



Implementing Antibiotic Stewardship in Small and Critical Access Hospitals

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Objectives

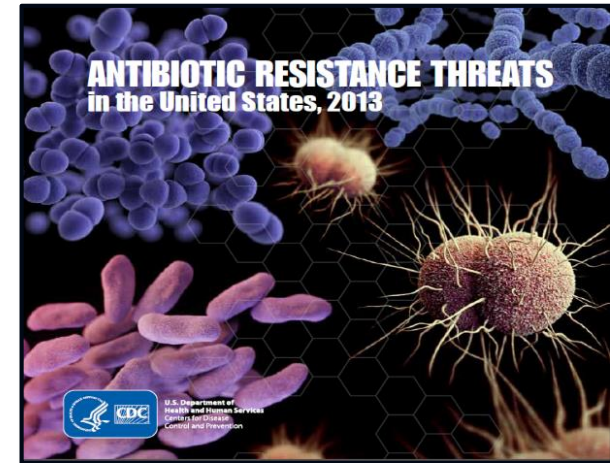
- Describe uptake of CDC's core elements in hospitals.
- Discuss opportunities and barriers of the implementation of CDC's core elements in small and critical access hospitals.
- Describe implementation strategies of antibiotic stewardship in small and critical access hospitals.

Rationale for Antibiotic Stewardship

- Improve Patient Care and Safety
 - Prevent *C. difficile* infections
 - Minimize adverse events
 - Good clinical practices
- Reduce Resistance
 - Decrease deaths
 - Preserve antimicrobial effectiveness

Antibiotic Resistance Threatens Every Person, Modern Medicine, and Industries

- Antibiotic resistance affects all communities and, without action, will continue to get worse.
- Antibiotic resistant bacteria make infections harder, and in some cases impossible, to treat.
- Antibiotic resistance often leads to worse outcomes, including death.
- Antibiotic resistance makes it more difficult to practice medicine- it's riskier to do surgery and give chemotherapy if you can't treat the infections that might occur.



Estimated minimum number of illnesses and deaths caused annually by antibiotic resistance*:

At least

 **2,049,442** illnesses

 **23,000** deaths

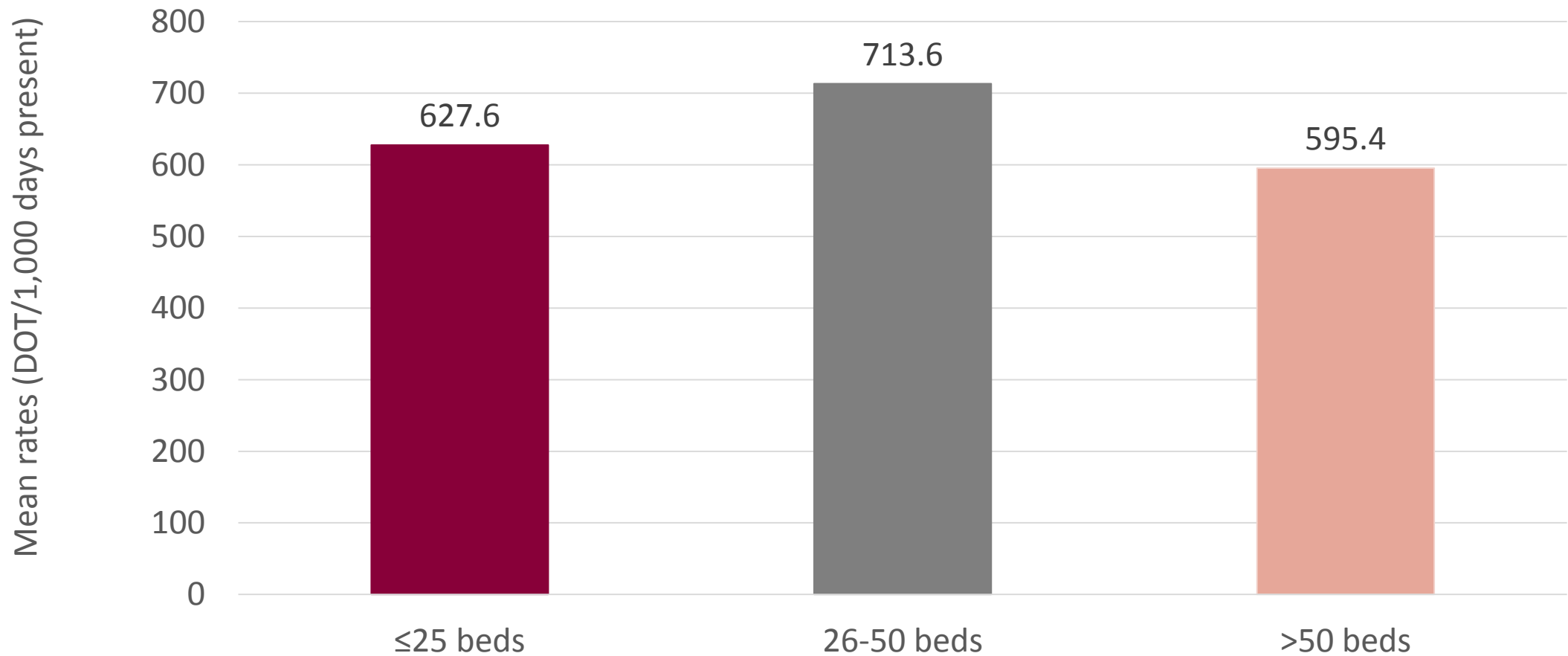
**bacteria and fungus included in this report*

Small and Critical Access Hospitals Are Not Spared the Problems of Resistance and *C. difficile*

- Most small and critical access hospitals have had to treat infections with Methicillin Resistant *S. aureus* (MRSA) and *Clostridium difficile*.
- A growing number are now encountering infections caused by highly resistant gram-negative pathogens as well.
 - 2015: 1.7% of CAHs reported a healthcare associated infection with a highly resistant gram negative pathogen.
 - 2016: 2.9% of CAHs reported a healthcare associated infection with a highly resistant gram negative pathogen.

Small and Critical Access Hospitals Use Antibiotics About As Much As Larger Hospitals

Mean Rates of Total Antibiotic Use



Source: NHSN AU Option

Antibiotic Agent Use Varies Some by Bed Size

- Small hospitals are using similar antibiotics as their larger counterparts
 - All groupings of hospitals bed size had the following drugs present in their 7 most commonly used agents, although order of these 7 drugs differed

| Hospitals with 25 beds or fewer | | |
|---------------------------------|-----------|-------------|
| Antibiotic | Mean rate | Median rate |
| 1. Ceftriaxone | 123.0 | 98.0 |
| 2. FQNs* | 93.7 | 57.8 |
| 3. PipTazo ^ψ | 64.3 | 40.8 |
| 4. Vancomycin | 61.2 | 44.7 |
| 5. Azithromycin | 59.5 | 52.4 |
| 6. Cefazolin | 29.7 | 17.4 |
| 7. Metronidazole | 29.1 | 19.7 |

| Hospitals with 26 - 50 beds | | |
|-----------------------------|-----------|-------------|
| Antibiotic | Mean rate | Median rate |
| 1. Vancomycin | 102.01 | 82.05 |
| 2. PipTazo ^ψ | 99.75 | 78.09 |
| 3. Ceftriaxone | 87.51 | 76.92 |
| 4. FQNs* | 80.37 | 56.82 |
| 5. Azithromycin | 53.09 | 44.62 |
| 6. Cefazolin | 52.94 | 33.90 |
| 7. Metronidazole | 35.96 | 28.63 |

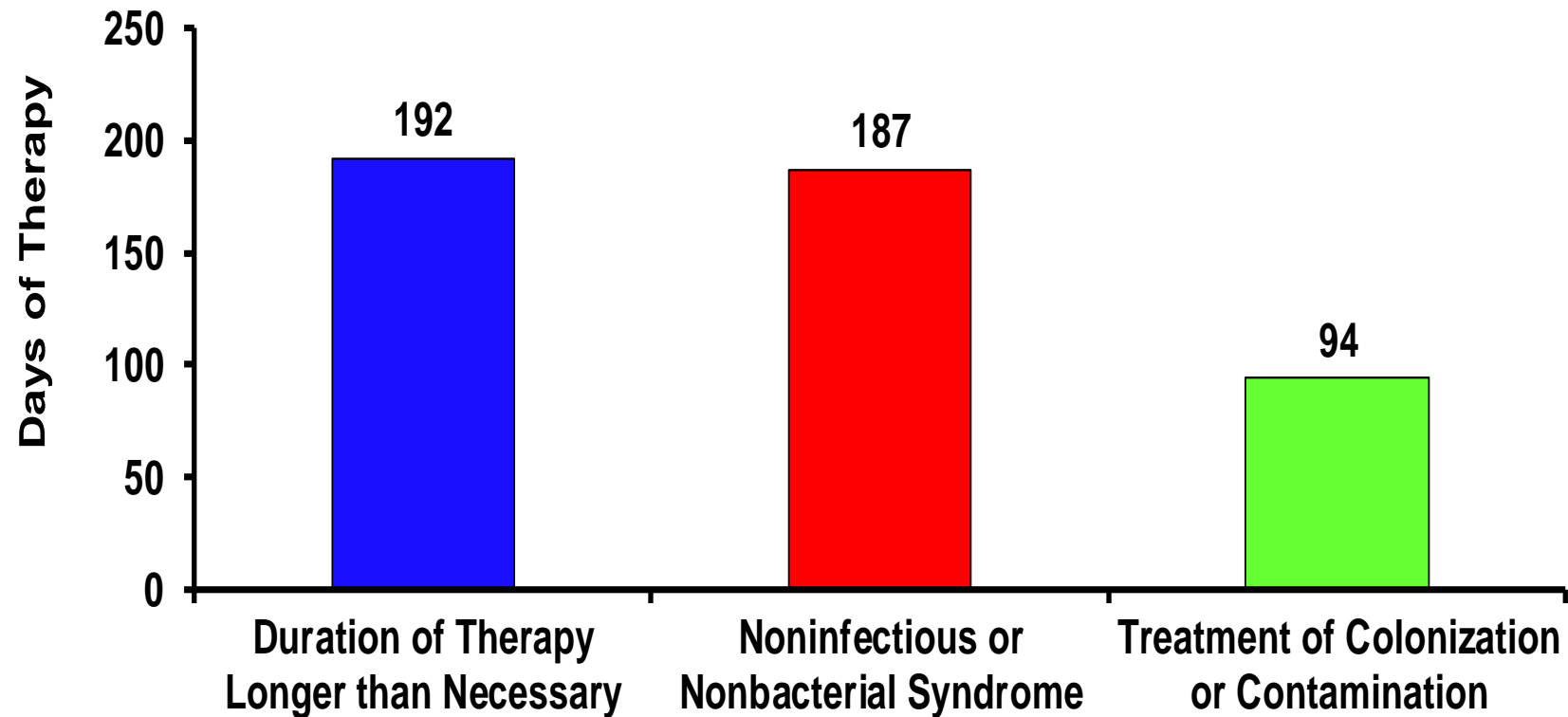
| Hospitals with >50 beds | | |
|-------------------------|-----------|-------------|
| Antibiotic | Mean rate | Median rate |
| 1. Vancomycin | 93.12 | 78.98 |
| 2. PipTazo ^ψ | 86.86 | 71.59 |
| 3. FQNs* | 57.28 | 37.43 |
| 4. Ceftriaxone | 56.72 | 46.80 |
| 5. Cefazolin | 48.51 | 28.08 |
| 6. Metronidazole | 45.79 | 36.36 |
| 7. Azithromycin | 26.65 | 19.55 |

*FQNs = Fluoroquinolones and include Ciprofloxacin, Gemifloxacin, Levofloxacin, Moxifloxacin

^ψPipTazo = Piperacillin/Tazobactam

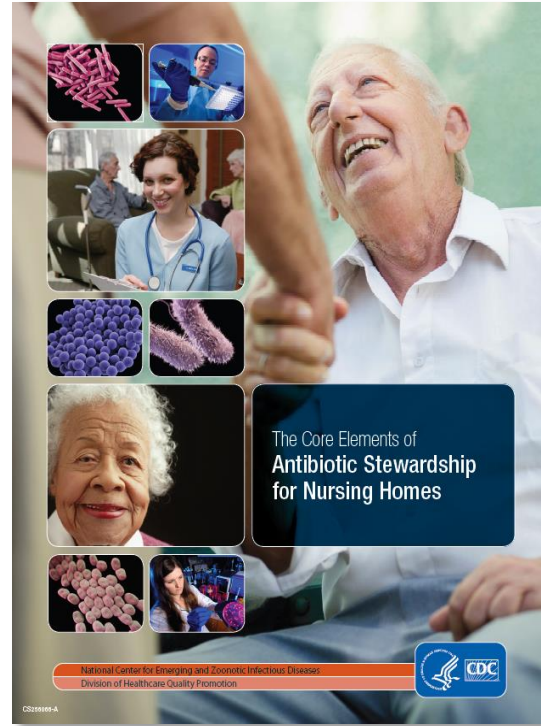
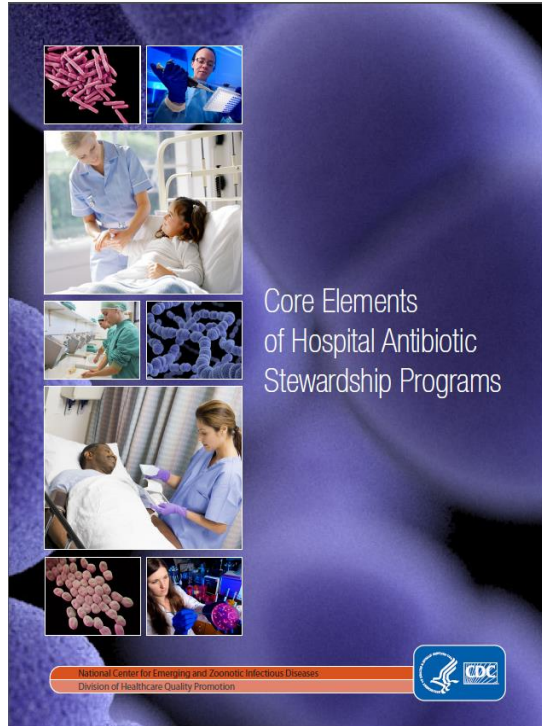
About 30% of Hospital Antibiotic Use is Unnecessary

Most Common Reasons for Unnecessary Antibiotics



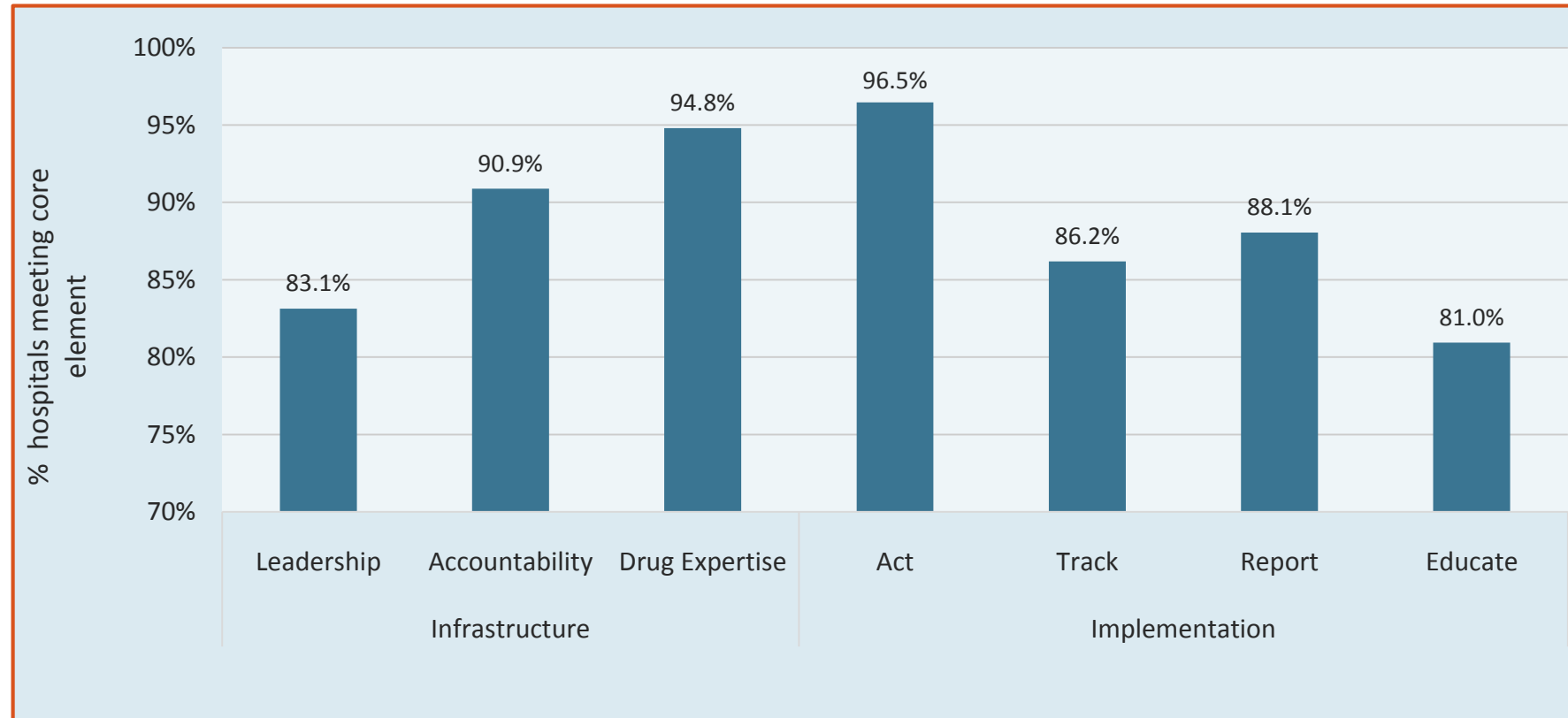
576 (30%) of 1941 days of antibiotics deemed unnecessary

CDC's Core Elements of Antibiotic Stewardship for Hospitals, Nursing Homes, and Outpatient Settings

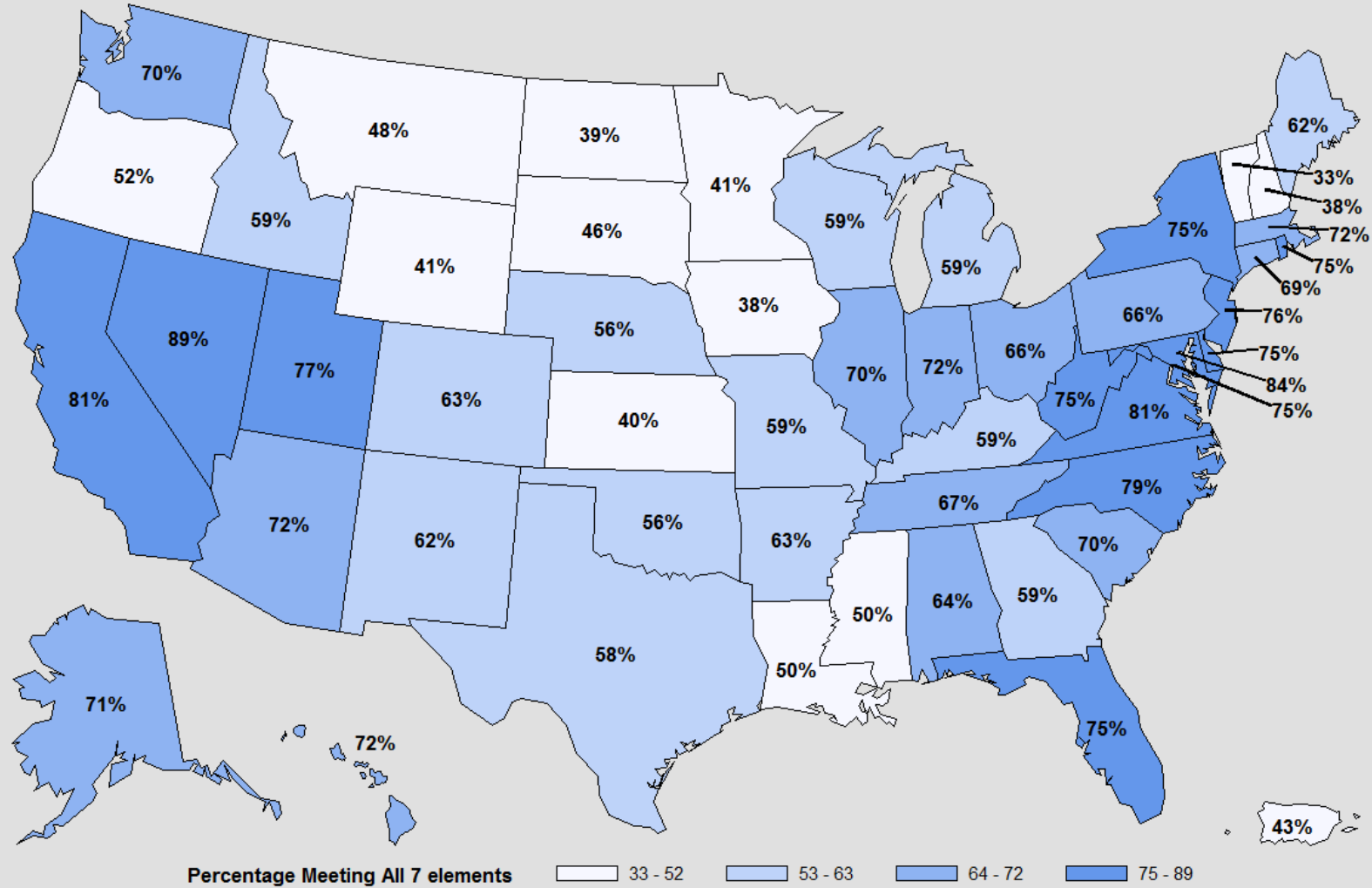


Uptake of CDC's Core Elements, 2016

Of the 4,781 acute care hospitals responding to the 2016 NHSN Annual Hospital Survey, 3,063 (64.1%) reported uptake of all 7 core elements

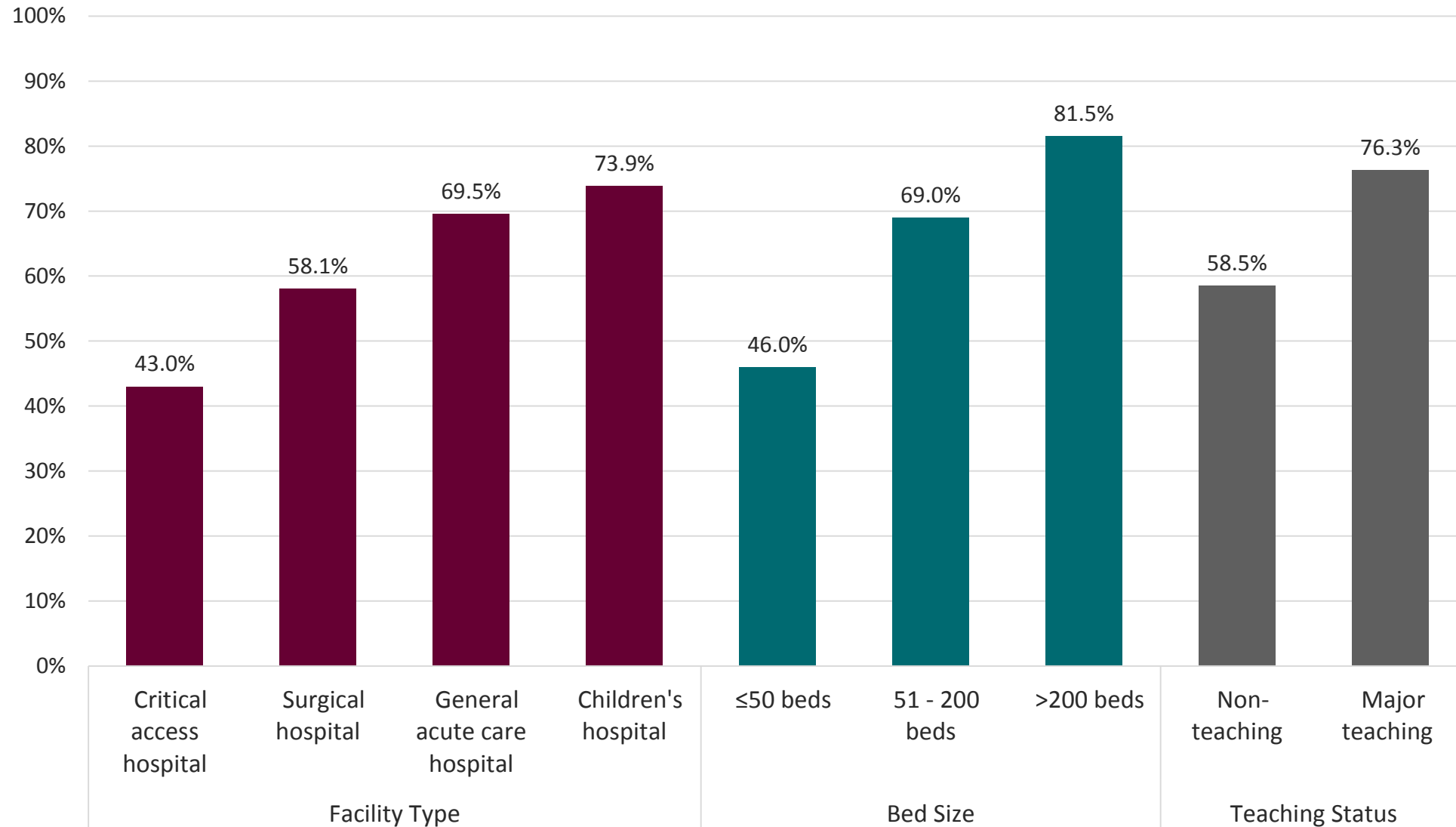


Percentage of Facilities in Each State Meeting all 7 Core Elements, 2016



National: 64%

Percentage of U.S. acute care hospitals reporting uptake of all 7 CDC Core Elements, by facility demographic, National Healthcare Safety Network, 2016 (N=4,781)



Barriers to Implementing Stewardship Programs in Small and Critical Access Hospitals

- Has not been a priority, perhaps due to (mis)perception that antibiotic overuse and complications of antibiotic use are limited to larger hospitals.
- Limited access to infectious disease clinicians who have historically been champions for and led antibiotic stewardship efforts.
- Previous recommendations for stewardship have ignored the realities of small and critical access hospitals (e.g. assemble a team led by an ID clinician and ID pharmacist).

But It Can, And Is, Being Done

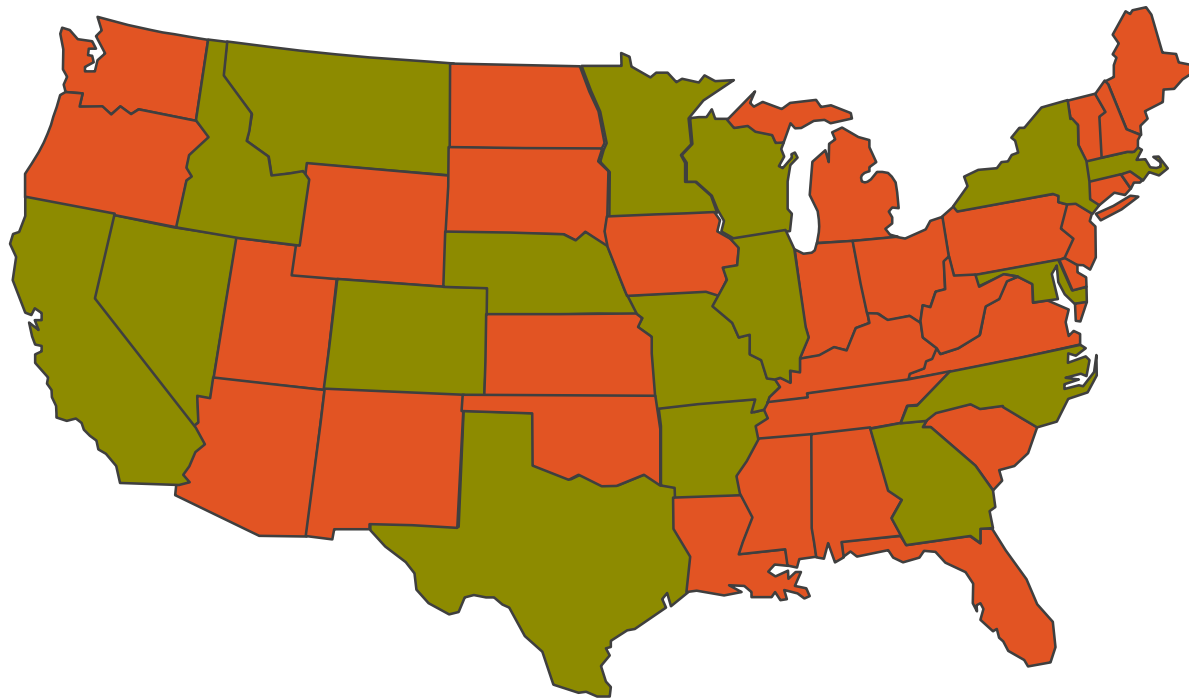
- 801 critical access hospitals reported information on stewardship program core elements on the annual 2015 NHSN survey.
 - 211 (**26%**) met all 7 core elements

Supporting Implementation Antibiotic Stewardship in Small and Critical Access Hospitals

- Discussions with staff in small and critical access hospitals indicated that specific guidance on how to implement the core elements in this setting would be helpful.
- Efforts informed at all stages by discussions with and guidance from staff working in small and critical access hospitals.
 - “Suggestions from CAHs for CAHs”

Implementing Core Elements in Small and CAHs

- Input from small and CAHs in several states (in green below)
- Developed in collaboration with: Federal Office of Rural Health Policy, The American Hospital Association, The Pew Charitable Trusts



Antibiotic Stewardship Program Core Elements

- Core elements for hospital Antibiotic Stewardship Programs include:
 - 1) Leadership commitment
 - 2) Accountability for program outcomes
 - 3) Drug Expertise
 - 4) Action
 - 5) Tracking
 - 6) Reporting AU data
 - 7) Education

Core Elements 1 and 2: Leadership Commitment/Accountability

- Examples of Small and CAH Implementation Strategies:
 - Designate a physician in the C-suite or an individual that reports to the C-suite to be accountable for the outcomes of the stewardship program.
 - Integrate stewardship activities into on-going quality improvement efforts.
 - Engage the hospital board and have the board and C-suite issue a formal statement on the importance of antibiotic stewardship.

Core Elements 1 and 2: Leadership Commitment/Accountability

- Examples of Small and CAH Implementation Strategies:
 - Enrolling in multi-hospital, collaborative efforts to improve antibiotic use. Consider contacting state hospital associations, state or local public health agencies, and/or large academic medical centers to identify existing antibiotic stewardship collaboratives.
 - Funding remote consultation or telemedicine with experts in antibiotic stewardship (e.g., infectious diseases physicians and pharmacists).
 - Placing stewardship requirements into the contractual responsibilities of any external pharmacy services including a requirement that pharmacy contractors have formal stewardship training.

Core Element 3: Drug Expertise

- Examples of Small and CAH Implementation Strategies:
 - Appoint a pharmacist leader, ideally someone who is on-site either full- or part-time.
 - Appoint a physician leader to provide physician support to the antibiotic stewardship program ideally someone who is on-site either full- or part-time.
 - Offer access to training courses in antibiotic stewardship to help develop local expertise.
 - Seek additional expertise by joining multi-hospital improvement collaboratives or through remote consultation (e.g. telemedicine).

Core Element 4: Action

- There are a number of evidenced based interventions that can improve antibiotic use. The majority of all antibiotic use in hospitals is driven by just three conditions:
 - Community-acquired Pneumonia
 - Urinary Tract infections
 - Skin and Soft Tissue infections
- A number of specific potential improvement actions are listed in the document.

Core Element 5: Tracking

- Examples of Small and CAH Implementation Strategies:
 - Submit antibiotic use and resistance through CDC NHSN AU and Resistance Module.
 - Monitor adherence to hospital treatment recommendations.
 - Monitor how often antibiotics are changed/stopped after 2-3 days (assess antibiotic “time outs”)
 - Perform a medication use evaluation to assess courses of therapy for selected antibiotics (e.g., piperacillin-tazobactam, carbapenems, vancomycin, fluoroquinolones) to see if there are opportunities to improve use.
 - Monitor how often patients are converted from intravenous to oral therapy and assess to see if there are missed opportunities to convert.

Core Element 6: Reporting

- Examples of Small and CAH Implementation Strategies:
 - Prepare regular reports on the measures being tracked related to antibiotic use. Include these data as a standing report to key stakeholders within the facility, e.g., pharmacy and therapeutics, patient safety/quality, medical staff leadership/committees, and hospital board.
 - If feasible, share provider-specific reports with individual clinicians confidentially.
 - Distribute data and key messaging through staff newsletters and emails.

Core Element 7: Education

- Examples of Small and CAH Implementation Strategies:
 - Integrate regular updates on antibiotic stewardship and resistance into communications tools with particular focus on interventions related to CAP, UTI and SSTI (e.g., blogs, website, intranet, and employee newsletters).
 - Provide targeted in-person or web-based educational presentations and messages to key provider, pharmacist and nursing groups at least annually.
 - Incorporate antibiotic stewardship into (re)credentialing education
 - Ask the patient-family advisory committee for input on patient education material.
 - Develop stories to share how patients' lives are affected by complications of antibiotic use (e.g. *C. difficile* infection).
 - Include information on antibiotics in patient education materials.

Some Key Lessons Learned and Tips from Small and CAHs

- Bedside nurses can play a key role in antibiotic stewardship in CAHs.
 - CDC and American Nurses Association recently released a white paper on the role of nurses in hospital stewardship programs:
<http://www.nursingworld.org/ANA-CDC-AntibioticStewardship-WhitePaper>
- Strong relationships between staff members often makes performance improvement efforts easier to implement and more successful in CAHs—once CAHs decide to do it, they will succeed.
- Small prescribing staff makes individual feedback and one on one education a realistic, and very effective, option.
- Design multi-faceted improvement efforts: *C. difficile*+stewardship+sepsis

Conclusions

- Antibiotic stewardship is as important in small and CAHs as in any other hospital.
- Medicare Beneficiary Quality Improvement Program (MB-QIP) is seeking to increase that number for CAHs.
 - Implementation of the CDC Core Elements is now a Core/Required Element of MB-QIP (2018-2021) for CAHs.

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 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.



Question

- 1) After listening to this portion of the presentation, which of the following describes your understanding of strategies for implementation of the CDC's Core Elements of Antibiotic Stewardship small and critical access hospitals?
- a) Less clear understanding
 - b) Unchanged understanding
 - c) More clear understanding

Question

The use of telemedicine for remote consultation is an example of how to incorporate which of the following Core Elements into your stewardship program?

- a) Education
- b) Drug Expertise
- c) Leadership commitment
- d) Action