Welcome!

Incorporation of Antibiotic Stewardship Into Your Urgent Care Practice

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Moderator: Patrick O'Malley, MD

August 10, 2023

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URGENT CARE ASSOCIATION®

Antibiotics…Help or Hurt

- ICU Patient
  - –Sepsis
- Urgent Care Patient
  - –UTI
  - –C. Difficile

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Learning Objectives

- You will learn the importance of antibiotics, risks of antibiotics and how to utilize an antibiotic stewardship approach.
- You will learn specific antibiotic prescribing practices for common bacterial infections in adults.
- As a result of these learnings, you will be able to utilize and effective approach to treatment of bacterial infections and choose the correct antibiotic, if indicated, thus improving patient outcomes.

All About Antibiotics Today

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Importance of Antibiotics

- 1928: Dr. Alexander Fleming
- 1938: Dr. Howard Florey, Dr. Earnest Chain, Dr. Norman Heatley
- 1942: Anne Miller

- Tool to cure deadly infectious diseases

Risks of Antibiotics

- Side effects (5-25%)
- Allergic reactions
- C. Difficile infections
- Fleming warned of bacterial resistance
- Antimicrobial Resistance
  - Creation of “Superbugs”
  - 2019 – 1.27 million deaths globally

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The Threat of Antibiotic Resistance in the United States

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

New National Estimate*

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

2,868,700 infections

35,900 deaths

+

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

223,900 cases

12,800 deaths

New Threats List

Updated urgent, serious, and concerning threats—totaling 18

5 urgent threats

2 new threats

NEW:
Watch List with **3** threats

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

* *C. diff* cases from hospitalized patients in 2017

www.cdc.gov/DrugResistance/Biggest-Threats

IMPROVE OUTPATIENT ANTIBIOTIC USE

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

BE ANTIBIOTICS AWARE
SMART USE, BEST CARE

www.cdc.gov/antibiotic-use

CDC

CS321025-A

https://www.cdc.gov/antibiotic-use/core-elements/outpatient.html

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Outpatient Antibiotics

- 30% of antibiotics are prescribed without an appropriate indication in outpatient settings
- 61% of antibiotics are for respiratory infections
- 50% of encounters for respiratory tract infections receive antibiotics
- Provider variability is 3%-94% for antibiotic prescribing
- COVID made it worse

Percentage of Visits for Antibiotic-Inappropriate Respiratory Diagnosis Leading to Antibiotic Prescriptions

- Urgent Care Centers: 45.7%
- Emergency Departments: 24.6%
- Medical Offices: 17%
- Retail Clinics: 14.4%

Data source: Palms DL, Hicks LA, Bartoces M, et al. Comparison of Antibiotic Prescribing in Retail Clinics, Urgent Care Centers, Emergency Departments, and Traditional Ambulatory Care Settings in the United States. *JAMA Intern Med.* 2018;178(9):1267–1269. doi:10.1001/jamainternmed.2018.1632

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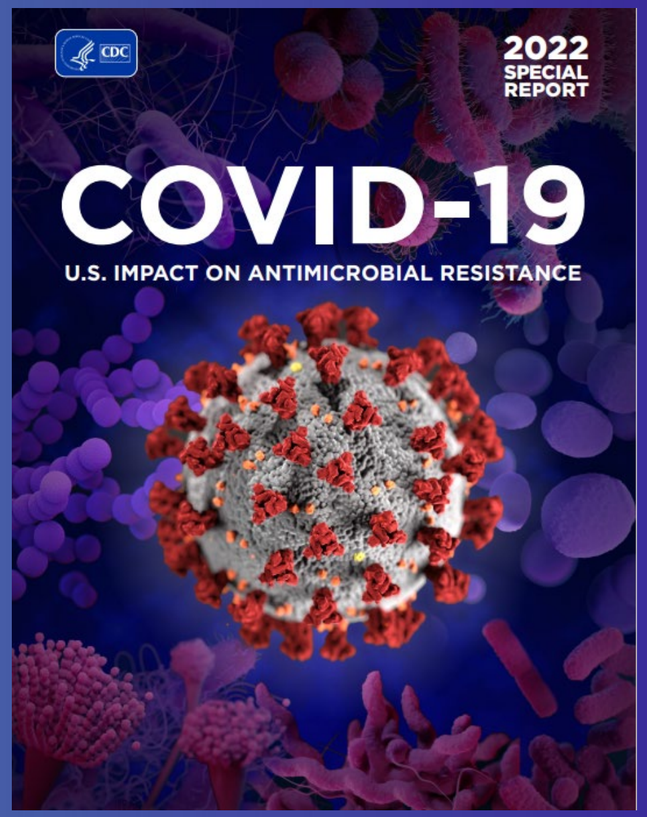
Pandemic Challenges Reversed U.S. Progress on Antibiotic Resistance

- 15% increase in resistant infections (2019 – 2020)
- Leading to 15% increase in deaths (2019 – 2020)
- Significantly increased rates of Hospital Acquired Infections (2021)
- Increase in fungal infections such as *Candida Auris*



1. CDC. COVID-19: U.S. Impact on Antimicrobial Resistance, Special Report 2022. Atlanta, GA: U.S. Department of Health and Human Services, CDC; 2022. https://www.cdc.gov/drugresistance/covid19.html

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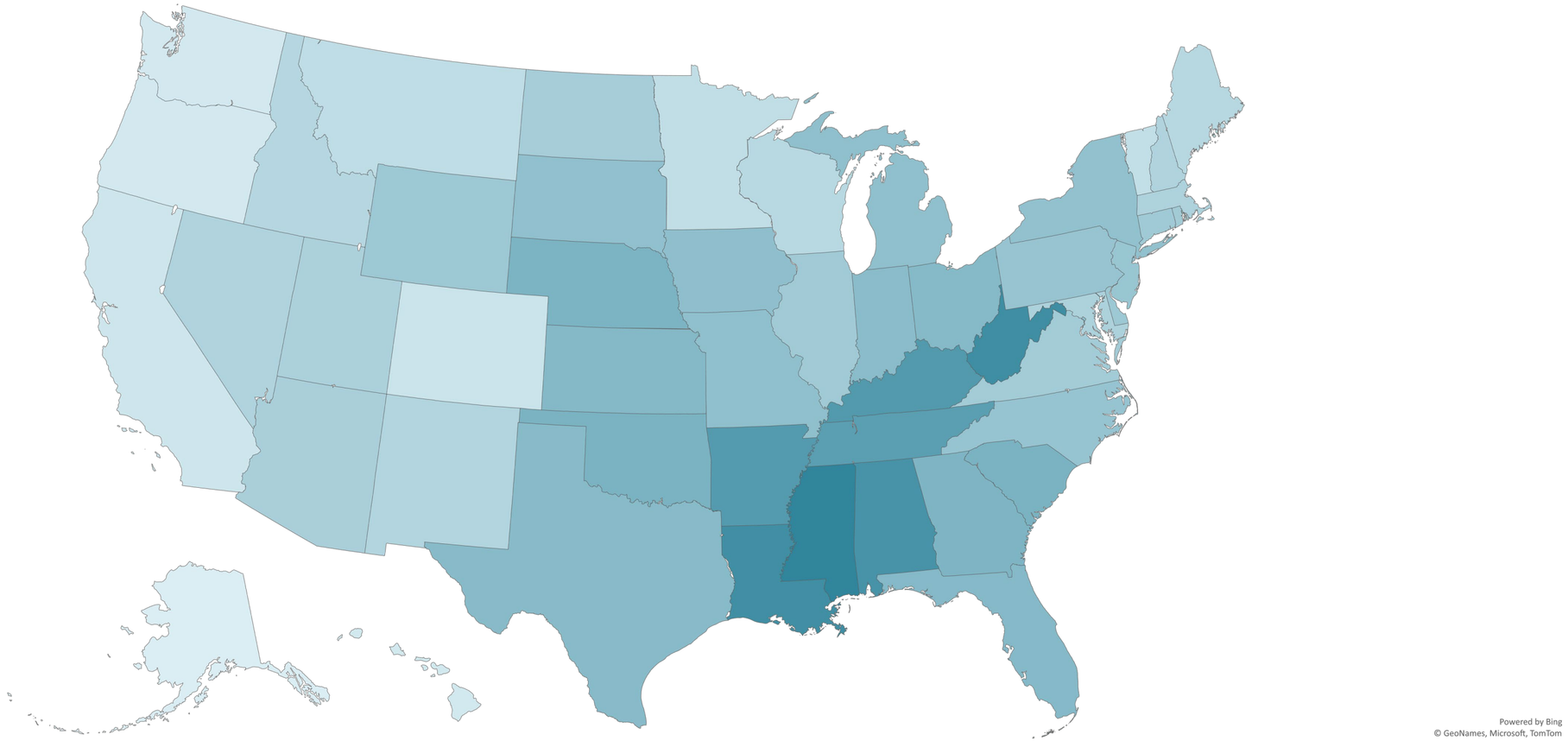
Antibiotic Prescribing Differs Across the United States



Data source: IQVIA Xponent, 2021

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Clinical Factors Alone do NOT explain Geographic Differences in Antibiotic Prescribing

- 2017 Marketscan Commercial claims of insured individuals <65 years
- ARTIs from retail clinics, urgent care, EDs and medical offices
  - Risk Ratios and 95%CIs calculated, stratified by indication and region
  - Controlled for patient age, comorbidities, care setting, prescriber type, and diagnosis

Geographic differences in antibiotic prescribing can NOT be explained by clinical factors alone

Diagnosis Tier	Northeast Risk Ratio (95%CI)	Midwest Risk Ratio (95%CI)	South Risk Ratio (95%CI)	West Risk Ratio (95%CI)
Antibiotics always indicated	1.00 (0.99-1.00)	0.97 (0.96–0.97)	1.00 (0.99–1.00)	Reference
Antibiotics sometimes indicated	1.05 (1.04–1.05)	1.00 (0.99–1.00)	1.09 (1.08–1.09)	Reference
Antibiotics rarely indicated	1.21 (1.20–1.21)	1.18 (1.17–1.18)	1.34 (1.33–1.34)	Reference

All About Antibiotic Stewardship

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What is Antibiotic Stewardship?

- Measure antibiotic prescribing
- Improve antibiotic prescribing so that antibiotics are only prescribed and used when needed
- Minimize misdiagnoses or delayed diagnoses leading to the underuse of antibiotics
- If prescribing antibiotics, ensure the right drug, dose and duration are selected

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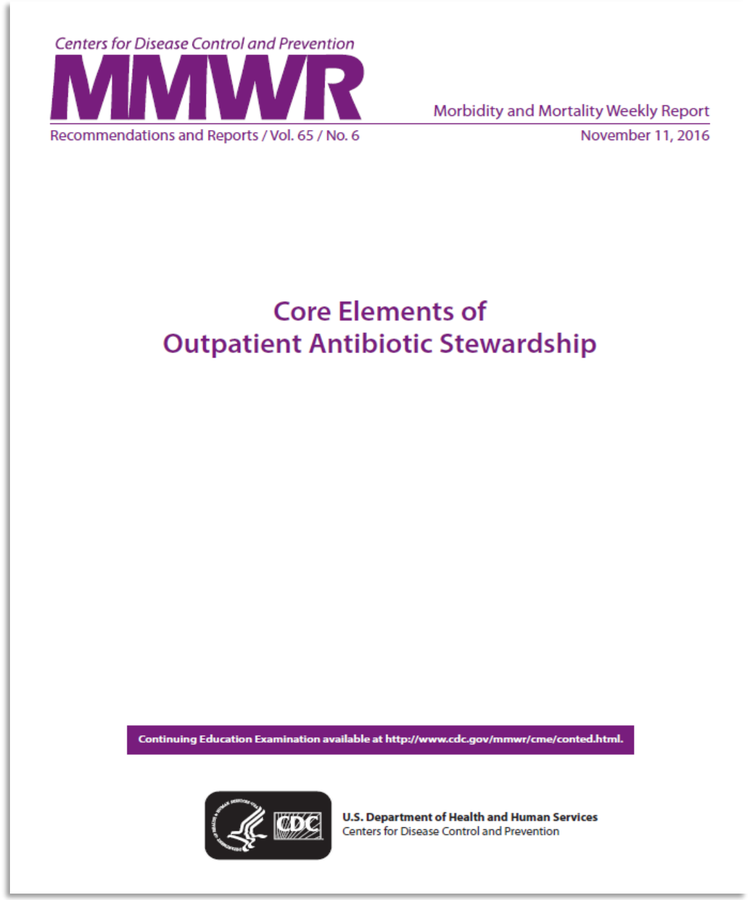
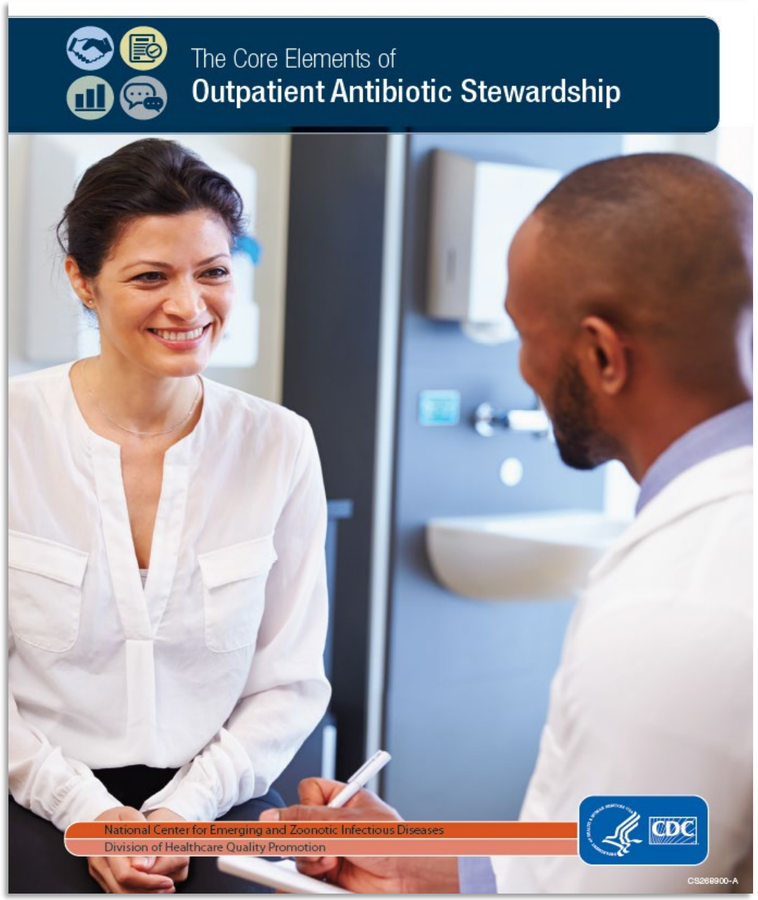
The Core Elements of Outpatient Antibiotic Stewardship





Sanchez et al. 2016 *MMWR Recomm Rep* 65(No. RR-6):1-12.

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Successful Outpatient Antibiotic Stewardship Publications

Author	Setting	Results
Stenehjem et al. 2023	38 health system-affiliated urgent care centers in Utah	Reduction in antibiotic prescribing for respiratory encounters from 47.8% to 33.3%
Laude et al. 2020	5 Urgent care centers in Delaware	Reduction in total antibiotic prescriptions per 100 visits from 40.2 to 35.0 prescriptions
Gross et al. 2019	Dental practices serving Medicaid-enrollees in Illinois	Reduction in dental antibiotic prescribing from 8.5% to 2.3%
Yadav et al. 2019	3 Emergency Departments in academic health systems in California	Reduction in antibiotic prescribing for ARI visits from 6.2% to 2.4%

Acknowledgement to Guillermo Sanchez, CDC

JAMA Network Open™

Original Investigation | Infectious Diseases

Implementation of an Antibiotic Stewardship Initiative in a Large Urgent Care Network

Edward Stenehjem, MD, MSc; Anthony Wallin, MD; Park Willis, MD; Naresh Kumar, MPH; Allan M. Seibert, MD; Whitney R. Buckel, PharmD; Valoree Stanfield, MPH; Kimberly D. Brunisholz, PhD, MST; Nora Fino, MS; Matthew H. Samore, MD; Rajendu Srivastava, MD, MPH; Lauri A. Hicks, DO; Adam L. Hersh, MD, PhD

Implementation of an Antibiotic Stewardship Initiative in a Large Urgent Care Network | Infectious Diseases | JAMA Network Open | JAMA Network

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Intermountain Healthcare Antibiotic Stewardship Initiative

- Quality Improvement Project Targeting Antibiotic Prescribing in 38 Urgent Care Clinics affiliated with the Health System
- Outcome Measure: % Visits to UC with Antibiotic Prescription
- Baseline, Intervention and Sustainability Periods
- Multifaceted Approach: Education for Clinicians and Patients, EHR Tools, Clinician Dashboard, Media
- Respiratory Condition Prescribing Decreased from 47.8% to 33.3%

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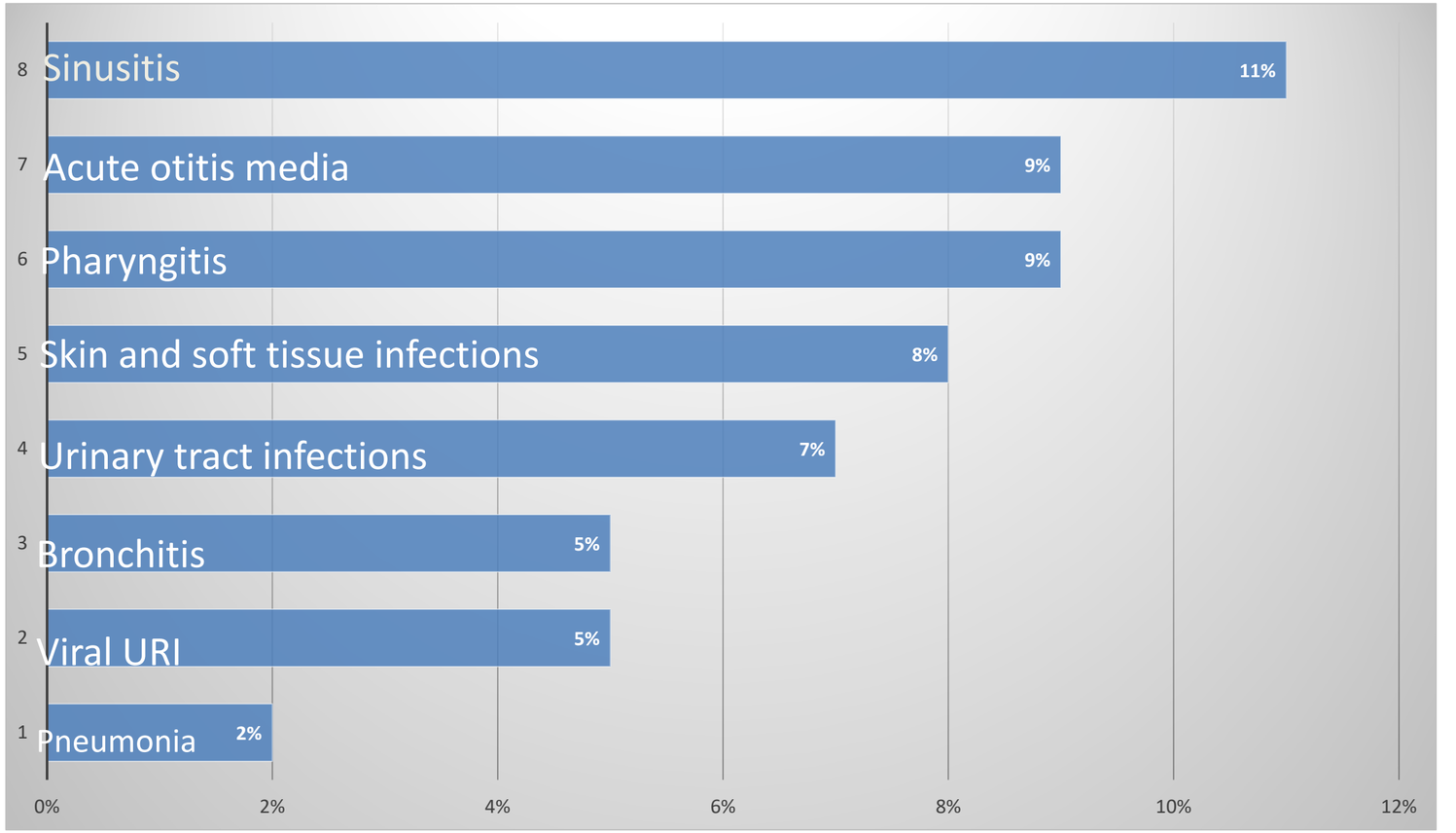
Make the Right Diagnosis – Bacterial or Viral

- Bronchitis
- Viral Sinusitis
- Otitis Media
- Cellulitis
- Urinary Tract Infection
- Strep Throat
- Pneumonia
- Bacterial Sinusitis
- Serous Otitis Media
- Abscess
- Bacteriuria
- Viral Pharyngitis

Antibiotics Needed?



Data from: Fleming-Dutra et al. JAMA. 2016;315(17):1864-1873

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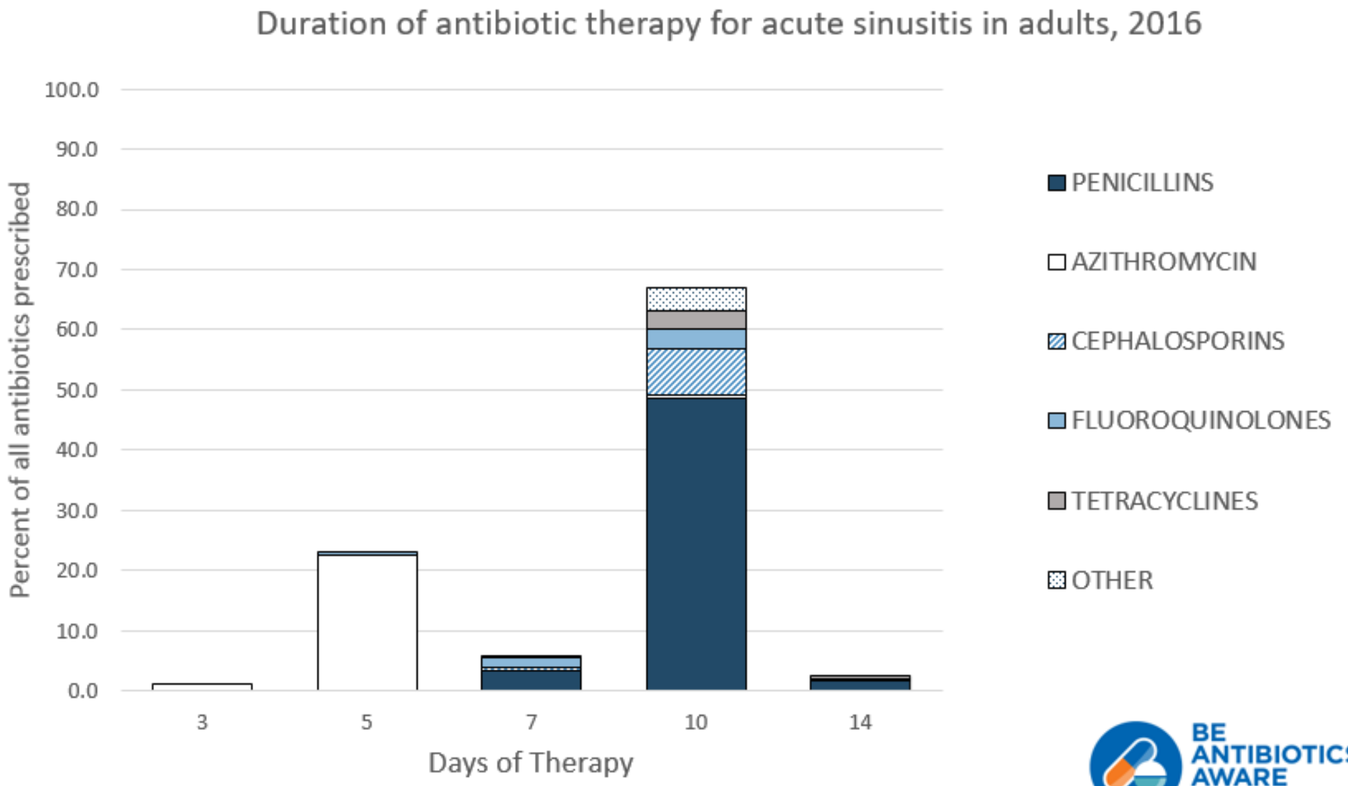
Choose the Right Drug

- If no antibiotics, symptomatic and supportive treatment
- If antibiotics are indicated, choose the narrowest spectrum option
  - Levofloxacin versus nitrofurantoin
  - Augmentin versus amoxicillin
  - Clindamycin versus cephalexin
  - Augmentin versus penicillin

Choose the Right Dose

- If antibiotics are indicated, choose the lowest effective dose
- Use weight base dosing for pediatrics
  - Cephalexin 500mg versus 1000mg
  - Clindamycin 450mg versus 300mg
  - Amoxicillin 80mg/kg/day versus 90mg/kg/day

Duration?



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Data source: King et al. *JAMA Intern Med.* 2018; 178(7): 992-994.

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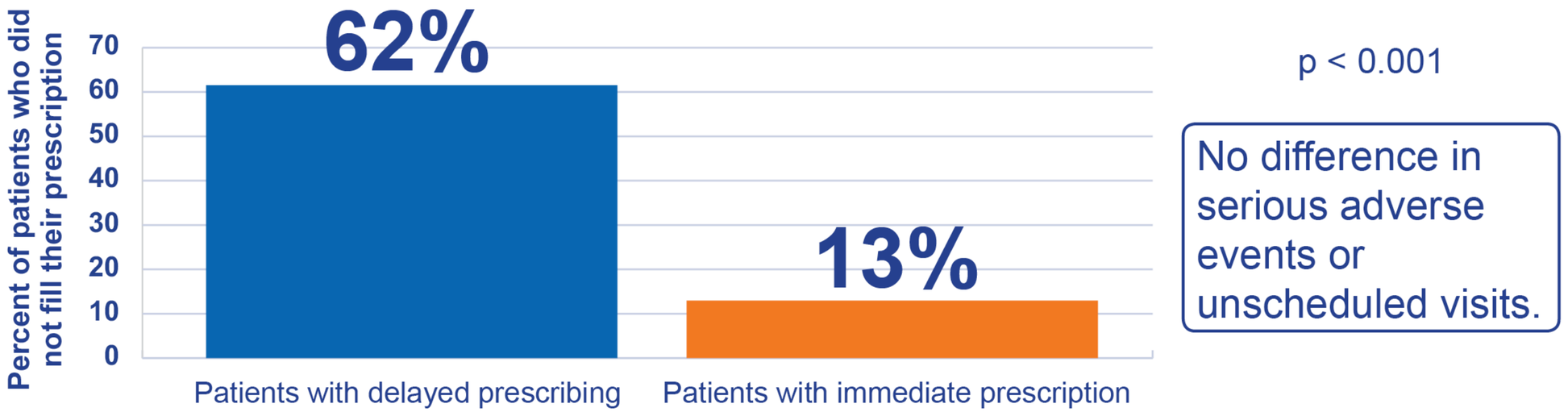
Choose the Right Duration

- If antibiotics are indicated, choose the shortest duration
  - Otitis Media 5 days (exception <2 yrs)
  - Urinary Tract Infection 5 days, maybe even 3 days
  - Community Acquired Pneumonia 5 days
  - Bacterial Sinusitis 5 days

Consider Delayed Prescription



Patients who did not fill their antibiotic prescriptions prescribed in the pediatric emergency department for acute otitis media.

Data source: Wait-and-See Prescription for the Treatment of Acute Otitis Media: A Randomized Controlled Trial | Otolaryngology | JAMA | JAMA Network

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What Is Delayed Prescribing?

BE ANTIBIOTICS AWARE
SMART USE, BEST CARE

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.**

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What Is Watchful Waiting?

BE ANTIBIOTICS AWARE
SMART USE, BEST CARE

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.

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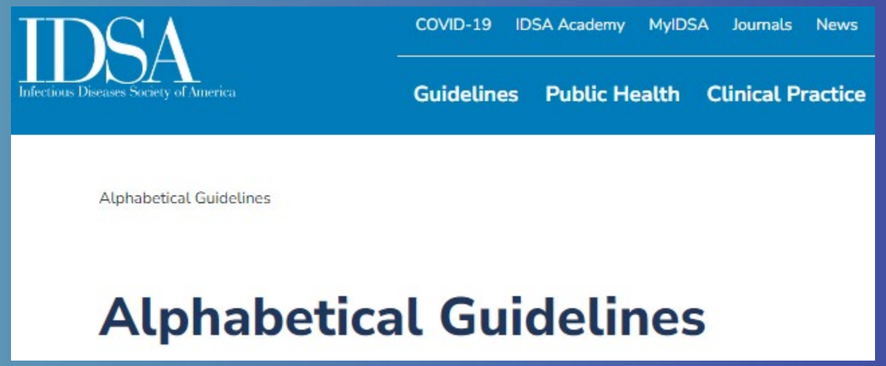
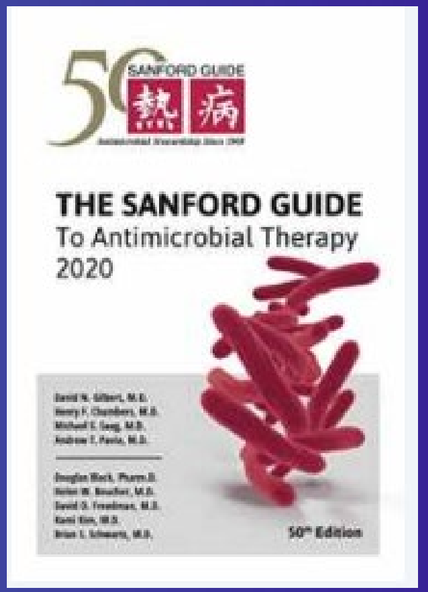
Specific Antibiotic Prescribing Practices

Find an Antibiotic Resource

- CDC
- IDSA
- UpToDate
- Sanford
- WHO
- Local Resources





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Otitis Media - Causes

- Impaired functioning of the eustachian tube
- Otitis media
  - –*Streptococcus pneumoniae*
  - –*Haemophilus influenzae*
  - –*Moraxella catarrhalis*
- Otitis media with effusion – middle ear effusion without acute symptoms
  - –Supportive treatment
  - –Antibiotics NOT recommended
  - –Decongestants and nasal steroids have questionable effectiveness

Otitis Media - Treatment

- Amoxicillin/clavulanate
- Cephalosporin
- Amoxicillin
- If PCN allergy
  - Doxycycline
  - Azithromycin
  - Clarithromycin
- Duration - 5 days (can extend if needed)
  - Exception is <2 yrs needs 10 days
- Consider delayed prescription

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Sinusitis

- 90-98% of cases are viral
- Bacterial may not improve with antibiotics
- >30 million cases per year

Bacterial Sinusitis - Diagnosis

- 3-4 days severe symptoms
  - Fever >39°C
  - Purulent nasal discharge
  - Facial pain
- Worsening after initial improvement
- > 10 days of persistent symptoms
  - Nasal discharge
  - Cough

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Sinusitis - Treatment

- Watchful waiting
- Supportive treatment
- Choice: amoxicillin, followed by amoxicillin/clavulanate
- Do not use: macrolides (azithromycin) due to ~40% *strep pneumoniae* resistance
- If PCN allergy: doxycycline, respiratory fluoroquinolone (levofloxacin, moxifloxacin)
- Duration of treatment: 5 days

Bronchitis

- Cough is the most common outpatient complaints
- Bronchitis is the most common diagnosis for cough
- Colored sputum does not indicate bacterial
- Evaluation should focus on ruling out pneumonia
  - Rare among health adults
  - Look for abnormal vital signs (T ≥ 38°C, HR ≥ 100, RR ≥ 24)
  - Look for abnormal lung findings

Bronchitis - Treatment

- Antibiotics NOT recommended
- Supportive treatment
  - Cough suppressants
  - Antihistamines
  - Decongestants

Community Acquired Pneumonia

- Heterogeneous Illness
  - –Various clinical presentations
  - –Various pathogens
    - *Streptococcus pneumoniae*
    - *Haemophilus influenzae*
    - *Mycoplasma pneumoniae*
    - *Staphylococcus aureus*
    - *Legionella* species
- Inaccuracy of clinical signs and symptoms

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Community Acquired Pneumonia

2007 Infectious Diseases Society of America/American Thoracic Society Criteria for Defining Severe Community-Acquired Pneumonia

Minor criteria:

- Respiratory rate ≥ 30 breaths/min
- PaO2/FiO2 ratio ≤ 250
- Multilobar infiltrates
- Confusion/disorientation
- Uremia (blood urea nitrogen level ≥ 20 mg/dl)
- Leukopenia* (white blood cell count < 4,000 cells/µl)
- Thrombocytopenia (platelet count < 100,000/µl)
- Hypothermia (core temperature < 36°C)
- Hypotension requiring aggressive fluid resuscitation

Major criteria:

- Septic shock with need for vasopressors
- Respiratory failure requiring mechanical ventilation

*Due to infection alone (ie, not chemotherapy induced).

Data source: Metlay JP, Waterer GW, Long AC, et al. 2019. Diagnosis and treatment of adults with community-acquired pneumonia. An official clinical practice guideline of the American Thoracic Society and Infectious Diseases Society of America. *American Journal of Respiratory and Critical Care Medicine*. Volume 200, Issue 7, pages 45-67

Community Acquired Pneumonia - Treatment

- No comorbidities or risk factors* for MRSA or *Pseudomonas aeruginosa*
  - Amoxicillin
  - Doxycycline
  - Macrolide (if local pneumococcal resistance is <25%)

- With comorbidities**
  - Amoxicillin/clavulanate or cephalosporin

  AND
  - Macrolide or doxycycline

  OR
  - Monotherapy with a respiratory fluoroquinolone

*Risk factors: prior respiratory isolation of MRSA or *P. aeruginosa* or IV antibiotic in the last 90 days
**Comorbidities: chronic heart, lung, liver or renal disease; diabetes mellitus; alcoholism; malignancy; asplenia

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Pharyngitis

- Group A Strep is the only indication for antibiotics for sore throat
- Only 5-10% of sore throat cases are GAS
- So, 90-95% of sore throat cases are viral

Pharyngitis - Diagnosis

- Clinical features do not distinguish between viral and bacterial
- Centor Criteria
  - Fever
  - Tonsillar Exudates
  - Tender Cervical Lymphadenopathy
  - Absence of Cough
  - Age (+1, 0, -1)
- If ≥ 2, proceed with rapid antigen test
- Adults do not need a throat culture

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Pharyngitis - Treatment

- If negative rapid, antibiotics NOT recommended
- Supportive treatment
- If positive for GAS
  - –Choice: amoxicillin or penicillin V
  - –If PCN allergy: cephalexin, cefadroxil, clindamycin or macrolides
  - –Increased resistance to clindamycin and azithromycin
  - –Duration of treatment is 10 days

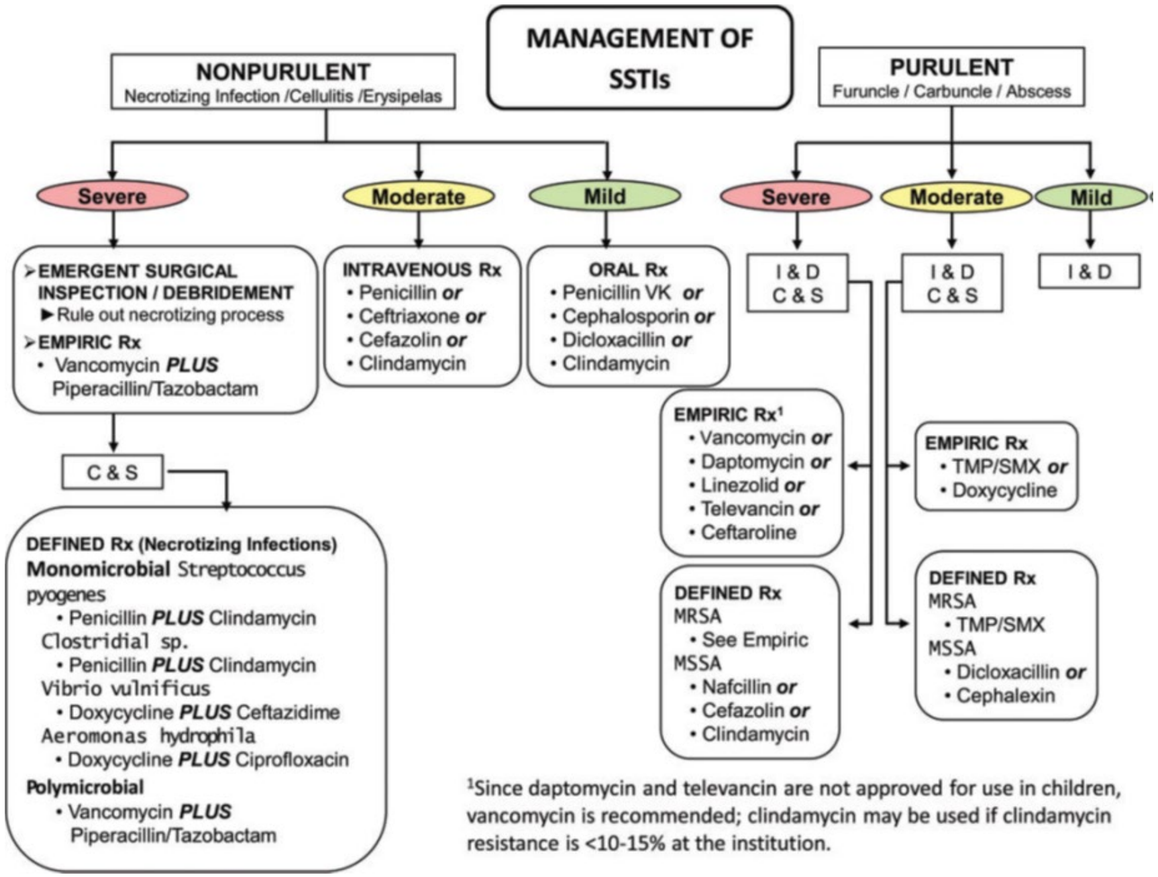
Urinary Tract Infection

- Classic symptoms: dysuria, urgency, frequency
- Less common symptoms: hematuria, suprapubic discomfort
- One of the most common infections in women
  - Caused most often by *E. Coli*
- Urinalysis positive for nitrites and leukocyte esterase

Urinary Tract Infection - Treatment

- For healthy women with uncomplicated cystitis
  - –Nitrofurantoin
  - –Trimethoprim/sulfamethoxazole (TMP-SMX)
  - –Fosfomycin
- For men with complicated cystitis
  - –Fluoroquinolones such ciprofloxacin and levofloxacin

Skin and Soft Tissue Infections



Reproduced from: Dennis L. Stevens, Alan L. Bisno. Practice Guidelines for the Diagnosis and Management of Skin and Soft Tissue Infections: 2014 Update by the Infectious Diseases Society of America. *Clinical Infectious Diseases*, 2014, volume 59, issue 2, by permission of Oxford University Press.

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Soft Tissue Infection - Abscess

- Incision and Drainage
- Antibiotics against *S. aureus* only if SIRS
  - –temperature >38°C or <36°C
  - –tachypnea >24 breaths per minute
  - –tachycardia >90 beats per minute
  - –white blood cell count >12,000 or <400 cells/µL
- Antibiotics against MRSA only if recurrent

Soft Tissue Infection - Cellulitis

- Elevation of affected area
- Antibiotics against *streptococci*
- May consider antibiotics against MRSA if risk factors are present
- Duration only 5 days
- Hospitalization for severe infection (SIRS, AMS, hemodynamic instability)

The Patient Experience

The Patient Experience

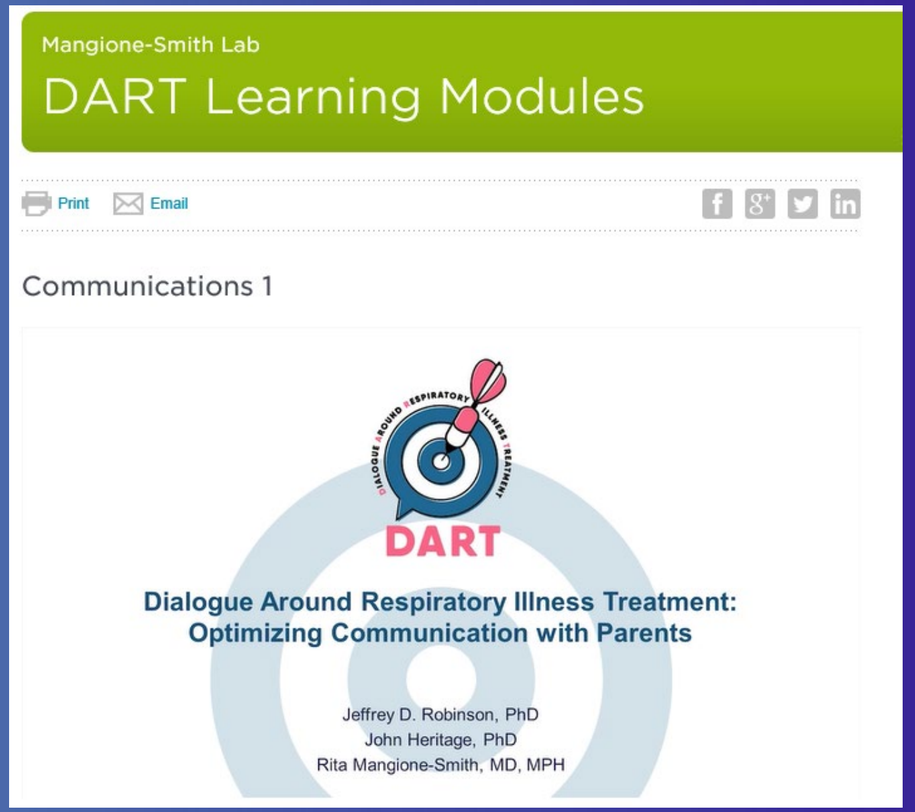
- 54 yo man presents to urgent care requesting antibiotics for his sinus infection.
  - –Requests the “special” antibiotic for sinuses
  - –Has frontal headache and fever x 1 day
- Make the right diagnosis
- Provide the right treatment

The Patient Experience

- Explain harms and that they can exceed benefit
- Discuss side-effects with each Rx that is needed
- Explain that this is new science
- Weave-in stories from the media
- Offer symptomatic treatment
- Leave the door open for easy follow-up
- Ask and address all concerns
- Consider a safety-net prescription

Improved Patient Satisfaction via Communication

- How can we effectively and efficiently communicate with patients?
  - Review physical exam findings
  - Deliver a clear diagnosis
  - Provide a two-part, negative-then-positive recommendation
    - Explain that antibiotics are not needed (negative recommendation) paired with a recommendation for treatment of symptoms (positive recommendation)
  - Provide a contingency plan
    - Clear return precautions



http://www.seattlechildrens.org/research/child-health-behavior-and-development/mangione-smith-lab/dart-learning-modules/

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Take Away Points

- Antibiotics and help and harm
- Antimicrobial Stewardship
  - –Right diagnosis
  - –Right drug
  - –Right dose
  - –Right duration
- Do the right thing for the patient
- Get communication training

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- Special thanks to Guillermo Sanchez of the CDC

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Questions?