Section A: CPHE to complete	
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Guidance title:	Antimicrobial Stewardship: changing risk-related behaviours in the general population
Committee:	PHAC A
Subject of expert testimony:	Behaviour change and antibiotic prescribing in healthcare settings – findings from a literature review and behavioural analysis
Evidence gaps or uncertainties:	
Research questions to address:	
- What does qualitative research tell us about the public's awareness and understanding of appropriate antimicrobial use/prescribing and antimicrobial resistance in the UK?	
- What are the behaviours of patients/the public that should be targeted to reduce patient use of antibiotics for self-limiting infections? - Is there evidence of effective interventions targeting these behaviours? - Where are there evidence gaps?	
Section B: Expert to complete	
Summary testimony:	[Please use the space below to summarise your testimony in 250 – 1000 words – continue over page if necessary]

This expert testimony is based upon our published report: *'Behaviour Change and antibiotic prescribing in healthcare: A literature review and behavioural analysis. Pinder, R., Sallis, A., Chadborn, T. & Berry, D. (2015) PHE Report'* which can be found at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/405031/Behaviour_Change_for_Antibiotic_Prescribing_-_FINAL.pdf

Richard Pinder and I (Anna Sallis) jointly prepared and presented the testimony.

Introduction

Firstly we presented the approach taken in the report:

- Review of existing literature
- Identification of key behaviours
- Categorisation of literature into behavioural model
- Interpretation of evidence through behavioural science framework
- Assessment of existing interventions/polices for addressing behaviours and behavioural drivers.

- Proposed interventions

In relation to the questions we were asked to answer in the expert testimony we stated the following parameters:

- Our literature review was conducted in November 2013 and was not a systematic literature review
- Evidence is not separated for qualitative and quantitative
- It is concerned with current interventions/policies and how they address the behavioural drivers not research gaps.
- Primary care focus.

We presented the search strategy used in the report aimed at identifying what we know or think might contribute to AMR and what we know or think might improve stewardship.

We highlighted the qualitative evidence included in our report which contributed to our key points.

Primary Qualitative Evidence

Brooks L, et al. Towards a better understanding of patients' perspectives of antibiotic resistance and MRSA: a qualitative study. Family Pract 2008; 54: 341-8.

Brookes-Howell L, et al. 'The body gets used to them': patients' interpretations of antibiotic resistance and the implications of containment strategies. J Gen Int Med 2012; 27: 766-72.

Hawkings NJ, Butler CC, Wood F. Antibiotics in the community: a typology of user behaviours. Patient Education and Counselling 2008; 73: 146–52.

Editorial / Reviews

Avorn J, Solomon DH. Cultural and economic factors that (mis)shape antibiotic use: the nonpharmacologic basis of therapeutics. Ann Intern Med 2000; 133: 128-135.

Patient/public behaviours

From the literature review and consultation with key stakeholders a series of core target behaviours emerged as important to reduce patient use of antibiotics for self-limiting infections:

- Firstly, a patient can obtain pharmacy advice for their cold/ runny nose or flu and **does not make an appointment with their GP.**
- Secondly, a patient could adopt self-care for their other self-limiting infections, or go to the pharmacy for advice **before considering to book an appointment with their GP.**
- The third behaviour is the patient NOT requesting antibiotics at their GP appointment for their self-limiting infection symptoms.
- Finally, the patient can act upon the advice given by their GP when they do not get prescribed antibiotics and self-care is mandated, or a delayed prescription is issued.

We have not included infection control/hand hygiene, medication adherence generally and specifically have not included taking pills as directed.

We then presented the evidence from the literature categorised by the COM-B model of behaviour which stands for Capability, Opportunity, Motivation and Behaviour (Michie et al, 2011). We mapped key interventions and policies expected to alter behaviour through each of these three behavioural components (COM).

Our interpretation of key issues and gaps are as follows:

Unclear consequences and link between outcome and behaviour

- There are unclear consequences to AMR and especially how individuals own actions are linked to any consequences.
- It could be useful to point to certain drugs which have already or are at risk of becoming ineffective or link to MRSA as an example.
- The consequences of taking antibiotics inappropriately need to be more immediate, visible salient and personally relevant so for example emphasising side effects of antibiotics use or the potential lack of drugs available to treat serious infections in family members.

Conflicting messages in healthcare

- A moral hazard arises from universal and “free at the point of care” health services which may be blamed for lessening the perceived value of self-care.
- Some patients may prefer a free appointment visit to the GP over self-medication, which can be more costly.
- Self-selection of the appropriate medicine can also be considered complex.
- The incentives are misaligned.
- It needs to be made easier and cheaper to self-care
- There may be conflicting messages between encouraging self-care and social marketing campaigns in other areas to prompt early diagnosis of cancer, CVD or other infectious diseases.
- A key message should be to increase credibility of pharmacy advice to reduce demand for appointments.

A cycle of inappropriate prescribing

- A cycle occurs when antibiotics are taken for self-limited infections where recovery from these may be incorrectly attributed to antibiotics which then reinforces this link between the benefits of antibiotics to the patient.
- Inappropriate prescription of antibiotics can also reinforce the health-seeking behaviour of patients.
- Our behavioural analysis identified two key points to intervene; (i) At the point of feeling unwell, before a GP appointment is booked (ii) At the GP appointment when presenting with self-limiting infection symptoms.

The tragedy of the commons

- The tragedy of the commons is an economic theory which states that individuals acting independently and rationally according to self-interest behave contrary to the best interests of the whole group by depleting some common resource.
- There are societal benefits but few visible immediate personal benefits creating a public goods situation where people can free ride and rely on

others to change their behaviour.

- There is a lack of incentive to discontinue existing behaviour
- Situation is similar to that of public behaviours to prevent climate change such as water use and recycling.
- Social norms are also important here but it is unlikely a new social norm for antibiotics being a “last resort” can be developed without more immediate negative consequences or more salient distal consequences.
- Alternatively as already discussed it needs to be easier to carry out the described behaviour than the behaviour we are trying to change.

Antibiotics must not become seen as a scarce resource

- Moving forward with whatever interventions and campaigns we need to be careful not to make antibiotics appear to be a scare resource limited to a lucky few as this can increase demand.

Summary of opportunities for behavioural science

- ✓ Promote alternatives to antibiotics through pharmacies having specific sections for symptom relief for infections
- ✓ Improve credibility of pharmacy advice.
- ✓ Increase frictional cost of accessing antibiotics
- ✓ Demonstrate a social norm for low antibiotic use.
- ✓ Reduce appeal of antibiotics by emphasising other treatments are better
- ✓ Interrupt cycle of reinforcement by limiting access
- ✓ Point of decision increase salience packaging
- ✓ Focus on alternative behaviours
- ✓ Address individual loss for societal gain
- ✓ Break down habitual association between minor ailments and antibiotics

Conclusion

Key Issues:

- The consequences of AMR are unclear to the public
- Patients do not realise that antibiotics will not improve their symptoms for viral or self-resolving infections

Solutions:

- Make the consequences of AMR more immediate, visible, salient and personally relevant
- Demonstrate a social norm for low antibiotic use
- Increase credibility of pharmacy advice
- Reduce the appeal of antibiotics – increase friction costs
- Make it easier to self-care

References (if applicable):

Michie, S., van Stralen, M,. & West. R. (2011) The Behaviour Change wheel: A new method for designing and characterising behaviour change interventions. Implementation Science, 6, 42.