A Behavioural Analysis of Antimicrobial Prescribing: Opportunities for behavioural science interventions.

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Chief Medical Officer annual report, March 2013.

- Antimicrobial resistance should be placed on the national risk register (specifically, the ‘National Security Risk Assessment’).

UK Five-year Antimicrobial Resistance Strategy, Sept 2013

- Improve the knowledge and understanding of AMR.
- Conserve and steward the effectiveness of existing treatments
1. identify and review the evidence on behaviours and behavioural context that drive resistance

2. identify and review existing interventions and other research aimed at improving antibiotic stewardship in relation to key behaviours

3. identify and describe the routine monitoring of antibiotic stewardship and/or resistance in England to consider sources of data available to measure outcomes of potential behavioural science interventions

4. select target behaviours that are amenable to change and likely to mitigate the threat(s) posed by antibiotic resistance

5. understand the drivers of these behavioural targets using the Theoretical Domains Framework (Cane, O’Connor, and Michie 2012) and COM-B model (Michie, van Stralen, and West 2011).

6. consider the extent to which existing polices or interventions address these behavioural drivers

7. assess the opportunities for behavioural science interventions to address the drivers of behaviour
Method

• Literature reviews
  - Prescribing behaviours and contexts contributing to resistance.
  - Interventions to improve antimicrobial prescribing.

• Stakeholder engagement
  - Surveillance data in England

• Behavioural analysis
  • Identify key target groups and behaviours
  • Mapped evidence from literature review to TDF and COM-B
  • Existing interventions
  • Feasibility of behavioural science trials
Focus on prescribing behaviour

• Patients
• Primary care professionals
• Secondary care professionals
COM-B

Michie et al (2011)
Patients: Reducing patient use of antibiotics for self-limiting infections

1. Patient undertakes self-care and/or obtains pharmacy advice for colds, runny nose and/or flu (and does not make a GP appointment)

2. Patient undertakes self-care and/or obtains pharmacy advice for other self-limiting infections as usual practice before considering a GP appointment

3. Patient does not request antibiotics if attending appointments for self-limiting infection symptoms

4. Patient acts upon GP advice where antibiotics are not prescribed and self-care is mandated or a delayed prescription is issued
## Patients: Reducing patient use of antibiotics for self-limiting infections

<table>
<thead>
<tr>
<th>COM-B component</th>
<th>What needs to happen for the target behaviour to change?</th>
<th>Current interventions/policies</th>
</tr>
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<tbody>
<tr>
<td><strong>Capability – psych</strong></td>
<td>Patients need to know about and be able to use, select and understand how to access the right help at the right time and to self-manage symptoms. They need to know the red flags and monitor their symptoms to determine when a GP appointment might be required.</td>
<td>NHS 111, NHS Choose Well, Community pharmacies, RCGP Target patient leaflet</td>
</tr>
<tr>
<td><strong>Opportunity - physical</strong></td>
<td>Easy 24 hr access to medical help if red flags. Harder to access antibiotics, or comparatively easier to access alternative supportive therapies (such as paracetamol or cough linctus).</td>
<td>NHS Choose well (but other polices to divert from A &amp; E to GPs), community pharmacy winter/minor ailments services.</td>
</tr>
<tr>
<td><strong>Opportunity - social</strong></td>
<td>Patients expect and observe others self-managing. Cultural norms to preserve antibiotics for the management of serious health conditions. Reinforced by GP refusals to issue antibiotic prescriptions.</td>
<td>CMO statements, Ebug, TARGET, European Antimicrobial Awareness Day.</td>
</tr>
<tr>
<td><strong>Motivation – reflective</strong></td>
<td>Believe in efficacy of over-the-counter medicines and credibility of pharmacy advice. Visibly of own actions contributing towards the goal of reducing AMR.</td>
<td>Campaigns</td>
</tr>
<tr>
<td><strong>Motivation - automatic</strong></td>
<td>Emotional decision-making and need for reassurance especially parents.</td>
<td>RCGP Target GP training covers some of this.</td>
</tr>
</tbody>
</table>
Primary care: Reducing prescribing for self-limiting infections

1. GPs do not issue antimicrobial prescriptions for colds, runny noses and, where clinically appropriate, other self-limiting infections

2. GPs issue back-up-prescriptions where appropriate using the TARGET Patient Information leaflet

3. GPs explain prescribing decision to patient, emphasise importance of taking antibiotics correctly, when to return for reassessment/red flags and advise on self-care

4. GPs prescribe the most appropriate drug for the correct duration
### Primary Care: Reducing prescribing for self-limiting infections

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<td>Capability – psych</td>
<td>GPs knows own prescribing rates. In particular, where those rates are high. GPs have capability to identify where antibiotics are not useful, and negotiate accordingly with the patient.</td>
<td>STAR – stemming the tide of antimicrobial resistance. Prescribing advisors.</td>
</tr>
<tr>
<td>Opportunity - physical</td>
<td>The environment should be organised in such a way that it is easier (or at least no more difficult) not to prescribe antibiotics. GPs should have resources to support not prescribing.</td>
<td>RCGP Target patient leaflet, delayed prescribing.</td>
</tr>
<tr>
<td>Opportunity - social</td>
<td>GPs need to see other professionals (vets, dentists, hospital doctors) also reducing prescribing. Belief that high prescribing professionally inappropriate.</td>
<td>ESPAUR is beginning to bring together the data on prescribing.</td>
</tr>
<tr>
<td>Motivation – reflective</td>
<td>Belief in the consequences of withholding antibiotics - low likelihood of avoidable complications. Support from opinion leaders to reduce their prescribing especially when rare events occur. Belief in evidence for penicillin prescribing impact on AMR,.</td>
<td>RCGP Target training, ESPAUR starting to connect the prescribing and resistance trends.</td>
</tr>
<tr>
<td>Motivation - automatic</td>
<td>Culturally, the prescription marks the end of a consultation. GPs should begin to lend parity of esteem towards back-up and no-prescriptions. Satisfaction from issuing the prescription and no penalties Fear and trepidation as a result of diagnostic uncertainty.</td>
<td>RCGP Target toolkit including delayed prescribing and no prescribing</td>
</tr>
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Secondary care: reducing the use of antibiotics through guideline compliance

1. Indication for antibiotic use (that is the reason for which antibiotic therapy is administered)
2. Choice of drug with a preference for narrower-spectrum agent
3. Appropriate and timely amendment of therapy – for example from broad spectrum to narrow spectrum, intravenous to oral, longer duration to shorter duration, and discontinuation where appropriate.
## Secondary care: reducing the use of antibiotics through guideline compliance

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<tr>
<td>Capability – psych</td>
<td>Prescribers should be conscious of the threat posed by AMR when deciding to initiate and / or continue a broad-spectrum agent. Senior clinical/ pharmacist support should be readily available.</td>
<td>Many have re-designed prescribing system (paper or electronically) to include prompts that improve antimicrobial governance.</td>
</tr>
<tr>
<td>Opportunity - physical</td>
<td>Antibiotic guidelines should be easily accessible and relevant. Prescribers should be prompted to routinely amend their drug regimen on the basis of available evidence.</td>
<td>Antibiotic guidelines are available at almost all hospitals. The quality of these guidelines is likely to vary.</td>
</tr>
<tr>
<td>Opportunity - social</td>
<td>Junior doctors should observe senior staff prescribing in line with guidelines and considering antimicrobial resistance in their decision-making.</td>
<td>Unclear</td>
</tr>
<tr>
<td>Motivation – reflective</td>
<td>Dr feels parallel responsibility for broader societal health and duty towards patient in front of them. Dr is confident reducing their prescribing impacts upon AMR and is not overshadowed by vets, primary care.</td>
<td>ESPAUR</td>
</tr>
<tr>
<td>Motivation - automatic</td>
<td>Current technology means that blood cultures may only become positive around the time that intravenous antibiotics are converted to oral therapy.</td>
<td>CMO longitudinal prize for £10m prize for developing test for viral vs bacterial infections</td>
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On the basis of evidence from the literature and the behavioural analysis, a range of behavioural interventions are suggested that have considered the following:

• feasibility
• cost
• scalability
• capacity to benefit from behavioural approaches.
Shorter term interventions

Feedback on prescribing behaviours (S1)
• Trial underway by PHE/DH

Online pledges for parents (S2)
• European Antibiotic Awareness Day

Improving use of TARGET patient leaflet as back-up/no prescription (S3)
• Advice only this year but possibility for a review next year
Medium term interventions

Substitution of antibiotic therapy (M1)

**Reducing patient appointments for self-limiting infections at GPs (M2) - trial under development.**

Advising patients on their antimicrobial usage (M3)

Adding friction to prescribing (M4)

Guideline implementation and decision support (M5)

Making back-up prescribing the default for respiratory infections (M6)

Improving the presentation of the TARGET clinical guideline (M7)

Recording GP decision-making (M8)

Design-led hospital prescription charts (M9)
Longer term interventions

Making antibiotic packaging salient (L1)

Presenting resistance as a societal threat (L2)

Increasing the cost of antimicrobials (L3)
Contact details

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