Aging and Preventive Health Services: The Effect of Health Insurance Mandates on Colorectal Cancer Screening

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Presentation Outline

- ACA Preventive Service Utilization Research
  - Background and Significance
  - Objectives
  - Methods
  - Econometric Framework
  - Results
  - Conclusions
  - Implications for Policy and PH Practice

- Health Initiatives and Disparities Research
  - Cancer Control Programs
  - Documentation of Cancer Health Disparities
  - Conclusions
  - Policy Implications
Aging and Health

- Two factors that will double the populations aged 65+ (72 million over the next 25 years)
  - Longer life spans
  - Aging baby boomers
- Chronic conditions present a strong economic incentive for action
  - Paradigm shift
    - Infectious dz / acute illnesses
    - Chronic dz / degenerative illness
- 2/3 older Americans have multiple chronic conditions
- Treatment accounts for 66% of health care budget

Source: The State of Aging and Health in America, 2013
The Burden of Chronic Disease for Older Adults

- Heart Disease since 1900
- Cancer since 1938
  - Risk increases with age

Source: The State of Aging and Health in America, 2013
Ways to Promote and Preserve the Health of Older Adults and Reduce Costs

- Prevention Care (recommended screenings)
- Practicing healthy behaviors from an early age
- Current data on health-related behaviors
  - Aged 55-64 years do not indicate a positive future
- Communities
  - Policies
  - Systems
  - Environments

*Source: The State of Aging and Health in America, 2013*
Colorectal Cancer in the U.S.

- Third leading cause of cancer-related deaths in men and women when counted separately
- Second leading cause of cancer-related deaths in men and women when counted collectively
- 136K+ new cases
- 50K+ deaths
- 1+ million survivors
- Over the past 20+ years, death rates have decreased
- Disparities remain among medically underserved populations

American Cancer Society, 2014
Colorectal Cancer Screening

- Early detection has been a major contributor to the overall decline in new cases and deaths from CRC
- Screening allows for detection and removal of precancerous polyps before they progress to cancer (Cancer Facts & Figures 2012)
- Screening allows for earlier detection when disease is easier to cure
- Improvement in treatment over the years
- Healthy People 2020 screening goal 70.5%
  - HOT TOPIC at 2014 NCCRT Annual Meeting: 80% by 2018
Types of CRC Screening

- High-Sensitivity FOBT (Stool Test)
  - Stool samples are checked for blood
Types of CRC Screening

- Flexible Sigmoidoscopy
  - Short, thin, flexible, lighted tube placed inside the rectum and lower third of the colon
Types of CRC Screening

- Colonoscopy
  - Long, thin, flexible, lighted tube placed inside the rectum and entire colon
  - Also used as a follow-up test for other CRC screening tests if there are abnormal findings
Colorectal Cancer Screening Disparities

- Compliance or adherence to screening guidelines reduces disparities
- Higher mortality rates remain among disadvantaged and underserved that are part of racial and ethnic minorities and rural populations which tend to be low-income, under-insured, and uninsured
- Racial and ethnic minorities such as AA are less likely to be screened and more likely to die
- 5-year survival rate in AA was 53% compared to 63% in Whites from 1992 to 1999 (Agrawal et al., 2005)
Physician Visits

- Patient education, mass mailings and reminders alone did not improve screening rates.
- Increased odds of CRC screening and early-stage diagnosis with routine physician visits (Ferrante JM, et al, 2011).
- Early detection must be increased to improve survival.
- Five-year survival rate is 90% when CRC is diagnosed at an early stage where cancer is localized and 60% for those with regional disease.
- Five-year survival rate is only 10% when cancer is not diagnosed until it has spread to distant organs of the body (ACS, 2009).
Colorectal Cancer Screening Rates (BRFSS, 2010)

Source: CDC, 2010
Insurance Coverage Mandate States in the U.S.

Mandate State

Source: SCLD, 2012
Insurance Coverage Mandate for CRC

- Policy that requires insurers to cover the cost of medical services they would not otherwise if a mandate is not in place
- Not all states passed mandates related to CRC
- Variation in the types of mandates that were passed
  - Differences in the amount of cost-sharing
- Mandates reduced out-of-pocket expenses
  - Increase CRC screenings
AR Example: Act 2236

- The Colorectal Cancer Act of 2005
  - Rep Elliot; Sen Steele, Sen Critcher, Sen Whitaker
- Established:
  - CRC Control and Research Demonstration Project
    - UAMS Cancer Control (PI: Henry-Tillman)
  - Policy that requires insurers to cover CRC screenings
    - 2 main exemptions
      - Employer self-funded benefit plans (mainly large employers)
      - No restrictions on cost-sharing
Health Care Reform

- 2010, Patient Protection and Affordable Care Act (ACA)
  - Decrease the number of uninsured Americans
  - Reduce the overall cost of health care
  - Insurance coverage mandates for preventive health services
    - Closed loop-holes in state mandates
      - Employer self-funded benefit plans
      - No restrictions on cost-sharing
Affordable Care Act 2010

“SEC. 2713. COVERAGE OF PREVENTIVE HEALTH SERVICES.

“(a) IN GENERAL.—A group health plan and a health insurance issuer offering group or individual health insurance coverage shall, at a minimum provide coverage for and shall not impose any cost sharing requirements for—

“(1) evidence-based items or services that have in effect a rating of ‘A’ or ‘B’ in the current recommendations of the United States Preventive Services Task Force;
Grade “A” Preventive Services

- Grade “A”
  - Recommends the service
  - High certainty that net benefit is substantial
- Provide first dollar coverage
  - Reduce the amount of out-of-pocket expenses
  - Coverage without having to pay:
    - Copayment
    - Co-insurance
    - Deductible
Law of Demand

As out-of-pocket costs decrease...

...the quantity of colorectal screenings increase
Goal of Research Study

- To estimate the impact of health insurance coverage mandates on overall CRC screening rates and CRC screening disparities.
- To examine insurance coverage mandate variations and the effect of physician utilization in moderating CRC screening rates.
Methods

- Difference-in-differences (DID)
  - Measures the difference in CRC screening before and after policy
  - Measures the difference in CRC screening b/w the treatment and control groups
- Treatment group: non-mandate states
- Control group: mandate states
- DID allows us to identify causal effects of a policy on CRC screening
Data

- Behavioral Risk Factor Surveillance System (BRFSS)
  - Study population is a sample of U.S. adults age 50+
- National Cancer Institute State Cancer Legislative Database
  - Used to determine provisions, exemptions, and enforcements of state mandates
- The dataset was used to assess state-level estimates of health behaviors and health care utilization by building a state-year longitudinal data file
- This data file provided information on types of CRC screening, date latest test was performed, insurance status, race/ethnicity and SES for years studied
- Analytical sample 34,017 (M:25,729; NM:8,288)
  - Person-years
Analysis

- **Model Specifications:**

  Difference-in-differences (DD)
  
  \[
  \text{Difference-in-differences (DD)} = [(\text{Rate}_{\text{reform, post}} - \text{Rate}_{\text{reform, pre}})] - \\
  [(\text{Rate}_{\text{non-reform, post}} - \text{Rate}_{\text{non-reform, pre}})]
  \]

  Difference-in-difference-in-differences (DDD)
  
  \[
  \text{Difference-in-difference-in-differences (DDD)} = [(\text{Rate}_{\text{race/uninsured/physvisit, post}} - \text{Rate}_{\text{race/uninsured/physvisit, pre}}) - \\
  (\text{Rate}_{\text{reform, post}} - \text{Rate}_{\text{reform, pre}})] - \\
  [(\text{Rate}_{\text{race/uninsured/physvisit, post}} - \text{Rate}_{\text{race/uninsured/physvisit, pre}}) - \\
  (\text{Rate}_{\text{non-reform, post}} - \text{Rate}_{\text{non-reform, pre}})]
  \]
Weighted Means (%)

Colorectal Cancer Screening Over Time

Notes: FOBT = fecal occult blood test. The dashed lines indicate the addition of cell phone data by the CDC in 2011.
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Received colorectal cancer screening (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Overall colorectal screening test (n=34,017)</td>
<td>61.55</td>
</tr>
<tr>
<td>Mean age +/- s.d. (in years)</td>
<td>66.2 +/-10</td>
</tr>
<tr>
<td>Mandate state coverage</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>61.78</td>
</tr>
<tr>
<td>No</td>
<td>61.13</td>
</tr>
<tr>
<td>Health care reform</td>
<td></td>
</tr>
<tr>
<td>Post</td>
<td>64.24</td>
</tr>
<tr>
<td>Pre</td>
<td>58.79</td>
</tr>
</tbody>
</table>
## Table 2. Summary statistics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Pre-health care reform</th>
<th>Post-health care reform</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Mean age +/- s.d. (in years)</td>
<td>64.93</td>
<td>10.199</td>
</tr>
<tr>
<td>Self-reported health status (Fair/poor)</td>
<td>26.99</td>
<td>0.444</td>
</tr>
<tr>
<td>Covered by health insurance</td>
<td>92.92</td>
<td>0.256</td>
</tr>
<tr>
<td>Did not see doctor due to medical costs</td>
<td>9.06</td>
<td>0.287</td>
</tr>
<tr>
<td>Doctor visit</td>
<td>1.29</td>
<td>0.649</td>
</tr>
<tr>
<td>Presence of a personal physician</td>
<td>93.97</td>
<td>0.238</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whites</td>
<td>81.99</td>
<td>0.384</td>
</tr>
<tr>
<td>Hispanics</td>
<td>3.74</td>
<td>0.190</td>
</tr>
<tr>
<td>Marital status</td>
<td>51.46</td>
<td>0.500</td>
</tr>
<tr>
<td>Male</td>
<td>38.42</td>
<td>0.486</td>
</tr>
</tbody>
</table>
### Table 3. Marginal Effects of Health Insurance Mandates on Colorectal Cancer Screening

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>SE</th>
<th>Marginal Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandate state coverage</td>
<td>-0.376</td>
<td>0.278</td>
<td>-0.080</td>
</tr>
<tr>
<td>Health care reform</td>
<td>0.0113</td>
<td>0.0931</td>
<td>0.00241</td>
</tr>
<tr>
<td>Health care reform effect</td>
<td>0.161*</td>
<td>0.100</td>
<td>0.0344</td>
</tr>
</tbody>
</table>

*p<0.1; **p<0.05
Table 4. Marginal Effects of Health Insurance Mandates on Screening Disparities by Race and Insurance Status

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>SE</th>
<th>Marginal Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandate state coverage</td>
<td>-0.291</td>
<td>0.260</td>
<td>-0.0621</td>
</tr>
<tr>
<td>Health care reform</td>
<td>0.0452</td>
<td>0.0685</td>
<td>0.00965</td>
</tr>
<tr>
<td>Health care reform effect</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonwhites vs whites/Caucasians</td>
<td>-0.120**</td>
<td>0.0594</td>
<td>-0.0257</td>
</tr>
<tr>
<td>African Americans vs whites</td>
<td>-0.153*</td>
<td>0.0911</td>
<td>-0.0325</td>
</tr>
<tr>
<td>Hispanics vs whites</td>
<td>-0.0735</td>
<td>0.449</td>
<td>-0.0156</td>
</tr>
<tr>
<td>Health care reform effect</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uninsured vs insured</td>
<td>-0.228**</td>
<td>0.0963</td>
<td>-0.0487</td>
</tr>
</tbody>
</table>

*p<0.1; **p<0.05
Table 5. Marginal Effects of Physician Utilization for Moderating CRC Screening Rates

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>SE</th>
<th>Marginal Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandate state coverage</td>
<td>0.0928</td>
<td>0.2963</td>
<td>0.0204</td>
</tr>
<tr>
<td>Health care reform</td>
<td>-0.5194***</td>
<td>0.0740</td>
<td>-0.1144</td>
</tr>
<tr>
<td>Cost barriers</td>
<td>-0.1464***</td>
<td>0.0429</td>
<td>-0.0322</td>
</tr>
<tr>
<td>Health care reform effect</td>
<td>1.0155***</td>
<td>0.0543</td>
<td>0.2237</td>
</tr>
</tbody>
</table>

***p<0.001
Conclusions

- Health care reform increased the probability of having a CRC screening by 3.4 percentage points on average
- Estimated 2.87 million additional age-eligible persons will receive a colorectal cancer screening as a result of health care reform
- Increased screening among whites
- Decreased screening among AA and Hispanics
- Increased screening among insured
- Clearly found evidence that ACA influences CRC screening
- Our analysis supports the implementation of health care reform and stronger policies that increase colorectal cancer screenings overall
Policy Implications

- This research demonstrates that insurance mandates increased colorectal cancer screenings by reducing out-of-pocket costs.
- Future health care reforms that increase access to preventive services, such as CRC screening, are likely with low out-of-pocket costs and will increase the number of people who are “up-to-date”.
- Starting 2014, all US citizens are required to have health coverage.
  - Expect demand to increase for CRC screening.
Policy Implications (continued)

- Identify best ways to design health systems for preventive services that target medically underserved populations
- Disparities continue to increase with health policies that reduce out-of-pocket expenses. Additional measures are required to reduce disparities in screenings among nonwhites and Hispanics
- Important to know if health coverage expansions decrease disparities
- Trend toward routine physician visits increasing CRC screenings
- Potentially missed opportunities to get physicians to recommend CRC screenings
Health Initiatives and Disparities Research

- Cancer Control Programs
- Documentation of Cancer Health Disparities
- Conclusions
- Policy Implications
Ex: Cancer Prevention and Control

- Who?
- What?
- When?
- How?
Cancer in the U.S.

- >1 million people in the US each year (all cancers)
- Breast Cancer
  - 230K+ new cases on invasive breast cancer
  - 62K+ new cases of carcinoma insitu
  - ~40K deaths
  - 2.8+ million survivors
- Colorectal Cancer
  - 136K+ new cases
  - 50K+ deaths
  - 1+ million survivors
Cancer Health Disparities

- **Breast Cancer**
  - Deaths decreasing fastest among white women
  - Black women are more likely to die of breast cancer than other women
    - Cancers grow faster and harder to treat
    - Fewer social and economic resources
    - Less likely to get prompt f/u care with abnormal mammogram
    - Less likely to get high-quality treatment

- **Colorectal Cancer**
  - Over the past 20+ years, death rates have decreased
  - Disparities remain among medically underserved populations

American Cancer Society, 2015
Mission Statement

- Reduce the risk, incidence, and death from cancer
- Enhance the quality of life for cancer survivors
- Lessen the burden of cancer through the development of increased partnerships with communities across the state
- Emphasize the integration of education, epidemiology, screening, life-style choices, chemoprevention and genetics with interventions

Winthrop P. Rockefeller Cancer Institute
University of Arkansas for Medical Sciences
Organization

Epidemiology

Risk Assessment
Environment

Prevention

Lifestyle
Behavioral
Chemoprevention

Training and Mentoring

Gene Regulation
Functional Genomics

Genomics

Outreach

Screening
Lifestyle
Policy/Legislation

Cancer Control and Population Sciences

Improved Cancer Outcomes

Winthrop P. Rockefeller Cancer Institute
University of Arkansas for Medical Sciences
CANCER CONTROL APPROACH

* Cancer Health Disparities
* Applied Research
* Behavioral Research
* Community Engagement and CBPR
* Training & Mentoring
* Partnership Development
* Evidence-based Policy Dissemination

Winthrop P. Rockefeller Cancer Institute
University of Arkansas for Medical Sciences
Funding for Cancer Control Programs

- Federal Funding: $14+ M
  - PI: Ronda Henry-Tillman, MD
    - A-SPAN U01 CA868081
    - AR-CCN U01 CA114607
    - CCESP R24 MD002805

- State Funding: $8+ M
  - PI: Ronda Henry-Tillman, MD
    - Mobile Mammography Program
    - CRC Demonstration
    - CRC Screening Program
Arkansas Cancer Plan
Implementation Grants

* The 2009 Arkansas General Assembly authorized the Arkansas Department of Health to spend $1.8 million to implement the Arkansas Cancer Plan

* For more information visit Arkansas Cancer Coalition
  www.arcancercoalition.org
Cancer Health Disparities

- Reduce Cancer Health Disparities
  - Increase public and community awareness
  - Disseminate current and accurate Information on prevention, early detection and treatment
  - Collaborate with rural healthcare programs to reduce cancer health disparities
  - Increase cancer health disparities “documentation” and interventions on a systematic basis
Problem: BreastCare

- Lack of access: 26 counties without FDA-approved facilities
- Lack of coverage: uninsured and underinsured
- Lack of knowledge: navigating the health care system
- BreastCare funding: dollars to support current infrastructure for breast and cervical cancer program
Solution: BreastCare

- **Mobile Mammography Program (Since Feb 2010)**
  - 397 trips in 38 counties
  - 8,729 women screened

- **Patient Navigation Program**
  - Navigates participants through cancer continuum of care
Problem: Colorectal Cancer

- 2nd leading cause of cancer death in AR
- Lack of access: providers and facilities not equally distributed
- Lack of coverage: uninsured and underinsured
- Lack of knowledge: navigating the health care system
- Low screening rates in underserved areas
Solution: Colorectal Cancer

- CRC Demonstration (ACT 2236)
  - Develop PH Screening Program
  - Educate providers & patients
  - Reimbursement for screening uninsured & underinsured patients
- CRC Screening Program
  - All 5 PH Regions
- Patient Navigation Program
  - Navigates participants through cancer continuum of care
Problem: Workforce

- Shortage of health care workers
- Educational perceptions
  - Urban vs Rural Realities
- Rural demographics and health status
  - Greater burden of disease
- Rural Practice Characteristics
  - Longer hours less flexibility
- Economics
  - Competition (salaries, benefits)
Solution: Workforce

* Training and Mentoring
* Faculty Diversity and Community Outreach Program/Minority Faculty Diversity Caucus
* Arkansas IDeA Networks of Biomedical Research Excellence (INBRE)
* Summer Science Discovery Program
Problem: Silo Approach

- Problem bigger than one group
- Silos: isolated outcomes
- Funding limitations
  - Funders
    => Collaborations
Solution: Silo Approach

Partnerships
Documentation of Cancer Health Disparities
Community Based Participatory Research

- Empowering Communities for Life (CCESP)
  - NIH National Center for Minority Health and Health Disparities (R24 MD002805)
  - St. Francis and Mississippi Counties (AR Delta)
- NCI CRCHD Community Health Education Biobanking/Biospecimen (U01 CA114607)
  - Region 2 B/GMaP (PI: Samuel Adunyah, PhD)
  - Meharry, Wake Forest, UAMS, NC State
- Understanding Esophageal Cancer in African American Patients
  - University of Maryland
Conclusions

- Identify problems within your community
- Identify solutions to the problems
- Identify training and mentoring opportunities related to issue
- Develop partnerships
- Determine how to document health disparities for policy change
- Provide evidence that support stronger policies that address disparities
Acknowledgements

* Health Initiatives and Disparities Research
  * Ronda S. Henry-Tillman, MD, FACS
  * Karen Crowell, MD
  * Jonathan Laryea, MD
  * Cancer Control Staff
For More Information

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