Welcome to the Missouri Antimicrobial Stewardship Educational Collaborative! (MASEC)

Kevin Hsueh MD

Assistant Professor of Medicine, Division of Infectious Diseases
Washington University School of Medicine
Co-Director of Antimicrobial Stewardship Barnes-Jewish Hospital
Associate Hospital Epidemiologist, Barnes-Jewish Hospital
Associate Medical Director for Infection Prevention, Washington University School of Medicine
Kevin.Hsueh@wustl.edu
Disclosures

• This webinar is supported by the Missouri Department of Health and Senior Services, with help from a Centers for Disease Control and Prevention Grant

• KH is a career hospital antimicrobial steward
• KH is also a recipient of occasional medical care
• KH a collaborator on an investigator initiated study of candidal infections funded by Astellas Pharmaceuticals
This is an Interactive Session!

MASEC uses Poll Everywhere for audience response.
Log in to PollEv.com/masec to begin.

Vote yes to confirm that Poll Everywhere is working for you!

Responses to surveys and polls will be recorded and used to generate and improve future webinar content.
Introductions: Washington University Team

- **Leadership:**
  - Kevin Hsueh MD
  - Michael Durkin MD MPH
  - Erin Rachmiel, PharmD BCPS

- **Project Coordinator:**
  - Tracey Habrock Bach

- **Physician Subject Experts:**
  - Jason Newland MD MEd (pediatrics)
  - Caline Mattar MD (resource-limited settings)
  - Jason Burnham MD MSC (MDROs)

- **Dissemination and Implementation Research Center**
  - Ginger McKay PhD
  - Meagan Pilar MPH
  - Stephanie Mazzucca PhD
State Mandate:

- Missouri Senate Bill 579:
  - Mandated that all hospitals and ambulatory surgical centers establish antimicrobial stewardship programs
  - Requires National Healthcare Safety Network (NHSN) reporting of Antimicrobial Use and Resistance by Stage III of CMS Meaningful Use
- Missouri has 164 hospitals
What Words Do You Associate With Successful Antimicrobial Stewardship
Goal:

- Successful Antimicrobial Stewardship
  - Implementation experience & experimentation
  - Subject matter expertise
  - Institutional support
Goal:

- Distribute Stewardship Expertise
- Allow for dissemination of successful practices
- Allow the DOH to assist where it can
Program Structure

• Monthly Case-Conference and Didactic Webinars

• Special Topical Webinars

• Topical FAQs and Other Literature

• Staffed MO.Stewardship@wustl.edu email
  • Send questions, future topics, challenging cases, and bounce ideas…
Monthly Case-Conferences

• Cases drawn from collaborative members

• Interactive

• Conference Structure
  • Presentation of a case
  • Discussion of approach & issues by content experts
  • Q&A with collaborative members
  • Short didactic on the topic
  • Useful handouts and educational materials
Special Topical Webinars

• Hour long seminars focused on a specific topic of significant concern/interest

• Topics
  • NHSN Antimicrobial Use and Resistance Module Reporting
  • Mandates from Government and Accrediting Bodies
  • Stewardship and Highly Resistant Organisms
  • Stewardship in Small Communities and Resource Limited Settings
<table>
<thead>
<tr>
<th>How would you rank your interest in the listed topics? (Highest Interest on Top)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHSN Antimicrobial Use and Resistance Reporting</td>
</tr>
<tr>
<td>Mandates from the Government and Accrediting Bodies</td>
</tr>
<tr>
<td>Stewardship and Highly Resistant Organisms</td>
</tr>
<tr>
<td>Stewardship in Small Community and Resource Limited Settings</td>
</tr>
</tbody>
</table>
FAQs and Informational Literature

• E-mailed out

• Will be freely available at our website (still in development)

• Focusing on topics discussed during the webinars or requested by collaborative members

• Currently available
  • What is Stewardship?
  • Double-Coverage with Antimicrobials

• Future topics…
  • You choose!
Write down any other topics of interest to you!
MO.Stewardship@wustl.edu

• Central point-of-contact for Stewardship or Collaborative questions

• Not for urgent/emergent clinical questions! (not a 24/7 consult service)

• Reasonable topic examples
  • Recommendations on approach
  • Challenges being faced
  • Topics for discussion
  • Challenging cases
  • Scientific questions
  • Help finding additional resources
  • Seeking advice/assistance from other collaborative members
  • Requests for template materials for pharmacists
    • e.g. IV to PO conversion MTS protocols, order sets for common conditions

• Staffed by Erin Rachmiel, PharmD BCPS
Example Case Discussion

Case Details: An 82 year old woman came to the hospital from home complaining of sudden onset abdominal pain

- Not febrile, she is normotensive and not tachycardic
- WBC of 20.1 (16% bands), Cr. 1.4
- She weighs 107lbs (48.5kg)
- CT Abdomen shows a thickened sigmoid colon with diverticuli and a possible enhancing fluid collection

- She is started on the following
  - IV vancomycin 1g q12h
  - IV meropenem 1g q8h
  - IV metronidazole 500mg q8h
What stewardship issues do you see here?
Expert Discussion

• Choice of Agents

• Agent Pharmacology

• Approach to the Physician

• Duration of Therapy

• Systemic Issues/Solutions
Expert Discussion

• **Choice of Agents**
  • Vancomycin probably not be needed
  • Meropenem and metronidazole double-cover anaerobic bacteria
  • Meropenem may be overly broad (depending on patient history)

• **Agent Pharmacology**
  • Vancomycin & meropenem are overdosed and overfrequent for this patient

• **Approach to the Physician**

• **Duration of Therapy/De-escalation**
  • Vancomycin should be stopped at 48h if no MRSA found
  • Meropenem should be de-escalated if patient improving/stable after 24-48h, duration of 5 days is typical.

• **Systemic Issues/Solutions**
  • Standardized treatment guidelines or ordersets
  • Renal dosing guidance or standardized adjustment
Common Pitfall: “More is Better”

• Common “Double Coverage” Scenarios
  • Use of two broad-spectrum gram-negative agents
    • Broad-spectrum beta-lactam:
      • Meropenem (Merrem™)
      • Piperacillin-tazobactam (Zosyn™)
      • Cefepime (Maxipeme™)
      • Ceftriaxone (Rocephin™)
    • Fluoroquinolone
      • Levofloxacin (Levaquin™)
      • Moxifloxacin (Avelox™)
      • Ciprofloxacin (Cipro™)
Common Pitfall: “More is Better”

- Duplicative coverage

<table>
<thead>
<tr>
<th>Anaerobes</th>
<th>Metronidazole</th>
<th>Meropenem</th>
<th>Pip-tazo</th>
<th>Amp-sulb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clostridial spp.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Peptostrep spp.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Bacteroides spp.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Prevotella spp.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Fusobacterium spp.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gram-negatives</th>
<th>Amp-sulb</th>
<th>Levofloxacin</th>
<th>Ceftriaxone</th>
<th>Pip-tazo</th>
<th>Cefepime</th>
<th>Meropenem</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. coli</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ESBL E. coli</td>
<td>?</td>
<td>?</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>K. pneumoniae</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ESBL K. pneumoniae</td>
<td>?</td>
<td>?</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>P. mirabilis</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ESBL P. mirabilis</td>
<td>?</td>
<td>?</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>P. aeruginosa</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>MDRO P. aeruginosa</td>
<td>?</td>
<td>?</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Common Pitfall: “More is Better”

- Most antibiotics are actually worse when used together on the same bugs

Common Pitfall: “More is Better”
• More antibiotics increase risk to patient

Risk of C.diff with Increasing Exposure to Antibiotic Types

Questions on the Case?
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yes</strong></td>
<td></td>
</tr>
<tr>
<td><strong>No</strong></td>
<td></td>
</tr>
</tbody>
</table>
Special Thanks To

Missouri Department of Health and Senior Services
• State Epidemiologist - George Turabelidze MD PhD

Missouri Hospital Association
• Alison Williams RN BSN MBA-HCM CPHQ
• Megan Griffith
Thanks Everybody For Attending! See You All Next Time!

Conference Feedback