Changes in faecal occult bleeding with time

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Declaration of Interests

- Clinical Director of the Scottish Bowel Screening Programme
- Independent Chair of UK National Screening Committee
gFOBT vs FIT

• gFOBT
  – Based on Guaiac reaction
  – Not specific for haemoglobin
  – Inconvenient to do

• FIT
  – Immunological
  – Specific for human haemoglobin
  – Easy to do
  – Quantitative
Scotland

- gFOBT screening started July 2007, fully rolled out by December 2009
- FIT piloted July – December 2010
  - 2 HBs, 60,000 invitations
- FIT introduced nationally November 2017
<table>
<thead>
<tr>
<th></th>
<th>FIT Pilot 2HBs 2010</th>
<th>FIT Programme (Year 1) 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uptake</td>
<td>58.5%</td>
<td>63.9%</td>
</tr>
<tr>
<td>Positivity</td>
<td>2.4%</td>
<td>3.1%</td>
</tr>
<tr>
<td>PPV for CRC</td>
<td>4.8%</td>
<td>5.2%</td>
</tr>
</tbody>
</table>
Why are uptake and positivity higher in the programme?

- Change in attitudes to screening?
- Pilot boards not representative of the whole country?
- Increased background faecal occult bleeding?
Pilot Boards vs Country
Socio-economic Deprivation

As SED decreases, uptake increases, but positivity falls

<table>
<thead>
<tr>
<th></th>
<th>1 Most Deprived</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5 Least Deprived</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Numbers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scotland</td>
<td>342,644</td>
<td>365,146</td>
<td>387,577</td>
<td>393,327</td>
<td>375,742</td>
<td>1,864,436</td>
</tr>
<tr>
<td><strong>Proportion</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A&amp;A and Tayside</td>
<td>21%</td>
<td>19%</td>
<td>21%</td>
<td>23%</td>
<td>17%</td>
<td></td>
</tr>
<tr>
<td>Scotland</td>
<td>18%</td>
<td>20%</td>
<td>21%</td>
<td>21%</td>
<td>20%</td>
<td></td>
</tr>
</tbody>
</table>
Pilot Boards vs Country

Age

As age increases, uptake and positivity increase.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Pilot boards</th>
<th>All Scotland</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-54</td>
<td>26%</td>
<td>28%</td>
</tr>
<tr>
<td>55-59</td>
<td>18%</td>
<td>20%</td>
</tr>
<tr>
<td>60-64</td>
<td>23%</td>
<td>22%</td>
</tr>
<tr>
<td>65-69</td>
<td>16%</td>
<td>15%</td>
</tr>
<tr>
<td>70-74</td>
<td>17%</td>
<td>16%</td>
</tr>
</tbody>
</table>
In women, uptake is higher than in men, but positivity is less.

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilot boards</td>
<td>49%</td>
<td>51%</td>
</tr>
<tr>
<td>All Scotland</td>
<td>49%</td>
<td>51%</td>
</tr>
</tbody>
</table>
Has background FOB changed with time?

- gFOBT/FIT algorithm used 2007-2017

- No obvious change in overall positivity rate in that time

- BUT
  - Mix of prevalence and incidence screening at different ages the proportions of which are dynamic
Positivity of initial gFOBT in 50 year-olds only (i.e. all the same age and all prevalence)
But…

- Health Boards have very variable positivity rates
- HB were introduced gradually into the programme
Positivity of initial gFOBT in 50 year-olds only in initiating HBs (Grampian and Fife)
Why has this happened?

• Changes in laboratory processes?
  – Unlikely owing to strict QA

• Faecal occult bleeding associated with multiple chronic morbidity

• Could reflect levels of systemic inflammation in the population

• May be related to lifestyle – diet, obesity etc.
Does it matter?
Changes in PPV for Cancer
Changes in PPV for Adenoma
Conclusion

• Population faecal occult bleeding has increased in 50 year-old screening participants

• This may reflect changes in population level of lifestyle-induced multi-morbidity

• This could affect the efficiency of colorectal screening based on FOB
Acknowledgements

- Everyone working in the SBoSP
- Information Services Division, NHS National Services Scotland