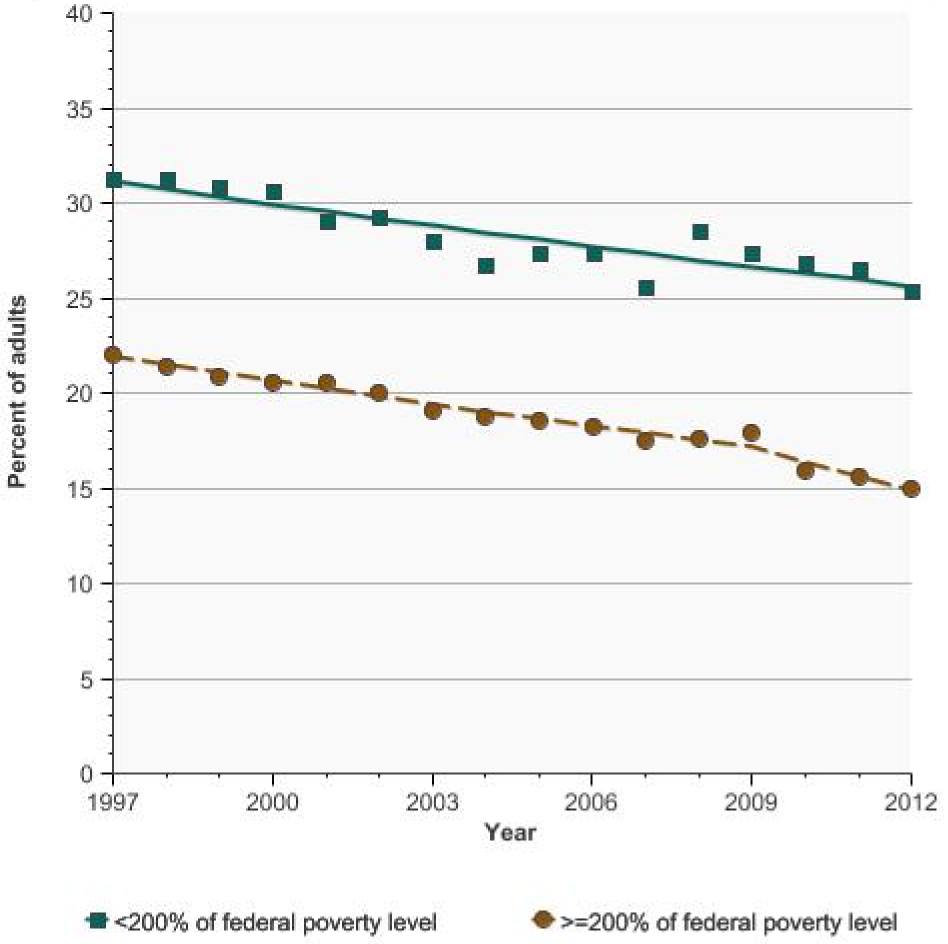
Go to the official source of cancer prevention information: www.cdc.gov/cancer.

Percentage of adults aged 18 years and older who were current cigarette smokers by race/ethnicity, 1991-2012



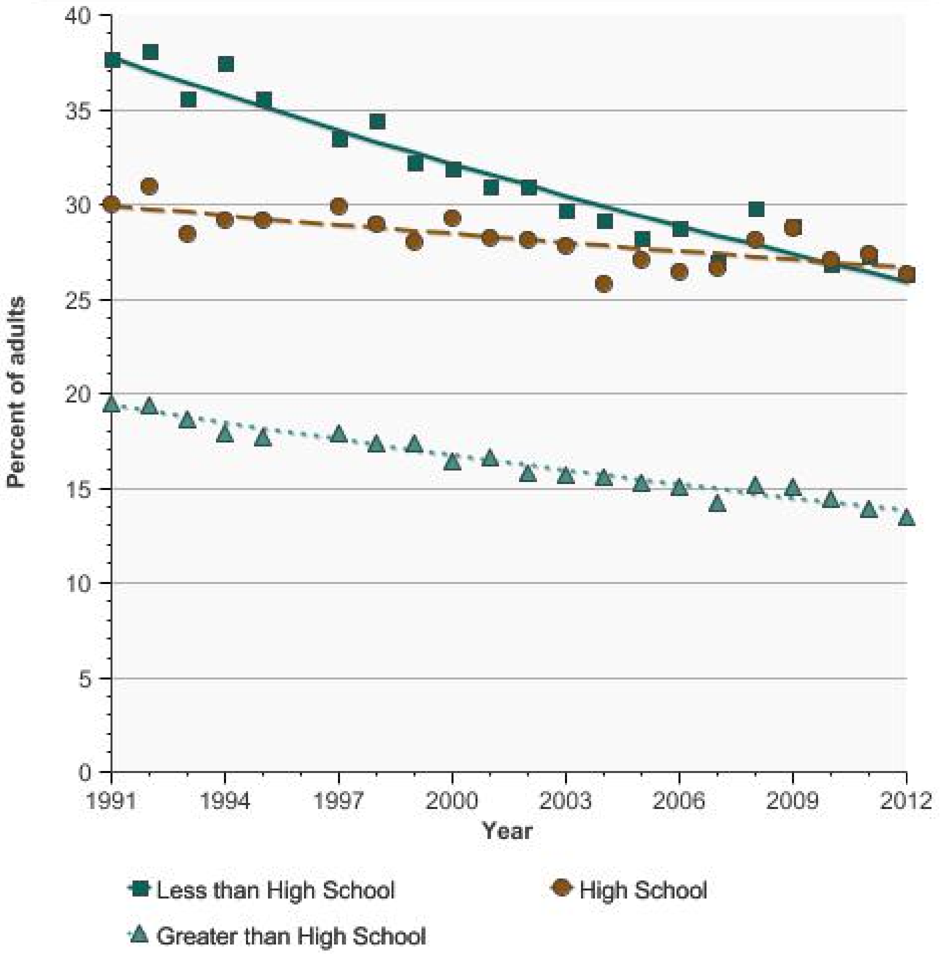
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Percentage of adults aged 18 years and older who were current cigarette smokers by poverty income level, 1997-2012



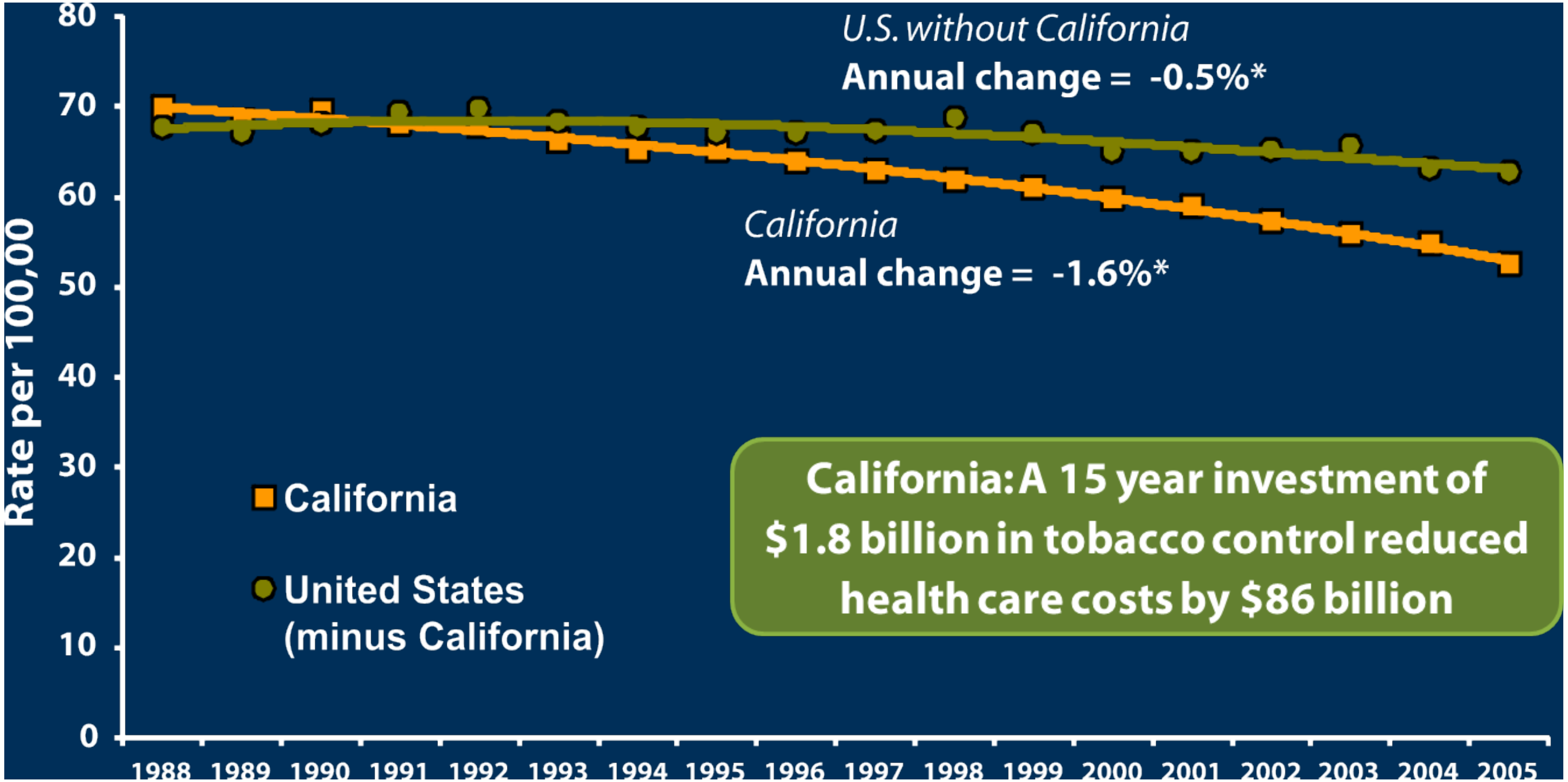
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Percentage of adults aged 25 years and older who were current cigarette smokers by highest level of education obtained, 1991-2012



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 25-34, 35-44, 45-64, 65+.

Long-term impact of a comprehensive approach: Lung and bronchus cancer incidence rates in CA

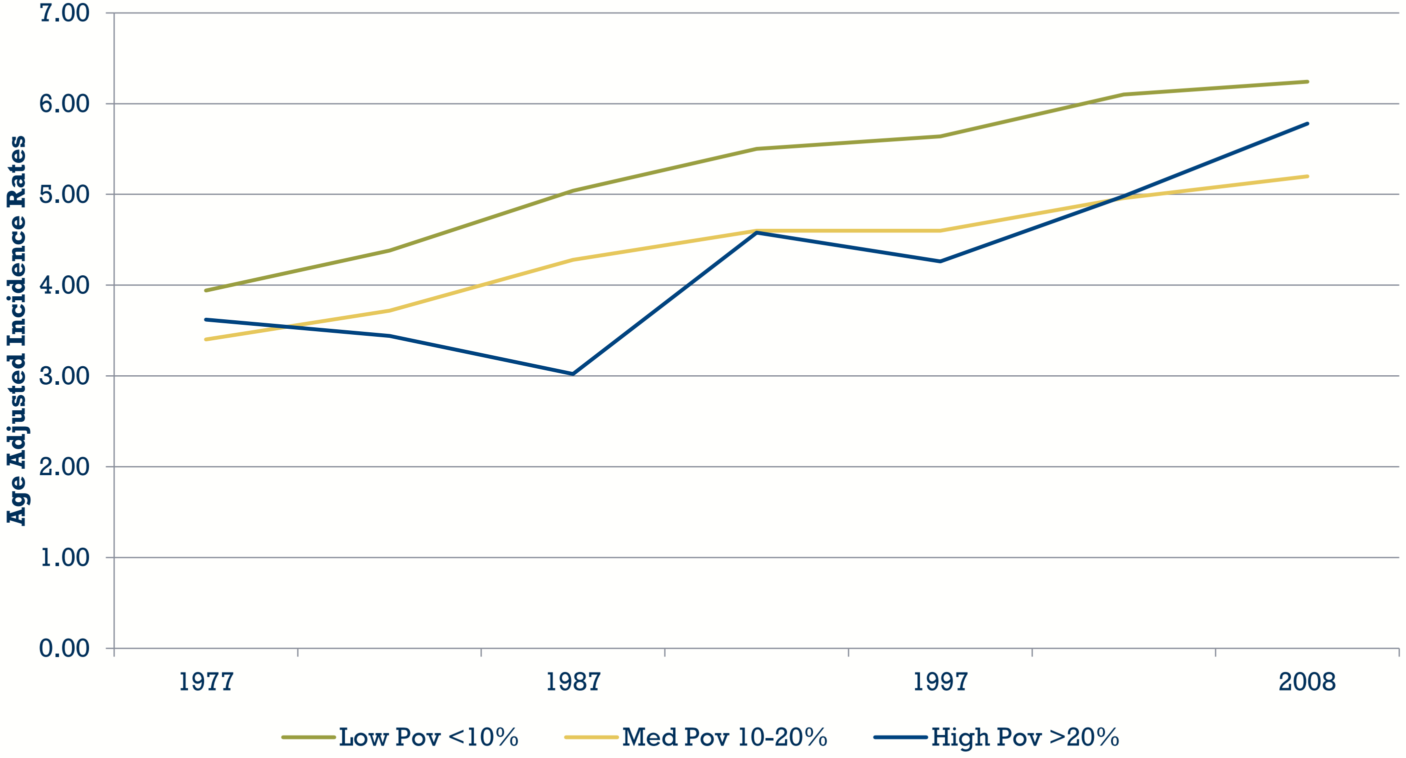


Rates are per 100,000 and age-adjusted to the 2000 U.S. standard (19 age groups).

* The annual percent change is significantly different from zero (p<0.05).

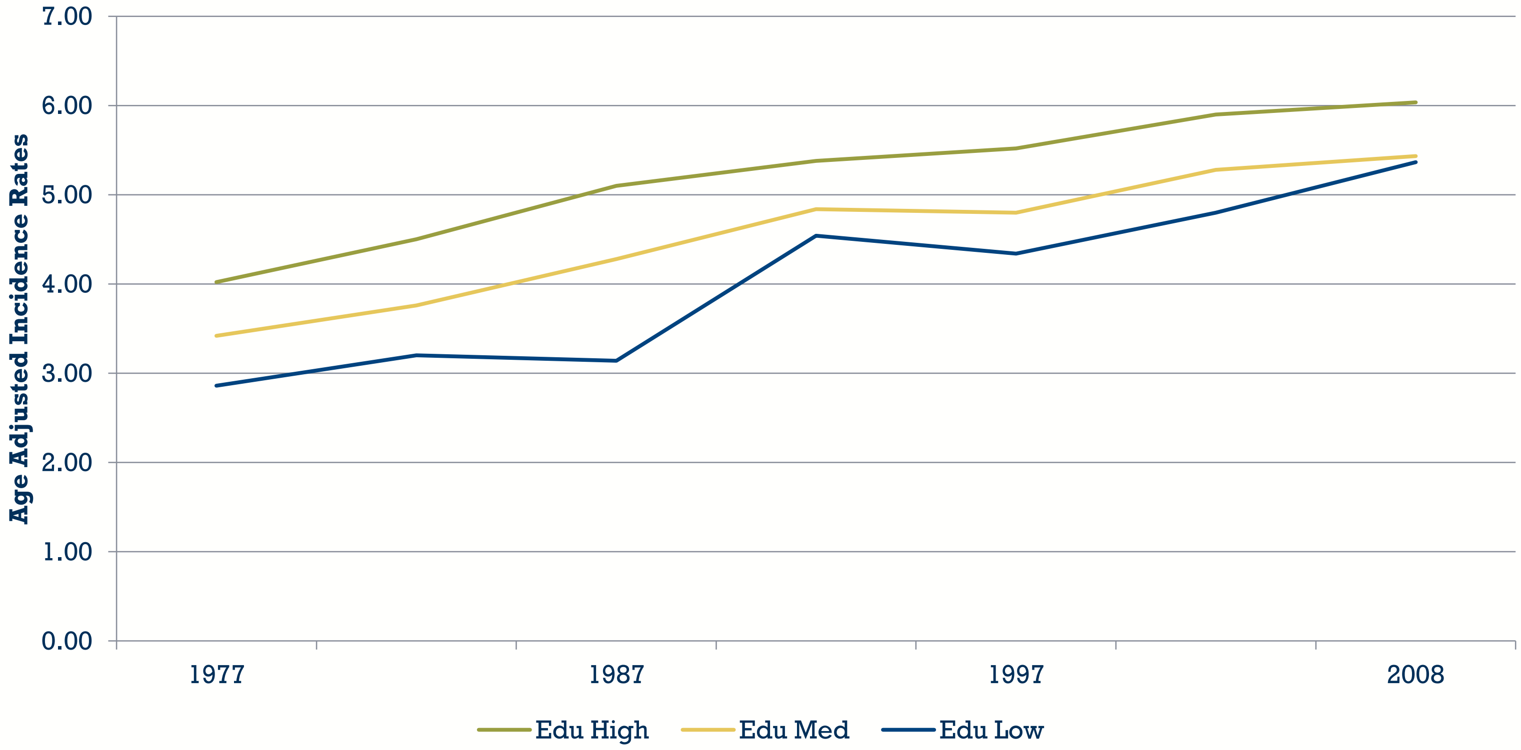
Source: Cancer Surveillance Section. Prepared by: California Department of Public Health, California Tobacco Control Program, 1988-2005. 2010.

Testicular Cancer Incidence by Poverty Level, 1975-2008



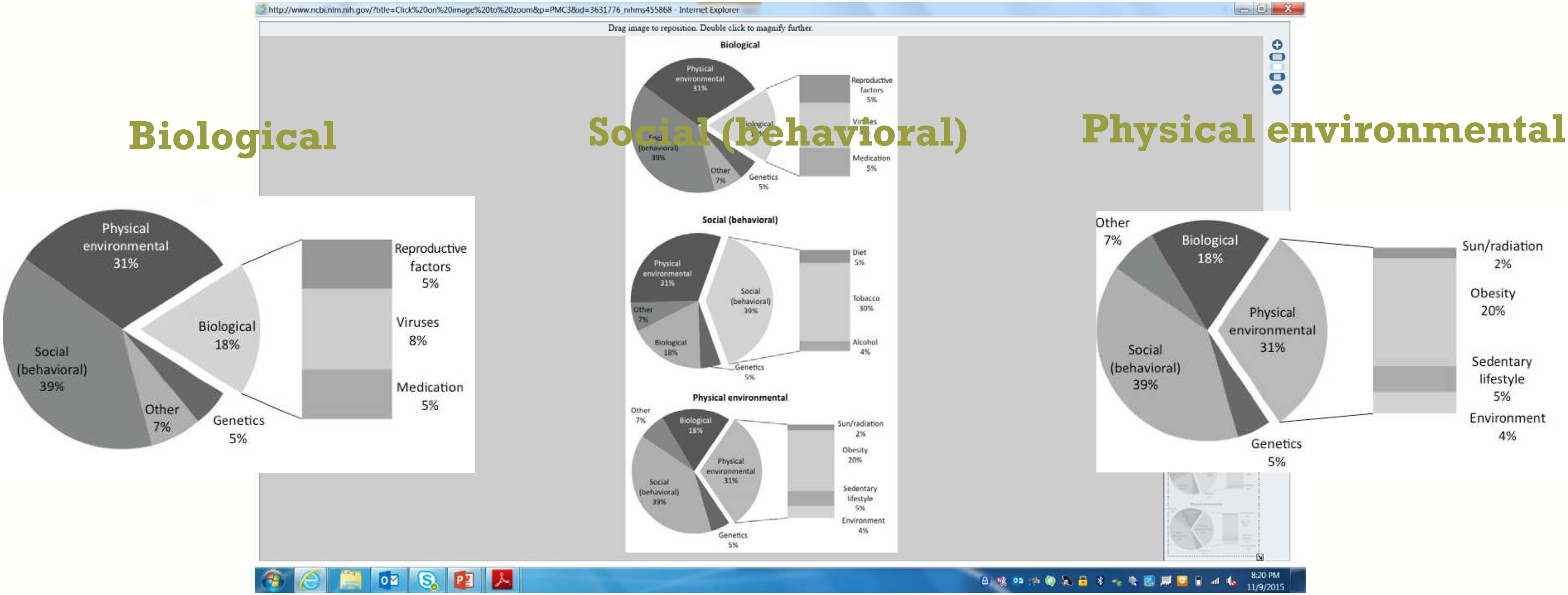
Urol Oncol. 2012; 30(1): 95-201. doi: 10.1016/j.urolonc.2011.09.010

Testicular Cancer Incidence by Educational Attainment, 1975-2008



Urol Oncol. 2012; 30(1): 95-201. doi: 10.1016/j.urolonc.2011.09.010

Causes of Cancer



Biological

Social (behavioral)

Physical environmental

http://www.ncbi.nlm.nih.gov/?title=Click%20on%20image%20to%20zoom&p=PMC3&id=3631776_nihms455868 - Internet Explorer

Drag image to reposition. Double click to magnify further.

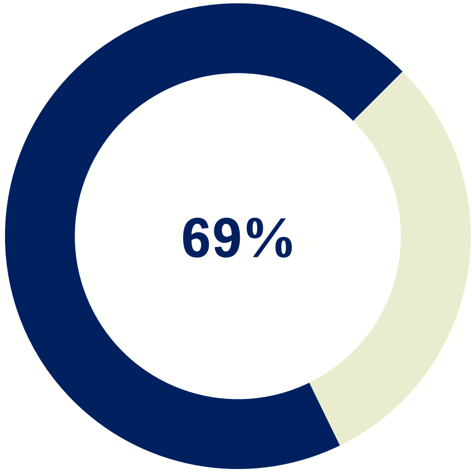
Colditz and Wei. Annu. Rev. Public Health 2012.33:137-56.

Colorectal Cancer By the Numbers

	Then	Now
Incidence	56.4 new cases per 100,000 people (1999)	38.4 new cases per 100,000 people (2013)
Mortality	20.9 deaths per 100,000 people (1999)	14.5 deaths per 100,000 people (2013)
5-year Relative Survival	49.8% (1975-1977)	65.1% (2006-2012)

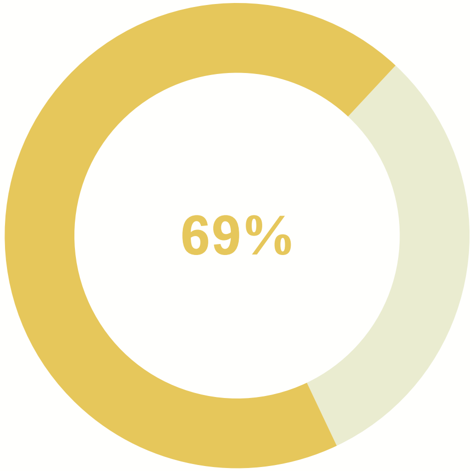
Sources:
Incidence and Mortality: : 1999-2012 *United States Cancer Statistics* Incidence and Mortality Web-based Report. www.cdc.gov/uscs
Survival: SEER Cancer Statistics Review, 1975-2012. http://seer.cancer.gov/csr/1975_2012/

Higher Rates of Up-to-Date with CRC Screening



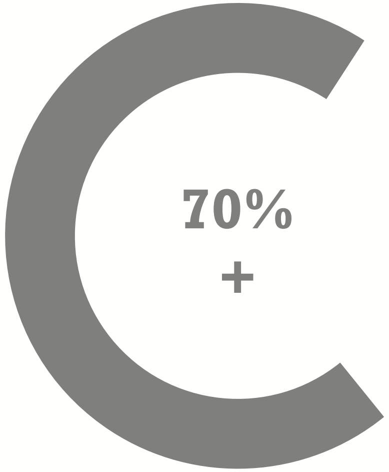
Health Insurance

Insured individuals more than twice as likely as non-insured to be up-to-date



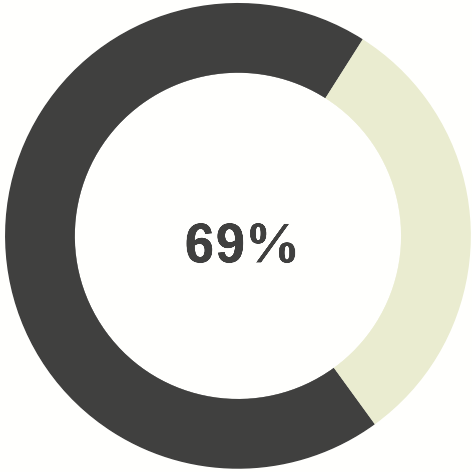
Regular Health Care

69% of individuals with a regular health care provider are up-to-date



Higher Income

More than 70% of individuals with an income $50k and above are up-to-date

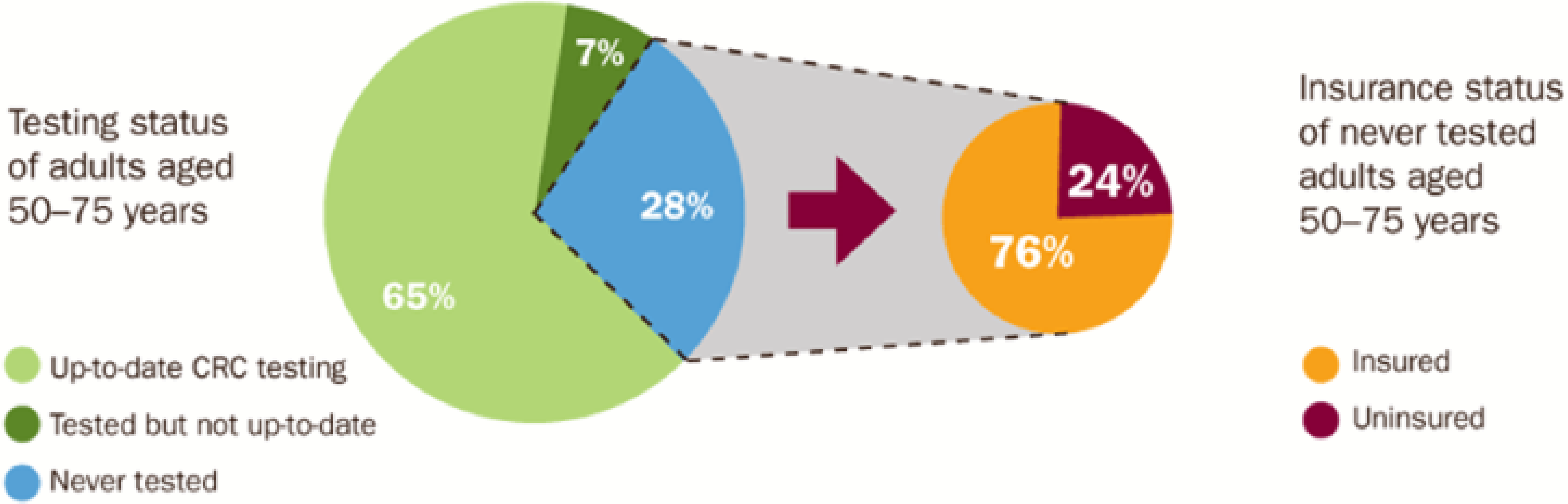


Higher Education level

Adults with at least some college are more likely to be up-to-date

Source: BRFSS, 2014

Insurance Status and Screening



Source: Centers for Disease Control and Prevention. Vital signs: colorectal cancer screening test use--United States, 2012. *MMWR Morb Mortal Wkly Rep*. 2013;62(44):881-8.

GEOGRAPHIC DISPARITIES AND TEMPORAL TRENDS IN THE COLONOSCOPY WORKFORCE

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ASSISTANT PROFESSOR OF EPIDEMIOLOGY
UNIVERSITY OF SOUTH CAROLINA

MARCH 17, 2017

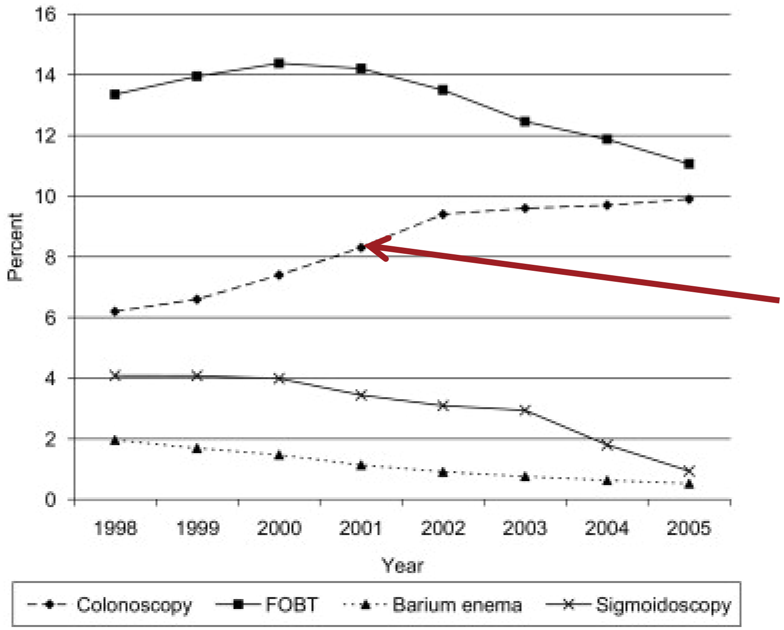
BACKGROUND

Colorectal cancer (CRC) is the third most common cancer, and the second leading cause of cancer death for both men and women.

- Screening is recommended for average-risk persons aged 50-75 yrs.

BACKGROUND

Colonoscopy has become the favored screening modality over time.



Coverage for colonoscopy among average-risk began

Figure 1.

Colorectal cancer test-use trends for U.S. fee-for-service Medicare enrollees aged ≥65 years, 1998–2005 Data sources: Medicare fee-for-service claims for CRC test in all settings conducted in 1998–2005 and the Medicare enrollment database

ACS MRSG

National data suggests that the demand for colonoscopy is greater than the supply of providers.

Selected research findings:

- Using SEER-Medicare data, Haas et al. found substantial variation in endoscopy use across counties.
- Mobley et al. found that increased distance to closest endoscopy provider was a predictor of lower utilization of screening and later-stage CRC diagnosis among Medicare beneficiaries.
- Soneji et al. found that state-level gastroenterologist density increased the probability of recent colorectal cancer screening.

References available upon request.

BACKGROUND

The literature is mixed on whether generalists can perform colonoscopy as well as gastroenterologists.

- Regardless of specialty, annual volume seems important.
- In rural areas, generalists may fill a need for colonscopy.

Our study aims to examine the extent to which colonoscopy providers of different specialties perform colonoscopies in South Carolina, by annual procedure volume and urban/rural location.

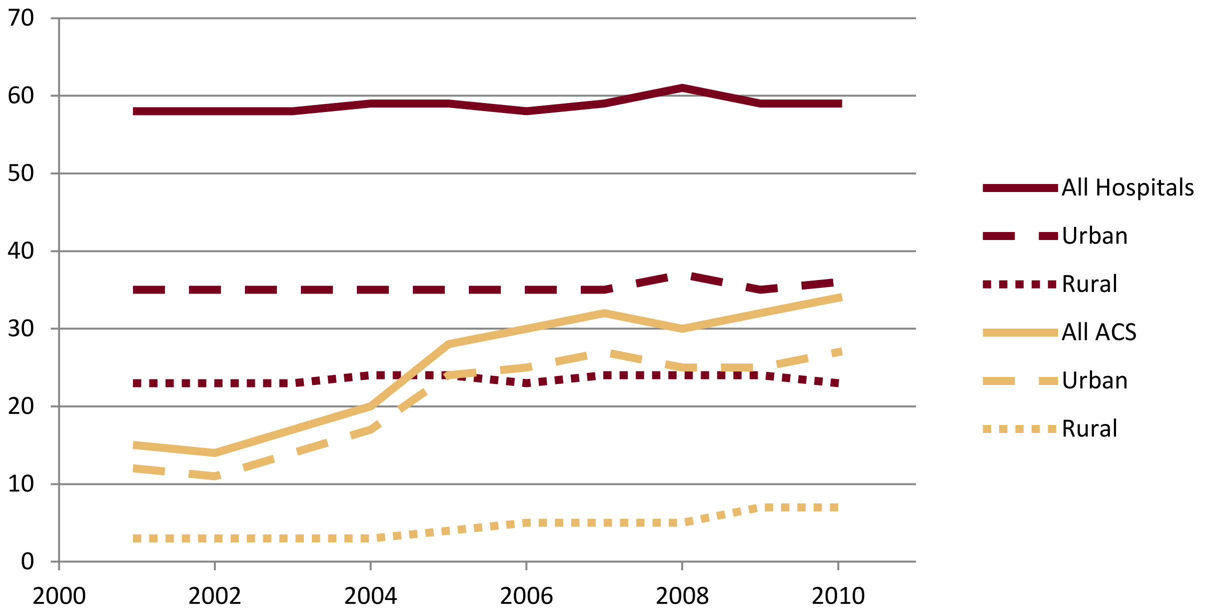
METHODS

Using the SC Ambulatory Surgery Discharge database, we conducted a retrospective analysis of all colonoscopy procedures between 2001-2010 among persons 50-74 years

- Colonoscopy center = a facility (hospital or ambulatory surgery center) performing ≥1 colonoscopy in any year
- Colonoscopy provider = physicians who performed ≥1 colonoscopy to individuals aged 50-74 years in any year
  - Medical specialty: Board of Labor & Licensing/NPI Registry
  - Categories: gastroenterology (GE), general surgery (GS), internal medicine (IM), colon and rectal surgery (CRS), and family medicine (FM). They perform >99% of colonoscopies.

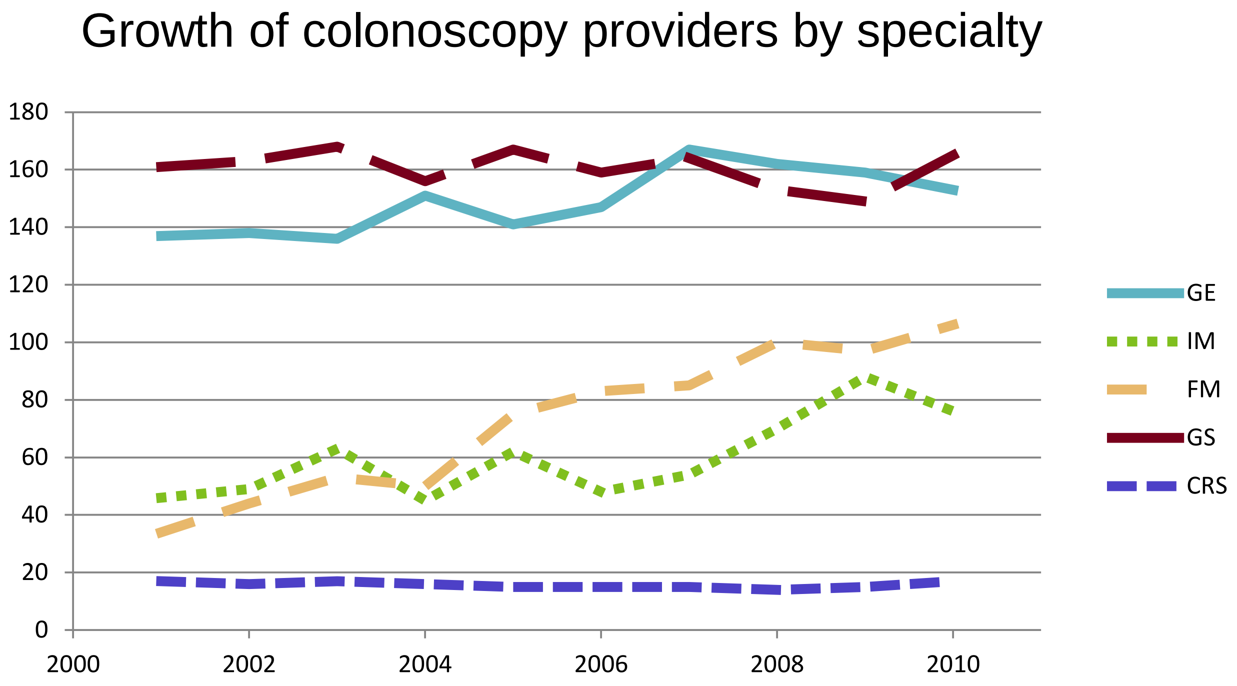
RESULTS

Trends in the type of facilities performing colonoscopy, by rurality



Ambulatory care surgery centers have had major gains (+125%) versus hospitals (+2%), particularly in urban areas (+230%).

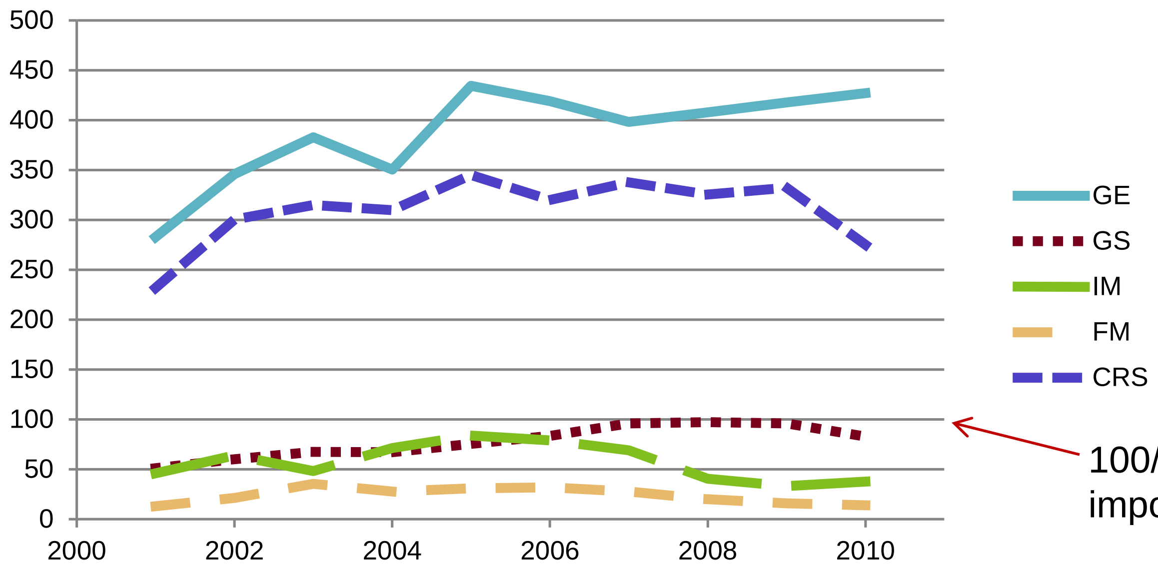
RESULTS



The number of internists and family physicians performing colonoscopies increased most (+165% and +312%, respectively).

RESULTS

Changes in average procedure volume by specialty



100/year is an important threshold

Despite more IM and FM physicians doing colonoscopy, their annual procedures volumes stayed fairly constant.

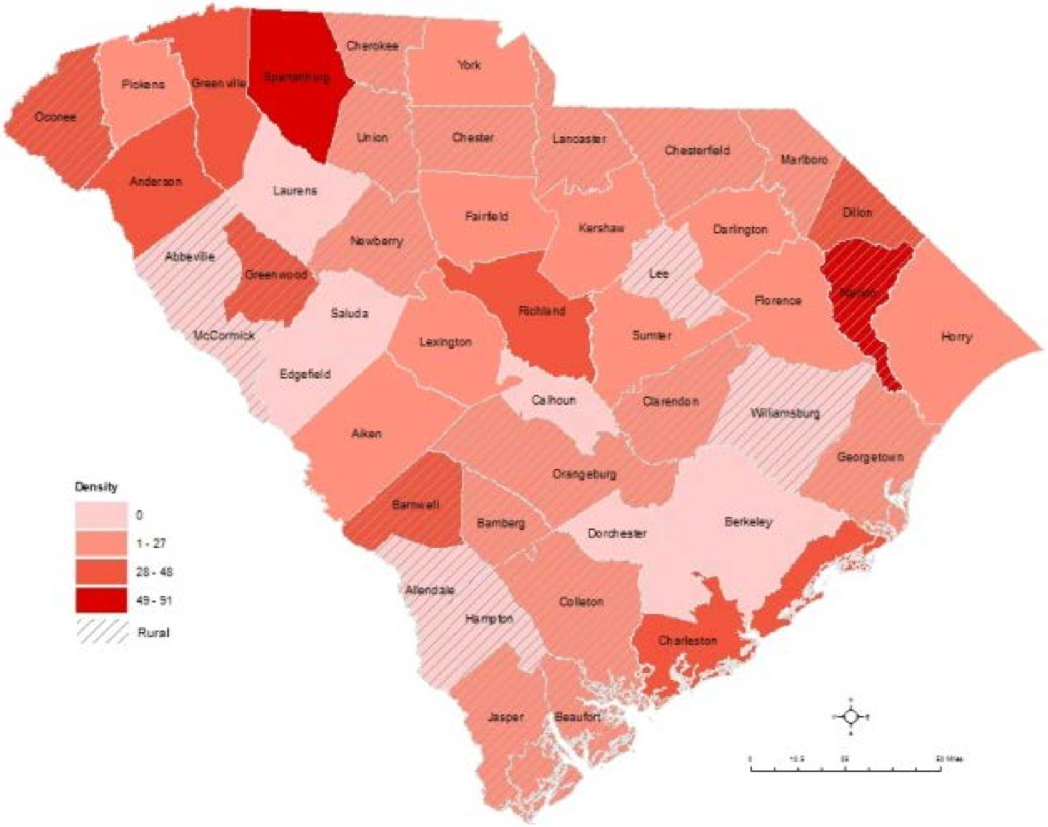
RESULTS

	All[a]	GE	GS	IM	FM	CRS
Overall Distribution, n (%)	583 (100)	153 (26.2)	165 (28.3)	76 (13.0)	106 (18.2)	17 (2.9)
Overall Annual Volume[c], mean (SD)	152 (240)	426 (268)	83 (102)	38 (197)	14 (38)	275 (192)
Primary Office Setting, n (%)						
Urban County	399 (68.4)	133 (86.9)	117 (70.9)	50 (65.8)	40 (37.7)	17 (100.0)
Rural County	184 (31.6)	20 (13.1)	48 (29.1)	26 (34.2)	66 (62.3)	N/A
Hospital	456 (78.2)	61 (39.9)	149 (90.3)	69 (90.8)	99 (93.4)	15 (88.2)
Ambulatory Surgery	127 (21.8)	92 60.1	16 9.7	7 9.2	7 6.6	2 (11.8)

[a] Includes providers not classified in one of the 5 predominant medical specialties providing colonoscopies.

RESULTS

Density of provider per 100,000 persons aged 50-74 years



* Only colonoscopy providers who performed 10 or more colonoscopies in 2010 were included, to more accurately represent colonoscopy capacity.

CONCLUSIONS

Observed a major shift in practice settings for colonoscopy, where the number of ASCs has substantially increased, mostly in urban counties.

Disparities in provider availability between urban and rural counties is widening.

- GI availability increased 17% in urban, decreased 13% in rural.

CHALLENGES

- Will physicians come together across specialty lines to ensure better supply?
- More research needed to examine colonoscopy effectiveness and adverse events among generalists.
- Repeal of ACA likely to remove requirement that private insurers fully cover screening colonoscopy (per USPSTF guidelines).
    - Loophole in Medicare to cover screening colonoscopy that results in a polyp removal (Bill introduced: HR 1017/S 479)

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Cassie Odahowski, MSPH

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Lee Mobley, PhD

Mario Schootman, PhD

Donna Jeffe, PhD

Nicholas Davidson, MD

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- **MRSG-15-148-01-CPHPS from American Cancer Society (Eberth, Mobley, Probst, Schootman)**
- **5U1CRH0311-12-00 from FORHP (Eberth, Probst)**
- **P30CA091842 from NIH-NCI (Jeffe)**
- **HL-38180, DK-56260, and DK-52574 from NIH, and R56AG049503 from NIH-NIA (Schootman, Davidson)**

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Improving Colorectal Cancer Screening in Low Income Populations: Visit-based Approaches

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University of North Carolina – Chapel Hill

1ST ANNUAL CANCER HEALTH DISPARITIES SYMPOSIUM
Promoting Cancer Equity in the Southeast
Charleston, South Carolina

UNC LINEBERGER

American Cancer Society®

UNC THE CECIL G. SHEPS CENTER FOR HEALTH SERVICES RESEARCH

Agenda

- Regional work in NC
  - Carolina Cancer Screening Initiative
- Background
  - Colorectal cancer (CRC) burden and disparities
  - 2016 USPSTF CRC Screening Guidelines
- Randomized trial of decision aid plus patient navigation

CAROLINA
Cancer Screening Initiative

- Multi-disciplinary effort aimed at improving delivery of appropriate, evidence-based cancer screening
- Part of UNC Lineberger Comprehensive Cancer Center's commitment to reduce cancer burden in NC
- Supported by the University Cancer Research Fund

Colorectal cancer

- A leading cause of cancer death in the United States
  - About 49,000 deaths in 2016
- Screening is effective but underused, especially in vulnerable populations
  - Medicaid, Uninsured, Latinos
- National goal: 80% by 2018
- Effective interventions needed to improve screening in vulnerable populations

Population	% Current with CRC screening
US Overall	62.4
Race	
White	63.7
Black	59.3
Am. Indian/ AN	48.4
Asian	52.1
Ethnicity	
Non-Hispanic	64.2
Hispanic	47.4

White A, Thompson TD, White MC, et al. Cancer Screening Test Use — United States, 2015. MMWR Morb Mortal Wkly Rep 2017;66:201–206.

Population	% Current with CRC screening
US Overall	62.4
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White A, Thompson TD, White MC, et al. Cancer Screening Test Use — United States, 2015. MMWR Morb Mortal Wkly Rep 2017;66:201–206.

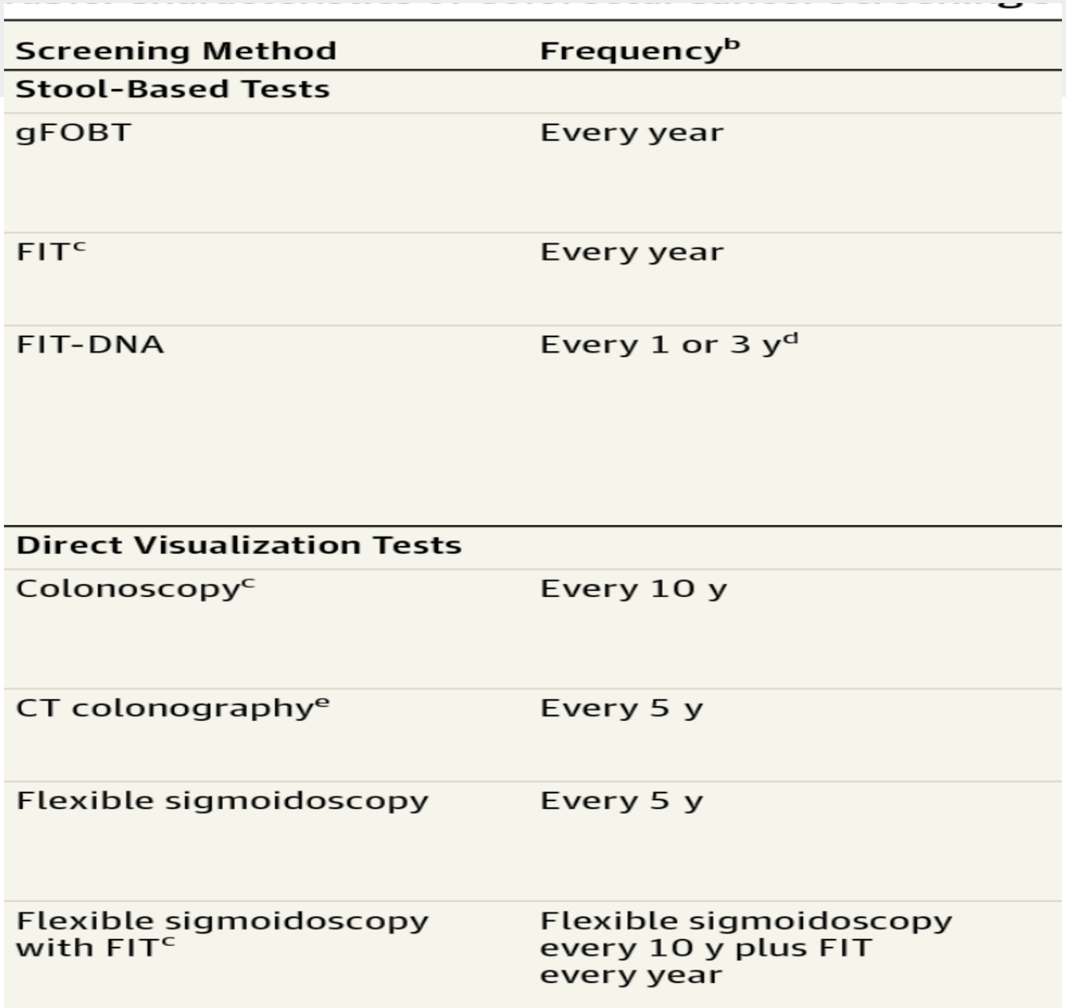
2016 USPSTF Statement

- CRC screening in average-risk, adults aged 50-75 is of substantial net benefit.
- Multiple screening strategies are available to choose from, with different levels of supporting evidence and unique advantages and limitations.
- There are no empirical data showing that any of the reviewed strategies provide a greater net benefit.
- CRC screening is a substantially underused prevention strategy in the US.

JAMA. 2016;315(23):2564-2575. doi:10.1001/jama.2016.5989

The JAMA Network

From: **Screening for Colorectal Cancer US Preventive Services Task Force Recommendation Statement**



Screening Method	Frequency[b]
Stool-Based Tests	
gFOBT	Every year
FIT[c]	Every year
FIT-DNA	Every 1 or 3 y[d]
Direct Visualization Tests	
Colonoscopy[c]	Every 10 y
CT colonography[e]	Every 5 y
Flexible sigmoidoscopy	Every 5 y
Flexible sigmoidoscopy with FIT[c]	Flexible sigmoidoscopy every 10 y plus FIT every year

UNC LINEBERGER

JAMA. 2016;315(23):2564-2575. doi:10.1001/jama.2016.5989

UNC THE CECIL G. SHEPS CENTER FOR HEALTH SERVICES RESEARCH

Combining a patient decision aid and patient navigation to improve colorectal cancer screening in vulnerable patients

A randomized controlled trial

Funding: American Cancer Society #RSG-13-165-01-CPPB

CRC Screening Decision Aids

- Can help address screening barriers
  - Lack of time to discuss screening options, especially FOBT/FIT
  - Language, culture, literacy
- Increase screening knowledge, intent, test ordering
- BUT, have only modest effects on test completion
  - absolute increase 8% (95% CI 6%, 11%)*

*Volk, et al., *Am. J Prev. Med.,* 2016

Patient Navigation for CRC Screening

- Patient navigation can help patients overcome barriers to test completion
- Can help address:
  - Test ordering (getting FOBT cards, colonoscopy scheduled)
  - Psychosocial barriers (fear, self-efficacy)
  - Financial barriers (un- or under-insured)
  - Logistical barriers (returning cards, transportation to endoscopy center)

Percac-Lima, *JAMA Internal Med.* 2016:176(7)
Percac-Lima *JGIM,* February 2009, 24(2)
Dietrich, *Ann. Int. Med*. 2006; 144(8)

Decision Aid + Patient Navigation

- Potentially complementary
- Address different barriers in screening process
  - Decision aids act “proximally”
  - Patient navigation acts “distally”
- No study has tested a combined decision aid and patient navigation intervention

Randomized Controlled Trial of Decision Aid + Patient Navigation

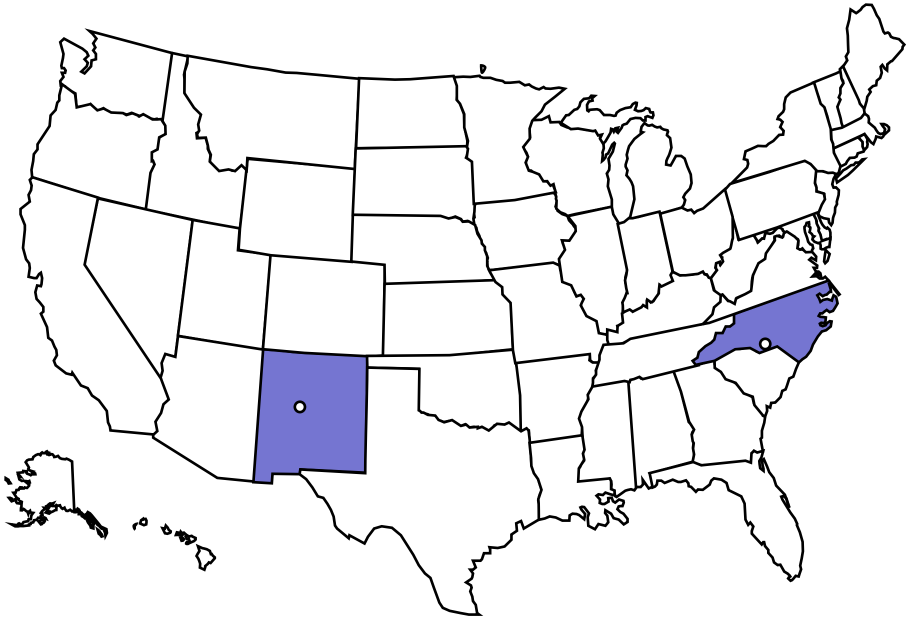
Overall purpose: determine effect of combined intervention on CRC screening in a safety-net primary care setting

Decision Aid

\+

Patient Navigation

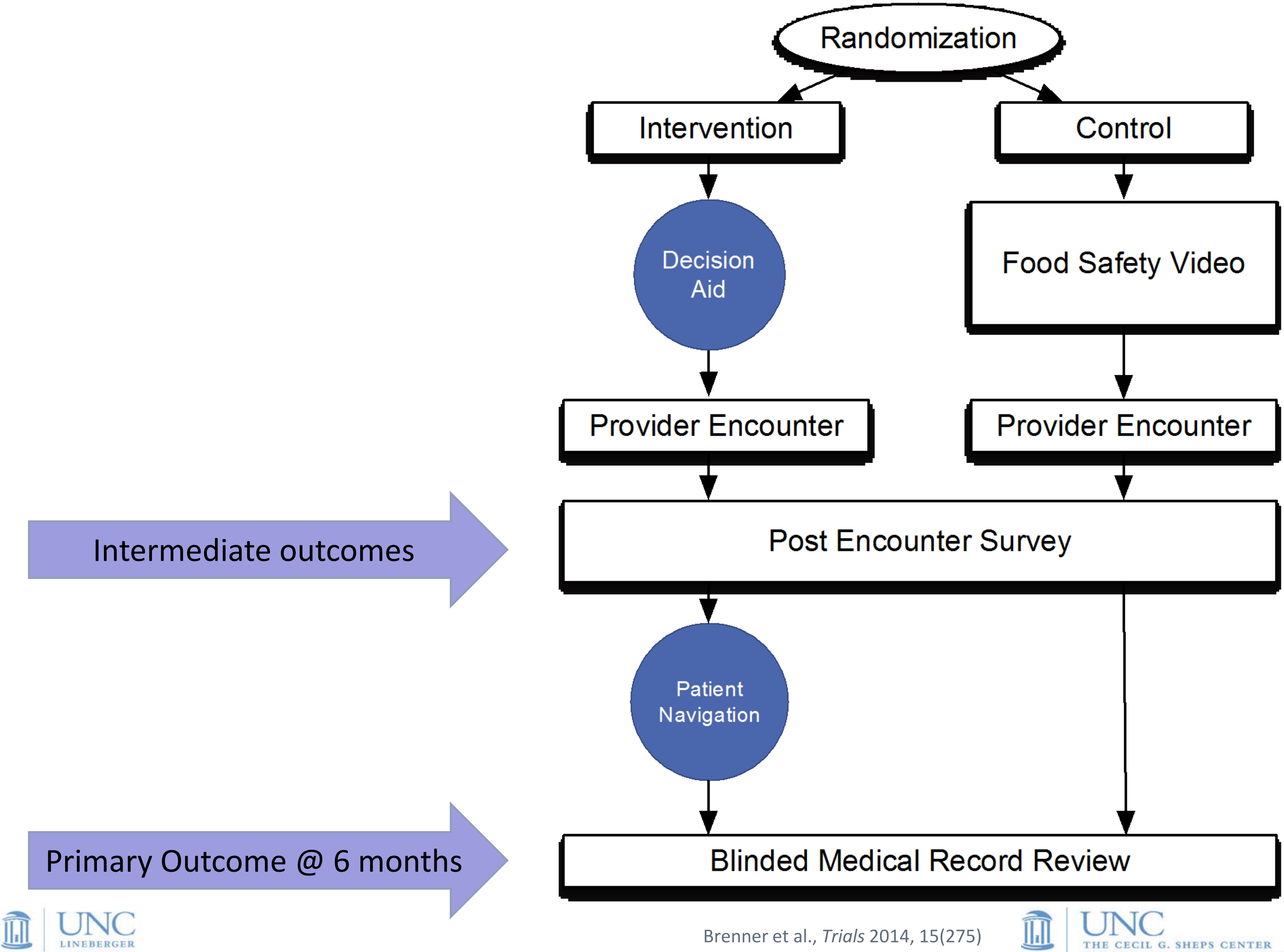
Study Setting



- 2 safety-net clinics serving diverse populations (esp. Latinos)
- Charlotte, NC site:
  - Health system-affiliated, community health center
  - Attendings and mid-levels (n=8)
- Albuquerque, NM site:
  - Community health center affiliated with a university
  - Attendings, residents, and mid-levels (n=25)

Eligible Population

- Primary care patients
- Ages 50-75
- At average risk for CRC
- Not current with screening
- English or Spanish-speaking
- Attending a clinic visit



Brenner et al., *Trials* 2014, 15(275)

Decision Aid

15 minute video

CHOICE

FOBT/FIT

Colonoscopy

OPCIONES

Pignone. et al., *Annals of Internal Medicine,* 2000, 133(10)
Ko, Reuland, et al., *Journal of Health Comm.*, 2014, 19(2)

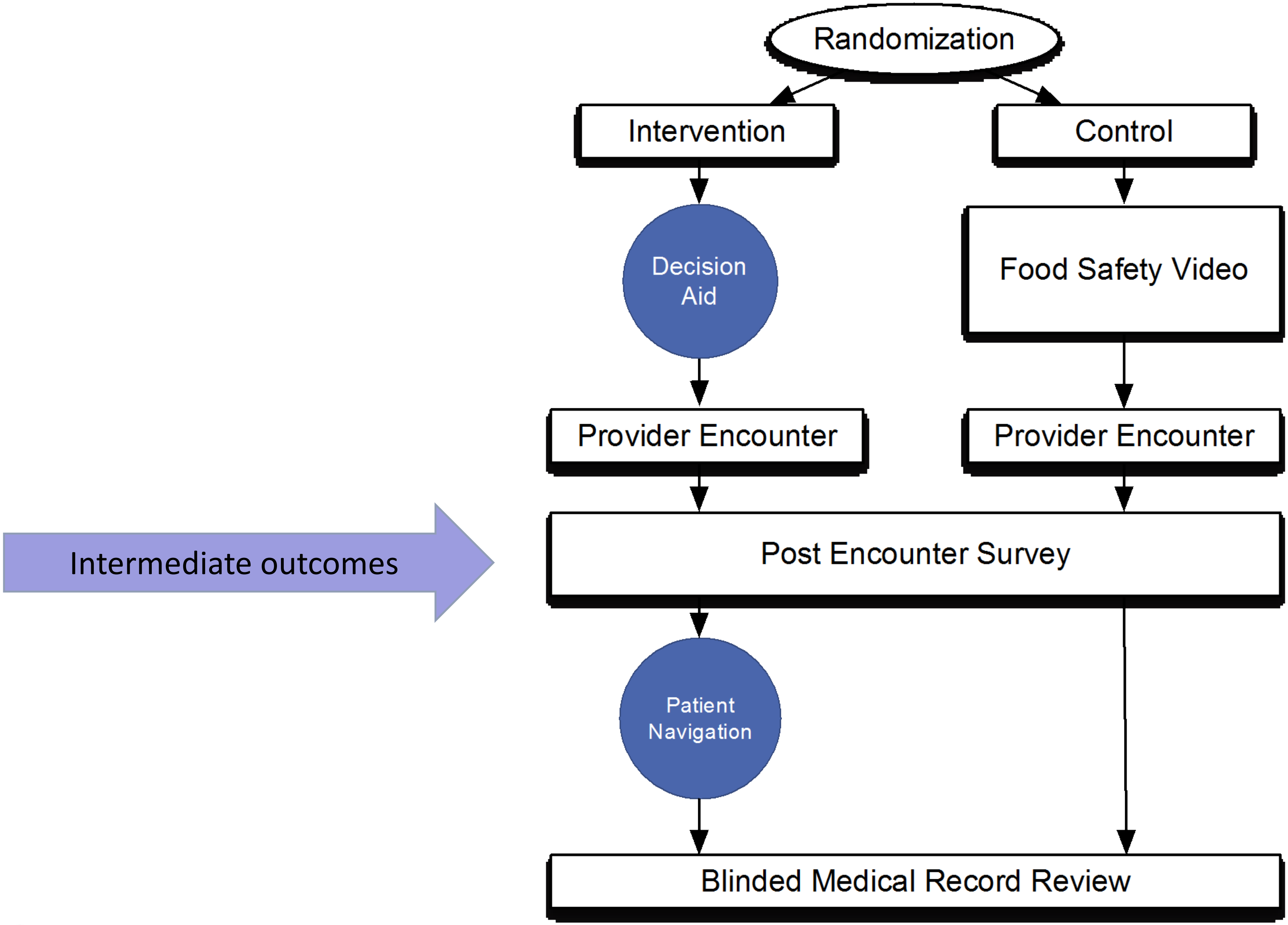
Patient navigators

- Bilingual employees of clinic/health system:
  - Medical assistant (2), MSW (1), or MPH (1)
- Received 12 h of training
- Met participants after encounter
  - Facilitated screening, tailored to readiness, test preferences, individual barriers
  - Provided FIT/FOBT kits if appropriate (standing orders)
- Tracked patients for screening
- Attempted to contact unscreened patients at two-week intervals

Participant Characteristics

	Intervention n = 133	Control n = 132
Age (years)	58	58
Female	66%	64%
Race/Ethnicity		
Latino	56%	67%
Non-Latino White	17%	14%
Non-Latino Black	18%	16%
Language		
Prefer Spanish	41%	48%
Education		
Less than HS	46%	46%
Health Literacy*		
Limited	42%	34%
Income		
<$20,000	77%	78%
Insurance		
None	35%	33%
Site		
NM (n=164)	50%	51%
NC (n=101)	50%	49%

*Chew, et al., *JGIM*, 2008; 23(5)



Intermediate outcomes

Randomization

Intervention

Control

Decision Aid

Food Safety Video

Provider Encounter

Provider Encounter

Post Encounter Survey

Patient Navigation

Blinded Medical Record Review

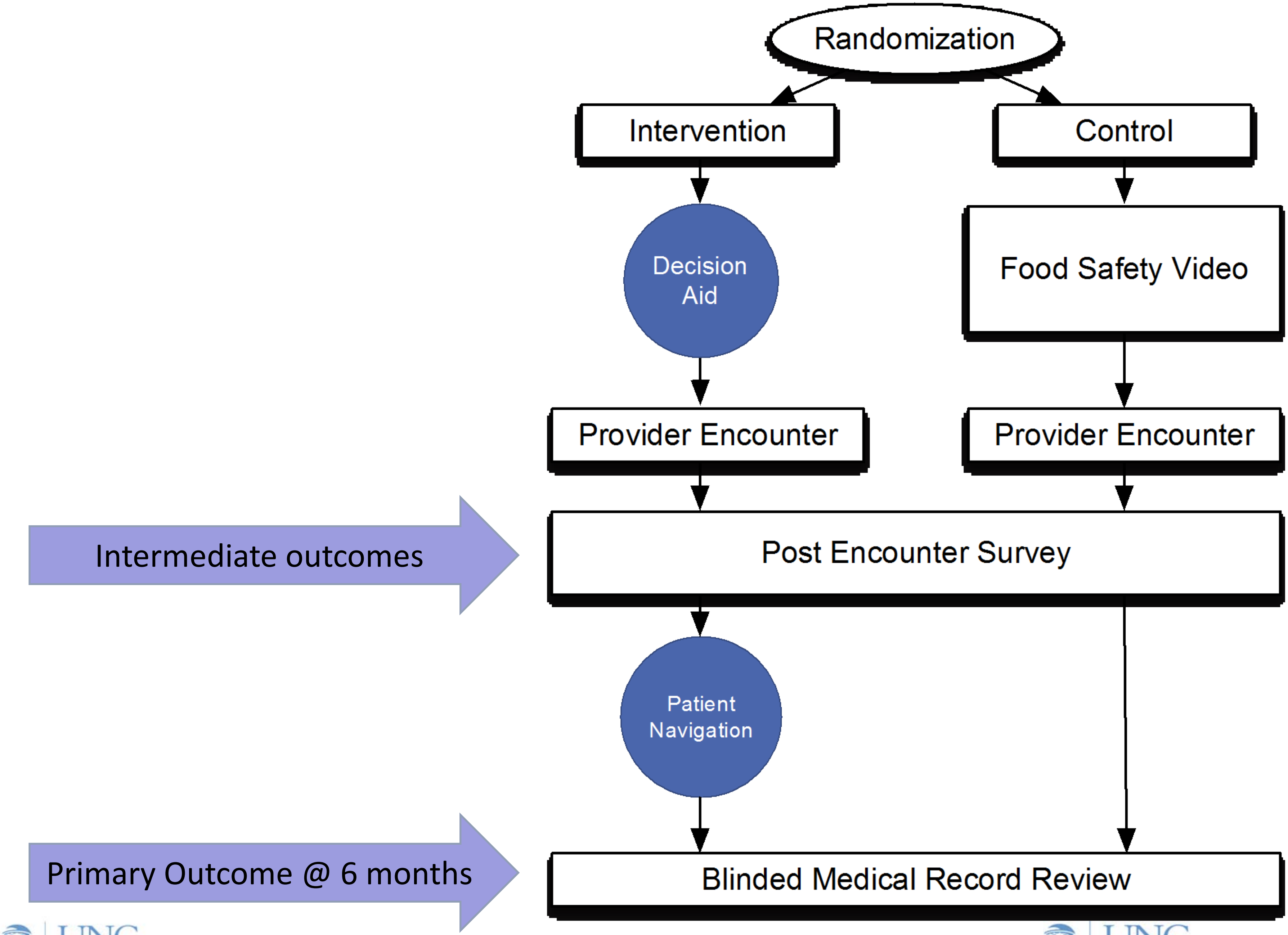
Brenner et al., *Trials* 2014, 15(275)

What happens if patients view a CRC decision aid before a provider visit?

- Knowledge about CRC screening increases
- Patient-provider CRC screening discussions increase
- Patients more likely to have a specific test preference
- Patients more likely to have a screening test ordered

Decision Aid

Brenner, et al., *AJPM.*,2016, 51(4)



Randomization

Intervention

Control

Decision Aid

Food Safety Video

Provider Encounter

Provider Encounter

Intermediate outcomes

Post Encounter Survey

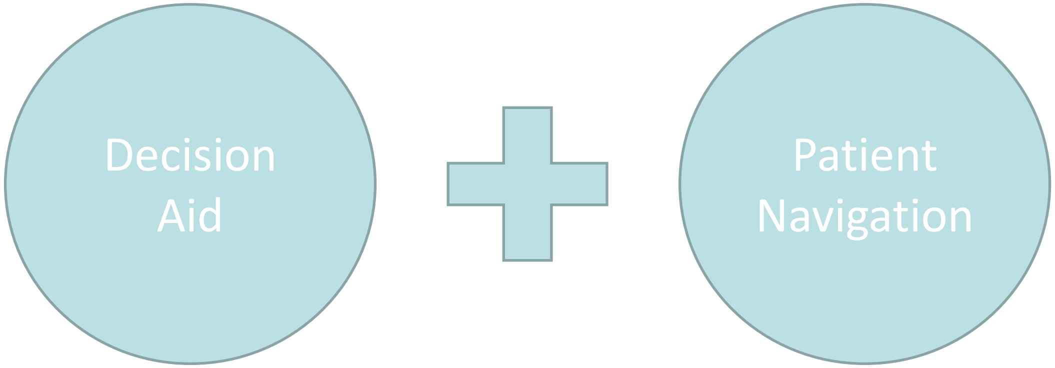
Patient Navigation

Primary Outcome @ 6 months

Blinded Medical Record Review

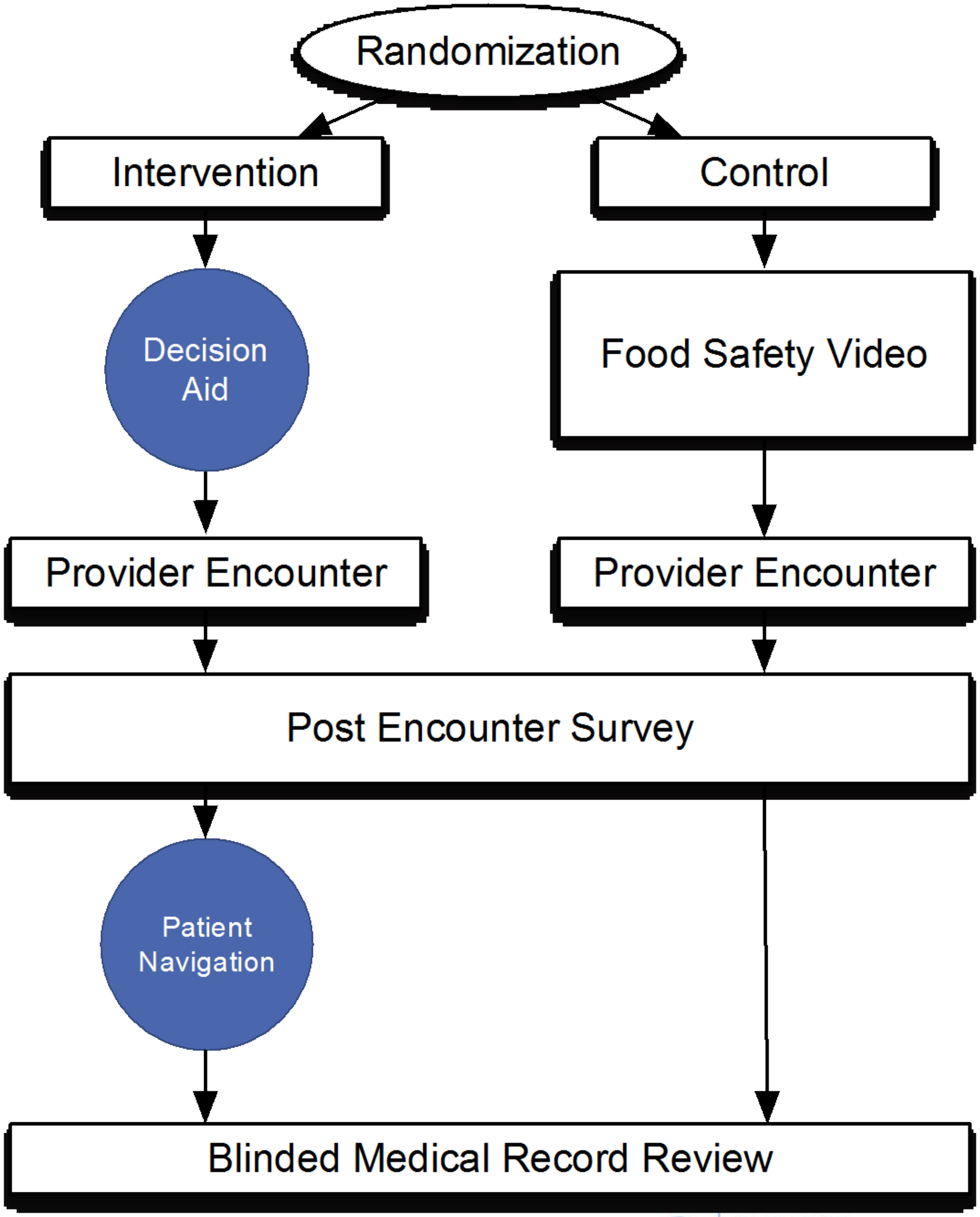
Brenner et al., *Trials* 2014, 15(275)

What about screening test completion?



Decision Aid

Patient Navigation



Randomization

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Decision Aid

Food Safety Video

Provider Encounter

Provider Encounter

Post Encounter Survey

Patient Navigation

Blinded Medical Record Review

Primary Outcome @ 6 months

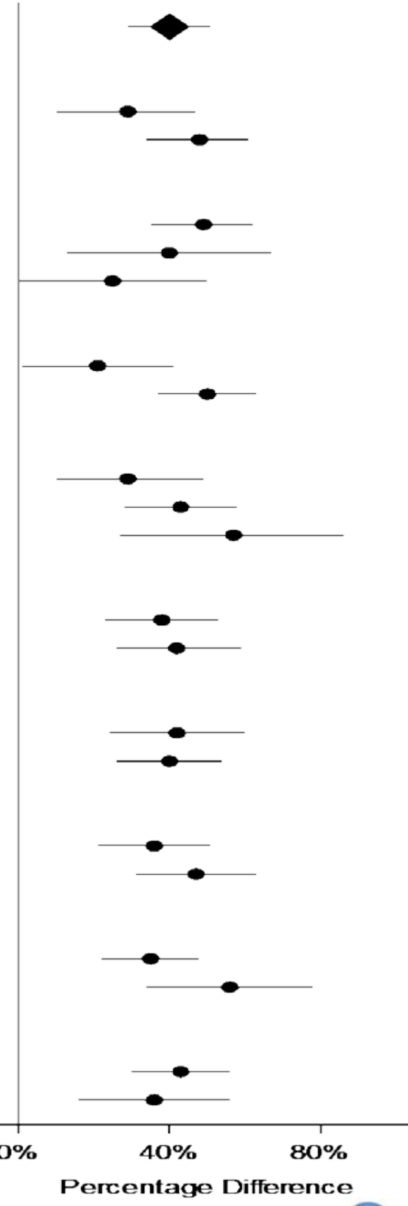
Brenner et al., *Trials* 2014, 15(275)

Primary Outcome:
CRC Screening Test Completion

	Intervention (n=133)	Control (n=132)	Adjusted Difference*
Any Screening Test Completed	**68%**	**27%**	**40.3% (29.3%, 51.3%)**
FOBT/FIT	*54%*	*21%*	
Colonoscopy	*14%*	*6%*	

*Adjusted for study site; p<0.001

Subgroups	n	%	Diff.	95%CI	P-value[a]
All Eligible Patients	265	100%	40%	(29%,51%)	
Site					0.101
NC	101	38%	29%	(10%,47%)	
NM	164	62%	48%	(34%,61%)	
Race/Ethnicity					0.167
Latino	164	62%	49%	(35%,62%)	
Non-Latino White	40	15%	40%	(13%,67%)	
Non-Latino Black/Mixed Race	61	23%	25%	(0%,50%)	
Sex					0.015
Male	92	35%	21%	(1%,41%)	
Female	173	65%	50%	(37%,63%)	
Insurance					0.285
None	91	34%	29%	(10%,49%)	
Public	142	54%	43%	(28%,58%)	
Private	32	12%	57%	(27%,86%)	
Education level					0.737
High school or higher	143	54%	38%	(23%,53%)	
Less than high school	122	46%	42%	(26%,59%)	
Literacy level					0.824
Limited	101	38%	42%	(24%,60%)	
Adequate	164	62%	40%	(26%,54%)	
Language preference					0.291
English	147	55%	36%	(21%,51%)	
Spanish	118	45%	47%	(31%,63%)	
Income*				Text	0.134
Up to $20,000	191	72%	35%	(22%,48%)	
More than $20,000	55	21%	56%	(34%,78%)	
Employed					0.715
No	187	71%	43%	(30%,56%)	
Yes	78	29%	36%	(16%,56%)	



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[a] Test for interaction

Limitations

- Unable to separate effects of decision aid and patient navigation
- Individual-level randomization could have led to some contamination of “usual care”
- Only two sites
- The research study supported the navigator

Conclusions

Systematically offering a primary care patients a decision aid and patient navigation

- substantially increased CRC screening completion
- was effective across diverse subgroups

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UNM

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Carolinas HealthCare System

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  - Lineberger Comprehensive Cancer Center

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UNC LINEBERGER

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UNC
THE CECIL G. SHEPS CENTER
FOR HEALTH SERVICES RESEARCH

Discussion

Discussion points

- CRC screening is underused
- There are tradeoffs between benefits and harms/costs of different strategies
- All recommended screening strategies appear to provide <u>net</u> benefit
- Systematically providing information about screening options and direct support (navigation) substantially increases screening

Implementation in Community Health Centers

- "Knowledge" is an issue, but not the main barrier
- Main barrier is competing demands (lack of resources relative to population needs)
- To improve screening, health centers need resources to
  - Take a proactive population approach
  - Be systematic
  - Use the team to leverage brief doctor recommendations
  - Follow-up after visits, track screening and referrals
  - Conduct outreach (mailing and calling)

In a cohort of 1000 persons screened regularly from ages 50-75

	CRC deaths averted	**CRC cases averted**	**Total number of colonoscopies**	**Complications**
FIT (1 year)	22	41	1757	10
Colonoscopy (10 years)	24	52	4049	15

Adapted from: Knudsen AB, Zauber AG, Rutter CM, et al. Estimation of Benefits, Burden, and Harms of Colorectal Cancer Screening Strategies: Modeling Study for the US Preventive Services Task Force. Jama. 2016;315(23):2595-2609.

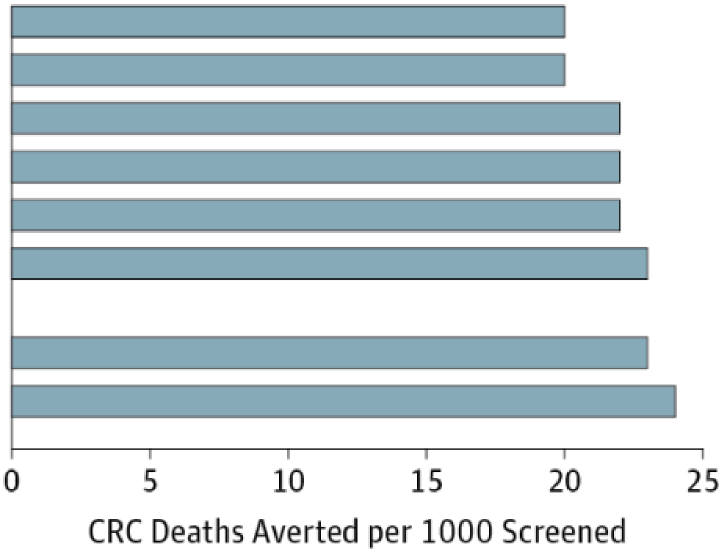
The JAMA Network

From: **Screening for Colorectal CancerUS Preventive Services Task Force Recommendation Statement**

JAMA. 2016;315(23):2564-2575. doi:10.1001/jama.2016.5989

B **Benefit:** Colorectal cancer deaths averted per 1000 individuals screened

Screening Method and Frequency	Model Estimates, CRC Deaths Averted per 1000 Screened		
	Middle	Low	High
Flexible sigmoidoscopy every 5 y	20	17	21
FIT-DNA every 3 y	20	19	22
FIT every year[a]	22	20	23
HSgFOBT every year	22	20	23
CT colonography every 5 y[b]	22	20	24
Flexible sigmoidoscopy every 10 y plus FIT every year[a]	23	22	24
FIT-DNA every year	23	22	24
Colonoscopy every 10 y[a]	24	22	24

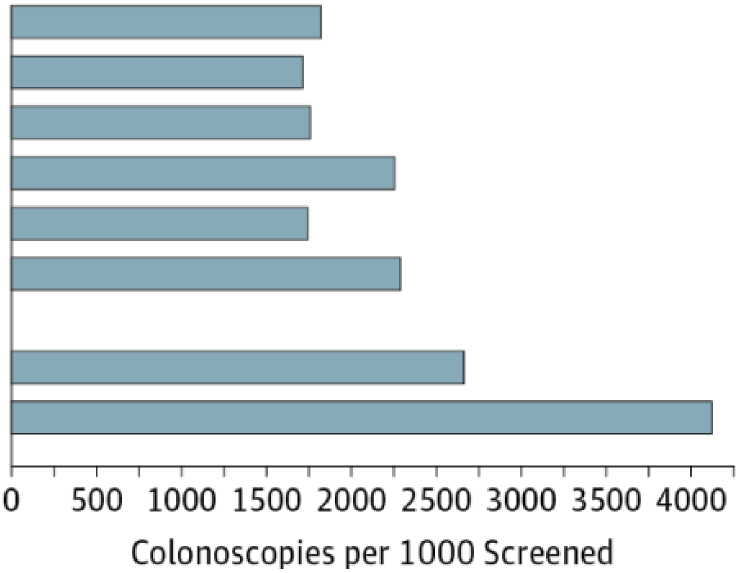


From: **Screening for Colorectal CancerUS Preventive Services Task Force Recommendation Statement**

JAMA. 2016;315(23):2564-2575. doi:10.1001/jama.2016.5989

D **Burden:** Lifetime No. of colonoscopies per 1000 individuals screened

	Model Estimates, Lifetime Colonoscopies per 1000 Screened		
Screening Method and Frequency	**Middle**	**Low**	**High**
Flexible sigmoidoscopy every 5 y	1820	1493	2287
FIT-DNA every 3 y	1714	1701	1827
FIT every year[a]	1757	1739	1899
HSgFOBT every year	2253	2230	2287
CT colonography every 5 y[b]	1743	1654	1927
Flexible sigmoidoscopy every 10 y plus FIT every year[a]	2289	2248	2490
FIT-DNA every year	2662	2601	2729
Colonoscopy every 10 y[a]	4049	4007	4101



- Among subjects who were assigned to undergo colonoscopy, 5649 subjects accepted the proposed strategy, whereas 1706 requested to be screened by means of FIT (Figure 1). Of the 5649 subjects who agreed to undergo colonoscopy, 4953 actually did so, and 1628 underwent FIT, for a participation rate of **24.6%,** according to the intention-to-screen analysis (average age, 59.1±5.5 years; proportion of subjects who were women, 53.4%)
- Among subjects who were assigned to undergo FIT, 9353 subjects accepted the proposed strategy, whereas 117 asked to be screened by colonoscopy. A total of 8983 subjects underwent FIT, and 106 underwent colonoscopy, for an overall participation rate of **34.2%**

- **Analysis of Resources**
- The numbers of subjects who needed to undergo colonoscopy to find one colorectal cancer were 191 in the colonoscopy group and 18 in the FIT group; to find any advanced neoplasm, the numbers were 10 and 2, respectively (Table 3 in the Supplementary Appendix)

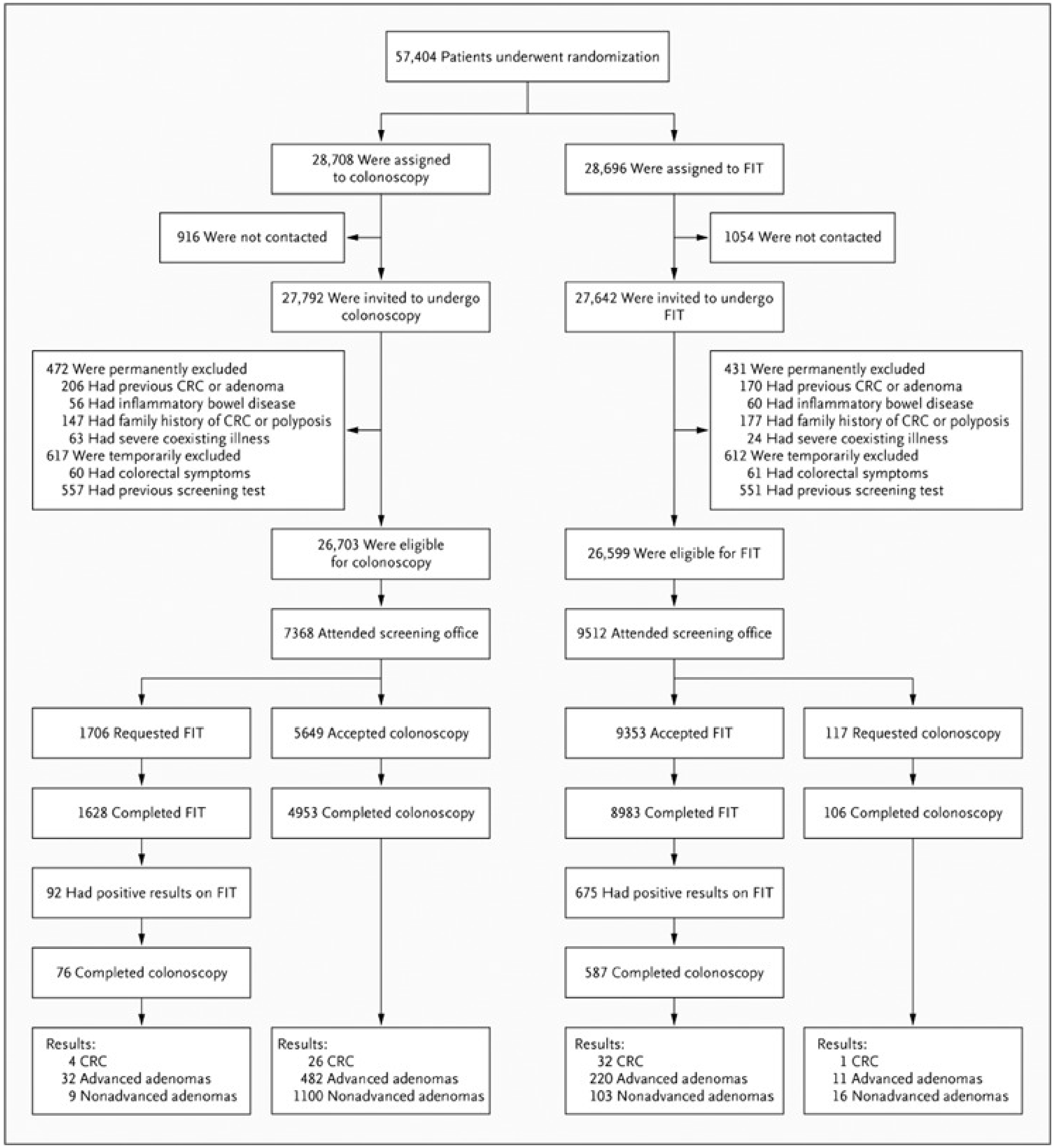
Adherence higher for FIT than colonoscopy (34.2% vs. 24.6%, P<0.001).

CRC found in 30 subjects (0.1%) in colonoscopy group and 33 subjects (0.1%) in FIT group (odds ratio, 0.99; 95% confidence interval [CI], 0.61 to 1.64; P=0.99).

Advanced adenomas detected in 514 subjects (1.9%) in colonoscopy group and 231 subjects (0.9%) in FIT group (odds ratio, 2.30; 95% CI, 1.97 to 2.69; P<0.001).

Nonadvanced adenomas detected in 1109 subjects (4.2%) in the colonoscopy group and 119 subjects (0.4%) in the FIT group (odds ratio, 9.80; 95% CI, 8.10 to 11.85; P<0.001).

Qunitero, et al. N Engl J Med; Feb 2012 Vol. 366(8):697-706



57,404 Patients underwent randomization

28,708 Were assigned to colonoscopy

916 Were not contacted

27,792 Were invited to undergo colonoscopy

472 Were permanently excluded
  206 Had previous CRC or adenoma
  56 Had inflammatory bowel disease
  147 Had family history of CRC or polyposis
  63 Had severe coexisting illness
617 Were temporarily excluded
  60 Had colorectal symptoms
  557 Had previous screening test

26,703 Were eligible for colonoscopy

7368 Attended screening office

1706 Requested FIT

1628 Completed FIT

92 Had positive results on FIT

76 Completed colonoscopy

Results:
  4 CRC
  32 Advanced adenomas
  9 Nonadvanced adenomas

5649 Accepted colonoscopy

4953 Completed colonoscopy

Results:
  26 CRC
  482 Advanced adenomas
  1100 Nonadvanced adenomas

28,696 Were assigned to FIT

1054 Were not contacted

27,642 Were invited to undergo FIT

431 Were permanently excluded
  170 Had previous CRC or adenoma
  60 Had inflammatory bowel disease
  177 Had family history of CRC or polyposis
  24 Had severe coexisting illness
612 Were temporarily excluded
  61 Had colorectal symptoms
  551 Had previous screening test

26,599 Were eligible for FIT

9512 Attended screening office

9353 Accepted FIT

8983 Completed FIT

675 Had positive results on FIT

587 Completed colonoscopy

Results:
  32 CRC
  220 Advanced adenomas
  103 Nonadvanced adenomas

117 Requested colonoscopy

106 Completed colonoscopy

Results:
  1 CRC
  11 Advanced adenomas
  16 Nonadvanced adenomas

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CAROLINA
Cancer Screening Initiative

Improving colorectal cancer screening using non-visit-based approaches (the mailed FIT approach)

Alison T Brenner, Stephanie B Wheeler, Jewels Rhode, Dana Baker, Rebecca Drechsel, Marcus Plescia, Tom Wroth, Stephanie B Wheeler, Daniel S Reuland

UNC
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Partnerships

- Mecklenburg County Public Health Department
- Community Care of North Carolina
- Community Care Partners of Greater Mecklenburg

MAY 20, 1775

Community Care
of North Carolina
Community Care Partners
of Greater Mecklenburg

Community Care
OF NORTH CAROLINA

Background

- Colorectal cancer (CRC) is a leading cause of cancer death
- CRC screening is effective but underutilized, especially in vulnerable, low-income populations
- Insurance is an important predictor of screening
- Medicaid populations tend to be screened at lower rates than other insured populations
    - 40-50%, compared with 65% in the privately insured
- National goal: 80% by 2018
- Effective interventions are needed to approach this goal

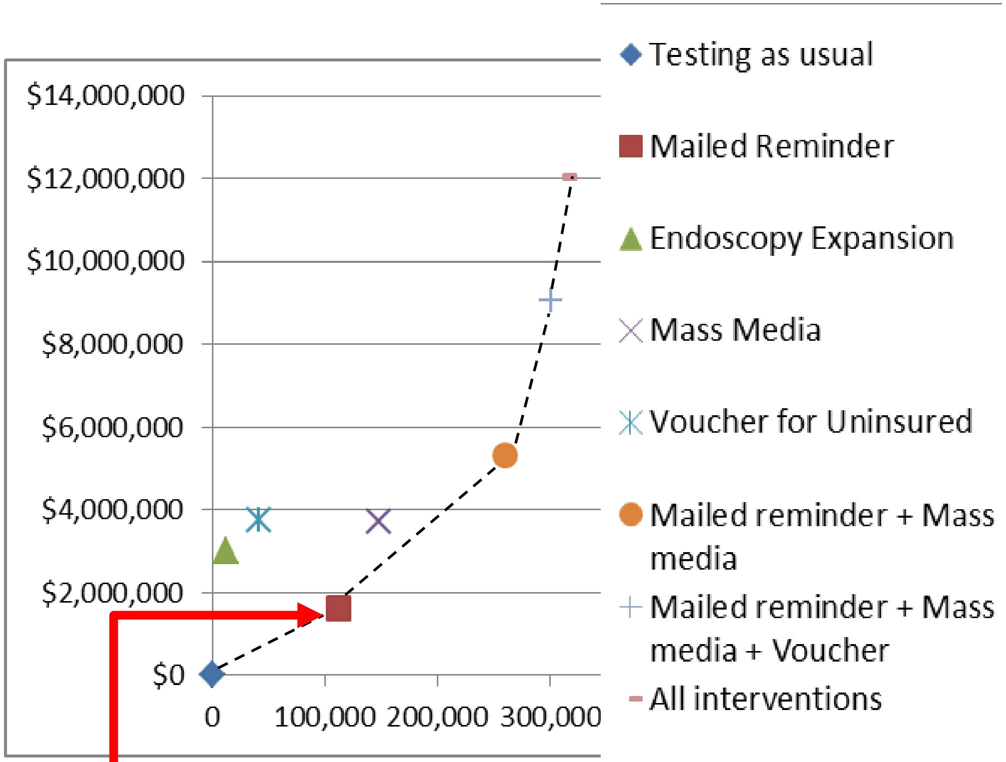
CRC Screening Testing Options

- US Preventive Services Task Force recommends several testing options including
  - Colonoscopy every 10 years
  - Fecal Immunochemical Testing (FIT) every 1 year
- FIT can be completed at home and requires no bowel preparation or dietary restrictions
- When FIT is included in the choice of CRC screening tests in low-income populations, more tend to complete screening
- Positive FIT results must be follow-up with a colonoscopy

Inadomi JM, et al. (2012) Adherence to colorectal cancer screening: a randomized clinical trial of competing strategies. Arch Intern Med.

Mailed CRC Screening Reminders

- Mailing CRC screening reminders with FIT kits has been shown to be effective in clinical settings*
  - 20-40 percentage point increase in screening completion
- We conducted simulation models specific to the NC Medicaid population**
- We found that mailed reminders would also be the most cost-effective intervention

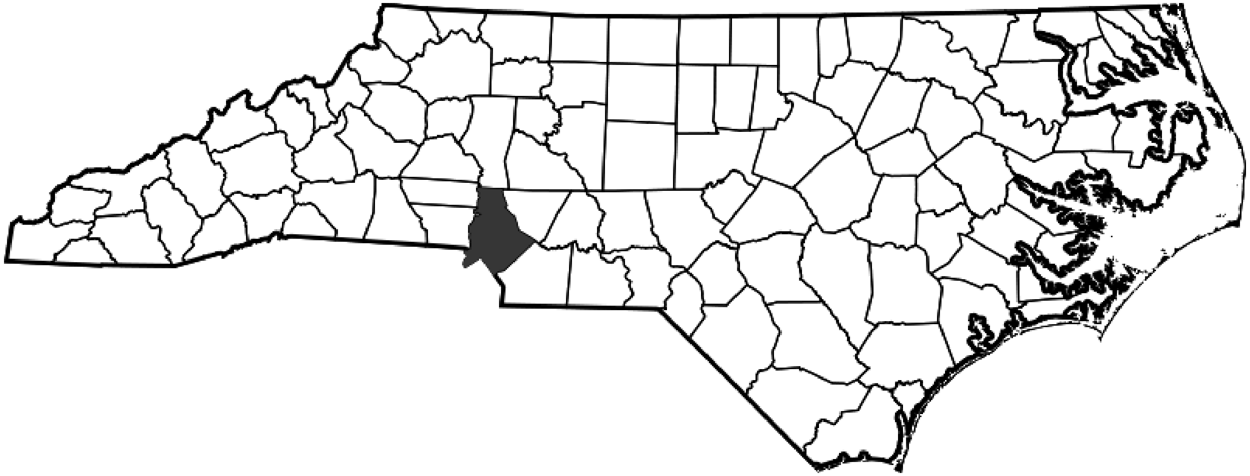


*Gupta S, et al. JAMA Intern Med 2013

**Wheeler et al (forthcoming)

Mecklenburg County

- Mecklenburg County, containing the city of Charlotte, is the most populous county in North Carolina
  - 17 endoscopy centers
- Some of the lowest screening rates in the state of NC
- Large Medicaid population



Health Department + Medicaid Managed Care

- Community Care of North Carolina (CCNC) manages Medicaid enrollment and claims in North Carolina
- Mecklenburg County Public Health Department has the capacity to distribute, track, and process FIT kits
- Community Care Partners of Greater Mecklenburg provides care coordination for Medicaid beneficiaries

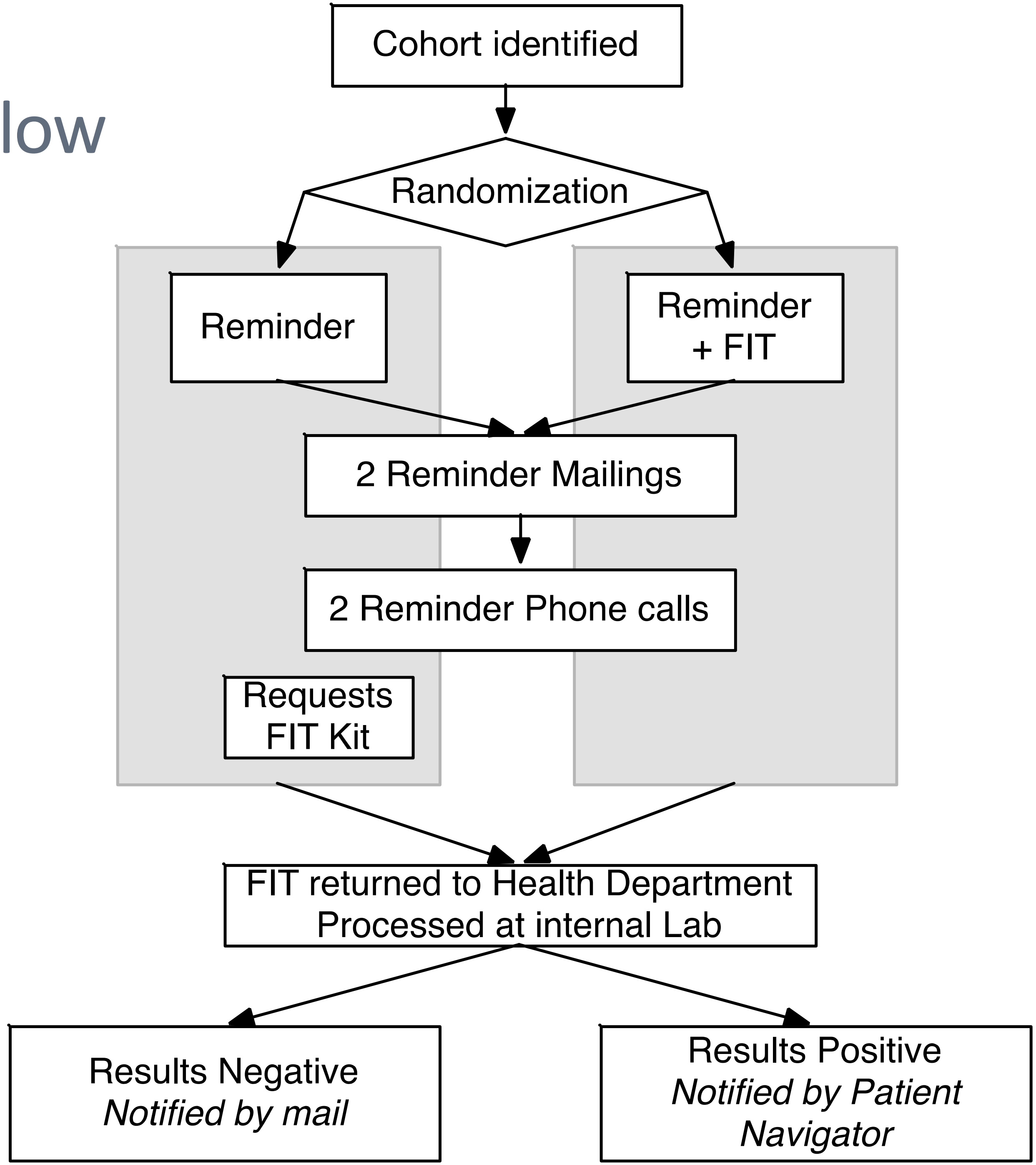
Objective

- To test the effectiveness of a mailed CRC screening reminder, with and without an included FIT kit, on CRC screening completion rates among Medicaid beneficiaries in Mecklenburg County, NC
    - Reporting here the preliminary results of the first wave of mailings

Methods

- Identified Medicaid beneficiaries living in Mecklenburg county who are:
  - 50-75
  - Not up-to-date with recommended CRC screening
  - No history of CRC, total colectomy, or major mental illness
- Randomized cohort to receive a packet from the Health Department including:
  - REMINDER GROUP: Reminder letter encouraging CRC screening with instructions for obtaining a FIT kit OR
  - FIT GROUP: Reminder letter encouraging CRC screening PLUS an included FIT kit and pre-paid return mailer
- Both groups allowed to opt out or report recent screening
- Compared response rates using chi squared test

Study Flow



Cohort identified

Randomization

Reminder

Reminder + FIT

2 Reminder Mailings

2 Reminder Phone calls

Requests FIT Kit

FIT returned to Health Department
Processed at internal Lab

Results Negative
Notified by mail

Results Positive
Notified by Patient Navigator

Results - Cohort

- We identified 2,144 potentially eligible Medicaid beneficiaries
- Initial mailings sent between October 31-November 4, 2016

Results - Response

- Included 1,042 in the initial wave
  - 528 FIT GROUP
  - 514 REMINDER GROUP
- 194 (19%) were returned to sender with a bad address
- 25 (2%) opted out of contact from the Health Department
- 76 (7%) reported recent screening
  - 59 (5%) Colonoscopy
  - 17 (2%) FOBT/other test/not stated
- FIT Group – 331 included in analysis
- Reminder – 308 included in analysis

Results - Response

- Reminder group requested 63 FIT kits

	FIT Group (n=331)	Reminder Group (n=308)	Difference (95% CI)
Returned FIT kits n(%)	70 (18%)	38(11%)	7% (2%, 11%; p=0.01)

Results – FIT Outcomes

- 108 FIT kits returned
- 4 invalid samples
- 99 Negatives results
- 5 Positives results
  - 2 follow-up colonoscopies scheduled
  - 2 in the process of being scheduled for follow up colonoscopy
  - 1 has refused

Conclusions

- A mailed CRC screening reminder program targeted at Medicaid beneficiaries and managed through a large county health department is feasible
- Modestly higher response when a FIT kit is included
- May be more cost efficient for recipients to request FIT kits

Discussion

- Previous studies testing mailed FIT programs have shown higher response rates
- Trust in care provider has been shown to be a significant predictor of CRC screening behavior in low-income populations*
- Recipients may not perceive the health departments as a care providers

*Gupta, Brenner, et al. Patient trust in physician influences colorectal cancer screening in low-income patients. Am J Prev Med 2014.

Implications

- Partnering with county health departments to deliver CRC screening may be a useful model for improving screening rates in Medicaid populations
- Cost effectiveness analyses will shed light on which model – screening reminder only vs included FIT kit – is best

Lung Cancer Screening Utilization in the United States: 2015 National Health Interview Survey Results

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Doctoral Candidate
Department of Epidemiology and Biostatistics
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Lung Cancer

- Leading cause of cancer related death in U.S.
- Over 70% of cases diagnosed in late stages
- 18% five-year survival rate overall
- 54% five-year survival rate when localized
- National Lung Screening Trial showed 20% reduction in mortality from LDCT vs. chest X-ray screening for high risk subjects

USPSTF Recommendation for LDCT Screening for Lung Cancer

- Ages 55 to 80 years
- Asymptomatic
- ≥ 30 pack-year smoking history
- Current smoker or quit ≤15 years ago

National Health Interview Survey

- Collected through the CDC National Center for Health Statistics
- Stratified, multistage area probability sampling design
- Represents all States and the District of Columbia
- Household interview survey (CAPI)

https://www.cdc.gov/nchs/nhis/about_nhis.htm

Methods

Total Sample Adult n=33,672

Exclusion Criteria:

- Unknown status for lung cancer
- Adults under age 40
- Subjects with >2 years between age at diagnosis of lung cancer and age at interview

Methods

- Estimate population screened in 2015
- Estimate population of smokers and former smokers receiving care
- Multiple Logistic Regression for factors associated with screening

Results

Use of CT and Chest Radiography for Lung Cancer Screening Before and After Publication of Screening Guidelines: Intended and Unintended Uptake

The National Lung Screening Trial (NLST) released its main findings in 2011,[1] concluding that the use of low-dose computed tomography (CT) to screen for lung cancer reduced lung cancer deaths by 20% compared with chest radiography.[1,2] The subsequent publication of new lung cancer screening (LCS) guidelines may raise the public's awareness of the clinical application of low-dose CT in screening,[3,4] leading to increased demand for screening not only by individuals who meet the eligibility criteria recommended for LCS but also by those who do not. The present study documents early experience of LCS in terms of both intended and unintended uptake of low-dose CT at the population level.

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Related article page 399

Methods | We used data from the 2010 and 2015 National Health Interview Survey (NHIS) Cancer Control Module (CCM) (https://healthcaredelivery.cancer.gov/nhis/) linked to the core questionnaire and limited our study cohort to individuals who were 40 years or older. Using smoking status and history from the CCM, we classified individuals into high-risk smokers (30 pack-years of smoking history, current smokers or those who quit smoking within the last 15 years), low-risk smokers (current or former smokers who did not meet the criteria of high-risk smokers), and never-smokers. Per the age eligibility criteria in the NLST, we defined LCS-eligible individuals as high-risk smokers aged 55 to 74 years. We identified LCS with CT using the survey question "Were any of the CAT scans of your chest area done to check for lung cancer, rather than for some other reason?" A similar question was used to identify LCS with chest radiography. Weighted analyses that accounted for the multistage survey design of the NHIS were performed to compare the utilization of CT in 2010 and 2015. This study was exempted from review and participant written informed

Figure 1. Weighted Analysis of the Rate of Lung Cancer Screening in the National Health Interview Survey by Screening Technology and Risk for Lung Cancer

No. at risk	All[a]	Never[b]	Low Risk[a]	High Risk[a]
2010				
Unweighted	213/11534	71/8479	80/4845	55/1693
Weighted	809978/63901565	269854/34497088	305951/20019179	213080/7315650
2015				
Unweighted	456/20657	143/11570	186/6517	109/1830
Weighted	1431524/68904243	464221/39656754	572895/21198030	329321/5725940

Letters

RESEARCH LETTER

Lung Cancer Screening With Low-Dose Computed Tomography in the United States—2010 to 2015

Lung cancer is the most preventable and leading cause of cancer deaths in the United States, with about 155 870 deaths each year.[1] In December 2013, the United States Preventive Services Task Force (USPSTF) recommended annual screening for lung cancer with low-dose computed tomography (LDCT) for asymptomatic persons aged 55 to 80 years who have a 30 pack or more per year smoking history and currently smoke or have quit within the past 15 years.[2] According to the 2010 National Health Interview Survey (NHIS), only 2% to 4% of high-risk smokers received LDCT for lung cancer screening in the previous year.[3] In this study, we examined whether LDCT screening has increased following the USPSTF recommendation.

Methods | We used the 2010 and 2015 NHIS, which included 2347 respondents who met the USPSTF criteria for LDCT.[2] Self-reported LDCT in the past year for lung cancer screening was the primary outcome of the study. Analyses excluded respondents with unknown (n = 6) or self-reported history of lung cancer (n = 41) or were missing LDCT testing information (n = 133), leaving 2167 adults available for analyses. Weighted prevalence of LDCT for lung cancer screening in the past year was calculated by factors of interest. Multivariable prevalence ratios of LDCT in the past year were estimated using predicted margins. All statistical analyses accounted for complex sampling design and were conducted with SAS callable SUDAAN statistical software (version 9.0.3, SAS Institute). The study was based on deidentified publicly available database and exempt from institutional review board and informed consent.

Results | From 2010 to 2015, the percentage of eligible smokers who reported LCDT screening in the past 12 months remained low and constant, from 3.3% in 2010 to 3.9% in 2015 (*P* = .60); an even lower proportion of noneligible smokers received LDCT (**Table 1**). Of the 6.8 million smokers eligible for LDCT screening in 2015, only 262 700 received it. Furthermore, there was no significant increase in screening from 2010 to 2015 for any of the sociodemographic groups, nor were there significant subgroup differences in screening, except between participants with or without a history of bronchitis (**Table 2**). Of note, over 50% (1230/2167) of smokers meeting USPSTF recommendations for LDCT screening were uninsured or Medicaid insured (Table 1).

Discussion | Screening for lung cancer using LDCT among eligible current and former smokers remained low and unchanged in 2015 following the 2013 USPSTF recommendation for annual screening. Reasons for exceptionally low uptake of screening may include gaps in smokers' knowledge regarding LDCT, lack of access to care as well as physicians' knowledge about screening recommendations[4] and reimbursement. For example, according to a 2015 survey of physicians in South Carolina, 36% of physicians correctly stated that LCDT screening should be conducted annually in high-risk individuals, and 63% of physicians did not know that Medicare covers LDCT for lung cancer screening.[4] It is also possible that physicians may be aware of LDCT screening, but have limited access to the high-volume, and high-quality radiology centers, a recommendation set forth by public health organizations[5] and a stipulation on Medicare reimbursement.[6] The decrease in the number of screening-eligible smokers from 8.4 million in 2010 to 6.8 million in 2015 reflects progress in tobacco control, and this has implications for the future provision of LDCT screening. Receipt of LDCT and smoking history were self-reported and subject to recall bias and the limited time following the USPSTF recommendation and Medicare-reimbursement are limitations of our study. Despite this, our study provides the first national estimate of LDCT following the USPSTF recommendation.

In conclusion, annual LCDT screening among heavy current and former smokers remains low and unchanged following the USPSTF recommendation despite the potential to avert thousands of lung cancer deaths each year. This underscores the need to educate clinicians and smokers about the benefit and risks of lung cancer screening for informed decision making.

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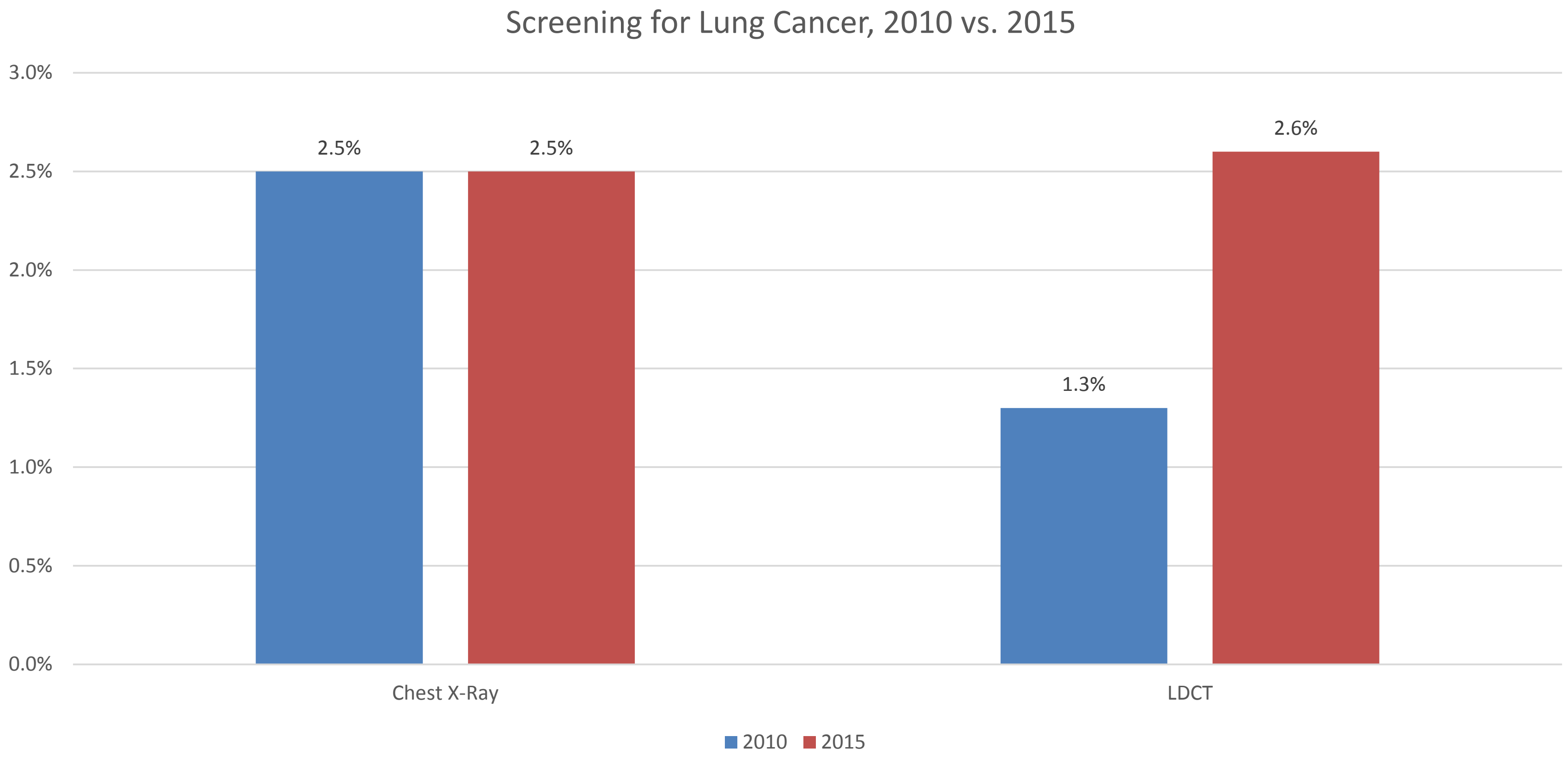
Author Contributions: Dr Fedewa had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.
Concept and design: All authors.
Acquisition, analysis, or interpretation of data: All authors.
Drafting of the manuscript: All authors.
Critical revision of the manuscript for important intellectual content: All authors.
Statistical analysis: Fedewa.

Conflict of Interest Disclosures: None reported.

Results



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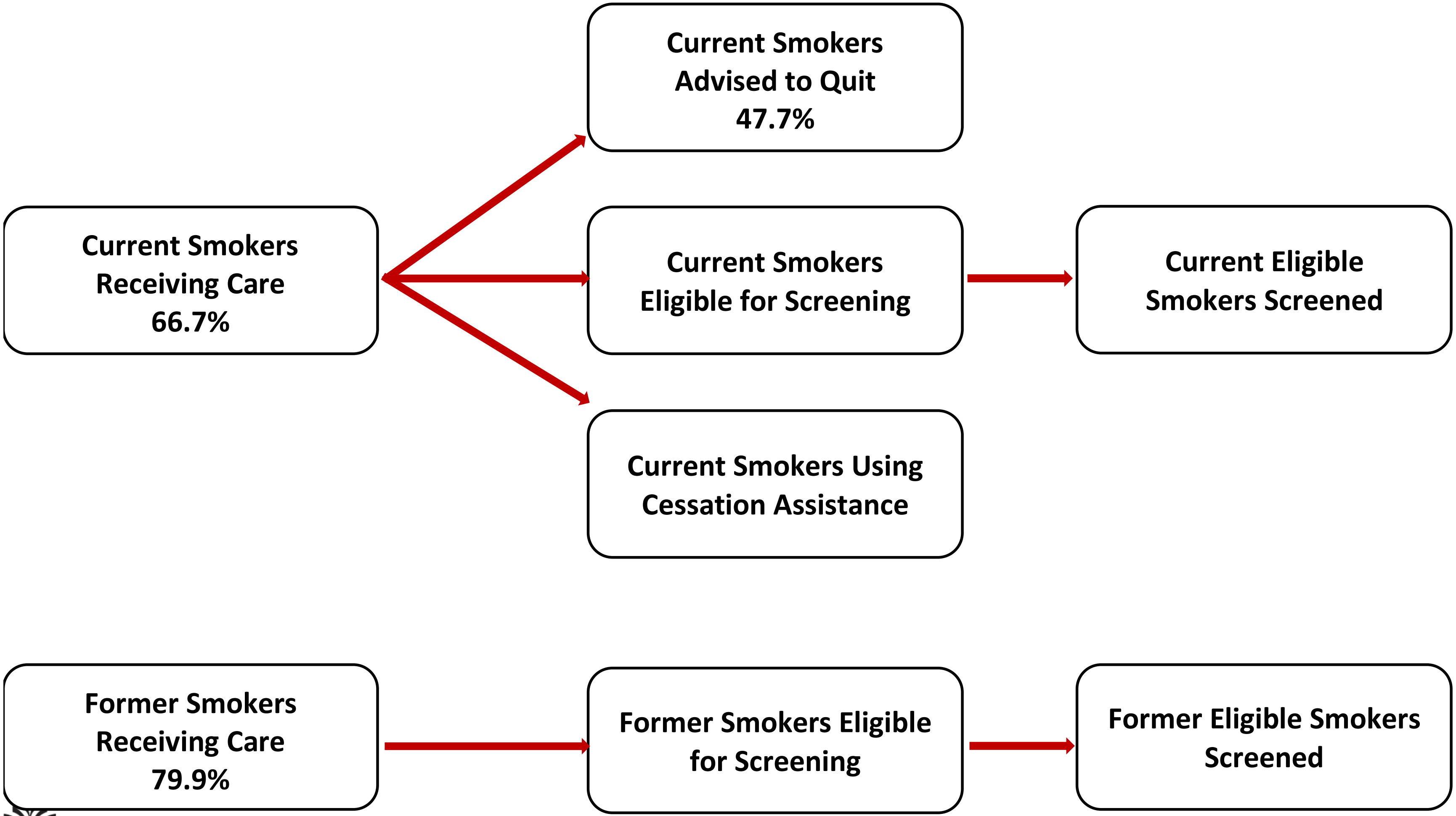
Results



Current Smokers
Receiving Care
66.7%

Current Smokers
Advised to Quit
47.7%

Current Smokers
Eligible for Screening

Current Eligible
Smokers Screened

Current Smokers Using
Cessation Assistance

Former Smokers
Receiving Care
79.9%

Former Smokers Eligible
for Screening

Former Eligible Smokers
Screened

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Potential Contributing Factors

- Access to screening locations
- Providers unaware of screening recommendations
- Reluctance of eligible patients to get screened

Conclusions

- LDCT screening for lung cancer has increased since NLST trial
- Expanded education on screening guidelines is still needed for both health professionals and the eligible population

Future Directions

- What percent of USPSTF screening eligible smokers are being screened?
- What percent of USPSTF screening eligible smokers are receiving care but are NOT being screened?
- Geographic differences in care/screening

Acknowledgements

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“Causal inference in cancer health disparities research: Where the rubber meets the road”

Whitney R. Robinson, PhD, MSPH

Department of Epidemiology * Gillings School of Global Public Health
Co-leader, Social Epidemiology Program

Carolina Population Center

Lineberger Comprehensive Cancer Center

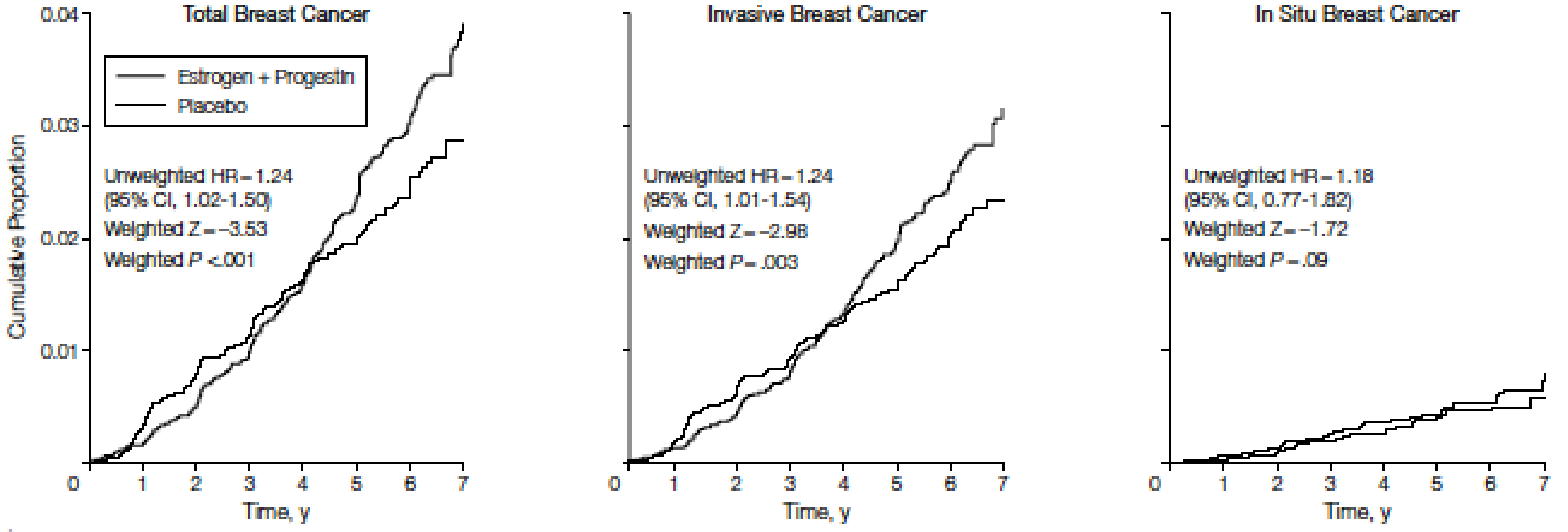
University of North Carolina at Chapel Hill

Why potential outcomes?

- Practical
  - What to put – or not – in your model
    - Confounders versus colliders
  - What kind of modeling do I need to use?
    - Standard regression, inverse-probability weighting, fixed-effects regression, etc.
- Intervention-oriented
- Broadly applicable sources of bias
  - Exchangeability, positivity, consistency/treatment variation irrelevance

The Women's Health Initative RCT: Estrogen Plus Progestin arm

Figure 1. Breast Cancer by Category and Treatment Group (Estrogen Plus Progestin vs Placebo)



No. at Risk

	0	1	2	3	4	5	6	7
Total Breast Cancer								
Estrogen + Progestin	8506	8396	8303	8194	7943	5751	3013	1302
Placebo	8102	8002	7895	7793	7581	5430	2696	977
Invasive Breast Cancer								
Estrogen + Progestin	8506	8398	8309	8209	7963	5771	3027	1316
Placebo	8102	8006	7905	7811	7609	5448	2707	981
In Situ Breast Cancer								
Estrogen + Progestin	8506	8396	8303	8194	7943	5751	3013	1302
Placebo	8102	8002	7895	7793	7581	5430	2696	977

Hazard ratios (HRs) are from unweighted Cox proportional hazards regression models, stratified by age and dietary modification randomization group. *Z* statistics and *P* values are from weighted Cox proportional hazards regression models, stratified by age and dietary modification randomization group. CI indicates confidence interval.

DOI:10.1093/jnci/djt207
Advance Access publication September 3, 2013

ARTICLE

Hormone Replacement Therapy and Breast Cancer: Heterogeneous Risks by Race, Weight, and Breast Density

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Manuscript received February 5, 2013; revised May 21, 2013; accepted May 21, 2013.

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Background Although studies have demonstrated a positive association between hormone replacement therapy (HRT) and breast cancer risk, this association may vary by patient factors.

Methods We analyzed 1 642 824 screening mammograms with 9300 breast cancer cases in postmenopausal women aged 45 years or older derived from the Breast Cancer Surveillance Consortium, a longitudinal registry of mammography screening in the United States. Multiple imputation methods were used to accommodate missing data for HRT use (14%) and other covariables. We performed logistic regression to estimate odds ratios (ORs) for breast cancer associated with HRT use within strata of race/ethnicity, age, body mass index (BMI), and breast density, with two-way interaction terms between HRT use and each key covariable of interest. *P* values for assessing possible interactions were computed from Wald *z* statistics. All statistical tests were two-sided.

Results HRT use was associated with greater than 20% increased risk in white (OR = 1.21; 95% CI = 1.14 to 1.28), Asian (OR = 1.58; 95% CI = 1.18 to 2.11), and Hispanic women (OR = 1.35; 95% CI = 1.09 to 1.67) but not black women (OR = 0.91; 95% CI = 0.72 to 1.14; $P_{\text{interaction}} = .04$). In women with low/normal BMI and extremely dense breasts, HRT use was associated with the highest breast cancer risk (OR = 1.49; 95% CI = 1.21 to 1.83), compared with nonusers. In overweight/obese women with less-dense breasts, no excess risk was associated with HRT use (adjusted ORs = 0.96 to 1.03).

Conclusions The impact of HRT use on breast cancer risk varies according to race/ethnicity, BMI, and breast density. This risk

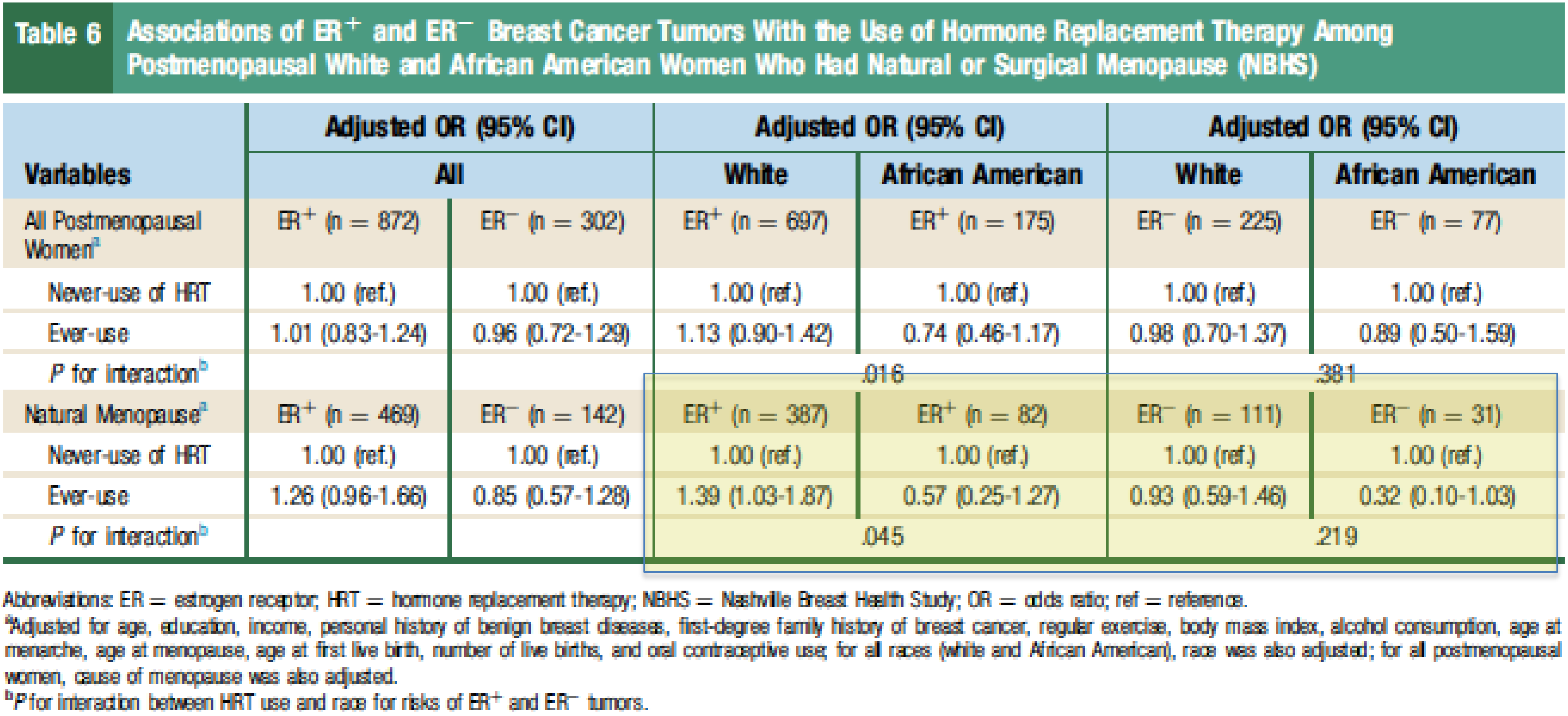


Table 6 Associations of ER$^+$ and ER$^-$ Breast Cancer Tumors With the Use of Hormone Replacement Therapy Among Postmenopausal White and African American Women Who Had Natural or Surgical Menopause (NBHS)

Variables	Adjusted OR (95% CI)		Adjusted OR (95% CI)		Adjusted OR (95% CI)	
	All		White	African American	White	African American
All Postmenopausal Women[a]	ER$^+$ (n = 872)	ER$^-$ (n = 302)	ER$^+$ (n = 697)	ER$^+$ (n = 175)	ER$^-$ (n = 225)	ER$^-$ (n = 77)
Never-use of HRT	1.00 (ref.)	1.00 (ref.)	1.00 (ref.)	1.00 (ref.)	1.00 (ref.)	1.00 (ref.)
Ever-use	1.01 (0.83-1.24)	0.96 (0.72-1.29)	1.13 (0.90-1.42)	0.74 (0.46-1.17)	0.98 (0.70-1.37)	0.89 (0.50-1.59)
P for interaction[b]			.016		.381	
Natural Menopause[a]	ER$^+$ (n = 469)	ER$^-$ (n = 142)	ER$^+$ (n = 387)	ER$^+$ (n = 82)	ER$^-$ (n = 111)	ER$^-$ (n = 31)
Never-use of HRT	1.00 (ref.)	1.00 (ref.)	1.00 (ref.)	1.00 (ref.)	1.00 (ref.)	1.00 (ref.)
Ever-use	1.26 (0.96-1.66)	0.85 (0.57-1.28)	1.39 (1.03-1.87)	0.57 (0.25-1.27)	0.93 (0.59-1.46)	0.32 (0.10-1.03)
P for interaction[b]			.045		.219	

Abbreviations: ER = estrogen receptor; HRT = hormone replacement therapy; NBHS = Nashville Breast Health Study; OR = odds ratio; ref = reference.

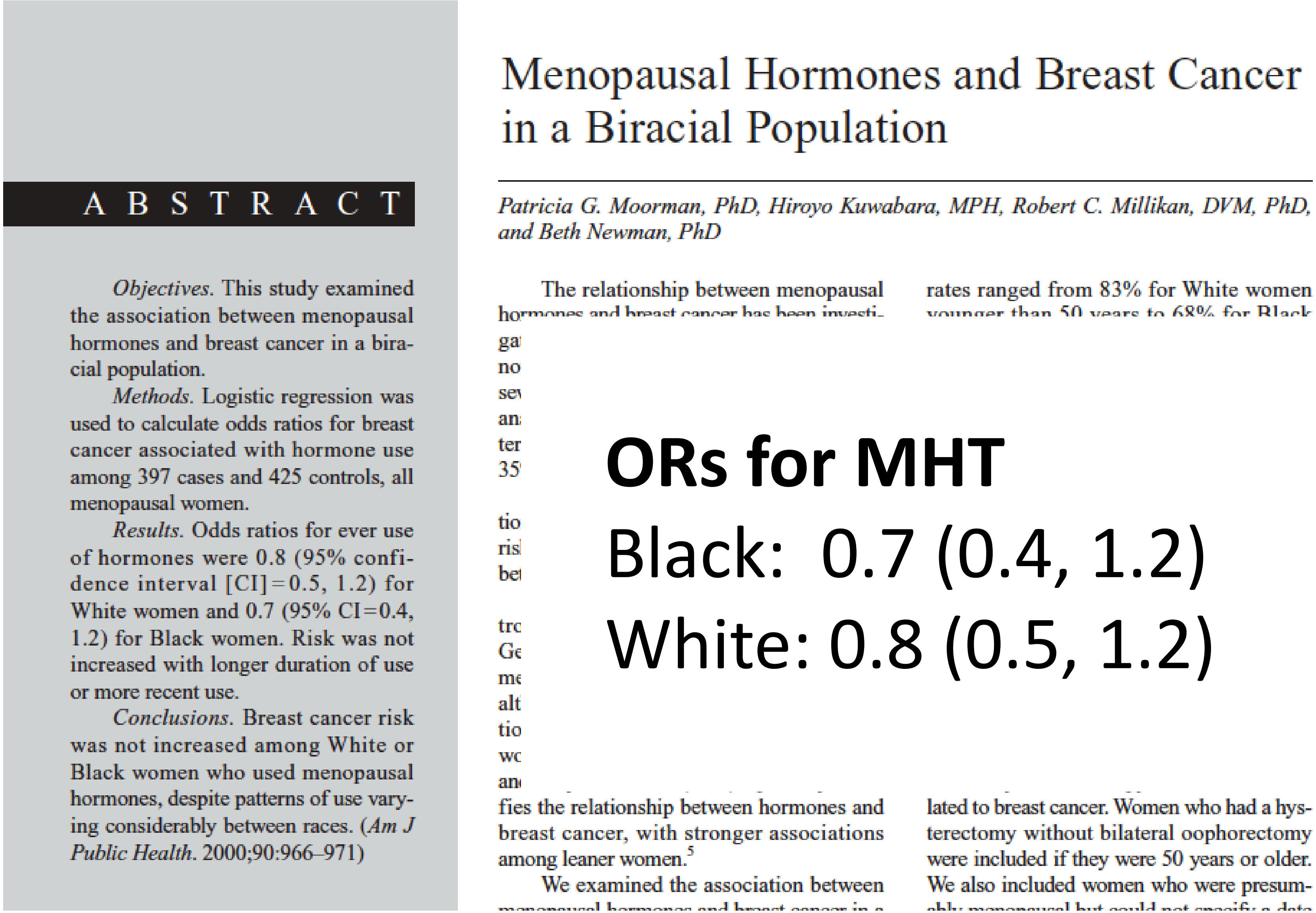
[a] Adjusted for age, education, income, personal history of benign breast diseases, first-degree family history of breast cancer, regular exercise, body mass index, alcohol consumption, age at menarche, age at menopause, age at first live birth, number of live births, and oral contraceptive use; for all races (white and African American), race was also adjusted; for all postmenopausal women, cause of menopause was also adjusted.

[b] *P* for interaction between HRT use and race for risks of ER$^+$ and ER$^-$ tumors.

Study Design

Carolina Breast Cancer Study, phases 1 & 2, 1993-2001

- Population-based case-control study of primary invasive breast cancers in women 20-74 yrs old in 24 NC counties
  - Oversampling of Black cases, especially those < 50 years
  - Controls matched on race and 5-year age group
  - 94.9% cases interviewed within 12 months of diagnosis



Menopausal Hormones and Breast Cancer in a Biracial Population

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ABSTRACT

Objectives. This study examined the association between menopausal hormones and breast cancer in a biracial population.

Methods. Logistic regression was used to calculate odds ratios for breast cancer associated with hormone use among 397 cases and 425 controls, all menopausal women.

Results. Odds ratios for ever use of hormones were 0.8 (95% confidence interval [CI]=0.5, 1.2) for White women and 0.7 (95% CI=0.4, 1.2) for Black women. Risk was not increased with longer duration of use or more recent use.

Conclusions. Breast cancer risk was not increased among White or Black women who used menopausal hormones, despite patterns of use varying considerably between races. (*Am J Public Health.* 2000;90:966–971)

The relationship between menopausal hormones and breast cancer has been investi-

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We examined the association between

rates ranged from 83% for White women younger than 50 years to 68% for Black

lated to breast cancer. Women who had a hysterectomy without bilateral oophorectomy were included if they were 50 years or older. We also included women who were presum-

ORs for MHT

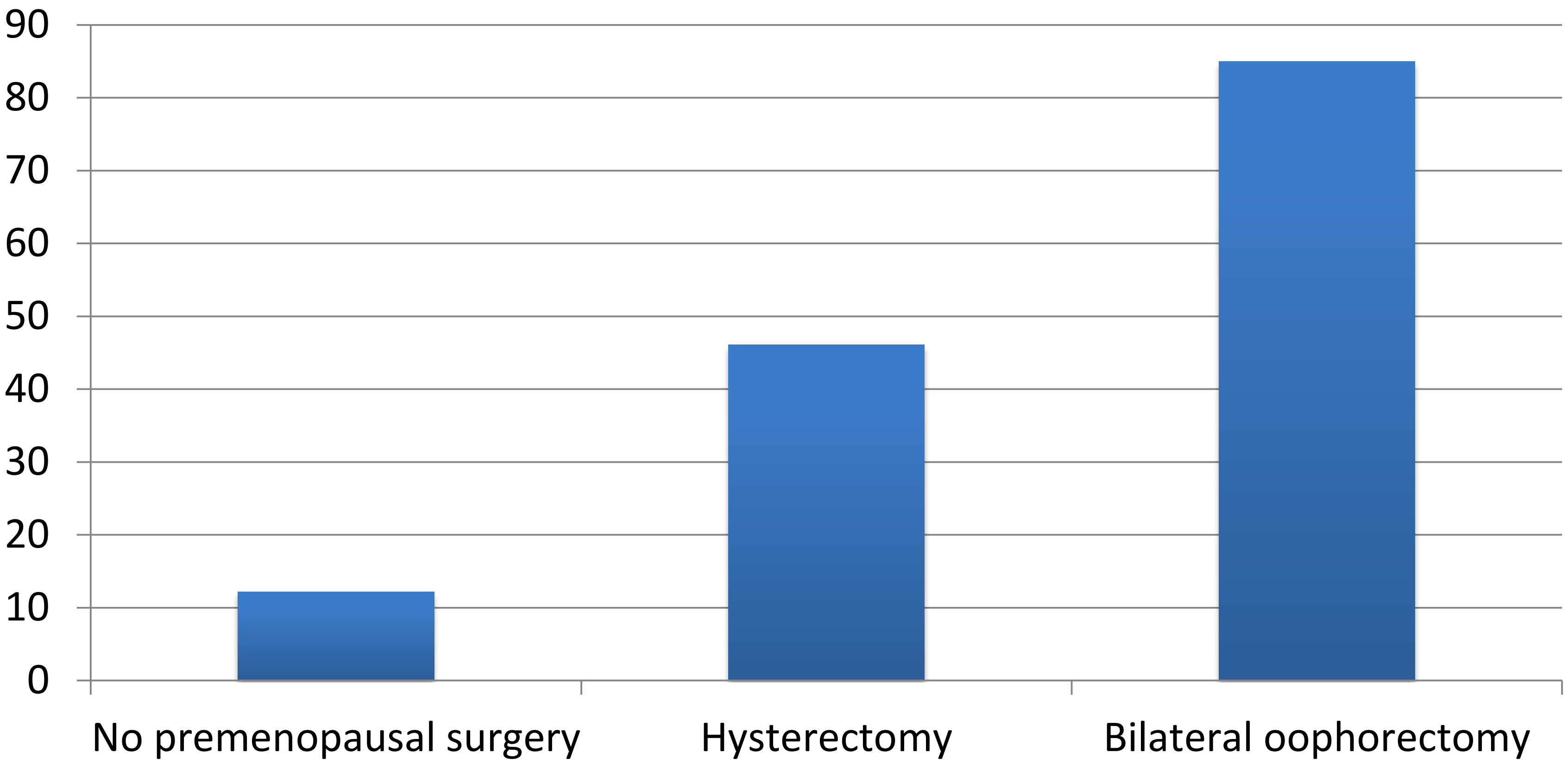
Black: 0.7 (0.4, 1.2)

White: 0.8 (0.5, 1.2)

Why potential outcomes?

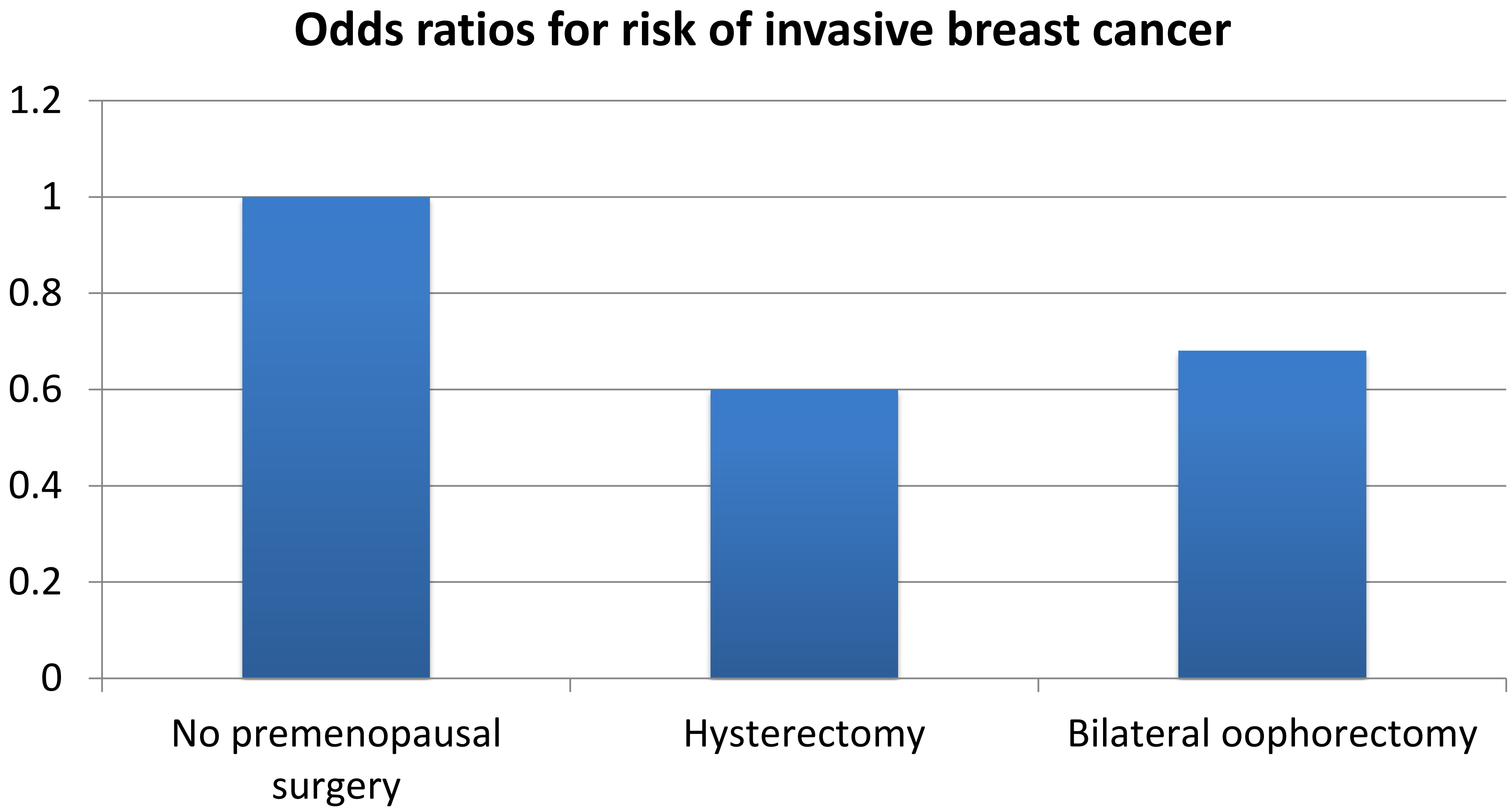
- Broadly applicable sources of bias
  - Exchangeability = How did people come to be exposed?
  - Consistency/Treatment variation irrelevance
  - Positivity

Ever used menopausal hormone therapy?



Robinson WR, Nichols HB, Tse CK, Olshan AF, Troster MA (2016). Premenopausal hysterectomy and oophorectomy and breast cancer among Black and White women: the Carolina Breast Cancer Study, 1993-2001. *American Journal of Epidemiology* 84(5): 388-99. Doi: 10.1093/aje/kwv448

Exchangeability matters



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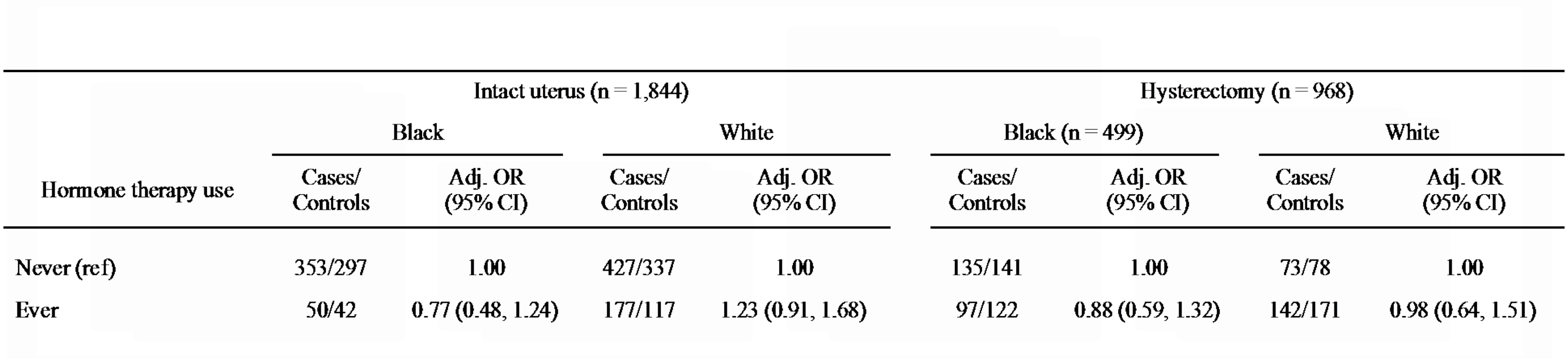
Adjusted odds ratios for association between hormone therapy and invasive breast cancer, Carolina Breast Cancer Study, 1993-2001 (n=2,813)



	Intact uterus (n = 1,844)				Hysterectomy (n = 968)			
	Black		White		Black (n = 499)		White	
Hormone therapy use	Cases/ Controls	Adj. OR (95% CI)	Cases/ Controls	Adj. OR (95% CI)	Cases/ Controls	Adj. OR (95% CI)	Cases/ Controls	Adj. OR (95% CI)
Never (ref)	353/297	1.00	427/337	1.00	135/141	1.00	73/78	1.00
Ever	50/42	0.77 (0.48, 1.24)	177/117	1.23 (0.91, 1.68)	97/122	0.88 (0.59, 1.32)	142/171	0.98 (0.64, 1.51)

*<u>DeBono N</u>, **Robinson WR**, Lund J, Tse, CK, Moorman PG, Olshan, AF, Troester, MA (in revision). Race, menopausal hormone therapy, and invasive breast cancer in the Carolina Breast Cancer Study, 1993-2001. *Journal of Women's Health*

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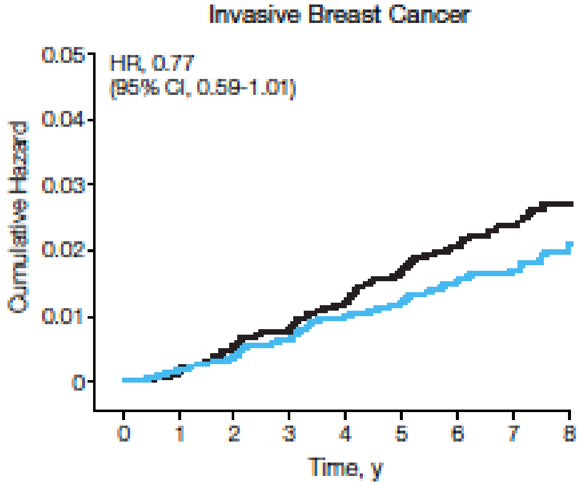


Events									
CEE	9	11	13	18	10	16	6	6	5
Placebo	7	20	15	22	24	18	12	6	0
No. at Risk									
CEE	5310	5225	5160	5077	4986	4896	3967	2271	1011
Placebo	5429	5348	5265	5183	5077	4958	4007	2332	1110

CEE indicates conjugated equine estrogen; HR, hazard ratio

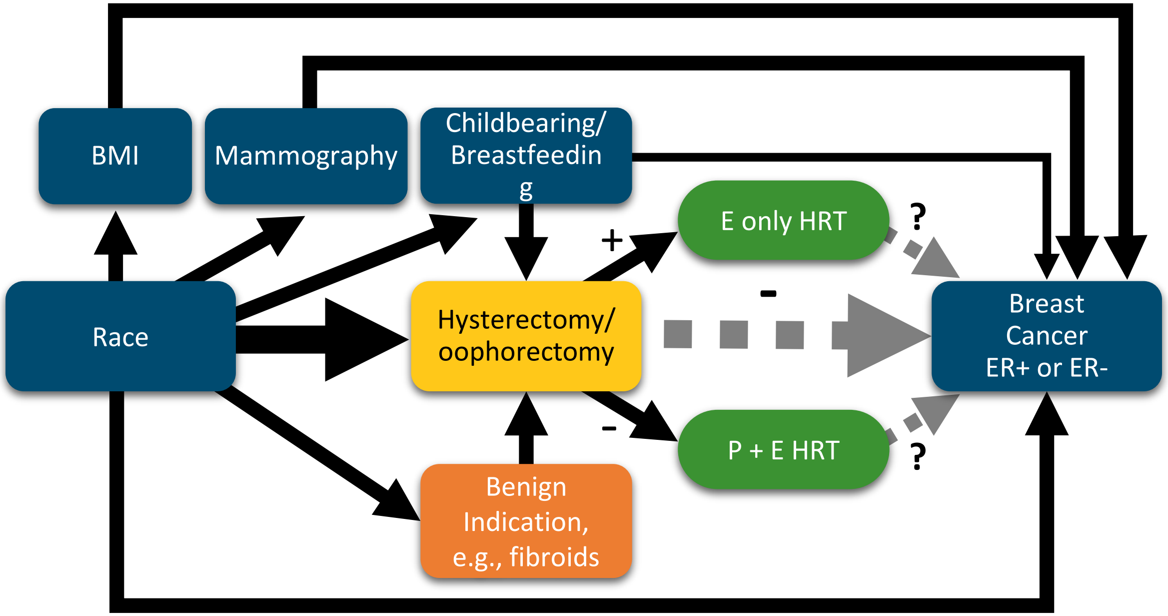
Effects of Conjugated Equine Estrogen in Postmenopausal Women With Hysterectomy

The Women's Health Initiative Randomized Controlled Trial

The Women's Health Initiative Steering Committee*

Context Despite decades of use and considerable research, the role of estrogen alone in preventing chronic diseases in postmenopausal women remains uncertain.

Conceptual diagram of relationships between hormone therapy and breast cancer incidence



Violation of Assumptions:
Consistency/Treatment Variation Irrelevance

Adjusted odds ratios for association between hormone therapy and invasive breast cancer, Carolina Breast Cancer Study, 1993-2001 (n=2,813)

	Intact uterus		Hysterectomy	
Formulation	Black	White	Black	White
Never user (ref)	1.0	1.0	1.0	1.0
Progestin + estrogen	1.18 (0.58, 2.37)	1.40 (0.95, 2.05)		
Unopposed estrogen only	0.48 (0.23, 0.97)	1.01 (0.54, 1.89)	0.87 (0.58, 1.31)	0.97 (0.62, 1.50)

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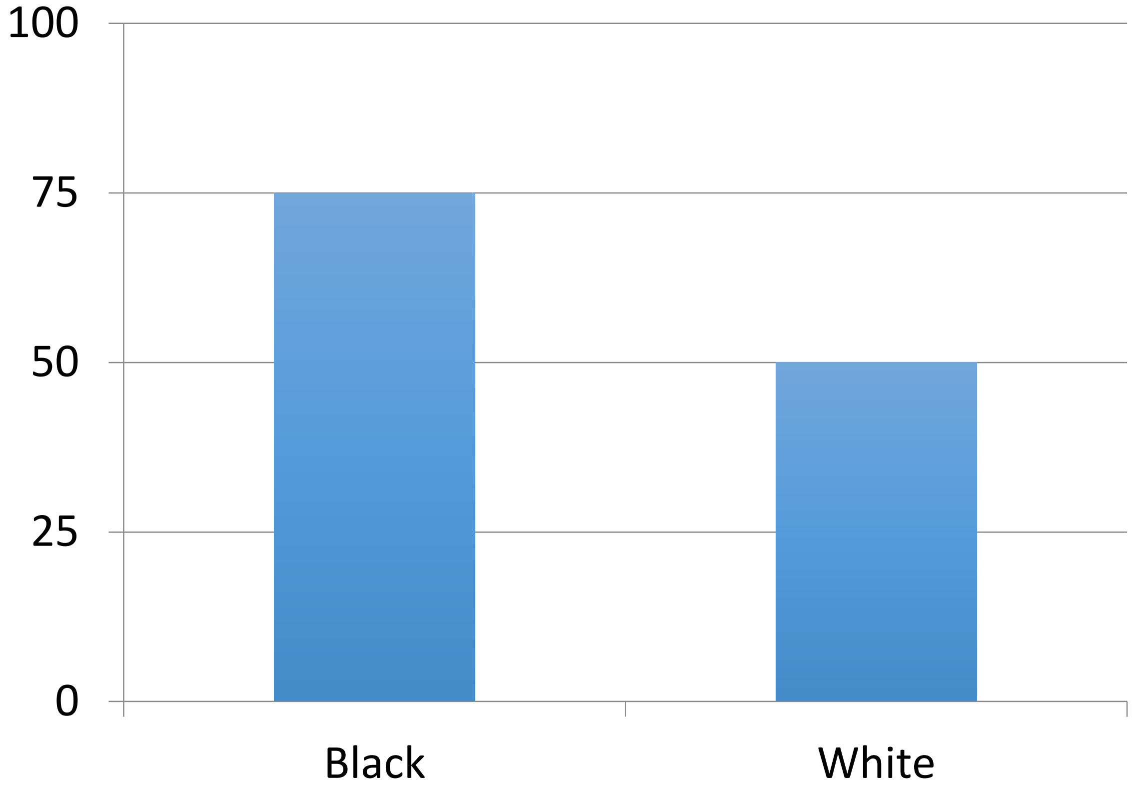
Among MHT users, what percentage was estrogen-only?



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Why causal inference?

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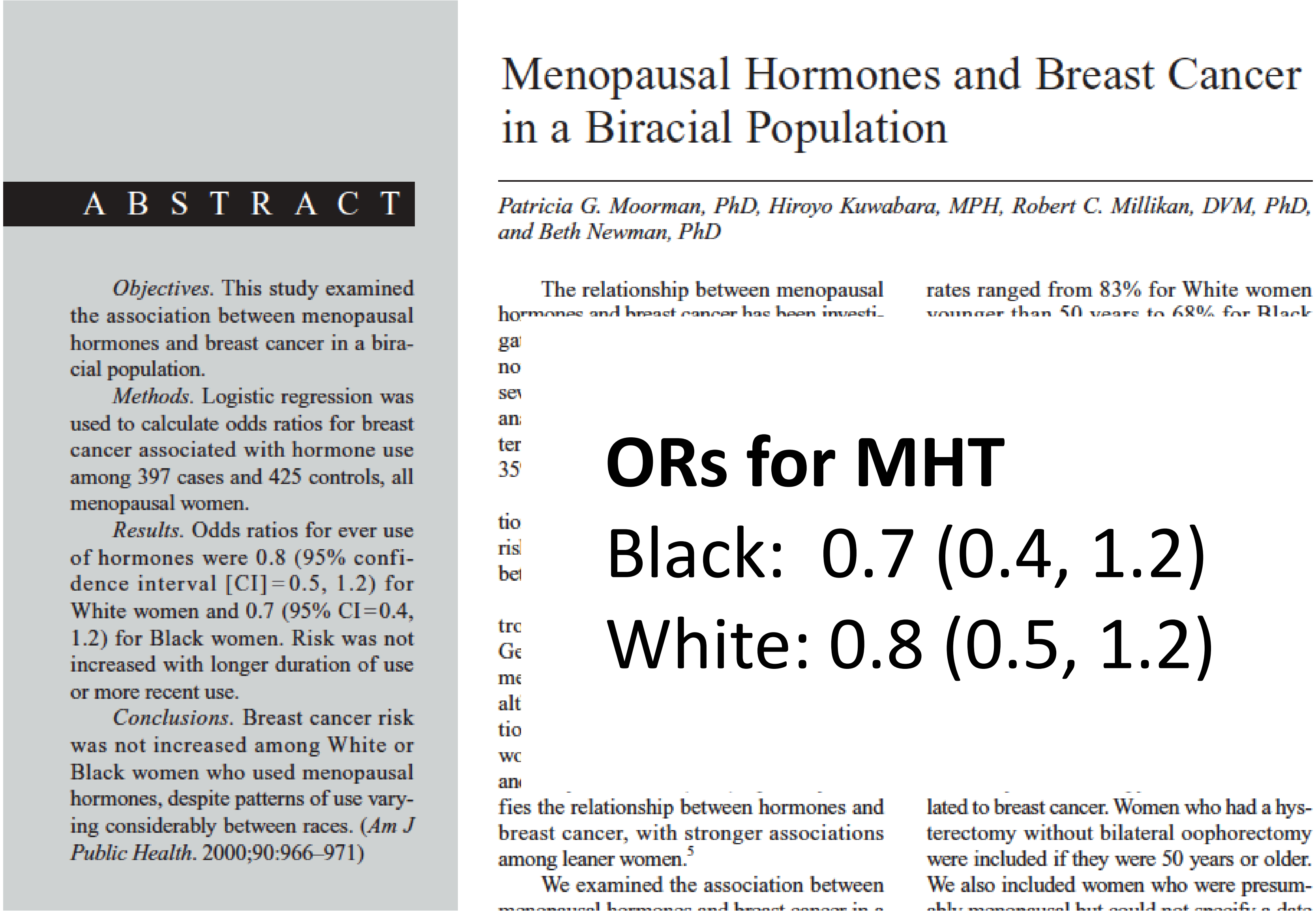
  - Exchangeability = How did people come to be exposed?
  - Consistency/Treatment variation irrelevance = Did people get the same exposure?
  - Positivity: Is there enough exposure across all covariate subgroups?

Violations of Positivity:

Association between hormone therapy and invasive breast cancer, Carolina Breast Cancer Study, 1993-2001

	Intact uterus		Hysterectomy	
Formulation	Black	White	Black	White
Never user (ref)	353/297	427/337	135/141	73/78
Progestin + estrogen	26/14	104/62	5/2	4/2
Unopposed estrogen only	17/21	25/22	89/109	120/147

*DeBono N, **Robinson WR**, Lund J, Tse CK,Moorman PG, Olshan, AF, Troester, MA (in revision). Race, menopausal hormone therapy, and invasive breast cancer in the Carolina Breast Cancer Study, 1993-2001. *Journal of Women's Health*



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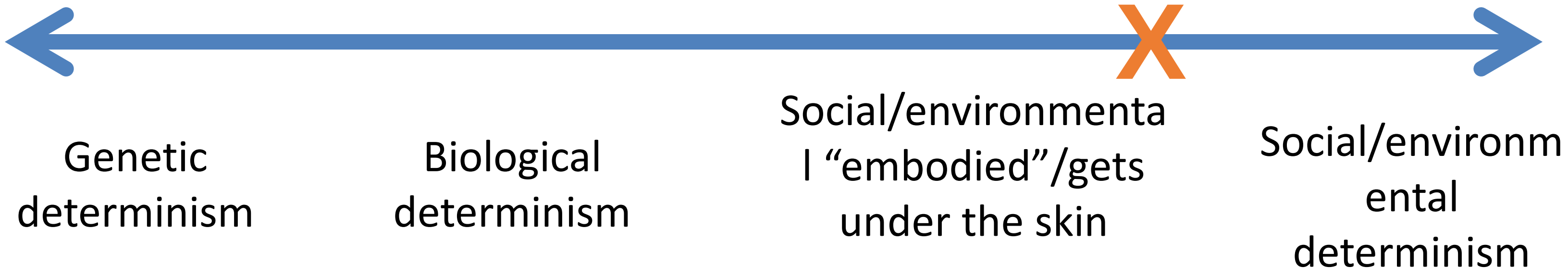

Genetic determinism

Biological determinism

Social/environmental “embodied”/gets under the skin

Social/environmental determinism

THE END

Standard: non-intervention-oriented

Modeling approach	Translation
Model the "race effect": add covariates and interpret adjusted coefficient for race	How bad is "race" for my outcome? What would happen if we changed a person's "race"?

Intervention-oriented

Modeling approach	Translation
Model the factors ("mediators") that differ across racial groups	In the US, race is a powerful marker of exposure: understand the relative prevalence of factors across groups – this is what we want to intervene on

VanderWeele T, **Robinson WR**. 2014. On causal interpretations of race in regressions adjusting for confounding and mediating variables. *Epidemiology* 25(4): 473-84

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HOLLINGS CANCER CENTER
A National Cancer Institute
Designated Cancer Center

1st Annual Cancer Health Disparities Symposium

Design and Preliminary Outcomes of a Study to Reduce Cancer-Associated Reactive Metabolite Levels in Breast Cancer Survivors – The RCAM Study

Marvella E. Ford, Mathew J. Gregoski, Lindsay L. Peterson, Kendrea D. Knight, Kent E. Armeson, Elizabeth E. Garret-Mayer, Andrea Abbott, Tonya Turner, Ebony J. Hilton, Gayenell Magwood, David P. Turner

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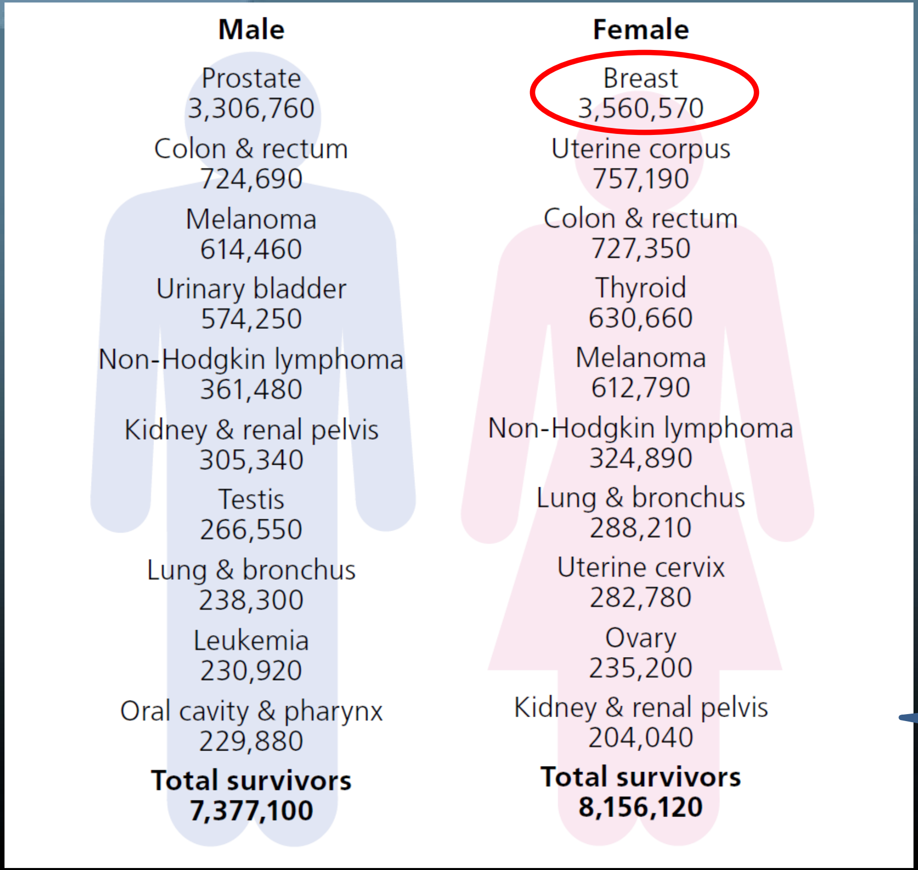
Surviving cancer is only the beginning

NIH NATIONAL CANCER INSTITUTE
Cancer Prevalence and Cost of Care Projections



Male	Female
Prostate 3,306,760	Breast 3,560,570
Colon & rectum 724,690	Uterine corpus 757,190
Melanoma 614,460	Colon & rectum 727,350
Urinary bladder 574,250	Thyroid 630,660
Non-Hodgkin lymphoma 361,480	Melanoma 612,790
Kidney & renal pelvis 305,340	Non-Hodgkin lymphoma 324,890
Testis 266,550	Lung & bronchus 288,210
Lung & bronchus 238,300	Uterine cervix 282,780
Leukemia 230,920	Ovary 235,200
Oral cavity & pharynx 229,880	Kidney & renal pelvis 204,040
Total survivors 7,377,100	**Total survivors 8,156,120**

- It is estimated that there are 15.5 million cancer survivors in the United States.
- This is expected to rise to 20.3 million, by 2026
- Costs of cancer care: $157 billion in 2010 dollars

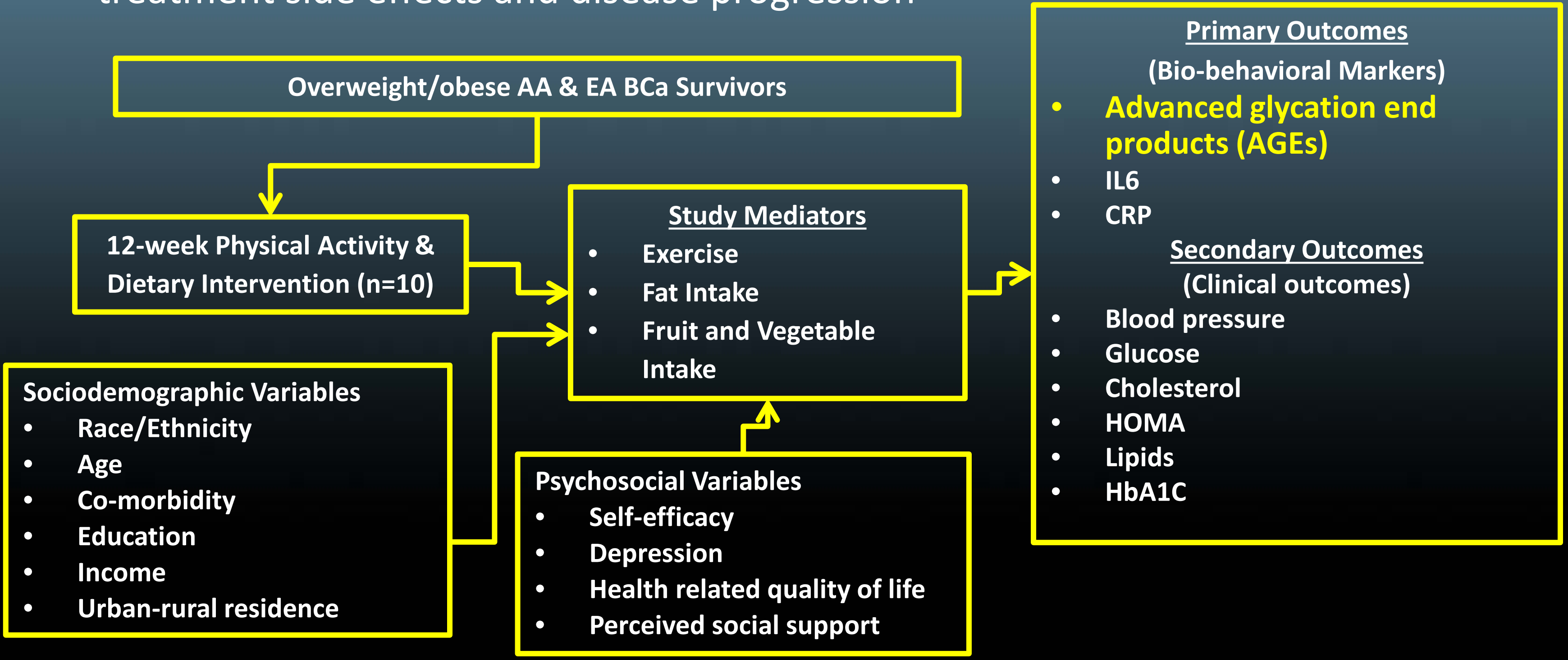
Urinary, bladder, a kid probl ns
Sexual dysfu ty

Di ght changes
stress
M or nd c er mental deficits
immune esponses

↓↓HRQOL & Disease Progression

RCAM Study Conceptual Framework

- The cost of treating breast cancer is higher than any other type of cancer ($16.5 billion)
- High BMI and African American race are linked to poorer survival after a BCa diagnosis
- Physically active women with early stage BCa have improved survival
- Physical activity could alter bio-behavioral pathways potentially associated with treatment side effects and disease progression



Overweight/obese AA & EA BCa Survivors

12-week Physical Activity & Dietary Intervention (n=10)

Sociodemographic Variables
- Race/Ethnicity
- Age
- Co-morbidity
- Education
- Income
- Urban-rural residence

Study Mediators
- Exercise
- Fat Intake
- Fruit and Vegetable Intake

Psychosocial Variables
- Self-efficacy
- Depression
- Health related quality of life
- Perceived social support

Primary Outcomes

(Bio-behavioral Markers)
- Advanced glycation end products (AGEs)
- IL6
- CRP

Secondary Outcomes

(Clinical outcomes)
- Blood pressure
- Glucose
- Cholesterol
- HOMA
- Lipids
- HbA1C

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The RCAM Intervention

- 12-week physical/dietary activity intervention
- Administered at the MUSC Cardiopulmonary Rehabilitation Center ("Cardiac Rehab")
    - 1 required supervised exercise session per week at Cardiac Rehab
    - 1 recommended exercise session per week at Cardiac Rehab
    - 2 additional recommended exercise sessions per week in community setting
    - Dietary counselling given at baseline & weeks 4, 8 and 12

- 10 participants: 6 European American, 4 African American breast cancer survivors
- Age range: 46-68 years (mean age=65 years; median age=58 years; standard deviation=6.6 years)

AA Mean Age: 56; Range: 49-57 EA Mean Age: 59; Range: 46-68

- BMI range: Average 33.78 kg/m^2; Median 34.15 kg/m^2

AA BMI average: 38.33kg/m^2 EA BMI average: 30.75kg/m^2

- Consent rate: 67%
- Adherence rate: 75%

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RCAM Clinical & Laboratory Changes

	Pre-intervention *mean (range)*	Post-intervention *mean (range)*	Paired Difference *mean*	p-value (paired t-test)
Clinical Characteristics				
Height (cm)	164.3 (160.0-172.7)	164.3 (160.0-172.7)	0.0	
Weight (kg)	90.9 (75.3-110.3)	89.5 (71.5-109.5)	-1.4	0.34
Pulse (bpm)	80 (67-95)	77 (62-88)	-2.9	0.31
Respiratory rate (bpm)	17 (16-20)	18 (16-20)	+0.9	0.17
Waist circumference (cm)	107.0 (94.0-124.0)	105.6 (91.4-125.1)	-1.1	0.50
Hip circumference (cm)	116.7 (106.7-125.0)	116.8 (108-141.0)	0.1	0.97
Waist:hip ratio (cm)	0.90 (0.83-0.95)	0.90 (0.83-1.02)	0.0	0.55
Body mass index (kg/m2)	33.8 (27.5-43.09)	33.2 (26.4-42.8)	-0.5	0.30
Systolic blood pressure (mmHg)	137 (117-166)	129 (112-144)	-7.3	0.06
Diastolic blood pressure (mmHg)	84 (74-100)	76 (62-94)	-8.2	0.01
Laboratory Characteristics[1]				
Glucose (mg/dl)[2]	117 (92-139)	117 (102-141)	+1.1	0.65
Insulin (mcIU/ml)[3]	24.4 (11.7-43.8)	17.1 (9.1-31.4)	-4.5	0.09
Lipid Levels (mmol/L)[4]	200 (166-234)	186 (146-236)	-10.6	0.05
Hemoglobin A1C (mmol/mol)[5]	6.1 (5.1-7.6)	6.0 (5.3-7.2)	-0.1	0.65
HOMA-insulin resistance[6,7]	7.2 (3.5-15.0)	5.1 (2.8-10.2)	-1.6	0.11

[1] 24-hour fasting blood draws

[2] Glucose: pre-intervention missing=1 (n=9)

[3] Insulin: pre-intervention missing=3 (n=7); post-intervention missing=1 (n=9)

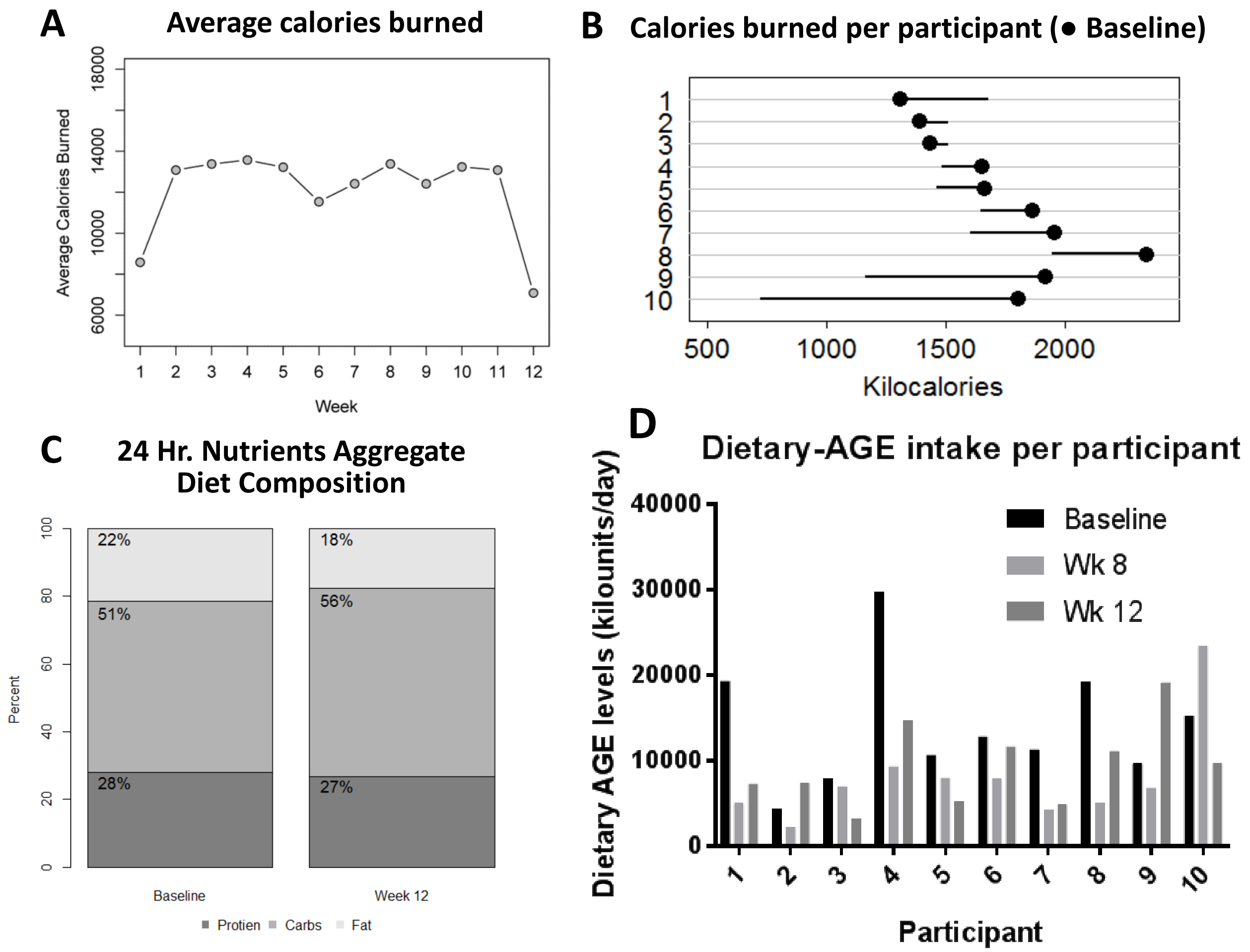
[4] Lipid levels: post-intervention missing=1 (n=9)

[5] Hemoglobin A1C: post-intervention missing=1 (n=9)

[6] HOMA-insuling resistance: pre-intervention missing=4 (n=6); post-intervention missing=1 (n=9)

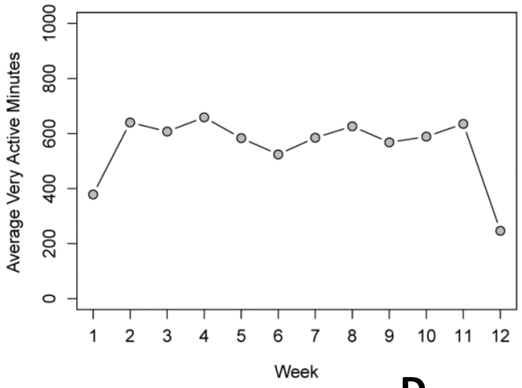
[7] HOMA-Insulin resistance formula: *(insulin X glucose)/405* (http://gihep.com/calculators/other/homa/)

RCAM Effects on Dietary Measures

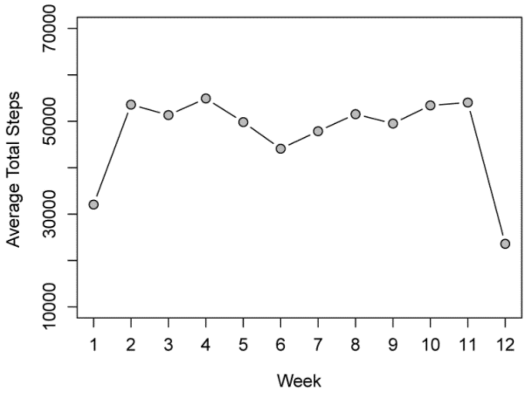


RCAM Effects on PA Measures

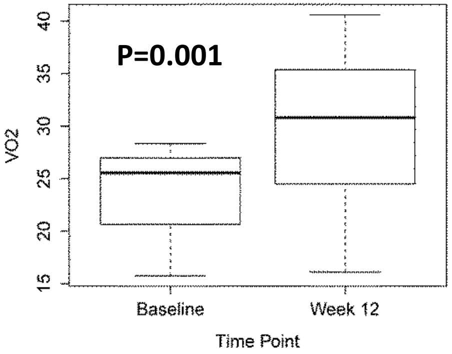
A Average very active minutes per week



B Average total steps per week



C Average VO2



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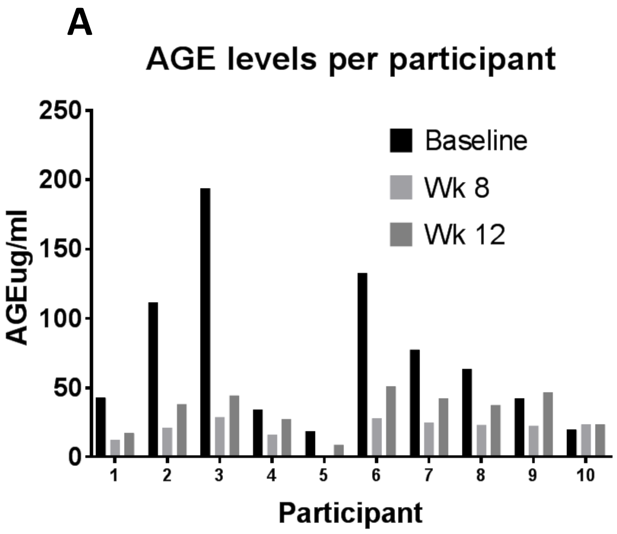
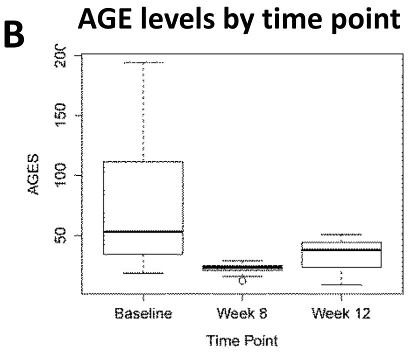
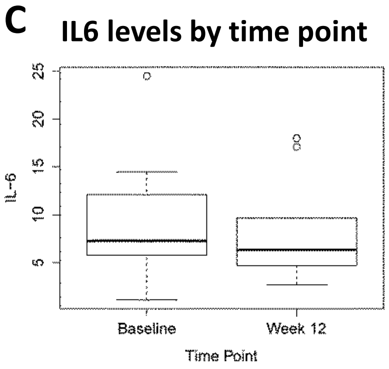
Study ID	Race	Baseline Weight (kg)	12-Week Weight (kg)	Baseline BMI	12-week BMI	Average Weight Loss (kg)	Average BMI Loss
1	AA	95.3	94.5	36.1	35.7	-0.8	-0.4
2	EA	76.3	71.5	28.4	26.6	-4.8	-1.8
3	AA	110.3	109.5	43.1	42.8	-0.8	-0.3
4	EA	82.0	79.1	27.5	26.4	-2.9	-1.1
5	EA	88.4	84.2	32.2	30.7	-4.2	-1.5
6	EA	92.1	99.5	37.1	39.4	7.4	2.3
7	EA	86.5	80.0	29.9	27.1	-6.5	-2.8
8	EA	75.3	70.3	29.4	27.9	-5	-1.5
9	AA	102.2	102.7	36.4	36.6	0.5	0.2
10	AA	100.3	103.6	37.7	39.2	3.3	1.5
Averages						-1.38	-0.54

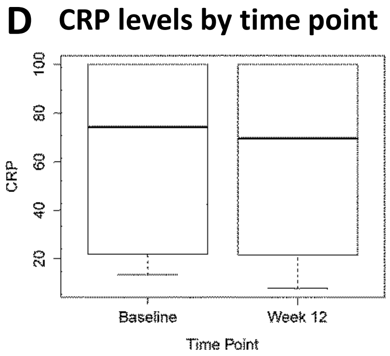
RCAM Effects on Biomarker Levels



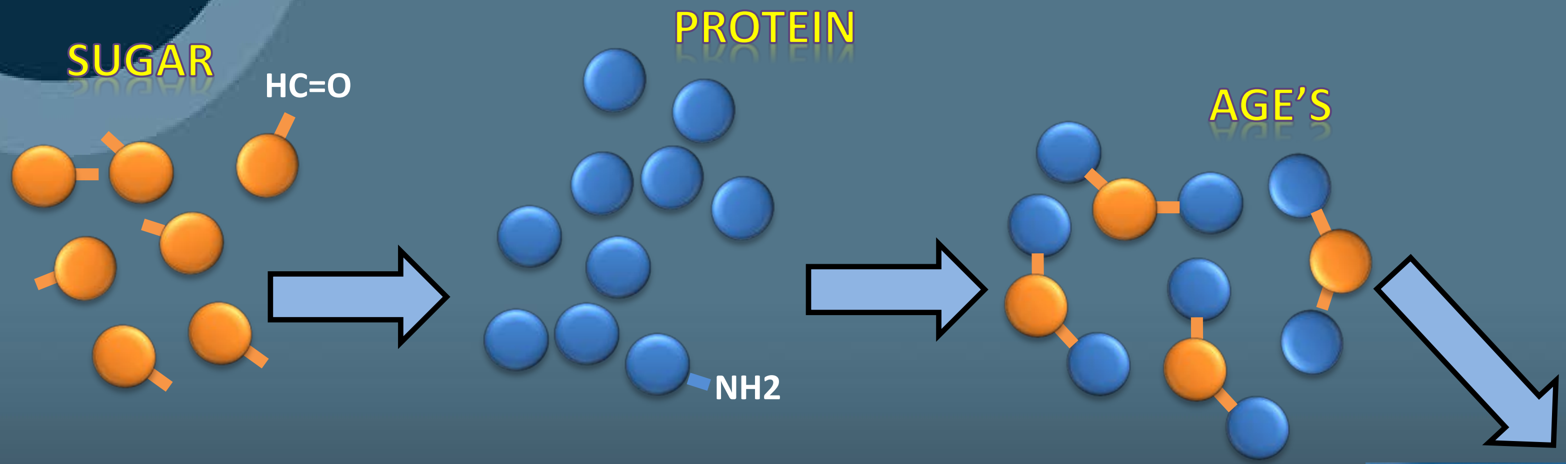


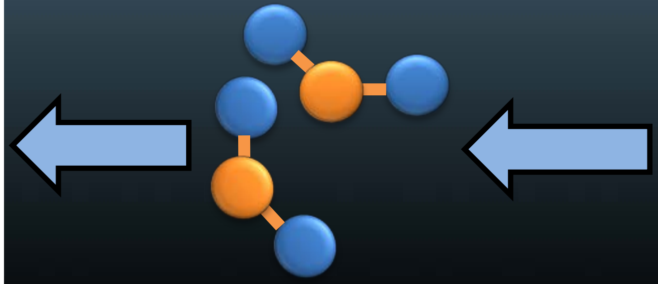
	AGES, median	Fold Change (95% CI)*	P-value*
Time Point			
Baseline	53	–	
Week 8	23	0.35 (0.25 – 0.47)	<0.001
Week 12	38	0.54 (0.40 – 0.72)	<0.001

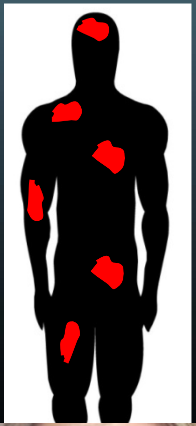




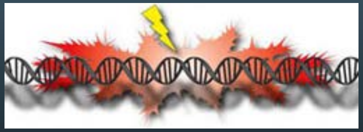
Lifestyle toxins:
Advanced glycation end-products (AGEs)



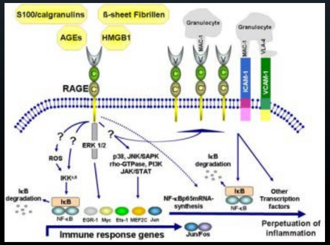




DNA damage



Cell signaling



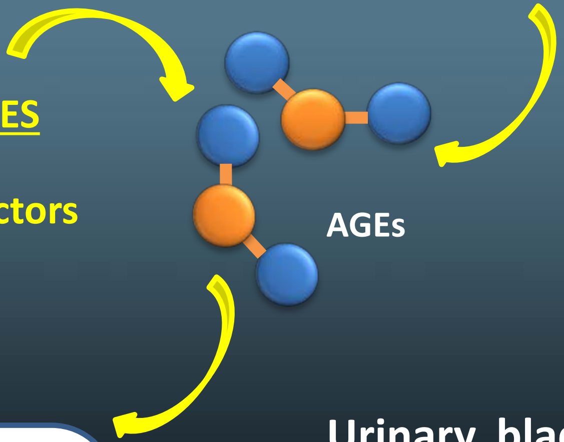
Western lifestyle increases AGE levels

EXOGENOUS SOURCES
Socioeconomic & Environmental Risk Factors

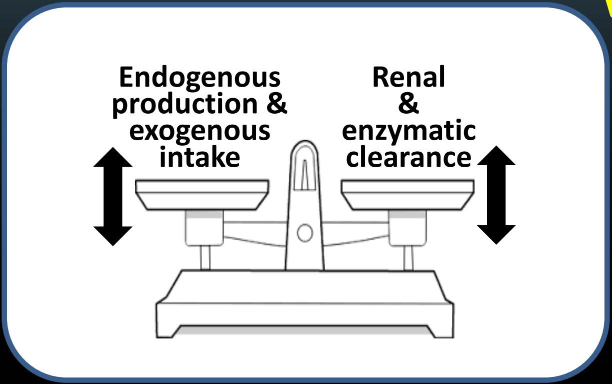
ENDOGENOUS SOURCES

Biological pathways

Glycolysis
Glucose metabolism
Stress response
Oxidative stress
Hyper-glycemia



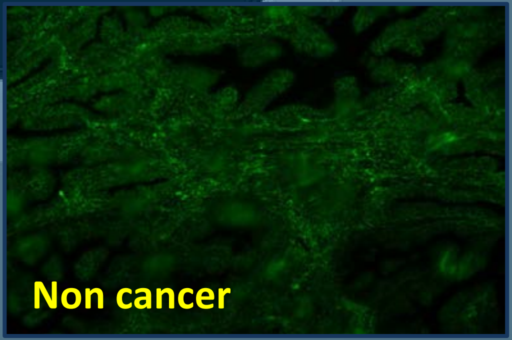
AGEs

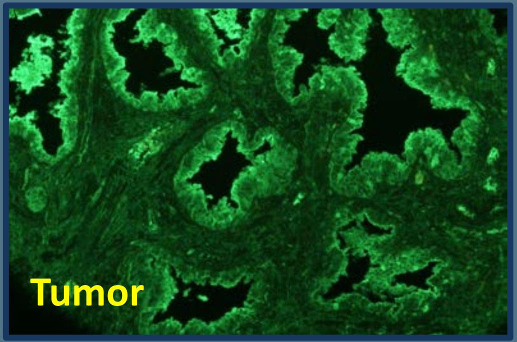


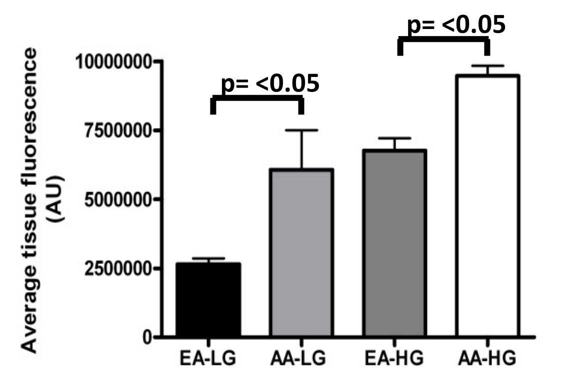
Imbalance

Urinary, bladder, and kidney problems
Sexual dysfunction & infertility
Lymphedema
Heart damage
Dietary issues: nausea, weight changes
Pain & stress
Memory and other mental deficits
Immune responses

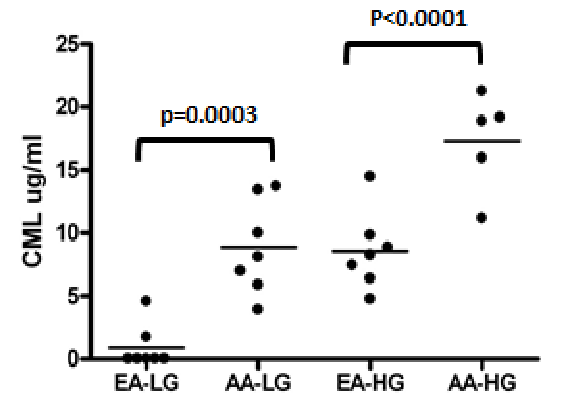
AGEs: a biological mechanism promoting cancer disparity







- AGE levels are elevated in tumors & serum from cancer patients



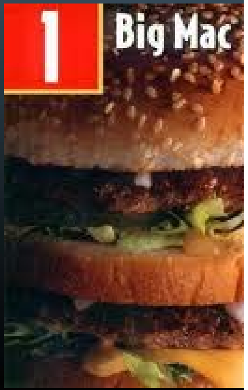
- Increased digestion of AGEs during puberty alters mammary development in mice
- AGEs function through their receptor (RAGE) to alter AKT and MAPK activation to promote cancer cell migration and invasion
- Dietary AGEs promote tumor growth in mice

AGE Reduction = Cancer Prevention & Increased HRQOL ?

2010:p911-916

Raw
800 AG

icken
kU/100g



Big M
7,801 AGE

gets
E kU/100g

10 AGE kU/100g

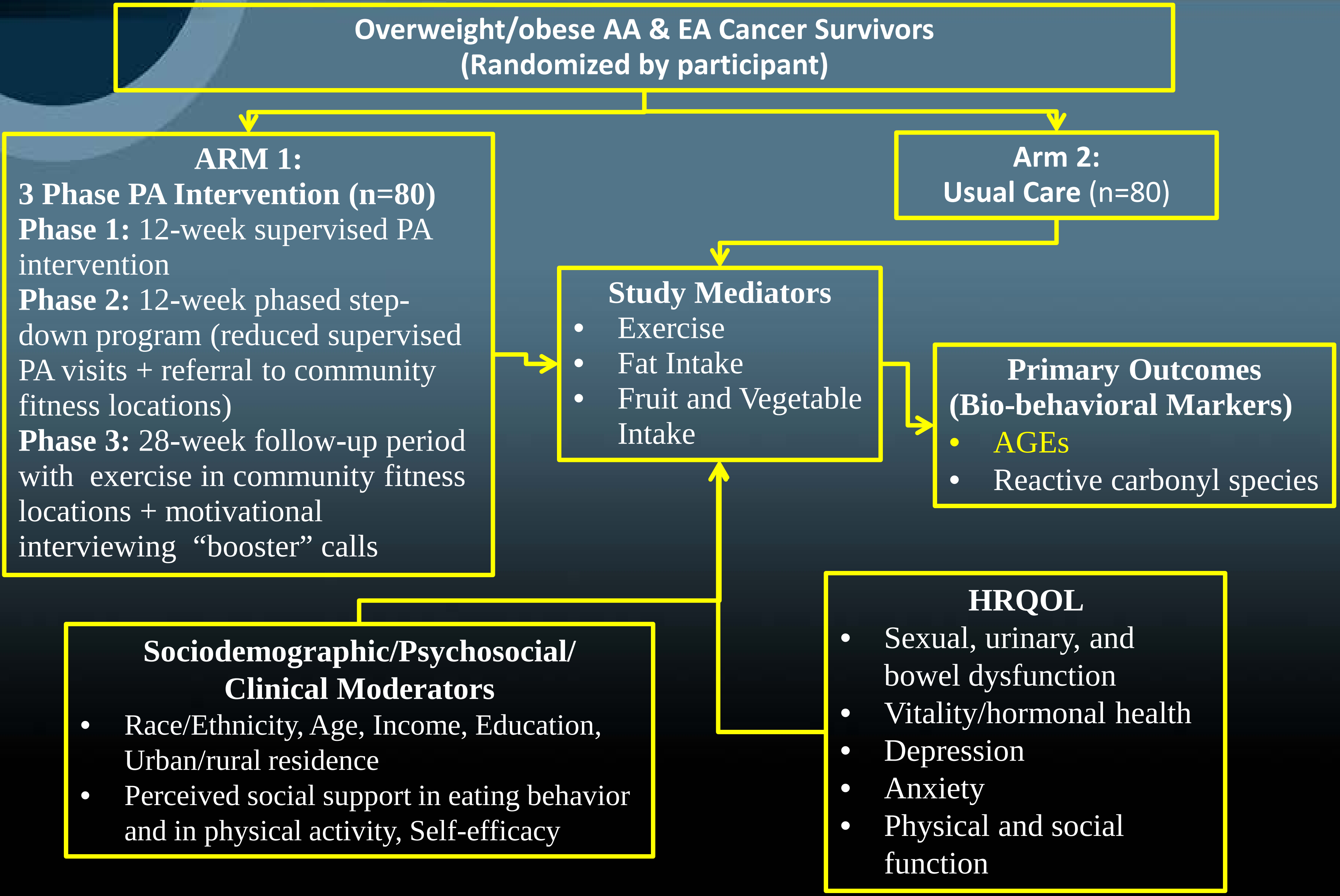
Summary

- **Physical Activity Feasibility Intervention**
  - The intervention was effective in increasing rates of physical activity among the study participants
  - Physical activity levels tapered off in the final week of the study
- **AGE Levels**
  - The study showed significant post-intervention reductions in AGE levels but not IL6 and CRP
  - The average pre-/post-intervention decrease in AGE levels was not as dramatic among black participants, as it was for white participants
    - Most black participants were morbidly obese at enrollment
    - Most white participants were overweight at enrollment
- Sociodemographic and Psychosocial data still to be fully assessed

Limitations

— The sample size for the feasibility study was small, the study requires replication with a larger sample

RCAM Study Conceptual Framework



Overweight/obese AA & EA Cancer Survivors
(Randomized by participant)

ARM 1:
3 Phase PA Intervention (n=80)
Phase 1: 12-week supervised PA intervention
Phase 2: 12-week phased step-down program (reduced supervised PA visits + referral to community fitness locations)
Phase 3: 28-week follow-up period with exercise in community fitness locations + motivational interviewing "booster" calls

Arm 2:
Usual Care (n=80)

Study Mediators
- Exercise
- Fat Intake
- Fruit and Vegetable Intake

Primary Outcomes
(Bio-behavioral Markers)
- AGEs
- Reactive carbonyl species

Sociodemographic/Psychosocial/ Clinical Moderators
- Race/Ethnicity, Age, Income, Education, Urban/rural residence
- Perceived social support in eating behavior and in physical activity, Self-efficacy

HRQOL
- Sexual, urinary, and bowel dysfunction
- Vitality/hormonal health
- Depression
- Anxiety
- Physical and social function

MUSC
HOLLINGS CANCER CENTER
A National Cancer Institute
Designated Cancer Center

Acknowledgements

RCAM Team:

Marvella E. Ford, Mathew J. Gregoski, Lindsay L. Peterson, Kendrea D. Knight, Kent E. Armeson, Elizabeth E. Garret-Mayer, Andrea Abbott, Tonya Turner, Ebony J. Hilton, Gayenell Magwood, David P. Turner

Funding:

Jill and John Chalsty

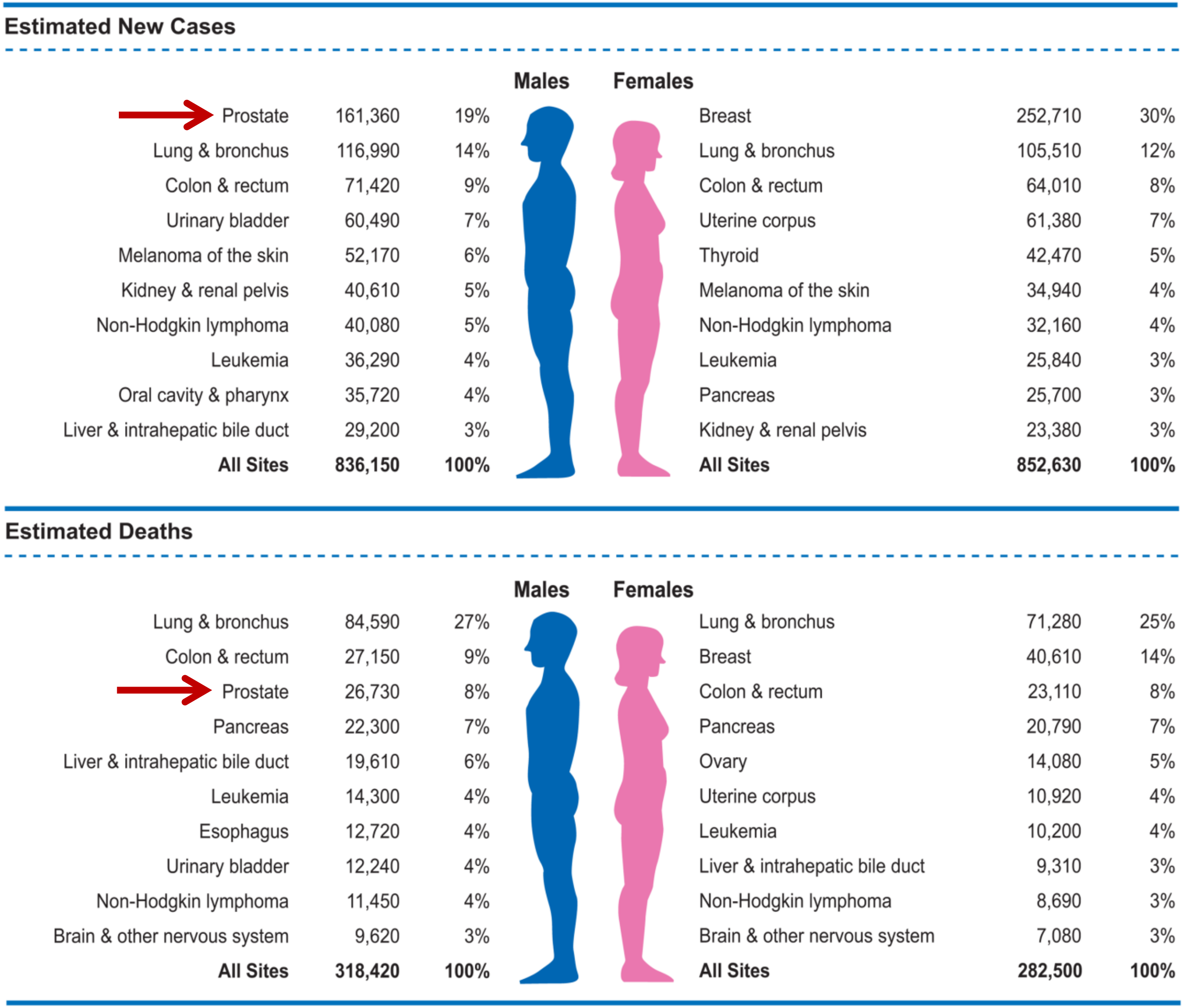
UNIVERSITY OF SOUTH CAROLINA
School of Medicine

Annual Cancer Health Disparities Symposium
MUSC, Charleston (SC)
(03/16-17/2017)

Role of macrophage inhibitory cytokine-1 in prostate cancer disparity

Dev Karan, Ph.D.
USC-SOM, Columbia (SC)

Cancer and statistics



Estimated New Cases

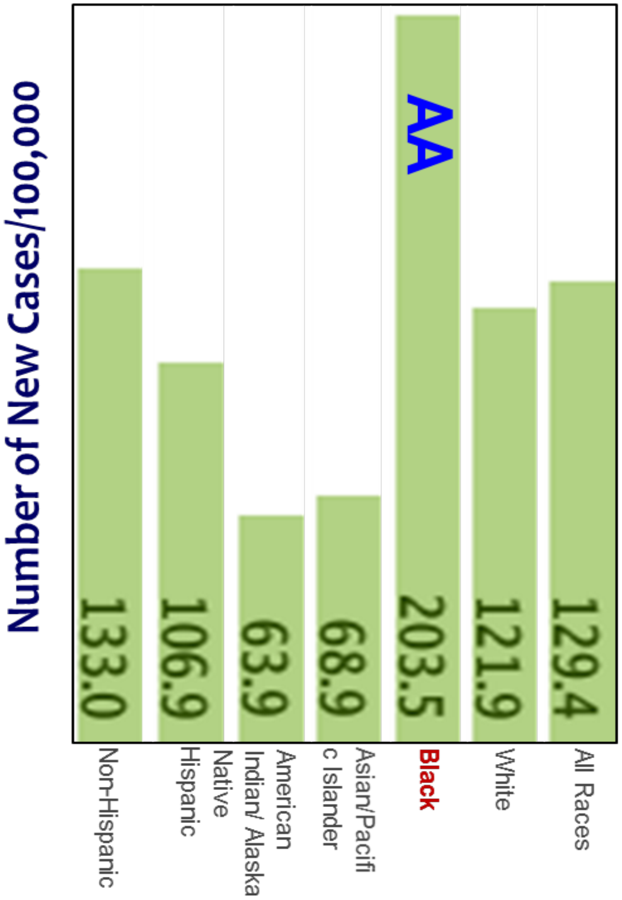
Males			Females		
→ Prostate	161,360	19%	Breast	252,710	30%
Lung & bronchus	116,990	14%	Lung & bronchus	105,510	12%
Colon & rectum	71,420	9%	Colon & rectum	64,010	8%
Urinary bladder	60,490	7%	Uterine corpus	61,380	7%
Melanoma of the skin	52,170	6%	Thyroid	42,470	5%
Kidney & renal pelvis	40,610	5%	Melanoma of the skin	34,940	4%
Non-Hodgkin lymphoma	40,080	5%	Non-Hodgkin lymphoma	32,160	4%
Leukemia	36,290	4%	Leukemia	25,840	3%
Oral cavity & pharynx	35,720	4%	Pancreas	25,700	3%
Liver & intrahepatic bile duct	29,200	3%	Kidney & renal pelvis	23,380	3%
All Sites	**836,150**	**100%**	**All Sites**	**852,630**	**100%**

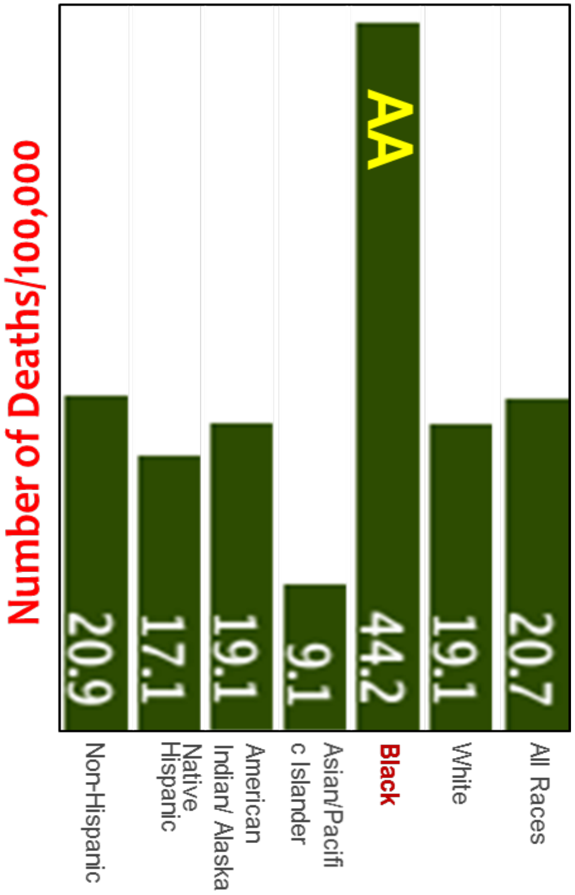
Estimated Deaths

Males			Females		
Lung & bronchus	84,590	27%	Lung & bronchus	71,280	25%
Colon & rectum	27,150	9%	Breast	40,610	14%
→ Prostate	26,730	8%	Colon & rectum	23,110	8%
Pancreas	22,300	7%	Pancreas	20,790	7%
Liver & intrahepatic bile duct	19,610	6%	Ovary	14,080	5%
Leukemia	14,300	4%	Uterine corpus	10,920	4%
Esophagus	12,720	4%	Leukemia	10,200	4%
Urinary bladder	12,240	4%	Liver & intrahepatic bile duct	9,310	3%
Non-Hodgkin lymphoma	11,450	4%	Non-Hodgkin lymphoma	8,690	3%
Brain & other nervous system	9,620	3%	Brain & other nervous system	7,080	3%
All Sites	**318,420**	**100%**	**All Sites**	**282,500**	**100%**

CA: A Cancer Journal for Clinicians: Siegel et al 2017.

Prostate cancer disparity

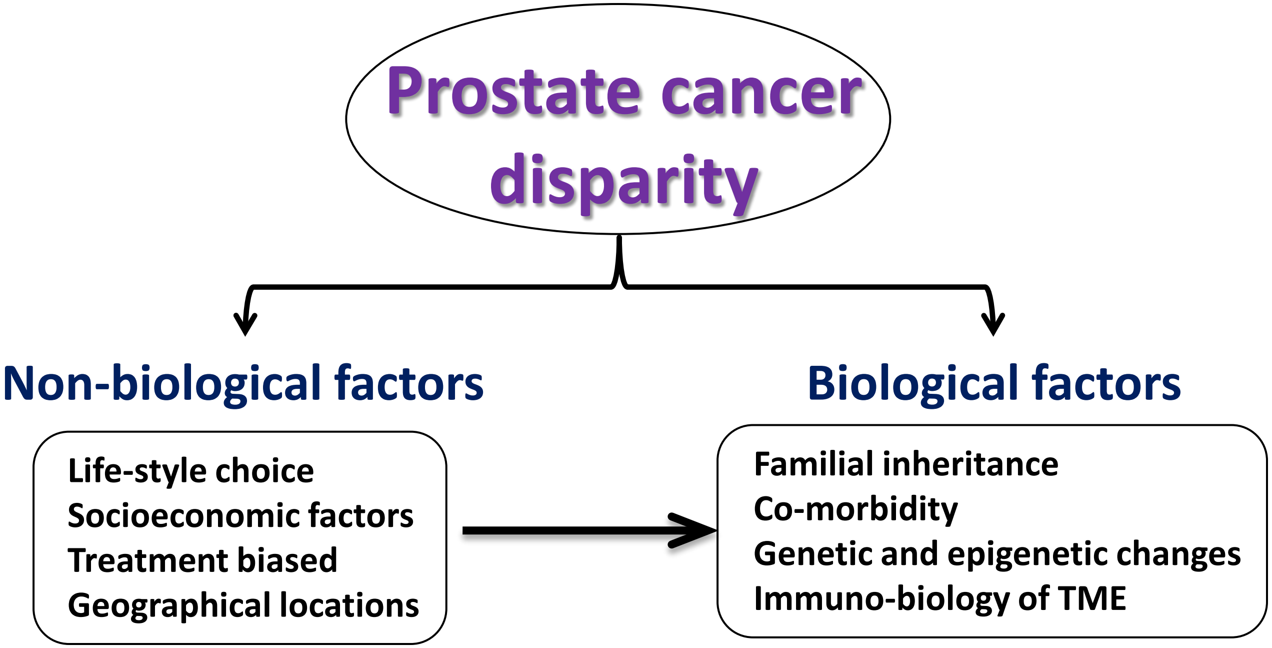




- **Prostate cancer disproportionately affects African American (AA) men**
- **Disparities in the treatment for AA, and emerging disparities in Hispanic men**
- **Younger AA men diagnosed with prostate cancer are less likely to receive treatment**

http://seer.cancer.gov/statfacts/html/prost.html

Prostate cancer disparity



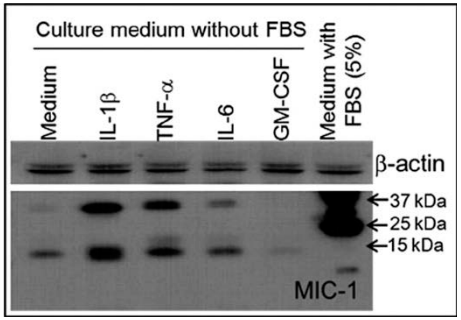
Prostate cancer disparity

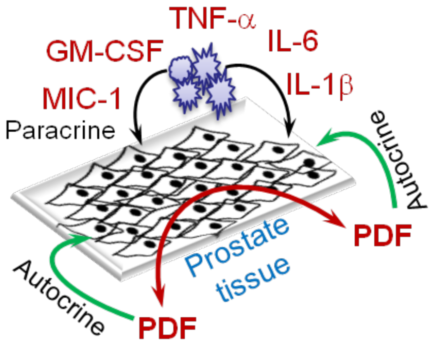
Non-biological factors

- Life-style choice
- Socioeconomic factors
- Treatment biased
- Geographical locations

Biological factors

- Familial inheritance
- Co-morbidity
- Genetic and epigenetic changes
- Immuno-biology of TME



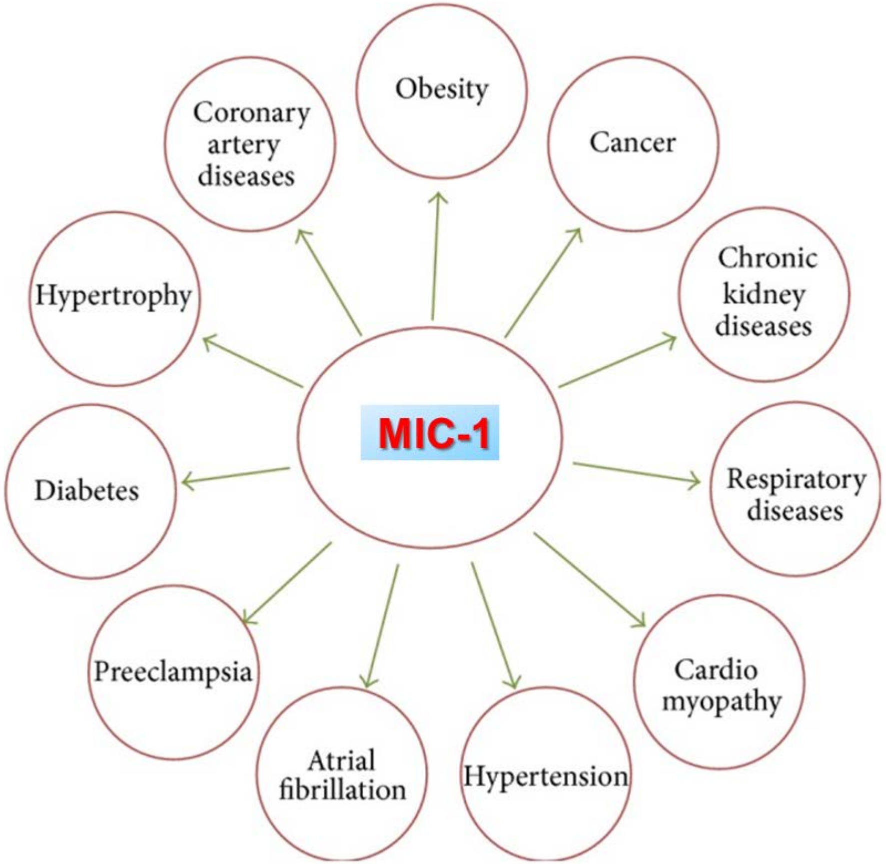


Macrophage Inhibitory Cytokine (MIC-1)

Member of TGF-β family

MIC-1 is associated with the development and progression of prostate cancer, and that the expression of MIC-1 is regulated by various cytokines

MIC-1 may inhibit secretion of TNF-α in tumor micro-environment reducing anti-tumor macrophage activity

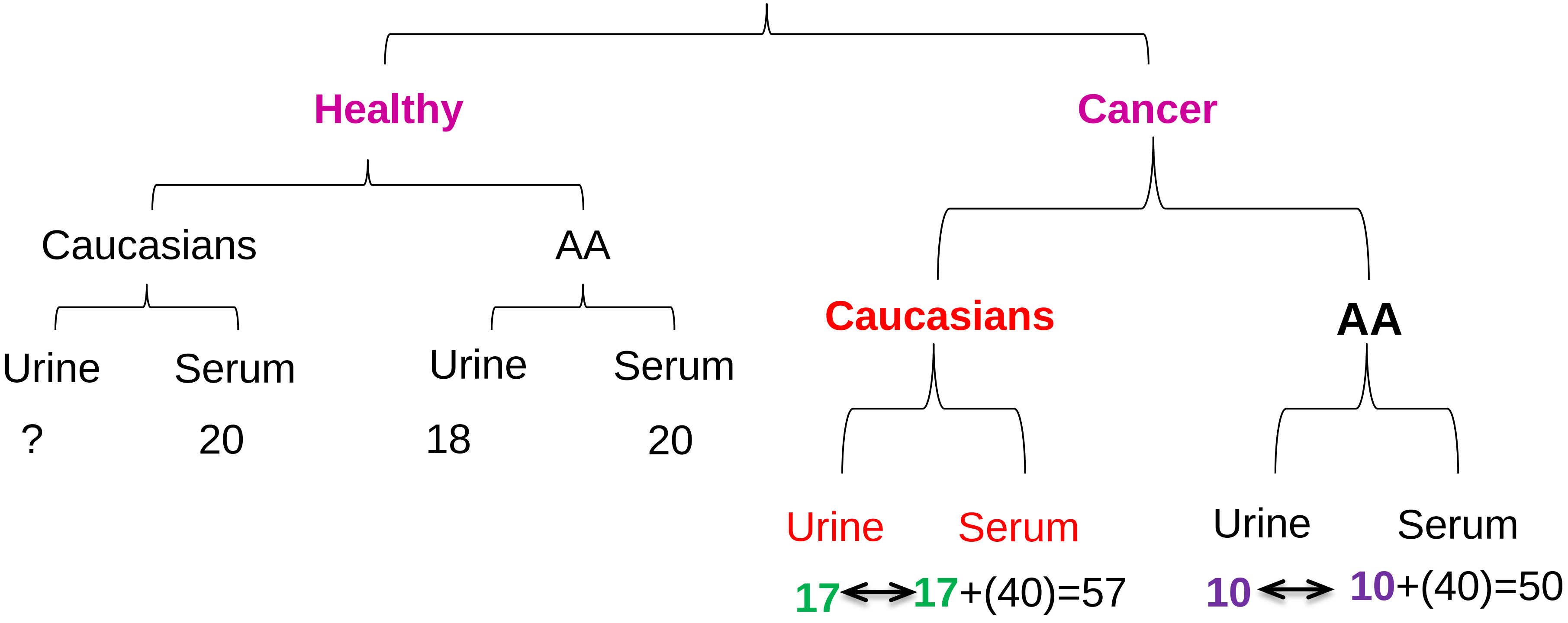


Purpose of the study

Objective: **To investigate the role of MIC-1 in the disparity of prostate tumor biology, and to determine if serum MIC-1 provides any predictive capability for racial disparity in prostate cancer in pre-surgical diagnosed males**

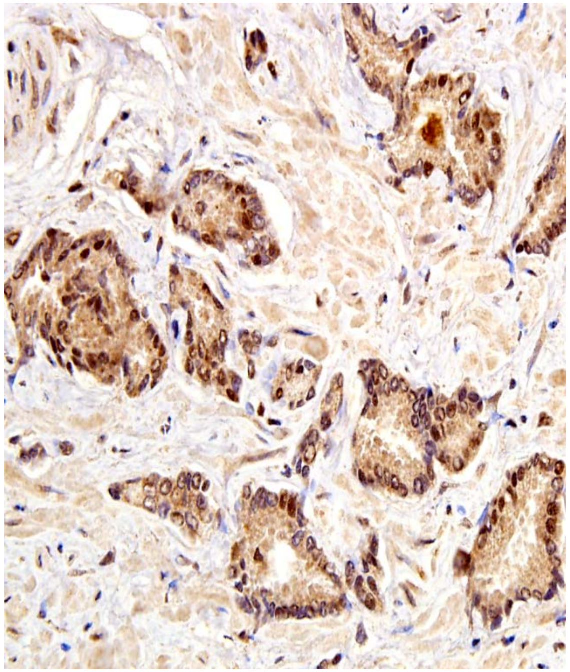
Methodology

Volunteers/Prostate cancer patients

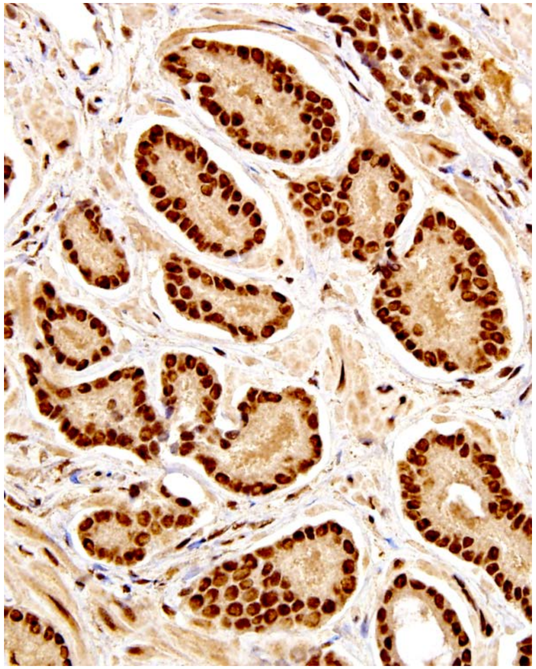


- **Healthy**
  - Caucasians
    - Urine ?
    - Serum 20
  - AA
    - Urine 18
    - Serum 20
- **Cancer**
  - **Caucasians**
    - Urine 17 ↔
    - Serum 17+(40)=57
  - **AA**
    - Urine 10 ↔
    - Serum 10+(40)=50

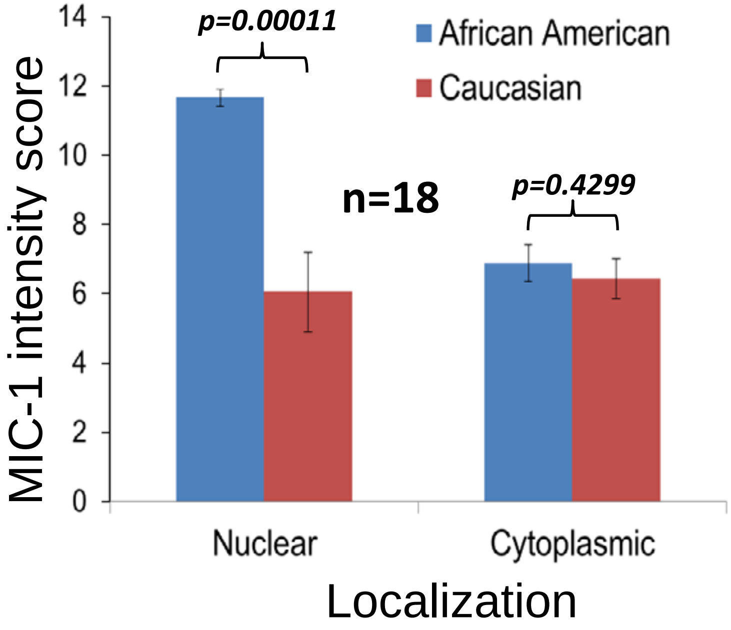
Disparity in MIC-1 expression in the prostate



Caucasian



African American



- Differential localization of MIC-1 in prostate cancer tissues

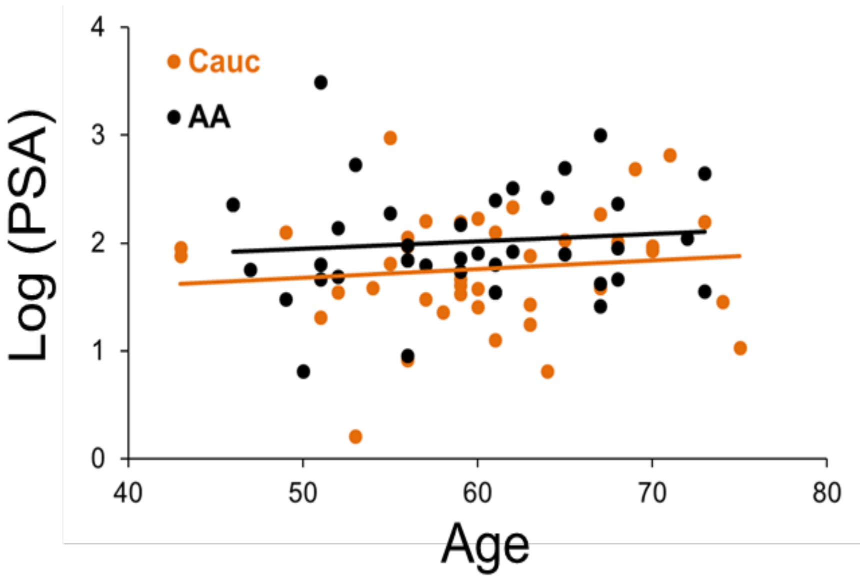
Disparity in MIC-1 expression in the prostate

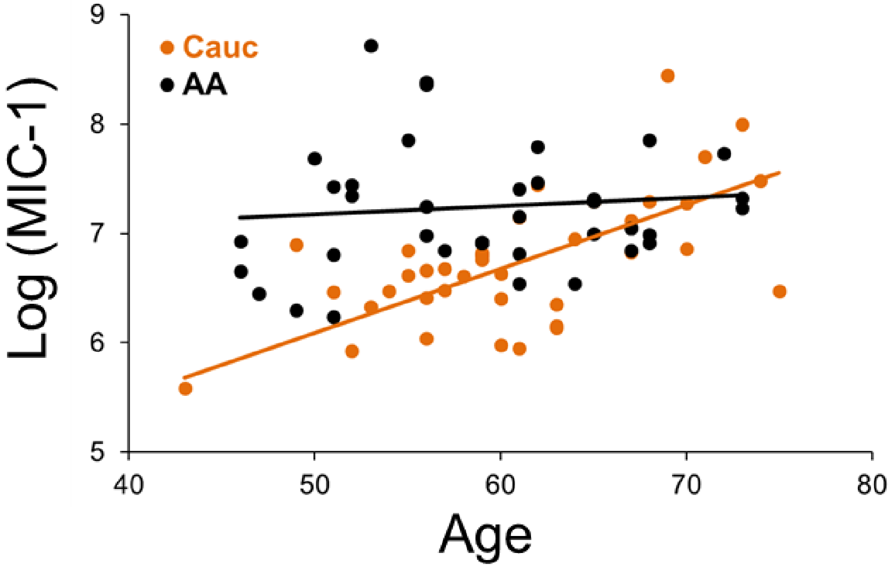
Summary of the clinical parameters associated with MIC-1 level among AA and Caucasian men diagnosed with prostate cancer

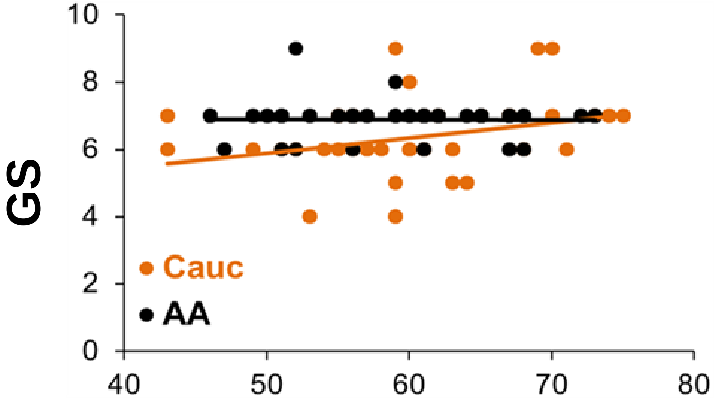
		All Samples (N = 80)	African American (n = 40)	Caucasian (n = 40)	p
MIC-1[*]		1004.9 (691.8, 1508.8)	**1220.4** (973.5, 1729.1)	**790.8** (587.6, 1141)	0.0001[†]
PSA[*]		6.6 (4.72, 9.03)	6.72 (5.37, 10.65)	6.35 (4.24, 8.2)	0.04[†]
Age[*] **(years)**		60 (55, 65)	59.5 (52.5, 65)	60 (56, 66)	0.5[‡]
Gleason Score[*]		7 (6, 7)	7 (7, 7)	6 (6, 7)	0.0009[†]
Stage	pT2a	12 (15%)	4 (10%)	8 (20%)	0.37[€]
	pT2b	3 (3.75%)	2 (5%)	1 (2.5%)	
	pT2c	59 (73.75%)	33 (82.5%)	26 (65%)	
	pT3a	3 (3.75%)	1 (2.5%)	2 (5%)	
	pT3c	2 (2.5%)	0 (0%)	2 (5%)	
	pT4a	1 (1.25%)	0 (0%)	1 (2.5%)	

Ages 43-75 years, Median = 60

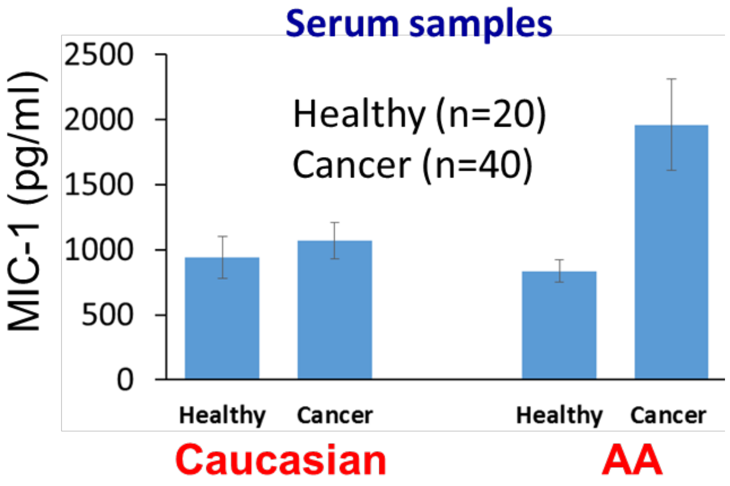
Disparity in MIC-1 expression in the prostate

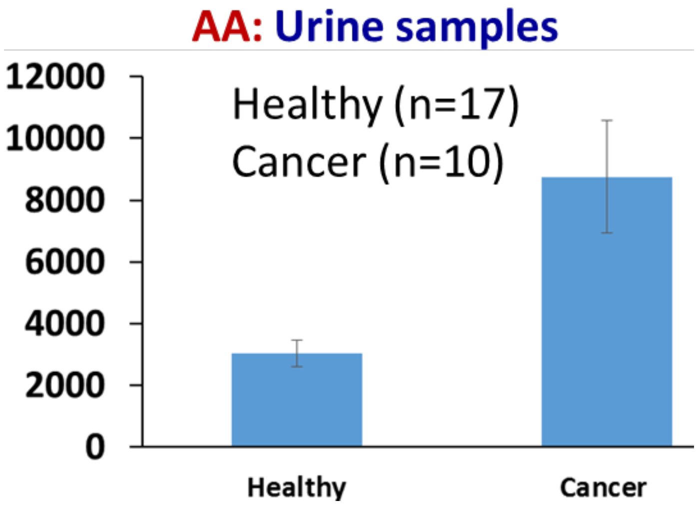


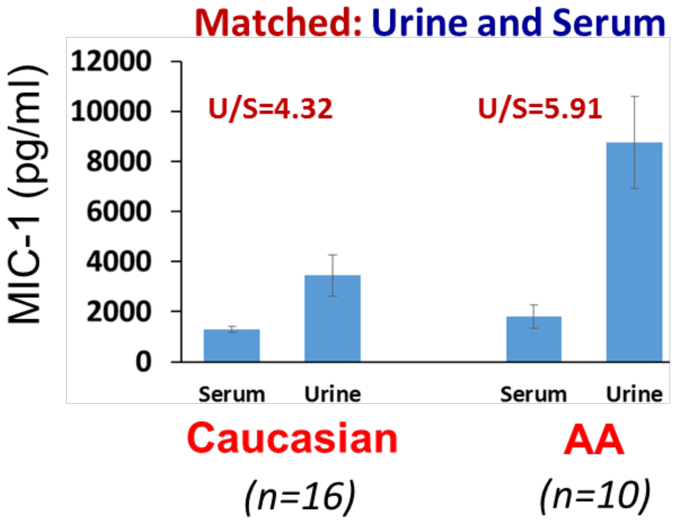




Disparity in MIC-1 expression in the prostate


Serum samples


AA: Urine samples


Matched: Urine and Serum

Summary and Conclusions

Expression of MIC-1 was predominantly **localized in the nucleus among AA** prostate cancer cells whereas in Caucasians, MIC-1 is mostly in the cytoplasm

Among **Caucasians**, higher levels of MIC-1 and higher Gleason scores are associated with older patients

Among **African Americans**, both older and younger patients have highly expressed MIC-1 and high Gleason scores

---

MIC-1 may help in understanding the disparity of prostate tumor biology among AA and Caucasians

High level of serum MIC-1 might serve as a potential biomarker for diagnosis of an aggressive stage of prostate cancer as often seen in AA men. However, the clinical significance could be evaluated with larger sample size

Acknowledgements

Current/past Lab Members

Seema Dubey, PhD
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Palliative and Supportive Care Equity (PaSCE) across the Cancer Care Continuum

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UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL
MARCH 17, 2017

UNC
GILLINGS SCHOOL OF
GLOBAL PUBLIC HEALTH

Presentation Overview

- Background on Palliative and Supportive Cancer Care
- PaSCE Research Agenda
- Disparities in Palliative and Supportive Cancer Care
- CHAMPS Study

What is Palliative Care?
What is Supportive Care?

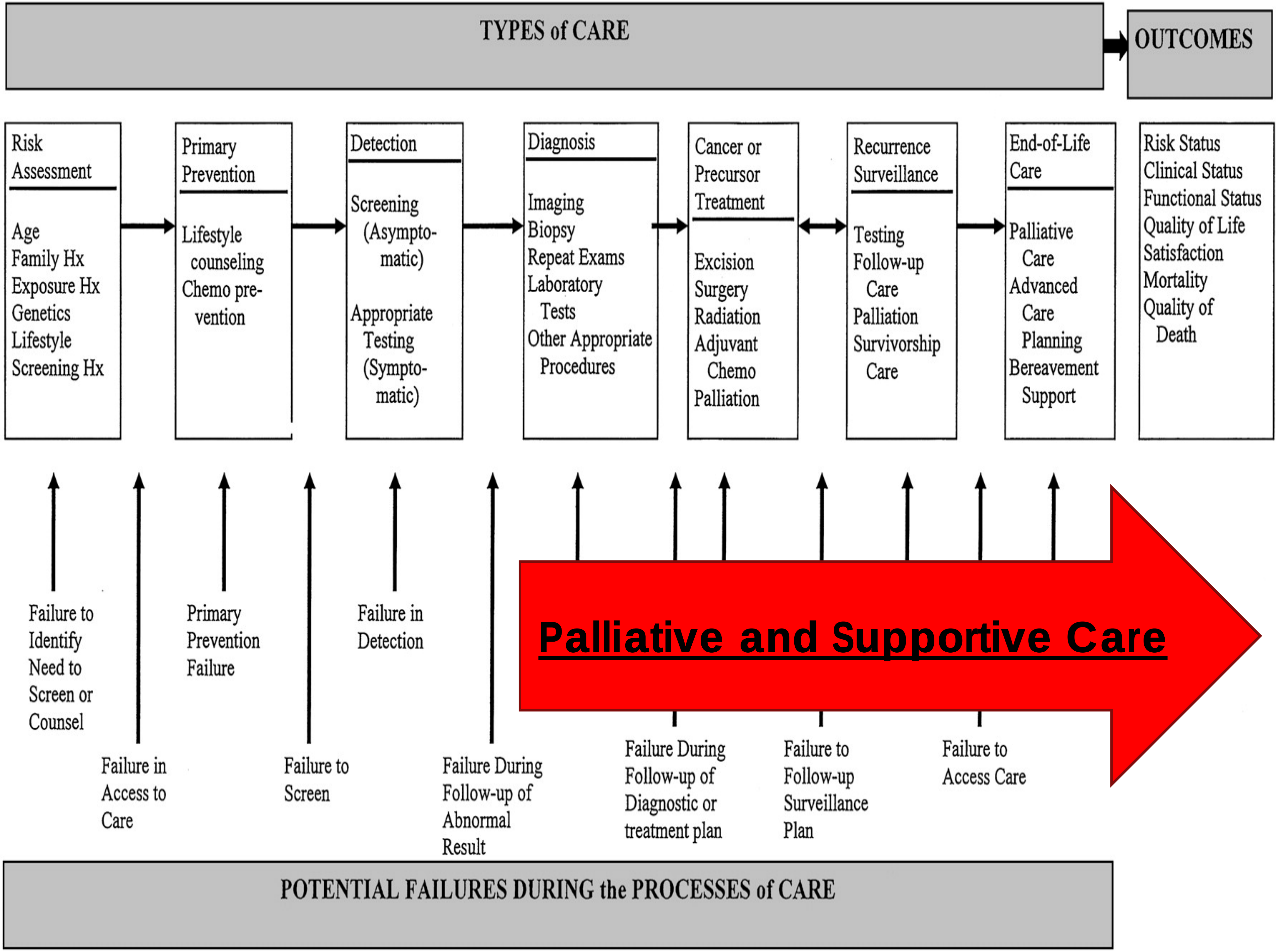
Palliative Care = Supportive Care

Symptoms and Side Effects of Cancer & Cancer Treatment

- Pain
- Nausea/Vomiting
- Diarrhea
- Fatigue
- Dyspnea
- Skin Toxicities
- Hair Loss
- Fear
- Anxiety
- Depression
- Distress
- Insomnia
- Sexual Dysfunction
- Infertility
- Hot Flashes
- Job Loss
- Financial Strain
- Spiritual Concerns

What is Palliative Care?
What is Supportive Care?

- **National Cancer Institute**
  - Palliative care is care given to improve the quality of life of patients who have a serious or life-threatening disease, such as cancer. **The goal of palliative care is to prevent or treat, as early as possible, the symptoms and side effects of the disease and its treatment, in addition to the related psychological, social, and spiritual problems.** The goal is not to cure. Palliative care is also called *comfort care*, *supportive care*, and *symptom management.*
- **Multinational Association of Supportive Care in Cancer**
  - Supportive care in **alleviates symptoms and complications of cancer, reduces or prevents toxicities of treatment, supports communication with patients about their disease and prognosis, allows patients to tolerate and benefit from active therapy more easily, eases emotional burden of patients and caregivers, helps cancer survivors with psychological and social problems.**



TYPES of CARE

OUTCOMES

Risk Assessment
Age
Family Hx
Exposure Hx
Genetics
Lifestyle
Screening Hx

Primary Prevention
Lifestyle counseling
Chemo prevention

Detection
Screening (Asymptomatic)
Appropriate Testing (Symptomatic)

Diagnosis
Imaging
Biopsy
Repeat Exams
Laboratory Tests
Other Appropriate Procedures

Cancer or Precursor Treatment
Excision
Surgery
Radiation
Adjuvant Chemo
Palliation

Recurrence Surveillance
Testing
Follow-up Care
Palliation
Survivorship Care

End-of-Life Care
Palliative Care
Advanced Care Planning
Bereavement Support

Risk Status
Clinical Status
Functional Status
Quality of Life
Satisfaction
Mortality
Quality of Death

Failure to Identify Need to Screen or Counsel

Failure in Access to Care

Primary Prevention Failure

Failure to Screen

Failure in Detection

Failure During Follow-up of Abnormal Result

Failure During Follow-up of Diagnostic or treatment plan

Failure to Follow-up Surveillance Plan

Failure to Access Care

<u>Palliative and Supportive Care</u>

POTENTIAL FAILURES DURING the PROCESSES of CARE

Types of Palliative and Supportive Care

- Medical Procedures
  - E.g., Palliative radiation
- Pharmacological Treatments
  - E.g., Opioid pain medications, antidepressants, benzodiazepines, antiemetics, antidiarrheals
- Non-pharmacological Treatments
  - E.g., Complementary and integrative medicine
- Support Services
  - E.g., Pastoral care, psychological counseling, physical/occupational rehabilitation

Palliative and Supportive Care Equity (PaSCE)

- Research Agenda
  - Assess – What inequities exist in palliative and supportive care?
  - Account – What modifiable and non-modifiable factors contribute to these inequities?
  - Address – What system changes are needed to address these inequities?

Disparities in Palliative and Supportive Cancer Care

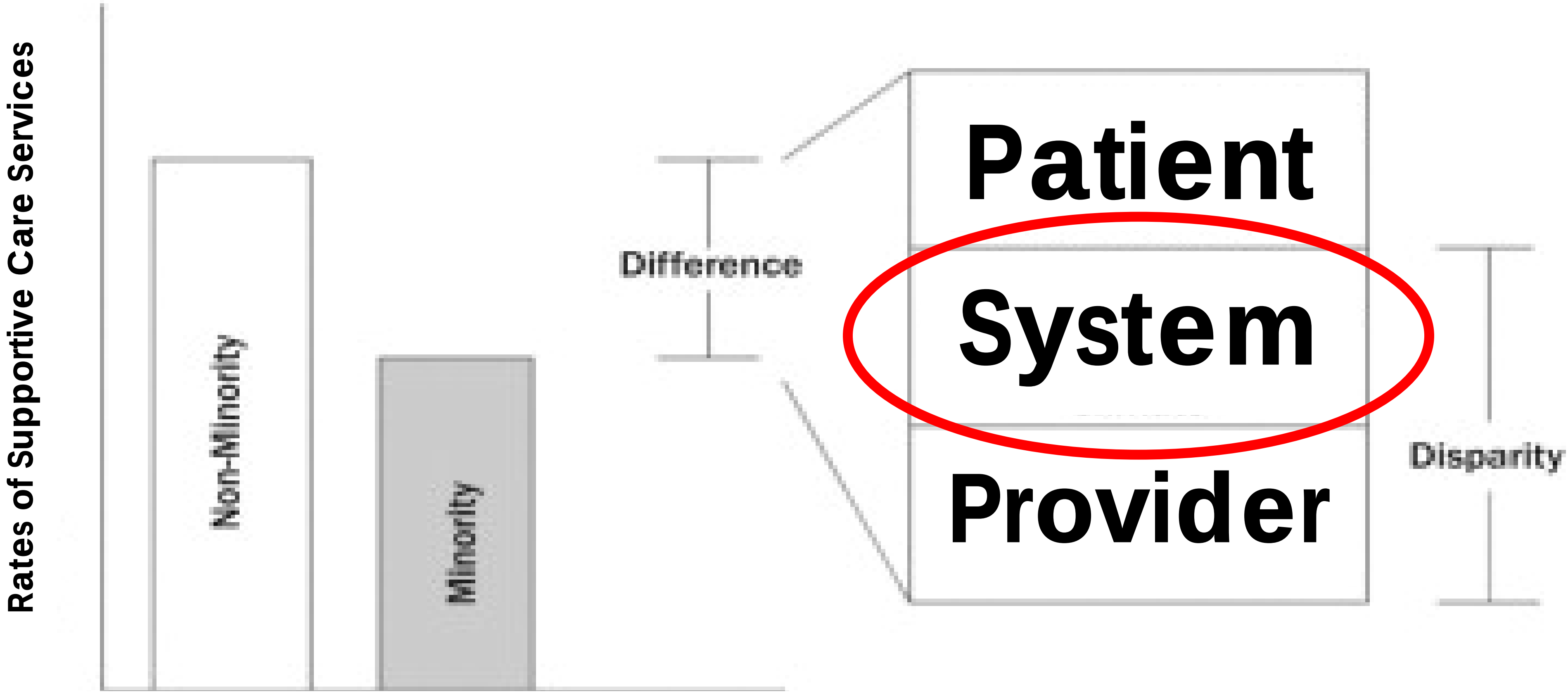
Disparities in Palliative and Supportive Cancer Care

- Racial/ethnic minority cancer patients more likely to report unmet symptom management needs and unmet needs for supportive care services
(John et al., 2014; Walling et al., 2016; Samuel et al., 2016)
- Racial disparities in early supportive medication use and end-of-life care among Medicare beneficiaries with breast cancer (Check, Samuel, Rosenstein, Dusetzina, 2016)

Disparities in Palliative and Supportive Cancer Care

- Implications for health-related quality of life
  - Black breast cancer survivors report lower physical and functional well-being and greater financial distress (Samuel et al., 2016; Pinheiro et.al, 2016)
- Impact on treatment adherence/completion
  - Symptom distress associated with less adherence to chemotherapy in Black breast cancer patients (Yee et al., 2017)
- Consequences for end-of-life care
  - Early receipt of palliative and supportive care, especially symptom management, associated with improved end-of-life care (Temel et. al, 2010)

Sources of Racial Disparities in Palliative and Supportive Cancer Care

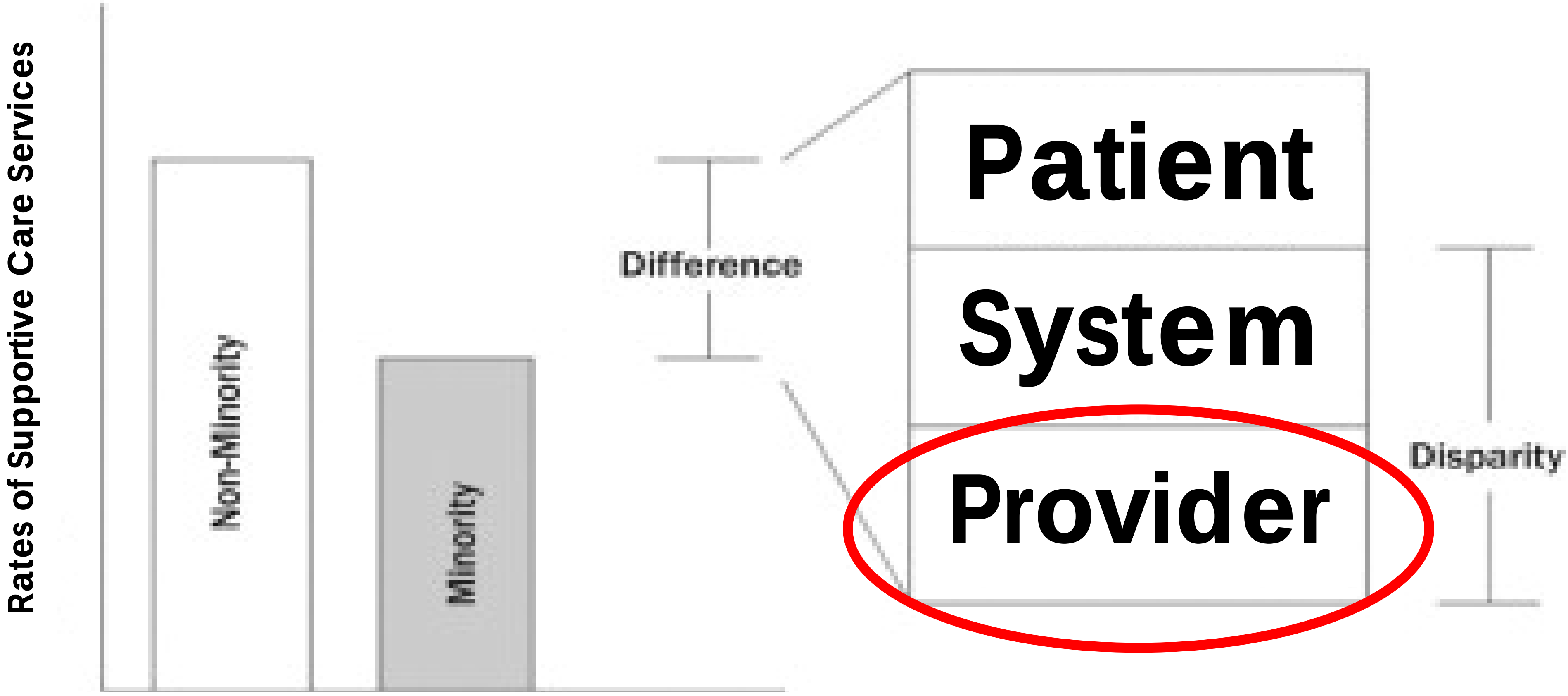


Source: Gomes & McGuire (2001)

System-Level Factors

- Pharmacies in predominantly minority neighborhoods less likely to carry sufficient stock of opioid pain medications (Morrison et al. 2000; Greene et al., 2005)
- Inadequate pain management (IPM) more common among racial/ethnic minority cancer patients, and predominantly minority serving facilities (Cleeland et al., 1994)
  - Discrepancy between patient and provider in judging severity of patients' pain linked to IPM

Sources of Racial Disparities in Palliative and Supportive Cancer Care



Source: Gomes & McGuire (2001)

Provider-Level Factors

- Failure to screen minority patients for pain (Bernebai et al., 1999; Burgess et al., 2013)
- Underestimate minority patients' pain severity (Cleeland et al., 1997; Anderson et al., 2000; Anderson et al., 2009)
- Black patients reporting pain (Hausmann et al., 2013)
  - Less likely referred to pain specialist
  - More likely referred for substance abuse assessments
  - More often subjected to urine drug tests

Fertile Ground for the Emergence of Cancer Care Disparities at **Provider Level**

- Provider-Level (IOM, 2002)
  - Subjectivity – variation in provider's understanding and interpretation of patient symptoms
  - Discretion – authority to make treatment recommendations/decisions
  - Uncertainty – regarding the condition of the patient and potential effectiveness of treatments
  - Time Constraints – limited time to see patients during office visits

Fertile Ground for the Emergence of Cancer Care Disparities at **Provider Level**

- Priors: prior beliefs about likelihood of patients' conditions based on observables (e.g., age, gender, SES, race/ethnicity)
  - Includes stereotypes and implicit bias
- Signals: new information gained from communicating with the patient (sometimes with varying levels of accuracy)

Fertile Ground for the Emergence of Cancer Care Disparities at **Provider Level**

- Providers must balance "priors" with "signals" gathered in the clinical encounter
- A noisy "signal" → greater reliance on "priors"
  - Creates room for influence of stereotypes and implicit bias
- **Statistical Discrimination** - Arrow (1973) Phelps (1972)

KEY TAKEAWAY

- Strategies that standardize and routinize symptom assessment and documentation (i.e., amplify the signal) are critical to addressing inequities in symptom control
  - Patient-reported outcomes (PROs)

Cancer Health Accountability for Managing Pain and Symptoms (CHAMPS) Study

NIH/NCI Supplement Award to ACCURE Study (5 R01 CA150980-04S1)
NCTraCS $2K Pilot Award (2KR691512)

CHAMPS

- Community-Based Participatory Research (CBPR)
  - Greensboro Health Disparities Collaborative (GHDC), Sisters Network Greensboro (SNG), UNC Chapel Hill, University of Pittsburgh Medical Center-Cancer Center (UPMC-CC), and Cone Health Cancer Center (CHCC)

CHAMPS

- Overarching Objective
  - To identify and address structures within cancer care systems contributing to racial disparities in symptom management, treatment completion, and HRQOL
- Mixed Methods Approach
  - Focus groups (Complete)
  - Survey and electronic medical record chart reviews (Underway)

CHAMPS Focus Groups

- Study Design
  - 6 race-specific focus groups and semi-structured interviews with N=22 Black and White breast cancer survivors
  - Community-Academic-Medical (CAM) partners facilitated focus groups and coded transcripts manually and with Dedoose software
  - CAM partners co-analyzed coded text to identify overall and race-specific themes

Symptom Diagram

Physical	External: Skin rashes, loss of hair, teeth or fingernails, skin discoloration, vaginal dryness Internal: Loss of energy, pain, hot flashes, vomiting, nausea, diarrhea, neuropathy, constipation, infections, loss of appetite, lymphedema, taste changes, chemo brain
Psychological /Emotional	Anxiety, fear of recurrence, change in identity, grief, fear about family member risk, depression, mood changes, loss of concentration, sadness, hopelessness, anger
Social	Change in family dynamics and relationships; your role at home, at work, or in your community; your role as a parent, employee, spouse, or friend
Financial	Financial distress, trouble paying medical bills, trouble paying utilities, rent, and other bills, trouble getting time off work, job loss, insurance coverage challenges, transportation issues
Spiritual	Strengthened/weakened spirituality/faith, questioned God or your own existence and purpose, wondered what you may have done to cause your cancer, second-guessed life choices

CHAMPS Focus Groups

Key Themes on Communication

- Both, White and Black breast cancer survivors reported:
  - Providers emphasized physical symptoms, but rarely mentioned non-physical side effects of cancer treatment (e.g., social isolation, financial toxicity)
    - *"Other than that I don't know that there was any of these other symptoms discussed with me. I definitely [don't think] any of the social, financial or spiritual ones were discussed. I think it was mostly the physical symptoms and maybe anxiety-type symptoms."*
  - Provider disregard of patients' symptom reports as a key barrier to symptom management
    - *"Moderator: Did they offer you any suggestions [for your symptoms]?*

      Participant: [Just….] Grin and bear it"

CHAMPS Focus Groups

Key Themes on Communication

- Compared with Whites, Black breast cancer survivors more commonly reported:
  - The importance of self-advocacy and patient engagement/empowerment to symptom management
    - *"I did that all on my own, where I wish they had said, 'Oh yeah, that's a very common thing. We've seen it before. This is what you can do.' You're out there on your own, I guess sometimes. You have to be your own advocate, for sure."*

CHAMPS Focus Groups

Key Themes on Communication

- Compared with Whites, Black breast cancer survivors more commonly reported:
  - Providers failed to adequately disclose potential side effects
    - *“I say really none. They didn't discuss those side effects with me.”*
  - Dissatisfaction with verbal and non-verbal provider communication regarding symptoms and symptom management
    - *“The one doctor. I don't know whether it was me or whether it was my race or whatever, but his body language said ‘I do not want to be bothered with you.’”*

CHAMPS Focus Groups

Summary and Limitations

- Racial differences in patient-provider communication exist among breast cancer survivors and may contribute to inequities in symptom management and HRQOL
- Inadequate communication regarding social, financial, and spiritual effects of cancer and its treatment

- Limitations
  - Exploratory study
  - Recall bias
  - Findings may not be generalizable to other races or cancer types

CHAMPS Focus Groups

Next Steps

- Survey and electronic medical chart reviews (Underway)
  - Examine racial differences in treatment-related symptoms and symptom management concerns among Black and White stage I-III breast cancer (BC) patients in active treatment
  - Examine whether racial differences in symptom management are linked to inequities in treatment completion

Closing Remarks

- Monitor race-specific data on cancer and treatment-related symptom management
  - Aligns with federal policies on meaningful use of health care data
  - Critical to efforts aimed at reducing disparities in symptom burden, HRQOL, and cancer treatment completion
- Routine symptom assessments (i.e., amplify signal) with PROs
- Novelty and value of applying CBPR to understand and address racial disparities in symptom management

Thank You

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Changing the Landscape of Cancer Care with Community Health Workers: Barriers & Alternative Payment Models

Annual Cancer Health Disparities Symposium
GMaP Region 1

Rumana S. Rabbani
March 17, 2017

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Regional Health
Equity Council
Cross-RHEC CHW Coalition

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Agenda

Background

- Community Health Workers
- Healthcare Reform
- Population Health/Social Determinants of Health
- Positive Outcomes
- Alternative payment models
- Summary of previous research findings

Research Overview

- Methodology
- Results
- Limitation
- Conclusion/Discussion

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Background

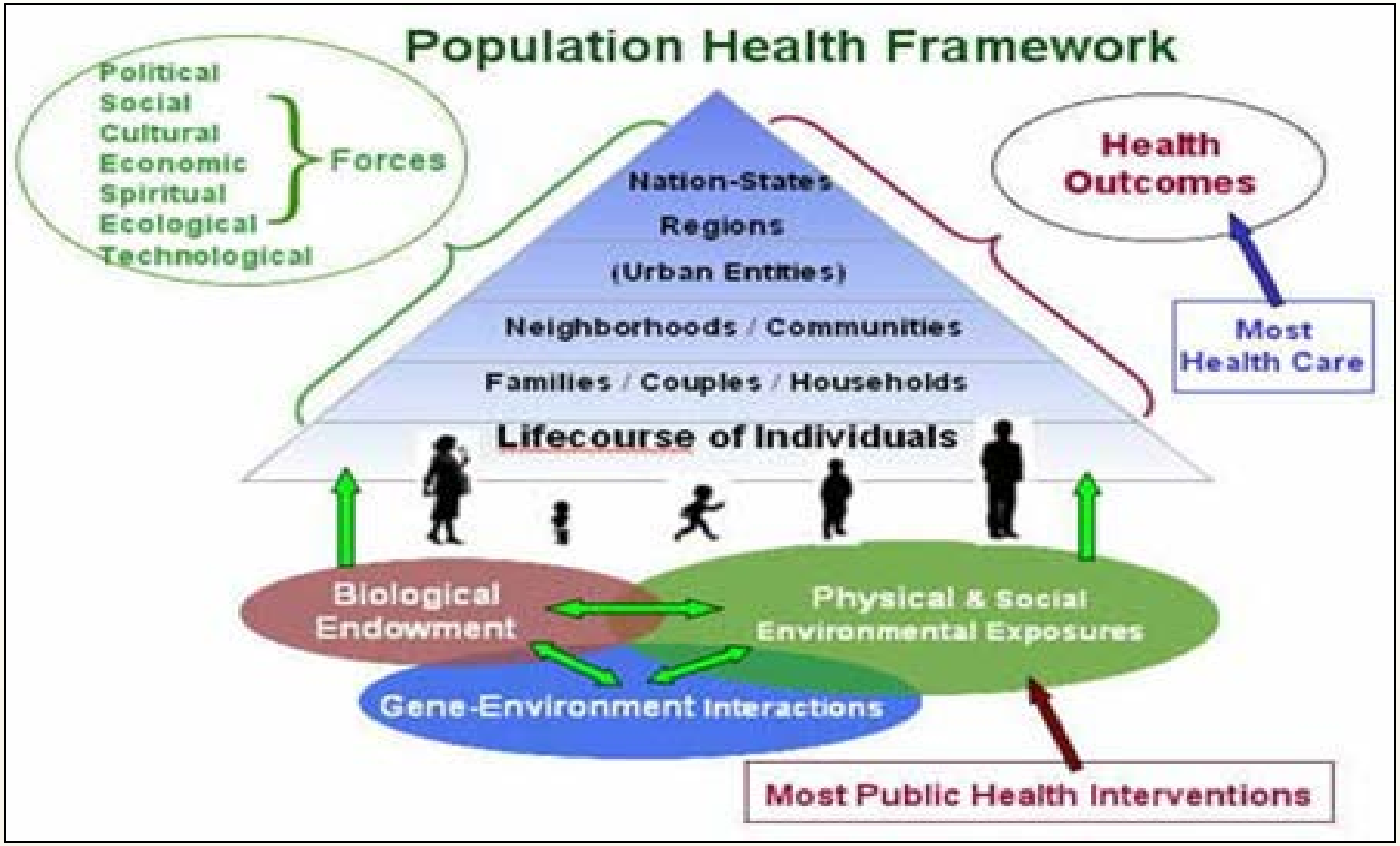
Community Health Worker (CHW)

According to the American Public Health Association definition:
A CHW is a *frontline public health worker* who is a trusted member of and/or has an unusually *close understanding of the community served*. This trusting relationship enables the CHW to serve as a *liaison/link/intermediary* between health/social services and the community to facilitate access to services and improve the quality and cultural competence of service delivered. A CHW also builds individual and community capacity by *increasing health knowledge and self-sufficiency* through a range of activities such as outreach, community education, informal counseling, social support and advocacy.[2]

Population Health

- Provides a strategic platform to improve the health outcomes of a defined group of people, concentrating on three correlated stages:
  - The distribution of specific health statuses and outcomes within a population
  - Factors that cause the present outcomes distribution
  - Interventions that may modify the factors to improve health outcomes

Population Health



Social Determinants of Health Areas

Karen Hacker, MD, MPH, Director, Allegheny County Health Department

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Social Factors with Important Direct or Indirect Effects on Health: The CHW Contribution

Upstream

- Education
- Income
- Race
- Working conditions

Downstream

- Knowledge
- Attitudes
- Belief
- Behaviors

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Healthcare Reform Recognizes and Encourages the CHW Workforce

Healthcare Reform

- Goals: Access to affordable health insurance, which reduces health disparities especially for vulnerable populations, increases public health preparedness, expands the healthcare workforce, improves the quality of healthcare delivery, and lowers healthcare expenditures[3]
- Recognizes and encourages the profession of CHWs: Section 5101 of the ACA includes CHWs in the definition for "primary care professionals"

CHW work results in overall:

1. *Patients* receive greater accessibility and quality of healthcare
2. *Payers and providers* receive greater share of savings:
    - Improved patient care and reduced healthcare cost
    - Higher probability of better outcome measurements
3. Overall savings are achieved for the *healthcare system.*

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State Program Approach	Intervention	Population	Return
Return on Investment			
Wilder Research Study	Outreach cost analysis	Cancer patients	ROI: $2.30: 1
Boston Study	Health Exchanges	Poor Latinos	More enrolled
Denver Study	Preventive and Primary care	Underserved males	ROI: $2.28 : 1
El Paso, Texas Study	Health Exchanges	Poor, immigrants	7,000 more enrolled
Seattle-King County	Home environmental assessment	Rural, low-income children	$1,124 per child/per year
Utilization / Quality-Of-Life			
Hawaii Study	ER Visits	Asthma patients	78% lower costs
West Baltimore Study	ER Visits	Underserved patients	40% fewer ER visits
New England Study	Home Visits	Maternal/Child health	Higher development quotient, shorter metabolic control
Seattle, Washington Study	Follow-up with patients	Hypertension	18% higher follow-up visits
Los Angeles & San Diego Study	Individual Counseling Sessions vs. Education Classes	Cardiovascular disease	Significant changes in systolic, diastolic blood pressures, and physical activity
Single Good Quality Study	Individual case management, primary care, public health resources	Post-incarcerates	Less use of ER
Colorado, California, Arkansas Study	Breast Cancer	Rural, low-to-moderate income, and minority women	Increased adherence with breast cancer screening

Source: http://cepac.icer-review.org/wp-content/uploads/2011/04/CHW-Draft-Report-05-24-13-MASTER1.pdf

CHWs and Cancer Care Interventions

Division of Cancer Prevention and Control

- State, territory, and tribal levels include CHWs and patient navigators (PNs) as part of strategy to control cancer through developing, implementing, and promoting effective cancer prevention
- Provides funds to help establish coalitions, assess the burden of cancer, determine priorities, and develop/implement cancer control programs (CCC)

Vermont Department of Health & Community foundations, Kindred Connections

- Peer-to-peer support program for cancer survivors
- CHWs cancer survivors provide support and encouragement to community members who have cancer
- Met the complex needs of cancer survivors looking for support in rural VT

DCPC's National Breast and Cervical Cancer Early Detection Program (NBCCEDP)

- Helps low-income, uninsured/underinsured women gain access to breast and cervical cancer screening and diagnostic services
- Provides community-based education (Alabama)
- Assists w/tracking and follow-up with abnormal screens for either breast /cervical cancer (Georgia)
- Helps women navigate program services and providing outreach (Connecticut)
- Schedules women for exams (Southeast Alaska Regional Health Consortium)

CHWs and Cancer Care Interventions

New York City Colorectal Cancer Control Program

- Provides colorectal cancer screening services to low-income, underinsured/uninsured men and women ages 50 to 64
- Patient no-show rate for colonoscopies dropped more than 45%
- Number of screened adults increased by 24%

Massachusetts Care Coordination Program (CCP)

- Incorporates new community-level navigation activities to support linkages between cancer screening services and individuals in the community
- 3 community-based organizations use CHWs to provide outreach to underserved and at-risk populations
- 9 educate community members about breast, cervical, and colorectal cancers using the Helping You Take Care of Yourself curriculum
- Link clients to community-based resources
- Helps clients get to a CCP clinical site for appropriate cancer screening services and primary care.

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Funding Methods for CHWs

- **Grants/Temporary Funding**
- **Fee for service reimbursement**
- **Alternative Payment Model**

  Form of payment reform that incorporates quality and total cost of care into reimbursement rather than traditional-fee-for-service structure

  - **Enhanced fee-for-service**
  - **Value-based Payment**
  - **Shared Savings Plan**
  - **Bundled Payment**
  - **Global Payment**

Minimal Risk

Partial Risk

Full Risk – Capitation Payment

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Sustainability of the Community Health Worker Workforce: Achieving Health Equity and the Triple Aim through Legislation and Alternative Payment Models

Legislation

- Little review or analysis of existing state-level approaches to health equity exists to help inform a move to a social determinants of health approach.

Payment for CHWs include:

- Grant Funding
- Fee-for-service reimbursement
- Alternative Payment Model

**please refer to hand-out*

Based on last year's research

- Hypothesis - CHWs are effectively implemented and sustained through alternative payment models.

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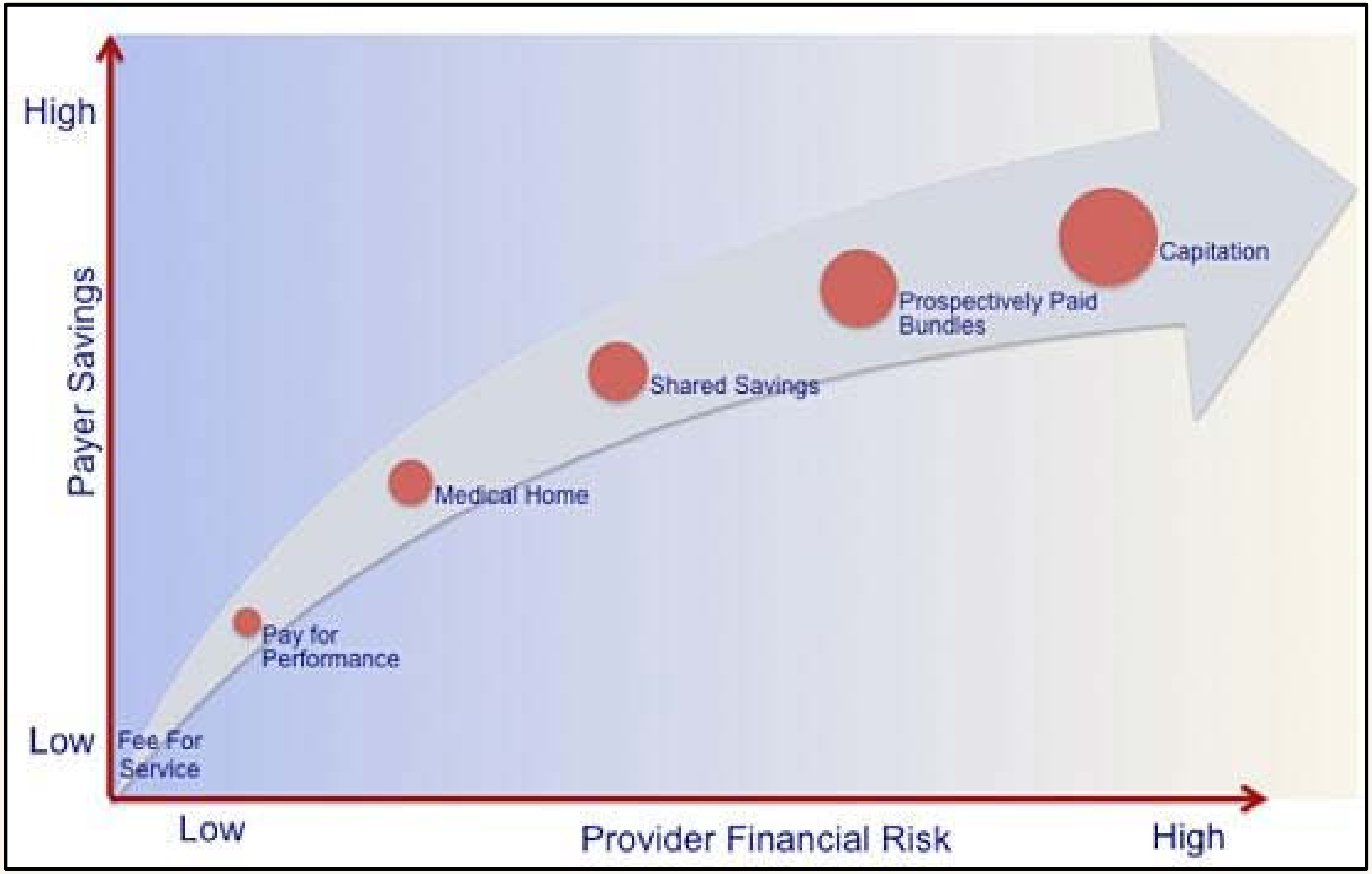
CHW Roles Change the Landscape of Healthcare from Volume to Value



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Objectives, Qualitative and Quantitative Methods

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Objectives

I. Gain insight into payment methods that exist nationally

II. Understand the effectiveness of Alternative Payment Models and why it is preferred for CHWs

III. Receive feedback from community health organizations, payers, and healthcare stakeholders regarding the incorporation of CHW roles in health care reform models for totality of health - social determinants of health and healthcare

IV. Assess community, health care, and payer organizations viewpoint of most effective payment for CHWs

V. Gain insight about barriers to implement CHWs (i.e. challenges, scope of work, metrics, strategies, etc.)

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Methodology

- **Secondary Research: Literature review, Environmental Scan**
  - CHWs in regard to SDH and Population Health
  - Aligned with Healthcare Reform goals
  - Alternative payment models recommended through Healthcare Reform

- **Primary Research: Key Informant Interviews**
  - Qualitative – open-ended and Likert scale with community health, healthcare, and payer organizations
  - 5 Community Health organizations (hybrids)
    5 Payers
    4 Providers
  - 1 hr. to 1 hr. 45 minute interviews
  - 15 Questions

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Methodology

1. Qualitative

- Microsoft Excel
- Identified Quotes by category
- Identified themes and sub-themes
- Coding based on themes
- Statistics – calculated frequency and proportions
- Qualitative Charts, key contextual quotes

2. Quantitative

- Microsoft Excel
- Likert Scale: Frequency Analysis, Mean Score Comparison
- Quantitative Charts

Qualitative Results

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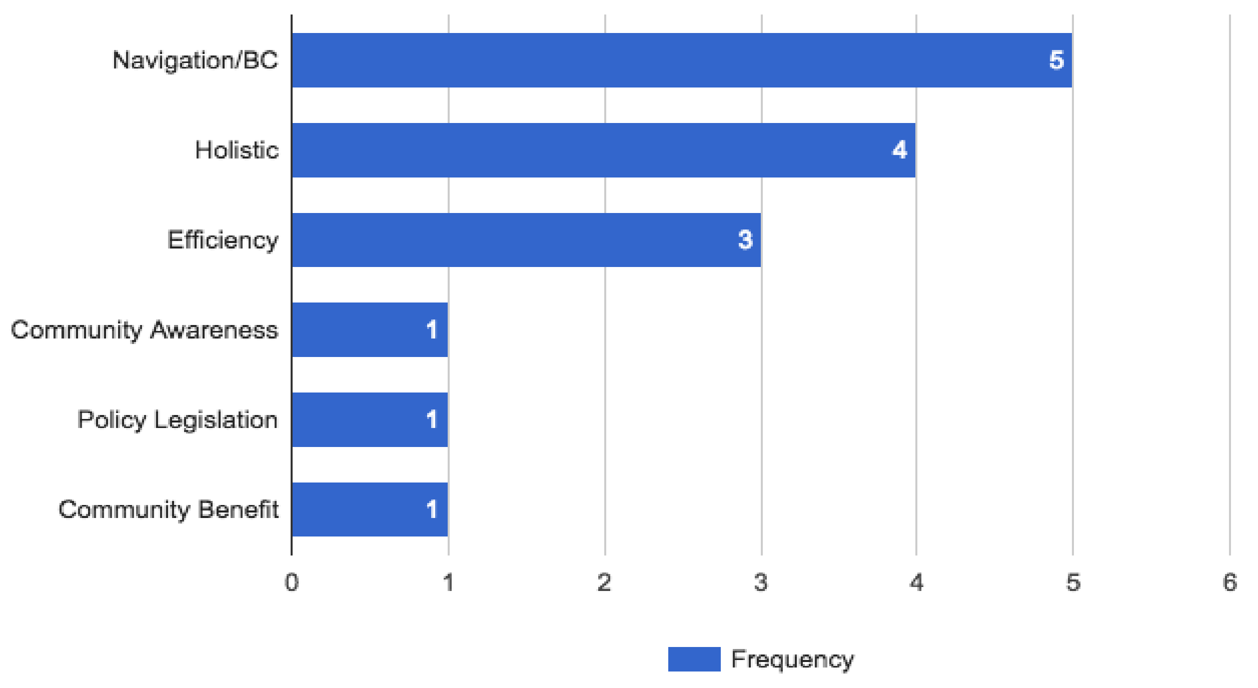
CHW Value Proposition



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CHW Value Proposition

- **Community Based Organization:**
  “It is the most effective model to reach the folks that we want to reach. For the Latino population in our state the main barrier that they have to getting the services that they want and need is trust. We have anti-immigrations laws and a lot of the barriers for other populations that may be low income. Including cultural differences and language challenges…so CHWs that are like them and understand where they came from understand the wall [and] are the most effective [workforce] to build that trust and help them.”

- **Payer:**
  “CHW are a staffing source that is viewed as having sustainability, flexibility, adaptability, and supports local capacity building.”

- **Provider:**
  “Our CHW positions don't require a college degree, yet our patients benefit from the CHWs’ knowledge of the community and their ability to speak effectively with our patients.”

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CHW Associations - Themes

- Themes: support, advocacy, gives CHW voice, training, alternative payment models
- 3-tier level of engagement with CHW Associations:
  - Comm. Orgs - All organizations involved with association
  - Healthcare Organization - Most involved at some level
  - Payers - No involvement currently
- Payers know about immediate circle, more myopic
- Comm. orgs and Providers have a need to reach out to community; payers are new entrant for using CHWs
- Some orgs do not get involved with CHW Association due to opposing beliefs
- Mission and vision have to align for CHW association and organization to be successful

Scope of Work

- **Mixed from top down to a collaborative process** with CHWs but mostly determined by funding

1. Top down

- Supervisors determine the scope of work; driving force behind defining scope of work is payment
- Community Org:

“[Scope of work is determined by] the senior management team.” – NH

2. Collaborative approach Inclusive model used – proves to be more effective (better retention, more sustainable, better metrics)

- CHW model since workforce is “at the table”
- Community Org:

“Higher level CHWs are supervisors of others CHWs. They wanted to create a career path for CHWs. They do not have to know English to be higher up. They carry out the roles/ carry out scope for formal levels of education or language skills, but [we] understand that they make valuable contributions regardless if they can deliver on all the roles”. - ME

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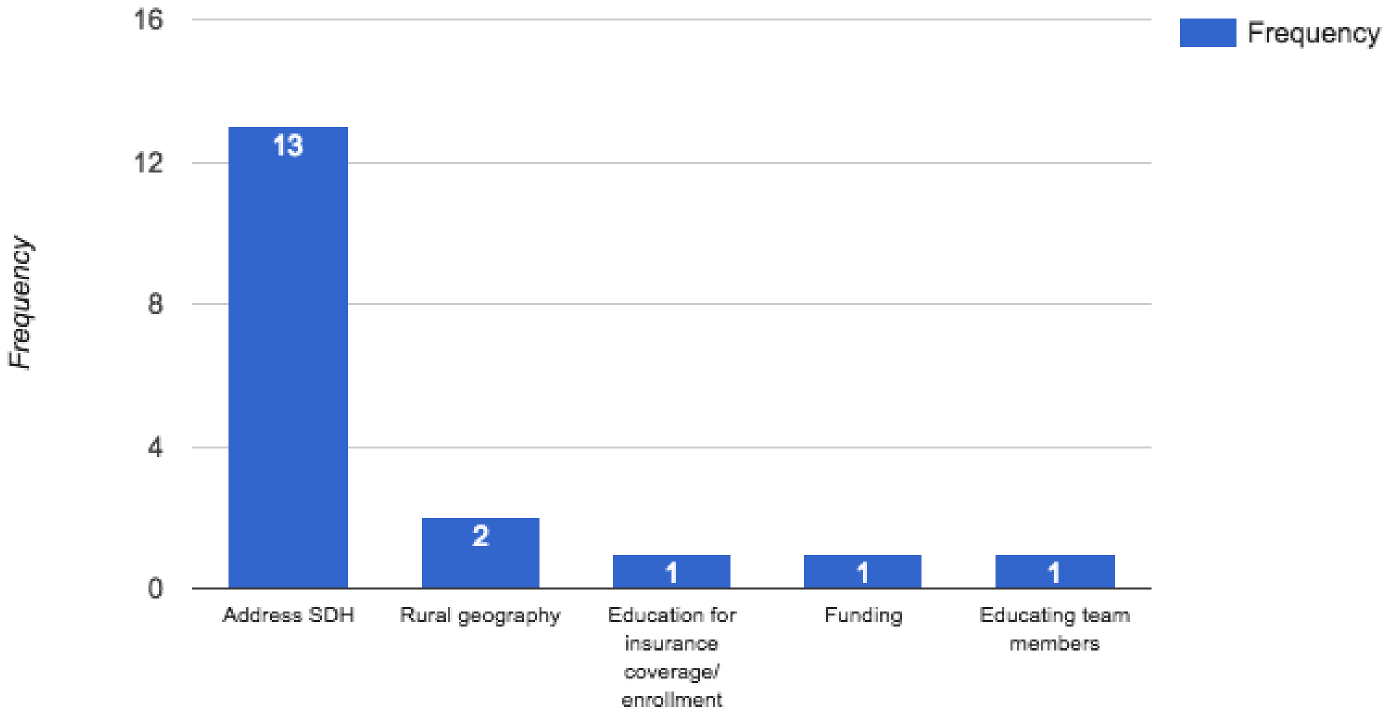
Challenges - Themes



Challenges

Provider:

…I have a breast cancer screening for early detection…I go to someone’s house who is under distress and maybe husband is in detention and individual is in farm worker housing, her husband is in orchard so housing is connected to employment, so not only is [her] husband gone, income [has] disappeared, and now housing may be an issue. [We] Need to identify most immediate needs and then come back and talk about screenings….” - Wisconsin

Provider:

“Although we've been doing this for ten years [another challenge] is educating the provider team. We'll get some new physicians or a new registrar [and] this is sort of a foreign language for them. What is a CHW? How does that work? How do we integrate [CHWs] into our practice to know the challenges [that] occur?” - NY

*Currently, providers in NYC is using CHWs as leaders in among 7 providers out of the 35

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Metrics - Themes

- Metrics used include:
  Process, clinical, utilization, Triple Aim measures, Quality of Life, Story-Telling, Qualitative Evaluation, ED Reduction, Cost Assessment
- Process metrics are in a 3-tiered level of complexity:
  1. Patient Count
  2. SDH Interventions
  3. Touch/face-to-face interventions

“We implemented the **Cambridge Health Alliance tool** that gives you the drivers and what is a high risk [patient] and then we were able to use that process to better identify the right patients that might benefit from the community health team.” - VT

Metrics

Community Health Org:

"[We also use] anecdotal story-telling about successful interventions with social determinants of health...like how many people you help connect to food or transportation…" - NH

Provider:

"We take a cohort of 15 diabetics and give them a weekly healthy food and counseling program. And we track A1c measures for those people…" - Wisconsin

"We actually populate their patient registry with clinical data and track that over time as well as the touches…we can then break this down and look at it from a gender perspective, ethnicity, age, clinical diagnosis, the number of touches...so we actually come away with some very intriguing information…"

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Skillset – Themes

- Key skills:
  Understanding of the Community, Inherent Qualities (such as respect, trustworthy, empathy, cultural sensitivity)

- Secondary skills:
  Leadership, Communication Skills, Prior Experience, Bi-lingual, Degree, Certification

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Skillset

Community Org:

“But there are traits that are embedded in the person that they are screened for as well...someone who is oriented to be empathetic towards others. These are traits that you can’t train for...so they look for that in a CHW”. - ME

Provider:

“Two key requirements: from the community... reflect the community – someone who has been there, had the same experiences as the community – had walked the walk of patient and someone who has the skill set to be leader in the community or has that skill set to connect and build trust quickly. Very little healthcare knowledge is [needed]... [it’s] better to be more authentic with the patient.”

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Strategy – Themes

Key strategies for success of CHW programs

- Retention
- Value CHWs
- Grant writer
- Inherent Quality
- Leadership skills
- Administration & team support
- Career/Education Advancement
- Training
- Balancing Education & Training
- Salary opportunities
- Tracking outcome measures
- Story-telling
- Incentives
- Support System
- Advocate
- Being at table
- Advocacy
- Policy Work
- Technology

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Strategy

Community Org:

"[We are able to sustain successfully] through a lot of grant writing and the advocacy and policy work to promote the value and identity of CHW. To sustain the FTEs it comes down to the grants they submit and being in good standing with the Bureau of Primary Health Care at HRSA."

"[For retention of CHWs] having the career path in place is key, having roles that CHWs can grow into, providing access to continuing education or learning, supporting them and the time and space to network and communicate with other CHWs internally and externally"

Provider:

"Boils down to commitment of leadership at hospitals…believing in [the] CHW model...you don't need licensed people to help with social determinants of health."

Strategy – H.I.E
Promising Practice

“The entity that oversees that **Health Information Exchange** project provides them with a panel of patients …they are able to identify them in their alert system and within their H. I.E. so if one of those folks ends up in the emergency room or the hospital they send us the alert through secure email process…we get it in real time and staff monitor this… We can act on it more quickly [and] incorporate it into our work routine.” - RI

“We get notifications when a patient is in a hospital through this electronic process…we are incorporating that into our daily routine. So not just the hospital that we're affiliated with but all of the hospitals in the state are doing this. Due to the patient registry at state level we're able to get those…”- RI

Quantitative Results

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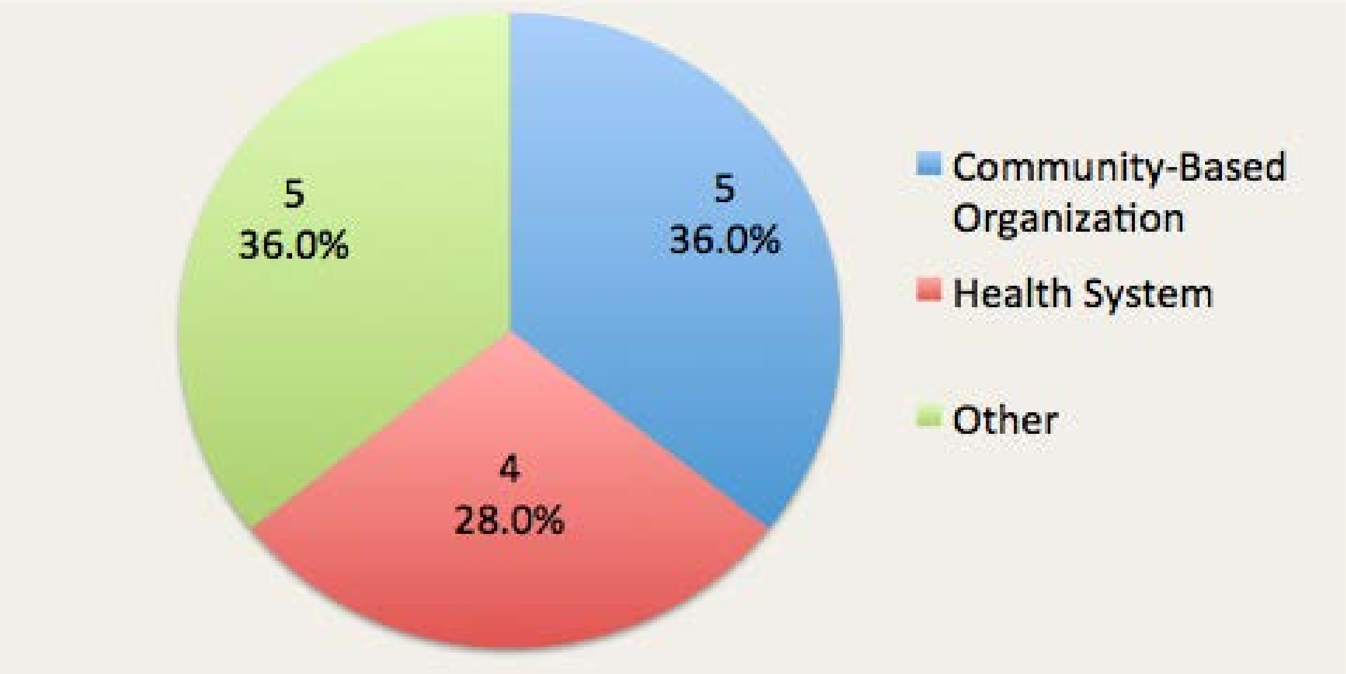
Type of Organization

Q1. Is your CHW program affiliated with a community based organization or a healthcare system?



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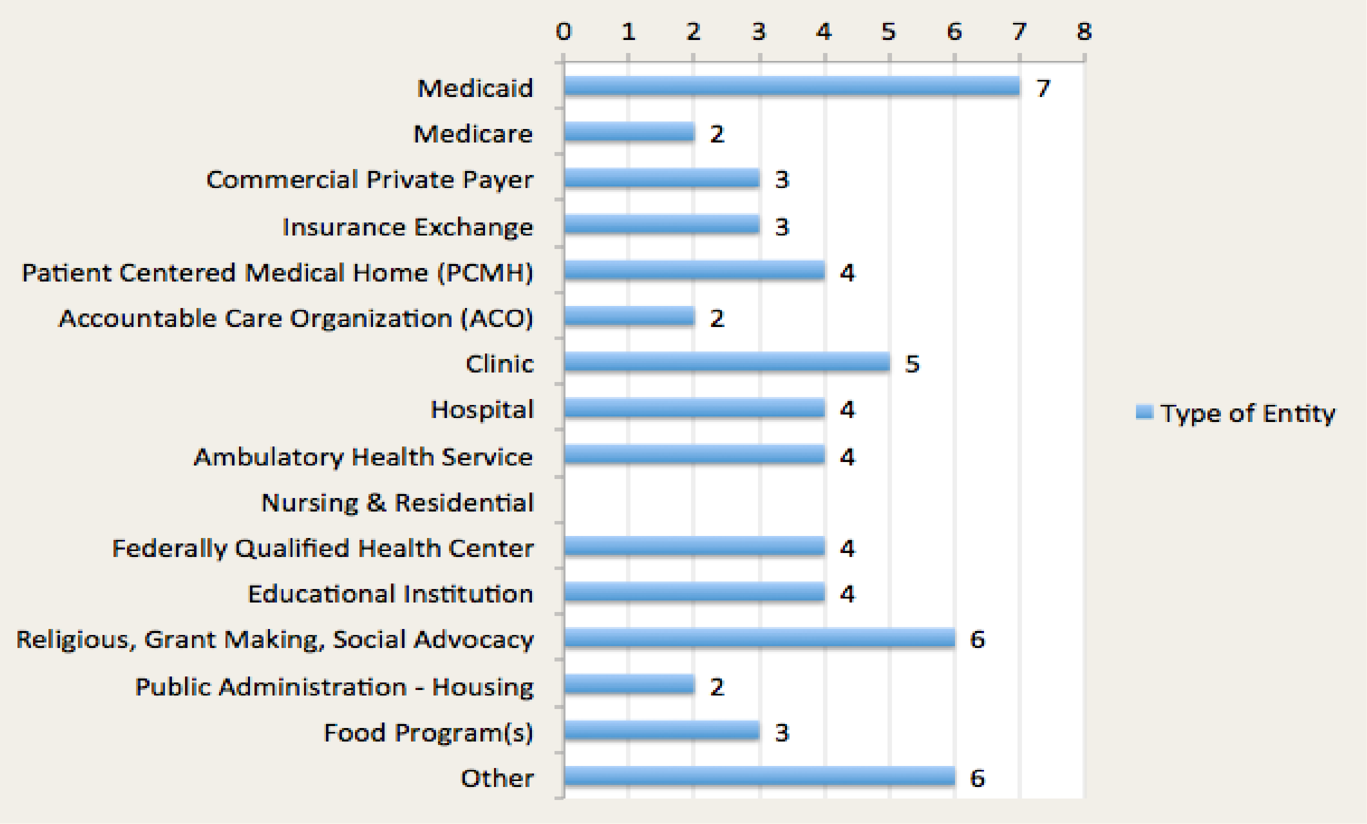
Entity Implementing CHWs

Q2. What type of entity /health care reform program are you using to implement CHWs?



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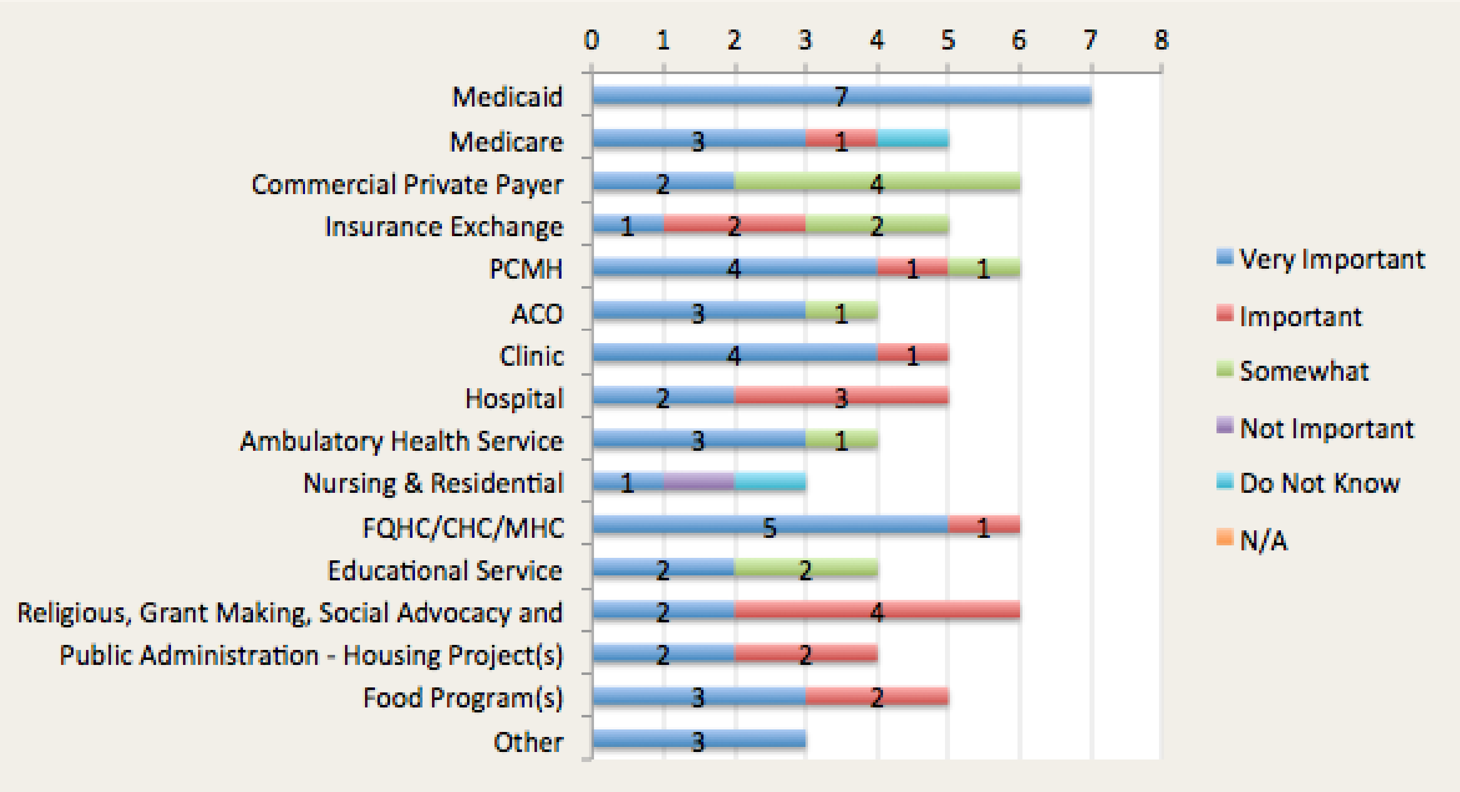
Importance of CHW workforce

Q3: Indicate the importance of the CHW workforce to entities below that may be relevant for your organization:



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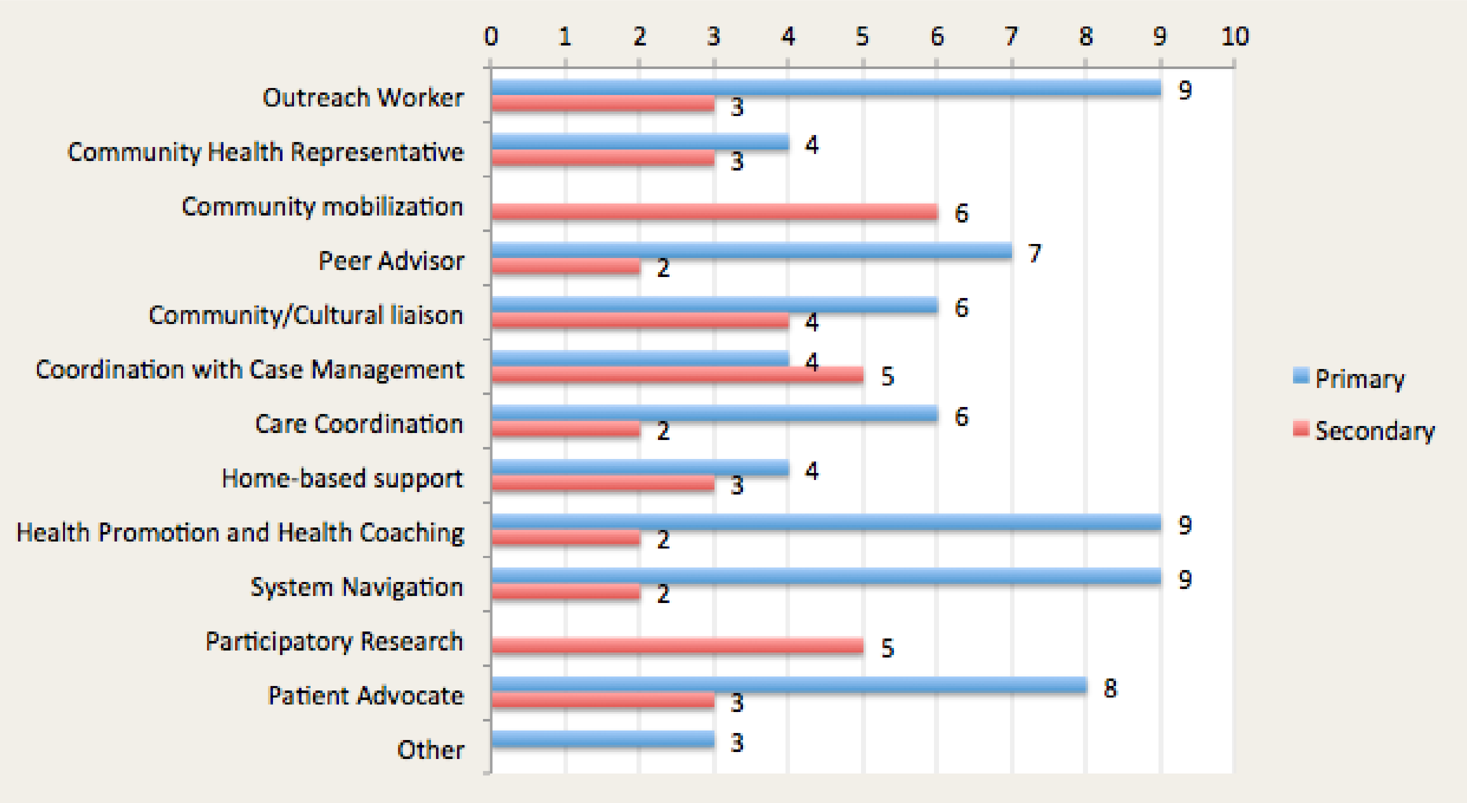
CHW Roles – Primary vs Secondary

Q5a. Are there any other positions from the list below in which CHWs are involved in your organization?



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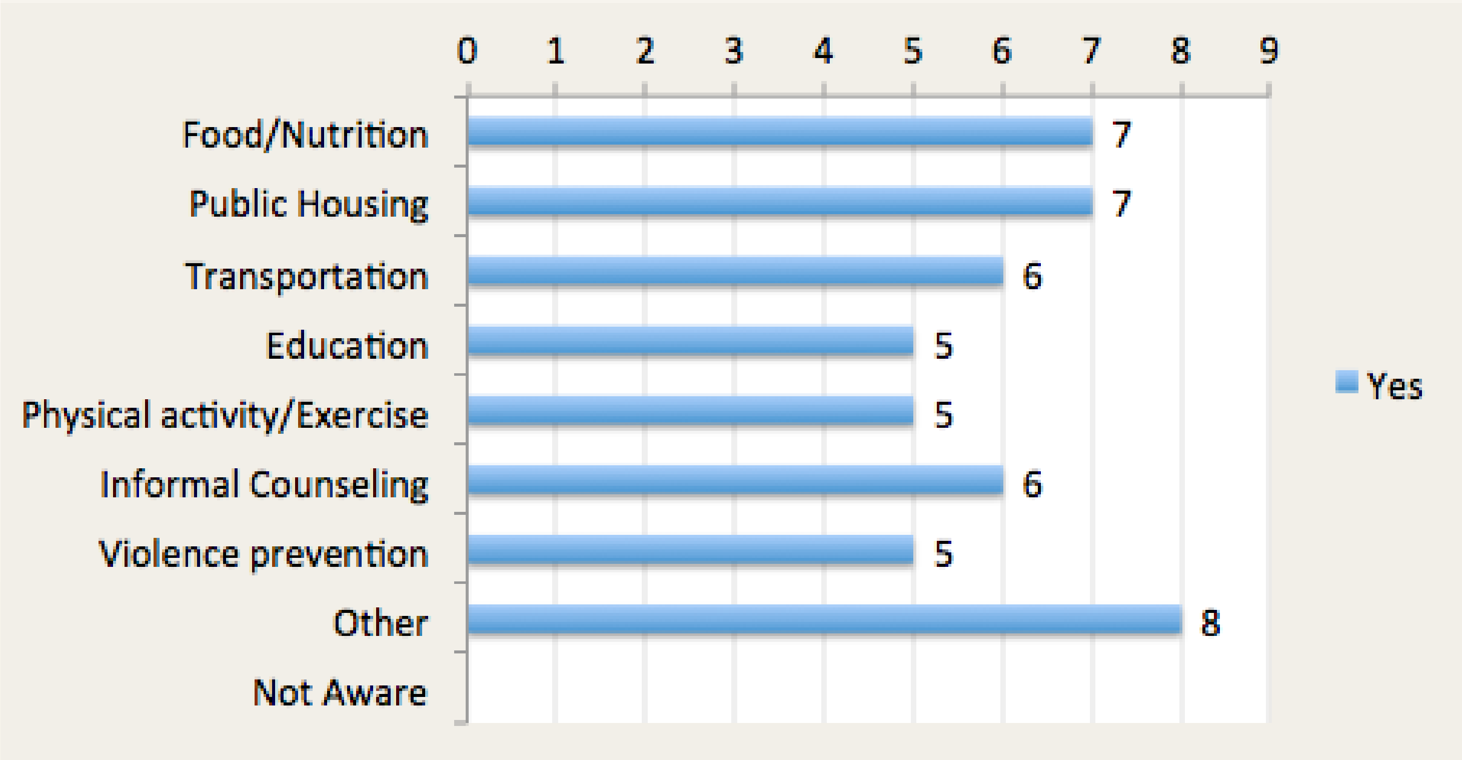
Payment for SDH

Q4a. Does your organization currently pay CHWs to help access services in the areas of <u>social determinants of health?</u>



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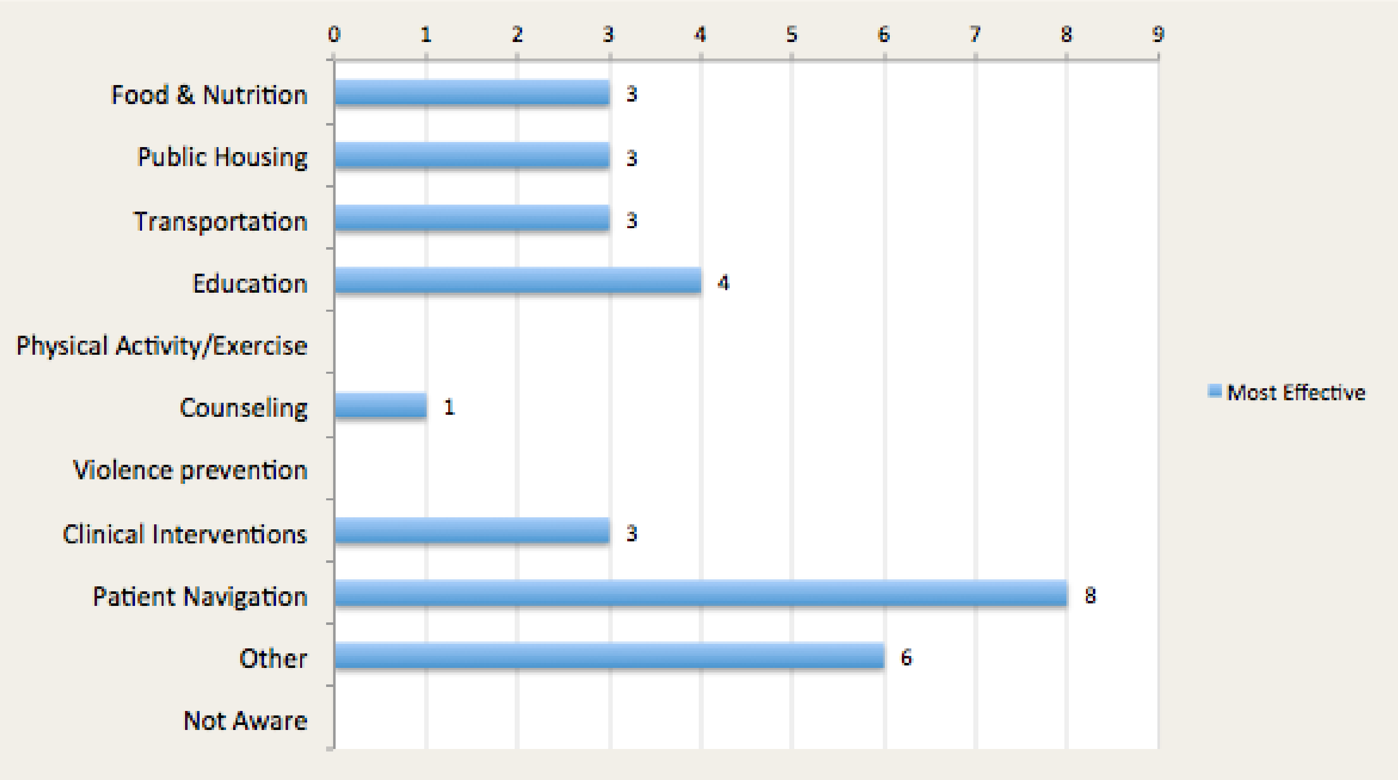
CHW Interventions

Q5d. In which interventions are CHWs most effective in your program from the list below?



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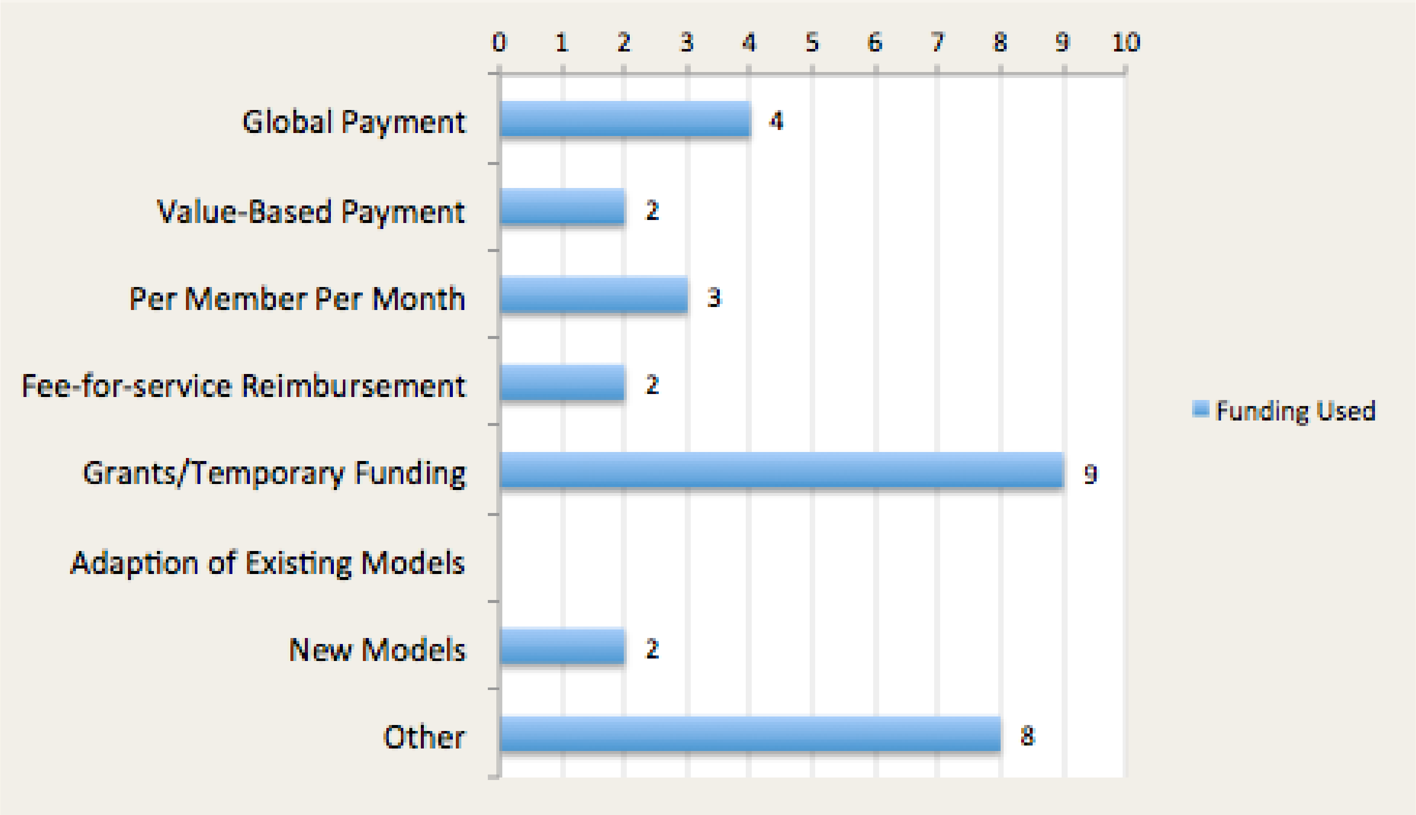
Funding Method Used

Q6a. What type of payment model(s)/funding method from the list below is used to pay CHWs in your organization?



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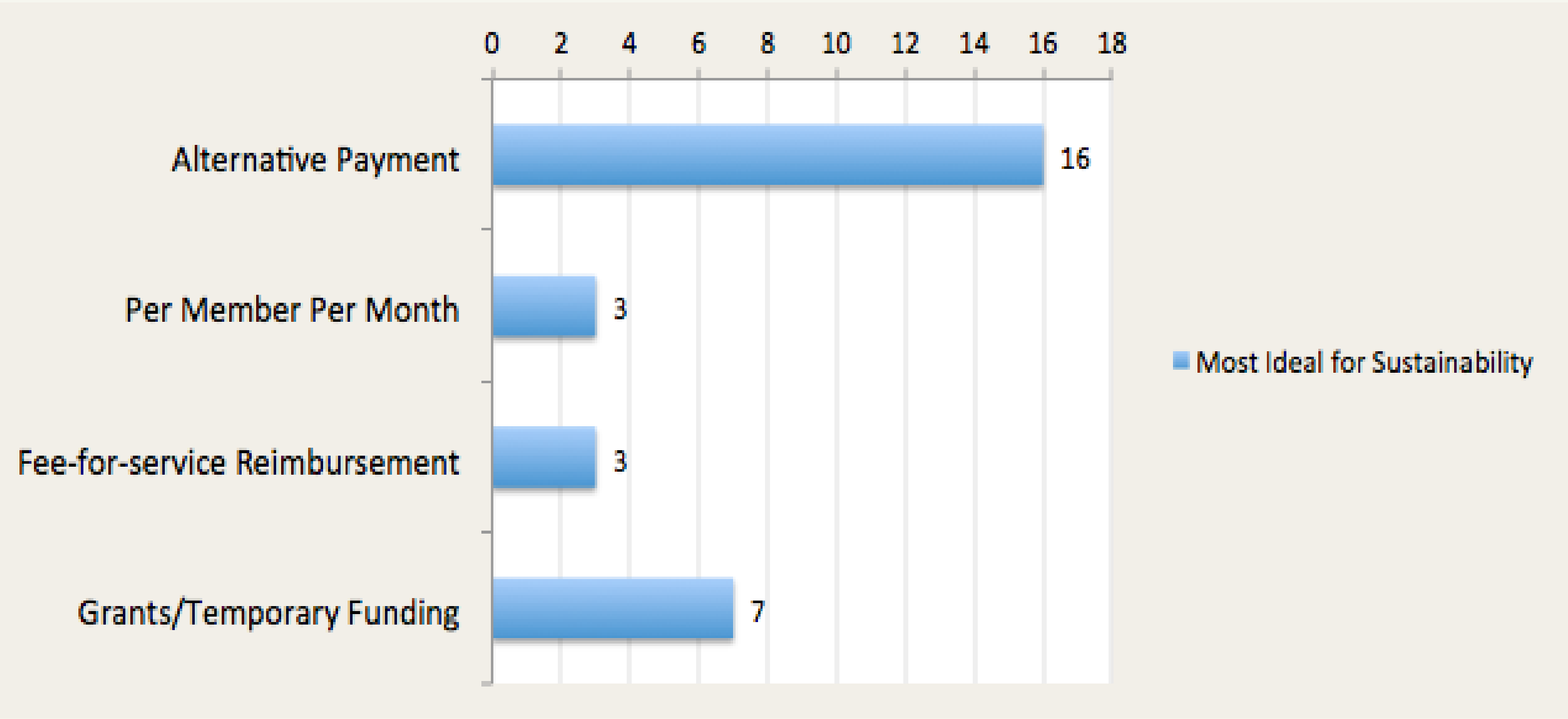
Ideal Funding Method/Payment Model for CHW Implementation/Sustainability



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Limitations

- Pilot Study
- Small sample size, across different entities, still see pattern
- Defined as community based but may not be community based organization ; many entities are mixed (could be community driven)
- Response time dependent on if affiliated with key informant and familiarity with previous research, otherwise no response or delayed response

Recommendations

- To encourage payers to move towards alternative payment model to sustain the employment of CHWs
- To be more holistic care for individuals and improve the efficiency and outcomes
- To educate payer providers, and community organizations about the positive outcomes such as social benefits (SROI), ROI, utilization, process metrics, cost assessment, QOL
- To advocate for CHWs' involvement in the conversations with payers about the benefit of moving to more sustainable alternative payment model
- To support CHW integration into team management that extends to community based organizations
- Need to integrate payers into discussion with CHWs, Comm. orgs, and Providers showing high outcome measures

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Summary Conclusion

Across the health delivery system – Comm.. Orgs, Providers and Payers are:

- Addressing SDH but may have challenges doing so, especially in singular programmatic funding
- Hiring CHWs because of the efficiency and ability to improve outcomes for individuals with complex life situations
- Working towards more secure financing methods and are either moving toward value based payment methods or would like to move in this direction – however no “road map” on how to accomplish this
- For those who are able to negotiate value-based payment with payers do so and would like to move towards more sustainable payment models such as capitation payment
- Show that there is Social ROI as well as ROI – coming up with more rigorous metric systems; including “story-telling”
- Comm.. orgs tend to have a longer history of more activity with addressing social determinants of health which may be due to focusing on community needs

NATIONAL
PARTNERSHIP
FOR ACTION
to End Health Disparities

New England Regional Health Equity Council

Acknowledgement

- We want to thank our advisor: Dr. Mark Holmes from the Health Policy & Management Department at Gillings School of Global Public Health.
- Special thanks to RHEC 1 & Cross-RHEC CHW Coalition for the ongoing national effort for the CHW workforce in efforts to attain health equity and reduce health disparities.
- A special thanks to our key informants. Your feedback is invaluable for the implementation and sustainability of the CHW workforce.

Cross-RHEC CHW Coalition
please visit:

http://communityhealth.npa-rhec.org/home

NATIONAL PARTNERSHIP FOR ACTION
to End Health Disparities

New England Regional Health Equity Council

Wake Forest®
Baptist Medical Center

Comprehensive Cancer Center

Hispanic Patient Navigation: An Intervention to Increase Clinical Trial Participation

Carla Strom, MLA
Wake Forest Baptist Comprehensive Cancer Center

Office of Cancer Health Equity

Improve the outcomes for underserved populations by:

- Facilitating community engagement
- Supporting research focused on eliminating cancer disparities
- Increasing diverse participation in clinical trials
- Assuring the highest level of culturally sensitive clinical care
- Understanding of the needs and removing the barriers to care

Minority Accrual Plan

Clinical trial recruitment policy

- Effective documentation of race and ethnicity (CPDM)
- Accurate and continuous monitoring of race and ethnicity (CROC & DOT)
- Inclusive protocol design (PRC) with benchmarks for recruitment

Physician & clinical trial staff training module

Recruitment of minority clinical faculty


Desnoyers
GI Oncologist


Perez-Avery
Breast Oncologist


Rodriguez Valdez
BMT


Lamar
Lymphoma


Winkfield
Radiation Oncologist

Underserved Patient Interventions:

- Hispanic Clinical Trial Navigator
- Travel Support
- Support Groups


Maria Alejandra Combs

Patient consents for non-English speakers

Self-reported race and ethnicity verification

Hispanics & Clinical Trials

- 17% of US population
- Fastest growing population in U.S. & NC
- Cancer is the leading cause of death

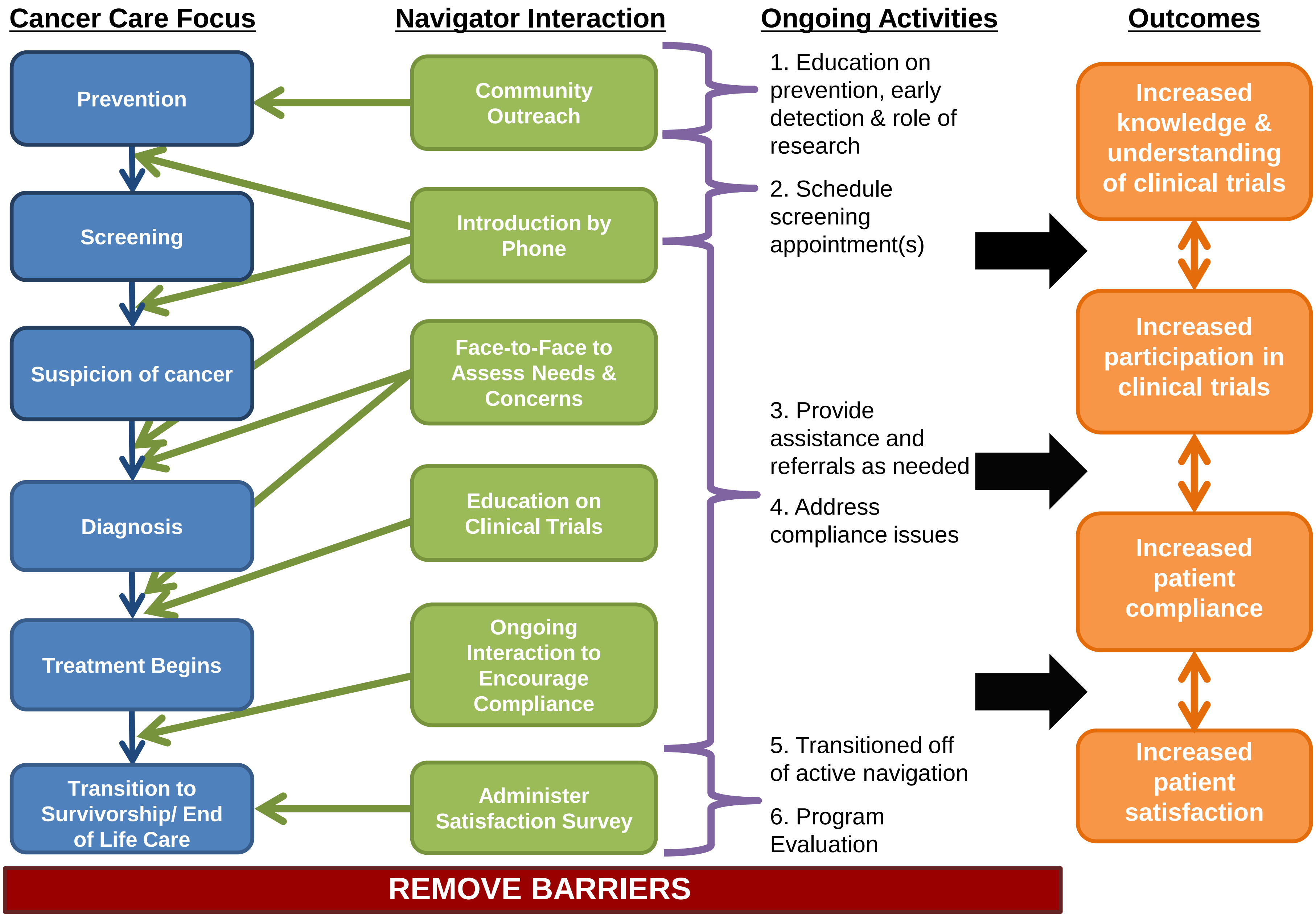
2-5% of cancer clinical trial participants

Hispanic Patient Navigator

- 2014- small grant from the Winston-Salem Foundation to support the new position
- Goals:
  - **Education & Outreach**: Increase awareness of cancer and cancer clinical trials in the community
  - **Patient Navigation**: Decrease care fragmentation through navigation patients and their families
  - **Clinical Trial Awareness:** Increase knowledge of clinical trials among patients

Provide services in a culturally sensitive and linguistically appropriate manner

Hispanic Clinical Trial Navigator Continuum



Cancer Care Focus

- Prevention
- Screening
- Suspicion of cancer
- Diagnosis
- Treatment Begins
- Transition to Survivorship/ End of Life Care

Navigator Interaction

- Community Outreach
- Introduction by Phone
- Face-to-Face to Assess Needs & Concerns
- Education on Clinical Trials
- Ongoing Interaction to Encourage Compliance
- Administer Satisfaction Survey

Ongoing Activities

1. Education on prevention, early detection & role of research
2. Schedule screening appointment(s)
3. Provide assistance and referrals as needed
4. Address compliance issues
5. Transitioned off of active navigation
6. Program Evaluation

Outcomes

- Increased knowledge & understanding of clinical trials
- Increased participation in clinical trials
- Increased patient compliance
- Increased patient satisfaction

REMOVE BARRIERS

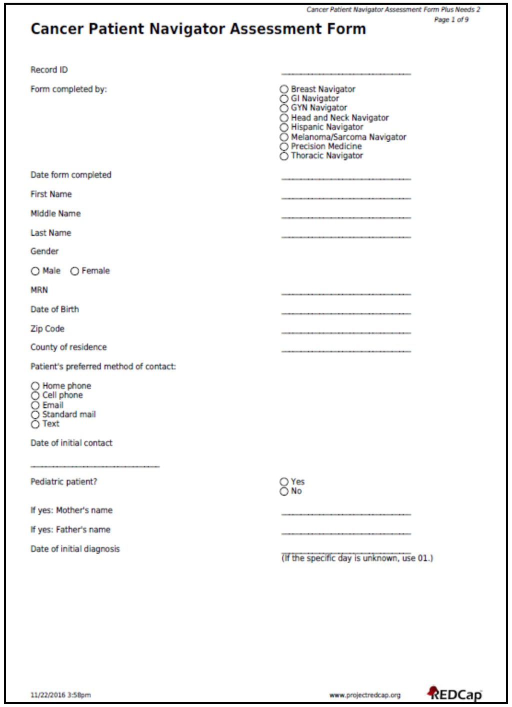
Our Experience

- Opportunities:
  - Member of multidisciplinary care team
  - Integrated with nurse navigators
- Challenges:
  - Degree
  - Previous experience
  - Bicultural
    (not just bilingual)

Initial training at Freeman Institute

Data Collection

- EMR: Clinical and demographic
- Navigator recorded: interactions, barriers, referrals, support, CT participation, language assessment
- From patient: needs & concerns, CT knowledge, evaluation
- REDCap web-based database:
  - Prediagnosis
  - Initial Contact
  - Patient Assessment
  - Data Log
  - Needs & Concerns
  - Pre & Post Tests
  - Evaluation Survey



Cancer Patient Navigator Assessment Form Plus Needs 2
Page 1 of 9

Cancer Patient Navigator Assessment Form

Record ID ________________

Form completed by:
○ Breast Navigator
○ GI Navigator
○ GYN Navigator
○ Head and Neck Navigator
○ Hispanic Navigator
○ Melanoma/Sarcoma Navigator
○ Precision Medicine
○ Thoracic Navigator

Date form completed ________________

First Name ________________

Middle Name ________________

Last Name ________________

Gender

○ Male ○ Female

MRN ________________

Date of Birth ________________

Zip Code ________________

County of residence ________________

Patient's preferred method of contact:

○ Home phone
○ Cell phone
○ Email
○ Standard mail
○ Text

Date of initial contact

____

Pediatric patient?
○ Yes
○ No

If yes: Mother's name ________________

If yes: Father's name ________________

Date of initial diagnosis ________________
(If the specific day is unknown, use 01.)

11/22/2016 3:58pm www.projectredcap.org REDCap

Hispanic Patients Navigated (N=108)

11/1/2015-10/31/2016

Category	# Patients	% of Total Patients
Care Focus		
Screening/Diagnostic	55	51%
Treatment	53	49%
Gender		
Female	94	87%
Male	14	13%
Age		
0-17	6	5%
18-34	14	13%
35-44	30	28%
45-54	32	30%
55-64	18	17%
65+	8	7%
Type of Cancer		
Breast	80	74%
Gastrointestinal	3	3%
Hematologic	18	17%
Melanoma	2	2%
Other	5	5%

Hispanic Patients Navigated (N=108)

11/1/2015-10/31/2016

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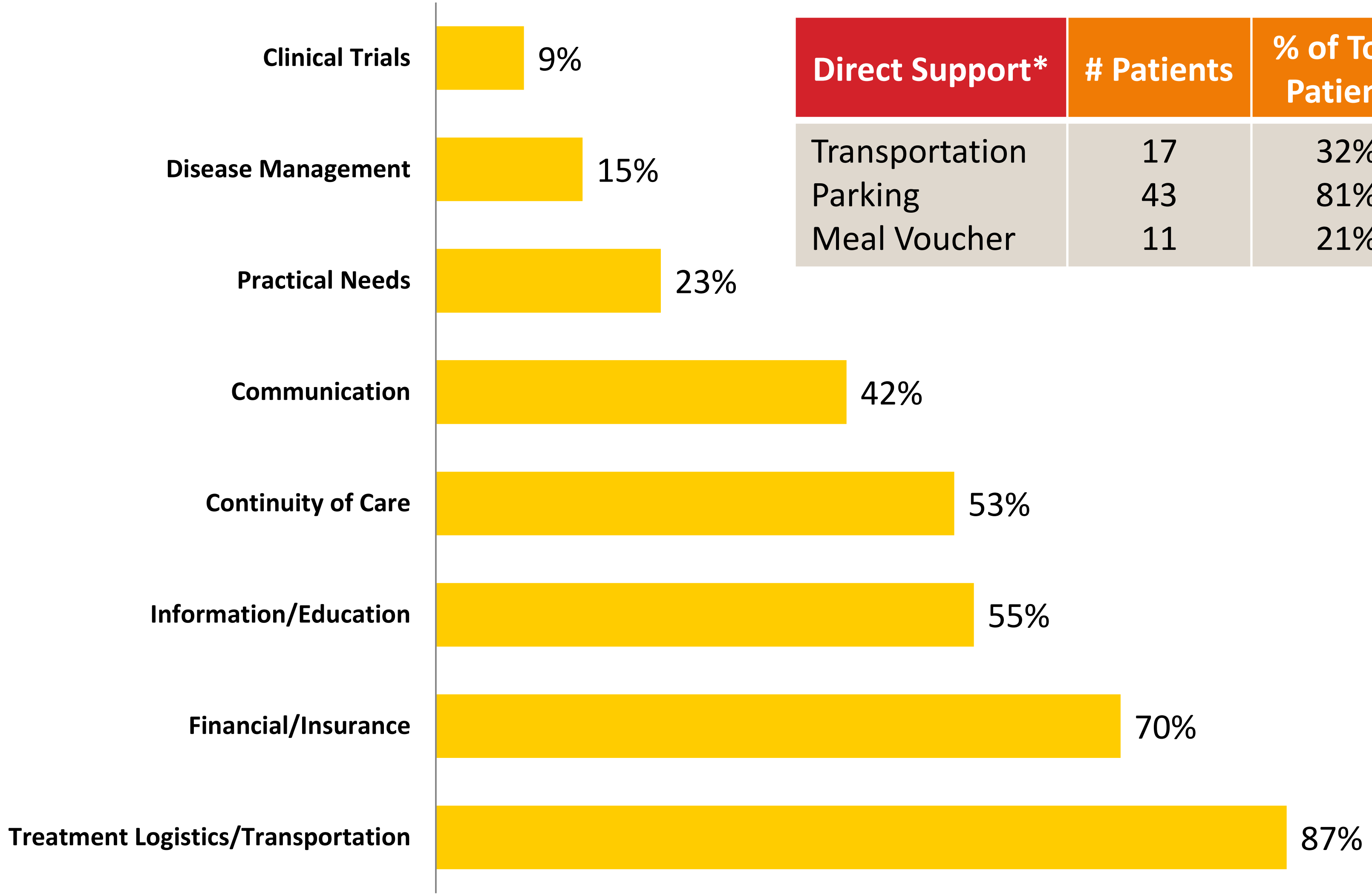
Type of Cancer		
Breast	80	74%
Gastrointestinal	3	3%
Hematologic	18	17%
Melanoma	2	2%
Other	5	5%

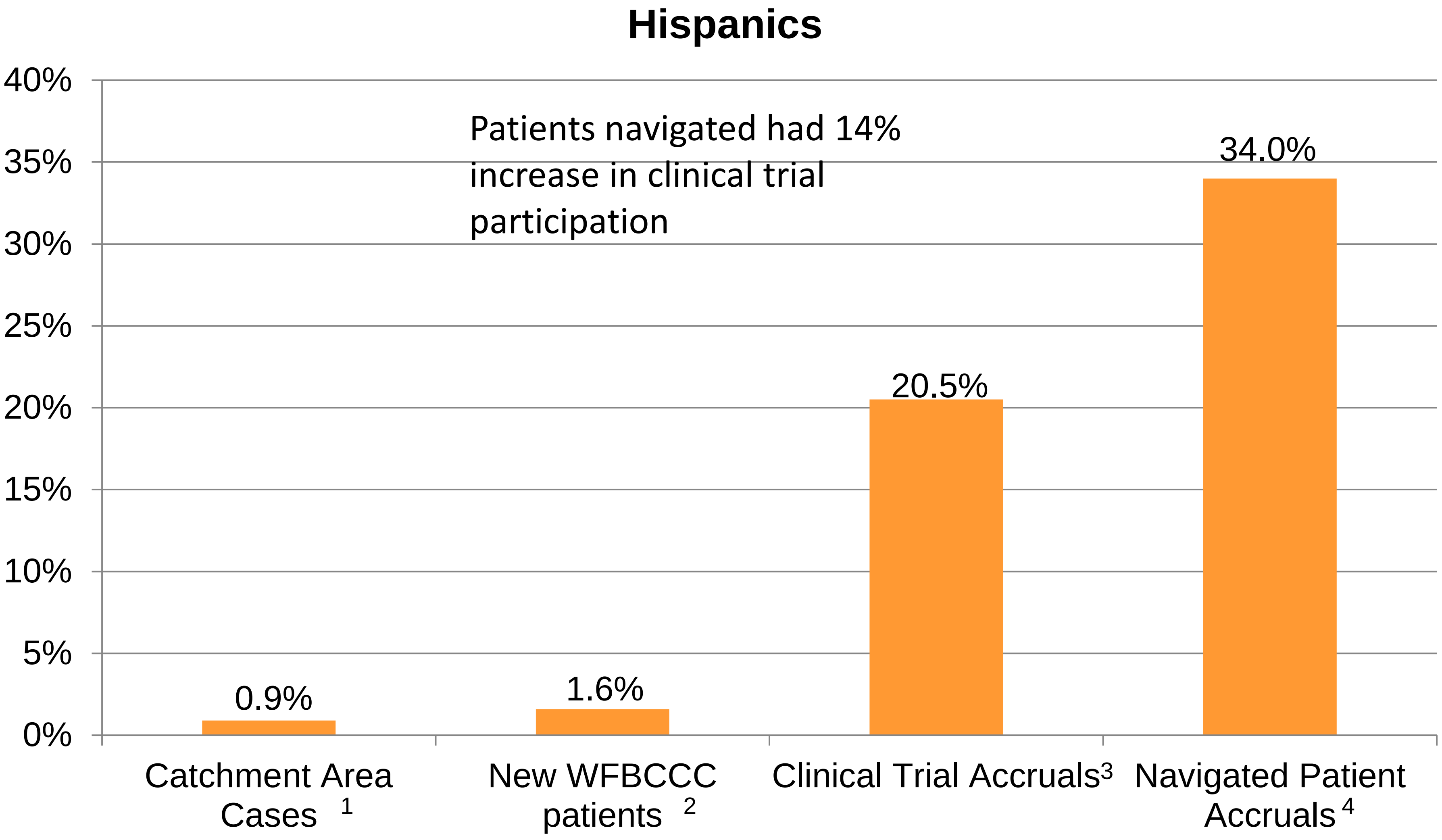
Potential Barriers to Care*



Direct Support*	# Patients	% of Total Patients
Transportation	17	32%
Parking	43	81%
Meal Voucher	11	21%

* Treatment patients only

Clinical Trial Participation



Patients navigated had 14% increase in clinical trial participation

[1]NCI State Cancer Profiles average annual incidence 2008-2012; [2]2015 WFBCCC cancer registry; [3]11/1/14 – 10/31/15; [4] 11/1/2015 – 10/31/2016

Limitations & Future Directions

- Additional data analysis
- Integrate additional outcome measures
- Ongoing financial support
- Expansion to other underserved populations (AA, rural, LGBTQ)

Thank you!

Winston-Salem Foundation

Karen Winkfield, MD, PhD

Kathryn Weaver, PhD, MPH

Jimmy Ruiz, MD

Maria Alejandra Combs

Cancer Communication Channels in Context (the 4C Study):

Initial Findings and Implications for Reducing Health Disparities through Targeted Communication

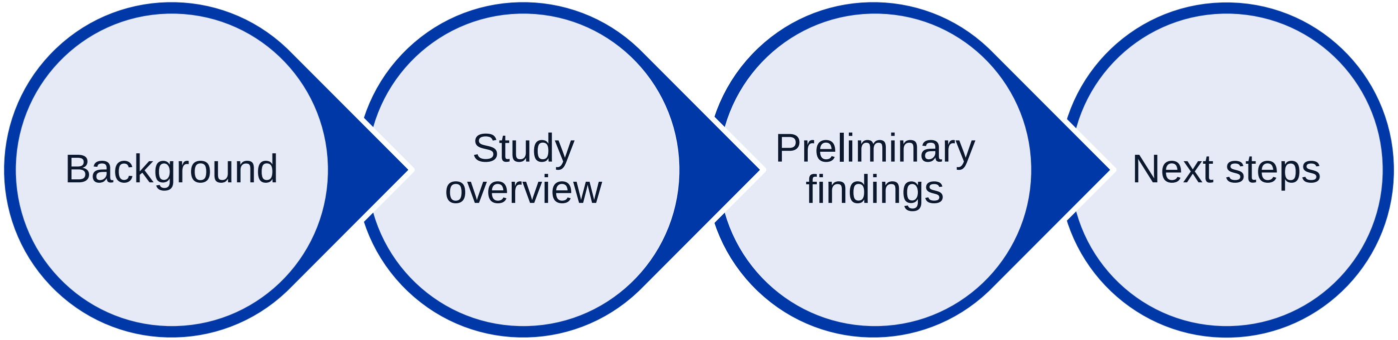
Kassandra I. Alcaraz, PhD, MPH

Strategic Director, Health Equity Research

American Cancer Society

GMaP Health Disparities Symposium – March 17, 2017

Overview



Background

Study overview

Preliminary findings

Next steps

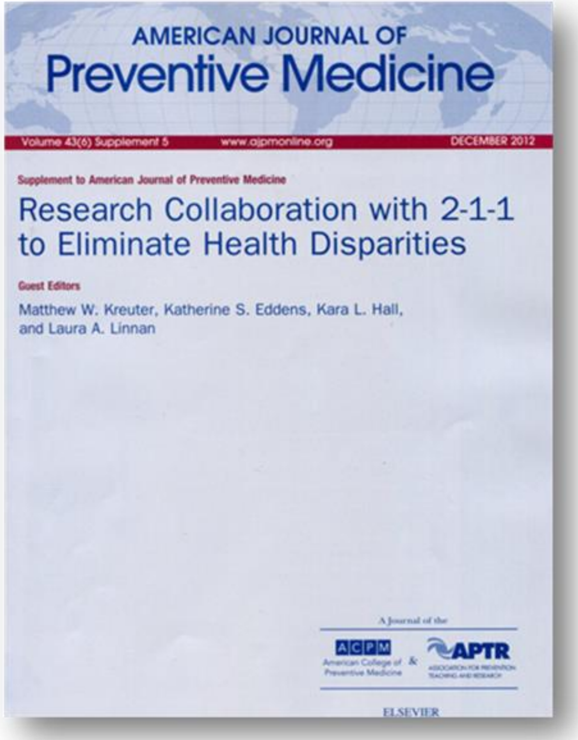
Research needs & opportunities

- Communication landscape
- Population heterogeneity
- Understudied behavioral determinants

2-1-1

- Information & referral
- Medically vulnerable
- Access & utilization

Collaborative research



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Preventive Medicine

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Supplement to American Journal of Preventive Medicine

Research Collaboration with 2-1-1
to Eliminate Health Disparities

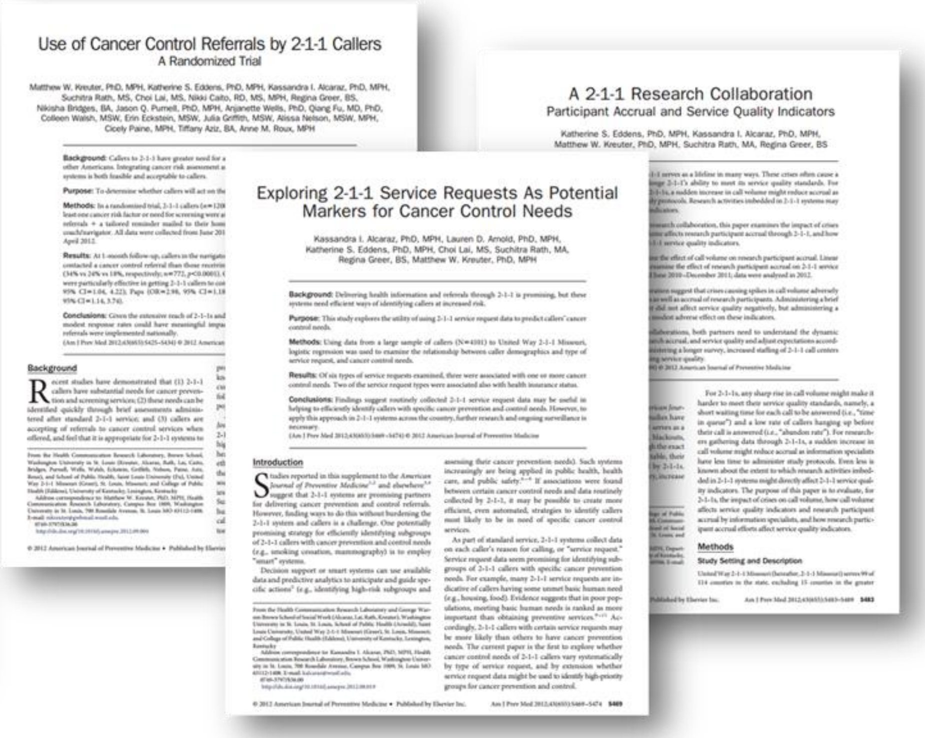
Guest Editors

Matthew W. Kreuter, Katherine S. Eddens, Kara L. Hall,
and Laura A. Linnan

A Journal of the

ACPM American College of Preventive Medicine & APTR Association for Prevention Teaching and Research

ELSEVIER



Use of Cancer Control Referrals by 2-1-1 Callers
A Randomized Trial

Matthew W. Kreuter, PhD, MPH, Katherine S. Eddens, PhD, MPH, Kassandra I. Alcaraz, PhD, MPH,
Suchitra Rath, MS, Choi Lai, MS, Nikki Caito, RD, MS, MPH, Regina Greer, BS,
Nikisha Bridges, BA, Jason Q. Purnell, PhD, MPH, Anjanette Wells, PhD, Qiang Fu, MD, PhD,
Colleen Walsh, MSW, Erin Eckstein, MSW, Julia Griffith, MSW, Alissa Nelson, MSW, MPH,
Cicely Paine, MPH, Tiffany Aziz, BA, Anne M. Roux, MPH

Exploring 2-1-1 Service Requests As Potential Markers for Cancer Control Needs

Kassandra I. Alcaraz, PhD, MPH, Lauren D. Arnold, PhD, MPH,
Katherine S. Eddens, PhD, MPH, Choi Lai, MS, Suchitra Rath, MA,
Regina Greer, BS, Matthew W. Kreuter, PhD, MPH

A 2-1-1 Research Collaboration
Participant Accrual and Service Quality Indicators

Katherine S. Eddens, PhD, MPH, Kassandra I. Alcaraz, PhD, MPH,
Matthew W. Kreuter, PhD, MPH, Suchitra Rath, MA, Regina Greer, BS

Cancer Communication Channels in Context: The 4C Study

- United Way 2-1-1 of Greater Atlanta
- Call center evolution
- Survey emphasis: communication & context

American Cancer Society®

Key inclusion criteria

- Language
- Age
- Location
- Channel

American Cancer Society®

4C Study channels

Internet search

Email

Text message

Live online chat

ONLINE

Telephone

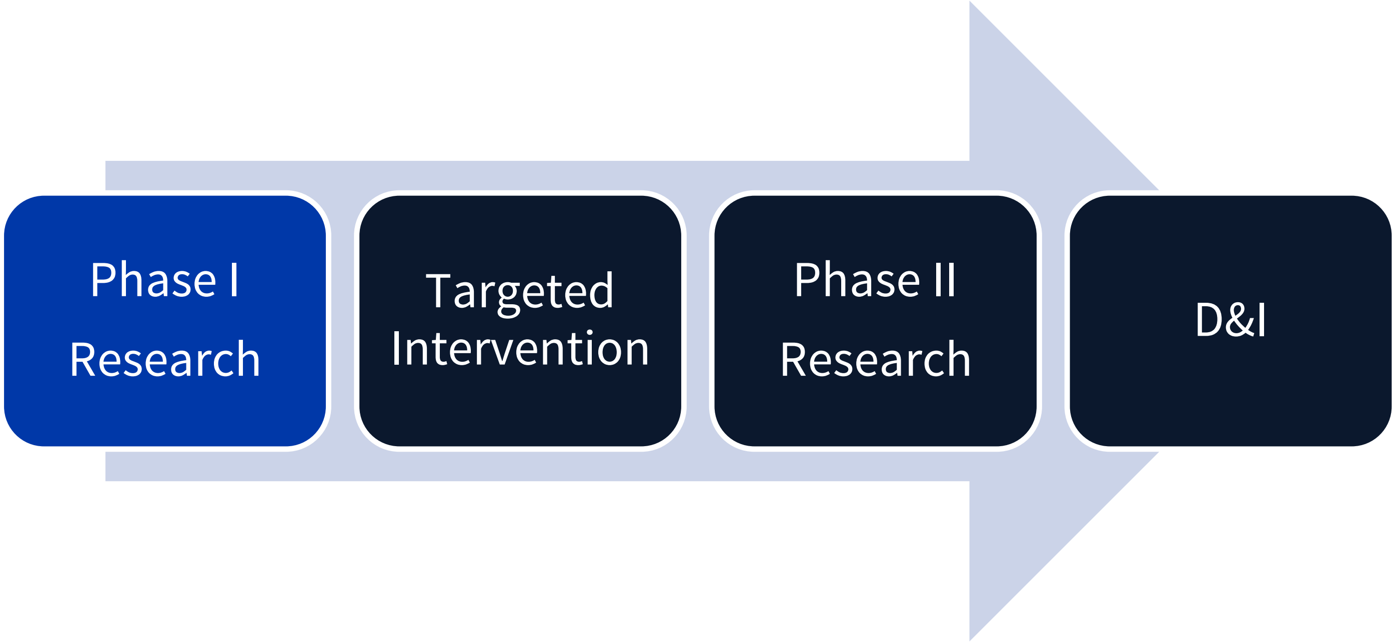
PHONE

N=3297

Future analyses & potential implications

- Subgroups
- Other health behaviors
- Mediators & moderators
- Mode

Next steps



Phase I Research

Targeted Intervention

Phase II Research

D&I

Thank You

American
Cancer
Society®

kassandra.alcaraz@cancer.org

Availability of Patient Navigation Services at NCI Community Oncology Research Program (NCORP) Community Sites

Kathryn E. Weaver, PhD, MPH

Wake Forest School of Medicine & Wake Forest NCORP Research Base

NCI Community Oncology Research Program

A program of the National Cancer Institute
of the National Institutes of Health

Collaborators

Lucy Gansauer- Spartanburg Medical Center, Gibbs Cancer Center & Research Institute

Nicholas M. Pajewski- Wake Forest School of Medicine

Kathleen Castro, Irene Prabhu Das, & Ann M. Geiger- National Cancer Institute, Division of Cancer Control and Population Sciences

Ruth Carlos- University of Michigan, Ann Arbor, MI

Marvella E. Ford-Medical University of South Carolina

George Chang- MD Anderson Cancer Center

Special thanks to all the participating NCORP Research Bases, Community Sits, and Minority Underserved Community Sites

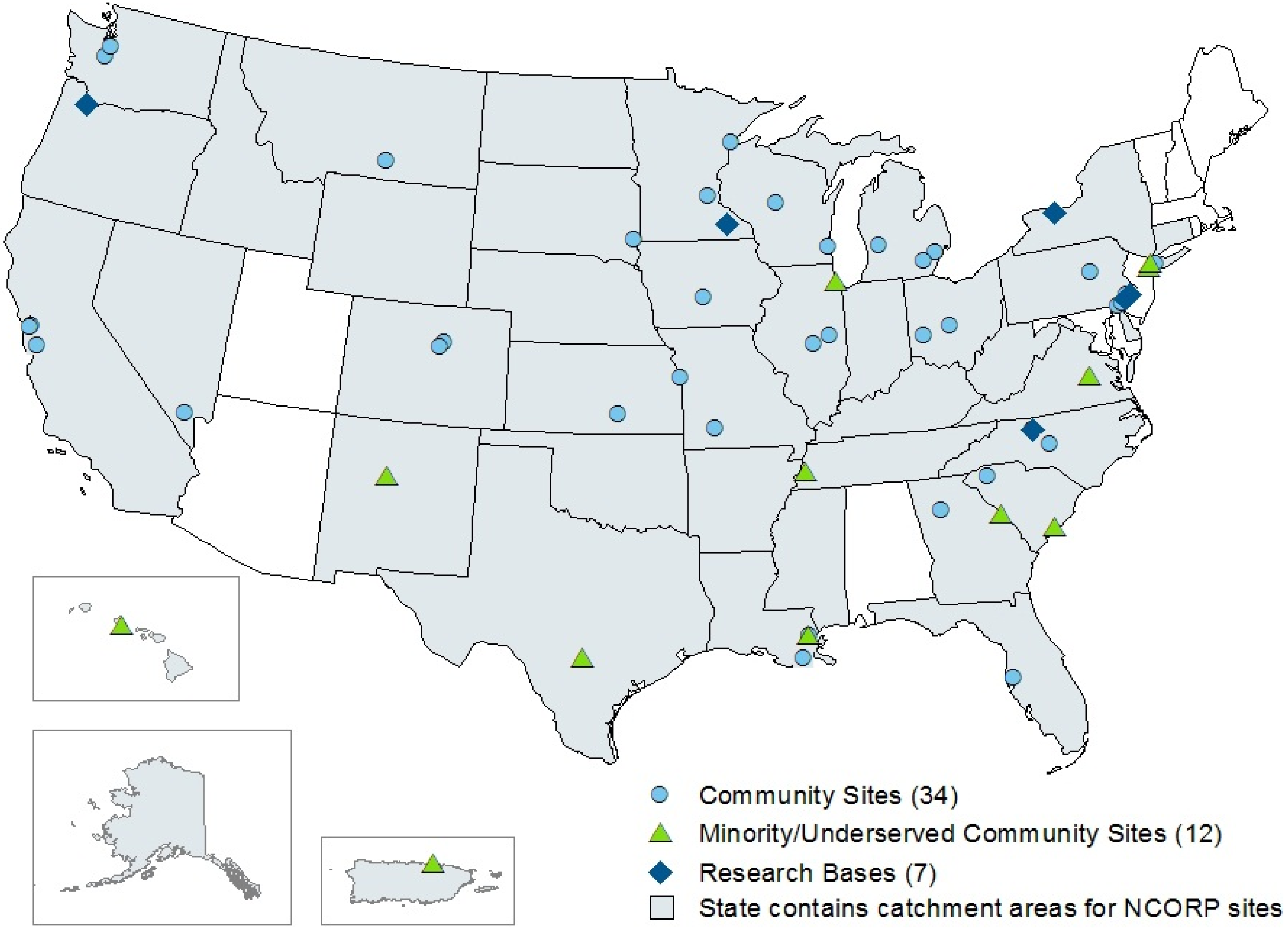
What is NCORP?

- A community-based cancer research program
- Builds upon the scope and activities of NCI's previously supported community networks
  - NCI Community Clinical Oncology Program & NCI Community Cancer Centers Program
- Design and conduct of :
  - Cancer prevention, control, and screening/treatment surveillance clinical trials
  - Multi-level cancer care delivery research (CCDR) studies

NCORP Overall Goal

To bring cancer clinical trials and cancer care delivery research (CCDR) to people in their own communities, thereby generating a broadly applicable evidence base that contributes to improved patient outcomes and a reduction in cancer disparities.

NCORP Sites



● Community Sites (34)
▲ Minority/Underserved Community Sites (12)
◆ Research Bases (7)
☐ State contains catchment areas for NCORP sites

What is Cancer Care Delivery Research (CCDR)?

- **Examines how social factors, financing systems, organizational structures/processes, health technologies, and healthcare provider and individual behaviors affect:**
  - **Cancer outcomes**
  - **Access to and quality of care**
  - **Cancer care costs**
  - **Health and well-being of cancer patients and survivors**

NCORP's CCDR focus encompasses individuals, families, organizations, institutions, providers, communities, populations, and their interactions.

Patient Navigation

- Patient navigation: support and guidance provided by trained culturally sensitive health care workers
- Promoted as a strategy to improve care quality and reduce cancer health disparities
- Availability and extent of navigation in community oncology practices is unclear
- Purpose: To assess: 1) availability of navigation services across diverse community oncology practices and 2) characteristics of oncology practices that do and do not offer navigation.

NCORP "Landscape" Site Survey

- Purpose: Assess CCDR assets, capacity, and capabilities of NCORP practices to inform study concepts
- Survey sent to 401 CCDR-designated NCORP components (individual practice sites)
- CCDR leads/administrators gathered information from key informants to report on navigation data
- Response: 350/401= 87%- represent 201 adult practice groups

Requested Navigation Information

- Extent of Navigation Availability: none, all patients or certain sites (breast, lung, GI, GU, gynecologic, leukemia, lymphoma, myeloma, head/neck)
- Availability across continuum (prior to screening, screening to diagnostic resolution, diagnosis to completion of treatment, completion of treatment through survivorship
- Number of lay, nurse, and other navigators

Characteristics of Adult Practice Groups

	N= 201
Hospital Based outpatient clinic Freestanding outpatient clinic or private group practice	73.6% 51.5%
Ownership Independent or small regional network Large regional/ multi-state (no health plan) Large regional/ multi-state (w/ health plan) Public or university owned HMO/payer owned	 28.6% 22.5% 43.9% 4.1% 0.5%
Academic medical center	11.9%
Safety net hospital	14.4%
Number of Oncology Providers, median (IQR)	9 (4 to 17)
Multidisciplinary practice	78.2%
NCCCP participant	8.5%
Minority Underserved NCORP practice	15.9%

Overall Navigation Availability

- 19.4% Not available
- 35.3% Available to some cancer patients
- 45.3% Available to all cancer patients

Navigator Type	Median (IQR)	Mean	% of Sites
Nurse	2 (1 to 5)	3.46	87.9%
Lay	2 (1 to 3)	3.14	23.0%
Other	2 (1 to 2)	2.68	33.8%

Table includes N=162 practice groups that provide navigation to at least some cancer patients. Median & Mean for practice groups with 1 or more navigator of each type

Predictors of Navigation Availability

	Any navigation Vs No	**All patients VS Only some cancers**
	Odds Ratio (95% CI)	**Odds Ratio (95% CI)**
NCCCP Participant (ref= No)	NA	0.7 (0.2, 1.8)
Academic Medical Center (ref= No)	1.2 (0.4, 3.8)	0.8 (0.3, 1.9)
Safety Net Hospital (ref= No)	1.2 (0.4, 3.3)	0.8 (0.3, 1.8)
Minority / Underserved NCORP (ref= No)	0.8 (0.3, 2.1)	**2.9 (1.1, 7.6)**
Hospital-based outpatient clinic (ref= No)	**4.12 (2.0, 8.6)**	0.9 (0.4, 2.0)
Free-standing outpatient / Private practice (ref= No)	0.7 (0.3, 1.4)	1.7 (0.9, 3.3)
Ownership (ref= Independent, single hospital or small regional network)		
Large Regional/Multi-state health system (w/health plan)	1.6 (0.7, 3.6)	**0.4 (0.2, 0.9)**
Large Regional/Multi-state health system (no health plan)	1.3 (0.5, 3.4)	**0.3 (0.1, 0.9)**
HMO/Payor, Publically, or University owned	3 (0.4, 25.8)	0.4 (0.1, 2.0)
Multidisciplinary practice (ref= No)	**7.7 (3.5, 16.8)**	0.7 (0.3, 1.9)
Total number of oncology physicians (0 to 4)		
5 to 9	**6.1 (2.1, 17.9)**	0.9 (0.3, 2.2)
10 to 17	**8.9 (2.4, 32.3)**	0.6 (0.2, 1.6)
18 or more	**3.3 (1.3, 8.5)**	0.4 (0.2, 1.1)

Navigation Availability

Cancer Types

	N=162
Breast	98.8%
Lung	87.0%
Gastrointestinal	79.5%
Head and Neck	73.9%
Genitourinary	70.2%
Gynecologic	68.9%
Lymphoma	68.3%
Myeloma	68.3%
Leukemia	66.5%

Practice groups that provide navigation to at least some cancer patients

Timing (for Practice Groups with Navigation for Breast Cancer Patients)

	N= 160
Prior to Screening	66.0%
Screening to Resolution	91.1%
During Treatment	95.6%
Post-treatment	86.7%

Conclusions

- Limitations
  - Varying definitions of “navigators” and the activities they engage in
  - Navigation “available” not the same as offered or provided
- Minority/underserved practices were more likely to have navigation available to all patients, if they offered it
- Navigation appears to be available in some capacity in a majority of community oncology practices
  - Opportunities for observational and intervention studies within NCORP to assess impact of navigation on cancer outcomes
- Navigation availability is not universal; focus implementation on smaller, freestanding, single treatment disciple practices

Thank You to the NCORP Community!

NCI Community Oncology Research Program

A program of the National Cancer Institute
of the National Institutes of Health