

# Why we should expect scientists to disagree about antibiotic resistance – and other controversies

August 24 2017, by Sujatha Raman And Warren Pearce

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On numerous matters including food, health and the environment, experts are called upon to communicate the implications of scientific evidence for particular choices. It may be tempting to highlight simple messages from complex evidence. But as the [recent controversy over](#)

[advice on antibiotics](#) shows, there is a risk of such messages backfiring when new evidence comes to light. So in these fractious times of "alternative facts", how best can experts build trust with the public?

Evidence provided by science is often mixed, incomplete, changeable or conditional on context. Yet experts are expected to stick to narratives that highlight a consensus view. Simplifying the complex may be essential for public communication, but this is not the same as glossing over [uncertainty](#) or valid disagreements. It is far better to find ways to communicate why evidence may be inconclusive and why experts might reasonably make different judgements on the same question.

On [antibiotics](#), it may be confusing to find experts giving conflicting assessments on whether or not people should "finish the course". But far from representing post-truth, this disagreement suggests we must pay more attention to the matter of how to cope despite the vagaries of expert consensus.

## **Fraying antibiotics consensus**

Healthcare professionals have long stressed that people mustn't stop taking prescribed antibiotics when they feel better. [Some experts recently questioned](#) this conventional wisdom in the *British Medical Journal (BMJ)*, suggesting that the advice is not evidence-based and that it impedes conservation of antibiotics in light of bacterial resistance. Elsewhere, it is claimed that antibiotics are prescribed more out of fear and habit than on the basis of science.

But other experts have been critical, saying that the call to change established prescribing practice is [dangerous](#) as it is itself unsupported by sufficient evidence.

In this debate, many actually agree that it is worth reconsidering

antibiotic duration, and that more clinical trials are needed to specify appropriate doses for different infections. Some consensus is emerging that shorter courses may sometimes be sensible – but more evidence is needed.

All agree, for example, that tuberculosis merits a longer course of antibiotics to cure the infection and [possibly to prevent resistance](#). But for some common conditions, the recommended course has [already been shortened to three days](#). Public health messages have subtly changed, with Public Health England telling people to take antibiotics "[exactly as prescribed](#)" rather than "completing the course". Prescribers are asked to [avoid unnecessarily lengthy durations](#).

So, calls to shorten antibiotic courses and gather more evidence are [not new](#). But until recently, public discussion of the issue was rare.

## Simple messages?

The real controversy provoked by the *BMJ* article is about what experts should tell the public. The authors [suggest that](#) primary care patients prescribed antibiotics for common bacterial infections could be advised to stop when they feel better. Many of their critics fear that such advice is too subjective, and people will be confused by experts disagreeing or departing from an established message. The Chief Medical Officer [has reiterated](#) that official advice is unchanged: follow what the doctor says.

The notion that experts must convey a simple message is based on the assumption that uncertainty creates anxiety, making people unsure of what to believe or how to act. Since being exposed to divergent views increases uncertainty, it seems to follow that experts must hew to a strict line. But health communication scholars suggest this is too simplistic as [people manage and respond to uncertainty in different ways](#). Some may have good reasons to ignore debates among experts, relying instead on

familiar routines that shape their beliefs and behaviour. Others may distrust markers of excessive confidence, finding open discussion more reassuring as it chimes with their own instincts about knowledge.

Even where some reduction in uncertainty is desirable, evidence is not a substitute for judgement. Doing scientific research to address complex matters [often increases uncertainty](#) as new evidence raises further questions. Clinical trials data [generate their own dilemmas](#) of assessment and interpretation for professionals.

In terms of antibiotic prescribing, one [expert](#) argues that trials are needed but clinical judgement will still be important. So evidence of one sort may be valuable but it must be put in context of other evidence and practical objectives. The same principle applies to most issues that experts investigate, from [sex differences](#) to the [economic impact of Brexit](#).

## **Coping with uncertainty**

In the case of antibiotic courses, it is unreasonable to expect that new evidence will automatically resolve current uncertainties. Science cannot meet such undue expectations. But this is only a problem in a culture where people expect prescriptions to be based on unshakeable evidence, and where experts cultivate that impression. On other issues such as climate change, where science is invoked to justify particular interventions to the public, we see the same pattern.

Tensions around the public role of science arise partly from the [belief](#) that the cultural credibility of expertise rests on communicating in terms of consensus. Whenever new knowledge seems to challenge current consensus, credibility becomes strained. We have recently highlighted how [this diverts attention](#) from more urgent practical challenges.

But if conflicting or inconclusive evidence from new science is taken to be the norm rather than the exception, uncertainty wouldn't be a problem to fear or eliminate. Similar points have been made in relation to [health communication](#), where evidence provided by new technologies of screening and testing [is often ambiguous](#).

Promising consensus as derived from scientific [evidence](#) is a perilous principle on which to found meaningful engagement between experts and the public. We are better off trying to facilitate improved ways of appraising and coping with entirely normal uncertainties and reasons for disagreement.

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