Antibiotic Use: Limiting the Harm We Do

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Name 3 things we all do but know we shouldn’t?
Why do we all prescribe too many antibiotics?
Patient Expectations are High

We need to manage them effectively
We all Crave Positive Interaction

But this is not what patients want
The Waiting Room is Full

Shortcuts actually complicate care
Antibiotics can be Dangerous

Unintended Harm
But what about the Art of Medicine?
Stewardship Messages

Be **risk averse** when prescribing antibiotics.

Use **good communication skills** to manage expectations (usually **lowering** them).

Focus on **risks and benefits** with patients.
Stewardship Messages

Empower patients! Properly informed, patients will want the right things.

Be empowered! Use evidence-based guidelines to build confidence in your prescribing habits.

Understanding ‘why we do what we do’ will increase your enjoyment in delivering care.
The Harm We Do
The Dirty FAQs

• Antibiotics are responsible for 1 of every 5 ER visits for drug related complications

• At least 2 million people per year in the US develop an infection resistant to ≥ 1 antibiotic – Causing 23,000 deaths

• 250,000 hospitalizations per year for C. difficile infection – Causing 14,000 deaths

• Annual excess direct costs = $6.5 billion/year
• Annual excess indirect costs > $30 billion/year


Up to 50% of antibiotic use is unnecessary or inappropriate
Outpatient Antibiotic Prescriptions - US 2013

% of oral antibiotic prescriptions by provider specialty

- 45% Primary care physicians
- 18% OB/GYN
- 9% Dentistry
- 8% Emergency medicine
- 5% Dermatology
- 3% Other specialties
- 3% Physician assistants and nurse practitioners

Community antibiotic prescribing rates

Antibiotic prescriptions per 1,000 people

Lowest

Highest

Prescribing data from 2014; population data from 2013

Source: IMS Health, Centers for Disease Control and Prevention
Opportunities for Improvement

Rhinosinusitis
Pharyngitis
Urinary tract infection
What percentage of acute rhinosinusitis (ARS) cases are caused by non-viral pathogens?

2) 12%
3) 22%
4) 32%

That means that 98% of ARS cases do not respond to antibiotics.
Viral ARS can reasonably be expected to last...

1) 2-3 days
2) 5-7 days
3) ≥10 days
What are the patterns of acute bacterial rhinosinusitis?
Acute Bacterial Rhinosinusitis

Persistent symptoms ≥ 10 days

Acute Viral Rhinosinusitis

Uncomplicated Viral URI

Severity

Respiratory symptoms

Fever

(days)

0 1 2 3 4 5 6 7 8 9 10 11 12

(days)
Acute **Bacterial** Rhinosinusitis

“Double-sickening sign”
Acute **Bacterial** Rhinosinusitis

Severe sx’s (fever ≥39°, pain, purulent discharge) at onset
The drug of choice for a child or adult diagnosed with acute bacterial sinusitis is

2) Amoxicillin
3) Amoxicillin-clavulanate
4) Levaquin
5) Doxycycline

Appropriate DOT: 5-7 Days!
ABRS and PCN Allergy

Summary

1) ABRS is uncommon vs viral infection.
2) Treatment regimens rarely include levaquin.
3) Duration of therapy is short.
Pharyngitis

12 year old with sore throat, sneezing, low grade fever, and headache

Would you test for GAS pharyngitis?
Would you treat for GAS pharyngitis?
Pharyngitis

SET PATIENT & PARENT EXPECTATIONS!

Most likely viral

Duration of symptoms = 1 week
Treat with symptomatic relief (OTCs)

To Test or Not Test

- 14 year old with sore throat, runny nose, and cough
  NO

- 5 year old with fever, sore throat, tonsillar exudates but no cough
  YES

- 25 year old preschool teacher with sore throat, nasal congestion, fever and cough
  NO
# Treatment Recommendations for GAS Pharyngitis in Adults and Children

<table>
<thead>
<tr>
<th>Drug of choice</th>
<th>Duration of therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No allergies</strong></td>
<td></td>
</tr>
<tr>
<td>Penicillin</td>
<td>10 days</td>
</tr>
<tr>
<td>Amoxicillin</td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th>Non-type I hypersensitivity reaction to penicillin</th>
<th>Antibiotics may shorten duration of illness and prevent development of rheumatic fever</th>
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<tr>
<th>Type I severe hypersensitivity reaction (ie: anaphylaxis) to penicillin&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Clindamycin</th>
<th>10 days</th>
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<tbody>
<tr>
<td></td>
<td>Azithromycin</td>
<td>5 days</td>
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</table>

<sup>1</sup>Resistance to azithromycin and clindamycin increasingly common, reserve for severe penicillin allergic patients

## Match Treatment

<table>
<thead>
<tr>
<th>Patient</th>
<th>Treatment Option</th>
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<tbody>
<tr>
<td>25 year old preschool teacher with sore throat, nasal congestion, cough with NKDA</td>
<td>Cephalexin x 10 days</td>
</tr>
<tr>
<td>15 year old with sore throat, fever, tonsillar exudates, rapid strep positive with PCN allergy described as flat rash</td>
<td>Azithromycin x 5 days</td>
</tr>
<tr>
<td>65 year grandmother with sore throat, tonsillar exudates, fever with NKDA</td>
<td>Penicillin x 10 days</td>
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<tr>
<td></td>
<td>Ibuprofen, pseudoephedrine and dextromethorphan</td>
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<td>Levofloxacin x 5 days</td>
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Urinary Tract Infection!
Which of the following patients warrants treatment for a UTI?

72 yo male with BPH, complaining of urinary hesitancy and retention, urine sample showing +nitrites, urine culture with 10,000 CFU/mL of gram-positive and gram-negative bacteria

28 yo non-pregnant female complaining of dysuria, clean-catch midstream urine dipstick showing +LE and –nitrites

68 yo female with non-specific malaise and body aches for the past few days had a midstream urine sample collected which shows +LE
Treat infection, not colonization, not contamination

• Treat when patient expresses symptoms!
  • Positive symptoms alone can confirm diagnosis in uncomplicated cases

• Treatment of asymptomatic bacteriuria is rarely indicated

• Obtain urine studies to help guide diagnosis and treatment choice
  • Urinalysis and urine culture
28 yo non-pregnant female complaining of dysuria, clean-catch midstream urine sample showing +LE and –nitrites

Which of the following agents are preferred treatment options?

1. Ciprofloxacin 250 mg PO q12h x 3 days

2. Cephalexin 500 mg PO q12h x 5 days

3. Trimethoprim/sulfamethoxazole 1 DS tab PO BID x 5 days

4. Nitrofurantoin 100 mg PO BID x 5 days
Empiric Antibiotic Selection
2014 CCHS *E. coli* Susceptibilities- Urine Cultures

<table>
<thead>
<tr>
<th>Antimicrobial Agents</th>
<th>Total isolates</th>
<th>Amp</th>
<th>Amp/Sul</th>
<th>Cefazolin</th>
<th>Ceftriax</th>
<th>Cipro</th>
<th>Levo</th>
<th>TMP/SXT</th>
<th>Nitrofurantoin</th>
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<tbody>
<tr>
<td></td>
<td>2042</td>
<td>2049</td>
<td>3510</td>
<td>2049</td>
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<td>2049</td>
<td>2049</td>
<td>2043</td>
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<td>(%S)</td>
<td>(54)</td>
<td>(62)</td>
<td>(99)</td>
<td>(96)</td>
<td>(83)</td>
<td>(83)</td>
<td>(77)</td>
<td>(94)</td>
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- **IDSA**: Avoid agents with >20% resistance prevalence
- **Reserve fluoroquinolones** for patients with true beta-lactam allergy who cannot take nitrofurantoin (complicated cystitis or renal impairment)
- Use more cephalexin and nitrofurantoin as first line treatment options
- Cefpodoxime alternative in patients with prior antibiotic exposure
How long to treat?

Differentiating between uncomplicated and complicated cystitis helps determine duration

**Uncomplicated Cystitis**
- Beta-lactam: 3-7 days
- Nitrofurantoin: 5 days
- TMP/SMX: 3-5 days
- Ciprofloxacin: 3 days
- Levofloxacin 250 mg daily: 3 days

**Complicated Cystitis**
- Beta-lactam: 7-10 days
- TMP/SMX: 7-10 days
- Ciprofloxacin: 7 days
- Levofloxacin 750 mg daily: 5 days
- Levofloxacin 250 mg daily: 10 days
Recommendations

• Set expectations that symptoms may remain for 48-72 hours after initiating antibiotics

• Recommend phenazopyridine (Pyridium®) to help numb the bladder; cranberry supplementation to aid in clearance of bacteriuria

• Follow-up on urine cultures and de-escalate therapy when possible
Concluding Key Points and Provider Resources
Key Points

• The majority of cases of pharyngitis, bronchitis, and sinusitis are caused by viral infections!
• We really shouldn’t be doing so many rapid streps! We are picking up colonization and over treating by testing everyone.
Key Points

• Sinus congestion and tenderness is most likely viral
• A cough for 2 weeks is probably still viral
• Antibiotics can cause serious harm. You are not “playing it safe” by giving a script
Key Points

• For UTI: treat infection, not colonization, not contamination
• Cipro and Bactrim should not be our go to antibiotics for UTI. Use more Keflex!
Tips for the Visit

• Empathize with the patient
  – “I know how terrible you must feel”

• Acknowledge concerns
  – “Thanks for coming in to be evaluated today”

• Be confident in your diagnosis
  – “You have a viral illness”
Educate the Patient

• Educate on the normal course of a URI
  – “Cough can last 2 weeks or more”

• Educate on signs and symptoms of a complication
  – “Occasionally a bacterial infection can develop after you get a virus. Here is what you should look out for”
HOW LONG WILL COLD & FLU SYMPTOMS LAST

% of Patients With Symptoms

% Fever
% Sore Throat
% Nasal Discharge
% Cough

Days of illness

Resources

www.cdc.gov/getsmtart

• Symptomatic treatment scripts
• Daycare letters