PHSSR Research-In-Progress Webinar
Wednesday, June 18, 2014

Health Care Reform:
Colorectal Cancer Screening Expansion and Health Disparities

Conference Phone: 877-394-0659
Conference Code: 775 483 8037#

Please remember to mute your computer speakers during the presentation.
Agenda

Welcome: Anna Hoover, PhD, National Coordinating Center for PHSSR

Presenter: Michael Preston, PhD, MPH, U. of Arkansas for Medical Sciences

Commentary:
  Glen Mays, PhD, MPH, Professor, U. of Kentucky College of Public Health
  Ronda Henry-Tillman, MD, Winthrop P. Rockefeller Cancer Institute, U. of Arkansas for Medical Sciences

Questions and Discussion
Michael Preston, PhD, MPH
U. of Arkansas for Medical Sciences
Health Care Reform: Colorectal Cancer Screening Expansion and Health Disparities

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No Financial Conflicts of Interest to Disclose
Presentation Outline

* Background and Significance
* Theoretical Framework
* Objective
* Methods
* Results
* Conclusions
* Implications
Colorectal Cancer

* 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
* 142K+ new cases
* 50K+ deaths
* Over the past 20+ years, death rates have decreased
* Disparities remain among medically underserved populations
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%
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)
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
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
Policy Adoption Over Time

- **Mandate**
- **Non-Mandate**
- **Reform**

Number of States

Years: 1997 to 2012
Law of Demand

As out-of-pocket costs decrease...

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

* To estimate the effects of health insurance coverage expansions on overall CRC screening rates and CRC screening disparities.
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 ACA on CRC screening
Data

- Behavioral Risk Factor Surveillance System (BRFSS)
  - Study population is a sample of U.S. adults age 50 or greater
- 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
* **Model Specification:**

* Difference-in-differences (DD)

\[
= (\text{CRCscreening}_{\text{reform, post}} - \text{CRCscreening}_{\text{reform, pre}}) - \\
(\text{CRCscreening}_{\text{non-reform, post}} - \text{CRCscreening}_{\text{non-reform, pre}})
\]

* \(Y_{c,s,t} = \alpha + \beta_0 + \beta_1 \cdot \text{REFORM}_t + \beta_2 \cdot \text{POST}_s + \\
\beta_3 \cdot \text{REFORM}_t \cdot \text{POST}_s + X\beta_4 + \delta_s + \varepsilon_{s,t}\)
Analysis

Model Specification:

- Difference-in-difference-in-differences (DDD)

\[ Y_{c,s,t} = \alpha + \beta_0 + \beta_1 \times \text{REFORM}_t + \beta_2 \times \text{POST}_s + \beta_3 \times \text{RACE}_{i,y} + \beta_4 \times \text{REFORM}_t \times \text{POST}_s + \beta_5 \times \text{REFORM}_t \times \text{RACE}_{i,y} + \beta_6 \times \text{POST}_s \times \text{RACE}_{i,y} + \beta_7 \times \text{REFORM}_t \times \text{POST}_s \times \text{RACE}_{i,y} + \beta_8 \times X + \delta_s + \epsilon_{s,t} \]

\[ Y_{c,s,t} = \alpha + \beta_0 + \beta_1 \times \text{REFORM}_t + \beta_2 \times \text{POST}_s + \beta_3 \times \text{UNINS}_{i,y} + \beta_4 \times \text{REFORM}_t \times \text{POST}_s + \beta_5 \times \text{REFORM}_t \times \text{UNINS}_{i,y} + \beta_6 \times \text{POST}_s \times \text{UNINS}_{i,y} + \beta_7 \times \text{REFORM}_t \times \text{POST}_s \times \text{UNINS}_{i,y} + \beta_8 \times X \]

\[ + \delta_s + \epsilon_{s,t} \]
Colorectal Screening Over Time

- Weighted Means (%)

- FOBT
- Endoscopy

Years: 1997 to 2012
Colorectal Screening (Up-to-date) Over Time

Overall Compliance

Means (%)
Table 1. Descriptive statistics of the study population receiving any colorectal screening, individual characteristics only

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Received colorectal cancer screening (%)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Overall colorectal screening test</td>
<td>61.55</td>
<td>38.45</td>
</tr>
<tr>
<td>(n=1,571,267)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endoscopic test (n=930,547)</td>
<td>95.61</td>
<td>4.39</td>
</tr>
<tr>
<td>FOBT test (n=660,167)</td>
<td>35.92</td>
<td>64.08</td>
</tr>
<tr>
<td>Mean age +/- s.d. (in years)</td>
<td>66.2 +/-10</td>
<td>63.8 +/-11</td>
</tr>
<tr>
<td>Mandate state coverage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>61.78</td>
<td>38.22</td>
</tr>
<tr>
<td>No</td>
<td>61.13</td>
<td>38.87</td>
</tr>
<tr>
<td>Health care reform</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post</td>
<td>64.24</td>
<td>35.76</td>
</tr>
<tr>
<td>Pre</td>
<td>58.79</td>
<td>41.21</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 Care Reform 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>
### Table 4. Marginal Effects of Health Care Reform 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>
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
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.
* 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
For More Information

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Commentary

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**Ronda Henry-Tillman**, MD, Winthrop P. Rockefeller Cancer Institute, U. of Arkansas for Medical Sciences

Questions and Discussion
Future Webinars – PHSSR Research in Progress

All webinars from 12-1 pm, ET

Aug 13 – Quantifying the Value of Public Health Intervention
Theresa Green, PhD, MBA, MS, Center for Community Health, Public Health Sciences, University of Rochester Medical Center
Commentary: Michael Stoto, PhD, Health Systems Administration and Population Health, Georgetown University

Aug 27 – Priorities in rural health: Cost-effectiveness analysis of fungal meningitis outbreak in New River Health District
Kaja Abbas, PhD, MPH, Dep’t. of Population Health Sciences, Virginia Polytechnic Institute and State University
Commentary: Kerry Redican, PhD, MPH, Virginia Tech Carilion School of Medicine and Research Institute and Molly O'Dell, MD, MFA, Director, New River Health District, Virginia Department of Health
Future Webinars – PHSSR Research in Progress

All webinars from 12-1 pm, ET

Sept 10 – Improving HIV/STD Partner Services Performance in New York State: A Performance Management Approach
Britney Johnson, MPH, AIDS Institute/Office of Public Health Practice, New York State Department of Health
Commentary: Sylvia Pirani, MPH, Office of Local Health Services, NYS Dept. of Health
James Tesoriero, PhD, HIV Prevention Director, NYS Dept. of Health

Sept 24 - State Health Department Foodborne Disease Outbreak Reporting
Fanta Purayidathil, PhD, Health Economics and Outcomes Research, Boehringer Ingleheim
Commentary: Jennifer Ibrahim, PhD, MPH, Dept. of Public Health, Temple University

Oct 8 – Variations in the costs of delivering public health services: An analysis of local health departments in Florida
Simone Singh, PhD, University of Michigan School of Public Health
Commentary: Patrick Bernet, PhD, Florida Atlantic University
### Future Webinars – PHSSR Research in Progress

*All webinars from 12-1 pm, ET*

<table>
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<tr>
<th>Date</th>
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<tr>
<td>Oct 22</td>
<td>Relationship Between Public Health Workforce Competency, Provision of Services, and Health Outcomes in Tennessee</td>
<td>Robin Pendley, DrPH, Health Services Management and Policy, College of Public Health, East Tennessee State University</td>
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<td>Nov 12</td>
<td>Trends and Characteristics of the State and Local Public Health Workforce</td>
<td>Angela J. Beck, PhD, MPH, Associate Director, Center of Excellence in Public Health Workforce Studies, University of Michigan</td>
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| Dec 10 | Integrating Public Health and Healthcare: Lessons from One Urban County | Erik L. Carlton, DrPH, Health Systems Management and Policy, School of Public Health, University of Memphis  
*Commentary: Paul Erwin, MD, DrPH, Dept. of Public Health, University of Tennessee* |
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