Antibiotic Decision Making

Potential Barriers and Suggested Ideas for Change

Condition: Viral Upper Respiratory Infection

Rationale: Judicious antibiotic prescribing for upper respiratory infections (URIs) requires distinguishing between viral and bacterial infections, as viral infections do not benefit from antibiotic therapy. Therefore, it is important to diagnose viral URIs accurately and rule out bacterial infections using evidence-based clinical guidelines. The careful application of strict diagnostic criteria will help ensure appropriate treatment and avoid possible drug-related adverse events and antibiotic resistance. Patients/families need to be informed about the expected course of the virus and understand that antibiotics are not beneficial for viral URIs. Such education fosters the shared decision-making process and builds trust.

Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
Gap: Patients inappropriately prescribed antibiotics for URIs		
Practitioners and/or staff may not recognize the importance of using strict criteria to diagnose viral URIs.	• Review the guidelines, recommendations, and literature that discuss the importance of accurately diagnosing infections to avoid misuse of antibiotics: ✓ AAP 2021 Policy Statement Antibiotic Stewardship in Pediatrics ✓ CDC Antibiotic Resistance Threats in the United States, 2019 ✓ CDC Antibiotic Prescribing and Use in Doctor's Offices: Pediatric Treatment Recommendations ✓ Clinical Practice Guidelines for *Clostridium difficile* Infection in Adults and Children: 2017 Update by the Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA) ✓ AAP News article, Why's and how's of judicious antibiotic prescribing for URIs ✓ Drug-related adverse events, a summary created for this course	• Review the KCA, **Diagnose Infection Accurately** for more information on this topic. Review **Treat Infection Effectively** for specific information related to this gap and measure. • Meet with staff to discuss the importance of accurate diagnoses and stress the following: ✓ Inappropriate diagnosis may lead to inappropriate use of antibiotics. ✓ Antibiotic overuse is a serious health threat. ✓ Possible drug-related adverse events can result from unnecessary antibiotics. ✓ Accurate diagnoses lead to appropriate treatment and judicious antibiotic use.
Lack of knowledge or adherence to criteria that distinguishes between viral and bacterial URIs.	• In addition to the guidelines noted above, also review these materials, which outline diagnostic criteria to distinguish between viral URI and common pediatric bacterial infections:	• Conduct a staff Lunch-and-Learn with fellow clinicians to review the guidelines and flowcharts described in this grid row to ensure that all are aware of the

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	✓ Clinical Practice Guide for Diagnosis and Management of Group A Streptococcal Pharyngitis: 2012 Update by the Infectious Diseases Society of America. ✓ AAP Clinical Practice Guideline for the Diagnosis and Management of Acute Bacterial Sinusitis in Children Aged 1 to 18 Years ✓ CDC Core Elements of Outpatient Antibiotic Stewardship • Recognize that viral URI criteria include 1 or more of the following signs and symptoms: ☑ Cough ☑ Rhinorrhea ☑ Congestion ☑ Conjunctivitis ☑ Sore throat ☑ Hoarseness • Utilize the flowcharts created for this course that summarize the essential criteria for diagnosing common pediatric. Alternately, create your own flowcharts to meet the needs of your practice. ✓ Antibiotic Decision Making for Viral URI flowchart ✓ Antibiotic Decision Making for Acute Otitis Media flowchart ✓ Antibiotic Decision Making for Acute Bacterial Sinusitis flowchart ✓ Antibiotic Decision Making for Acute Streptococcal Pharyngitis flowchart	criteria to distinguish between viral and bacterial URIs. • Make diagnostic flowcharts available in examination rooms and systematically apply diagnostic criteria. The tool should have clear criteria for discerning between viral and bacterial infections, with emphasis on the detailed criteria for diagnosing and treating common pediatric infections.
Practice does not have an effective triage system to optimize an accurate diagnosis.	• Develop and communicate practice policies to ensure a triage system is established and used appropriately. Consider the following policies: ✓ Diagnosis must be based on a physical examination by a clinician. Avoid routine rapid strep for throat culture prior to evaluation. ✓ Do not use nurse-only visits for diagnosis or treatment. ✓ Do not allow prescribing over the phone. ✓ Do not depend on parental reports based on the use of a pharmacy otoscope.	✓ Examine your practice's policy concerning prescribing antibiotics. Brainstorm ways to improve your triage system in order to reduce diagnoses without a physical exam by a clinician. • Establish a practice policy that eliminates nurse-only visits and over-the-phone prescribing.
Practitioners may have a lack of knowledge of the appropriate treatment	• Review the appropriate treatment for viral URI. ✓ Antibiotics should not be prescribed for viral URI.	• Obtain scripts to address symptomatic care for viral URI. For example, CDC's *Be*

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(symptoms relief) for viral URI.	✓ Explicitly plan treatment of symptoms with parents; symptomatic relief including: – Use of bulb syringe – Use of nasal saline – Use of antipyretics – Discussing the pros and cons of cool mist humidifier use – Recommending against using decongestants and cough medication in young children – Instructing families on the importance of adequate sleep – Discussing smoking avoidance – Encouraging fluid intake – Informing when to return if symptoms persist/develop – Using honey to relieve cough; do not give honey to an infant younger than 1 year old	*Antibiotics Aware* Prescription Pads.
Practitioners may have a lack of knowledge of the clinical course of viral URI and thus prescribe antibiotics for persistent symptoms.	• Recognize that the typical course of viral URIs is 10–14 days. In general, the symptoms of the common cold do not vary by the specific causative virus. • Review the Illness Duration Table created for this course.	• Review the literature: Thompson M, Vodicka TA, Blair PS, Buckley DI, Heneghan C, Hay AD; TARGET Programme Team. Duration of symptoms of respiratory tract infections in children: systematic review. *BMJ*. 2013;11;347:f7027.
Parental pressure for antibiotics influences clinician's decision to prescribe antibiotics.	Consider the following actions: • Educate patients and families utilizing resources available for addressing misconceptions and biases regarding antibiotic use, such as: ✓ Antibiotic Allergy Resources and Patient and Family Resources lists created for this course ✓ CDC Core Elements of Outpatient Antibiotic Stewardship • Make selected resources readily available in examination rooms. • Review common misconceptions and parental resistance issues and develop responses. See the Clinical Guide *Provide Guidance and Education* for this course for some common misconceptions. • Establish practice policies that eliminate over-the-phone prescribing of antibiotics (ie, diagnosis must be based on a physical examination).	• Meet with practice staff to: ✓ Discuss the importance of a practice policy for addressing parental pressure and the best way to communicate the policy. ✓ Brainstorm ideas for your specific patient population to address the common concerns and misconceptions practitioners face. • Practice antibiotic stewardship in your practice, using these resources to guide efforts: ✓ CDC Overview and Evidence to Support Stewardship

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	• Consult the Antibiotic Guidance and Education Checklist created for this course for a summary of key messages and key information to share with families. • Post antibiotic use information and policies in waiting rooms and on the practice Web site, patient portal, etc. • Provide scripts to address symptomatic care for viral URI such as the *CDC's Be Antibiotics Aware Prescription Pads*.	✓ Antimicrobial stewardship in pediatrics: how every pediatrician can be a steward. *JAMA Pediatrics*. 2013;167(9):859-866 ✓ CDC Core Elements of Outpatient Antibiotic Stewardship for Healthcare Professionals • Elect an antibiotic educator to guide and educate patients and families on antibiotics.
Gap: Education not provided concerning: 1) expected course of URI; and 2) reason antibiotics are not beneficial for viral URI		
Counseling patients about the course of illness and judicious use of antibiotics is not a standard part of the visit flow. Practitioners do not remember to counsel patients. There is not enough time in the visit to counsel families.	• Consider discussing and/or creating a brochure about the expected course of the illness. Make it a routine part of sick visits for respiratory conditions. Inform patients/families about: ✓ The course of the illness (10–14 days); how long the cough may last, how long the fever may persist and how long green nasal discharge may be present. See the Illness Duration Table created for this course. ✓ Antibiotic use and risks. • Consider the use of a prompt for education/guidance in the EMR. • Make infection prevention techniques part of well-child visits. • Consult and keep on hand the Antibiotic Guidance and Education Checklist created for this course for a 1-page summary of key messages and key information to share with families. • Create a list of antibiotic educational resources and make readily available in examination rooms. See the Patient and Family Resources list created for this course. • Post antibiotic use information and policies in waiting rooms and on practice Web site, patient portal, etc. • Create and post a Commitment Letter in the practice waiting and/or examination rooms. A Commitment Letter is a poster-size letter to display that should have photographs and signatures of each provider along with their commitment to	• Review the KCA, **Provide Guidance and Education**, for more information on this topic. • Make it practice policy that all practitioners must understand risks, discuss treatment risks with the patient/family, and document that discussion in the patient's medical record. • Elect an antibiotic educator to guide and educate patients and families on antibiotics. • Create a judicious antibiotic use portal on your practice Web site with educational resources including information on your practice's approach to common clinical infections.

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	reduce inappropriate use of antibiotics. See CDC's *Be Antibiotics Aware:* Posters—Commitment Letter. • Reserve spots for same-day sick appointments in your schedule. • Educate office staff in clinical course and when patients should be seen.	
Resources are not available (or not utilized) to guide patient/family discussion of the risks related to antibiotics.	• Consult and keep on hand the Antibiotic Guidance and Education Checklist created for this course for a 1-page summary of key messages and key information to share with parents. • Consider resources to educate patents/families such as: ✓ AAP Patient Education Online (requires subscription): – Antibiotics—When Do They Help? – Common Childhood Infections • CDC's *Be Antibiotics Aware*: Antibiotic Prescribing and Use in Doctor's Offices • HealthyChildren.org articles: – Antibiotic Prescriptions for Children: 10 Common Questions Answered – How Do Antibiotics Work? – Guidelines for Antibiotic Use – Caring for Your Child's Cold or Flu – Why Most Sore Throat, Coughs & Runny Noses Don't Need Antibiotics – The Difference Between Sinusitis and a Cold • CDC's *Be Antibiotics Aware* Resources: ✓ Handouts ✓ Prescription Pads ✓ Social Media and Web Graphics ✓ Videos	• Elect an antibiotic educator to guide and educate patients and families on antibiotics. • Use the Patient and Family Resources list to locate resources that fit the needs of your patient population. • Make educational resources available in examination rooms.
Gap: Follow-up plan not provided/documented		
The sick-visit flow does not include informing patients/families of the need for follow-up if symptoms worsen or persist.	• Educate office staff in clinical course and under what circumstances patients should be seen. • Devote part of your sick-visit flow to inform parents of the expected course of the illness and when follow-up is indicated. Include the following information: ✓ The expected course of a viral URI infection is 10–14 days.	• Review the KCA, **Provide Guidance and Education,** as follow-up depends on family involvement. Review **Treat Infection Effectively** for specific

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	✓ Family should follow up if the following occurs: – Labored breathing – Signs of dehydration (sunken soft spot, sunken eyes) or lethargy – URI symptoms persisting longer than 10 days – Respiratory symptoms that worsen after initial improvement – Fever ≥39°C (102.2F) and purulent nasal discharge persist more than 3 days – New onset of ear pain	information related to this gap and measure. • Create a handout or prescription pad to provide to patients/families about the need and circumstances requiring follow-up. See CDC's Delayed Prescribing and Watchful Waiting Prescription Pads
It is not part of the visit flow or standard practice procedure to document discussion about follow-up if symptoms worsen or persist.	• Include in your practice protocol a process to document in the medical record that a discussion with the patient/family took place regarding the course of viral infections and when it's necessary to follow up.	• Hold a staff meeting to emphasize the need to counsel patients and how/where to document the conversation in the medical record. • Make the discussion an item on a sick-visit checklist to simplify the documentation.

Appendix

Drug-Related Adverse Events

Possible adverse events may occur from antibiotic treatment. Some may result in additional medical visits, tests, or cost. They may even require hospitalization or be life-threatening.

Toxicity

- Toxicity can occur due to improper dosing or impaired drug metabolism.

Side Effects

- Most side effects are known and generally predictable.
- Mild side effects may include vomiting, abdominal pain, diarrhea, and nonpruritic rashes, including diaper rashes.
- Severe side effects may include *C. difficile* colitis.

Allergies/Hypersensitivity Reactions

- IgE-mediated allergies may include symptoms such as hives/urticaria, angioedema, wheezing, and anaphylaxis.
- Non–IgE-mediated hypersensitivity reactions can be severe (eg, Stevens-Johnson syndrome and toxic epidermal necrolysis).

See *Is It Really a Penicillin Allergy?* and antibiotic allergy resources included in this EQIPP course for more information about antibiotic allergies.

Illness Duration Table

Average illness duration in days and time to symptom resolution in days for 50% and 90% of children with common respiratory illnesses.

Illness	Average duration of illness (days)	Symptom resolution by Day 3 (%)	Symptom resolution by Day 7 (%)
Acute otitis media	2–8 depending on self-resolution and response to therapy	50	90
Viral sore throat/tonsillitis/pharyngitis	2–7	63–66	
Streptococcal pharyngitis	3.5 without antibiotics 1–2 with antibiotics		100
Common cold**†	10–14		50 90 by 15 days

**Symptom resolution is reported at days 10 and 15 instead of day 7.
†There is much overlap with sinusitis, and it is persistence of symptoms or sudden worsening of symptoms that raise suspicion of bacterial sinusitis.

Reference: Thompson M, Vodicka TA, Blair PS, et al. Duration of symptoms of respiratory tract infections in children: Systematic review. *BMJ.* 2013;347:f7027 doi: 10.1136/bmj.f7027 (Published 11 December 2013)

Antibiotic Resistance

Antibiotic resistance refers to bacteria that have become resistance to the antibiotics designed to kill them. The overuse and/or inappropriate use of antibiotics can result in the drugs' ability to treat the infection.

Infection Prevention Techniques

Consider making the URI prevention techniques an educational component of your practice protocols, as appropriate:

- Recommend pneumococcal conjugate vaccine to all children based on the schedule of the Advisory Committee on Immunization Practices of the CDC, AAP, and AAFP.
- Recommend annual influenza vaccine to all children and families according to schedule of the Advisory Committee on Immunization Practices of the CDC, AAP, and AAFP.
- Encourage avoidance of tobacco smoke exposure.
- Encourage hand washing.