It Doesn’t Have to be This Way
Source: www.societyhealth.vcu.edu/work/the-projects/mapping-life-expectancy.html
Health Equity Challenges Rooted Nation’s Past

The New York Times Magazine

PROJECT 1619
REMEMBERING THE FIRST AFRICAN LANDING
Health Disparities Gain National Focus
Progress and Opportunities
Deaths from Cancer Continue to Decline

Overall cancer deaths (age-adjusted, per 100,000 population) By Total

2020 Baseline (year): 179.3 (2007)  
2020 Target: 161.4  
Desired Direction: Decrease desired

CDC National Center for Health Statistics; healthypeople.gov
## Cancer Advances not Benefitting all Equally

Age-Adjusted Cancer Death Rates for Blacks and Whites, Selected Years 1950-2016

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>194.6</td>
<td>193.1</td>
<td>196.7</td>
<td>204.2</td>
<td>211.6</td>
<td>197.2</td>
<td>172.4</td>
<td>156.6</td>
</tr>
<tr>
<td>Black</td>
<td>176.4</td>
<td>199.1</td>
<td>225.3</td>
<td>256.4</td>
<td>279.5</td>
<td>248.5</td>
<td>203.8</td>
<td>177.9</td>
</tr>
<tr>
<td>Difference</td>
<td>-18.2</td>
<td>6.0</td>
<td>28.6</td>
<td>52.2</td>
<td>67.9</td>
<td>51.3</td>
<td>31.4</td>
<td>21.3</td>
</tr>
<tr>
<td>Ratio</td>
<td>.9</td>
<td>1.0</td>
<td>1.2</td>
<td>1.3</td>
<td>1.3</td>
<td>1.3</td>
<td>1.2</td>
<td>1.1</td>
</tr>
</tbody>
</table>

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.

Adapted from Williams & Jackson
https://doi.org/10.1377/hlthaff.24.2.325
Despite Progress, Disparities Persist

- **African American Women**: are twice as likely as white women to be diagnosed with and die from triple negative breast cancer (*).
- **Sexual minority cancer survivors**: have poorer care access quality of life than their heterosexual counterparts (**).
- **African American men**: die more often from prostate cancer than any other racial/ethnic group (+).
- **Women in rural areas**: have higher incidence and death from cervical cancer than women in metro areas (++).
- **Asian and Pacific Islanders**: are more likely than any other racial/ethnic group to die from liver cancer (+++).
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.
Lifestyle Factors influence Health and Wellbeing

- Don’t Smoke
- Eat Healthy
- Exercise Regularly
- Limit Alcohol
- Fewer Chronic Conditions and Live Longer

What is “modifiable”

<table>
<thead>
<tr>
<th>Non-modifiable</th>
<th>Potentially modifiable</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Age</td>
<td>• Factors that accelerate aging</td>
</tr>
<tr>
<td>• Race/ethnicity</td>
<td>• Policies that prohibit discrimination</td>
</tr>
<tr>
<td>• Genetics</td>
<td>• Gene expression (epi-genetics)</td>
</tr>
<tr>
<td>• Poverty</td>
<td>• Educational and economic opportunities</td>
</tr>
</tbody>
</table>

Non-modifiable factors include age, race/ethnicity, genetics, and poverty. Potentially modifiable factors include factors that accelerate aging, policies that prohibit discrimination, gene expression (epi-genetics), and educational and economic opportunities.
Impact of Low-risk Lifestyle Behaviors on Health


Bars represent 95% confidence interval.

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)

How Social Determinants Impact Health

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

50% Can be traced back to your zip code
Population-Based Approach to Individualized Care
Life-course Exposures Create Physiological Changes
Closing the Gaps with Population Impact
## Health Outcomes Overall Still Less than Ideal

United States lags behind peer nations in efficiency, access, equity and outcomes.

<table>
<thead>
<tr>
<th></th>
<th>AUS</th>
<th>CAN</th>
<th>FRA</th>
<th>GER</th>
<th>NETH</th>
<th>NZ</th>
<th>NOR</th>
<th>SWE</th>
<th>SWIZ</th>
<th>UK</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OVERALL RANKING</strong></td>
<td>2</td>
<td>9</td>
<td>10</td>
<td>8</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Care Process</td>
<td>2</td>
<td>6</td>
<td>9</td>
<td>8</td>
<td>4</td>
<td>3</td>
<td>10</td>
<td>11</td>
<td>7</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Access</td>
<td>4</td>
<td>10</td>
<td>9</td>
<td>2</td>
<td>1</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Administrative Efficiency</td>
<td>1</td>
<td>6</td>
<td>11</td>
<td>6</td>
<td>9</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Equity</td>
<td>7</td>
<td>9</td>
<td>10</td>
<td>6</td>
<td>2</td>
<td>8</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Health Care Outcomes</td>
<td>1</td>
<td>9</td>
<td>5</td>
<td>8</td>
<td>6</td>
<td>7</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>10</td>
<td>11</td>
</tr>
</tbody>
</table>

Population-Level Benefits of Prevention Require Multi-sector/disciplinary Collaborations
Robert Wood Johnson Foundation Culture of Health National Metrics:

- Implement a **broad scope** of population health activities
- Through **dense networks** of multi-sector relationships
- Including **central actors** to coordinate actions

51% of U.S. population served by a comprehensive public health system in 2018
Comprehensive Systems do More with Less

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.
The Case for Equity: Larger Gains in Low-Resource Communities

Effects of Comprehensive Population Health Systems in Low-Income vs. High-Income Communities

Impact of Comprehensive Systems on Health

IV Estimates on Mortality, 1998-2014

Deaths per 100,000

What is CDC Doing?
Today, a person’s zip code is a stronger determinant of their health than their genetic code.
Prevalence Trends and Data

Men aged 40+ who have had a PSA test within the past two years (variable calculated from one or more BRFSS questions) (Crude Prevalence)

View by: Overall
Response: Yes

www.cdc.gov/brfss/index.html
### Distribution of Health-related behaviors in men aged ≥ 25 years, by sexual orientation

<table>
<thead>
<tr>
<th>Sexual Orientation</th>
<th>No Current Smoking</th>
<th>Physical Activity</th>
<th>Normal Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight</td>
<td>25</td>
<td>60</td>
<td>81.4</td>
</tr>
<tr>
<td>Gay</td>
<td>40.3</td>
<td>51.8</td>
<td>77</td>
</tr>
<tr>
<td>Bisexual</td>
<td>29.8</td>
<td>59.1</td>
<td>77.1</td>
</tr>
</tbody>
</table>

### Distribution of Health-related behaviors in women aged ≥ 25 years, by sexual orientation

<table>
<thead>
<tr>
<th>Sexual Orientation</th>
<th>No Current Smoking</th>
<th>Physical Activity</th>
<th>Normal Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight</td>
<td>37</td>
<td>66.2</td>
<td>86</td>
</tr>
<tr>
<td>Lesbian</td>
<td>30.4</td>
<td>80.6</td>
<td>75</td>
</tr>
<tr>
<td>Bisexual</td>
<td>29.8</td>
<td>47.1</td>
<td>71.7</td>
</tr>
</tbody>
</table>

County-Level Data

Small Area Health Insurance Estimates (SAHIE) demographic, economic, and insurance insights aid surveillance efforts

- Highlights local variation
- Provides better understanding of cancer control efforts and impacts
- Enables more targeted interventions

[census.gov/programs-surveys/sahie.html](census.gov/programs-surveys/sahie.html)
U.S. Census Bureau - Uninsured Population Age 65 Under

2017 Small Area Health Insurance Program
Change in Uninsured Rates by Race/Ethnicity and State Medicaid Expansion, 2013-2017

Unleashing the Power of Data

Enable a seamless data environment

Unlock scientific advances with open computational and storage platforms

Develop a workforce capable of using open and connected data

If you build it ....

.... make it easy and relevant to use ....

.... we will come.
CDC’s National Program of Cancer Registries

<table>
<thead>
<tr>
<th>1.66 million</th>
<th>New cancer cases each year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>200+ data items</strong> for each case</td>
<td>Cancer site and histology</td>
</tr>
<tr>
<td></td>
<td>Patient demographics</td>
</tr>
<tr>
<td></td>
<td>Stage at diagnosis</td>
</tr>
<tr>
<td></td>
<td>First course of treatment</td>
</tr>
</tbody>
</table>

**WHO**
is getting cancer (for instance, by race, age, or sex)?

**WHAT**
types of cancer are increasing or decreasing?

**WHERE**
will prevention efforts have the biggest impact?

**WHEN**
are screening or prevention strategies working?

**HOW**
far has the cancer spread, and are we catching cancer early?
Making Data Accessible and Usable

All Types of Cancer, All Races/Ethnicities, Male and Female
Estimated rate per 100,000 people

gis.cdc.gov/Cancer/USCS/DataViz.html
Understanding the AI/AN Cancer Burden

Select “AI/AN restricted to PRCDA” only

Select “More Topics” tab

American Indian/Alaska Native, Non-Hispanic

Rate of New Cancers by Leading Cancer Sites
Male and Female, East United States, 2012-2016

White, Non-Hispanic

Rate of New Cancers by Leading Cancer Sites
Male and Female, East United States, 2012-2016

Cancer Type
AI/AN Restricted
Brain and Other Nervous System Cancers
Colon and Rectum
Corpus and Uterus, NOS
Esophagus
Female Breast
Gallbladder
Hodgkin Lymphoma
Kaposi Sarcoma
Kidney and Renal Pelvis
Larynx
Leukemias
Liver and Intrahepatic Bile Duct
Lung and Bronchus
Melanomas of the Skin
Mesothelioma
Myeloma
Non-Hodgkin Lymphoma
Oral Cavity and Pharynx
Ovary
Pancreas
Prostate
Stomach
Testis
Thyroid
Urinary Bladder
Incidence Rates by IHS Regions

Scaling Proven Cancer Prevention and Control Strategies
NBCCEDP Clinical Services Delivered

Since 1991...

• 5.6 million women served
• 13.3 million screenings
• 68,486 breast cancers
• 21,852 premalignant breast lesions
• 4,720 invasive cervical cancers
• 214,652 premalignant cervical lesions
By the Numbers

NBCEDP PY2013-PY2018

70 grantees
System-level interventions

1,253,859 Women Screened

12,132 diagnosed breast cancers
560 diagnosed cervical cancers
6,436 high-grade precancerous lesions
Impact of the NBCCEDP Implementation in NM

Fig. 1. Breast cancer incidence rate by stage, Surveillance Epidemiology, and End Results Program, New Mexico.


Fig. 2. Cervical cancer incidence rate by stage, Surveillance Epidemiology and End Results Program, New Mexico.
# Analyses of Life Years Gained From Select Population-based Prevention Programs

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Target Population</th>
<th>LYs saved per person/ year</th>
<th>Data sources, yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quitting cigarette smoking</td>
<td>35-year-olds</td>
<td>0.667–0.833</td>
<td>Wright JC, 1998</td>
</tr>
<tr>
<td>All childhood immunizations</td>
<td>&lt;5 years old</td>
<td>0.1233</td>
<td>Maciosek MV, 2010</td>
</tr>
<tr>
<td>NBCCEDP–Breast cancer screening</td>
<td>40-64 years</td>
<td>0.056</td>
<td>Hoerger TJ, 2011</td>
</tr>
<tr>
<td>NBCCEDP–Cervical cancer screening</td>
<td>18-29 years</td>
<td>0.023</td>
<td>Ekwueme DU 2014</td>
</tr>
<tr>
<td>NBCCEDP–Cervical cancer screening</td>
<td>30-39 years</td>
<td>0.01</td>
<td>Ekwueme DU 2014</td>
</tr>
<tr>
<td>Measles vaccine</td>
<td>&lt;5 years old</td>
<td>0.008</td>
<td>Wright JC, 1998</td>
</tr>
<tr>
<td>Rubella vaccine</td>
<td>&lt;5 years old</td>
<td>0.008</td>
<td>Wright JC, 1998</td>
</tr>
<tr>
<td>NBCCEDP–Cervical cancer screening</td>
<td>18-64 years</td>
<td>0.006</td>
<td>Ekwueme DU 2014</td>
</tr>
<tr>
<td>Breast cancer screening</td>
<td>50+ year-old women</td>
<td>0.0045</td>
<td>Maciosek MV, 2010</td>
</tr>
<tr>
<td>Colorectal cancer screening</td>
<td>50 + years FOBT</td>
<td>0.0041</td>
<td>Maciosek MV, 2010</td>
</tr>
<tr>
<td>NBCCEDP–Cervical cancer screening</td>
<td>40-64 years</td>
<td>0.003</td>
<td>Ekwueme DU 2014</td>
</tr>
<tr>
<td>Influenza immunization</td>
<td>50 + years</td>
<td>0.0024</td>
<td>Maciosek MV, 2010</td>
</tr>
<tr>
<td>Cervical cancer screening</td>
<td>21+ years women</td>
<td>0.0002</td>
<td>Maciosek MV, 2010</td>
</tr>
</tbody>
</table>
Tenets of the CRCCP model

- Integrate public health and primary care
- Focus on defined, high-need populations
- Establish partnerships to support implementation
- Implement sustainable health system changes
- Use evidence-based strategies to maximize limited public health dollars
- Encourage innovation in adaptation of EBIs
- Use data for program improvement and performance management
CRCCP Grantee Reach

- 245 Health systems
- 815 Clinics
- 6,181 Providers
- 1,272,003 Patients aged 50-75

Source: Clinic data submission, Sep. 2019, (Includes clinics recruited in PYs 1-4)
A closer look at CRCCP clinics

815 CRCCP Clinics

71% are Federally-Qualified Health Centers (FQHCs)

27% serve high percentages of uninsured patients (>20%)

51% use FOBT/FIT tests as the primary CRC screening test type

Source: Clinic data submission, Sep. 2019, (Includes clinics recruited in PYs 1-4)
Reach continues to grow as new clinics are recruited.

This graph shows growth in the # of clinics

<table>
<thead>
<tr>
<th>PY1</th>
<th>PY2</th>
<th>PY3</th>
<th>PY4</th>
</tr>
</thead>
<tbody>
<tr>
<td>391</td>
<td>524</td>
<td>679</td>
<td>815</td>
</tr>
</tbody>
</table>

Source: Clinic data submission, Sep. 2019, (Includes clinics recruited in PYs 1-4)

This graph shows growth in the # of patients, age 50-75

<table>
<thead>
<tr>
<th>PY1</th>
<th>PY2</th>
<th>PY3</th>
<th>PY4</th>
</tr>
</thead>
<tbody>
<tr>
<td>699,208</td>
<td>940,695</td>
<td>1,127,729</td>
<td>1,272,003</td>
</tr>
</tbody>
</table>
Screening rate increases from PY1 to PY3 vary by clinic characteristics

Source: CRCCP Clinic Data April, 2019 data submission. PY1 Clinics only; Years 1-3.
CRC screening rates through PY3 increase with each newly implemented with EBI

![Graph showing CRC screening rates increasing with each newly implemented EBIs by the end of PY3.](image)

Source: CRCCP Clinic Data April, 2019 data submission. PY1 Clinics only; Years 1-3.
Supporting Community Champions
CDC Rural Health Series

MMWR First to detail cancer differences and mortality gaps between rural and urban areas

Addressing Research/Clinical Trial Enrollment Gaps

Rapid Case Ascertainment (RCA) of the North Carolina Central Cancer Registry Partnership

By the Numbers

Since 1992:

- **20,000** patients enrolled in research studies in NC and nationwide
- **200,000** path reports reviewed/identified
- **30** studies spanning **15** cancer sites.
- Hospital report reimbursement reinvested in registry program education & improvements
Linking Vulnerable Populations to Critical Services

Collaborating to navigate uninsured, minority women to local screening programs

70% Durham County residents have health care access and insurance concerns

15.1% Durham County women ages 18-64 uninsured

Source: CDC DataViz

Rate of New Cancers in Durham County, North Carolina

All Types of Cancer, All Ages, All Racial/Ethnicities, Male and Female, 2012-2016
Rate per 100,000 people

<table>
<thead>
<tr>
<th>Rate</th>
<th>Durham County</th>
</tr>
</thead>
<tbody>
<tr>
<td>360.3 - 439.2</td>
<td>423.8 - 571.5</td>
</tr>
<tr>
<td>429.4 - 459.4</td>
<td>459.9 - 482.4</td>
</tr>
</tbody>
</table>

Source: CDC DataViz
Every Case Counts: Facilitating Efficient Electronic Reporting

Improving the completeness, timeliness, and quality of physician/clinic cancer data

- 63 Pathology labs
- 12,000 e-Path reports/year
- 10% reports require follow-up for missed cases

Meaningful Use (MU) Reporting Results

<table>
<thead>
<tr>
<th>Description</th>
<th>2014-2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>MU files received for 2014-2016 diagnoses</td>
<td>3,452</td>
<td>1,500</td>
</tr>
<tr>
<td>Non-matches after linkage to registry database (cases not reported by the practice)</td>
<td>4,649</td>
<td>1</td>
</tr>
<tr>
<td>Cases with a non-reportable condition</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Multiple records combined into a single record for the patient and tumor</td>
<td>3,261</td>
<td>338</td>
</tr>
<tr>
<td>Cases loaded into the final registry database</td>
<td>1,385</td>
<td>836</td>
</tr>
</tbody>
</table>

835% increase over 2013
Planning for Success
All People Free of Cancer

**Aspirations**

**PREVENTION**
Eliminate preventable cancers

**SCREENING**
All people get the right screening at the right time for the best outcome

**CANCER SURVIVORS**
Cancer Survivors live longer, healthier lives

**Strategic Priorities**

- Reduce risk of cancer
- Scale best practices to increase screening outcomes
- Improve health and wellbeing for cancer survivors

**Guiding Principles**

- **Equity**
- **Begin with the End in Mind**
- **Collaboration**
- **Targeted Communications**

**Strengths**

- **Data**
- **Translation & Evaluation**
- **Partnership**
Often tedious

Time consuming

Intimidatingly difficult

Worth Doing
Thank you!

Go to the official federal source of cancer prevention information:
www.cdc.gov/cancer
Building a Framework for a Culture of Health