Building your Antibiotic Stewardship Program
Phase 2:
Actions to Support Optimal Antibiotic Use

ASP, C. difficile and MDROs

July 12th, 2017
3:00-4:00pm
# Agenda

<table>
<thead>
<tr>
<th>Topic</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>Welcome and Introductions</td>
<td>NYSPFP Staff</td>
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<td>Review of ASP in HIIN</td>
<td>NYSPFP Staff</td>
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<tr>
<td>• Rapid Cycle Improvement Phase 2</td>
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<td>• Gap Analysis</td>
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<tr>
<td>Rapid Cycle Improvement - Actions to Support Antibiotic Use</td>
<td>David P. Calfee, MD, MS</td>
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<td>Waleed Javaid, MD, FACP, FIDSA</td>
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<td>Teresa Lubowski, Pharm.D., B.S.</td>
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<td>Hospital Questions and Discussion</td>
<td>Hospital Participants</td>
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<td>Facilitated by NYSPFP Staff</td>
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<tr>
<td>Tools and Resources/Next Steps</td>
<td>NYSPFP Staff</td>
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GOAL:
• Implement an antibiotic stewardship program (ASP)
• Reduce hospital multi-drug resistant organism (MDRO) infection and *Clostridium difficile* Infection (CDI) by 20%, from a 2015 baseline

OBJECTIVES
• Hospitals will implement all elements of the Centers for Disease Control’s (CDC) “Core Elements of Antibiotic Stewardship Programs” as part of the hospital’s ASP program by September 2018
• Reduce CDI by 20% by September 2018
• Reduce MDRO infections, particularly MRSA, by 20% by September 2018
Rapid Cycle Improvement Projects

<table>
<thead>
<tr>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
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<tr>
<td>• Leadership commitment</td>
<td>• Actions to support optimal antibiotic use</td>
<td>• Tracking and monitoring antibiotic prescribing, use, and resistance</td>
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<td>• Accountability</td>
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<td>• Reporting information on improving antibiotic use and resistance</td>
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<td>• Drug expertise</td>
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Education of Clinicians and Patients and Families
NYSPFP Tools and Resources

Gap analysis

Action planning tool
CDC Core Elements/NQF
ASP/C. difficile/MRSA Process Measure Survey
Results: Actions to Support Abx Use (Q2 2017)

Actions to Support Optimal Antibiotic Use: Policies

Does your facility have facility-specific treatment recommendations, based on national guidelines and local susceptibility, to assist with antibiotic selection for common clinical conditions?

- Yes: 94% (N=87)

Does your facility have a policy that requires prescribers to document in the medical record or during order entry a dose, duration, and indication for all antibiotic prescriptions?

- Yes: 66% (N=87)

% responding "Yes"
CASP/C. difficile/MRSA Process Measure Survey Results: Actions to Support Abx Use (Q2 2017)

Actions to Support Optimal Antibiotic Use:
Broad Interventions

- Does a physician or pharmacist review courses of therapy for specified antibiotic agents (i.e., prospective audit with feedback) at your facility? 91%
- Do specified antibiotic agents need to be approved by a physician or pharmacist prior to dispensing (i.e., pre-authorization) at your facility? 83%
- Is there a formal procedure for all clinicians to review the appropriateness of all antibiotics 48 hours after the initial orders (e.g. antibiotic time out)? 41%

% responding "Yes"

N=87
**ASP/C. difficile/MRSA Process Measure Survey Results: Actions to Support Abx Use (Q2 2017)**

**Actions to Support Optimal Antibiotic Use:**
Are the following actions implemented in your facility?

- **Dose adjustments in cases of organ dysfunction?**
  - 92% responding "Yes"

- **Dose optimization (pharmacokinetics/pharmacodynamics) to optimize the treatment of organisms with reduced susceptibility?**
  - 86% responding "Yes"

- **Automatic alerts in situations where therapy might be unnecessarily duplicative?**
  - 75% responding "Yes"

- **Time-sensitive automatic stop orders for specified antibiotic prescriptions?**
  - 64% responding "Yes"

- **Automatic changes from intravenous to oral antibiotic therapy in appropriate situations?**
  - 64% responding "Yes"
**ASP/C. difficile/MRSA Process Measure Survey Results: Actions to Support Abx Use (Q2 2017)**

**Actions to Support Optimal Antibiotic Use:**
Does your facility have specific interventions in place to ensure optimal use of antibiotics to treat the following common infections?

<table>
<thead>
<tr>
<th>Infection Type</th>
<th>% Responding “Yes”</th>
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<tbody>
<tr>
<td>Surgical prophylaxis</td>
<td>93%</td>
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<tr>
<td>Community-acquired pneumonia</td>
<td>85%</td>
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<tr>
<td>Urinary tract infection</td>
<td>74%</td>
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<tr>
<td>Skin and soft tissue infections</td>
<td>68%</td>
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<tr>
<td>Culture-proven invasive (e.g., blood stream) infections</td>
<td>66%</td>
</tr>
<tr>
<td>Empiric treatment of Methicillin-resistant Staphylococcus aureus (MRSA)</td>
<td>63%</td>
</tr>
<tr>
<td>Non-C. difficile infection (CDI) antibiotics in new cases of CDI</td>
<td>56%</td>
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N=87
Implementing Core Element 4: Actions to Support Optimal Antibiotic Use

David P. Calfee, MD, MS
Waleed Javaid, MD, FACP, FIDSA
Teresa Lubowski, Pharm.D., B.S.
FAQ 1: We don’t know where to start to support prescriber's optimal antibiotic use – Help!

- Optimal antibiotic use is driven by
  - Microbiology data
  - Formulary drug selections
  - Physician knowledge and comfort with certain antibiotics
  - Computerized vs paper order entry
  - Availability of order sets
  - Engagement from leadership, both hospital and prescriber
  - Availability of reference material, like guidelines, online searchable references etc.
Strategies include

- **Pre-prescription interventions:**
  - Display of selective antibiotic information in culture results
  - Formulary drug selections
  - Order sets making it easier to use optimal antibiotics
  - Add indication field in EMR
  - Add mandatory entry for duration of therapy in EMR

- **Post-prescription interventions:**
  - Prospective review and audit utilization
  - IV-PO conversion
  - Evaluation of duration of therapy based on indication
FAQ 2: We don’t have an ID physician to help us develop hospital-specific guidelines based on local susceptibility data – what should we do?

- Hospital or Facility specific guidelines do not require ID physician
- ASP team members, pharmacy champion and microbiology lab champions can review pathogen or condition specific guidelines and review their hospital microbiology sensitivity data to determine most appropriate empiric antibiotic therapy
FAQ 2: (cont.)

- **Steps**
  - Identify a syndrome – for this example we will use Urinary track infection (UTI)
  - Identify the most common pathogen - causing the (UTI) in most cases, it will be E. Coli
  - Review the antibiogram from microbiology lab, preferably with the help of microbiology stewardship champion
  - List antibiotics that E.coli has > 80% sensitivity, in most cases, this will include cefazolin, nitrofurantoin, Bactrim and ciprofloxacin
  - Among the list of antibiotics, select ones with narrowest spectrum, (e.g. nitrofurantoin, cefazolin)
  - Develop guidance for empiric therapy based on above sensitivity data, and patient factors (nitrofurantoin can not be used in patients with renal insufficiency)
FAQ 2: (cont.)

Identify a syndrome
- For this example we will use Urinary tract infection

Identify the most common pathogen
- For urinary tract infection, in most cases it will be E.coli
- Microbiology Lab can help in identifying the pathogen

Review the antibiotic susceptibility data
- List antibiotics that the pathogen has > 80% sensitivity
- 80% is arbitrary cutoff

Select antibiotics with narrowest spectrum
- Nitrofurantoin
- Cefazolin

Consider patient specific issues
- For example: nitrofurantoin should not be used inpatients with renal failure
- Patients may be allergic to beta lactams

Develop guidance based on above factors and severity of illness
- For example:
  - Cystitis > you may consider nitrofurantoin
  - Pyelonephritis > consider antibiotic that is effective in renal parenchyma, like ceftriaxone
FAQ 3: What is the standardized antimicrobial administration ratio (SAAR) and how could it be helpful?

**SAAR:**
Generated from the NHSN Antimicrobial Use and Resistance (AUR) module: requires submission of antibiotic administration data from eMAR or bar coding medication record (BCMA).

A metric to analyze and report antimicrobial use data in summary form.

Calculated by dividing observed antimicrobial use (number of days of antimicrobial therapy) by predicted antimicrobial use.

Constructed using indirect standardization where predicted antimicrobial use days are based on nationally aggregated antimicrobial use data.
FAQ 3: (cont. )

SAARs are generated for five specific antimicrobial groupings.¹

- Broad spectrum antibacterial agents predominantly used for hospital-onset/multidrug resistant infections
- Broad spectrum antibacterial agents predominantly used for community-acquired infections
- Anti-MRSA agents
- Antibacterial agents predominantly used for surgical site infection prophylaxis
- All antibacterial agents

SAARs are calculated separately for adult and pediatric units and wards.

¹ CDC guide to standardized antimicrobial administration ration table : https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/aur/au-qrg-saartables.pdf
FAQ 3: (cont.)

SAARs could helpful to provide to providers and antimicrobial stewardship teams because:

They can provide a mechanism to track changes in antimicrobial use over time and assess changes associated with ASP interventions.

- Example: a new program to reduce unnecessarily long courses of surgical antibiotic prophylaxis

They may help to identify groups of antibiotics that are being excessively prescribed or patient locations in which antibiotic administration is excessive.

NOTE: it is important to understand what an individual SAAR value does and does not mean (e.g., an SAAR >1 does not always mean that antibiotic use is inappropriate).
FAQ 3: (cont.)

<table>
<thead>
<tr>
<th>Helpful Resource</th>
<th>Resource</th>
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</table>
FAQ 4: How can we implement processes to review antibiotics prescribed after 24-72 hours?

Core ASP team interventions

- Case reviews at 24-72 hours
  - Drugs initially approved by ASP for empiric use
  - Patients with common infectious syndromes (e.g., CAP, UTI)
  - Electronic reports of antibiotic orders >24-72 hours in duration
  - Surveillance software
FAQ 4: (cont.)

Take advantage of other available resources:

- Prescribers, clinical pharmacists, bedside nurses
  - Antibiotic “time-outs”
- Electronic medical record
  - Electronic reminders
  - Clinical decision support
  - Stop orders
FAQ 5: How can we implement processes to review antibiotics prescribed after 24-72 hours? (Cont.)

Helpful Resources:

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Resource</th>
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<tbody>
<tr>
<td></td>
<td><a href="https://med.stanford.edu/cme/courses/online/optimizing-antimicrobial-therapy.html">https://med.stanford.edu/cme/courses/online/optimizing-antimicrobial-therapy.html</a></td>
</tr>
<tr>
<td>ASP implementation guidelines</td>
<td><a href="http://www.idsociety.org/Antimicrobial_Agents/">http://www.idsociety.org/Antimicrobial_Agents/</a></td>
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<tr>
<td>(IDSA and SHEA)</td>
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FAQ 6: Do you have a sample protocol for IV to PO Conversion?

<table>
<thead>
<tr>
<th>Resource</th>
<th>Stanford Medicine-Inclusion/Exclusion Criteria</th>
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<tbody>
<tr>
<td></td>
<td><a href="http://med.stanford.edu/bugsanddrugs/guidebook.html">http://med.stanford.edu/bugsanddrugs/guidebook.html</a></td>
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<table>
<thead>
<tr>
<th>Resource</th>
<th>SHEA (Guidelines and Worksheet)</th>
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<tr>
<td></td>
<td><a href="https://www.shea-online.org/index.php/practice-resources/priority-topics/antimicrobial-stewardship/implementation-tools-resources">https://www.shea-online.org/index.php/practice-resources/priority-topics/antimicrobial-stewardship/implementation-tools-resources</a></td>
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<tr>
<th>Resource</th>
<th>New York Presbytarian Hospital- Criteria</th>
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<td><a href="http://www.cumc.columbia.edu/dept/id/documents/IVtoPOPoli">http://www.cumc.columbia.edu/dept/id/documents/IVtoPOPoli</a> cyUpdate5-4-11.pdf</td>
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<tr>
<th>Resource</th>
<th>University of Rhode Island-Candidates and Contraindications</th>
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FAQ 6: What information should we be providing to patients and families on antimicrobials? Do you have any examples of materials that hospitals are using?

- Antibiotic Stewardship Patient Education Topics - CDC Get Smart
  - Resistance
  - C-Difficile
  - MRSA
  - How to Dispose of Medications
  - Infection specific information
# FAQ 6: (cont.)

<table>
<thead>
<tr>
<th>Useful Resources</th>
<th>Sample Patient Education Material</th>
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<tbody>
<tr>
<td>University of Rochester - Urinary Tract Infection <a href="https://www.urmc.rochester.edu/encyclopedia/content.aspx?contenttypeid=85&amp;contentid=P01497">Link</a></td>
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<tr>
<td>CDC Staying Safe in the Hospital <a href="https://www.cdc.gov/drugresistance/protecting_yourself_family.html">Link</a></td>
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<tr>
<td>C-Difficile - Peggy Lillis Foundation <a href="http://peggyfoundation.org/c-diff-101/cdiff-101/">Link</a></td>
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<tr>
<td>CDC Resistance <a href="https://www.cdc.gov/getsmart/community/about/antibiotic-resistance-faqs.html">Link</a></td>
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## FAQ 6: (cont.)

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<thead>
<tr>
<th>Useful Resources</th>
<th>FDA- Drug Disposal-&lt;br&gt;<a href="https://www.fda.gov/forconsumers/consumerupdates/ucm101653.htm">https://www.fda.gov/forconsumers/consumerupdates/ucm101653.htm</a></th>
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<tr>
<td></td>
<td>University of Pittsburgh Medical Center-MRSA Patient Education-&lt;br&gt;<a href="http://www.upmc.com/patients-visitors/education/infection-control/Pages/mrsa.aspx">http://www.upmc.com/patients-visitors/education/infection-control/Pages/mrsa.aspx</a></td>
</tr>
<tr>
<td>Sample Patient Education Material</td>
<td>CDC MRSA Information for Patients-&lt;br&gt;<a href="https://www.cdc.gov/mrsa/healthcare/patient/index.html">https://www.cdc.gov/mrsa/healthcare/patient/index.html</a></td>
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### Other Useful Resources

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<thead>
<tr>
<th>Resource description:</th>
<th>Resource</th>
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<tr>
<td>The Sanford Guide to Antimicrobial Therapy 2016</td>
<td><a href="http://www.sanfordguide.com/">http://www.sanfordguide.com/</a></td>
</tr>
<tr>
<td>The critical role of the staff nurse in antimicrobial stewardship</td>
<td><a href="https://academic.oup.com/cid/article/62/1/84/2462624/The-Critical-Role-of-the-Staff-Nurse-in">https://academic.oup.com/cid/article/62/1/84/2462624/The-Critical-Role-of-the-Staff-Nurse-in</a></td>
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Additional resources and information are available from the NQF Playbook:
http://www.qualityforum.org/Publications/2016/05/National_Quality_Partners_Playbook__Antibiotic_Stewardship_in_Acute_Care.aspx
Other Useful Resources

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<tr>
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Questions and Hospital Discussion
Next Steps

- **Save the Date:**
  - NSYPFP ASP July Coaching Call
  - Wednesday, July 19, 3:00 – 3:30 p.m.

- **Watch for NYS Partnership for Patients announcements and upcoming events in your inbox**
  - Hospitals participating in the RCIP will receive information on the monthly coaching call for July and August
  - Alert your NYSPFP PM if you would like to/continue to receive information on the coaching call

- **Work with PM to complete the gap analysis and action plan if not completed, and review additional tools available on the NYSPFP website**