

Antibiotic Stewardship A National Update

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Disclosures

- No financial disclosures
- Opinions are those of the speaker and not representative of CDC/ATSDR

“Core Elements”

Centers for Disease Control and Prevention
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SEARCH

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Get Smart for Healthcare

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Related Links

- Antibiotic/Antimicrobial Resistance
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Checklist for Core Elements of Hospital Antibiotic Stewardship Programs

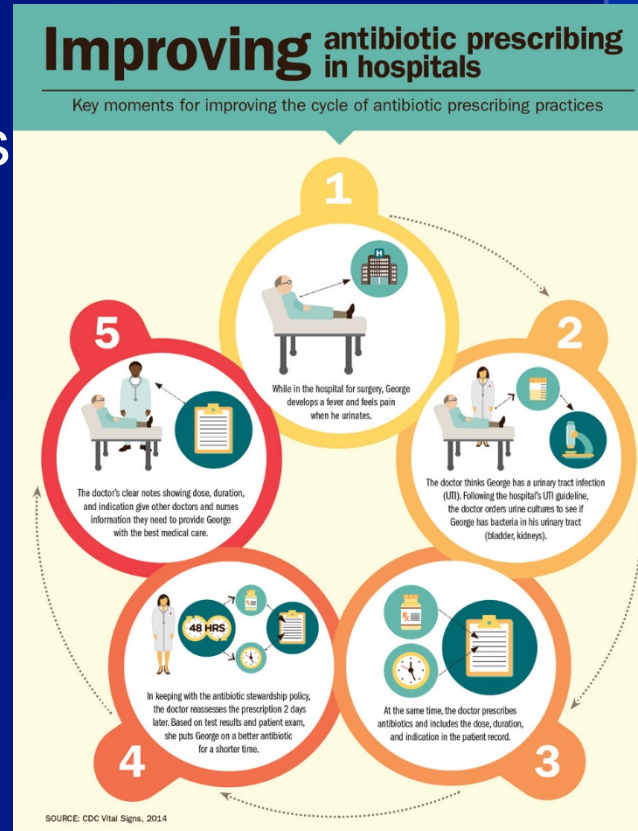
The following checklist is a companion to [Core Elements of Hospital Antibiotic Stewardship Programs](#). This checklist should be used to systematically assess key elements and actions to ensure optimal antibiotic prescribing and limit overuse and misuse of antibiotics in hospitals. CDC recommends that all hospitals implement an Facilities using this checklist should involve one or more knowledgeable staff to determine if the following principles and actions to improve antibiotic use are in place. The elements in this checklist have been shown in previous studies to be helpful in improving antibiotic use though not all of the elements might be feasible in all hospitals.

Download Publication
View Fact Sheet

Leadership support	Established at facility	
Does your facility have a formal, written statement of support from leadership that supports efforts to improve antibiotic use (antibiotic stewardship)?	Yes	No
Does your facility receive any budgeted financial support for antibiotic stewardship activities (e.g., support for salary, training, or IT support)?	Yes	No

Core Elements for Antibiotic Stewardship Programs

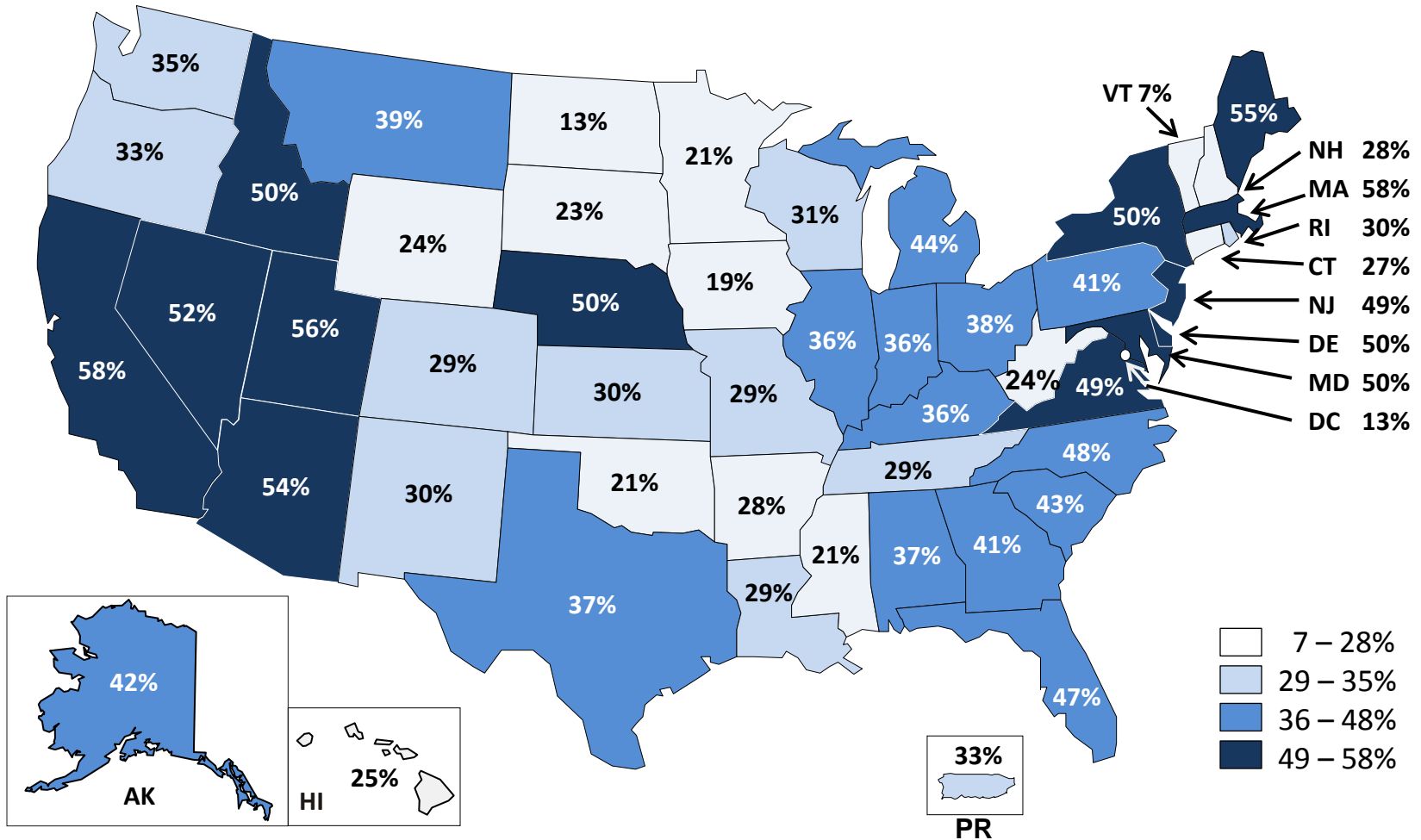
- ❑ Leadership commitment from administration
- ❑ Single leader responsible for outcomes
- ❑ Single pharmacy leader
- ❑ Antibiotic use tracking
- ❑ Regular reporting on antibiotic use and resistance
- ❑ Educating providers on use and resistance
- ❑ Specific improvement interventions



What Is The Current Status of Antibiotic Stewardship Programs?

- To get a better picture of stewardship programs, CDC added questions to the 2015 annual facility survey of the National Healthcare Safety Network (covers hospital activities in 2014).
- Questions based on CDC “Core Elements for Hospital Antibiotic Stewardship Programs.”
 - In 2014, 39.2% of US hospitals reporting having a stewardship program that meets all 7 CDC Core Elements.
 - Factors associated with meeting all Core Elements
 - Bed size
 - Teaching Status
 - Leadership support (written > salary)

Percentage of acute care hospitals (n=4,184) implementing all seven of core elements of hospital antibiotic stewardship programs, National Healthcare Safety Network, 2014



AE, AP, AS, GU, VI data are not shown due to 7 or fewer hospital respondents but are included in the overall percentage.

Helping With Implementation

- ❑ Many hospitals have indicated they would like to have specific examples on ways to implement the CDC core elements.
- ❑ CDC is partnering with the National Quality Partnership of the National Quality Forum to do this.

NQF Antibiotic Stewardship Playbook

- ❑ Represents input from more than 30 different groups who were part of the Antibiotic Stewardship Action Team.
- ❑ Is based on the CDC Core Elements for Hospitals Antibiotic Stewardship Programs.
 - Has specific suggestions for implementing the core elements and a special section on measurement in stewardship.
- ❑ Released on May 25, 2016.

http://www.qualityforum.org/Advancing_Antibiotic_Stewardship_in_Healthcare.aspx

NQF ABX Stewardship Playbook: Leadership Commitment

- ❑ Examples of implementation:
 - Issue formal board-approved statement on the importance of the ASP and include in annual report
- ❑ Potential barriers and solutions:
 - Low support of ASP by leaders- Refer to key national reports on importance of antibiotic stewardship and direct leaders to proposed regulatory requirements.
- ❑ Tools and Resources:
 - [Making the Business Case for ASP](#): Taking It to the C-Suite

NQF ABX Stewardship Playbook: Actions

Core Element 4: Actions to Support Optimal Antibiotic Use

Implementing at least one or more interventions to improve antibiotic use, such as the systematic evaluation of ongoing treatment need after a set period of initial treatment, is critical for an effective antibiotic stewardship program.

- The antibiotic stewardship program (ASP) identifies and implements one or more specific interventions to improve antibiotic use at the hospital. The intervention(s) should align with local needs (i.e., interventions address areas where evidence suggests room for improvement at the hospital). The interventions have measurable outcomes, which the ASP monitors and reports to hospital leadership and providers.

Examples of Implementation

Basic:

Systemwide Interventions

- Implement a policy for review of antibiotic orders for specified drugs by a physician or pharmacist based on local needs (also known as "prior approval").
- Require documentation of diagnosis/indication, drug, dose, and duration for all antibiotic orders.
- Establish guidance for antibiotic allergy assessment (e.g., a penicillin allergy assessment protocol, including recommendations on which patients might benefit from skin testing).
- Develop facility-specific treatment recommendations based on national guidelines and local susceptibility data.

Intermediate:

Patient-Specific Interventions

- Establish a process to review antibiotics prescribed after 48-72 hours ("antibiotic time-out" or "post-prescription review"). This might be done by the treating team and/or the ASP.
- Establish guidance on automatic changes from IV to oral dosing in identified situations.
- Establish guidance on dose adjustment for cases of organ dysfunction.
- Develop dose optimization recommendations, especially for organisms with reduced susceptibility.
- Build in automatic alerts for potentially duplicative drug

- Ensure that the stewardship program works with the ICU to develop optimized antibiotic treatment protocols for possible sepsis cases.
- Ensure discussions of patient care (e.g., rounds) include information on antibiotics.

Advanced: Diagnosis- and Infection-Specific Interventions

- Use real-time, rapid diagnosis such as rapid pathogen identification assays (e.g., influenza and MRSA) and biomarkers (e.g., procalcitonin) to improve appropriate antibiotic use.
- Assure timely and appropriate culture collection and transport.
- Realize important evidence-based opportunities and

Potential Barriers and Suggested Solutions

Providers and/or ASP Team Overwhelmed by Scope of Interventions

Suggested Solutions

- Meet with key stakeholders to survey areas of unmet need.
- Develop a priority matrix and start with one stewardship intervention based on the facility's local needs and available data and guidance in literature (e.g., surgical prophylaxis e-order set and community-acquired pneumonia); establish a sequential rollout that is inclusive of key stakeholders.
- Assess antibiotic use to look for areas where there is clear evidence of need for improvement (e.g., evaluate treatment of most commonly seen or most severe infections to identify areas for improvement).
- Engage bedside nurses in stewardship actions to help expand the stewardship workforce and the role of nurses, as they are first responders.

ways to implement interventions in workflow.

- Participate in a regional/state collaboration to allow for peer benchmarking.

Providers Not Aware of Treatment Recommendations

Suggested Solutions

- Implement clinical decision support guidelines and recommended interventions that are easily accessible.
- Embed clinical decision support into the electronic health record (e.g., best practice alerts and standardized antibiotic orders).
- Provide regular antibiotic stewardship education to all relevant staff.
- Provide feedback to providers on antibiotic use rates with recommendations.

"Alert Fatigue"

Resistance from Providers

Suggested Solutions

- Provide provider-specific education and de-identified peer group data.
- Partner with providers to identify areas that they think would benefit most.
- Partner with providers to identify areas that they think would benefit most.

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Suggested Tools and Resources

Audit Tools

- Lee TC, Franette C, Jayaraman D, et al. Antibiotic self-stewardship: trainee-led structured antibiotic time-outs to improve antimicrobial use. *Ann Intern Med.* 2014;161(10 Suppl):S53-S58.
- Southwest Memorial Hospital Stewardship Committee. The 5Ds—Diagnosis/Indication; Drug; Dose; Duration; and De-escalation +

- Pappas PE, Archer G, Archer R, et al. Clinical Practice Guidelines for the Management of Community-acquired Pneumonia in Adults: 2016 Update. *Clinical Infectious Diseases.* 2016;62(4):517-535.
- Society of Critical Care Medicine. Sepsis Campaign. www.sccm.org/sepsiscampaign
- Centers for Disease Control and Prevention (CDC). www.cdc.gov/antibiotic-use/

Other Implementation Needs

- ❑ The NHSN hospital survey demonstrated that smaller hospitals are having a hard time implementing the core elements:
 - 25% of hospitals <50 beds vs 55% in >200 beds
- ❑ But about 100 critical access hospitals did report implementing all 7 elements.
 - How can we disseminate their experience?
 - State based collaborative efforts are helpful here.

Advancing Measures of Appropriate Use

- ❑ Ideally, we want to be able to use electronic information to do high level assessments of appropriate use.
 - A lot of the information is probably available electronically e.g. culture results, antibiotics prescribed, durations of therapy
- ❑ CDC is partnering with various groups to test approaches for doing this.
- ❑ Can we do an electronic use evaluation?

Antibiotic Use Measures: NHSN Available now

- ❑ National Healthcare Safety Network (NHSN)
 - Hospitals can now get a risk-adjusted measure of antibiotic use in the antibiotic use option
 - The Standardized Antibiotic Administration Ratio (SAAR) became available in the AU option in January of 2016
- ❑ National Quality Forum (NQF) endorsed
 - ✓ Public health/disease surveillance
 - ✓ Quality improvement (internal to the specific organization)
 - ✓ Quality improvement (external benchmarking involving multiple organizations)
 - ❑ Public reporting
 - ❑ Payment program
 - ❑ Regulatory and accreditation programs
 - ❑ Professional certification or recognition program

<http://www.cdc.gov/nhsn/acute-care-hospital/aur/index.html>

National Healthcare Safety Network Antibiotic Use Option-Update

- 120 facilities submitted at least 1 month of data
 - From 30 states
 - Bed size:
 - Average = 222
 - Median = 186
 - Min/Max = 11, 919
 - 63% teaching hospitals
 - 87% facility submission part of health system submission
- We'd love to add you!

Growing Enrollment: Antibiotic Use Option

- ❑ Contracts awarded to 2 groups last year who each will bring on about 25 hospitals.
- ❑ CDC working with a few health systems (HCA and Ascension) to enroll their hospitals in AU.
- ❑ On-going work to add the rest of the VA hospitals.
- ❑ Recently released contract opportunity (SHEPHERD program) to enroll hospitals in AU and work on assessing the SAAR.

Standardized Antibiotic Administration Ratio (SAAR)

- ❑ Similar in principle to the Standardized Infection Ratio (SIR).
- ❑ SAAR expresses observed antibiotic use compared to predicted use.
 - SAAR >1 = use was more than predicted based on comparison to other hospitals.
- ❑ The SAAR is risk adjusted based only on facility characteristics (e.g. ICUs, hospital size)

SAAR Metrics Cover 5 Antimicrobial Agent Categories

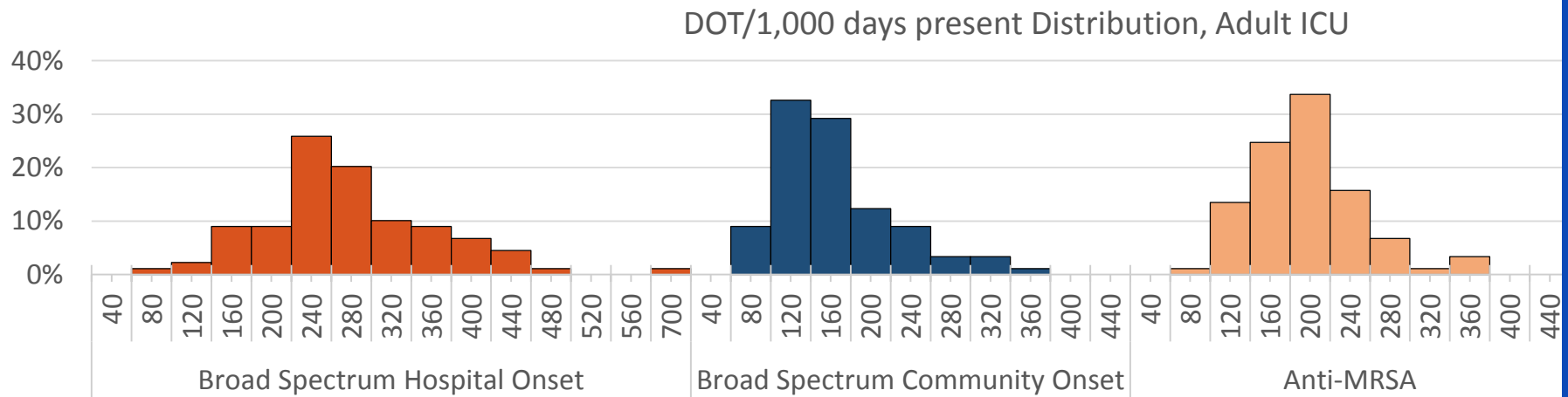
High value targets for antimicrobial stewardship programs:

1. **Broad spectrum agents predominantly used for hospital-onset/multi-drug resistant bacteria** – aminoglycosides, some cephalosporins, penicillin B-lactam/b-lactamase inhibitor combinations, and other agents
2. **Broad spectrum agents predominantly used for community-acquired infection** – ertapenem, some cephalosporins, and some fluoroquinolones
3. **Anti-MRSA agents** – ceftaroline, dalbavancin, daptomycin, linezolid, oritavancin, quinupristin/dalfopristin, tedizolid, telavancin, and vancomycin
4. **Agents predominantly used for surgical site infection prophylaxis** – cefazolin, cefotetan, cefoxitin, cefuroxime

High level indicators for antimicrobial stewardship programs:

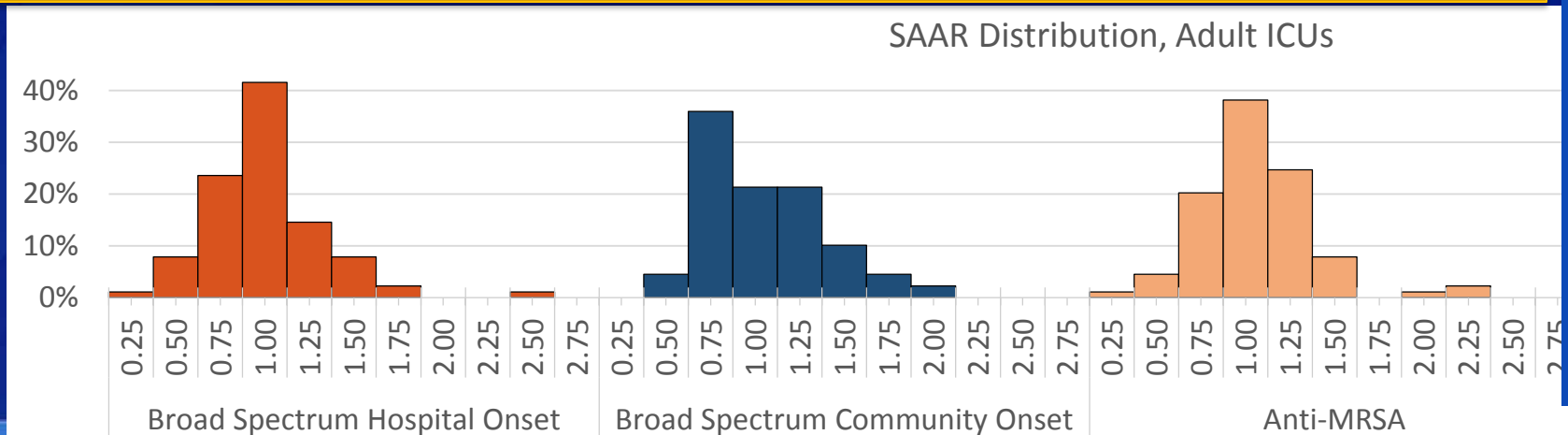
5. **All antibiotic agents** – All agents included in NHSN AUR protocol

Adjusting for Patient Location Narrows Variation, Better Interfacility Comparisons

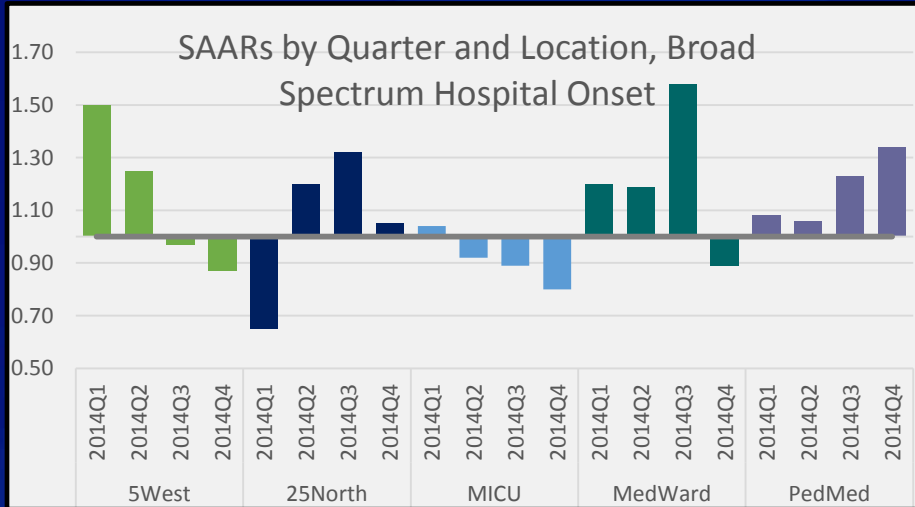


Standardized Antimicrobial Administration Ratio

Days of Therapy /1000 PD

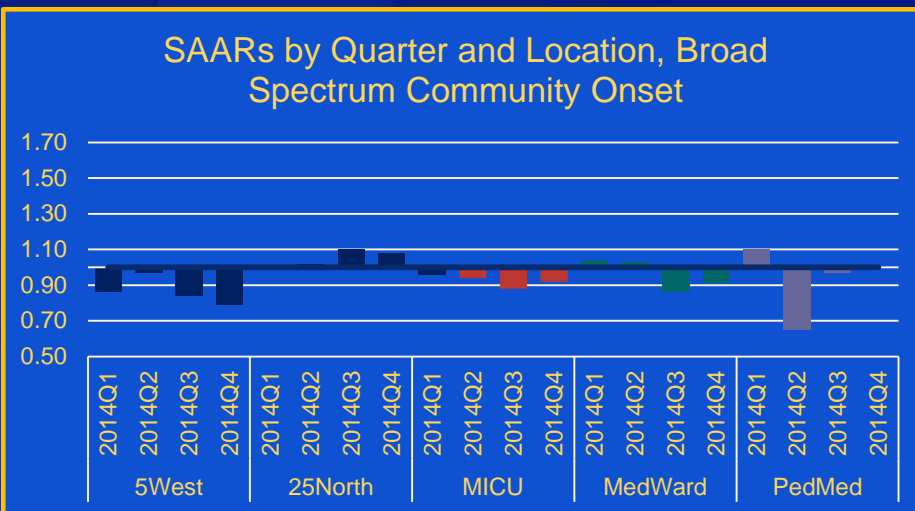


Within Hospital Able to Track over time



Broad Spectrum Hospital Onset

- By quarter, see changes within reporting locations



Broad Spectrum Community Onset

- By quarter, see changes within reporting locations

Next Steps for the SAAR and AU Option

- ❑ Examining the impact of adding patient level characteristics to the risk adjustment model (e.g. infectious disease diagnoses).
- ❑ Developing tools to help stewardship programs explore abnormal SAARs and then take steps to improve antibiotic use (where indicated).
 - In partnership with the Pew Charitable Trusts
- ❑ Discussing additional ways to display AU data to help drive action.



List of Measures under Consideration for December 1, 2015

Hospital Inpatient Prospective Payment System 2017 Proposed Rule

MUC15-531	National Healthcare Safety Network (NHSN) Antimicrobial Use Measure	<p>Numerous inpatient antimicrobial use measures have been developed and implemented among facilities. The measure will serve as a quantitative guide for hospital and health system use, focusing on antibiotic agents that have been shown to be high value targets for antimicrobial stewardship efforts. Knowledge about antibiotic use patterns of these agents is a primary</p>	<p>“In the future, we are considering proposing the NHSN Antimicrobial Use measure to advance national efforts to reduce the emergence of antibiotic resistance by enabling hospitals and CMS to assess national trends of antibiotic use to facilitate improved stewardship by comparing antibiotic use that hospitals report to antibiotic use that is predicted based on nationally aggregated data.” - CMS</p>
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Why Is This Important?

- The items on the Measures Under Consideration list are the ones that CMS is considering making part of some type of reporting and/or payment program.

Meaningful Use Stage 3



[CDC](#) > [Meaningful Use](#) > [Public Health Options](#)

NHSN Meaningful Use Overview



For 2018, NHSN Antimicrobial Resistance and Antimicrobial Use reporting has been identified as a new option for public health registry reporting under Meaningful Use Stage 3. See <https://www.federalregister.gov/articles/2015/03/30/2015-06612/2015-edition-health-information-technology-health-it-certification-criteria-2015-edition-base> [↗](#). See

Why is This Important?

- It will provide some incentives for hospital information technology vendors to include reporting to the antibiotic use options as part of their systems.

Accreditation Standard from The Joint Commission

- ❑ Late in 2015, The Joint Commission proposed an accreditation standard for antibiotic stewardship in all healthcare facilities.
- ❑ The standard has 8 performance elements.

Joint Commission Standard Approved July 2016

APPROVED: New Antimicrobial Stewardship Standard

The Joint Commission recently announced a new Medication Management (MM) standard for hospitals, critical access hospitals, and nursing care centers. Standard MM.09.01.01 addresses antimicrobial stewardship and becomes effective January 1, 2017.

Joint Commission



Requirement

Official Publication of Joint Commission Requirements

New Antimicrobial Stewardship Standard

APPLICABLE TO HOSPITALS AND CRITICAL ACCESS HOSPITALS

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)

dard 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>.

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 systemic evaluation of ongoing treatment need, after a set period of initial treatment (for example, "antibiotic time out" after 48 hours).
 - Tracking: Monitoring the antimicrobial stewardship program, which may include information on antibiotic prescribing and resistance patterns.
 - Reporting: Regularly reporting information on the antimicrobial stewardship program, which may include information on antibiotic use and resistance, to doctors, nurses, and relevant staff.
 - Education: Educating practitioners, staff, and patients on the antimicrobial program, which may include information about resistance and optimal prescribing. (See also IC.02.01.01, EP 1 and NPSG.07.03.01, EP 5)

The Joint Commission recommends that organizations use this document when designing their antimicrobial stewardship program.

6. © The [critical access] hospital's antimicrobial stewardship program uses organization-approved multidisciplinary protocols (for example, policies and procedures).

Note: Examples of protocols are as follows:

- Antibiotic Formulary Restrictions
- Assessment of Appropriateness of Antibiotics for Community-Acquired Pneumonia
- Assessment of Appropriateness of Antibiotics for Skin and Soft Tissue Infections
- Assessment of Appropriateness of Antibiotics for Urinary Tract Infections
- Care of the Patient with *Clostridium difficile* (c.-diff)
- Guidelines for Antimicrobial Use in Adults
- Guidelines for Antimicrobial Use in Pediatrics
- Plan for Parenteral to Oral Antibiotic Conversion
- Preauthorization Requirements for Specific Antimicrobials
- Use of Prophylactic Antibiotics

7. © The [critical access] hospital collects, analyzes, and reports data on its antimicrobial stewardship program.

Note: Examples of topics to collect and analyze data on may include evaluation of the antimicrobial stewardship program, antimicrobial prescribing patterns, and antimicrobial resistance patterns.

8. © The [critical access] hospital takes action on improvement opportunities identified in its antimicrobial stewardship program. (See also MM.08.01.01, EP 6)

Continued on page 4

Hospital Stewardship Programs as a Condition of Participation?

- The President has instructed CMS to review regulations and consider proposing new regulations to advance antibiotic stewardship.
- CMS has indicated that it is considering this step for acute care hospitals, just as they have already done for nursing homes.

Still Proposed



This document is scheduled to be published in the Federal Register on 06/16/2016 and available online at <http://federalregister.gov/a/2016-13925>, and on FDsys.gov

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Centers for Medicare & Medicaid Services

42 CFR Parts 482 and 485

[CMS-3295-P]

RIN 0938-AS21

Medicare and Medicaid Programs; Hospital and Critical Access Hospital (CAH) Changes to Promote Innovation, Flexibility, and Improvement in Patient Care

AGENCY: Centers for Medicare & Medicaid Services (CMS), HHS.

ACTION: Proposed rule.

SUMMARY: This proposed rule would update the requirements that hospitals and critical access hospitals (CAHs) must meet to participate in the Medicare and Medicaid programs.

PROPOSED Hospital Conditions of Participation §482.42: Infection prevention and control and antibiotic stewardship

- The hospital must have active hospital-wide programs for the surveillance, prevention, and control of.., **and** for the optimization of antibiotic use through stewardship
- Antibiotic stewardship program organization and policies include
 - Appointed leader of the antibiotic stewardship program
 - Demonstrate coordination among all components of the hospital antibiotic use and resistance
 - Document the evidence-based use of antibiotics in all departments and services of the hospital
 - Demonstrate improvements (e.g., CDI, AR)
 - Adheres to nationally recognized guidelines, best practices
 - Competency-based training and education of hospital personnel and staff on antibiotic stewardship guidelines, policies, and procedures

Key Developments in Stewardship-Partnerships

- Society for Hospital Medicine launched “Fight the Resistance” campaign.
- Working with American Nurses Association to find ways to engage bedside nurses in stewardship.
- Working with the critical care community to explore stewardship opportunities in intensive care units, especially to improve sepsis care.
- Starting in 2016, Anthem Healthcare added compliance with the CDC Core Elements to its Hospital Quality Incentive Program- more than 1000 hospital eligible.
- The Leapfrog Group is adding questions on CDC Core Elements to their annual survey: Important influence for many C-suites.

New Resources for Stewardship

- The 2016 Federal budget
 - includes significant funding support for the President's budget request for combating antibiotic resistance.
 - Stewardship is a key part of that request.
- Resources support key gaps
 - measurement and implementation in state and local health departments for preventing resistance and promoting stewardship efforts.

Conclusions

- Many of the important things we've been asking for in stewardship are finally starting to happen.
- All key stakeholders appear to be at the table and engaged.
 - We're learning from some of the things that did not go well for HAIs.
- There is a ton still to do and we need to do things right.
- I welcome your suggestions on what will help.

Accreditation Standard from The Joint Commission

- ❑ Element 1: Leaders establish antimicrobial stewardship as an organizational priority.
- ❑ Element 2: Educate staff and licensed independent practitioners involved in antimicrobial ordering, dispensing, administration, and monitoring about antimicrobial resistance and antimicrobial stewardship practices. Education occurs upon hire and annually thereafter
- ❑ Element 3: Educate patients, and their families as needed, regarding the appropriate use of antimicrobial medications, including antibiotics

Accreditation Standard from The Joint Commission

- ❑ Element 4: The organization has an antimicrobial stewardship multidisciplinary team
- ❑ Element 5: The organization's antimicrobial stewardship program includes [the CDC] core elements:

Accreditation Standard from The Joint Commission

- ❑ Element 6: The organization's antimicrobial stewardship program uses organization-approved multidisciplinary protocols.
- ❑ Element 7: The organization collects and analyzes data on its antimicrobial stewardship program, including antimicrobial prescribing and resistance patterns
- ❑ Element 8: The organization takes action on improvement opportunities identified in its antimicrobial stewardship program.

Percentage of U.S. acute care hospitals (n=4,184) reporting implementation of antibiotic stewardship by core element, 2014

