Detection in subsequent screen round in the Netherlands: results for two FIT cut-off levels

Arthur Kooyker
On behalf of the national monitoring and evaluation team
Possible conflicts of interest

• None
Aim

• Present yield and participation in the second round of the Dutch CRC screening program for populations with different screening histories
Dutch CRC Screening Program

- Initiation: 2014
- Screening modality: FIT
- Interval: Biennial
- Target group: 55 – 75 years old
- Roll-out period: 5 years
First round

• Real-time monitoring
  – Higher than expected positivity rate
  – Lower than expected FIT positive predictive value

• Increased FIT cut-off level from 15 µg to 47 µg Hb per gram of feces
First round

2014
FIT cut-off level 15 or 47 µg Hb/g feces

- Tested with 15 µg cut-off
  n = 130,457
- Tested with 47 µg cut-off
  n = 398,599
- Non-participants
  n = 212,858
First round

2014
FIT cut-off level 15 or 47 µg Hb/g feces

Tested with 15 µg cut-off
n = 130,457

Tested with 47 µg cut-off
n = 398,599

Non-participants
n = 212,858
"First round"

Outcomes in the first year of the Dutch CRC screening program

- Positivity rate (%)
  - 15 µg Hb/g feces: 10.6
  - 47 µg Hb/g feces: 6.7

- PPV for AN (%)
  - 15 µg Hb/g feces: 42.1
  - 47 µg Hb/g feces: 49.1

- Detection rate of AN (‰)
  - 15 µg Hb/g feces: 36.6
  - 47 µg Hb/g feces: 25.0

Age-adjusted; AN = Advanced Neoplasia

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Second round

2014
FIT cut-off level 15 or 47 µg Hb/g feces

- Tested with 15 µg cut-off  
  \( n = 130,457 \)
- Tested with 47 µg cut-off  
  \( n = 398,599 \)
- Non-participants  
  \( n = 212,858 \)

2016
FIT cut-off level 47 µg Hb/g feces

- Repeated participation  
  \( n = 39,270 \)
- Repeated participation  
  \( n = 286,251 \)
- Previous non-participants  
  \( n = 23,370 \)
Second round: participation

• Participation rates:
  – Total: 75.9%
    • Repeated participation: 93.4%
    • Previous non-participants: 21%
Second round

2014
FIT cut-off level 15 or 47 µg Hb/g feces

Tested with 15 µg cut-off  
$\text{n} = 130,457$

Tested with 47 µg cut-off  
$\text{n} = 398,599$

Non-participants  
$\text{n} = 212,858$

2016
FIT cut-off level 47 µg Hb/g feces

Repeated participation  
$\text{n} = 39,270$

Repeated participation  
$\text{n} = 286,251$

Previous non-participants  
$\text{n} = 23,370$
Second round: repeated participation

Outcomes of the second round of participants previously tested with a low or high FIT cut-off level

Age-adjusted; AN = Advanced Neoplasia

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Second round: repeated participation

• Correlation between amount of Hemoglobin in the feces and outcomes in subsequent round
Second round: repeated participation

μg Hb/g feces vs. FIT positivity rate in subsequent round

- 0 µg Hb: 2.4%
- 0 < µg Hb < 15: 7.9%
- 15 ≤ µg Hb < 47: 23.3%
Second round: repeated participation

µg Hb/g feces vs. detection rate of advanced neoplasia in subsequent round

<table>
<thead>
<tr>
<th>µg Hb/g feces</th>
<th>Detection rate per 1,000 participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 µg Hb</td>
<td>5.6</td>
</tr>
<tr>
<td>0 &lt; µg Hb &lt; 15</td>
<td>30.2</td>
</tr>
<tr>
<td>15 ≤ µg Hb &lt; 47</td>
<td>120.3</td>
</tr>
</tbody>
</table>
Second round: previous non-participants

- 21% of the non-participants of the first round participated in the second round
Second round

2014
FIT cut-off level 15 or 47 µg Hb/g feces

Tested with 15 µg cut-off
n = 130,457

Tested with 47 µg cut-off
n = 398,599

Non-participants
n = 212,858

2016
FIT cut-off level 47 µg Hb/g feces

Repeated participation
n = 39,270

Repeated participation
n = 286,251

Previous non-participants
n = 23,370

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Second round: previous non-participants

Outcomes of first round participants vs. outcomes of first round non-participants in the second round

- Positivity rate (%): First round participants 6.3, First round non-participants 7.9
- PPV for AN (%): First round participants 48.5, First round non-participants 54.9
- Detection rate of AN (%): First round participants 23.5, First round non-participants 30.1

Not age-adjusted; AN = Advanced Neoplasia

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Conclusion

• When FIT is repeated, most of the missed findings due to a higher FIT cut-off level are detected in the subsequent round
• Strong correlation between FIT results in the first round and outcomes in the subsequent round
• Previous non-participants are at higher risk of developing advanced neoplasia
Thank you for your attention

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