Changes in the Proportion of Early Stage Colon Cancer Among Medicaid Expansion and Non-Expansion States

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Disclosures

None
Introduction

Patients with inadequate insurance coverage experience disparities in cancer care.

- Lower rates of screening
- Later stage at diagnosis
- Lower rates of treatment
- Lower rates of trial enrollment
- Decreased survival

This is especially pronounced in cancers where preventative screening methods are available.
Figure 2. Use of Colonoscopy and Flexible Sigmoidoscopy Among Medicare Fee-for-Service Beneficiaries

PERIOD 1  PERIOD 2  PERIOD 3

Curves represent the fitted number of procedures per 100,000 beneficiaries from a piecewise linear regression model.

Gross et al. JAMA 2006


Siegel et al. CA Cancer J Clin 2020
Affordable Care Act and Medicaid Expansion

• Health insurance marketplaces
• Dependent until age 26
• Private and Medicare must cover USPSTF grade A/B preventive care services without cost-sharing
• Medicaid expansion of eligibility – optional per state

OLD
You can qualify for Medicaid based on income, household size, disability, family status, and other factors. Eligibility rules differ between states.

NEW
In states that have expanded Medicaid coverage: You can qualify based on your income alone.
No family (childless)
Not an American citizen
Not Caucasian
Household Income < $50,000
Part-time or not employed

Changes in Coverage

<table>
<thead>
<tr>
<th>Age Category</th>
<th>Percent Uninsured By Age in 2009</th>
<th>Percent Uninsured By Age in 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-24</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>25-34</td>
<td>25%</td>
<td>15%</td>
</tr>
<tr>
<td>35-44</td>
<td>20%</td>
<td>10%</td>
</tr>
<tr>
<td>45-64</td>
<td>15%</td>
<td>5%</td>
</tr>
<tr>
<td>Over 65</td>
<td>10%</td>
<td>0%</td>
</tr>
</tbody>
</table>

United States Census Bureau
Primary Aim

To determine the association of Medicaid expansion with colon cancer *stage at diagnosis*.
Study Population

Data Source: 2006-2016 National Cancer Database Colon Cancer

Primary Outcomes:
1. Proportion of early stage at diagnosis per year (stage I-II)
2. Change in the proportion before and after 2014 expansion

Analysis Plan:
Propensity score weighting with multivariable logistic regression
Cohort Selection

908503 Patients >18 years old with colon as disease site obtained from the 2006-2016 National Cancer Database PUF

425408 Excluded

165465 Not colon adenocarcinoma
193747 Colon cancer not listed as primary in cancer sequence
24804 Benign pathology
41392 Analytic stage missing

483095 Received primary diagnosis of colon malignancy, analytic stage I-IV

457633 Excluded

281084 Age > 65
163425 Insurance not listed as uninsured or Medicaid
13124 Early/Late Expansion State or missing Expansion State Group data (Age < 40)

25462 Patients included in analysis
Demographics

Median age 55
<table>
<thead>
<tr>
<th>Covariate</th>
<th>Comparison</th>
<th>Odds Ratio</th>
<th>95% Wald Confidence Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age at Diagnosis</strong></td>
<td>Per year increase</td>
<td>1.006</td>
<td>1.002 to 1.010</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td>Non-Hispanic White</td>
<td>Ref</td>
<td>-- to --</td>
</tr>
<tr>
<td></td>
<td>Non-Hispanic Black</td>
<td>0.691</td>
<td>0.649 to 0.735</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>2.288</td>
<td>2.041 to 2.564</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td>Male</td>
<td>Ref</td>
<td>-- to --</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1.001</td>
<td>0.949 to 1.056</td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td>Not insured</td>
<td>Ref</td>
<td>-- to --</td>
</tr>
<tr>
<td></td>
<td>Medicaid</td>
<td>3.580</td>
<td>3.387 to 3.784</td>
</tr>
<tr>
<td><strong>Median Household Income</strong></td>
<td>&lt;$38,000</td>
<td>Ref</td>
<td>-- to --</td>
</tr>
<tr>
<td></td>
<td>$38,000-$47,999</td>
<td>1.162</td>
<td>1.079 to 1.252</td>
</tr>
<tr>
<td></td>
<td>$48,000-$62,999</td>
<td>1.477</td>
<td>1.353 to 1.611</td>
</tr>
<tr>
<td></td>
<td>$68,000+</td>
<td>2.157</td>
<td>1.914 to 2.385</td>
</tr>
<tr>
<td></td>
<td>NA</td>
<td>3.818</td>
<td>0.849 to 17.169</td>
</tr>
<tr>
<td><strong>Percent did not graduate from HS</strong></td>
<td>21% or more</td>
<td>Ref</td>
<td>-- to --</td>
</tr>
<tr>
<td></td>
<td>13% to 20.9%</td>
<td>1.093</td>
<td>1.017 to 1.174</td>
</tr>
<tr>
<td></td>
<td>7% to 12.9%</td>
<td>1.144</td>
<td>1.048 to 1.249</td>
</tr>
<tr>
<td></td>
<td>&lt;7%</td>
<td>1.239</td>
<td>1.098 to 1.398</td>
</tr>
<tr>
<td></td>
<td>Not Available</td>
<td>0.637</td>
<td>0.096 to 4.206</td>
</tr>
<tr>
<td><strong>Rurality</strong></td>
<td>Metro</td>
<td>Ref</td>
<td>-- to --</td>
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<tr>
<td></td>
<td>Urban</td>
<td>0.898</td>
<td>0.831 to 0.972</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>0.776</td>
<td>0.644 to 0.936</td>
</tr>
<tr>
<td></td>
<td>NA</td>
<td>1.061</td>
<td>0.870 to 1.294</td>
</tr>
</tbody>
</table>
Unadjusted Proportion of Early Stage Diagnosis Over Time

Proportion Early Stage Colon Cancer

Year


Non-Medicaid Expansion

Medicaid Expansion
Limitations

• Data only from Commission on Cancer accredited facilities
• Disruption of insurance coverage unknown
• Medicaid Expansion unknown for patients < 40
In Summary

Patients residing in non-Expansion states were more likely to be disadvantaged.

In the post-Expansion period, the proportion of early stage diagnosis increased over time for patients in expansion states.

In the same period, the proportion of early stage diagnosis decreased over time for patients in non-expansion states.
Conclusions

Patients with no insurance or Medicaid residing in Medicaid Expansion States experienced increasing proportion of earlier stage colon cancer at diagnosis.

Improved insurance coverage may have facilitated screening and earlier diagnoses.

Future studies should investigate associations of the ACA with delivery of therapy and survival outcomes.