Enhanced invitation methods using the question-behaviour effect to increase uptake of NHS Health Checks

a pragmatic double-blind randomised controlled trial

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**Acknowledgments**

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Bernadette Khoshaba

**Collaborators**
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**Funding**
National Institute for Health Research (NIHR) Health Technology Assessment Programme (11/129/61).
Background

• NHS Health Check screening programme was introduced to prevent a substantial number of deaths, myocardial infarctions and strokes each year

• Low uptake of screening programs will reduce effectiveness and can increase inequalities in the health service delivery

• Uptake nationally is currently less than 50%

• We undertook an HTA rapid trial to evaluate an intervention in improve uptake

Primary Objective
To evaluate the effectiveness of an enhanced invitation method using the Question-Behaviour Effect (with and without an incentive for completing the questionnaire)
Intervention: Question-Behaviour Effect

- Principle of QBE:

Ask views on a behaviour  \[\uparrow\] accessibility of attitude towards the behaviour  \[\uparrow\] chance the behaviour will be performed

QBE Questionnaire: 8 questions based on:
- intentions, attitudes, anticipated regret, ‘subjective norms’, ‘self-efficacy’

Example:
- I intend to go for a Health Check in the next few weeks
- If I did not go for a Health Check in the next few weeks, I would feel regret
Trial Design

Lambeth and Lewisham: General Practice

21<sup>st</sup>: PNL list generated & cleaned
≈ 24<sup>th</sup>: individual randomisation

SI

Standard Invitation

28<sup>th</sup>: Sent

QBE

QBE questionnaire

7 days

Primary Outcome: Health check within 6 month of initial standard invitation

QBE + I

Reminder letter

12 weeks

12 weeks

£ 5 voucher

return
Implementation: Automated & In-practice

Automated method

QMS
- Potential eligible
  - PNL generated
  - Final List
    - Mail out

Practice
- EMIS data
  - Clean List
    - QMS: Quality Medical Solutions
**Implementation: Automated & In-practice**

**Automated method**
- QMS
  - Potential eligible
  - PNL generated
  - Final List
  - randomisation
  - Mail out
- Practice
  - EMIS data
  - Clean List

**In-Practice**
- QMS
  - Potential eligible
  - PNL generated
  - Final List
  - randomisation
  - Mail out
- Practice
  - EMIS data
  - Clean List

QMS: Quality Medical Solutions
### Results: Baseline

- 18 Practices (6 automated, 12 in-practice), 9 Lambeth, 9 Lewisham
- 12,643 participants over 18 month recruitment period (n=184 in pilot)

<table>
<thead>
<tr>
<th></th>
<th>SI (n=4,231)</th>
<th>SI +QBE (N = 4,124)</th>
<th>SI + QBE + I (N= 4,104)</th>
<th>Total (N=12,459)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>43.9%</td>
<td>43.2%</td>
<td>44.1%</td>
<td>43.7%</td>
</tr>
<tr>
<td>Age (median)</td>
<td>46 (40-54)</td>
<td>45 (40-54)</td>
<td>45 (40-54)</td>
<td>45 (40-54)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>35.6%</td>
<td>35.8%</td>
<td>36.3%</td>
<td>35.9%</td>
</tr>
<tr>
<td>IMD: most deprived quintile</td>
<td>28.8%</td>
<td>29.7%</td>
<td>29.9%</td>
<td>29.5%</td>
</tr>
</tbody>
</table>

**SI:** Standard Invitation; **QBE:** Question Behaviour Effect Questionnaire; **I:** £5 voucher incentive
### Results: Questionnaire return rate

<table>
<thead>
<tr>
<th>QBE Questionnaire</th>
<th>QBE (n=3,988)</th>
<th>QBE + I (n=3,969)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not returned</td>
<td>77%</td>
<td>76%</td>
</tr>
<tr>
<td>Returned</td>
<td>23%</td>
<td>25%</td>
</tr>
</tbody>
</table>
## Results: Effectiveness

<table>
<thead>
<tr>
<th>Trial Arm</th>
<th>N</th>
<th>Health checks</th>
<th>Uptake within 6mths</th>
</tr>
</thead>
<tbody>
<tr>
<td>SI</td>
<td>4,095</td>
<td>590</td>
<td>14.4%</td>
</tr>
<tr>
<td>QBE</td>
<td>3,998</td>
<td>630</td>
<td>15.8%</td>
</tr>
<tr>
<td>QBE+I</td>
<td>3,969</td>
<td>629</td>
<td>15.9%</td>
</tr>
<tr>
<td>Total</td>
<td>12,052</td>
<td>1,849</td>
<td>15.3%</td>
</tr>
</tbody>
</table>

NB outcome data not extracted for 407 participants (3.3% of trial population)

### Difference in uptake between:

- **SI and QBE**
  - 1.43%
  - 95% CI (-0.12, 2.97), p = 0.070

- **SI and QBE+I**
  - 1.52%
  - 95% CI (-0.03, 3.07), p = 0.054

Adjusted for clustering by practice using generalised estimating equations method. Model binomial family with identity link including month and year of randomisation

Significance level set to 0.0167

3,904 took place in non-trial participants during the study period
Results: Efficacy

How well did it worked in those who ‘complied’ ? ( returned the questionnaire)

<table>
<thead>
<tr>
<th>Trial Arm</th>
<th>Uptake in Compliers</th>
<th>Uptake in non-compliers</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>SI</td>
<td>Unknown</td>
<td>Unknown</td>
<td>14.4%</td>
</tr>
<tr>
<td>QBE</td>
<td>32.5%</td>
<td>10.8%</td>
<td>15.8%</td>
</tr>
<tr>
<td>QBE+I</td>
<td>32.8%</td>
<td>10.4%</td>
<td>15.9%</td>
</tr>
</tbody>
</table>

Complier-Average Causal Effect (CACE) analysis
Difference in uptake between:
SI and QBE: 6.0% 95% CI (0.08%, 11.3%), p = 0.024
SI and QBE+I: 5.9% 95% CI (0.08%, 10.9%), p = 0.022
Summary

- Overall uptake of health checks within 6 months of invitation was lower than expected at 15% using a population-based call-recall system.
- The majority of checks performed during the study practice were ‘opportunistic’ (see Khoshaba et al.*).
- The QBE intervention used was not an effective intervention for increasing uptake in this population.
- QBE questionnaire return rate was very low (24%).
- Participants who returned the questionnaire were more likely to attend a health check (estimated 6% increase).