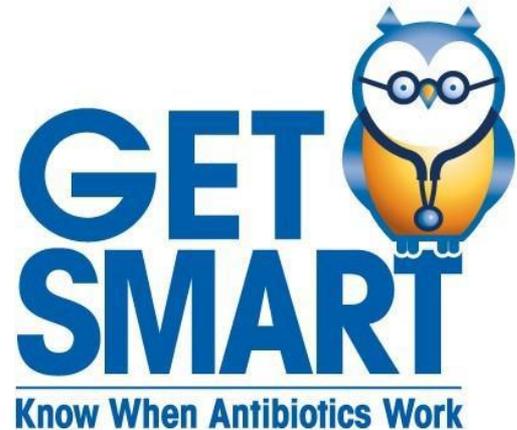


Outpatient Antibiotic Stewardship and Patient Safety

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Get Smart: Know When Antibiotics Work

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Centers for Disease Control and Prevention

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and 2017 Texas Department of State Health Services Healthcare Safety Conference
August 10 , 2017



Disclosure

- I have no relevant conflicts of interest.

Presentation Objectives

As a result of this presentation, participants will be able to:

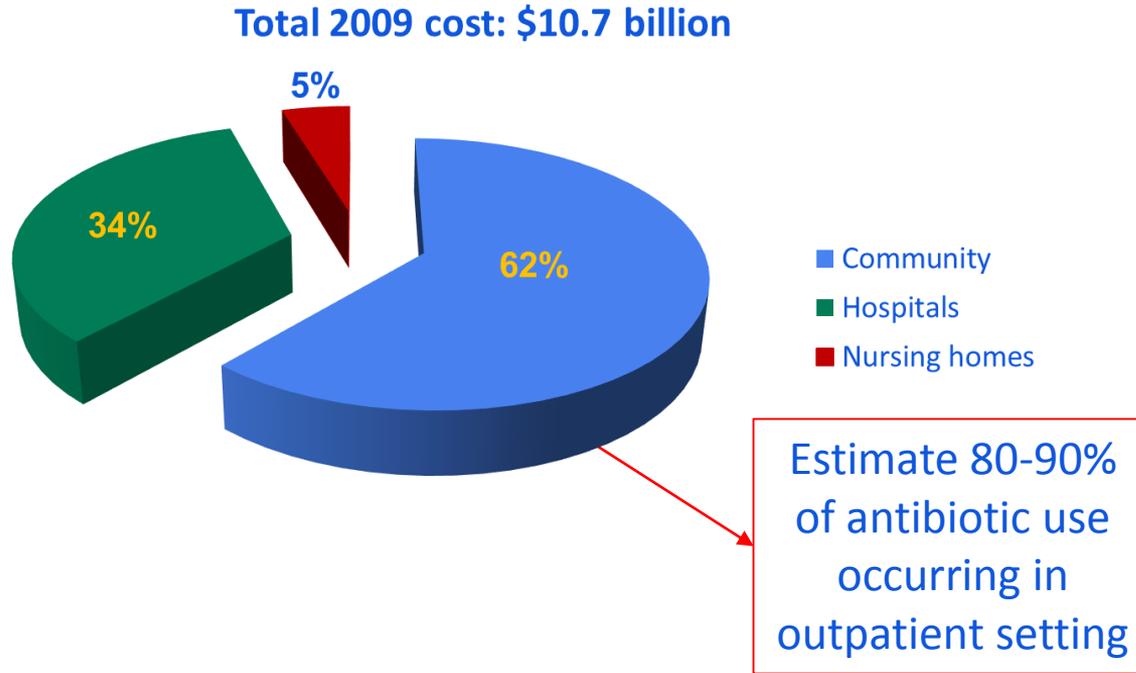
- Identify high-priority conditions to target for improvements in outpatient antibiotic prescribing
- Describe common barriers to appropriate outpatient antibiotic prescribing
- Discuss CDC's Core Elements of Outpatient Antibiotic Stewardship
- Identify effective antibiotic stewardship interventions to improve outpatient antibiotic prescribing



Overview of Antibiotic Prescribing in the US

- Provide the rationale for antibiotic stewardship in outpatient settings
- Identify high-priority conditions to target for improvements in outpatient antibiotic prescribing

Antibiotic Expenditures in United States by Treatment Setting

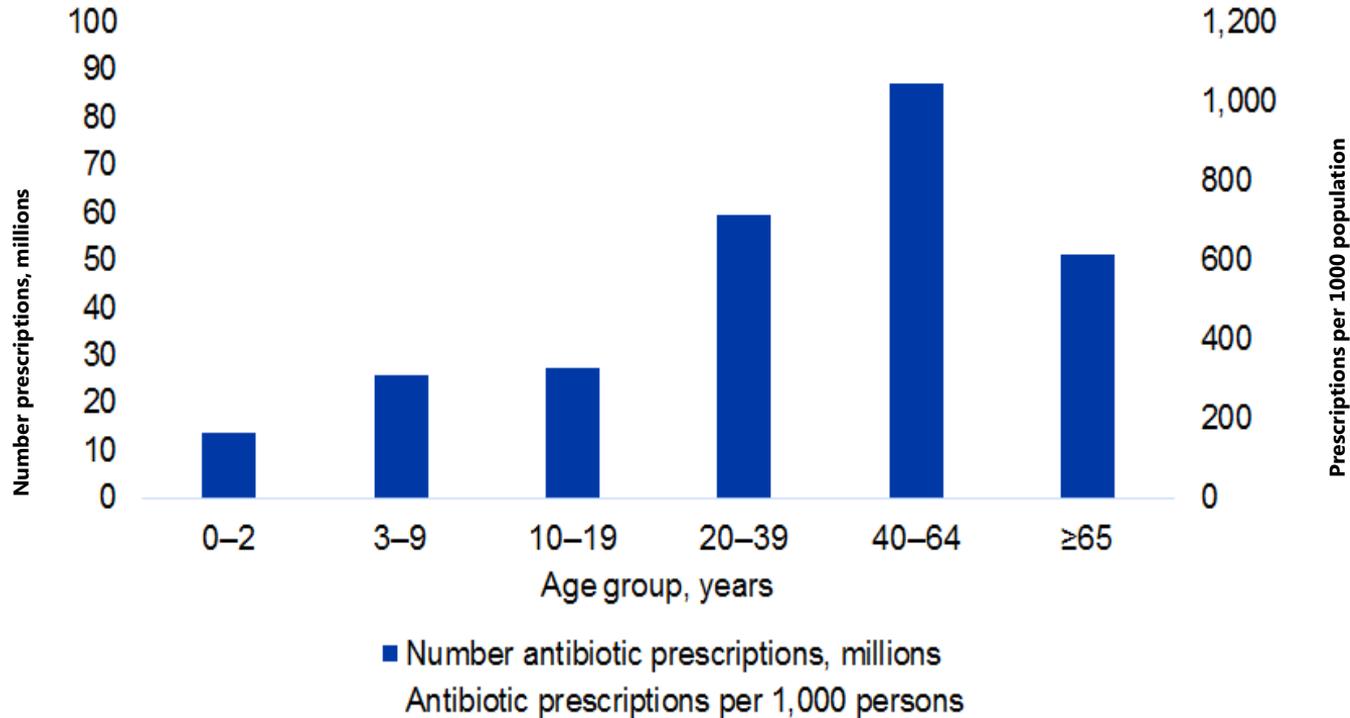


Suda et al. J Antimicrob Chemother 2013; 68: 715–718

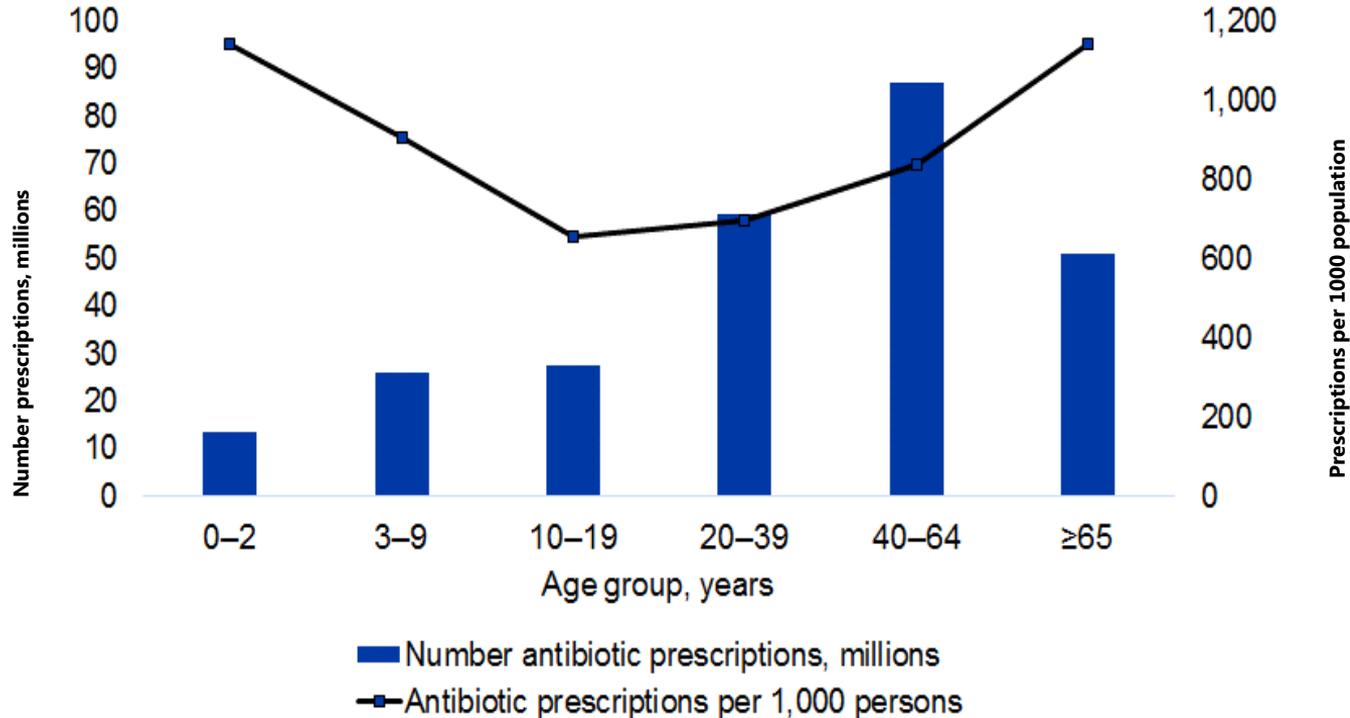
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/362374/ESPAUR_Report_2014_3_.pdf

<https://www.folkhalsomyndigheten.se/pagefiles/20281/Swedres-Svarm-2014-14027.pdf>

Community Antibiotic Prescribing Practices United States, 2013

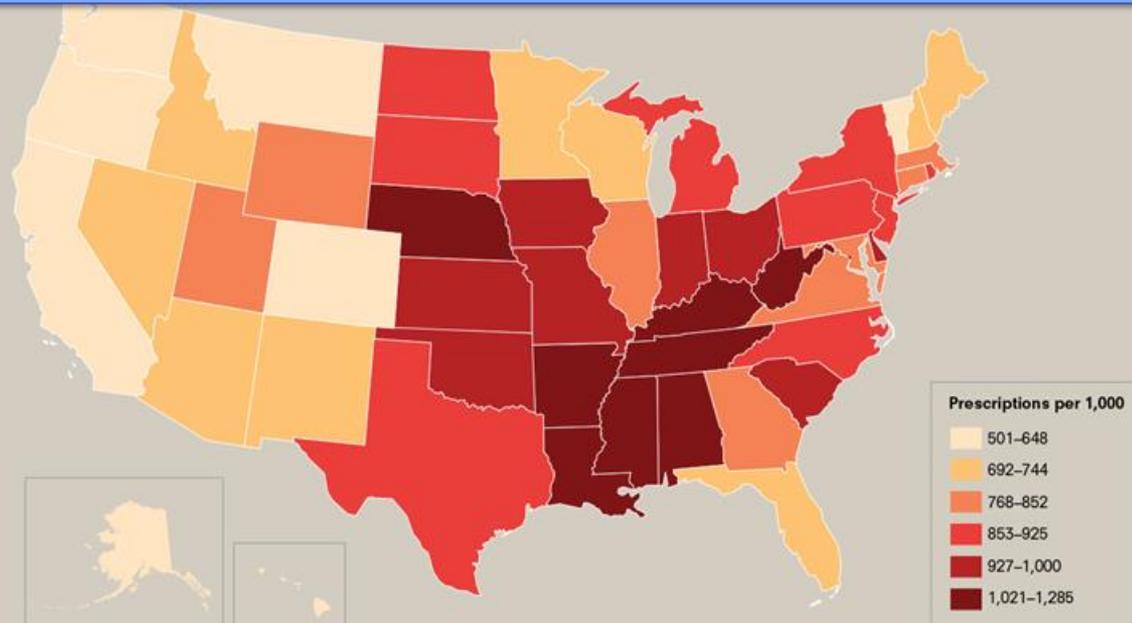


Community Antibiotic Prescribing Practices United States, 2013



Community Antibiotic Prescriptions per 1,000 Population by State — 2014

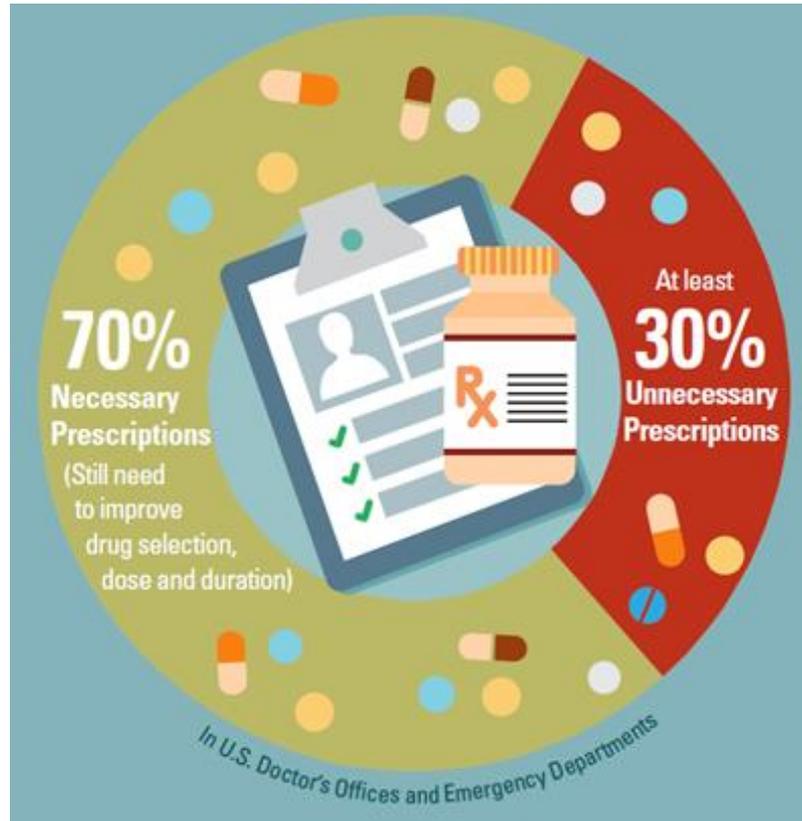
US, 2014: 835 antibiotic courses per 1000 population
Sweden, 2014: 328 antibiotic courses per 1000 population



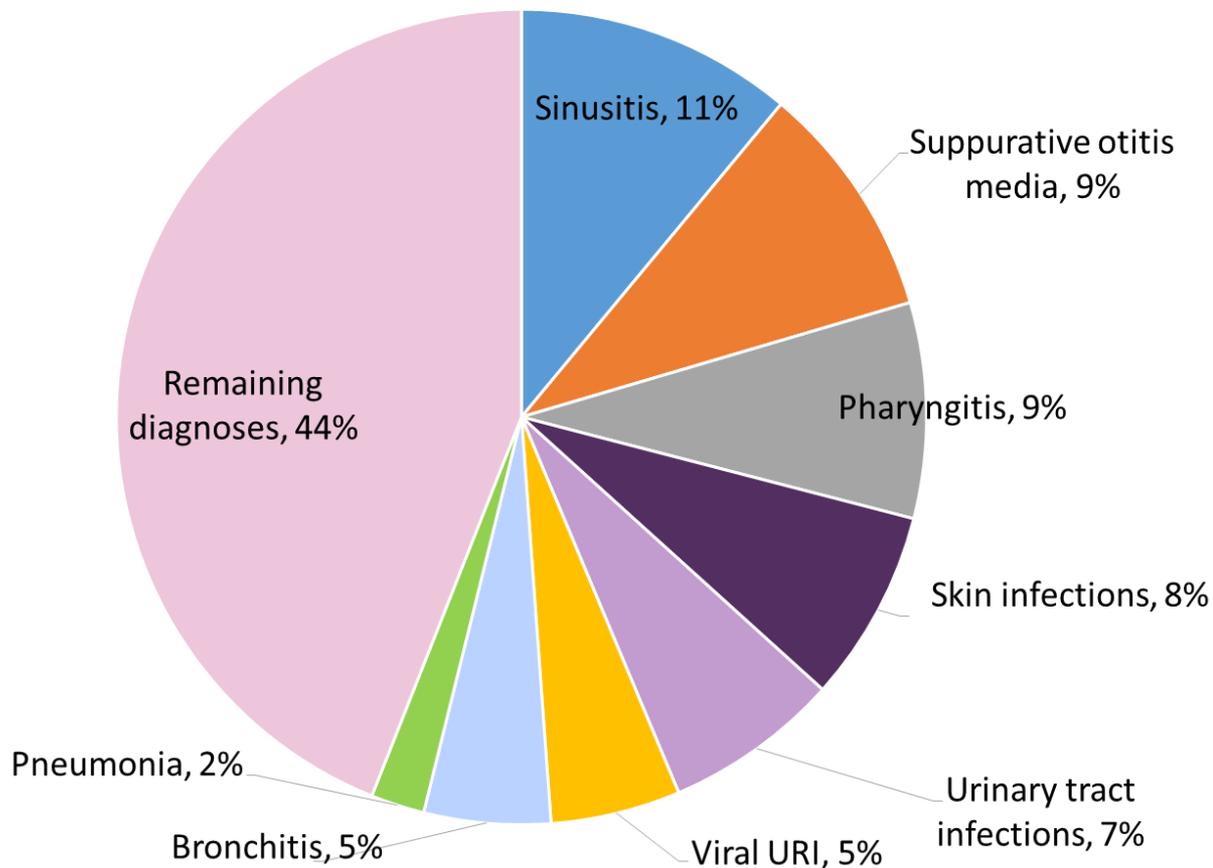
Data source: IMS Health Xponent 2014.

*Fleming-Dutra, K., et al. (2016). "Prevalence of Inappropriate Antibiotic Prescriptions Among US Ambulatory Care Visits, 2010-2011." *JAMA: the Journal of the American Medical Association* 315(17): 1864-1873.

How much inappropriate use is there?



Diagnoses Leading to Antibiotics — United States, 2010–11





Why are providers prescribing antibiotics inappropriately?

Understanding barriers to appropriate prescribing

Why might providers prescribe antibiotics inappropriately?

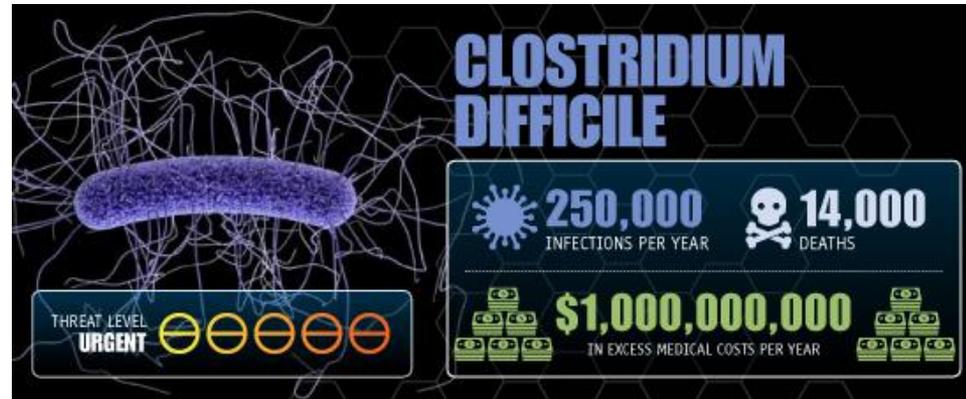
- Lack of knowledge of appropriate indications?
 - Fear of complications?
 - Patient pressure and satisfaction?
 - Habit?
- 

Why might providers prescribe antibiotics inappropriately?

- ~~Lack of knowledge of appropriate indications~~
 - Providers generally know the guidelines
- Fear of complications
 - Providers cite fear of infectious complications

What if something bad happens?

- Without an antibiotic
 - Complications to common respiratory infections are very rare
 - Over 4400 patients with colds need to be treated to prevent 1 case of pneumonia
- With an antibiotic



It's a Matter of Patient Safety

- Adverse events from antibiotics range from minor to severe
 - Side effects like rash or antibiotic-associated diarrhea
 - Allergic reactions, including anaphylaxis (life-threatening)
- 1 in 1000 antibiotic prescriptions leads to an emergency department (ER) visit for an adverse event
 - 142,000 ER visits per year for antibiotic-associated adverse events
 - Antibiotics are most common cause of drug-related emergency department visits for children



Why might providers prescribe antibiotics inappropriately?

- ~~■ Lack of knowledge of appropriate indications~~
 - Providers generally know the guidelines
- Fear of complications
 - Providers cite fear of infectious complications
 - *Also adverse events*
- Patient pressure and satisfaction
 - Providers universally cite patient requests for antibiotics
 - Providers worry about losing patients to other providers

Perceptions of Patient Expectations

- Overt requests for antibiotics are rare
- When physicians think patients/parents want antibiotics, they are more likely to prescribe
 - 62% when they thought parent wanted antibiotics
 - 7% when they thought parent did **not** want antibiotics
- Physicians are terrible at predicting which patients want antibiotics



Why do we think patients want antibiotics?

- Physicians thought parents wanted antibiotics when
 - Parents suggested a candidate diagnosis
 - Parents questioned non-antibiotic treatment plan
- Parents who questioned the treatment plan were equally likely to expect or not expect antibiotics
- Two different conversations
 - One that the healthcare provider understands
 - One that the patient is having

Stivers. *Journal Family Practice* 2003; 52(2):140-8.
Mangione-Smith. *Arch Pediatr Adolesc Med* 2006;160(9): 945-952.



Patient Satisfaction

- Parents are still satisfied if they don't get antibiotics
- Parents are dissatisfied if communication expectations are not met

- How to maximize patient satisfaction?
 - Explanation + positive recommendations
 - Contingency plan



Mangione-Smith et al. *Pediatrics* 1999;103(4):711-8.
Mangione-Smith et al. *Arch Pediatr Adolesc Med* 2001;155:800-6.
Mangione-Smith et al. *Ann Family Med* 2015; 13(3) 221-7.

Communication Training as a Public Health Intervention?

- Enhanced communications training reduces antibiotic prescribing for respiratory infections in all ages
- Effect appears to be sustainable over time



Cals et al. *Ann Family Med* 2013;11(2)157-64.
Little et al. *Lancet* 2013;382(9899)1175-82.



Introduction to Antibiotic Stewardship

- Identify the Core Elements of Outpatient Antibiotic Stewardship
- Identify effective antibiotic stewardship interventions to improve outpatient antibiotic prescribing

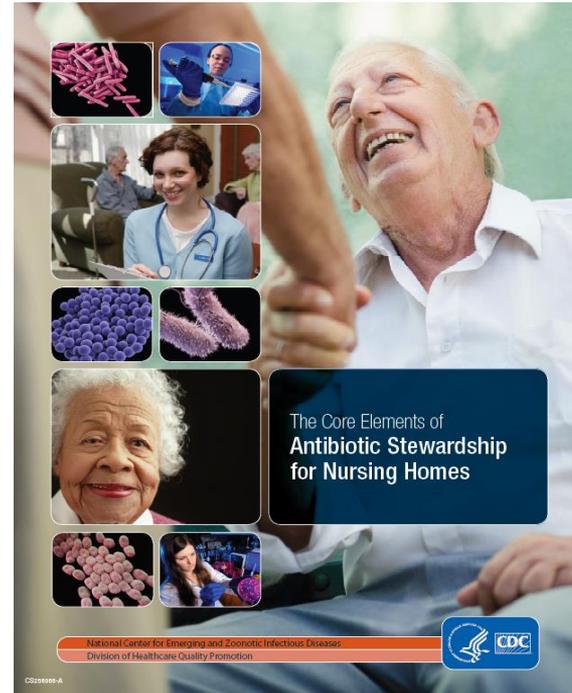
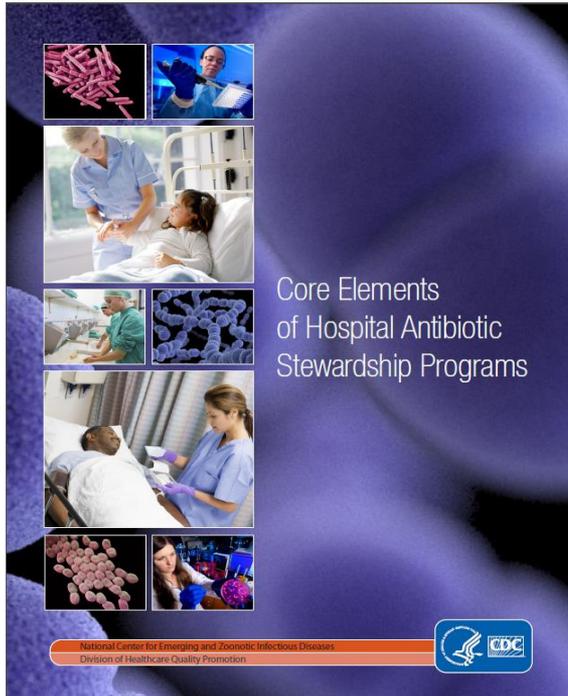
What is Antibiotic Stewardship?

- Antibiotic stewardship is the effort to:
 - Measure antibiotic prescribing
 - Improve antibiotic prescribing so that antibiotics are only prescribed and used when needed
 - Minimize misdiagnoses or delayed diagnoses leading to underuse of antibiotics
 - Ensure that the right drug, dose, and duration are selected when an antibiotic is needed



It's about patient safety and delivering high-quality healthcare.

CDC's Core Elements of Antibiotic Stewardship for Hospitals and Nursing Homes



Core Elements of Outpatient Antibiotic Stewardship

Continuing Education Examination available at <http://www.cdc.gov/mmwr/cme/conted.html>.



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention



Sanchez GV, Fleming-Dutra KE, Roberts RM, Hicks LA. Core Elements of Outpatient Antibiotic Stewardship. MMWR Recomm Rep 2016;65(No. RR-6):1-12.
https://www.cdc.gov/mmwr/volumes/65/rr/rr6506a1.htm?s_cid=rr6506a1_e

The Core Elements of Outpatient Antibiotic Stewardship



- **Commitment:** demonstrate dedication to and accountability for optimizing antibiotic prescribing and patient safety
- **Action for policy and practice:** implement at least one policy or practice to improve antibiotic prescribing, assess whether it is working, and modify as needed
- **Tracking and Reporting:** monitor antibiotic prescribing practices and offer regular feedback to clinicians or have clinicians assess their own antibiotic use
- **Education and Expertise:** Provide educational resources to clinicians and patients on antibiotic prescribing and ensure access to needed expertise on antibiotic prescribing

Checklists for Core Elements

Facility Checklist for Core Elements of Outpatient Antibiotic Stewardship

CDC recommends that outpatient care facilities take steps to implement antibiotic stewardship activities. Use this checklist as a baseline assessment of policies and practices that are in place. Then use the checklist to review progress in expanding stewardship activities on a regular basis (e.g., annually).

COMMITMENT

1. Can your facility demonstrate dedication to and accountability for optimizing antibiotic prescribing and patient safety related to antibiotics?

If yes, indicate which of the following are in place. (Select all that apply.)

- Identify a single leader to direct antibiotic stewardship activities.
- Include antibiotic stewardship-related duties in position descriptions.
- Communicate with all clinic staff members to set patient expectations.

ACTION

2. Has your facility implemented at least one policy or practice to improve antibiotic prescribing?

If yes, indicate which interventions are in place. (Select all that apply.)

- Provide communications skills training for clinicians.
- Require explicit written justification in the medical record for antibiotic prescribing.
- Provide support for clinical decisions.
- Use call centers, nurse hotlines, or pharmacist consultations to reduce unnecessary visits.

Clinician Checklist for Core Elements of Outpatient Antibiotic Stewardship

CDC recommends that outpatient clinicians take steps to implement antibiotic stewardship activities. Use this checklist as a baseline assessment of policies and practices that are in place. Then use the checklist to review progress in expanding stewardship activities on a regular basis (e.g., annually).

COMMITMENT

1. Can you demonstrate dedication to and accountability for optimizing antibiotic prescribing and patient safety related to antibiotics?

Yes No

If yes, indicate which of the following are in place (select all that apply)

- Write and display public commitments in support of antibiotic stewardship.

ACTION

2. Have you implemented at least one practice to improve antibiotic prescribing?

Yes No

If yes, indicate which practices which you use. (Select all that apply.)

- Use evidence-based diagnostic criteria and treatment recommendations.
- Use delayed prescribing practices or watchful waiting, when appropriate.

Effect of Behavioral Interventions on Inappropriate Antibiotic Prescribing

- Cluster randomized trial—47 primary care practices (248 clinicians)
- Behavioral science principle: Clinicians want to preserve their reputation
- Outcome: Prescribing rates for visits with inappropriate antibiotics for acute respiratory infections
- Three specific EHR interventions
 - Suggested alternatives (menu of symptomatic treatment choices)
 - Accountable Justification (antibiotic justification note)
 - Peer Comparison

Peer Comparison

“You are a Top Performer”

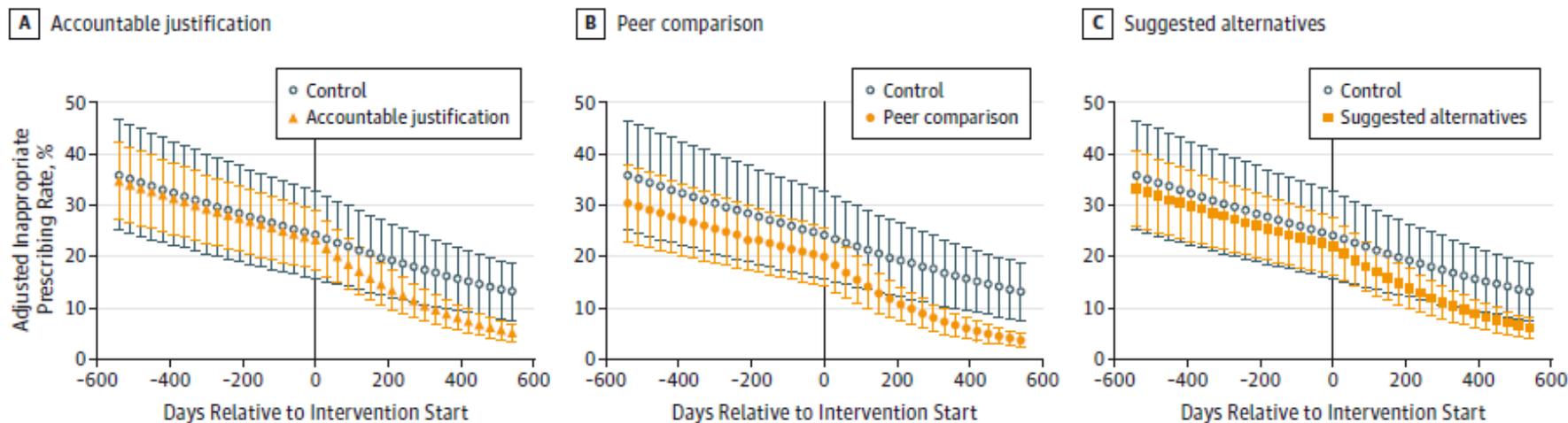
You are in the top 10% of clinicians. You wrote 0 prescriptions out of 21 acute respiratory infection cases that did not warrant antibiotics.

“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.

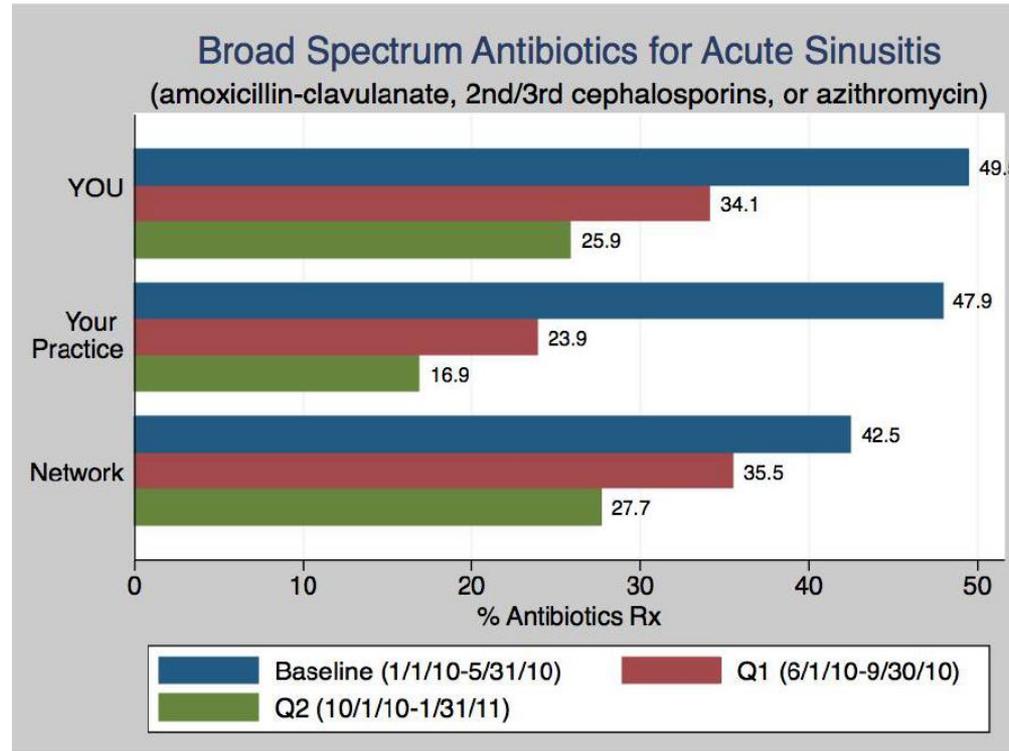
Effect of Behavioral Interventions on Inappropriate Antibiotic Prescribing

Figure 2. Adjusted Rates of Antibiotic Prescribing at Primary Care Office Visits for Antibiotic-Inappropriate Acute Respiratory Tract Infections Over Time



Prescribing rates for each intervention are marginal predictions from hierarchical regression models of intervention effects, adjusted for concurrent exposure to other interventions and clinician and practice random effects. Error bars indicate 95% CIs. Model coefficients are available in eTable 3 in Supplement 2.

Audit-and-feedback with peer comparisons

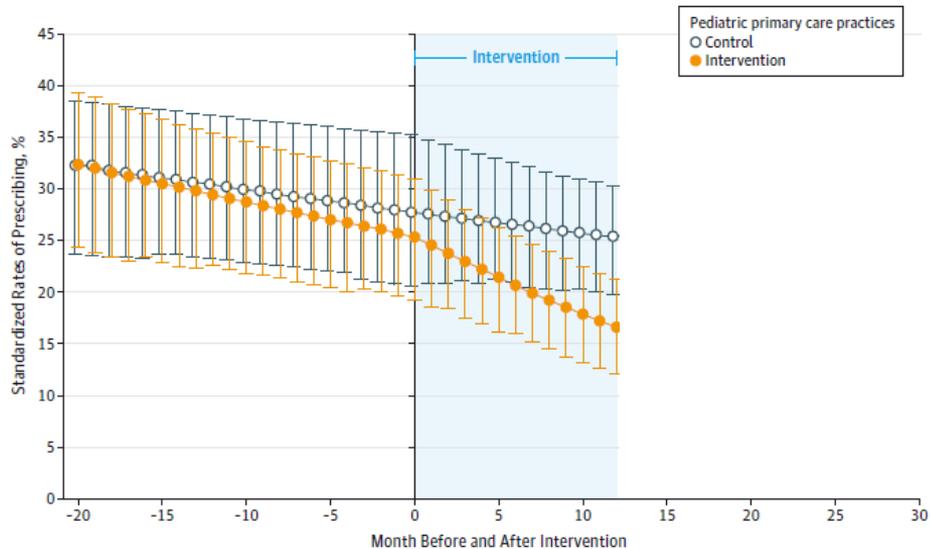


Gerber. *JAMA* 2013; **309**(22): 2345-2352.

Slide courtesy of Jeff Gerber

Effect of an Audit and Feedback on Broad-Spectrum Antibiotic Prescribing

Figure. Standardized Rates of Broad-Spectrum Antibiotic Prescribing Before, During, and After Audit and Feedback



Gerber. *JAMA* 2013; **309**(22): 2345-2352.

Gerber. *JAMA* 2014 Dec 17;312(23): 2569-70.

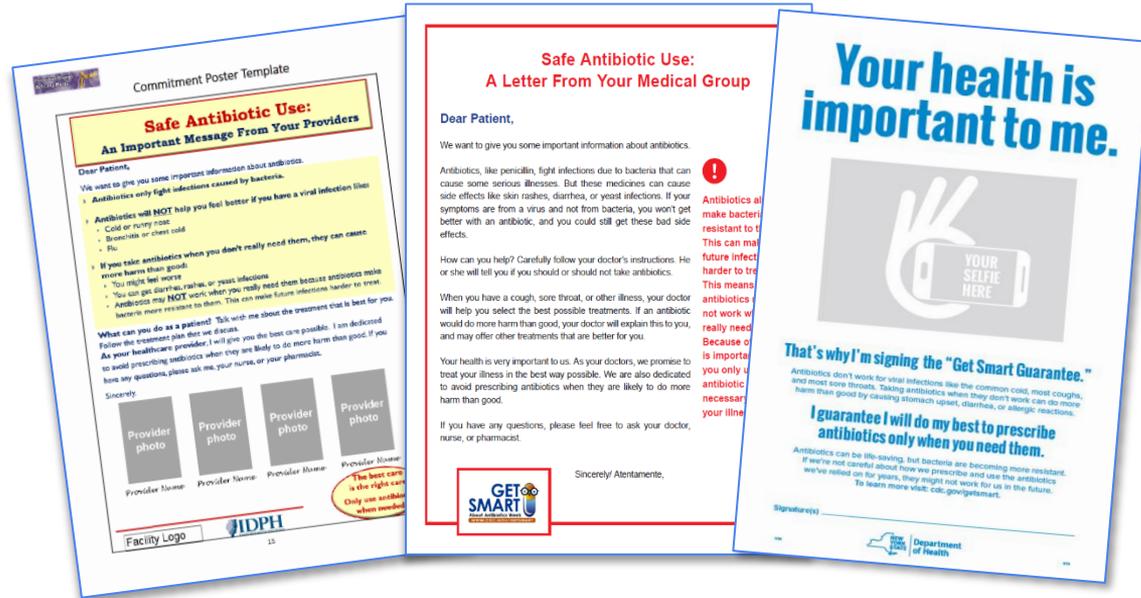
Public Commitment Posters

- Simple intervention: poster-placed in exam rooms with clinician picture and commitment to use antibiotics appropriately
- Randomized-controlled trial
- Principle of behavioral science: desire to be consistent with previous commitments
- “Behavioral nudge” to make the right choice

“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 do to more harm than good.”

- Adjusted absolute reduction in inappropriate antibiotic prescribing: -20% compared to controls, $p=0.02$

Commitment Posters in Illinois, Texas and New York



<http://blogs.cdc.gov/safehealthcare/?p=5900>

Put a Commitment Poster in Your Clinic!

- CDC worked with the authors of the study to create a poster template for download
- Will be coming in Spanish
- Add your picture and signature
- Place in your examination rooms
- Available at:
<https://www.cdc.gov/getsmart/community/materials-references/print-materials/hcp/index.html>

Meeker et al. *JAMA Intern Med.* 2014;174(3):425-31.



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,

Picture and signature here



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

03/2014

Get Smart: Know When Antibiotics Work

Get Smart Home

About

For Patients

For Healthcare Professionals

Improving Prescribing

Core Elements of Outpatient Antibiotic Stewardship

Outpatient Antibiotic Stewardship

Interventions That Work

Program Development and Evaluation

Programs and Measurement

Partners

Materials and References

Related Links

[Antibiotic/Antimicrobial Resistance](#)

[CDC](#) > [Get Smart Home](#) > [Programs and Measurement](#) > [State and Local Activities](#)

Core Elements of Outpatient Antibiotic Stewardship

For Healthcare Professionals



The Core Elements of Outpatient Antibiotic Stewardship provides a framework for antibiotic stewardship for outpatient clinicians and facilities that routinely provide antibiotic treatment. This report augments existing guidance for other clinical settings. In 2014 and 2015, respectively, CDC released the [Core Elements of Hospital Antibiotic Stewardship Programs](#) and the [Core Elements of Antibiotic Stewardship for Nursing Homes](#). Antibiotic stewardship is the effort to measure and improve how antibiotics are prescribed by clinicians and used by patients. Improving antibiotic prescribing involves implementing effective strategies to modify prescribing practices to align them with evidence-based recommendations for diagnosis and management.

Core Elements

- [MMWR – Core Elements of Outpatient Antibiotic Stewardship](#)
- [Core Elements of Outpatient Antibiotic Stewardship](#) [PDF - 2.8 MB]
- [Checklist for Clinicians: Core Elements of Outpatient Antibiotic Stewardship](#) [PDF - 529 KB]



Commitment

Demonstrate dedication to and accountability for optimizing antibiotic prescribing and patient safety.



Action for policy and practice

Implement at least one policy or practice to improve antibiotic prescribing, assess whether it is working, and modify as needed.



Tracking and reporting

Monitor antibiotic prescribing practices and offer regular feedback to clinicians, or have clinicians assess their own antibiotic prescribing practices themselves.



Education and expertise

Provide educational resources to clinicians and patients on antibiotic prescribing, and ensure access to needed expertise on optimizing antibiotic prescribing.

Summary

- Antibiotic stewardship is the effort to improve antibiotic prescribing so that antibiotics are only prescribed and used when needed; and to ensure that the right drug, dose, and duration are selected when an antibiotic is needed.
- The *Core Elements of Outpatient Stewardship* provides a framework for improving outpatient antibiotic prescribing.
- Effective interventions to improve antibiotic prescribing include audit and feedback, communications training, commitment posters, and watchful waiting/delayed antibiotic prescribing.
- For more information, visit www.cdc.gov/getsmart



Acknowledgements:

Katherine Fleming-Dutra,
Rebecca Roberts, Lauri Hicks

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For more information, contact CDC
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TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

