Predictors of practice level-variation in use of urgent referrals for suspected cancer and endoscopies in English primary care

Gary Abel

What is driving general practice variation in ‘two-week wait’ referrals and use of endoscopy and imaging investigations, and does it matter for cancer outcomes?

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Hardeep Singh (Baylor college)

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<table>
<thead>
<tr>
<th>Process indicators</th>
<th>Outcome indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast screening coverage</td>
<td>TWW conversion rate</td>
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<tr>
<td>Cervical screening coverage</td>
<td>TWW detection rate</td>
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<tr>
<td>Bowel screening coverage</td>
<td>Emergency route to diagnosis</td>
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<tr>
<td>Sigmoidoscopy rate</td>
<td>Referred route to diagnosis</td>
</tr>
<tr>
<td>Colonoscopy rate</td>
<td>Other route to diagnosis</td>
</tr>
<tr>
<td>Upper GI endoscopy rate</td>
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<tr>
<td>TWW referral rate</td>
<td></td>
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<tr>
<td>TWW referral rate (Colorectal)</td>
<td></td>
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<tr>
<td>TWW referral rate (Lung)</td>
<td></td>
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<tr>
<td>TWW referral rate (Skin)</td>
<td></td>
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<tr>
<td>TWW referral rate (Breast)</td>
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</tbody>
</table>
Why try and explain variation in endoscopies and referrals?

- These are things that GPs do when diagnosing patients
- Variation in processes may drive some variation in outcomes
- Some evidence exists that more is better
  - Higher TWW referral rate associated with lower mortality (Møller et al, BMJ 2015)
  - Higher use of gastroscopy associated with lower mortality (Shawihdi et al, Gut 2014)

So what is driving variation

- Receptionists
- Access
- Continuity
- Dr Communication
- Type of GP
- Type of patients
So what is driving variation

- Receptionists
- Access
- Continuity
- Dr Communication
- Type of GP
- Type of patients
- GPPS
- Workforce data
- Practice population data

Practice & Population Characteristics

- Various data from NHS Digital/PHE used to define
  - Single handed status
  - Rurality
  - Training practice status
  - List size
  - Patients per FTE GP
  - Proportion male GPs
  - Proportion of GPs trained in UK
  - Mean GP age
  - Proportion of patients who are
    - Male
    - Aged 65 or older
    - Mixed, Asian, Black and Other ethnic groups
  - Practice population deprivation quintile
Models

- Series of mixed effects Poisson models
- Referral rate of endoscopy rate outcome
- Practice and patient variables as exposures
- Rate ratios calculated for 1SD change in continuous variables

<table>
<thead>
<tr>
<th>Proportion of patients:</th>
<th>Sigmoidoscopy rate RR</th>
<th>Colonoscopy rate RR</th>
<th>Upper GI endoscopy rate RR</th>
<th>TWW referral rate RR</th>
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<tbody>
<tr>
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All highlighted cells p≤0.002
<table>
<thead>
<tr>
<th></th>
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<th>TWW referral rate</th>
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<tr>
<td></td>
<td>RR</td>
<td>RR</td>
<td>RR</td>
<td>RR</td>
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<tr>
<td>Single handed</td>
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<tr>
<td>Training</td>
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<td>Patients per FTE GP</td>
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<td>0.99</td>
<td>1.00</td>
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<tr>
<td>Proportion male GPs</td>
<td>1.01</td>
<td>0.99</td>
<td>0.98</td>
<td>0.95</td>
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<tr>
<td>Proportion of GPs trained in UK</td>
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<td>Mean GP age</td>
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<td>0.98</td>
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Mean Age of GPs

10th centile 41 years

90th centile 57 years

TWW Referral rate
(per 1000 patients per year)

10th centile 41 years 24.1

90th centile 57 years 19.1

Difference 5.0/21%
Gastroscopy rate  
(per 1000 patients per year)

- 10th centile 41 years: 12.0
- 90th centile 57 years: 10.8
- Difference: 1.2/10%

Mean Age of GPs

Summary

High continuity of Care
Older GPs
Male GPs
Single-handed practices
Practices with many ethnic minorities

Good GP communication
Training practices
More GPs trained in UK
Older Patients
Deprived patients
Summary

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CAUTION!
Correlation may not be causation
• Might continuity be a bad thing for cancer?
• Discontinuity may act as a ‘second opinion’ mechanism (e.g. Ridd et al, BJGP 2015)
• New symptoms attributed to pre-existing disease.

• Idiosyncratic - Good communicators just tend to refer more
• Mechanistic - eliciting details resulting in referral
• Reverse causality – Patients like GPs who refer
- Ability to manage risk?
- Conservative referral style?

- Doing things by the book?
High continuity of Care
Older GPs
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- Appropriate for need driven by cancer incidence?