

Interventions and Best Practices for Improving Antibiotic Use

Nebraska Antimicrobial Stewardship Summit

August 12, 2022

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Disclosure

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- The findings in this presentation are those of the authors who are responsible for its content and do not necessarily represent the views of AHRQ
- No statement in this report should be construed as an official position of AHRQ, the U.S. Department of Health and Human Services, or of the United States Government

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Outline

- **Publications and Results**
 - Northwestern Urgent Care Stewardship
 - AHRQ Safety Program for Improving Antibiotic Use
- **Interventions**
 - Measurement and Reporting
 - Peer Comparison
 - Commitment
 - Communication Training
- **Questions and Discussion**

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Received: 26 April 2017 | Accepted: 20 July 2017
DOI: 10.1111/jcpt.12610

ORIGINAL ARTICLE


WILEY Journal of Clinical Pharmacy and Therapeutics

Antibacterials dispensed in the community comprise 85%-95% of total human antibacterial consumption

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Summary
What is known and objective: Interventions intended to slow the emergence and spread of antibacterial resistance through enhanced antimicrobial stewardship will be more effective if informed by an accurate knowledge of current patterns of antibacterial consumption. For example, knowledge of the relative magnitude of community

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Infection Control & Hospital Epidemiology (2022), 1–10
doi:10.1017/ice.2022.164

SHEA

Original Article

Antibiotic stewardship to reduce inappropriate antibiotic prescribing in integrated academic health-system urgent care clinics

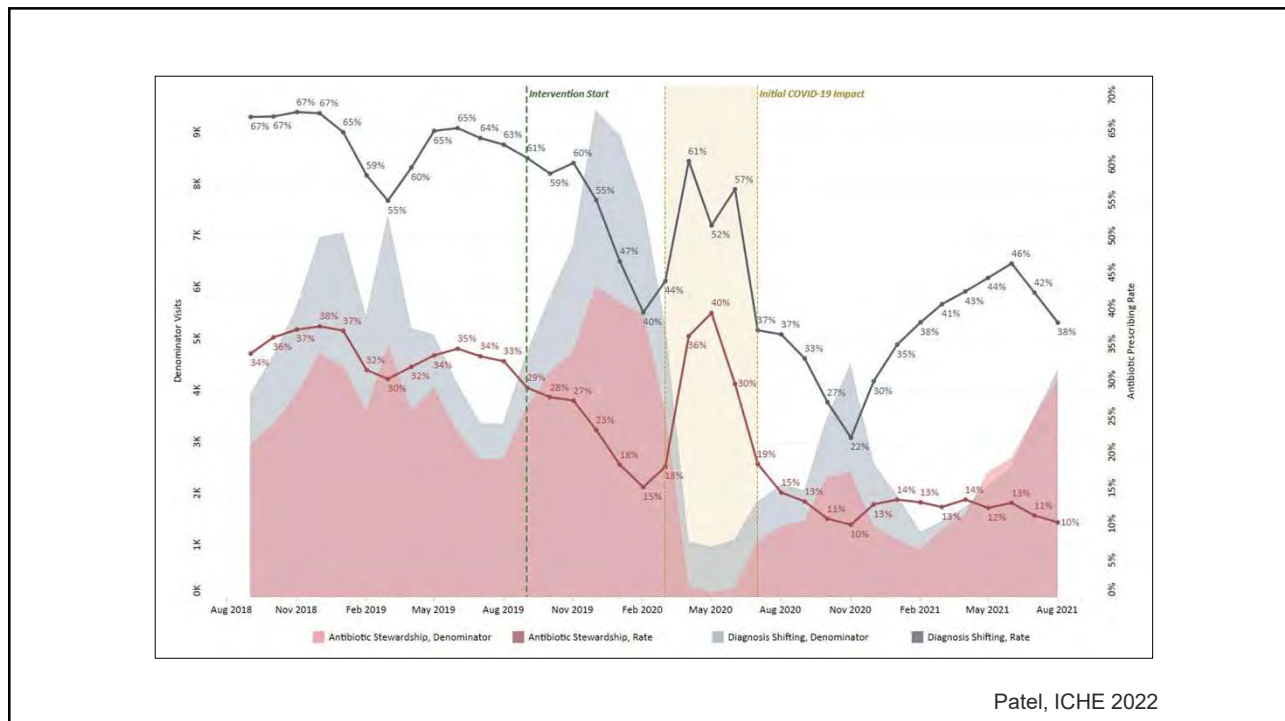
Dharmesh Patel MBA, CNMT, R.T.(N)(ARRT)¹, Teresa Ng², Lubna S. Madani MD³, Stephen D. Persell MD, MPH^{4,5,7}, Mark Greg PharmD⁶, Phillip E. Roemer MD^{4,7}, Sonali K. Oberoi OTR, MHA⁷ and Jeffrey A. Linder MD, MPH^{4,5,7} 

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Abstract

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Original Investigation | Infectious Diseases

Assessment of Changes in Visits and Antibiotic Prescribing During the Agency for Healthcare Research and Quality Safety Program for Improving Antibiotic Use and the COVID-19 Pandemic

Sara C. Keller, MD, MPH, MSHP; Tania M. Caballero, MD; Pranita D. Tamma, MD, MHS; Melissa A. Miller, MD, MS; Prashila Dullabh, MD; Roy Ahn, ScM, ScD; Savyasachi V. Shah, MPH; Yue Gao, MPH; Kathleen Speck, MPH; Sara E. Cosgrove, MD, MS; Jeffrey A. Linder, MD, MPH

Abstract

IMPORTANCE The Agency for Healthcare Research and Quality (AHRQ) Safety Program for Improving Antibiotic Use aimed to improve antibiotic prescribing in ambulatory care practices by engaging clinicians and staff to incorporate antibiotic stewardship into practice culture, communication, and decision-making. Little is known about implementation of antibiotic

Key Points

Question Is a national antibiotic stewardship program for ambulatory care associated with a decrease in antibiotic prescribing?

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AHRQ Safety Program

- **Practices:** Enrolled 467 primary care and urgent care practices
 - 83% completed program
 - 75% submitted complete data
- December 2019 to November 2020
- Monthly webinars, audio presentations, educational tools, office hours
- Primary Outcome: antibiotic prescriptions per 100 ARI visits

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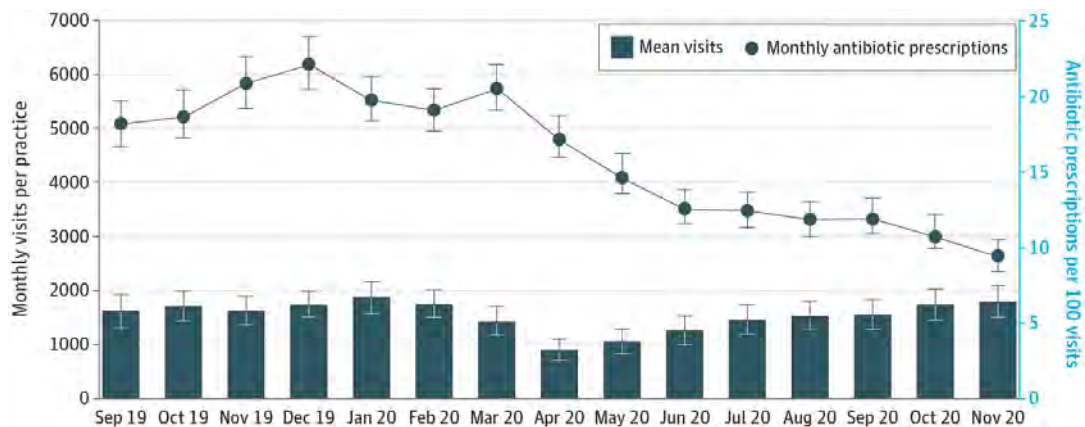
Keller, JAMA Netw Open 2022

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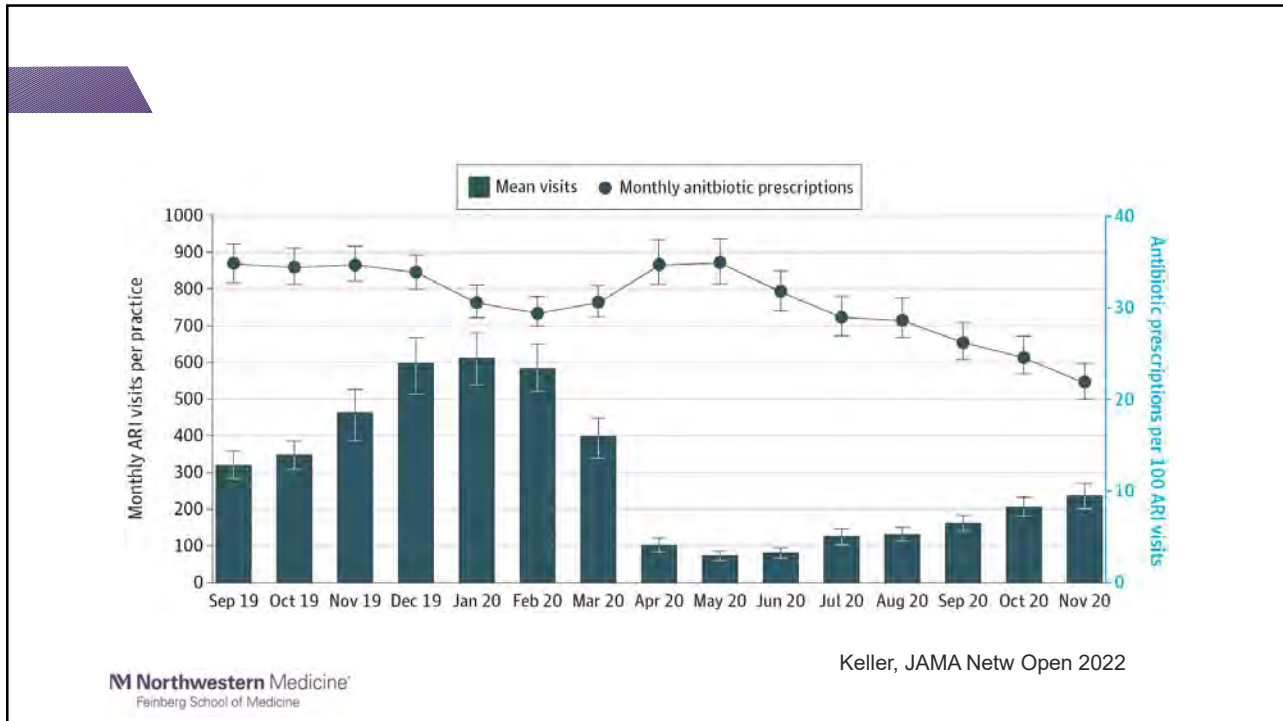
Table. Types of Practices That Participated in the Safety Program and Submitted Sufficient Data for Analysis

Practice type	No. (%)		No. of clinicians in practices completing Safety Program, mean (SD)
	Practices that remained in Safety Program (n = 389)	Practices that submitted complete data for analysis (n = 292)	
Primary care, including pediatrics	162 (42)	103 (35)	13.3 (16.7)
Pediatric-only primary care	23 (6)	21 (7)	10.5 (10.3)
Urgent care, including pediatrics	160 (41)	141 (48)	10.5 (15.0)
Pediatric-only urgent care	40 (10)	39 (13)	9.4 (13.4)
Federally supported practices ^a	49 (13)	34 (12)	19.9 (29.6)
Other ^b	18 (5)	14 (5)	37.3 (60.6)

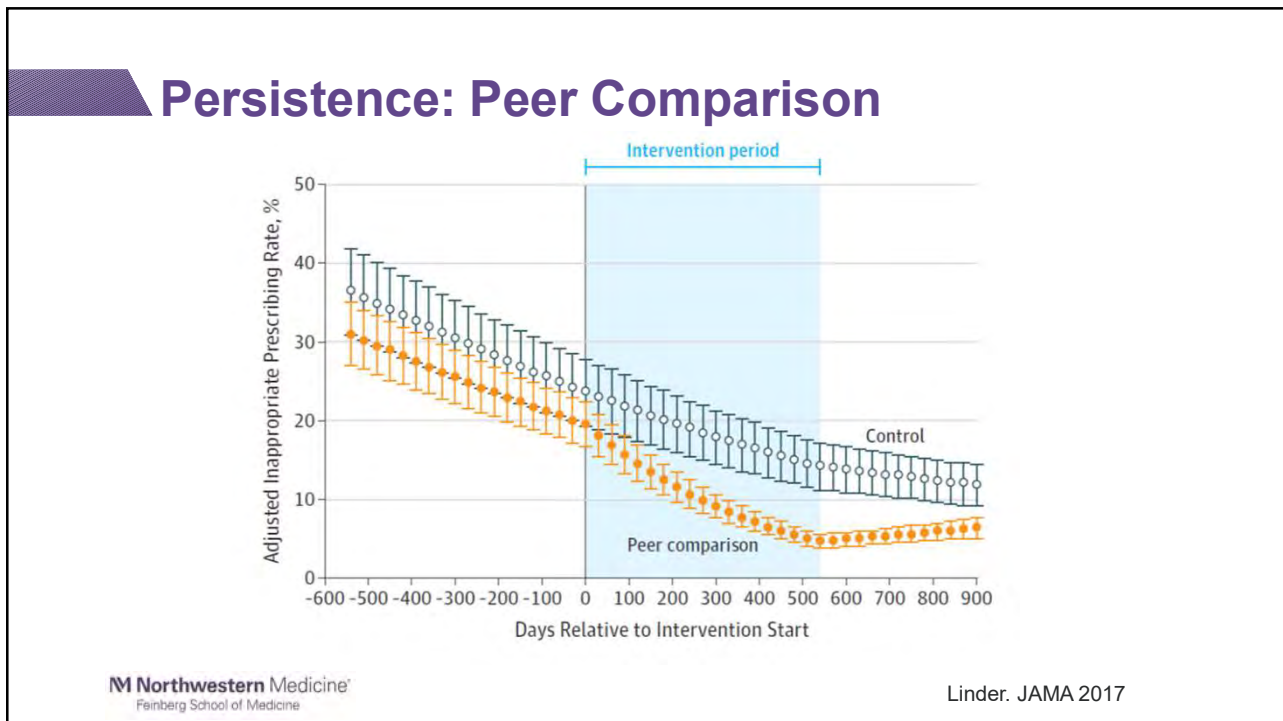
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Decision-Making: Feedback

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AHRQ Program: Data Feedback Report

Benchmarking Report 4, September 2019 to November 2020

Practice: Benchmarking group: Urgent Care practices

1. Antibiotic Prescriptions per 100 Visits, Total

Table 1. Antibiotic Prescriptions per 100 Visits, Total, Your Practice vs. Benchmark

Label	Sep 2019	Oct 2019	Nov 2019	Dec 2019	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020	Jun 2020	Jul 2020	Aug 2020	Sep 2020	Oct 2020	Nov 2020
Performing rate, Practice	52.2	51.9	45	45.4	34.9	33.9	35.4	38.3	41.6	37.7	24.9	26.6	26.4	25.3	25
Benchmark	32.2	31.8	30	31.5	34	31.3	29.8	27.2	28.3	24.9	24.9	24.9	24.9	24.9	24.9

Figure 1. Total Antibiotic Prescriptions per 100 Visits, Your Practice (indicated by bolded numbers) vs. the Benchmark

2. Antibiotic Prescriptions per 100 Visits with Acute Respiratory Infection (ARI) Diagnosis, Total

Table 2. Antibiotic Prescriptions per 100 Visits with ARI Diagnosis, Total, Your Practice vs. Benchmark

Label	Sep 2019	Oct 2019	Nov 2019	Dec 2019	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020	Jun 2020	Jul 2020	Aug 2020	Sep 2020	Oct 2020	Nov 2020
Performing rate, Practice	56.4	56.2	58.3	54.3	49.4	45.5	48	57.8	48.6	48.7	48.1	56.4	50	50.3	40.1
Benchmark	30.9	31.5	34	31.3	29.8	27.2	28.3	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9

Figure 2. Total Antibiotic Prescriptions per 100 Visits with ARI Diagnosis, Your Practice (indicated by bolded numbers) vs. the Benchmark

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Keller, JAMA Netw Open 2022

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Intervention 3: Peer Comparison

“You are a Top Performer”

You are in the top 10% of clinicians. You wrote 0 prescriptions out of 21 acute respiratory infection cases that did not warrant antibiotics.

“You are not a Top Performer”

Your inappropriate antibiotic prescribing rate is 15%. Top performers' rate is 0%. You wrote 3 prescriptions out of 20 acute respiratory infection cases that did not warrant antibiotics.

Original Investigation

Nudging Guideline-Concordant Antibiotic Prescribing A Randomized Clinical Trial

Daniella Meeker, PhD; Tara K. Knight, PhD; Mark W. Friedberg, MD, MPP; Jeffrey A. Linder, MD, MPH;
Noah J. Goldstein, PhD; Craig R. Fox, PhD; Alan Rothfeld, MD; Guillermo Diaz, MD; Jason N. Doctor, PhD

 Invited Commentary page 432

IMPORTANCE “Nudges” that influence decision making through subtle cognitive mechanisms have been shown to be highly effective in a wide range of applications, but there have been few experiments to improve clinical practice.

OBJECTIVE To investigate the use of a behavioral “nudge” based on the principle of public commitment in encouraging the judicious use of antibiotics for acute respiratory infections (ARIs).

**Safe Antibiotic Use:
A Letter From Your Medical Group**

Dear Patient,

We want to give you some important information about antibiotics.

Antibiotics, like penicillin, fight infections due to bacteria that can cause some serious illnesses. But these medicines can cause side effects like skin rashes, diarrhea, or yeast infections. If your symptoms are from a virus and not from bacteria, you won't get better with an antibiotic, and you could still get these bad side effects.

Antibiotics also make bacteria more resistant to them. This can make future infections harder to treat. This means that antibiotics might not work when you really need them. Because of this, 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 on when you should or should not take antibiotics.

When you have a cough, sore throat, or other illness, ask your doctor about the best possible treatments. If an antibiotic is needed, your doctor will explain this to you and your family.

Your health is very important to us. As your doctors, we promise to treat your illness in the best way possible. We are also dedicated to avoid prescribing antibiotics when they are likely to do more harm than good.

If you have any questions, please feel free to ask your doctor, nurse, or pharmacist.

Sincerely,



**El Uso Seguro de Antibióticos:
Una Carta de su Grupo Médico**

Estimado Paciente:

Queremos compartir información importante con usted sobre los antibióticos.

Los antibióticos como la penicilina ayudan a combatir infecciones debido a bacterias que pueden causar serias enfermedades. Pero estas medicinas también tienen efectos secundarios como erupciones de la piel, diarrea, o infecciones por hongos de levadura. Si sus síntomas son debidos a un virus y no por una bacteria, no se mejorará con un antibiótico, y usted aún puede obtener estos efectos secundarios no deseados.

Los antibióticos también pueden hacer la bacteria más resistente a ellas. Esto hará que infecciones en el futuro sean más difíciles de tratar. Eso significa que los antibióticos no trabajarán cuando usted en realidad necesita que funcionen. Por eso, es importante que usted sólo use un antibiótico cuando es necesario para usted.


Los antibióticos también pueden hacer la bacteria más resistente a ellas. Esto hará que infecciones en el futuro sean más difíciles de tratar. Eso significa que los antibióticos no trabajarán cuando usted en realidad necesita que funcionen. Por eso, es importante que usted sólo use un antibiótico cuando es necesario para usted.

mejor para usted.

Su salud es importante para nosotros. Como sus doctores, nosotros prometemos tratar su enfermedad en la mejor manera posible. También nos comprometemos a evitar recetar antibióticos cuando sean probables de hacer más daño que bien.

Si tiene cualquier pregunta, pregúmele a su doctor, enfermera, o farmacéutico.

Atentamente,




Your health is very important to us. As your doctors, we promise to treat your illness in the best way possible. We are also dedicated to avoid prescribing antibiotics when they are likely to do more harm than good.

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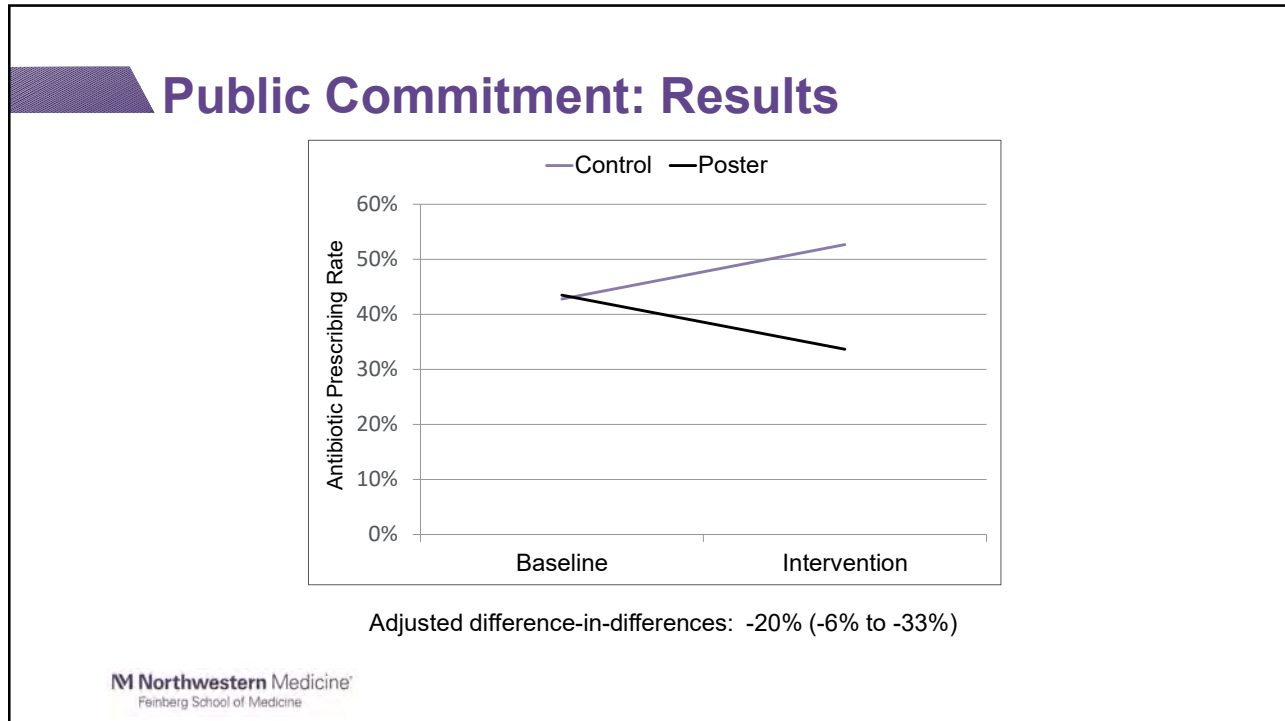
Public Commitment: Methods

- Randomized 14 clinicians
 - Stratified by high and low-prescribing
- 48 week baseline
- 12 week intervention
- 954 non-antibiotic-appropriate ARI visits



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ANALYSIS

Check for updates

Details matter: predicting when nudging clinicians will succeed or fail
 Subtle implementation details can greatly influence the effectiveness of behavioural nudges because of their inherent subjective and social nature, argue **Craig Fox and colleagues**

Craig R Fox,¹ Jason N Doctor,² Noah J Goldstein,¹ Daniella Meeker,² Stephen D Persell,³ Jeffrey A Linder³

Interest in promoting better medical decisions by applying insights from behavioural science research has surged.¹ Such interventions break with the traditional assumption that patients and clinicians act purely according to rational self-interest. Instead, behavioural interventions acknowledge cognitive constraints, biases, and social motivations of clinicians and patients, and typically attempt to “nudge” desired behaviours—that is, influence

comparison of clinician performance can be a powerful instrument for changing behaviour.⁷ For that reason, the disparity in results from a US performance message study^{8,9} and Swiss performance dashboard study¹⁰ initially seem curious. The US based study sent primary care physicians monthly emails summarising their rate of inappropriate antibiotic prescribing for acute upper respiratory infections, along with the rate of inappropriate

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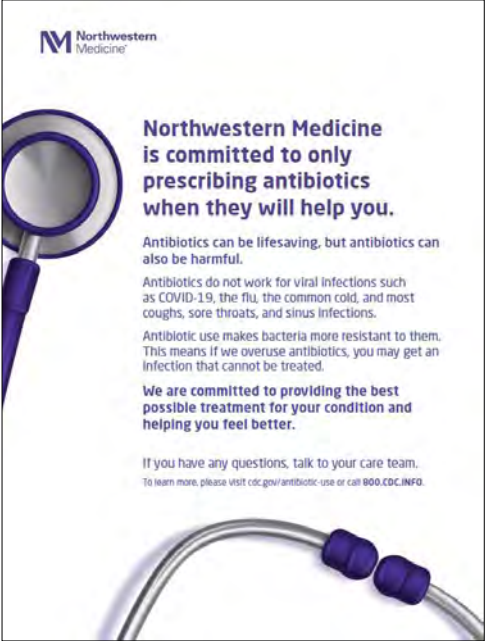
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<https://dx.doi.org/10.1136/bmj.m3256>
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Northwestern Medicine is committed to only prescribing antibiotics when they will help you.

Antibiotics can be lifesaving, but antibiotics can also be harmful.

Antibiotics do not work for viral infections such as COVID-19, the flu, the common cold, and most coughs, sore throats, and sinus infections.

Antibiotic use makes bacteria more resistant to them. This means if we overuse antibiotics, you may get an infection that cannot be treated.

We are committed to providing the best possible treatment for your condition and helping you feel better.

If you have any questions, talk to your care team.
To learn more, please visit [cdc.gov/antibiotic-use](https://www.cdc.gov/antibiotic-use) or call [800.CDC.INFO](https://www.cdc.gov/1800).

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WE COMMIT TO ONLY PRESCRIBING ANTIBIOTICS WHEN THEY WILL HELP YOU

Antibiotics only fight infections caused by bacteria.

Taking antibiotics when you don't need them will NOT make you better. You will still feel sick, and the antibiotic may give you a skin rash, diarrhea, or a yeast infection.

How can you help?

Your health is important to us. As your healthcare providers, we promise to provide the best possible treatment for your condition.

How can you help?

Your health is important to us. As your healthcare providers, we promise to provide the best possible treatment for your condition. If an antibiotic is not needed, we will explain this to you and will offer a treatment plan that will help.

When you have a cough, sore throat, or other illness, tell your doctor you only want an antibiotic if it is really necessary. If you are not prescribed an antibiotic, ask what you can do to feel better and get relief from your symptoms.

Keller, JAMA Netw Open 2022

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AHRQ Safety Program for Improving Antibiotic Use



Communicating With Patients and Families About Antibiotic Decisions

Ambulatory Care




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First Scenario – Past Experience

Prior Experience With Clinicians

“My doctor always gives me an antibiotic for a cough.”



Problem: Another clinician has prescribed antibiotics for similar symptoms

AHRQ Safety Program for Improving Antibiotic Use – Ambulatory Care

Communicating With Patients and Families 24

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First Scenario – Response

“My doctor always gives me an antibiotic for a cough.”



Potential response:

“There’s a lot of newer evidence showing antibiotics have more side effects than we used to think, so we are becoming more careful about only prescribing antibiotics when really necessary. I can give you a few other recommendations to help you feel better.”

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Second Scenario – Past Experience

Prior Experience With Antibiotics

“Antibiotics are the only thing that has ever helped this cough get better.”



Problem: What patients may perceive as response to an antibiotic is actually improvement that was expected as part of the natural course of illness, because antibiotics do not help acute bronchitis

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Second Scenario – Response¹⁴⁻¹⁵

“Antibiotics are the only thing that has ever helped this cough get better.”



Potential response:


“The good news is that this time, you have a virus, and antibiotics don’t fight viruses. We want to avoid putting you at risk for unnecessary diarrhea or discomfort that comes with antibiotic use. Let’s work on some other things that could help you feel better.”

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Take-Home Messages

- Effective communication with patients around antibiotic prescribing decisions reduces unnecessary antibiotic use.
- Patient and clinician satisfaction will improve if all members of the practice use clear and consistent messaging around antibiotic prescribing decisions.
- Provide positively focused messages about why it is good when patients do not need antibiotics
- Provide concrete alternatives.
- Provide clear guidance on when patients should return to medical care.

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PERSPECTIVE AND CONTROVERSY

"I Never Get Better Without an Antibiotic": Antibiotic Appeals and How to Respond


Julia E. Szymczak, PhD; Sara C. Keller, MD, MPH, MSHP;
and Jeffrey A. Linder, MD, MPH

Check for updates

A physician is seeing an urgent care patient at his large group practice, a 40-year-old lawyer with symptoms of a sinus infection. She does not meet guideline criteria for antibiotic prescribing. Upon being told a prescription is unnecessary, she protests. "Whenever I have this I always get an antibiotic from my doctor. I never get better without it." The physician remains firm in his decision, but the interaction is tense. The patient

back. Through conversations based on our combined experiences caring for patients in primary care, conducting sociological research about antibiotic decision making and implementing interventions to improve antibiotic use, we identify 5 common patient appeals that clinicians encounter in response to initial denials of a request for unnecessary antibiotics (Table). This list of appeals is not exhaustive, but reflects recurrent specific appeals that clinicians practicing in the US

From the Department of Biostatistics, Epidemiology and Informatics, University of Pennsylvania Perelman School of Medicine, Philadelphia, PA (J.E.S.); Department of Medicine, Johns Hopkins University School of Medicine, Baltimore, MD (S.C.K.); and Division of General Internal Medicine and Geriatrics, North-




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Addressing Antibiotic Appeals

<p>3 ...an important life event scheduled in the near future that they do not want their symptoms to interfere with.</p>	<p>"We're going on vacation for 10 days starting tomorrow. Can't you give me something, just in case?"</p>	<p>"Antibiotics won't help you get better faster and they can cause problems like diarrhea that might ruin your vacation. There are some effective things you can do to manage your symptoms including staying hydrated, taking ibuprofen, and using saline nasal spray."</p>
<p>4 ...the observation that a spouse, child, colleague, or friend with whom they have spent time is experiencing similar symptoms and was prescribed an antibiotic by another clinician.</p>	<p>"Something is going around my office and everyone is sick. Many of my colleagues have been given an antibiotic for this and seem to be better, so I think I need one too."</p>	<p>"My chief concern is your well-being since you are my patient and I will treat you as an individual. My examination shows you have a viral infection. The fact that your colleagues are sick makes it all the more likely that it is a virus, and antibiotics don't fight viruses."</p>
<p>5 ...an economic or consumerist reason why they should receive an antibiotic even if one is not warranted.</p>	<p>"But I took a whole morning off of work to come here. Are you telling me that there is really nothing you can give me!?"</p>	<p>"I'm so glad you came in to see me today so I could evaluate these uncomfortable symptoms you are experiencing to make sure it's not dangerous. You are sick with a virus. While we can't make the virus go away faster, you can feel better sooner by supporting your body with rest, lots of fluids, and ibuprofen for your muscle aches."</p>

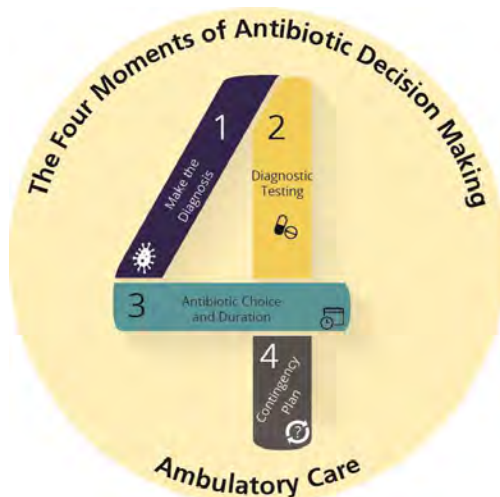

Szymczak, Mayo Clin Proc 2021

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Addressing Antibiotic Appeals

Messages to convey in response to all appeals
Convey that the patient's well-being in the moment is your primary concern and the motivation behind the recommendation.
Recognize the patient's suffering as real and empathize with the patient about the burdensome impact of illness on daily life.
Affirm the patient's decision to seek medical attention to rule out more serious illness.

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1. Does my patient have an infection that requires antibiotics?
2. Do I need to order any diagnostic tests?
3. If antibiotics are indicated, what is the narrowest, safest, and shortest regimen I can prescribe?
4. Does my patient understand what to expect and the follow-up plan?

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AHRQ Program: 3 Areas



Develop and improve antibiotic stewardship activities in your practice



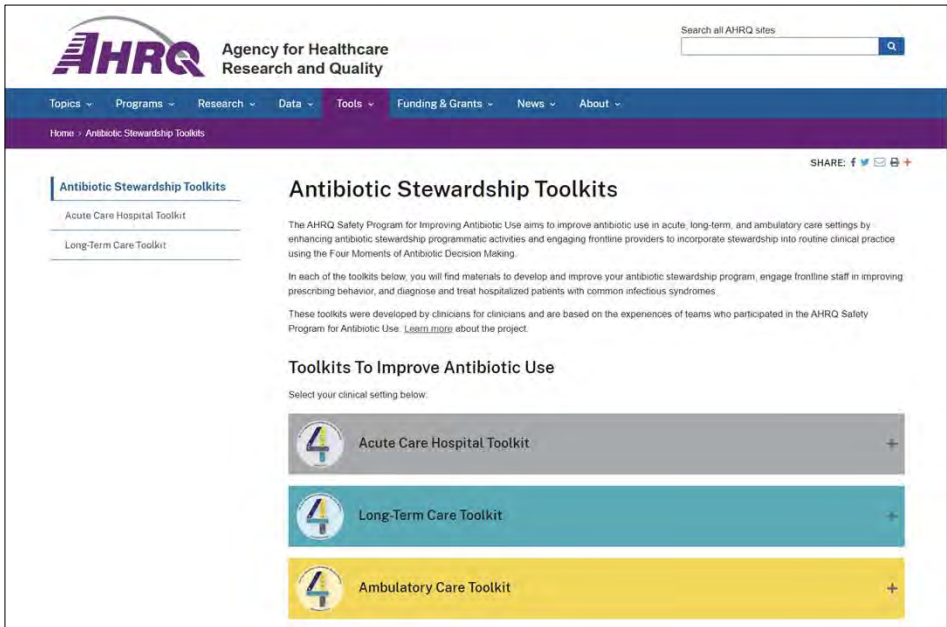
Learn strategies for communicating with colleagues, patients, and families about antibiotic prescribing



Learn best practices for diagnosing and managing common infectious syndromes and antibiotic allergies

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The screenshot shows the AHRQ website interface. At the top, the AHRQ logo is followed by the text "Agency for Healthcare Research and Quality". A search bar is located on the right. Below the logo is a navigation menu with items: Topics, Programs, Research, Data, Tools, Funding & Grants, News, and About. The breadcrumb trail reads "Home > Antibiotic Stewardship Toolkits".

The main content area is titled "Antibiotic Stewardship Toolkits". It includes a sub-section "Antibiotic Stewardship Toolkits" with a list of "Acute Care Hospital Toolkit" and "Long-Term Care Toolkit". Below this is a paragraph explaining the AHRQ Safety Program for Improving Antibiotic Use, followed by another paragraph stating that the toolkits were developed by clinicians for clinicians.

The section "Toolkits To Improve Antibiotic Use" includes a prompt "Select your clinical setting below." and three expandable toolkits: "Acute Care Hospital Toolkit" (grey bar), "Long-Term Care Toolkit" (teal bar), and "Ambulatory Care Toolkit" (yellow bar). Each bar has a plus sign on the right.

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Summary and Take-Home Points

1. Measurement and feedback is a requirement...and may be the most effective single intervention
2. Feedback cannot be too simple
3. For clinicians, must address *perceptions* around:
 - Patient desire for antibiotics
 - Patient satisfaction

Thank You

Questions? Conversation?

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