

Core Elements of Outpatient Antibiotic Stewardship

Implementing Antibiotic Stewardship Into Your Outpatient Practice

Katherine Fleming-Dutra, MD

Office of Antibiotic Stewardship
Division of Healthcare Quality Promotion
National Center for Emerging and Zoonotic Infectious Diseases
Centers for Disease Control and Prevention



Objectives

- Understand opportunities, barriers and effective interventions to improve outpatient antibiotic prescribing

Life-Saving Benefits of Antibiotics

- Once deadly infectious bacterial diseases are treatable, substantially reducing deaths compared to pre-antibiotic era
- Important adjunct to modern medical advances
 - Surgeries
 - Transplants
 - Cancer therapies



Antibiotic Resistance

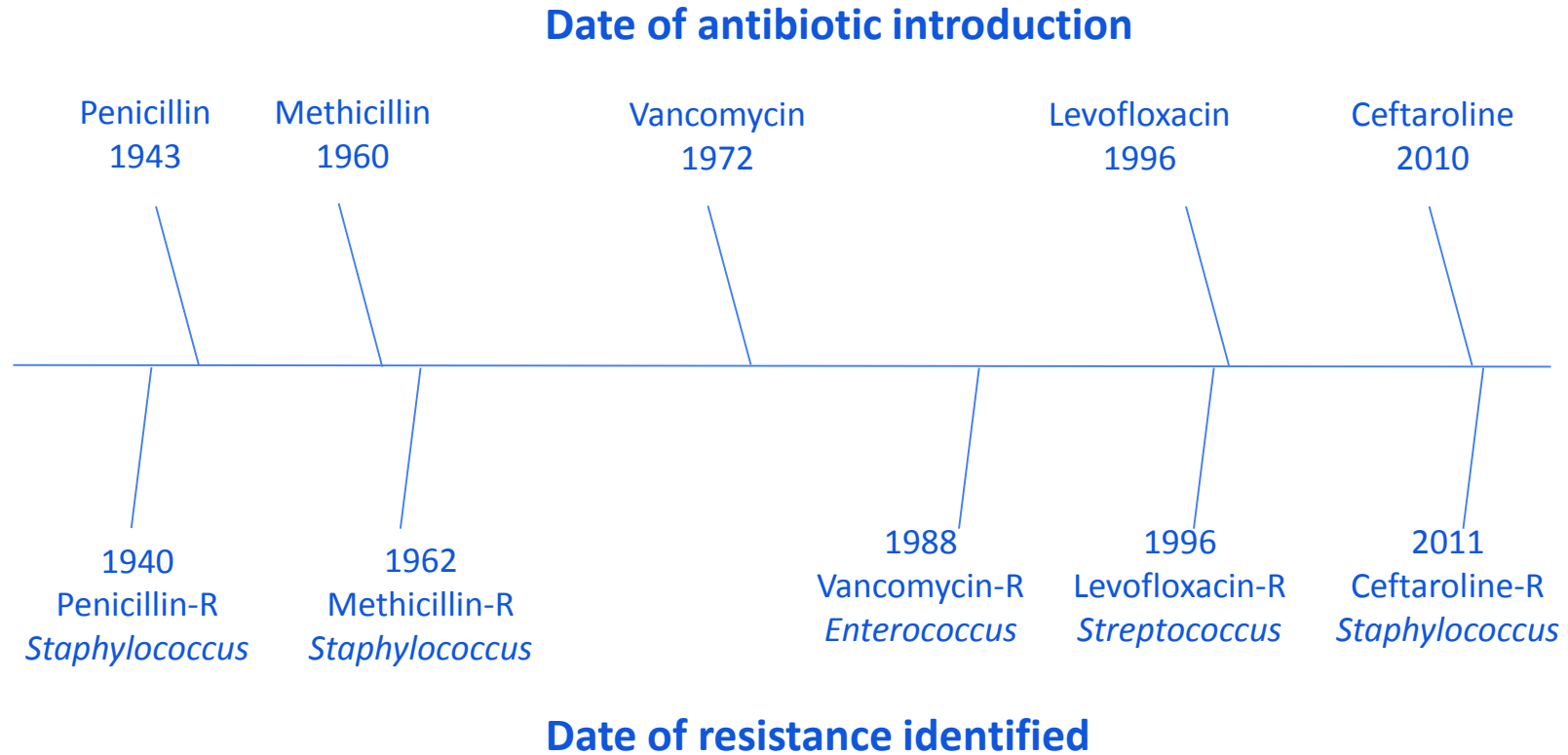
Estimated minimum number of illnesses and deaths caused annually by antibiotic resistance*:

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

**bacteria and fungus included in this report*

\$20 billion in excess direct healthcare costs annually

Antibiotic Use Drives Resistance



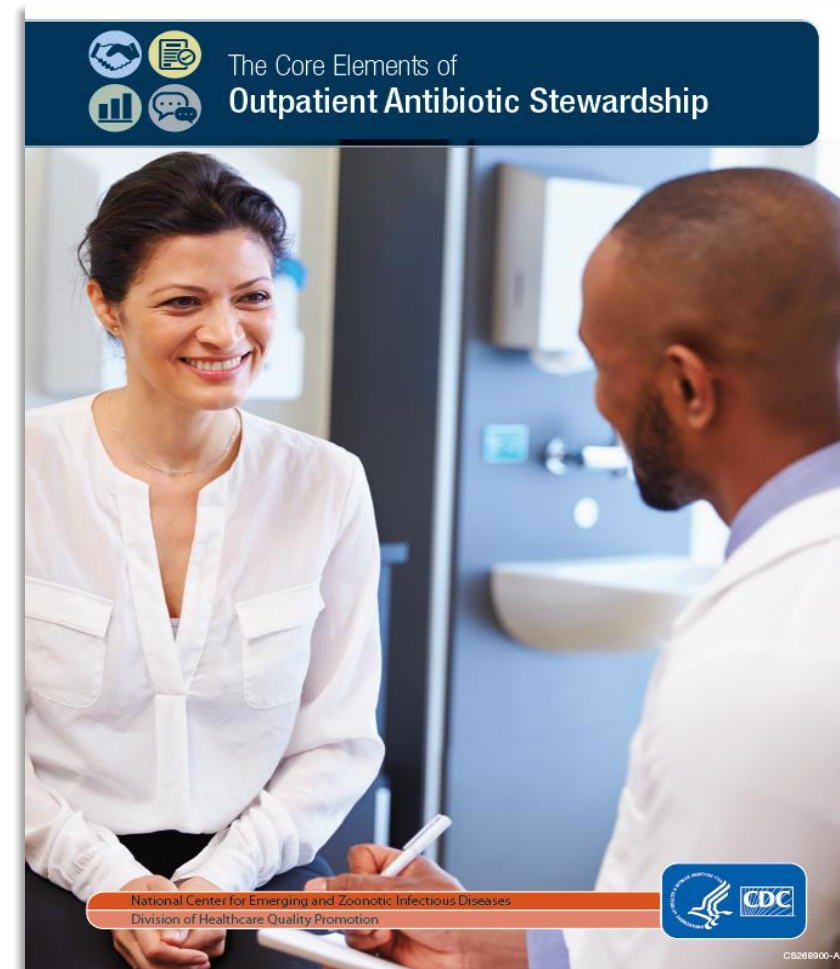
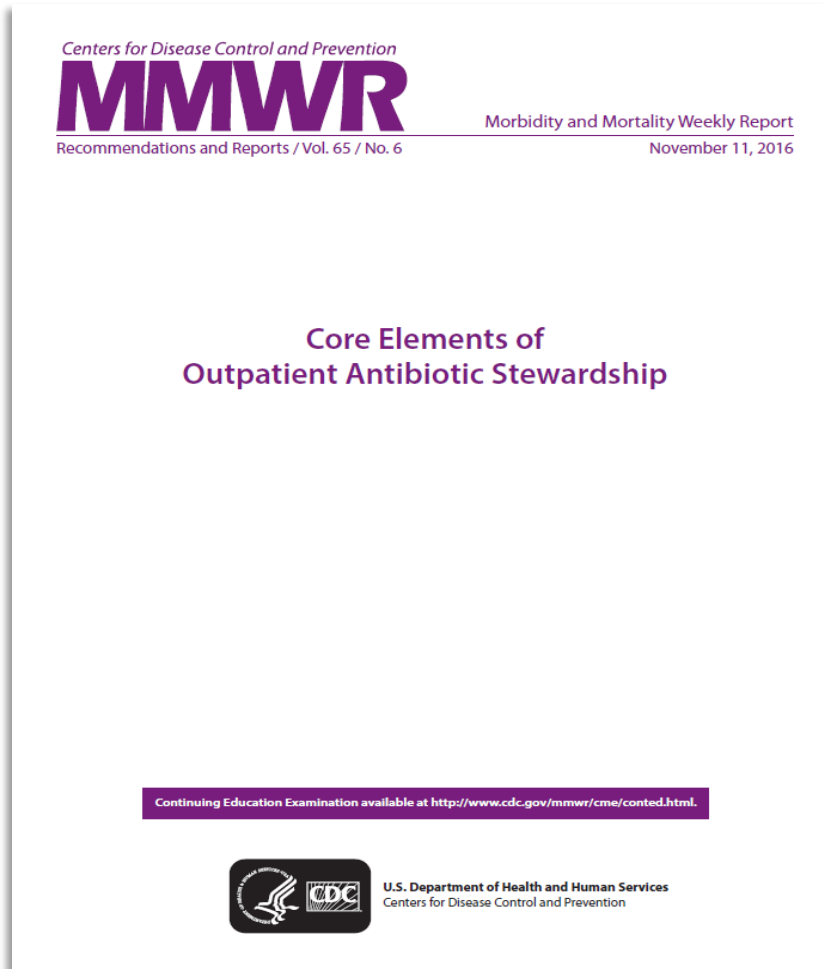
What is Antibiotic Stewardship?

- 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.

Core Elements of Outpatient Antibiotic Stewardship



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

Initial Steps for Outpatient Antibiotic Stewardship

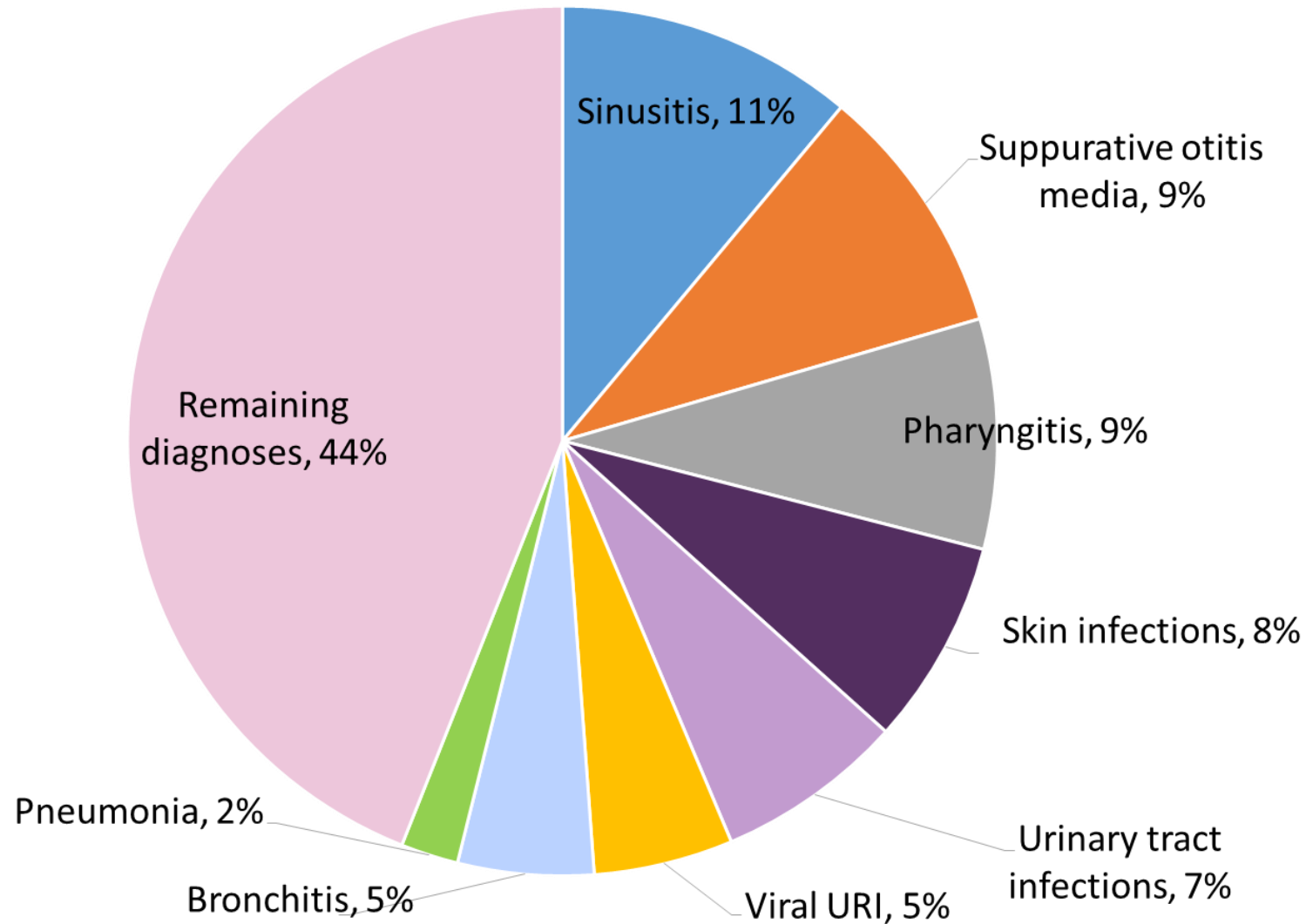


Identify one or more high-priority conditions for intervention.

High-priority conditions are conditions for which clinicians commonly deviate from best practices for antibiotic prescribing and include conditions for which antibiotics are overprescribed, underprescribed, or misprescribed with the wrong antibiotic agent, dose, or duration.

Condition Category	Example(s)
Antibiotics are overprescribed	Acute uncomplicated bronchitis
Overdiagnosed	Acute sinusitis, Streptococcal pharyngitis
Wrong dose, duration or agent	Azithromycin for sinusitis
Watchful waiting or delayed prescribing is underused	Acute sinusitis, Acute otitis media
Antibiotics are underused	Sepsis or sexually transmitted infections

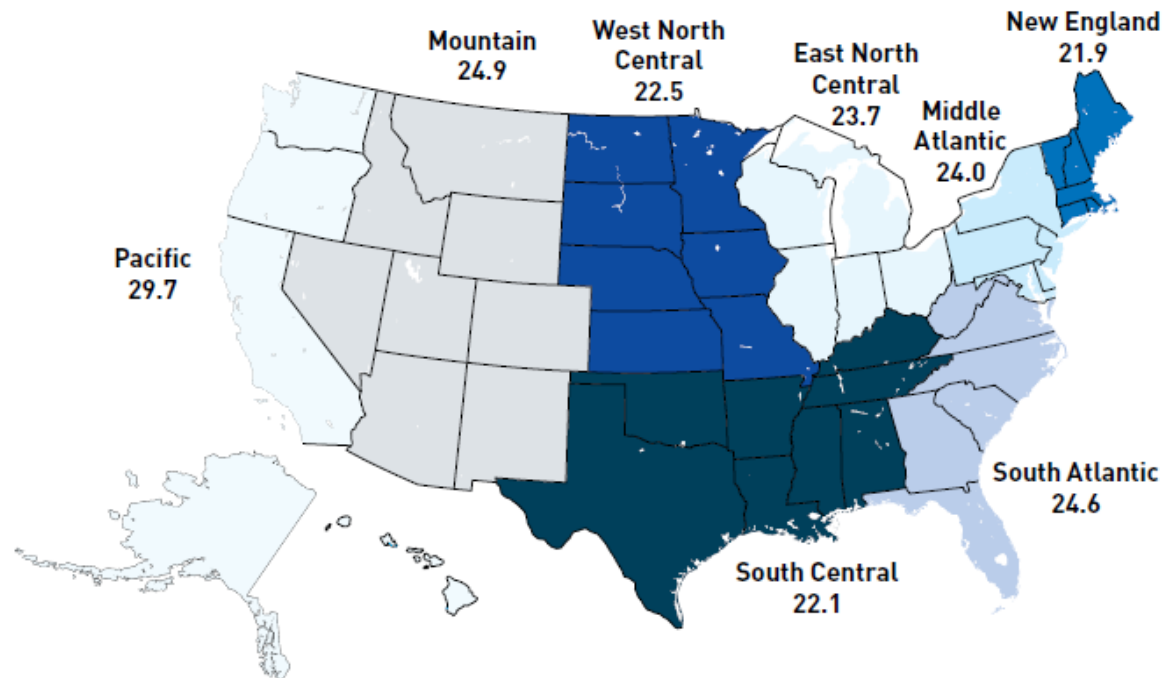
Diagnoses leading to antibiotics — United States, 2010–11



Case Study: Acute Bronchitis

- High quality evidence demonstrates no benefit from antibiotics since 1990s
- National guidelines recommend against prescribing antibiotics
- HEDIS measure: Avoidance of Antibiotic Treatment in Adults with Acute Bronchitis (Goal: 100%)

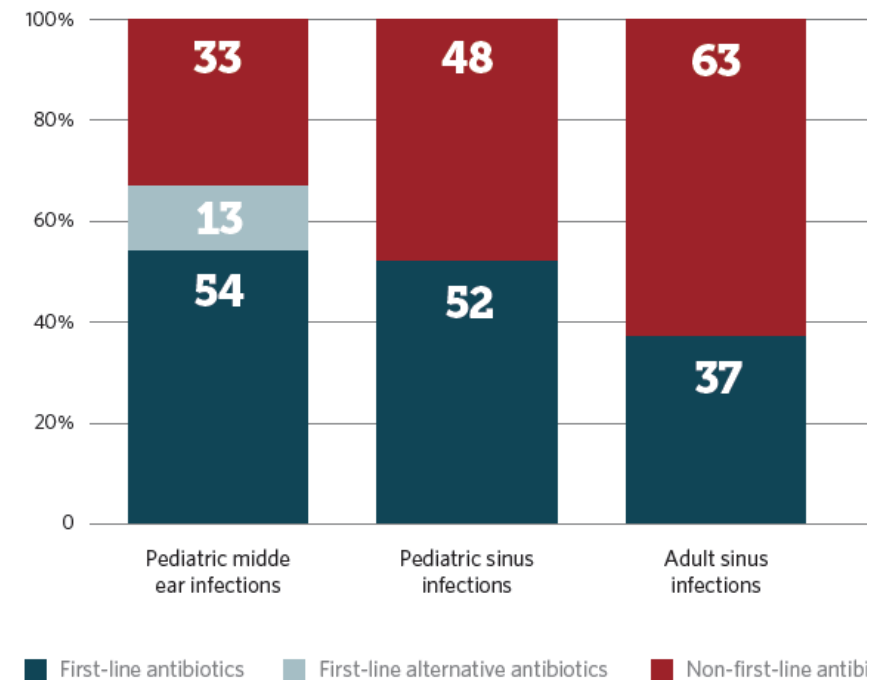
Performance on Bronchitis Measure 2008-12



Case Study: Acute Sinusitis

- National guidelines emphasize strict diagnostic criteria
 - Unclear how many patients fit criteria
- Evidence on antibiotic effectiveness
 - No benefit to antibiotics in adults in randomized-controlled trials & some to no benefit in children
- Watchful waiting without antibiotics is treatment option after 10 days of symptoms
 - AAO-HNS recommends up to 7 days watchful waiting
 - AAP recommends up to 3 days watchful waiting
- Antibiotic selection is a major issue
 - First-line antibiotics prescribed in only 37% of sinusitis visits for adults

Antibiotic Selection for Acute Otitis Media and Sinusitis — United States, 2011-12



Source: Analysis of NAMCS and NHAMCS data on U.S. antibiotic prescribing, 2010-2011

© 2016 The Pew Charitable Trusts

Initial Steps for Outpatient Antibiotic Stewardship



Identify barriers that lead to deviation from best practices.

These might include clinician knowledge gaps about best practices and clinical practice guidelines, clinician perception of patient expectations for antibiotics, perceived pressure to see patients quickly, or clinician concerns about decreased patient satisfaction with clinical visits when antibiotics are not prescribed.

Why might providers prescribe antibiotics inappropriately?

- Lack of knowledge of appropriate indications
 - Providers generally know the guidelines
- Diagnostic uncertainty and fear of complications
 - Clinicians cite diagnostic uncertainty and fear of infectious complications
- Patient pressure and satisfaction
 - Providers universally cite patient requests for antibiotics
- Habit
 - Adult providers in the VA system vary in prescribing antibiotics for acute respiratory infection (ARI) diagnoses from $\leq 40\%$ to $\geq 95\%$ of their ARI visits (i.e. the same diagnoses)

Why might providers prescribe antibiotics inappropriately?

- Lack of knowledge of appropriate indications
 - Providers generally know the guidelines
 - *Education is important but alone is not very effective*
- Diagnostic uncertainty and fear of complications
 - Clinicians cite diagnostic uncertainty and fear of infectious complications
 - *Communicating about adverse events to providers and patients is key*
- Patient pressure and satisfaction
 - Providers universally cite patient requests for antibiotics
 - *Communication training can help clinicians use antibiotics appropriately & keep patients satisfied*
- Habit
 - Adult providers in the VA system vary in prescribing antibiotics for acute respiratory infection (ARI) diagnoses from $\leq 40\%$ to $\geq 95\%$ of their ARI visits (i.e. the same diagnoses)
 - *Peer comparisons & academic detailing is a key mitigation strategy for these habitual providers*

What if something bad happens? It's a Matter of Patient Safety

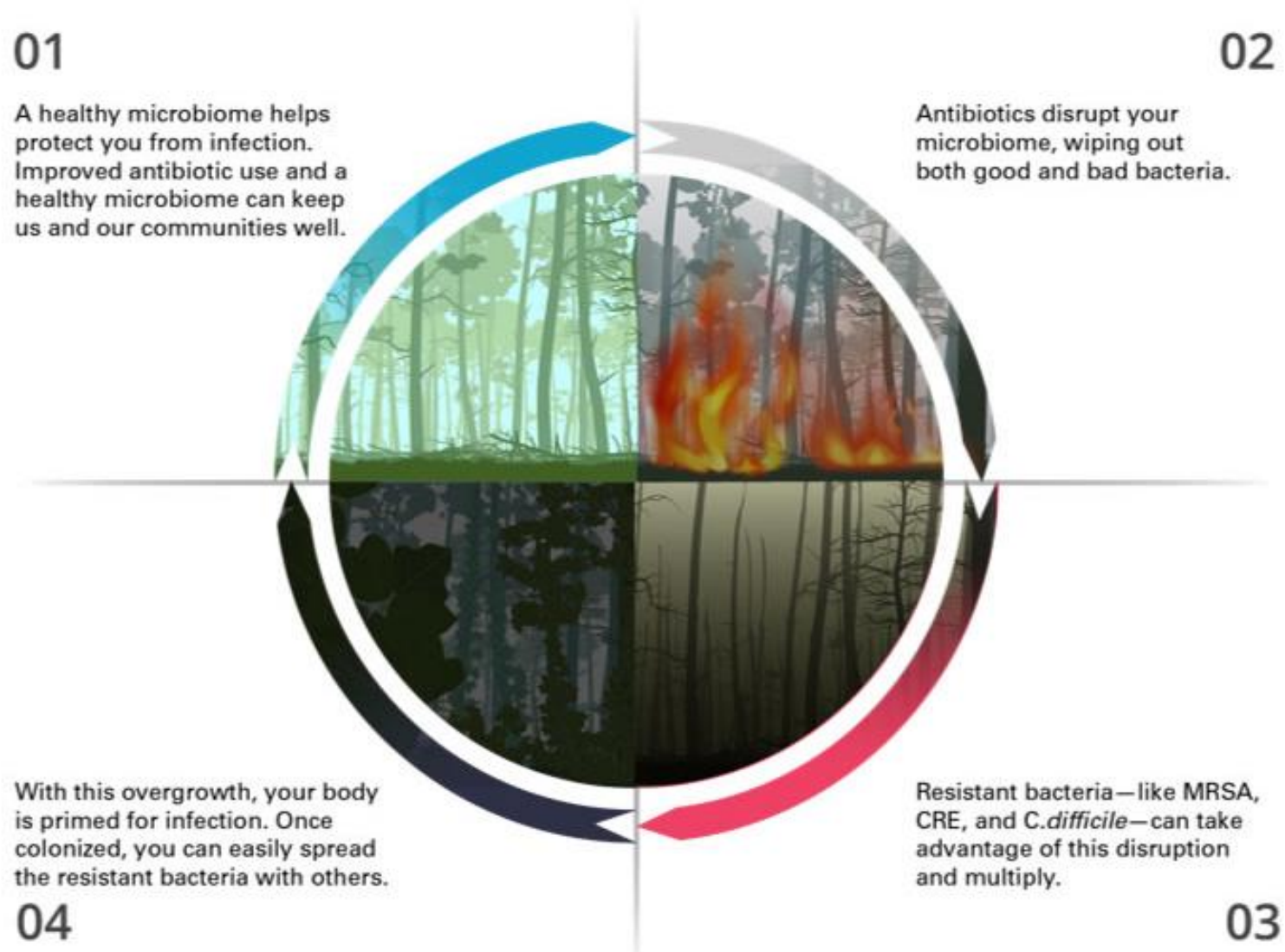
- Without an antibiotic
 - Complications to common respiratory infections are very rare
 - Over 4400 patients with colds need to be treated to prevent 1 case of pneumonia
- With an antibiotic
 - Adverse events from antibiotics range from minor to severe
 - Side effects like antibiotic-associated diarrhea (5-25% of patients) or rash
 - 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

Petersen et al. *British Medical Journal*. 2007;335(7627): 982.

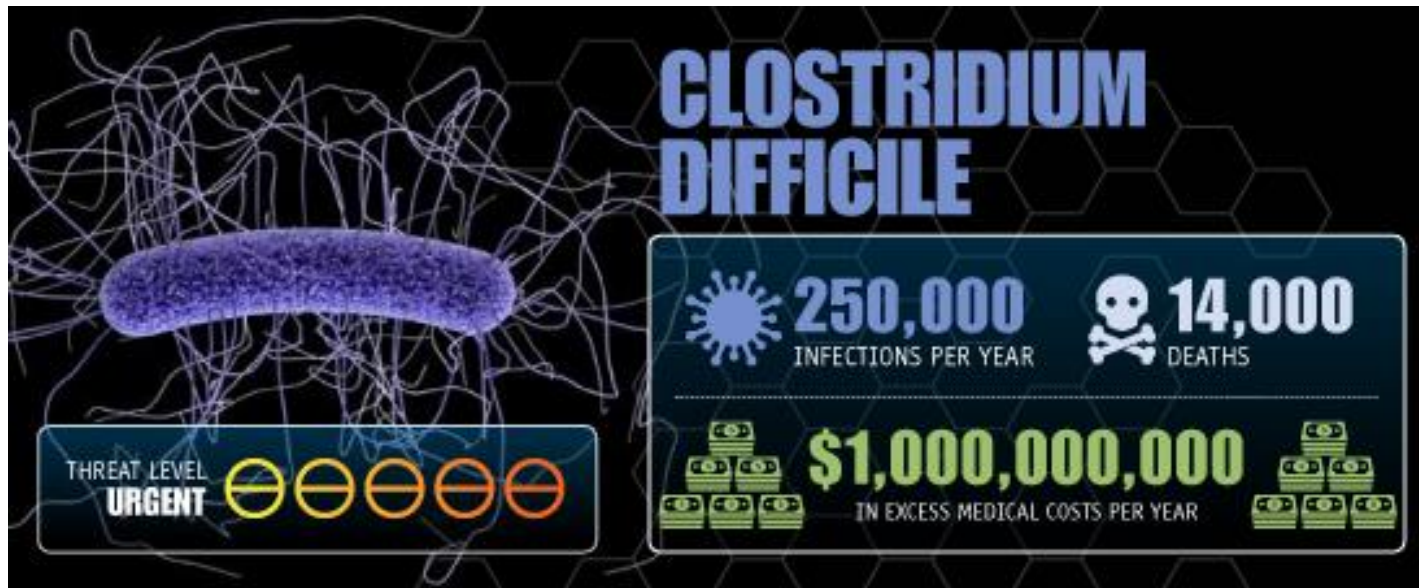
Shehab, et al. *Clin Infect Dis*. 2008 Sep 15;47(6):735-43. Bourgeois, et al. *Pediatrics*. 2009;124(4):e744-50.

Linder. *Clin Infect Dis*. 2008 Sep 15;47(6):744-6.

How do antibiotics affect your microbiome?



It's a matter of patient safety: *Clostridium difficile*



More recent estimate: 453,000 infections and caused 15,000 deaths in the US annually

Initial Steps for Outpatient Antibiotic Stewardship



Establish standards for antibiotic prescribing.

This might include implementation of national clinical practice guidelines and, if applicable, developing facility- or system-specific clinical practice guidelines to establish clear expectations for appropriate antibiotic prescribing



Get Smart: Know When Antibiotics Work

Adult Treatment Recommendations

Antibiotic prescribing guidelines establish standards of care and focus quality improvement efforts. The table below summarizes the most recent recommendations for appropriate antibiotic prescribing for adults seeking care in an outpatient setting.

Condition	Epidemiology	Diagnosis	Management
Acute rhinosinusitis ^{1,2}	<ul style="list-style-type: none">About 1 out of 8 adults (12%) in 2012 reported receiving a diagnosis of rhinosinusitis in the previous 12 months, resulting in more than 30 million diagnoses.Ninety–98% of rhinosinusitis cases are viral, and antibiotics are not guaranteed to help even if the causative agent is bacterial.	<ul style="list-style-type: none">Diagnose acute bacterial rhinosinusitis based on symptoms that are:<ul style="list-style-type: none">Severe (>3–4 days), such as a fever $\geq 39^{\circ}\text{C}$ (102°F) and purulent nasal discharge or facial pain;Persistent (>10 days) without improvement, such as nasal discharge or daytime cough; orWorsening (3–4 days) such as worsening or new onset fever, daytime cough, or nasal discharge after initial improvement of a viral upper respiratory infections (URI) lasting 5–6 days.Sinus radiographs are not routinely recommended.	<p>If a bacterial infection is established:</p> <ul style="list-style-type: none">Watchful waiting is encouraged for uncomplicated cases for which reliable follow-up is available.Amoxicillin or amoxicillin/clavulanate is the recommended first-line therapy.Macrolides such as azithromycin are not recommended due to high levels of <i>Streptococcus pneumoniae</i> antibiotic resistance (~40%).For penicillin-allergic patients, doxycycline or a respiratory fluoroquinolone (levofloxacin or moxifloxacin) are recommended as alternative agents.
Acute uncomplicated bronchitis ^{3–5}	<ul style="list-style-type: none">Cough is the most common symptom for which adult patients visit their primary care provider, and acute bronchitis is the most common diagnosis in these patients.	<ul style="list-style-type: none">Evaluation should focus on ruling out pneumonia, which is rare among otherwise healthy adults in the absence of abnormal vital signs (heart rate ≥ 100 beats/min, respiratory rate ≥ 24 breaths/min, or oral temperature $\geq 38^{\circ}\text{C}$) and abnormal lung examination findings (focal consolidation, egophony, fremitus).Colored sputum does not indicate bacterial infection.For most cases, chest radiography is not indicated.	<p>Routine treatment of uncomplicated acute bronchitis with antibiotics is not recommended, regardless of cough duration.</p> <p>Options for symptomatic therapy include:</p> <ul style="list-style-type: none">Cough suppressants (codeine, dextromethorphan);First-generation antihistamines (diphenhydramine);Decongestants (phenylephrine); andBeta agonists (albuterol).
Common cold or non-specific upper respiratory tract infection (URI) ^{6,7}	<ul style="list-style-type: none">The common cold is the third most frequent diagnosis in office visits, and most adults experience two to four colds annually.At least 200 viruses can cause the common cold.	<ul style="list-style-type: none">Prominent cold symptoms include fever, cough, rhinorrhea, nasal congestion, postnasal drip, sore throat, headache, and myalgias.	<ul style="list-style-type: none">Decongestants (pseudoephedrine and phenylephrine) combined with a first-generation antihistamine may provide short-term symptom relief of nasal symptoms and cough.Non-steroidal anti-inflammatory drugs can be given to relieve symptoms.Evidence is lacking to support antihistamines (as monotherapy), opioids, intranasal corticosteroids, and nasal saline irrigation as effective treatments for cold symptom relief. <p>Providers and patients must weigh the benefits and harms of symptomatic therapy.</p>

[Get Smart Home](#)

About



For Patients



For Healthcare Professionals



Outpatient Healthcare Professionals



Adult Treatment Recommendations

Pediatric Treatment Recommendations

Inpatient Healthcare Professionals

Community Pharmacists

Continuing Education &



[CDC](#) > [Get Smart Home](#) > [For](#)

Outpatient Healthcare Professionals



Recommendations for appropriate antibiotic prescribing for common infections in children and adolescents. Healthcare professionals can use to educate patients.

ADULT TREATMENT RECOMMENDATIONS

A collection of evidence-based recommendations for the treatment of common adult infections.

PEDIATRIC TREATMENT RECOMMENDATIONS

A collection of evidence-based recommendations for the treatment of common pediatric infections.

treatment of common adult infections in outpatient healthcare settings

in adults...

The Core Elements of Outpatient Antibiotic Stewardship



Commitment



Action for policy and practice



Tracking and Reporting



Education and Expertise



Commitment

- Demonstrate dedication to and accountability for optimizing antibiotic prescribing and patient safety **by doing one of the following:**

Clinicians	Organizational Leadership
<ul style="list-style-type: none">• Write and display public commitments in support of antibiotic stewardship	<ul style="list-style-type: none">• Identify a single leader to direct antibiotic stewardship activities within a facility• Include stewardship-related duties in position descriptions or job evaluation criteria• Communicate with all clinic staff to set patient expectations

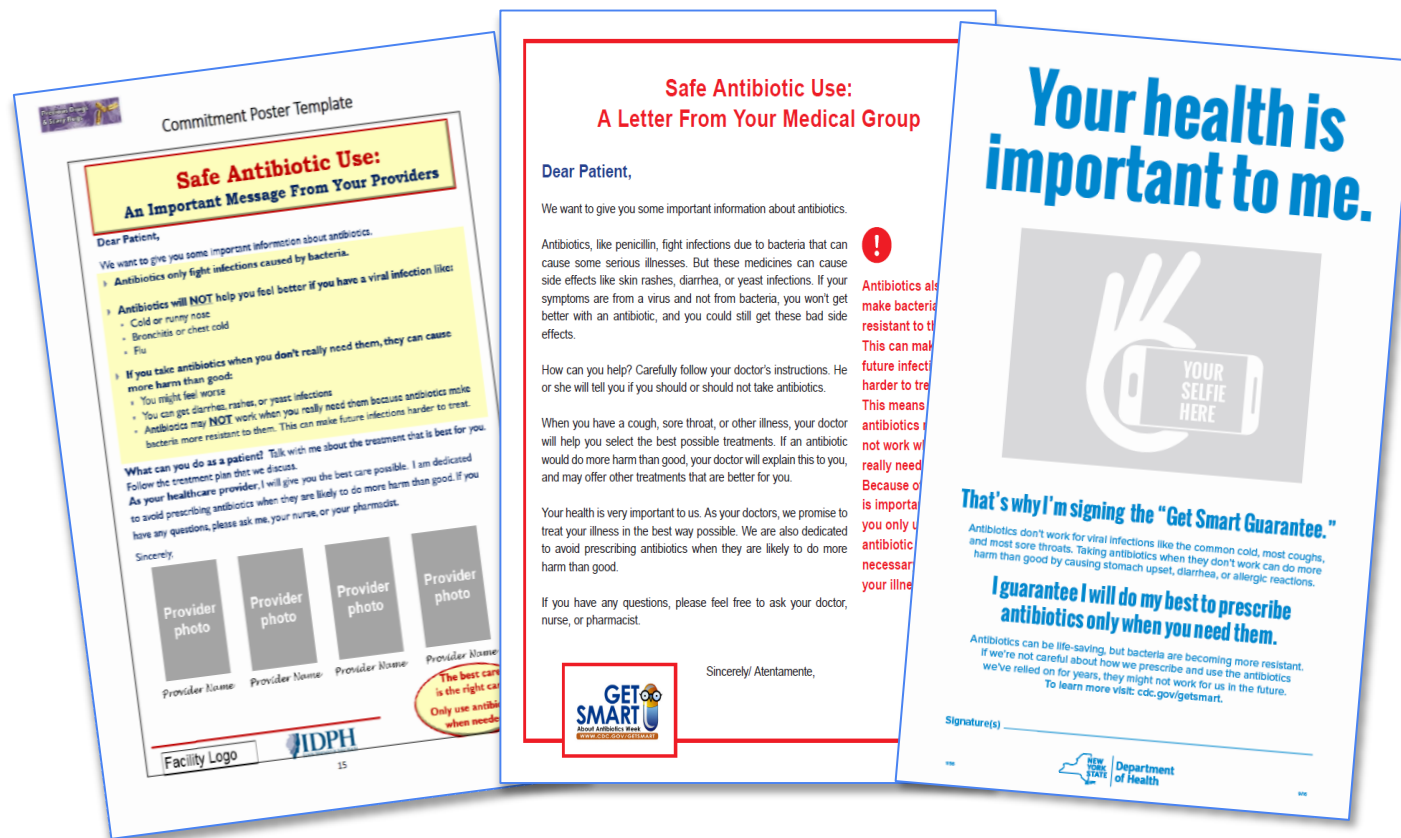
Public Commitment Posters

- 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 from Illinois, Texas New York, and CDC



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,

Add your picture and
signature here



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

1527064

blogs.cdc.gov/safehealthcare/?p=5900

cdc.gov/getsmart/community/materials-references/print-materials/hcp/index.html



Action

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

Clinicians	Organizational Leadership
<ul style="list-style-type: none">• Use evidence-based diagnostic criteria and treatment recommendations• Use delayed prescribing practices or watchful waiting, when appropriate	<ul style="list-style-type: none">• Provide communications skills training for clinicians• Require explicit written justification in the medical record for nonrecommended antibiotic prescribing• Provide support for clinical decisions• Use call centers, nurse hotlines, or pharmacist consultations as triage systems to prevent unnecessary visits

Watchful Waiting and Delayed Antibiotic Prescribing

- Watchful waiting implies having the patient call or come back
- Delayed prescriptions can be filled if patient worsens or does not improve within a specified time
 - Pearl: Put an expiration date on the delayed prescription (e.g. 3-7 days after the date written)
- When are delayed prescriptions appropriate?
 - When recommended by guidelines
 - Acute sinusitis
 - Acute otitis media
- When are delayed prescriptions **not** appropriate?
 - When antibiotics are clearly not indicated
 - Acute bronchitis
 - Viral pharyngitis

What is the evidence for delayed prescribing?

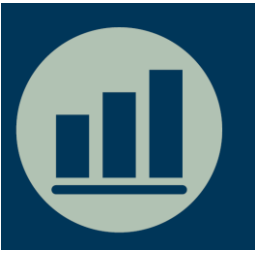
- **Randomized controlled trial for acute otitis media in the pediatric emergency department**
 - Children 6 months to 12 years with were randomized to delayed versus immediate prescription
 - 66% of patients with delayed antibiotics did not fill prescription
 - 13% of patients with immediate prescription did not fill prescription, $p < 0.001$
 - No difference in serious adverse events or unscheduled visits
- **Randomized controlled trial in Spanish family practice clinics using different antibiotic prescription strategies for adults with acute respiratory infections**
 - Percent of patients who used antibiotics during the acute respiratory infection
 - 91% who received immediate prescriptions
 - 33% who received a delayed prescription
 - 23% who were instructed to return to pick up a prescription if needed
 - 12% who received no prescription
 - Satisfaction was similar between all groups

Clinical decision support

- Effective intervention
 - Acute bronchitis: 12–14% reduction in antibiotic prescribing
 - Pharyngitis: reduced antibiotics use
 - Pneumonia: improved antibiotic selection
- Important considerations
 - Print and electronic tools are likely equally effective
 - Tools need to be **used** to be effective
 - In one study, tool was used in 6% of eligible visits
 - Alert fatigue is a problem

Behavioral Clinical Decision Support: Accountable Justification

- “Antibiotic justification note” in medical record
 - Triggered by diagnosis for which antibiotics are not indicated and antibiotic prescription
 - Free text field
 - If no text entered: “No justification given” appeared in medical record
 - Note disappeared if antibiotic prescription deleted
- Idea: Clinicians want to preserve their reputation
- Reduced inappropriate antibiotic prescribing from 23.2% to 5.2% pre and post-intervention (-7.0% difference in differences, $p < 0.001$)



Tracking and Reporting

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

Clinicians	Organizational Leadership
<ul style="list-style-type: none">• Self-evaluate antibiotic prescribing practices• Participate in continuing medical education and quality improvement activities to track and improve antibiotic prescribing	<ul style="list-style-type: none">• Implement at least one antibiotic prescribing tracking and reporting system• Assess and share performance on quality measures and established reduction goals addressing appropriate antibiotic prescribing from health care plans and payers

Tracking and Reporting with Peer Comparisons

- Effective feedback interventions often include peer performance comparisons
 - Comparing clinician's antibiotic selection patterns for respiratory conditions to colleagues' performance¹
 - Clinicians received quarterly e-mails with their performance and the average performance of their peers in their practice and in the network
 - Led to increased use of guideline recommended agents during the intervention period
 - Once intervention was withdrawn, performance returned back to baseline²
 - Notifying clinicians that they prescribe more antibiotics than 80% of their peers, based on the percentage all visits leading to antibiotic prescriptions³
 - Letter said: "Your practice is prescribing antibiotics at a rate higher than 80% of your local GP practices" and was from England's Chief Medical Officer
 - Led to decreased overall antibiotic prescribing and cost-savings

Peer Comparison to Top Performers

- One randomized controlled trial sent monthly emails to intervention group comparing clinician based on number of antibiotic prescriptions written for acute respiratory infections that do not require antibiotics (e.g. colds, bronchitis)
- For clinicians in the top 10% (prescribed no antibiotics for these antibiotic-inappropriate conditions)
 - “You are a Top Performer”
- For those not in the top 10% of performers:
 - “You are not a Top Performer”
- Mean antibiotic prescribing decreased from 19.9% to 3.7% (-16.3%)
 - Statistically significant versus controls

What about Quality Measures?

QPP <https://qpp.cms.gov/mips/quality-measures> QPP MIPS Quality Measures - Q...

Quality Payment PROGRAM

MIPS
 Merit-based Incentive Payment System

APMs
 Alternative Payment Models

About
 The Quality Payment Program

> [Adult Sinusitis: Antibiotic Prescribed for Acute Sinusitis \(Overuse\)](#) ADD

> [Adult Sinusitis: Appropriate Choice of Antibiotic: Amoxicillin With or Without Clavulanate Prescribed for Patients with Acute Bacterial Sinusitis \(Appropriate Use\)](#) ADD

> [Appropriate Testing for Children with Pharyngitis](#) ADD

> [Appropriate Treatment for Children with Upper Respiratory Infection \(URI\)](#) ADD

> [Appropriate Treatment of Methicillin-Sensitive Staphylococcus Aureus \(MSSA\) Bacteremia](#) ADD

> [Avoidance of Antibiotic Treatment in Adults With Acute Bronchitis](#) ADD

> [Perioperative Care: Selection of Prophylactic Antibiotic - First OR Second Generation Cephalosporin](#) ADD

> [Total Knee Replacement: Preoperative Antibiotic Infusion with Proximal Tourniquet](#) ADD

Selected Measures

0 Measures Added

Once you select measures, they will appear here.

Disclaimer

*MIPS eligible clinicians or groups are expected to report on applicable measures. "Applicable" is defined as measures relevant to a particular MIPS eligible clinician's services or care rendered. MIPS eligible clinicians can refer to the measures specifications to verify which measures are applicable. Not all measures in each Specialty Measure Set will be applicable to all clinicians in a given specialty. If the set includes less than six applicable measures, the eligible clinician should only report the measures that are applicable.

- Opportunity in Centers for Medicaid and Medicare Service's (CMS) Quality Payment Program to select measures that would fulfil the tracking and reporting Core Elements
- <https://qpp.cms.gov/mips/quality-measures>
- Search "antibiotic" in the keyword box



Education and Expertise

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

Clinicians	Organizational Leadership
<ul style="list-style-type: none">• Use effective communications strategies to educate patients about when antibiotics are and are not needed• Educate about the potential harms of antibiotic treatment• Provide patient education materials	<ul style="list-style-type: none">• Provide face-to-face educational training (academic detailing)• Provide continuing education activities for clinicians• Ensure timely access to persons with expertise

Educating Patients Through Effective Communication

- Clinicians cite patient demand for antibiotics as a reason they prescribe inappropriately¹
- Overt requests for antibiotics are rare
- When physicians think parents want antibiotics, they are more likely
 - 62% when they thought parent wanted antibiotics
 - 7% when they thought parent did **not** want antibiotics
- Physicians are terrible at predicting which parents want antibiotics

Sanchez, EID; 2014; 20(12);2041-7.

Knapf *Family Practice* 2004;21(5):500-6.

Mangione-Smith *Pediatrics* 1999;103(4):711-8



Why do clinicians think patients want antibiotics?

- Physicians thought parents wanted antibiotics when
 - Parents suggested a candidate diagnosis
 - Parents questions 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 physician 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, antibiotics and communication

- Parents are still satisfied if they don't get antibiotics
- Parents are dissatisfied if communication expectations are not met
- What do patients & parents want?
 - Explanation of why antibiotics are not needed + positive recommendations for symptom management
 - Contingency plan—i.e. when to call or return
- Tip: remember to be specific!



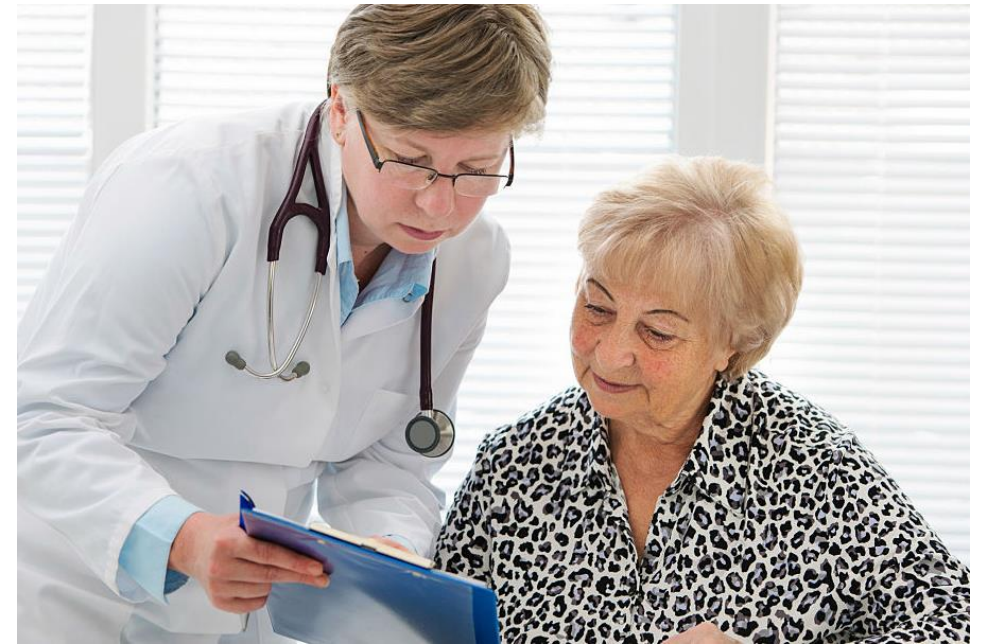
Mangione-Smith *Pediatrics* 1999;103(4):711-8.

Mangione-Smith *Arch Pediatr Adolesc Med* 2001;155:800-6.

Mangione-Smith *Ann Family Med* 2015; 13(3) 221-7.

Communication Training as an Antibiotic Stewardship Intervention


- Enhanced communication training reduces antibiotic prescribing for respiratory infections in all ages while maintaining patient satisfaction
- Communication goals
 - Understanding the patient's expectations
 - Explaining why antibiotics will/will not help
 - Providing symptomatic recommendations
 - Discussing when to return if the patient is not better
- Effect appears to be sustainable over time



CDC Materials for Acute Bronchitis

Preventing and Treating Bronchitis

Cough keeping you up at night? Soreness in your chest and feeling fatigued? You could have acute bronchitis, but be aware: an antibiotic will not help you get better.



What is Acute Bronchitis?

Bronchitis occurs when the airways of the lungs swell and produce mucus. That's what makes you cough. Acute bronchitis, often called a "chest cold," is the most common type of bronchitis. The symptoms last less than 3 weeks. If you're a healthy person without underlying heart or lung problems or a weakened immune system, this information is for you.

Symptoms of Acute Bronchitis:

- ◆ Coughing with or without mucus production

You may also experience:

- ◆ Soreness in the chest
- ◆ Fatigue (feeling tired)
- ◆ Mild headache
- ◆ Mild body aches
- ◆ Watery eyes
- ◆ Sore throat


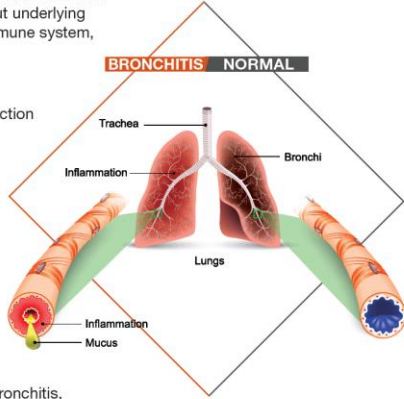
Causes

- ◆ Acute bronchitis is usually caused by a virus and often occurs after an upper respiratory infection.
- ◆ Bacteria can sometimes cause acute bronchitis, but even in these cases antibiotics are NOT recommended and will not help you get better.

When to Seek Medical Care

See a healthcare professional if you or your child have any of the following:

- ◆ Temperature higher than 100.4 °F
- ◆ Cough with bloody mucus
- ◆ Shortness of breath or trouble breathing
- ◆ Symptoms that last more than 3 weeks
- ◆ Repeated episodes of bronchitis



Centers for Disease Control and Prevention
National Center for Emerging and Zoonotic Infectious Diseases

CS278374A



Recommended Treatment

Good news! Acute bronchitis almost always gets better on its own—without antibiotics. Using antibiotics when they aren't needed can do more harm than good. Unintended consequences of antibiotics include side effects, like rash and diarrhea, as well as more serious consequences, such as an increased risk for an antibiotic-resistant infection or *Clostridium difficile* infection, a sometimes deadly diarrhea.



To Feel Better:

- ◆ Get plenty of rest
- ◆ Drink plenty of fluids
- ◆ Use a clean humidifier or cool mist vaporizer
- ◆ Breathe in steam from a bowl of hot water or shower
- ◆ Use lozenges (*do not give lozenges to children younger than 4 years of age*)
- ◆ Ask your healthcare professional or pharmacist about over-the-counter medicines that can help you feel better



Remember, always use over-the-counter medicines as directed. **Do not use cough and cold medicines in children younger than 4 years of age** unless specifically told to do so by a healthcare professional.

Your healthcare professional will most likely prescribe antibiotics for a diagnosis of whooping cough (pertussis) or pneumonia.



Prevention

- ◆ Practice good hand hygiene
- ◆ Make sure you and your child are up-to-date with all recommended vaccines
- ◆ Don't smoke and avoid secondhand smoke, chemicals, dust, or air pollution
- ◆ Always cover your mouth and nose when coughing or sneezing
- ◆ Keep your distance from others when you are sick, if possible



And Remember:

Antibiotics will not treat acute bronchitis. Using antibiotics when not needed could do more harm than good.



CDC materials for Watchful Waiting and Delayed Prescribing

What is Delayed Prescribing?



WAIT. Do not fill your prescription just yet. Your healthcare professional believes your illness may resolve on its own.

First, follow your healthcare professional's recommendations to help you feel better without antibiotics and continue to monitor your own symptoms over the next few days.

- Rest
- Drink extra water and fluids
- Use cool mist vaporizer or saline nasal spray to relieve congestion
- For sore throats in older adults and children, try ice chips, sore throat spray, or lozenges

If you **do not feel better** in ___ days/hours, or **get worse**, go ahead and fill your prescription.

If you **feel better**, you **do not need the antibiotic**, and do not have to risk the side effects.

Waiting to see if you really need an antibiotic can help you take antibiotics only when it is actually necessary. Antibiotics can cause side effects like a skin rash, diarrhea, a yeast infection, or worse.

Antibiotics can also make future bacterial infections stronger and harder to treat. You can protect yourself and others by learning when antibiotics are and aren't needed.



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

For more information visit
www.cdc.gov/getsmart

05270228C

What is Watchful Waiting?



Good news! Your healthcare professional believes your illness will likely resolve on its own.

You should watch and wait for ___ days/hours before deciding whether to take an antibiotic.

In the meantime, follow your healthcare professional's recommendations to help you feel better and continue to monitor your own symptoms over the next few days.

- Rest
- Drink extra water and fluids
- Use cool mist vaporizer or saline nasal spray to relieve congestion
- For sore throats in older children and adults, try ice chips, sore throat spray, or lozenges
- Use honey to relieve cough. Do not give honey to an infant less than 1 year of age.

If you **feel better**, no further action is necessary — you don't need antibiotics.

If you **do not feel better**, experience **new symptoms**, or you have **other concerns**, call your healthcare professional _____ to discuss if you need a recheck or if you need antibiotics, which may be prescribed over the phone.

It may not be convenient to visit your healthcare professional multiple times, but it is critical to make the right choice. Antibiotics can cause side effects like a skin rash, diarrhea, a yeast infection, or worse.

Antibiotics can also make future bacterial infections stronger and harder to treat. You can protect yourself and others by learning when antibiotics are and aren't needed.



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

For more information visit
www.cdc.gov/getsmart

05270228D

Summary

- Antibiotic stewardship is one of the most important strategies to combat antibiotic resistance and keep our patients safe
- The *Core Elements of Outpatient Stewardship* provides a framework for improving outpatient antibiotic prescribing
- Start by identifying high-priority conditions to tackle, barriers to appropriate prescribing, and by establishing standards
 - It is about more than just education, we have to help clinicians change their behavior
- Use evidence-based interventions to implement the Core Elements



www.cdc.gov/getsmart
GetSmart@cdc.gov

For more information, contact CDC
1-800-CDC-INFO (232-4636)
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.