A Once Only Colonoscopy?
Surveillance does not add much.
TRUE

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Colonoscopy is effective but.....

• Limited resource

• Costly

• Harms (perforation, GI bleeding, etc.)

• Understanding the **NEED & TIMING** of re-screening is critical for the success and cost-effectiveness of a CRC screening program
Scenario 1:
Normal baseline colonoscopy
## CRC risk is reduced for up to 20 years

<table>
<thead>
<tr>
<th>Study</th>
<th>Year after exam</th>
<th>Incidence rate (per 100,000)</th>
<th>Relative Risk</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singh H et al. 2006</td>
<td>6-10 years</td>
<td>36.5</td>
<td>0.20</td>
<td>General population (1984-2003)</td>
</tr>
<tr>
<td>Samadder NJ et al. 2016</td>
<td>7-10 years</td>
<td>62.4</td>
<td>0.60</td>
<td>General population (2001-2011)</td>
</tr>
<tr>
<td>Nishihara R et al. 2013</td>
<td>10-15 years</td>
<td>73.2</td>
<td>0.26</td>
<td>No lower endoscopy</td>
</tr>
<tr>
<td>Brenner H et al. 2006</td>
<td>10-19 years</td>
<td>___</td>
<td>0.33</td>
<td>No colonoscopy (2003-2004)</td>
</tr>
</tbody>
</table>

CRC risk is reduced for >12 years

>12 years: 87.8 per 100,000; overall: 44 per 100,000
CRC death is reduced for >12 years

>12 years: 38.1 per 100,000; overall: 13 per 100,000
Atkin et al. Lancet 2017

CRC incidence rate FS: 120 per 100,000
CRC incidence rate control: 184 per 100,000

CRC mortality rate FS: 33 per 100,000
CRC mortality rate control: 56 per 100,000
Scenario 2: Low-risk adenoma (1-2 small tubular adenomas)
Surveillance for Low-risk Adenomas

- USMSTF: surveillance at 5-10 years
- ESGE: re-screen at 10 years
- “Polyp surveillance guidelines are based largely on studies that use high-risk adenomas as a surrogate for CRC, and this surrogate is not perfect.” David Lieberman MD

Long-Term Risk of Colorectal Cancer after Excision of Rectosigmoid Adenomas

Wendy S. Atkin, Ph.D., Basil C. Morson, and Jack Cuzick, Ph.D.

Table 5. Relative Risk of Colon Cancer According to Risk Group and Number of Adenomas (Single vs. Multiple). 1957-1980

<table>
<thead>
<tr>
<th>Risk Group/No. of Tumors *</th>
<th>No. of Patients (%)</th>
<th>Person-Yr at Risk†</th>
<th>Observed Cases</th>
<th>SIR (95% CI)‡</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low risk</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>712 (44)</td>
<td>8968</td>
<td>4</td>
<td>0.6 (0.1–1.4)</td>
</tr>
<tr>
<td>Multiple</td>
<td>64 (4)</td>
<td>755</td>
<td>0</td>
<td>0.0 (0.0–6.1)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>776 (48)</td>
<td>9723</td>
<td>4</td>
<td>0.5 (0.1–1.3)</td>
</tr>
<tr>
<td><strong>High risk</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>683 (42)</td>
<td>7922</td>
<td>20</td>
<td>2.9 (1.8–4.5)</td>
</tr>
<tr>
<td>Multiple</td>
<td>159 (10)</td>
<td>1581</td>
<td>11</td>
<td>6.6 (3.3–11.8)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>842 (52)</td>
<td>9503</td>
<td>31</td>
<td>3.6 (2.4–5.0)</td>
</tr>
</tbody>
</table>
CRC mortality after LRA removal

Loberg et al. NEJM 2014

SMR: 0.75
PLCO post-hoc analysis

RR for CRC: 1.2 (0.8-1.7)

RR for CRC death: 1.2 (0.5-2.8)

NAA: 1.4%
No adenoma: 1.2%

Cumulative Colorectal Cancer Incidence, %

No. at risk
Advanced adenoma 2882 2836 2756 2656 2480 2187 1812 1294
Nonadvanced adenoma 5068 4993 4879 4696 4393 3753 2949 2082
No adenoma 7985 7898 7730 7445 6955 5734 4294 2964

Click et al. JAMA 2018
CRC risk after low-risk adenoma removal

HRA: 2.03%
LRA: 0.57%
No adenoma: 0.51%

Lee et al. DDW 2019
Risk of CRC and related deaths – LRA group

Lee et al. DDW 2019
Could surveillance account for the similar CRC incidence in the low-risk adenoma and no-adenoma groups?
Subsequent Colonoscopy by Year of Follow-up

<table>
<thead>
<tr>
<th></th>
<th>Year 3</th>
<th>Year 5</th>
<th>Year 7</th>
<th>Year 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>No adenoma on baseline exam</td>
<td>1.4%</td>
<td>5.7%</td>
<td>11.8%</td>
<td>19.8%</td>
</tr>
<tr>
<td>Low-risk adenoma on baseline exam</td>
<td>1.9%</td>
<td>14.5%</td>
<td>49.6%</td>
<td>58.8%</td>
</tr>
<tr>
<td>High-risk adenoma on baseline exam</td>
<td>8.3%</td>
<td>42.7%</td>
<td>67.5%</td>
<td>72.7%</td>
</tr>
</tbody>
</table>

Lee et al. DDW 2019
## Advanced Adenoma by Year of Follow-up

<table>
<thead>
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<th>Year 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>No adenoma on baseline exam</td>
<td>0.3%</td>
<td>1.1%</td>
<td>2.3%</td>
<td>3.9%</td>
</tr>
<tr>
<td>Low-risk adenoma on baseline exam</td>
<td>0.3%</td>
<td>1.6%</td>
<td>5.0%</td>
<td>6.4%</td>
</tr>
<tr>
<td>High-risk adenoma on baseline exam</td>
<td>1.4%</td>
<td>7.5%</td>
<td>12.3%</td>
<td>13.3%</td>
</tr>
</tbody>
</table>

Lee et al. DDW 2019
Conclusion

• After normal colonoscopy
  – Risk of CRC and related deaths remain low for >12 years (15-20? years after a high-quality colonoscopy)
  – One-time colonoscopy if negative may be acceptable

• After low-risk adenoma removal
  – LRAs are NOT associated with an increased risk of CRC and related deaths compared to normal findings
  – Re-screening at 10 years is acceptable
Thank you