

Antibiotic Stewardship Beyond Hospital Walls

Thursday, November 16, 2017

TWO SESSIONS OFFERED TODAY:
12:00 to 1:00 p.m. CT
and
5:30 to 6:30 p.m. CT

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Welcome and Introductions

Bryna N. Stacey, MPH, BSN, RN

Healthcare-Associated Infections and Antimicrobial
Resistance (HAI/AR) Program Director

Bureau of Epidemiology and Public Health Informatics

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U.S. ANTIBIOTIC AWARENESS WEEK

November 13-19, 2017



CDC Stakeholder Toolkit:
<https://spark.adobe.com/page/pd0u80TFAsq6G/>

Objectives

- Know what Antibiotic Stewardship is for all transitions of care.
- Identify new rapid diagnostic testing available to help with antibiotic stewardship.
- Be able to discuss how to educate other healthcare providers and patients on antibiotic stewardship principles.
- Identify resources that will help your practice or facility build a successful Antimicrobial Stewardship Program (ASP).

Disclosure to Learners

The faculty and planning committee members do not have any relevant financial relationships to disclose.

Faculty

- **Katie Burenheide Foster**, PharmD, MS, BCPS, FCCM, Pharmacy Clinical Manager & PGY1 Pharmacy Residency Director, Stormont-Vail Health System, Topeka, Kansas
- **Jo-Ann S. Harris, MD**, Pediatric Infectious Disease Consultant, Midwest Women's and Children's Specialty Clinic, Overland Park Regional Medical Center, Overland Park, Kansas

Planning Committee

Listed faculty and:

Kansas Department of Health and Environment
Healthcare-Associated Infections and Antimicrobial Resistance
Bureau of Epidemiology and Public Health Informatics
Topeka, Kansas

- **Justin Blanding**, MPH, Infectious Disease and Antimicrobial Resistance Epidemiologist
- **Robert L. Geist**, MPH, CIC, FAPIC, Advanced Epidemiologist
- **Bryna N. Stacey**, MPH, BSN, RN, Program Director
- **Sheri Tubach**, MPH, MS, Director, Infectious Disease Epidemiology and Response Section

Kansas Healthcare Collaborative
Topeka, KS

- **Michele Clark**, MBA, CPHQ, CPPS, ABC, Program Director
- **Kendra Tinsley**, MS, CPPS, Executive Director

Continuing Education Credits

Continuing education is offered through Stormont Vail Medical Education Services for physicians and PAs, and through Stormont Vail Health for APRNs, RNs and LPNs. Continuing education credit also is available through the Kansas Dental Association for dentists: DDS and RDH.

This activity has been planned and implemented in accordance with the Accreditation Requirements and Policies of the Kansas Medical Society through the joint providership of Stormont Vail Medical Education Services and the Kansas Healthcare Collaborative.

Stormont Vail Medical Education Services is accredited by the Kansas Medical Society to provide continuing medical education for physicians.

Stormont Vail Medical Education Services designates this live activity for a maximum of one (1.0) *AMA PRA Category 1 Credit(s)*[™]. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Stormont Vail Health is approved as a provider of continuing nursing education by the Kansas State Board of Nursing. The course offering is approved for 1.2 contact hours and is applicable for APRN, RN and LPN re-licensure; 1.2 of which may be applied towards Pharmacology. Kansas State Board of Nursing Approved Provider Number is LT0072-0538.

AAPA accepts certificates of participation for educational activities certified for *AMA PRA Category 1 Credit(s)*[™] from organizations accredited by ACCME or a recognized state medical society. Physician assistants may receive a maximum of 1.0 hours of Category I credit for completing this program.

Continuing Education Credits

For CME and Nursing CE: To receive an attendance certificate for today's webinar, complete the online evaluation form that will be emailed to you.

Once the online evaluation is completed, participants will be able to download their attendance certificate.

Dentists (DDS and RDH) completing today's webinar will receive CE documentation from the Kansas Dental Assn.

All participants: If two or more individuals are participating in this webinar together, download the group roster attendance form; complete it and submit it as soon as possible to receive the evaluation form.

Questions? Contact Michele Clark, Kansas Healthcare Collaborative, mclark@khconline.org or 785-235-0763 x1321.

Polling Question:

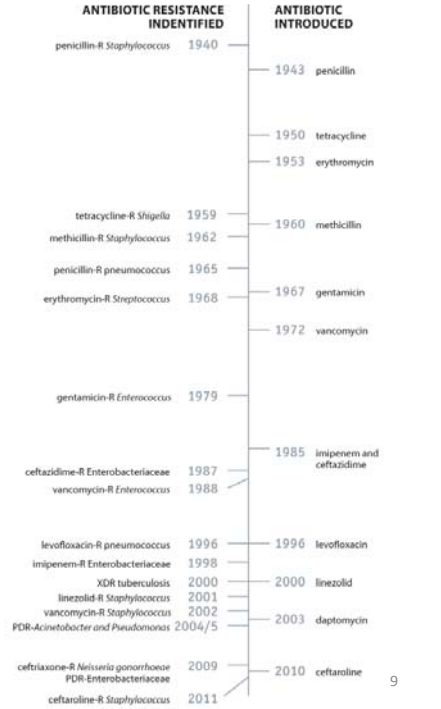
Our antibiotic stewardship program is:

- Not on our radar
- Just getting started
- Gaining momentum
- Firing on all cylinders

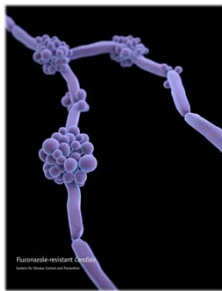
Antimicrobial Resistance =

Ability to resist effects of drugs

www.cdc.gov/drugresistance/about.html



Antimicrobial Resistance (AR)



- Resistance in organisms is on the rise
- Causes of resistance:
 - Innate
 - Shared
 - Use of antimicrobials
- Can infect anyone

AR Continued

- >50% of all hospital patients receive an antibiotic
- Up to 50% prescribed inappropriately
- **Minimum estimates related to AR**
 - 2,049,442 illnesses/yr
 - 23,000 deaths/yr



(CDC)

Be Antibiotics Aware: www.cdc.gov/antibiotic-use/

Other Effects of Overuse

- Adverse drug events
- *Clostridium difficile*
- Costly treatment
- Depletion of effectiveness of available antimicrobials

Antimicrobial Stewardship (AS)

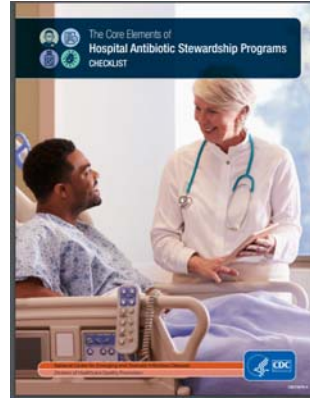
- **Appropriate use of antimicrobials to:**
 - Optimize outcomes for patients
 - Reduce resistance
 - Reduce other adverse effects
- **Right drug, right dose, right frequency, right duration, right route**
- **Education**

AS Programs (ASP)

	Leadership commitment Demonstrate support and commitment to safe and appropriate antibiotic use in your facility
	Accountability Identify physician, nursing and pharmacy leads responsible for promoting and overseeing antibiotic stewardship activities in your facility
	Drug expertise Establish access to consultant pharmacists or other individuals with experience or training in antibiotic stewardship for your facility
	Action Implement at least one policy or practice to improve antibiotic use
	Tracking Monitor at least one process measure of antibiotic use and at least one outcome from antibiotic use in your facility
	Reporting Provide regular feedback on antibiotic use and resistance to prescribing clinicians, nursing staff and other relevant staff
	Education Provide resources to clinicians, nursing staff, residents and families about antibiotic resistance and opportunities for improving antibiotic use

- **Programs within facilities that implement AS interventions**
- **Team effort is key**
- **7 Core Elements from CDC**

CDC Core Elements



www.cdc.gov/antibiotic-use/healthcare/pdfs/core-elements.pdf

www.cdc.gov/antibiotic-use/healthcare/pdfs/core-elements-small-critical.pdf

ASP in Hospitals

- **Recommended by many organizations**
- **CMS proposed requirement 2016**
- **Proven beneficial:**
 - Improve patient outcomes
 - Reduce antibiotic resistance
 - Reduce *C. difficile*
 - Save money



Antibiotic Stewardship Beyond Hospital Walls

Jo Ann Harris, MD
Pediatric Infectious Disease Specialist

Katie Burenheide Foster, PharmD, MS, BCPS, FCCM
Pharmacy Clinical Manager & PGY1 Pharmacy Residency Director

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Case Study 1

You are seeing a 38 year old male with chief complaint of sinus infection. He describes developing sore throat 6 days ago and has had cough, nasal congestion without rhinorrhea and sinus headache (pointing over his forehead) for the past 5 days. He notes fever of 99.6. States he has tried Ibuprofen for symptoms.

Patient has no significant past medical history and no known drug allergies. On examination, his temperature is 99.2, VSS. You note sinus tenderness to palpation over his frontal sinuses, erythematous and edematous nasal turbinates, post-nasal drainage in posterior pharynx with pharyngeal erythema or exudates and clear breath sounds through all lung fields. All other examination is unremarkable.

Based on history and examination, what treatment recommendations do you offer the patient?

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Case Study 1

Based on history and examination, what treatment recommendations do you offer the patient?

- A. Decongestants with first-generation antihistamine
- B. NSAID
- C. Antibiotic
- D. All of the above
- E. A & B

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Fast Facts

- Antibiotics are a shared resource and becoming a scarce resource.
- 30-50% of antibiotic use in hospitals is unnecessary or inappropriate.
- Antibiotic overuse contributes to the growing problems of *Clostridium difficile* infection and antibiotic resistance in healthcare facilities.

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Fast Facts

- Reducing unnecessary antibiotic use can decrease antibiotic resistance, *Clostridium difficile* infections, and healthcare costs, and improve patient outcomes.
- Interventions to improve antibiotic use can be implemented in any healthcare setting—from the smallest to the largest.
- Improving antibiotic use is a **medication-safety and patient-safety issue.**

<http://www.cdc.gov/getsmart/healthcare/evidence.html>

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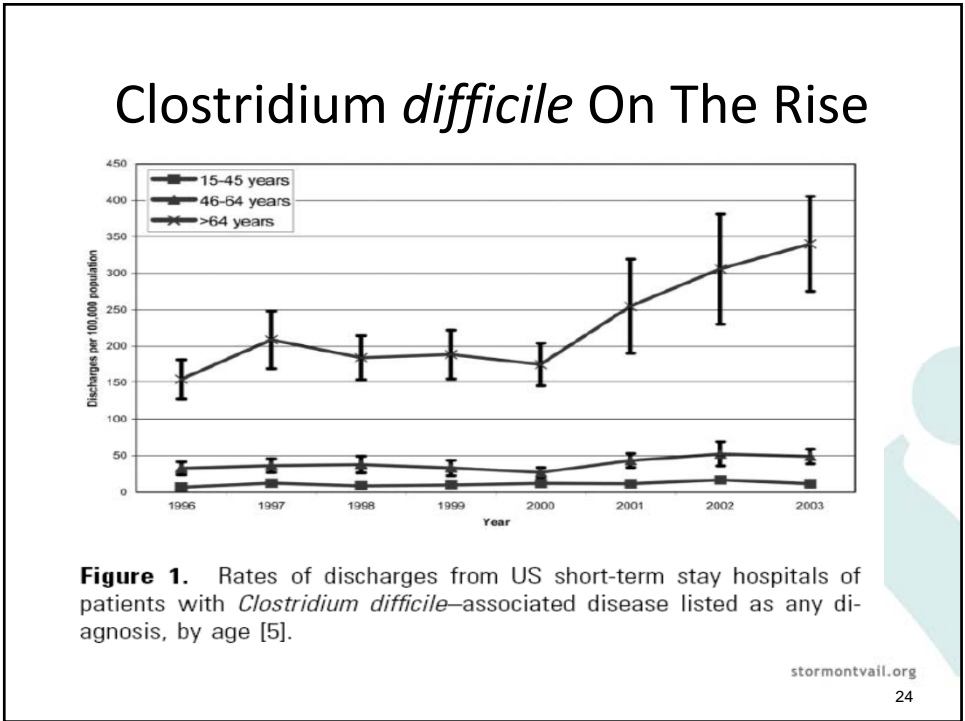
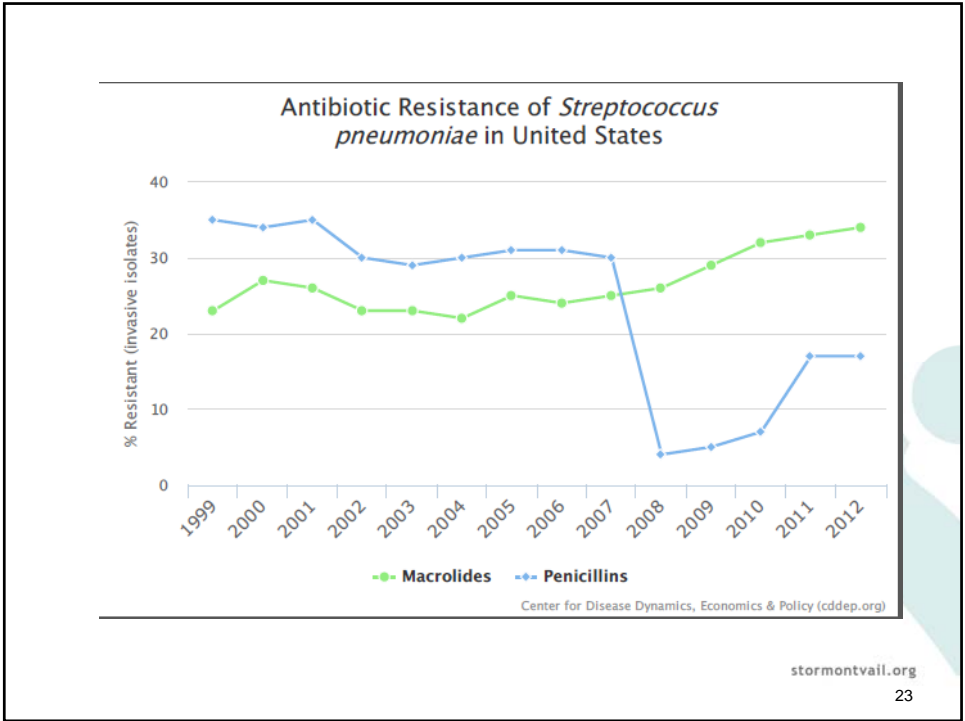
 CDDEP THE CENTER FOR
Disease Dynamics,
Economics & Policy
WASHINGTON DC • NEW DELHI



<https://resistancemap.cddep.org/AntibioticResistance.php>

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Antibiotic Stewardship at Stormont Vail Health



Topeka, KS

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What Is Antibiotic Stewardship?

- Program which promotes and monitors appropriate selection, dosing, route and duration of antimicrobial therapy.

Primary Goals

- Optimized clinical outcomes
- Minimize unattended consequences of antimicrobial use
 - Toxicity
 - Selection of pathogenic organisms
 - (*Clostridium difficile*)
 - Emergence of resistance

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Endorsed By Multiple National Organizations

- Infectious Disease Society of America
- Society of HealthCare Epidemiology of America
- American Society of Health-Systems Pharmacists
- American Academy of Pediatrics
- Society for Hospital Medicine
- Pediatric Infectious Disease Society
- Society of Infectious Disease Pharmacist
- Infectious Disease Society for Obstetrics and Gynecology
- Center of Disease Control
- Institute of HealthCare Improvement

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Stormont-Vail ASP Goals Initiated August 2010

- Improve patient outcomes by improving the overall quality of antimicrobial prescribing while minimizing unintended consequences of antimicrobial use.
- Prevent the emergence of resistant organisms by preventing unnecessary and/or inappropriate antimicrobial use.
- Reduce drug expenditures associated with inappropriate antibiotic use without adversely impacting quality of care.
- Start program in the acute care facility and expand to the outpatient settings as appropriate.

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Antibiotic Stewardship Membership

Co-Directors
Infection Disease Physician
Pharmacy Clinical Manager

Committee Members
Adult Pediatric Hospitalist designees
Intensivist designee
Surgeon designee
ER physician designee
Adult Infectious Disease Specialist
Infection control
Chief Medical Quality Officer
Department Director of Lab
Microbiology designees
Medical Director of Laboratory services
Clinical Pharmacist
Infection Control
Information Systems

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Initial Protocols & Outcomes

Pharmacist Clinical Antibiotic Interventions Documented

- Antibiotic renal adjustments
- Antibiotic IV/PO automatic conversion
- Antibiotic kinetic monitoring
 - Aminoglycoside/vancomycin
- Antibiotic Consults
 - Antibiotic selection & dosing recommendations

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Pharmacist Education

Pharmacist Infectious Disease Topics Covered

- Culture and Sensitivity Antibiotic Review
- Community-Acquired Pneumonia
- Nosocomial Pneumonia
- Diabetic Foot
- Intra-abdominal
- Fungal Infections
- Catheter UTI
- Catheter Line infections/Blood stream
- Asymptomatic Bacteriuria
- Surgical Prophylaxis

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Antibiotic Stewardship 9 month Results

Implementing an Antibiotic Stewardship program at a community hospital already showed effective results within the first 9 months. We believe that our success was multifactorial and include the following:

- An antibiotic stewardship program (ASP) initiated thru the medical staff with strong support of the administration of a community hospital was able to impact on inappropriate use of antibiotics
- By reviewing antibiotic utilization, the ASP identified 2 antibiotics, ED use of single dose vancomycin and inpatient use of piperillin/tazobactam, to target and reduce inappropriate use.
- Focusing on one area, management and prevention of pneumonia, was effective in improving evidence based practices

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ASP 9 month Results Continued

- ED Physician education and ED physician review of orders reduced use of single dose vancomycin in patients being discharged home.
- Unit based clinical pharmacist antibiotic interventions approved by ASP, IV to PO conversion and aminoglycoside/vancomycin dosing, were implemented and accepted by physicians.

The ASP program has already selected goals and objectives to target for the upcoming year selected by medical staff. We hope to continue to show improvement and success in the future.

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What Happened since 2010?

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Pharmacy Automatic Protocols

- Vancomycin/aminoglycoside protocol Adult
 - Pediatric in development
- Pharmacist De-escalation
 - 72 hour review
 - Pharmacy automatic procalcitonin protocol for lower respiratory tract infections
 - Recent procalcitonin review

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MRSA/VRE Antibiotic Criteria

- Restricting MRSA antibiotics
 - Daptomycin (Cubicin), Ceftaroline (Teflaro) & linezolid (Zyvox)
 - FDA approved indications
 - Infectious disease approval via phone or consult within 24 hours of order written

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Fall 2014-Present

Exciting New Antibiotic Stewardship
Endorsements!

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NATIONAL STRATEGY FOR COMBATING ANTIBIOTIC- RESISTANT BACTERIA

Vision: The United States will work domestically and internationally to prevent, detect, and control illness and death related to infections caused by antibiotic-resistant bacteria by implementing measures to mitigate the emergence and spread of antibiotic resistance and ensuring the continued availability of therapeutics for the treatment of bacterial infections.

September 2014



www.whitehouse.gov/sites/default/files/docs/carb_national_strategy.pdf

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Goals

- Slow the Development of Resistant Bacteria and Prevent the Spread of Resistant Infections
- Strengthen National One-Health Surveillance Efforts to Combat Resistance
- Advance Development and Use of Rapid and Innovative Diagnostic Tests for Identification and Characterization of Resistant Bacteria
- Accelerate Basic and Applied Research and Development for New Antibiotics, Other Therapeutics, and Vaccines
- Improve International Collaboration and Capacities for Antibiotic Resistance Prevention, Surveillance, Control, and Antibiotic Research and Development

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CDC Core Elements for Antibiotic Stewardship

Outpatient

- **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.

Hospital

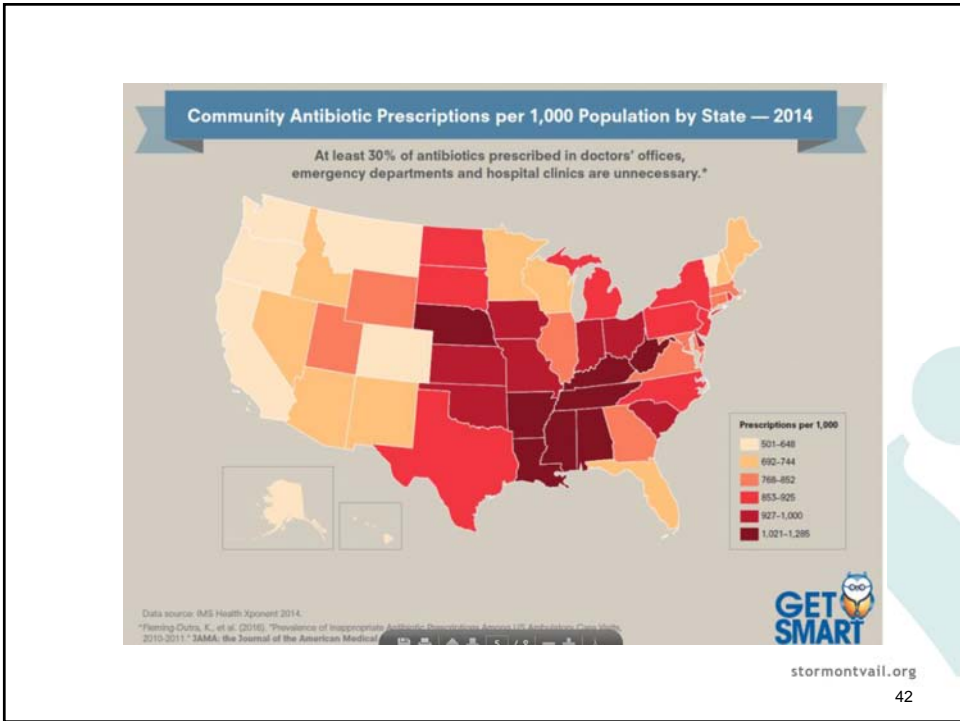
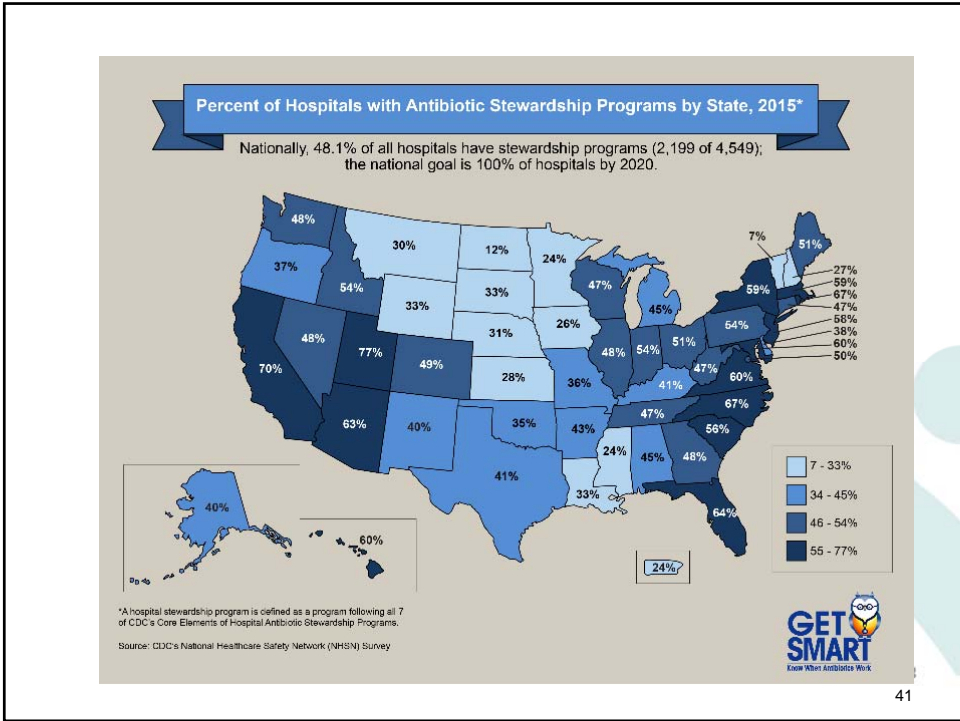
- **Leadership Commitment:** Dedicating necessary human, financial and information technology resources.
- **Accountability:** Appointing a single leader responsible for program outcomes. Experience with successful programs show that a physician leader is effective.
- **Drug Expertise:** Appointing a single pharmacist leader responsible for working to improve antibiotic use.
- **Action:** Implementing at least one recommended action, such as systemic evaluation of ongoing treatment need after a set period of initial treatment (i.e. "antibiotic time out" after 48 hours).
- **Tracking:** Monitoring antibiotic prescribing and resistance patterns.
- **Reporting:** Regular reporting information on antibiotic use and resistance to doctors, nurses and relevant staff.
- **Education:** Educating clinicians about resistance and optimal prescribing.

Long Term Care (Nursing Homes)

- **Leadership commitment:** Demonstrate support and commitment to safe and appropriate antibiotic use in your facility
- **Accountability:** Identify physician, nursing and pharmacy leads responsible for promoting and overseeing antibiotic stewardship activities in your facility
- **Drug expertise:** Establish access to consultant pharmacists or other individuals with experience or training in antibiotic stewardship for your facility
- **Action:** Implement at least one policy or practice to improve antibiotic use
- **Tracking:** Monitor at least one process measure of antibiotic use and at least one outcome from antibiotic use in your facility
- **Reporting:** Provide regular feedback on antibiotic use and resistance to prescribing clinicians, nursing staff and other relevant staff
- **Education:** Provide resources to clinicians, nursing staff, residents and families about antibiotic resistance and opportunities for improving antibiotic use

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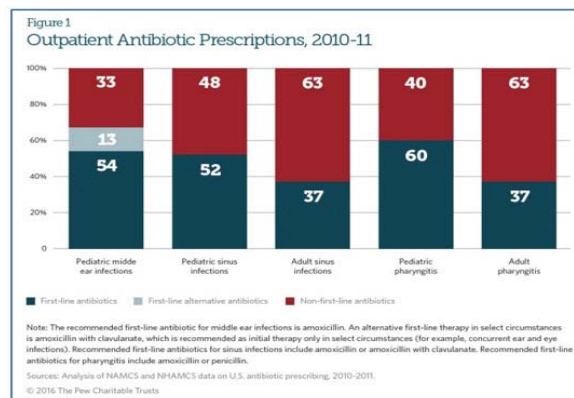


Outpatient Data

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Frequency Of First-line Antibiotic Selection Among US Ambulatory Care Visits For Otitis Media, Sinusitis, And Pharyngitis



Hersh AL, Fleming-Dutra KE, Shapiro DJ, Hyun DY, Hicks LA. . Frequency of First-line Antibiotic Selection Among US Ambulatory Care Visits for Otitis Media, Sinusitis, and Pharyngitis. *JAMA Intern Med.* Published online October 24, 2016.

CDC Safe Healthcare Blog: New Study Shows Many Patients Not Receiving Right Type of Antibiotics Posted on October 24, 2016.
<https://blogs.cdc.gov/safehealthcare/new-study-shows-many-patients-not-receiving-right-type-of-antibiotics/>

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Adult Treatment CDC for Acute Rhinosinusitis, Bronchiolitis, Common Cold, Pharyngitis and Cystitis

Antibiotic prescribing practice guidelines of an out-patient setting. The table below summarizes the antibiotic prescribing for adults seeking care in an outpatient setting.

Condition	Epidemiology	Diagnosis	Management
Acute rhinosinusitis ^{1,2}	About 1 out of 3 adults (37%) in 2012 reported receiving a diagnosis of rhinosinusitis in the previous 12 months, resulting in more than 30 million diagnoses. Ninety-eight percent of rhinosinusitis cases are viral, and antibiotics are not guaranteed to help even if the causative agent is bacterial.	Diagnose acute bacterial rhinosinusitis based on symptoms that are: • Severe (3-4 days), such as a fever $\geq 39^{\circ}\text{C}$ (102.2°F) and purulent nasal discharge or facial pain; • Persistent (>10 days) without improvement, such as nasal discharge or daytime cough; or • Worsening (3-4 days) such as worsening or new onset fever, daytime cough, or nasal discharge after initial improvement of a viral upper respiratory infection (URI) lasting 5-6 days. Sinus radiographs are not routinely recommended.	If a bacterial infection is established: • 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 ($\sim 10\%$). • For penicillin-allergic patients, doxycycline or a respiratory fluoroquinolone (levofloxacin or moxifloxacin) are recommended as alternative agents.
Acute uncomplicated bronchitis ^{3,4}	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.	• 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.	Routine treatment of uncomplicated acute bronchitis with antibiotics is not recommended, regardless of cough duration. Options for symptomatic therapy include: • Cough suppressants (codeine, dextromethorphan). • First-generation antihistamines (diphenhydramine). • Decongestants (pseudoephedrine), and • Beta agonists (albuterol).
Common cold or non-specific upper respiratory tract infection (URTI) ⁵	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.	• Prominent cold symptoms include fever, cough, rhinorrhea, nasal congestion, postnasal drip, sore throat, headache, and myalgias.	• 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. Providers and patients must weigh the benefits and harms of symptomatic therapy.
Pharyngitis ^{6,7}	Group A beta-hemolytic streptococcal (GAS) infection is the only common indication for antibiotic therapy for sore throat cases. Only $>10\%$ of adult sore throat cases are caused by GAS.	• Clinical features alone do not distinguish between GAS and viral pharyngitis; a rapid antigen detection test (RADT) is necessary to establish a GAS pharyngitis diagnosis. • Those who meet two or more Centor criteria (e.g., fever, tonsillar exudate, tender cervical lymphadenopathy, absence of cough) should receive a RADT. Throat cultures are not routinely recommended for adults.	• Antibiotic treatment is NOT recommended for patients with negative RADT results. • Amoxicillin and penicillin V remain first-line therapy due to their reliable antibiotic activity against GAS. • For penicillin-allergic patients, cephalosporins, clindamycin, or macrolides are recommended. • GAS antibiotic resistance to azithromycin and clindamycin are increasingly common. • Recommended treatment course for all oral beta lactams is 10 days.
Acute uncomplicated cystitis ^{8,9,10}	Cystitis is among the most common infections in women and is usually caused by E. coli.	• Classic symptoms include dysuria, frequent voiding of small volumes, and urinary urgency. Hematuria and suprapubic discomfort are less common. • Nitrite and leukocyte esterase are the most accurate indicators of acute uncomplicated cystitis.	For acute uncomplicated cystitis in healthy adult non-pregnant, premenopausal women: • Nitrofurantoin, trimethoprim-sulfamethoxazole (TMP-SMX), where local resistance is $<20\%$, and fosfomycin are appropriate first-line agents. • Fluoroquinolones (e.g., ciprofloxacin) should be reserved for situations in which other agents are not appropriate.

[06-12-2016] The U.S. Food and Drug Administration is advising that the serious side effects associated with fluoroquinolones (i.e., ciprofloxacin, gemifloxacin, levofloxacin, moxifloxacin and ofloxacin) outweigh the benefits for patients with acute sinusitis, acute bronchitis, and uncomplicated urinary tract infections who have other treatment options. For patients with these conditions, fluoroquinolones should be reserved for those who do not have alternative treatment options.

¹ Rosenfeld LR, Gosselin P, Charneyweiser SL, et al. Clinical practice guideline (update): adult sinusitis. *Otolaryngol Head Neck Surg*. 2015;152:122-139.
² Chen JH, Saeng-nguan H, Dizon E, et al. 2015 clinical practice guideline for acute bacterial rhinosinusitis in children and adults. *Clin Infect Dis*. 2015;61:117-123.
³ Sheth SG. Diagnosis and Treatment of Acute Bronchitis. *Am Fam Physician*. 2012;85(11):1348-55.
⁴ Sheth SG, Swanson M, Bange JC, et al. Diagnosis and management of acute bronchitis: a meta-analysis of randomised clinical practice guidelines. *Chest*. 2014;145(2):207-215.
⁵ Gendron M, Barnett M, Bange JC, et al. Principles of appropriate antibiotic use for treatment of uncomplicated acute bronchitis. *Background*. *Ann Intern Med*. 2014;160(7):521-9.
⁶ Gendron M, Barnett M, Bange JC. Evidence of the common cold in children and adults. *Am Fam Physician*. 2013;88(2):139-9.
⁷ Bange JC. Clout and the common cold: ACOP evidence-based clinical practice guidelines. *Chest*. 2008;128(1 Suppl):125-145.
⁸ Dizon E, Bange JC, Bange JC, et al. Clinical practice guideline for the diagnosis and management of group A streptococcal pharyngitis. 2012 update for the American College of Physicians. *Clin Infect Dis*. 2012;55(11):1807-12.
⁹ Cooper JJ, Ashraf M, Bartlett JG, et al. Principles of appropriate antibiotic use for acute pharyngitis in adults. *Background*. *Ann Intern Med*. 2012;156(12):884-91.
¹⁰ Dizon E, Bange JC, Bange JC, et al. International consensus on the treatment of acute uncomplicated cystitis and pyelonephritis in women. *J Urol*. 2012;188(2):185-91.
¹¹ Dizon E, Bange JC, Bange JC, et al. Principles of appropriate antibiotic use for treatment of uncomplicated acute bronchitis. *Background*. *Ann Intern Med*. 2014;160(7):521-9.
¹² Olinger R, Williams H. Diagnosis and treatment of acute uncomplicated cystitis. *Am Fam Physician*. 2014;89(7):774-8.

Pediatric Treatment CDC Recommendations for Acute Rhinosinusitis, Acute Otitis Media, Bronchiolitis, Pharyngitis, Common cold, and Urinary Tract Infections

Antibiotic prescribing guidelines establish standards of care, foster improvement efforts, and improve patient outcomes. The table below summarizes the most recent primary care antibiotic prescribing for children obtaining care in an outpatient setting for the following six diagnoses: acute rhinosinusitis, acute otitis media, bronchiolitis, pharyngitis, common cold, and urinary tract infection.

Condition	Epidemiology	Diagnosis	Management
Acute rhinosinusitis ^{1,2}	90-95% of sinusitis cases are viral, and antibiotics are not guaranteed to help even if the causative agent is bacterial.	Halitosis, fatigue, headache, decreased appetite, but most physical exam findings are non-specific and do not distinguish bacterial from viral causes. A bacterial diagnosis may be established based on the presence of one of the following criteria: • Persistent symptoms without improvement: nasal discharge or daytime cough >10 days. • Worsening symptoms: worsening or new onset fever, daytime cough, or nasal discharge after initial improvement of a viral URI. • Severe symptoms: fever $\geq 39^{\circ}\text{C}$, purulent nasal discharge for at least 3 consecutive days. Imaging tests are no longer recommended for uncomplicated cases.	If a bacterial infection is established: • Amoxicillin or amoxicillin/clavulanate remain first-line therapy. • For children with a non-type I hypersensitivity to penicillin, a combination of clindamycin and a third-generation cephalosporin (ceftriaxone or cefepime) may be appropriate. • Recommendations for treatment of children with a history of type I hypersensitivity to penicillin vary. ^{1,2} • In children who are vomiting or who cannot tolerate oral medication, a single dose of ceftriaxone can be used. ¹ • For further recommendations on alternative antibiotic regimens, consult the American Academy of Pediatrics' or the Infectious Diseases Society of America's guidelines.
Acute otitis media (AOM) ^{3,4}	AOM is the most common childhood infection for which antibiotics are prescribed. 4-10% of children with AOM treated with antibiotics experience adverse effects. ⁵	Definitive diagnosis requires either: • Moderate or severe bulging of tympanic membrane (TM) or new onset otitis media not due to otitis externa. • Mild bulging of the TM AND recent (<48) onset of otalgia (holding, tugging, rubbing of the ear in a nonverbal child) or intense erythema of the TM. AOM should not be diagnosed in children without middle ear effusion (based on pneumatic otoscopy and/or tympanometry).	• Mild cases with unilateral symptoms in children 6-23 months of age or unilateral or bilateral symptoms in children >2 years may be appropriate for watchful waiting based on shared decision-making. • Amoxicillin remains first-line therapy for children who have not received amoxicillin within the past 30 days. • Amoxicillin/clavulanate is recommended if amoxicillin has been taken within the past 30 days, if concurrent purulent conjunctivitis is present, or if the child has a history of recurrent AOM unresponsive to amoxicillin. • For children with a non-type I hypersensitivity to penicillin: cefdinir, ceftriaxone, cefepime, or ceftriaxone may be appropriate choices. • Prophylactic antibiotics are not recommended to reduce the frequency of recurrent AOM. • For further recommendations on alternative antibiotic regimens, consult the American Academy of Pediatrics' guidelines. ¹
Pharyngitis ^{6,7}	Recent guidelines aim to minimize unnecessary antibiotic exposure by emphasizing appropriate use of rapid antigen detection test (RADT) testing and subsequent treatment. During the winter and spring, up to 20% of asymptomatic children can be colonized with group A beta-hemolytic streptococci (GAS), leading to more false positives from RADT testing and increases in unnecessary antibiotic exposure. Streptococcal pharyngitis is primarily a disease of children 5-15 years old and is rare in preschool children.	Clinical features alone do not distinguish between GAS and viral pharyngitis. Children with sore throat plus 2 or more of the following features should undergo a RADT test: 1. Absence of cough 2. Presence of tonsillar exudate or swelling 3. History of fever 4. Presence of swollen and tender anterior cervical lymph nodes 5. Age younger than 15 years • Testing should generally not be performed in children younger than 3 years in whom GAS rarely causes pharyngitis and rheumatic fever is uncommon. • In children and adolescents, negative RADT tests should be backed up by a throat culture; positive RADTs do not require a back-up culture.	• Amoxicillin and penicillin V remain first-line therapy. • For children with a non-type I hypersensitivity to penicillin: cephalosporins, clindamycin, clarithromycin, or azithromycin are recommended. • For children with an immediate type I hypersensitivity to penicillin: clindamycin, clarithromycin, or azithromycin are recommended. • Recommended treatment course for all oral beta lactams is 10 days.

[06-12-2016] The U.S. Food and Drug Administration is advising that the serious side effects associated with fluoroquinolones (i.e., ciprofloxacin, gemifloxacin, levofloxacin, moxifloxacin and ofloxacin) outweigh the benefits for patients with acute sinusitis, acute bronchitis, and uncomplicated urinary tract infections who have other treatment options. For patients with these conditions, fluoroquinolones should be reserved for those who do not have alternative treatment options.



Pediatric Treatment CDC Recommendations Acute Rhinosinusitis, Acute Otitis Media, Bronchiolitis, Pharyngitis, Common cold, and Urinary Tract Infections

Common cold or non-specific upper respiratory tract infection (URI) ^{1,2}	The course of most uncomplicated viral URIs is 5 to 7 days. Colds usually last around 10 days. At least 100 viruses can cause the common cold. Bronchiolitis is the most common lower respiratory tract infection in infants.	• Viral URIs are often characterized by nasal discharge and congestion or cough. Usually nasal discharge begins to clear and changes throughout the course of the illness. • Fever, if present, occurs early in the illness.	• Management of the common cold, nonspecific URI, and acute cough illness should focus on symptomatic relief. Antibiotics should not be prescribed for these conditions. • There is potential for harm and no proven benefit from over-the-counter cough and cold medications in children younger than 6 years. These substances are among the top 20 substances leading to death in children <5 years old. • Low-dose inhaled corticosteroids and oral prednisolone do not improve outcomes in non-asthmatic children.
Bronchiolitis ³	Bronchiolitis is the most common lower respiratory tract infection in infants. It is most often caused by respiratory syncytial virus but can be caused by many other respiratory viruses.	• Bronchiolitis occurs in children <24 months and is characterized by rhinorrhea, cough, wheezing, tachypnea, and/or increased respiratory effort. • Routine laboratory tests and radiologic studies are not recommended, but a chest x-ray may be warranted in atypical disease (absence of viral symptoms, severe distress, frequent recurrence, lack of improvement).	• Usually patients worsen between 3-5 days, followed by improvement. • Antibiotics are not helpful and should not be used. • Nasal suctioning is mainstay of therapy. • Albuterol can be trialed but should only be dispensed if there is a documented improvement. Only 1 in 4 children with bronchiolitis will have any response to albuterol. • Nebulized racemic epinephrine has also shown some benefit in bronchiolitis. • There is no evidence to support routine suctioning of the lower pharynx or larynx (deep suctioning). • There is no role for corticosteroids, ribavirin, or chest physiotherapy in the management of bronchiolitis.
Urinary tract infections (UTI) ^{4,5}	UTIs are common in children, affecting 8% of girls and 2% of boys by age 7. The most common causative pathogen is E. coli, accounting for approximately 85% of cases.	• In infants, fever and/or strong-smelling urine are common. • In school-aged children, dysuria, frequency, or urgency are common. • A definitive diagnosis requires both a urinalysis suggestive of infection and at least 10,000 CFUs/mL of a single uropathogen from urine obtained through catheterization or suprapubic aspiration (NOT urine collected in a bag). • Urinalysis is suggestive of infection with the presence of pyuria (leukocyte esterase or ≥5 WBCs per high powered field), bacteriuria, or nitrites. • Nitrites are not a sensitive measure for UTI in children and cannot be used to rule out UTI. Urine testing for all children 2-24 months with unexplained fever is no longer recommended.	• Initial antibiotic treatment should be based on local antimicrobial susceptibility patterns. Suggested agents include TMP-SMX, amoxicillin-clavulanate, cefixime, cefpodoxime, cefprozil, or cephalexin. • Duration of therapy should be 7 to 14 days. • Antibiotic treatment of asymptomatic bacteriuria in children is not recommended. Antibiotic prophylaxis to prevent recurrent UTIs is not recommended. Febile infants with UTIs should undergo renal and bladder ultrasonography during or following their first UTI. Abnormal imaging results require further testing.

[65-12-2016] The U.S. Food and Drug Administration is advising that the serious side effects associated with fluoroquinolones (i.e., ciprofloxacin, gemifloxacin, levofloxacin, moxifloxacin and ofloxacin) antibiotic drugs generally outweigh the benefits for patients with acute rhinosin, acute bronchitis, and uncomplicated urinary tract infections who have other treatment options. For patients with these conditions, fluoroquinolones should be reserved for those who do not have alternative treatment options.

1. Van R St, Aspinette VL, Sidor C, et al. *Guidelines for the diagnosis and management of acute bacterial rhinositis in children aged 6 to 18 years*. *Pediatrics*. 2013;132(1):e52-60.

2. Chou AH, Sperling TG, Bross I, et al. *Guidelines for the diagnosis and management of acute bacterial rhinositis in children aged 6 to 18 years*. *Pediatrics*. 2013;132(1):e52-60.

3. Uppertup AG, Cantel AG, Osoresena M, et al. *The diagnosis and management of acute bronchiolitis*. *Pediatrics*. 2013;132(1):e52-60.

4. Wain AL, Bentley VA, Kohn M, et al. *Guidelines for the diagnosis and management of acute bacterial rhinositis in children aged 6 to 18 years*. *Pediatrics*. 2013;132(1):e52-60.

5. Chou AH, Sperling TG, Bross I, et al. *Guidelines for the diagnosis and management of acute bacterial rhinositis in children aged 6 to 18 years*. *Pediatrics*. 2013;132(1):e52-60.

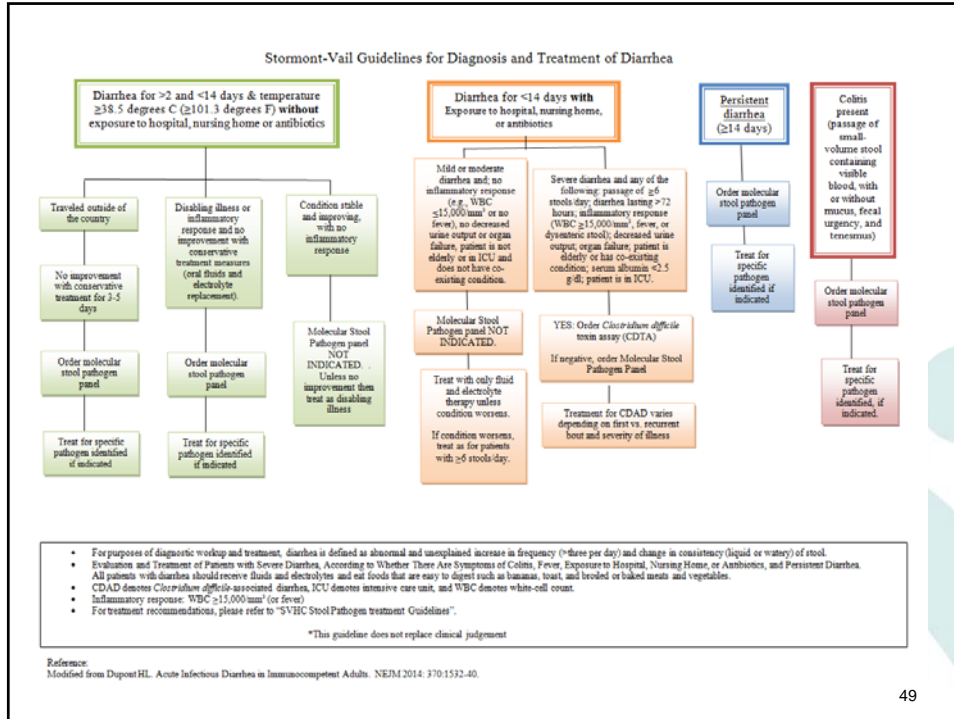
6. Pomeroy ST, Sidor C, Sidor C, et al. *Guidelines for the diagnosis and management of acute bacterial rhinositis in children aged 6 to 18 years*. *Pediatrics*. 2013;132(1):e52-60.

7. *Diagnosis and Management of Acute Bacterial Rhinositis in Children*. *Am Fam Physician*. 2013;88(2):153-9.

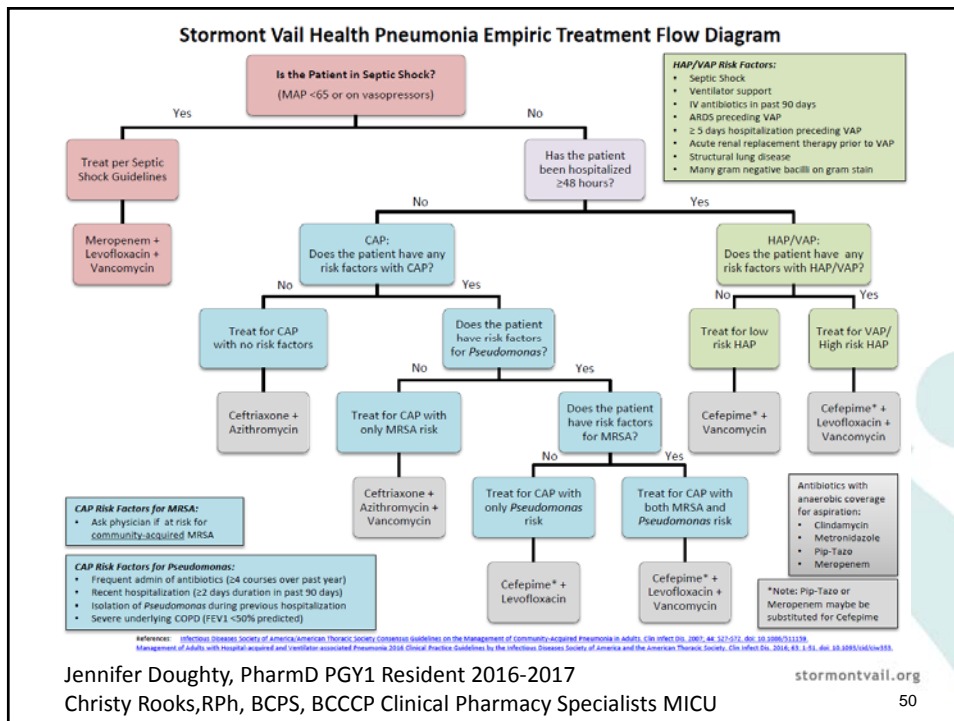
8. American Academy of Pediatrics Committee on Otitis and Management of Acute Otitis Media. *Diagnosis and Management of Acute Otitis Media in Children*. *Am Fam Physician*. 2013;88(2):153-9.

9. Subcommittee on Urinary Tract Infections, Steering Committee on Quality Improvement and Management, Roberts RB, et al. *Diagnosis and Management of Acute Bacterial Rhinositis in Children*. *Am Fam Physician*. 2013;88(2):153-9.

Other Treatment Guidelines



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Asymptomatic Bacteriuria

- Appropriate UA criteria
 - UA for broken arm?
- Appropriate Antibiotic dosage
 - I.e. nitrofurantoin or levofloxacin

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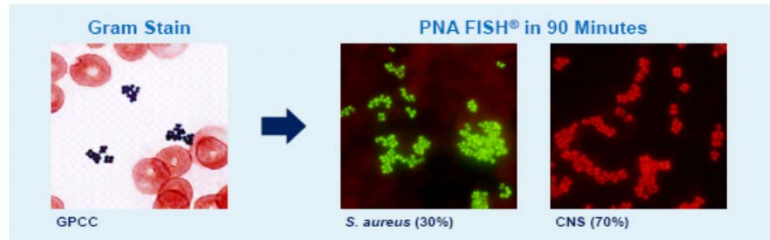
Rapid Diagnostic Testing

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S. aureus/CNS PNA FISH®

- 90 min. identification and differentiation of *S. aureus* and CNS from GPCC-positive blood cultures
- Helps ensure earlier...
 - Appropriate and effective therapy for true *S. aureus* bacteremia
 - Discontinuation of therapy for patient with CNS contaminated blood cultures



8 PN1870A

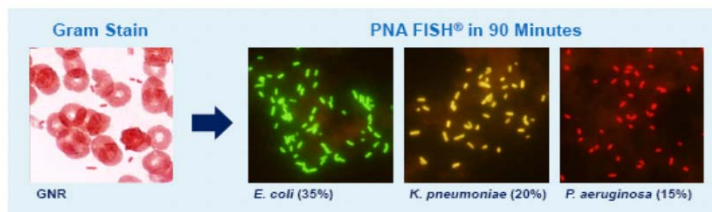
AdvanDx

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GNR Traffic Light® PNA FISH®

- 90 min. identification and differentiation of *E. coli*, *K. pneumoniae* and *P. aeruginosa* from GNR-positive blood cultures
 - Helps optimize antibiotic therapy (Pseudomonal vs. non-Pseudomonal) 1-2 days earlier for Gram-Negative bacteremia
 - Helps improve clinical outcomes while control antibiotic use



10 PN1870A

AdvanDx

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Film Array Multiplex Biofilm

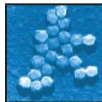
Virology Testing and More

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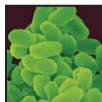
FilmArray Respiratory Panel

1 Test. 20 Respiratory Pathogens. All in about an hour.



Viruses

- Adenovirus
- Coronavirus HKU1
- Coronavirus NL63
- Coronavirus 229E
- Coronavirus OC43
- Human Metapneumovirus
- Human Rhinovirus/Enterovirus
- Influenza A
- Influenza A/H1
- Influenza A/H1-2009
- Influenza A/H3
- Influenza B
- Parainfluenza 1
- Parainfluenza 2
- Parainfluenza 3
- Parainfluenza 4
- Respiratory Syncytial Virus



Bacteria

- *Bordetella pertussis*
- *Chlamydomphila pneumoniae*
- *Mycoplasma pneumoniae*



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FilmArray Blood Culture Identification Panel

1 Test. 27 Targets. All in about an hour.



Gram + Bacteria

Enterococcus
Listeria monocytogenes

Staphylococcus
Staphylococcus aureus

Streptococcus
Streptococcus agalactiae
Streptococcus pyogenes
Streptococcus pneumoniae



Gram - Bacteria

Acinetobacter baumannii
Haemophilus influenzae
Neisseria meningitidis
Pseudomonas aeruginosa

Enterobacteriaceae
Enterobacter cloacae complex
Escherichia coli
Klebsiella oxytoca
Klebsiella pneumoniae
Proteus
Serratia marcescens



Yeast

Candida albicans
Candida glabrata
Candida krusei
Candida parapsilosis
Candida tropicalis



Antibiotic Resistance

mecA - methicillin resistant
vanA/B - vancomycin resistant
KPC - carbapenem resistant

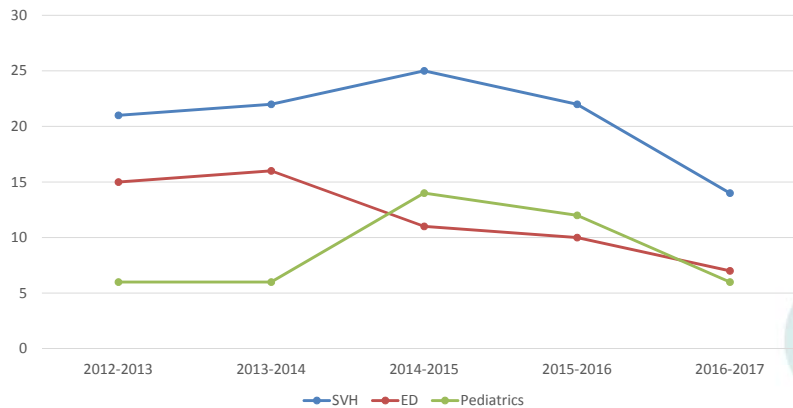


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SVH 5 Year Trend

Total Antibiotic Use (%) in RSV Positive Pediatric Patients

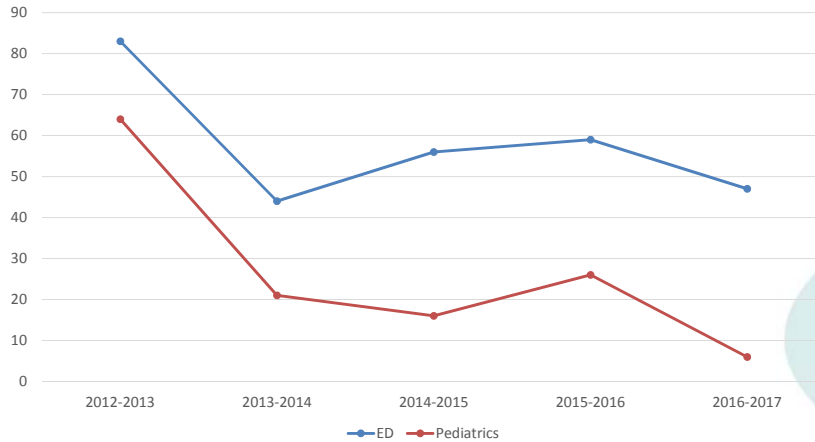


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SVH 5 Year Trend

Antibiotic Use (%) Deemed Potential For Improvement



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SVH Respiratory Panel Treatment Guidelines

Species	Background	Adult Treatment* (Dosing based on normal renal and hepatic function)	Pediatric Treatment* (Dosing based on normal renal and hepatic function)
Adenovirus	<ul style="list-style-type: none"> Virus family: <i>Adenoviridae</i> Incubation: 3 – 10 days Symptoms: Wide range <ul style="list-style-type: none"> Common cold Pharyngitis Bronchitis Pneumonia Conjunctivitis Fever Transmission via: <ul style="list-style-type: none"> Respiratory droplets Close personal contact Direct contact with secretions Increase in infections during summer 	<ul style="list-style-type: none"> Usually mild and self-limiting Primarily use supportive care: <ul style="list-style-type: none"> Prevent dehydration (oral/ IV fluids) Pain and fever medications as needed Plenty of rest 	<ul style="list-style-type: none"> Usually mild and self-limiting Primarily use supportive care: <ul style="list-style-type: none"> Prevent dehydration (oral/ IV fluids) Pain and fever medications as needed Plenty of rest
Bordetella pertussis	<ul style="list-style-type: none"> Bacterial family: <i>Alcaligenaceae</i> Incubation: 5 – 10 days Stages and associated symptoms <ul style="list-style-type: none"> Catarrhal (7-10 days) <ul style="list-style-type: none"> Mild progressive cough Low grade fever Coryza Paroxysmal (1-6 weeks) <ul style="list-style-type: none"> Numerous, rapid coughing Difficulty clearing mucus High-pitched "whoop" Cyanosis Convalescent (7-10 days) <ul style="list-style-type: none"> Less persistent coughs Gradual recovery Transmission via: <ul style="list-style-type: none"> Respiratory droplets Primarily a toxin-mediated disease 	<ul style="list-style-type: none"> Primary: <ul style="list-style-type: none"> Azithromycin 500 mg PO daily x 1 day, then 250mg PO daily x 4 days Clarithromycin 500 mg PO BID x 7 days Alternative: <ul style="list-style-type: none"> Bactrim DS - 1 tab PO BID x 14 days 	<ul style="list-style-type: none"> Primary (< 6 months): <ul style="list-style-type: none"> Azithromycin 10 mg/kg PO once daily x 5 days Primary (≥ 6 months): <ul style="list-style-type: none"> Azithromycin 10 mg/kg PO daily x 1 day (max 500mg), then 5 mg/kg PO daily x 4 days (max 250mg) Alternative (if ≥ 2 months): <ul style="list-style-type: none"> TMP 8mg/kg/day-SMX 40mg/kg/day divided for 14 days

*The provider retains decision making authority for therapy

Jennifer Doughty, PharmD rg

Jennifer Doughty, PharmD PGY1 Resident 2016-2017

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SV Stool Pathogen Treatment Guidelines

P&T approved 6/23/2015 & MEC 8/14/2015

Species	Background	Treatment
<i>Campylobacter</i> spp.	<ul style="list-style-type: none"> Gram-negative, microaerophilic bacterium Symptoms: Diarrhea (often bloody), abdominal cramps, fever Transmission: Contaminated food (poultry), water, or contact with infected animals Most common infectious agent precipitant of Guillain-Barre Syndrome, reactive arthritis, and IBS 	<ul style="list-style-type: none"> Primary <ul style="list-style-type: none"> Azithromycin 500 mg BID for 3 days For 14 days if bacteremic Alternate <ul style="list-style-type: none"> Erythromycin 500 mg PO four times daily for 3 days Ciprofloxacin 500 mg PO BID for 5 days For 14 days if bacteremic
<i>Clostridium difficile</i>	<ul style="list-style-type: none"> Spore-forming, gram-positive anaerobic bacillus Symptoms: Watery diarrhea, fever, loss of appetite, nausea, abdominal pain/tenderness Transmission: Contact with any surface, device, or material contaminated with feces Avoid anti-motility agents: May mask symptoms and precipitate toxic megacolon Use of probiotics not routinely recommended due to: <ul style="list-style-type: none"> Lack of standardization of products Variations in bacterial counts Risk of inducing bacteremia or fungemia Children ≤ 2 generally do not need treatment unless previous antibiotic use or other risk factors for toxigenic 	<ul style="list-style-type: none"> Discontinue any antibiotics that may have caused Initial episode <ul style="list-style-type: none"> Mild-to-moderate: WBC < 15K and Scr < 1.5x baseline <ul style="list-style-type: none"> Metronidazole 500mg PO three times daily x10-14 days Severe: WBC ≥ 15K OR Scr > 1.5x baseline <ul style="list-style-type: none"> Vancomycin 125mg PO four times daily x10-14 days Severe, complicated: Hypotension or shock, ileus, megacolon <ul style="list-style-type: none"> Vancomycin 500mg PO or per tube four times daily PLUS metronidazole 500mg every 8 hours IV Consider rectal vancomycin 500 mg in 100 NS PR Q6H as a retention enema if complete ileus First recurrence <ul style="list-style-type: none"> Same as initial episode, Metronidazole 500 mg PO three times daily X 10-14 days Do not use metronidazole beyond the first recurrence or long-term chronic therapy because potential for cumulative neurotoxicity Second recurrence

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Andrew Naglich, PharmD PGY1 Resident 2014-2015

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SVH Meningitis Encephalitis Panel Treatment Guidelines

Bacteria	** <i>Pseudomonas aeruginosa, Staphylococcus aureus, Staphylococcus epidermidis, Enterococcus</i> species, and other pathogens can cause CNS infections but are not included on the FilmArray Meningitis/Encephalitis Panel used at Stormont Vall**		
Species	Background	Adult Treatment (Dosing based on normal renal and hepatic function)	Pediatric Treatment (>1 month of age) (Dosing based on normal renal and hepatic function)
<i>Escherichia Coli</i> (K1)	<ul style="list-style-type: none"> Risk Factors: <ul style="list-style-type: none"> Age <1 month Age 1-23 months Head trauma Neurosurgery Presence of a shunt or other neurosurgical device CSF leak 	<ul style="list-style-type: none"> Primary: <ul style="list-style-type: none"> Ceftriaxone 2 g IV q12h Alternative: <ul style="list-style-type: none"> Cefepime 2 g IV q8h Meropenem 2 g IV q8h Aztreonam 2 g IV q6h Trimethoprim-sulfamethoxazole: 5 mg TMP/kg IV q6h Ampicillin 2 g IV q4h Treatment duration: <ul style="list-style-type: none"> 21 days 	<ul style="list-style-type: none"> Primary: <ul style="list-style-type: none"> Ceftriaxone 50 mg/kg IV q12h (maximum 4 gm/day) PLUS Alternative: <ul style="list-style-type: none"> Gentamicin 2.5 mg/kg IV q8h Meropenem 40 mg/kg IV q8h (maximum dose: 2 g) Treatment duration: <ul style="list-style-type: none"> Minimum of 21 days or 2 weeks beyond first sterile culture, whichever is longer
<i>Haemophilus influenzae</i>	<ul style="list-style-type: none"> Risk Factors: <ul style="list-style-type: none"> Age 1-23 months Head trauma Basilar skull fracture A paranasal focus (sinusitis, otitis) of infection is often present in adults Uncommon since introduction of <i>H. influenzae</i> type B vaccine Rifampin chemoprophylaxis may be required for household and/or childcare contacts 	<ul style="list-style-type: none"> Dexamethasone 0.15 mg/kg q6h should be administered prior to or concurrent with the first dose of antibiotic and continued for 4 days in microbiologically confirmed <i>H. influenzae</i> type b meningitis Primary: <ul style="list-style-type: none"> Ceftriaxone 2 g IV q12h Alternative: <ul style="list-style-type: none"> Cefepime 2 g IV q8h Meropenem 2 g IV q8h Aztreonam 2 g IV q6h Chloramphenicol 25 mg/kg IV q6h (maximum 4 gm/day) Treatment duration: <ul style="list-style-type: none"> 7-10 days 	<ul style="list-style-type: none"> Dexamethasone 0.15 mg/kg q6h should be administered to infants and children prior to or concurrent with the first dose of antibiotic and continued for 4 days in microbiologically confirmed <i>H. influenzae</i> type b meningitis Primary: <ul style="list-style-type: none"> Ceftriaxone 50 mg/kg IV q12h (maximum 4 gm/day) Alternative: <ul style="list-style-type: none"> Chloramphenicol 25 mg/kg IV q6h (maximum 4 gm/day) Treatment duration: <ul style="list-style-type: none"> 7-10 days

The provider retains decision-making authority for therapy.

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Matthew Gutzmer, PharmD PGY1 Resident 2016-2017

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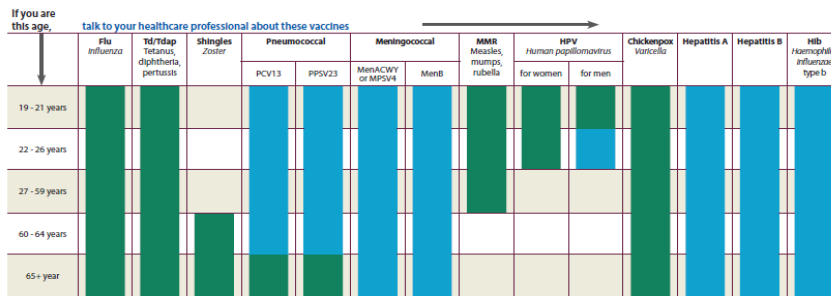
Vaccines

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Routine Vaccine Schedule Compliance?

INFORMATION FOR ADULT PATIENTS 2017 Recommended Immunizations for Adults: By Age



More Information: You should get flu vaccine every year. You should get a Td booster every 10 years. You also need 1 dose of Tdap. Women should get a Tdap vaccine during every pregnancy to help protect the baby. You should get shingles vaccine every 10 years. You also need 1 dose of Tdap. Women should get a Tdap vaccine during every pregnancy to help protect the baby. You should get 1 dose of PCV13 and at least 1 dose of PPSV23 depending on your age and health condition. You should get this vaccine if you did not get it when you were a child. You should get HPV vaccine if you are a woman through age 26 years or a man through age 21 years and did not already complete the series.

Recommended For You: This vaccine is recommended for you unless your healthcare professional tells you that you do not need it or should not get it.

May Be Recommended For You: This vaccine is recommended for you if you have certain risk factors due to your health condition or other. Talk to your healthcare professional to see if you need this vaccine.

If you are traveling outside the United States, you may need additional vaccines. Ask your healthcare professional about which vaccines you may need at least 6 weeks before you travel.

For more information, call 1-800-CDC-INFO (1-800-232-4636) or visit www.cdc.gov/vaccines



C37286-G 64

What Is Kansas Doing For ASP?

REPORT TO THE PRESIDENT ON
 COMBATING ANTIBIOTIC RESISTANCE

NATIONAL ACTION
 PLAN FOR COMBATING
 ANTIBIOTIC-RESISTANT
 BACTERIA

Executive Off
 President's Co
 Science a
 Septe



MARCH 2015



**CMS proposal includes mandatory
 antibiotic stewardship programs**

IDSA FEATURES

Advance Access published April 13, 2016



Implementing an Antibiotic Stewardship Program:
 Guidelines by the Infectious Diseases Society of America
 and the Society for Healthcare Epidemiology of America

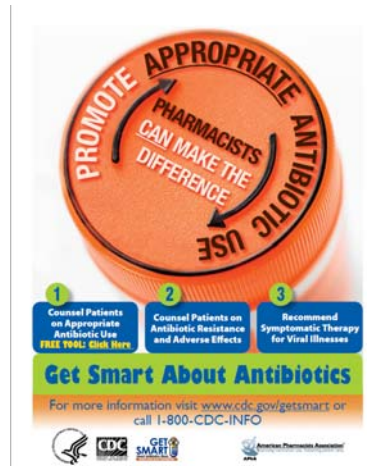
Tamer F. Barton,¹ Sara E. Coopron,² Litan M. Abba,³ Conan MacDougall,⁴ Audrey N. Schmitt,⁵ Edward J. Septimus,⁶ Arjun Srinivasan,⁷ Timothy H. Dellit,⁸
 Yagor T. Fatch-Ytter,⁹ Neil O. Fishman,¹⁰ Cindy W. Hamilton,¹¹ Timothy C. Jenkins,¹² Pamela A. Lipsack,¹³ Praveen N. Malani,¹⁴ Larissa S. May,¹⁵
 Gregory J. Moran,¹⁶ Melinda M. Neuhausen,¹⁷ Jason G. Newland,¹⁸ Christopher A. Oki,¹⁹ Matthew H. Samore,²⁰ Susan K. Seo,²¹ and Kavita K. Trivedi²²

Kansas Healthcare-Associated Infections and Antimicrobial Resistance Advisory Group

<http://www.kdheks.gov/epi/hai/advgroup.htm>

Education

- Pharmacists
- Providers
 - Including dentist
- Public



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<https://www.cdc.gov/antibiotic-use/week/promotional-materials/print-products.html>

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**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,

<https://www.cdc.gov/antibiotic-use/week/promotional-materials/print-products.html>



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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.

<https://www.cdc.gov/antibiotic-use/week/promotional-materials/print-products.html>



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DO YOU NEED ANTIBIOTICS?



You feel sick and miserable and want to get better fast. It could be a cold or even the flu. You're probably thinking you need antibiotics to knock out your illness and help you feel better. *Not so fast!* When antibiotics aren't needed, they won't help you, and the side effects could still hurt you.

8 WAYS TO BE ANTIBIOTICS AWARE

1 Antibiotics save lives, but they aren't always the answer when you're sick.

2 Antibiotics do not work on viruses.

3 Antibiotics are only needed for treating certain infections caused by bacteria.

4 An antibiotic will NOT make you feel better if you have a virus.

5 Any time antibiotics are used, they can cause side effects.

6 Taking antibiotics creates resistant bacteria.

7 If you need antibiotics, take them exactly as prescribed.

8 Stay healthy: clean hands, cover coughs, and get vaccinated, for the flu, for example.

Talk to your healthcare professional about the best way to feel better.

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



<https://www.cdc.gov/antibiotic-use/week/promotional-materials/print-products.html>

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Viruses or Bacteria What's got you sick?

Antibiotics are only needed for treating certain infections caused by bacteria. Viral illnesses cannot be treated with antibiotics. When an antibiotic is not prescribed, ask your healthcare professional for tips on how to relieve symptoms and feel better.

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

* 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.



Chills, Cough and/or Cold – Oh My!

Antibiotics only treat bacterial infections. Viral illnesses cannot be treated with antibiotics. When an antibiotic is not prescribed, ask your pharmacist or primary healthcare provider for tips on how to relieve symptoms to make you feel better.

Illness	Usual Cause		Antibiotic Needed
	Virus	Bacteria	
Cold/Runny nose	✓		No
Bronchitis/Chest cold (in otherwise healthy children and adults)	✓		No
Whooping Cough		✓	Yes
Stomach Flu	✓		No
Strep Throat		✓	Yes
Fluid in Middle Ear (Otitis media with Effusion)	✓		No
Urinary Tract Infection		✓	Maybe
Respiratory Flu	✓		No
Sinus infection		✓	Maybe

Antibiotics are not Always the Answer
Your Pharmacist can help you select the right cough and cold medication for you or may direct you to your primary care provider.



Antibiotic Stewardship Beyond Hospital Walls
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In partnership with

Kansas Healthcare
COLLABORATIVE

Seven Ways Dentists can Act Against Antibiotic Resistance



Dental providers are uniquely positioned to play a role in preventing the spread of antibiotic resistance. Here are seven simple "how-tos" for safe, appropriate antibiotic prescribing and use when treating dental infections.

- 1** **MAKE** an accurate diagnosis. 
- 2** When prescribing an antibiotic, **CHOOSE** the right drug for the right dose and duration. 
- 3** **USE** narrow-spectrum antibiotics for simple infections and preserve broad-spectrum drugs for more complex infections. 
- 4** **AVOID** prescribing antibiotics for viral infections. 
- 5** For empiric treatment, **REVISE** treatment regimen based on patient progress and/or test results. 
- 6** **KNOW** the side effects and drug interactions of an antibiotic before prescribing. 
- 7** **TEACH** your patients about appropriate antibiotic use and emphasize the importance of taking antibiotics exactly as directed. 


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

To learn more:
<https://www.cdc.gov/patients/antibiotic-resistance/materials-inferences/print-materials.html>

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Stormont Vail Health

Virus Tracking on EPIC Dashboard



Primary Care Dashboard

GET SMART: Know When Antibiotics Work

Antibiotic Stewardship Weekly Update 12/19/2016

- Total tested: 117
 - Positive influenza A: 1
 - Positive influenza B: 0
- Point of care flu from clinics
 - Total ran: 28
 - Positive influenza A: 0
 - Positive influenza B: 0
- Rapid RSV
 - Total tested: 21
 - Positive: 4
- Respiratory Panel tests performed: 76
 - **Rhinovirus: 14**
 - Adenovirus: 1
 - RSV: 3
 - Parainfluenzae: 2
 - Coronavirus: 7
 - Metapneumovirus: 1

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Penicillin Allergy vs Side Effect?

Contribute to Overuse of Broad Spectrum Antibiotics

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Is it Really a Penicillin Allergy?

Evaluation and Diagnosis of Penicillin Allergy for Healthcare Professionals

Did You Know? 5 Facts About Penicillin Allergy (Type 1, Immunoglobulin E (IgE)-mediated)

1. Approximately 10% of all U.S. patients report having an allergic reaction to a penicillin class antibiotic in their past.
2. However, many patients who report penicillin allergies do not have true IgE-mediated reactions. When evaluated, fewer than 1% of the population are truly allergic to penicillins.¹
3. Approximately 80% of patients with IgE-mediated penicillin allergy lose their sensitivity after 10 years.²
4. Broad spectrum antibiotics are often used as an alternative to penicillins. The use of broad spectrum antibiotics in patients labeled "penicillin allergic" is associated with higher healthcare costs, increased risk for antibiotic resistance, and suboptimal antibiotic therapy.³
5. Correctly identifying those who are not actually penicillin-allergic can decrease unnecessary use of broad-spectrum antibiotics.⁴

10% of the population reports a penicillin allergy but <1% of the whole population is truly allergic.



Before prescribing broad spectrum antibiotics to a patient thought to be penicillin allergic, evaluate the patient for true penicillin allergy (IgE-mediated) by conducting a history and physical, and, when appropriate, a skin test and challenge dose.

History and Physical Examination

The history and physical examination are important components when evaluating a patient's drug reactions.⁵

- Questions to ask during the examination:
 - What medication were you taking when the reaction occurred?
 - What kind of reaction occurred?
 - How long ago did the reaction occur?
 - How was the reaction managed?
 - What was the outcome?
- Characteristics of an IgE-mediated (Type 1) reaction:
 - Reactions that occur immediately or usually within one hour⁶
 - Hives: Multiple pink/red raised areas of skin that are intensely itchy⁶
 - Angioedema: Localized edema without hives affecting the abdomen, face, extremities, genitalia, oropharynx, or larynx⁶
 - Wheezing and shortness of breath
 - Anaphylaxis: requires signs or symptoms in at least two of the following systems:
 - Skin (hives, flushing, itching, and/or angioedema) (continued on next page)

- Broad-spectrum antibiotics are often used as an alternative to narrow-spectrum penicillins.
- Using broad-spectrum antibiotics can increase healthcare costs and antibiotic resistance, and may mean your patient recovers less than the best care.
- Correctly identifying if your patient is actually penicillin-allergic can decrease these risks by reducing unnecessary use of broad-spectrum antibiotics.

National Center for Emerging and Zoonotic Infectious Diseases
Division of Healthcare Quality Promotion



Continued from previous page:

- Respiratory: Cough, nasal congestion, shortness of breath, chest tightness, wheezes, sensation of throat closure or choking, and/or change in voice quality (laryngeal edema)
- Cardiovascular: Hypotension, faintness, tachycardia or less commonly bradycardia, tunnel vision, chest pain, sense of impending doom, and/or loss of consciousness
- Gastrointestinal: Nausea, vomiting, abdominal cramping, and diarrhea⁶

Penicillin Skin Tests and Challenge Doses

Based on the patient history and physical exam, additional tests may be needed to confirm a penicillin allergy. Penicillin skin testing is a reliable and useful method for evaluating IgE-mediated penicillin allergy.⁷

- A positive result means the patient is likely to have a penicillin allergy. If negative, the skin test is usually followed by an oral penicillin class challenge (e.g., with amoxicillin) to safely rule out an IgE-mediated penicillin allergy.⁷
- Skin tests currently include penicilloyl/polylysine, the major antigenic determinant that indicates hypersensitivity to penicillin.
- However, it is important to note that the patient can also be allergic to other reactive breakdown products, called minor determinants, which include penicillin G, benzylpenicillin, penicillate, and penicillins—many of which are not commercially available. Of these, only penicillin G is available from pharmacies.
- To rule out penicillin allergy, an oral challenge dose can be done after skin testing. The negative predictive value of skin testing with the major and minor determinants is more than 95%, but approaches 100% when followed by a challenge dose!⁸

Special Considerations

Patients with severe hypersensitivity syndromes—like Stevens Johnson syndrome, toxic epidermal necrolysis, serum sickness, acute interstitial nephritis, hemolytic anemia, and drug rash with eosinophilia and systemic symptoms (DRESS)—should not use the offending drug in the future. The skin test and challenge described here are not appropriate for patients with these severe hypersensitivity syndromes.^{9,10}

Cephalosporins use in penicillin-allergic patients

Many cephalosporins, especially in the later generations, can be safely tolerated despite a penicillin allergy.¹¹ Patients with anaphylaxis or other severe reactions to penicillin may require further evaluation prior to the use of cephalosporins.

Penicillin G

Children who are receiving amoxicillin or ampicillin and have Epstein-Barr virus infection can develop a non-IgE, non-granulocytic rash that can appear similar to an IgE-mediated reaction.¹²

For more information about appropriate antibiotic use, visit www.cdc.gov/getsmart.

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PrePen Data

- CDC ASP Guidelines
 - Assess Penicillin Allergy To Ensure Optimal Antibiotic Use

23 % Higher incidence of C. difficile
14 % Higher incidence of MRSA
30 % Higher incidence of VRE infections

- CDC Reduce C Dif With Penicillin testin

Patients labeled penicillin allergic have a threefold increased risk of adverse events (ADEs).
3X reduction in unnecessary antibiotic use.
 30-50% of antibiotics prescribed in hospitals are unnecessary or inappropriate.
 98% of hospitalized subjects with a history of penicillin allergy tested have negative results if tested.

http://www.qualityforum.org/Publications/2016/05/Antibiotic_Stewardship_Playbook.aspx?utm_source=external&utm_medium=link&utm_term=ABX&utm_content=Playbook&utm_campaign=ABX

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Antibiotic Stewardship

Is Now Apart Of All Transitions Of Care

We Need Your Help To Make A Difference

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Case Study 2

You are seeing a 47 year old female with chief complaint of sinus infection. She notes having 5 days of congestion, cough and sinus pressure, which she states is making her jaw ache. Reports fever ranging from 102-102.5 for past 3 days. Most recent fever was 102.1 this morning; notes taking Ibuprofen approximately 90 minutes ago. In addition to Ibuprofen has been taking her daily antihistamine for year-round allergies as well as trying Mucinex and Alka Seltzer. Patient has no significant past medical history and no known drug allergies.

On exam, patient has temperature of 100.1, VSS. You note sinus tenderness to palpation over the maxillary sinus. Turbinates are erythematous and edematous and seem to be surrounded by thick mucus. Post-nasal drainage present in the posterior pharynx without any erythema or edema. Lungs are clear to auscultation throughout all lung fields. All other examination is unremarkable.

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Case Study 2

Based on history and examination, what treatment recommendations do you offer the patient?

- A. Decongestants with first-generation antihistamine
- B. NSAID
- C. Antibiotic
- D. All of the above
- E. A & B

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Questions?



<https://www.cdc.gov/antibiotic-use/week/promotional-materials/print-products.html>

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AS Guidance

- **National Quality Partners Playbook: Antibiotic Stewardship in Acute Care**
- **CDC**
 - Core Elements of Antibiotic Stewardship
 - *Be Antibiotics Aware*
 - Antibiotic Resistance Solutions Initiative
- **Kansas Department of Health and Environment's (KDHE) Healthcare-Associated Infections and Antimicrobial Resistance (HAI/AR) Program**

Resources

- **CDC Core Elements of Antibiotic Stewardship**
www.cdc.gov/antibiotic-use/healthcare/implementation/core-elements.html
- **CDC Resources for U.S. Antibiotic Awareness Week**
www.cdc.gov/antibiotic-use/week/overview.html
- **KDHE Healthcare-Associated Infections & Antimicrobial Resistance Advisory Group**
www.kdheks.gov/epi/hai/advgroup.htm
- **Infectious Diseases Society of America (IDSA)**
www.idsociety.org/Stewardship_Policy/
- **The Society for Healthcare Epidemiology of America (SHEA)**
www.shea-online.org/index.php/antimicrobial-stewardship

Summary

- **Antimicrobial resistance is a problem that effects everyone**
- **Antimicrobial stewardship is the solution**
- **Highly recommended to have ASP in your facility**
- **Many resources and guidance available**
- **KDHE HAI/AR Program is here to help**
Epidemiology Hotline 877-427-7317



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www.kdheks.gov/epi/hai.htm


BE ANTIBIOTICS AWARE:
 ANTIBIOTIC STEWARDSHIP FOR CRITICAL ACCESS HOSPITALS

Thursday, November 16 at 2:00 PM ET

Join CDC and the Federal Office of Rural Health Policy for a webinar in recognition of National Rural Health Day and U.S. Antibiotic Awareness Week.


To register, visit: <https://cc.readytalk.com/r/u2xxa0r3d2g1&eom>

HRSA 1:00 PM CST
Health Resources & Services Administration



Implementation of Antibiotic Stewardship Core Elements at Small and Critical Access Hospitals


WEBINAR



JOIN OUR #AntibioticResistance CHAT

Thursday, November 16, 2017
 1 PM EST

12:00 – 2:00 PM CST
#BeAntibioticsAware
#USA AW17



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Questions





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