

Antimicrobial Stewardship for Advanced Practice Providers

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National Association of
Pediatric Nurse Practitioners™



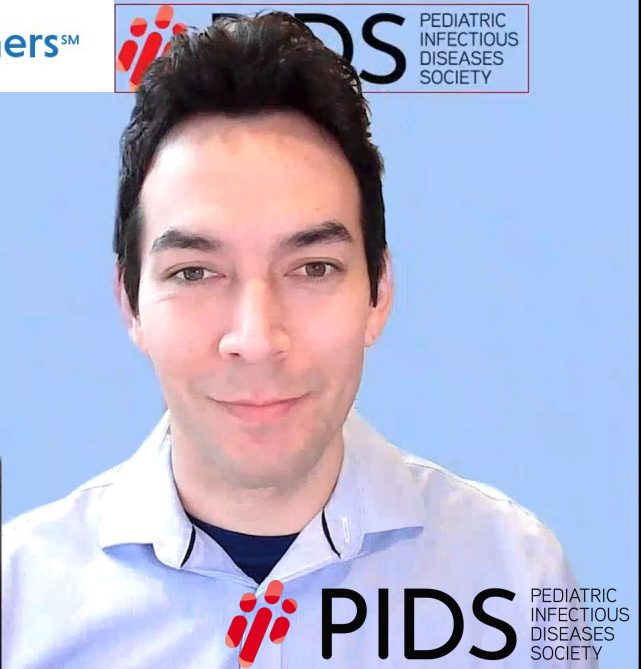
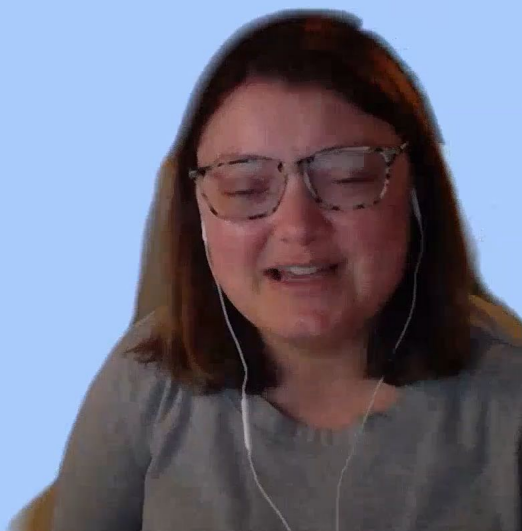
PIDS PEDIATRIC
INFECTIOUS
DISEASES
SOCIETY



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Learning Objectives

Learner will be able to:

- Identify threats of antimicrobial resistance
- Describe antimicrobial stewardship practices
- Describe “Core Elements of Outpatient Antibiotic Stewardship”



Antimicrobial Use & Resistance



Antimicrobial Resistance

- Antimicrobial resistance happens when germs like bacteria and fungi develop the ability to defeat the drugs designed to kill them.
- Antimicrobials are the only medication that affects other people when *YOU* take them
- International Health Threat!



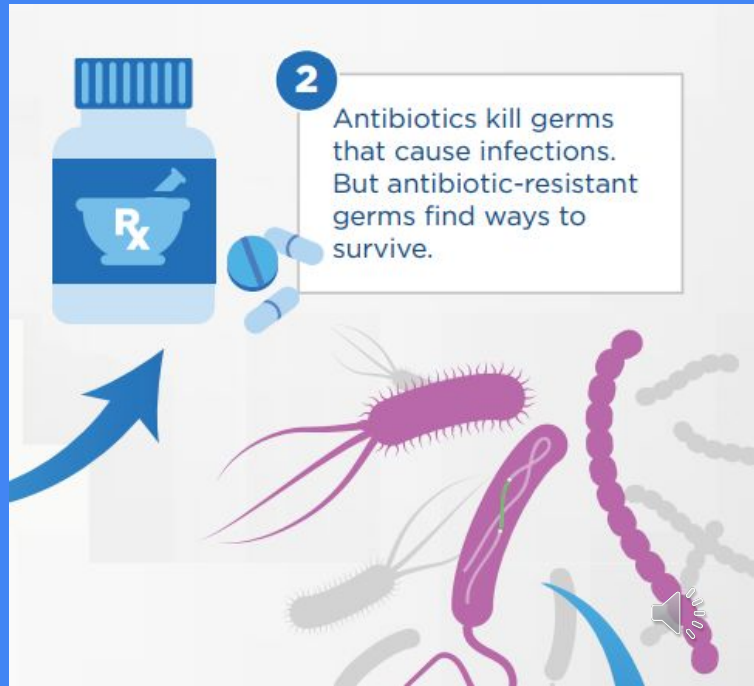
How Does Antimicrobial Resistance Happen?

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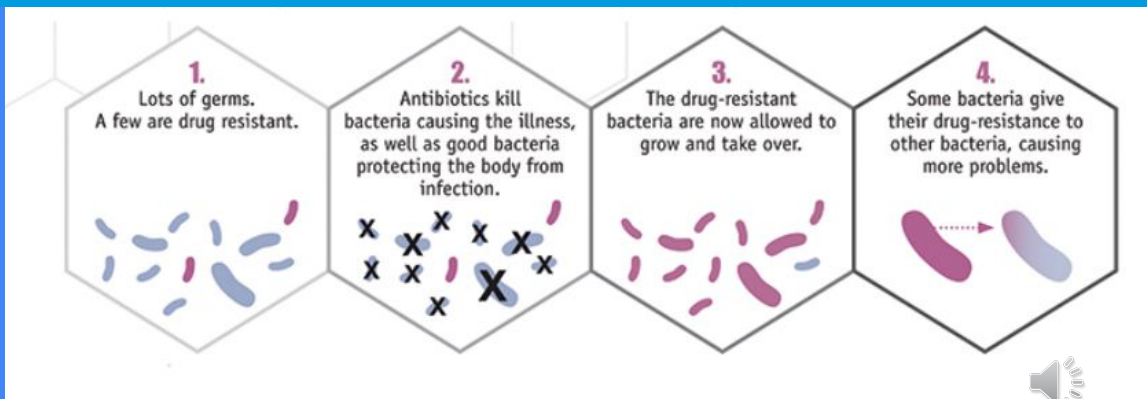
Germs (bacteria and fungi) are everywhere. Some help us. Some make people, crops, or animals sick.



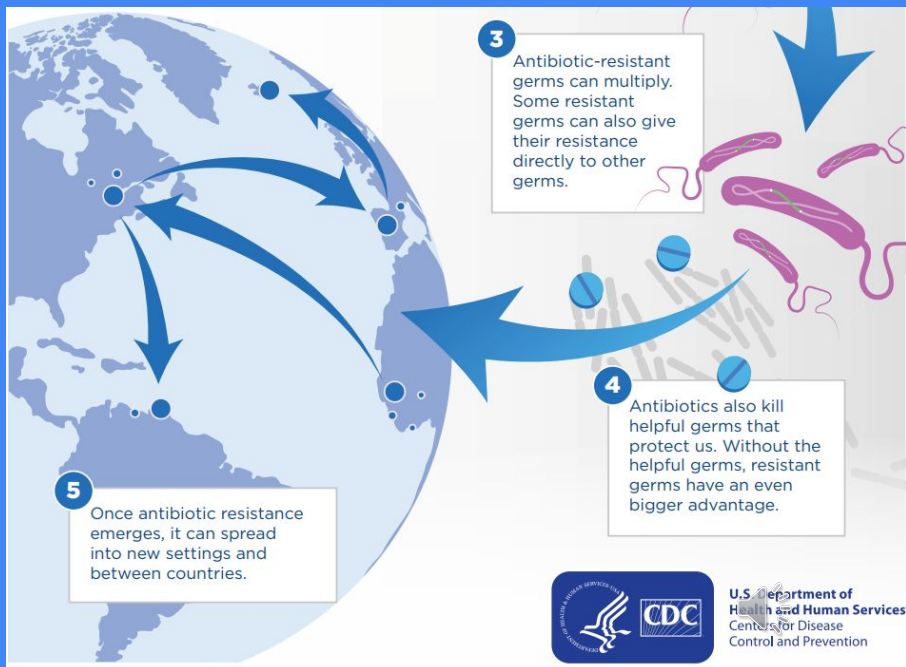
How Does Antimicrobial Resistance Happen?



Antibiotic Resistant Germs Find Ways to Survive



How Does Antimicrobial Resistance Happen?



New National Estimate*

Antibiotic-resistant bacteria and fungi cause at least an estimated:

2,868,700
infections

35,900
deaths



Clostridioides difficile is related to antibiotic use and antibiotic resistance: *

223,900
cases

12,800
deaths



Antibiotic resistance remains a significant One Health problem, affecting humans, animals, and the environment.

www.cdc.gov/DrugResistance/Biggest-Threats

Five core strategies to combat the threat of antibiotic resistant infections

Antibiotic use and access:

- Improve **appropriate** use
- Reduce **unnecessary** use
- Ensure **improved access**



Infection prevention and control: Prevent infections and reduce the spread of germs



Tracking and data: Share data and improve data collection



Antibiotic use and access: Improve appropriate use of antibiotics, reduce unnecessary use (called antibiotic stewardship), and ensure improved access to antibiotics



Vaccines, therapeutics, and diagnostics: Invest in development and improved access to vaccines, therapeutics, and diagnostics for better prevention, treatment, and detection



Environment and sanitation: Keep antibiotics and antibiotic-resistant threats from entering the environment through actions like improving sanitation and improving access to safe water

<https://www.cdc.gov/drugresistance/pdf/threats-report/2019-ar-threats-report-508.pdf>

There are many opportunities to improve outpatient antibiotic use across outpatient healthcare settings

72%
of antibiotic
prescriptions
are likely
necessary.

(Still need to improve drug selection, dose, and duration).



at least
28%
of antibiotic
prescriptions
are **unnecessary**.

In U.S. Doctor's Offices and EDs



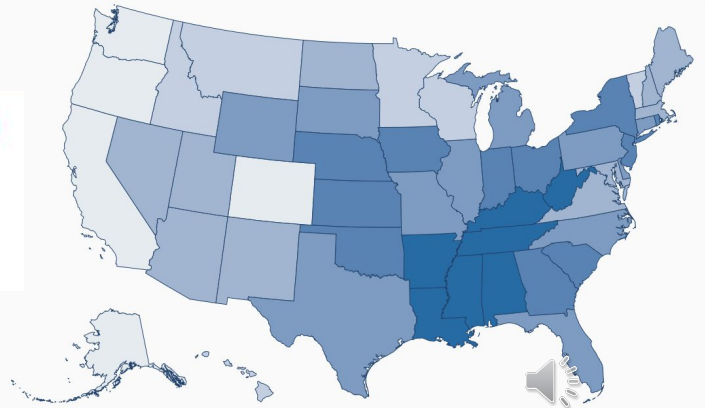
www.cdc.gov/antibiotic-use



Outpatient antibiotic prescriptions dispensed in outpatient pharmacies across the U.S.

NATIONAL OUTPATIENT ANTIBIOTIC PRESCRIPTION RATE ^①

791 Prescriptions of all antibiotic classes per 1,000 population in 2018



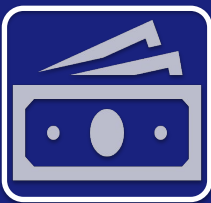
<https://arosp.cdc.gov/profile/antibiotic-use/all-classes>

Antibiotic Use and Costs



Severe Adverse Drug Events

- Clostridium difficile infections
- Allergic reactions



Financial Costs

- Higher attributable health care expenditures
- National attributable costs for Otitis Media is \$25.3 Million



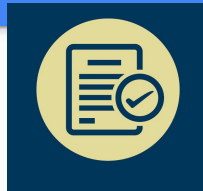
Butler AM, Brown DS, Durkin MJ, et al. Association of Inappropriate Outpatient Pediatric Antibiotic Prescriptions With Adverse Drug Events and Health Care Expenditures. *JAMA Netw Open.* 2022;5(5):e2214153. doi:10.1001/jamanetworkopen.2022.14153

The Core Elements of Outpatient Antibiotic Stewardship



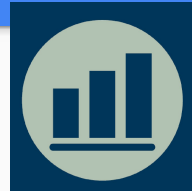
Commitment

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



Action for policy & practice

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



Tracking & Reporting

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

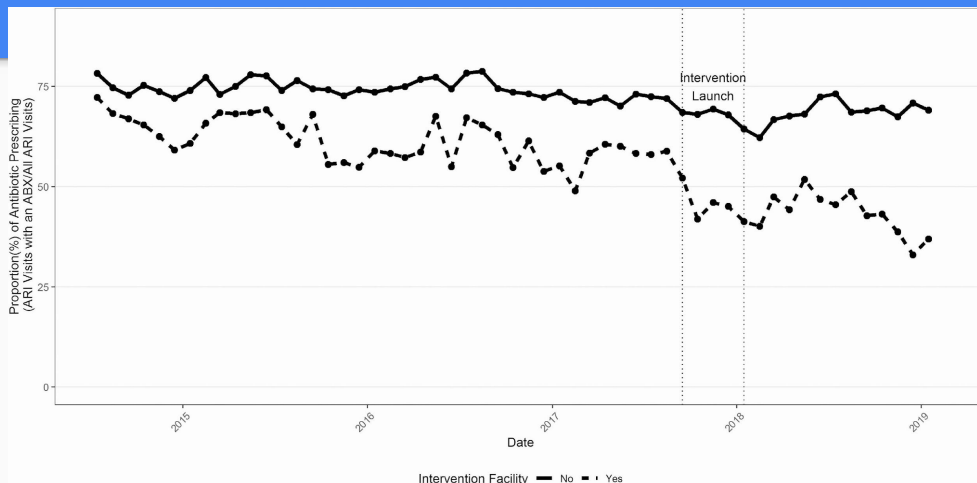


Education & Expertise

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



Implementation of the *Core Elements* was associated with reduced antibiotic prescribing for respiratory infections and a reduction in hospitalizations



Madaras-Kelly et al. 2021 *Clinical Infectious Diseases* 73(5):e1126-1134.





Core Elements: 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



Commitments posters display public commitment to antibiotic stewardship

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,

To learn more about antibiotic prescribing and use, visit www.cdc.gov/antibiotic-use.



Your health is important to me.



That's why I'm signing the "Smart Use Guarantee."

Antibiotics don't work for viral infections like the common cold, most coughs, and most sore throats. Taking antibiotics when they don't work can do more harm than good by causing stomach upset, diarrhea, or allergic reactions.

I guarantee I will do my best to prescribe antibiotics only when you need them.

Antibiotics can be life-saving, but bacteria are becoming more resistant. If we're not careful about how we prescribe and use the antibiotics we've relied on for years, they might not work for us in the future. To learn more visit: cdc.gov.

Signature(s) **Guillermo Sanchez,**
PA-C Department of Health





Core Elements: 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



Clinicians can increase their use of delayed prescribing when indicated

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. Continue to monitor your own symptoms over the next few days.

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


If you do not feel better in ___ days/hours or feel 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 needed. When antibiotics aren't needed, they won't help you, and the side effects could still hurt you. Common side effects of antibiotics can include rash, dizziness, nausea, diarrhea, and yeast infections.

Antibiotics save lives, and when a patient needs antibiotics, the benefits outweigh the risks of side effects. You can protect yourself and others by learning when antibiotics are and are not needed.

To learn more about antibiotic prescribing and use, visit www.cdc.gov/antibiotic-use.



What Is Watchful Waiting?



WAIT. DO NOT FILL YOUR PRESCRIPTION JUST YET.

Your healthcare professional believes your illness may go away 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 a cool mist vaporizer or saline nasal spray to relieve congestion.
- For sore throats in adults and older children, try ice chips, sore throat spray, or lozenges.
- Use honey to relieve cough. Do not give honey to an infant younger than 1.

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

If you do not feel better, experience new symptoms, or have other concerns, call your healthcare professional _____. Discuss whether you need a recheck or antibiotics.

It may not be convenient to visit your healthcare professional multiple times, but it is critical to take antibiotics only when needed. When antibiotics aren't needed, they won't help you and the side effects could still hurt you. Common side effects of antibiotics can include rash, dizziness, nausea, diarrhea, and yeast infections.

Antibiotics save lives, and when a patient needs antibiotics, the benefits outweigh the risks of side effects. You can protect yourself and others by learning when antibiotics are and are not needed.

To learn more about antibiotic prescribing and use, visit www.cdc.gov/antibiotic-use.






Core Elements: 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



Audit and feedback with peer comparison is an evidence-based antibiotic stewardship intervention

Chart Icd	Antibiotics Stewardship Diagnosis Category ^	Antibiotics Prescription Rate
1	BRONCHITIS	33%
2	PHARYNGITIS	56%
3	SINUSITIS	70%
4	URI	6%

Provider Last Name	Provider First Name	Chart Icd Antibiotics Stewardship Diagnosis Category ^	Call Prescriptions Aggregate Antibiotics Calls	Call Count	Antibiotics Prescription Rate
[Redacted]	[Redacted]	BRONCHITIS		2	4%
[Redacted]	[Redacted]	PHARYNGITIS		7	25%
[Redacted]	[Redacted]	SINUSITIS		6	17%
[Redacted]	[Redacted]	URI		150	2%

Last Name	First Name	Antibiotics Stewardship Diagnosis Category	Email	Difference From Practice
[Redacted]	[Redacted]	BRONCHITIS		-29%
[Redacted]	[Redacted]	PHARYNGITIS		-27%
[Redacted]	[Redacted]	SINUSITIS		-53%
[Redacted]	[Redacted]	URI		-4%

Antibiotic report card from Du Yan et al. *JGIM* 2021.

[Name]
[Title]
[Address 1]
[City] [State] [Zip]

Dear X,

I am writing to ask for your help in promoting appropriate antibiotic use to protect patients from harms caused by unnecessary antibiotic use and combat antibiotic resistance, one of the most urgent threats to the public's health.

Antibiotics are powerful tools we have to fight life-threatening infections, like those that can lead to sepsis. However, anytime they are used, they can cause side effects and lead to antibiotic resistance. Side effects can include rash, dizziness, nausea, diarrhea, and yeast infections, but also more serious conditions like C. difficile infection and severe or life-threatening allergic reactions. Infections caused by antibiotic-resistant bacteria often require extended hospital stays, additional follow-up visits to healthcare providers, and treatments that may be more costly and potentially more toxic.¹

[STATE HD] is working to combat the growing threat of antibiotic resistance and improve patient safety by participating in a Centers for Disease Control and Prevention (CDC) initiative to improve antibiotic prescribing. As part of this effort, [STATE HD] is identifying and alerting providers who are writing a higher number of antibiotic prescriptions than other clinicians in our state.

You prescribe more antibiotics than the majority (90%) of **Insert Specialty** in **Insert State**.

This analysis was based upon the number of antibiotic prescriptions dispensed from community pharmacies in 2018 from data provided by IQVIA, a research organization participating in CDC's Antimicrobial Resistance (AMR) Challenge to fight antibiotic resistance across the globe.² While volume of antibiotic prescribing does not indicate appropriateness, we hope you will consider taking the following actions and using the below tools to optimize antibiotic prescribing:

- Display a personalized commitment poster³ to communicate your commitment to using antibiotics appropriately with your patients.
- Communicate to patients why antibiotics are not needed for certain infections – you can use the enclosed CDC factsheet: "Viruses or Bacteria: What's got you sick?"⁴
- Take the CDC Training on Antibiotic Stewardship to learn more about appropriate antibiotic use.⁵

CDC's national campaign, **Be Antibiotics Aware**, aims to raise awareness about antibiotic resistance and the importance of appropriate antibiotic prescribing and use among healthcare providers, patients, and their families. We encourage you to visit the **Be Antibiotics Aware** campaign website to find resources that you can use to educate your patients about appropriate antibiotic use: www.cdc.gov/antibiotic-use

Antibiotic prescribing is a complex issue, but there are simple changes that we can all make that will have the potential for big impact. We look forward to collaborating with you to improve patient safety and combat antibiotic resistance.

Sincerely,





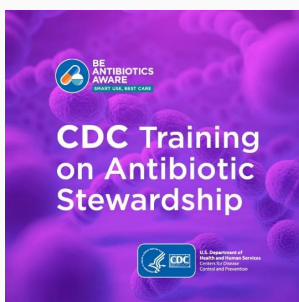
Core Elements: Education and Expertise

- Provide educational resources to clinicians and patients on antibiotic prescribing and ensure access to needed expertise on optimizing antibiotic prescribing
- Inappropriate antibiotic prescribing is rarely due to clinical knowledge gaps alone

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



Improving communication strategies and educating patients & providers



Viruses or Bacteria
What's got you sick?

Common Respiratory Infections	Common Cause		Are Antibiotics Needed?
	Virus	Virus or Bacteria	
Common cold/runny nose	✓		No
Sore throat (except strep)	✓		No
COVID-19	✓		No
Flu	✓		No
Bronchitis/chest cold (in otherwise healthy children and adults)*		✓	No*
Middle ear infection		✓	Maybe
Sinus infection		✓	Maybe
Strep throat			✓ Yes
Whooping cough			✓ Yes

* Studies show that in otherwise healthy children and adults, antibiotics for bronchitis won't help you feel better.

To learn more about antibiotic prescribing and use, visit www.cdc.gov/antibiotic-use.

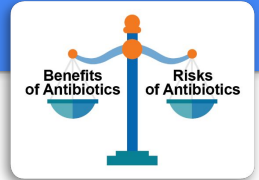


<https://www.uwimtr.org/dart/>
https://www.train.org/cdctrain/training_plan/3697

[cdc.gov/antibiotic-use/materials-references/](https://www.cdc.gov/antibiotic-use/materials-references/)



Improve communication with patients when antibiotics are not needed



- Clinicians know the guidelines for common infections
 - Diagnostic uncertainty and fear of infectious complications
 - Patient and family demand for antibiotics
- Communication skills training has been found to be effective and sustainable in improving antibiotic prescribing in the outpatient setting
 - Review physical exam findings
 - Deliver a clear diagnosis
 - Lead with a negative treatment recommendation (“e.g., the bad news is...”)
 - Then provide positive treatment recommendations (symptomatic relief)
 - Provide a contingency plan

Sanchez, EID, 2014; 20(12);2041-7
Mangione-Smith *Ann Family Med* 2015; 13(3) 221-7.
Module 6 of CDC Training on Antibiotic Stewardship https://www.train.org/cdctrain/training_plan/3697



Take Home Messages

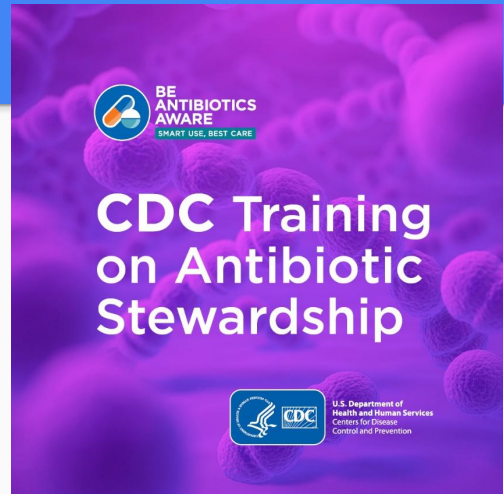
- Antibiotic stewardship is important for patient safety
- There are many opportunities to improve antibiotic use across the spectrum of healthcare
- The Core Elements are useful to identify, implement and assess stewardship interventions



CDC training with over 8 hours of free CE credits on antibiotic stewardship

Course include educational content on:

- Antibiotic resistance threats in the United States
- Benefits of antibiotic stewardship
- Risks and benefits of antibiotics
- Epidemiology of outpatient antibiotic use in the U.S. and opportunities for improvement
- Communication training for clinicians to improve outpatient antibiotic prescribing and use
- Antibiotic stewardship considerations for the management of common outpatient conditions
- Antibiotic stewardship in the outpatient setting, dentistry, emergency departments, hospitals, and nursing homes



https://www.train.org/cdctrain/training_plan/3697

