

## INTRODUCTION

Public surveys conducted by Public Health England (PHE)<sup>1-6</sup> have shown that:

- Lower socio-economic groups use more antibiotics
- Higher socio-economic groups are more likely to keep and use left-over antibiotics
- Public campaigns used alone have not reduced antibiotic use
- Many patients (and especially the young) do not complete their antibiotic courses

## AIMS

To determine knowledge and use of antibiotics in the general public, including a large group of parents with young children, comparing results with previous surveys.

## METHODS

- A market research company, Ipsos MORI, conducted interviews as part of their weekly Face-to-Face Omnibus (Capibus) survey that collects a wide range of information from across the country in a single week.
- The main survey was conducted between 24th January and 5th February 2017, using multistage sampling to recruit 1,691 adults aged 15+ from across England for face-to-face interviews in their own home.
- A subset of data (only questions pertaining to children) from an additional sample (n=592) of parents of children under 5 years old was collected between 6th and 19th March 2017.
- The interview schedule was based on previously-published PHE surveys.<sup>1-6</sup>
- A validated questionnaire asked about participants' recent infections, antibiotic knowledge and use, including questions about antibiotic resistance (**Box 1**).

### Box 1: New question asked in 2017 about antibiotic resistance (correct answer)

- Q1. People can carry antibiotic resistant bacteria for over a year (true)  
 Q2. Antibiotics don't work for everything (true)  
 Q3. Taking antibiotics when you don't need them encourages bacteria that live inside you to become resistant (true)  
 Q4. Antibiotic resistance is not caused by taking antibiotics (false)  
 Q5. If you have taken antibiotics recently and then have a new infection, antibiotics are more likely to work on this new infection (false)  
 Q6. All antibiotic resistant bacteria are harmful (false)  
 Q7. Antibiotics work for colds or flu because they're viral infections (false)  
 Q8. We can carry antibiotic resistant bacteria in our bodies without knowing (true)

## RESULTS

### Awareness and perceptions

- In broad terms, levels of understanding have not changed substantially over the past 14 years (**Table 1**).
- For example, although a majority (72-83%) of respondents recognize that antibiotics kill bacteria/treat bacterial infections, a sizable minority (35-43%) think that antibiotics kill viruses/treat viral infections.

### Antibiotic use

- Three quarters of respondents (72% (1,237/1,707)) reported at least one infection in the past 12 months.
- One sixth (15% (73/503)) of respondents who had taken antibiotics reported having left-over capsules or tablets, of which 33% (24/73) were kept for possible future use.
- 1% of respondents (22/1,707) had taken left-over antibiotics in the preceding 12 months and 2% (28/1,707) had taken antibiotics obtained without a prescription.

### Expectations, advice, information, and prescriptions

- Among the 256 respondents who accessed primary care, as many expected antibiotics (38%) as expected treatment for symptoms (34%); 57% (145/256) were prescribed antibiotics (**Table 2**).
- Among 1,339 respondents who had an infection or antibiotics within the past year, 43% (571) said that they did not receive any advice or information about antibiotics, compared with 55% in 2014.\*
- The majority (83%) of those who did receive information in 2017 said that it was provided to them verbally by a healthcare professional.

### Delayed antibiotics

- 4% (59/1,707) of respondents had been given a 'delayed/back-up' antibiotic prescription by a GP, nurse, dentist or other health professional in the past 12 months, the same proportion as in 2014.
- Fewer respondents in 2017 (23%) compared with 2014 (28%) were aware of delayed antibiotics.\*
- The proportions of respondents who were ambivalent about delayed antibiotics for urinary, ear and throat infections tended to be lower in 2017 compared to 2014.

\* Pearson's chi-squared ps0.004 2017 cf. 2014

A multivariable analysis of factors associated with knowledge about antibiotic resistance and its relationship with antibiotic use (7+ correct responses to 9 questions) showed:

**More knowledgeable** = higher social class; higher qualifications; households with children; respondents who had visited a doctor or pharmacy in the preceding 12 months

**Less knowledgeable** = youngest (15-24 years); oldest (65+ years); black, Asian and minority ethnic adults

Table 1: Trends in awareness and perceptions about antibiotics and resistance (2003-2017)

	2003	2008	2009	2014	2017
Antibiotics can kill bacteria	80%	72%	72%	-	-
[bacterial infections] can be effectively treated by antibiotics	-	-	-	77%	83%**
Antibiotics can kill viruses	43%	41%	39%	-	-
[viral infections] can be effectively treated by antibiotics	-	-	-	40%	35%*
Antibiotics work on most coughs and colds	32%	30%	27%	-	-
[colds or flu] can be effectively treated by antibiotics	-	-	-	14%	15%
Most coughs, colds and sore throats get better on their own	-	-	-	49%	52%
A course of antibiotics should be stopped when a person feels better	-	24%	20%	-	-
You don't need to finish a course of antibiotics if you are feeling better	-	-	-	13%	13%
I trust my GP's advice as to whether I need antibiotics or not	-	-	-	88%	85%
I trust my nurse's advice as to whether I need antibiotics or not	-	-	-	69%	73%
I trust the pharmacist's advice as to whether I need antibiotics or not	-	71%	70%	66%	71%
Antibiotic resistant bacteria could infect me or my family	80%	68%	67%	-	-
Healthy people carry antibiotic resistant bacteria	-	-	-	45%	43%
Bacteria that are resistant to antibiotics spread easily from person to person	-	-	-	53%	50%
In most instances you cannot drink alcohol while taking antibiotics	-	-	-	76%	72%
Taking antibiotics weakens your immune system	-	-	-	51%	44%

\* Pearson's chi-squared ps0.01 2017 cf. 2014; \*\* ps0.001

Table 2: Expectations, advice and antibiotic prescriptions reported by respondents who accessed primary care for their own or their child's respiratory (cough, throat, ear, sinus, chest infection) or flu symptoms or a cold/runny nose in the past 12 months

	Respiratory/flu symptoms		Cold/runny nose	
	Self	Child	Self	Child
	n=256 <sup>a</sup>	n=152 <sup>b</sup>	n=61 <sup>c</sup>	n=58 <sup>d</sup>
What did you EXPECT?				
To be prescribed antibiotics	38% (98)	27% (41)	29% (18)	13% (8)
To be prescribed treatment for symptoms	34% (88)	33% (50)	25% (15)	22% (13)
Advice about whether antibiotics were needed	19% (48)	23% (35)	24% (14)	21% (12)
What HAPPENED?				
Antibiotics were prescribed	57% (145)	41% (63)	31% (19)	33% (19)
Treatment to relieve/reduce symptoms was prescribed	30% (76)	24% (36)	26% (16)	16% (9)
Advice was given about whether antibiotics were needed	15% (38)	25% (38)	16% (10)	12% (7)

<sup>a</sup> Respondents with respiratory (cough, throat, ear, sinus, chest infection) or flu symptoms in the past 12 months (n=955) who visited or contacted a doctor's surgery or visited a NHS Walk-in Centre or GP out-of-hours service for these symptoms (n=256)

<sup>b</sup> Respondents with a child under 5 (n=882) who had respiratory (cough, throat, ear, chest infection) or flu symptoms in the past 12 months (n=292) who visited or contacted a doctor's surgery or visited a NHS Walk-in Centre or GP out-of-hours service because of the child's symptoms (n=152)

<sup>c</sup> Respondents with a cold or a runny nose in the past 12 months (n=862) who visited or contacted a doctor's surgery or visited a NHS Walk-in Centre or GP out-of-hours service for their illness (n=61)

<sup>d</sup> Respondents with a child under 5 (n=882) who had a cold or a runny nose in the past 12 months (n=310) who visited or contacted a doctor's surgery or visited a NHS Walk-in Centre or GP out-of-hours service because of the child's illness (n=58)

## DISCUSSION

- Most people have a correct basic understanding of antibiotics (they treat bacterial infections), but misunderstandings persist among a substantial minority (antibiotics can kill viruses).
- 43% of people who had an infection or took antibiotics said that they did not receive any advice or information.
- Most people trust their GPs advice as to whether antibiotics are needed.
- Hence, there is scope for:
  - providing more information about antibiotics and antimicrobial resistance during primary care consultations
  - raising levels of trust in advice given by nurses and pharmacists
- Information needs to be aimed at those groups identified as being less knowledgeable about antibiotics, namely adults under 24 or over 65 years old and black, Asian and minority ethnic adults.
- More work is needed to explore antibiotic understanding, use and culture of use in these groups, and barriers to improvement.

## REFERENCES

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## ACKNOWLEDGEMENTS

We would like to thank Christine Roberts at PHE marketing and the staff at Ipsos MORI including Daniel Marshall, Sarah Shepherd and David Jeans for their advice with question format and data analysis, and the public who answered the questionnaire.

## FUNDING

This study had no specific funding.