Implementing cancer prevention to eliminate disparities

April 11, 2013

Department of Surgery
Division of Public Health Sciences
Goals of talk

• Review disparities research through Prevention and Control program @ Siteman Cancer Center, Washington University School of Medicine and Barnes-Jewish Hospital, St Louis
• Place in context
• Outline key issues in application of implementation science to improve population health.
Lewis and Clark Expedition (1804–1806)
Cahokia Mounds State Historic Site
• Cahokia was the largest and most influential urban settlement in the Mississippi culture, 600-1400
• developed advanced societies across much of what is now the Southeastern United States, beginning more than 500 years before European contact
• Cahokia's population at its peak in the 1200s was as large as, or larger than, any European city of that time, and its ancient population would not be surpassed by any city in the United States until about the year 1800.
Where was this even held?

• What was the event?
Cancer Prevention and control: Program goals Siteman Cancer Center

- To implement prevention strategies that engage clinicians, the community, and individuals.

- Create a pathway between discoveries in biological science and effective clinical and population level interventions.

- Build strategies to identify cancer risks for individuals and whole communities; to change behavior to lower risk and improve people’s lives through interventions by health care providers, regulatory changes to help sustain healthy behaviors, and individual behavior changes.
Eliminating Cancer Disparities

- NCI funding to develop and implement strategies to reduce cancer disparities (U54)
- Community based participatory research methods
- Focus on St. Louis/underserved
  - Breast, prostate, colon, and lung cancers
  - Largest visible component is mammography van
  - Range of community based activities to increase awareness and access
  - Komen funding to study delay in access to treatment among African American women, engaging women in understanding access and decisions
Historical Trends (1975-2009)

Mortality, All Cancer Sites
All Races (incl Hisp), Both Sexes
Ages 50+

Deaths per 100,000 resident population

Year of Death

Source: Death data provided by the National Vital Statistics System public use data file. Death rates calculated by the National Cancer Institute using SEER*Stat. Death rates (deaths per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: (<1, 1-4, 5-9, ..., 80-84, 85+). Population counts for denominators are based on Census populations as modified by NCI. The US populations included with the data release have been adjusted for the population shifts due to hurricanes Katrina and Rita for 62 counties and parishes in Alabama, Mississippi, Louisiana, and Texas. The 1969-2009 US Population Data File is used with mortality data.
Historical Trends (1975-2009)

Mortality, All Cancer Sites
Both Sexes, Ages 50+

Deaths per 100,000 resident population

Year of Death


United States
All Races (incl Hisp)

Missouri
All Races (incl Hisp)

Missouri
White (incl Hisp)

Created by statecancerprofiles.cancer.gov on 04/11/2013 5:27 am. Regression lines calculated using the Joinpoint Regression Program.

Source: Death data provided by the National Vital Statistics System public use data file. Death rates calculated by the National Cancer Institute using SEER*Stat. Death rates (deaths per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: (<1, 1-4, 5-9, ..., 80-84, 85+)). Population counts for denominators are based on Census populations as modified by NCI. The US populations included with the data release have been adjusted for the population shifts due to hurricanes Katrina and Rita for 62 counties and parishes in Alabama, Mississippi, Louisiana, and Texas. The 1969-2009 US Population Data File is used with mortality data.
Historical Trends (1975-2009)

Mortality, All Cancer Sites
Both Sexes, Ages 50+

Deaths per 100,000 resident population

Year of Death

0      | 550   | 600   | 650   | 700   | 750   | 800   | 850   | 900   | 950   | 1000

Key
Mortality
All Cancer Sites
Both Sexes
Ages 50+

United States
All Races (incl Hisp)

Missouri
All Races (incl Hisp)

Missouri
White (incl Hisp)

Missouri
Black (incl Hisp)

Source: Death data provided by the National Vital Statistics System public use data file. Death rates calculated by the National Cancer Institute using SEER*Stat. Death rates (deaths per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84, 85+). Population counts for denominators are based on Census populations as modified by NCI. The US populations included with the data release have been adjusted for the population shifts due to hurricanes Katrina and Rita for 62 counties and parishes in Alabama, Mississippi, Louisiana, and Texas. The 1969-2009 US Population Data File is used with mortality data.
Historical Trends (1975-2009)

Mortality, United States
Lung & Bronchus, Both Sexes
All Ages

Deaths per 100,000 resident population

Year of Death: 1975 to 2005

Key
- Mortality United States
- Lung & Bronchus Both Sexes All Ages
- White (incl Hisp)
- Black (incl Hisp)

Created by statecancerprofiles.cancer.gov on 04/11/2013 6:00 am. Regression lines calculated using the Joinpoint Regression Program.

Source: Death data provided by the National Vital Statistics System public use data file. Death rates calculated by the National Cancer Institute using SEER*Stat. Death rates (deaths per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84, 85+). Population counts for denominators are based on Census populations as modified by NCI. The US populations included with the data release have been adjusted for the population shifts due to hurricanes Katrina and Rita for 62 counties and parishes in Alabama, Mississippi, Louisiana, and Texas. The 1969-2009 US Population Data File is used with mortality data.
Historical Trends (1975-2009)

Mortality, Lung & Bronchus
Both Sexes, All Ages

Deaths per 100,000 resident population

Year of Death


Source: Death data provided by the National Vital Statistics System public use data file. Death rates calculated by the National Cancer Institute using SEER*Stat. Death rates (deaths per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: (<1, 1-4, 5-9, ..., 80-84, 85+). Population counts for denominators are based on Census populations as modified by NCI. The US populations included with the data release have been adjusted for the population shifts due to hurricanes Katrina and Rita for 62 counties and parishes in Alabama, Mississippi, Louisiana, and Texas. The 1969-2009 US Population Data File is used with mortality data.

Created by statecancerprofiles.cancer.gov on 04/11/2013 6:01 am. Regression lines calculated using the Joinpoint Regression Program.
State of Tobacco Control 2013

Missouri

Grades:

Tobacco Prevention & Control Spending F
Smokefree Air F
Cigarette Tax F
Youth Access F

http://www.stateoftobaccocontrol.org/state-grades/missouri/
Age-Adjusted Death Rates for Missouri, 2005 - 2009
All Cancer Sites
All Races (includes Hispanic), Both Sexes, All Ages

Age-Adjusted Annual Death Rate
(Deaths per 100,000)

Quantile Interval

- 221.2 to 275.4
- 209.3 to 221.1
- 196.7 to 209.2
- 189.0 to 196.6
- 177.7 to 188.9
- 149.6 to 177.6

United States Rate (95% C.I.)
178.7 (178.4 - 178.9)

Missouri Rate (95% C.I.)
191.4 (189.9 - 192.9)

Healthy People 2020 Goal C-1
160.6

Created by statecancerprofiles.cancer.gov on 04/11/2013 5:38 am.
State Cancer Registries may provide more current or more local data.
Data presented on the State Cancer Profiles Web Site may differ from statistics reported by the State Cancer Registries (for more information).
Source: Death data provided by the National Vital Statistics System public use data file. Death rates calculated by the National Cancer Institute using SEER*Stat. Death rates (deaths per 100,000 population per year) are
Demographic Data for Missouri
2006-2010 American Community Survey 5-Year Data
Poverty: Persons below poverty
All Races (includes Hispanic), Both Sexes, All Ages

Created by statecancerprofiles.cancer.gov on 04/11/2013 5:41 am.
Source: Demographic data provided by the Census Bureau and the American Community Survey.
For more information about Poverty: Persons below poverty see the dictionary.
Technology vs. equity

- The US health care system spends more on ‘technology’ of care than on achieving equity in its delivery.
- From 1991 to 2000, medical advances averted 176,633 deaths, but equalizing the mortality rates of whites and Africa Americans would have averted 886,202 deaths.
- “Achieving equity may do more for health than perfecting technology”
  - Steven Woolf and David Satcher, AJPH 2004;94:2078-81
Disparities in mortality

- Satcher et al review black-white mortality gap from 1960 to 2000
- SMR for total mortality changed little (overall SMR 1.4) and worsened for men 35 and older
- 83,570 excess deaths each year could be prevented if the black white mortality gap could be eliminated
  - Satcher et al. Health Affairs 2005;24:459-64
Breast Cancer

Historical Trends (1975-2009)
Mortality, Breast Female, All Ages

Deaths per 100,000 resident population

Year of Death

Key
Mortality
Breast Female All Ages
Missouri Black (incl Hisp)
United States Black (incl Hisp)
Missouri White (incl Hisp)
United States White (incl Hisp)

Source: Death data provided by the National Vital Statistics System public use data file. Death rates calculated by the National Cancer Institute using SEER*Stat. Death rates (deaths per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: <=1, 1-4, 5-9, ..., 80-84, 85+). Population counts for denominators are based on Census populations as modified by NCI. The US populations included with the data release have been adjusted for the population shifts due to hurricanes Katrina and Rita for 62 counties and parishes in Alabama, Mississippi, Louisiana, and Texas. The 1969-2009 US Population Data File is used with mortality data.
Location of area where the unadjusted risk of late-stage (regional or distant) breast cancer is increased among women aged 50 years and older, 1996-1998.

Mario Schootman, Donna B. Jeff, William E. Gillanders, Yan Yan, Bruce Jenkins, Rebecca Aft

**Geographic Clustering of Adequate Diagnostic Follow-Up after Abnormal Screening Results for Breast Cancer among Low-income Women in Missouri**

Annals of Epidemiology Volume 17, Issue 9 2007 704 - 712

http://dx.doi.org/10.1016/j.annepidem.2007.03.017
Breast cancer screening 2008-2010
Steps of care in cancer screening

Zapka et al JNCI Monograph 2010
Steps of care in cancer screening

Zapka et al JNCI Monograph 2010
What does all this have to do with implementing prevention to eliminate disparities?


Gehlert, et al. *Community-based participatory approach to improving breast cancer services for women living in St. Louis.*


Quality improvement; Breast cancer regional navigation workgroup

Active surveillance of breast cancer screening and diagnosis rates at BHC and on van

**Research**

**Outreach/QI**

**Research and Outreach**

**Research and Outreach**

**Research and Outreach**
Figure 2: GIS Maps of Service Area

Number of women screened
Number of mobile van visits
Success Story: Breast Health Navigation
Success Story: Breast Health Navigation

- ARRA findings for breast cancer navigation at north county health center site

<table>
<thead>
<tr>
<th>Need for navigation</th>
<th>Reach/Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=792 needed nav. (i.e. due/overdue for mmg)</td>
<td>n=751 navigated (94.8%)</td>
</tr>
<tr>
<td></td>
<td>n=710 navigated women that received mmg (94.5%)</td>
</tr>
<tr>
<td>90.8% minority</td>
<td>Nearly the same as</td>
</tr>
<tr>
<td>80.3% income ≤$25,000</td>
<td>Nearly the same as</td>
</tr>
<tr>
<td>69.4%* uninsured or medicaid</td>
<td>Nearly the same as</td>
</tr>
</tbody>
</table>

* n=842, per episode of navigation

* Nearly the same as

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Success Story: Breast Health Navigation

- ARRA findings for breast cancer navigation at north county health center site

### Health center’s breast cancer screening utilization among age-eligible women (baseline to follow up)

<table>
<thead>
<tr>
<th></th>
<th>Baseline n (%)</th>
<th>Year 1 n (%)</th>
<th>Year 2 n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All sites</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>women received mmg</td>
<td>627 (11.8)</td>
<td>931 (13.5)</td>
<td>1093 (15.4)</td>
</tr>
<tr>
<td><strong>North county site</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>women received mmg</td>
<td>--</td>
<td>235 (17.7)</td>
<td>420 (27.6)</td>
</tr>
</tbody>
</table>
Success Story: Breast Health Navigation

• ARRA findings for breast cancer navigation at north county health center site

Post study (6 months of data)
On track to exceed year 2 mmg receipt percent by 10% or larger
Success Story: Breast Health Navigation

• ARRA findings for breast cancer navigation at north county health center site
• Reinforcing navigation infrastructure in the entire St. Louis metropolitan region, AND
  • Breast navigator group model will be replicated in the State through Show Me Healthy Women (CDC-funded NBCCEDP)
PECaD at WUSTL- Colon Cancer

FIND

Needs Assessment
Needs & capacity assessments through stakeholders to identify community priorities

Research
James, et al. Perceptions of CRC Screening in Low-Income Populations (ACS)

Research
James, et al. Using Photovoice to engage community members about colorectal cancer screening (NIH)

SOLVE

Research
James, et al. Peer Outreach for Promoting CRC Screening (NIH)

Research
James, Colditz, et al. Systems Intervention to Increase CRC Screening (NIH)

CHANGE

Research
James, Colditz, et al. Systems Intervention to Increase CRC Screening (NIH)

Outreach
James, Colditz, et al. Provider Education to Increase CRC Screening (ACS)

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Success Story: Public Library Network

• Cancer health information kiosks at St. Louis City Public Libraries (n=4)

• In conjunction with the medical center library funded by the National Library of Medicine (NLM)

Win-Win
1999 NLM Resolution

Health information outreach

To health professionals

To the general public
Success Story: Media Outreach & Education

- Newspaper – Cancer educational ads and related editorials
- Transit (bus/metro) campaign – cancer education and resources
- Radio – live and recorded interviews with cancer prevention experts
- TV – “8 Ways to Prevent Cancer” campaign
- Clinical Trials Video/DVD – minority recruitment
Figure 2: Generations of health disparities research in the published literature by year

- **1st**: Do disparities exist?
- **2nd**: Why do disparities exist?
- **3rd**: Do interventions work?
- **4th**: Community-based participatory research

Goodman M., et al. unpublished

Washington University in St. Louis • School of Medicine
Department of Surgery
Division of Public Health Sciences

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Looking Ahead: More Work To Be Done in Missouri

- Half of all cancer could be prevented
- Major challenge of high cancer mortality in MO rural counties
- Moving lessons learned in St. Louis to broader application in the Bootheel and other rural areas

Then to Southern Illinois, and perhaps down river to the rest of the delta
When and How Do We Bridge the Gap Between Data and Application?
Data will never be perfect. You can act on known evidence.
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Create cross-discipline teams
Data will never be perfect. You can act on known evidence.

Create cross-discipline teams

Think about end user, even during manuscript development
Data will never be perfect. You can act on known evidence.

Create cross-discipline teams

Think about end user, even during manuscript development

Use varied modalities
Implementation science

A goal of implementation science for health is to identify the factors, processes, and methods that can successfully embed evidence based interventions in policy and practice to achieve population health.

Population health = “the health outcomes of a group of individuals, including the distributions of such outcomes within the groups”

- Kindig D, Stoddart G. 2003. AJPH
Measuring outcomes for population health
Measures?

Summary measures of population health

Health-adjusted life expectancy at birth (y)

Quality-adjusted life expectancy

Years of healthy life

Healthy life years

Disability-adjusted life years

Quality-adjusted life years
IOM report on value of community based prevention 2013

Valuing — What should be counted?

Benefits

Harms

QALYs or HALE

Community Benefit

Value
The value of an intervention considers its benefits, harms, and costs.

Community Process

Process Indicator

Benefits

Harms

Community Well-Being Indicator

Community Cost

Resources Used

Identification of Investments and Resources

Valuing — What should be counted?

Savings

Costs

Monetary Units (USD)
Using epidemiologic data to guide and sustaining social change

- Common agenda
- Shared measurement system
- Mutually reinforcing activities
- Continuous communication and
- A backbone support organization

Kania et al 2011 Stanford Social Innovation Review
Why are we not preventing cancer now?

Multiple barriers:
• Skepticism that cancer can be prevented
• Short term focus of cancer research
• Interventions deployed too late in life
• Research focused on treatment not prevention
• Debates among scientists
• Societal factors ignored
• Lack of transdisciplinary training
• Complexity of implementation

Colditz et al Sci Transl Med 2012: March 28
Proposed process:
increase stakeholder input and reporting on external validity

Lobb R, Colditz GA. 2013.
Annu. Rev. Public Health. 34:235–51
Very long term prevention action:

"In the beginning of every enterprise we should know, as distinctly as possible, what we propose to do, and the means of doing it... We desire to lay the foundation and to mature some parts of the plan. Those who come after us must finish the work."

William Greenleaf Eliot, co-founder
Washington University in St Louis
1854