UWTASP tele-antimicrobial stewardship program | echo

May 21, 2024

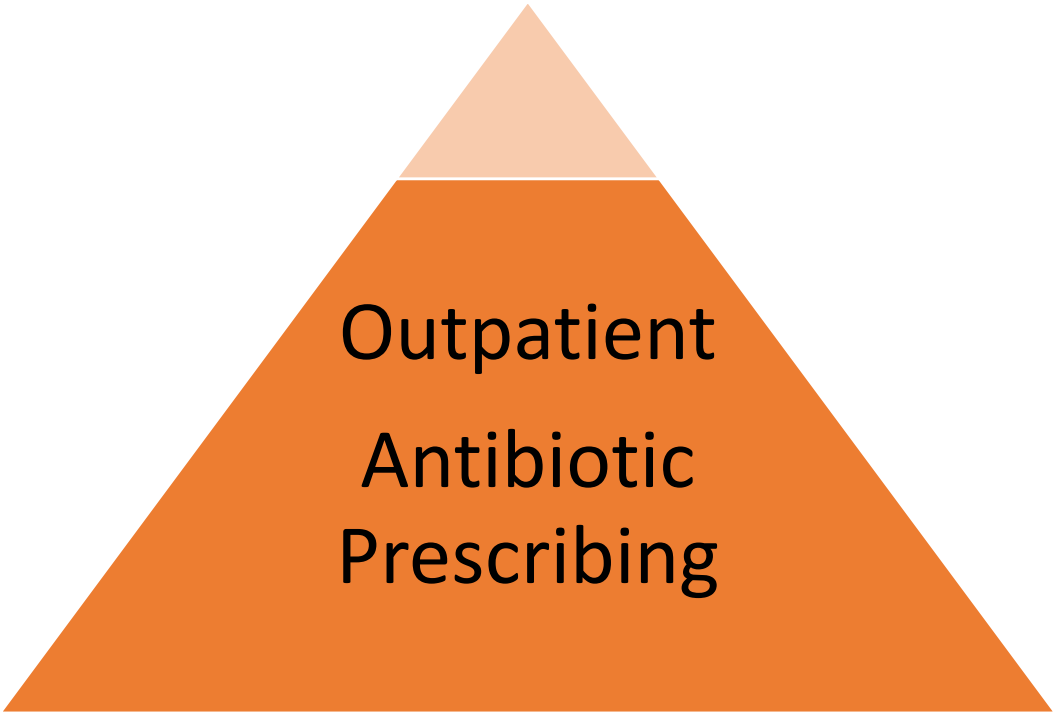
Antimicrobial Stewardship in the Emergency Department

Darra Drucker, PharmD

Project ECHO

Where Does Stewardship Happen?

According to the CDC, in the U.S.



85% of antibiotic prescribing

At least 28% of antibiotics in the outpatient setting are unnecessarily prescribed

Plenty of antimicrobial stewardship opportunities!

Centers for Disease Control and Prevention. 2023.
Society of Infectious Diseases Pharmacists Antimicrobial Stewardship Toolkit. 2023.

Antibiotics in the Emergency Department

- Intersection of community and hospital
- Antibiotic choice influences what is continued inpatient
- ED clinicians play big role in obtaining relevant cultures/studies → allow for tailoring antimicrobial regimens during hospitalization
- Limited literature regarding ED antimicrobial stewardship strategies

May et al. *Ann Emerg Med.* 2013;62(1):69-77.e2.
May et al. *Clin Microbiol Infect*. 2021;27(2):204-209.
Ruiz-Ramos et al. *Antibiotics* 2023, 12(10), 1522;

Stewardship - Same but Different?

Inpatient

vs

Emergency Department

Image: https://www.misskatecuttables.com/products/miscellaneous/wild-west

Stewardship in the Emergency Department

- **Unique challenges:**
  - High-acuity patients → competing priorities
  - Lack of continuity of care
  - Less background information on patients (vs inpatient)

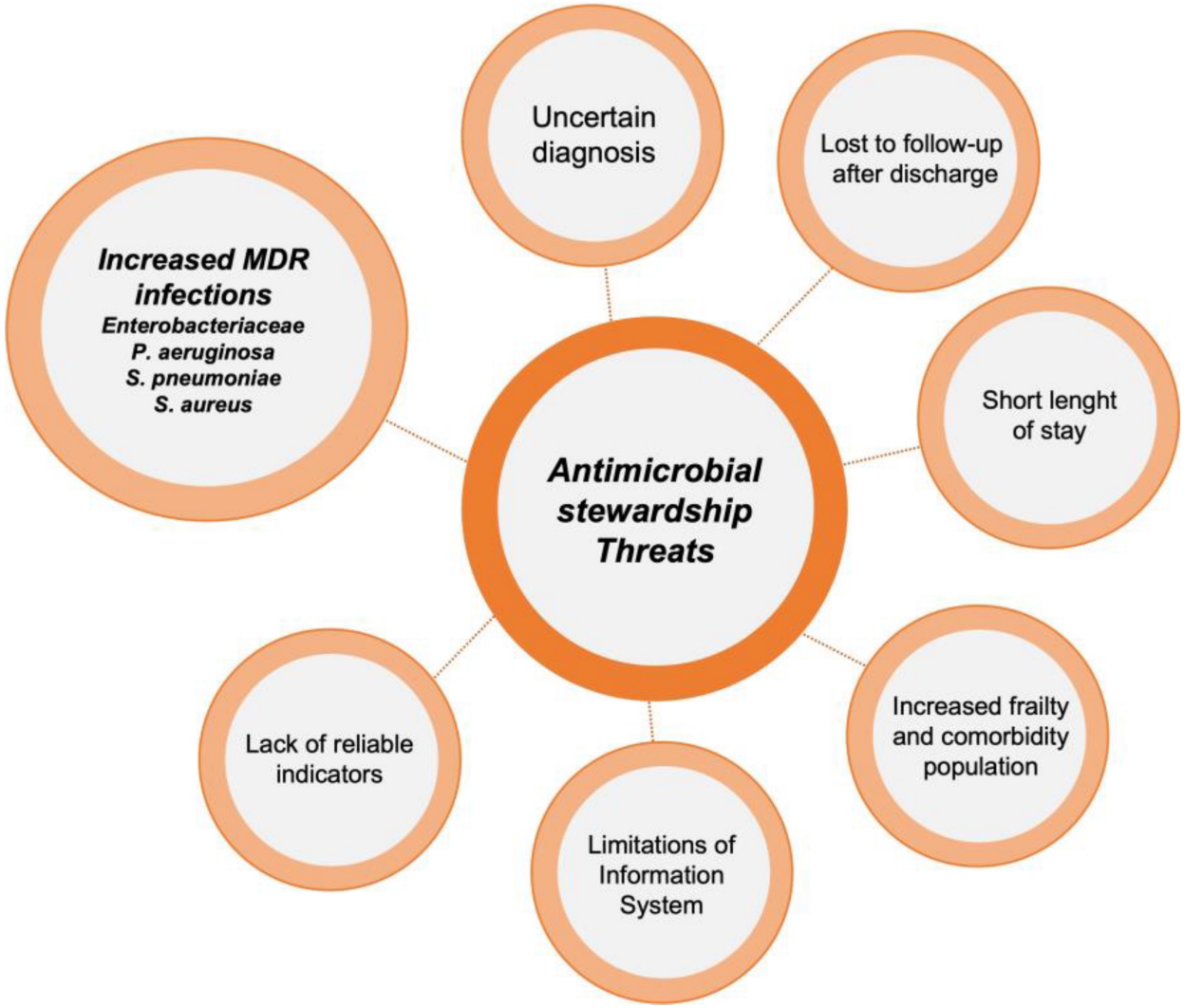
- **Unique opportunities:**
  - Sepsis response
  - Rapid diagnostics
  - Culture call-back

+

- ED clinical guidelines
- ED-specific antibiogram
- Provider education
- Pre-built order sets

Centers for Disease Control and Prevention. 2023.
Pulia et. al. Emerg Med Clin North Am. 18;36(4):853-872. doi:10.1016/j.emc.2018.06.012
Ruiz-Ramos et al. *Antibiotics* 2023, 12(10), 1522;

More on Challenges



Ruiz-Ramos et al. *Antibiotics* 2023, 12(10), 1522;

Stabilize...Diagnose...De-escalation...Duration

24-48h Stabilize/ treat

Emergency Room

48-72h Review micro data

>72h Treatment planning

Antibiotic optimization

Antibiotic de-escalation

Slide by Dr. Zahra Kassamali Escobar

Spectrum of Disease Severity

Ex: Acute bronchitis

Ex: Sepsis

Mild

Severe

Antimicrobial Stewardship

Image: https://www.istockphoto.com/illustrations/severe-icon

Evidence for Interventions in the ED

Contents lists available at ScienceDirect

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com

Narrative review

Antimicrobial stewardship in the emergency department: characteristics and evidence for effectiveness of interventions

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May et al. *Clin Microbiol Infect*. 2021;27(2):204-209.

Evidence for Interventions in the ED

Four Essential Elements of Antimicrobial Stewardship (AMS) in the ED

1. Concentrated around the clinical diagnosis.
2. Strongly focused on empirical therapy.
3. Emphasizes relevance of appropriate culture taking/tests prior to antimicrobial therapy.
4. Needs to address follow-up for outpatients discharged from the ED with or without antimicrobials and/or culture taking.

May et al. *Clin Microbiol Infect*. 2021;27(2):204-209.

Multifaceted Approach

Education

Pathway or Guidelines

Audit pre- and post-Intervention

Feedback

May et al. *Ann Emerg Med.* 2013;62(1):69-77.e2.
May et al. *Clin Microbiol Infect*. 2021;27(2):204-209.
Ruiz-Ramos et al. *Antibiotics* 2023, 12(10), 1522;

ED Stewardship Strategies

Culture Call-Backs

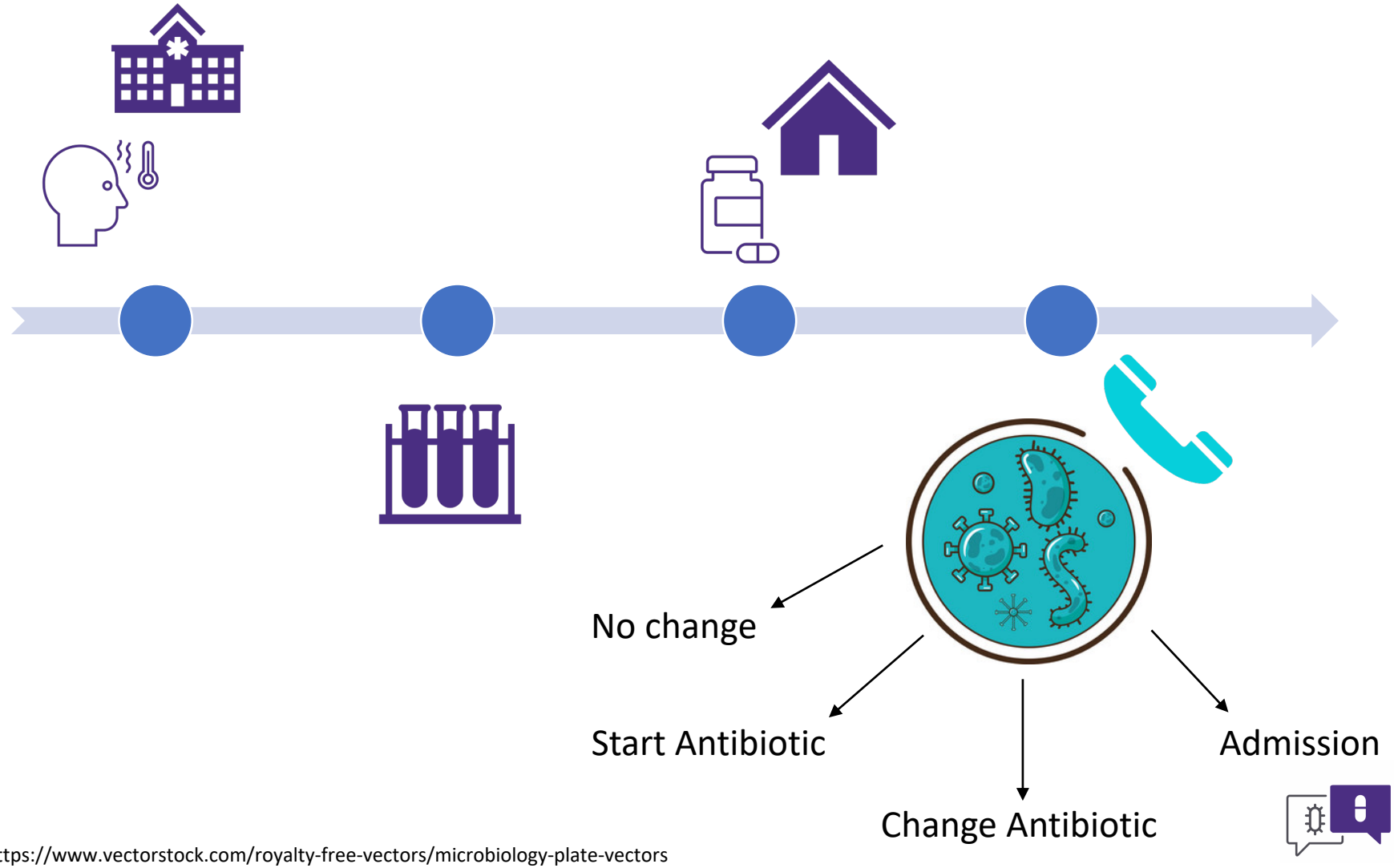


Image: https://www.vectorstock.com/royalty-free-vectors/microbiology-plate-vectors

Audience Response

Who performs culture call-backs in your Emergency Department?

- Nurse
- Pharmacist
- Physician / Advanced Practice Provider
- Someone else
- Don’t routinely do culture call-backs

Culture Call-Backs: Evidence

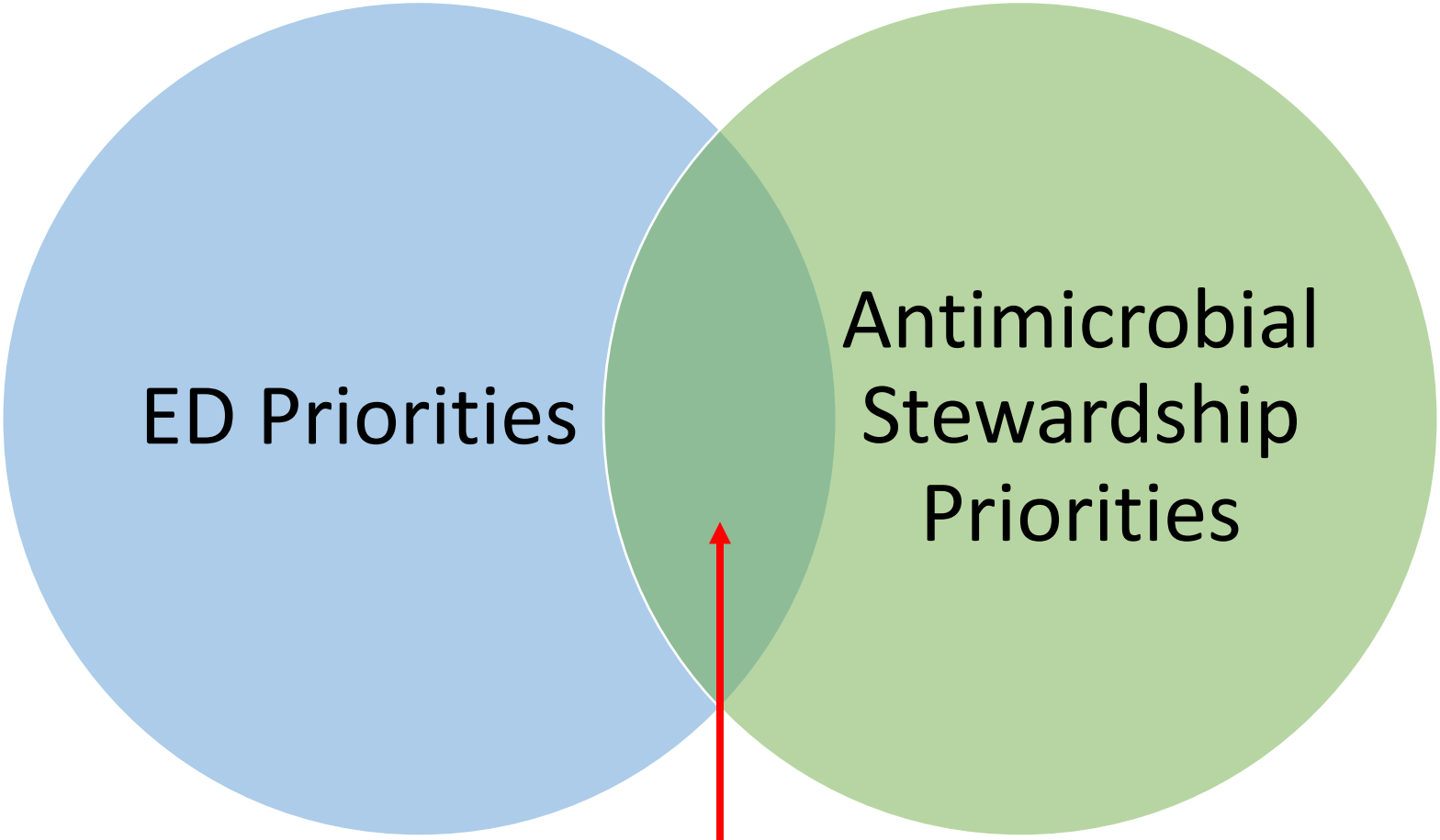
Study	Findings: Preimplementation → Postimplementation
Randolph T, 2011.	**Unplanned readmission to the ED:** 19% pre → 7% post (P<0.001)
Baker S, 2012.	**Median time positive culture review and contact:** 3 days pre → 2 days post (P=0.0001)
Giruzzi ME, 2019.	**Guideline-concordant prescribing:** 85.7% pre → 91.8% post (P=0.047) **Median time to antibiotic modification:** 6.79 days pre → 1.99 days post (P<0.001)
Cornell WK, 2022.	**Median time from review to intervention:** 5.27 hours pre → 2.95 hours post (P<0.001) **Interventions per week:** 5.88 pre → 11.2 post
Geyer AC., 2023.	**Median potential antibiotic days saved:** 5 days per patient, 236 days per month

Adapted from Dumkow and Geyer's "Emergency Department Antimicrobial Stewardship: A Critical Area of Focus for Health Systems". *Contagion Live*. 2023.

Culture Call-Backs: Benefits

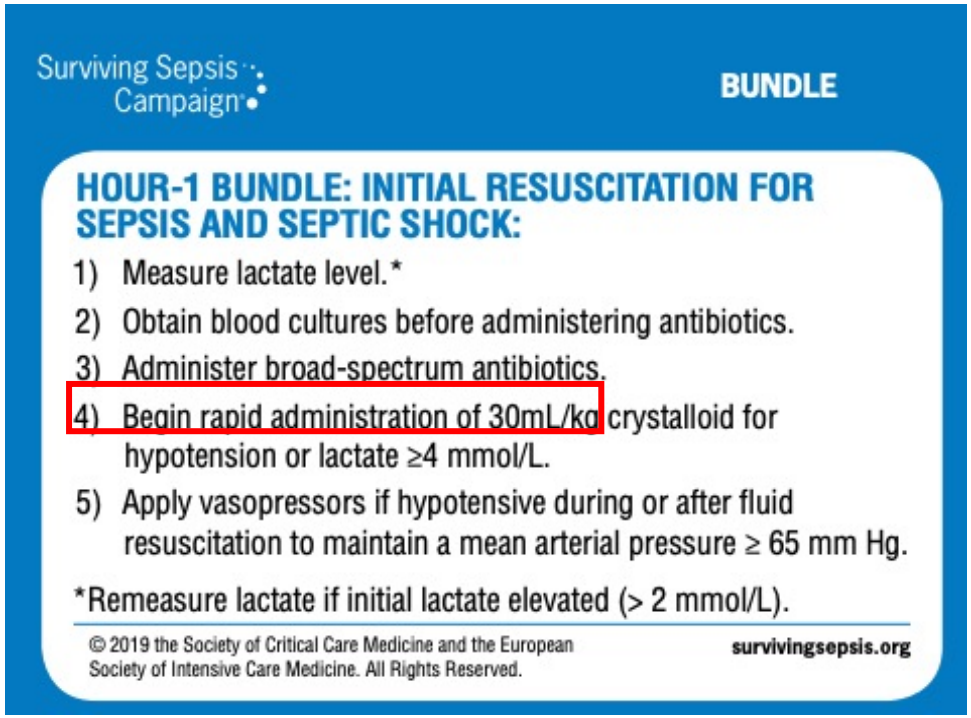
- Faster time to patient follow-up
- Improved guideline-concordant prescribing
- Reduced return visits to the ED
- Cost savings

Know Your Stakeholders



Such as…

Sepsis Management



- Education (nurses, physicians, advanced practice providers)
- Antibiotics in Pyxis
- Electronic medical record support
- Rapid diagnostics
- Individualized feedback

Fitzpatrick et al. *BMJ Qual Saf.* 2019;28(9):758-761.
Pulia et al. *Emerg Med Clin North Am*. 2017;35(1):199-217.
Warstadt NM et al. *BMJ Open Qual.* 2022;11(1):e001624.

Make it Easy

- ED-specific clinical pathways or guidelines
- Clinical decision support in the electronic medical record
- Start with one disease state (example: UTI)

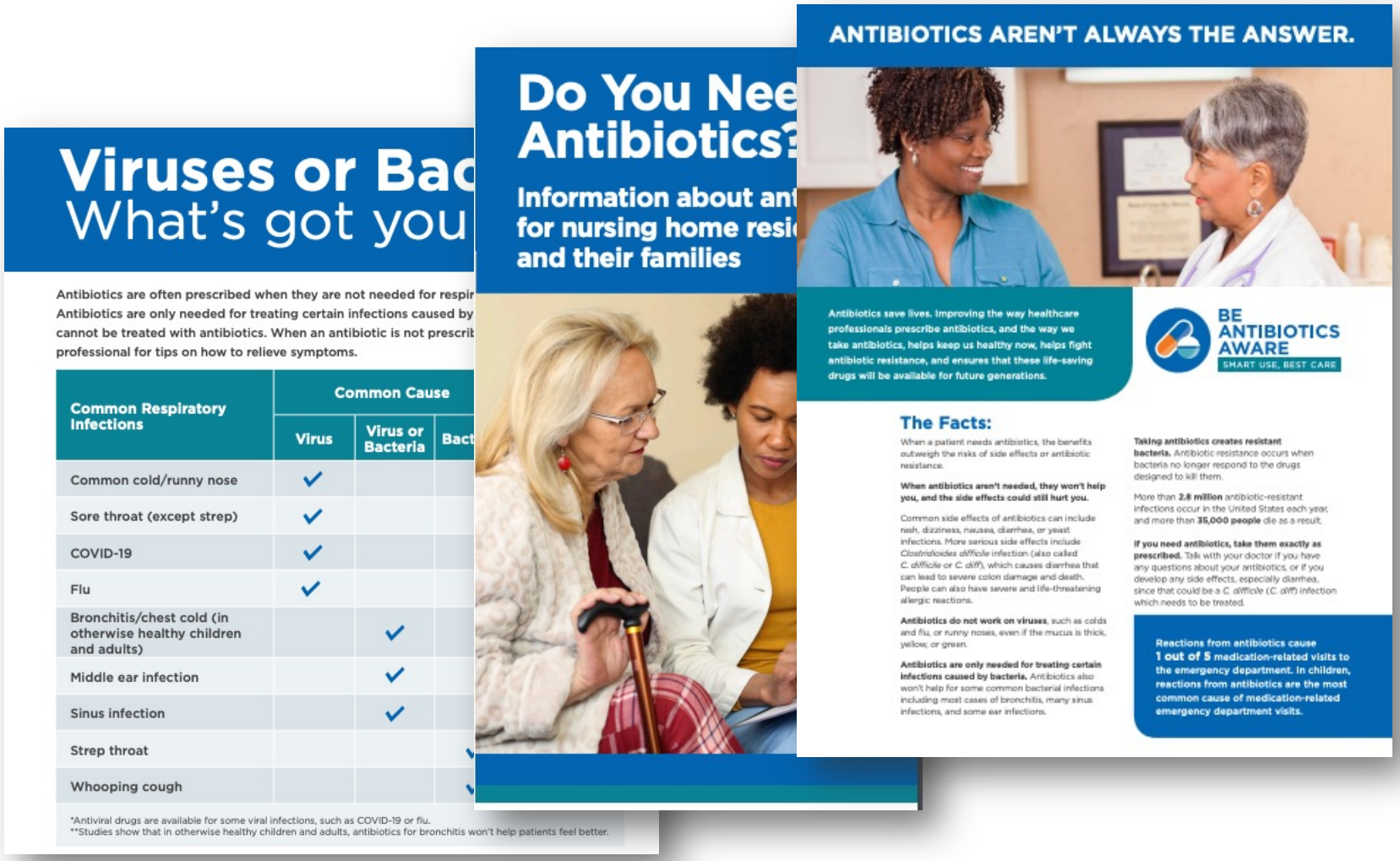
Educate Providers

- Evidence in favor of education as part of a set of interventions
- Important role of clinical decision support systems

May et al. *Ann Emerg Med.* 2013;62(1):69-77.e2.
May et al. *Clin Microbiol Infect*. 2021;27(2):204-209.
Ruiz-Ramos et al. *Antibiotics* 2023, 12(10), 1522;

Educate Patients

BE ANTIBIOTICS AWARE
SMART USE, BEST CARE



Viruses or Bac
What's got you

Antibiotics are often prescribed when they are not needed for respir
Antibiotics are only needed for treating certain infections caused by
cannot be treated with antibiotics. When an antibiotic is not prescrib
professional for tips on how to relieve symptoms.

Common Respiratory Infections	Common Cause		
	Virus	Virus or Bacteria	Bact
Common cold/runny nose	✓		
Sore throat (except strep)	✓		
COVID-19	✓		
Flu	✓		
Bronchitis/chest cold (in otherwise healthy children and adults)		✓	
Middle ear infection		✓	
Sinus infection		✓	
Strep throat			✓
Whooping cough			✓

*Antiviral drugs are available for some viral infections, such as COVID-19 or flu.
**Studies show that in otherwise healthy children and adults, antibiotics for bronchitis won't help patients feel better.

Do You Nee Antibiotics?

Information about ant
for nursing home resi
and their families

ANTIBIOTICS AREN'T ALWAYS THE ANSWER.

Antibiotics save lives. Improving the way healthcare professionals prescribe antibiotics, and the way we take antibiotics, helps keep us healthy now, helps fight antibiotic resistance, and ensures that these life-saving drugs will be available for future generations.

BE ANTIBIOTICS AWARE
SMART USE, BEST CARE

The Facts:

When a patient needs antibiotics, the benefits outweigh the risks of side effects or antibiotic resistance.

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, or yeast infections. More serious side effects include *Clostridioides difficile* infection (also called *C. difficile* or *C. diff*), which causes diarrhea that can lead to severe colon damage and death. People can also have severe and life-threatening allergic reactions.

Antibiotics do not work on viruses, such as colds and flu, or runny noses, even if the mucus is thick, yellow, or green.

Antibiotics are only needed for treating certain infections caused by bacteria. Antibiotics also won't help for some common bacterial infections including most cases of bronchitis, many sinus infections, and some ear infections.

Taking antibiotics creates resistant bacteria. Antibiotic resistance occurs when bacteria no longer respond to the drugs designed to kill them.

More than **2.8 million** antibiotic-resistant infections occur in the United States each year, and more than **35,000 people** die as a result.

If you need antibiotics, take them exactly as prescribed. Talk with your doctor if you have any questions about your antibiotics, or if you develop any side effects, especially diarrhea, since that could be a *C. difficile* (*C. diff*) infection which needs to be treated.

Reactions from antibiotics cause 1 out of 5 medication-related visits to the emergency department. In children, reactions from antibiotics are the most common cause of medication-related emergency department visits.

Centers for Disease Control and Prevention. 2023.

Take Aways

- Lot of opportunity for stewardship in the Emergency Department (ED).
- Unique challenges require unique approaches to antimicrobial stewardship vs inpatient setting.
- Limited high-quality data describing antimicrobial stewardship and outcomes in the ED.
- Interdisciplinary collaboration and a multi-faceted approach are key elements to stewardship in the ED.

Thank You!

Questions?

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Appendix: Outpatient Stewardship

Respiratory Tract Infections	Sinus Infections	Asymptomatic Bacteriuria
• Most caused by viruses • Antibiotics not recommended for acute bronchitis	• Consider watchful waiting for patients with non-severe rhinosinusitis	• Cloudy or foul-smelling urine and altered mental status alone ≠ UTI symptoms • Bacteriuria or pyuria without symptoms of UTI does not require treatment

What can we do?

- Outpatient clinical guidelines and education
- Prescriber feedback
- Outpatient-specific antibiogram
- Patient education
- Assess/clarify antibiotic allergies
- Optimize dosing for efficacy and safety

Resources

- SIDP Antimicrobial Stewardship Advocacy Toolkit (https://sidp.org/AMSToolkit)
- WA State Dept of Health Antimicrobial Stewardship

Society of Infectious Diseases Pharmacists Antimicrobial Stewardship Toolkit. 2023.
Washington State Dept of Health Antibiotic Stewardship. 2023.