Kentucky Outpatient
Antimicrobial Stewardship

Implementation Workbook

Kentucky ANTIBIOTIC Awareness

Working together to keep the BAD BUGS out of the Bluegrass!

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Introduction

Thank you for joining the effort to encourage appropriate antibiotic use throughout Kentucky!

Antimicrobial resistance is a growing healthcare concern that requires immediate attention and action. The most important driving factor for antibiotic resistance is the inappropriate prescribing of antibiotics. Antimicrobial stewardship (AMS) consists of coordinated interventions designed to improve and measure the appropriate use of antimicrobial agents. Stewardship efforts can improve patient safety and slow the spread of antibiotic resistance. The majority of antibiotic use occurs in outpatient healthcare settings, making this an important area for targeting antimicrobial stewardship efforts.¹

In 2016, the CDC published The Core Elements of Outpatient Antibiotic Stewardship [https://www.cdc.gov/antibiotic-use/community/pdfs/16_268900-A_CoreElementsOutpatient_508.pdf](https://www.cdc.gov/antibiotic-use/community/pdfs/16_268900-A_CoreElementsOutpatient_508.pdf) as a guide for clinicians and facilities.² This workbook utilizes Kentucky resources and examples, while maintaining the CDC’s Core Elements, listed below. We hope this workbook will assist you in establishing an effective antimicrobial stewardship program (ASP) in your practice.

---

**Commitment**
Demonstrate dedication to and accountability for optimizing antibiotic prescribing and patient safety.

**Education and expertise**
Provide resources to clinicians and patients and ensure access to needed expertise on optimizing antibiotic prescribing.

**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 on their own.
Kentucky Antibiotic Awareness Leadership

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Kentucky Antibiotic Use

According to the Centers for Disease Control and Prevention (CDC), Kentucky has the second highest rate of outpatient antibiotic prescriptions in the United States. For all patient ages, Kentucky had a rate of 1256 antibiotics dispensed per 1000 population in 2015, compared to the national average of 838 antibiotic prescriptions per 1000 population. For more data on national and Kentucky prescribing, visit the CDC’s website https://gis.cdc.gov/grasp/PSA/AUMapView.html.

The majority of antibiotic prescribing occurs in children. Kentucky has the highest rate of outpatient pediatric antibiotic prescriptions in the US. Published analyses of pediatric Medicaid claims have demonstrated that the highest prescribing occurs in the south-eastern part of Kentucky, as shown on the map below. This prescribing rate of over 3000 prescriptions per 1000 children per year is over 3 times higher than the national average for children.
Checklist

Print this easy-to-use checklist to follow along throughout the workbook.

Commitment (Required)

☐ Identify leadership: ___________________      _____________________
   (Prescriber Champion)      (Nurse Champion)

☐ Join the Listserv: http://eepurl.com/dGgOZL

☐ KY Office Commitment Posters

Education and Expertise (Required)

☐ Provider Education (Must be completed by Prescriber Champion)
   CDC Stewardship Training: ________________________________
   (Date completed)

☐ Patient Education (Minimum of 2)
   ____________________________     _________________________________
   (Chosen activity)                                  (Chosen activity)

Action for policy and practice (Optional)

☐ Implement at least 1 suggested intervention, or design your own
   Description: _______________________________________________________

Tracking and Reporting (Optional)

☐ Baseline: _________________________________________________________

☐ Post-implementation: _____________________________________________

☐ Plan for continued monitoring/improvement: ____________________________

When all categories are complete, send to KYantibx@louisville.edu
for a Certificate of Achievement!
Identify Leadership

Prescriber Stewardship Champion: ________________________________

Nurse Stewardship Champion: ________________________________

Leadership and responsibility is a vital piece of any successful ASP. Once leaders are established, they can be continuously encouraged by including stewardship-related duties in position descriptions or job evaluation criteria.

Listserv and Newsletter

To ensure you have the support you need, one or both Stewardship Champions should sign up to receive emails and newsletters from the Kentucky Antibiotic Awareness Listserv. Click here to subscribe: http://eepurl.com/dGgOZL

The listserv will provide updates and examples of successful stewardship interventions throughout the state. We look forward to working with you to further improve antibiotic use in Kentucky!

Join the Listserv! http://eepurl.com/dGgOZL
Office Posters

KY Commitment Poster

Healthcare providers are encouraged to display their commitment to antimicrobial stewardship with placement of this poster throughout their practice site. Examination room posters, along with other patient and provider educational interventions, have been shown to reduce antibiotic use.\(^3\,^4\)

Did you know that Kentucky has the highest rate of antibiotic prescriptions in the country?

- Antibiotics only work for infections caused by bacteria.
- Antibiotics will NOT help your child feel better for viral infections such as:
  - Cold or runny nose
  - Bronchitis or chest cold
  - Flu
- Taking antibiotics when your child doesn’t need them can cause harm:
  - Diarrhea, skin rash, yeast infections
  - Antibiotic resistance can cause antibiotics to not work when your child needs them

You child’s health is important to us

We promise to provide the best treatment for your child.
If an antibiotic is not needed, we will offer a different treatment plan that will help.
We are dedicated to prescribing antibiotics only when they are needed.

If you have any questions, please ask.

Sincerely,
Navjyot K. Vidwan, MD, MPH
(Your Name Here)

Click here to order free posters for your office!

*While supplies last
Provider Education
Stewardship training available from national leaders can assist providers in implementing successful strategies throughout their practice. Below are suggested stewardship training resources with CME/CNE available.

**CDC Training on Antibiotic Stewardship**
https://www.train.org/cdctrain/training_plan/3697

**Section 1**
Module 1: Antibiotic Resistance Threats and Combating the Spread of Antibiotic Resistance
Module 2: What is Antibiotic Stewardship and Why Do We Need It?
Module 3: Antibiotic Adverse Events: It’s about Patient Safety

**Section 2**
Module 4A: Outpatient Antibiotic Use Across the United States: *Background & Errors in Antibiotic Use*
Module 4B: Outpatient Antibiotic Use Across the United States: *Drivers of Inappropriate Antibiotic Use and Opportunities for Improvement*
Module 5: Core Elements of Outpatient Antibiotic Stewardship: *Implementing Antibiotic Stewardship in Your Outpatient Practice*
Module 6: Communication Training: *A Key to Improving Outpatient Antibiotic Prescribing and Use*

**Section 3**
Module 7A: Antibiotic Stewardship Considerations for the Management of Urinary Tract and Skin and Soft Tissue Infections
Module 7B: Antibiotic Stewardship Considerations for Bronchitis, Asthma and COPD Exacerbations, Viral Upper Respiratory Infection, and Acute Sinusitis
Module 7C: Antibiotic Stewardship Considerations for the Management of Acute Otitis Media and Pharyngitis
Module 7D: Antibiotic Stewardship Considerations in Dentistry

**Section 4**
Module 8: Antibiotic Stewardship in Emergency Departments and Hospitals
Module 9: Antibiotic Stewardship in Nursing Homes

This course fulfills Improvement Activities (IA) Patient Safety and Practice Assessment (PSPA)_23 and PSPA_24 under the Centers for Medicare & Medicaid Services (CMS) Merit-Based Incentive Programs, or MIPS.

For more CDC education on antibiotic stewardship:
https://www.cdc.gov/antibiotic-use/community/for-hcp/continuing-education.html

Education in Quality Improvement for Pediatric Practice (EQIPP): Judicious Use of Antibiotics
https://shop.aap.org/eqipp-judicious-use-of-antibiotics/
- Online course is free for American Academy of Pediatrics (AAP) members and qualifies for MOC Part 4 Credit
Communication Training

Patient encounters can be difficult when patient expectations are at odds with what you feel is best for the patient. Studies have shown that certain communication strategies can avoid inappropriate antibiotic prescribing while maintaining patient satisfaction and decreasing visit length. This information is also available in module 6 of CDC’s Antibiotic Stewardship Training Series. [https://www.train.org/cdctrain/training_plan/3697](https://www.train.org/cdctrain/training_plan/3697)

Key Communication Practices:

- Review your Physical Exam findings
- Deliver a clear diagnosis
- Use a 2-part negative/positive treatment recommendation
  1. Negative treatment recommendations to ‘rule out’ the need for antibiotics: “This is a cold, which antibiotics won’t work against”
  2. Positive treatment recommendations for symptom relief: “Raising the head of her bed will help with the drainage from her nose so she won’t cough so much”
- Provide a contingency plan

Note: Patients/parents tend to question the treatment plan after a negative recommendation. Avoid this by using the following structure:

- “On the one hand, antibiotics won’t help...” [negative recommendation]
- “On the other hand, there are things you can do...”[positive recommendation]

Researchers from University of Washington and Seattle Children’s developed Dialogue Around Respiratory Illness Treatment (DART) learning modules to better understand these important communication strategies. These training modules are also available with continuing education credit in Module 6 of the CDC’s Antibiotic Stewardship Training Series. [https://www.train.org/cdctrain/training_plan/3697](https://www.train.org/cdctrain/training_plan/3697)
Patient In-Office Education

Provide patient handouts

Antibiotics aren’t always the answer
https://www.cdc.gov/antibiotic-use/community/pdfs/aaw/AU_trifold_8_5x11_508.pdf

Do you need Antibiotics
https://www.cdc.gov/antibiotic-use/community/pdfs/aaw/AU_Wait_Room_Poster_508.pdf

Symptom Relief for Viral Illnesses
https://www.cdc.gov/antibiotic-use/community/pdfs/aaw/CDC-AU_RCx_Relief_for_Viral_Illness_sm_v8_508.pdf
Antibiotics save lives by treating certain infections caused by bacteria, not viruses like colds or flu. When they’re not needed, antibiotics won’t help you, and the side effects could still hurt you. Ask your doctor when an antibiotic is the right tool for your illness and when it’s not.

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

Viruses or Bacteria
https://www.cdc.gov/antibiotic-use/community/pdfs/Viruses-or-Bacteria-Factsheet-Eng.pdf

Antibiotics Aren’t Always the Answer
www.cdc.gov/antibiotic-use

Kentucky Antibiotic Awareness
uofl.edu/ky-antibiotic-awareness
Community Education

Kentucky providers feel that the public will be more receptive to education that comes from members of their own community. Help educate your community about appropriate antibiotic use!

Social Media
Follow us and share our posts!
Facebook: @KYAbxAwareness
Twitter: @KYAbxAwareness

Children
Use our KY Kids Activity Book to educate the next generation
uofl.edu/ky-antibiotic-awareness

Community Events
Use our KY Community Antibiotic Awareness slides
uofl.edu/ky-antibiotic-awareness to provide education at libraries, health fairs, social meetings, churches, and more!

Traditional Media
Seek opportunities to share your message on a local radio or news show or write an article or Letter to the Editor for your local newspaper.

Pharmacy
Encourage your local pharmacies to join the effort by hanging a Pharmacy Commitment Poster
uofl.edu/ky-antibiotic-awareness and including this handout with antibiotic prescriptions
Children’s Activities

KY Kids Antibiotic Awareness Activity Book
uofl.edu/ky-antibiotic-awareness

CDC Flu Season Activity Book

KY Antibiotic Awareness stickers
uofl.edu/ky-antibiotic-awareness

CDC Be Antibiotics Aware stickers
https://www.cdc.gov/antibiotic-use/community/downloads/stickers-au-v2-FINAL.pdf
Antibiotic Awareness Week: Nov. 12-18, 2018

U.S. Antibiotic Awareness Week [https://www.cdc.gov/antibiotic-use/week/index.html](https://www.cdc.gov/antibiotic-use/week/index.html) is an annual one-week observance to raise awareness of the threat of antibiotic resistance and the importance of appropriate antibiotic prescribing and use. Join CDC and partners as we celebrate the effort to combat the spread of antibiotic resistance and improve patient safety.

Ideas for participation:
- Schedule a community education event
- Host a children’s coloring contest
- Hand out antibiotic awareness stickers
- Share social media messages

Keep in touch with Kentucky Antibiotic Awareness for information on Antibiotic Awareness Week in 2019

Facebook: [@KYAbxAwareness](https://www.facebook.com/KYAbxAwareness)
Twitter: [@KYAbxAwareness](https://twitter.com/KYAbxAwareness)

Join the Listserv! [http://eepurl.com/dGgOZL](http://eepurl.com/dGgOZL)
Now that you’re an expert on antimicrobial stewardship, it’s time to take action! Consider implementing one of the following interventions to improve antibiotic prescribing in your practice or design your own.

### Resources and Literature Support

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Details</th>
<th>Resources and Literature Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocol Development</td>
<td>Use evidence-based diagnostic criteria and treatment recommendations</td>
<td>Clinical practice guidelines</td>
</tr>
<tr>
<td>Pediatric Treatment Recommendations Pocket Card</td>
<td><a href="https://www.cdc.gov/antibiotic-use/community/for-hcp/outpatient-hcp/index.html">Expanded content and references available at</a></td>
<td>IDSA Guidelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Summary of treatment recommendations on CDC’s website <a href="https://www.cdc.gov/antibiotic-use/community/for-hcp/outpatient-hcp/index.html">https://www.cdc.gov/antibiotic-use/community/for-hcp/outpatient-hcp/index.html</a></td>
</tr>
<tr>
<td>Provider Feedback</td>
<td>Monthly reports on the topic of your choice:</td>
<td>See Appendix (p22) Intervention Resources - Provider Feedback links 1-4</td>
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<tr>
<td></td>
<td>• HEDIS Measures <a href="http://www.ncqa.org/hedis-quality-measurement/hedis-measures">http://www.ncqa.org/hedis-quality-measurement/hedis-measures</a></td>
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<td></td>
<td>• Upper Respiratory Infection (URI) Children with Pharyngitis (CWP)</td>
<td></td>
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<td></td>
<td>• Use of 1st line antibiotics</td>
<td></td>
</tr>
<tr>
<td>Delayed Fill or Watchful Waiting</td>
<td>Ask patients to fill a prescription or return to your office only if symptoms persist or worsen.</td>
<td>Prescription Pad Handouts</td>
</tr>
<tr>
<td></td>
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<td>Delayed prescribing <a href="https://www.cdc.gov/antibiotic-use/community/pdfs/aaw/CDC-AU_RCx_Delayed_Prescribing_sm_v9_508.pdf">https://www.cdc.gov/antibiotic-use/community/pdfs/aaw/CDC-AU_RCx_Delayed_Prescribing_sm_v9_508.pdf</a></td>
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<td>Watchful waiting <a href="https://www.cdc.gov/antibiotic-use/community/pdfs/aaw/Watchful-Waiting-Prescription-Pads_small-P.pdf">https://www.cdc.gov/antibiotic-use/community/pdfs/aaw/Watchful-Waiting-Prescription-Pads_small-P.pdf</a></td>
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<td>See Appendix (p22) Delayed Fill or Watchful Waiting Guidelines 1-5</td>
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<td>See Appendix (p22) Delayed Fill or Watchful Waiting Clinical Trials 1-6</td>
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**What is Watchful Waiting?**

**WAIT. DO NOT FILL YOUR PRESCRIPTION JUST YET.**

Your healthcare professional believes your illness may go away on its own. You should watch and wait for ___ days/hours before deciding whether to take an antibiotic.

In the meantime, follow your healthcare professional’s recommendations to help you feel better and continue to monitor your own symptoms over the next few days.

- **Rest.**
- **Drink extra water and fluids.**
- **Use a cool-mist vaporizer or saline nasal spray to relieve congestion.**
- **For sore throats in adults and older children, try ice chips, sore throat spray, or lozenges.**
- **Use honey to relieve cough. Do not give honey to an infant younger than 1.**
- **If you feel better, no further action is necessary. You don't need antibiotics.**

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

It may not be convenient to visit your healthcare professional multiple times, but it is critical to take antibiotics only when needed. When antibiotics aren’t needed, they won’t help you and the side effects can hurt you. Common side effects of antibiotics can include rash, 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](http://www.cdc.gov/antibiotic-use).
## Action for policy and practice

<table>
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<tr>
<th>Intervention</th>
<th>Details</th>
<th>Resources and Literature Support</th>
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</table>
| Indications or Written Justification | Require written justification in the medical record or indications on all antibiotic prescriptions | Effect of Behavioral Interventions on Inappropriate Antibiotic Prescribing Among Primary Care Practices  
https://jamanetwork.com/journals/jama/fullarticle/2488307                                      |
| Triage Visits                     | Use existing call centers or train office staff to reduce unnecessary visits for conditions that do not require a clinic visit, such as a common cold. | Optimizing the use of telephone nursing advice for upper respiratory infection symptoms.  
| Clinical Decision Support         | Providing specific information during the typical workflow can facilitate accurate diagnoses and effective management of common conditions (e.g. viral respiratory infections) | See Appendix (p22)  
Clinical Decision Support links 1-3                                                      |
| UTI Treatment                     | Follow-up with patients to discontinue or narrow antibiotic therapy based on urine culture results | See Appendix (p22)  
UTI Treatment links 1-3                                                                            |
| Cefdinir Use                      | Cefdinir is over-prescribed in pediatrics given its lack of 1st line indications per national guidelines. This is concerning due to decreased efficacy against Strep pneumoniae and poor drug properties. Track the use of cefdinir in your practice to ensure appropriateness. | Cephem Review paper  
https://www.researchgate.net/publication/258254786_Cephem_Antibiotics_Wise_Use_Today_Preserves_Cure_for_Tomorrow  
Susceptibility paper  

For examples of ASP interventions used in Kentucky  
See Appendix (p23)
Tracking and Reporting

Tracking and reporting is an important piece of any successful antimicrobial stewardship program. Consider monitoring at least one aspect of antibiotic prescribing to guide changes in practice and assess progress in improving antibiotic prescribing.

Below are recommendations from The Core Elements of Outpatient Antibiotic Stewardship: https://www.cdc.gov/antibiotic-use/community/pdfs/16_268900-A_CoreElementsOutpatient_508.pdf

1. Track and report...
   - Antibiotic prescribing for one or more high-priority conditions
   - The percentage of all visits leading to antibiotic prescriptions
   - Complications of antibiotic use and antibiotic resistance trends among common outpatient bacterial pathogens

2. Assess and share performance on quality measures and established reduction goals addressing appropriate antibiotic prescribing from health care plans and payers
   - Healthcare Effectiveness Data and Information Set (HEDIS) measures related to antibiotic use: http://www.ncqa.org/hedis-quality-measurement/what-is-hedis
     - Appropriate Testing for Children with Pharyngitis (CWP)
     - Appropriate Treatment for Children With Upper Respiratory Infection (URI)
     - Avoidance of Antibiotic Treatment in Adults with Acute Bronchitis (AAB)
   - CMS Quality Payment Program (see the next page for more information)
Incentives

Your work towards implementing an ASP in your practice will also qualify you for provider incentives. Specific examples are listed below.

CMS Quality Payment Program:
https://qpp.cms.gov/

Quality Measures:
- **QPP 021**: Perioperative Care: Selection of Prophylactic Antibiotic – First OR Second-Generation Cephalosporin
- **QPP 065**: Appropriate Treatment for Children with Upper Respiratory Infection (URI)*
- **QPP 066**: Appropriate Testing for Children with Pharyngitis*
- **QPP 093**: Acute Otitis Externa (AOE): Systemic Antimicrobial Therapy
  - Avoidance of Inappropriate Use
- **QPP 116**: Avoidance of Antibiotic Treatment in Adults with Acute Bronchitis
- **QPP 331**: Adult Sinusitis: Antibiotic Prescribed for Acute Viral Sinusitis (Overuse)
- **QPP 332**: Adult Sinusitis: Appropriate Choice of Antibiotic: Amoxicillin with or Without Clavulanate Prescribed for Patients with Acute Bacterial Sinusitis (Appropriate Use)
- **QPP 407**: Appropriate Treatment of Methicillin-Sensitive Staphylococcus Aureus (MSSA) Bacteremia
- **QPP 464**: Otitis Media with Effusion (OME): Systemic Antimicrobials- Avoidance of Inappropriate Use

Improvement Activities:
- **IA_PSPA_23** and **IA_PSPA_24**: Completion of CDC Training on Antibiotic Stewardship (High weight)
  https://www.train.org/cdctrain/training_plan/3697
- **IA_PSPA_15**: Implementation of an ASP (Medium weight)

Patient-Centered Medical Home (PCMH)
https://pcmh.ahrq.gov/page/defining-pcmh

- **Competency E, KM20**: Incorporates evidence-based clinical decision support
- **Competency A, QI1**: Measures current performance and opportunities for improvement
- **Competency C, QI15**: Reports practice-level or individual clinician performance results

 Medicaid EHR Incentive Program (Promoting Interoperability):
- Quality measures also compatible with this program are marked above with *
- For more information:
  - CMS Promoting Interoperability
  - Kentucky CHFS: Kentucky Medicaid EHR Incentive Program (PI)
    https://chfs.ky.gov/agencies/dms/ehr/Pages/whatsnew.aspx
  - Eligibility

For more information on these programs, contact the

**KY Regional Extension Center**
http://www.kentuckyrec.com/
Congratulations!
You have successfully implemented an ASP

What’s next?

☐ Send your completed Checklist (p6) to KYantibx@louisville.edu for a Certificate of Achievement. Display it proudly at your practice site!
☐ Tell your colleagues about this program and encourage participation
☐ Tell us your success stories (interventions, community events, etc.)
   - we hope to include them as examples for inspiration
☐ Contact us with feedback and ideas for resource development, events, assistance, etc.

☐ Most importantly... maintain your ASP with continued Commitment, Education, Action and Tracking!
Acknowledgements:

Kevin B. Spicer, MD, PhD, MPH
Medical Officer (CDC), AR Coordinator, HAI Prevention Program
Infectious Disease Branch, Div. of Epidemiology and Health Planning
Kentucky Department for Public Health

Child and Adolescent Health Research Design and Support Unit
University of Louisville, Department of Pediatrics
Appendix

Intervention Resources

Provider Feedback
1. Effect of an Outpatient Antimicrobial Stewardship Intervention on Broad-Spectrum Antibiotic Prescribing by Primary Care Pediatricians  
https://jamanetwork.com/journals/jama/fullarticle/1696098
2. Cluster-randomized trial to improve antibiotic use for adult with acute respiratory infections treated in emergency departments  
https://www.annemergmed.com/article/S0196-0644(07)00383-6/fulltext?code=ymem-site
3. Provision of social norm feedback to high prescribers of antibiotics in general practice: a pragmatic national randomized controlled trial  
https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(16)00215-4/fulltext
4. Effect of behavioral interventions on inappropriate antibiotic prescribing among primary care practices  
https://jamanetwork.com/journals/jama/fullarticle/2488307

Delayed Fill or Watchful Waiting

Guidelines
1. The diagnosis and management of acute otitis media  
http://pediatrics.aappublications.org/content/131/3/e964.long
2. Clinical practice guideline for the diagnosis and management of acute bacterial sinusitis in children aged 1 to 18 years.  
http://pediatrics.aappublications.org/content/132/1/e262.long
http://journals.sagepub.com/doi/pdf/10.1177/0194599815574247
4. CDC pediatric treatment recommendations  
https://www.cdc.gov/antibiotic-use/community/for-hcp/outpatient-hcp/pediatric-treatment-rec.html
5. CDC adult treatment recommendations  
https://www.cdc.gov/antibiotic-use/community/for-hcp/outpatient-hcp/adult-treatment-rec.html

Clinical Trials
1. Delayed antibiotic prescribing strategies for respiratory tract infections in primary care: pragmatic, factorial, randomised controlled trial  
https://www.bmj.com/content/348/bmj.g1606
2. Prescription strategies in acute uncomplicated respiratory infections  
https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2475025
3. Comparison of two approaches to observation therapy for acute otitis media in the emergency department  
http://pediatrics.aappublications.org/content/121/5/e1352?sso=1&sso_redirect_count=1&nfstatus=401&nftoken=00000000-0000-0000-0000-000000000000&nfstatusdescription=ERROR%3a+No+local+token
4. Nonsevere acute otitis media: a clinical trial comparing outcomes of watchful waiting versus immediate antibiotic treatment  
http://pediatrics.aappublications.org/content/115/6/1455
5. Treatment of otitis media with observation and a safety-net antibiotic prescription  
http://pediatrics.aappublications.org/content/112/3/527
6. Wait-and-see prescription for the treatment of acute otitis media  
https://jamanetwork.com/journals/jama/fullarticle/203330

Clinical Decision Support
1. Efficacy of an evidence-based clinical decision support in primary care practices  
https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/1722509
2. Effects of clinical pathways for common outpatient infections on antibiotic prescribing  
https://www.amjmed.com/article/S0002-9343(13)00069-7/fulltext
3. A cluster randomized trial of decision support strategies for reducing antibiotic use in acute bronchitis  
https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/1556795

UTI Treatment
1. Urine culture follow-up and antimicrobial stewardship in a pediatric urgent care network  
http://pediatrics.aappublications.org/content/early/2017/03/14/peds.2016-2103
2. Impact of a multidisciplinary culture follow-up program of antimicrobial therapy in the emergency department  
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4108117/
3. Expanding antimicrobial stewardship to urgent care centers through a pharmacist-led culture follow-up program  
https://link.springer.com/article/10.1007/s40121-017-0168-8
Kentucky Outpatient ASP Intervention Examples

Reduction of Antibiotics for URI
Who: Norton Healthcare
Aim: To reduce inappropriate antibiotic prescribing for viral upper respiratory infections by 20% for patients greater than 3 months old
Methods:
• Reports were distributed to all primary care adult and pediatric and immediate care providers on a monthly basis, detailing the % visits where an antibiotic was given for patients with a URI (percent failure). The reports included data for individual providers, offices as a group and specialty as a group including adult primary care, pediatric primary care, and urgent care.
• Messaging regarding appropriate antibiotic use was added to waiting room monitors.
• Support staff were also provided with education about the initiative.
Results:
• In 9 months, the percent failure rate for adult primary care dropped from 47.9% to 41%
• Immediate care centers and pediatric practices remained relatively unchanged
Conclusions:
• Clinician peer pressure may be an effective means of encouraging behavior change
• Further provider education on communication techniques might be useful
• Building an epic report takes longer than you would think
Contact: Michele Fass, MD; michele.fass@nortonhealthcare.org

Effect of Patient and Provider Education on Antibiotic Overuse for Respiratory Tract Infections.
Who: Fulltime Healthcare Provider’s for “walk-in” patients in large, busy rural PCP office in north-central Kentucky
Aim: to assess the effects of a combination patient and provider education program on antibiotic prescribing in RTIs in a rural primary care clinic
Methods: Utilizing a quasi-experimental pretest-posttest design, a retrospective electronic medical record review was conducted to determine if a patient and provider education program changed the rates of antibiotics being prescribed (immediate or delayed) during a visit for RTI for 207 randomly selected patients during the established evaluation time period.
Results: The antibiotic prescription rate for the preintervention group was 56.3% compared to 28.8% for the postintervention group (p,.01). Immediate antibiotics were ordered in the preintervention group 31.1% of the time compared to 13.5% for the postintervention group (p,.05).
Conclusions: The results of this study demonstrate that educational interventions can be effective in rural settings and that changes in antibiotic prescribing are possible.
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References
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