NC CLASP OUTPATIENT STEWARDSHIP
YEAR 2, SESSION 9

Additional Stewardship Strategies and Review
June 12, 2024
CONFLICT OF INTEREST DISCLOSURES

- The views and opinions expressed in this series are those of the speakers and do not reflect the official policy or position of any agency of the US or NC government or UNC.
- None of the speakers or planners have any relevant financial relationships with ineligible companies to disclose.
- These slides contain materials from a variety of colleagues, as well as the CDC, WHO, AHRQ, etc.
INTRODUCTIONS

Please put your name, clinic, and location in the chat!
CME AND CE CREDIT

- CME & CE for participants
  - Attendance and active participation per learning session
  - Click the link in the chat during the session to document your attendance
  - Complete surveys as requested
TODAY’S OVERVIEW

- Quick Review:
  - Antibiotic Allergies
- Additional Strategies to Reduce Antibiotic Overuse
  - Vaccines
- Special Settings
- Review
VACCINES AND ANTIMICROBIAL RESISTANCE
Vaccines and AMR

• Most antibiotic stewardship focuses on proper treatment of sick people

• Vaccines prevent people from getting sick!

WHO, 2021
BACTERIAL VACCINES AND AMR

- Direct prevention of bacterial infections that require antibiotics
  - Pneumococcus, Hib, meningococcus, pertussis, diphtheria, typhoid

- Less fear of bacterial complications

- Targeting key bacterial drivers of antibiotic resistance
  - Pneumococcus
  - Typhoid

WHO. Leveraging Vaccines to Reduce Antibiotic Use and Prevent Antimicrobial Resistance, 2020
VIRAL VACCINES AND AMR

- Prevention of viral infections with bacterial complications
  - Influenza, measles, varicella
  - Increasing flu vaccine coverage by 10 percentage points → 6.5% decrease in antibiotic prescribing (Klein et al., OFID, 2020)

- Prevention of viral infections that may lead to unnecessary antibiotics
  - Less acute illness → fewer antibiotic prescriptions
  - Influenza, COVID-19, RSV, etc.
HOPEFUL FUTURE HIGH-IMPACT VACCINES

North America and Europe

- *Staphylococcus aureus*
- *C. difficile*
- Gonorrhea and chlamydia

Worldwide

- Tuberculosis
- Malaria
WHAT CAN PROVIDERS DO?

- Ensure patients are adequately vaccinated!
  - Newer vaccines for older patients – RSV and PCV20
  - New vaccines for babies – nirsevimab for RSV
  - Flu and COVID shots

- Advocate for pro-vaccine policies

- Use vaccination rates as a quality metric
  - Clinic level, system level, payor level
OTHER SETTINGS
OTHER IMPORTANT SETTINGS FOR STEWARDSHIP

- Emergency Department
- Urgent Care
- Dental offices
- Telemedicine
ED AND URGENT CARE

Challenges
- ED context – need to triage time and effort to sickest patients
- No prior relationship with patient; no follow-up
- Priority on assessment and disposition

Opportunities
- Very amenable to algorithmic approach for minor illnesses
- Often have pharmacy support for antibiotic recommendations
ED AND URGENT CARE: SUCCESSFUL STRATEGIES

- Clearly defined diagnostic pathways and antibiotic treatment recommendations

- Follow up on negative urine cultures and actively STOP antibiotics
  - Routine practice is to follow up only on *positive* cultures
DENTAL PRACTICE

- Dentists prescribe 10% of outpatient antibiotics
- Dental antibiotic prescribing has remained flat, while medical antibiotic prescribing has declined slightly since 2012
- AHA and ADA guidelines are available.

Multiple models:
- Primary care practice-based
- Direct-to-consumer, fully remote practitioner
- Synchronous vs asynchronous; text messages vs audio vs audio/video

Convenient, efficient
- May be able to reach rural and underserved populations

Challenges:
- Cannot perform physical exam (throat, ears, lungs, etc.)
- Usually cannot perform diagnostic testing (strep, urine culture, etc.)
- Physical exam warning signs may be missed (vital sign abnormalities, mastoiditis, etc.)
TELEMEDICINE

- Antibiotic prescribing
  - Generally lower-quality; lots of variability
  - Primary care-based telehealth: good quality
  - Less is known about direct-to-consumer services

- Best-practice recommendations for practitioners:
  - Synchronous, audio/video visits most effective whenever possible
  - Have a backup plan if telemedicine is not appropriate
  - Establish standards for antibiotic prescribing during virtual visits
  - Avoid use of telemedicine for *convenience* only
## DEFINING ANTIBIOTIC OVERUSE

<table>
<thead>
<tr>
<th>Unnecessary antibiotics</th>
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<tbody>
<tr>
<td>• Prescribing when not indicated</td>
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<tr>
<td>• Viral URI, bronchitis, etc.</td>
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<table>
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<tr>
<th>Excess Spectrum</th>
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<tr>
<td>• Treatment not targeted</td>
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<tr>
<td>• Example: third-generation cephalosporins for respiratory infection</td>
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<tr>
<th>Duration</th>
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<td>• Longer courses than necessary</td>
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CDC Core Elements of Outpatient Stewardship

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.

https://www.cdc.gov/antibiotic-use/community/pdfs/16_268900-A_CoreElementsOutpatient_508.pdf
COMMITMENT

1. Identify a single leader who is accountable
2. Include stewardship duties in position descriptions and job evaluation criteria
3. Communicate with all clinic staff members to set patient expectations
4. Write and display public commitments in support of antibiotic stewardship
“TRACKING AND REPORTING”

1. Participate in CME and QI activities to track and improve antibiotic prescribing

2. Implement at least one antibiotic prescribing tracking and reporting system

3. Assess and share performance on quality measures and established reduction goals
EVIDENCE-BASED STRATEGIES

- Peer comparison
- Clinical decision support
- Nudging strategies
  - Written justification
  - Signed commitment letter
- Communication training
COMMUNICATION TRAINING

- **DART Project (Dialogue Around Respiratory Illness Treatment)**
- **4 key components to successful communication**
  1. Review your physical exam findings
     - “Lungs sound nice and clear”
  2. Deliver a clear diagnosis
     - “You have bronchitis”
  3. Use a two-part negative/positive treatment recommendation
     - Negative: “This is caused by a virus that antibiotics won’t touch”
     - Positive: what things the patient *can* do to feel better
     - Start with negative and *then* do positive – shift the focus away from antibiotics
  4. Provide a contingency plan
“EDUCATION AND EXPERTISE”

Patient Education
- Patient-Facing Materials
- Face-to-face counseling

Provider Education
- CME
- Quality Improvement
Patient Education

**DON’T SAY**

• “You just have a virus, you just have to let it pass.”

• “Let’s start antibiotics just in case.”

• “Why don’t you come in for a visit so we can see if you need antibiotics?”

**DO SAY**

• “You definitely have a viral infection, but it’s not something that antibiotics are going to help with.”

• “I think this is a bacterial infection, and I think it’s worth taking antibiotics to help you get better faster.”

• “Why don’t you come in for a visit so we can figure out what’s going on?”
HARMS CAUSED BY ANTIBIOTICS

▶ Antibiotic resistance
  ▶ Especially recent and/or long-term antibiotic exposure (e.g., UTI prophylaxis)
  ▶ Usually difficult to link this directly

▶ Antibiotic-related toxicity
  ▶ Antimicrobials cause 1/6 of all ED visits for adverse drug events (#2 after anticoagulant/antiplatelet drugs)
  ▶ Over half of all ED visits for ADEs in children under 6

▶ C. difficile infection
  ▶ 10% reduction in outpatient antibiotics → 16.8% reduction in community-acquired C-diff
SPECIFIC CONDITIONS
<table>
<thead>
<tr>
<th>Infection</th>
<th>Biggest Problem</th>
<th>Recommended First-Line Antibiotics</th>
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<tbody>
<tr>
<td>Acute Bacterial Sinusitis</td>
<td>Overdiagnosis, antibiotic duration too long</td>
<td>Amox-clav x 7 days (adults) or 7-10 days (children)</td>
</tr>
<tr>
<td>Acute Bronchitis</td>
<td>Antibiotics given at all (confusion with pneumonia)</td>
<td>None</td>
</tr>
<tr>
<td>Community-Acquired Pneumonia</td>
<td>Overdiagnosis, antibiotic selection</td>
<td>Amox-clav x 5-7 days +/- azithromycin (adults)</td>
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<tr>
<td>COPD Exacerbation</td>
<td>Using antibiotics when unlikely to help</td>
<td>Only if purulent sputum plus either increased sputum or increased dyspnea</td>
</tr>
<tr>
<td>Pharyngitis</td>
<td>Overdiagnosis of strep throat</td>
<td>Penicillin IM x1 or amoxicillin x 10 days</td>
</tr>
<tr>
<td>Acute otitis media</td>
<td>Overdiagnosis; broad-spectrum antibiotics</td>
<td>Amoxicillin x 10 days (first-line in kids)</td>
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</table>
| Urinary Tract Infection          | Overdiagnosis (many false-positive results); broad-spectrum antibiotics; excessive duration | Cystitis: nitrofurantoin  
Pyelonephritis: ceftriaxone; ciprofloxacin if less severe           |
| Skin and soft-tissue infection    | Overdiagnosis of cellulitis; excessive MRSA coverage; excessive duration | Cellulitis: cephalexin x 5 days  
Abscess: I&D; TMP-SMX or doxy x 5 days |
ANTIBIOTIC ALLERGY
Reported penicillin allergy associated with:

- 1.5x greater risk of surgical site infection
- Increased risk of MRSA
- Increased risk of C-diff
- 14% greater risk of mortality

10% of all patients report a penicillin allergy

Only 10% of allergy reporters are *actually* allergic

Alternative antibiotics are often:

- Broader-spectrum
- Less effective
- More likely to cause C-diff
PENICILLIN ALLERGIES

- Penicillin allergy is often falsely reported
- Inaccurate penicillin allergy labels are harmful
- You can identify patients who are likely to benefit from penicillin allergy testing
- Penicillin allergy testing is NOT a waste of time, effort, or money. It is very helpful for patients – and they appreciate it!
- After testing, most patients reporting a penicillin allergy can safely take beta-lactams
TAKING ACTION
A GOOD TARGET SHOULD BE...

<table>
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<tr>
<th>Common</th>
<th>Impactful</th>
<th>Measurable</th>
<th>Actionable</th>
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<tbody>
<tr>
<td>• Salient to clinicians</td>
<td>• Avoiding toxicity,</td>
<td>• Data is available</td>
<td>• Clear plan for change</td>
</tr>
<tr>
<td></td>
<td>preventing <em>C-diff</em></td>
<td>• Metric matches the desired change</td>
<td>• Sensible for stakeholders</td>
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<tr>
<td>• Measurable impact in</td>
<td>• Maximizing efficacy</td>
<td></td>
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<tr>
<td>reasonable timeframe</td>
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## POTENTIAL TARGETS: CONDITIONS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Potential Problems</th>
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<tbody>
<tr>
<td>Otitis media</td>
<td>Unjustified cephalosporin use</td>
</tr>
<tr>
<td>Sinusitis</td>
<td>- Use of azithromycin or fluoroquinolones</td>
</tr>
<tr>
<td></td>
<td>- Not applying strict diagnostic criteria</td>
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<td>- Durations: 5-7 days now recommended</td>
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<tr>
<td>Viral URI (e.g., pharyngitis with negative testing, bronchitis)</td>
<td>Prescribing any antibiotic at all</td>
</tr>
<tr>
<td>UTI</td>
<td>- Overdiagnosis (asymptomatic bacteriuria)</td>
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<td>- Prescribing doesn’t match resistance patterns</td>
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<td>- Excessive durations for cystitis</td>
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# POTENTIAL TARGETS: DRUGS

<table>
<thead>
<tr>
<th>Drug or Class</th>
<th>Potential Problems</th>
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<tbody>
<tr>
<td><strong>Azithromycin</strong></td>
<td>Overuse in acute respiratory infections when beta-lactams are more likely to be effective</td>
</tr>
<tr>
<td><strong>Fluoroquinolones</strong></td>
<td>Overuse in acute respiratory infections and/or urinary tract infections in which beta-lactams would be equally effective with less toxicity</td>
</tr>
<tr>
<td><strong>Third-generation cephalosporins</strong></td>
<td>Overuse in acute respiratory infections in which amox +/- clav would be sufficient: pneumonia, sinusitis, streptococcal pharyngitis</td>
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Specific
Measurable
Attainable
Relevant
Time-Bound
SMART AIMS

- **Specific**
  - Have a clear goal in mind.
  - NOT: “Use fewer fluoroquinolones.”
  - “Reduce X by 25%.” “Increase Y by 50%.”
  - “Achieve 90% compliance.”

- **Measurable**
  - Can’t be specific if you can’t measure it

- **Attainable**
  - Is there a strategy that’s likely to work?
  - Don’t set your goal too high

- **Relevant**
  - “If we achieve our aim, will our patients be safer/have better outcomes?”
  - Make sure your aim affects a lot of patients (or makes a big difference for a small number)

- **Time-bound**
  - Set a deadline
  - Work backward from there
CASE EXAMPLES
A nurse in a pediatric clinic notices that they are seeing a ton of cases of strep throat. She did a CE course recently and learned that strep throat is very uncommon before school age, but many of the patients they are diagnosing with strep are under 4 years of age. What is the most likely explanation?

- There is new strain of Group A Strep that causes more illnesses in young children
- The clinic adopted a new workflow so that the MA can swab the patient for strep before the provider sees them
- Kids are just more susceptible to Group A Strep these days
A nurse in a pediatric clinic notices that they are seeing a ton of cases of strep throat. She did a CE course recently and learned that strep throat is very uncommon before school age, but many of the patients they are diagnosing with strep are under 4 years of age. What is the most likely explanation?

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STREP THROAT CASE

Next steps

- If possible, get data on strep throat diagnoses
- Arrange an educational session for all staff members on strep throat symptoms
- Change the workflow to integrate screening for symptoms that are rare in strep throat
  - Cough, hoarse voice, runny nose

Develop a SMART Aim

- “In the next 6 months, we will screen at least 80% of patients with sore throat for viral symptoms before we get a strep swab.”
A nurse practitioner in Internal Medicine recently had a 60-year-old patient suffer an Achilles tendon rupture while taking ciprofloxacin for 14 days for a UTI. She reflects on her own practice – she uses fluoroquinolones often for suspected UTI and sometimes for sinusitis or pneumonia if the patient reports a penicillin allergy. What steps can she take to prevent future adverse effects from fluoroquinolones in her clinic?
What steps can she take to prevent future adverse effects from fluoroquinolones in her clinic?

- Obtain and review local urine culture antibiogram to see if alternatives to FQ would offer better coverage (e.g., cephalexin, TMP-SMX, nitrofurantoin)
- Conduct an educational session for providers about the differences between asymptomatic bacteriuria, cystitis, and pyelonephritis
- Obtain a list of clinic patients with reported penicillin allergies and frequent antibiotic prescriptions; refer the patients to an allergist
- Initiate a comprehensive QI project to stop antibiotics when urine cultures return negative
WHAT CAN WE DO EVERY DAY?

- Educate our patients continuously
- Strive for guideline adherence
  - Evidence-based diagnostic criteria
  - Narrowest-spectrum effective antibiotics
  - Shortest effective durations
- Little projects:
  - Make one-page or card-sized guideline summaries and post on computers
  - Educational sessions focused on antibiotic stewardship
  - Antibiotic stewardship commitment posters
THE NORTH CAROLINA CLINICAL ANTIBIOTIC STEWARDSHIP PARTNERS (NC CLASP)

- All the information from today’s session will be on our website https://spice.unc.edu/ncclasp/
THANK YOU!!