



Study: Patient Expectations Influence Prescribing Of Antibiotics

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An **experiment published** by the American Psychological Association (APA) shows that doctors are more likely to prescribe antibiotics if patients have high expectations of receiving them, even if the probability of bacterial infection is low. Researchers referred to this as the “expectations effect.”

The APA’s findings are based on two similar experiments that were designed to 1) test how low versus high expectations for antibiotics influenced the frequency of antibiotic prescriptions and 2) observe whether higher expectations for antibiotics increased the perceived probability of bacterial infection by doctors.

A total of 305 family doctors completed the first experiment, and a total of 131 completed the second. In both experiments, doctors were presented with an online survey that used vignettes, or accounts, of patients presenting with illnesses ranging from colds to ear infections. Some patients had high expectations for antibiotics (for instance, because of an upcoming swim meet or the need to return to work), and some patients had low expectations (no time-sensitive events or patient requests hurrying recovery).

In experiment one, doctors were presented with five hypothetical patients, each randomly associated with one of four conditions. Parents’ expectations for antibiotics were also presented to address the idea that parents’ expectations impact the prescription of antibiotics and have a large influence on the expectations effect. The order of the questions about probability of infection and prescribing of antibiotics was randomized to see if the order impacted the decision to prescribe.

In experiment two, doctors were presented with only two patients, one with a cold and one with an ear infection. Both were adults advocating on behalf of his or her self. The question and vignette orders were fixed in this experiment, with the decision to prescribe antibiotics coming before the probability of infection and the ear infection vignette coming before the cold vignette.



The results of both experiments show both good and bad news: While doctors were more likely to prescribe antibiotics to patients with high expectations, this did not influence their view on whether infections were likely bacterial or viral. The common cold worked as a good sort of control for this, as it is well-known to be a viral infection, with only 12.2% of doctors prescribing antibiotics despite a high expectation from the patient, which is a drastic drop-off from the expectations effect in the other vignette (at 51.9%) in the second experiment.

Results also show that more experienced doctors were just as susceptible to the expectations effect as less experienced doctors, with experience having a positive association with prescribing antibiotics.

Researchers came to the **following conclusion** regarding decreasing the overprescription of antibiotics:

From a clinical point of view, nonclinical factors and, specifically, social influences might contribute to the overprescribing of antibiotics and, in turn, to the increased antibiotic resistance (Costelloe et al., 2010). This is particularly important in situations in which most of the interventions designed to reduce antibiotic overprescribing are focused on clinical guidelines (National Institute for Health Care Excellence, 2015). To reduce overprescribing of antibiotics, potential interventions should target patients' expectations, physicians' beliefs about these expectations, and physicians' skills in managing these expectations. Consistently with such a conclusion, prior complex intervention studies have found the most effective interventions to be those that target patients and clinicians during consultations, facilitating shared decision-making (Coxeter, Del Mar, McGregor, Beller, & Hoffmann, 2015; Ranji, Steinman, Shojania, & Gonzales, 2008; Vodicka et al., 2013).

These suggestions go hand-in-hand with the World Health Organization's (WHO) urgent calls to control the spread of antibiotic resistance and to develop new drugs to fight specific families of bacteria.

Alarming, for the first time in their history, **WHO recently published** a list of "priority pathogens" that are antibiotic-resistant and present a need for immediate research and the development of drugs. The list is divided into three priority groups: critical, high and medium.

The most critical group of all includes multidrug resistant bacteria that pose a particular threat in hospitals, nursing homes, and among patients whose care requires devices such as ventilators and blood catheters. They include Acinetobacter, Pseudomonas and various Enterobacteriaceae (including Klebsiella, E. coli, Serratia, and Proteus). They can cause severe and often deadly infections such as bloodstream infections and pneumonia.

These bacteria have become resistant to a large number of antibiotics, including carbapenems and third generation cephalosporins – the best available antibiotics for treating multi-drug resistant bacteria.

The second and third tiers in the list – the high and medium priority categories – contain other increasingly drug-resistant bacteria that cause more common diseases such as gonorrhea and food poisoning caused by salmonella.

In addition, WHO provides the following suggestions for individuals to help slow the spread of antibiotic resistance in these and other families of bacteria:



- *Only use antibiotics when prescribed by a certified health professional.*
- *Never demand antibiotics if your health worker says you don't need them.*
- *Always follow your health worker's advice when using antibiotics.*
- *Never share or use leftover antibiotics.*
- *Prevent infections by regularly by washing hands, preparing food hygienically, avoiding close contact with sick people, practising safer sex, and keeping vaccinations up to date.*

Doctors have their own **set of guidelines**, including infection control techniques, education of patients and the public, careful prescribing, and the reporting of resistant bacteria.

Both doctors and patients must take responsibility for the use of antibiotics.

As an individual, you can make the first move by not asking for antibiotics with every illness. Let your doctor make his or her decision without the expectations effect.

[Read a PDF of the full experiment results.](#)

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