

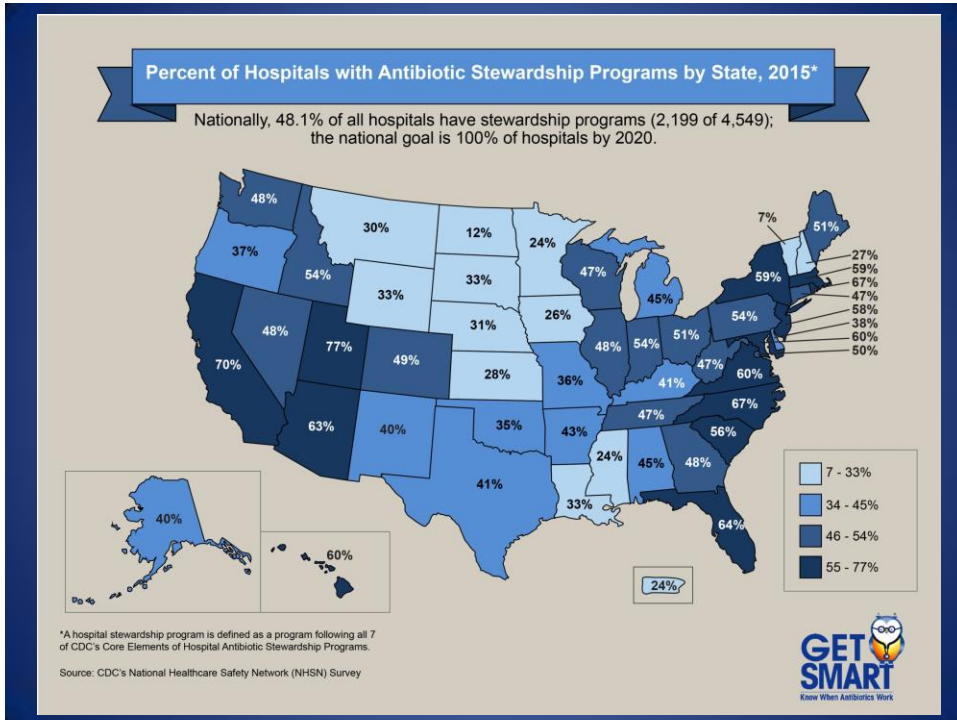
The Basics of Antimicrobial Stewardship – Getting Started

Sara Nausheen, MD

Kevin Kern, PharmD

The Basics of Antimicrobial Stewardship - Getting Started

- Objectives:
 - Highlight the scope and impact of inappropriate antibiotic use.
 - Outline the positive impacts of antimicrobial stewardship programs.
 - Review the CDC's core elements of an antimicrobial stewardship program for hospitals and nursing homes.
 - Discuss regulatory requirements for antimicrobial stewardship; e.g. Joint Commission, CMS.
 - Identify key steps in getting an effective antimicrobial stewardship program started at your facility

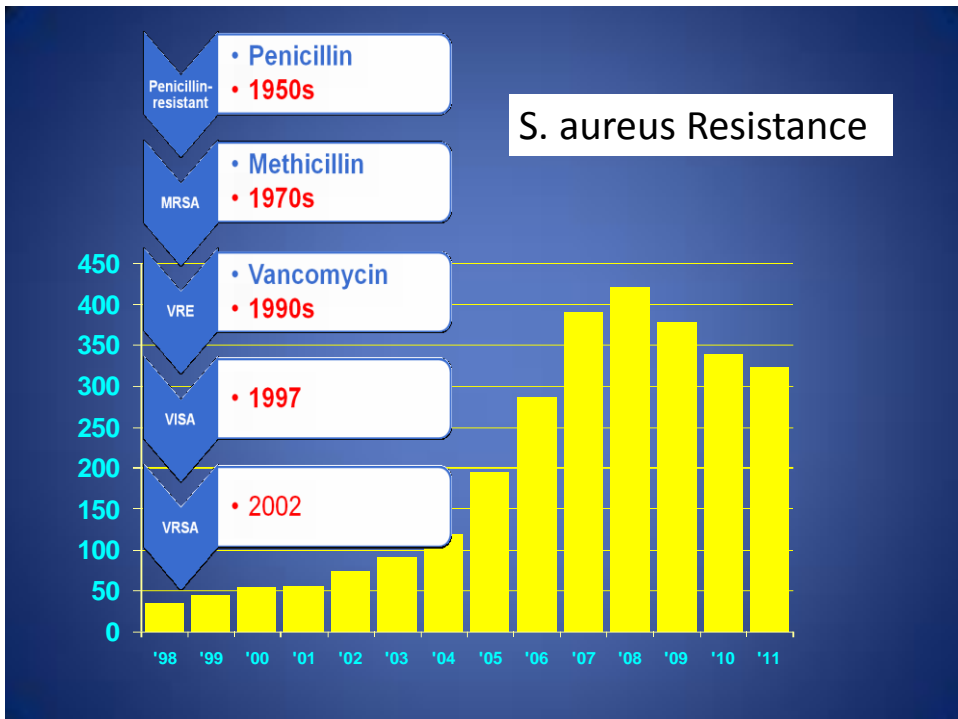


The Problem

- Inappropriate antimicrobial use
 - According to the CDC 20-50% of all antibiotics prescribed in U.S. acute care hospitals are either unnecessary or inappropriate.
 - Up to 70% of nursing home residents receive 1 or more courses of systemic antibiotics when followed over a year.
 - 40-75% considered unnecessary or inappropriate
 - Consequences:
 - Adverse effects of antibiotics
 - In 2008, there were 142,000 visits to emergency departments for adverse events attributed to antibiotics.
 - Recent FDA warning on fluoroquinolone adverse effects (July 26 2016)
 - Clostridium difficile infections (CDI)
 - An estimated 333,000 cases and 20,000 deaths per year.
 - Antimicrobial resistance
 - An estimated 2 million persons are infected with antibiotic-resistant organisms resulting in approximately 23,000 deaths annually
 - Increased health care costs
 - Hospital acquired infections account for an estimated \$28 billion to \$33 billion in preventable health care costs per year in the U.S.

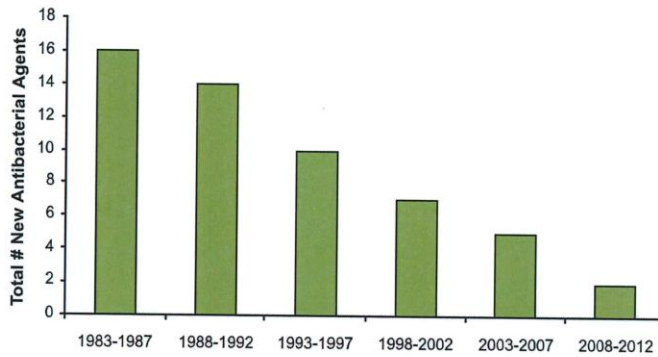
Susceptibility

		Pseudomonas aeruginosa, MDR	
		MIC	DISC DIFFUSION
Amikacin	16	Susceptible	
Aztreonam		Resistant	
Cefepime	16	Intermediate	
Ceftolozane/Tazobactam			2 ug/ml Susceptible
Ciprofloxacin	>=4	Resistant	
Gentamicin	8	Intermediate	
Meropenem	>=16	Resistant	
Piperacillin/Tazobactam	>=128	Resistant ¹	
Tobramycin	<=1	Susceptible	



The Answer – New Antibiotics?

Figure 3-3. Number of Antimicrobial Agents Approved by the US Food and Drug Administration



This graph shows the number of new antimicrobials approved by the US Food and Drug Administration. Currently, there are only two new antimicrobials expected to be released between 2008 and 2012.

Source: Adapted from Infectious Diseases Society of America, et al. Combating antimicrobial resistance: Policy recommendations to save lives. *Clin Infect Dis.* 52(Suppl 5):S397–S428, May 2011. Used with permission.

Antimicrobial Stewardship

- What is it?
 - Per IDSA/SHEA guideline: “Coordinated interventions designed to improve and measure the appropriate use of antibiotic agents by promoting the selection of optimal drug regimen including dosing, duration of therapy, and route of administration.”

Antimicrobial Stewardship

Benefits

- Improved patient outcomes
 - Reduced adverse events
 - Reduced incidence of C difficile infections
 - Decreased rates of antimicrobial resistance
 - Decreased costs
-
- CDC - Overview and Evidence to Support Stewardship

<http://www.cdc.gov/getsmart/healthcare/evidence.html>

Antimicrobial Stewardship

Regulatory Background

- California:
 - 2008=> enacted legislation requiring general acute care hospitals develop a process for monitoring the judicious use of antibiotics
 - September 2014=> Senate Bill 1311 signed into law further requiring hospitals to adopt and implement an Antimicrobial Stewardship policy
- Presidential Executive Order “Combating Antibiotic-Resistant Bacteria” – Sept. 2014
 - Requires federal agencies to review and propose new regulations requiring hospitals to implement Antimicrobial Stewardship Programs.

Antimicrobial Stewardship

Regulatory Background

- June 2016 - CMS issues proposed rule for Antibiotic Stewardship in hospitals.
- January 1, 2017 - Joint Commission Standards for Antimicrobial Stewardship in hospitals, critical access hospitals and nursing care centers go into effect.

Antimicrobial Stewardship

CDC Core Elements

- In 2014, The CDC recommended that all acute-care hospitals in the U.S. have an Antimicrobial Stewardship Program.
 - Developed “The Core Elements of Hospital Antibiotic Stewardship Programs” to help hospital implement programs.
 - Outlines 7 key components that have been associated with successful stewardship programs.
- In 2015 introduced “The Core Elements of Antibiotic Stewardship for Nursing Homes”

Antimicrobial Stewardship CDC Core Elements

- Leadership Commitment
 - *Hospital => Dedicating necessary human, financial, and informational technology resources.*
 - *NH => Demonstrates support and commitment to safe and appropriate antibiotic use in your facility.*
 - Essential for success of antimicrobial stewardship programs
 - Potential barriers:
 - Lack of administrative/resource support

Antimicrobial Stewardship CDC Core Elements

- Accountability
 - *Hospital => Appointing a single leader responsible for program outcomes. Experience with successful programs shows that a physician leader is effective.*
 - IDSA guideline: ASPs are best lead by infectious disease physicians with additional stewardship training.
 - *NH => Identify physician, nursing and pharmacy leads responsible for promoting and overseeing antibiotic stewardship activities in your facility.*
 - A leaderless program will be ineffective
 - Potential barriers:
 - Finding a qualified leader
 - Ineffectual leader – handling difficult providers
 - Time

Antimicrobial Stewardship CDC Core Elements

- Drug Expertise
 - Hospital => *Appointing a single pharmacist leader responsible for working to improve antibiotic use.*
 - NH => *Establish access to consultant pharmacists or other individuals with experience or training in antibiotic stewardship for your facility.*
 - Potential barriers:
 - Inability to find qualified pharmacist
 - Time and funding

Antimicrobial Stewardship CDC Core Elements

- Action
 - Hospital => *Implementing at least one recommended action, such as systemic evaluation of ongoing treatment need after a set period of initial treatment; e.g. “antibiotic time out” after 48 hours.*
 - NH => *Implement at least one policy or practice to improve antibiotic use.*
 - Potential barriers:
 - Daunting/overwhelming task – where to get started
 - Inconsistent message
 - Resistance from providers / medical staff buy-in
 - Alert fatigue

Antimicrobial Stewardship CDC Core Elements

- Tracking
 - *Hospital => Monitoring antibiotic prescribing and resistance patterns*
 - *NH => Monitor at least one process measure of antibiotic use and at least one outcome from antibiotic use in your facility*
 - Important for identifying opportunities for improvement and assessing impact
 - Potential barriers:
 - IT support
 - Lack of isolates to develop an antibiogram

Antimicrobial Stewardship CDC Core Elements

- Reporting
 - *Hospital => Regular reporting information on antibiotic use and resistance to doctors, nurses and relevant staff*
 - *NH => Provide regular feedback on antibiotic use and resistance to prescribing clinicians, nursing staff and other relevant staff.*
 - Potential barriers:
 - Timely/Consistent reporting
 - Reporting perceived as punitive
 - Overwhelming volume of data

Antimicrobial Stewardship CDC Core Elements

- Education
 - *Hospital => Educating clinicians about resistance and optimal prescribing*
 - *NH => Provide resources to clinicians, nursing staff, residents and families about antibiotic resistance and opportunities for improving antibiotic use.*
 - Very important for sustainability
 - Potential barriers:
 - Time/resources
 - Identifying most effective methods

The Joint Commission Antimicrobial Stewardship Standard Hospitals, CAHs and Nursing Care Centers

- Standard MM.09.01.01 – Elements of Performance
 - Leaders establish antimicrobial stewardship as an organizational priority.
 - Educate staff and licensed independent practitioners involved in antimicrobial prescribing about antimicrobial resistance and antimicrobial stewardship practices
 - Occurs upon hiring and periodically thereafter

The Joint Commission

Antimicrobial Stewardship Standard
Hospitals, CAHs and Nursing Care Centers

- Standard MM.09.01.01 – Elements of Performance
 - Educates patients/residents, and their families as needed, regarding the appropriate use of antimicrobial medications.
 - Has an antimicrobial stewardship multidisciplinary team that includes the following members:
 - ID physician, Infection preventionist(s), Pharmacist(s) and Practitioner
 - Part-time or consultant staff and telehealth staff are acceptable members

The Joint Commission

Antimicrobial Stewardship Standard
Hospitals, CAHs and Nursing Care Centers

- Standard MM.09.01.01 – Elements of Performance
 - The antimicrobial stewardship program includes the CDC's core elements of stewardship.
 - Uses organization-approved multidisciplinary protocols
 - E.g. Antibiotic formulary restrictions, Treatment protocols for CAP, SSTIs, UTIs, etc., IV to PO conversion
 - Collects, analyzes and reports data on its antimicrobial stewardship program
 - Takes action on improvement opportunities identified in its antimicrobial stewardship program.

Centers for Medicare and Medicaid Services

Proposed Requirements Promoting Antimicrobial Stewardship

- Section 1.C. – Systems to Prevent Transmission of MDROs and Promote Antimicrobial Stewardship
 - 1.C.9: Has written policies and procedures whose purpose is to improve antibiotic use (antibiotic stewardship)
 - 1.C.10: Has designated a leader (e.g. physician, pharmacist, et.) responsible for program outcomes.
 - 1.C.11: Policy and procedures requires practitioners to document in the medical record or during order entry an indication for all antibiotics, in addition to other required elements such as dose and duration.
 - 1.C.12: The hospital has a formal procedure for all practitioners to review the appropriateness of any antibiotic prescribed after 48 hrs from the initial order (e.g. antibiotic time out)
 - 1.C.13: Monitors antibiotic use at the unit and/or hospital level.

Antimicrobial Stewardship

Getting Started - Resources

- Become familiar with current literature surrounding antimicrobial stewardship
 - The Centers for Disease Control
 - Core Elements for Hospitals and Nursing Homes
 - American Hospital Association – Antimicrobial Stewardship Toolkit
 - The Joint Commission
 - Joint Commission Resources; Standards
 - Infectious Diseases Society of America
 - Guideline for implementing Antimicrobial Stewardship Program
 - Treatment guidelines; e.g. CAP, C diff, etc.
 - National Quality Forum: Antibiotic Stewardship in Acute Care: A Practical Playbook
 - MAD-ID: Antimicrobial Stewardship Training Program

Antimicrobial Stewardship Getting Started

- Create “Antimicrobial Stewardship Committee”
 - Identify key stakeholders/contributors within your institution
 - Administration, Quality Management, Medical Staff, Nursing Staff, Pharmacy, Infection Control, Laboratory Services, Information technology.
 - Purpose:
 - Assess current level of stewardship within your institution
 - CDC Gap Analysis checklist
 - Develop policy document governing antimicrobial stewardship within your institution
 - Establish institutional support
 - Using CDCs Core elements as framework
 - Review Joint Commission and CMS standards
 - Identify physician/pharmacy leadership personnel
 - Set goals and metrics
 - Assess impact

Antimicrobial Stewardship Getting Started

- Establish methods of assessing resistance and antibiotic usage
 - Identify IT support resources
 - Do you have an antibiogram?
 - Institution wide?
 - Unit specific?
 - Can you track antibiotic usage?
 - Days of therapy (DOT)
 - Institution wide?
 - Unit specific?

Antimicrobial Stewardship Getting Started

- Collect baseline data / internal benchmarks
 - Antibiotic usage
 - Percentage of NH residents receiving antibiotics per year.
 - Resistance rates
 - C diff rates
- Identify initial stewardship activities
 - Start with “doable” initiatives identified in the gap analysis assessment
 - Establish antibiotic formulary
 - Develop antibiotic dosing protocols/renal dose adjustment
 - Define durations of therapy

Antimicrobial Stewardship Getting Started

- Education
 - Inform providers regarding the what & why’s of antimicrobial stewardship while developing your program and before implementing any new initiatives.
 - Establish a culture of change
 - Changing physician prescribing behavior is critical to long-term success

Antimicrobial Stewardship Altru Hospital's Policy Statement

- **Standard policy**
- TITLE: Antimicrobial Stewardship
- PURPOSE:
 - Altru Health System will support the development and maintenance of an Antimicrobial Stewardship Program by dedicating the necessary human, financial and information technology resources needed to operate such a program.
- FUNCTION:
 - The Antimicrobial Stewardship program will promote the judicious and effective use of antimicrobial agents; e.g. proper selection, dosing, route and duration of antimicrobial therapy throughout the health care system. The program will also be responsible for instituting the principles of antimicrobial stewardship to optimize clinical outcomes in infectious diseases. The program will also function as a patient safety initiative by minimizing the untoward effects of antimicrobials; i.e. adverse reactions, resistance and the promotion of select pathogenic organisms such as *Clostridium difficile*.

Antimicrobial Stewardship Altru Hospital's Policy Statement

- **ANTIMICROBIAL STEWARDSHIP COMMITTEES:**
- **The Antimicrobial Stewardship Leadership Committee:** set goals and measures of success.
 - Committee membership: Medical staff, Administration, Quality Management, Laboratory Services, Infection control, Nursing and Pharmacy
- **The Antibiotic Stewardship Planning Group:** Planning and implementation of stewardship activities/strategies.
 - Committee membership: Infectious Disease, Pathology, Infection Control, Microbiology and Pharmacy

Antimicrobial Stewardship

Altru Hospital's Policy Statement

- **ANTIMICROBIAL STEWARDSHIP ACTIVITIES:**
- Activities of the Antimicrobial Stewardship Program will include, but are not limited to the following:
 - Prospectively review and audit antimicrobial usage for appropriateness and provide direct feedback to prescribers.
 - Duplicate therapy, broad-spectrum/combination regimens (antimicrobial timeout at 48hrs)
 - Empiric and definitive therapy on all positive blood cultures,
 - Indications for utilization of restricted antimicrobials
 - Ensure appropriate antimicrobial dosing and monitoring; e.g. per Altru Pharmacy protocol for renal dose adjustment of antimicrobials
- Review resistance patterns, MDRO incidence/occurrence trends and antimicrobial utilization (e.g. in days of therapy).
- Infectious diseases protocol/guideline development and maintenance; e.g. community and health-care associated pneumonias, urinary tract infections, skin and soft tissue infections, etc.
 - Utilize Epic features/functions to promote judicious antimicrobial usage
 - Review newly approved antimicrobial agents for inclusion/exclusion to formulary.
 - Make recommendations and antibiogram data available in easily accessible electronic versions.
- Education: disseminate pertinent antimicrobial resistance and antimicrobial utilization data to physicians, nursing and other relevant staff.
- Report impact and outcomes to the Antimicrobial Stewardship Committee for dissemination to committees; Pharmacy & Therapeutics, Infection Control, Quality Council, COC and/or MEC as appropriate:
 - Physician acceptance rates and compliance with Antimicrobial Stewardship protocols.
 - Antimicrobial Usage (by system, department/unit, physician).
 - Hospital onset rates and resistance for MDRO's; e.g. C diff rates
 - Financial impact of the Antibiotic Stewardship Program

Antimicrobial Stewardship – Getting Started

Final Comments

- No two Antimicrobial Stewardship programs will look alike.
 - Your goal: Develop an Antimicrobial Stewardship Program within the framework set forth by the CDC that meets the needs of your institution .
- Part II – December 15th, 2016
 - Antimicrobial Stewardship Programs – The Same, but Different

Continuing Education

- Continuing education instructions will be emailed to all individuals who accessed today's ASP event.
- If others joined you, please share the CE instructions with them.
- The email you receive will also include a registration link for Part II of this ASP series.

Thank you for joining us today!

Your feedback is valuable to us. Please complete the post-event knowledge questions before ending this session.