CRC screening in the Netherlands; issues to consider

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FIT for Screening working group
Lead-up to the bowel cancer screening programme

2006: Start of pilot screening programmes
2009: Advisory report issued by the Health Council of the Netherlands
2011: Feasibility study conducted by RIVM

June 2011: Ministerial decision
Early 2013: Application and recommendation for permit under Population Screening Act
September 2013: Start of pilot
January 2014: National launch
CRC screening started end of January 2014

- FIT (FOB Gold, cut-off 15 µg/g) + colonoscopy
- Men and women 55–75 years old
- Bi-annually
- Phased introduction; when implemented: 2,2 million invitees per year
- Till 13 October: 473,435 invitees; 14,894 colonoscopies
ColonIS

WORKFLOW

ZELFAFNME
TEST

ongunstige
uitslag

HUISARTS

voor cliënt:
uitslag zelfafname test
en afspraak intake

afspraak wijzigen

time slots afspreken

Intake

COLOSCOPIE
verslaglegging in MDL
informatiesysteem

pathologie

overeenkomst

PALGA

kwaliteitsborg
RCP - RCMEL
lab

voorankondiging
versturen

verpakking
met testbuisje

TEST

lab
First results March-May 2014

Participation rate 65-68%, referral rate 13% (we planned with 60% and 8%)

Referral rate by age

<table>
<thead>
<tr>
<th>age</th>
<th>negative</th>
<th>positive</th>
<th>total</th>
<th>%positive</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1951</td>
<td>63</td>
<td>951</td>
<td>72</td>
<td>1.023</td>
<td>7.04%</td>
</tr>
<tr>
<td>1949</td>
<td>65</td>
<td>1.574</td>
<td>146</td>
<td>1.720</td>
<td>8.49%</td>
</tr>
<tr>
<td>1938</td>
<td>76</td>
<td>39.930</td>
<td>6.454</td>
<td>46.384</td>
<td>13.91%</td>
</tr>
<tr>
<td>total</td>
<td>62.753</td>
<td>9.509</td>
<td>72.262</td>
<td>13.16%</td>
<td>12.91 - 13.41</td>
</tr>
</tbody>
</table>
### Results: colonoscopy (August 2014)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorectal cancer</td>
<td>763</td>
<td>6.7%</td>
</tr>
<tr>
<td>Advanced adenoma</td>
<td>3,832</td>
<td>33.5%</td>
</tr>
<tr>
<td>Non-advanced adenoma</td>
<td>2,640</td>
<td>23.1%</td>
</tr>
<tr>
<td>Serrated polyp/adenoma</td>
<td>544</td>
<td>4.8%</td>
</tr>
<tr>
<td>No findings</td>
<td>3,649</td>
<td>31.9%</td>
</tr>
<tr>
<td>Other tumors</td>
<td>2</td>
<td>0.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>11,430</td>
<td></td>
</tr>
</tbody>
</table>
Consequences

- Increasing waiting times: temporarily less people were invited
- With a referral rate of 12-13% there was not sufficient colonoscopy capacity
- We wouldn’t be able to keep to the invitation scheme with a referral rate of 12-13% and acceptable waiting times
- Positive predictive value was lower than expected based on the pilot studies
Actions taken from middle March

• Active surveillance of waiting times and intake capacity: if necessary slowing down number of invitations and adaptations in ColonIS

• Further analysis and development of scenarios to support decision what to do: RIVM, screening organisations and national evaluator Erasmus Medical Centre
Cut-off and referral in national programme (vs Rotterdam pilot study)
Cut-off and yield in national programme vs Rotterdam pilot study

![Graphs showing cut-off and yield comparison between national programme and Rotterdam pilot study.](chart.png)
Number of required colonoscopies in the national programme (x1,000)

- Original estimates
- Including 76-year olds
- Including 76 year olds and higher participation
- Including 76-year olds, higher participation and observed positivity and yield

Year:
- 2013: 13, 0
- 2014: 28, 64
- 2015: 42, 85
- 2016: 53, 103
- 2017: 70, 137
- 2018: 75, 149
- 2019: 78, 149
- 2020: 80, 154
- 2021: 84, 161
- 2022: 83, 158
- 2023: 85, 160
- 2024: 86, 162
- 2025: 85, 161
- 2026: 87, 164
- 2027: 89, 166
- 2028: 89, 165
- 2029: 90, 166
- 2030: 90, 166
- 2031: 90, 164
- 2032: 88, 162
Estimated number of colorectal cancer deaths prevented in the national programme (x1,000)
Options to reduce required colonoscopies

- Slowing down rate of invitations
- Increasing colonoscopy capacity
- Changing implementation scheme
- Increasing cut-off value
# Efficient measures to reduce required colonoscopy capacity in 2014

<table>
<thead>
<tr>
<th>Measure</th>
<th>Reduction in colonoscopies</th>
<th>Reduction in cancer deaths prevented</th>
<th>Cancer deaths <em>not</em> prevented per 1,000 colonoscopies saved</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postpone screening in 63-year olds</td>
<td>17.9</td>
<td>0.33</td>
<td>18</td>
<td>3</td>
</tr>
<tr>
<td>Postpone screening in 65-year olds</td>
<td>18.4</td>
<td>0.31</td>
<td>17</td>
<td>2</td>
</tr>
<tr>
<td>Postpone screening in 67-year olds</td>
<td>19.9</td>
<td>0.38</td>
<td>19</td>
<td>4</td>
</tr>
<tr>
<td>Postpone screening in 75-year olds</td>
<td>11.8</td>
<td>0.56</td>
<td>48</td>
<td>6</td>
</tr>
<tr>
<td>Postpone screening in 76-year olds</td>
<td>11.3</td>
<td>0.51</td>
<td>45</td>
<td>5</td>
</tr>
<tr>
<td>Increase cut-off to 150 ng/ml</td>
<td>18.9</td>
<td>0.24</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>Increase cut-off to 200 ng/ml</td>
<td>26.4</td>
<td>0.35</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Increase cut-off to 275 ng/ml</td>
<td>34.3</td>
<td>0.50</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>
Estimated cumulative number of colorectal cancer deaths prevented in the national programme (x1,000)

- Original estimates
- Including 76-year olds, higher participation and observed positivity and yield
- Increasing cut-off to 150 ng/ml
- Increasing cut-off to 200 ng/ml
- Increasing cut-off to 275 ng/ml
Required number of colonoscopies in the national programme in 2014 (x1,000) – impact of measures per July 2014

- Original estimates
- Updated estimates based on observations
- Cut-off of 150 ng/ml
- Cut-off to 200 ng/ml
- Cut-off to 275 ng/ml
- Cut-off to 275 ng/ml & postponing 63-year olds
- Cut-off to 275 ng/ml & postponing 65-year olds
- Cut-off to 275 ng/ml & postponing 67-year olds
Conclusions of evaluation

- Inviting 76-year olds in 2014, higher participation rate and especially the higher positivity rate of FIT have increased the required colonoscopy capacity in 2014 from 28,000 to 64,000 per year; in the long term, a colonoscopy capacity of 90,000 to 160,000 per year is needed.

- The higher participation rate and especially the higher positivity rate of FIT also increase the health benefits by approximately 300 additional prevented colorectal cancer deaths per year.
Conclusions of evaluation (2)

- Increasing the cut-off is the most efficient way to reduce required colonoscopy capacity while maintaining a high number of colorectal cancer deaths prevented.

- Increasing the cut-off of the FIT in the national programme to 275 ng/ml results in a similar balance of harms and benefits as observed in the Rotterdam pilot study.

Increasing cut-off value to 275 ng/ml in order to

- Balance harms & benefits in accordance with advice Health Council 2009
- Invite people according to plan, given the available colonoscopy capacity => gives the most health gain
- Where possible extra colonoscopy capacity: meetings with hospitals and health insurances

May/June
Meetings with advisory board screening programme, Ministry of Health and Health Council

July
Cut-off value was increased
Proposal long term (after 2015)

- Modelling scenario's again when more data are available
- First half of 2015: proposal further implementation of the programme from 2016 onwards.

Searching as much colonoscopy capacity as possible + options:
- Changing screening interval and/or cut-off value?
- Age and/or sexe specific cut-off value?
- Changing surveillance guideline / accelerate shift in work distribution?

Afternoon: presentation results until June
Further information

http://www.rivm.nl/en/Topics/B/Bowel_cancer_screening_programme

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