Targeting respiratory antibiotics – the role of diagnostics

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Respiratory antibiotics

- GPRD data 568 practices 2010–11

- Median prescribing rates
  - 48% for ‘cough and bronchitis’
  - 60% for ‘sore throat’
  - 60% for ‘otitis–media’

- Median for RTI 54% (39–69%) lowest/highest
## Antibiotic and symptoms vs natural history (NICE)

- **Evidence from RCTs, systematic reviews**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Prior duration</th>
<th>Duration after seeing doctor</th>
<th>Total duration untreated</th>
<th>Benefit from antibiotics</th>
<th>NNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Otitis media</td>
<td>1-2 days</td>
<td>3-5 days</td>
<td>4 days</td>
<td>8-12 hours</td>
<td>18</td>
</tr>
<tr>
<td>Sore throat</td>
<td>3 days</td>
<td>5 days</td>
<td>8 days</td>
<td>12-18 hours</td>
<td>10-20</td>
</tr>
<tr>
<td>Sinusitis</td>
<td>5 days</td>
<td>7-10 days</td>
<td>12-15 days</td>
<td>24 hours</td>
<td>13</td>
</tr>
<tr>
<td>Bronchitis</td>
<td>10 days</td>
<td>10-12 days</td>
<td>20-22 days</td>
<td>24 hours</td>
<td>10-20</td>
</tr>
</tbody>
</table>
### PRISM: Delayed/Score/RADT

<table>
<thead>
<tr>
<th></th>
<th>Delayed (control)</th>
<th>FeverPAIN</th>
<th>RADT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Severity sore throat/diff swallowing</strong> <em>(Days 2-4; 0 no ..3 mod bad; ... 6 as bad as it could be)</em></td>
<td>3.11</td>
<td>-0.33* (-0.64 to -0.02)</td>
<td>-0.30 (-0.61 to 0.004)</td>
</tr>
<tr>
<td><strong>Duration</strong> <em>(moderately bad or worse Sx)</em></td>
<td>Median 5 days</td>
<td>HR 1.30* (1.03 to 1.63)</td>
<td>HR 1.11 (0.88 to 1.40)</td>
</tr>
<tr>
<td><strong>Antibiotic use</strong></td>
<td>75/164 (46%)</td>
<td>RR 0.71* (0.05 to 0.95)</td>
<td>RR 0.73* (0.52 to 0.98)</td>
</tr>
<tr>
<td><strong>Belief</strong> <em>(not likely to need seeing Dr in future)</em></td>
<td>62/163 (38%)</td>
<td>RR 0.97 (0.71 to 1.27)</td>
<td>RR 1.03 (0.76 to 1.32)</td>
</tr>
<tr>
<td>*=p&lt;0.05</td>
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</tr>
</tbody>
</table>

All models controlled for fever and symptom severity at baseline. No difference in returns within one month or following.
Are C+G important?

- <3 days
- glands
- v.inflamed
- no coryza
- no cough
- pus
- fever
- aches
- age <10
- badly sore

Group A  CG  Others
GRACE: Antibiotic/placebo in LRTI
Resolution of moderately bad symptoms

Kaplan-Meier survival estimates

- time to resolution of moderately bad symptoms
- groupnumber = 0
- groupnumber = 1

analysis time

0 10 20 30
X ray pneumonia

Kaplan-Meier survival estimates

time to symptom resolution - Xray pneumonia subgroup
How to spot pneumonia: The role of CRP

ROC Curve

Legend
- Symptoms&signs only: AUC 0.70 (95% CI 0.65-0.75)
- Symptoms&signs + CRP: AUC 0.78 (95% CI 0.74-0.83)
- Symptoms&signs + PCT: AUC 0.71 (0.67-0.76)
- Reference Line: AUC 0.50

Diagonal segments are produced by ties.
Conclusion

- Overuse of antibiotics for RTI
- Limited benefit for symptoms
- Spotting the few who would benefit

- Strep ACG rapid tests for sore throat
- Improving precision of diagnosis of pneumonia