

Coordination of Data and Incentives to drive AMR progress: a US perspective

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Division of Healthcare Quality Promotion



Antibiotic Resistance Old Challenge, New Opportunity

ANTIBIOTIC RESISTANCE THREATS in the United States, 2013

CARBAPENEM-RESISTANT ENTEROBACTERIACEAE



9,000
DRUG-RESISTANT
INFECTIONS PER YEAR

600
DEATHS

THREAT LEVEL
URGENT



**CRE HAVE BECOME RESISTANT TO ALL
OR NEARLY ALL AVAILABLE ANTIBIOTICS**



U.S. Department of
Health and Human
Services
Centers for Disease
Control and Prevention

Keeping pace with a Complex System

Vital signs™
March 2011

Making Health Care Safer

Reducing bloodstream infections

A central line is a tube that a doctor usually places in a large vein of a patient's neck or chest to give important medical treatments. When not put in correctly or kept clean, central lines can become a doorway for germs to enter the body and cause serious bloodstream infections. These infections can be deadly. Of patients who get a bloodstream infection from having a central line, up to 1 in 4 die. Bloodstream infections in patients with central lines are largely preventable when healthcare providers use CDC-recommended infection control steps. Medical professionals have reduced these infections in hospital intensive care unit (ICU) patients by 90% since 2005. Even so, many still occur in ICUs, in other parts of hospitals, and in outpatient care locations. In 2008, about 27,000 bloodstream infections occurred in hospitalized outpatients with central lines.

Learn what you can do to reduce central line bloodstream infections. → See page 4

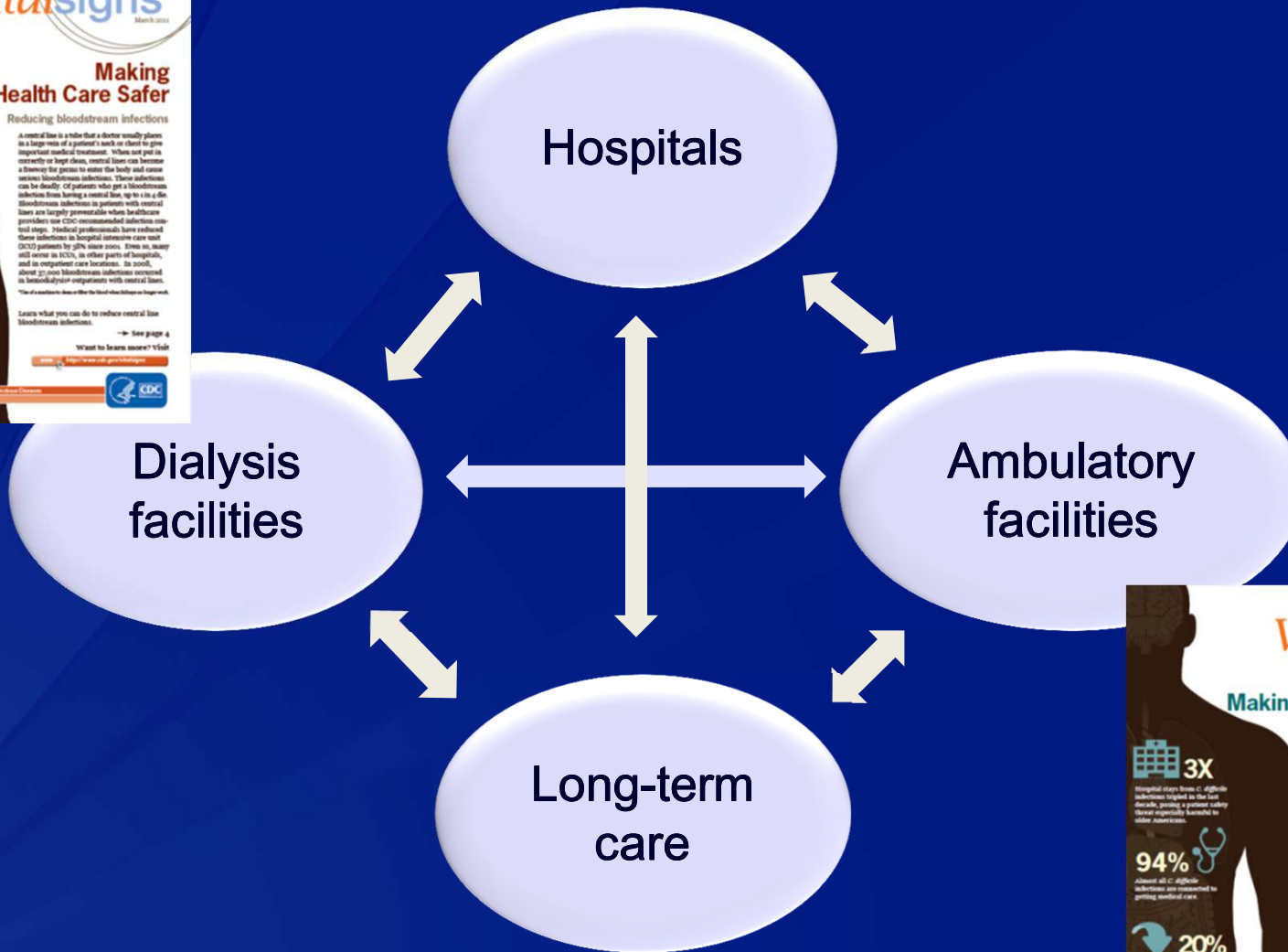
Want to learn more? Visit www.cdc.gov/ncidod/dhqp/html/CLBSI.html

41,000
About 41,000 bloodstream infections at hospital patients with central lines each year.

37,000
About 37,000 bloodstream infections in long-term care patients with central lines each year.

1 in 20
About 1 in 20 patients get an infection each year while receiving medical care.

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Making Health Care Safer

Stopping *C. difficile* infections

People getting medical care can catch serious infections called health care-associated infections (HAIs). While most types of HAIs are declining, one – caused by the germ *C. difficile* – remains at historically high levels. *C. difficile* causes diarrhea linked to hospital-associated deaths each year. Those most at risk are people, especially older adults, who take antibiotics and also get medical care. When a person takes antibiotics, good germs that protect against infections are destroyed for several months. During this time, patients can get sick from *C. difficile* picked up from environmental surfaces or spread from a health care provider's hands. About 80% of *C. difficile* infections first show symptoms in hospital patients; 20% first show in nursing home patients or in people recently cared for in doctors' offices and clinics. *C. difficile* infections cost at least \$1 billion in extra health care costs annually.

To learn more about how to stop the spread of *C. difficile*, visit www.cdc.gov/ncidod/dhqp/html/CDI.html

→ See page 4

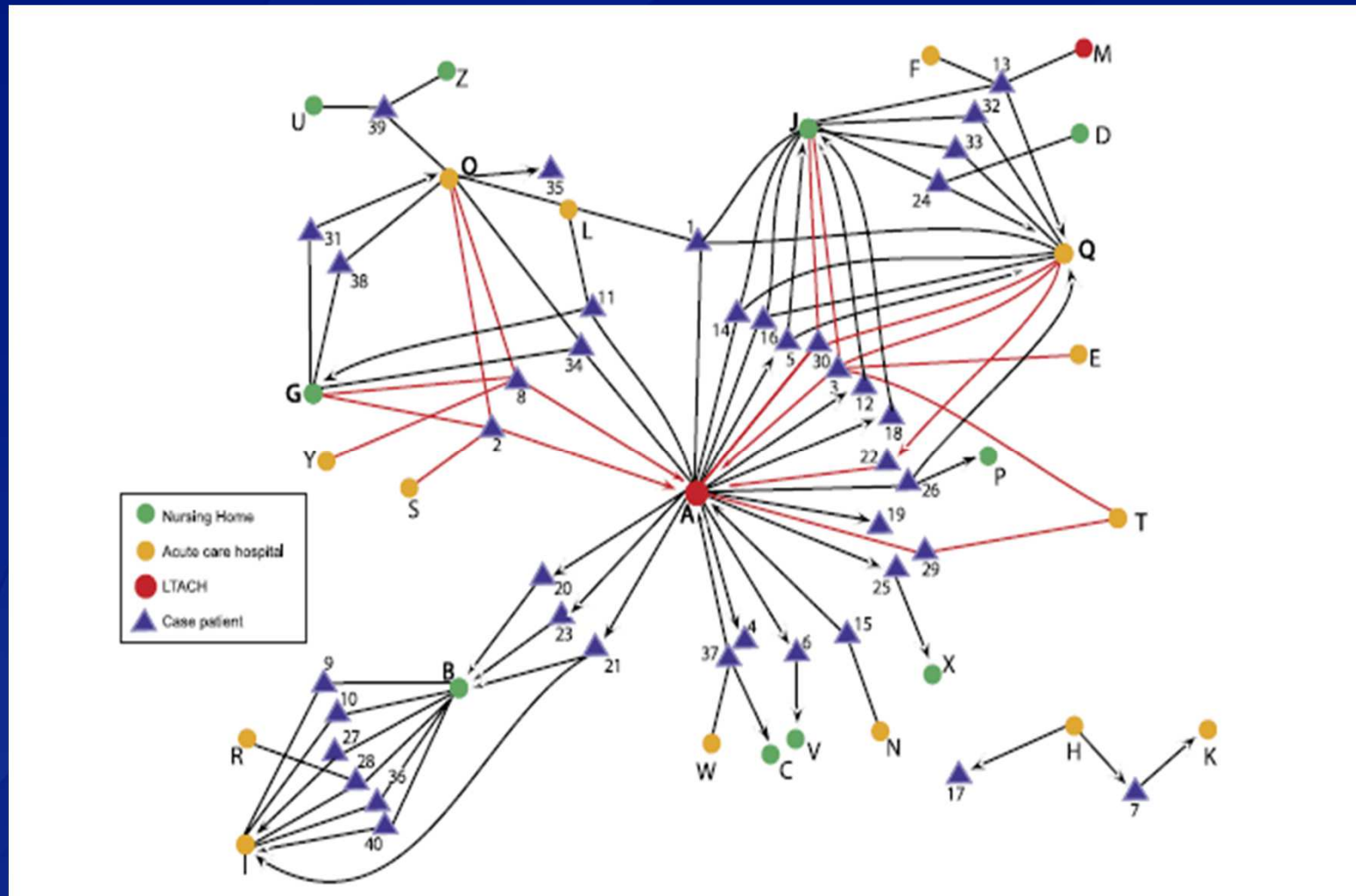
3X
Hospital stays from *C. difficile* infections compared to the late 1990s, posing a patient safety threat especially harmful to older Americans.

94%
Almost all *C. difficile* infections are preventable by getting medical care.

20%
Hospital-acquired infections are bloodstream infections. Inward *C. difficile* infections rates for 2008 in long-term care, 3 years.

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Regional control of Carbapemen-resistant Enterobacteriaceae (CRE)

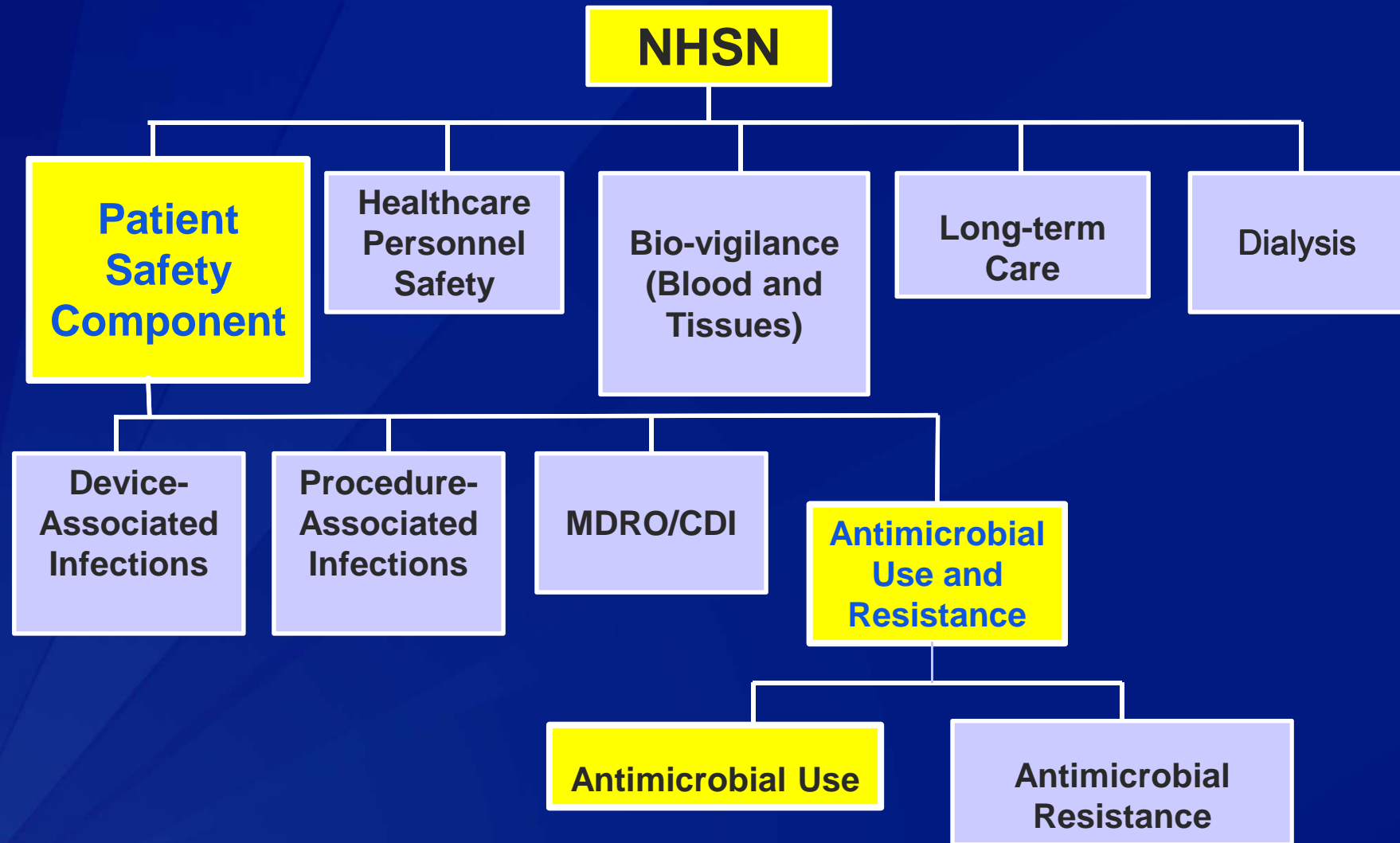


Won S, Munoz-Price S, Lolans K, Hota B, Weinstein R, Hayden M. for the Centers for Disease Control Prevention Epicenter Program. Rapid and Regional Spread of *Klebsiella pneumoniae* Carbapenemased CID 2011;53: 532-540

Timely Data + Effective Policies Impact

- ❑ **National Healthcare Safety Network (NHSN)**
 - Web-based system for US hospitals to send healthcare outcomes data to CDC and State health departments
- ❑ **US Centers for Medicare and Medicaid Services (CMS)**
 - National healthcare reimbursement policies require hospitals to send data to CDC
 - Payment is now adjusted based on data reported to NHSN
- ❑ **Non-punitive opportunities + resources for improvement**
 - Technical assistance from CDC and State health departments
 - CMS-supported Quality Improvement Networks
 - Accreditation Organizations

US National Healthcare Safety Network (NHSN)



Increasing Transparency: CDC data for State and Federal initiatives

NATIONAL

Healthcare-associated infections (HAI) are infections patients can get while receiving medical treatment in a health care facility. The standardized infection ratio (SIR) is a statistic used to track HAI prevention progress over time. Lower SIRs indicate better progress. The infection data are collected through CDC's National Healthcare Safety Network (NHSN). Oklahoma requires hospitals to publicly report at least one HAI to MRSA, and SIR data for nearly all U.S. hospitals are published on the Hospital Compare website.

Changes in MRSA and C. difficile infections vs. 2011 National Baseline

1,175 hospitals with MRSA bloodstream infections

6% of hospitals worse than the national SIR of 0.56

1,681 hospitals with C. difficile data in 2012

When a person takes antibiotics, good bacteria that protect against infection are destroyed for several months. During this time, patients can get sick from C. difficile, bacteria that are potentially deadly to some. C. difficile is usually spread by contact with contaminated surfaces or contaminated hands.

10/2012 H. influenzae 2012 SIR: 0.00 H. influenzae 2011 SIR: 0.00

OKLAHOMA

Healthcare-associated infections (HAI) are infections patients can get while receiving medical treatment in a health care facility. The standardized infection ratio (SIR) is a statistic used to track HAI prevention progress over time. Lower SIRs indicate better progress. The infection data are collected through CDC's National Healthcare Safety Network (NHSN). Oklahoma requires hospitals to publicly report at least one HAI to MRSA, and SIR data for nearly all U.S. hospitals are published on the Hospital Compare website.

Changes in CLABSI vs. 2008 National Baseline

CLABSI vs. 2008 National Baseline

7% of Oklahoma hospitals have an SIR worse than the national SIR of 0.56

Changes in CAUTI vs. 2009 National Baseline

CAUTI vs. 2009 National Baseline

NEW MEXICO HEALTHCARE-ASSOCIATED INFECTIONS ANNUAL REPORT

Prepared by: New Mexico Healthcare-associated Infections Advisory Committee January-December 2013

Healthcare-associated infection prevention in New Mexico

Healthcare-associated infections (HAI) are infections patients can acquire while receiving medical treatment. The New Mexico Department of Health (NMDOH) and New Mexico (NM) HAI Advisory Committee have facilitated statewide and regional HAI prevention efforts since 2008. NMDOH receives both voluntary and mandatory data from healthcare facilities and publishes an annual surveillance report.

This annual report provides an update on NM HAI prevention progress in 2013. Facility-specific information is on the NMDOH website (<http://nmhealth.org/2013>) for hospitals reporting to NMDOH. Additional detail on methodology and infections can be found in the NM HAI Annual Report 2012 (<http://nmhealth.org/2012>). State-specific 2012 data for all states is included in the Centers for Disease Control and Prevention (CDC) 2012 HAI Progress Report (www.cdc.gov/hai/progress-report/) and Hospital Compare (www.medicare.gov/hospitalcompare/); provides quality and safety data on additional facilities in NM and nationally.

HAI prevention progress is tracked using a standardized infection ratio (SIR) which compares the current number of infections to the number of predicted infections based on national baseline data; lower SIRs indicate better progress (i.e., fewer infections). National prevention targets are set by US Department of Health and Human Services (HHS) and through the Healthy People (HP) framework. Infection data are collected through CDC's National Healthcare Safety Network (NHSN) database. HAI data provide healthcare facilities and public health agencies information needed to design, implement, monitor, and evaluate HAI prevention efforts.

2013 New Mexico key findings

- Central line-associated bloodstream infection SIR met the national 2013 HHS prevention target
- Healthcare personnel influenza vaccination rate was better than the 2014 HP target
- Clostridium difficile facility-onset SIR was similar to national baseline but did not meet the 2013 HHS target
- Facility-onset methicillin-resistant Staphylococcus aureus SIR was better than the 2013 HHS target

What's inside?

Page 2 & 3: NM progress on CLABSI, CDI, MRSA, and HCP influenza vaccination

Page 4: HAI prevention- we all have a role

Medicare.gov | Hospital Compare

The Official U.S. Government Site for Medicare

Healthcare Associated Infections - details

Table 1 of 6 Central line-associated blood stream infections (CLABSI)

	No. of Infections Reported (A)	Central Line Days (CLDs) (B)	Predicted No. Infections (C)	Standardized Infection Ratio (SIR) (A/B)	Evaluate
GEORGE WASHINGTON UNIV HOSPITAL	20	6983	15,230	1.313	No Difference than U.S. National Benchmark
CHILDREN'S HOSPITAL NMC	Not Available	Not Available	Not Available	Not Available ⁵	Not Available
MEDSTAR GEORGETOWN UNIVERSITY HOSPITAL	13	9769	24,425	0.532	Better than the U.S. National Benchmark

Standardized infection ratio (SIR) national benchmark = 1.
Lower SIRs are better. A score of (0) – meaning no CLABSIs – is best.



Data for Action: Targeted Assessment for Prevention (TAP)

CDC Data

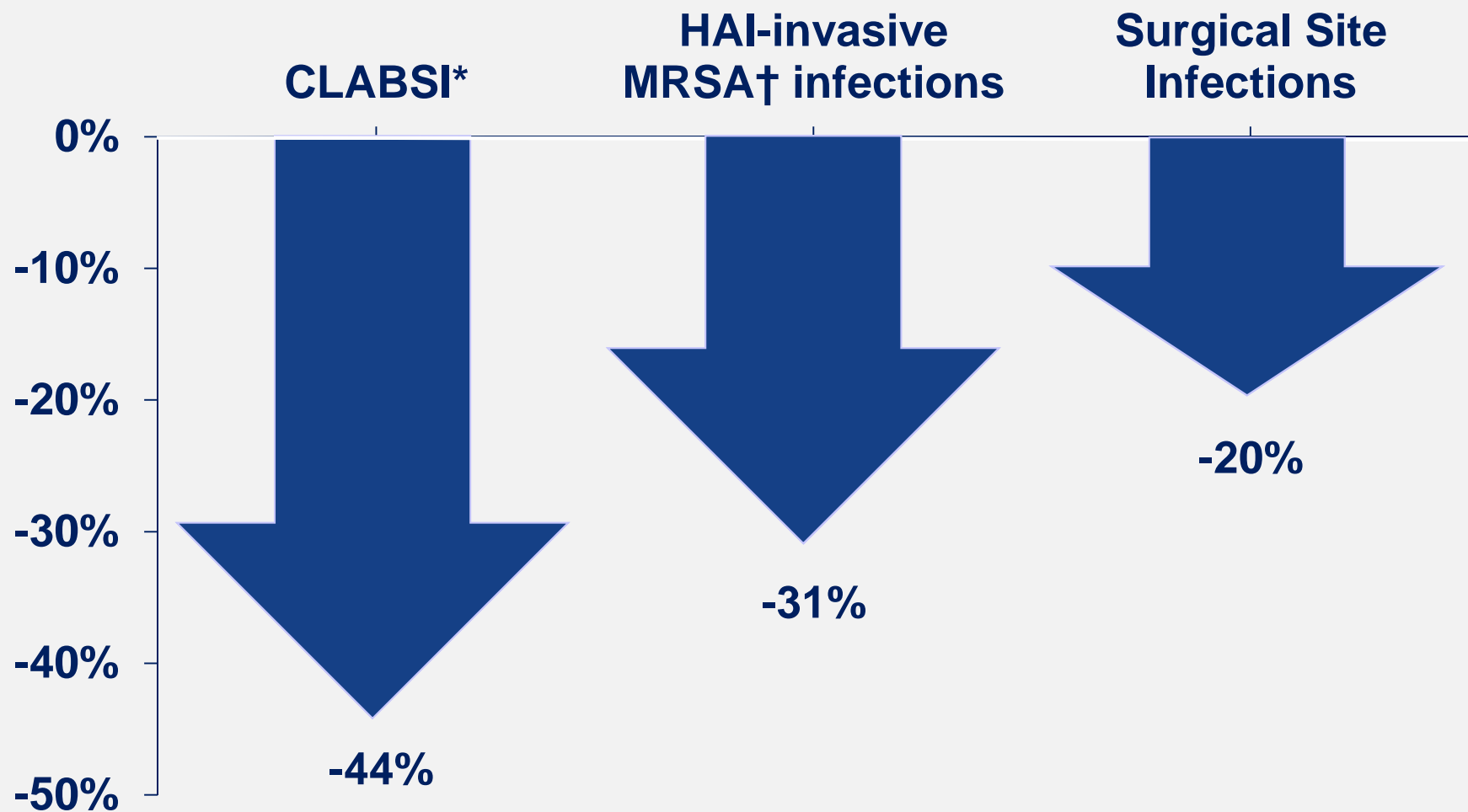
Rank Hospitals by Outcome

Contact hospitals
with excessive
outcomes of interest

Technical Assistance

- Quality Improvement organizations
- State Health Departments
- Other partners

Demonstrating Preventability of Healthcare-associated Infections (HAI)



*CLABSI: Central line-associated bloodstream infections

†MRSA: Methicillin-resistant *Staphylococcus aureus*



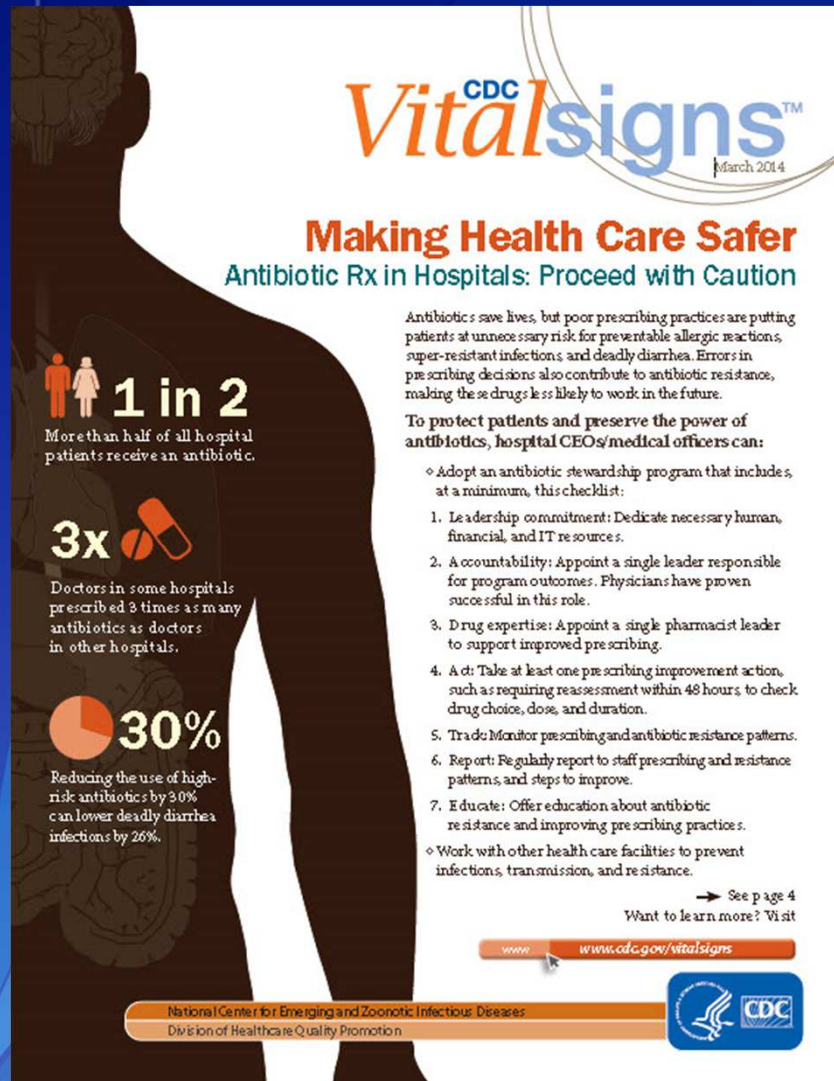
Public Health & Clinical Laboratory data

Complementary roles:

- Clinical - testing for patient-care decisions and contributing to regional and national data
- State Public Health - testing to inform both clinical and local public health decision-making (e.g., outbreak identification)
- CDC - reference testing, esoteric testing, providing national data for local, regional & national interventions

Accurate, reliable laboratory data are essential for AMR control.

Improving Antibiotic Use: Stewardship Programs in Hospitals



Vitalsigns™
CDC
March 2014

Making Health Care Safer

Antibiotic Rx in Hospitals: Proceed with Caution


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

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7 Key Elements

- ❑ Leadership commitment
- ❑ Accountability
- ❑ Drug expertise
- ❑ Action
- ❑ Tracking
- ❑ Reporting
- ❑ Education

Antimicrobial Use Data

- Monthly data--required for:
 1. Critical care - medical and surgical critical care units
 2. Ward - medical and surgical wards
 3. Specialty care area – e.g., oncology, dialysis
 4. Facility-wide – All inpatient locations
- Numerator: Antimicrobial days (days of therapy)
 - 86 antimicrobials collected – includes antibacterial, antifungal, and anti-influenza agents
 - Agents are sub-stratified by route of administration: intravenous (IV), intramuscular (IM), digestive (oral), and respiratory (inhaled)
- Denominators:
 - Days Present - number of patients present for any portion of each day of a calendar month in specific unit or in any inpatient location (facility-wide)
 - Admissions - number of patients admitted to the facility (facility-wide calculation only)

Rate Table for Facility-Wide AU

National Healthcare Safety Network

Rate Table - Most Recent Month of AU Data - Antimicrobial Utilization Rates for FACWIDEIN

Rate per 1,000 Days Present

As of: February 23, 2015 at 1:44 PM

Date Range: All AU_RATES1MONTHFACWIDEIN

Facility Org ID=13860

Summary Year/Month	Antimicrobial Category	Antimicrobial Class	Antimicrobial Days	Days Present	Rate per 1000 Days Present
2015M01	Antibacterial	-- All --	1626	2177	746.899
2015M01	Antibacterial	Aminoglycosides	22	2177	10.106
2015M01	Antibacterial	Carbapenems	101	2177	46.394
2015M01	Antibacterial	Cephalosporins	337	2177	154.8
2015M01	Antibacterial	Fluoroquinolones	244	2177	112.081
2015M01	Antibacterial	Folate pathway inhibitors	32	2177	14.699
2015M01	Antibacterial	Folate pathway inhibitors/Sulfonamides	0	2177	0

Sample rate table for all submitted AU data by FacWideIN (all inpatient locations reporting AU data)

- Generates a rate of utilization per 1,000 days present for each antimicrobial class for all inpatient locations combined
- Report includes separate rates for each antimicrobial class for each month of data submitted

*Data for example only

AU Data - Pie Chart by Location

National Healthcare Safety Network

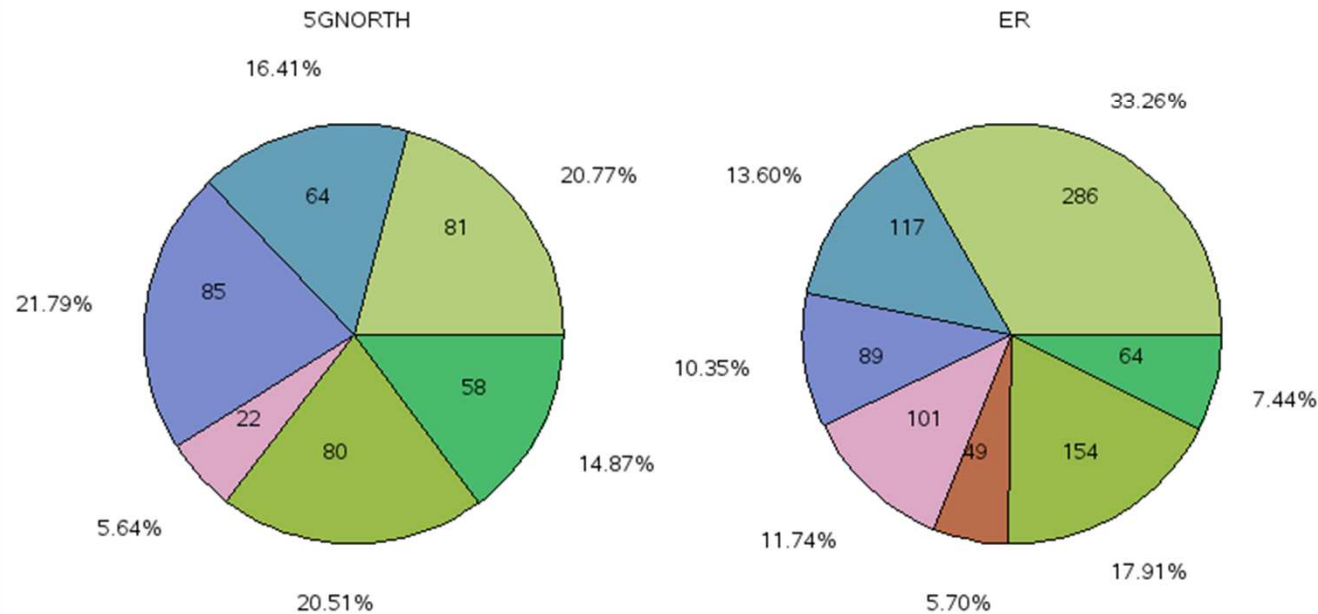
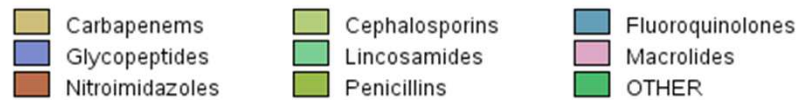
Pie Chart - Current Month - Proportion of Antimicrobial Days per Antibacterial Class by Location

As of: February 23, 2015 at 1:59 PM

Date Range: All SUMMARYAU1MONTH

Stratified by Location

summaryYM=2015M01

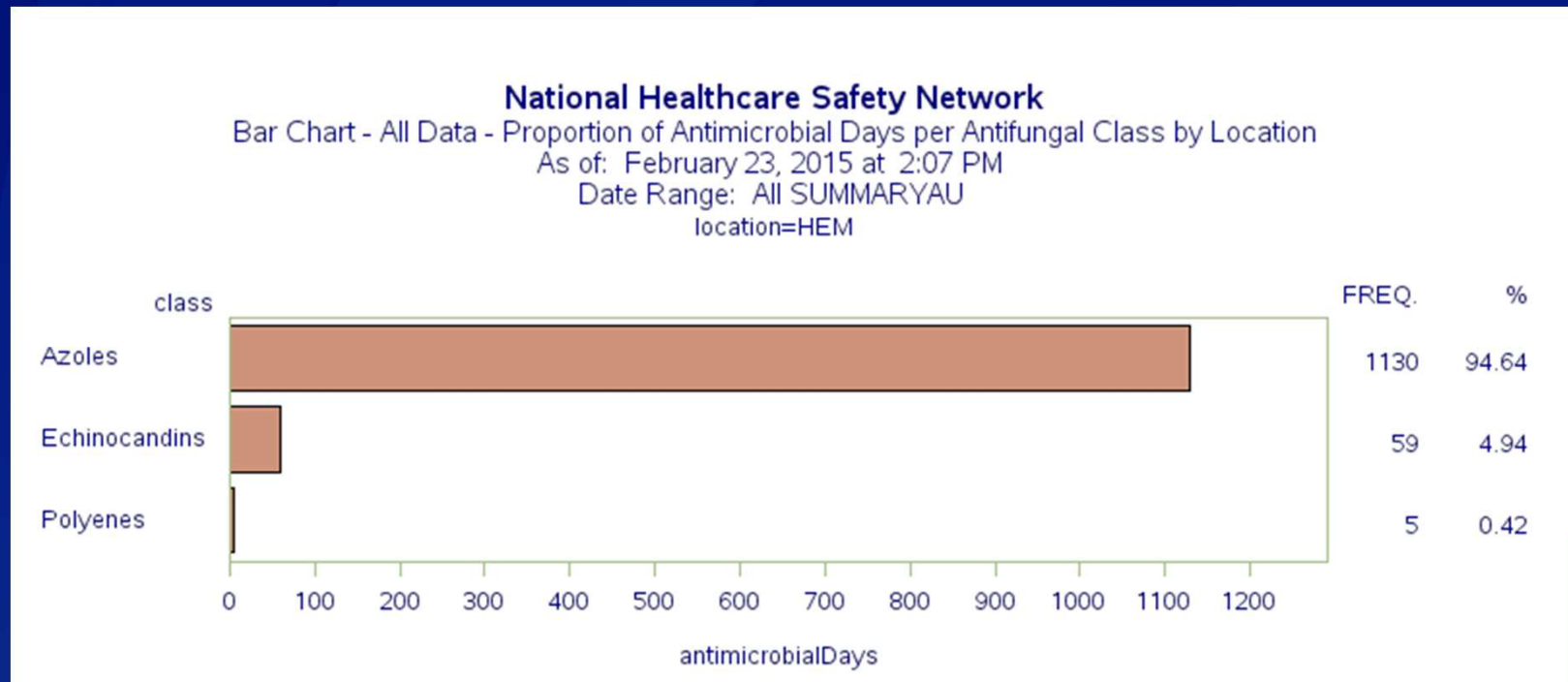


Sample pie chart by location

Shows proportion of antimicrobial days per antibacterial class

*Data for example only

AU Data - Bar Chart by Location

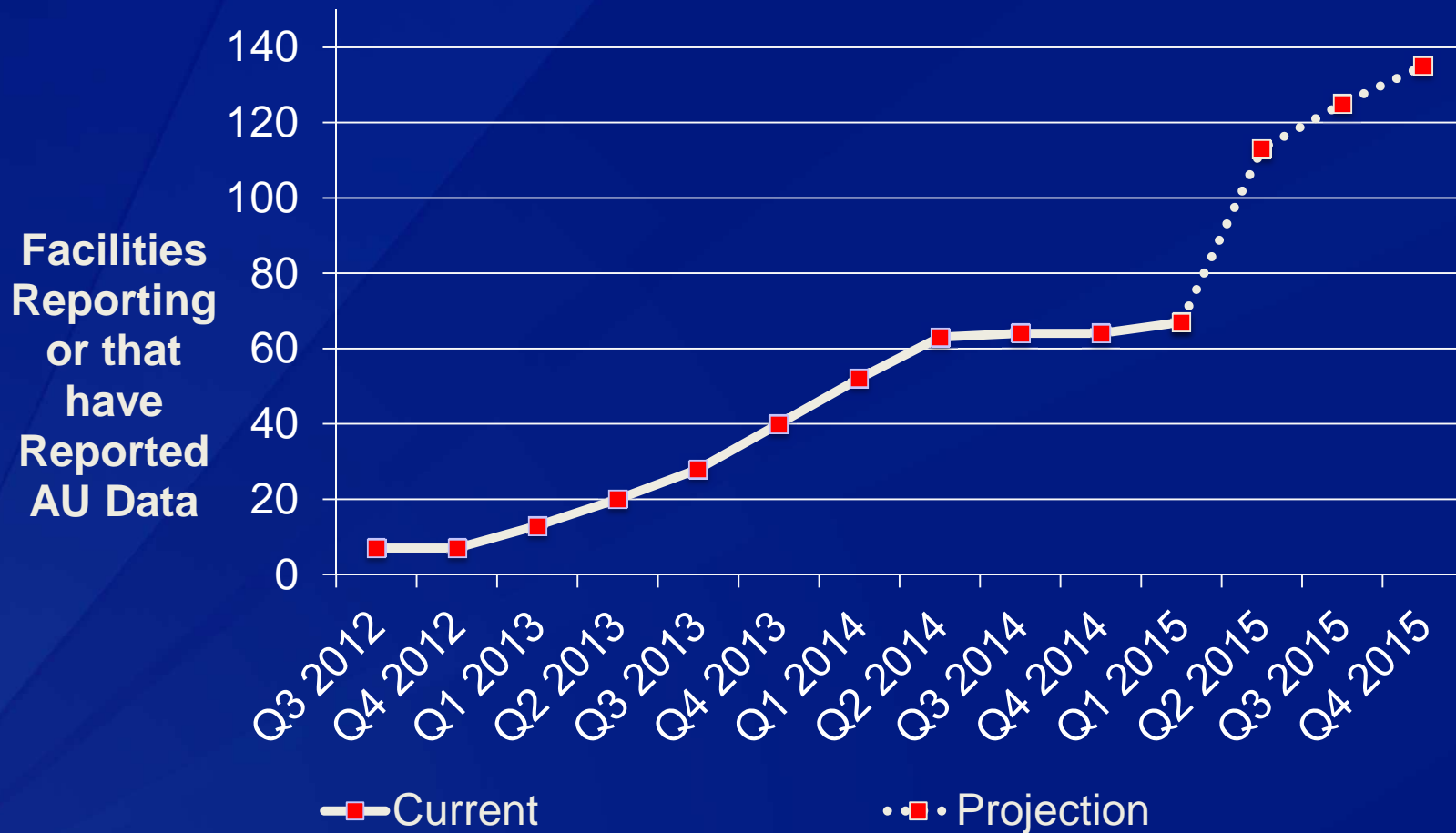


Sample bar chart by location

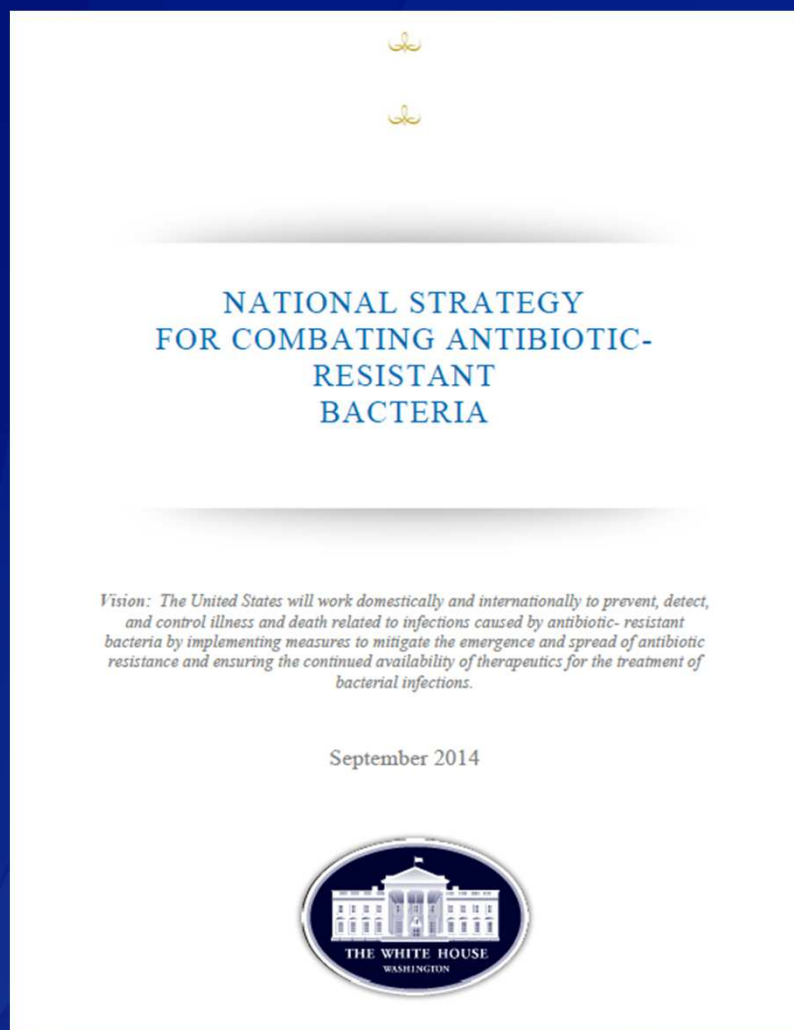
Shows proportion of antimicrobial days per antifungal class

*Data for example only

Quarterly AU Data Submissions to NHSN - Current and Projected as of April 2015



National Strategy to Combat Antibiotic Resistant Bacteria, September 2014 – 5 Goals



1. **Slow the Emergence of Resistant Bacteria and Prevent the Spread of Resistant Infections**
2. **Strengthen National One-Health Surveillance Efforts to Combat Resistance**
3. **Advance Development and Use of Rapid and Innovative Diagnostic Tests for Identification and Characterization of Resistant Bacteria**
4. **Accelerate Research to Develop New Antibiotics and Alternative Therapeutics, and Vaccines**
5. **Improve International Collaboration and Capacities for Disease Prevention and Surveillance and Antibiotic Research and Development**



Thank you

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

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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Infections



Need for complete implementation of practices known to prevent HAIs



Need for ongoing research to identify new strategies to prevent the remaining HAIs

AU Option – Forthcoming Changes and Upgrades

Coming soon – July 2015:

Adding 3 newly FDA approved drugs:

- Isavuconazonium (antifungal)
- Peramivir (anti-influenza)
- Ceftazidime/Avibactam (antibacterial)

Expanding NHSN AU Analysis Options:

- Ability to generate rates per single drug and selected drugs within separate antimicrobial classes

Coming later:

NHSN AU measure calculation - Enabling NHSN users to calculate their facility's Standardized Antimicrobial Administration Ratios (SAARs) in accordance with NHSN AU measure proposal specifications



CDC and States Support Hospitals

Lab Testing Guidance and Capacity Building Questions/Needs



Guidance & Capacity Building