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Improved Survival but Continued Disparities in Colorectal Cancer:

Planning the Future With Precision Oncology but Assessing the Past Through the Rear-View Mirror

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116th President of the National Medical Association
Brigadier General (Ret.) United States Air Force

Declining cancer mortality

> **Know from whence you came. If you know whence you came, there are absolutely no limitations to where you can go**
>
> – JAMES BALDWIN

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Non-Hispanic Black males have the highest cancer incidence and mortality rates compared to all other racial / ethnic groups

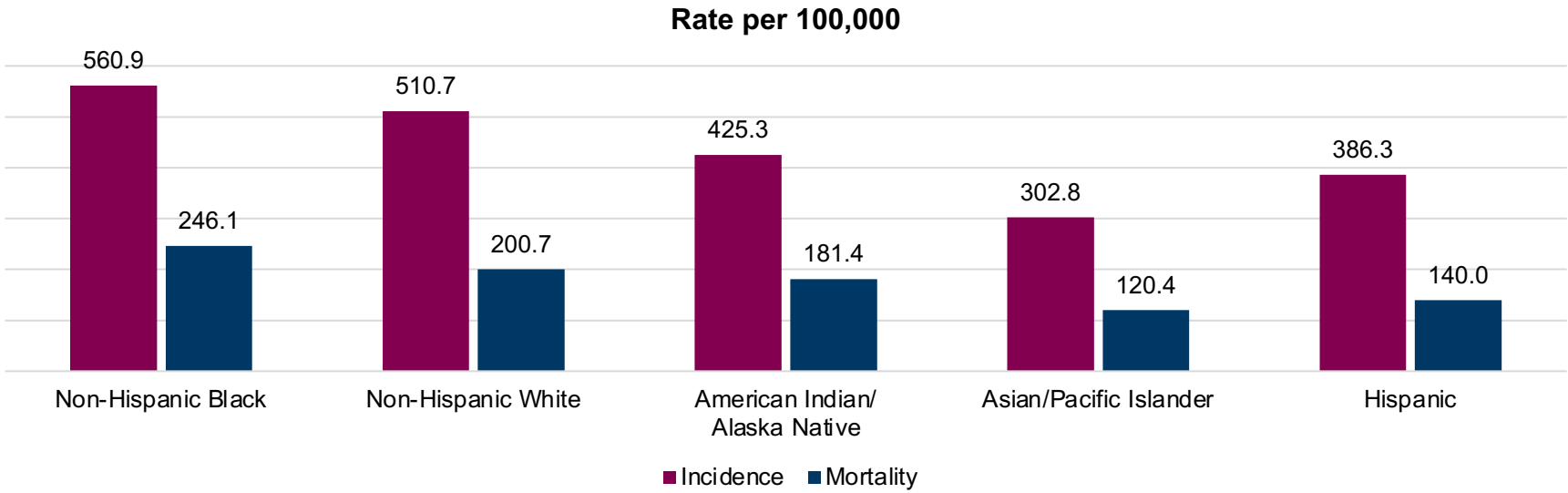

Figure 2: Among males, non-Hispanic Blacks have the highest cancer incidence and mortality rates overall, driven by high rates for the most common cancers (lung and bronchus, prostate, and colorectal) (see Figure 7, page 23; Figure 9, page 26; Figure 10, page 30). Similar to females, Hispanic, Asian/Pacific Islander, and American Indian/Alaska Native males generally have higher rates of cancers related to infections compared to non-Hispanic Whites

Sources: Incidence: Surveillance, Epidemiology, and End Results (SEER) program, 2017. Mortality: National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC), 2017

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Non-Hispanic White females have the highest cancer incidence rates, but non-Hispanic Black females have the highest death rates

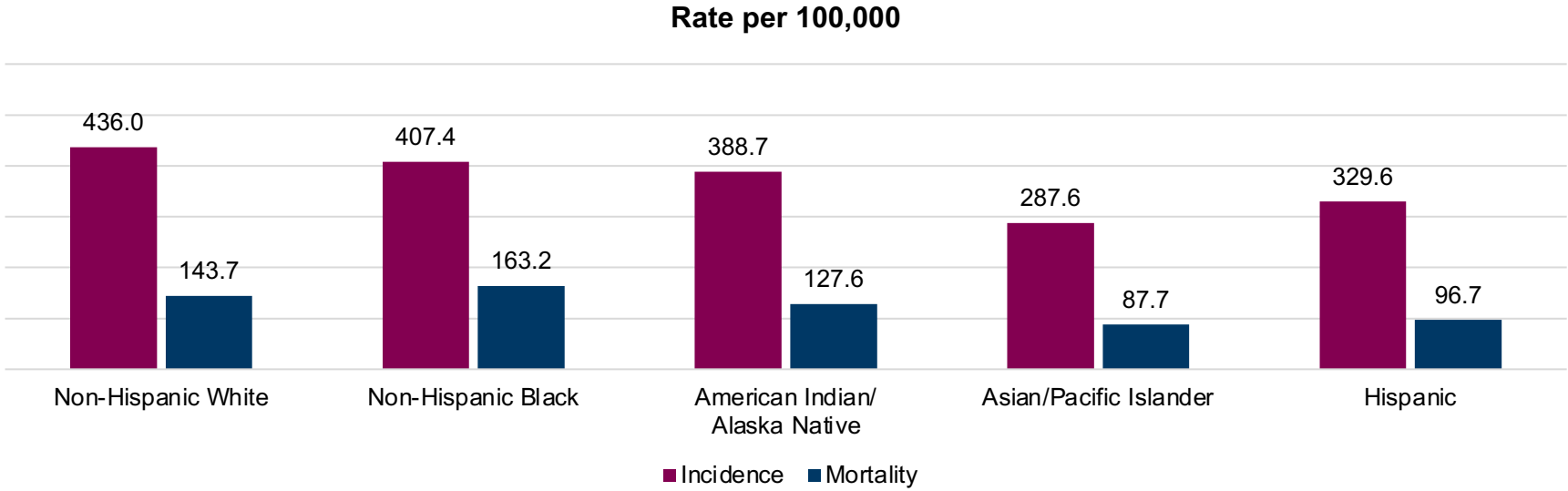

Figure 1: Among females, non-Hispanic Whites have the highest overall cancer incidence rates, but non-Hispanic Blacks have the highest cancer death rates. Importantly, while Hispanic and Asian/Pacific Islander females have among the lowest incidence and mortality rates overall, they have among the highest rates of certain infection-related cancers (e.g. liver and stomach cancers) (see Figures 13–16, pages 39 and 40).

Sources: Incidence: Surveillance, Epidemiology, and End Results (SEER) program, 2017. Mortality: National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC), 2017

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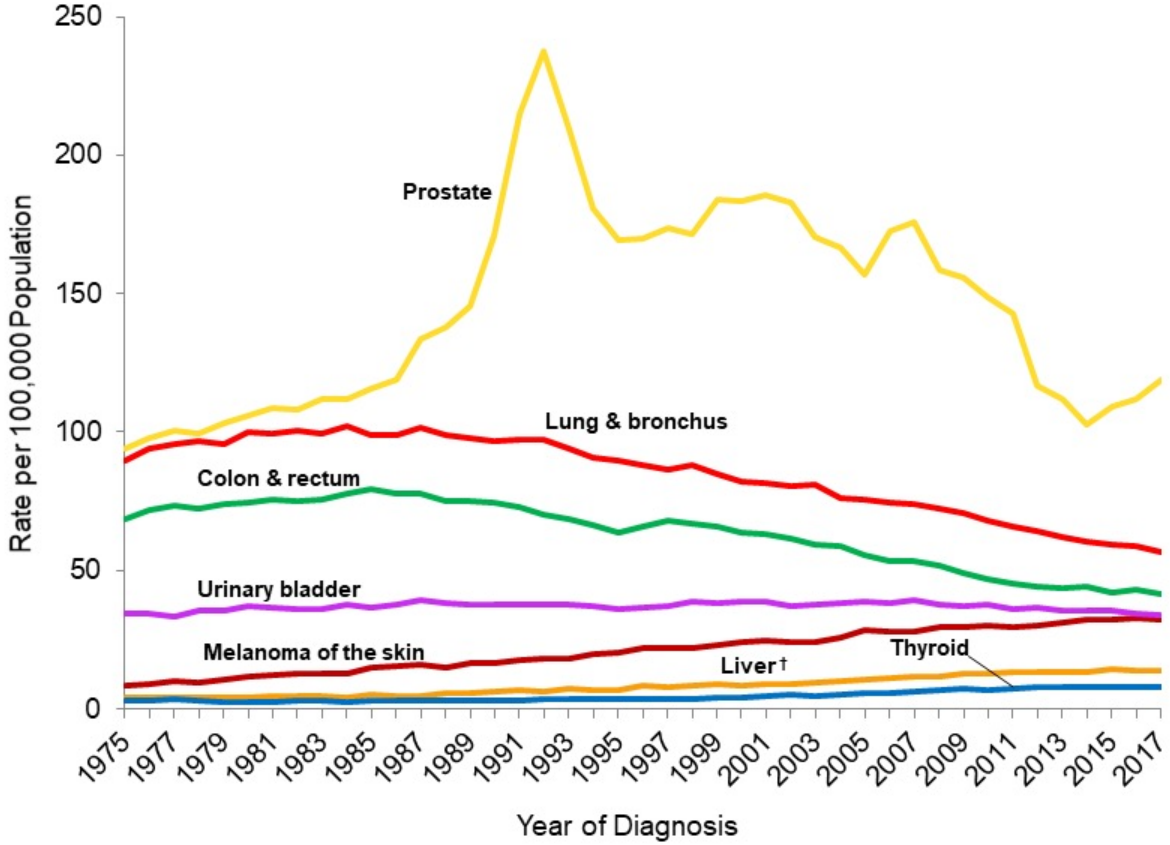
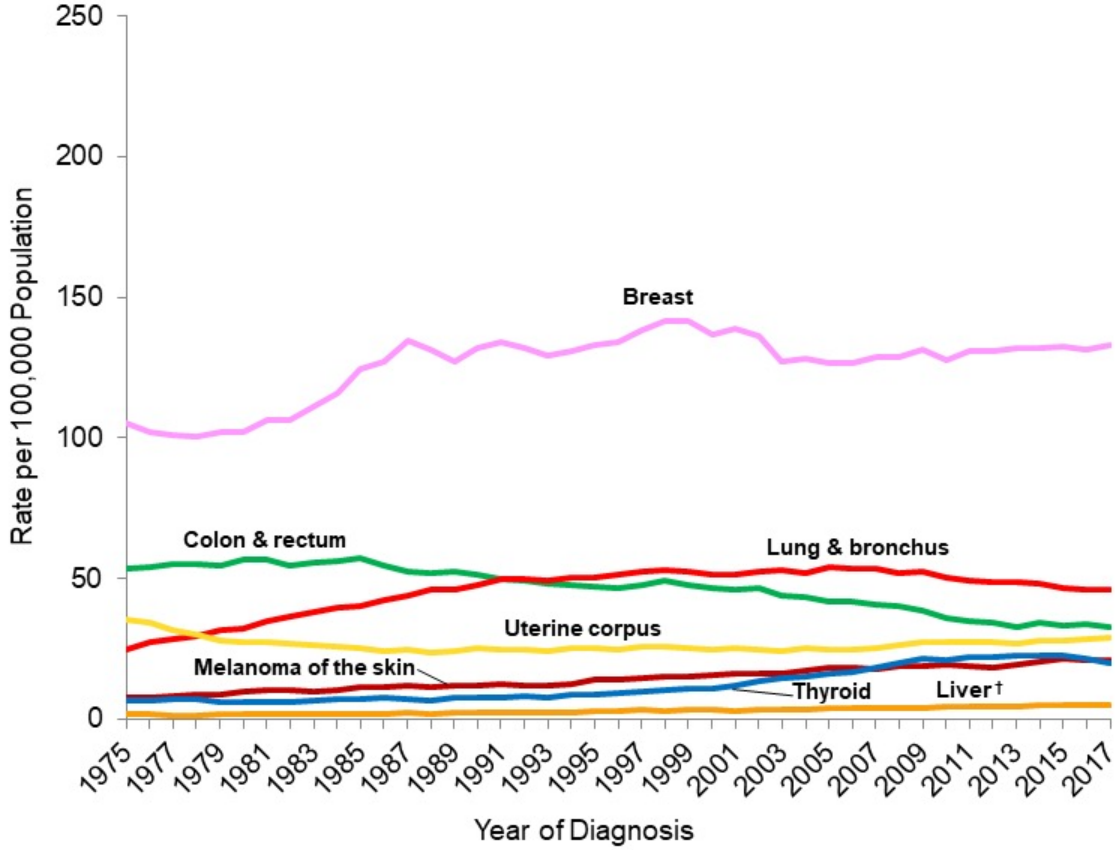
Trends in Cancer Incidence Rates* Among Males, US, 1975-2017



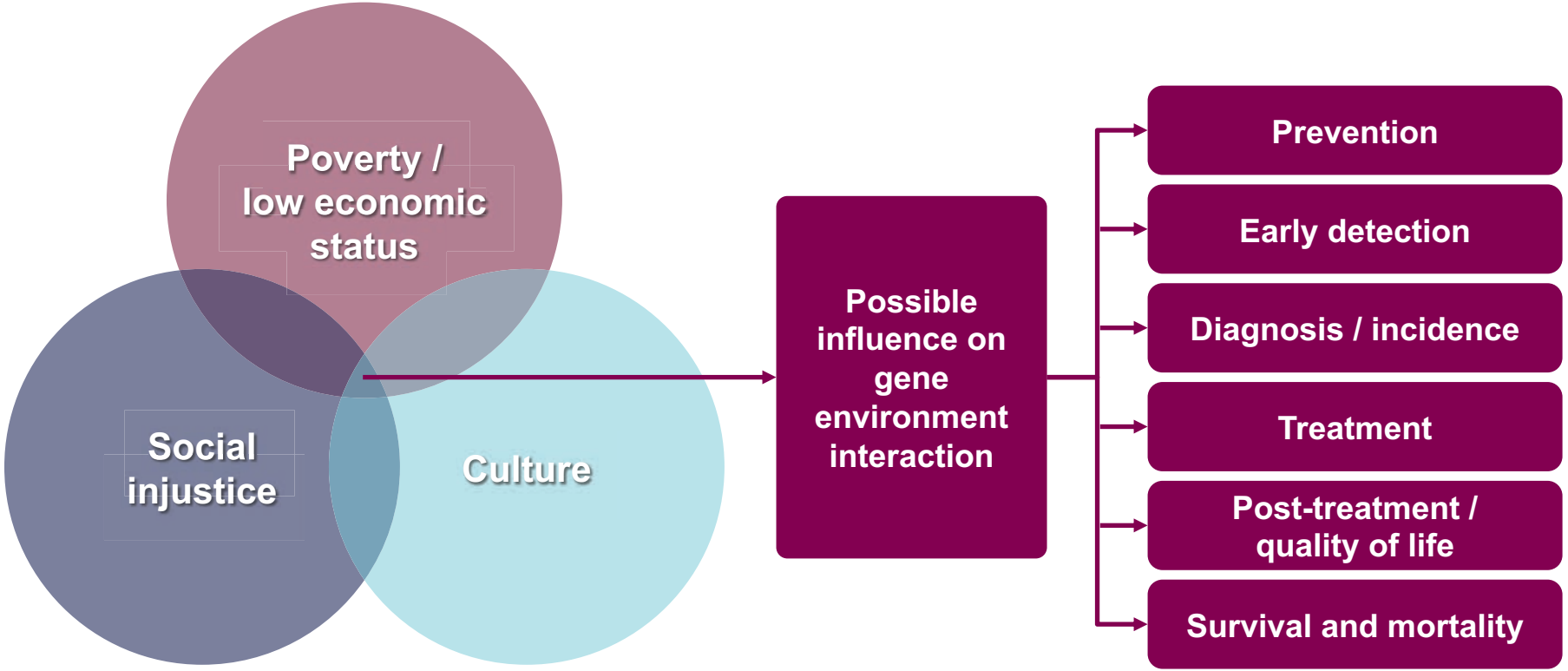
*Age-adjusted to the 2000 US standard population and adjusted for delays in reporting. †Includes the intrahepatic bile duct.
Source: Surveillance, Epidemiology, and End Results (SEER) Program, National Cancer Institute, 2020.

Trends in Cancer Incidence Rates* Among Females, US, 1975-2017



*Age-adjusted to the 2000 US standard population and adjusted for delays in reporting. †Includes the intrahepatic bile duct.
Source: Surveillance, Epidemiology, and End Results (SEER) Program, National Cancer Institute, 2020.

Causes of health disparities



Freeman H. Adapted from Cancer Epidemiology Biomarkers & Prevention, April 2003

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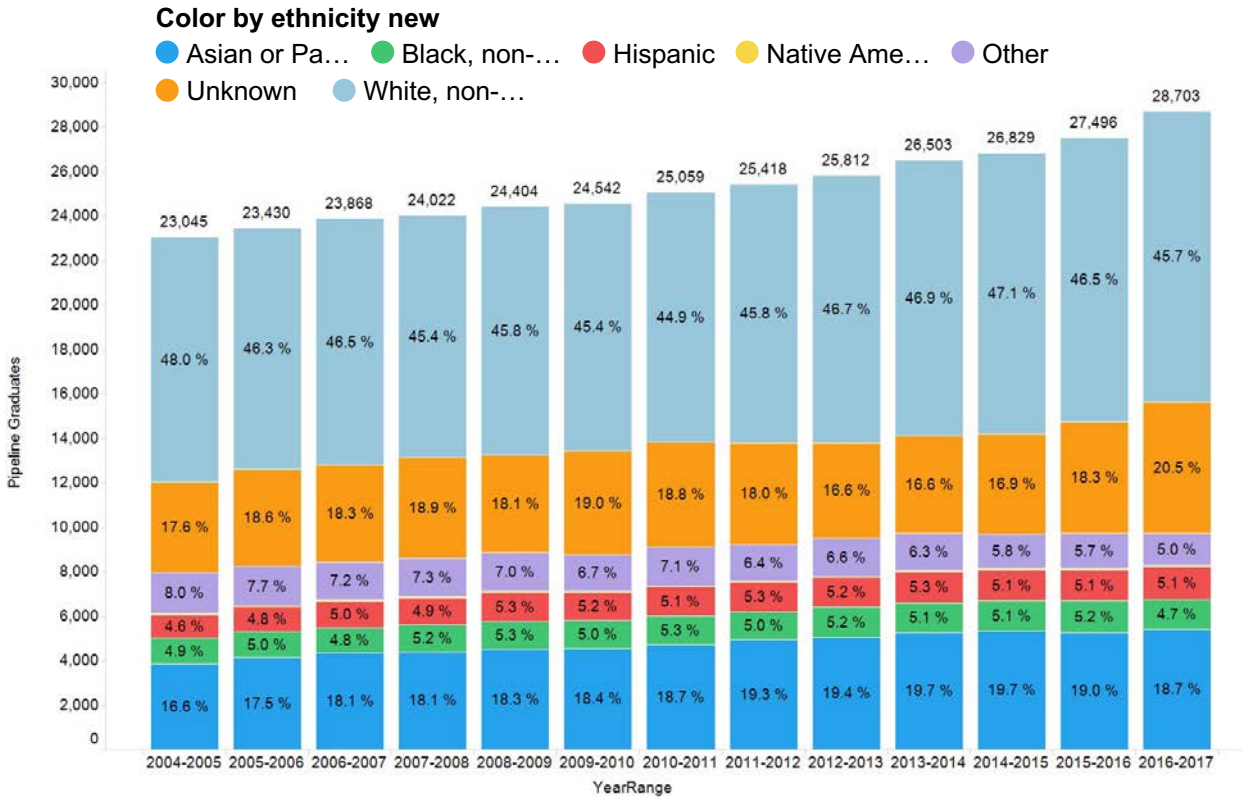
Rationale for workforce diversity

URiM physician number is well below the needs of minoritized populations, which furthers health care disparities

URiM physicians care for a greater proportion of individuals in poor and minoritized communities:

- Aspiration during training
- Reality once in practice

Race-conscious professionalism[1]



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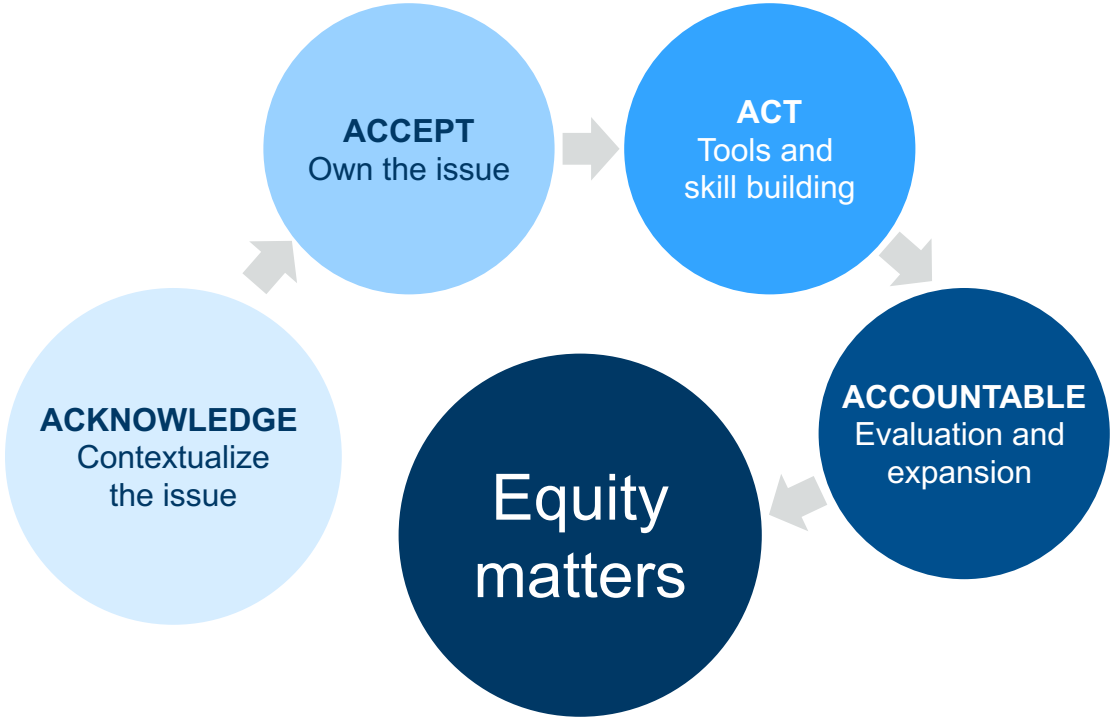
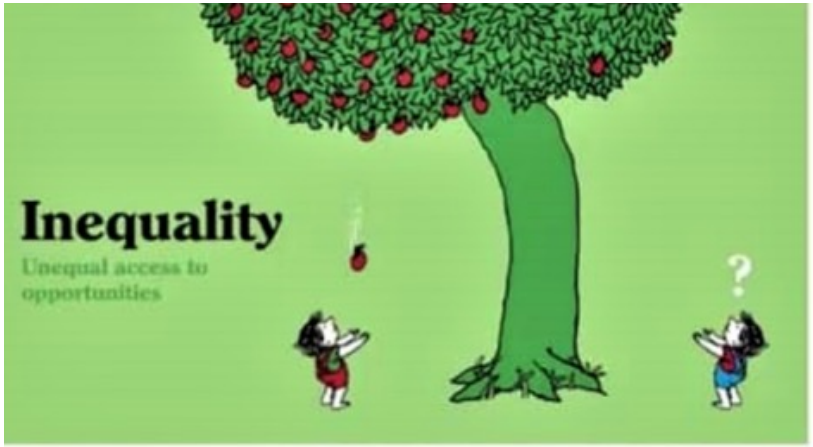
1. Powers, BW et al. *Acad Med* 2016;91:913–915

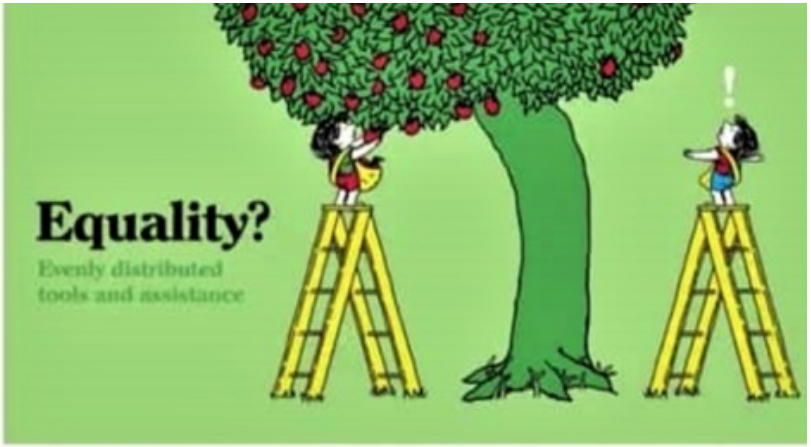
“Equality matters” framework

D	DIVERSITY Workforce
E	EQUITY Outcomes
I	INCLUSION Culture

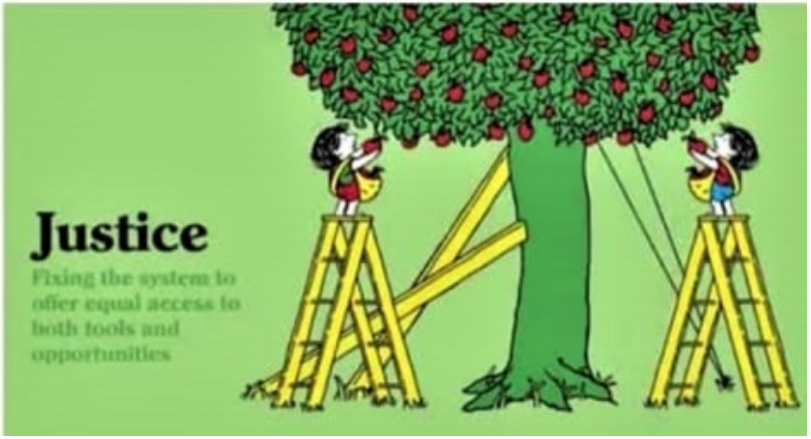


“Equity matters” framework phases


Inequality
Unequal access to opportunities
!
?


Equality?
Evenly distributed tools and assistance
!


Equity
Custom tools that identify and address inequality


Justice
Fixing the system to offer equal access to both tools and opportunities

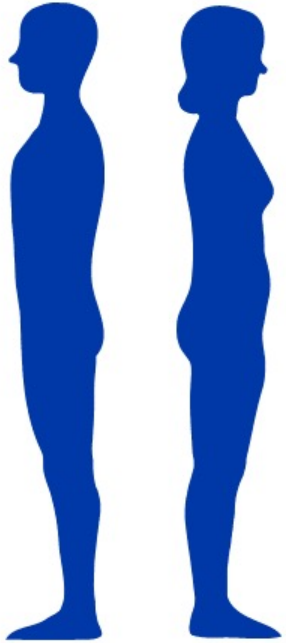
Racial disparities in healthcare

Root causes of these disparities are multifactorial and may include:

- Implicit and explicit bias and institutional racism in health care delivery
- Low number of minority professionals
- Redlining and racism in housing purchases
- Research studies not including diverse populations
- Social determinants of health
- Lower rates of comprehensive insurance
- Out-of-pocket costs
- Cost of care challenges

Estimated New Cancer Cases* in the US in 2021

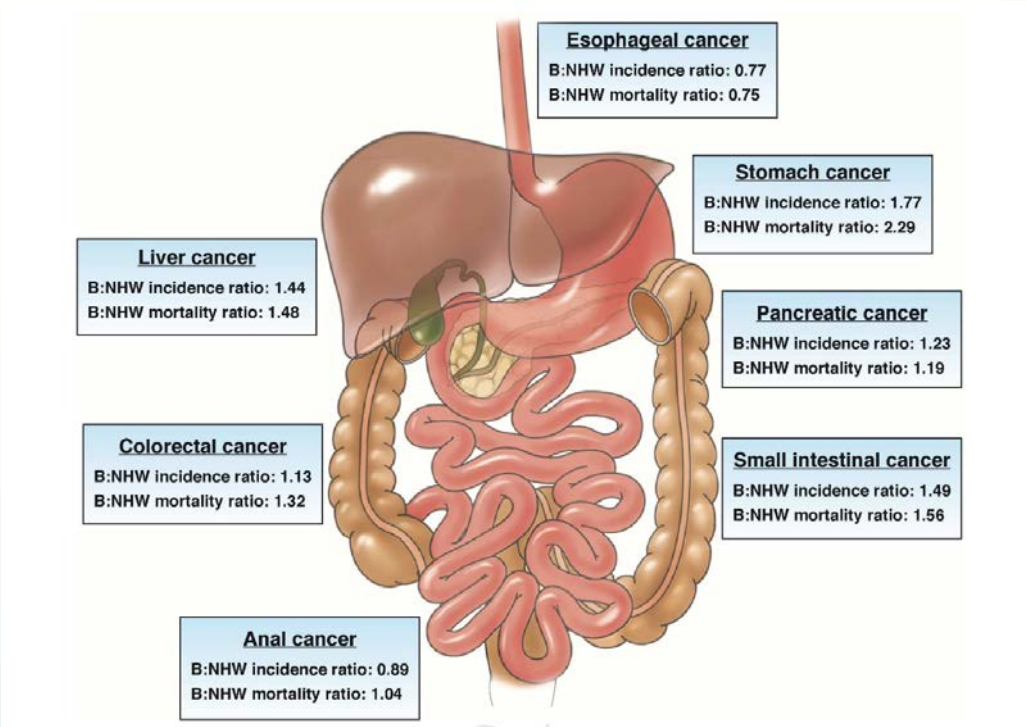
Males 970,250	
Prostate	26%
Lung & bronchus	12%
Colon & rectum	8%
Urinary bladder	7%
Melanoma of the skin	6%
Kidney & renal pelvis	5%
Non-Hodgkin lymphoma	5%
Oral cavity & pharynx	4%
Leukemia	4%
Pancreas	3%
All other sites	20%



Females 927,910	
30%	Breast
13%	Lung & bronchus
8%	Colon & rectum
7%	Uterine corpus
5%	Melanoma of the skin
4%	Non-Hodgkin lymphoma
3%	Thyroid
3%	Pancreas
3%	Kidney & renal pelvis
3%	Leukemia
21%	All other sites

*Excludes basal cell and squamous cell skin cancers and in situ carcinoma except urinary bladder.

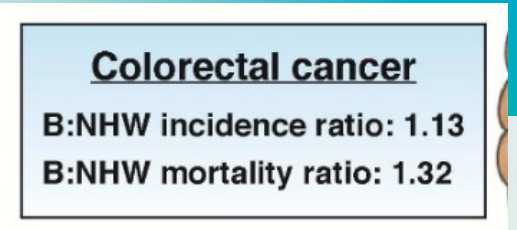
Racial Disparities in Gastrointestinal Cancers



- The operative rates for Black patients were low relative to White patients. Adjustment for age, stage, and comorbidities revealed even lower odds of receiving surgery.
- Receipt of surgery and socioeconomic factors had greatest influence on the survival disparity of gastrointestinal cancers[2]
- Other social determinants of health affect survival (social injustice, living environments, education, etc)

1. Ashktorab H, Kupfer SS, Brim H, Carethers JM. Racial Disparity in Gastrointestinal Cancer Risk. *Gastroenterology*. 2017;153(4):910-923. doi:10.1053/j.gastro.2017.08.018. 2. Bliton JN, Parides M, Muscarella P, Papalezova KT, In H. Understanding Racial Disparities in Gastrointestinal Cancer Outcomes: Lack of Surgery Contributes to Lower Survival in African American Patients. *Cancer Epidemiol Biomarkers Prev*. Published online December 10, 2020:cebp.0950.2020. doi:10.1158/1055-9965.epi-20-0950

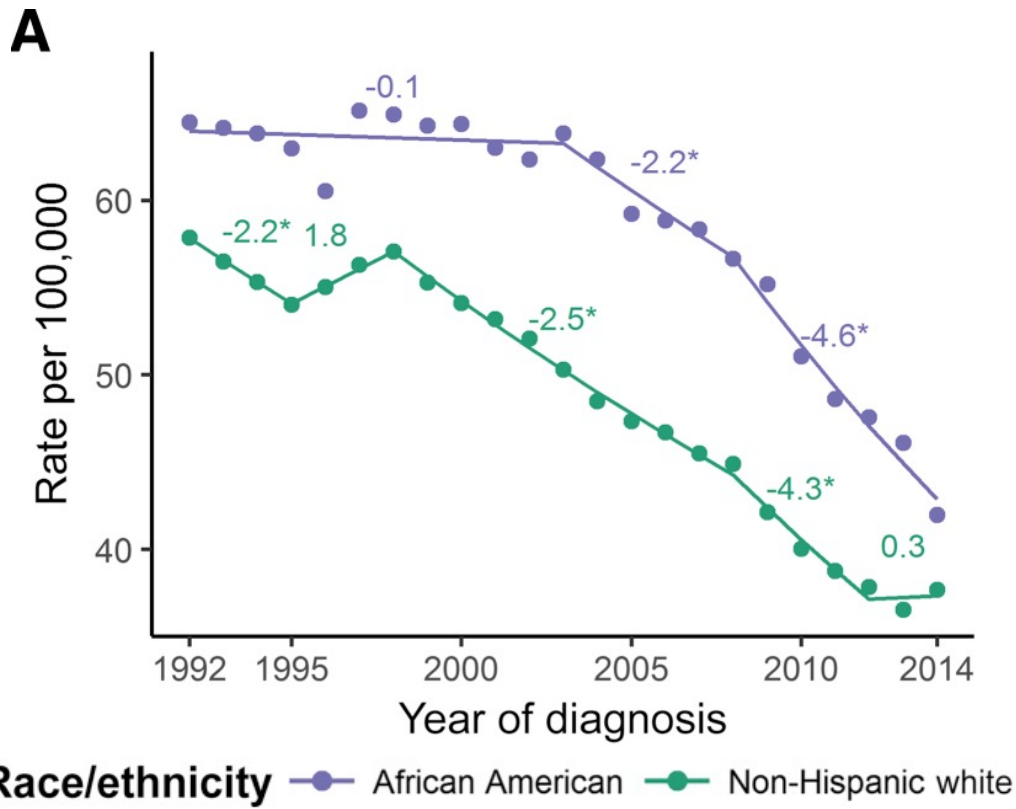
Colorectal Cancer



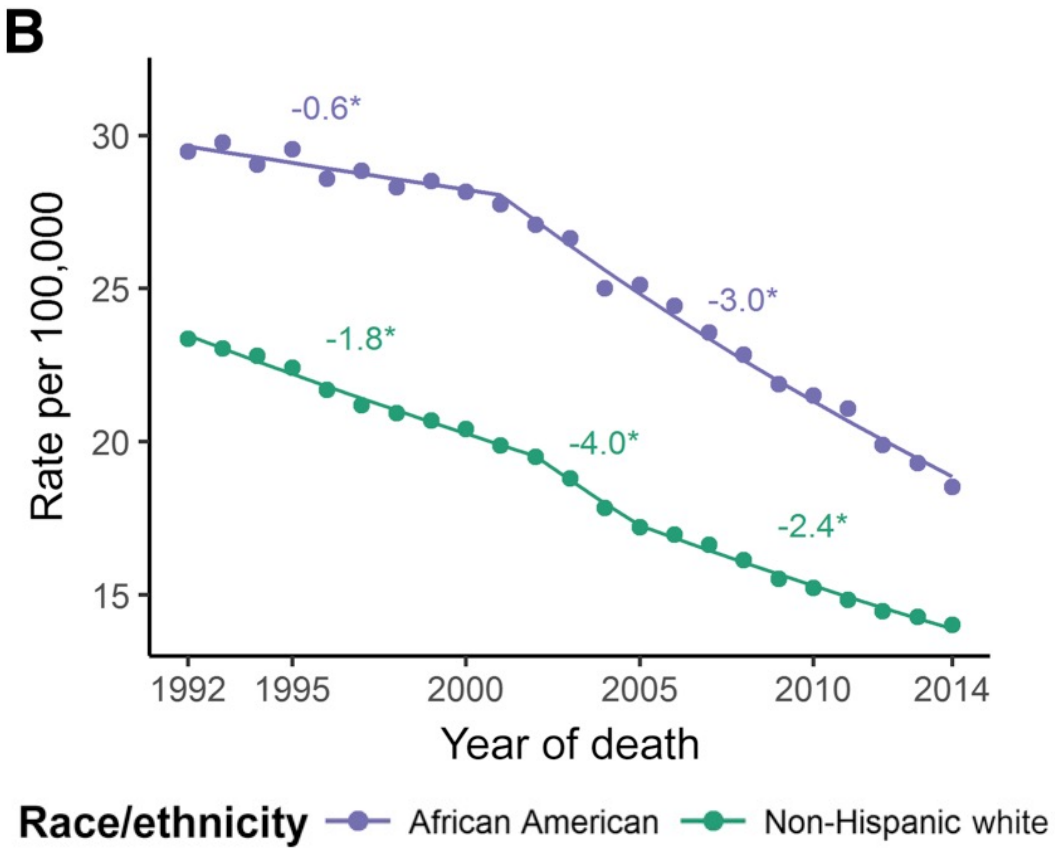
- Blacks have the highest incidence and death rates for CRC, whereas Hispanics and Asian/Pacific Islanders have the lowest rates
- Blacks have a distribution of CRC that favors metastatic disease compared to NHWs

- Disparities in incidence and mortality can be attributed to social determinants of health
- Black patients display a higher frequency of KRAS mutations in tumors, increasing the aggressiveness of the CRC
- Black patients are more likely to be diagnosed at an earlier age, with more advanced, and more aggressive disease

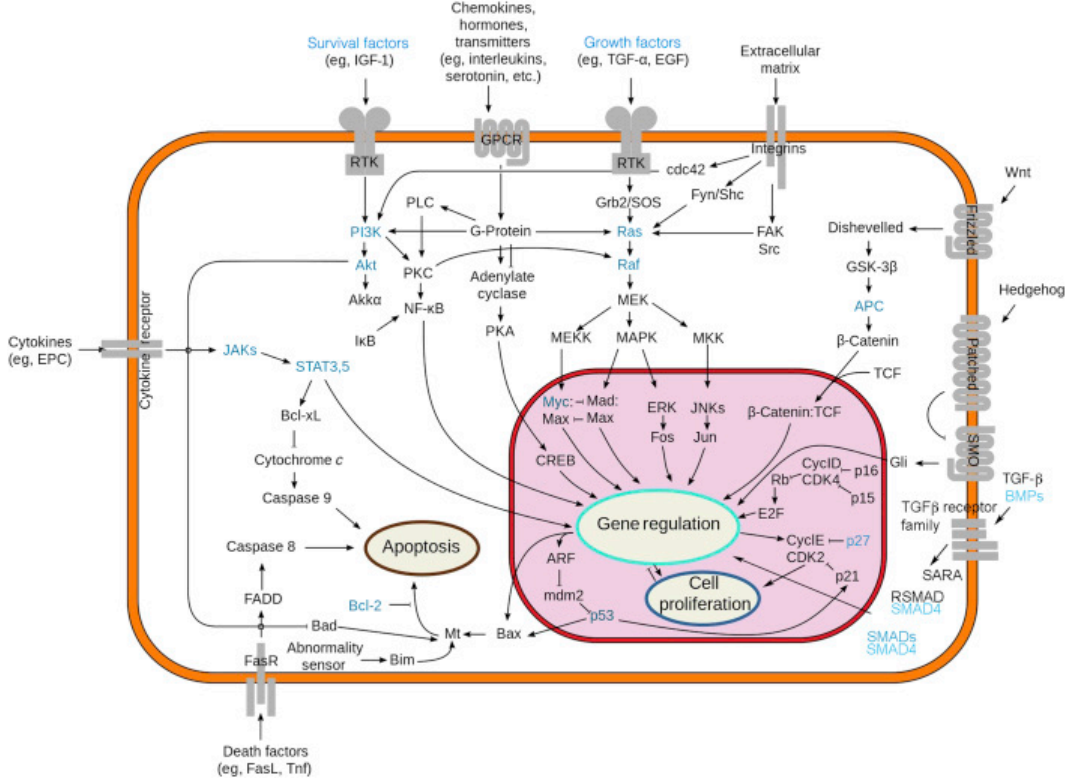
1. Ashktorab H, Kupfer SS, Brim H, Carethers JM. Racial Disparity in Gastrointestinal Cancer Risk. *Gastroenterology*. 2017;153(4):910-923. doi:10.1053/j.gastro.2017.08.018



A: Age-adjusted incidence rates of colorectal cancer (CRC) in African Americans (purple) and whites (green; explicitly non-Hispanic whites) from 1992 to 2014, all ages, both sexes [data from Surveillance, Epidemiology, and End Results (SEER) 13, Incidence–SEER 13 Regs Research Data, November 2016 Sub (1992 to 2014) <Katrina/Rita Population Adjustment>; *https://seer.cancer.gov/data/seerstat/nov2016*, accessed April 14, 2017]. Annual percentage change is depicted as text above data, where negative values indicate a decreasing trend and positive values indicate an increasing trend. **Asterisks** denote a rising or falling trend, where the entire 95% CI is above or below 0, respectively. **No asterisk** indicates a stable trend.



B: Age-adjusted US mortality rates of CRC in African Americans (purple) and whites (green; explicitly non-Hispanic whites) from 1992 to 2014, all ages, both sexes (data from SEER 13). Annual percentage change is depicted as text above data, where negative values indicate a decreasing trend.



Cellular pathways dysregulated in colorectal cancer (CRC). Specific genetic factors that are altered in CRC and discussed in this review are blue. Figure altered from original by Wikipedia user RoadNotTaken (*https://commons.wikimedia.org/wiki/File:Signal_transduction_pathways.svg*, last accessed June 20, 2017). This image is being used with permission under the terms of the GNU Free Documentation License, version 1.2 or any later version, published by the Free Software Foundation (with no invariant sections, no front-cover texts, and no back-cover texts). The image herein originally appeared on November 18, 2010, and is current as of publication of this article. APC, adenomatous polyposis coli; BMP, bone morphogenetic protein; CDK, cyclin-dependent kinase; CREB, CAMP-responsive element-binding protein; EGF, epidermal growth factor; EPC, endothelial progenitor cell factors; ERK, extracellular signal–regulated kinase; FADD, Fas-associated protein with death domain; FasR, Fas receptor; GPCR, G protein–coupled receptor; GSK, glycogen synthase kinase; IGF, insulin-like growth factor; JAK, Janus-activating kinase; JNK, c-Jun N-terminal kinase; MAPK, mitogen-activated protein kinase; MEK, MAPK/ERK kinase; MEKK, MAP kinase kinase kinase; MKK, mitogen-activated protein kinase kinase; PI3K, phosphatidylinositol 3-kinase; PLC, phospholipase C; RSMAD, receptor phosphorylated SMAD; RTK, receptor tyrosine kinase; SARA, SMAD anchor for receptor activation; SMO, smoothened; SOS, son of sevenless; TCF, T-cell factor; TGF, transforming growth factor; Tnf, tumor necrosis factor.

Biomarkers: Predictive

Chemotherapy/Targeted agents

- Stage – 5-FU, oxaliplatin (FOLFOX/CAPOX),..
- BRAF V600E – EGFRi, EGFRi+BRAFi+irinotecan
- Extended RAS - EGFRi
- Right sidedness –EGFRi (1st line)

Immunotherapy

- MSI-H –anti-PD-1, 5-FU *(II)*

Emerging biomarkers: Prognostic

CMS subtype
Microbiome
ctDNA
Immune infiltration

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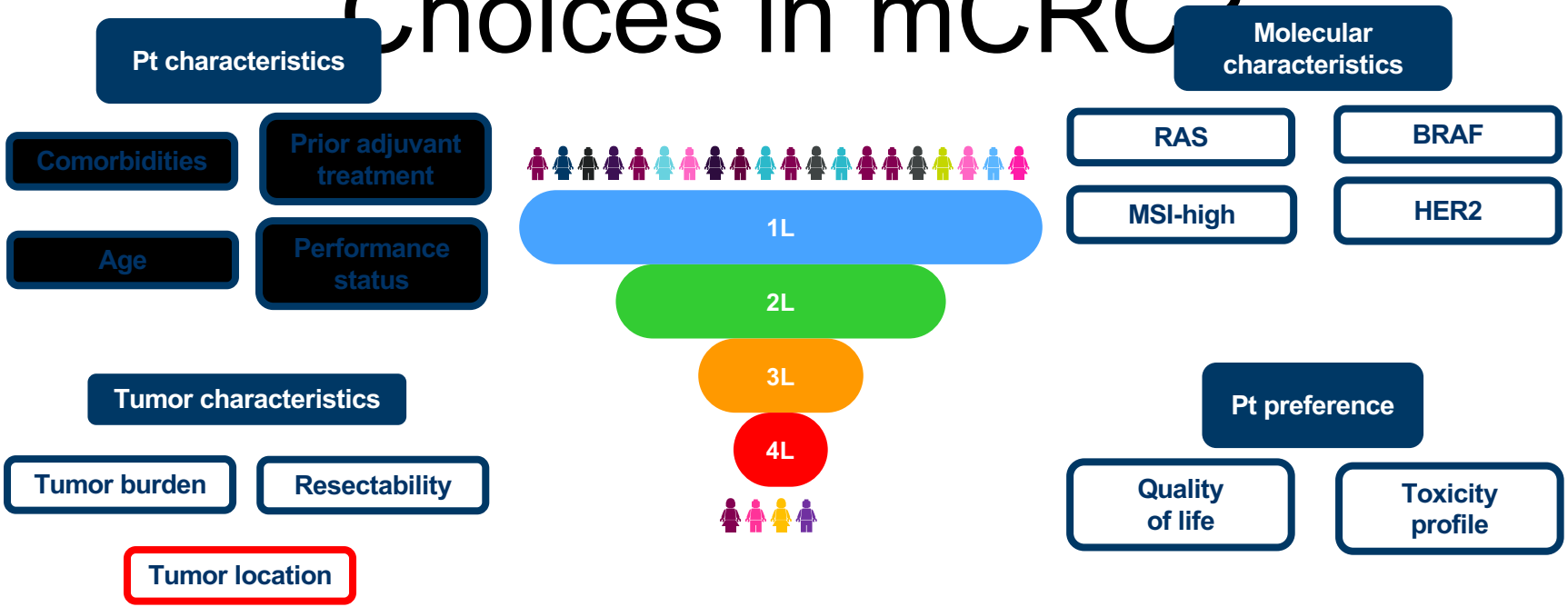
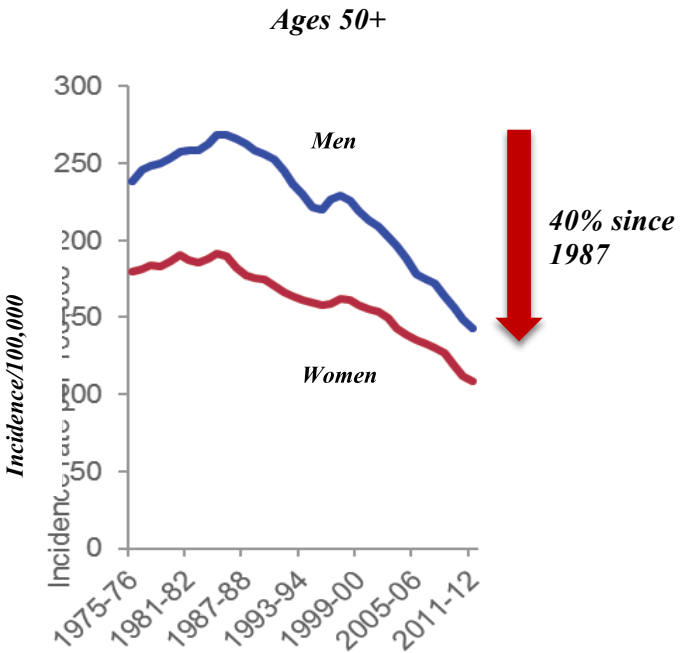
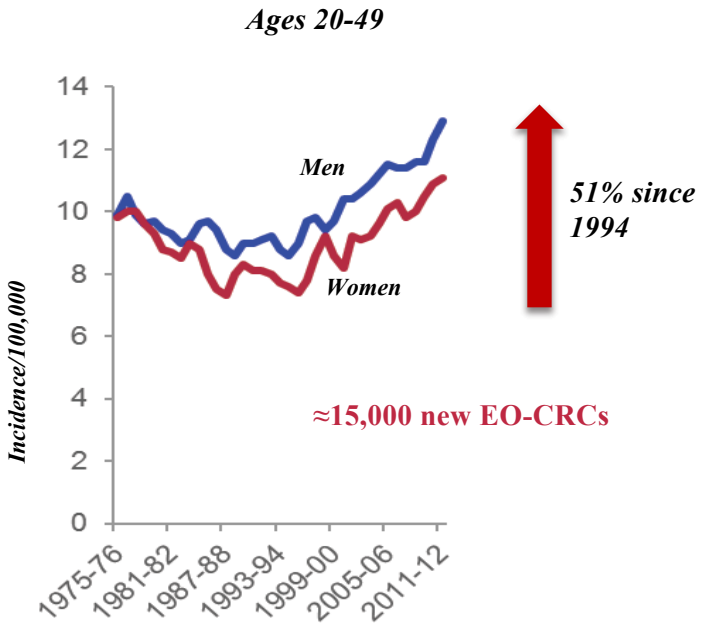
What Influences Treatment Choices in mCRC?



Slide credit: clinicaloptions.com

Early-Onset CRC Incidence in U.S. is Increasing





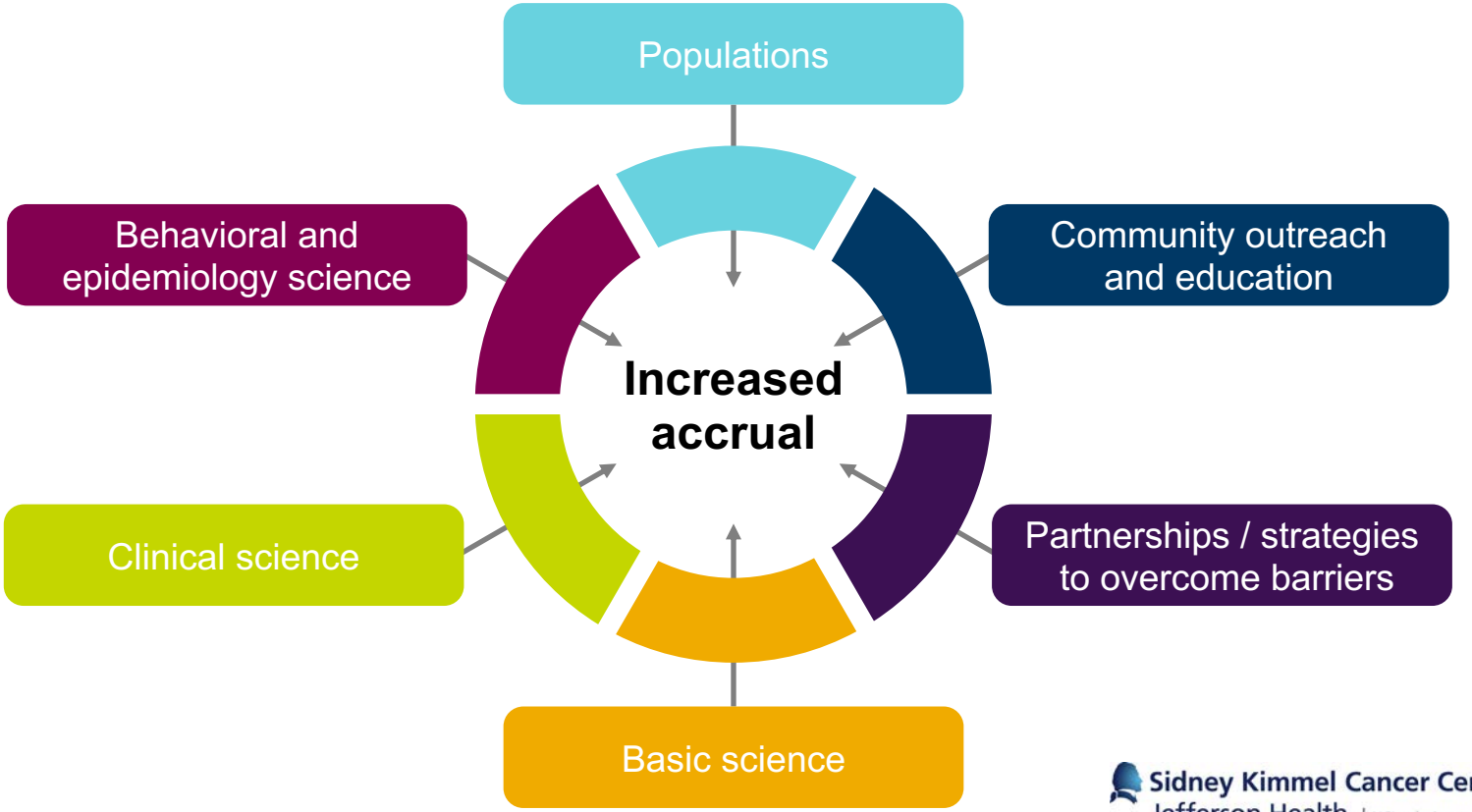
Siegel R: Source:-SEER 9 delay-adjusted rates, 1975-2012; 2-yr moving average.

Addressing Disparities

- Patient navigators intervened on the social and community context by providing support to vulnerable populations in overcoming the anxiety and barriers faced when navigating through the complexities of the healthcare system[1]
- Investing in navigation services throughout the continuum of preventive care has been shown to improve successful screening uptake, diagnosis, and follow-up, resulting in earlier diagnoses and treatment and eventually contributing to gains in QALY[1]
- Receipt of surgery and socioeconomic factors had greatest influence on the survival disparity of gastrointestinal cancers[3]
- A construct to address social determinants of health promotes recognition of structural inequities, institutional environments, living environments, risk factors and the spectrum of cancer co-morbidities (ACS)

1. Mohan G, Chattopadhyay S. Cost-effectiveness of Leveraging Social Determinants of Health to Improve Breast, Cervical, and Colorectal Cancer Screening: A Systematic Review. *JAMA Oncol*. 2020;6(9):1434-1444. doi:10.1001/jamaoncol.2020.1460. 2. Gold JS. Linking Disparities to Outcomes in Pancreatic Cancer: Inching Toward Answers. *JAMA Surg*. 2020;155(2). doi:10.1001/jamasurg.2019.5082. 3. Bliton JN, Parides M, Muscarella P, Papalezova KT, In H. Understanding Racial Disparities in Gastrointestinal Cancer Outcomes: Lack of Surgery Contributes to Lower Survival in African American Patients. *Cancer Epidemiol Biomarkers Prev*. Published online December 10, 2020:cebp.0950.2020. doi:10.1158/1055-9965.epi-20-0950

Integrating minority populations and gender into SKCC research and clinical trials



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Solutions to Increase Diverse Participation in Clinical Trials: The Latino Perspective

Amelie G. Ramirez, DrPH, MPH
Director, *Salud America!*
Director, Institute for Health Promotion Research
Associate Director, Cancer Outreach and Engagement, Mays Cancer Center
UT Health San Antonio

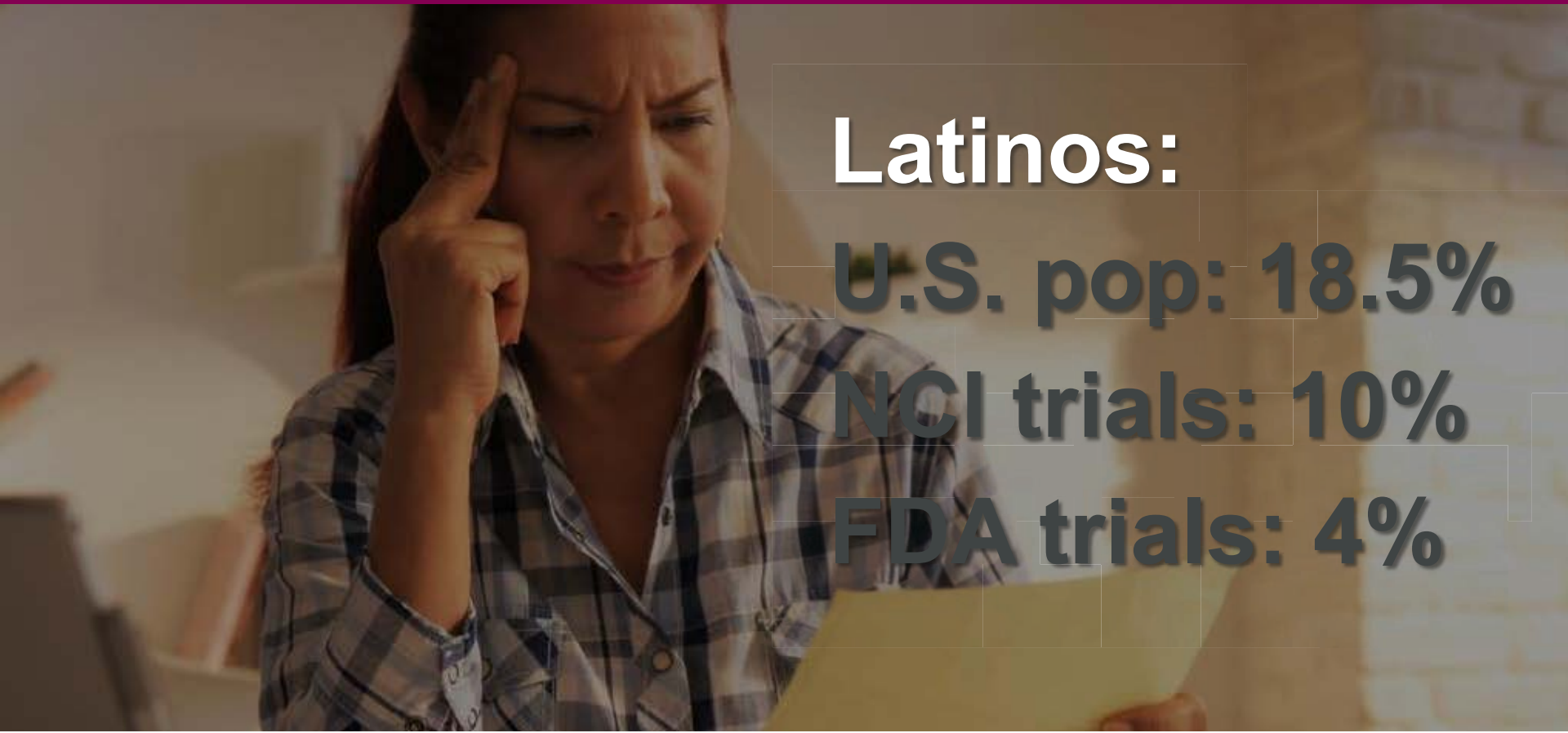
UT Health San Antonio
Institute for Health Promotion Research

salud-america.org

Salud America!

Smith et al, Future of cancer incidence in the United States: Burdens upon an aging, changing nations. J Clin Oncol, 27(17):2758-2765.

ACS, 2018, salud.to/acsfactsfigures2018; UT Health San Antonio, Cancer Chapter, South Texas Health Status Review, 2018, salud.to/cancerchapter



ASCO Educational Book, 2019, http://salud.to/ascobook; The Cancer Letter, 2020, http://salud.to/ncitrialnumbers

How Can We Recruit More Latinos?

Identify Barriers

- Lack of awareness of trials
- Lack of knowledge about disease and treatment options
- Cultural, language, literacy
- Cost, insurance, travel to trial center

Identify Enablers

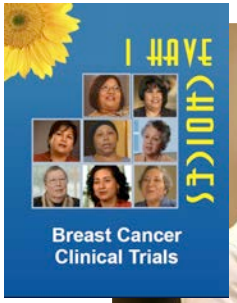
- Trusting in the doctor
- Trusting the trial center
- Feeling that joining a trial will give hope and help future cancer patients
- Having clear information
- Encouragement from family members

Source: Chalela P, Suarez L, Munoz E, Gallion KJ, Ramirez AG et al. (2014) Promoting factors and barriers to participation in Early Phase Clinical Trials: Patient Perspectives. J Community Med Health Educ 4:281.

Our CHOICES Intervention

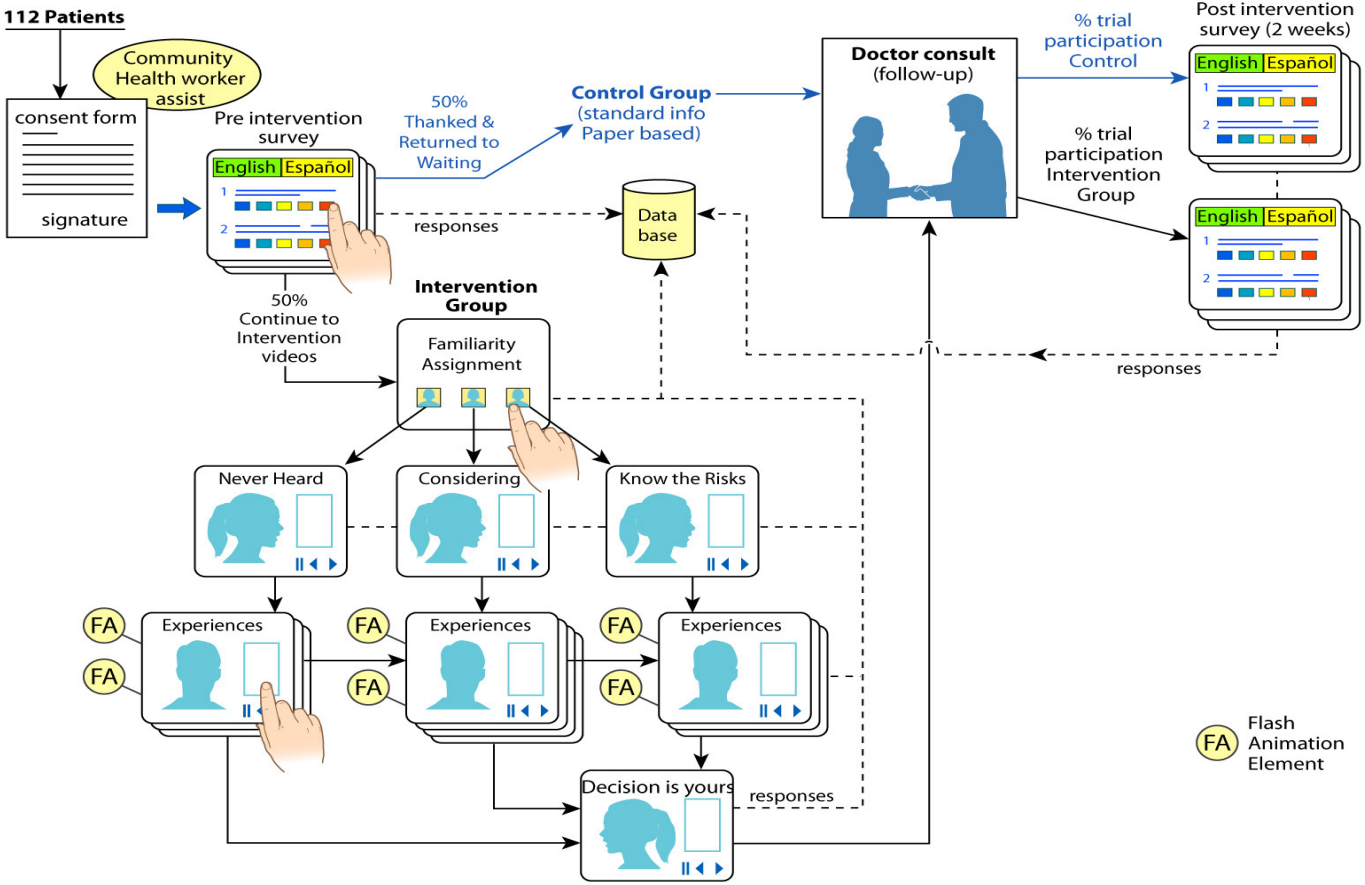
Online Videos + Booklets + Navigation to Empower Latinas to Make Informed Decisions about CTs

- **Enhancing knowledge, attitudes, and skills**
- **Increasing self-efficacy**
- **Encourage discussion of CTs as a treatment option with doctors and family members**



Source: Chalela, P., Munoz, E., Gallion, K.J., Kaklamani, V., Ramirez, A.G. (2018). Empowering Latina Breast Cancer Patients to Make Informed Decisions about Clinical Trials: a pilot study. *Transl Behav Med*, *8*(3), 439-449.

Our CHOICES Intervention



Our CHOICES Intervention

Intervention group participants (vs. control):

- ↑ perceived understanding of CTs (p = .033)
- ↑ consideration of CTs as a treatment option (p = .008)
- Showed greater significant changes in stages of change
- Were more likely to ask doctors about CTs, talk with family and friends, and consider pros and cons of participating

Source: Chalela, P., Munoz, E., Gallion, K.J., Kaklamani, V., Ramirez, A.G. (2018). Empowering Latina Breast Cancer Patients to Make Informed Decisions about Clinical Trials: a pilot study. *Transl Behav Med*, *8*(3), 439-449.

Our CHOICES Intervention

Lessons Learned:

- **Just raising awareness won't boost participation if we don't address other key barriers**
- **Barriers to participation are complex and multifaceted: health system, provider, patient**
- **Patient navigation addresses common barriers (i.e., language, logistic) and allows patients to focus on treatment options**

Source: Chalela, P., Munoz, E., Gallion, K.J., Kaklamani, V., Ramirez, A.G. (2018). Empowering Latina Breast Cancer Patients to Make Informed Decisions about Clinical Trials: a pilot study. *Transl Behav Med*, *8*(3), 439-449.

Our CHOICES Intervention

Lessons Learned:

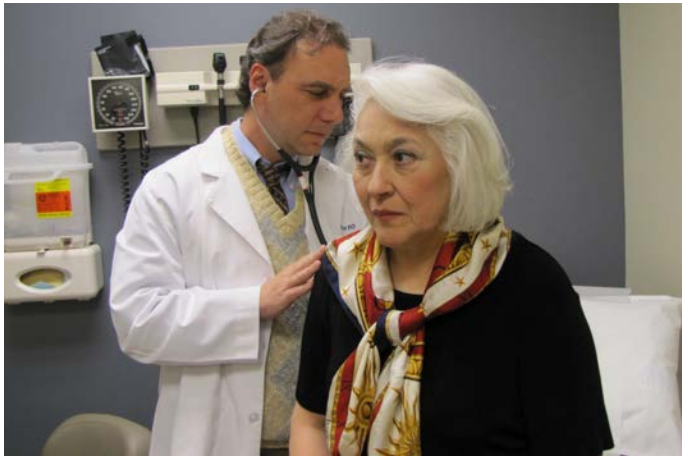
- **Involving the population we want to reach is essential**
- **Pretesting is critical**
- **Empowering interventions that enhance patients' awareness and self-efficacy foster a sense of control and provide patients with the knowledge and skills they need to make informed decision regarding their treatment options.**

Source: Chalela, P., Munoz, E., Gallion, K.J., Kaklamani, V., Ramirez, A.G. (2018). Empowering Latina Breast Cancer Patients to Make Informed Decisions about Clinical Trials: a pilot study. *Transl Behav Med*, *8*(3), 439-449.

Our CHOICES Intervention

Lessons Learned:

- **Computer-based videos are an effective strategy to increase patients' knowledge and understanding of clinical trials and promote their participation in clinical research.**

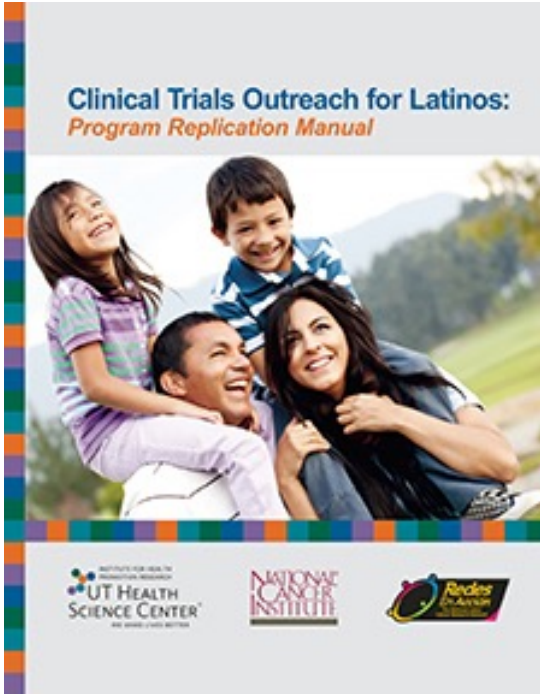


Source: Chalela, P., Munoz, E., Gallion, K.J., Kaklamani, V., Ramirez, A.G. (2018). Empowering Latina Breast Cancer Patients to Make Informed Decisions about Clinical Trials: a pilot study. *Transl Behav Med*, *8*(3), 439-449.

CTOL Manual

Our Clinical Trials Outreach for Latinos (CTOL) Manual gives tips, resources, and other help to incorporate CT outreach into an organization

- **Learn about CTs, cultural competency, need for outreach among Latinos**
- **Start CT outreach activities**
- **Adapt CT outreach materials and evaluations to org needs**
- **Increase the number of Latinos who participate in CTs**



https://redesenaccion.com/clincial-trials-for-latinos

UT Health San Antonio Institute for Health Promotion Research

Remaining Barrier: Systemic Injustice

Racial/ethnic discrimination impacts educational attainment, which, in turn, impacts future educational, health, social, and career opportunities for people of color.

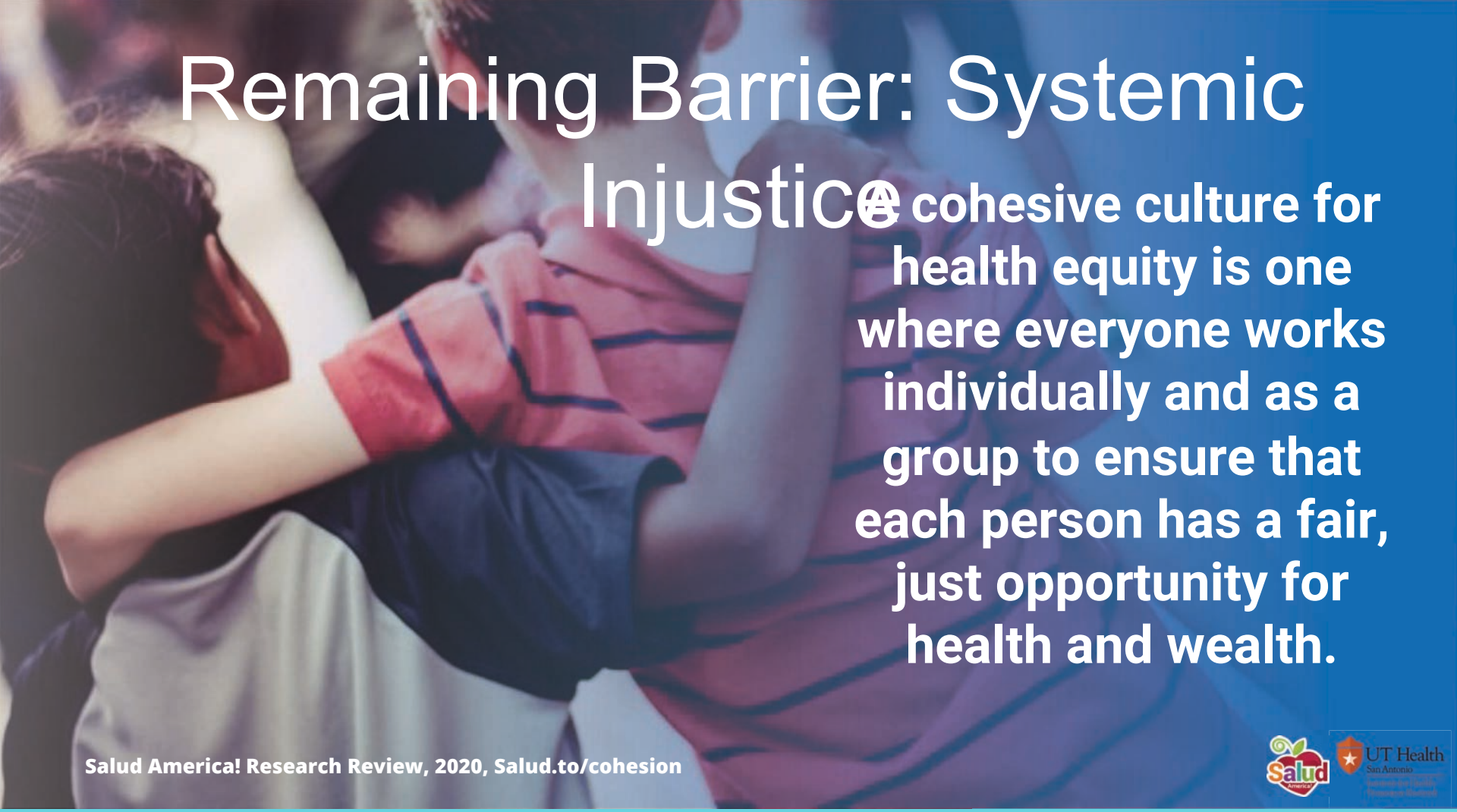
Salud America! Research Review, 2020, Salud.to/cohesion

Remaining Barrier: Systemic Injustice

Most people of color say they've experienced discrimination due to their race or ethnicity from time to time or regularly, including 76% of Blacks and 58% of Latinos, compared to 33% of Whites.

Salud America! Research Review, 2020, Salud.to/cohesion

Remaining Barrier: Systemic Injustice



A cohesive culture for health equity is one where everyone works individually and as a group to ensure that each person has a fair, just opportunity for health and wealth.

Salud America! Research Review, 2020, Salud.to/cohesion

Download our Action Packs

328 National Downloads of “Find Out if You Have Implicit Bias” Action Pack

salud.to/seebias

With the Action Pack, people get

— FAQs

— Guide for IAT and reflecting on results

— Technical Support

to enable people to identify their implicit bias and takes steps to overcome bias

Download our Action Packs

501 National Downloads of “Racism is a Public Health Crisis” Action Pack

salud.to/endracism

With the Action Pack, advocates get

— FAQs
— Template Materials
— Model Emails
— Technical Support

to enable cities to adopt resolutions that racism is a public health crisis, and commit to action

Follow Our New Project

2/10/21: *Salud America!* is 1 of 16 projects funded via Genentech's Health Equity Innovation Fund

Create Latino-focused recruitment strategies and systems for clinical trials in cancer treatment and Alzheimer's disease

***Salud America!* website, https://salud.to/genegrant**

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- improve Latino understanding of clinical trials and biobanking
- increase Latinos' self and collective efficacy for enrolling in clinical trials and biobanking
- increase awareness of how unconscious biases and discrimination against Latinos curtails recruitment to clinical trials and biobanking
- improve patient-provider communication and trust
- increase self and collective efficacy for participating in advocacy to promote policies and systems that reduce bias in healthcare settings and remove barriers to Latino participation in clinical trials and biobanking

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Special thanks to my *Salud America!* team:

- Rosalie Aguilar, Coordinator
- Cliff Despres, Communications
- Content Curators: Amanda Merck, Pramod Sukumaran, Josh McCormack, Julia Weis
- Tenoch Aztecatl, Videos

Join us at

salud-america.org/join

@SaludAmerica

UT Health San Antonio Institute for Health Promotion Research

Salud America!

Robert Wood Johnson Foundation

American Indian Cancer Foundation.

- Awareness and education
- Eligibility
- Transportation and resources
- Interest & capacity
- Relevance and impact
- Patient/provider relationship and interaction
- History of health care, research and treaty rights
- Unique cultural values, protocols, and practices

American Indian Cancer Foundation (AICAF) is a national non-profit established to address tremendous cancer inequities faced by American Indian and Alaska Natives.

Mission:

To eliminate cancer burdens on American Indian families through education and improved access to prevention, early detection, treatment and survivor support.

Our Approach

We believe…

Native communities have the wisdom to find the solutions to health inequities, but are often seeking the organizational capacity, expert input and resources to do so.

- Invest in the communities
- Establish long term relationships
- Center the needs and priorities of the communities
- Solutions need to be tribally-led, community based and rooted in culture
- Continual support and resources

- Center Indigenous communities
- Communities have authority and decision making power
- Be an advocate, a true ally - Not a savior

Pidamaya do! - *Thank you*