Exploring the impact of changes in NICE suspected-cancer referral guidelines on timeliness of diagnosis

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Policy on referral for suspected cancer

- Spotting patients who need investigation is hard
- Key to improving cancer outcomes
- Guidelines on referral for suspected ovarian cancer revised in 2011
- Guidelines for remaining cancers revised in 2015

How can we assess the impact of the new guidelines?
Methods I

• Setting
  – Clinical Practice Research Datalink (CPRD)
  – National Cancer Registration and Analysis Service data linkage

• Study period
  – Pre: 1 Aug 2012 to 31 Dec 2014
  – Post: 1 Aug 2015 to 31 Dec 2017

• Inclusion criteria
  – Incident myeloma, or bladder, breast, colorectal, lung, oesophageal, ovarian, pancreatic, prostate, stomach or uterine cancer
  – Aged ≥18 years

• Exclusion criteria
  – Screen-detected cancer
Methods II

• **Outcome measure**
  – Stage
  – Diagnostic interval

• **Analysis**
  – Mean diagnostic interval (bootstrap linear difference-in-difference regression)
Patients classified by their first possible symptom of cancer:

- “Old NICE”: NICE 2005
- “New NICE”: NICE 2015 only (or NICE 2011 for ovarian cancer)
Results

- \( n = 45,496 \) (55% male)
- \( n = 31,411 \) (69%) with cancer feature (55% male)
- Mean (SD) age at diagnosis:
  - Pre: 69.7 (12.7) years (\( n=19,917 \))
  - Post: 69.5 (12.6) years (\( n=11,494 \))

<table>
<thead>
<tr>
<th>Site</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prostate</td>
<td>8,485</td>
<td>27.0</td>
</tr>
<tr>
<td>Breast</td>
<td>5,544</td>
<td>18.0</td>
</tr>
<tr>
<td>Lung</td>
<td>5,064</td>
<td>16.0</td>
</tr>
<tr>
<td>Colorectal</td>
<td>3,975</td>
<td>13.0</td>
</tr>
<tr>
<td>Bladder</td>
<td>1,829</td>
<td>5.8</td>
</tr>
<tr>
<td>Oesophagus</td>
<td>1,637</td>
<td>5.2</td>
</tr>
<tr>
<td>Ovary</td>
<td>1,267</td>
<td>4.0</td>
</tr>
<tr>
<td>Pancreas</td>
<td>1,196</td>
<td>3.8</td>
</tr>
<tr>
<td>Uterus</td>
<td>933</td>
<td>3.0</td>
</tr>
<tr>
<td>Stomach</td>
<td>902</td>
<td>2.9</td>
</tr>
<tr>
<td>Myeloma</td>
<td>579</td>
<td>1.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>31,411</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
## Results: Diagnostic interval, pooled

![Graph showing diagnostic intervals](image)

<table>
<thead>
<tr>
<th>NICE Group</th>
<th>Period</th>
<th>N</th>
<th>Mean DI (95% CI)</th>
<th>Mean difference (95% CI)</th>
<th>Difference-in-differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old</td>
<td>Pre</td>
<td>15,683</td>
<td>97.3 (95.6 to 98.9)</td>
<td>7.4 (4.5 to 10.2)</td>
<td>-7.1 (-13.1 to -1.0)</td>
</tr>
<tr>
<td></td>
<td>Post</td>
<td>9,072</td>
<td>104.7 (102.7 to 106.8)</td>
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</tr>
<tr>
<td>New</td>
<td>Pre</td>
<td>4,234</td>
<td>136.9 (133.5 to 140.3)</td>
<td>0.3 (-5.2 to 5.8)</td>
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</tr>
<tr>
<td></td>
<td>Post</td>
<td>2,422</td>
<td>137.2 (132.7 to 141.7)</td>
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</tbody>
</table>
**Results: diagnostic interval, ovarian**

<table>
<thead>
<tr>
<th>NICE Group</th>
<th>Period</th>
<th>N</th>
<th>Mean DI (95% CI)</th>
<th>Mean difference (95% CI)</th>
<th>Difference-in-differences (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old</td>
<td>Pre</td>
<td>484</td>
<td>101.9 (92.7 to 111.0)</td>
<td>11.5 (-1.5 to 24.7)</td>
<td>-37.9 (-62.5 to -13.3)</td>
</tr>
<tr>
<td></td>
<td>Post</td>
<td>464</td>
<td>113.4 (104.0 to 122.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New</td>
<td>Pre</td>
<td>152</td>
<td>109.6 (92.1 to 127.1)</td>
<td>-26.3 (-47.8 to -4.9)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Post</td>
<td>167</td>
<td>83.3 (69.8 to 96.7)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Abdominal distension/bloating**
- Old NICE: Pre 484, Post 464
- New NICE: Pre 152, Post 167

**Early satiety/loss of appetite**
- Old NICE: Pre 484, Post 464
- New NICE: Pre 152, Post 167

**Abdominal pain**
- Old NICE: Pre 484, Post 464
- New NICE: Pre 152, Post 167

**Pelvic pain**
- Old NICE: Pre 484, Post 464
- New NICE: Pre 152, Post 167

**Urinary urgency/frequency**
- Old NICE: Pre 484, Post 464
- New NICE: Pre 152, Post 167

**Weight loss**
- Old NICE: Pre 484, Post 464
- New NICE: Pre 152, Post 167

**Abdominal/pelvic mass**
- Old NICE: Pre 484, Post 464
- New NICE: Pre 152, Post 167

**Fatigue**
- Old NICE: Pre 484, Post 464
- New NICE: Pre 152, Post 167

**Constipation**
- Old NICE: Pre 484, Post 464
- New NICE: Pre 152, Post 167

**Change in bowel habit**
- Old NICE: Pre 484, Post 464
- New NICE: Pre 152, Post 167

**Back pain**
- Old NICE: Pre 484, Post 464
- New NICE: Pre 152, Post 167

**Raised Ca125**
- Old NICE: Pre 484, Post 464
- New NICE: Pre 152, Post 167

**Ascites**
- Old NICE: Pre 484, Post 464
- New NICE: Pre 152, Post 167
Summary

- Secular rise in diagnostic interval
  - Clinical significance?
  - NHS robust to pressures of increased testing
- Impact of NICE 2015
  - Reduction in diagnostic interval of over 1 month for ovarian cancer
- Future studies
  - Impact on stage
  - Impact on survival
Acknowledgements

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