Quality Improvement Organizations
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CENTERS FOR MEDICARE & MEDICAID SERVICES

QUALIS HEALTH

Washington State Hospital Association

Antimicrobial Stewardship in Critical Access Hospitals

December 16, 2014

- **Tara Dockery, MT (ASCP)** Infection Prevention East Adams Rural Hospital
- **Loria Pollack, MD, MPH**, Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention
- **Eddie Stenehjem, MD MSc,** Infectious Diseases and Antimicrobial Stewardship, Intermountain Healthcare

Presented at the Washington State Hospital Association Statewide ASP Initiative Webcast on December 16, 2014

Education • Quality • Infection Prevention

EQIP Critical Access Hospitals

Training and Professional Development Program

- New web-based courses offered monthly
- Mentorship by experienced Infection Preventionists
- Collaborative action and improvement opportunities
- Turn-key resources (sample policies, templates, tools)
- Benchmarking of HAI data
- No cost to participants
- Enrollment begins in January!

Contact Qualis Health for information
Jamie Moran, QI Consultant
JamieM@QualisHealth.org
206-288-2512

Presented at the Washington State Hospital Association Statewide ASP Initiative Webcast on December 16, 2014

Partners

Washington State Hospital Association

AMSCOW

Antimicrobial Stewardship Consortium of Washington

WSPA

WASHINGTON STATE PHARMACY ASSOCIATION

Centers for Disease Control and Prevention

CDC 24/7: Saving Lives, Protecting People™

Statewide Antimicrobial Stewardship (ASP) Initiative – Three Tiers

All Washington hospitals and health systems will have an Antimicrobial Stewardship Program

Basic (Foundation)

- ASP Policy and Procedure in place and annual ASP training
- Local antibiogram available for use
- Physician supervised multi-disciplinary committee and dedicated ASP FTE
- Report and improve results on days of therapy of select antibiotics per 1000 patient days
- Real-time antibiotic review and feedback process

Intermediate (Intervention)

- Expanded annual education
- Antibiogram generates an action plan to drive results
- Guidelines for managing common infections and syndromes
- Monitor antibiotic usage, resistance and individual prescriber patterns
- Increased frequency of prospective audits and feedback loops

Advanced (System-Wide)

- Antimicrobial formulary reviewed annually, with changes based on local antibiogram
- Physicians review antibiotics after 48-72 hour s of therapy
- Engage in collaborative projects with Infection Control or other services
- Continued expansion of real-time review and feedback processes
- Share best practices with others

Common Barriers for Establishing ASP in CAH

- Infectious Disease Physician Support
- Full-time pharmacy support
- Standard definitions and treatment for common infections
- Provider engagement in antimicrobial stewardship
- Common understanding of Antibiograms and other sensitivity reports
- Staff understanding of drug classes and appropriate “bug/ drug” match
- Current EMR systems do not have the capability to data mine

Core Elements of Hospital Antibiotic Stewardship Programs

Finding what fits

Loria Pollack, MD, MPH
Division of Healthcare Quality Promotion
Centers for Disease Control and Prevention

Presented at the Washington State Hospital Association Statewide ASP Initiative Webcast on December 16, 2014

Objectives

- Review the rationale and goals of antimicrobial stewardship programs
- Understand the core elements of effective antimicrobial stewardship programs
- Learn how smaller hospitals can improve antibiotic prescribing

Background: Antibiotic Misuse

- **Between 20-50% of antibiotic prescriptions are either unnecessary or inappropriate**
  - *Given when they are not needed*
  - *The wrong antibiotic is chosen to treat an infection*
  - *Continued when they are no longer necessary*
  - *Given at the wrong dose*
  - *Broad spectrum agents are used to treat very susceptible bacteria*

Fishman N. Am J Med. 2006 Jun;119(6 Suppl 1):S53-61

Consequences of Inappropriate Use

- Antibiotic exposure is the single most important risk for *C. difficile* Infections
  - Exposure to antibiotics increases the risk of *C. diff* infection by at least 3 fold for at least a month
  - Up to 85% of patients with *C. diff* infection have antibiotic exposure in the 28 days before infection
- Antibiotics account for nearly 1 in 5 drug-related adverse events
  - >140,000 ER visits/year due to adverse effect of antibiotics
  - Admission required for 6.1% of adverse events

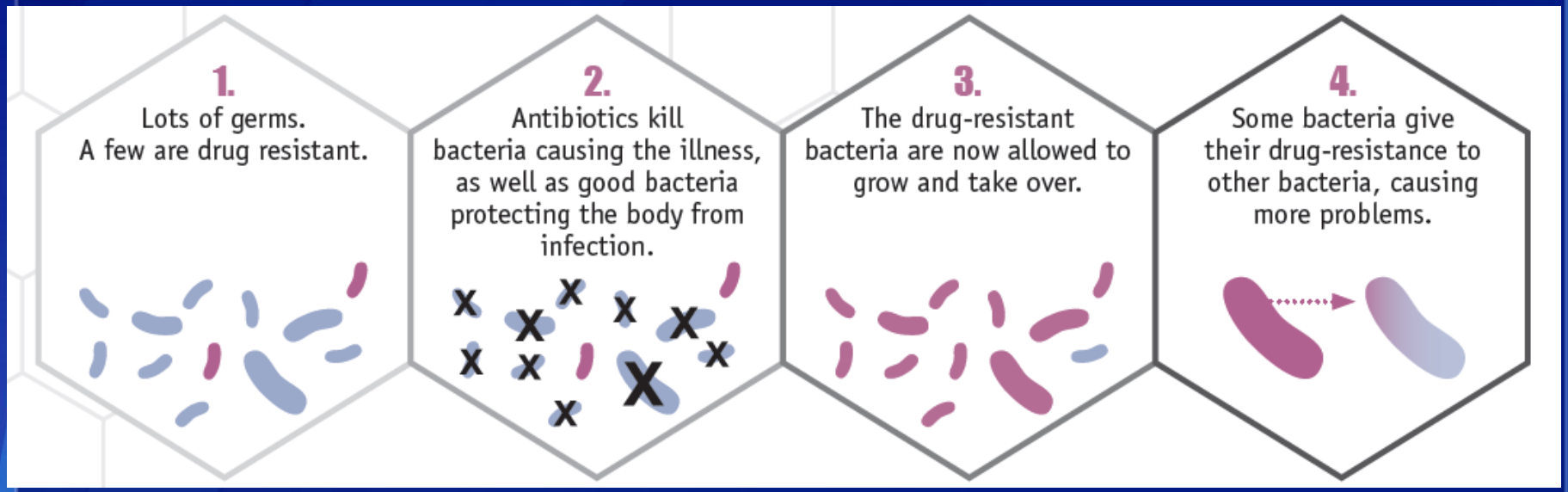
Antibiotic Use Drives Resistance

- For an individual, getting an antibiotic increases a patient's chance of becoming colonized or infected with a resistant organism

- Increasing use of antibiotics in healthcare settings increases the prevalence of resistant bacteria in hospitals

Patel G et al. Infect Control Hosp Epidemiol 2008;29:1099-1106
Zaoutis TE et al. Pediatrics 2005;114:942-9
Talon D et al. Clin Microbiol Infect 2000;6:376-84

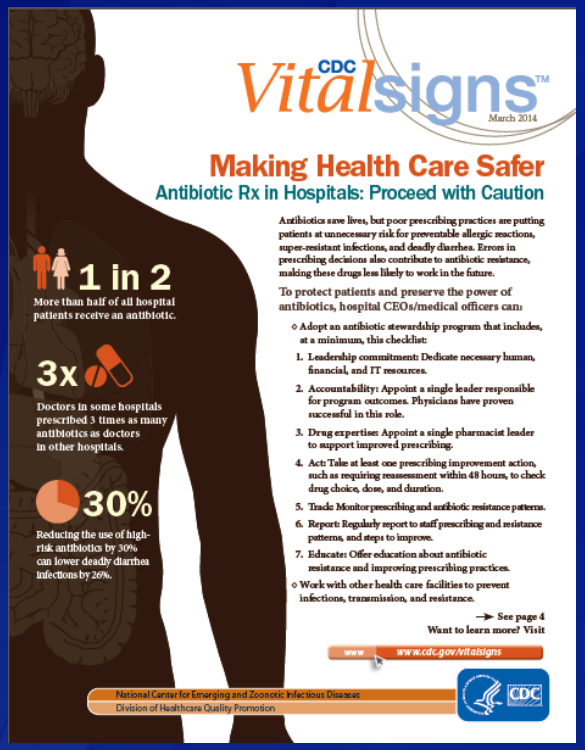
How Antibiotic Resistance Happens



CDC, Antibiotic resistance threats in the United States, 2013

CDC 2014 Report Highlights Issue

Antibiotic Stewardship Vital Signs



CDC Vitalsigns™
March 2014

Making Health Care Safer
Antibiotic Rx in Hospitals: Proceed with Caution

1 in 2
More than half of all hospital patients receive an antibiotic.

3x
Doctors in some hospitals prescribed 3 times as many antibiotics as doctors in other hospitals.

30%
Reducing the use of high-risk antibiotics by 30% can lower deadly diarrhea infections by 26%.

Antibiotics save lives, but poor prescribing practices are putting patients at unnecessary risk for preventable allergic reactions, super-resistant infections, and deadly diarrhea. Errors in prescribing decisions also contribute to antibiotic resistance, making these drugs less likely to work in the future.

To protect patients and preserve the power of antibiotics, hospital CEOs/medical officers can:

- Adopt an antibiotic stewardship program that includes, at a minimum, this checklist:
  1. Leadership commitment: Dedicate necessary human, financial, and IT resources.
  2. Accountability: Appoint a single leader responsible for program outcomes. Physicians have proven successful in this role.
  3. Drug expertise: Appoint a single pharmacist leader to support improved prescribing.
  4. Act: Take at least one prescribing improvement action, such as requiring reassessment within 48 hours, to check drug choice, dose, and duration.
  5. Track: Monitor prescribing and antibiotic resistance patterns.
  6. Report: Regularly report to staff prescribing and resistance patterns, and steps to improve.
  7. Educate: Offer education about antibiotic resistance and improving prescribing practices.
- Work with other health care facilities to prevent infections, transmission, and resistance.

→ See page 4
Want to learn more? Visit
www.cdc.gov/vitalsigns

National Center for Emerging and Zoonotic Infectious Diseases
Division of Healthcare Quality Promotion

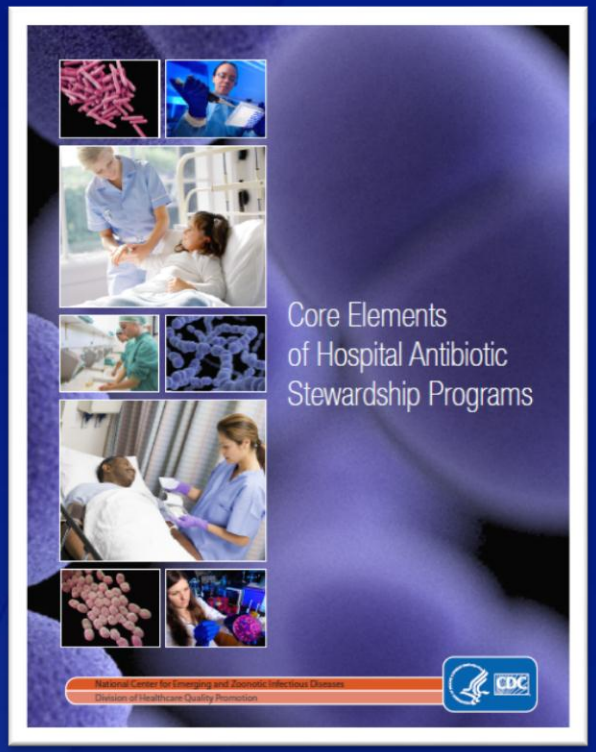
- **CDC Vital Signs: Antibiotic Rx in Hospitals: Proceed with Caution**
  - **Encouraged hospital CEOs/medical officers to adopt an antibiotic stewardship program**
  - **Identified Core Elements for Hospital Antibiotic Stewardship**

http://www.cdc.gov/vitalsigns/antibiotic-prescribing-practices/

Antimicrobial Stewardship

- **Strategic multidisciplinary and facility specific efforts to optimize antimicrobial prescribing**
  - Right drug
  - Right dose
  - Right duration
  - Recognize when not needed

Core Elements of Antimicrobial Stewardship Programs



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

Leadership Commitment

- Leadership support for efforts to improve and monitor antibiotic prescribing
- Assurance that involved staff has time, authority, and accountability
- Funding can augment efforts
  - Staff time to accomplish goals
  - Training for staff
  - IT support
- Stewardship programs will often pay for themselves

Accountability

- **Stewardship program leader:**
  - **Identify a single leader who will be responsible for program outcomes**
  - **Physicians and/or pharmacists have been highly effective in this role**

Key Supporters

- Clinician groups
- Infection preventionists
- Quality improvement staff
- Laboratory staff
- Nurses

Drug Expertise

- Identify a pharmacist to be involved
- Formal training in infectious diseases and/or antibiotic stewardship is beneficial
- Pharmacist can assist in
  - Identifying areas for improvement, and
  - Monitoring use

Stewardship Program Functions

- Develop guidelines, policies, and protocols that support optimal prescribing
- Prioritize efforts
  - Specific conditions
  - Particular units or prescriber groups
  - Specific antimicrobial drugs
- Educate
- Monitor and report

Infection and syndrome specific interventions

- Community-acquired pneumonia
- Urinary tract infections (UTIs)
- Skin and soft tissue infections
- Tailoring treatment to culture results
- *Clostridium difficile* infections

Action: Guidelines

- Facility-specific guidelines, based on
  - National guidelines
  - Local susceptibility
- Select and review charts
  - What is current practice?
  - What can we improve upon?
- Involve prescribers
- Develop order-sets that incorporate guidelines

Actions: Interventions

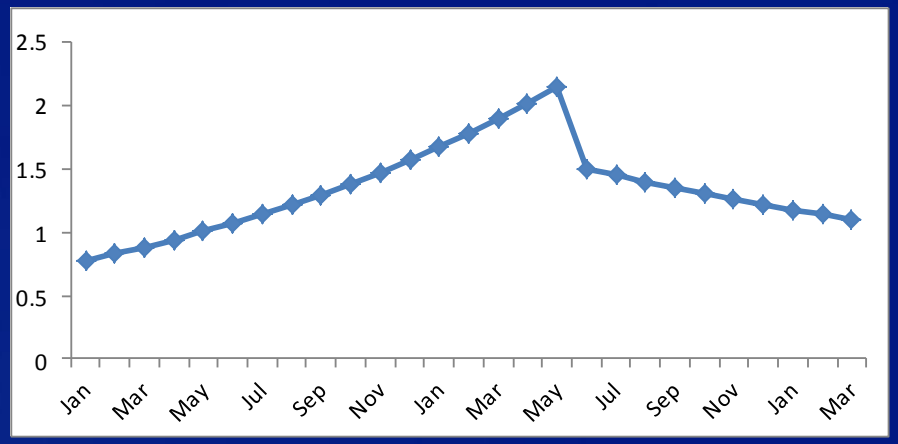
- Guidelines, policies, and protocols alone will probably not change practice
- Active interventions are most effective
  - Prospective audit
  - Formulary restriction and preauthorization
  - Antibiotic ‘Time Out’

Prospective Audit

- An physician or pharmacist reviews orders and intervenes with modification of order and feedback to prescriber
- Results in improved use, decreased costs
- Caveats:
  - Time and labor intensive
  - Many settings do not have capacity
  - Providers may not be receptive

Formulary restriction and preauthorization

- Specific antibiotics cannot be ordered without authorization
- Useful in response to healthcare-associated outbreak



Impact of Fluoroquinolone Restriction on Rates of *C. difficile* Infection (CDI)

Kallen et al. Infect Control Hosp Epidemiol. 2009 Mar;30(3):264-72.

Pharmacy-driven Interventions

- Automatic changes from intravenous to oral antibiotic therapy
- Automatic alerts in situations where therapy might be unnecessarily duplicative
- Dose adjustments/optimization
- Time-sensitive automatic stop orders

Additional Core Elements

Tracking:

- Monitoring antibiotic prescribing and resistance patterns

Reporting:

- Regular reporting information on antibiotic use and resistance to doctors, nurses and relevant staff

Education:

- Educating clinicians about resistance and optimal prescribing

Antimicrobial Stewardship

Successful example

Antimicrobial Stewardship in a Rural Hospital

- **Setting:** 141-bed community hospital in rural Northwest
- **Team:** Pharmacist-led (non-ID), Remotely located ID physician
- **Intervention:**
  - Targeted review of six antimicrobials
    - Pip/Tazo, imipenam, cilastatin, ertapenam, vancomycin, linezolid, daptomycin
  - Weekly teleconference "rounding" with ID physician
  - Streamlined Therapy
    - Eliminated unnecessary combinations
    - Recommended more narrow spectrum
  - Dose optimization

Yam et al. Am J of Health-System Pharm. 2012 ;(69):1142-8

Antimicrobial Stewardship in a Rural Hospital

Outcomes

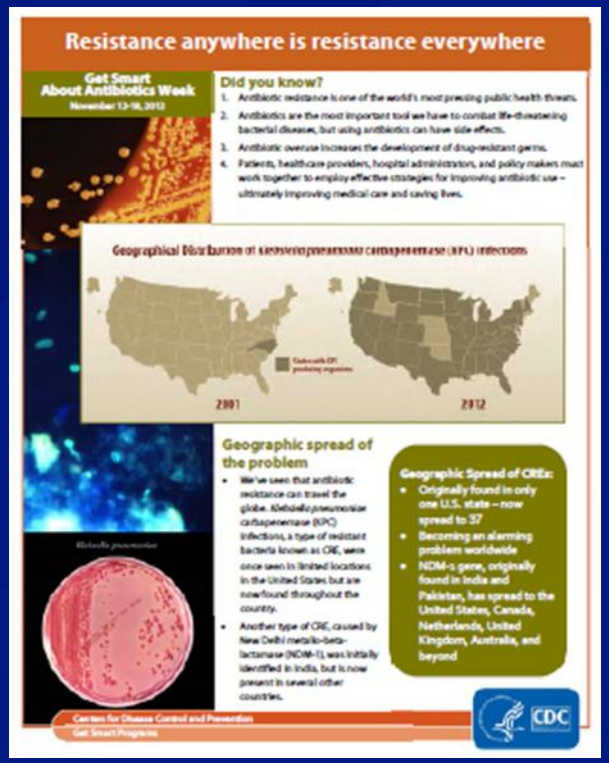
- Number of interventions increased from 2 to 7 per week
- Streamlining was most common intervention
  - 44% before program, 96% after program began
- C. diff infections decreased from 5.5 to 1.6 (cases/10,000 pt days)
- Antimicrobial purchase costs decreased
  - $13,521 per 1,000 pt days (baseline) to
  - $ 9,756 (2010) to
  - $ 6,583 (2011 Quarter 1-2)

Yam et al. Am J of Health-System Pharm. 2012 ;(69):1142-8

Moving Stewardship to the Front Lines

- Every practitioner should embrace the responsibility to optimize antibiotic use
- Starting point: Identify specific interventions that people can do to improve antibiotic use

Resources on *Get Smart for Healthcare* Website – *For your use!*



- **Fact sheets**
- **Implementation resources**
- **Program examples**

http://www.cdc.gov/getsmart/healthcare/

Thank you!

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CDC/Division of Healthcare Quality and Promotion
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Phone: (404) 639-1154

For more information please contact Centers for Disease Control and Prevention
1600 Clifton Road NE, Atlanta, GA 30333
Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov Web: www.cdc.gov

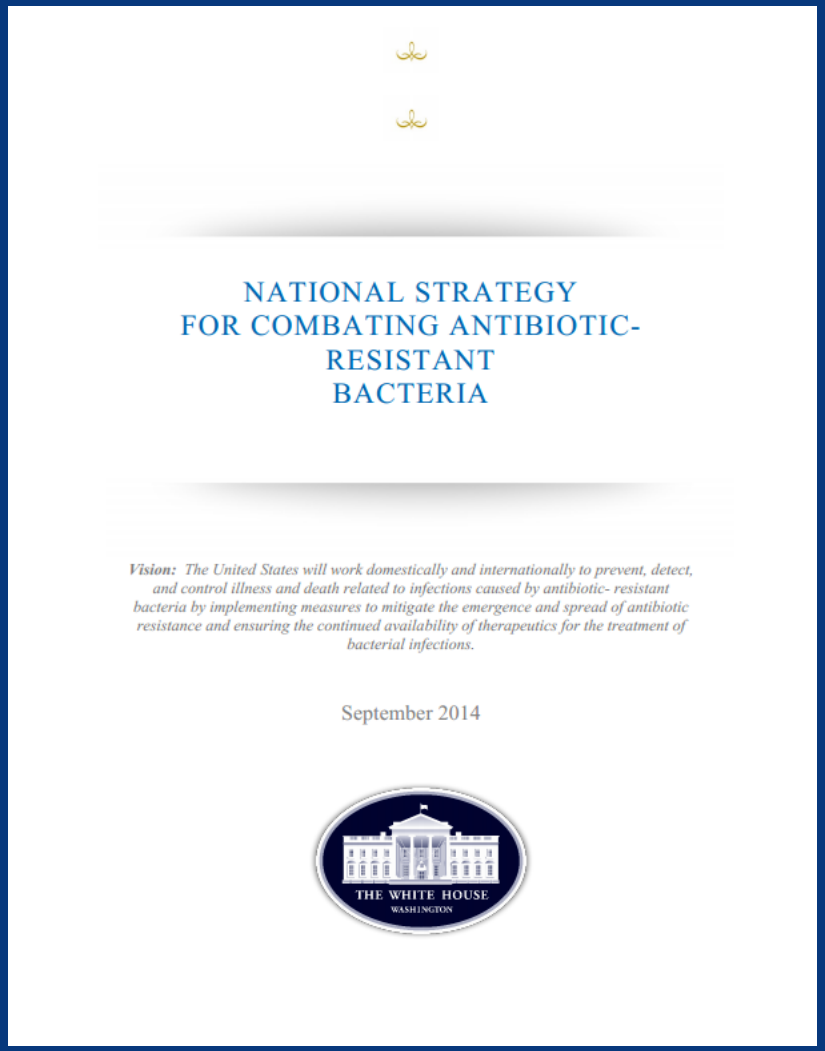
Advancing Antimicrobial Stewardship in Community Hospitals in Utah

Eddie Stenehjem, MD MSc
Infectious Diseases and Antimicrobial Stewardship
December 16th, 2014

Objectives

- Describe how antimicrobial usage in small, community hospitals compares to large urban centers
- Understand the basic concepts of Intermountain's SCORE study and how it can apply to your hospital

Presidential Report



NATIONAL STRATEGY
FOR COMBATING ANTIBIOTIC-
RESISTANT
BACTERIA

Vision: The United States will work domestically and internationally to prevent, detect, and control illness and death related to infections caused by antibiotic- resistant bacteria by implementing measures to mitigate the emergence and spread of antibiotic resistance and ensuring the continued availability of therapeutics for the treatment of bacterial infections.

September 2014

THE WHITE HOUSE
WASHINGTON

Executive Order

- Task Force for Combating Antibiotic Res.
  - By 2/14/2015: submit a National Action Plan
- Improved Antibiotic Stewardship
  - "By the end of calendar year 2016, HHS shall review existing regulations and propose new regulations …that require hospitals…to implement robust antibiotic stewardship programs that adhere to best practices."

SCOPE

2005 United State Hospitals

4935 Registered Hospitals

72% have < 200 beds

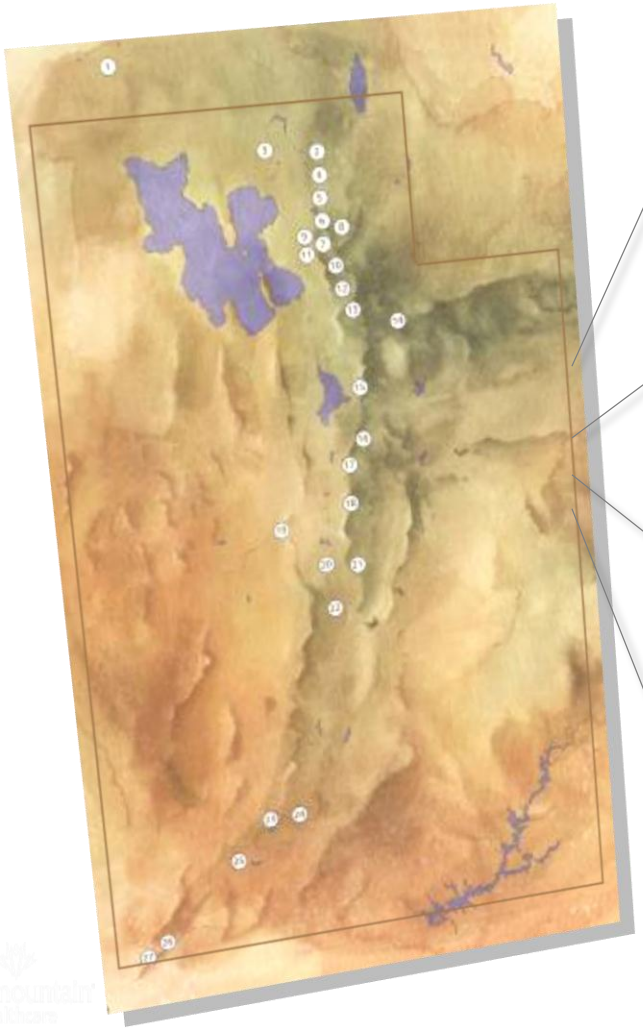
Most of these are without antibiotic oversight

All will be included in Executive Order

AHA Statistics
http://www.aha.org/research/rc/stat-studies/index.shtml

Intermountain Healthcare Highly-Integrated Health System

Washington State Hospital Association



Hospitals

Since 1975
- 22 hospitals
- 2,784 licensed beds

SelectHealth

Since 1983
- Health plans
- 700,000+ members

Medical Group

Since 1994
- 1,200 employed physicians
- 558 advanced practice clinicians

Clinical Programs

Since 1997
- 10 key service lines

Intermountain Antibiotic Stewardship

Increased emphasis in the past 5 years at our large facilities

- Corporate AS Committee
  - *Subcommittee of Infection Control Guidance Council*
- Corporate Outpatient AS Committee
  - *Subcommittee of Primary Care Clinical Program*
- Individual ASP Committees at our large sites
- NO FOCUS ON OUR SMALLER HOSPITALS


IDAHO
Yellowstone National Park
Cassia
Grand Teton National Park
Bear River
Logan
McKay-De
Primary Children's
UTAH
LDS
Park City
IMC
TOSH
Riverton
Alta View
Heber Valley
American Fork
Orem
Utah Valley
Delta
Sanpete
Fillmore
Sevier
Arches National Park
Canyonlands National Park
Capitol Reef National Park
Valley View
Bryce Canyon National Park
Dixie
Zion National Park

Hospital	Staffed Bed Count
Intermountain Medical Center	472
Utah Valley	375
McKay-Dee	300
Primary Children's	289
Dixie Regional	245
LDS	243
Logan Regional	128
American Fork	89
Riverton	88
Alta View	66
Valley View	48
Park City Medical Center	30
Cassia Regional	25
Sevier Valley	24
Orem Community	18
Bear River Valley	16
Heber Valley	16
Delta Community	15
Garfield Memorial	14
Sanpete Valley	13
Fillmore Community	7

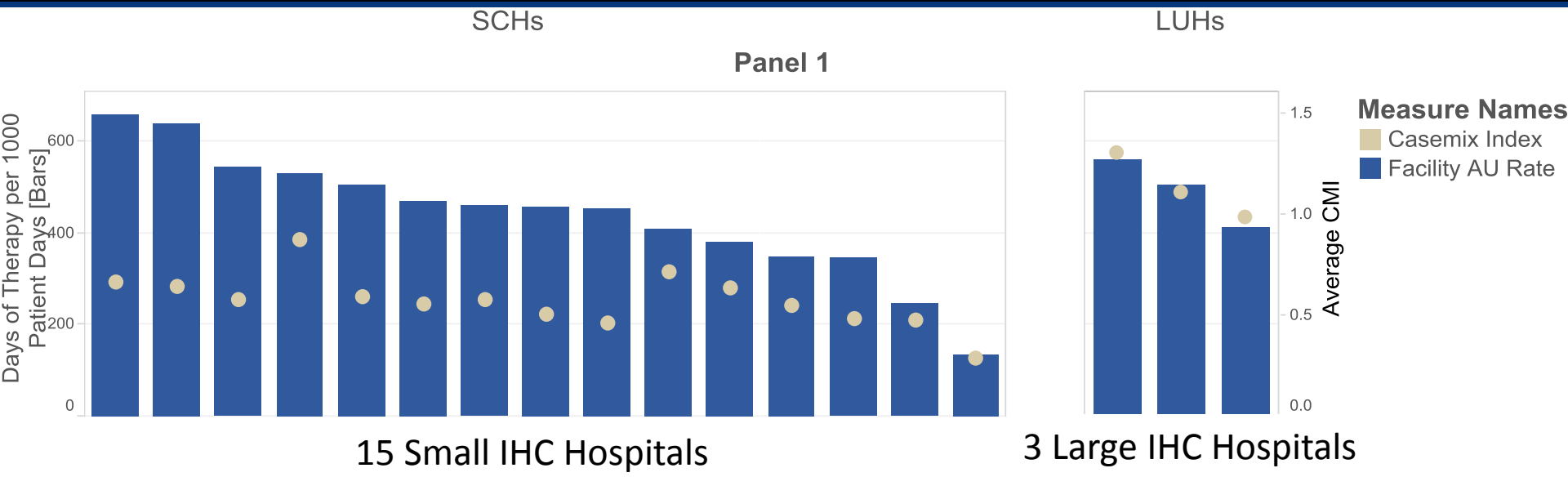
Large Urban Hospitals
-ASP focused
-Formal ID consultation available

Small Community Hospitals
-15 Hospitals
-597 Beds
-**25% of IHC Beds**
-No formal ASPs
-No Infectious Diseases MD support
-All with full time pharmacy staff

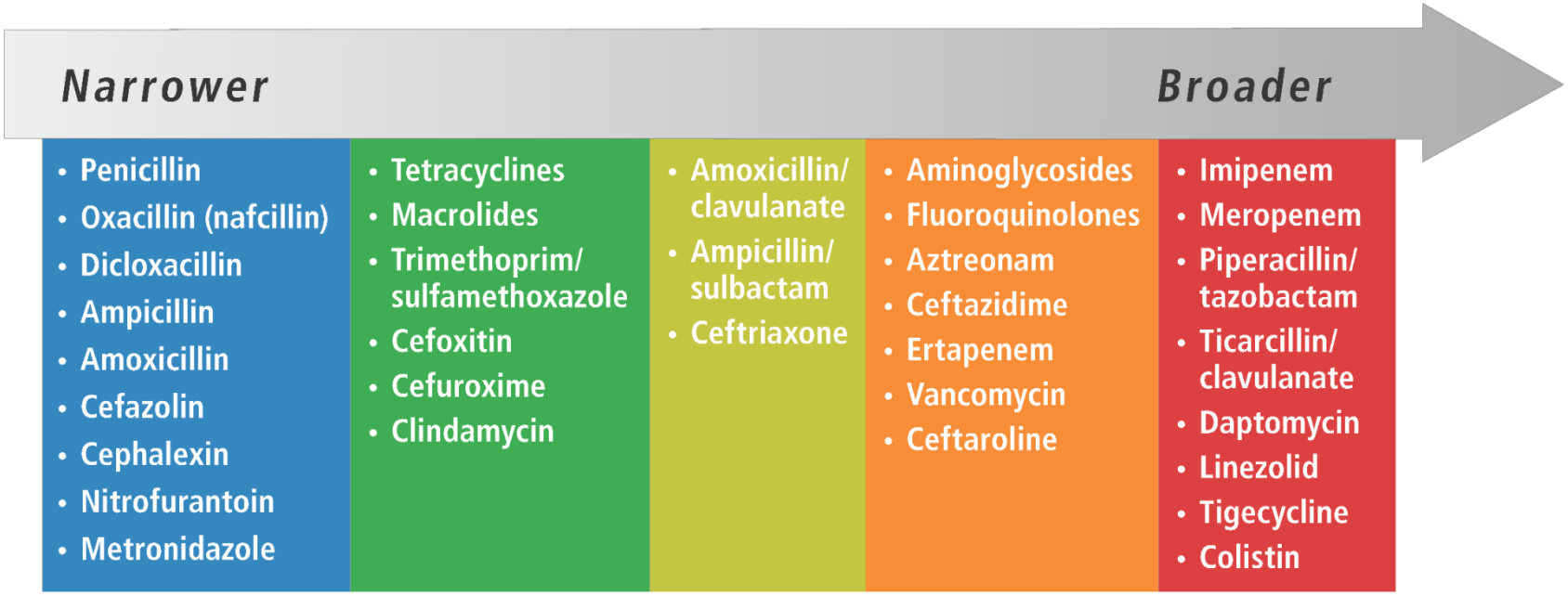
Antibiotic Usage
CDC AU Data

- How does usage differ across our system?
  - Small vs Large Hospitals
  - Usage and Case Mix Index (CMI)
  - Usage and Spectrum

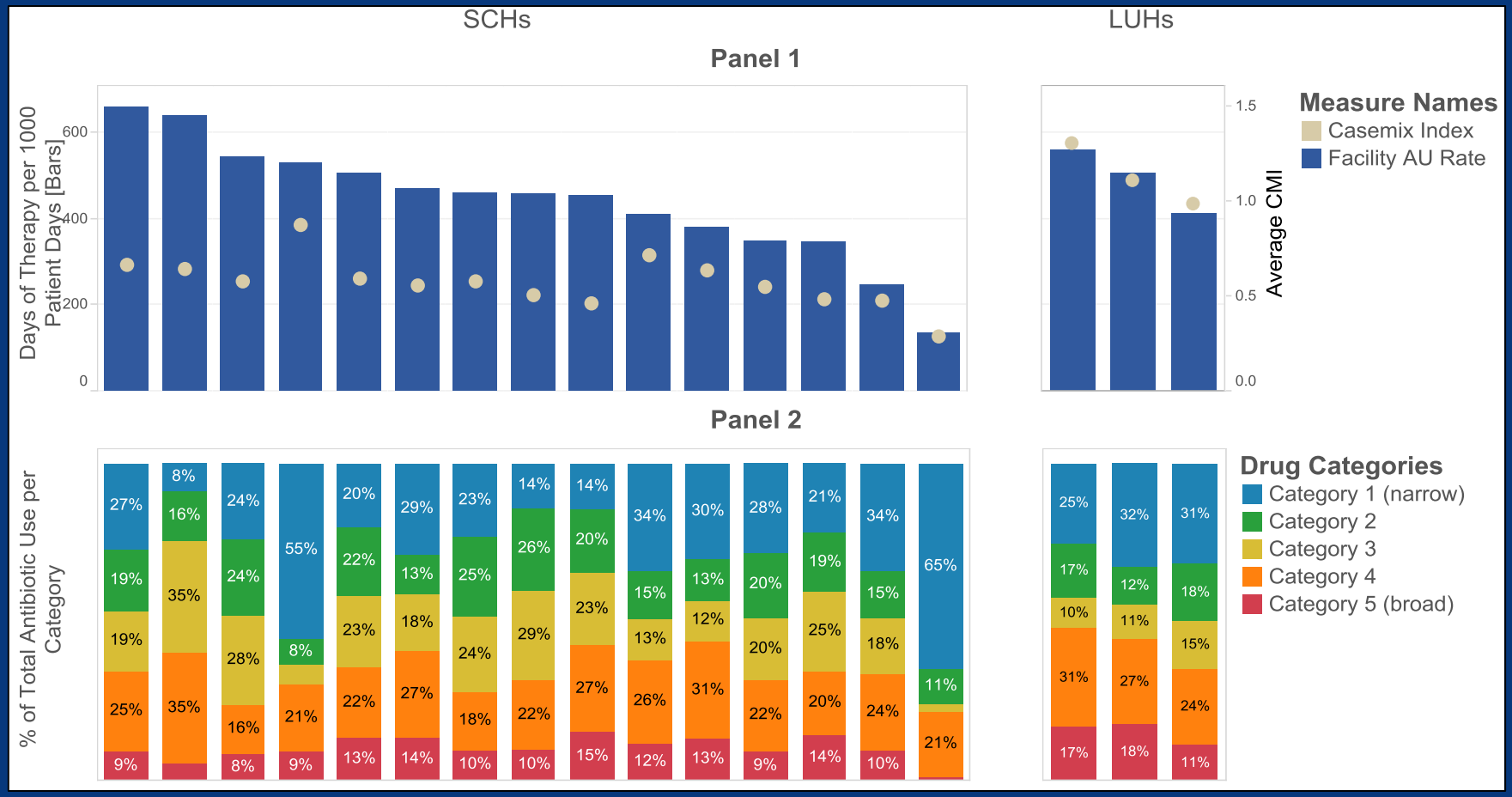
Small vs. Large Hospitals
3 year average



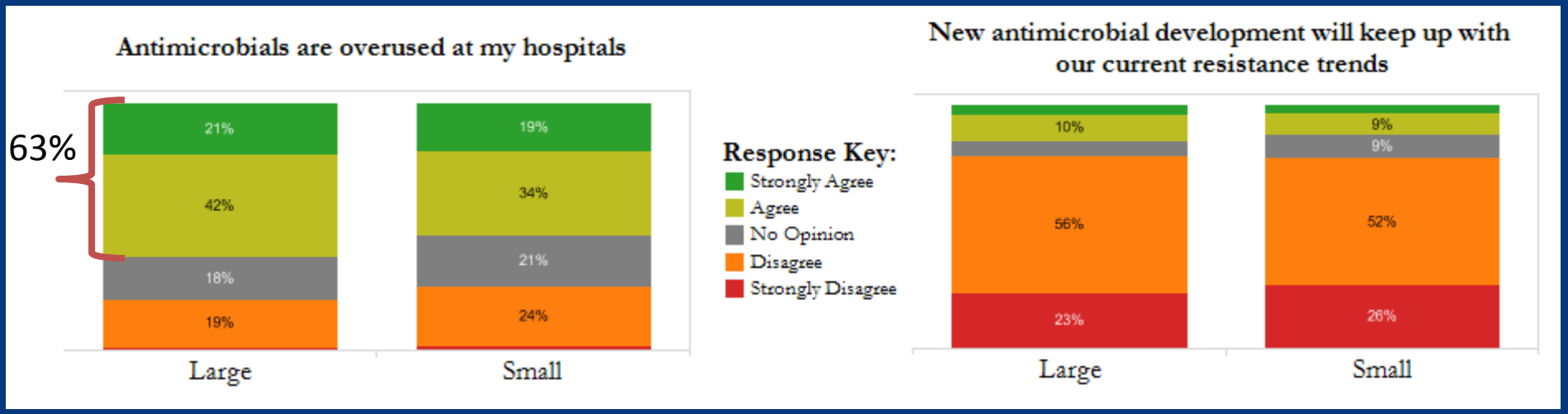
Usage and Spectrum



Usage and Spectrum



Need for Stewardship



Conclusions – Baseline analysis

- SCHs have similar antibiotic usage rates as large, urban hospitals.
- There is significant variation in antibiotic selection in SCHs.
- Antibiotic use rates are dependent, in part, on:
  - CMI
  - Unit types

SCORE

Stewardship in Community Hospitals: Optimizing Outcomes and Resources (SCORE)

Funded by:
Pfizer Independent Grants for Learning and Change
The Joint Commission

Project Aim: SCORE

Stewardship in Community Hospitals Optimizing Outcomes and Resources

Define an antibiotic stewardship strategy for Intermountain's smaller hospitals that optimizes outcomes while maximizing resources

Study Design: Cluster Randomized Clinical Trial

Study sites: All smaller Intermountain hospitals (N = 15)

Intervention:

- Low Resource Utilization
- Medium Resource Utilization
- High Resource Utilization

ALL Sites – Antibiotic Best Practices

IV to PO Conversion

Antibiotic Indications

48 hour Antibiotic "Timeout"

Access to: ID clinicians and pharmacists

Monthly Hospital Antibiotic Utilization Report

Low Resource	Medium Resource	High Resource
Education Initiative - Pharmacy KAP survey Topics Covered: • Stewardship Basics • Antibiotic Time Out • IV to PO • Antibiotic Indications • Bug-Drug mismatch • When to call ID	Education Initiative - Pharmacy KAP survey Stewardship Basics – all of those in Low, plus • De-escalation - mylearning • Anaerobes - mylearning • Restrictions - mylearning • Allergy Verification • Stewardship Pearls / Q and A	Education Initiative - Pharmacy KAP survey Stewardship Basics – all of those in Low, plus • De-escalation - mylearning • Anaerobes - mylearning • Restrictions - mylearning • Allergy Verification • Stewardship Pearls / Q and A
	PAF – lite: Audit a limited number of antimicrobial agents* and provide feedback **Restriction** (local pharmacy review) of selected antimicrobials*** * Vancomycin, carbapenems, piperacillin/tazobactam, and cefepime	**PAF:** Audit an expanded list of antimicrobial agents** and provide feedback **Restriction** (Infectious Diseases review) of selected antimicrobials*** ID study staff to review positive blood culture results and all cultures with MDROs. ** Vancomycin, carbapenems, piperacillin/tazobactam, cefepime, aminoglycosides, ciprofloxacin, levofloxacin, ceftriaxone, and ampicillin/sulbactam *** Restricted agents: Meropenem, linezolid, daptomycin, ceftaroline, tigecycline, antifungals.

Antibiotic Best Practices

- IV to PO Conversion
- Antibiotic Indications
- 48 Hour Antibiotic “Timeout”
- Monthly Antibiotic Report
- Access to ID Consultation

IV to PO Conversion

▸ *Quick Reference Guide for Hospital Pharmacists*

Intermountain Healthcare

This quick reference guide describes the purpose, process, and inclusion/exclusion criteria for converting antibiotics from IV to PO.

What is IV to PO conversion?

IV to PO conversion is a process of reviewing all patients on select IV antibiotics daily, assessing each patient's eligibility for conversion to PO, and recommending conversion to the prescribing doctor.

Key Point:
You'll review patients on IV antibiotics daily to assess eligibility for conversion.

Antibiotic Indications

▸ *Quick Reference Guide for Hospital Pharmacists*

Intermountain Healthcare

This quick reference guide describes the purpose, process, and requirements for including indications in HELP1 for every antimicrobial prescription. All antibiotics, antifungals, and antivirals are in the scope of these procedures; this card focuses on antibiotics.

The goal

To ensure that antibiotics are prescribed correctly. Ask yourself, is this...

- The RIGHT patient — *Does the patient have an infection or need antibiotics based on an upcoming procedure?*
- The RIGHT drug — *Which antibiotic is most appropriate?*
- The RIGHT dose — *What dose is most appropriate?*
- The RIGHT route — *IV, oral, switch from IV to oral?*
- The RIGHT duration — *3 days, 7 days, 6 weeks?*

Key Point:
Knowing why the patient is receiving an antibiotic will enable you to assist the prescriber in providing the RIGHT care to the patient.

Antibiotic Time-Out

PHI:ABX TIMEOUT: Garfield Memorial Hospital

abxAlert@ihc.com

Sent: Mon 11/24/2014 7:31 AM

To: Whitney Buckel

Retention Policy: 90-day Message Retention - Inbox (90 days) Expires: 2/22/2015

ANTIBIOTIC TIME-OUT

[redacted]

Room: 111A

The above patient has been on the following antibiotics for greater than 48 hours:

LEVOFLOXACIN (LEVAQUIN), TABLET 750.

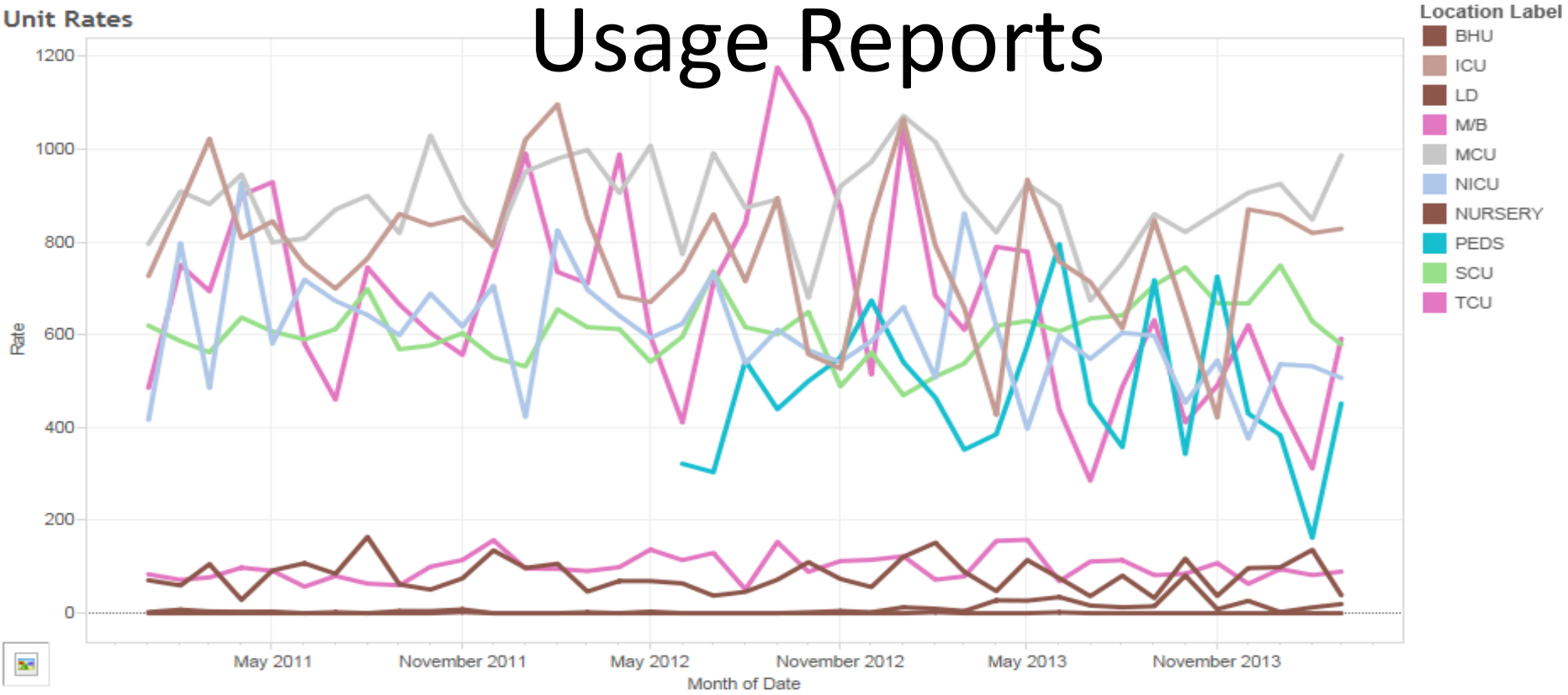
Please take a moment and review your patients available microbiology and clinical data to determine if antibiotics can be de-escalated or discontinued.

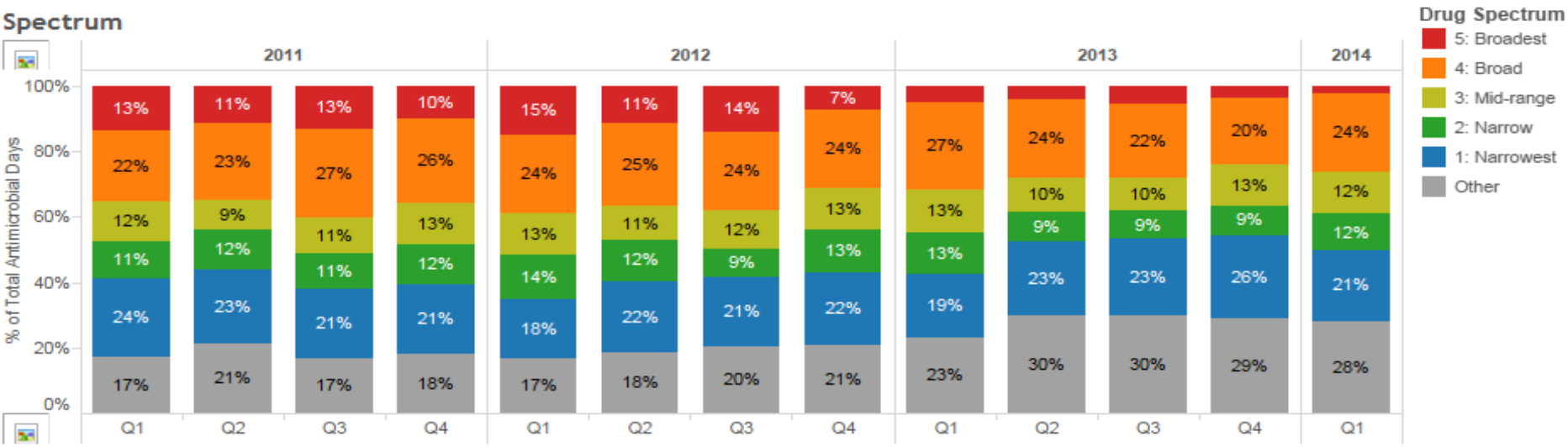
An ANTIBIOTIC TIME-OUT is considered to be an 'Antibiotic Best Practice' by the Centers for Disease Control and The Joint Commission.

Thank you.

Antibiotic Stewardship Team

Usage Reports





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Access to ID Clinicians

- Adults and Pediatrics
- One number: 1-801-50-SCORE

- Call: Anytime
  - Adults: Stenehjem
  - Pediatrics: Attending on call at PCMC

https://my.intermountain.net/qpsafety/Pages/SCORE.aspx

Intermountain.net

Search

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Quality and Patient Safety

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- Reports
- Sentinel Event Alerts
- Contacts

SCORE Study

SCORE
Optimizing Stewardship in Community Hospitals
1-801-50-SCORE (72673) | score@imail.org

The SCORE Antimicrobial Stewardship study is gathering data to answer this question: "What is the appropriate level of antibiotic stewardship for community hospitals?" SCORE stands for "Stewardship in Community Hospitals - Optimizing Outcomes and Resources".

Why is the SCORE study important?
Various sources have estimated that up to 50% of antibiotic use is inappropriate, which leads to decreased patient safety and comfort, increased costs to both patients and healthcare systems, and increased antibiotic resistance in disease-causing organisms.

Antimicrobial stewardship programs provide a toolkit of techniques to ensure that we are using our antimicrobials appropriately. While stewardship programs in large urban hospitals have been well studied, there have not been adequate studies looking at stewardship (in particular, the appropriate level of stewardship) in community hospitals. The SCORE study is focusing on this gap.

What are the study details?
The SCORE study is a prospective, randomized study of 15 Intermountain community hospitals. Each hospital is randomized into one of three levels of intervention. Data is being gathered on the effect of different levels of stewardship programs on each hospital.

Who can I contact for more information?
Primary Contact
Peter Jones, MSLS
Project Consultant

SCORE Links

URL

- CDC: Antibiotic Stewardship
- SHEA: Antibiotic Stewardship
- IDSA: Antibiotic Stewardship
- IDSA: Practice Guidelines
- Intermountain Stewardship Care Process Models page
- App: GermWatch
- Intermountain Antibiogram

Quick Reference Guides

URL

- When to Consult Infectious Diseases
- Antibiotic Indications
- Antibiotic Timeout
- Bug-Drug Mismatch
- IV to PO
- Anaerobes (Advanced)
- Allergy Verification (Advanced)
- Antibiotic Restrictions (Advanced)
- De-escalation (Advanced)

Cases and Examples

ALL Sites – Antibiotic Best Practices

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Low Resource	Medium Resource	High Resource
Education Initiative - Pharmacy KAP survey Topics Covered: • Stewardship Basics • Antibiotic Time Out • IV to PO • Antibiotic Indications • Bug-Drug mismatch • When to call ID	Education Initiative - Pharmacy KAP survey Stewardship Basics – all of those in Low, plus • De-escalation - mylearning • Anaerobes - mylearning • Restrictions - mylearning • Allergy Verification • Stewardship Pearls / Q and A	Education Initiative - Pharmacy KAP survey Stewardship Basics – all of those in Low, plus • De-escalation - mylearning • Anaerobes - mylearning • Restrictions - mylearning • Allergy Verification • Stewardship Pearls / Q and A
	PAF – lite: Audit a limited number of antimicrobial agents* and provide feedback **Restriction** (local pharmacy review) of selected antimicrobials*** * Vancomycin, carbapenems, piperacillin/tazobactam, and cefepime	**PAF:** Audit an expanded list of antimicrobial agents** and provide feedback **Restriction** (Infectious Diseases review) of selected antimicrobials*** ID study staff to review positive blood culture results and all cultures with MDROs. ** Vancomycin, carbapenems, piperacillin/tazobactam, cefepime, aminoglycosides, ciprofloxacin, levofloxacin, ceftriaxone, and ampicillin/sulbactam *** Restricted agents: Meropenem, linezolid, daptomycin, ceftaroline, tigecycline, antifungals.

Prospective Audit and Feedback

Pharmacy will review the following medications after 48 hours of administration

- Vancomycin
- Carbapenems
- Piperacillin/tazobactam
- Cefepime
- Fluoroquinolones
- Aminoglycosides
- Ceftriaxone
- Ampicillin/sulbactam

Restrictions

- The following drugs will be restricted
  - Daptomycin, linezolid, ceftaroline
  - Imipenem/meropenem, tigecycline
  - Amphotericin, vori/posaconazole, micafungin

- Medium group – local pharmacy
- High group – ID pharmacist

High Group

- Infectious diseases involvement
  - Positive blood cultures
  - *S. aureus* bacteremia
  - CNS infections
  - MDRO
  - Home IV antibiotic therapy

Outcomes

- Primary Outcome:
  - Antimicrobial use
- Secondary Outcomes:
  - Stratified antimicrobial use
  - Incidence of *C. difficile* infection
  - Incidence of MDRO infections
    - (VRE, ESBL, CRE, MRSA, FQ R E.coli)
  - Feasibility
  - Cost

Significance

- One of the largest AS studies ever done
- First AS study to evaluate effectiveness of different intervention levels
- First randomized AS study done in small, community hospitals

Timeline

Jan/Feb 2014: Education

March 2014 – June 2015: Intervention

July 2015 – Aug 2015: Analyze Data

Sept 2015: Present Intermountain Plan

Thank You

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