How to Eradicate Antibiotic Overuse

Implementing an Antibiotic Stewardship Program in a Resource-Limited Environment
1. Understanding the Urgency—and the Challenge

2. Establishing an Effective ASP in Resource-Limited Settings

3. Questions and Answers
Bacterial Resistance a Real and Growing Threat

Clinically Dangerous—and Costly Too

- **2M**
  Estimated number of people infected annually with antibiotic-resistant organisms in the U.S.

- **23,000**
  Estimated number of U.S. deaths annually due to antibiotic-resistant infections

- **$20B**
  High-end estimate of direct health care costs due to antibiotic resistance

“\[quote\]
The use of antibiotics is the single most important factor leading to antibiotic resistance around the world.\[quote\]

*Centers for Disease Control and Prevention*
Antibiotic Overuse the Primary Culprit

Clear Opportunity to Improve Antibiotic Therapy in Hospitals

20-50%
Proportion of antibiotic use in the U.S. estimated to be unnecessary or inappropriate

80%
Proportion of 505 hospitals studied by CDC and Premier that had inappropriate or redundant use of antibiotic combinations from 2008-11

Significant Variability within the Crimson Cohort

Vancomycin use for APR-DRG 720 (Septicemia and Disseminated Infections), 2014


1) N = 727 hospitals; minimum number of cases per hospital = 20.

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Many Hospitals Not Yet Responding

More Than Half Lack Robust Stewardship Programs

"Antimicrobial stewardship is a coordinated program that promotes the appropriate use of antimicrobials (including antibiotics)."

– Association for Professionals in Infection Control and Epidemiology

Hospitals that had an antibiotic stewardship program (ASP) incorporating all seven “core elements” identified by CDC

CDC’s Core Elements of ASPs

✓ Leadership commitment from administration
✓ Single leader responsible for outcomes
✓ Single pharmacy leader
✓ Antibiotic use tracking
✓ Regular reporting on antibiotic use, resistance
✓ Educating providers on use and resistance
✓ Specific improvement interventions

Sizing the Opportunity

22-36% Estimated reduction in antibiotic use due to hospital ASP efforts

Regulatory Action May Change the Dynamic

Pushed by White House, Agencies Creating New ASP Requirements

Executive Order 13676—Combatting Antibiotic-Resistant Bacteria

September 18, 2014

“…By the end of calendar year 2016, HHS shall review existing regulations and propose new regulations or other actions, as appropriate, that require hospitals and other inpatient healthcare delivery facilities to implement robust antibiotic stewardship programs that adhere to best practices, such as those identified by the CDC.”

New Mandates Looming

Officials confirm they expect to propose that antibiotic stewardship be a condition of participation in Medicare by 2017

NQF working with CDC to establish new antibiotic stewardship performance measures, for implementation within the next two to five years

No Shortage of Guidance for How to Build an ASP

Industry Groups Offer Plenty of Recommendations

CDC Provides Comprehensive Overview of Stewardship Requirements

Topics Covered

- Data on why antibiotic stewardship matters
- Leadership, governance, and support
- Potential interventions
- Guidance for monitoring ASP impact
- Options for physician education
- Emerging developments in stewardship

Just a Small Sample of Other Groups Offering Guidance for ASPs

- Infectious Diseases Society of America
- Society for Healthcare Epidemiology of America
- American Society of Health System Pharmacists
- The Joint Commission
- Agency for Healthcare Research and Quality
- American Hospital Association
- Greater New York Hospital Association
- California Department of Public Health

Source: CDC, Core Elements of Hospital Antibiotic Stewardship Programs, 2015, available at www.cdc.gov/getsmart/healthcare/implementation/core-elements.html; Crimson Continuum of Care interviews and analysis
Key Challenge for Many: Limited Resources

Guidance Based Mainly on What Works in AMCs, Other Large Facilities

A Limited Sample Set

“Most of our data [on how to do antibiotic stewardship effectively] comes from large urban hospitals. We have no idea what really works in a smaller hospital.”

Dr. Eddie Stenehjem, medical director of antimicrobial stewardship at Intermountain Healthcare, who is helping lead a randomized trial on stewardship at smaller facilities

Resources that Big Hospitals Have—and Community Hospitals Often Don’t

- Ample availability of infectious disease specialists to guide ASP development
- Robust, trained pharmacy staff to carry out stewardship day to day
- Access to best-in-class technology to advance stewardship efforts
- Performance improvement Infrastructure to implement a range of interventions

Research Examines Three Key Challenges

1. **Leadership and Governance**
   - Where do ASPs truly need physician leaders? What if you lack physicians with relevant training?
   - Do you need a formal ASP oversight committee too?

2. **Intervention Selection**
   - Given resource limitations, how do you select between potential stewardship opportunities?
   - What interventions do ASPs most commonly pursue?

3. **Impact Measurement**
   - How do you gauge ASP success and opportunities with limited data?
   - What performance metrics do “average” ASPs most commonly monitor?

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**Research in Brief: Antibiotic Stewardship Programs**
- Conducted qualitative interviews with leaders of ASPs at 10 hospitals of different sizes, system affiliation status
- Conducted quantitative survey of 418 hospitals participating in quality-focused Advisory Board research and technology programs

**Source:** Crimson Continuum of Care interviews and analysis.
1. Understanding the Urgency—and the Challenge

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Infectious Disease Physicians Seen as Ideal Leaders

Challenge #1: Leadership and Governance

In Reality, Many Programs Pharmacist-Led

Pharmacy Leaders Responsible for Driving Day-to-Day Activities

Typical Pharmacist Role in ASP

Leadership Activities
- Sets agenda for committee meetings
- Compiles, monitors utilization data, resistance trends
- Identifies intervention opportunities
- Coordinates with other relevant staff

Daily Activities
- Monitors prescriptions, cultures to flag patient cases requiring antibiotic changes
- Interfaces with prescribers on restricted drugs, therapeutic recommendations
- Carries out other ASP interventions

The Eyes and Ears of an ASP

“Pharmacists are like the senses of the ID physician. They are the ones trolling the data, looking for opportunities, suggesting interventions, and moving things along.”

Infectious disease pharmacist
Physicians Play an Important But More Limited Role

Shape, Champion ASP Initiatives; Interface with Prescribers

Typical Physician Leader Role in ASP

Leadership Activities
• Consults with ASP pharmacist leader on stewardship data, initiatives
• If hospital maintains an ASP committee, attends or leads regular meetings
• Educates peers about ASP work to secure physician buy-in

Other Activities
• Intervenes as needed with frontline physicians who are skeptical of pharmacy-driven recommendations
• Consults on more clinically complex cases

What If We Don’t Have Any ID Physicians?
• Research contacts agree having an on-the-ground physician champion is important for understanding local physician culture
• However, it need not be an ID specialist; other good champion candidates include:
  • Hospitalists
  • Intensivists
  • Physician executive (e.g., CMO)
• Can supplement with ID-specific support from outside experts—though unclear whether this is truly necessary; likely depends on training of in-house staff, hospital culture

Source: Crimson Continuum of Care interviews and analysis.
Do You Need a Formal ASP Committee Too?

Some Don’t Have One, But Emerging Requirements May Change That

Typical ASP Committee in Brief

Departments represented
- Pharmacy
- Infectious diseases
- Quality improvement
- Infection prevention/epidemiology
- Information technology
- Laboratory
- Nursing
- Other relevant clinical groups (e.g., hospitalists)

Responsibilities
- Meet regularly (e.g., monthly/bimonthly) to review data, ongoing and potential interventions
- Provide additional support to ASP as needed (e.g., helping to analyze data, engage physicians, implement process changes)

Survey respondents who have established an ASP steering committee\(^1\); for those who have not, typically due to lack of resources or perceived lack of need

July 1, 2015
Date that California began requiring hospitals to have a physician-supervised multidisciplinary antimicrobial stewardship committee

76%

\(^1\) N = 311

Source: Crimson Continuum of Care interviews and analysis.
Many Opportunities to Improve Stewardship

Range of Initiatives for Hospitals to Choose Between

Suggestions for ASP Interventions

Policies to Support Optimal Antibiotic Use
- Documentation of dose, duration, and indication
- Facility-specific treatment guidelines

Broad Interventions
- Antibiotic “time-outs” (review of therapy by provider team 48 hours post-initiation)
- Prior authorization of targeted medications
- Prospective audit and feedback (review of therapy by expert other than treating team)

Pharmacy-Driven Interventions
- Automatic changes from IV to oral therapy
- Dose adjustments in case of organ dysfunction (renal dosing)

Pharmacy-Driven Interventions, Con’t
- Dose optimization
- Automatic alerts when therapy may be duplicative
- Automatic stop orders
- Detection of drug-drug interactions

Infection and Syndrome-Specific Interventions
- Community-acquired pneumonia
- Urinary tract infections
- Skin and soft tissue infections
- Empiric coverage of MRSA
- Clostridium difficile infections
- Culture-proven invasive infections

Unlikely You’ll Be Able to Do it All

Intervention Selection Depends on Hospital Resources, Culture

CDC Itself Recommends a Limited Approach

“Choose interventions based on the needs of the facility as well as the availability of resources and content expertise; stewardship programs should be careful not to implement too many interventions at once.”

CDC, “Core Elements of Hospital Antibiotic Stewardship Programs”

Factors Influencing Hospital Choice of Stewardship Interventions

**Human Resources**
How many staff and providers are available to help with stewardship activities? Where are they located? What is their training?

**Technology Resources**
What pharmacy-related IT systems do you have access to? How can you leverage them to automate stewardship day-to-day?

**Physician Culture**
How well do your physicians trust your pharmacists? How likely are physicians to accept treatment recommendations or follow prescribing guidelines?
Little Similarity Between Profiled Programs

When You’ve Seen One ASP, You’ve Seen One ASP

A Sampling of Programs Interviewed for Research

<table>
<thead>
<tr>
<th>Institution</th>
<th>Primary Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital A</td>
<td>• Active antimicrobial formulary management</td>
</tr>
<tr>
<td>130-bed community hospital</td>
<td>• Prospective audit and feedback carried out by pharmacist</td>
</tr>
<tr>
<td>Hospital B</td>
<td>• Prospective audit and feedback carried out by physician-pharmacist dyad</td>
</tr>
<tr>
<td>200-bed children’s hospital</td>
<td></td>
</tr>
<tr>
<td>Hospital C</td>
<td>• Infection-specific prescribing guidelines for fever/neutropenia, pneumonia, skin &amp;</td>
</tr>
<tr>
<td>350-bed children’s hospital</td>
<td>soft-tissue</td>
</tr>
<tr>
<td></td>
<td>• Automatic IV to PO conversion</td>
</tr>
<tr>
<td>Hospital D</td>
<td>• Automatic stop orders after 7 days</td>
</tr>
<tr>
<td>450-bed community teaching hospital</td>
<td>• Prior authorization required for broad-spectrum antibiotics</td>
</tr>
<tr>
<td></td>
<td>• 48-hour time-outs conducted by pharmacy resident</td>
</tr>
</tbody>
</table>

Source: Crimson Continuum of Care interviews and analysis.
Finding the Common Themes in Others’ Experience

Five Tips for Where to Focus When Resources Are Limited

1. Concentrate on the most impactful drugs and pathogens

2. Limit antibiotic access in the first place

3. Fully leverage your existing pharmacy staff

4. Automate as much as you can

5. Strengthen stewardship among frontline physicians

Source: Crimson Continuum of Care interviews and analysis.
1. Identify the most problematic drugs and pathogens

Assess Your Hospital’s Biggest Opportunity Areas

Local Patterns Help Tailor Deployment of Stewardship Resources

Common Places to Look for Stewardship Opportunities

- **National Targets**
  Drugs and pathogens seen as high-risk for all hospitals—e.g., broad-spectrum antibiotics, *Clostridium difficile*.

- **Local Utilization**
  Overuse of any antibiotic can breed resistance; do your physicians use particular drugs frequently?

- **Local Cost Trends**
  Are you using drugs with less expensive alternatives? (Though some caution that drug shortages can make antibiotic prices volatile)

- **Local Infection Rates**
  High-volume infections can make good intervention targets; common targets include pneumonia, skin and soft tissue infections

What About Local Bacterial Resistance?

Since bacterial sensitivity patterns do not change frequently, many hospitals reported using the antibiogram primarily as an annual check on overall impact of ASP, rather than an ongoing source of new interventions.

Source: Crimson Continuum of Care interviews and analysis.
The Most Common Drug/Bug Targets

Though Local Patterns Will Vary, Survey Highlights Themes

Most Commonly Targeted Drugs

\[ n = 278 \]

- Carbapenems: 78.1%
- Lipopeptides/daptomycin: 64.4%
- Oxazolidinones-linezolid: 54.3%
- Fluoroquinolones: 51.4%
- Glycopeptides/vancomycin: 48.2%
- Antifungals: 46.0%
- Piperacillin-tazobactam: 43.2%
- Cephalosporins (3rd-generation): 28.1%
- Monobactams/aztreonam: 24.5%
- Cephalosporins (2nd-generation): 12.6%
- Lincosamides/clindamycin: 12.2%
- Macrolides: 10.4%

1) Doripenem, imipenem, ertapenem, meropenem.
2) Ciprofloxacin, moxifloxacin, levofloxacin.

Source: Crimson Continuum of Care Antibiotic Stewardship Survey, 2015
The Most Common Drug/Bug Targets, Con’t

Though Local Patterns Will Vary, Survey Highlights Themes

Most Commonly Targeted Pathogens

\( n = 277 \)

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clostridium difficile</td>
<td>76.2%</td>
</tr>
<tr>
<td>Staphylococcus aureus/MRSA</td>
<td>61.0%</td>
</tr>
<tr>
<td>Enterobacteriaceae(^1)</td>
<td>43.0%</td>
</tr>
<tr>
<td>Enterococci/VRE/ E. faecium</td>
<td>42.2%</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>35.7%</td>
</tr>
<tr>
<td>Acinetobacter/ A. baumanii</td>
<td>23.8%</td>
</tr>
</tbody>
</table>

1) E. coli, Klebsiella, extended-spectrum b-lactamase-producing organisms.

Source: Crimson Continuum of Care Antibiotic Stewardship Survey, 2015

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Formulary Management the Backbone of Any ASP

Take a Principled Approach to Antibiotic Availability

**Minimal Investment: Stronger Scrutiny of Antibiotics for Formulary Inclusion**

- Requests for new antibiotics must go through ASP committee for review
- Committee assesses whether drug offers new benefits over existing formulary choices
- ASP then makes recommendation to larger P&T committee for formal approval or rejection

**More Intensive Option: Ongoing Formulary Restriction**

*Formulary Restriction in Brief*

- Access to high-value medications (e.g., broad-spectrum antibiotics) limited to designated physicians only
- Requests for medication from other providers must be approved by pharmacy staff

**Case in Brief: Tidelands Health**

- Two-hospital system in South Carolina
- With limited ID physician resources, has focused on formulary management

**Should You Use This Strategy?**

- Only feasible if your pharmacists or physicians have time to manage requests for access to restricted therapies
- Many research contacts did not maintain restricted formularies

Source: Crimson Continuum of Care interviews and analysis.
Enlisting Unit Pharmacists for Therapy Review

Unit-Based “Prospective Audit” a Common Strategy Heard in Research

1. Physician starts antibiotic treatment empirically (i.e., based on educated guess before culture results return)

2. Decentralized pharmacists on each unit review treatment for appropriateness once lab information is available

3. If needed, pharmacist offers recommendations for treatment adjustment to prescribing physician

What Pharmacists Look For in Review

- “Drug-bug” mismatches
- Patients ready to switch from IV to oral therapy
- Potential to switch to lower-value antibiotic
- Recommended dose adjustments (e.g., due to renal failure)
- Other de-escalation opportunities

Most research contacts report that physicians accept pharmacist recommendation more than 95% of the time

Source: Crimson Continuum of Care interviews and analysis.
Customizing the Strategy to Fit Each Hospital

Questions to Ask in Implementing Post-Facto Therapy Review

Should we review all antibiotics or just a subset?
- Some hospitals just ask pharmacists to review drugs determined to be high-value by ASP (e.g., broad-spectrum antibiotics, high-cost medicines)
- Reviewing more medications leads to more thorough audit, but requires more staff time

Can our pharmacists change therapy without permission?
- At some facilities, pharmacists able to make certain adjustments without physician approval, based on pre-established clinical rules
- Most common “automatic” changes are IV to PO conversion, renal dose adjustment
- Makes review more efficient, but requires high degree of physician trust; most hospitals contacted for research did not allow

Do we have other staff we could leverage instead?
- While unit pharmacists most common reviewers, other options surfaced in research
- Example 1: Pharmacy residents
- Example 2: Dyad of central pharmacy leader and (unusually engaged) infectious disease physician
- Example 3: Centralized night shift pharmacists (with assist from IT system that runs 24/7 to flag drug adjustment opportunities)

Source: Crimson Continuum of Care interviews and analysis.
Another Reason to Consider Retrospective Checks

Does CMS Survey Imply They May Become Required?

ASP Questions in Most Recent CMS Infection Control Survey

The hospital has…
- Written policies and procedures whose purpose is to improve antibiotic use
- Designated a leader responsible for program outcomes of antibiotic stewardship activities at the hospital
- Policies and procedures that require practitioners to document an indication for all antibiotics, as well as other required elements such as dose and duration
- A formal procedure for all practitioners to review the appropriateness of antibiotics 48 hours after initial order
- Processes to monitor antibiotic use (consumption) at the unit and/or hospital level

- No hospital contacted for research asks physicians to do antibiotic “time-outs” themselves
- Unclear whether more common model in which ASP team reviews therapy and provides feedback to treating provider would be sufficient to meet a time-out requirement from CMS

Source: AHC Media, “CMS sets the table for regulation requiring antibiotic stewardship programs,” February 23, 2015; Crimson Continuum of Care interviews and analysis.
4. Automate as much as you can

Stewardship Made Easier by Technology…

…Though Hospitals May Be Thwarted by Local Barriers to IT Use

Sample Automation Opportunities

- Invest in IT system that can flag de-escalation or adjustment opportunities in real time
- Add “automatic stops” to ordering system, requiring active physician approval to continue antibiotics after set time period
- Embed pop-up alerts in ordering system that flag potential problems with particular drugs or suggest alternatives

Potential Barriers to Use

- Cost of IT investment may be prohibitive, especially for smaller hospitals
- For hospitals within larger health system, changes to CPOE may impact all, requiring (harder to obtain) system-level commitment
- Overuse of pop-ups can lead to “alert fatigue,” requiring judicious use of this strategy

Source: Crimson Continuum of Care interviews and analysis.
5. Strengthen stewardship among frontline physicians

Expect Physician Engagement to Build Over Time

Repeated Exposure to ASP Efforts Ultimately Pays Off

**Strategies to Engage Physicians in Stewardship**

*Regular Individual Feedback:* ASP team reviews 36 targeted antibiotics daily, provides recommendations to frontline physicians.

*Didactic Education:* ASP publishes monthly “pearls” to educate physicians on key topics (e.g., when to call the ASP vs. an infectious disease consult).

*Positive Reinforcement:* ASP leaders publicly praise physicians who de-escalate therapy ahead of recommendations.

> “As we’ve moved forward in our program, we’ve been intervening less and less because providers know we’re watching and are doing the right thing ahead of time. It’s almost like a game that creates a competitive thing for them, whether they can beat us. And we’re fine with that.”

*Christie Van Dyke,*
*Clinical Pharmacy Specialist*

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**Case in Brief: Helen DeVos Children’s Hospital**

- 236-bed children’s hospital based in Grand Rapids, MI; part of Spectrum Health
- ASP started in January 2013; co-led by pharmacy leader and ID physician

Source: Crimson Continuum of Care interviews and analysis.
Some Hospitals Developing Diagnosis-Specific Prescribing Pathways

Main Benefit of Guidelines: Reduced Resource Use Through Scale

- Allows hospitals to disseminate expert recommendations widely, rather than relying on daily expert availability
- Improves ASP efficiency by reducing variation in prescribing patterns from the start, rather than fixing problems after the fact

“Diagnosis-specific treatment guidelines give you expert recommendations on a mass scale.”

ASPL leader, Canary Hospital

Many ASPs Moving This Direction

83%

Surveyed ASPs that report guidelines development as a stewardship strategy

Hospitals that did not actively pursue guidelines cited physician resistance as main barrier; felt that convincing physicians to use guidelines would not be worth the effort

1) Pseudonym.
2) N = 283.

Source: Crimson Continuum of Care interviews and analysis.
Antibiotic Pathways Can Be Created Without Major Investment

Guideline Development Process

- ASP leader (0.5 FTE pharmacist) reviews clinical literature to develop guideline
- First guideline took roughly three months to build; later efforts have taken less time
- ID physician champion (0.2 FTE) provides feedback on guideline
- Additional physician champions from relevant clinical areas also offer feedback, help engage frontline providers

Focus Stays on High-Volume, High-Value Diagnoses

Guidelines developed to date for:

- Fever and neutropenia (selected due to link with C. difficile, found mainly in hospital’s hematology-oncology unit)
- Pneumonia (high-volume diagnosis)
- Skin and soft-tissue infections (high-volume diagnosis, involves both inpatient and ambulatory care)

Case in Brief: Canary Health System¹

- Two-hospital system based in the Midwest
- ASP started in September 2013; pharmacist leader works across both campuses
- Creation of diagnosis-specific treatment guidelines the primary focus for ASP

¹) Pseudonym.
Winning Physician Buy-In for Guideline Use

Key Steps to Antibiotic Guideline Acceptance at Canary Health

**Demonstrate Clear Expertise**
By developing guideline from review of primary literature (rather than borrowing another hospital’s guideline), ASP leader can easily explain guideline rationale

**Enlist Physician Champions**
Presentation of guideline to frontline physicians supported by ID physician, champions from within relevant clinical groups to respond to any concerns

**Make the Guideline Easy to Use**
Guidelines put on hospital intranet and embedded into ordering system, with preferred drugs pre-selected and links to background literature included

**Provide Audit and Feedback**
ASP leader runs daily check on patients covered by guidelines, provides education as needed (though need has decreased as guideline uptake has grown)

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1) Pseudonym.

80-90% Estimated physician use of antibiotic guidelines at Canary Health System

Source: Crimson Continuum of Care interviews and analysis.
No Shortage of Potential Metrics Either

Suggested ASP Outcome Measures Found in a Review of Literature

<table>
<thead>
<tr>
<th>Usage</th>
<th>Clinical Outcomes</th>
<th>Financial Indicators</th>
<th>Microbiologic Indicators</th>
<th>Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days of therapy</td>
<td>• All-cause mortality</td>
<td>• Overall antimicrobial spend</td>
<td>• Percent of organisms resistant to specific antimicrobials</td>
<td>• Percent of cases complying with hospital antibiotic use policies</td>
</tr>
<tr>
<td>Defined daily dose</td>
<td>• Infection-related mortality</td>
<td>• Use of high-cost antimicrobials</td>
<td>• Percent of multi-drug resistant organisms</td>
<td>• Percent of cases that documented indication and planned duration of antibiotic therapy</td>
</tr>
<tr>
<td>Use of specific drugs</td>
<td>• Length of stay</td>
<td>• Use of therapeutic drug monitoring (TDM) lab tests</td>
<td>• Number of infections due to specified organisms</td>
<td>• Percent of cases that obtained cultures and relevant tests prior to treatment</td>
</tr>
<tr>
<td></td>
<td>• Rates of readmission</td>
<td></td>
<td>• Incidence of hospital-onset C. difficile infections</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Clinical cure (with or without precise definitions)</td>
<td></td>
<td>• Antibiogram changes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Incidence of toxicity</td>
<td></td>
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</tr>
</tbody>
</table>
Antibiotic Use, Resistance the Primary Data Tracked

Metric Types Tracked by Surveyed Hospitals

- Bacterial sensitivity: 51.3% tracked electronically, 44.0% tracked by hand
- Antimicrobial spending: 50.2% tracked electronically, 38.8% tracked by hand
- Antimicrobial utilization: 46.4% tracked electronically, 35.4% tracked by hand
- Rates of resistant infections: 48.5% tracked electronically, 36.9% tracked by hand
- Utilization by provider: 21.9% tracked electronically, 20.8% tracked by hand
- Overall savings due to stewardship: 31.5% tracked electronically, 19.9% tracked by hand
- Antimicrobial appropriateness: 43.3% tracked electronically, 14.6% tracked by hand
- Adherence to ASP protocols: 45.1% tracked electronically, 13.4% tracked by hand
- Impact of ASP on clinical outcomes: 24.5% tracked electronically, 9.3% tracked by hand
- MD compliance with treatment recommendations: 9.2% tracked electronically, 9.2% tracked by hand


N = 257-275
Helping ASPs Measure and Improve

Two Advisory Board Products Provide Complimentary Support

Identify Trends and Opportunities

*Crimson Continuum of Care*

- Track utilization and cost of specific antibiotics
- View usage patterns at the hospital, group, disease state, and provider level
- Identify which antibiotics are used for which conditions
- Compare performance within the hospital, to the Crimson cohort, and to national norms
- Analyze the impact of antibiotic usage on quality and utilization outcomes

Support Interventions in Real Time

*Quality Compass*

- In-the-moment report creation to track particular groups (e.g., patients on certain antibiotics, culture data by unit)
- Real-time, customizable alerts (e.g., when particular antibiotics are ordered)
- Customizable documentation of intervention completion (when, by whom etc.)
- Flexible, shareable antibiogram creation
- Inpatient and outpatient data on all labs and drug orders

Source: Crimson Continuum of Care interviews and analysis.
Summarizing the Basic ASP

Based on Qualitative Research, Consider these Entry-Level Attributes

“Low-Hanging Fruit”

*Relatively low-cost and easy to implement*

- Identify pharmacy leader to oversee day-to-day ASP activities
- Identify local physician champion to support stewardship efforts
- Establish process to review antibiotics for addition to or removal from formulary
- Create general policies for antibiotic de-escalation (e.g., when patients should be converted from IV to oral delivery)
- Identify specific opportunities (e.g., pockets of antibiotic overuse)
- Educate physicians on stewardship; consider creating prescribing guidelines
- Monitor antibiotic utilization and bacterial resistance trends on an ongoing basis

**Additional Considerations**

*Included in CMS infection control survey*

- Establish documentation policies and procedures (indication, dose, duration)
- Establish formal procedure to review antibiotic appropriateness within 48 hours

*Required under California law*

- Maintain multidisciplinary antibiotic stewardship committee that includes at least one physician or pharmacist with formal stewardship training from a recognized professional organization
- Report stewardship program activities to appropriate hospital committees focused on quality improvement

Source: Crimson Continuum of Care interviews and analysis.
1. Understanding the Urgency—and the Challenge

2. Establishing an Effective ASP in Limited-Resource Settings

3. Questions and Answers
Please take a minute to provide your thoughts on today’s presentation.

Thank You!

Please note that the survey does not apply to webconferences viewed on demand.