Cancer Control in the 21st Century Observations on Disparities in Health

Otis W. Brawley, MD, MACP, FRCP(L)

Bloomberg Distinguished Professor
of
Oncology and Epidemiology

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Disclosure Information

Otis W. Brawley

I have the following financial relationships to disclose:

Membership on Advisory Committees or Review Panels, Board Membership, etc. –

Genentech/Roche, Grail, PDS Biotech, Lyell Immunopharma, Incyte Corp., and Agilent Technologies

Stocks in publicly traded companies, excluding diversified mutual funds –

Lyell Immunopharma, PDS Biotech, Agilent Technologies, Incyte Corp.

Research Support

NCI and Bloomberg Philanthropies

– and –

I will not discuss off label use and/or investigational use in my presentation.

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Funding

- Bloomberg Philanthropies
- Maryland Cigarette Restitution Fund
- National Cancer Institute
- American Cancer Society

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OBJECTIVES

- Discuss trends in cancer mortality over the past 30 years

- Define disparities in health and identify how it relates to cancer prevention, screening, diagnosis and treatment

- Define health equity and describe some possible solutions

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"THOSE WHO DO NOT APPRECIATE HISTORY ARE DESTINED TO REPEAT IT."

PARAPHRASING

GEORG SANTAYANA

Respect the scientific process and scientific findings.

- I was thought from an early age that one should label things:

  – What you know
  – What you do not know
  – What you believe

- Question all things, but question what you know more so than anything else.

- These are good rules in the assessment of healthcare.

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Key Point!!!

The Most Important Question in Cancer Control

How can we provide adequate high-quality care (<u>to include preventive services</u>) to populations that so often do not receive it?
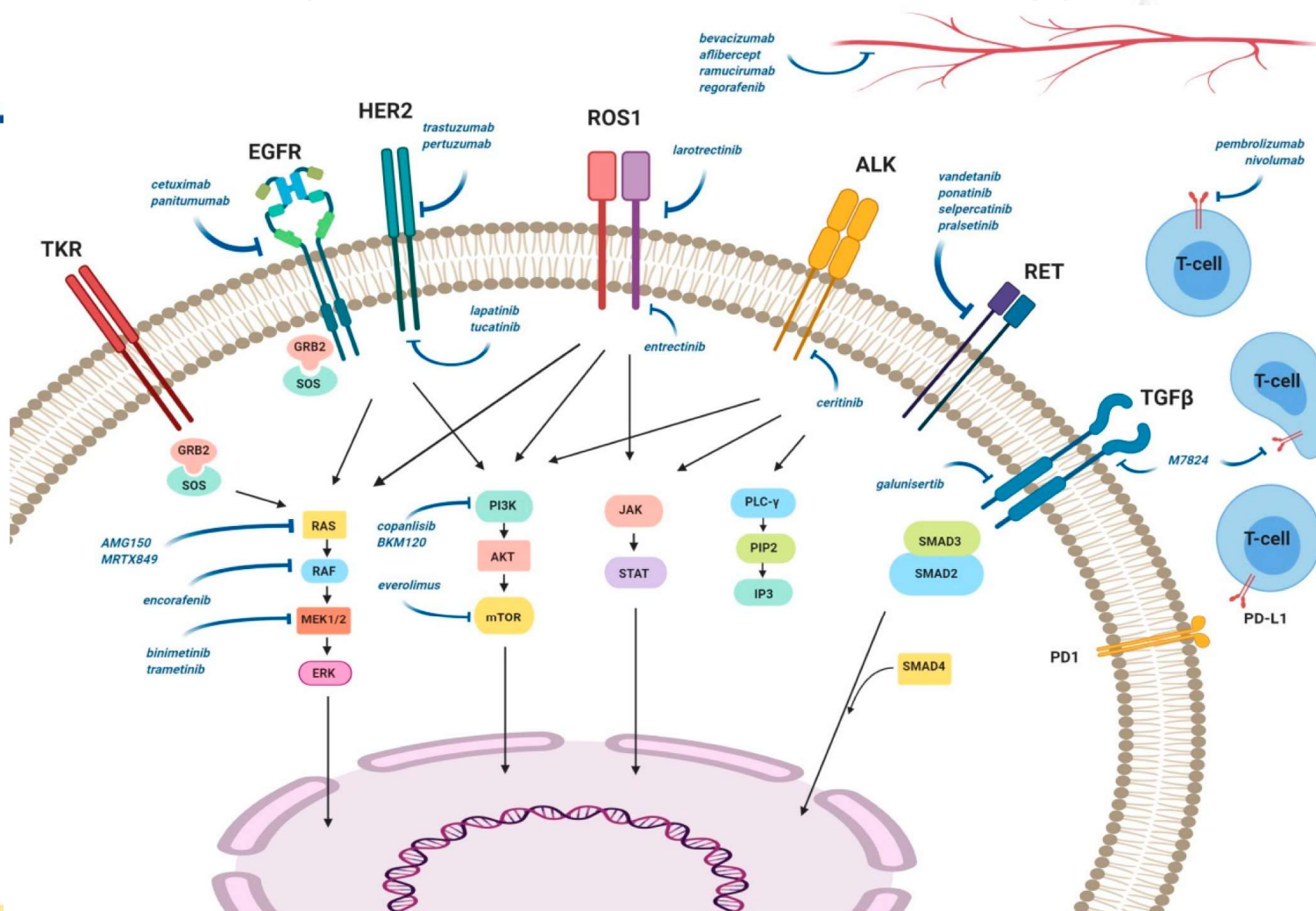
– Unnecessary care consumes limited resources and interferes with abilities to provide necessary care.

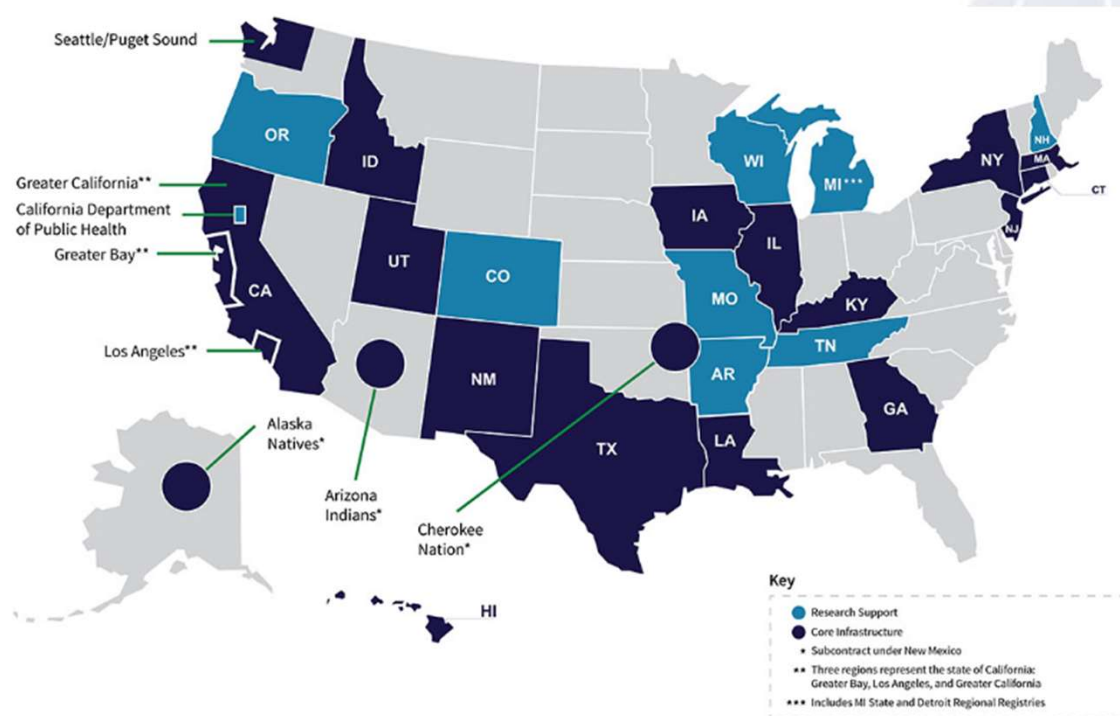– The provision of unnecessary care is a cause of health disparities.

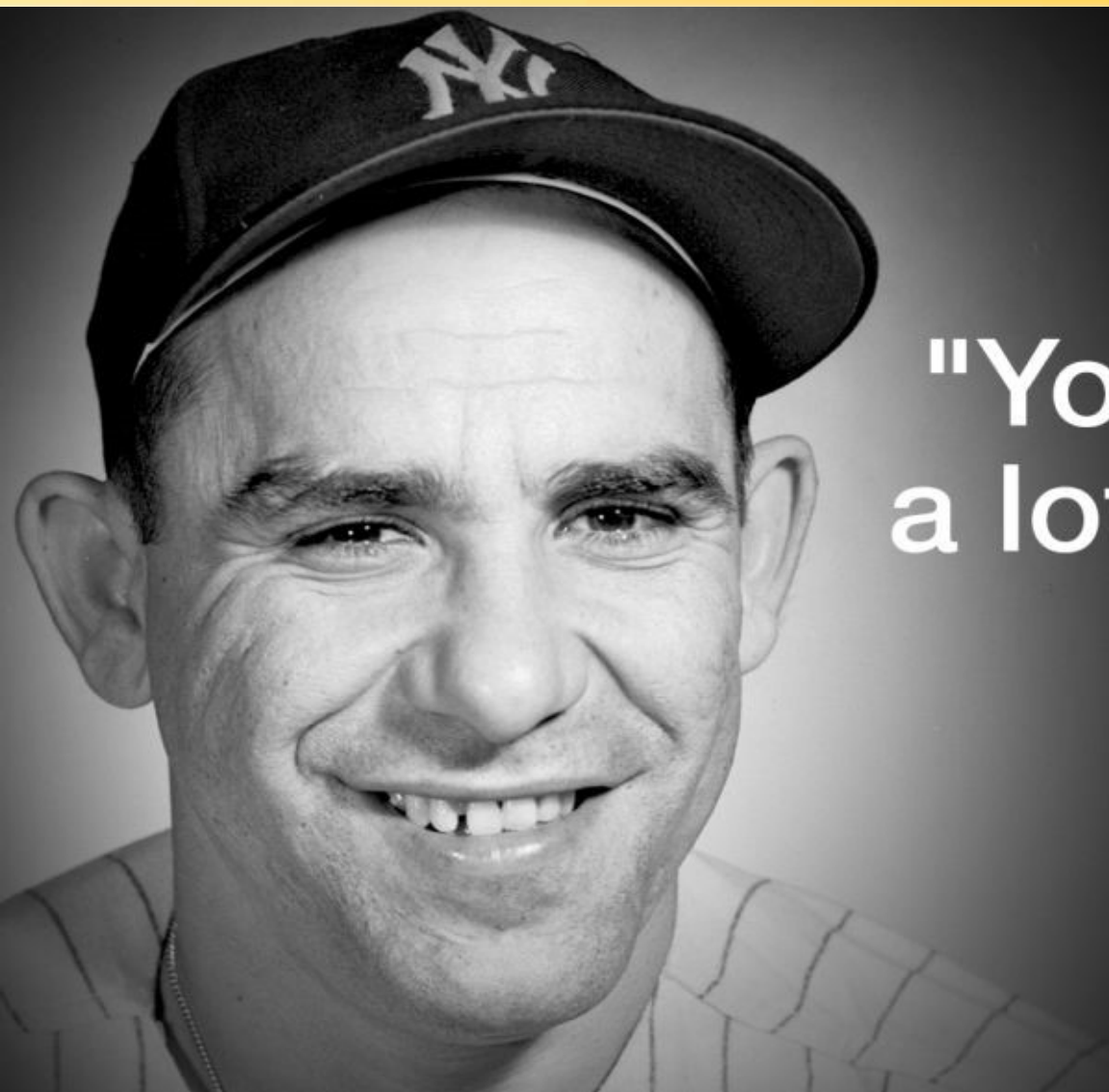# The National Cancer Act, December 23, 1971

50 years of Cancer Biology

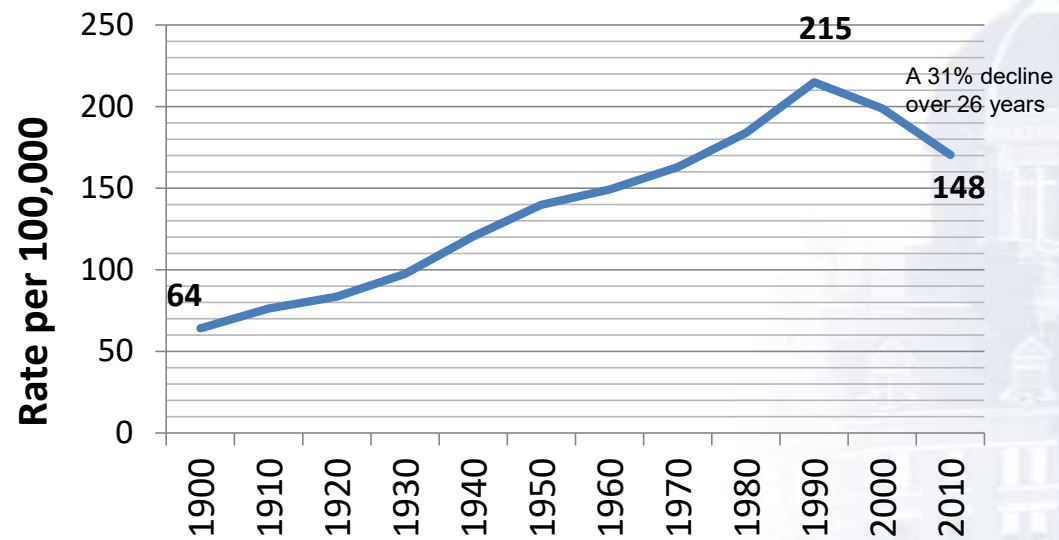# NCI Surveillance Epidemiology and End Results (SEER) Program

"You can observe a lot by watching"

— Yogi Berra

US Cancer Death Rate

1900 to 2018

Rate per 100,000

250

215

A 31% decline over 26 years

200

150

148

100

64

50

0

1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010

Age Adjusted to 2000 Standard
1900-1970, US Public Health Service, Vital Statistics of the US, Vol. 1 and Vol 2;
1971-2020, US National Center for Health Statistics, Vital Statistics of the U.S

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Cancer Mortality Reduction
1991 to 2020

	1991 Rate per 100,000	2020 Rate per 100,000	Percent Decrease
Lung	58.9	31.8	46%
Prostate	39.2	18.6	53%*
Breast	31.6	19.1	40%
Colorectal	23.3	12.6	46%**

*Prostate cancer rates may be affected by attribution biases associated with aging
**The colorectal mortality decline is 55% since 1980
Rates are age-adjusted to the 2000 standard

Source: NCI SEER 2023

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Causes of the Decline in Cancer Death Rates

- Prevention
- Treatment
- Screening

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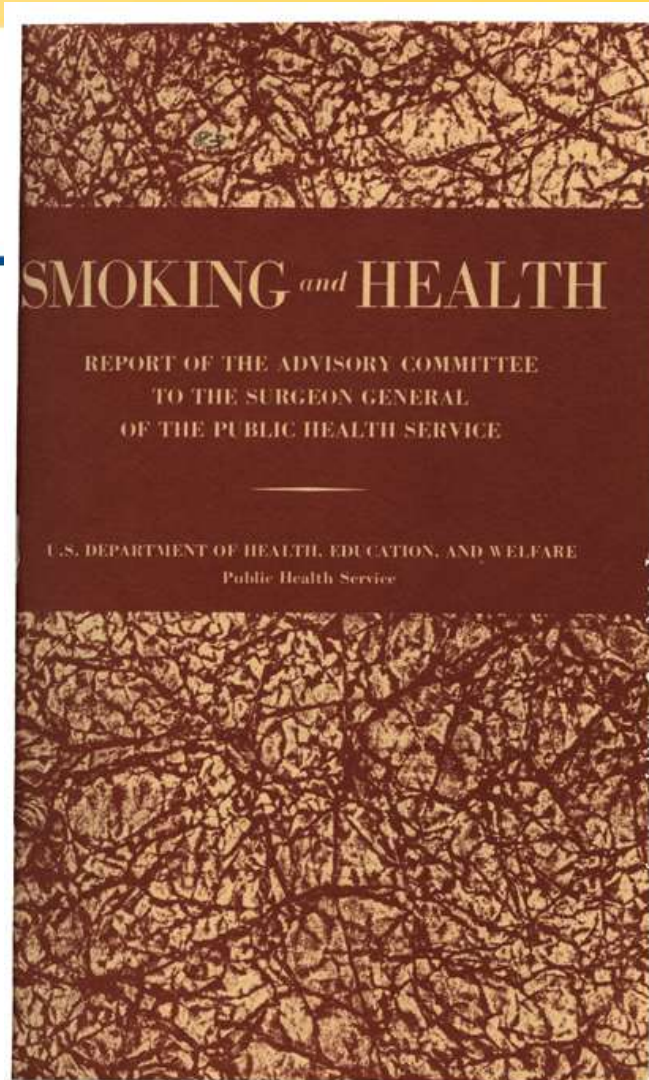
Copyright 1964, U.S. Department of Health, Education, and Welfare

Cancers Associated with Tobacco Use

- lung,
- larynx,
- mouth,
- esophagus,
- throat,
- bladder,
- kidney,

- liver,
- stomach,
- pancreas,
- colon and rectum,
- cervix,
- acute myeloid leukemia.

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Proportion and Absolute Number of Americans Smoking Cigarettes 1965-2018
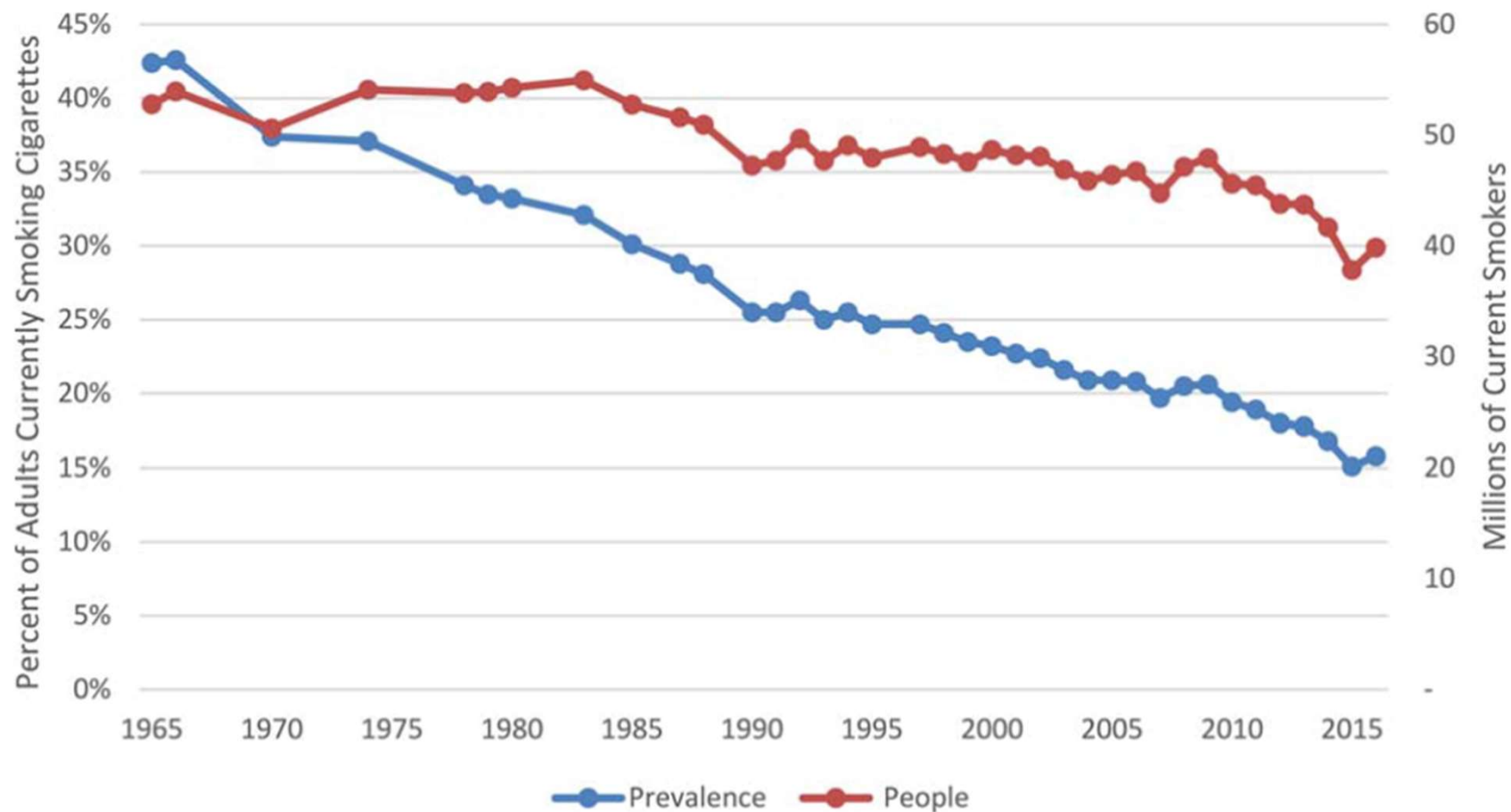
Volume IV:
Cardiovascular
and
Cerebrovascular
Disease

Part 1

Report of the Secretary's Task Force on

Black & Minority Health

U.S. Department of Health and
Human Services

January 1986

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THE EMPHASIS WAS ON RACE

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Population Categorization

- Race is a broad sociopolitical construct.

- Race is not a biologic categorization.

- In some cases, race is often used as a biological categorization and that is racism.

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Cancer Mortality by Race/Ethnicity from 1990 to 2017
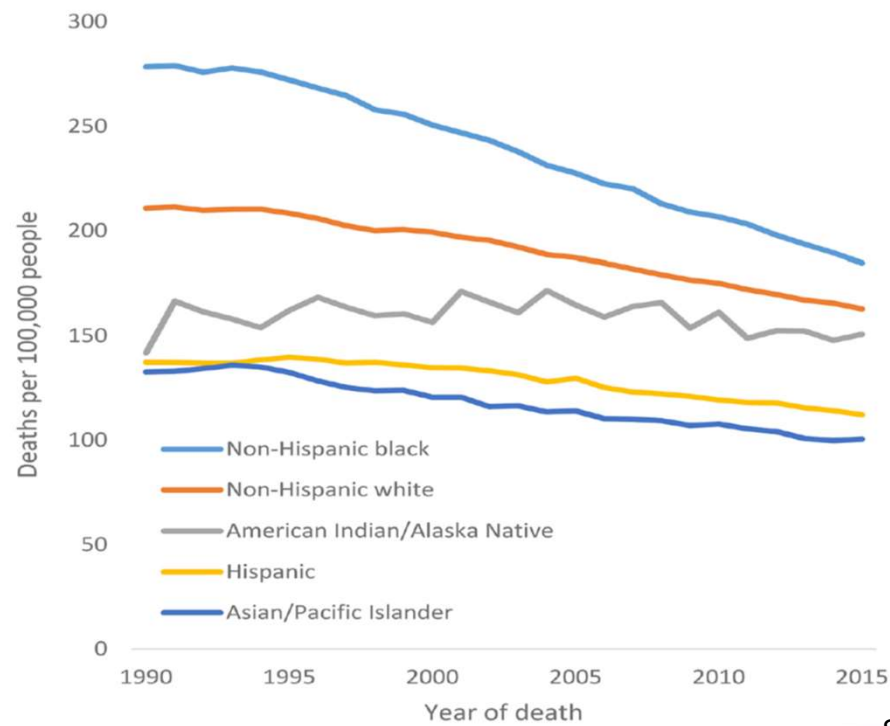
Siegel, et al. CA 2018;68:329-339

"Poverty is a Carcinogen!"

Samuel Broder

American Oncologist, AIDS Researcher and Philosopher Director of NCI, 1989-1995

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Trends in Cancer Mortality by Age, Group, and County-Level Income Quintile.

JNCI J Natl Cancer Inst, 2019, vol. 111, No. 8
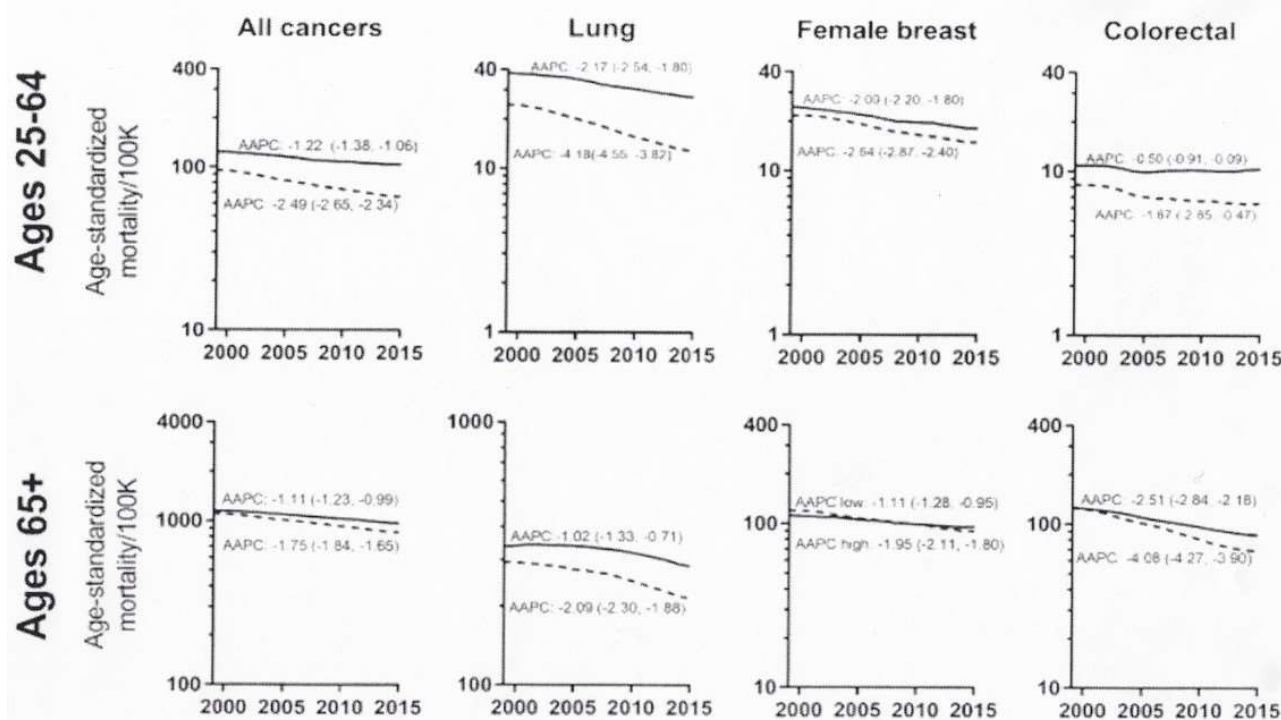
Poverty Rate by Race/Ethnicity US 2019

Race/Ethnicity	Proportion of US Population	Proportion of Racial/Ethnic Group in Poverty
White NH	60.1%	9.0%
Black NH	12.2%	21.2%
Hispanic	18.5%	17.2%
Asian/Pacific Islander NH	5.9%	9.7%
American Indian/Alaska Native NH	1.3%	24.2%

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David Satcher, MD, PhD
16th Surgeon General of the United States (1998-2002)
11th Assistant Secretary for Health (1998-2001)

Disparities in Health

- The concept that some populations (however defined) do worse than others.

- Populations can be defined or categorized by:
  - Race
  - Ethnicity and Culture
  - Area of geographic origin
  - Socioeconomic Status

The Evolution of a Discipline

- Minority Health
- Special Populations Health
- Disparities in Health
- Health Equity
- Health Justice
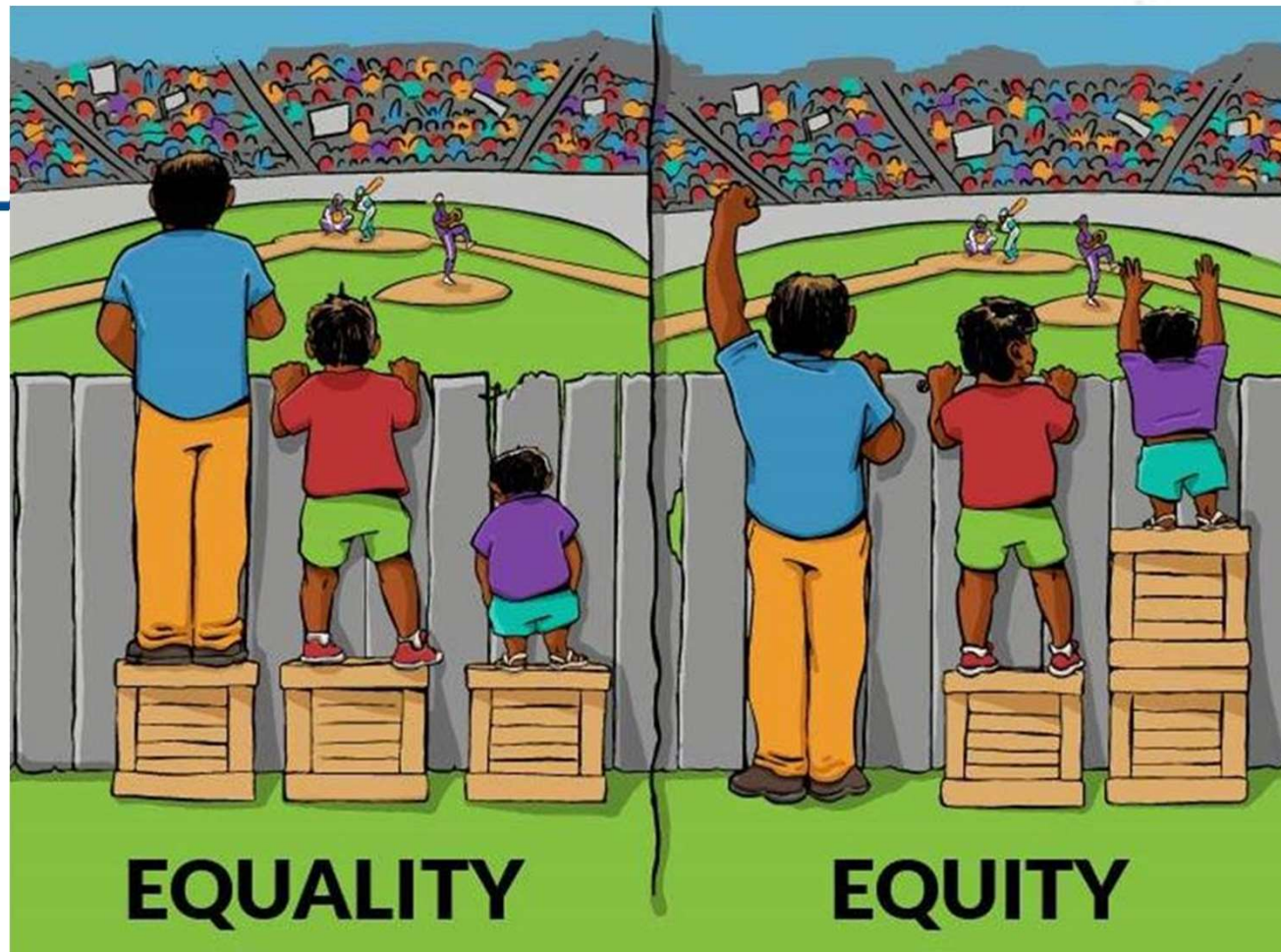
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EQUALITY

EQUITY

Causes of the Decline in Cancer Death Rates

- Prevention
- Treatment
- Screening

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CANCER SCREENING
BE CAUTIOUS!!!!

Cancer Screening

- Screening is doing a test to determine if cancer might be present in an asymptomatic individual.

- Most distinguish mass screening versus screening within physician-patient relationship.

- Diagnostic tests are used when there are symptoms to cause a clinical suspicion of disease.

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Principles of Screening

Finding disease is not a measure of success in cancer screening.

Increased survival is not a legitimate measure of success outside of a randomized clinical trial.

Reduction in mortality is the only true proof of effective screening. (Requires a randomized trial)

Principles of Screening

- There are several examples of cancer screening tests that have:
  - found localized disease,
  - increased the amount of disease found,
  - increased the proportion surviving five years and
  - Possibly increased risk of death.

- Some without changing the risk of death:
  - urine vanillylmandelic acid (VMA) screening for neuroblastoma.
    - -Wood et al, NEJM, 2002
  - chest x-ray screening for lung cancer.
    - -Marcus et al, JNCI, 2006

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Cancer Screening

- A series of tests with some uncertainties and some risk.

- Many do not appreciate the harms of screening.

- Often the harms are better proven than the benefits.

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Harm?

- False Positive Findings
  - Anxiety
  - Negative diagnostic workup

- Morbidity
  - Pain
  - Hospitalizations
  - Death!!!!

To the Screening Epidemiologist

The worth of screening is really measured in a Benefit / Harm Ratio

A look at the forest and not just one tree!

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Cancer Screening

- Lead time bias

- Length bias

- Overdiagnosis

LEAD TIME BIAS

Diagnosis due to Symptoms

Death due to Cancer

A

Diagnosis due to Screening

Death due to Cancer

B

Lead Time

Diagnosis due to Screening

Death due to Cancer or other causes

C

Lead Time

Prolonged Life due to Screening
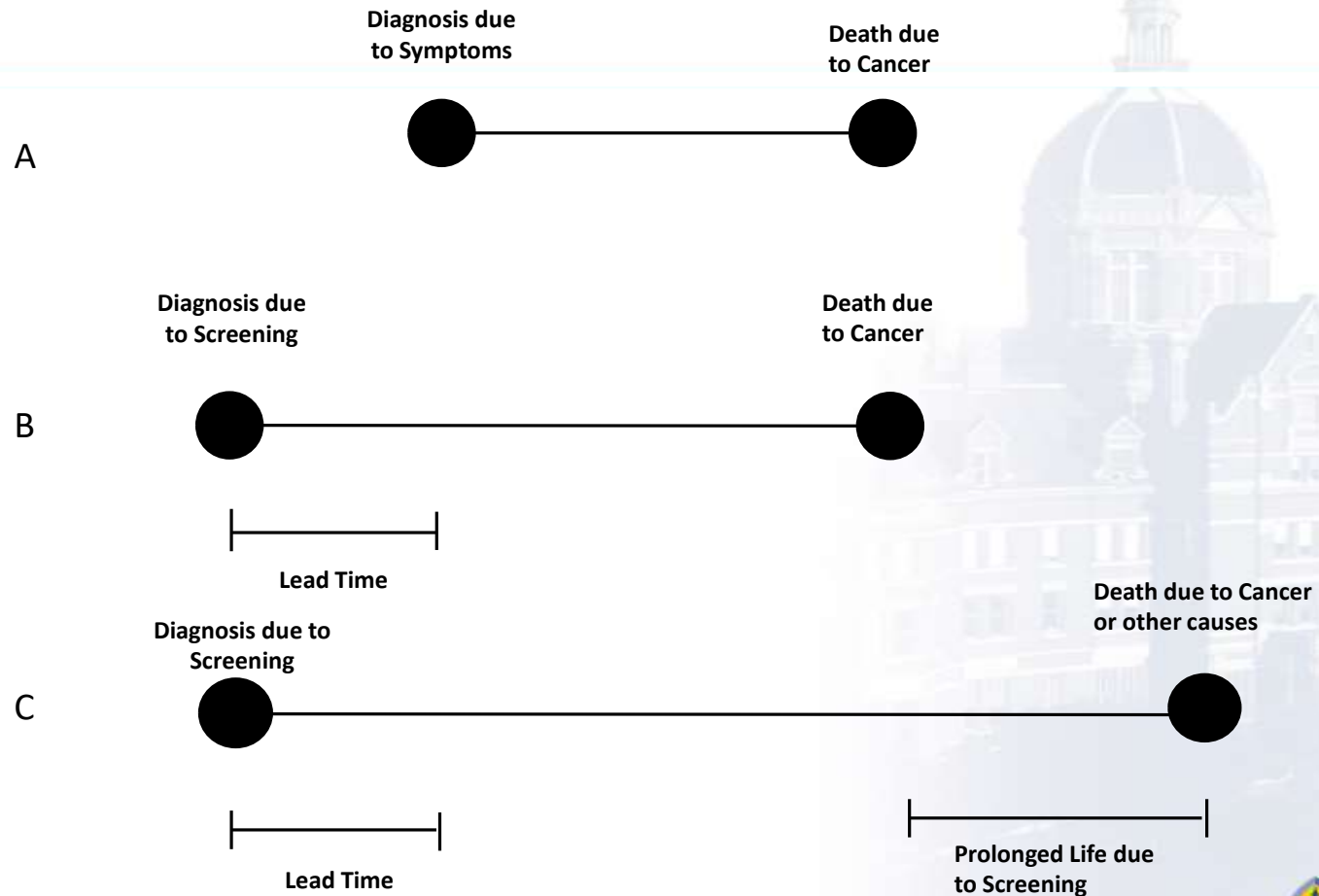
Lead Time Bias

- Because of lead time bias, survival can increase without a decrease in mortality rate.

- Indeed, both survival and mortality increased in randomized trials of CXR and sputum cytology screening in the 1970's.

Marcus et al., JNCI, 2006

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Length Bias

Biologic behavior of a cancer is key to its "screenability."

Slower growing, less deadly tumors are actually easier to find, treat, and cure.

Fast growing cancers are less likely to benefit from screening.

Overdiagnosis of Cancer
a form of length bias

There are some small screen detected cancers that are not a clinical threat to the patient.

– We cure some cancers that do not need to be cured!!!!

– How to determine that these tissues are non-threatening is a major area of research.
  - Tumor profiling through genomics: Oncotype Dx, etc.
  - Using artificial intelligence to read the digital imaging of the biopsy

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Overdiagnosis of Cancer

Thyroid Cancer in South Korea

	1993	2011
Incidence per 100,000	5	75
Mortality per 100,000	4	4

Ahn, Kim, and Welch NEJM 2014

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Overdiagnosis of Cancer
(A Difficult Concept to Comprehend)

Estimates:
- 10 to 20% of radiologically detected lung cancers
- 10 to 50% of mammographically detected invasive breast cancers
- Up to 80% of Ductal Carcinoma In Situ of the breast
- 60 to 90%% of ultrasound detected thyroid cancers
- 60 to 80% of PSA detected prostate cancers

Thomas, Richards, Plescia, et al. MMWR 2015 3;64(12):324-7.

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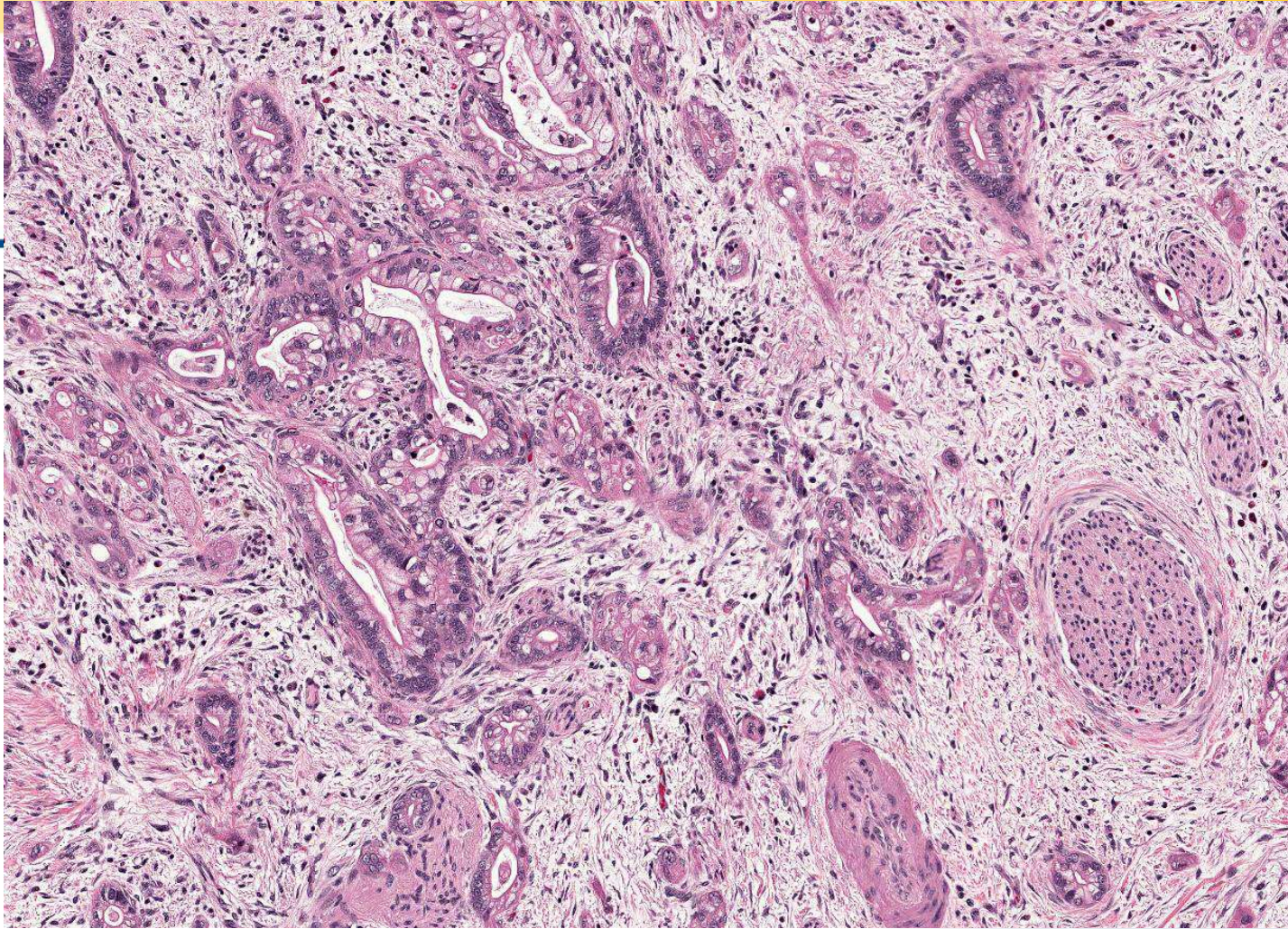
Rudolph Ludwig Karl Virchow

1821- 1902

Adenocarcinoma

Advances in cancer diagnosis:

- X-ray – 1890's
- Mammogram - 1950's
- Ultrasound – 1960's
- Computerized Tomography (CT) - 1970's
- Magnetic Resonance Imaging (MRI) - 1980's
- Stereotactic biopsy – 2000's to present

Mammogram with a Ductal Carcinoma
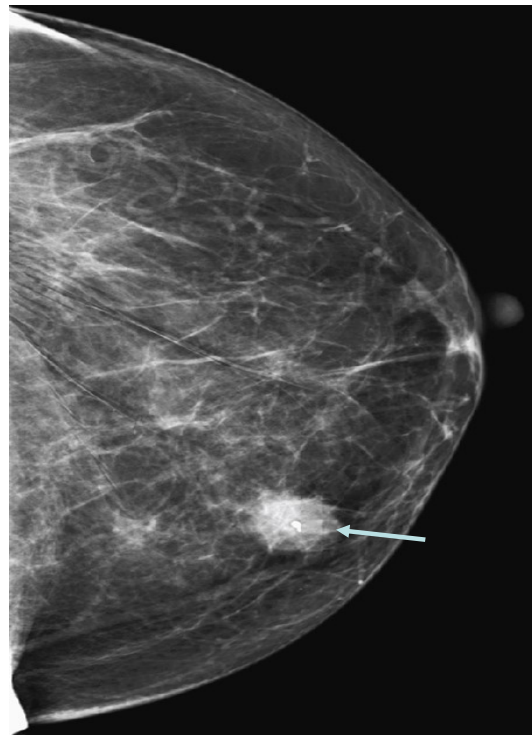
Adenocarcinoma

Bone Scan of Metastatic Adenocarcinoma

R Anterior L   L Posterior R   R Anterior L   L Posterior R

Overdiangosis
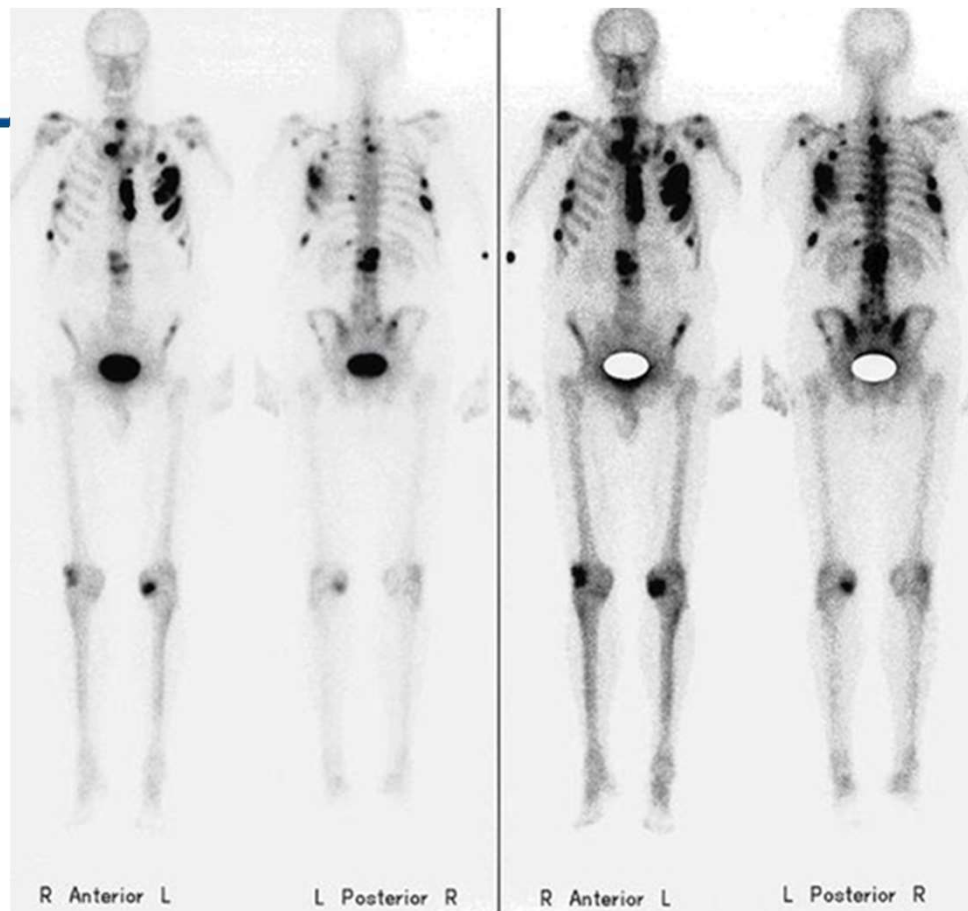
Overdiagnosis is the pathologic equivalent of "racial profiling."

It looks like something that has killed in the past;
The assumption is if left alone it too will kill.

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What is the Real Diagnosis?
Cancer is a subjective diagnosis!

When 49 pathologists look at 2940 biopsies, Inter-observer agreement rates were:

– 89% (95% CI 84-92) for invasive cancer,
– 79% (95% CI 76-81) for ductal carcinoma-in-situ,
– 43% (95% CI 41-45) for atypia, and
– 77% (95% CI 74-79) for benign without atypia.

Jackson et al. Ann Surg Oncology, 2016

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What is Cancer?
The Evolution of Our Concept of the Disease

- Moving from a 19th Century definition to a 21st Century definition

- Moving from the biopsy to the biopsy and genomics

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The Gold Standard in Clinical Science is a "Prospective Randomized Trial"

Enrollee Randomization

Group A

Compare

Death rate over time

Group B
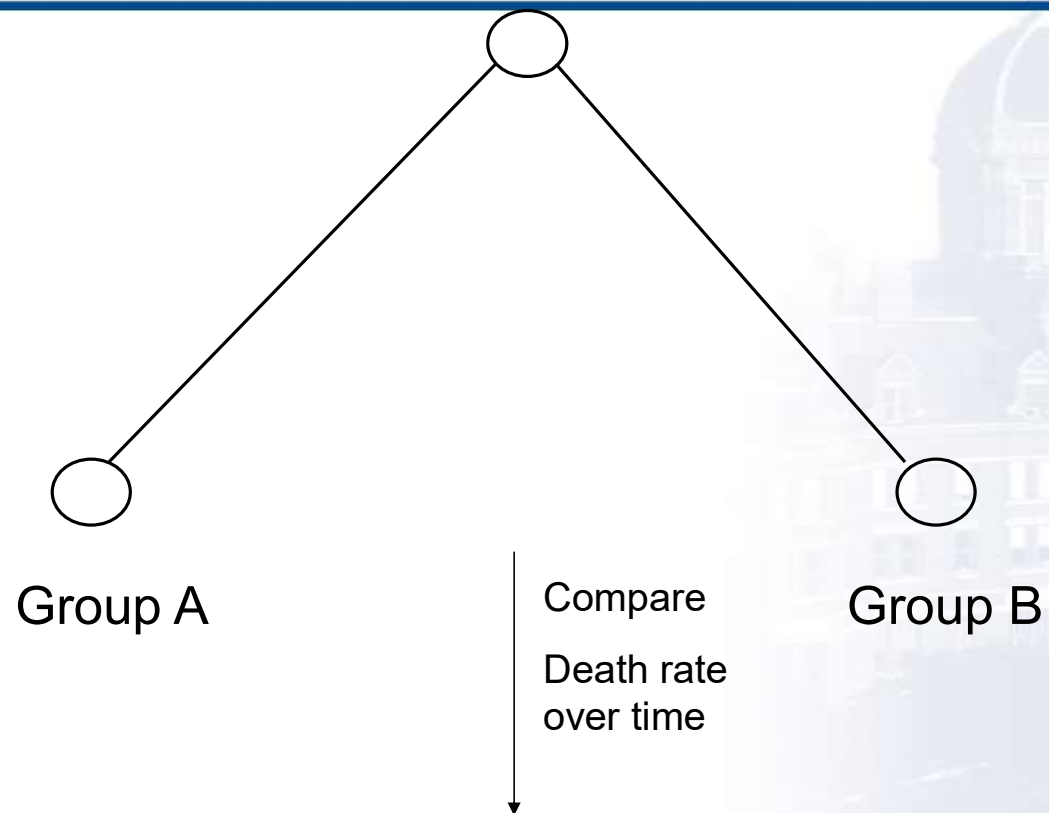
Cancer Screening

Well designed clinical studies have demonstrated a mortality reduction through:

- Mammography for Breast Cancer

- Stool Blood Testing and Sigmoidoscopy for Colorectal Cancer

- Pap and Visual Screening for Cervical Cancer

- Low Dose Spiral CT screening in those at high risk for lung cancer

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Research

A Multilevel Primary Care Intervention to Improve Follow-Up of Overdue Abnormal Cancer Screening Test Results
A Cluster Randomized Clinical Trial

Steven J. Atlas, MD, MPH; Anna N. A. Tosteson, ScD; Adam Wright, PhD; E. John Orav, PhD; Timothy E. Burdick, MD, MSc, MBA; Wenyan Zhao, PhD; Shoshana J. Hort, MD; Amy J. Wint, MSc; Rebecca E. Smith, MS; Frank Y. Chang, MS; David G. Aman, BA; Mathan Thillaiyapillai, MS; Courtney J. Diamond, MA; Li Zhou, MD, PhD; Jennifer S. Haas, MD, MSc

+ Supplemental content

IMPORTANCE Realizing the benefits of cancer screening requires testing of eligible individuals and processes to ensure follow-up of abnormal results.

In a survey of patients getting usual care, less than 23% of patients with an abnormal cancer screen completed diagnostic workup within 120 days.

A navigation intervention moved that figure to 31%.

Atlas et al JAMA 2023; 330(14):1348-1358

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BREAST CANCER

Breast Cancer

In 2019,

269,000 Diagnosed and 42,300 Deaths

There has been a 40% decline in age-adjusted female mortality from 1990 to 2016

Screening is attributed with 40% to 50% of the decline.

American Cancer Society Estimates 2019

Breast Cancer Screening

- <u>Routine</u> Mammography is recommended for normal risk women

- Controversies
  - Starting at age 40, 45, or 50 and over
  - Every year vs every two years
  - Quality of image and quality of radiologist
  - Importance of a program of routine screening and image comparison

- Clinical Breast Examination when mammography is not available.

Smith RA et al, CA Cancer J Clin 2015

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Breast Cancer Screening

- Screening will miss some disease that we wish we could find especially among younger women with dense breasts.

- Screening will find some disease that does not need treatment (overdiagnosis).

- Overdiagnosis is a special question for 3D Mammography (The TMIST Trial)

Smith RA et al, CA Cancer J Clin 2015

Molecular Breast Imaging

Mammography   Molecular Breast Imaging
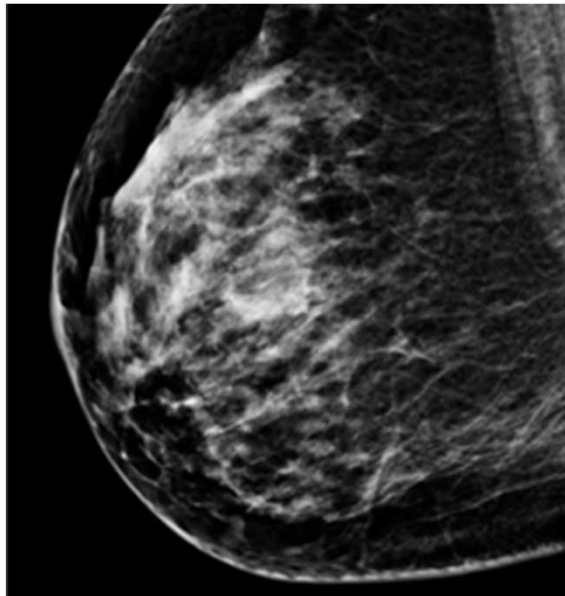
Courtesy of Mayo Clinic

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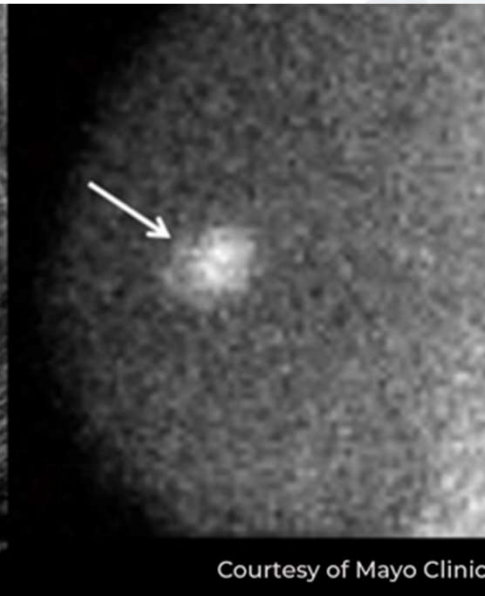
Overemphasis on Screening
(and not enough emphasis on provision of adequate care)

CISNET Breast Cancer Modeling Estimates assessing annual and biannual screening.

- Failure to follow accepted screening guidelines accounts for 9.5 to 11.3% of all breast cancer deaths.

- Failure of the diagnosed to receive appropriate treatment accounts for 21.2 to 27.0% all of breast cancer deaths.

  » Mandelblatt Stout, Schechter, et al, Cancer 2016
  » Mandelblatt van Ravesteyn, Schechter, et al, Cancer 2011

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Breast Cancer

In 2019,

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American Cancer Society Estimates 2019

Breast
Recent Trends in U.S. Age-Adjusted Mortality Rates, 2000-2020
By Race/Ethnicity, Female, All Ages

Legend (Race/Ethnicity)

Hispanic (any race)
Non-Hispanic American Indian / Alaska Native
Non-Hispanic Asian / Pacific Islander
Non-Hispanic Black
Non-Hispanic White

Breast
Recent Trends in U.S. Age-Adjusted Mortality Rates, 2000-2020
By Race/Ethnicity, Female, All Ages

34.4 Per 100,000

26.2 per 100,000

25.4 per 100,000

18.7 per 100,000

Blacks consistently have a death rate 1.3 to 1.4 times higher than Whites
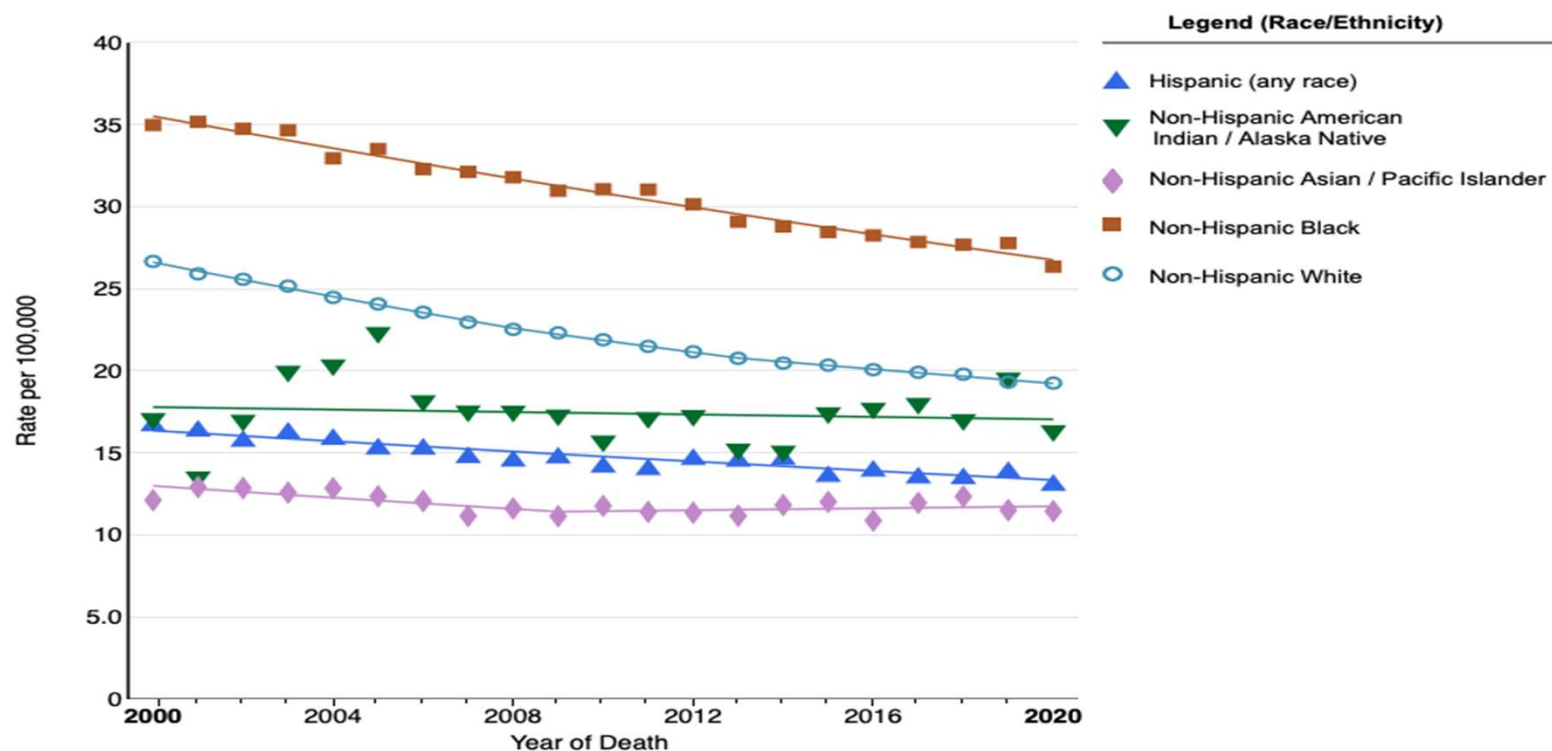
Legend (Race/Ethnicity)
△ Black (includes Hispanic)
▽ White (includes Hispanic)
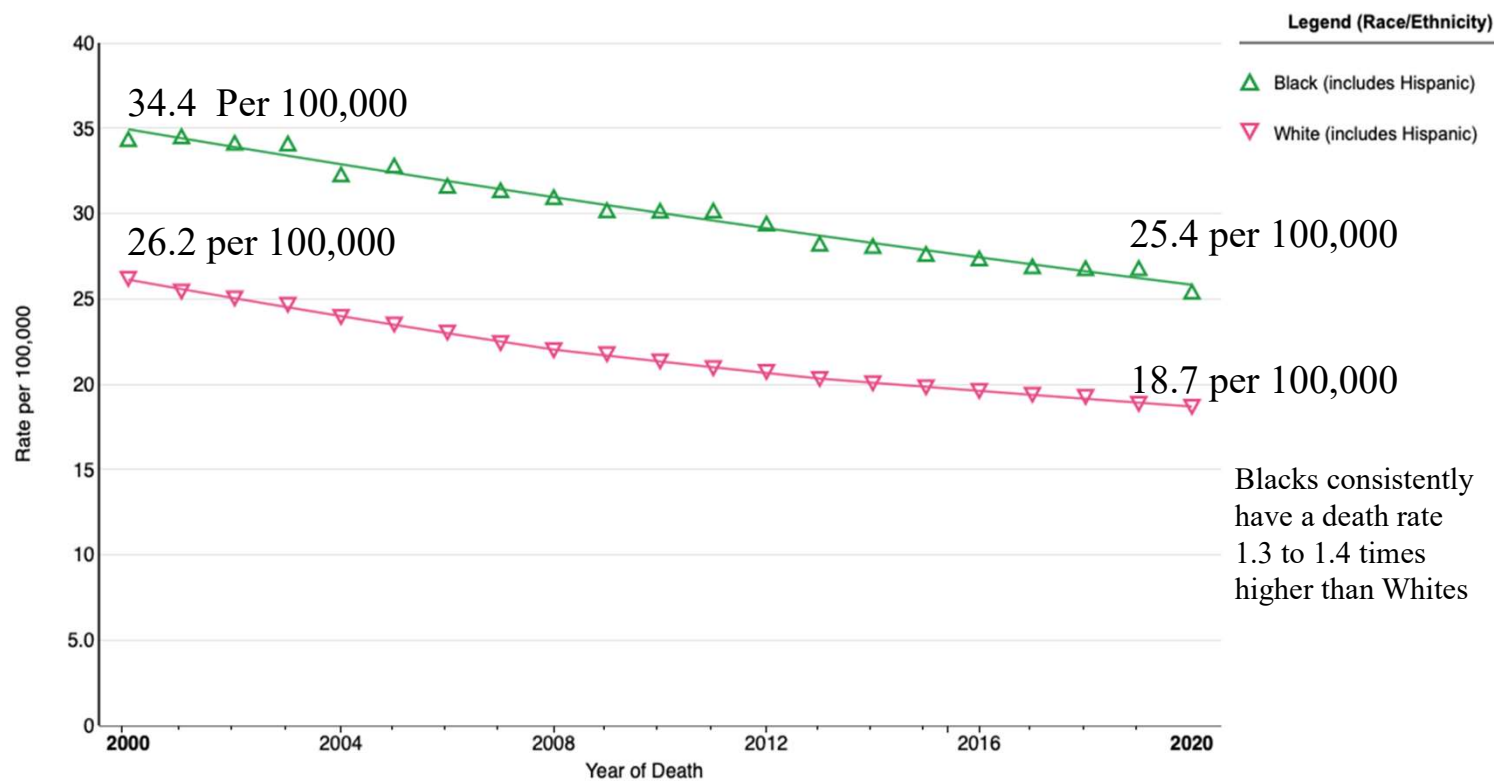
Varying Breast Cancer Mortality
White Women by registry (2013-2017)

17.8 in Connecticut

Avg White Female 20.3 Range: to

22.0 in Idaho

Rates are per 100,000 population
age-adjusted to 2000 standard

Varying Breast Cancer Mortality
Black/AA Women by registry (2014-2018)

Average
Black Female 28.4
White Female 20.3

Black Female	
17.5	New Mexico
18.3	Massachusetts
19.8	Iowa
20.3	Connecticut
20.3	Minnesota
21.7	Seattle-Puget Sound
23.0	New York City
25.1	Kentucky
25.7	San Francisco Bay Area
28.3	Georgia
28.8	Detroit
29.8	Atlanta
30.2	Los Angeles
32.1	Louisiana

Rates are per 100,000 population
age-adjusted to 2000 standard

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Breast Cancer Mortality

- The B-W death rate is essentially equal in five states. They are among the lowest in the US.

- The White mortality rate in 11 states is higher than the rate for Black women in Massachusetts.

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US Breast Cancer Mortality

- There has been a 40% decline in US age-adjusted mortality from 1991 to 2020.

- The decline has varied by state.

Breast Cancer Mortality Decline
from 1988-90 to 2013-2015 by State
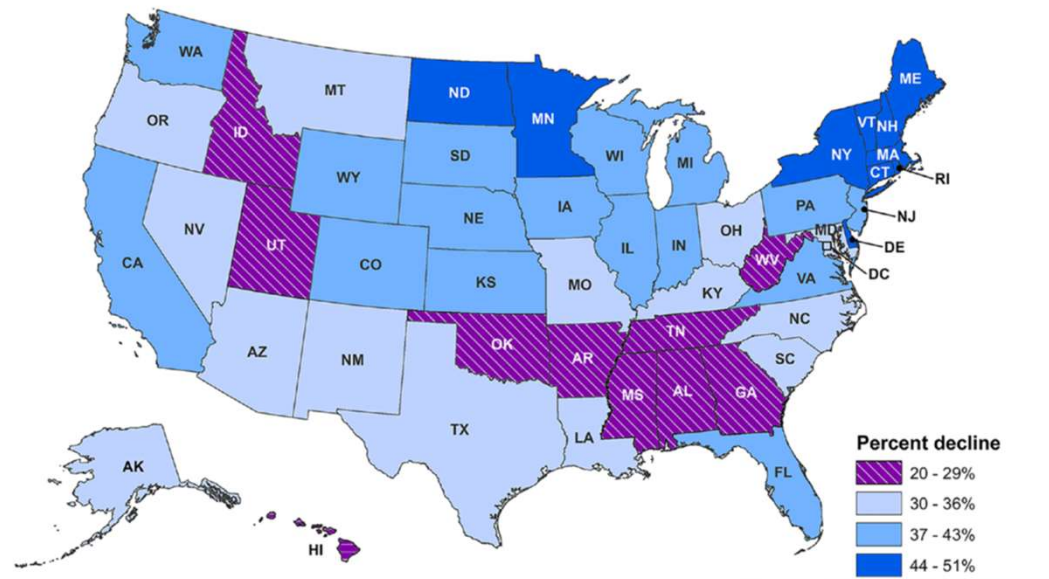
Overemphasis on Screening
(and not enough emphasis on provision of adequate care)

- A substantial proportion of women with breast cancer do not get adequate:
  - surgery,
  - chemotherapy,
  - hormonal therapy,
  - radiation therapy.

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COLON CANCER

Colon Cancer Screening Clearly Reduces Mortality!!!

- Stool blood (human hemoglobin) testing, done annually with samples analyzed in a lab
  - Effective in several randomized trials and is really underappreciated

- Sigmoidoscopy (every three to five years)
  - Effective in several randomized trials

Smith RA et al, CA Cancer J Clin 2019

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Colon Cancer Screening

- Stool DNA testing has become widely available in the past five years.

- The currently available test has some specificity issues and results in a high number of colonoscopies.

Smith RA et al, CA Cancer J Clin 2019

Colon cancer Screening

- Screening Colonoscopy (every ten years) –
  - Widely accepted, indeed widely preferred, but to date no randomized trials,

  - Adopted because positive stool testing trials required a diagnostic colonoscopy.

Colon Cancer Screening

- Colonoscopy has not been proven more effective than stool blood testing!

- High tech (fiberoptic) is not necessarily better.

Smith RA et al, CA Cancer J Clin 2019

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Colon Cancer Screening

- A positive stool test or polyps on sigmoidoscopy requires a diagnostic colonoscopy

- Colon screening with stool hemoglobin testing reduces risk of death by at least 35% and risk of cancer (through polypectomy) by 20%

- Colon screening is the least controversial of all screening tests.

Smith RA et al, CA Cancer J Clin 2019

Colon Cancer Quality of Surgery/Pathologic Assessment

A minimum of 12 lymph node should be examined in an adequate colorectal cancer pathology specimen

-About half of all colorectal cancer patients have 12 or more LN examined.

-Hispanics, Blacks and the poor have higher odds of receiving an inadequate dissection.

– Rhoads et al, Cancer 2012 Jan 15;118(2):469-77

Colon Cancer Quality of Surgery/Pathologic Assessment

-Inadequate examination is associated with the hospital where care was received.

-Inadequate staging leads to some Blacks with true stage 3 disease being labeled stage 2 and some of the talk that colorectal cancer is more aggressive among Blacks!!!

- Rhoads et al, Cancer 2012 Jan 15;118(2):469-77

Colon and Rectal Cancer

In 2019,

- Diagnosed: 101,400 colonic and 44,200 rectal

- 51,000 Americans will die of colon and rectal cancer.

- Among the US Population as a whole, there has been a 50% decline in age-adjusted death rate since 1980.

- Screening is attributed with about 2/3 of the decline.

American Cancer Society Estimates 2019

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Female Colorectal Cancer Mortality, 1975-2015
SEER, Age-Adjusted to year 2000 Standard

Siegel, et al. CA 2018;68:329-339

Male Colorectal Cancer Mortality 1975-2015
SEER, Age-Adjusted to year 2000 Standard

Legend: White, Black, NA//AN, API, Asian
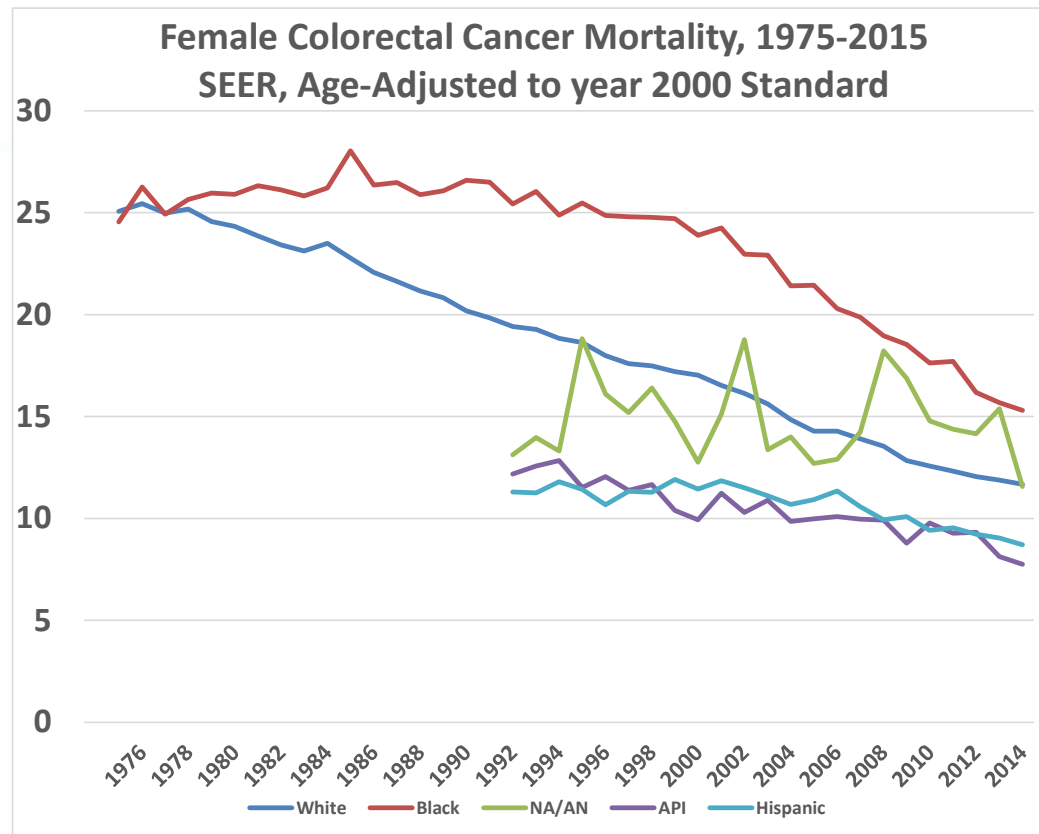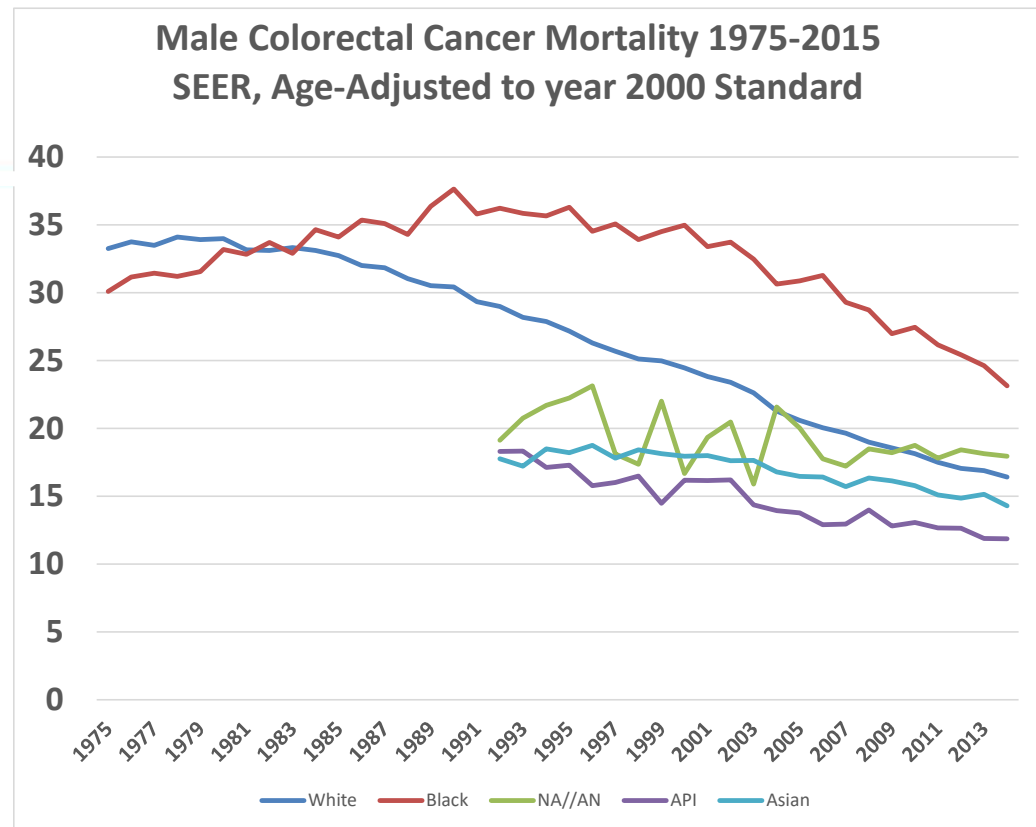
Siegel, et al. CA 2018;68:329-339

Colorectal Cancer Mortality Decline
from 1980-82 to 2013-2015 by State

Siegel, et al. CA 2018;68:329-339

LUNG CANCER

The National Lung Screening Trial
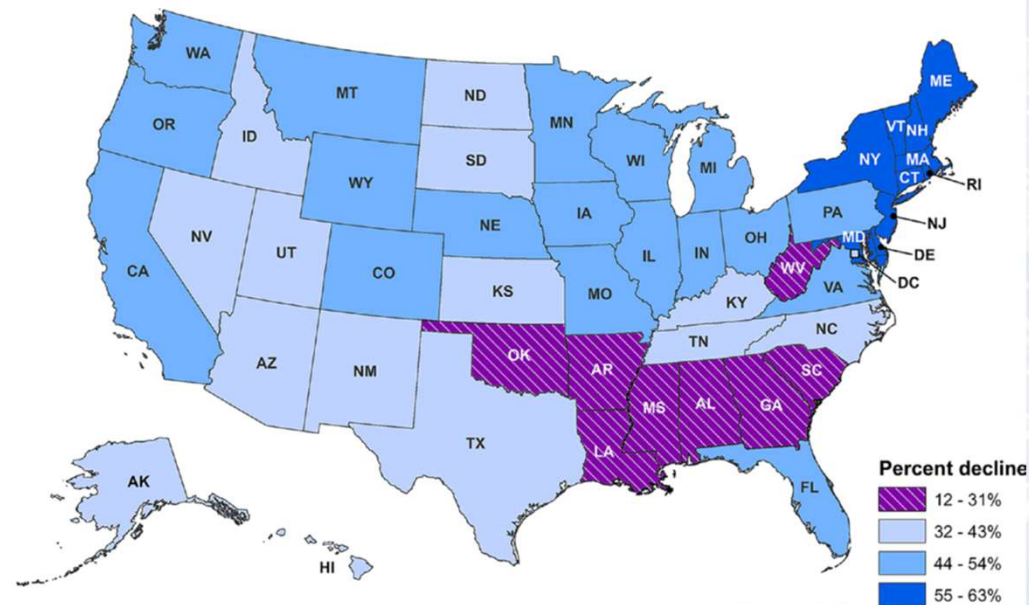
- **Nearly 54,000 at high risk enrolled in the trial**
  - age 55 and above
  - 30 pack year or greater history of smoking; if quit, did so less than 15 years prior to trial entry
  - Reasonable health

- **Subjects prospectively randomized to chest X-ray (sham) or low dose spiral CT (LDCT) yearly for three years**
  - Done at 30 sites with lung cancer expertise
  - Analysis 10 years from start of screening showed LDCT associated with a 20% reduction in relative risk of death

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The National Lung Screening Trial:
A Closer Look

- **In this high risk group, the benefit/risk ratio of 5.4 lives saved for:**
  - Every 2 people with a complication due to an invasive procedure
  - Every 1 life lost prematurely due to diagnostic procedures

- This study was done in 30 of the best hospitals in the country
  - Results may differ as LDCT screening is adopted at other facilities.
  - The benefit-risk ratio may decrease

Lung Cancer Screening Recommendations

Six Respected Groups Recommend the Doctor "Consider" spiral CT for those:

–Healthy aged 50 years and above,

–H/0 20 pack years of smoking or more,

–If quit smoking did so less than 15 years ago,

–Who understand that there are risks of unnecessary diagnostic procedures and even death associated with screening.

Wender et al, CA Cancer J Clin 2013
ACS 2023 Guideline

An Efficient National Screening Program
Applying Results of the NLST

- Approximately 160,000 Americans currently die of lung cancer every year.

- A screening program has potential of preventing 8,000 to 10,000 deaths per year!!!

- If done well screening would lead to 1,500 to 1,850 deaths secondary to diagnostic interventions (bronchoscopy, biopsy, etc.).

Lung Cancer Screening in the Real World

- Increasing volumes due to screening can tax and diminish the quality of care in other diseases.

- Lung screening consumes resources, especially in radiology and pathology.

- A lung cancer screening program can worsen or cause disparities in some hospital systems.

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PROSTATE CANCER

Prostate Cancer Screening

- There are positive and negative trials, all with significant biases tainting their results.

- It is likely that screening saves some lives but causes significant harm.

- The harms are better proven than the benefits.

Brawley OW, Annals of Internal Medicine, 2012

Prostate Cancer Screening
A Complex Message

This is ripe for confusion and distrust

- Many (who mean well) promote screening and do not understand the nuances.
- Many promote screening because it is money making.

Confusion and distrust can cause disparities in receipt of care

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The European Randomized Study of Screening for Prostate Cancer

- 162,389 men aged 55 to 69 in seven European countries,

- Randomized:
  - 72,890 to routine screening vs
  - 89,351 to the control group

- Results:
  - 520 prostate cancer deaths in the screened group
  - 793 prostate cancer deaths in the control group

Hugosson et al., Eur Urol. 2019 76(1): 43-51.

The European Randomized Study of Screening for Prostate Cancer

- PCa mortality reduction of 20% at 16 years

    RR =0.80 95% CI 0.72-0.89, p<0.001)

- Screening invitations to prevent one PCa death was 570

- Number Diagnosed to prevent one PCa death was 18

Hugosson et al., Eur Urol. 2019 76(1): 43-51.

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Applying ERSPC to the Population fourteen years of follow-up

Of 1000 men aged 55 to 69 screened regularly over a 16 year period

– 100 will be diagnosed with prostate cancer

– The number aggressively treated is declining in recent years

– 4 will die of the disease

ASCO Patient Consent, 2019

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Applying ERSPC to the Population sixteen years of follow-up

Of 1000 men aged 55 to 69 who choose not to be screened over a 16 year period:

- 60 will be diagnosed with prostate cancer

- 5 will die of the disease

Applying ERSPC to the Population sixteen years of follow-up

A look at the absolute numbers

- 5 per 1000 dying going to 4 per 1000 is the 20% reduction in relative risk of death

- Screening saves 1 life in 1000 men screened regularly for 16 years, but at what cost?

- Of the 100 diagnosed through screening 96 think they are the 1 in 1000 whose life was saved.

Organizations Assessing Prostate Cancer Screening

- U.S. Preventive Services Taskforce
- American Cancer Society
- American Urology Association
- National Comprehensive Cancer Network
- American Society for Clinical Oncology
- European Urology Association
- Canadian Taskforce on the Periodic Health Examination
- American College of Preventive Medicine
- American College of Physicians
- American Academy of Family Physicians

American Urological Association*

Given the uncertainty that PSA testing results in more benefit than harm, a thoughtful and broad approach to PSA is critical.

Patients need to be informed of the risks and benefits of testing before it is undertaken. The risks of over detection and overtreatment should be included in this discussion.

AUA PSA Best Practice Statement 2009 and 2013

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Prostate Cancer Treatment

Quality of Treatment is very important in outcome.

- Surgery
- Radiation therapy
- Observation for low grade lesions

Increasing volumes due to screening can tax and diminish the quality of a treatment program.

Fifteen-Year Outcomes after Monitoring, Surgery, or Radiotherapy for Prostate Cancer

Freddie C. Hamdy, F.R.C.S.(Urol.), F.Med.Sci., Jenny L. Donovan, Ph.D., F.Med.Sci., J. Athene Lane, Ph.D., Chris Metcalfe, Ph.D., Michael Davis, M.Sc., Emma L. Turner, Ph.D., Richard M. Martin, B.M., B.S., Ph.D., Grace J. Young, M.Sc., Eleanor I. Walsh, M.Sc., Richard J. Bryant, Ph.D., F.R.C.S.(Urol.), Prasad Bollina, M.B., B.S., F.R.C.S.(Urol.), Andrew Doble, F.R.C.S.(Urol.), et al., for the ProtecT Study Group*

After a median of 15 years follow-up of 1610 men with screen detected prostate cancer, (1/3 with intermediate or high-risk disease), the proportions were as follows:

	Dying from Prostate Cancer	Developing Metastatic Disease
Active-monitoring	3.1%	9.4%
Prostatectomy	2.2%	4.7%
Radiotherapy	2.9%	5.0%

Hamdy et al, NEJM 2023; 388:1547-1558 101

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Prostate Cancer Treatment

Active Surveillance is the preferred management of low-risk prostate cancer.

- PSA less than 10 ng/ml,
- Gleason grade group 1,
- Clinical stage T1c or T2a.

In a survey of 349 US urology practices treating 20,800 patients with low-risk prostate cancer, rates of active surveillance were:

- 26.5% in 2014
- 59.6% in 2021

Cooperberg et al, JAMA Open Network 2023 6(3)

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U.S. Health Care Spending (2019)

$3.8 TRILLION

17.7% of US GDP ($21.43 Trillion)
$10,000 per man, woman and child in the US

Martin, Hartman, Lassman, et al.
Health Aff, 2021

Health Expenditure as a percentage of Gross Domestic Product (GDP) 2019

- United States   17.7%
- Germany   11.7%
- Switzerland   11.3%
- France   11.1%
- Japan   11.0%
- Sweden   10.9%
- Canada   10.8%
- Belgium   10.7%
- Norway   10.5%
- United Kingdom   10.2%
- Netherlands   10.2%
- Finland   9.2%
- Israel   7.5%

Health expenditure as share of GDP by country | Statista

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Disparities in Health
The Concept of Medical Gluttony

- Some consume too much
  - (Unnecessary care is given meaning increased risk of harm)
- Some consume too little
  - (Necessary care not given and harm results)
- We could decrease the waste and improve overall health!!!!

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Causes of the Decline in Disease Mortality

The Spectrum of Disease Control

Appropriate

Prevention/Risk Reduction ⇨ Screening ⇨ Diagnostics ⇨ Treatment

In the US, the emphasis is too much on screening, diagnosis and treatment and not enough emphasis is placed on disease prevention (or risk reduction).

THE TRUE COST OF AMERICAN HEALTHCARE (FROM A CANCER DOC!)

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Cancer Mortality by Education
Age Adjusted Rates per 100,000
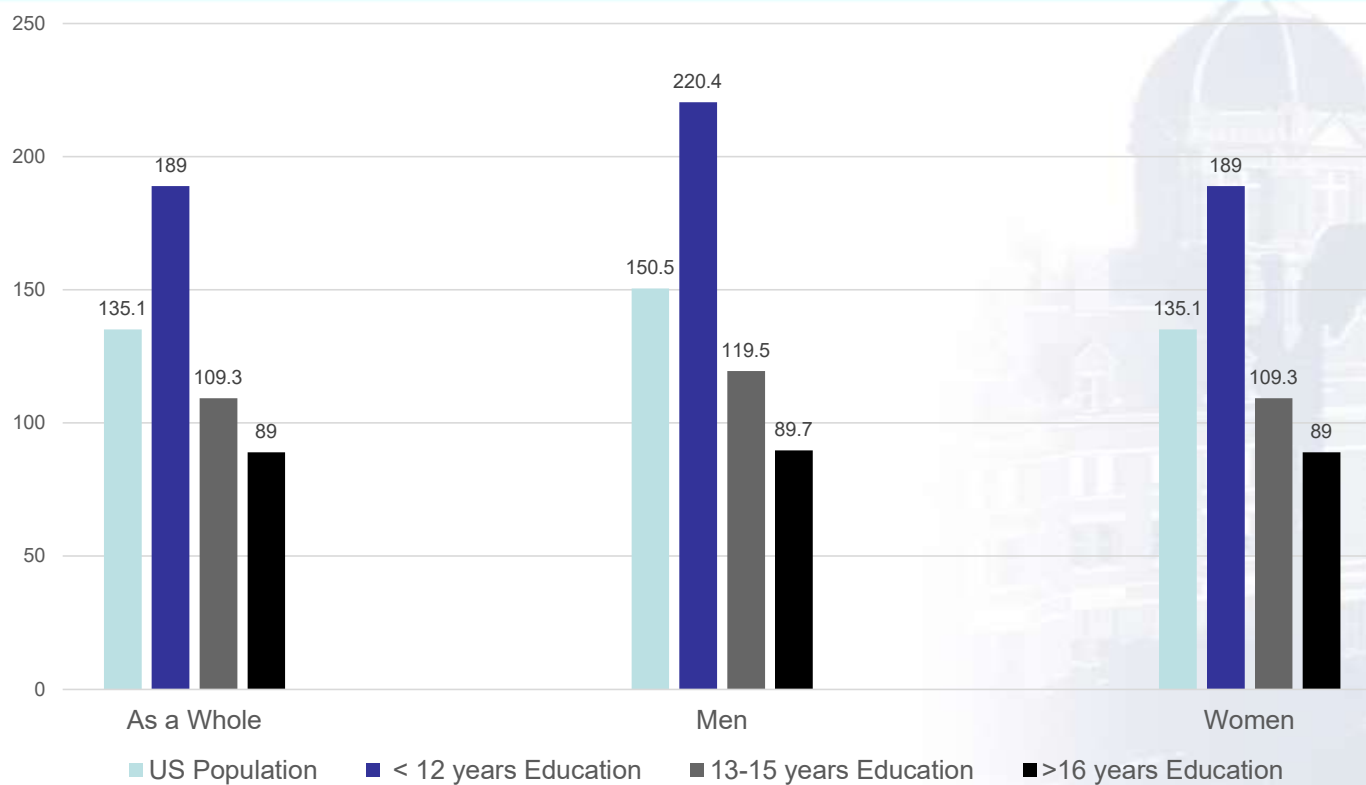
Applying Known Science (Prevention and Treatment)

- It is estimated that about 600,000 Americans will die of cancer this year.

- If all Americans had the cancer death rate of college educated Americans, 22% would not die.

- More than one in five cancer deaths (132,000 Americans) would not occur!

Siegel, et al. CA
2018;68:329-339

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Applying Known Science
(Prevention and Treatment)

- At least 132,000 (22% of the more than 600,000) deaths per year are preventable if all Americans received known medical prevention and treatment.

- The United States leads the western world in preventable cancer deaths.

- Most of these preventable deaths are among white Americans.

- The issue of disparities in health are not just a racial minority health issue.

Siegel, et al. CA
2018;68:329-339

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Key Point!!!

The Most Important Question in Cancer Control

How can we provide adequate high-quality care (<u>to include preventive services</u>) to populations that so often do not receive it?

- – Unnecessary care consumes limited resources and interferes with abilities to provide necessary care.

- – The provision of unnecessary care is a cause of health disparities.

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