

# Simple Changes Reduce Misguided Antibiotic Prescriptions

By Gil Ross — February 15, 2016



Antibiotic overuse leads to adverse drug effects and

antimicrobial-resistant infections, which harm patients.

More than 250 million outpatient antibiotic prescriptions are written in the United States each year, most of which are for acute respiratory tract infections. A large proportion of these prescriptions are unnecessary. While many of these infections are *nosocomial* hospital acquired more and more are occurring among outpatients. That is why adapting the principles of antimicrobial stewardship to the ambulatory setting should be prioritized.

Antibiotic-resistant bacterial infections are a significant public health issue, and contribute to at least [23 000 deaths](#) <sup>[1]</sup> and at least two million serious illnesses annually in the U.S., from diverse resistant organisms including *Clostridium difficile* ("C-diff"), methicillin-resistant staph aureus (MRSA), vancomycin-resistant intestinal flora (VRE), among others.

While a strong argument can be made for a contribution to this problem from "growth promoting" antibiotics given to farm animals, unquestionably the larger problem is irresponsible antibiotic prescribing by primary care doctors.

A group of researchers based in Los Angeles and Boston decided to assess several methods aimed at reducing inappropriate antibiotic prescribing. They published their results in the current [JAMA](#) <sup>[2]</sup>, [in a study](#) <sup>[2]</sup> entitled "Effect of Behavioral Interventions on Inappropriate Antibiotic Prescribing Among Primary Care Practices."

The authors, from USC, UCLA, Brigham and Womens Hospital, were led by Daniella Meeker, PhD. Their method involved employing three types of behavioral interventions, or "reminders" for physicians concerning their antibiotic Rx's:

1 *suggested alternatives* presented electronic order sets suggesting nonantibiotic treatments

2 *accountable justification* prompted clinicians to enter free-text justifications for prescribing antibiotics into patients electronic health records

3 *peer comparison* sent emails to clinicians that compared their antibiotic prescribing rates with those of top performers (those with the lowest inappropriate prescribing rates)

The randomized clinical trial was conducted among 47 primary care practices in Boston and Los Angeles. Participants were 248 enrolled clinicians randomized to receive one of the interventions for 18 months. All clinicians received education on antibiotic prescribing guidelines on enrollment. Interventions began between November 1, 2011, and October 1, 2012. Follow-up for the latest-starting sites ended on April 1, 2014. Adult patients with comorbidities and concomitant infections were excluded. The outcomes measured included antibiotic prescribing rates for visits with antibiotic-inappropriate diagnoses (nonspecific upper respiratory tract infections, acute bronchitis, and influenza) from 18 months preintervention to 18 months afterward.

The results were impressive, supporting the efficacy of such interventions in these "real time" scenarios: There were 147,753 visits (mean patient age, 47 years; 69 percent women) for antibiotic-inappropriate acute respiratory tract infections during the baseline period and 167,959 visits (mean patient age, 48 years; 67 percent women) during the intervention period.

Mean antibiotic prescribing rates decreased from 24 percent at intervention start to 13 percent at intervention month 18 for control practices; from 22 percent to 6 percent for suggested alternatives; from 23 percent to 5 percent for accountable justification; and from 20 percent to 4 percent for peer comparison.

The authors concluded, with some justification, that the use of accountable justification and peer comparison as behavioral interventions resulted in lower rates of inappropriate antibiotic prescribing for acute respiratory tract infections.

Given the major ramifications for public health of the issue excessive antibiotic prescribing by primary care doctors it seems that implementing these simple cognitive behavioral interventions in a more widespread distribution would have a significant salutary impact on bacterial resistance and needless drug reactions to inappropriate antibiotics.

The devil, however, may well be in the details of how to set up such programs among hundreds of thousands of independent providers.

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[1] <http://pubs.acs.org/doi/full/10.1021/acs.est.5b01519?src=recsys&>

[2] <http://jama.jamanetwork.com/article.aspx?articleid=2488307>