HOWARD UNIVERSITY
1867

Department of Pathology
College of Medicine

Social Determinants of Health

Roger A. Mitchell Jr. MD FCAP
Professor and Chairman
Department of Pathology
Howard University College of Medicine
Howard University Hospital


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No.1
Most Diverse Medical School
U.S. News and World Report's 2022 "Best Graduate Schools"
EXAM ROOM
7
B-LINE CLINICAL SKILLS
Excellence in Truth and Service


FINANCIAL INSECURITY
POVERTY
HUNGER

ADVERSE CHILDHOOD EXPERIENCES – ACES

What are Adverse Childhood Experiences (ACEs)?
ACEs are potentially traumatic events that occur in a child's life:

Physical Abuse

Emotional Abuse

Sexual Abuse

Domestic Violence

Parental Substance Abuse

Mental Illness

Suicide or Death

Crime or Imprisoned Family

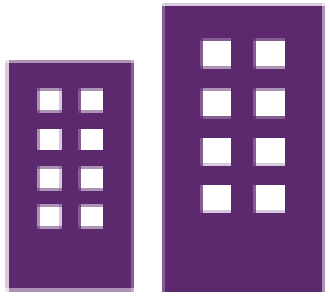
Causing lifelong medical, mental & social suffering

American SPCC
American Society for the Positive Care of Children

americanspcc.org
The Nation's Voice for Children
*Center for Disease Control

What are Social Determinants?

Childhood experiences



Housing

Education

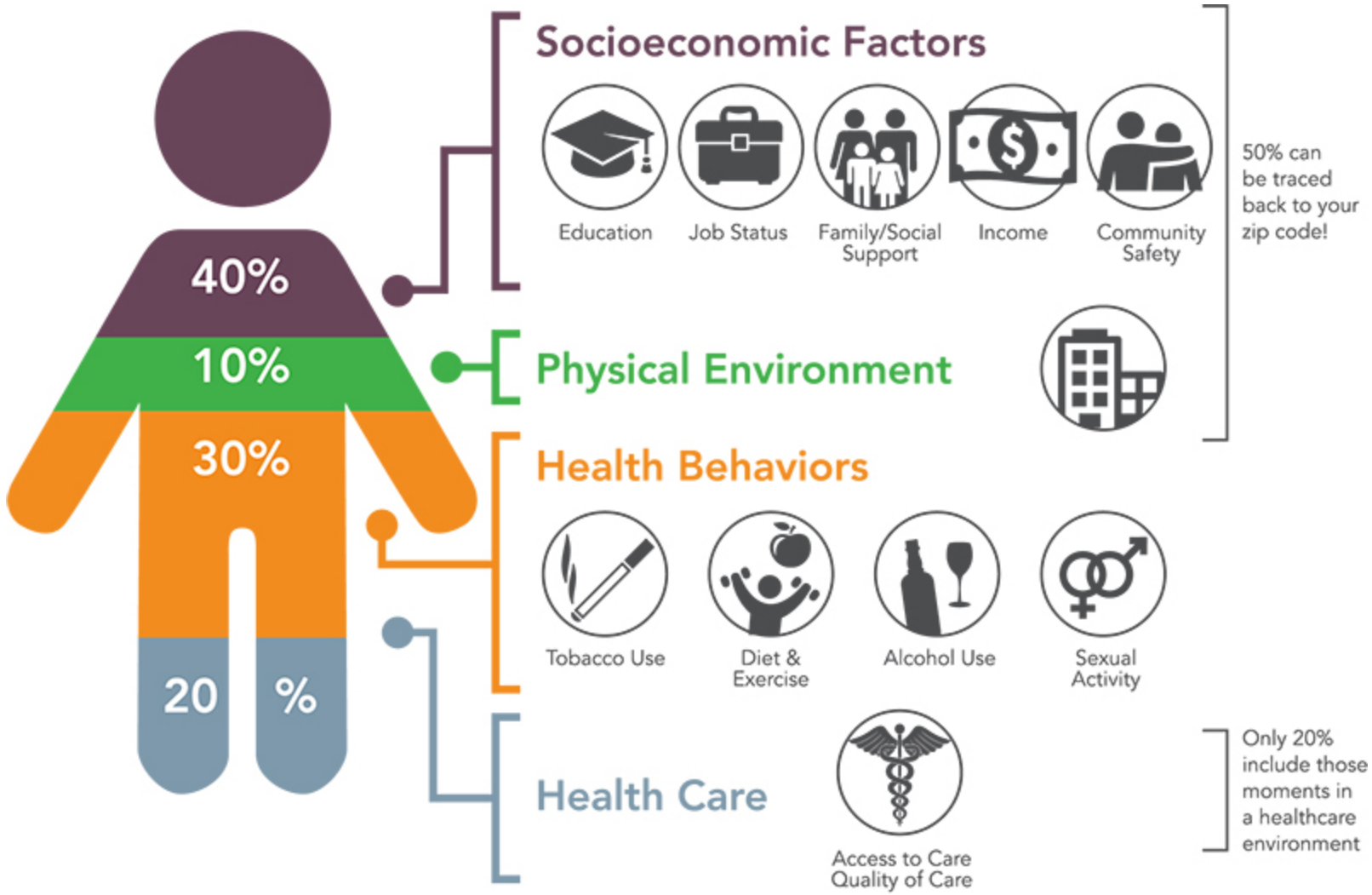
Social support

Family income

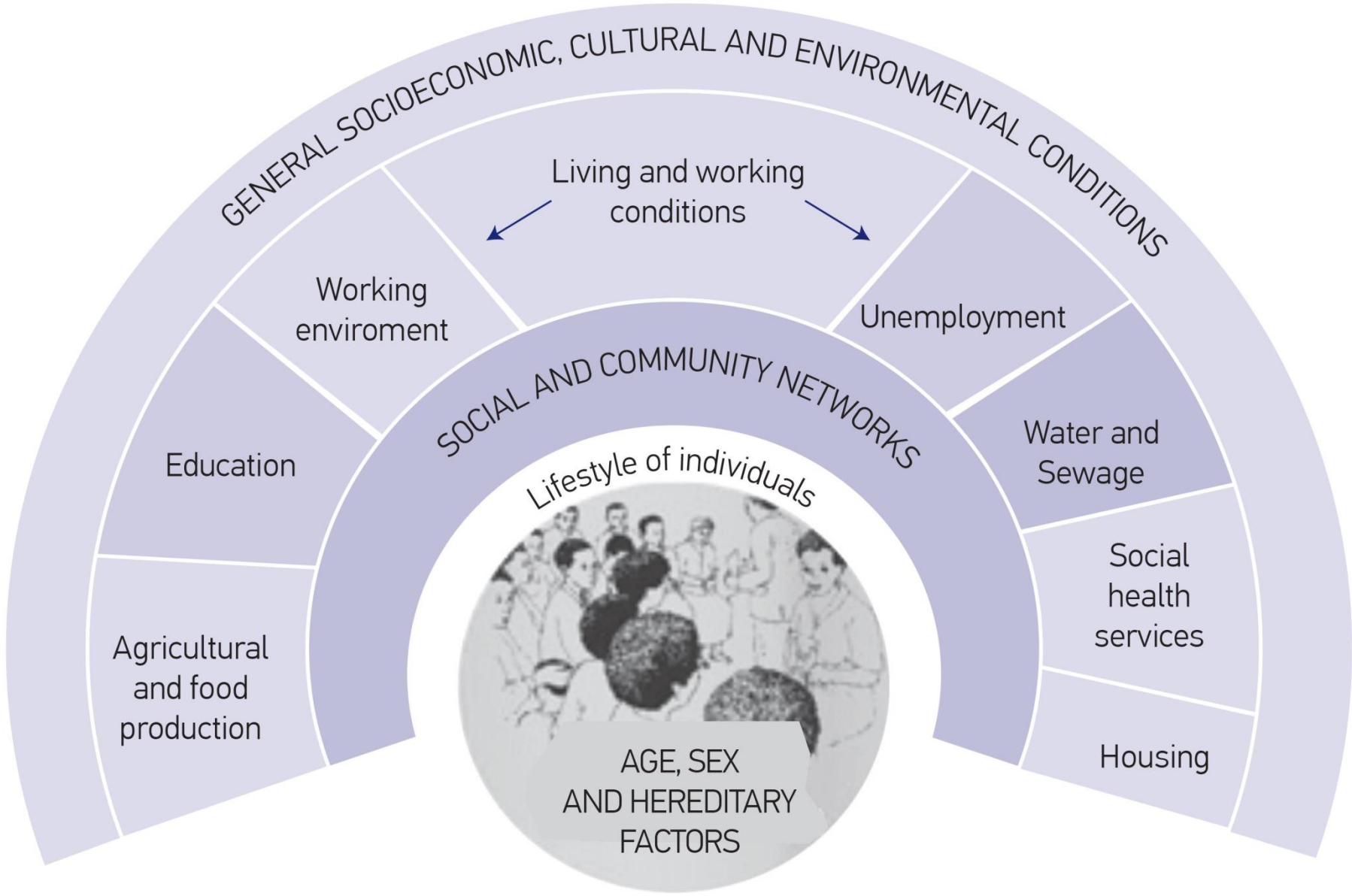
Employment

Our communities

Access to health services



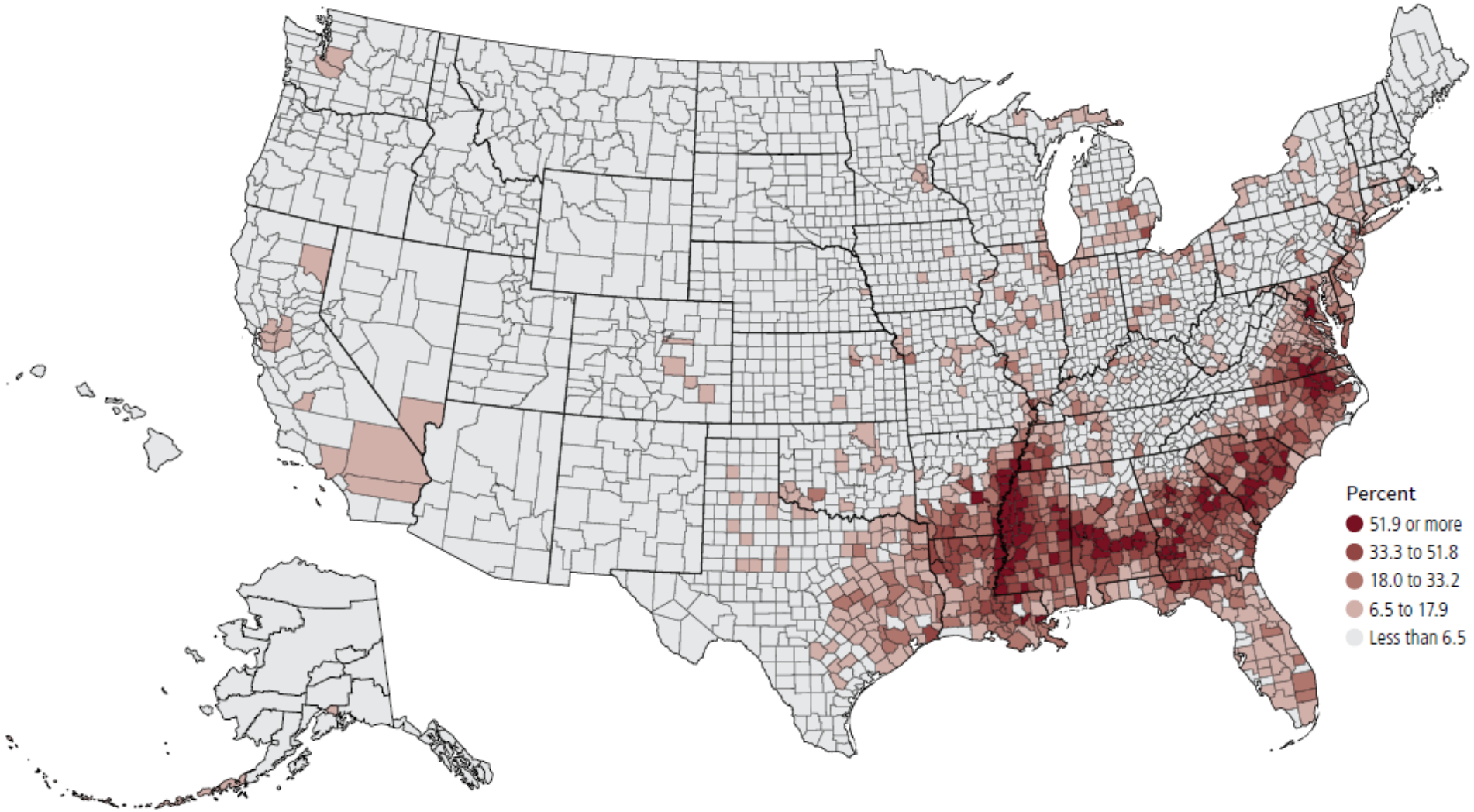
Source: Institute for Clinical Systems Improvement, Going Beyond Clinical Walls: Solving Complex Problems (October 2014)


GENERAL SOCIOECONOMIC, CULTURAL AND ENVIRONMENTAL CONDITIONS
Living and working conditions
Working enviroment
Unemployment
Education
SOCIAL AND COMMUNITY NETWORKS
Water and Sewage
Lifestyle of individuals
Social health services
Agricultural and food production
Housing
AGE, SEX AND HEREDITARY FACTORS

American Cancer Society®

Cancer Facts & Figures
for African Americans 2019-2021

Figure 1. Non-Hispanic Black Population as a Percentage of Total County Population, 2016



Source: US Census Bureau, Population Estimates, July 1, 2016. Released 2017.

Table 1. Leading Causes of Death by Sex among Non-Hispanic Blacks and Whites, US, 2016

Males		NH Black				NH White		
Cause of Death	**Rank**	**Number**	**%**	**Death Rate***	**Rank**	**Number**	**%**	**Death Rate***
Heart diseases	1	40,040	24%	267.2	1	266,981	25%	214.1
Cancer	2	35,215	21%	228.1	2	247,202	23%	190.7
Accidents (unintentional injuries)	3	12,452	7%	65.8	3	76,025	7%	72.4
Cerebrovascular diseases	4	8,114	5%	57.4	5	43,711	4%	35.8
Diabetes	5	6,976	4%	45.3	6	30,010	3%	23.6
All causes		168,742		1088.7		1,077,329		880.6

Females		NH Black				NH White		
Cause of Death	**Rank**	**Number**	**%**	**Death Rate***	**Rank**	**Number**	**%**	**Death Rate***
Heart diseases	1	36,563	23%	171.2	1	233,632	22%	131.3
Cancer	2	34,510	22%	156.1	2	219,262	21%	138.2
Cerebrovascular diseases	3	10,074	6%	48.0	5	63,776	6%	35.6
Diabetes	4	7,077	4%	32.8	7	23,389	2%	14.4
Alzheimers	5	6,126	4%	30.3	4	67,893	6%	35.6
All causes		158,057		735.4		1,056,078		635.4

NH: Non-Hispanic. *Rates are per 100,000 and age adjusted to the 2000 US standard population.

Source: National Center for Health Statistics, Centers for Disease Control and Prevention.

Table 2. Lifetime Probability of Developing or Dying from Invasive Cancers* by Race and Sex, US, 2013-2015

		Developing		Dying	
		Black (%)	NH White (%)	Black (%)	NH White (%)
All sites†	Male	36.6 (1 in 3)	39.9 (1 in 3)	22.0 (1 in 5)	21.9 (1 in 5)
	Female	34.0 (1 in 3)	39.2 (1 in 3)	18.7 (1 in 5)	18.9 (1 in 5)
Breast	Female	11.5 (1 in 9)	13.2 (1 in 8)	3.1 (1 in 32)	2.6 (1 in 39)
Colon & rectum	Male	4.4 (1 in 23)	4.3 (1 in 23)	2.2 (1 in 46)	1.8 (1 in 55)
	Female	4.2 (1 in 24)	4.0 (1 in 25)	2.0 (1 in 51)	1.7 (1 in 59)
Kidney & renal pelvis	Male	2.0 (1 in 50)	2.2 (1 in 46)	0.5 (1 in 195)	0.6 (1 in 159)
	Female	1.3 (1 in 79)	1.2 (1 in 83)	0.3 (1 in 336)	0.3 (1 in 297)
Leukemia	Male	1.2 (1 in 86)	1.9 (1 in 52)	0.7 (1 in 150)	1.0 (1 in 96)
	Female	0.9 (1 in 109)	1.3 (1 in 74)	0.5 (1 in 191)	0.7 (1 in 139)
Liver & intrahepatic bile duct	Male	1.6 (1 in 62)	1.1 (1 in 89)	1.2 (1 in 83)	0.9 (1 in 114)
	Female	0.6 (1 in 173)	0.5 (1 in 212)	0.5 (1 in 182)	0.5 (1 in 219)
Lung & bronchus	Male	6.9 (1 in 15)	7.0 (1 in 14)	5.8 (1 in 17)	6.0 (1 in 17)
	Female	5.1 (1 in 19)	6.5 (1 in 15)	3.9 (1 in 26)	5.0 (1 in 20)
Myeloma	Male	1.4 (1 in 73)	0.8 (1 in 122)	0.7 (1 in 142)	0.5 (1 in 221)
	Female	1.2 (1 in 80)	0.6 (1 in 175)	0.7 (1 in 141)	0.3 (1 in 291)
Ovary	Female	0.9 (1 in 107)	1.3 (1 in 75)	0.7 (1 in 140)	0.9 (1 in 106)
Pancreas	Male	1.6 (1 in 64)	1.6 (1 in 62)	1.4 (1 in 73)	1.4 (1 in 71)
	Female	1.7 (1 in 59)	1.5 (1 in 66)	1.5 (1 in 65)	1.3 (1 in 76)
Prostate	Male	14.8 (1 in 7)	10.6 (1 in 9)	4.0 (1 in 25)	2.2 (1 in 45)
Stomach	Male	1.2 (1 in 83)	0.8 (1 in 119)	0.8 (1 in 132)	0.4 (1 in 278)
	Female	0.8 (1 in 118)	0.4 (1 in 227)	0.5 (1 in 206)	0.2 (1 in 436)
Thyroid	Male	0.3 (1 in 325)	0.7 (1 in 137)	<0.1 (1 in 2,893)	0.1 (1 in 1,743)
	Female	1.1 (1 in 87)	2.0 (1 in 51)	0.1 (1 in 1,273)	0.1 (1 in 1,576)
Urinary bladder‡	Male	1.8 (1 in 56)	4.2 (1 in 24)	0.5 (1 in 183)	1.0 (1 in 99)
	Female	0.8 (1 in 123)	1.2 (1 in 82)	0.3 (1 in 295)	0.4 (1 in 283)
Uterine cevix	Female	0.7 (1 in 140)	0.6 (1 in 177)	0.4 (1 in 281)	0.2 (1 in 506)
Uterine corpus	Female	2.7 (1 in 37)	3.0 (1 in 34)	1.0 (1 in 101)	0.6 (1 in 176)

NH= non-Hispanic. *For those who have not been previously diagnosed with cancer. †All sites excludes basal and squamous cell skin cancers and in situ cancers except urinary bladder. ‡Includes in situ cancers. Note: Percentages and "1 in" numbers may not be equivalent due to rounding.

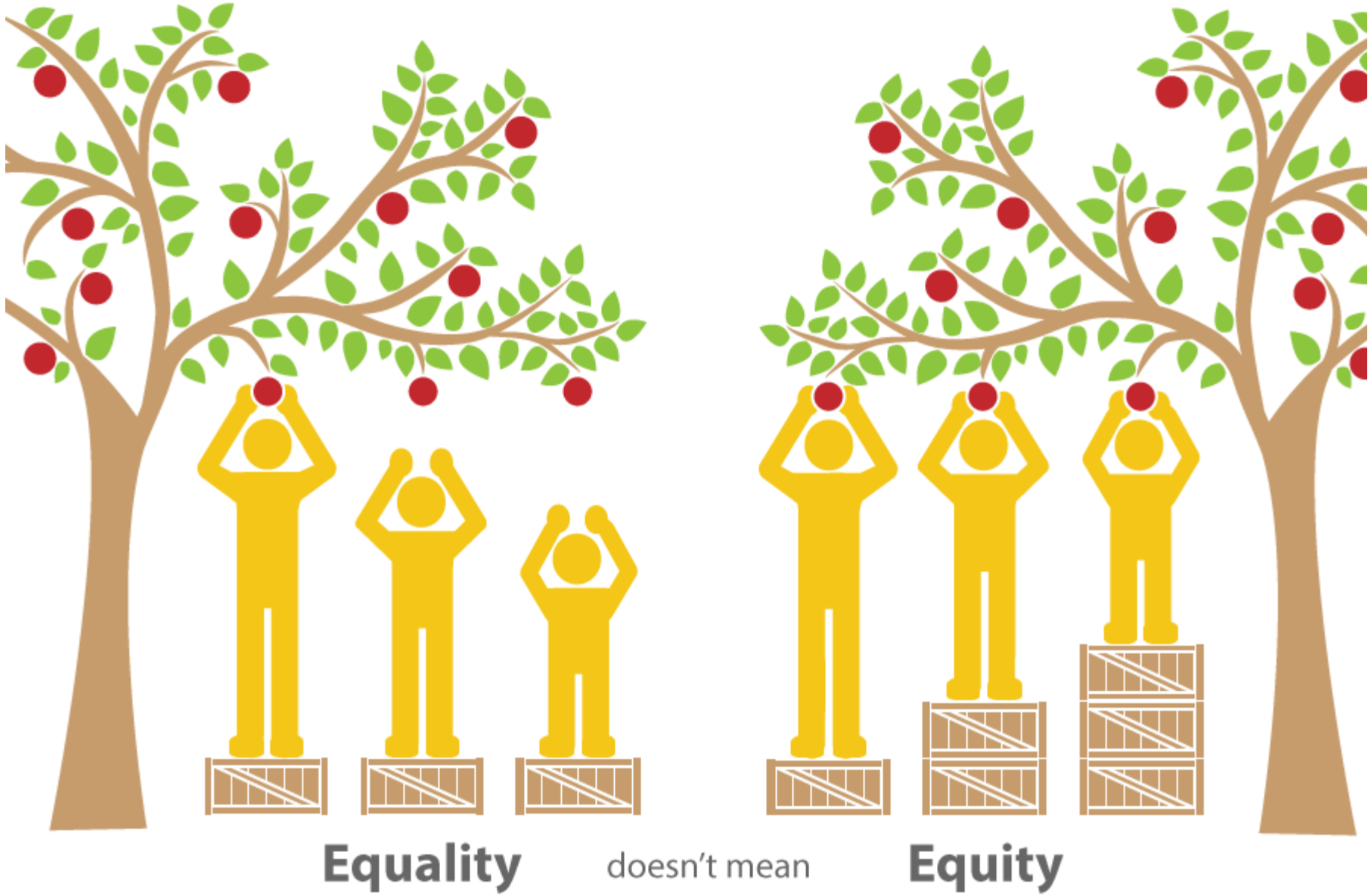
Source: DevCan: Probability of Developing or Dying of Cancer Software, Version 6.7.6.[10]

Blacks have an 11% higher age-adjusted death rate for all cancers compared with Whites, whereas Hispanics have a 31%lower rate; the divide is even more pronounced in breast cancer, where Blacks have a 36% higher age-adjusted breast cancer death rate than Whites, and Hispanics have a 31% lower rate.

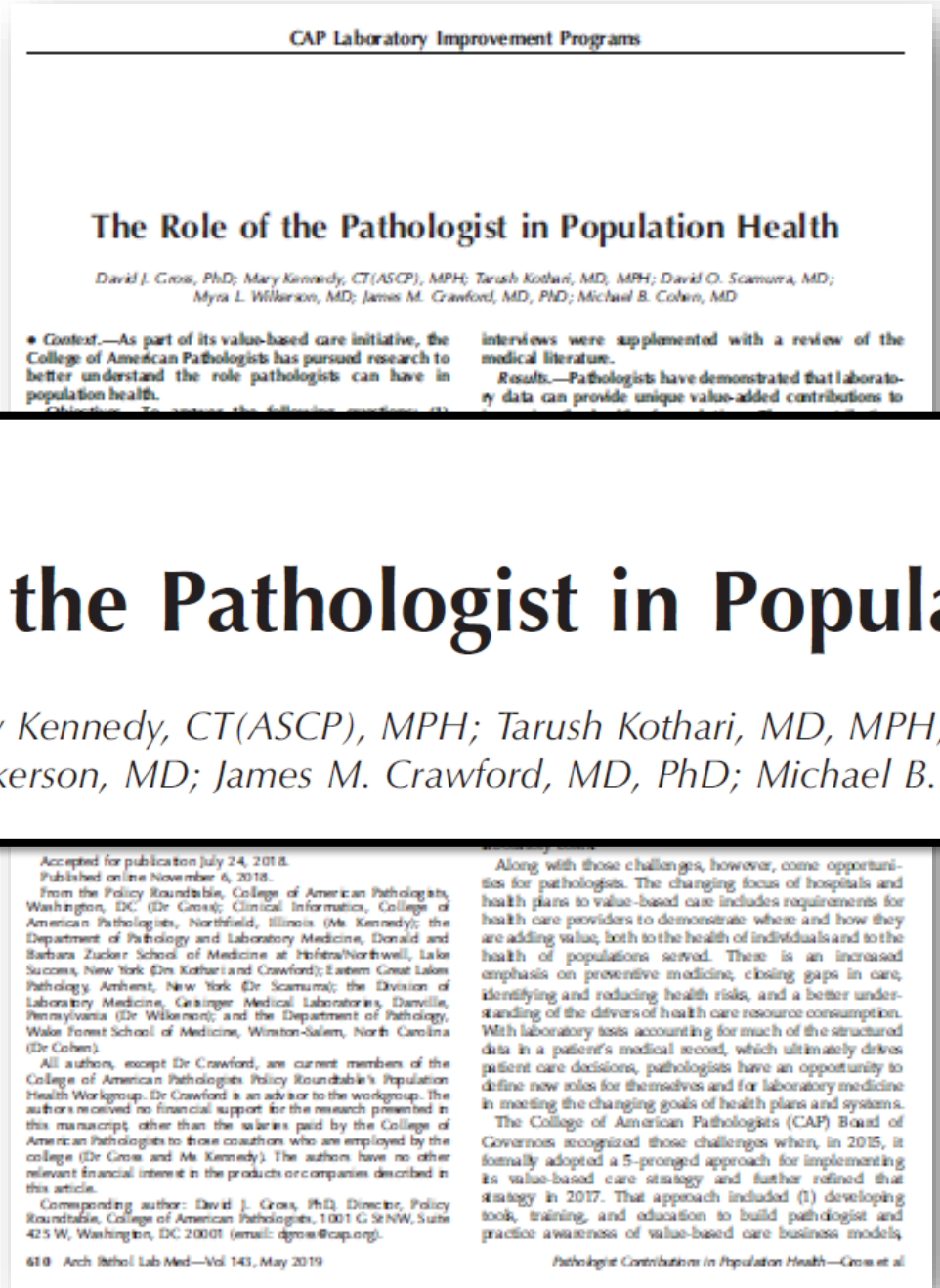

Editorial Opinion

Deconstructing Racial and Ethnic Disparities in Breast Cancer

Joseph A. Sparano, MD; Otis W. Brawley, MD


Equality
doesn't mean
Equity


HOWARD UNIVERSITY HOSPITAL



The Role of the Pathologist in Population Health

David J. Gross, PhD; Mary Kennedy, CT(ASCP), MPH; Tarush Kothari, MD, MPH; David O. Scamurra, MD; Myra L. Wilkerson, MD; James M. Crawford, MD, PhD; Michael B. Cohen, MD

• *Context.*—As part of its value-based care initiative, the College of American Pathologists has pursued research to better understand the role pathologists can have in population health.

Objectives.—To answer the following questions: (1)

interviews were supplemented with a review of the medical literature.

Results.—Pathologists have demonstrated that laboratory data can provide unique value-added contributions to

Accepted for publication July 24, 2018.
Published online November 6, 2018.

From the Policy Roundtable, College of American Pathologists, Washington, DC (Dr Gross); Clinical Informatics, College of American Pathologists, Northfield, Illinois (Ms Kennedy); the Department of Pathology and Laboratory Medicine, Donald and Barbara Zucker School of Medicine at Hofstra/Northwell, Lake Success, New York (Drs Kothari and Crawford); Eastern Great Lakes Pathology, Amherst, New York (Dr Scamurra); the Division of Laboratory Medicine, Geisinger Medical Laboratories, Danville, Pennsylvania (Dr Wilkerson); and the Department of Pathology, Wake Forest School of Medicine, Winston-Salem, North Carolina (Dr Cohen).

All authors, except Dr Crawford, are current members of the College of American Pathologists Policy Roundtable's Population Health Workgroup. Dr Crawford is an advisor to the workgroup. The authors received no financial support for the research presented in this manuscript, other than the salaries paid by the College of American Pathologists to those coauthors who are employed by the college (Dr Gross and Ms Kennedy). The authors have no other relevant financial interest in the products or companies described in this article.

Corresponding author: David J. Gross, PhD, Director, Policy Roundtable, College of American Pathologists, 1001 G St NW, Suite 425 W, Washington, DC 20001 (email: dgross@cap.org).

Along with those challenges, however, come opportunities for pathologists. The changing focus of hospitals and health plans to value-based care includes requirements for health care providers to demonstrate where and how they are adding value, both to the health of individuals and to the health of populations served. There is an increased emphasis on preventive medicine, closing gaps in care, identifying and reducing health risks, and a better understanding of the drivers of health care resource consumption. With laboratory tests accounting for much of the structured data in a patient's medical record, which ultimately drives patient care decisions, pathologists have an opportunity to define new roles for themselves and for laboratory medicine in meeting the changing goals of health plans and systems.

The College of American Pathologists (CAP) Board of Governors recognized those challenges when, in 2015, it formally adopted a 5-pronged approach for implementing its value-based care strategy and further refined that strategy in 2017. That approach included (1) developing tools, training, and education to build pathologist and practice awareness of value-based care business models,

What is the role of Pathologists in Population Health?

- Population Health is defined as: *‘‘the health outcomes of a group of individuals, including the distribution of such outcomes within the group.’’*
  - There is an increased emphasis on preventive medicine, closing gaps in care, identifying and reducing health risks, and a better understanding of the drivers of health care resource consumption.
  - With laboratory tests accounting for much of the structured data in a patient’s medical record, which ultimately drives patient care decisions, pathologists have an opportunity to define new roles for themselves and for laboratory medicine in meeting the changing goals of health plans and systems.

Arch Pathol Lab Med—Vol 143, May 2019

Opportunities for Clinical Pathology

1. Earlier identification of patients with new diagnosis and/ or change in health status.
2. Earlier identification of patients enrolling in specific managed care plans.
3. Resetting of patient goals for those already enrolled in care-management programs.
4. Development of models for care-management programs that identify individuals who face a high risk of complications and that can implement a variety of interventions tailored to the needs of specific groups.
5. Identification of gaps-in-care for targeted patient populations.
6. Supporting payer quality and accreditation standards by supplementing claims data to provide evidence for higher-quality ratings from HEDIS and CMS measures and reducing the need for manual review of medical records.
7. Identifying drug contraindications and the need for alternative therapeutic care plans.
8. Autopopulation of patients' health portals with laboratory data results.
9. Enabling improved predictive analysis, for example, using models to project which patients might develop diabetes in the next 12–24 months and/or identifying diabetics with undiagnosed comorbidities.

Arch Pathol Lab Med—Vol 143, May 2019

Special Article

Academic Pathology: Volume 7
DOI: 10.1177/2374289519898857
journals.sagepub.com/home/apc

SAGE

The Value Proposition for Pathologists: A Population Health Approach

Barbara S. Ducatman, MD[1,2], Alan M. Ducatman, MD, MS[3], James M. Crawford, MD, PhD[4], Michael Laposata, MD, PhD[5], and Fred Sanfilippo, MD, PhD[6]

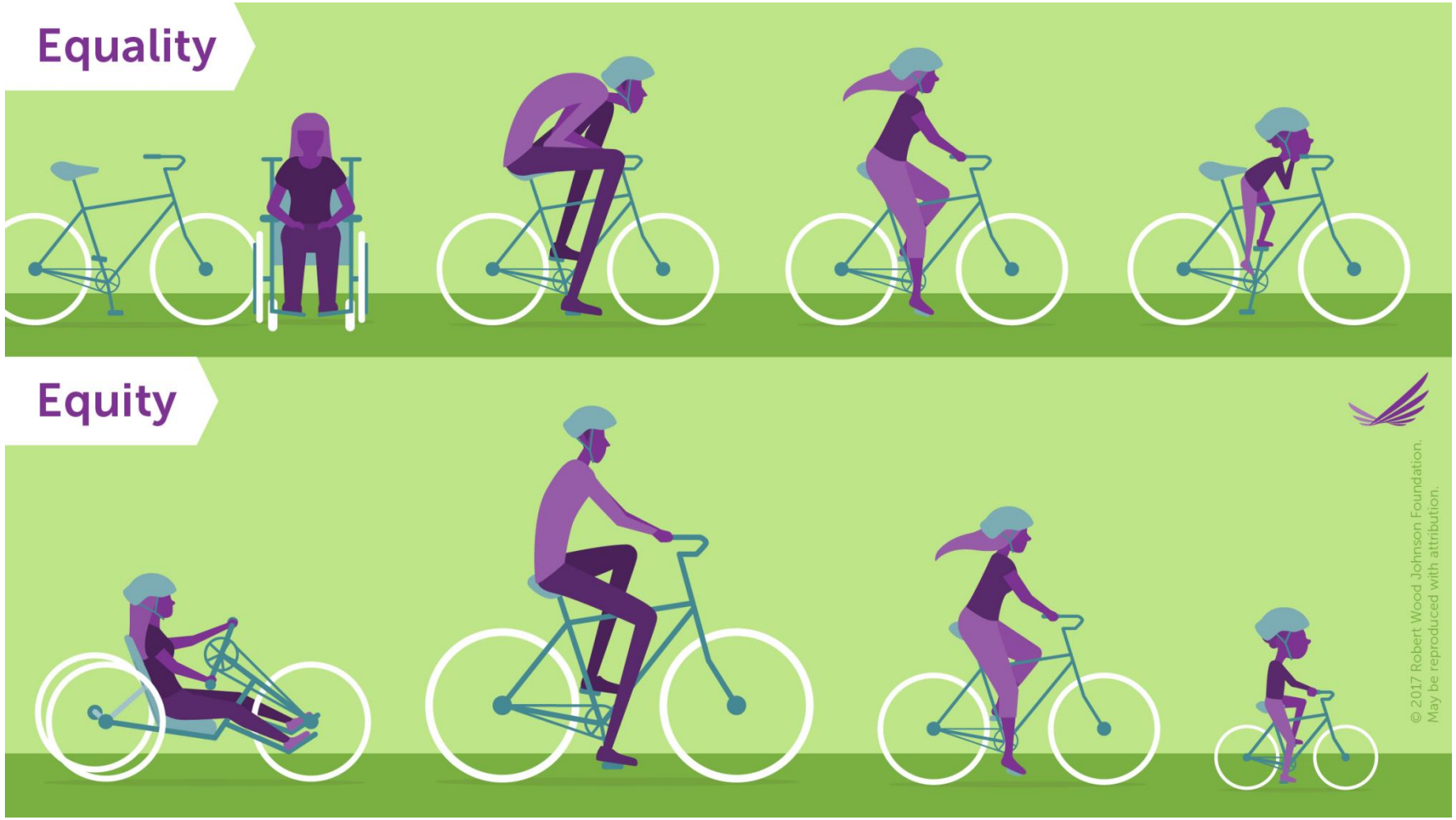
Opportunities for Pathology to Improve Population Health

- Utilization Management
  - The adoption of EMR and computerized order entry (CPOE) have facilitated laboratory test ordering, data collection, andanalysis, as well as interventions to reduce necessary and unnecessary testing
- Precision Medicine
  - Pathology expertise is essential to accurately assess the clinical benefit and calculate the economic impact to determine true value.
- Reducing Diagnostic Errors
  - Utilization of Autopsy and Surgical Pathology has added value to identifying diagnostic supposition and errors
- Improve Health-Care Outcomes
  - Laboratory professionals see the diagnostic data first and are the subject matter experts in test results interpretation and potential application.

Population Health Management

- Defined as ‘‘an approach to health care delivery that aims to improve the overall health outcomes of a defined population of individuals, based on the preservation of health, prevention of disease, and management of acute and chronic disease among members of the group. It ***typically relies on the aggregation of patient data across multiple health information resources and analysis of data*** and actions through which care providers can improve both clinical and financial outcomes.’’

Arch Pathol Lab Med—Vol 143, May 2019


Equality
Equity
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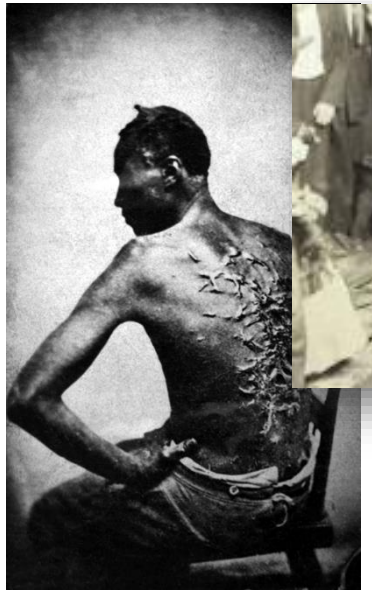
Institutional Racism

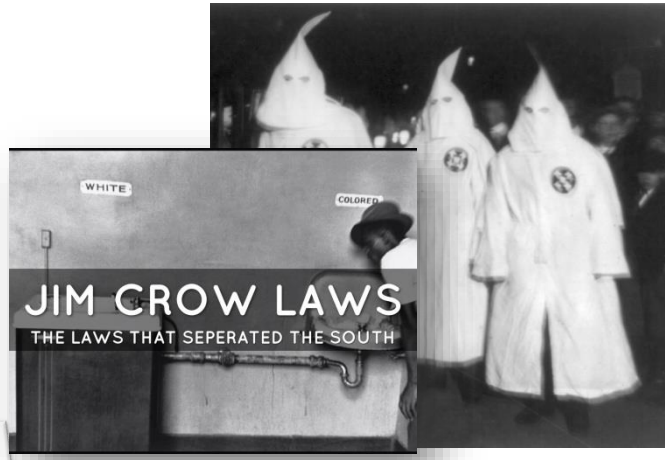
"...white terrorists bomb a black church and kill five black children that is an act of individual racism...

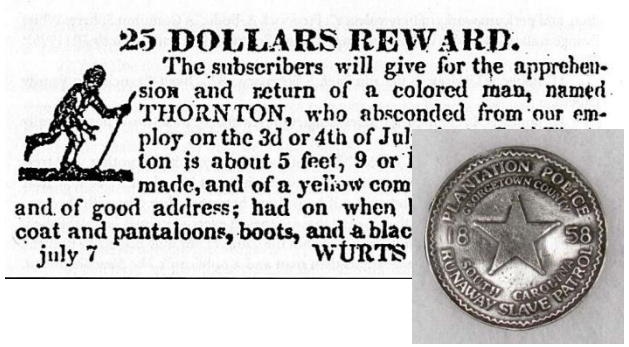
But when in the same city – Birmingham, Alabama-five hundred black babies die each year because of the lack of proper food, shelter and medical facilities, and thousands more are destroyed and maimed physically, emotionally and intellectually because of conditions of poverty and discrimination in the black community that is a function of institutional racism".

(Carmichael & Hamilton 1967:2)

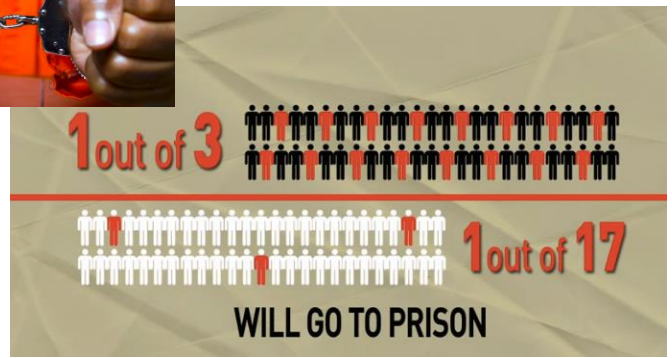
Stokely Carmichael

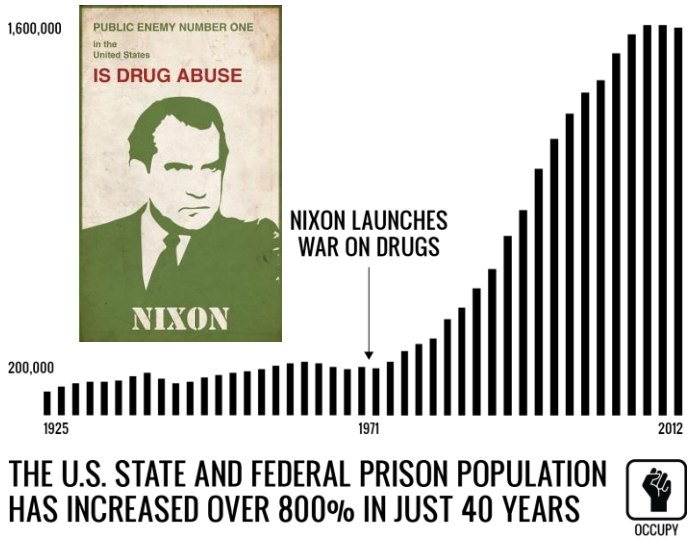



WHITE
COLORED
JIM CROW LAWS
THE LAWS THAT SEPERATED THE SOUTH


25 DOLLARS REWARD.
The subscribers will give for the apprehen-
sion and return of a colored man, named
THORNTON, who absconded from our em-
ploy on the 3d or 4th of Jul
ton is about 5 feet, 9 or
made, and of a yellow com
and of good address; had on when
coat and pantaloons, boots, and a blac
july 7
WURTS

PLANTATION POLICE
GEORGETOWN COUNTY
18
58
SOUTH CAROLINA
RUNAWAY SLAVE PATROL


1 out of 3
1 out of 17
WILL GO TO PRISON


1,600,000
PUBLIC ENEMY NUMBER ONE
in the
United States
IS DRUG ABUSE
NIXON
NIXON LAUNCHES
WAR ON DRUGS
200,000
1925
1971
2012
THE U.S. STATE AND FEDERAL PRISON POPULATION
HAS INCREASED OVER 800% IN JUST 40 YEARS
OCCUPY

Tuskegee Syphilis Experiment

1932 – 1972

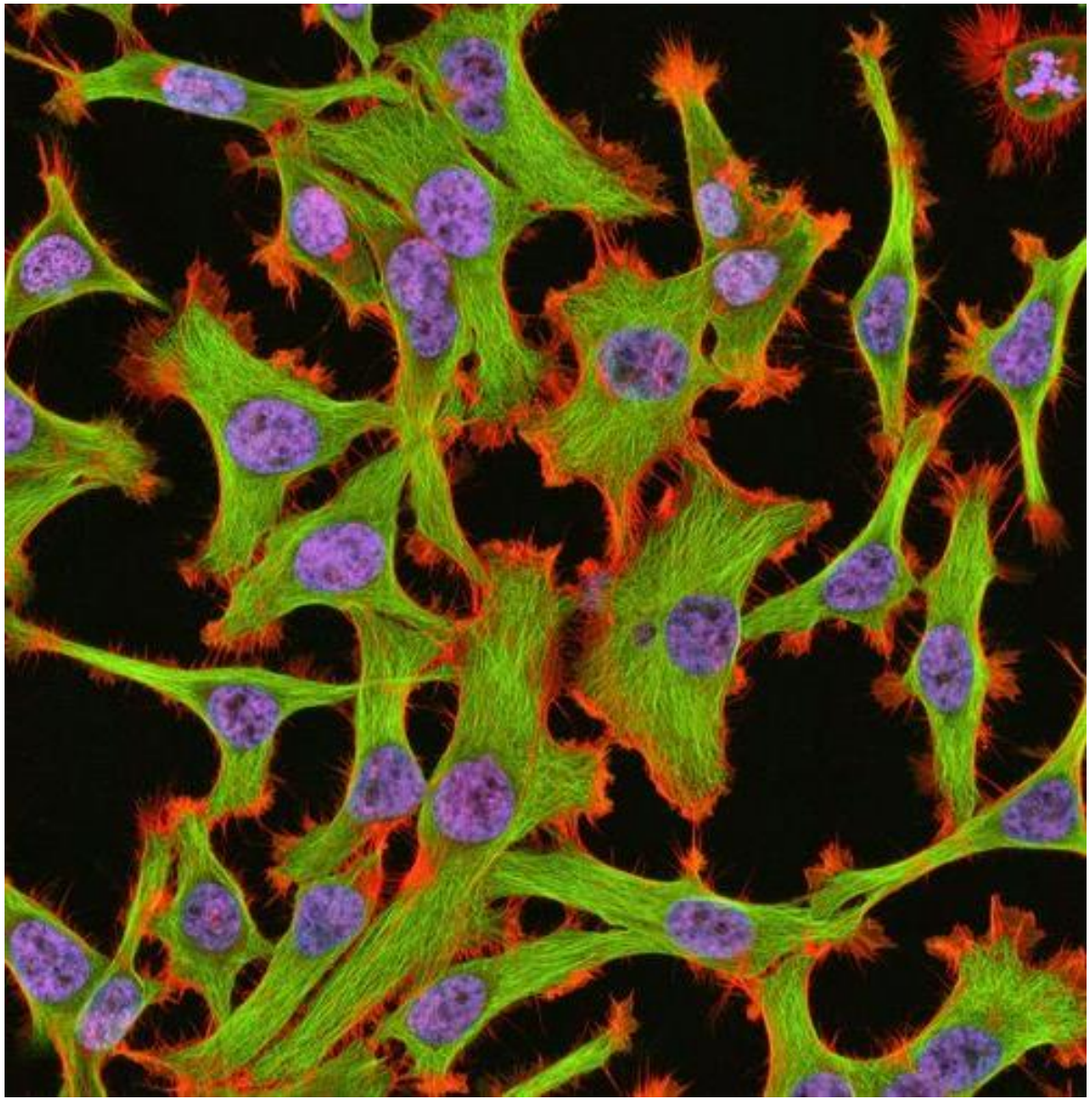
PHOTO: WIKI COMMONS

Henrietta Lacks

the Lacks' story is kept hidden in the open behind an acronym - don't be fooled

Henrietta's cells have been kept growing for decades & enabled much of biomedical research BUT

she did not consent & her family was kept out of the loop only to be told years later, in jargon-filled terms when researchers wanted to study them also, that their dead loved one was in some way "still alive" in a lab



The NEW ENGLAND JOURNAL of MEDICINE

MEDICINE AND SOCIETY

Debra Malina, Ph.D., *Editor*

Hidden in Plain Sight — Reconsidering the Use of Race Correction in Clinical Algorithms

Darshali A. Vyas, M.D., Leo G. Eisenstein, M.D., and David S. Jones, M.D., Ph.D.

Race-Adjusted Diagnostic Algorithm

- Many of these race-adjusted algorithms guide decisions in ways that may direct more attention or resources to white patients than to members of racial and ethnic minorities.
  - American Heart Association (AHA) Heart Failure Risk Score
  - Race Corrected eGFR – Increased baseline Creatinine
  - Kidney Donor Risk Index (KDRI)
  - Vaginal Birth After C-Section (VBAC)
  - STONE Scores

WHAT IS THE ROLE OF PATHOLOGY IN ELUCIDATING THE IMPACT OR RACE ON DIAGNOSTIC AND TREATMENT ALGORITHMS?

Published in final edited form as:

N Engl J Med. 2013 September 05; 369(10): 974–975. doi:10.1056/NEJMe1308505.

Estimated GFR and Risk of Death — Is Cystatin C Useful?

Julie R. Ingelfinger, M.D. and **Philip A. Marsden, M.D.**

Keenan Research Centre of the Li Ka Shing Knowledge Institute, St. Michael's Hospital, and the University of Toronto—both in Toronto (P.A.M.)

Cystatin C

- Cystatin C, a nonglycosylated protein consisting of 120 amino acid residues encoded by CST3, has gained traction as an alternative marker.6 Cystatin C is synthesized and secreted at a nearly constant rate by virtually all nucleated cells. Given its 13-kDa size, cystatin C is freely filtered by the glomeruli. In contrast to creatinine, cystatin C is not excreted in the urine but, rather, is metabolized by the proximal tubule, so timed urine collections are not needed. Cystatin C is particularly useful for estimating kidney function when creatinine production is variable or unpredictable

HOW IS GFR ESTIMATED?

CREATININE EQUATIONS

1. The original MDRD Study equation[12,13]:

$$eGFR = 186 \times SCr^{-1.154} \times age^{-0.203} \times 1.212 \text{ (if African American)} \times 0.742 \text{ (if female)}$$

2. The "reexpressed" MDRD Study equation for standardized SCr[14]:

$$eGFR = 175 \times \text{standard } SCr^{-1.154} \times age^{-0.203} \times 1.212 \text{ (if African American)} \times 0.742 \text{ (if female)}$$

CYSTATIN C EQUATIONS

3. CKD-EPI cystatin equation not adjusted for age, sex, and race[14]:

$$eGFR = 76.7 \times CysC^{-1.19}$$

4. CKD-EPI cystatin equation adjusted for age, sex, and race[14]:

$$eGFR = 127.7 \times CysC^{-1.17} \times age^{-0.13} \times 0.91 \text{ (if female)} \times 1.06 \text{ (if African American)}$$

5. CKD-EPI cystatin and creatinine equation adjusted for age, sex, and race[15]:

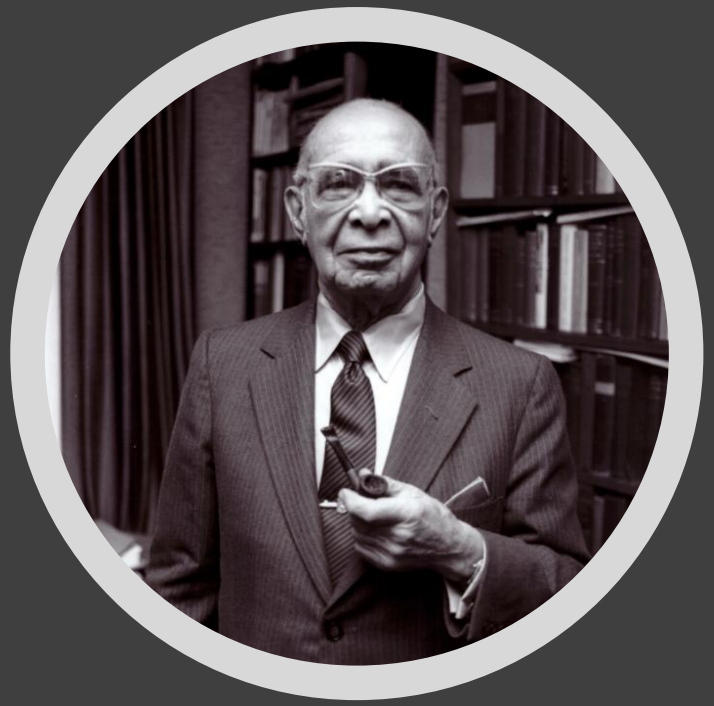
$$eGFR = 177.6 \times SCr^{-0.65} \times CysC^{-0.57} \times age^{-0.20} \times 0.80 \text{ (if female)} \times 1.11 \text{ (if African American)}$$

Note: GFR is expressed as mL/min/1.73 m²; Age is expressed in years; weight is expressed in kilograms.

Conversion factors for units: GFR in mL/min/1.73 m² to mL/s/1.73 m², × 0.01667; SCr in mg/dL to µmol/L, x 88.4; serum CysC in mg/L to nmol/L, × 74.9.

Abbreviations: CKD, chronic kidney disease; CKD-EPI, Chronic Kidney Disease Epidemiology Collaboration; CysC, serum cystatin C; eGFR, estimated glomerular filtration rate; MDRD, Modification of Diet in Renal Disease; SCr, serum creatinine

Source: Stevens LA, Levey AS. *Am J Kid Dis*. 2009;53:S17-S26.



Howard University Historical Commitment to Laboratory Medicine

Department of Pathology
College of Medicine

roger.mitchell@howard.edu

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