Antibiotic Stewardship Beyond Hospital Walls

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OBJECTIVES
1. Review what Antibiotic Stewardship is for all transitions of care.
2. Review national mandates and guidelines.
3. Review new rapid diagnostic testing available to help with antibiotic stewardship.
4. Discuss how to reduce community Clostridium difficile with appropriate antibiotic stewardship principles.
5. Discuss how to educate other healthcare providers and patients on antibiotic stewardship principles.

Fast Facts
• Antibiotics are a shared resource and becoming a scarce resource.
• 30-50% of antibiotic use in hospitals is unnecessary or inappropriate.
• Antibiotic overuse contributes to the growing problems of Clostridium difficile infection and antibiotic resistance in healthcare facilities.
Fast Facts

• Reducing unnecessary antibiotic use can decrease antibiotic resistance, *Clostridium difficile* infections, and healthcare costs, and improve patient outcomes.

• Interventions to improve antibiotic use can be implemented in any healthcare setting—from the smallest to the largest.

• Improving antibiotic use is a medication-safety and patient-safety issue.

http://www.cdc.gov/getsmart/healthcare/evidence.html
What Is Antibiotic Stewardship?

• Program which promotes and monitors appropriate selection, dosing, route and duration of antimicrobial therapy.

• Primary Goals
  • Optimized clinical outcomes
  • Minimize unattended consequences of antimicrobial use
  • Toxicity
  • Selection of pathogenic organisms
    • (Clostridium difficile)
  • Emergence of resistance
Endorsed By Multiple National Organizations

- Infectious Disease Society of America
- Society of Health Care Epidemiology of America
- American Society of Health-Systems Pharmacists
- American Academy of Pediatrics
- Society for Hospital Medicine
- Pediatric Infectious Disease Society
- Society of Infectious Disease Pharmacists
- Infectious Disease Society for Obstetrics and Gynecology
- Center of Disease Control
- Institute of Health Care Improvement

Goals

- Slow the Development of Resistant Bacteria and Prevent the Spread of Resistant Infections
- Strengthen National One-Health Surveillance Efforts to Combat Resistance
- Advance Development and Use of Rapid and Innovative Diagnostic Tests for Identification and Characterization of Resistant Bacteria
- Accelerate Basic and Applied Research and Development for New Antibiotics, Other Therapeutics, and Vaccines
- Improve International Collaboration and Capacities for Antibiotic Resistance Prevention, Surveillance, Control, and Antibiotic Research and Development
CDC Core Elements for Antibiotic Stewardship

**Outpatient**
- **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 and reduce risk of antibiotic resistance.
- **Tracking and reporting:** Monitor antibiotic prescribing practices and offer regular feedback to clinicians and other stakeholders.

**Hospital**
- **Leadership Commitment:** Dedicate necessary human, financial, and information technology resources.
- **Accountability:** Appoint a single leader responsible for program outcomes. Experience with successful programs show that a physician leader is effective.
- **Drug Expertise:** Appoint a single pharmacist leader responsible for working to improve antibiotic use.
- **Action:** Implement at least one recommended action, such as systemic evaluation of ongoing treatment need after a set period of initial treatment (i.e., "antibiotic time out" after 48 hours).
- **Tracking:** Monitor antibiotic prescribing and resistance patterns.
- **Reporting:** Regularly report information on antibiotic use and resistance to doctors, nurses, and other relevant staff.

**Long Term Care (Nursing Homes)**
- **Leadership commitment:** Demonstrate support and commitment to safe and appropriate antibiotic use in your facility.
- **Accountability:** Appoint a single lead pharmacist or pharmacist leader who is responsible for promoting and overseeing antibiotic stewardship initiatives.
- **Drug Expertise:** Establish access to consultant pharmacists or other individuals with expertise in antibiotic stewardship.
- **Action:** Implement at least one policy or practice to improve antibiotic use.
- **Tracking:** Monitor at least one process measure of antibiotic use and at least one outcome from antibiotic use in your facility.
- **Reporting:** Provide regular feedback on antibiotic use and resistance to prescribing clinicians, nursing staff, residents, and families.
- **Education:** Provide educational resources to clinicians, nursing staff, residents, and families about antibiotic stewardship and opportunities for improving antibiotic use.
Outpatient Data Coming Soon

Frequency Of First-line Antibiotic Selection Among US Ambulatory Care Visits For Otitis Media, Sinusitis, And Pharyngitis

Hersh AL, Fleming-Dutra KE, Shapiro DJ, Hyun DY, Hicks LA, ... Published online October 24, 2016.


http://blogs.cdc.gov/safehealthcare/new-study-shows-many-patients-not-receiving-right-type-of-antibiotics/
Treatment Guidelines
New Community Acquired Pneumonia Guidelines Coming Summer 2017
Asymptomatic Bacteria

Antibiotic Dosing Appropriate For Indication

Sepsis
What needs to be done STAT?

IV access
IV fluids
Identify a infectious source
Obtain Cultures
Antibiotics

SCCM ANTIBIOTICS

Give with in the first hour

HOW? & Why?

Clinical Practice Guidelines for Cladastium difficile Infection in Adults: 2010 Update by the Society for Healthcare Epidemiology of America (SHEA) and the Infectious Diseases Society of America (IDSA)

Clinical Practice Guidelines for the Diagnosis and Treatment of Asymptomatic Bacteriuria in Adults

Clinical Practice Guidelines by the Infectious Diseases Society of America for the Treatment of Methicillin-Resistant Staphylococcus Aureus Infections in Adults and Children

Time is of the Essence

Example of Sepsis order set
Not an all inclusive indications & antibiotic list shown here

Rapid Diagnostic Testing

S. aureus/CNS PNA FISH®
- 90 min. identification and differentiation of S. aureus and CNS from GPCC-positive blood cultures
- Helps ensure earlier...
Film Array Multiplex Biofilm
Virology Testing and More

FilmArray Respiratory Panel
1 Test. 20 Respiratory Pathogens. All in about an hour.
How Do You Treat This and for How Long?

Andrew Naglich, PharmD PGY1 Resident 2014-2015
### Procalcitonin

**Bacteria**

<table>
<thead>
<tr>
<th>Species</th>
<th>Background</th>
<th>Initial Treatment</th>
<th>Procalcitonin Treatment (ICU &gt; 1 cm of age)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Nasopharynx and bone marrow infection</td>
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<tr>
<td></td>
<td></td>
<td>Hypersensitivity of infants or other patients</td>
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<td></td>
<td></td>
<td>Bloodstream infection</td>
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<td></td>
<td></td>
<td>Early-onset ventilator-associated pneumonia</td>
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<tr>
<td></td>
<td></td>
<td>Late-onset ventilator-associated pneumonia</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Other infections</td>
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</tbody>
</table>

**Procalcitonin**

- **Early-Onset**
  - Cerebral edema
  - Septic shock
  - Multisystem organ failure

- **Late-Onset**
  - Pneumonia
  - Sepsis
  - Septic shock

**Treatment Duration**

- **Early-Onset**
  - 2-3 days

- **Late-Onset**
  - 7-10 days

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### Procalcitonin

**DVT Respiratory Tract Treatment Guidelines**

<table>
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<tr>
<th>Species</th>
<th>Assignment</th>
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<th>Procalcitonin Treatment</th>
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### Procalcitonin

**SVH Medicals Endocrinology Panel Treatment Guidelines**

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**Figure 1. PCT Algorithm for Antibiotic Stewardship**

Control PCT after 6-8 h hours

- Initial antibiotic can be considered in cases if:
  - Respiratory or hemodynamic instability
  - Life-threatening complications
  - PCT ≥ 50 μg/L

If antibiotics are initiated:

- Measure PCT on day 3, 5, 7

Stop antibiotics until PCT is ≤ 2 μg/L or clinical improvement before returning to normal dose of PCT.

- PCT remains high, consider other infections:
  - Sputum or blood cultures
  - Alternative antibiotics

*Adapted from: WordPress.com, CDC guidelines on antibiotic use.*

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**Vaccines**

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**Routine Vaccine Schedule Compliance?**

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Tdap and Td Preventative Covered for Adults?

- Medicare Part B
  - Only cuts or injury

- Medicare Part D
  - Preventative
    - Tdap (Adacel or Boostrix)
    - Td (Tenvac)

Kansas Pharmacy Regulation for Vaccine Administration

- Current statute limits the administration of influenza vaccine to a person six years of age or older and may administer vaccine, other than influenza vaccine, to a person 18 years of age or older pursuant to a vaccination protocol....

http://kslegislature.org/li_2012/b2011_12/statute/065_000_0000_chapter/065_016_0000_article/065_016_0035a_section/065_016_0035a_k/

What Are You Or Your Organization(s) Doing To Promote Antibiotic Stewardship?
State Antibiotic Stewardship Programs


What Is Kansas Doing For ASP?
Kansas Healthcare-Associated Infections and Antimicrobial Resistance Advisory Committee

Kansas Healthcare-Associated Infections and Antimicrobial Resistance Advisory Work Items

• Value of regional antibiograms

• Reimbursement Issues

• Guidelines
  • Dental association antibiotic prophylaxis
  • Surgical prophylaxis
  • Duration of therapy

• Resources Needed

***Enterobacter cloacae Ceftriaxone result may cause inducible β-lactamase mediated resistance.
Kansas Healthcare-Associated Infections and Antimicrobial Resistance Advisory Work Items

- Value of regional antibiograms
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- Resources Needed
Education

- Pharmacists
- Providers
- Public

CDC Get Smart

https://www.cdc.gov/getsmart/index.html
PrePen Data

• CDC ASP Guidelines
  • Assess Penicillin Allergy To Ensure Optimal Antibiotic Use
  • CDC Reduce C Diff With Penicillin testing


Natalie Johnson, PharmD PGY1 Resident 2013-2014
ED Clinical Pharmacy Specialist
Reduce Proton Pump Inhibitor Use

Resources Needed

CDC
Antibiotic Stewardship


STORMONT VAIL HEALTH
Kansas Strategic Antibiotic Stewardship Pharmacy Meeting

2/27/2017
Kansas Pharmacy Antibiotic Stewardship Initiatives and Future Desires

- Pharmacist Vaccine programs
- Educating providers and other pharmacists
- Some hospitals providing discharge medication information to retail pharmacies
- Some pharmacies have access to hospital EMRs
- Discuss pharmacist may question if a patient needs an antibiotic and patient may have a virus. Concerns of pharmacist and provider relationship.
- Unable to access NHSN
- Some physicians are taking the ASP CDC pledge postmarking prescriptions and informing their patients they have a virus but not better in a few days to fill prescriptions
  - Discuss concern with that since patients may keep the prescription for another time and not go to their provider in the future

Kansas Strategic Antibiotic Stewardship Pharmacy Task Force

Workgroup

Questions?
References

- Society for Healthcare Epidemiology of America, Infectious Diseases Society of America and Pediatric Infectious Diseases Society. Policy Statement on Antimicrobial Stewardship by the Society for Healthcare Epidemiology of America (SHEA), the Infectious Diseases Society of America (IDSA), and the Pediatric Infectious Diseases Society (PIDS). Infection Control and Hospital Epidemiology Special Topic Issue: Antimicrobial Stewardship April 2012; 33(44): 322-327
- Dellit TH et al. IDSA and the Society of Healthcare epidemiology of American guidelines for developing an institutional program to enhance antimicrobial stewardship. CID 2007; 44:159-77.
- Cohen SH et al. Clinical Practice Guidelines for Clostridium Difficile Infection in Adults: 2010 Update by the Society of Healthcare Epidemiology of America (SHEA) and Infectious Disease Society of America (IDSA) Infect Control Hosp Epidemiol 2010; 31(5):431-455
- OpenBiome http://www.openbiome.org