Hot Topics in Antimicrobial Stewardship

Meghan Brett, MD
Medical Director, Antimicrobial Stewardship
University of New Mexico Hospital
Antimicrobial Stewardship Goals

- **Primary Goal**
  - Optimize clinical outcomes while minimizing the unintended consequences of antimicrobial use

- **Secondary Goals**
  - Reduce antimicrobial resistance
  - Reduce mortality and length of stay
  - Reduce associated healthcare costs
Antimicrobial Stewardship Team

ASP
Physician
Pharmacist

Microbiology
Informatics
Pharmacy
Infection Control
Infectious Diseases
Hospital Admin
UNMH Antimicrobial Stewardship Program

Mission Statement

To Preserve the Miracle of Antibiotics for All
ASP Interventions

**ASP Activities**

- Patient Centered
  - Prospective audit and review
  - Formulary management
  - Identify patients who may benefit from ID consult

- Institutional
  - Antibiograms
  - Clinical pathways
  - Dose optimization

**Impact of Interventions**

*Goal: Decrease or slow antimicrobial resistance*
CDC Core Elements of ASP – Hospital-Based

Checklist for Core Hospital Antibiotic Stewardship

The following checklist is a compendium of practices that should be implemented to improve antibiotic use in hospitals and to reduce antimicrobial resistance. This checklist is intended to serve as a guide for hospitals to self-assess their antibiotic stewardship practices and to identify areas for improvement. Hospitals should use this checklist to develop an action plan to address any identified gaps in their antibiotic stewardship activities.

**LEADERSHIP SUPPORT**

- A. Is there a hospital leader responsible for antibiotic stewardship?
- B. Is there a hospital policy on antibiotic stewardship?

**ACCOUNTABILITY**

- A. Is there a physician leader responsible for antibiotic stewardship?
- B. Is there a pharmacist leader responsible for antibiotic stewardship?

**DRUG USE AND OUTCOME MEASURES**

- A. Does your facility measure drug use and outcome measures?
- B. Does your facility measure antibiotic use and antibiotic resistance?

**DIAGNOSIS AND INFECTIONS SPECIFIC INTERVENTIONS**

- A. Does your facility have specific interventions in place to reduce antibiotic use?
- B. Does your facility have specific interventions in place to reduce antibiotic resistance?

**MEDICATIONS**

- A. Does your facility have a medication management plan?
- B. Does your facility have a medication reconciliation plan?

**TRAINING AND MONITORING**

- A. Does your facility have a training program for healthcare providers?
- B. Does your facility have a monitoring program for antibiotic use?

**MONITORING AND AUDITING**

- A. Does your facility have a monitoring and auditing program for antibiotic use?
- B. Does your facility have a reporting system for antibiotic use?

**PERFORMANCE IMPROVEMENT**

- A. Does your facility have a performance improvement program for antibiotic use?
- B. Does your facility have a performance improvement program for antibiotic resistance?

**COMMUNICATION AND EDUCATION**

- A. Does your facility have a communication and education program for antibiotic use?
- B. Does your facility have a communication and education program for antibiotic resistance?

**SUBMISSION OF INFORMATION TO FACILITIES**

- A. Does your facility submit information to facilities for antibiotic use and antibiotic resistance?
- B. Does your facility submit information to facilities for antibiotic resistance and antibiotic use?
CDC’s Core Elements for ASPs

✓ Obtain leadership commitment
  • Includes dedicating necessary human, financial and information technology resources

✓ Appoint a single leader responsible for program outcomes

✓ Appoint a single pharmacist leader responsible for working to improve antibiotic use

✓ Obtain support from key stakeholder
  • Infection control and prevention
  • Information technology
  • Quality improvement
  • Clinicians

http://www.ahaphysicianforum.org/resources/appropriate-use/antimicrobial/content%20files%20pdf/CDC%20checklist.pdf
CDC’s Core Elements for ASPs (cont.)

✓ Implement policies and interventions to improve antibiotic use

✓ Evaluate ongoing treatment need after an initial treatment period
  • E.g. “Antibiotic timeout” after 48 hours

✓ Monitor antibiotic prescribing and resistance patterns

✓ Regularly report information on antibiotic use and resistance to doctors, nurses, and relevant staff

✓ Educate clinicians about resistance and optimal prescribing
### NHSN Annual Facility Survey – Antimicrobial Stewardship (2015)

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</table>

42.5% of Hospitals had all 7 elements

Data from A. Srinivasan (Slide, SHEA Conference 2015)
# CDC Core Elements of ASP – Nursing Homes

## Checklist for Stewardship

The following checklist is a companion to the Core Elements of ASP. The CDC recommends that all nursing homes implement this checklist annually. Over time, implement actions.

### Leadership Support

1. Can your facility demonstrate leadership support for antibiotic stewardship? If yes, indicate which of the following actions are in place:
   - Written statement of leadership support
   - Antibiotic stewardship duties included in job descriptions
   - Leadership monitors whether antibiotic use is consistent with best practices
   - Antibiotic use and resistance data is regularly reviewed

### Accountability

2. Has your facility identified a lead(s) for antibiotic stewardship? If yes, indicate who is accountable for stewardship:
   - Medical director
   - Director or assistant director of nursing
   - Consultant pharmacist
   - Other:

### Drug Expertise

3. Does your facility have access to infectious disease experts?
   - Consultant pharmacy has staff trained
   - Partnering with stewardship team at a neighboring facility
   - Other:

### Actions to Improve Use

4. Does your facility have policies to improve antibiotic use? If yes, indicate which policies are in place:
   - Requires prescribers to document a diagnosis for antibiotic use
   - Developed facility-specific algorithms for selecting appropriate antibiotic use
   - Developed facility-specific treatment recommendations
   - Reviews antibiotic use and resistance data
   - Other:

### Tracking: Monitoring Antibiotic Prescribing, Use, and Resistance

5. Does your facility monitor one or more measures of antibiotic use? If yes, indicate which of the following are being tracked:
   - Adherence to clinical guidelines
   - Adherence to prescribing documentation (dose, duration, indication)
   - Adherence to facility-specific treatment recommendations
   - Monitors rates of antibiotic-resistant organisms
   - Monitors adverse drug events due to antibiotic use
   - Other:

### Reporting Information to Staff on Improving Antibiotic Use and Resistance

6. Does your facility provide facility-specific reports on antibiotic use and outcomes with clinical providers and nursing staff? If yes, indicate which of the following are being tracked:
   - Measures of antibiotic use at the facility
   - Measures of outcomes related to antibiotic use (e.g., C. difficile rates)
   - Report of facility antibiotic susceptibility patterns (within last 12 months)
   - Other:

### Education

7. Does your facility provide educational resources and materials about antibiotic resistance and opportunity for improving antibiotic use? If yes, indicate which of the following activities are being tracked:
   - Clinical providers (e.g., MDs, NPs, FAs, Pharmacists)
   - Nursing staff (e.g., RNs, LPNs, CMAs)
   - Residents and families
   - Other:

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3-Letter Acronyms

- ASP
- TJC
- CMS
TJC – New Antimicrobial Stewardship Standard

- Issued 6/22/2016
- Effective 1/1/2017
- Medication Management Standard (MM.09.01.01)
- 8 Elements of Performance

https://www.jointcommission.org/assets/1/6/New_Antimicrobial_Stewardship_Standard.pdf
TJC’s New Antimicrobial Stewardship Standard

- Leadership support
- Education
  - Staff and licensed providers
  - Patients and families
- ASP Team
- Includes core elements
- Use of multidisciplinary protocols for improving ABX use
- Analyzes and report data
- Takes action on improvement activities

**New Antimicrobial Stewardship Standard**

**Effective January 1, 2017**

**Medication Management (MM)**

**Standard MM.09.01.01**
The [critical access] hospital has an antimicrobial stewardship program based on current scientific literature.

**Elements of Performance for MM.09.01.01**

1. Leaders establish antimicrobial stewardship as an organizational priority. (See also LD.01.03.01, EP 5)
   - Note: Examples of leadership commitment to an antimicrobial stewardship program are as follows:
     - Accountability documents
     - Budget plans
     - Infection prevention plans
     - Performance improvement plans
     - Strategic plans
     - Using the electronic health record to collect antimicrobial stewardship data

2. The [critical access] hospital educates staff and licensed independent practitioners involved in antimicrobial ordering, dispensing, administration, and monitoring about antimicrobial resistance and antimicrobial stewardship practices. Education occurs upon hire or granting of initial privileges and periodically thereafter, based on organizational need.

3. The [critical access] hospital educates patients, and their families as needed, regarding the appropriate use of antimicrobial medications, including antibiotics. (For more information on patient education, refer to Standard PC.02.03.01)

**Note:** An example of an educational tool that can be used for patients and families includes the Centers for Disease Control and Prevention’s Get Smart document, “Viruses or Bacteria—What’s got you sick?” at [http://www.cdc.gov/getsmart/community/downloads/getsmart-chart.pdf](http://www.cdc.gov/getsmart/community/downloads/getsmart-chart.pdf)

4. The [critical access] hospital has an antimicrobial stewardship multidisciplinary team that includes the following members, when available in the setting:
   - Infectious disease physician
   - Infection preventionist(s)
   - Pharmacist(s)
   - Practitioner
   - Note 1: Part-time or consultant staff are acceptable as members of the antimicrobial stewardship multidisciplinary team.
   - Note 2: Telehealth staff are acceptable as members of the antimicrobial stewardship multidisciplinary team.

5. The [critical access] hospital’s antimicrobial stewardship program includes the following core elements:
   - Leadership commitment: Dedicating necessary human, financial, and information technology resources.
   - Accountability: Appointing a single leader responsible for program outcomes. Experience with successful programs shows that a physician leader is effective.
   - Drug expertise: Appointing a single pharmacist leader responsible for working to improve antibiotic use.
   - Action: Implementing recommended actions, such as systematic evaluation of ongoing treatment need, after a set period of initial treatment (for example, “antibiotic time out” after 48 hours).
CMS – Conditions of Participation

- Proposed rule change issued in June 2016
- Require hospitals to implement antibiotic stewardship programs to participate in Medicare and Medicaid
- Comment period was over as of 8/15/16
CMS §482.42(b): Antibiotic Stewardship Program
Organization and Policies

- Effective January 1, 2017

- Demonstrate coordination among all components of the hospital responsible for antibiotic use and factors that lead to antimicrobial resistance

- Document the evidence-based use of antibiotics in all departments and services of the hospital

- Demonstrate improvements, including sustained improvements in proper antibiotic use

Why ABX Stewardship?

- 30 – 50% of antibiotic use is inappropriate and are likely prolonged and not scaled back
- ASPs have been shown to reduce ABX by almost 20% in inpatient settings
  - Patient safety
  - Drug-resistance
  - Cost
- Data that associates effective ASPs and lower infection rates
- Antibiotic resistance continues to grow
  - 23,000 deaths\(^1\)
  - > 2 million infections\(^1\)

\(^1\)CDC Antibiotic Resistance Threats in the US, 2013
How Many People Have Heard about Antibiotic Timeouts?
Antibiotic Timeouts

- All clinicians should perform a review of ABX 48 hrs after ABX should ask:

1. Does this patient have an infection that will respond to antibiotics?
2. If so, is the patient on the right antibiotic(s), dose, and route of administration?
3. Can a more targeted ABX be used to treat the infection (i.e., deescalate)?
4. How long should the patient receive the antibiotic(s)?
Antibiotic Timeouts – Good in Principle, Hard in Practice

- Teaching hospital
- Evaluated Zosyn and Vancomycin use (broad-spectrum antibiotics)
- Timeout program:
  - Electronic dashboard that aggregated infection-relevant data
  - Note template in EMR that included structured review of ABX indications
  - Educational and social marketing campaign
- Impact
  - Vancomycin was more greatly impacted than Zosyn
    - 64 vs. 48% with vancomycin discontinued by day 5
    - 67 vs. 62% with vancomycin discontinued by day 5
  - Modest level of clinician satisfaction with EMR dashboard and note template

How’s Our Antibiotic Prescribing Relative to Everyone Else?

- Newer module in CDC’s National Healthcare Safety Network (NHSN) → Antibiotic Use and Resistance Module
- How many people are aware of this? How many people are using this?
- Captures electronic data on ABX administered and admission/discharge/transfer data
CDC NHSN AUR Module

- Calculates rates of use to evaluate current antibiotic use (units or facility-wide), to aggregate data for regional/national data, and to create benchmarks (ABX use measure)
  - Days of therapy per 1000 patient days present
  - Split by locations (adult vs. peds, ICU vs. ward)
  - Current agent categories: broad spectrum gram neg agents (community vs. hospital acquired), anti-MRSA agents, all ABX
  - Developing a standardized antibiotic administration ratio (SAAR)

- As of 2015, roughly 100 facilities were submitting data

**Caveat:** Need structured data from clinical decision support systems
Is Rapid Diagnostic Testing Enough?

- Often times, no...

- So interventions need to be paired with stewardship activities

- Challenge: many disease entities do not have rapid diagnostics to rule out infections or reliability is not sufficient
  - ICU settings
  - Inpatient floor
  - Ambulatory care

Stewardship Training Programs

**Making a Difference in Infectious Diseases (MAD-ID)**
- Basic program
- Advanced program
- 19 contact hours (1.9 CEUs) each
- [http://mad-id.org/antimicrobial-stewardship-programs/](http://mad-id.org/antimicrobial-stewardship-programs/)

**Society of Infectious Disease Pharmacists (SIDP)**
- Partnered with ProCE
  - info@proce.com
- Offers up to 43 contact hours (4.3 CEUs)
- [http://www.sidp.org/Stewardship-Program](http://www.sidp.org/Stewardship-Program)
Additional Resources

- STEWARDSHIP-EDUCATION.org
  - Collaborative project between SHEA, IDSA, PIDS, NFID, MAD-ID, SIDP, and ASHP

- APIC’s Stewardship Toolkit
  - http://www.apic.org/Professional-Practice/Practice-Resources/Antimicrobial-Stewardship

- CDC’s Get Smart Campaign
  - http://www.cdc.gov/getsmtart/
  - Checklist for Core Elements of Hospital Antibiotic Stewardship Programs
Support Antimicrobial Stewardship

Be a Microbiome Defender!