A population-based estimate of the extent of colorectal cancer screening in men with HIV

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Conflict of Interest Disclosure

- None
Background

- Increased rates of non-AIDS defining malignancies, including colorectal cancer, described in persons with HIV
- In setting of HIV, colorectal cancer:
  - Occurs at a younger age
  - Diagnosed at a later stage
  - Associated with poor outcomes
- As cohort ages, need for age-appropriate cancer screening will increase
- No population-based data examining utilization of colorectal investigations in persons with HIV
Objectives

- Examine association of HIV status with receipt of colorectal cancer investigations in men aged 50 to 65 years in Ontario
  - Fecal occult blood testing, barium enema radiography, sigmoidoscopy, colonoscopy
- Identify factors associated with fecal occult blood testing and colonoscopy in men with HIV between the ages of 50 to 65
Methods – Data sources

- Used administrative healthcare databases at Institute for Clinical Evaluative Sciences
  - Registered Persons Database – to identify cohort
  - OHIP – identify physician claims for colorectal investigations
  - CIHI DAD – diagnostic/procedural information on all patients discharged from hospitals and same day surgery units
  - Ontario Cancer Registry – to identify men with history of CRC
Methods – Study population

- RPDB to identify all men in Ontario aged 50 to 65 years alive and eligible for OHIP as of April 1, 2007
- From cohort of eligible men, identified men with HIV using a previously validated case-finding algorithm
- Excluded men, who in previous 5 years:
  - Diagnosis of inflammatory bowel disease or colorectal cancer
  - Receipt of any colorectal investigation
Methods – Outcomes

- Receipt of colorectal investigation:
  - Received FOBT within 2 years of cohort entry, or any one of colonoscopy, barium enema radiography or flexible/rigid sigmoidoscopy within 5 years of cohort entry
  - Followed each person for up to 5 years following cohort entry until receipt of a colorectal investigation, death, or March 31, 2012
Methods – Analysis

● Main: multivariable Poisson regression models to examine receipt of each investigation with HIV status
  ● Adjusted for age, neighborhood income quintile, urban vs. rural, no. of physician visits, visit with a gastroenterologist, comorbidity burden

● Secondary: Determined predictors for receipt of colonoscopy and FOBT in men with HIV only
Results

- 725,801 men eligible for analysis
  - 1,432 (0.19%) diagnosed with HIV
  - 308,270 (42.5%) received any colorectal investigation during follow-up
# Results – Baseline Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>HIV n = 1,432</th>
<th>Non-HIV N = 742,369</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (SD)</td>
<td>54.9 (4.3)</td>
<td>56.2 (4.5)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Rural residence</td>
<td>71 (5.0%)</td>
<td>110,943 (14.9%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Gastroenterologist</td>
<td>82 (5.7%)</td>
<td>14,644 (2.0%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mean (SD) no. of MD visits</td>
<td>21.9</td>
<td>9.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Number of ADGs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zero</td>
<td>38 (2.7%)</td>
<td>116,677(15.7%)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>1 to 3</td>
<td>370 (25.8%)</td>
<td>271,294 (36.5%)</td>
<td></td>
</tr>
<tr>
<td>4 to 7</td>
<td>624 (43.6%)</td>
<td>265,225 (35.7%)</td>
<td></td>
</tr>
<tr>
<td>8 to 10</td>
<td>249 (17.4%)</td>
<td>66,737 (9.0%)</td>
<td></td>
</tr>
<tr>
<td>&gt;11</td>
<td>151 (10.5%)</td>
<td>22,436 (3.0%)</td>
<td></td>
</tr>
</tbody>
</table>
## Results – Baseline Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>HIV ( n = 1,432 )</th>
<th>Non-HIV ( N = 742,369 )</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income Quintile</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 (lowest)</td>
<td>452 (31.6%)</td>
<td>144,953 (19.5%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>2</td>
<td>304 (21.2%)</td>
<td>148,317 (20.0%)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>229 (16.0%)</td>
<td>145,079 (19.5%)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>189 (13.2%)</td>
<td>147,895 (19.9%)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>233 (16.3%)</td>
<td>148,757 (20.0%)</td>
<td></td>
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</tbody>
</table>
### Adjusted rate ratios for receipt of colorectal cancer investigations

<table>
<thead>
<tr>
<th>Procedure</th>
<th>n/N (HIV)</th>
<th>n/N (non-HIV)</th>
<th>Adjusted RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOBT</td>
<td>156/1,432</td>
<td>106,735/742,369</td>
<td>0.74 (0.63 to 0.87)</td>
</tr>
<tr>
<td>Flexible Sigmoidoscopy</td>
<td>47/1,432</td>
<td>12,518/742,369</td>
<td>1.72 (1.28 to 2.30)</td>
</tr>
<tr>
<td>Rigid Sigmoidoscopy</td>
<td>51/1,432</td>
<td>7,311/742,369</td>
<td>2.98 (2.26 to 3.93)</td>
</tr>
<tr>
<td>Barium enema</td>
<td>14/1,432</td>
<td>9,272/742,369</td>
<td>0.66 (0.39 to 1.12)</td>
</tr>
<tr>
<td>Colonoscopy</td>
<td>435/1,432</td>
<td>171,731/742,369</td>
<td>1.24 (1.13 to 1.37)</td>
</tr>
</tbody>
</table>
Predictors of colonoscopy and FOBT in men with HIV

- 156 (10.9%) and 435 (30.4%) of men with HIV received FOBT or colonoscopy

Colonoscopy
- Lower comorbidity burden: aRR 1.27 (95% CI, 1.01 to 1.61)
- High income vs. low income: aRR 1.13 (95% CI: 0.86 to 1.48)
- Gastroenterologist: aRR 1.25 (95% CI: 0.85 to 1.84)

FOBT
- High income vs. low income: aRR 0.72 (95% CI: 0.42 to 1.22)
Limitations

- Not generalizable to women, men < 50 years of age
- Could not distinguish between screening vs. diagnostic
  - Single center studies of find that these tests more likely to be for diagnostic vs. screening in HIV+ patients
  - Our results likely ‘best case’ scenario for screening that is likely an overestimate
Discussion & Conclusions

- CRC screening underutilized in men with HIV
  - Missed opportunity for early detection and management of colonic neoplasms
- Disparities in colonoscopy use
- Further research: reasons, incidence of CRC, appropriateness of existing guidelines for this population
Acknowledgments

- Co-investigators
  - Rick Glazier, Nathaniel Jembere, Alexander Kopp, Refik Saskin

- Funding
  - Institute for Clinical Evaluative Sciences
  - Ontario HIV Treatment Network (Tony Antoniou)