Antibiotics & Infectious Disease Guidelines: Part I & Part II

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Discussion Points

- MRSA guidelines
  - Skin & soft-tissue infections
  - Pneumonia
- Intra-abdominal infection guidelines
- Urinary tract infection guidelines
- Treatment of acute otitis media

MRSA Treatment Guidelines

- Skin & soft-tissue infections
  - Including recurrent infection
- Pneumonia
- New vancomycin dosing
  - Bacteremia & infective endocarditis
  - Bone & joint infections
  - CNS infections

Clin Infect Dis. 2011;52:e18-e55. [IDSA MRSA guidelines]
Prevalence of MRSA in Acute, Purulent Skin Infections, August 2008 (n=619)

Organism by Infection Type

CA-MRSA Susceptibility Patterns

- Resistant:
  - All penicillins
  - Cephalosporins

- Susceptible:
  - TMP/SMX
  - Doxycycline
  - Rifampin
  - Vancomycin
  - Linezolid

- Variable:
  - Clindamycin: 94% (2% inducible resistant)
  - Levofloxacin: 45%
  - Erythromycin: 10%

Susceptibility patterns are dynamic, vary geographically & in patient populations.
**MRSA SSTIs Clinical Guidelines**

- Simple abscess: I&D alone likely to be enough
- Indications for antibiotics with abscesses:
  - Severe or extensive disease (multiple sites)
  - Rapid progression with cellulitis
  - Signs & symptoms of systemic illness
  - Extremes of age; co-morbidities
  - Difficult to drain areas (hand, face, genitalia)
  - Associated septic phlebitis
  - Lack of response to I&D alone

*Clin Infect Dis. 2011;52:e18-e55. [IDSA MRSA guidelines]*

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**MRSA SSTIs Clinical Guidelines**

- Outpatients with purulent cellulitis & no associated abscess:
  - Empirical therapy for CA-MRSA is recommended
  - Empirical therapy for β-hemolytic streptococci likely unnecessary
  - 5-10 days of therapy is recommended

*Clin Infect Dis. 2011;52:e18-e55. [IDSA MRSA guidelines]*

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**MRSA SSTIs Clinical Guidelines**

- Outpatients with nonpurulent cellulitis & no associated abscess:
  - Empirical therapy for β-hemolytic streptococci is recommended
  - Role of MRSA unknown
  - Empirical coverage for MRSA in those who do not respond to β-lactam therapy or those with systemic toxicity

*Clin Infect Dis. 2011;52:e18-e55. [IDSA MRSA guidelines]*
**MRSA SSTIs Clinical Guidelines**

- Oral antibiotic options for CA-MRSA:
  - TMP/SMX or clindamycin or linezolid alone
  - Doxycycline or minocycline
- Coverage for β-hemolytic strep & CA-MRSA:
  - Clindamycin or linezolid alone
  - TMP/SMX or doxycycline or minocycline with a β-lactam (e.g., amoxicillin)
- Use of rifampin is not recommended

*Clin Infect Dis.* 2011;52:e18-e55. [IDSA MRSA guidelines]

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**MRSA SSTIs Clinical Guidelines**

- For hospitalized patients with cSSTIs, empirical IV therapy for MRSA should be considered pending culture results:
  - Vancomycin; Linezolid; Daptomycin
  - Telavancin; Clindamycin
- β-lactam may be considered in hospitalized patients with nonpurulent cellulitis
- 7-14 days of therapy

*Clin Infect Dis.* 2011;52:e18-e55. [IDSA MRSA guidelines]

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**MRSA SSTIs Clinical Guidelines**

- Wound cultures are recommend:
  - In patients treated with antibiotics
  - Severe local infection
  - Signs of systemic illness
  - No response to initial therapy
  - Concern for a cluster or outbreak

*Clin Infect Dis.* 2011;52:e18-e55. [IDSA MRSA guidelines]
MRSA SSTIs Clinical Guidelines

- Decolonization may be considered:
  - Recurrent SSTIs
  - Infection among household members
- Nasal decolonization: Mupirocin bid x 5-10 days
- Mupirocin bid for 5-10 days plus chlorhexidine body wash for 5-14 days or dilute bleach baths
- Oral antibiotics not routinely recommended for decolonization

CAP & CA-MRSA

- Has emerged as a cause of severe CAP
- Empirical therapy for MRSA is recommended:
  - Severe illness (i.e., ICU admission)
  - Necrotizing or cavitary infiltrates
  - Empyema
- Antimicrobial choices include:
  - Vancomycin; Linezolid
  - Clindamycin

New Adult IV Vancomycin Dosing Regimen

- Traditional dosing is adequate for most SSTIs:
  - 1 gram or 15 mg/kg q12 hrs
- New regimen:
  - 15-20 mg/kg/dose ABW q8-12 hrs
  - Not to exceed 2 grams per dose
  - A loading dose of 25-30 mg/kg ABW in seriously ill patients
- Extend infusion period to 2 hrs if dose > 1 g
Take Home Points

- Nonpurulent cellulitis: Cover for MRSA in those with systemic toxicity
- Routine wound cultures not recommended
- Routine decolonization not recommended
- Traditional vancomycin dosing is adequate for most SSTIs
- Cover for MRSA in severe pneumonia

Intra-Abdominal Infections

- In general, direct empiric therapy towards:
  - Enterobacteriaceae & anaerobes
- Anaerobic therapy not indicated for acute cholecystitis
- Reserve anti-pseudomonal coverage for:
  - Severe infections, immunocompromised, or advanced age
- No need for routine MRSA coverage

* Clin Infect Dis. 2010;50:133-64. [2010 IDSA guidelines]*

Intra-Abdominal Infections

- Ampicillin-sulbactam not recommended
  - High rates of resistance among E. coli
- Cefotetan & clindamycin not recommended
  - High rates of resistance among B. fragilis
- Reserve aminoglycosides for patients allergic to β-lactams & quinolones

* Clin Infect Dis. 2010;50:133-64. [2010 IDSA guidelines]*
### Intra-Abdominal Infections
#### Outpatient Antimicrobial Therapy

- Mild diverticulitis, drained peri-rectal abscess
  - TMP/SMX DS *plus* Metronidazole
  - Amoxicillin/clavulanate (2 grams bid)
  - Cipro or Levofloxacin *plus* Metronidazole
  - Moxifloxacin
- High-degree of clinda resistance to *B. fragilis*
- Treat for 7-10 days


### Community-Acquired
#### Intra-Abdominal Infections in Adults

##### Mild-to-Moderate Severity

<table>
<thead>
<tr>
<th>Cefoxitin</th>
<th>Ertapenem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moxifloxacin</td>
<td>Tigecycline</td>
</tr>
<tr>
<td>Ticarcillin / clavulanic acid</td>
<td></td>
</tr>
<tr>
<td>Cefazolin, cefuroxime, ceftriaxone, or cefotaxime <em>plus</em> metronidazole</td>
<td></td>
</tr>
<tr>
<td>Ciprofloxacin or levofloxacin <em>plus</em> metronidazole</td>
<td></td>
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</tbody>
</table>

(*Clin Infect Dis.* 2010;50:133-64. [2010 IDSA guidelines])

### Community-Acquired
#### Intra-Abdominal Infections in Adults

##### High Risk or Severe

<table>
<thead>
<tr>
<th>Imipenem-cilastatin</th>
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</thead>
<tbody>
<tr>
<td>Meropenem</td>
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<tr>
<td>Piperacillin-tazobactam</td>
</tr>
<tr>
<td>Cefepime or ceftazidime <em>plus</em> metronidazole</td>
</tr>
<tr>
<td>Ciprofloxacin or levofloxacin <em>plus</em> metronidazole</td>
</tr>
</tbody>
</table>

(*Clin Infect Dis.* 2010;50:133-64. [2010 IDSA guidelines])
Take Home Points

- Intra-abdominal infections: Avoid routine use of anti-pseudomonal agents

UTI Clinical Practice Guidelines

Acute Cystitis

- Nitrofurantoin 100 mg bid x 5 days
- TMP/SMX DS bid x 3 days
- Fosfomycin 3 grams single dose
- Avoid fluoroquinolones as first-line agents
- Avoid oral β-lactams as first-line agents
- Avoid amoxicillin & ampicillin

Acute Pyelonephritis

- Obtain urine culture & susceptibility test
- Oral fluoroquinolones x 5-7 days
- Consider initial IV dose in ED
  - Fluoroquinolones; Ceftriaxone
  - Aminoglycosides; Ertapenem
- TMP/SMX DS bid x 14 days
- Avoid oral β-lactams as first-line agents

References:
- Arch Intern Med. 2007;167:2207-12. [Short course nitrofurantoin]
- JAMA. 2012;307:583-89. [Cefpodoxime for cystitis]
Take Home Points

- Use nitrofurantoin for 5 days as first-line agent for treatment of acute cystitis
- Use oral fluoroquinolones for 5-7 days as first-line agents for outpatient treatment of acute pyelonephritis
- Obtain urine culture & susceptibility testing in all patients with pyelonephritis

Treatment of Acute Otitis Media

- Randomized, double-blind, placebo-controlled
- Amox-clavulanate vs placebo x 10 days
- 291 patients 6-23 months of age
- Initial resolution of symptoms by day 2:
  - 35% amox-clavulanate vs 28% placebo
- Resolution of symptoms by day 7:
  - 67% with amox-clavulanate vs 53% placebo
- More diarrhea in abxs group: 25% vs 15%
  

- Randomized, double-blind, placebo-controlled
- Amox-clavulanate vs placebo x 7 days
- 319 patients 6-35 months of age
- Treatment failure: 19% abx vs 45% placebo
- More diarrhea in abxs group: 48% vs 27%
- Antibiotics reduced risk of treatment failure by 62% & need for rescue treatment by 81%

Acute Otitis Media in Children

<table>
<thead>
<tr>
<th>Age</th>
<th>Certain Dx</th>
<th>Uncertain Dx</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 6 months</td>
<td>Antibiotics</td>
<td>Antibiotics</td>
</tr>
<tr>
<td>6 mo – 2 yrs</td>
<td>Antibiotics</td>
<td>Abxs if severe</td>
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<tr>
<td></td>
<td></td>
<td>Observe if not</td>
</tr>
<tr>
<td>≥ 2 yrs</td>
<td>Abxs if severe</td>
<td>Observe</td>
</tr>
<tr>
<td></td>
<td>Observe if not</td>
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</tbody>
</table>

- Severe illness is defined as temperature ≥ 39°C in the past 24 hours or moderate-severe otalgia.

**Take Home Points**

- Antibiotics are recommended for patients less than 2 years of age with definite diagnosis of acute otitis media
- Treat acute otitis media at any age with temperature ≥ 39°C or moderate-severe otalgia