

# Effectiveness of behavioral interventions to reduce inappropriate antibiotic prescribing

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Among primary care practices, the use of two socially motivated behavioral interventions - accountable justification and peer comparison - resulted in significant reductions in inappropriate antibiotic prescribing for acute respiratory tract infections, while an intervention that lacked a social component, suggested alternatives, had no significant effect, according to a study in the February 9 issue of *JAMA*.

Most antibiotics prescribed in the United States are for acute [respiratory tract infections](#), and roughly half of these prescriptions are intended to treat diagnoses for which antibiotics have no benefit. Despite published clinical guidelines and decades of efforts to change prescribing patterns, [antibiotic overuse](#) persists. Interventions based on behavioral science might reduce inappropriate antibiotic prescribing. Researchers are beginning to apply models from psychology and behavioral economics to identify new social and cognitive devices to gently nudge clinician decision making while preserving freedom of choice.

Jason N. Doctor, Ph.D., of the University of Southern California, Los Angeles, and colleagues randomly assigned 248 clinicians from 47 primary care practices in Boston and Los Angeles to receive 0, 1, 2, or 3 interventions for 18 months. The three behavioral interventions, implemented alone or in combination, were: suggested alternatives, which presented electronic order sets suggesting nonantibiotic treatments; accountable justification, which prompted clinicians to enter free-text justifications for prescribing antibiotics into patients' electronic health records; and peer comparison, which sent emails to clinicians that compared their antibiotic prescribing rates with those of "top performers" (those with the lowest inappropriate prescribing rates). All clinicians received education on antibiotic prescribing guidelines on enrollment.

There were 14,753 visits (average patient age, 47

years) for antibiotic-inappropriate acute respiratory tract infections during the baseline period and 16,959 visits (average patient age, 48 years) during the intervention period. Average 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.

Analysis indicated that accountable justification and peer comparison resulted in statistically significant reductions in inappropriate antibiotic prescribing, while suggested alternatives had no statistically significant effect.

All 3 interventions involved modest changes to the practice environment; none restricted clinicians' choice of treatment or changed how clinicians were paid.

The authors note that there were no statistically significant interactions between interventions; therefore, applying these interventions simultaneously might have additive effects on antibiotic prescribing.

"This report highlights the promise of various types of immediate feedback to improve [antibiotic prescribing](#) and justifies further investigation to devise the most effective, generalizable, and sustainable interventions," writes Jeffrey S. Gerber, M.D., Ph.D., of the Children's Hospital of Philadelphia, in an accompanying editorial.

"This might require tailoring the intervention to specific practice, practitioner, or patient characteristics. Future work should also expand to focus on the most common infections for which antibiotics are sometimes (but often not) indicated, such as acute pharyngitis and sinusitis (although these conditions triggered the nudge in this intervention, prescribing rates for pharyngitis and sinusitis were not measured), and to optimize

guideline-concordant antibiotic choice (narrower) and duration of therapy (shorter) for common bacterial infections."

**More information:** *JAMA*, [DOI: 10.1001/jama.2016.0275](https://doi.org/10.1001/jama.2016.0275)

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