Antibiotic Stewardship Programs: The Secret of Getting Ahead is Getting Started

HRET HIIN Antimicrobial Stewardship
June 1, 2017
Emily Koebnick, Program Manager, HRET

WELCOME AND INTRODUCTIONS
<table>
<thead>
<tr>
<th>Time</th>
<th>Session/Panel</th>
<th>Speaker(s)</th>
</tr>
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| 11:00 – 11:10 a.m. | Welcome                                                                       | Emily Koebnick, MPH, MPA  
Program Manager, HRET |
|              | Open and housekeeping information  
Objectives:  
• Describe purpose of Antibiotic Stewardship Program (ASP)  
• Discuss innovative approaches to ASP by facilities with no or limited infectious disease resources  
• Identify a small test of change to jumpstart or accelerate your ASP |  
| 11:10 – 11:15 a.m. | Introduction                                                                   | Barb DeBaun, RN, MSN, CIC  
Steve Tremain, MD, FACPE  
Improvement Advisors, Cynosure Health |
|              | Brief introduction and overview of ASP                                         |  
| 11:15 – 11:45 a.m. | Hospital Panel/Discussion                                                      | Kevin Dumas, PharmD, BCPS, BCCP  
Mylinda Dill, PharmD  
Jefferson Regional Medical Center, Pine Bluff, AR  
Stephanie Justice, PharmD, BCPS  
St. Claire Regional Medical Center, Morehead, KY |
|              | Highlights of success from three facilities who have a pharmacist-driven ASP |  
| 11:45 a.m. – 11:50 a.m. | Bring it Home                                                                 | Emily Koebnick, MPH, MPA  
Program Manager, HRET |
|              | Review resources and future education                                          |  

Polling Question

How did you hear about today’s virtual event?

A. HRET HIIN flyer
B. HRET HIIN website
C. HRET LISTSERV
D. State hospital association
E. QIN-QIO
F. Your organization/colleague
G. Other, please specify.
Polling Question

My primary role is:

A. Infection Preventionist
B. Quality Improvement
C. Pharmacy
D. Administration
E. Physician
Barb DeBaun, RN, MSN, CIC
Steve Tremain, MD, FACPE
Improvement Advisors, Cynosure Health

ANTIBIOTIC STEWARDSHIP
Yesterday’s Headline News

Thanks to PENICILLIN
...He Will Come Home!
Today’s Headline News

- Single most important factor
- Most commonly prescribed drugs
- 50% not needed or inappropriately prescribed
- Commonly used in food animals
Antibiotic Resistance Impact

• More than 2 million people in the US every year
• At least 23,000 deaths
Antibiotic Stewardship: Purpose

Promotes appropriate use of antimicrobials by selecting the appropriate agent, dose, duration and route of administration.
Antimicrobial Stewardship

Percent of Hospitals with Antibiotic Stewardship Programs by State, 2015*

Nationally, 48.1% of all hospitals have stewardship programs (2,199 of 4,549); the national goal is 100% of hospitals by 2020.

*A hospital stewardship program is defined as a program following all 7 of CDC’s Core Elements of Hospital Antibiotic Stewardship Programs.

Source: CDC’s National Healthcare Safety Network (NHSN) Survey

GET SMART
Know When Antibiotics Work

HRET
Health Research & Educational Trust

American Hospital Association
Polling Question

Our antibiotic stewardship program is:

A. Not on our radar
B. Just getting started
C. Gaining momentum
D. Firing on all cylinders
Polling Question

My average daily census is:

A. >500
B. 300-499
C. 150-299
D. 75-149
E. 25-74
F. <25
EP 4 – Hospital has ASP multidisciplinary team that includes (when available):

- Infectious Disease Physician
- Infection Preventionist
- Pharmacist
- Practitioner
Where are you?
Site Specific Self Assessment

- Conduct self assessment
- What is in place? Where are the gaps?
- Next actions?
- How can we work with current resources?
- What else do we need?
Kevin Dumas, PharmD, BCPS, BCCP  
Bridgton Hospital, Bridgton, ME  

Mylinda Dill, PharmD  
Jefferson Regional Medical Center, Pine Bluff, AR  

Stephanie Justine, PharmD, BCPS  
St. Claire Regional Medical Center, Morehead, KY
Bridgton Hospital, ME
Stated Goal

Develop a pharmacist directed daily assessment that improves antimicrobial utilization and meets CMS standards for Antimicrobial Stewardship for inpatients at Bridgton Hospital

Framework

A daily workflow and tool that provides a baseline for antimicrobial review but is also the foundation for implementation of specific interventions or data collection moving forward
Utilized SMART Goals to Develop an Achievable and Sustainable Process

**Specific, Measurable, Achievable, Realistic and Time-limited**

- **S**: Perform daily antimicrobial assessment including indication, antibiotic selection, targeted narrowing of empiric therapy, 48hr time out and duration of therapy.
- **M**: Document indication, antimicrobial start date/time, 48hr time-out completed and targeted therapy and duration for all antimicrobial regimens.
- **A**: Ensure the process allows the above to occur within the current workflow as much as possible. **Relationship building and education with providers and other disciplines is key!**
- **R**: Track specific patient parameters that are able to be assessed and documented within the constraints of daily workflow and staffing.
- **T**: Limit the assessment to 15-20 minutes of pre-meeting preparation and the duration of morning meeting to achieve goals.
Antimicrobial Data Reported Monthly (To Start)

- Total patient encounters receiving antimicrobials
- Antimicrobial time-out at 48 hours
- Antimicrobial indications
  - Not based on “admission reason” or indication selected in CPOE by provider but what we actually treated
- Fluoroquinolone DOT per 1,000 patient days
  - System-wide goal to decrease quinolone use for certain indications
- Pharmacist documented intervention types
Pharmacist Documented Intervention Types

Antimicrobial Intervention Data – 1/01/17 – 3/31/17

Antimicrobial Stewardship:

• 48-hour documentation review: 117
• Vancomycin/Aminoglycoside monitoring: 24
• Antimicrobial de-escalation: 10
• Targeted therapy (culture/resistance): 7
• Appropriate therapy (empiric): 4
• Appropriate therapy (dosing): 5
• Antimicrobial duration based on indication: 7
  » Total 174
  » Total (not 48hr time-outs) 57
  » Total patients receiving Abx 155
Next steps

• Continue to document indication, antimicrobial start date/time, 48 hour time-out completed and targeted therapy and duration for all antimicrobial regimens.

• Report results on a monthly basis to pharmacy-and-therapeutics and the regional ASP meetings.

• Use the daily assessment workflow to determine areas for antimicrobial utilization improvement to improve outcomes and limit antimicrobial resistance.

• Further utilize pharmacist documentation and interventions to assess treatment regimens and durations with a focus on SSTI, CAP, HCAP/HAP, UTI and *C. diff.*
Antimicrobial Stewardship Program

My Motto:

START
WHERE YOU ARE.
USE WHAT YOU HAVE.
DO WHAT YOU CAN.

-ARThUR ASHE
Antimicrobial Stewardship Program

Leadership

- No ID physician – no problem
- Pharmacist/hospitalist co-leading program
- Identify administration’s priorities and align with them
  - Prove value by showing how your activities benefit the hospital’s priorities
  - JRMC priority includes HIIN

Enhance Current Activities

- PK monitoring
  - Assess for discontinuation of antibiotic
- Infection Control Nurse Partner
  - Positive cultures robot report originally distributed to infection control only
    - Distributed to pharmacy, AHEC (medical residency program), hospitalists
  - C. diff. positive patients
    - Lab pages infection control
    - Infection control emails me
      - Mini RCAs to investigate antibiotic use
      - Call primary care physician if present on admission
    - Future: notes to accompany lab results
## Positive Cultures Robot Report

### Positive Cultures previous 24 hours

<table>
<thead>
<tr>
<th>Acct#</th>
<th>Admit</th>
<th>Name</th>
<th>curloc</th>
<th>Order Item</th>
<th>orderdtm</th>
<th>observation dtm</th>
<th>Item</th>
<th>text</th>
<th>status</th>
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<td>2</td>
<td>5/27/2017 3:52:00 PM</td>
<td>2 NE-</td>
<td>5/27/2017 4:37:46 PM</td>
<td>Urine Culture</td>
<td>5/30/2017 10:45:44 AM</td>
<td>Enterobacter cloacae (ENTCL)</td>
<td><strong>RESF</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 CW</td>
<td>5/28/2017 5:50:00 PM</td>
<td>3 CW</td>
<td>5/28/2017 5:20:13 PM</td>
<td>Urine Culture</td>
<td>5/30/2017 11:08:16 AM</td>
<td>Escherichia coli (EC)</td>
<td><strong>RESF</strong></td>
<td></td>
<td></td>
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<tr>
<td>3 NE</td>
<td>5/27/2017 9:35:00 AM</td>
<td>3 NE</td>
<td>5/26/2017 2:06:22 PM</td>
<td>Wound/Abcess Culture</td>
<td>5/30/2017 8:29:41 AM</td>
<td>Yeast Species - No Definitive ID</td>
<td><strong>RESF</strong></td>
<td></td>
<td></td>
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<tr>
<td>3 NE</td>
<td>5/27/2017 9:39:00 AM</td>
<td>3 NE</td>
<td>5/26/2017 2:06:22 PM</td>
<td>Wound/Abcess Culture</td>
<td>5/30/2017 8:29:41 AM</td>
<td>Staphylococcus capitis subsp. ureolyticus (STACAU)</td>
<td><strong>RESF</strong></td>
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Future

• Clinical Surveillance Tool Implementation
  – Automate antibiogram
  – Automate CDC’s NHSN AUR Module reporting
  – Remove/reduce paperwork
  – Streamline pharmacist workflow
  – Target patients requiring interventions
    • Work with hospitalists to prioritize interventions
St. Claire Regional Medical Center

159 bed rural community teaching hospital

- Largest rural hospital in Northeastern Kentucky

Half-million patient encounters annually

Clinical pharmacy services

- Inpatient
  - Pharmacokinetic dosing/monitoring
  - Interdisciplinary team rounding
Protected Antibiotics

- Daptomycin
- Ertapenem
- Linezolid
- Meropenem
- >3 days of piperacillin/tazobactam
Prospective Data

Antimicrobial Stewardship Study: Prospective Data
August 2016 to February 2017

<table>
<thead>
<tr>
<th>Medication</th>
<th>Total</th>
<th>Indicated</th>
<th>Not indicated</th>
<th>Changed per pharmacy recommendation</th>
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</thead>
<tbody>
<tr>
<td>Meropenem</td>
<td>60</td>
<td>32</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Pip/tazo</td>
<td>80</td>
<td>32</td>
<td>20</td>
<td>23</td>
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<tr>
<td>Ertapenem</td>
<td>12</td>
<td>7</td>
<td>5</td>
<td>3</td>
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<tr>
<td>Linezolid</td>
<td>19</td>
<td>11</td>
<td>8</td>
<td>5</td>
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<tr>
<td>Daptomycin</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
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American Hospital Association
# Primary Objective Results

<table>
<thead>
<tr>
<th></th>
<th>Retrospective</th>
<th>Prospective</th>
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<tbody>
<tr>
<td>Antibiotic Indicated</td>
<td>151 (27.3%)</td>
<td>85 (48.6%)</td>
</tr>
<tr>
<td>Antibiotic Not Indicated</td>
<td>402 (72.7%)</td>
<td>90 (51.4%)</td>
</tr>
<tr>
<td>Total</td>
<td>553</td>
<td>175</td>
</tr>
</tbody>
</table>

P-value <0.001
<table>
<thead>
<tr>
<th></th>
<th>Systemic Gram Negative Rods</th>
<th>Total isolates</th>
<th>Amikacin</th>
<th>Cefepime</th>
<th>Ciprofloxacin</th>
<th>Levofloxacin</th>
<th>Meropenem</th>
<th>Piperacillin/Tazobactam</th>
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</thead>
<tbody>
<tr>
<td>2015</td>
<td>Ps. Aeruginosa</td>
<td>38</td>
<td>92</td>
<td>84</td>
<td>66</td>
<td>63</td>
<td>87</td>
<td>97</td>
</tr>
<tr>
<td>2016</td>
<td>Ps. Aeruginosa</td>
<td>36</td>
<td>94</td>
<td>89</td>
<td>75</td>
<td>72</td>
<td>94</td>
<td>100</td>
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Future Directions

- Further develop St. Claire’s Antimicrobial Stewardship Program
  - Indication field required for all antibiotics
  - Implementation of automatic stop dates for antibiotics
  - Eventual restriction of fluoroquinolone use
  - Reduction of hospital *C. diff* rates
Polling Question

Based upon what I have heard today, I am:
A. More likely mobilize my team towards developing an ASP
B. Neutral mobilize my team towards developing an ASP
C. Less likely mobilize my team towards developing an ASP
Time to open lines and talk
Emily Koebnick, Program Manager, HRET

BRING IT HOME
Next Steps
• HRET HIIN ASP Change Package coming soon!

C. Difficile Transmission and Infection Change Package is available now!
Jump Start Stewardship: Implementing Antimicrobial Stewardship in a Small, Rural Hospital
CDI Resources - LISTSERV

• Join the LISTSERV®
  – Ask questions
  – Share best practices, tools and resources
  – Learn from subject matter experts
  – Receive follow up from this event and notice of future events
Thank You!

Find more information on our website:
www.hret-hiin.org

Questions or Comments: HIIN@aha.org