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

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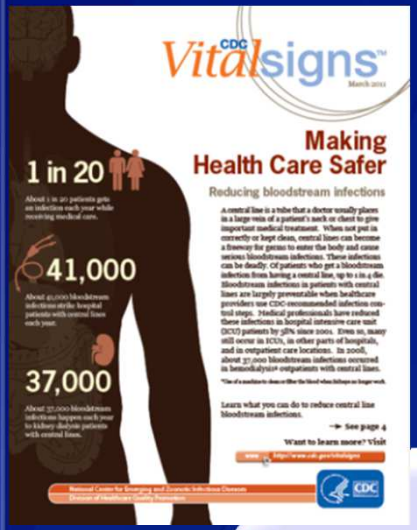
Antibiotic Resistance
Old Challenge, New Opportunity

Keeping pace with a Complex System



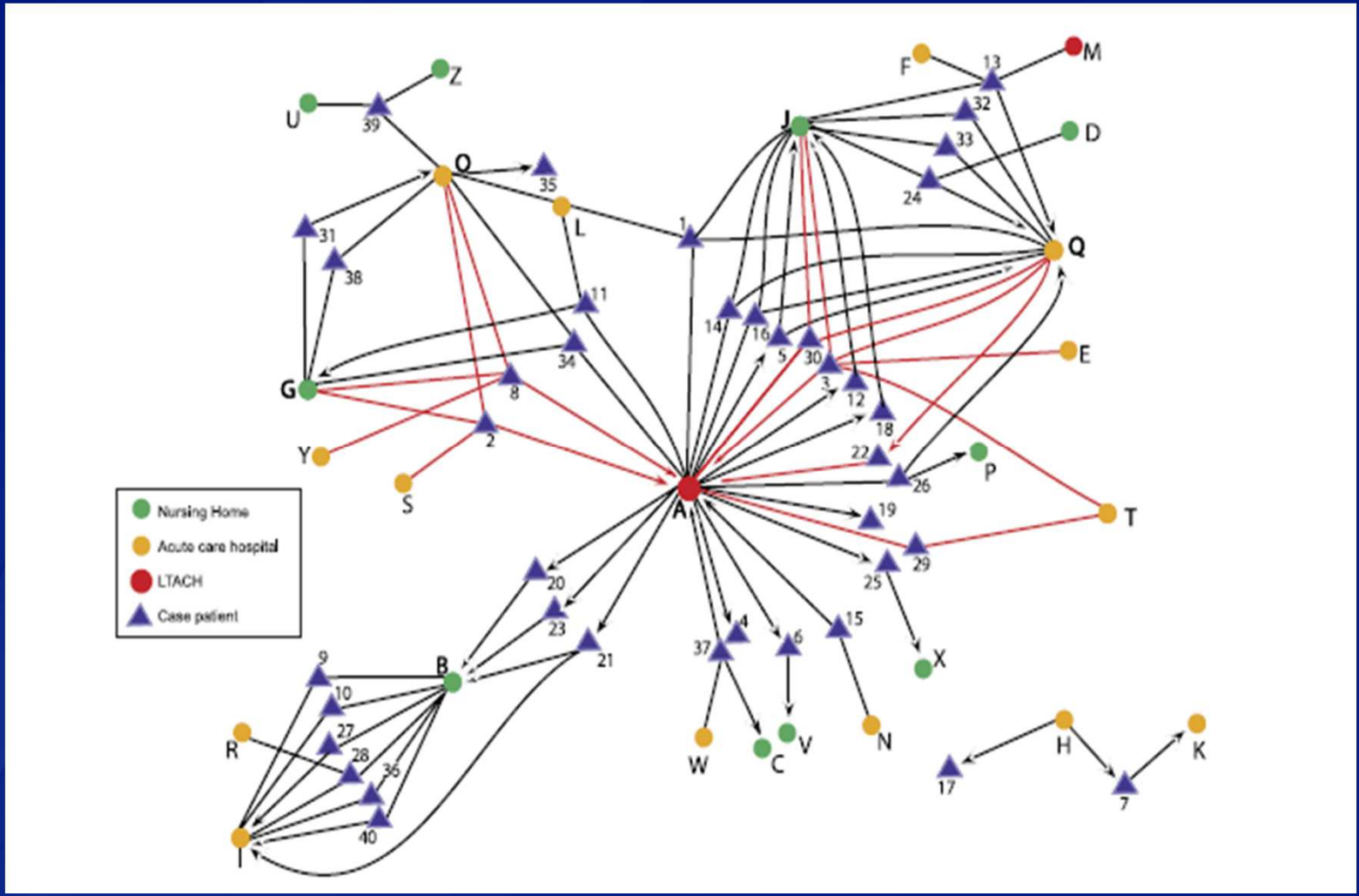
Hospitals

Dialysis facilities

Ambulatory facilities

Long-term care

Regional control of Carbapemen-resistant Enterobacteriaceae (CRE)

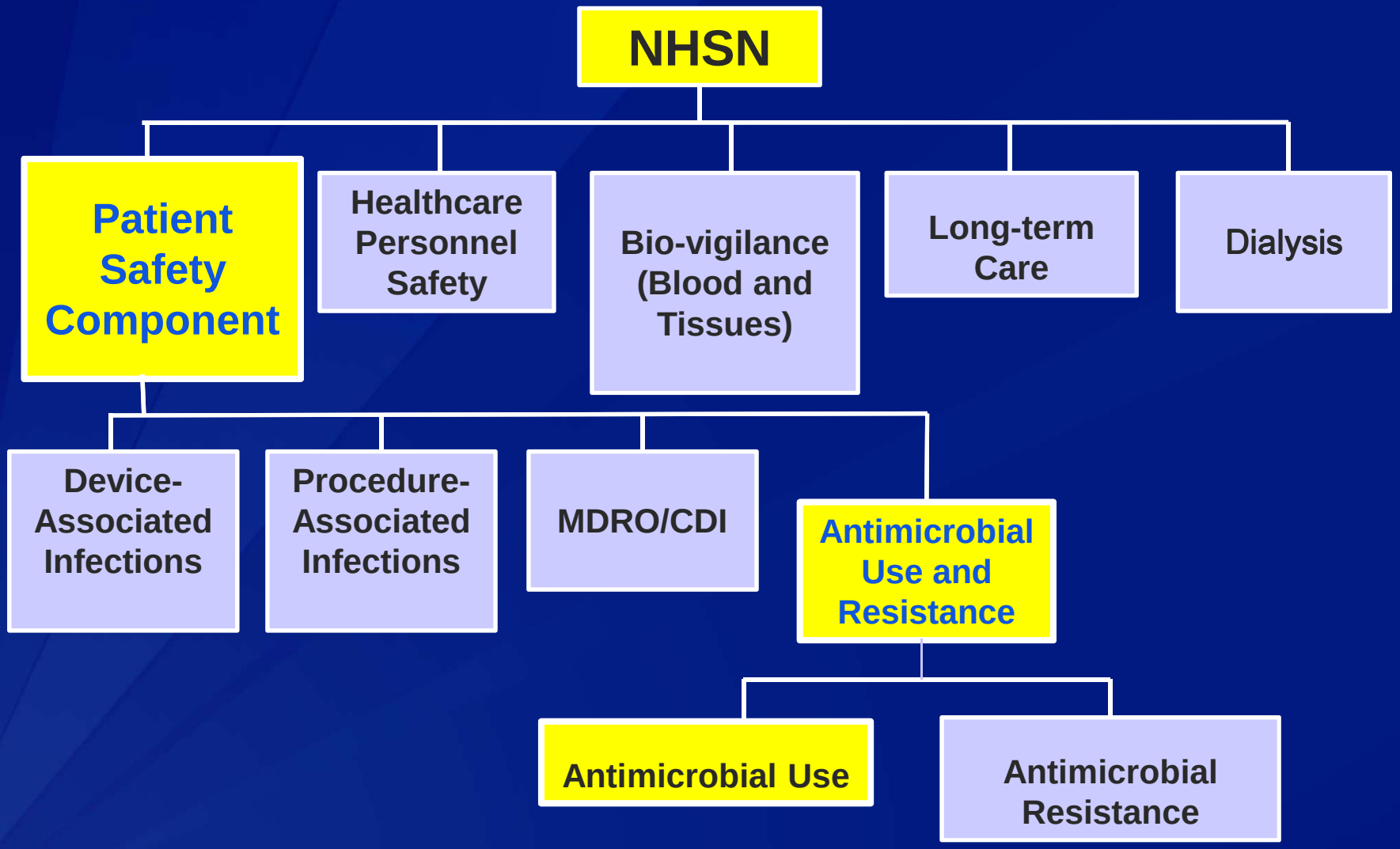


Won S, Munoz-Price S, Lolans K, Hota B, Weinstein R, Hayden M. for the Centers for Disease Control Prevention Epicenter Program. Rapid and Regional Spread of Klebsiella pneumoniae Carbapenemased CID 2011:53: 532-540

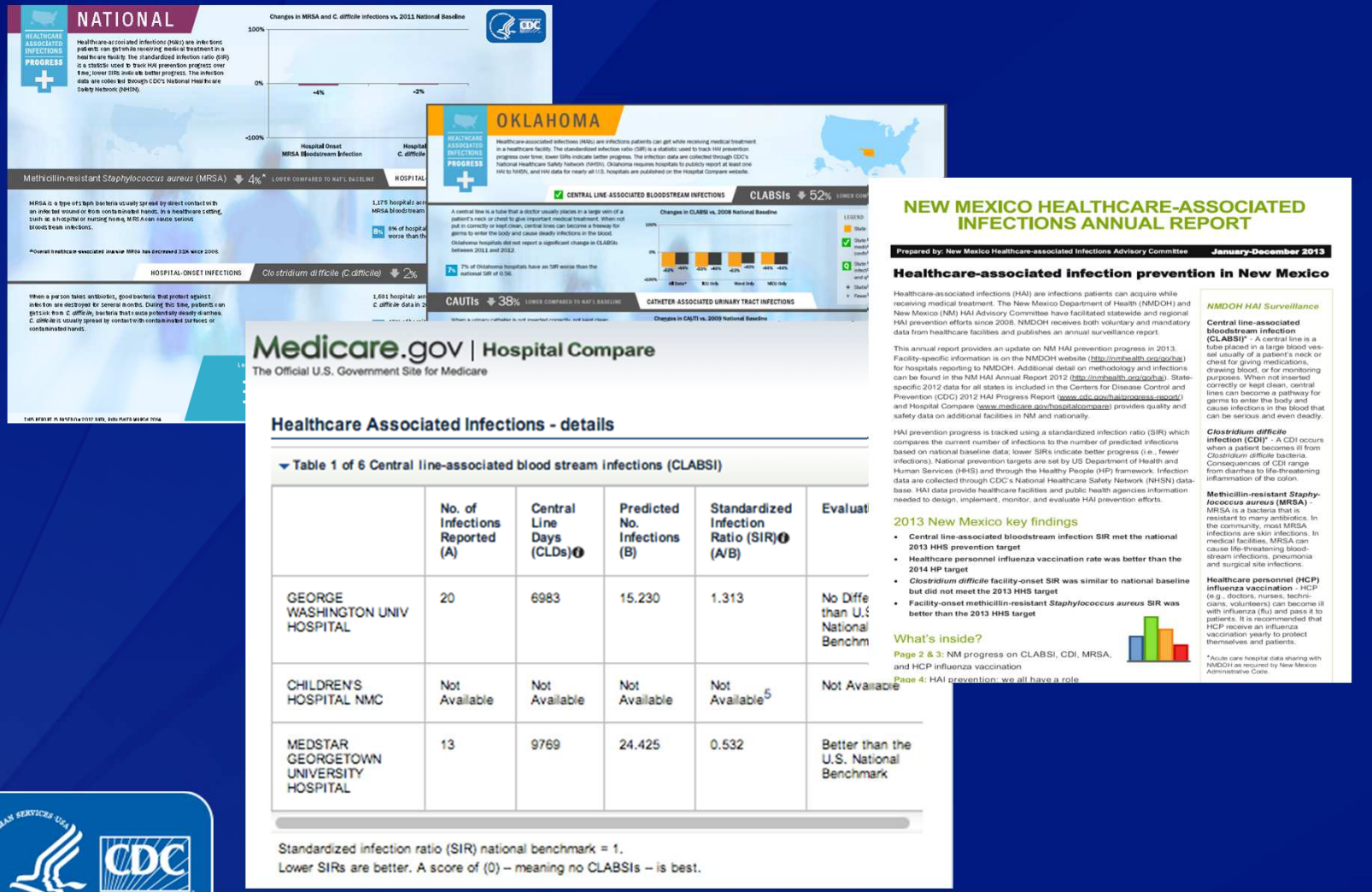
Timely Data + Effective Policies → Impact

- 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)

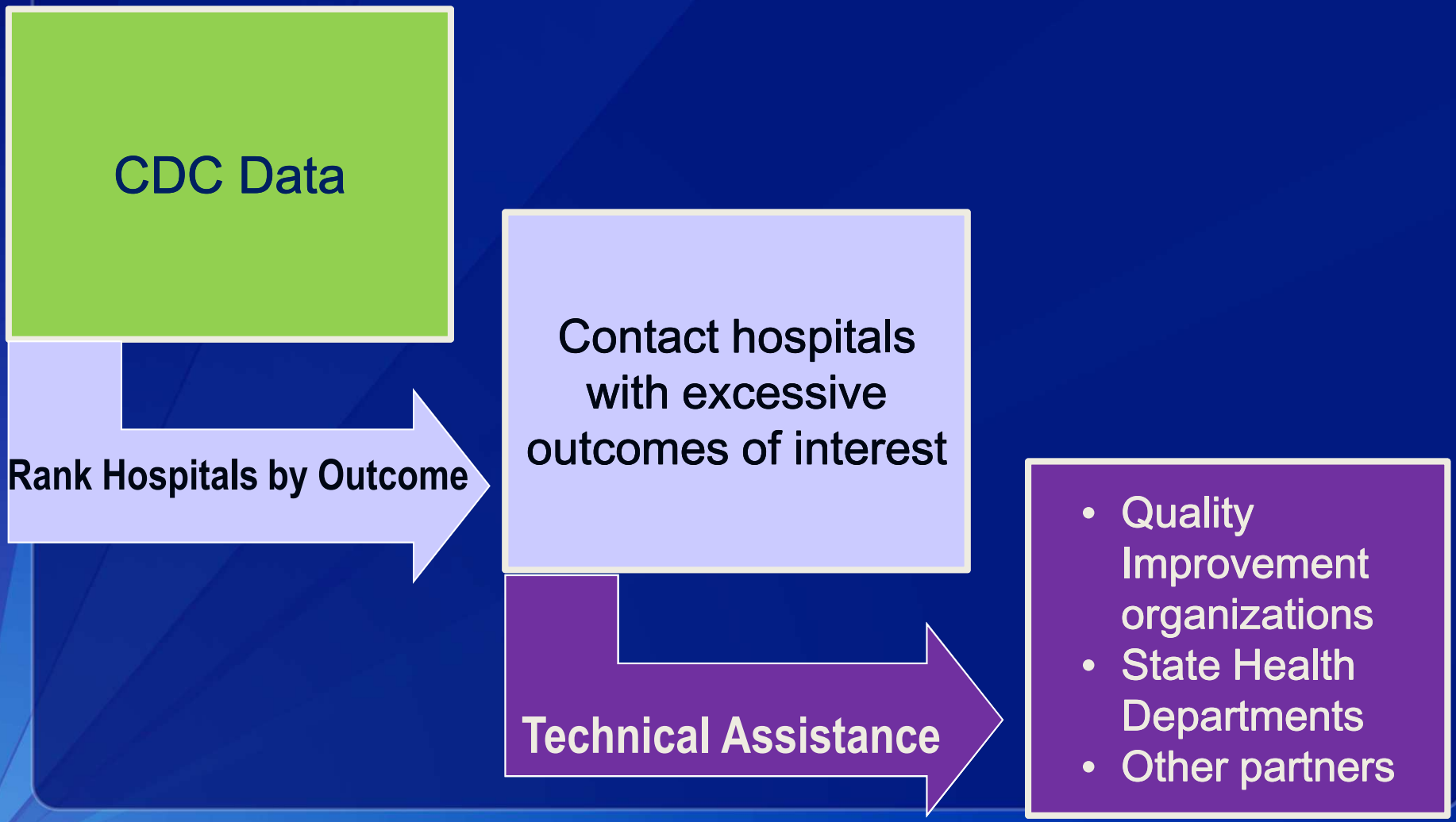


Increasing Transparency:
CDC data for State and Federal initiatives

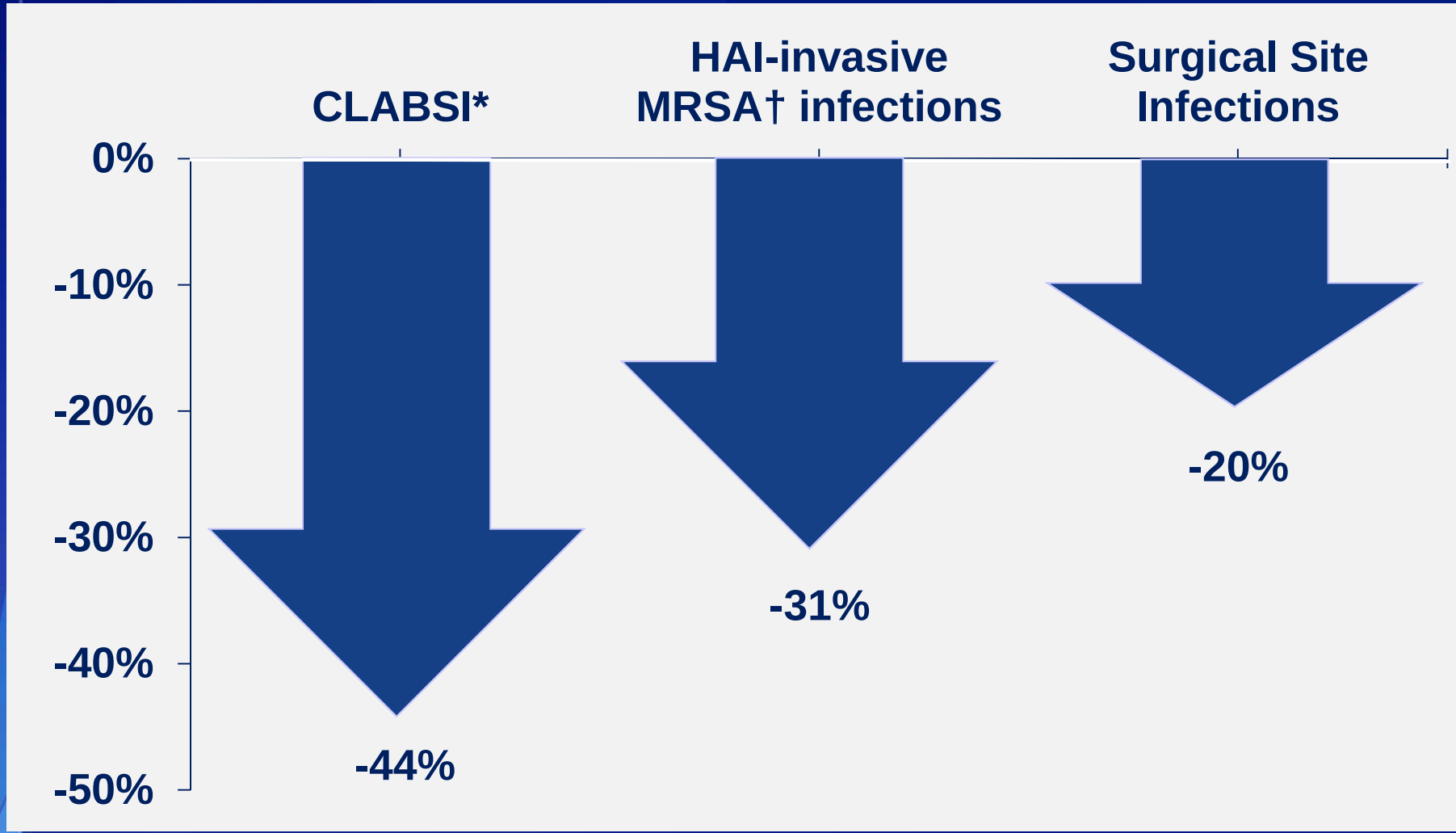


	No. of Infections Reported (A)	Central Line Days (CLDs)	Predicted No. Infections (B)	Standardized Infection Ratio (SIR) (A/B)	Evaluat
GEORGE WASHINGTON UNIV HOSPITAL	20	6983	15.230	1.313	No Diffe than U.S National Benchm
CHILDREN'S HOSPITAL NMC	Not Available	Not Available	Not Available	Not Available[5]	Not Available
MEDSTAR GEORGETOWN UNIVERSITY HOSPITAL	13	9769	24.425	0.532	Better than the U.S. National Benchmark

Data for Action:
Targeted Assessment for Prevention (TAP)



Demonstrating Preventability of Healthcare-associated Infections (HAI)



**CLABSI: Central line-associated bloodstream infections*

†MRSA: Methicillin-resistant Staphylococcus aureus

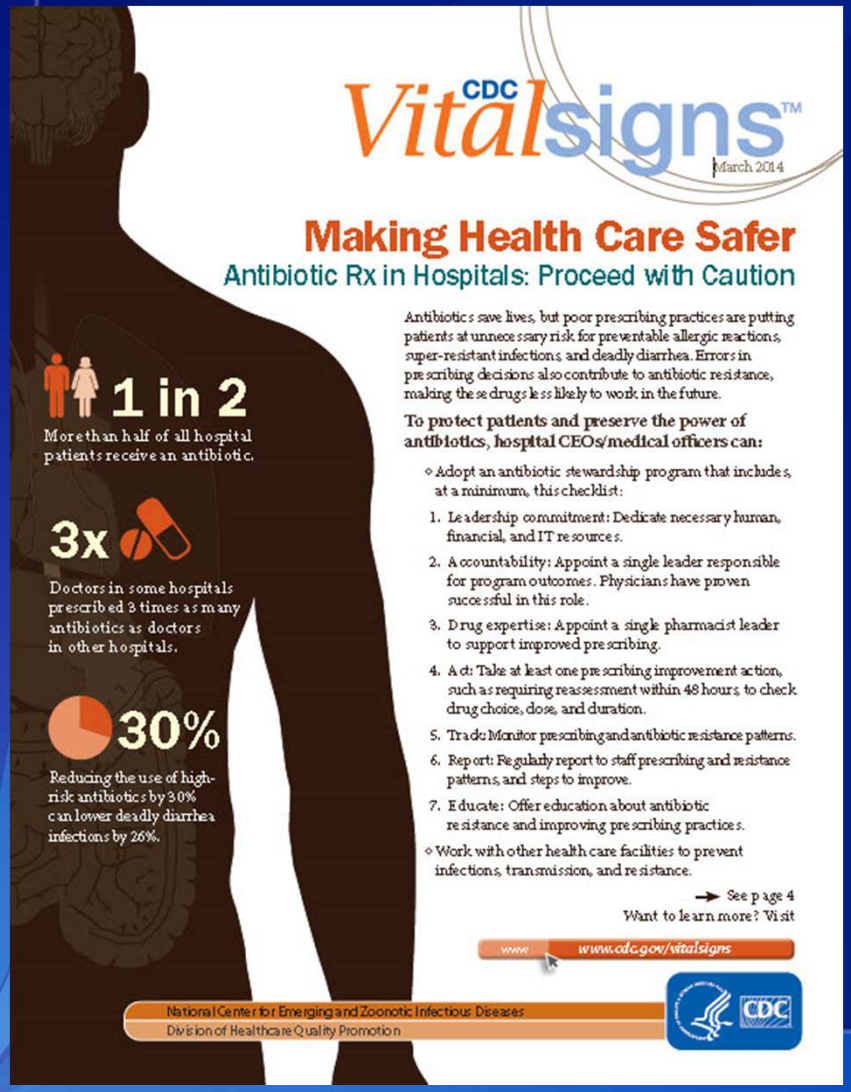
Public Health & Clinical Laboratory data

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



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

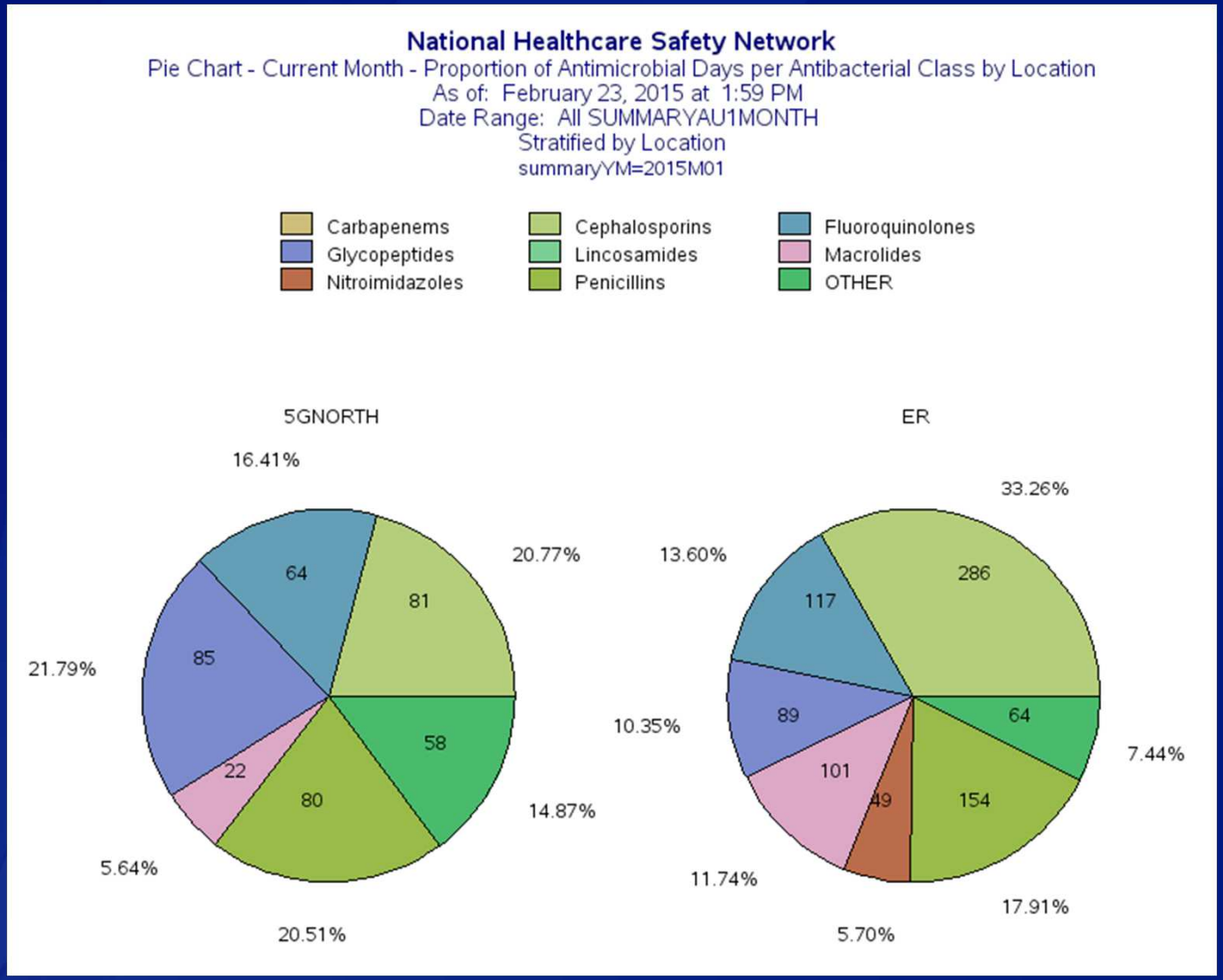
Summary Year/Month	Antimicrobial Category	Antimicrobial Class	Antimicrobial Days	Days Present	Rate per 1000 Days Present
2015M01	Antibacterial	-- All --	1626	2177	746.899
2015M01	Antibacterial	Aminoglycosides	22	2177	10.106
2015M01	Antibacterial	Carbapenems	101	2177	46.394
2015M01	Antibacterial	Cephalosporins	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

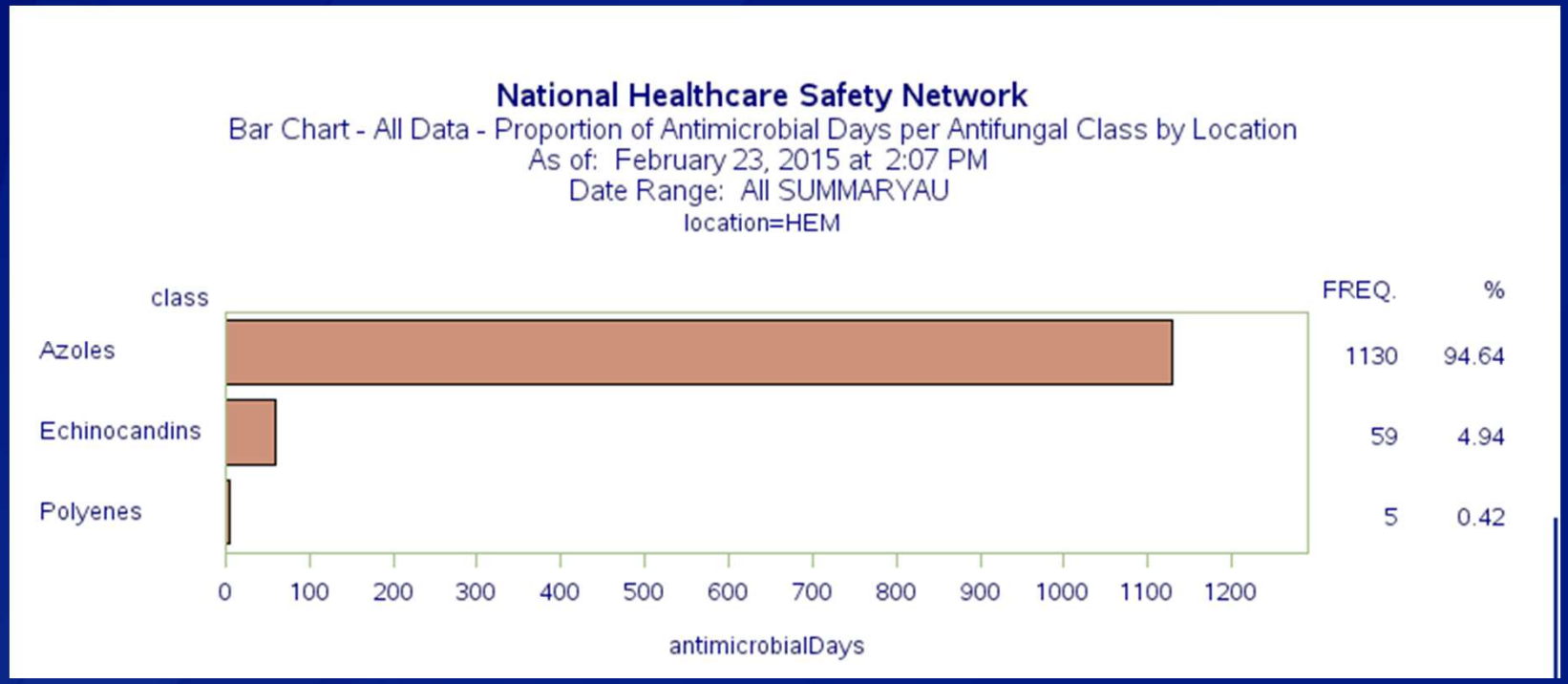


Sample pie chart by location

- Shows proportion of antimicrobial days per antibacterial class

*Data for example only

AU Data - Bar Chart by Location

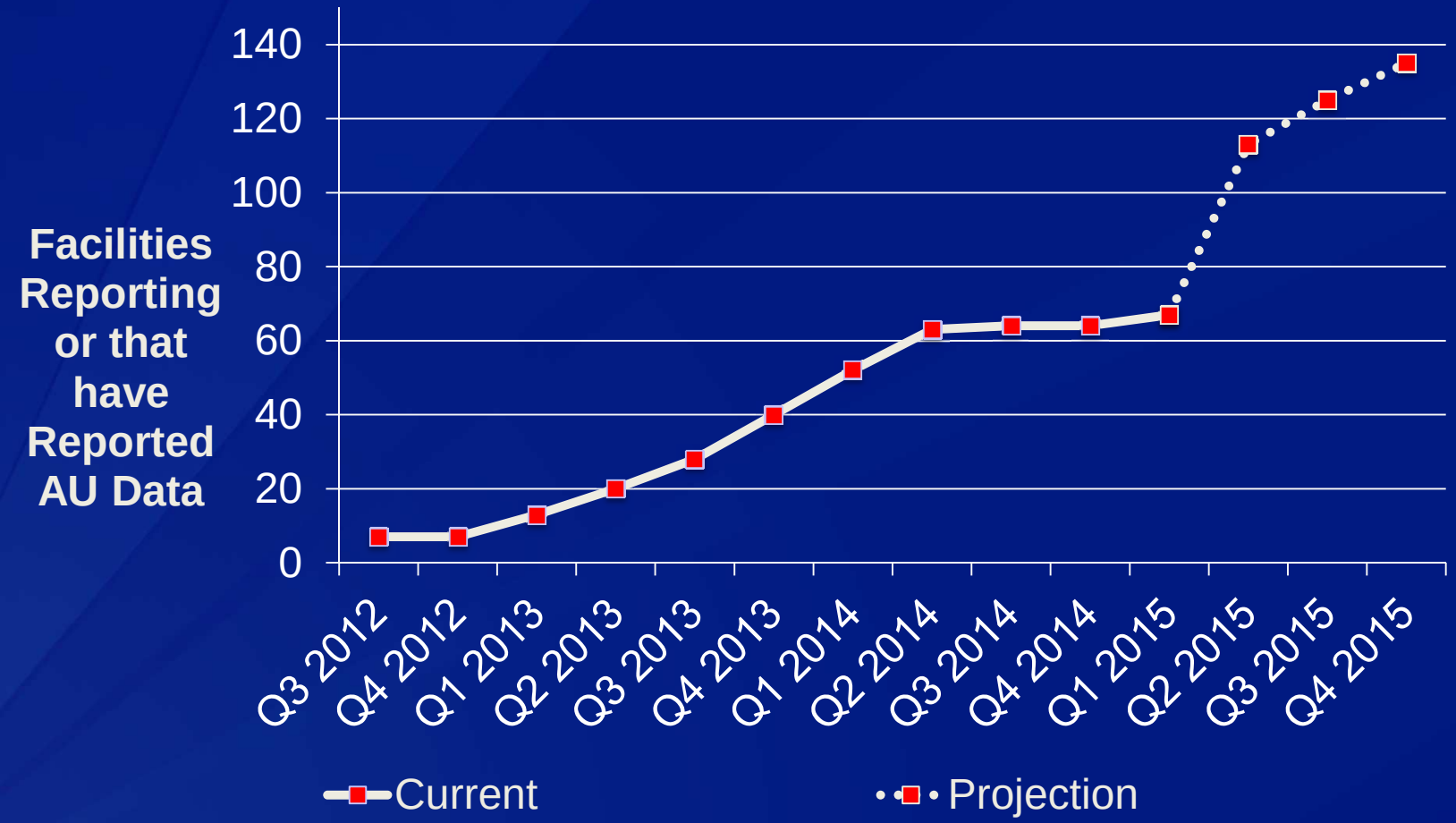


Sample bar chart by location

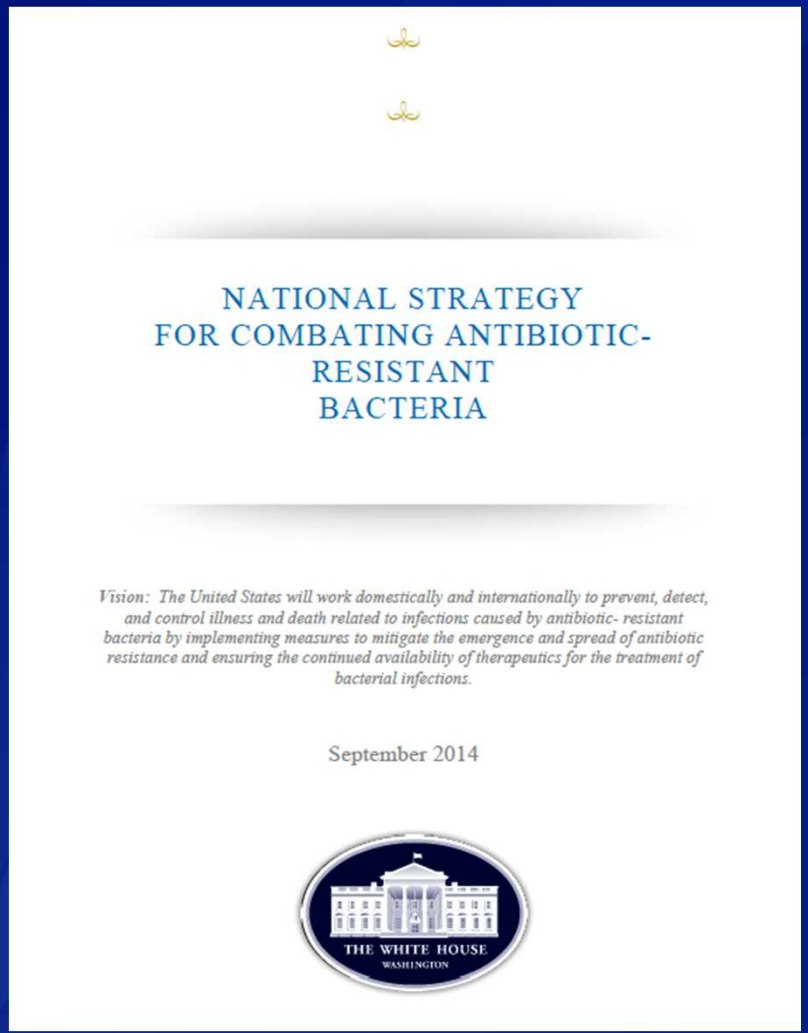
Shows proportion of antimicrobial days per antifungal class

*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



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

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

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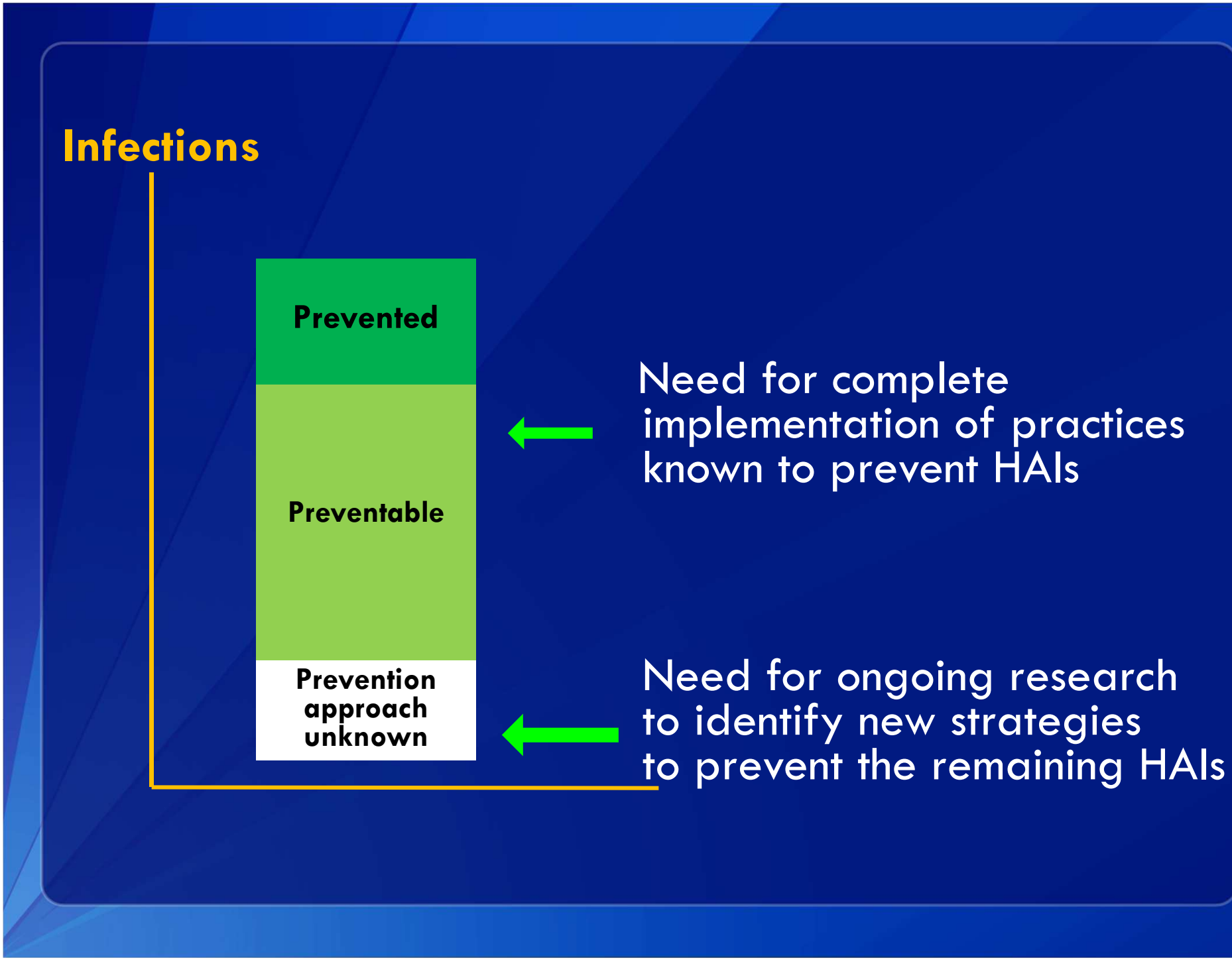
Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov Web: www.cdc.gov

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.


Infections
Prevented
Preventable
Prevention approach unknown
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