Implementing Change for Best Practices in Antimicrobial Stewardship

Susan Davis, PharmD

Disclosures

- Dr. Davis has served on advisory boards for Allergan, The Medicines Company and Zavante.
- This presentation will not discuss commercial products or services or off-label indications of any drug products.
Learning Objectives

• At the end of this lecture, the learner will be able to:
  - List strategies for encouraging expansion of antimicrobial stewardship programs (ASPs) in healthcare systems
  - Describe how to perform an institutional self-assessment of ASP needs, strengths, and limitations
  - Explain how to prioritize program development objectives, metrics and timelines
  - Identify key administrators and resources to implement plans

Stewardship is Key to Patient Safety

• Antibiotic resistance is a serious public health threat
• CDC estimates that antibiotic-resistant bacteria cause more than 2 million illnesses and about 23,000 deaths annually
• Use and misuse of antibiotics contributes to antibiotic resistance

### US Regulatory Landscape

- September 2015: Presidential executive order on combating antibiotic resistance
- March 2015: 5-year National Action Plan for Combating Antibiotic Resistant Bacteria
- July 2017: The Joint Commission antimicrobial stewardship standard (MM.09.01.01)

### The purpose of an ASP

<table>
<thead>
<tr>
<th>General ASP Purpose</th>
<th>What is the purpose of your ASP?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Optimize clinical outcomes while minimizing unintended consequences of antimicrobial use</td>
<td></td>
</tr>
<tr>
<td>– Toxicity</td>
<td></td>
</tr>
<tr>
<td>– Selection of pathogenic organisms</td>
<td>• To improve outcome?</td>
</tr>
<tr>
<td>– Emergence of resistant pathogens</td>
<td>• To reduce resistance?</td>
</tr>
<tr>
<td></td>
<td>• To improve safety?</td>
</tr>
<tr>
<td></td>
<td>• To minimize cost?</td>
</tr>
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</table>

Clinical Infectious Diseases 2016; 62(10):1-27
Strategic Planning
it’s not as bad as it sounds

• Why?
  – To foster growth, engage stakeholders who can dedicate resources
  – To guide performance measures

• General Suggestions
  – Small vs large, have an engaged group
  – Homework already completed
  – Away from the distractions of the office
  – Refreshments are an enticement to show up

Elements of a Strategic Plan

• Mission – what your ASP does
• Vision – what you want the ASP to do in the future
• Values – behaviors and beliefs influencing practice
• Analysis – SWOT or other
• Goals – clarify the vision
• Strategic Objectives – to achieve the goals
  – Action plans – initiatives, projects, programs
  – Resources & accountability - needed for implementation
  – Measures and timelines – how do you know if it worked
Strategic Planning
make sure it’s useful

• Don’t spend all of your time word-smithing
• Remember that design of a plan is just the beginning
• The focus should be on the strategy (your initiatives), not the plan itself (organized list of your initiatives)
• Engage more than just the “leaders”

Who is on the team?

Stewardship Team

Nursing
Infection Control/Hosp Epi
Microbiology
Informatics
Quality/Safety
Pharmacy
Infectious Diseases
Other Medical, Surgical staff

Dellitt TH et al. Clin Infect Dis 2007;44:159-77
Some Processes Used in Planning

<table>
<thead>
<tr>
<th>SWOT Analysis</th>
<th>Gap Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Strengths, Weaknesses, Opportunities, Threats</td>
<td></td>
</tr>
<tr>
<td>- Evaluates a program (more often a company) versus competitors</td>
<td>- Shorter term goals</td>
</tr>
<tr>
<td>- Longer term planning</td>
<td>- Can be made simple and focus on a single process within the group</td>
</tr>
<tr>
<td>- Comprehensive, big picture</td>
<td>- Compare current status to a best practice or goal to be achieved</td>
</tr>
<tr>
<td>- Contrast with <strong>SOAR</strong> analysis</td>
<td></td>
</tr>
<tr>
<td>- Strengths, opportunities, aspirations, results</td>
<td></td>
</tr>
</tbody>
</table>

You can start with either. But they should refer back and inform each other.

Think Big Picture with a SWOT Analysis

- **Strengths**
  - Positive
  - Advantages the ASP has over other alternatives
  - Internal
- **Opportunities**
  - External
  - Trends external to ASP e.g. institutional enterprise, that can be exploited for the ASP
- **Weaknesses**
  - Negative
  - Areas known to need improvement
- **Threats**
  - External factors that potentially threaten the ASP or its overall goals
What are the SWOTs affecting the implementation or expansion of your ASP?

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Opportunities</th>
<th>Threats</th>
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<td></td>
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</table>

CDC Core Elements for Stewardship

- Leadership Commitment
- Drug Expertise
- Tracking
- Education
- Accountability
- Action
- Reporting

CDC = Centers for Disease Control and Prevention
The Joint Commission
Elements of Performance

- Organizational priority
- Patient & Family Education
- Drug & Disease Protocols
- Collect & Analyze Data
- Annual Staff Education
- Multidisc. Team
- CDC Core Elements
- Quality Improvements

Example Framework for ASP Strategic Objectives

- Leadership establishes ASP as organizational priority
- Annual staff education on resistance and stewardship
- Patient and family education on antimicrobial use
- ASP multidisciplinary team in place
- ASP uses approved protocols
- ASP collects and analyzes data
- ASP acts on quality improvement opportunities

CDC = Centers for Disease Control and Prevention; TJC = The Joint Commission
Self Assess with a Gap Analysis

<table>
<thead>
<tr>
<th>Strategic Objective: (list example here)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Status</strong></td>
</tr>
<tr>
<td>List what you currently CAN do with existing resources. Is there a metric used?</td>
</tr>
</tbody>
</table>

Your plan so far

- **SWOT analysis**
  - You can describe how the ASP fits in with big picture institutional framework

- **Strategic Objectives**
  - Gap analysis identified major areas for focus

- **How do we populate the plan with appropriate initiatives ("action plans") to achieve the objectives?**
Need ideas?

- National Quality Forum Antibiotic Stewardship Playbook
  - Compiled from over 30 groups
  - Provides suggestions for implementation of the core elements
  - Discusses common barriers and solutions


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### Core Element 1. Leadership Commitment

<table>
<thead>
<tr>
<th>Basic</th>
<th>Intermediate</th>
<th>Advanced</th>
</tr>
</thead>
</table>
| • Board-issued statement on importance of ASP  
• Salary support for ASP leaders | • ASP outcomes included in facility-level strategic dashboard  
• ASP included in quality and safety reporting | • Prioritize funding for ASP IT support  
• Create financial incentives for departments to improve antibiotic use |
### Core Element 2. Accountability

<table>
<thead>
<tr>
<th>Level</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>• Identify physician and pharmacy leaders for ASP</td>
</tr>
<tr>
<td>Intermediate</td>
<td>• Ensure ASP leaders have specific training in antibiotic stewardship</td>
</tr>
<tr>
<td>Advanced</td>
<td>• Establish metrics on appropriate antibiotic use for annual performance reviews for key leaders</td>
</tr>
</tbody>
</table>


### Core Element 3. Drug Expertise

<table>
<thead>
<tr>
<th>Level</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>• Ensure documented pharmacy leader with expertise in ID, stewardship</td>
</tr>
<tr>
<td>Intermediate</td>
<td>• Provide training programs in antibiotic stewardship for a pharmacy leader</td>
</tr>
<tr>
<td>Advanced</td>
<td>• Engage and train other pharmacy staff in antibiotic use, incorporate into broader practice model</td>
</tr>
</tbody>
</table>

### Core Element 4. Actions

<table>
<thead>
<tr>
<th>Basic (system-based)</th>
<th>Intermediate (patient-specific)</th>
<th>Advanced (disease-specific)</th>
</tr>
</thead>
</table>
| • Implement policy for formulary restriction/authorization | • Establish antibiotic timeout process  
• Dosing and IV/PO guidelines  
• Audit and feedback of target drugs | • Implement rapid diagnostics or biomarkers  
• Implement evidence-based disease state care bundles |


### Core Element 5. Tracking and Monitoring

<table>
<thead>
<tr>
<th>Basic</th>
<th>Intermediate</th>
<th>Advanced</th>
</tr>
</thead>
</table>
| • Adherence to institutional guidelines  
• Acceptance rate for ASP interventions | • Resistance for pathogens of interest  
• C. difficile infections  
• readmission | • Antibiotic utilization  
• Standardized antibiotic administration ratio (SAAR) – NQF endorsed measure |

### Core Element 6. Reporting

<table>
<thead>
<tr>
<th>Basic</th>
<th>Intermediate</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Reporting of ASP measures for key committees, staff meetings, web-based reports</td>
<td>• Reports include suggestions for improvements</td>
<td>• Distribute provider-level feedback</td>
</tr>
<tr>
<td></td>
<td>• Participate in public reporting</td>
<td>• Implement a real-time analytics dashboard</td>
</tr>
<tr>
<td></td>
<td>• Present unit-specific data to unit staff</td>
<td></td>
</tr>
</tbody>
</table>


### Core Element 7. Education

<table>
<thead>
<tr>
<th>Basic</th>
<th>Intermediate</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Integrate ASP messages in routine institutional communication (blogs, websites, newsletters)</td>
<td>• Provide targeted in-person or web-based training</td>
<td>• Establish ASP curriculum in provider education and training</td>
</tr>
<tr>
<td></td>
<td>• Educate prescribers on antibiotic resistance data</td>
<td>• Develop patient education materials</td>
</tr>
</tbody>
</table>

Antimicrobial stewardship, not just for inpatient services

Core Elements – For Nursing Homes

- Leadership Commitment
- Accountability
- Drug Expertise
- Action
- Tracking
- Reporting
- Education

Core Elements – Outpatient Settings

- **Commitment**
- **Action for Policy and practice**
- **Tracking and Reporting**
- **Education and expertise**


Prioritizing Stewardship Targets

*Tailored to your practice*

<table>
<thead>
<tr>
<th>Institution Characteristics</th>
<th>Priorities</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Academic medical center</td>
<td>• High cost drugs</td>
</tr>
<tr>
<td>• Community hospital</td>
<td>• High utilization drugs</td>
</tr>
<tr>
<td>• Multi-hospital system</td>
<td>• Length of stay</td>
</tr>
<tr>
<td>• Long term care population</td>
<td>• Duration of therapy</td>
</tr>
<tr>
<td>• Pediatric population</td>
<td>• Readmission</td>
</tr>
<tr>
<td>• Outpatient settings</td>
<td>• <em>C. difficile</em></td>
</tr>
<tr>
<td></td>
<td>• Other problem pathogens</td>
</tr>
<tr>
<td></td>
<td>• IV/PO conversion</td>
</tr>
</tbody>
</table>
A Team-Based Brainstorming Activity

You will need...
• Your people
• Small sticky notes, markers
• A wall or bulletin board
• A big prioritization matrix

Instructions:
Distribute sticky notes to your team members
Ask participants to write down (1 per sticky note) the Problems, Projects, and Pet Peeves they think the ASP should address in the next 2 to 3 years.
Each team member does this independently.
Encourage ALL ideas.

Populate the prioritization matrix. Each team member should stick their post-its where they think they belong on the scale of Impact and Passion.

Su AJ. How to prioritize your work when your manager doesn’t. Harvard Business Review 1/24/2017, hbr.org
Don’t forget metrics for your initiatives

• Useful to have *process measures* in addition to *outcome measures*
• Encourage stewardship to become routine part of antibiotic use process and quality/safety reporting
• Help get attention of administration and secure support for stewardship expansion
Examples of reporting measures should be specific to your intervention

- Drug use
  - Aggregate or individual antibiotic use
  - Standardized Antibiotic Administration Ratio (SAAR)
- Microbiology
  - Resistance patterns
  - *C. difficile*
- Disease-specific
  - “Appropriate” selection dose, duration
  - Length of stay for common infections

Challenges with Metrics

- Clinical Outcomes, Resistance
  - Time consuming
  - Difficult to impact with small targeted interventions
- Drug Use and Cost
  - Days of Therapy (DOTs), other measures
  - Antimicrobial use reporting is being considered as CMS condition of participation
  - Do we care about “use” or “appropriateness”?  
  - Cost is not compelling to most clinicians

CMS = Centers for Medicare and Medicaid Services
I have a plan, now what?

• Who can approve resources?
• Who can facilitate policy development?
• Who are your champions outside the ASP?

• Implementation isn’t about the plan
  it’s about deploying the strategies

The Science of Diffusion of Innovation

• Three basic clusters of influence
  • **Perceptions** of the innovation
    • Benefit, compatibility, simplicity, “trial-ability”, and observability
  • **Context**
    • Communication, incentives, information technology (IT), leadership, management
  • Characteristics of the **people** who adopt the innovation (or fail to do so)

Berwick D. *JAMA* 2003;289:1969-75
Adopter categorization on the basis of innovativeness

Adventurous, tolerate risk, fascinated with novelty (may not be opinion leaders, aka: physician maverick)

Innovators (2.5%)

Early adopters (13.5%)

Early majority (34%)

Late majority (34%)

Laggards (16%)


Time to Adoption (SDs from Mean)

SD = standard deviation

Incorporating change theory into your ASP

<table>
<thead>
<tr>
<th>Rule #</th>
<th>Rule description</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Find sound innovations</td>
<td>If your ASP stewardship team is the ‘early innovators’, give them the resources to make good decisions</td>
</tr>
<tr>
<td>2</td>
<td>Find and support innovators</td>
<td>Provide time and resources for innovators to seek out new ideas (travel, professional meetings). Remember, innovators may not be the easiest individuals to deal with.</td>
</tr>
<tr>
<td>3</td>
<td>Invest in early adopters</td>
<td>Get these champions on your committees!</td>
</tr>
<tr>
<td>4</td>
<td>Make early adopter activity observable</td>
<td>This is better done through a social network than formal processes (curbside consult)</td>
</tr>
<tr>
<td>5</td>
<td>Trust and enable reinvention</td>
<td>All innovations will require new local processes requiring reinvention of the innovation.</td>
</tr>
<tr>
<td>6</td>
<td>Create slack for change</td>
<td>Don’t expect immediate results. Allow champions protected time.</td>
</tr>
<tr>
<td>7</td>
<td>Lead by example</td>
<td>Leaders must be prepared to begin change with themselves.</td>
</tr>
</tbody>
</table>

My plan is approved. Now what?

• Don’t lose sight of the plan.
• Build it into subcommittee agenda items
• Have an annual review until it’s outdated.
• Carry on with the daily business of the ASP

Barriers to an efficient workflow

• Deficiencies in IT infrastructure
  – Alerts or scoring tools should be integrated into electronic health record

• Misplaced alert-based stewardship
  – Insensitive alerts – miss needed interventions
  – Unspecific alerts – spend time reviewing low-impact problems
  – Alert fatigue

• Lack of two-way communication
  – How do you communicate with the primary team?
  – Who is responsible for follow-up?
Examples of daily activities

• Microbiology review
  – Culture follow-up in the emergency department
  – De-escalation based on known pathogen
• Syndrome-based review
  – C. difficile optimization of therapy
  – Asymptomatic bacteriuria
• Drug-based review
  – Formulary restrictions, criteria
  – Duration of therapy

Prioritize the Priorities

• Must do tasks:
  – Patients at high risk for bad outcomes (e.g. bug-drug mismatch, C. difficile)
  – regulatory or administrative requirements
• Should do tasks:
  – impact on patient outcome is indirect or minor
  – impact on program objectives is smaller
• If time allows tasks:
  – little impact on your objectives or can delegate
Summary

- Antimicrobial stewardship is a fundamental component of patient safety
- Designing and implementing a plan can help your ASP stay on track and build support
  - Analyze your program and environment
  - Identify important long term objectives
  - Brainstorm ASP initiatives that excite your team
- Use your plan to inform daily priorities

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