Effect of state Medicaid expansion status on insurance coverage and stage at diagnosis in head and neck cancer patients

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PURPOSE / OBJECTIVES

- Early evidence suggests that Medicaid expansion mandated by the Affordable Care Act (ACA) has had a positive impact on the following:
  - Access to care for nonelderly cancer patients\(^2\,\,3\)
  - Stage at diagnosis for nonelderly cancer patients\(^2\,\,3\)
  - Access to care for head and neck cancer patients\(^5\)
- Medicaid expansion effects on stage at diagnosis have not been studied in HNC and impacts on socioeconomic disparities are unknown.
- HNC is among the most expensive to treat,\(^6\) so improvements in access to care may have a large economic impact as well as impact on prognosis.
- Our objective was to evaluate Medicaid expansion-associated changes in insurance and stage at diagnosis overall and by subgroups.

MATERIALS & METHODS

- We utilized the Surveillance, Epidemiology, and End Results 18 (SEER) database to identify HNC patients 18-64 years diagnosed with a first primary malignancy in 2011-2015
- Cases diagnosed 3 months before and 3 months after the date of expansion were excluded to allow for a wash-out / phase-in period\(^4\)
- We compared changes in insurance rates (Medicaid & uninsured) and early (0-II) stage in cases from states that expanded Medicaid (EXP) by 2014 to states that did not (NEXP)
- We used difference-in-differences analyses\(^2\) applied to linear probability models with robust standard errors to quantify the expansion-associated effects
- Models were adjusted for covariates (age, race, sex, marital status, county-level income and education, metropolitan residence, and cancer site).
- Additional analyses were performed excluding states that expanded early (2010-2011) as earlier expansion may nullify results.

RESULTS

**Table 1: Association Between Expansion and Insurance Status**

<table>
<thead>
<tr>
<th>Population</th>
<th>Expansion Effect (95% CI), percentage points (PP)</th>
<th>Effect Differences: p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicaid</td>
<td>3.36 (1.32, 5.41)</td>
<td>0.001</td>
</tr>
<tr>
<td>Q1 income</td>
<td>5.06 (1.25, 8.87)</td>
<td>0.001</td>
</tr>
<tr>
<td>Q2 income</td>
<td>11.05 (6.52, 15.58)</td>
<td>0.001</td>
</tr>
<tr>
<td>Q3 income</td>
<td>-1.69 (-5.22, 1.84)</td>
<td>0.36</td>
</tr>
<tr>
<td>Q4 income</td>
<td>1.3 (4.55, 7.16)</td>
<td>0.36</td>
</tr>
<tr>
<td>Overall</td>
<td>-1.67 (-3.26, -0.09)</td>
<td>0.039</td>
</tr>
</tbody>
</table>

**Table 2: Association Between Expansion & Stage at Diagnosis**

<table>
<thead>
<tr>
<th>Population</th>
<th>Expansion Effect (95% CI), PP</th>
<th>Effect Differences: p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>2.6 (0.48, 5.67)</td>
<td>0.098</td>
</tr>
<tr>
<td>18-34y</td>
<td>17.22 (1.34, 33.11)</td>
<td>0.038</td>
</tr>
<tr>
<td>55-64y</td>
<td>1.01 (-5.46, 7.49)</td>
<td>0.949</td>
</tr>
<tr>
<td>65-74y</td>
<td>1.93 (-1.17, 5.03)</td>
<td>0.36</td>
</tr>
<tr>
<td>Male</td>
<td>2.53 (-0.29, 3.14)</td>
<td>0.027</td>
</tr>
<tr>
<td>Female</td>
<td>2.74 (2, 13.08)</td>
<td>0.047</td>
</tr>
<tr>
<td>Unmarried</td>
<td>3.83 (0.3, 7.35)</td>
<td>0.59</td>
</tr>
<tr>
<td>Married</td>
<td>2.27 (0.13, 4.49)</td>
<td>0.67</td>
</tr>
</tbody>
</table>

Note the uninsured overall analysis did not meet parallel trends assumption. Abbreviations: Q1, first / lowest quartile of income; Q2, second quartile; Q3, third quartile; Q4, fourth / highest quartile of income.

**Figure 1:** Insurance Changes Overall (a, Medicaid; b, Uninsured) and by County Income (c, Medicaid; d, Uninsured).

**Figure 2:** Early Stage at Diagnosis Changes by (a) age, (b) sex, (c) marital status, and (d) race.

- A total of 26,330 cases were identified
- **Insurance Status**
  - Increase in Medicaid insurance and decrease in uninsured in expansion relative to non-expansion states, especially for residents of low-income counties (Table 1, Figure 1).
- **Stage at Diagnosis**
  - Increases in early stage among young adults, females, unmarried patients (Table 2, Figure 2a-c)
  - Increased early stage diagnoses for cancer of the lip (13.5 PP 95% CI = 2.67, 24.30, p=0.015)
  - Some evidence for greater expansion-associated increases in early stage diagnoses for non-Hispanic blacks (8.53 PP 95% CI = 0.03 to 17.1, p=0.051) and other races (20.4 PP 95% CI = 1.29 to 39.4, p=0.036) relative to white HNC patients (p=0.025) when excluding early Medicaid expanding states (Figure 2d).

SUMMARY / CONCLUSIONS

- Medicaid expansion is associated with increases in Medicaid and decreases in the rates of uninsured, particularly among low income counties.
- Medicaid expansion is associated with increases in early stage diagnoses for some subgroups.
- Improved access to care particularly relevant at a time when there is debate in the United States about healthcare financing, Medicaid, and the Affordable Care Act.

REFERENCES / ACKNOWLEDGEMENTS


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