Using FIT for polypectomy surveillance

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Faecal Immunochemical tests (FIT) versus colonoscopy for surveillance after screening and polypectomy: a diagnostic accuracy and cost-effectiveness study

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Background

• 3- yearly colonoscopy surveillance is recommended for patients at intermediate risk for CRC.

• Intermediate risk defined as:
  – 3- 4 small adenomas or
  – 1 adenoma $\geq$ 10 mm
Background

• Colonoscopy carries risk of complication, time-consuming, discomfort and demand on colonoscopy capacity and costs.

• FIT is non-invasive, performed at home, automated analysis. In case of quantitative FIT: positivity rates can be modified.

• FIT established for screening, less is known for surveillance.
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• Aim to determine if annual FIT is:
  – Feasible and safe
  – Acceptable
  – Cost- effectiveness

• Intermediate risk patients under surveillance
Study design and participants

- 60-72 years
- at intermediate risk of CRC following colonoscopy
- colonoscopy performed < 1 year previously in BCSP for a positive gFOBT
- scheduled to undergo 3 yearly colonoscopy surveillance
Study design and participants

• Quantitative FIT (OC-sensor) send to participants and returned by prepaid envelope

• Positivity threshold 40 μg/g

• FIT at 1, 2 and 3 years post-polypectomy
Study design and participants

• Participants positive FIT at 1 or 2 years → early colonoscopy

• All participants offered a 3 year FIT → routine colonoscopy
Results

- 8008 invitees
  - > 65 years 50.7%; 34.7 % female

- 5946 (74.3%) participants

- 97% returned FIT at 2 and 3 years
Results

• Annual FIT positivity rate: 5.8% to 4.1% over 1-3 years

• Colonic examinations were performed in 5199/5946 (87%)

• Yield:
  – CRC 26 (0.5%)
  – AAs 443 (8.5%)
Results

• Location CRC: n=23/26
  – Proximal n= 12
  – Distal n= 11

• Stage 23/26 CRC:
  – Stage I/II: n= 14
  – III/IV: n= 9
  – pT3 or T4 n= 11
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Outcome FIT over 3 years

• 744/ 5946 (13%) underwent colonic examination after positive FIT

• Adherence to colonic examination after positive FIT: 94%
<table>
<thead>
<tr>
<th>FIT threshold at 40 μg/g</th>
<th>FIT threshold at 10 μg/g</th>
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<tbody>
<tr>
<td>• Cumulative positivity rate 13%</td>
<td>• Cumulative positivity rate 29%</td>
</tr>
<tr>
<td>• PPV 2.4%</td>
<td>• PPV 1.4%</td>
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<tr>
<td>• Missed CRC n=8 (31%)</td>
<td>• Missed CRC n= 4 (15%)</td>
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<tr>
<td>• Missed AA n=291 (65%)</td>
<td>• Missed AA n= 189 (42%)</td>
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<tr>
<td>• Sensitivity for CRC:59%</td>
<td>• Sensitivity for CRC:72%</td>
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<tr>
<td>• Sensitivity for AA: 33%</td>
<td>• Sensitivity for AA:57%</td>
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CRC missed by FIT

- FIT\(^{40}\) CRC missed n=8
- Location CRC: proximal n= 4, distal n=1 (NET), unknown n=3
- Stage CRC: stage I: n= 2 stage II: n= 3 unknown: n=3

- FIT\(^{10}\) CRC missed n= 4
- Location CRC: proximal n= 2, distal n= 1(NET) unknown: n=1
- Stage CRC:
  - stage I: n= 2 stage II: n= 1 unknown:n= 1
Cost- effectiveness

- Total costs 3 yearly colonoscopy surveillance: £2,633,382

- FIT + colonoscopy in positive cases FIT\(^4\) £485,236
- FIT + colonoscopy in positive cases FIT\(^1\) £956,602

- Incremental cost-effectiveness per AA not detected £7382 and £268,518 per CRC not detected
- Incremental cost-effectiveness per AA not detected £8872 and £419,195 per CRC not detected

- Replacing colonoscopy with FIT in the UK: £3.6 to £4.6 million to be saved

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Patient preference

- Questionnaires, discussion groups and interviews

- 198 people invited (average risk and intermediate risk)
  - 45 (22.7%) participants

- 3-yearly colonoscopy plus annual FIT (57.9%)
- Annual FIT with colonoscopy in positive cases (31.5%)
Conclusion

• Annual low-threshold FIT with colonoscopy in positive cases achieved high sensitivity for CRC
• Reduce colonoscopies by 70%
• Is cost saving compared with 3-yearly colonoscopy.
• However, at higher thresholds, this strategy could miss 15–30% of CRCs and 40–70% of AAs.
• Most participants preferred annual FITs plus 3-yearly colonoscopy.