

# Simple ways to deter improper antibiotic prescribing

NOV 22, 2016

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Inappropriate prescribing of antibiotics is a long-standing practice that once seemed benign but whose consequences are coming into sharper focus. Antibiotic-resistant bacteria kill at least 23,000 Americans annually and cause more than 2 million illnesses in the U.S., according to the Centers for Disease Control and Prevention (CDC). There are some good ideas that can help physicians steer their patients away from antibiotics when they will do more harm than good.

Jeffrey A. Linder, MD, MPH, has a few of them. He is associate professor of medicine in the Division of General Internal Medicine and Primary Care at Brigham and Women's Hospital, and argues that the millions of antibiotic prescriptions inappropriately written each year for patients with acute respiratory infections (ARI) are not due to a shortage of knowledge among primary care physicians.

"It's a behavioral problem and it's a kind of social problem," Dr. Linder said. "There is this weird psychology of the doctor assuming the patient is wanting antibiotics, and they don't want to have this uncomfortable conversation where they have to deny things to people."

While most patients react well when physicians explain why an antibiotic prescription will not help, it only takes one or two who don't to make a mark, Dr. Linder said.

"Early in my career, practicing urgent care, it happened twice. You get somebody who's angry. 'I came here to get antibiotics and I need to get back to work!'"

Years later, "it sort of stays with me," he said. "I really hope that doesn't happen again. It's not fun to argue with a patient. We're supposed to be on the same team here."

## The letter

Establishing a team—or shared responsibility—mindset is behind one of the approaches that Dr. Linder has tried in his efforts to cut inappropriate antibiotic prescribing. He and his colleagues took

poster-sized “commitment letters” and displayed them in the exam rooms at five outpatient primary care clinics for 12 weeks. The letter, written at the eighth-grade level, detailed side effects of antibiotics, why they would not be effective against viral infections, and explained the phenomenon of antibiotic resistance.

“Because of this,” the letter said, “it is important that you only use an antibiotic when it is necessary to treat your illness. How can you help? Carefully follow your doctor’s instructions. He or she will tell you if you should or should not take antibiotics.” Photos of each clinic’s physicians were included at the bottom of the letter, along with the doctors’ signatures.

This simple, low-cost move had an effect. Prior to using the posters, the rate of inappropriate antibiotic prescriptions for ARIs was 43.5 percent. For the 114 ARI visits after the posters were deployed, the rate fell to 33.7 percent. By comparison, the clinics that didn’t get a poster saw their inappropriate antibiotic prescribing rates rise from 42.8 percent to 52.7 percent.

Dr. Linder calls the poster a “nudge” intended to gently encourage patients and physicians in the right direction.

“We are trying a variety of things, using these tools we have learned from behavioral economists that have influenced things in other domains,” he said. “We don’t think there’s a magic bullet but we hope that from a variety of these approaches we can engrain appropriate prescribing as more of a habit.”

## Testing other methods

More recently, Dr. Linder and his colleagues compared three other ways to encourage physicians to avoid wanton prescribing of antibiotics for ARIs.

**Suggested alternatives.** When physicians enter a diagnosis of ARI and try to order an antibiotic, the electronic health record (EHR) generates an alert saying “antibiotics are not generally indicated” for the diagnosis and offering a list of over-the-counter and prescription medications to help address cold-and-cough symptoms.

**Accountable justification.** Under this approach, the physician who orders the inappropriate antibiotic is prompted to “explicitly justify, in a free text response, his or her treatment decision.” The warning says, “If you do not enter anything in this box, ‘NO JUSTIFICATION FOR PRESCRIBING ANTIBIOTIC’ will be added to the patients’ medical record.”

**Peer comparison.** In each region, physicians’ antibiotic prescribing was ranked from best to worst. Each month, an email sent to the physicians highlighted the “top performers”—those with the lowest rate of inappropriate orders. The remaining doctors received individual emails saying they were “not a

top performer” and detailing the share of inappropriate antibiotic prescriptions they wrote compared with those who did best.

Nearly 250 physicians and health professionals at 47 primary care practices in Boston and Los Angeles were randomly assigned none, one, two or all three methods. And while inappropriate antibiotic prescribing fell for the control clinics and for each method, the declines were statistically significantly greater for accountable justification (from 23.2 percent to 5.2 percent) and peer comparison (from 19.9 percent to 3.7 percent).

The accountable justification method is one that can be used for any type of questionable ordering. “You are being asked to justify what you do explicitly,” Dr. Linder said. “We should be explaining our thinking in our notes. This just sort of serves as a little break to make doctors pause and say, ‘How would I explain this to somebody else?’” This method is easy to accomplish with modern EHRs, he added.

His favorite approach is peer comparison. “Technologically, that’s the simplest one. You just pull the data out reliably and serve it back to doctors in a way that’s likely to have an impact.”

That method and the exam-room posters are ones that Dr. Linder hopes to spread through working with partners.

“We have a decent start here,” he said. “We want to take it bigger and add more refinements.”

## Antibiotics on the farm

Cutting down on inappropriate antibiotic prescribing in the outpatient setting is just one element of a broader effort to prevent and mitigate antimicrobial resistance that the CDC promoted recently as part of Get Smart Week. Congress has appropriated \$160 million for the CDC to combat antibiotic resistance, carrying out the White House’s national action plan to reduce improper outpatient antibiotic prescribing 50 percent by 2020. The AMA joined the CDC and 11 other health organizations to issue a statement in October on the importance of outpatient antibiotic stewardship.

“We recognize that antibiotic resistance is a major threat to public health and commit to collective action to address this challenge by ensuring the appropriate use of these critical therapies,” said the letter, also joined by the American Academy of Family Physicians, American Academy of Emergency Medicine, Infectious Diseases Society of America and others.

Another practice contributing to antimicrobial resistance is “the overuse and misuse of antibiotics in food animal production,” according to an article in *World Medical Journal*. The periodical is published by the World Medical Association, to whose policy-making meetings the AMA sends a delegation

consisting of its immediate-past president, president and president-elect.

The *WMJ* article says “an overwhelming proportion of the worldwide consumption of antibiotics is for animal use” and offers several public health approaches communities can undertake to address the issue. The CDC also offers a primer on how antibiotic resistance goes “from the farm to the table.”