

Doing What's Best for Our Patients

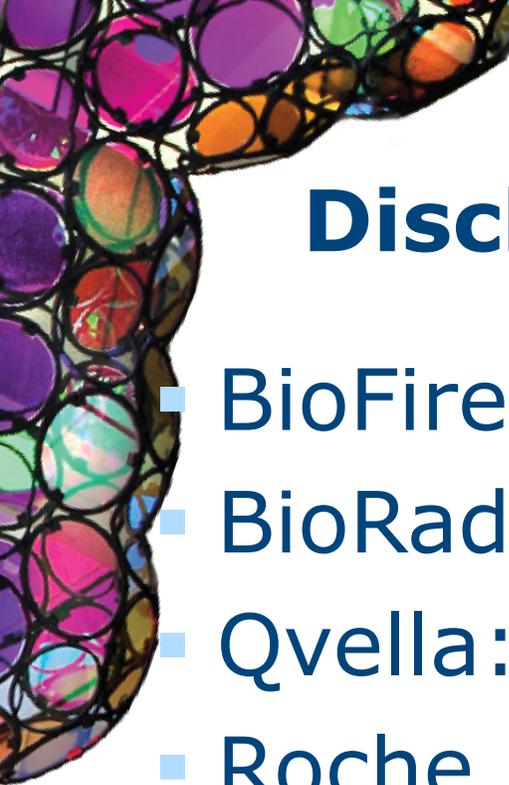
Antibiotic Stewardship in the ED Setting

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Disclosures

- MITIGATE Funding Statement: This work was supported by CDC's investments to combat antibiotic resistance under award number 200-2016-91939.
 - Disclaimer: The findings and conclusions in the MITIGATE presentation are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.
 - SSTI Project Funded by Merck Investigator Studies Program
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- BioFire Diagnostics: grant support
- BioRad: consultant
- Qvella: consultant
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- Cepheid: speakers bureau
- Gilead Foundation: grant support



Outline

- Antimicrobial stewardship for the ED and outpatient setting
 - Understanding barriers to improving care
 - Potential interventions to improving appropriate use of antibiotics
 - MITIGATE project
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Antibiotic stewardship is patient safety

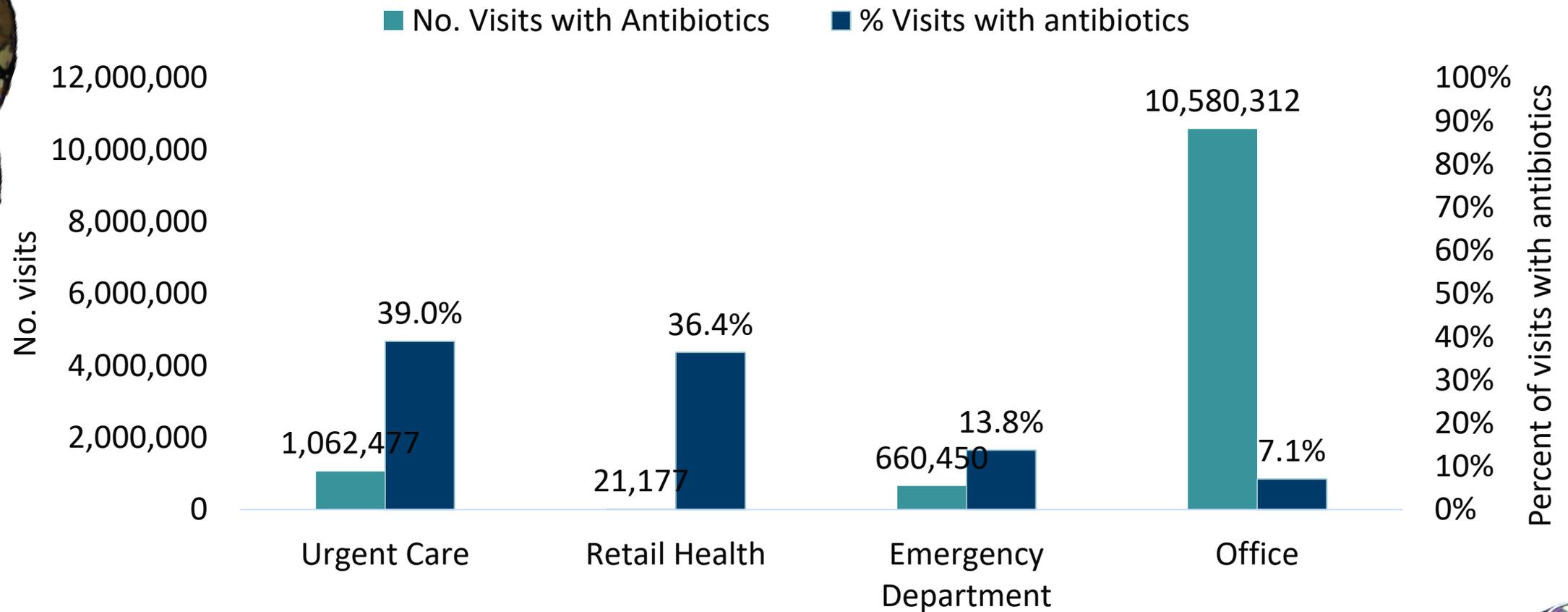
- Adverse drug events
- *Clostridium Difficile*
- Long-term consequences

Estimated minimum number of illnesses and deaths caused annually by antibiotic resistance*:

At least  **2,049,442** illnesses,
 **23,000** deaths

**bacteria and fungus included in this report*

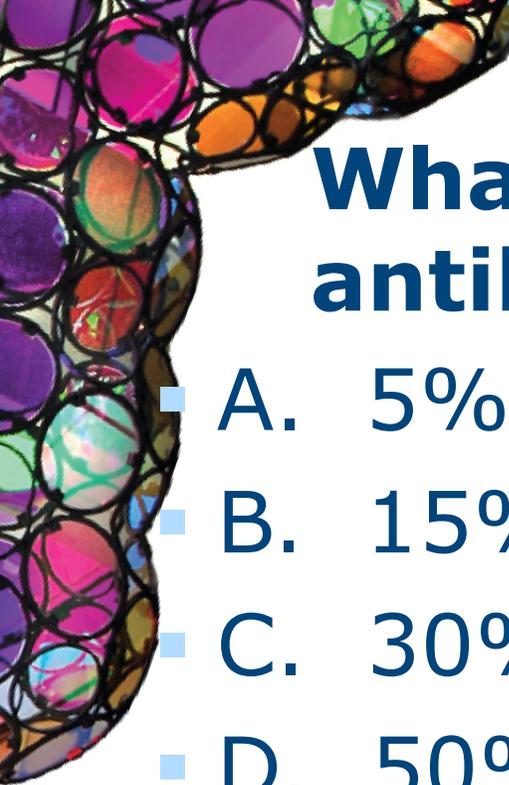
Antibiotic prescribing per visit by outpatient setting — MarketScan, 2014



Where Do We Want to Be?

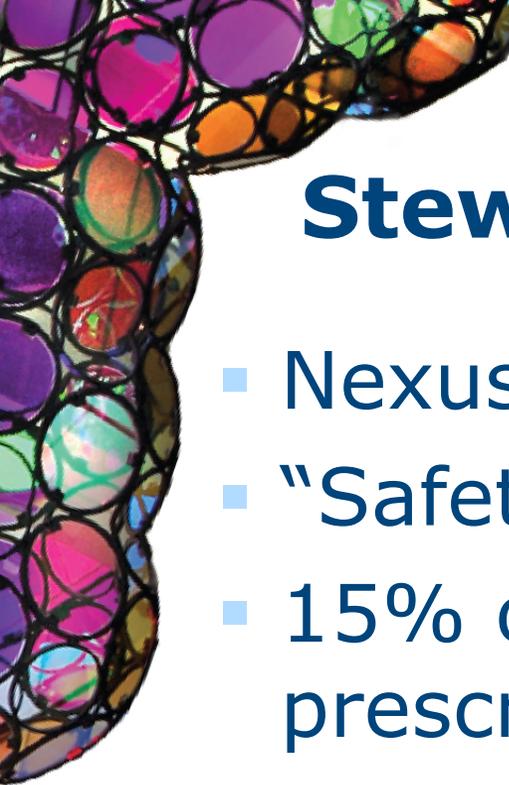
- Every patient gets optimal antibiotic treatment
 - Antibiotics only when they are needed
 - If needed
 - Right antibiotic
 - Right dose
 - Right duration
- **Antibiotic stewardship** is the effort to measure and optimize antibiotic use





What percent of ED visits result in an antibiotic Rx?

- A. 5%
- B. 15%
- C. 30%
- D. 50%

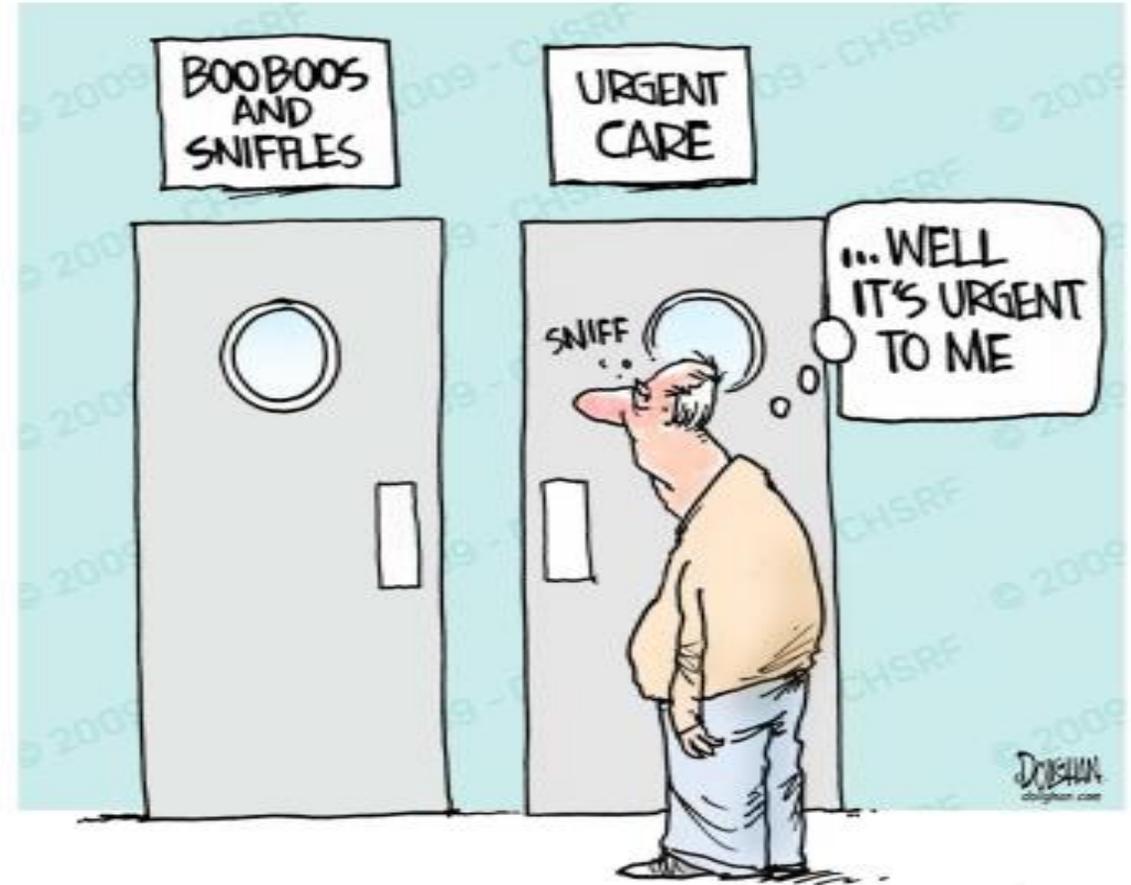


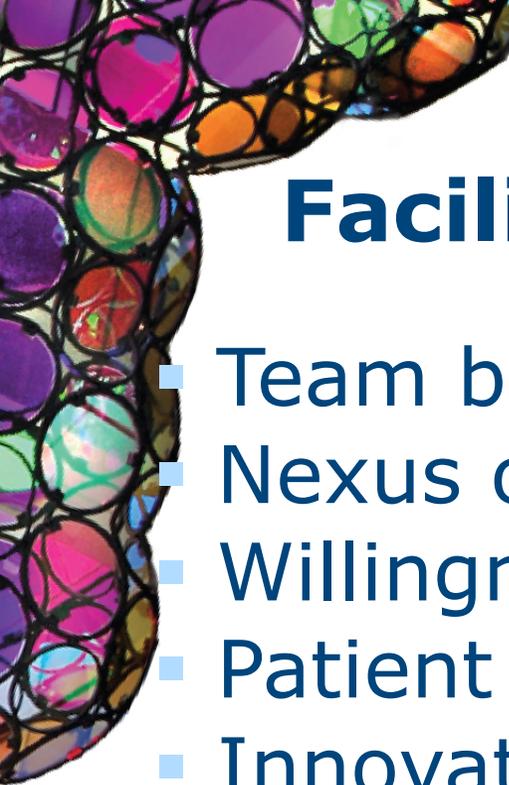
Stewardship: Why the ED?

- Nexus of community and hospital
 - “Safety Net”
 - 15% of ED/urgent care visits result in antibiotic prescription
 - Diverse conditions along spectrum of severity
 - Paucity of recommendations outside hospital setting
- 

Challenges for the ED

- ED crowding/boarding
- Patient turnover
- Quick decision-making
- Shift based scheduling
- Diagnostic uncertainty
- Concern for poor outcomes
- Lack of patient follow-up
- Patient satisfaction





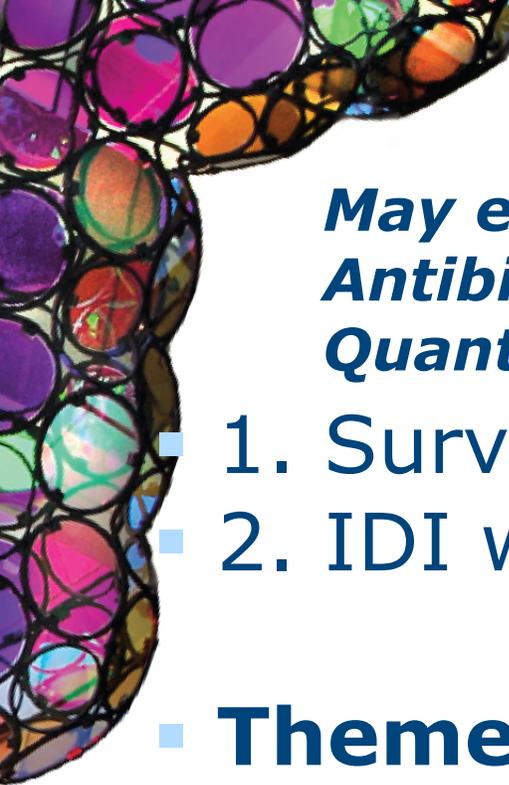
Facilitators

- Team based approach
 - Nexus of community and hospital
 - Willingness to take on new tasks and learn
 - Patient education/communication tools
 - Innovate/create
 - Local guidelines/pathways
 - CDSS
 - Rapid diagnostics
 - Antibiofilms
- 



Why might providers prescribe antibiotics inappropriately in the ED?

- Lack of knowledge of appropriate indications?
 - Fear of complications?
 - Patient pressure and satisfaction?
- 



May et al. Multisite Exploration of Clinical Decision Making for Antibiotic Use by Emergency Medicine Providers Using Quantitative and Qualitative Methods

- 1. Survey of 150 ED providers on KAB
 - 2. IDI with 21 providers across 8 sites

 - **Themes:**
 - Resource/environmental factors
 - Access/quality of care received outside ED
 - Patient-provider relationship
 - Clinical inertia
 - Local knowledge generation
- 



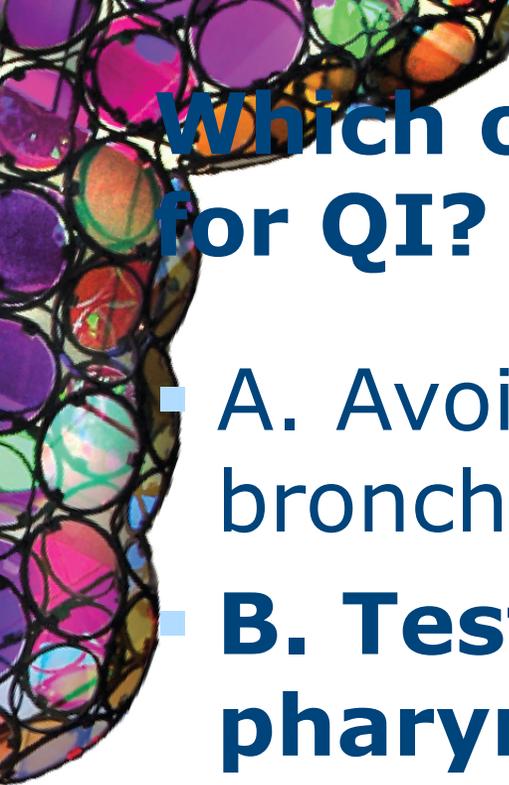
Approaches to stewardship in the ED

- Engage ED clinicians in existing ASP
 - Multidisciplinary collaboration
 - Education
 - Guidelines and Clinical Pathways
 - Audit and Feedback
 - Clinical decision support
 - Rapid Diagnostics
 - Focus on outpatients/care transitions
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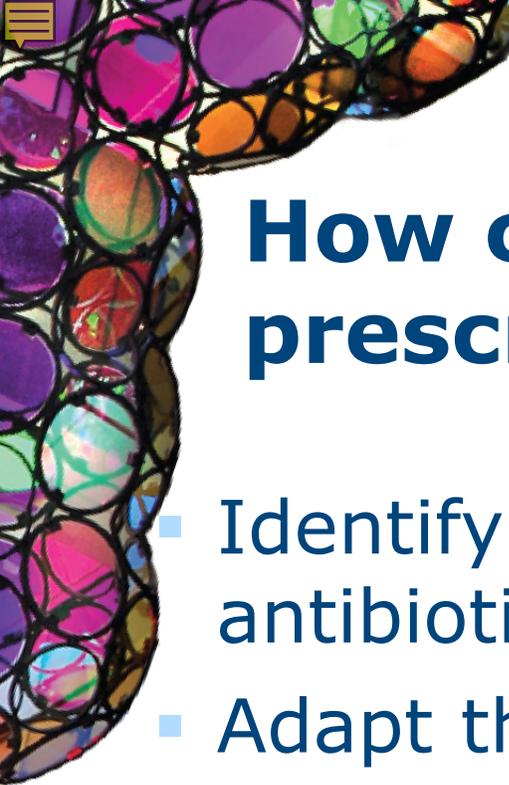
Targets for stewardship

- Appropriate antibiotics
 - Pneumonia, UTI, miscellaneous bacterial infections
 - No antibiotics
 - Bronchitis, bronchiolitis, viral URI, influenza, non-suppurative otitis media, viral pneumonia, asthma, allergy
 - Test for bacterial infection
 - Pharyngitis (all-cause)
 - Reduction in antibiotics to level of the lowest prescribing region
 - Sinusitis, suppurative otitis media
 - All other remaining conditions
- 



Which of the following is not a HEDIS measure for QI?

- A. Avoiding antibiotics in adults with acute bronchitis
- **B. Testing all patients prior to treatment of pharyngitis with antibiotics**
- C. Avoiding antibiotics in children under 18 with nonspecific URI



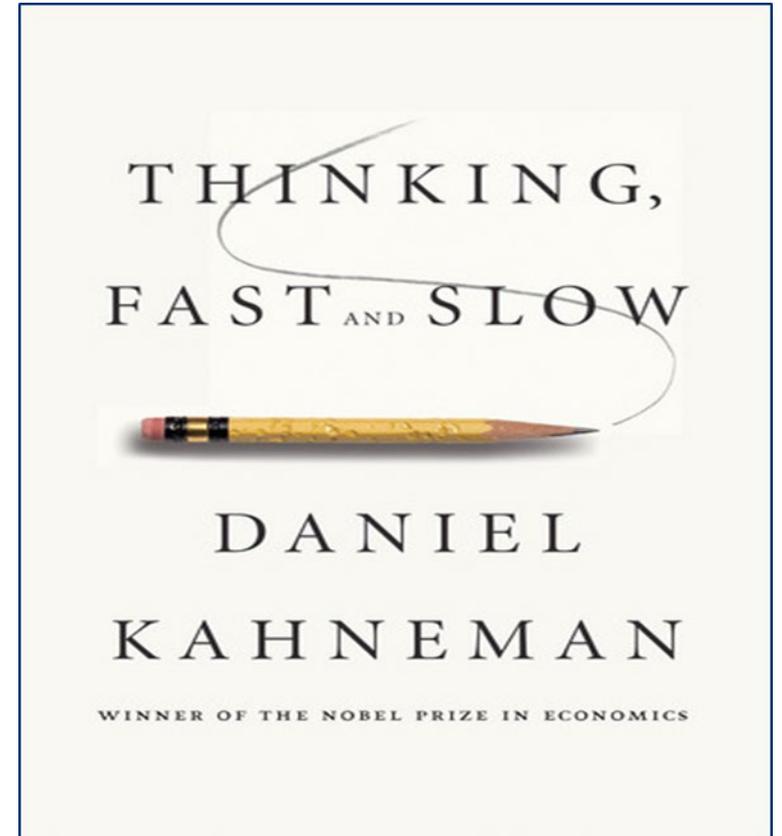
How can we change clinician antibiotic prescribing practices?

- Identify effective interventions to improve outpatient antibiotic prescribing
- Adapt them to the local context
- Use rigorous implementation science methods before and after
- Disseminate for broader uptake (scale and spread)



Changing Behavior

- **Implicit model:** clinicians reflective, rational, and deliberate
 - “Educate” and “remind” interventions
- **Behavioral model:** decisions fast, automatic, influenced by emotion and social factors
 - Cognitive bias
 - Appeal to clinician self-image
 - Consider social motivation



Model for Improvement



QI Approach

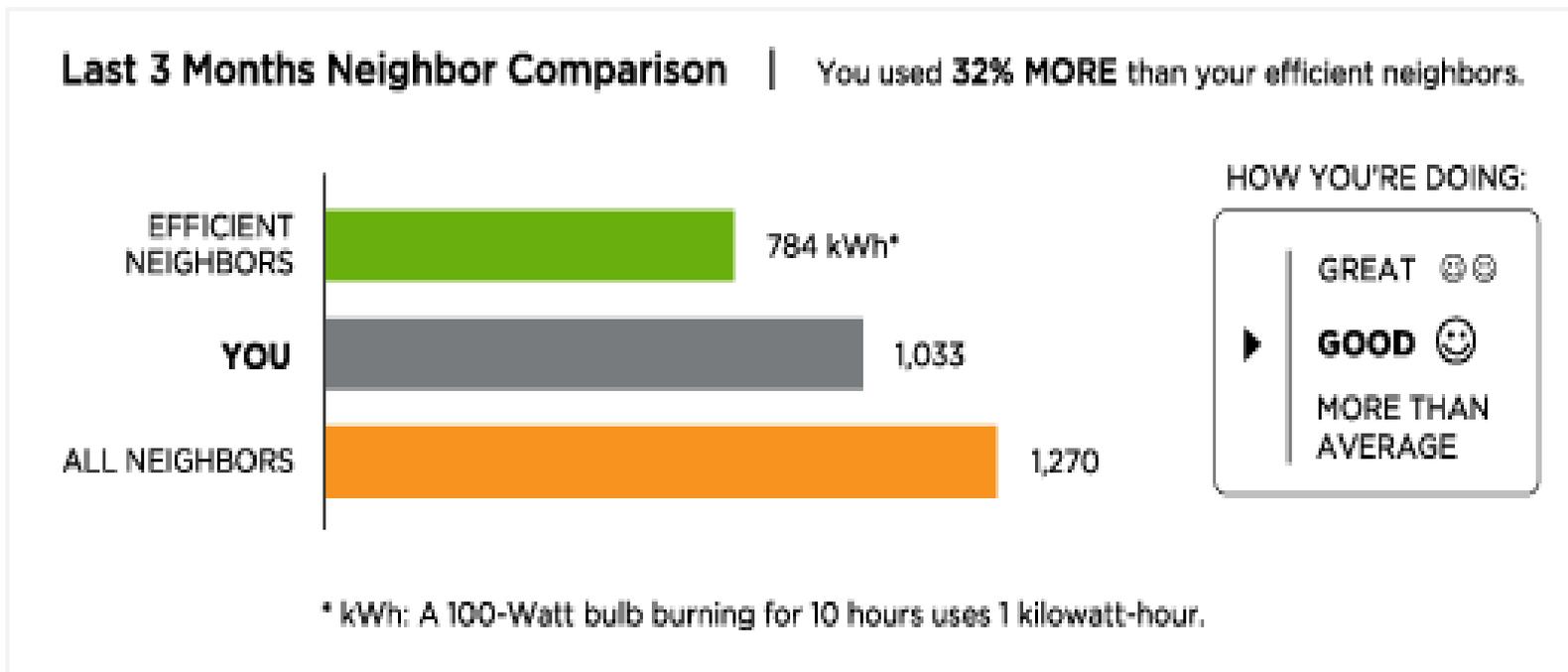


Nudges Target Automatic Thinking

- **Nudge:** gentle, non-intrusive persuaders which influence choice in a certain direction
 - Different frames, default rules, feedback mechanisms, social cues
 - Can be ignored
 - A good nudge will only affect choice when there are not strong reasons for the decision
- 

Social Norms

& Descriptive norms that signal acceptable or appropriate contextual behavior



Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annu. Rev. Psychol.*, 55, 591-621.

Kallgren, C. A., Reno, R. R., & Cialdini, R. B. (2000). A focus theory of normative conduct: When norms do and do not affect behavior. *Personality and social psychology bulletin*, 26(8), 1002-1012.

Nudge: Social Norms

JAMA The Journal of the
American Medical Association

ORIGINAL CONTRIBUTION

Effect of Behavioral Interventions on Inappropriate Antibiotic Prescribing Among Primary Care Practices A Randomized Clinical Trial

Daniella Meeker, PhD; Jeffrey A. Linder, MD, MPH; Craig R. Fox, PhD; Mark W. Friedberg, MD, MPP;
Stephen D. Persell, MD, MPH; Noah J. Goldstein, PhD; Tara K. Knight, PhD; Joel W. Hay, PhD; Jason N. Doctor, PhD

“You are a Top Performer” vs “You are not a Top Performer”

Mean antibiotic Rx decreased from 19.9% to 3.7% (-16.3%)



Social Norms: Underperformer

Dear Dr. X,

You were not a top performer in antibiotic stewardship for likely viral infections last week.

You wrote too many unnecessary prescriptions.

Based on your most recent activity, you wrote X prescriptions of Y acute respiratory infection cases that didn't warrant antibiotics.

Sincerely,

The MITIGATE antibiotic stewardship team





Social Norms: Top Performer

Dear Dr. X,

Congratulations! You were a top performer in antibiotic stewardship for likely viral infections last month.

You were in the top 10% of providers.

Based on your most recent activity, you wrote X prescriptions of Y acute respiratory infection cases that didn't warrant antibiotics.

Sincerely,

The MITIGATE antibiotic stewardship team

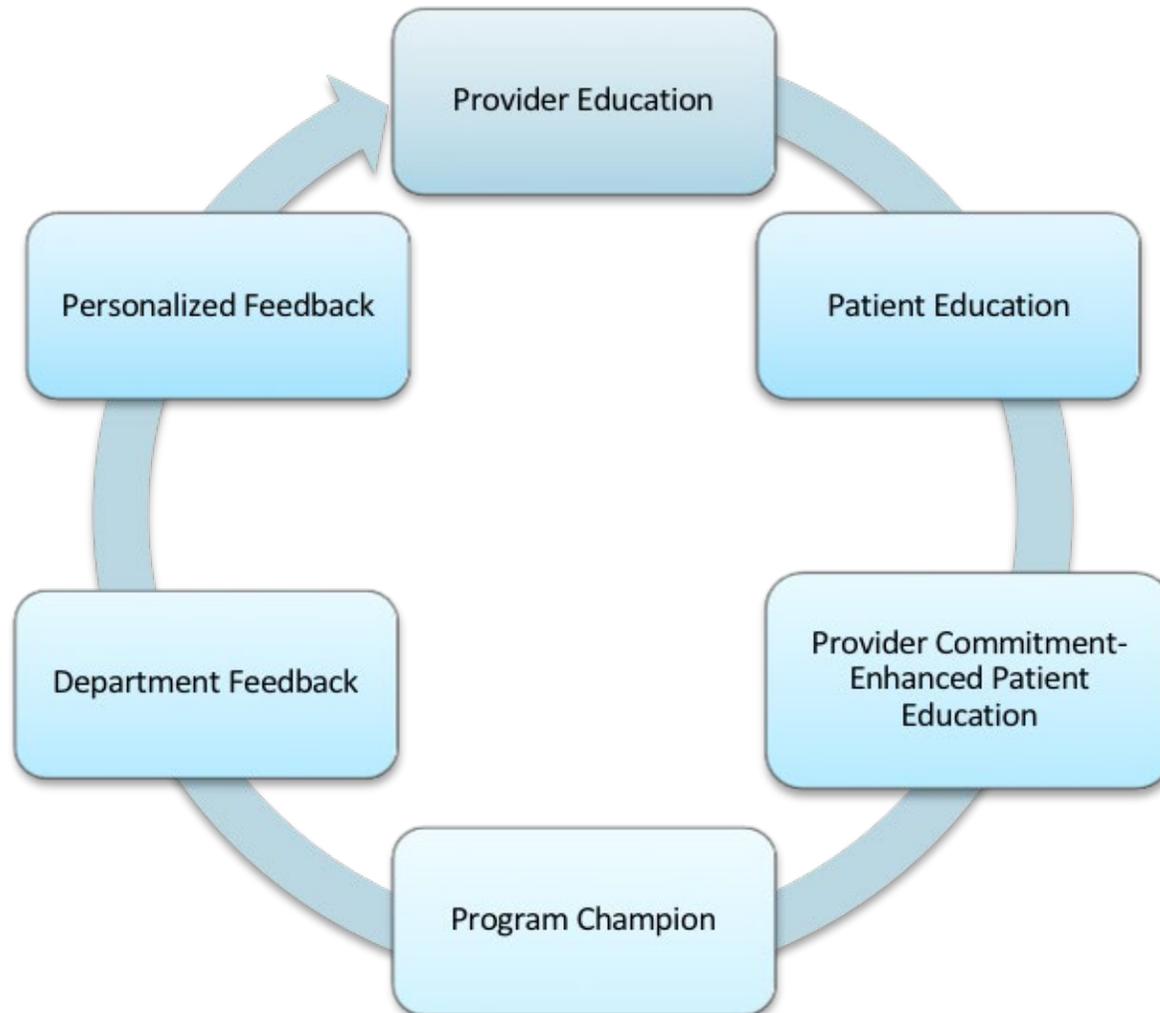


Nudge: Identifiability



- People do things for people they know
- Local champion

Local Champion Promotes Stewardship

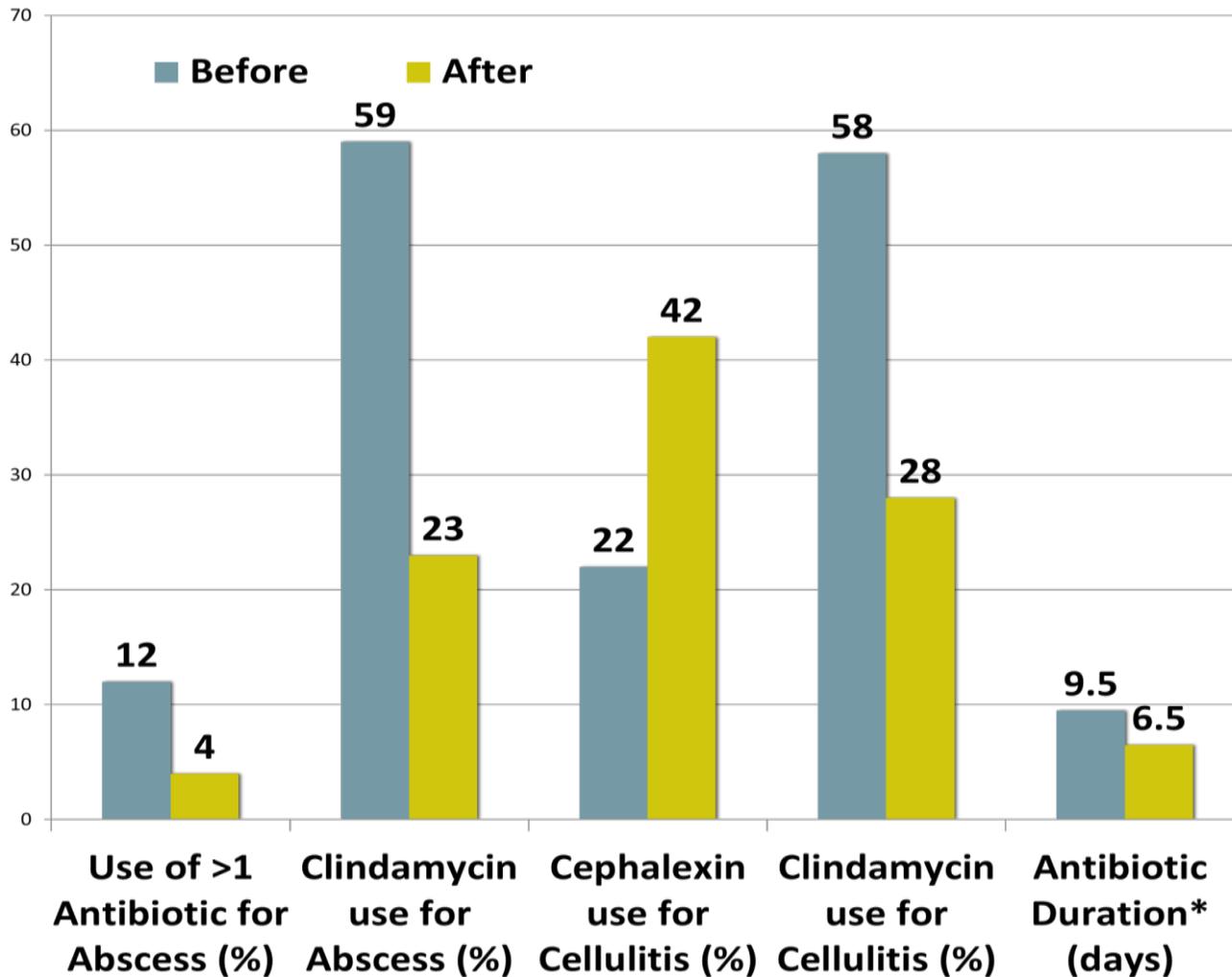




Antibiotic Use for SSTI

- Education
 - Evidence based algorithm and order set
 - Reports to ED clinicians on duration of Rx
 - General and individual feedback: “top performer” or “not a top performer”
 - Antibiotic selection/duration
 - Confidential feedback to outlier clinicians
- 

Results of SSTI stewardship



*Difference of -3.0 (-0.6, -5.3) days (95% CI adjusted for provider cluster effects)

Nudge: Consistency

Psychology
Marketing

Public Commitment as a Motivator for Weight Loss

Prashanth U. Nyer
Chapman University

Stephanie Dellande
University of New Orleans

Meals and Miles
Thursday

I'm running 8 miles on Saturday and riding my bike 50 miles on Monday. Hoping if I put these things out there, that they will actually happen. :)

State your own workout goals below. Let's help hold each other accountable through the holiday weekend.

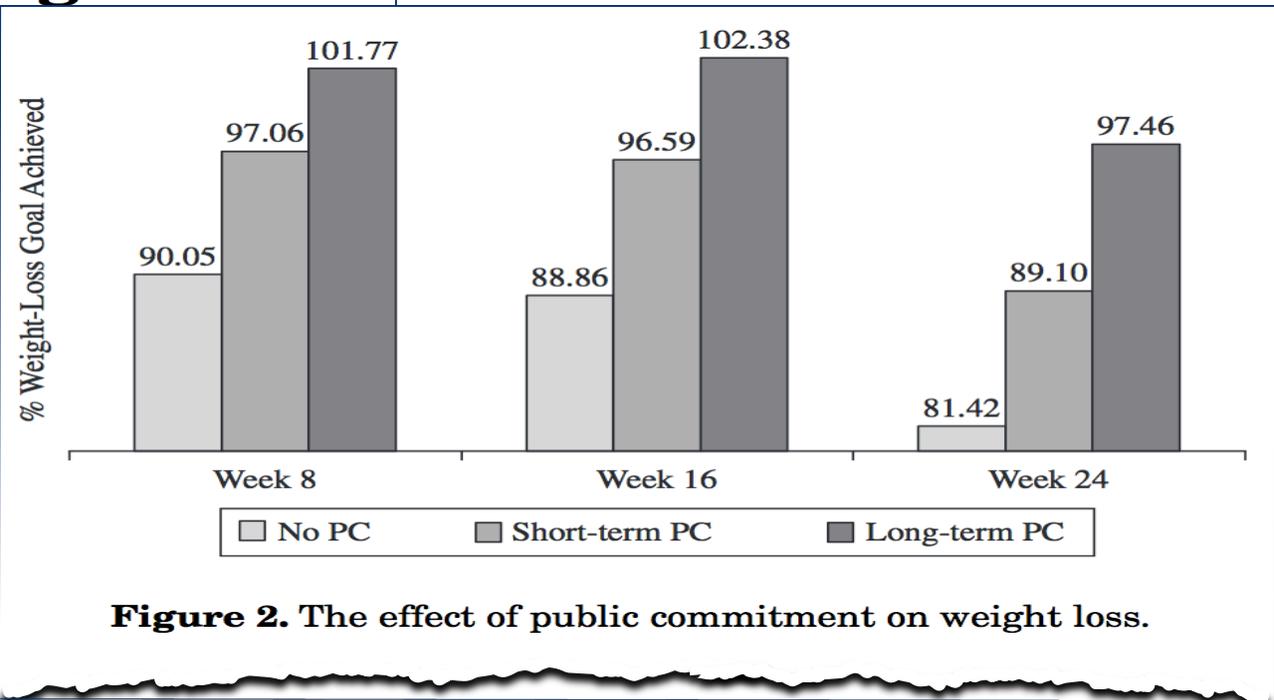


Figure 2. The effect of public commitment on weight loss.

JAMA Internal Medicine

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

Public Commitment

MITIGATE STUDY COMMITMENT LOG

By signing below you commit to the department to prescribe antibiotics only when they are needed, and will avoid giving antibiotics when they might do more harm than good.

Please refer to the CDC letter/poster for additional reading.

Printed Name	Signature	Badge Reel	Pin	Commitment Poster Signature
John Doe	<i>John Doe</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Know When Antibiotics Work



A Commitment to Our Patients about Antibiotics

Antibiotics only fight infections caused by bacteria. Like all drugs, they can be harmful and should only be used when necessary. Taking antibiotics when you have a virus can do more harm than good: you will still feel sick and the antibiotic could give you a skin rash, diarrhea, a yeast infection, or worse.

Antibiotics also give bacteria a chance to become more resistant to them. This can make future infections harder to treat. It means that antibiotics might not work when you really do 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? 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.

*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. We are **dedicated** to prescribing antibiotics **only** when they are needed, and we will avoid giving you antibiotics when they might do more harm than good.*

If you have any questions, please feel free to ask us.

Sincerely,



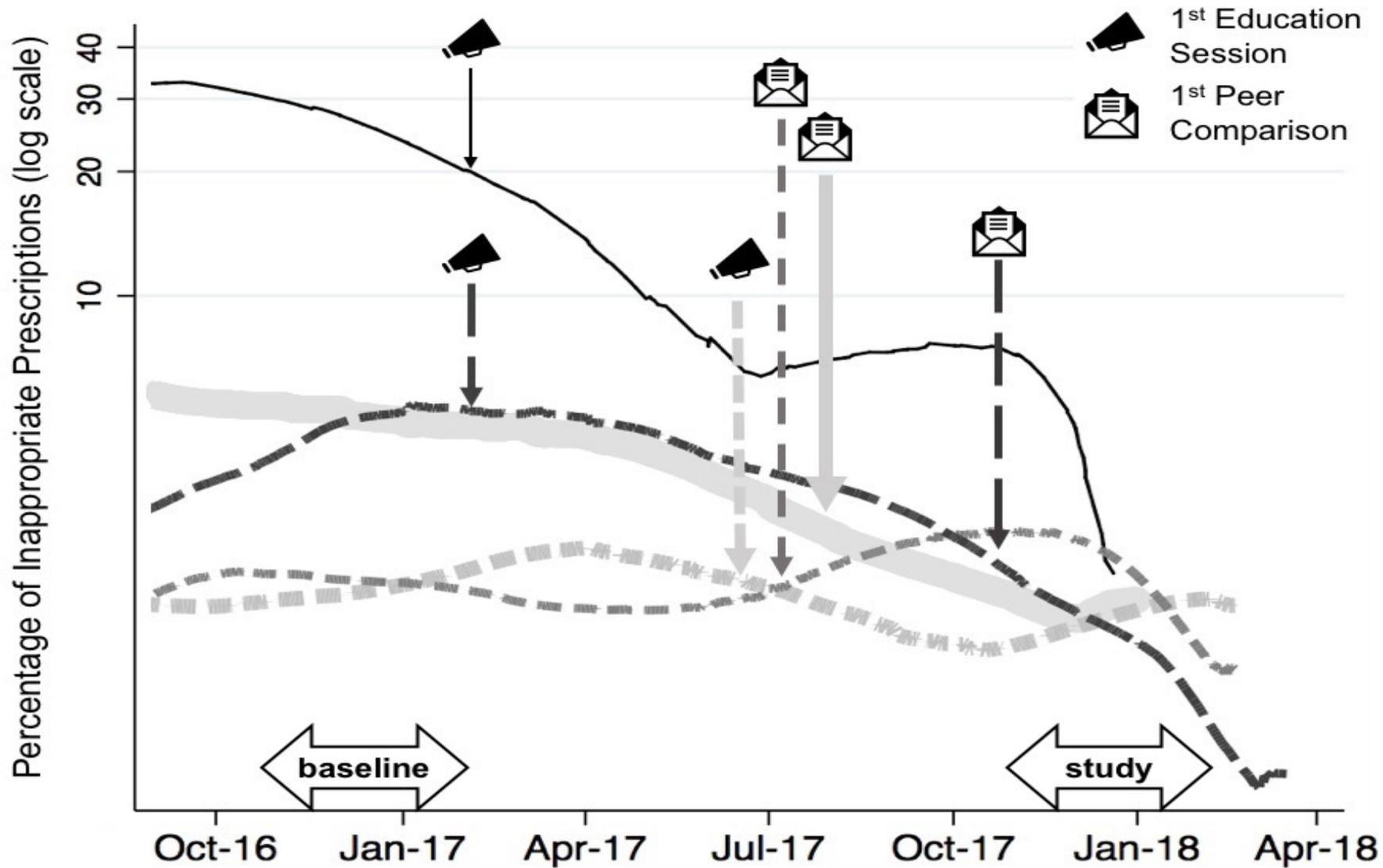
Public Commitment



“We need to talk about your flair”



Reduction in Inappropriate Rx



MITIGATE ANTIMICROBIAL STEWARDSHIP TOOLKIT



<https://tinyurl.com/mitigatetoolkit>



LESSONS LEARNED

- Nudges
 - Formal commitment (consistency)
 - Local champion (identifiability)
 - Comparisons (social norms)
 - Clinician buy-in
 - Low hanging fruit
 - Operational support
 - Implementation science and QI = framework for evidence-based program implementation
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- 



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 - Daniella Meeker, Ph.D., & Jason N. Doctor, Ph.D., Schaeffer Center for Health Policy and Economics, University of Southern California, Los Angeles, CA Applications of Behavioral Economics to Clinical Quality Improvement
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Questions?

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