



Priorities for Hospital Core Element Implementation

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Division of Healthcare Quality Promotion

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Five core strategies to combat the threat of antibiotic resistant infections

Antibiotic use and access:

- Improve **appropriate** use
- Reduce **unnecessary** use
- Ensure **improved access**



Infection prevention and control: Prevent infections and reduce the spread of germs



Tracking and data: Share data and improve data collection



Antibiotic use and access: Improve appropriate use of antibiotics, reduce unnecessary use (called antibiotic stewardship), and ensure improved access to antibiotics



Vaccines, therapeutics, and diagnostics: Invest in development and improved access to vaccines, therapeutics, and diagnostics for better prevention, treatment, and detection



Environment and sanitation: Keep antibiotics and antibiotic-resistant threats from entering the environment through actions like improving sanitation and improving access to safe water

CDC released the Core Elements of Hospital Antibiotic Stewardship Programs

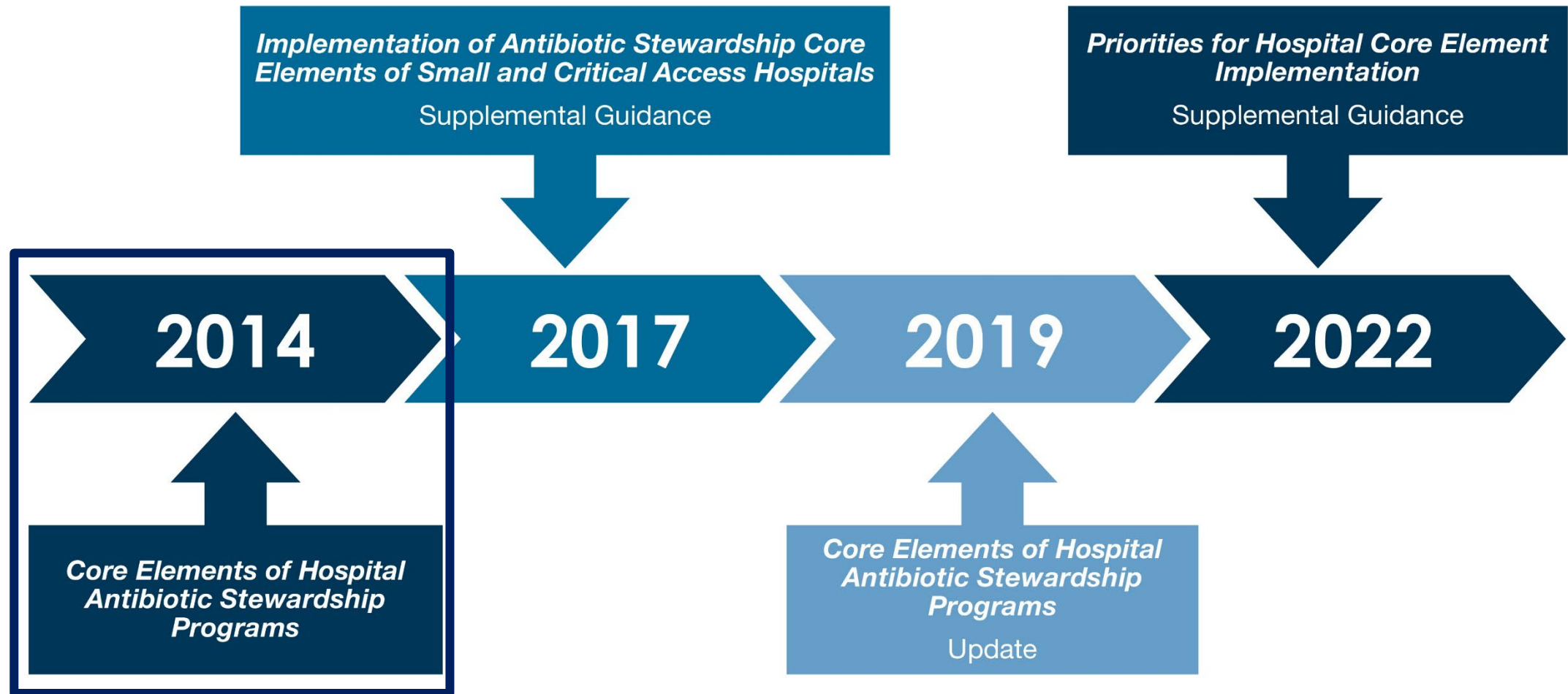


Figure. Timeline of Core Elements of Hospital Antibiotic Stewardship Programs

CDC released the Core Elements of Hospital Antibiotic Stewardship Programs

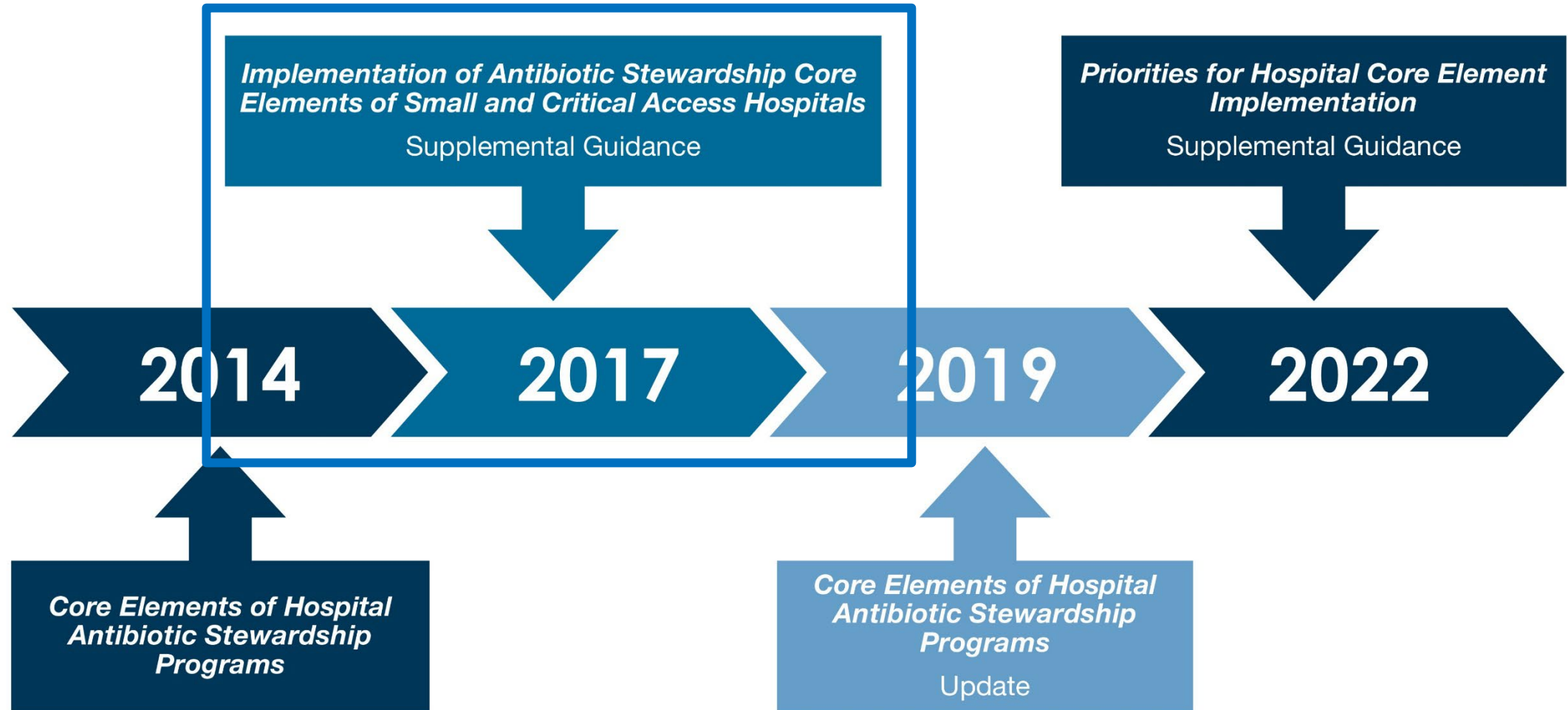


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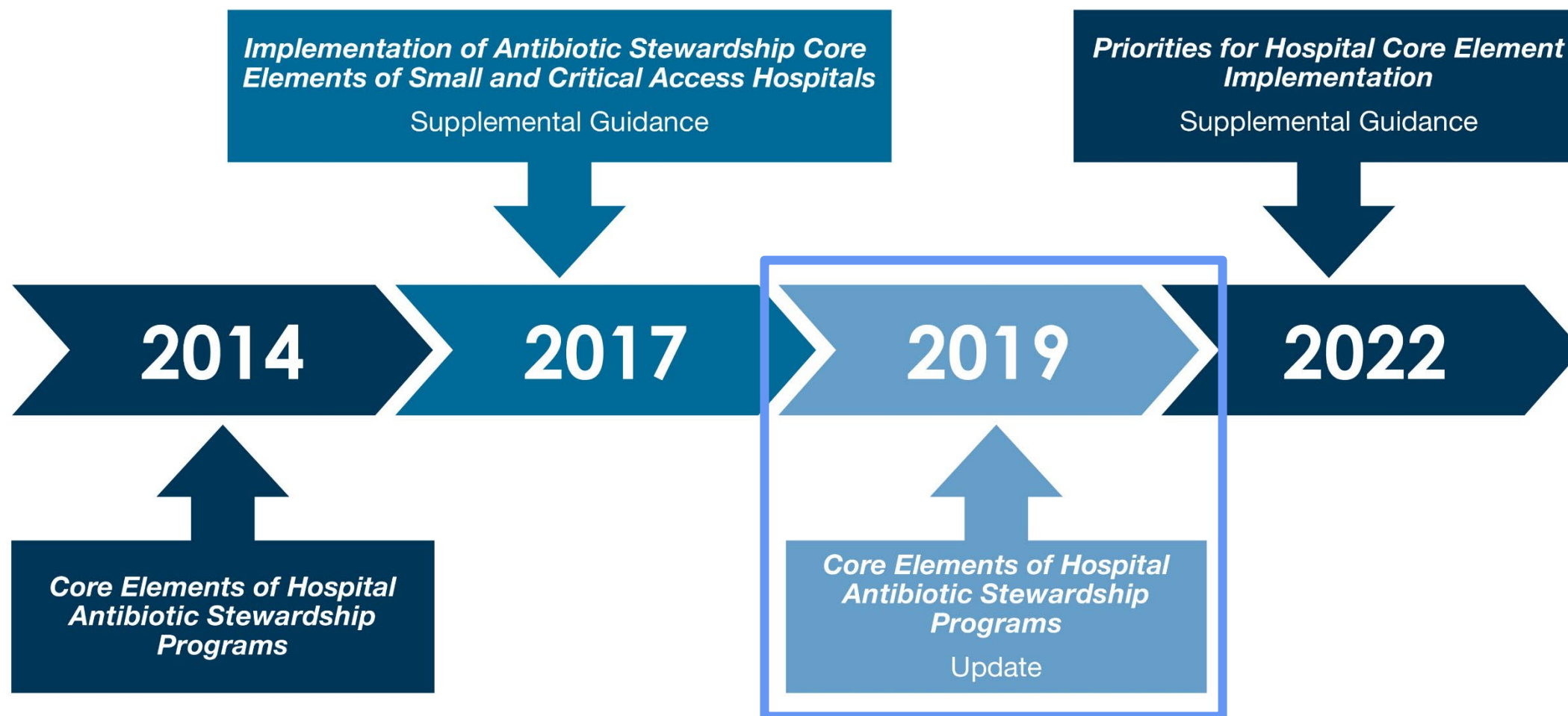


Figure. Timeline of Core Elements of Hospital Antibiotic Stewardship Programs



The Core Elements of Hospital Antibiotic Stewardship Programs: 2019



Centers for Disease
Control and Prevention
National Center for Emerging and
Zoonotic Infectious Diseases
Division of Healthcare Quality Promotion

Core Elements of Hospital Antibiotic Stewardship Programs



Hospital Leadership Commitment

Dedicate necessary human, financial, and information technology resources.



Accountability

Appoint a leader or co-leaders, such as a physician and pharmacist, responsible for program management and outcomes.



Pharmacy Expertise (previously “Drug Expertise”):

Appoint a pharmacist, ideally as the co-leader of the stewardship program, to help lead implementation efforts to improve antibiotic use.



Action

Implement interventions, such as prospective audit and feedback or preauthorization, to improve antibiotic use.



Tracking

Monitor antibiotic prescribing, impact of interventions, and other important outcomes, like *C. difficile* infections and resistance patterns.



Reporting

Regularly report information on antibiotic use and resistance to prescribers, pharmacists, nurses, and hospital leadership.



Education

Educate prescribers, pharmacists, nurses, and patients about adverse reactions from antibiotics, antibiotic resistance, and optimal prescribing.

The Core Elements of Hospital Antibiotic Stewardship Programs



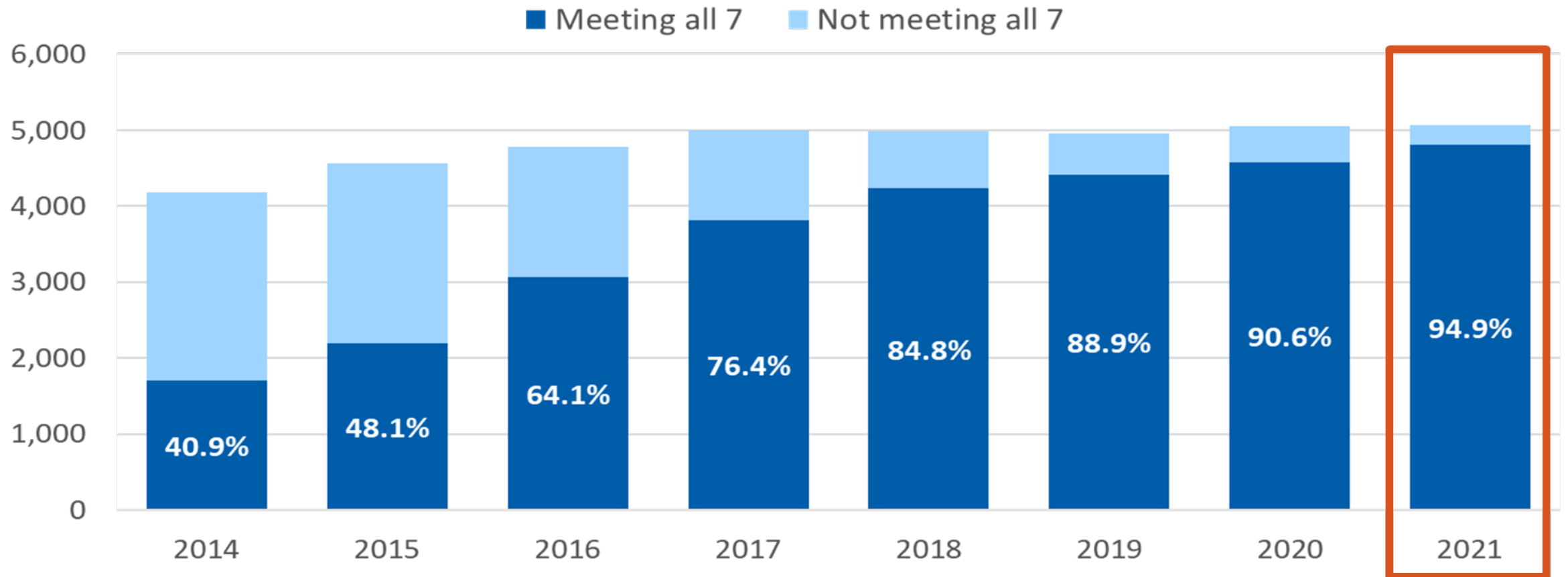
Implementation of CDC's Hospital Core Elements



- The *Core Elements of Hospital Antibiotic Stewardship Programs* play an important role in regulatory and accreditation stewardship standards.
 - The *Core Elements* from the foundation for antibiotic stewardship standards from the **Joint Commission** and **DNV**.
 - The *Core Elements* referenced in the 2019 hospital Conditions of Participation from the **Centers for Medicare and Medicaid Services** regulation for hospital antibiotic stewardship programs.

NHSN Annual Hospital Surveys 2014-2021: Number and percent of hospitals meeting all 7 Core Elements

Number and percentage of hospitals meeting all 7 Core Elements



CDC released *Priorities* to enhance the quality and impact of hospital antibiotic stewardship programs

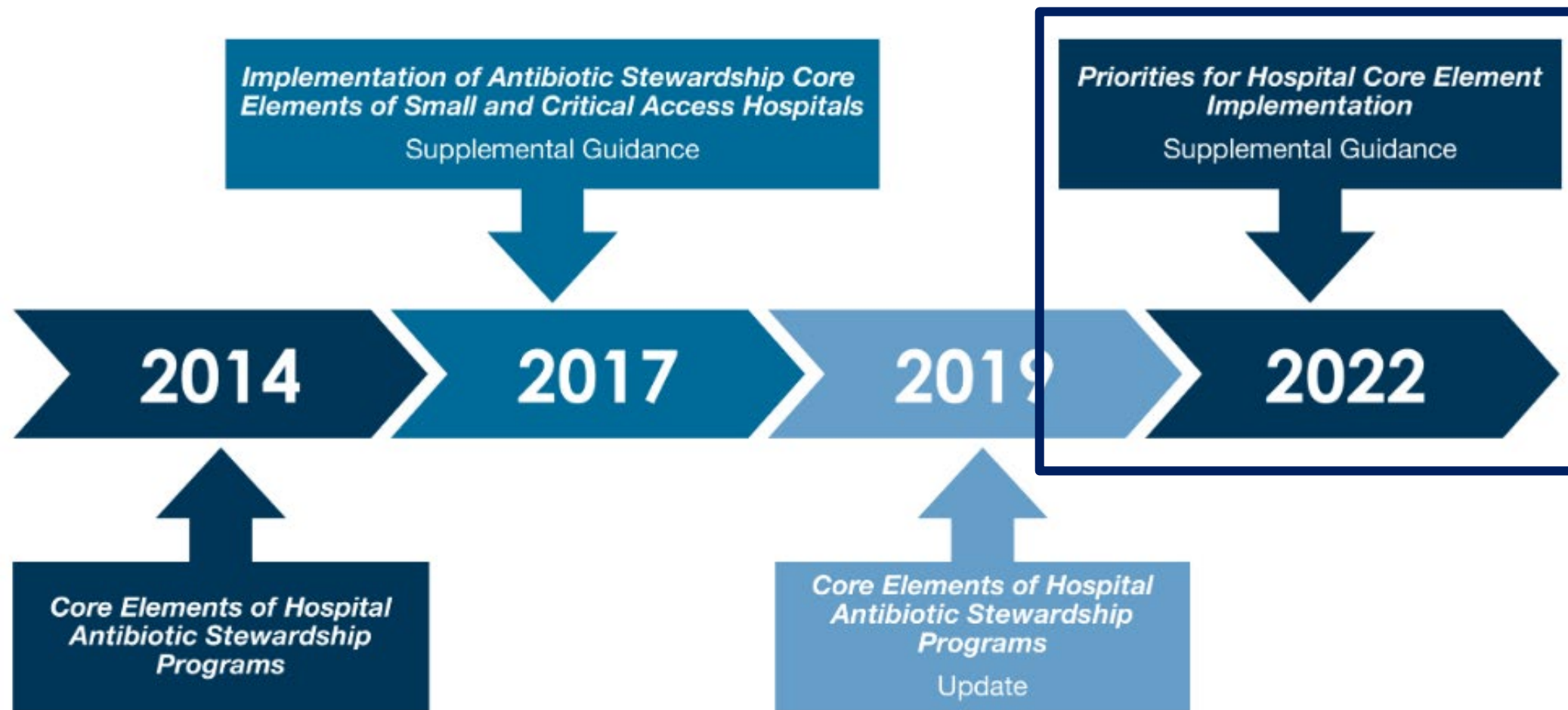


Figure. Timeline of Core Elements of Hospital Antibiotic Stewardship Programs

Priorities are derived from the Hospital Core Elements

- Highlight a **subset** of effective stewardship implementation approaches that are supported by evidence and/or recommended by stewardship experts.

Hospital Core Elements	Priorities for Hospital Core Element Implementation
Hospital Leadership Commitment  Dedicate necessary human, financial, and information technology resources.	Antibiotic stewardship physician and/or pharmacist leader(s) have antibiotic stewardship responsibilities in their contract, job description, or performance review.
Accountability  Appoint a leader or co-leaders, such as a physician and pharmacist, responsible for program management and outcomes.	Antibiotic stewardship program is co-led by a physician and pharmacist.*
Pharmacy/Stewardship Expertise  Appoint a pharmacist, ideally as the co-leader of the stewardship program, to help lead implementation efforts to improve antibiotic use.	Antibiotic stewardship physician and/or pharmacist leader(s) have completed infectious diseases specialty training, a certificate program, or other training on antibiotic stewardship.
Action  Implement interventions, such as prospective audit and feedback or preauthorization, to improve antibiotic use.	Antibiotic stewardship program has facility-specific treatment recommendations for common clinical condition(s) and performs prospective audit/feedback or preauthorization.
Tracking  Monitor antibiotic prescribing, impact of interventions, and other important outcomes, like <i>C. difficile</i> infections and resistance patterns.	Hospital submits antibiotic use data to the NHSN Antimicrobial Use Option.
Reporting  Regularly report information on antibiotic use and resistance to prescribers, pharmacists, nurses, and hospital leadership.	Antibiotic use reports are provided at least annually to target feedback to prescribers. In addition, the antibiotic stewardship program monitors adherence to facility-specific treatment recommendations for at least one common clinical condition.
Education  Educate prescribers, pharmacists, nurses, and patients about adverse reactions from antibiotics, antibiotic resistance, and optimal prescribing.	No implementation priority identified.

Priorities are derived from the Hospital Core Elements

- Highlight a subset of effective stewardship implementation approaches that are supported by evidence and/or recommended by stewardship experts.
- Provide hospital leadership and antibiotic stewards opportunities to **expand** their antibiotic stewardship programs.

Hospital Core Elements	Priorities for Hospital Core Element Implementation
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Education  Educate prescribers, pharmacists, nurses, and patients about adverse reactions from antibiotics, antibiotic resistance, and optimal prescribing.	No implementation priority identified.

Priorities for Hospital Core Element Implementation



Hospital Leadership Commitment

Antibiotic stewardship physician and/or pharmacist leader(s) have antibiotic stewardship responsibilities in their contract, job description, or performance review.



Accountability

Antibiotic stewardship program is co-led by a physician and pharmacist.*



Stewardship/Pharmacy Expertise

Antibiotic stewardship physician and/or pharmacist leader(s) have completed infectious diseases specialty training, a certificate program, or other training on antibiotic stewardship.



Action

Antibiotic stewardship program has facility-specific treatment recommendations for common clinical condition(s) and performs prospective audit/feedback or preauthorization.



Tracking

Hospital submits antibiotic use data to the NHSN Antimicrobial Use Option.



Reporting

Antibiotic use reports are provided at least annually to target feedback to prescribers. In addition, the antibiotic stewardship program monitors adherence to facility-specific treatment recommendations for at least one common clinical condition.



Education

No implementation priority identified.

*For critical access hospitals that do not have pharmacists on staff, co-leadership may not be possible.

Hospital Core Elements

Hospital Leadership Commitment



Dedicate necessary human, financial, and information technology resources.

Priorities for Hospital Core Element Implementation

Antibiotic stewardship physician and/or pharmacist leader(s) have antibiotic stewardship responsibilities in their contract, job description, or performance review.

Hospital Core Elements

Accountability



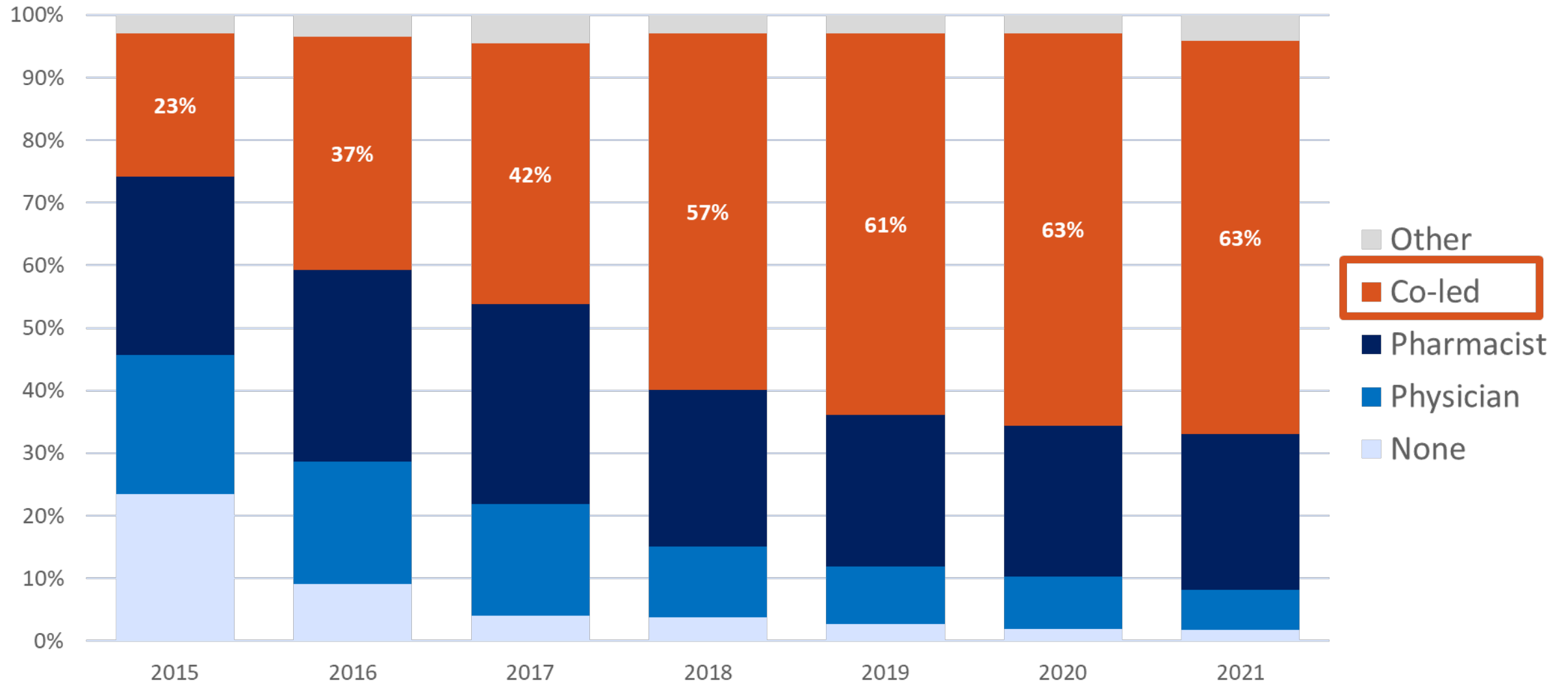
Appoint a leader or co-leaders, such as a physician and pharmacist, responsible for program management and outcomes.

Priorities for Hospital Core Element Implementation

Antibiotic stewardship program is co-led by a physician and pharmacist.*

*For critical access hospitals (CAHs), accountability can be met if the hospital has a physician leader with a pharmacist involved in stewardship

Co-leadership model with physician and pharmacist



Hospital Core Elements

Pharmacy/Stewardship Expertise



Appoint a pharmacist, ideally as the co-leader of the stewardship program, to help lead implementation efforts to improve antibiotic use.

Priorities for Hospital Core Element Implementation

Antibiotic stewardship physician and/or pharmacist leader(s) have completed infectious diseases specialty training, a certificate program, or other training on antibiotic stewardship.



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SMART USE, BEST CARE

UPDATED CDC Training on Antibiotic Stewardship



CS336932-A

To access the training and free continuing education credits, visit
www.train.org/cdctrain/training_plan/3697.

Hospital Core Elements

Action



Implement interventions, such as prospective audit and feedback or preauthorization, to improve antibiotic use.

Priorities for Hospital Core Element Implementation

Antibiotic stewardship program has facility-specific treatment recommendations for common clinical condition(s) and performs prospective audit/feedback or preauthorization.

Priority interventions to
improve antibiotic use

Preauthorization

Prospective Audit
and Feedback

Facility-specific
treatment guidelines

Hospital Core Elements

Tracking

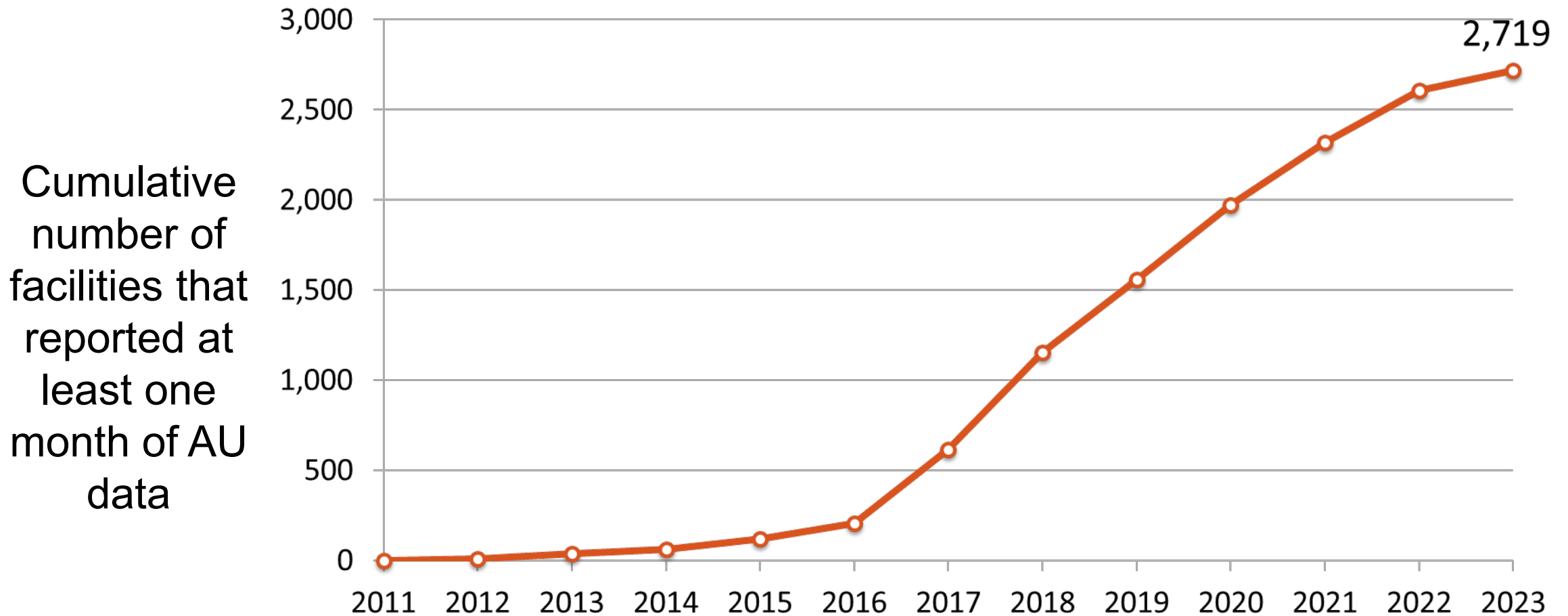


Monitor antibiotic prescribing, impact of interventions, and other important outcomes, like *C. difficile* infections and resistance patterns.

Priorities for Hospital Core Element Implementation

Hospital submits antibiotic use data to the NHSN Antimicrobial Use Option.

Cumulative annual submission to the AU Option*



*As of March 1, 2023

Hospital Core Elements

Reporting



Regularly report information on antibiotic use and resistance to prescribers, pharmacists, nurses, and hospital leadership.

Priorities for Hospital Core Element Implementation

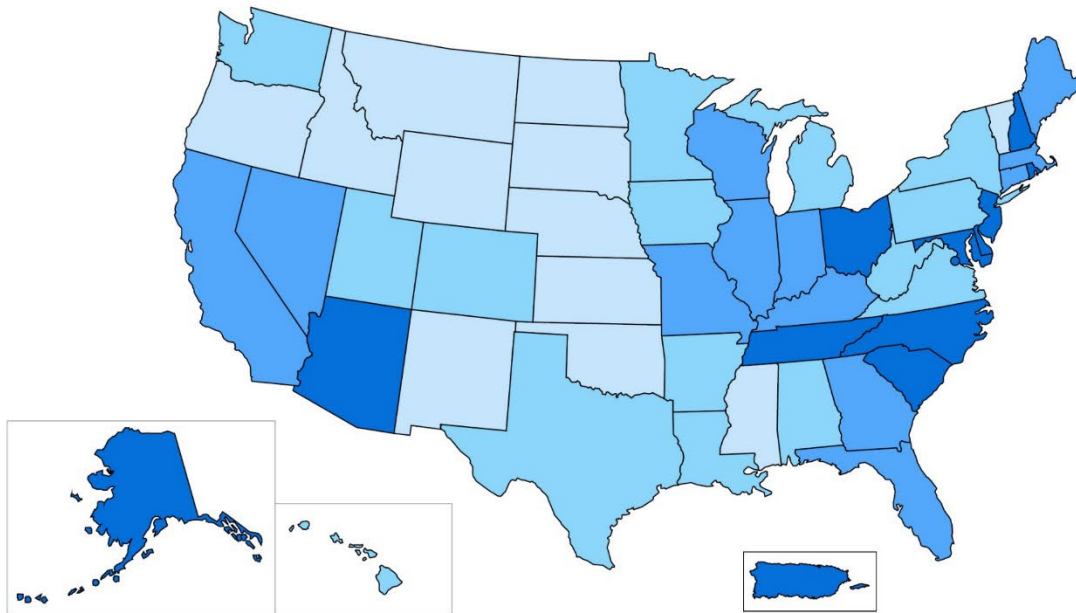
Antibiotic use reports are provided at least annually to target feedback to prescribers. In addition, the antibiotic stewardship program monitors adherence to facility-specific treatment recommendations for at least one common clinical condition.

Antibiotic Resistance & Patient Safety Portal



**BE
ANTIBIOTICS
AWARE**

SMART USE, BEST CARE



Explore and Visualize Data on
Antibiotic Use and Stewardship

For more information, visit www.cdc.gov/antibiotic-use or call **1-800-CDC-INFO**.



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Hospital antibiotic stewardship stratified by state

HOSPITAL ANTIBIOTIC STEWARDSHIP (AS) BY STATE

YEAR

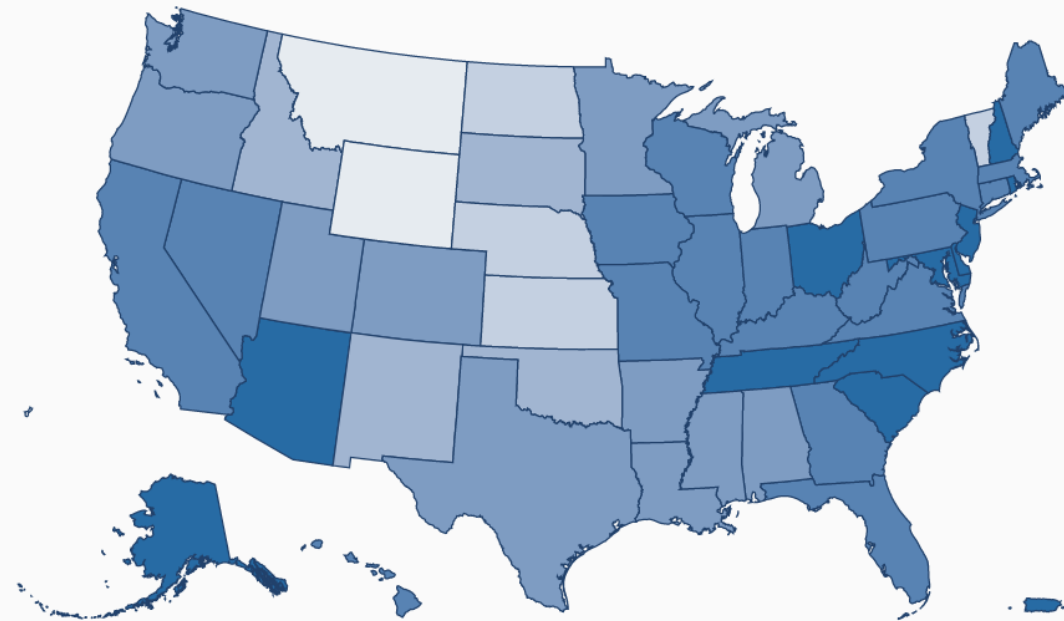
2021

CORE ELEMENT

All 7 Core Elements

This map shows the variation by state in the percentage of U.S. hospitals that report implementation of CDC's core elements of hospital antibiotic stewardship programs by year. Implementation of the core elements is visualized in this graphic by aggregating acute care hospital responses to the NHSN Annual Hospital Survey by state. Each hospital answers questions related to antibiotic stewardship and responses are later mapped to the seven core elements: leadership commitment, accountability, pharmacy expertise, action, tracking, reporting, and education. Click on a state to see more information on that state's core element uptake.

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Percentage of hospitals meeting All 7 Core Elements
79% - 83% 84% - 87% 88% - 91% 92% - 95% 96% - 98% 99%+

Hospital antibiotic stewardship core elements uptake increased over time

CHANGES OVER TIME IN HOSPITAL ANTIBIOTIC STEWARDSHIP (AS)

VIEW DATA SAVE IMAGE SHARE

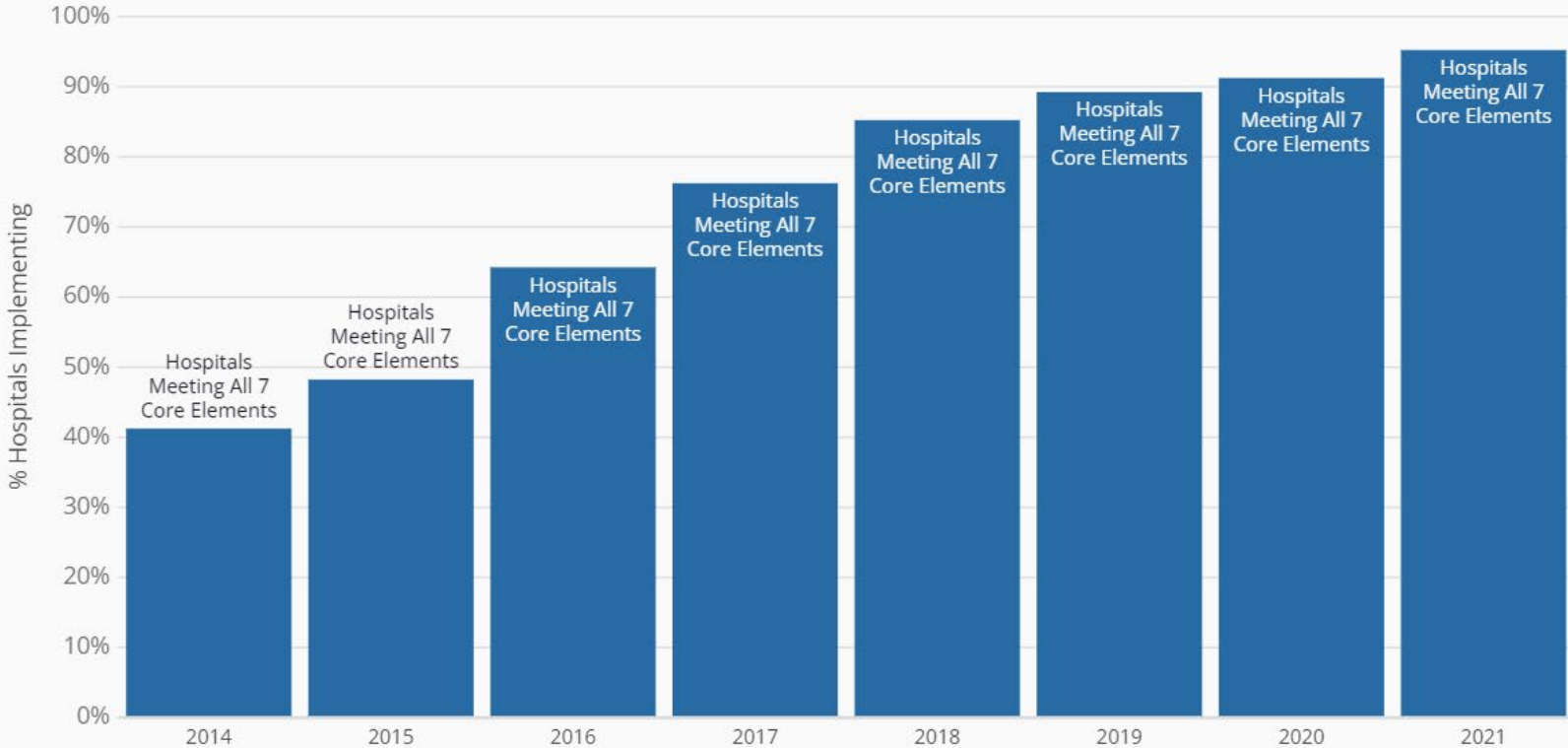
CORE ELEMENT

All 7 Core Elements

STATE

All States

This graphic shows the change over time from 2014 to 2021 in hospital implementation of antibiotic stewardship programs by state and core element.



Priority core element uptake added to AR & PSP

HOSPITAL ANTIBIOTIC STEWARDSHIP (AS) IMPLEMENTATION BY CORE ELEMENT

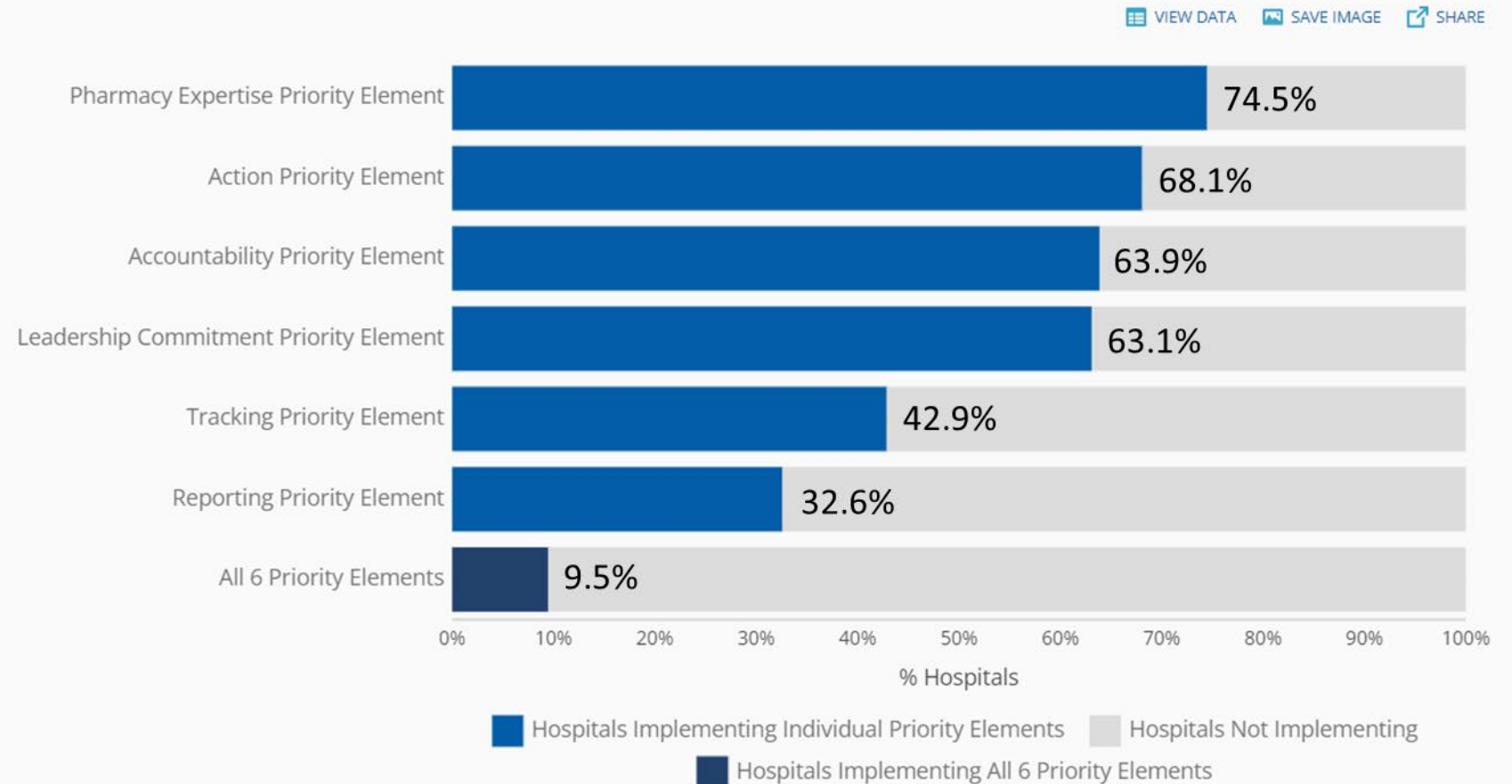
Core element reporting

Priority element reporting

STATE

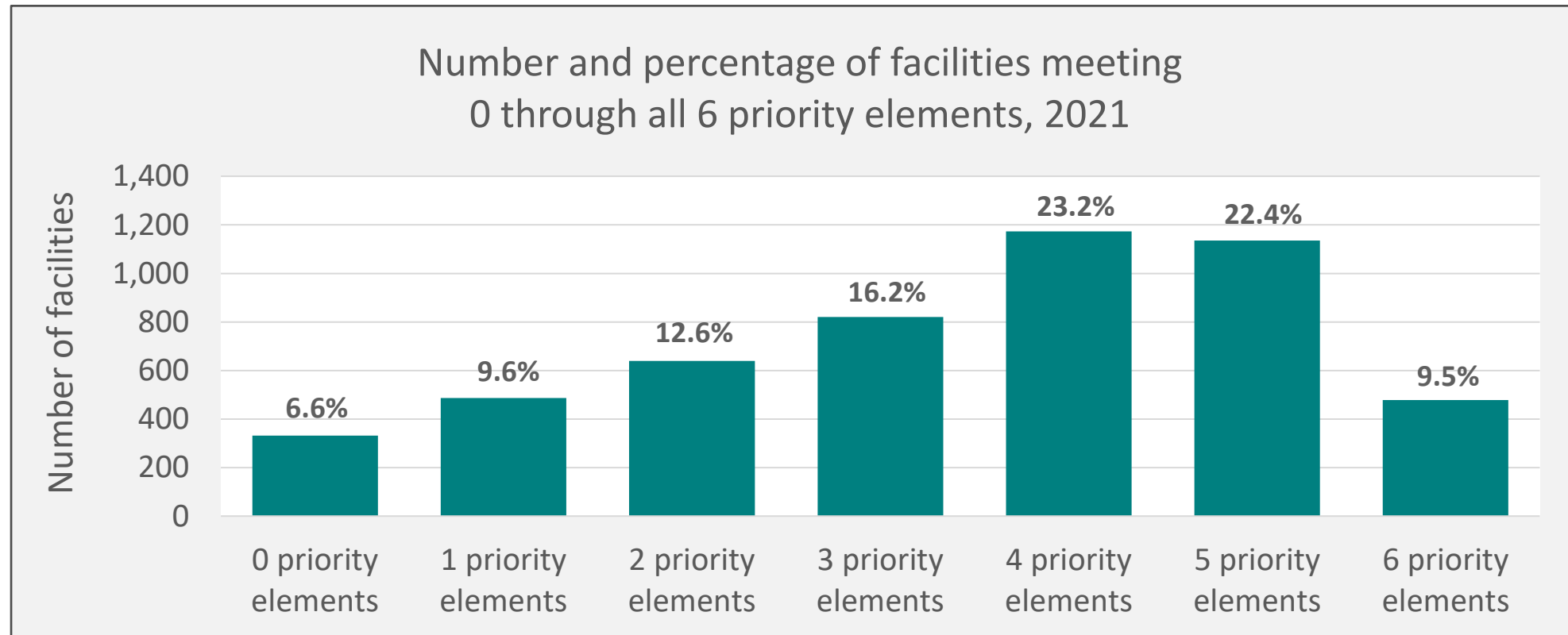
All States

The graphic shows the percent of acute care hospitals that report implementation of Priority Elements of hospital antibiotic stewardship programs for the nation in **2021**. Visit the [United States Profile](https://arpsp.cdc.gov/profile/stewardship) to learn more about Antibiotic Stewardship reporting by geography.



Priorities for Hospital Core Element Implementation

- 479 (9.5%) hospitals met all 6 priority elements in 2021
- 2,308 (45.6%) hospitals met 4 or 5 of the priority elements in 2021



Antibiotic Use



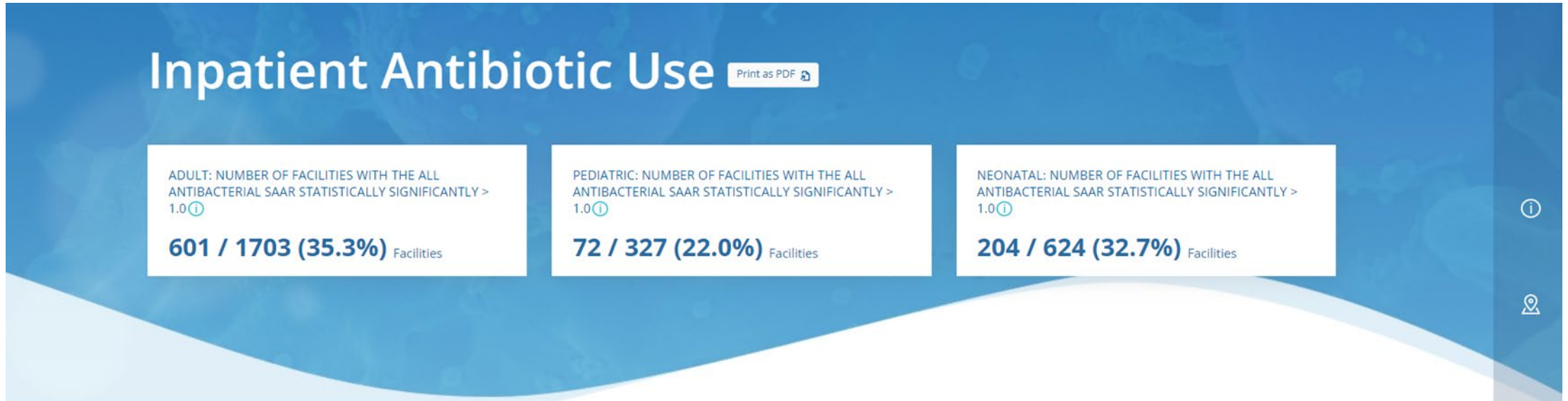
Antibiotic Use & Stewardship

Antibiotic Use

Antibiotic Stewardship Core Elements

These data reflect antibiotic use data from inpatient facilities enrolled in the NHSN's Patient Safety Component Antimicrobial Use and Resistance (AUR) Module Antimicrobial Use (AU) Option and oral antibiotic prescriptions dispensed to humans in US outpatient pharmacies during 2019-2021.

Hospital antibiotic use based on NHSN AU Option standardized antimicrobial administration ratio (SAAR)



Inpatient Antibiotic Use

The Standardized Antimicrobial Administration Ratio (SAAR) is a risk-adjusted summary measure of antimicrobial use available to acute care hospitals participating in the National Healthcare Safety Network (NHSN) Antimicrobial Use (AU) Option. Hospitals can use the SAAR to track AU, compare their AU to a national benchmark, and assess the impact of interventions aimed at improving prescribing practices.

DATA SOURCE

NATIONAL HEALTHCARE SAFETY NETWORK (NHSN)

YEARS INCLUDED

2021

RESOURCES

→ NHSN Antimicrobial Use Report

→ AUR Module Protocol

Hospital facility antibiotic use data by state

SAAR VALUES BY STATE MAP

POPULATION

- Adult
- Pediatric
- Neonatal

SAAR AGENT ALL ANTIBACTERIAL AGENTS

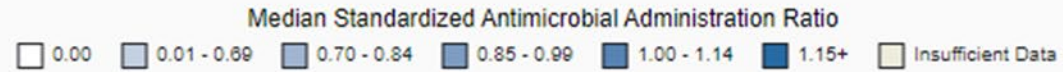
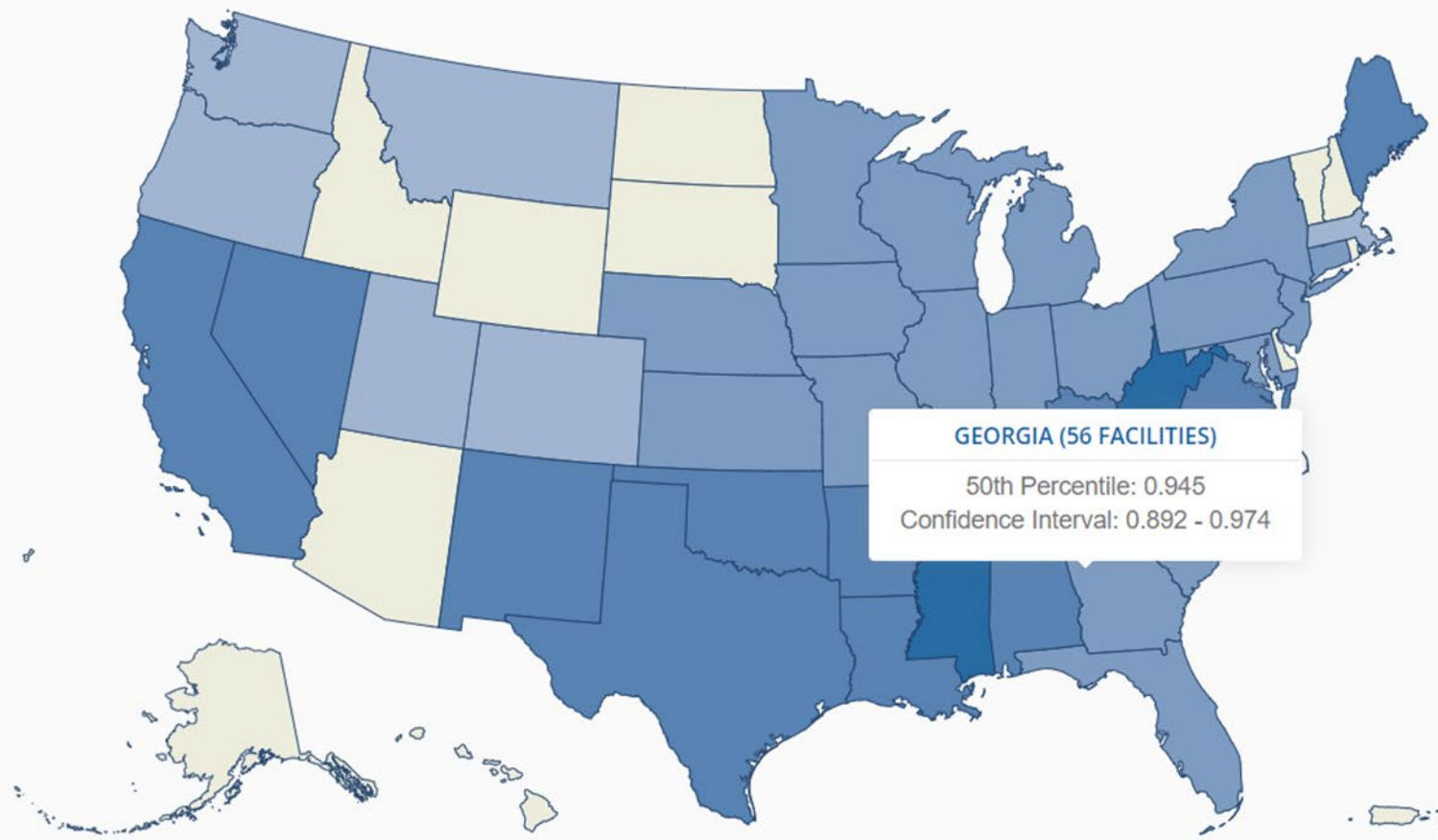
This map displays the variation in SAAR values for all SAAR agent categories across all states and select territories for the select population in 2021.

To view State Profile data, hover and click on desired State.

For specific SAAR agent category names, please see footnotes below.

For additional SAAR distribution data, please see "View Data" tab.

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Antibiotic Prescribing and Use

CDC > Antibiotic Use > Core Elements of Antibiotic Stewardship > Hospital

Antibiotic Use

About Antibiotic Use +

Patient Resources and Education +

Healthcare Professional Resources and Training +

Health Department Resources

Improving Antibiotic Use +

Core Elements of Antibiotic Stewardship -

Hospital -

Priorities for Core Elements Implementation

Implementation Resources for Hospitals

Small and Critical Access Hospitals

Outpatient +

Priorities for Hospital Core Element Implementation

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Opportunities to Enhance Hospital Antibiotic Stewardship Programs

Hospital antibiotic stewardship programs are essential to optimize patient care and help combat antimicrobial resistance. In 2021, nearly 95% of U.S. hospitals had antibiotic stewardship programs that met all seven of the *Core Elements of Hospital Antibiotic Stewardship Programs (Hospital Core Elements)*.

To continue enhancing hospital antibiotic stewardship programs, CDC has released *Priorities for Hospital Core Element Implementation (Priorities)* that can help enhance the quality and impact of existing antibiotic stewardship programs. The *Priorities* (Table) highlight highly effective implementation approaches and are supported by evidence and stewardship experts. Like the *Hospital Core Elements*, the uptake of the *Priorities* is tracked and reported through CDC's National Healthcare Safety Network and can be viewed on the [Antibiotic Resistance & Patient Safety Portal](#).

Table. The Core Elements of Hospital Antibiotic Stewardship Programs and the Priorities for Hospital Core Element Implementation.

Hospitals that have implemented the Hospital Core Elements of Antibiotic Stewardship can implement the Priorities for Hospital Core Element Implementation to further enhance their stewardship program.

Antibiotic Prescribing and Use

CDC > Antibiotic Use > Core Elements of Antibiotic Stewardship > Hospital

Antibiotic Use

About Antibiotic Use +

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Priorities for Hospital Core Element Implementation

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Outpatient +

Implementation Resources for Hospitals

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Pharmacy Expertise

- [5 Ways Hospital Pharmacists can Be Antibiotics Aware](#)

Action

- [Implementing an Antibiotic Stewardship Program: Guidelines by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America](#)  [PDF - 27 pages] 
- [Urine Culture Stewardship in Hospitalized Patients](#)
- **NEW** [Healthcare Professionals: Be Antibiotic Aware – At Hospital Discharge \(Print Only\)](#)  [PDF - 1 page]
- **NEW** [Antimicrobial Stewardship Transition of Care \(Henry Ford Health System\)](#) 
- [Toolkit to Enhance Nursing and Antibiotic Stewardship Partnership \(The Johns Hopkins Hospital Department of Antimicrobial Stewardship\)](#) 
- [Redefining the Antibiotic Stewardship Team: Recommendations from the American Nurses Association/Centers for Disease Control and Prevention Workgroup on the Role of Registered Nurses in Hospital Antibiotic Stewardship Practices](#) [PDF - 14 pages]. 
- [AHRO Safety Program for Improving Antibiotic Use](#) 

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November 18–24, 2023

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For more information, contact CDC
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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.

