5 D's of Antibiotic Stewardship

- Diagnosis
  - Does the condition require antibiotic therapy?
- Drug
  - Is the bacteria susceptible?
- Dose
  - What is the recommended dose?
- Duration
  - What is the recommended duration?
- De-escalation
  - Can the antibiotic be switched from IV to oral?

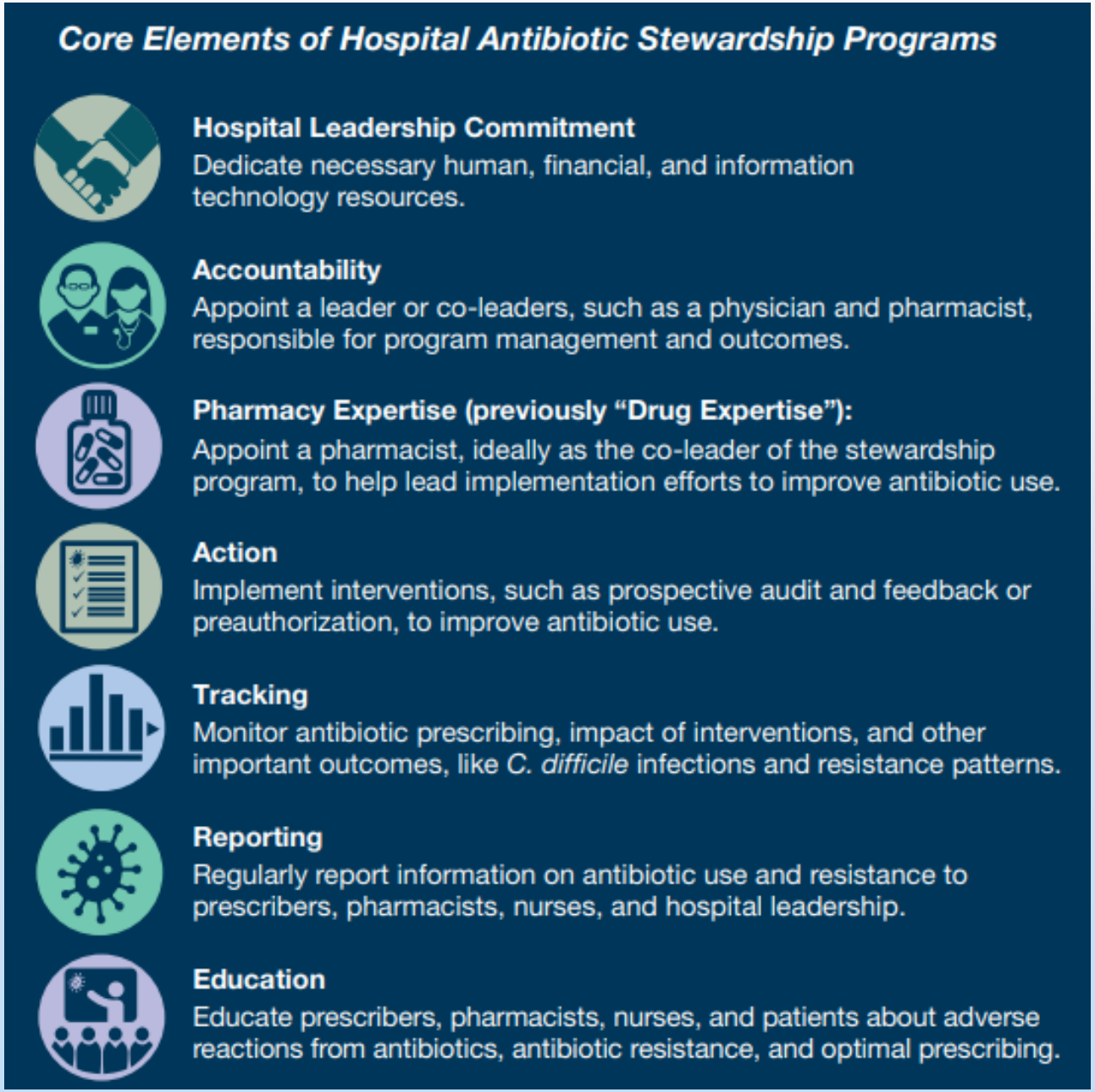
Antibiotic Stewardship Benefits

- Increase good patient outcomes
- Decrease antibiotic resistance
- Decrease C. difficile infections
- Decrease costs

CDC. Save Money with Antibiotic Stewardship. Accessed on 04/28/2017. Available at: https://www.cdc.gov/getsmart/week/downloads/gsw-factsheet-cost.pdf

Antimicrobial Stewardship

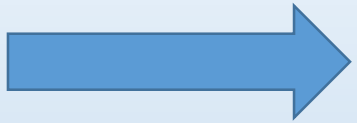
Core Elements



CDC. Core Elements of Hospital Antibiotic Stewardship Programs. Atlanta, GA: US Department of Health and Human Services, CDC; 2019. Available at https://www.cdc.gov/antibiotic-use/healthcare/pdfs/hospital-core-elements-H.pdf

Priority and Other

- Some sections are now stratified by "Priority" and "Other"



- Leadership
- Action
- Tracking

- Priority – experiences of successful stewardship programs and published data
- Other – useful as supplementary role but not in place of Priority items

Hospital Leadership Commitment

- Priority
  - Time
  - Resources
  - Senior leader to serve as a “champion” for the stewardship program
  - Regular opportunities to report stewardship activities, resources, and outcomes to senior executives and hospital board
- Other
  - Quality improvement and patient safety efforts
  - Formal statements of support
  - Job descriptions and annual performance reviews
  - Training and education for program leaders and hospital staff
  - Enrollment in and reporting to NHSN-AUR module
  - Focus on key support departments and groups
    - Added Program heads, P&T committee, quality improvement

Accountability

- Leader or co-leaders responsible for program management and outcomes
- 59% Physician and Pharmacist co-lead
- Regular stewardship rounds and “handshake stewardship”
  - Enhances visibility and support [3, 4]
- Tele-stewardship when full time positions are not available

Pharmacy Expertise

- Previously Drug Expertise
- Renamed to reflect importance of pharmacy engagement
- Appoint a pharmacist as co-leader of the stewardship program
- Interventions
  - Require documentation of indications for antibiotics
  - Intravenous (IV) to Oral
  - Dose adjustments
  - Dose optimization
  - Duplicative Therapy Alerts
  - Time-sensitive automatic stop orders
  - Drug-Drug Interactions

Action

- Priority
  - Prospective audit and feedback
  - Preauthorization
  - Facility-specific treatment recommendations
- Other
  - Antibiotic timeout now “useful supplemental intervention”
  - Infection-based interventions
    - More than half of all antibiotics prescribed are for:
      - Community Acquired Pneumonia (CAP)
      - Urinary Tract Infection (UTI)
      - Skin and Soft Tissue Infection (SSTI)
  - Department based interventions
    - Provider, Pharmacy, Microbiology,and Nursing

Tracking

- Priority
  - Report data to NHSN AU
  - Monitor impact of the key interventions
    - Prospective audit and feedback
    - Preauthorization
    - Facility-specific treatment recommendations
- Other
  - Outcome measure
    - *C. difficile* infections
    - Antibiotic Resistance
    - Financial impact
  - Process Measures for Quality Improvement
    - Antibiotic timeouts, medication use and evaluation, IV to PO missed opportunities, duplicate therapy, and rate of patient discharge on correct antibiotic therapy

Reporting

- Continue to provide regular updates on process and outcome measures to other departments
  - Providers, Pharmacy, Microbiology, Nurses, and Leadership

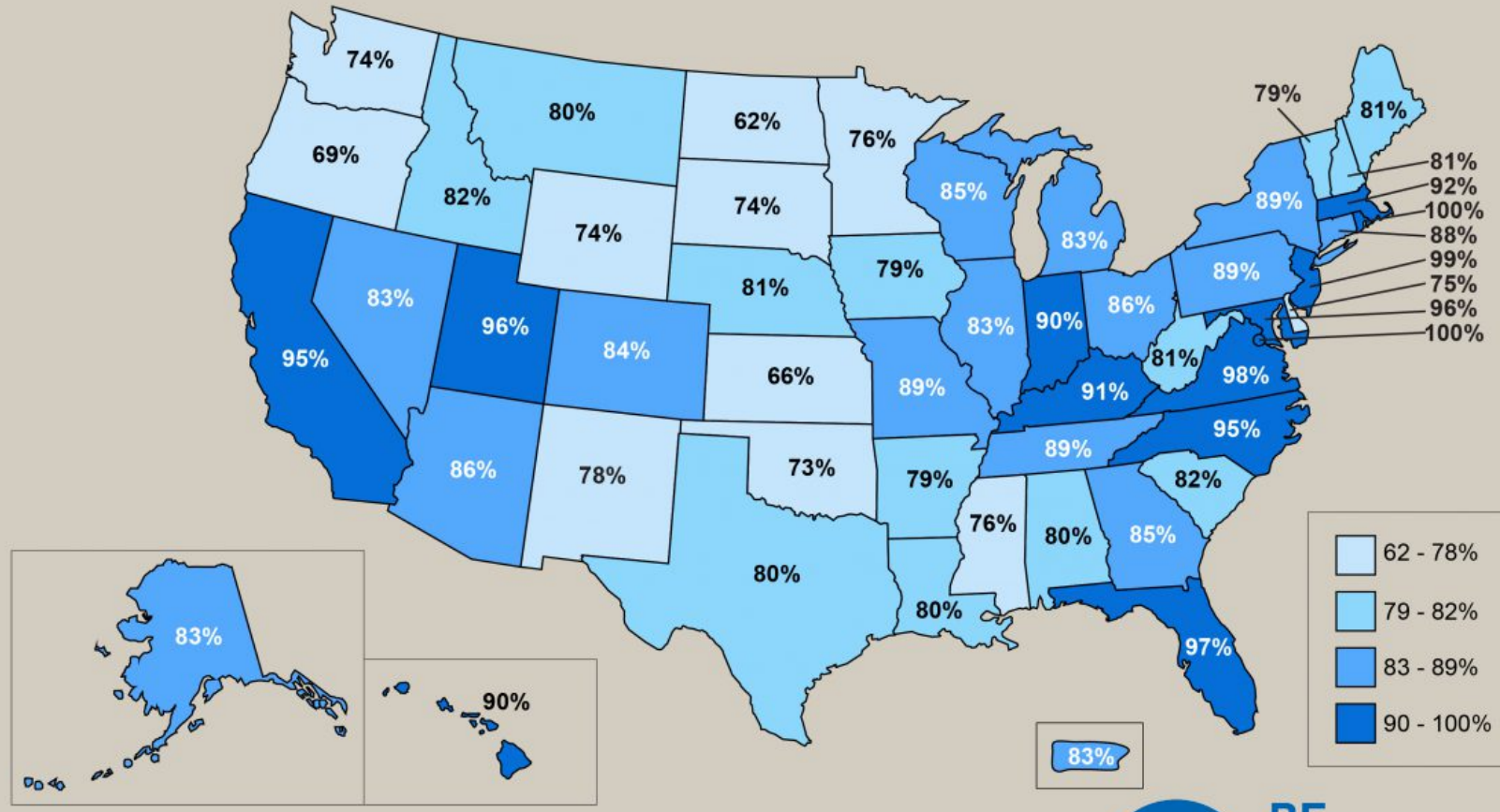
- Useful to share with prescribers
  - Medication use evaluations
  - Summary of key issues arising from priority interventions
  - Facility-specific antibiotic use among similar patient care locations[5]

Education

- Case-based education
- Pair with interventions and measurements of outcomes.
- Handshake stewardship

Percentage of Hospitals Meeting all 7 Core Elements of Hospital Antibiotic Stewardship Programs* by State, 2018

Nationally, 84.8% of hospitals have met all 7 Core Elements (4,233 of 4,989); the national goal is 100% of hospitals by 2020.



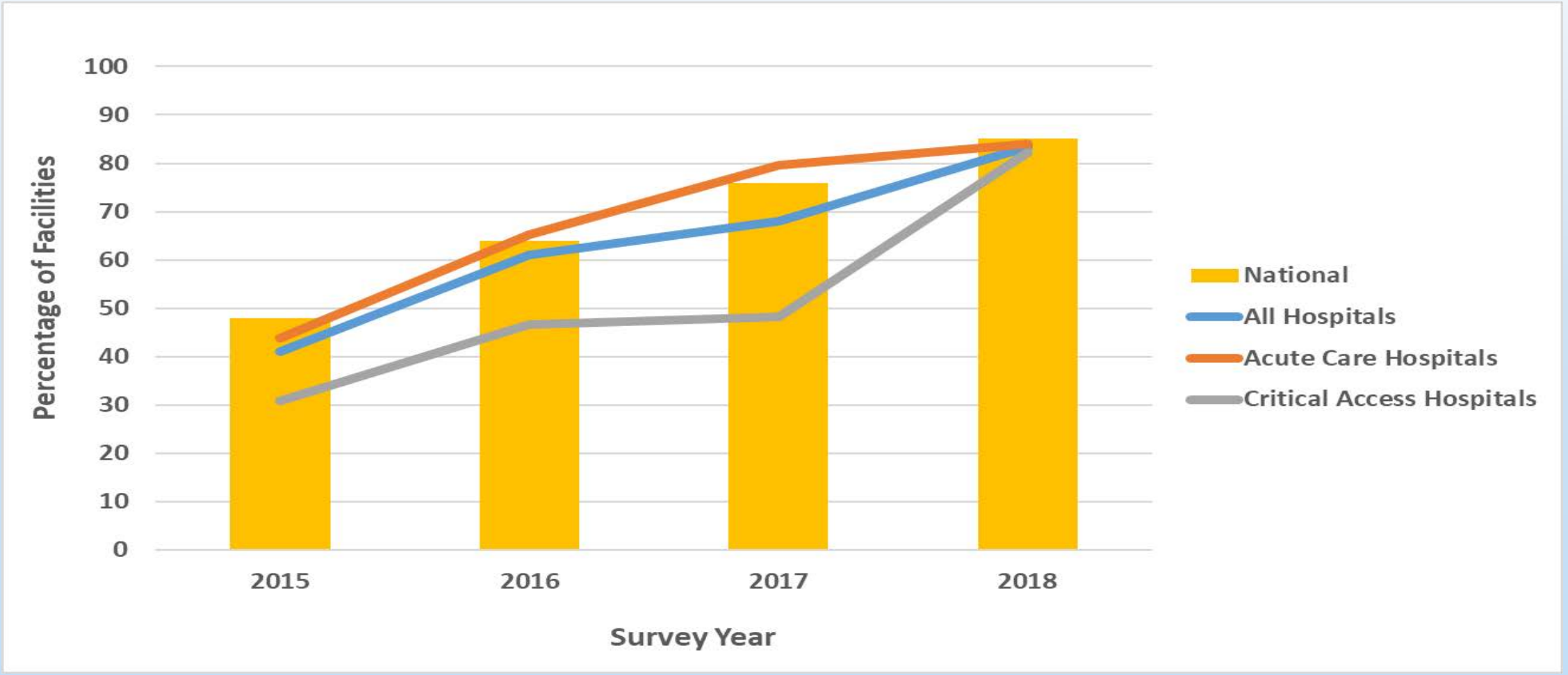
*More information on CDC's Core Elements of Hospital Antibiotic Stewardship Programs can be found at:
https://www.cdc.gov/antibiotic-use/core-elements/hospital.html

Source: CDC's National Healthcare Safety Network (NHSN) Survey

19-312162-A

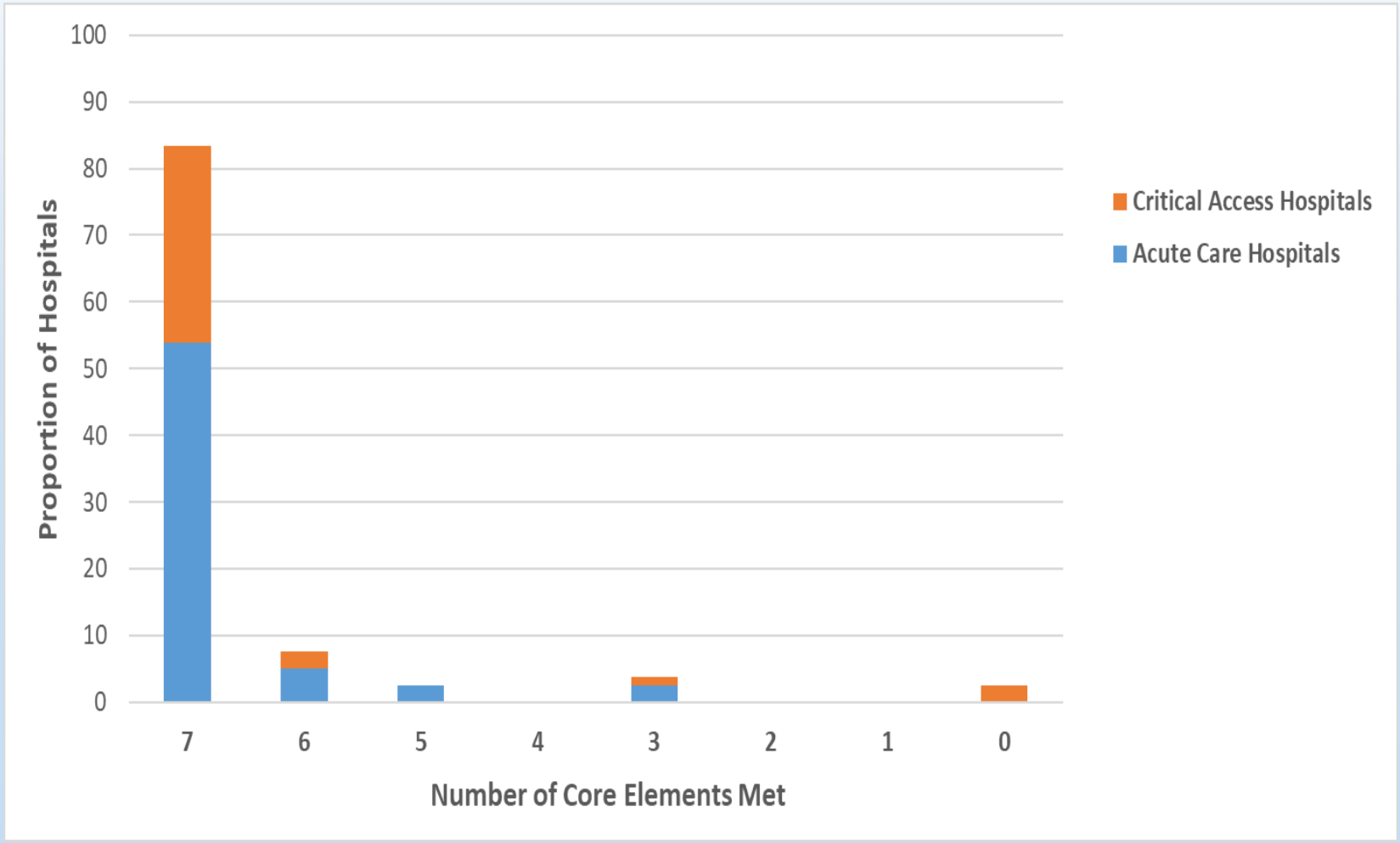
BE ANTIBIOTICS AWARE
SMART USE, BEST CARE

Percentage of Hospitals in Arkansas That Met All 7 Core Elements, by Facility Type and Year



Unpublished Arkansas aggregate data from CDC's National Healthcare Safety Network.

Percentage of Hospitals (N=78) by Number of Core Elements Met and Facility Type, 2018



Largest Gaps in Elements:

Reporting	**7 Facilities**
Accountability	**5 Facilities**
Drug Expertise	**5 Facilities**

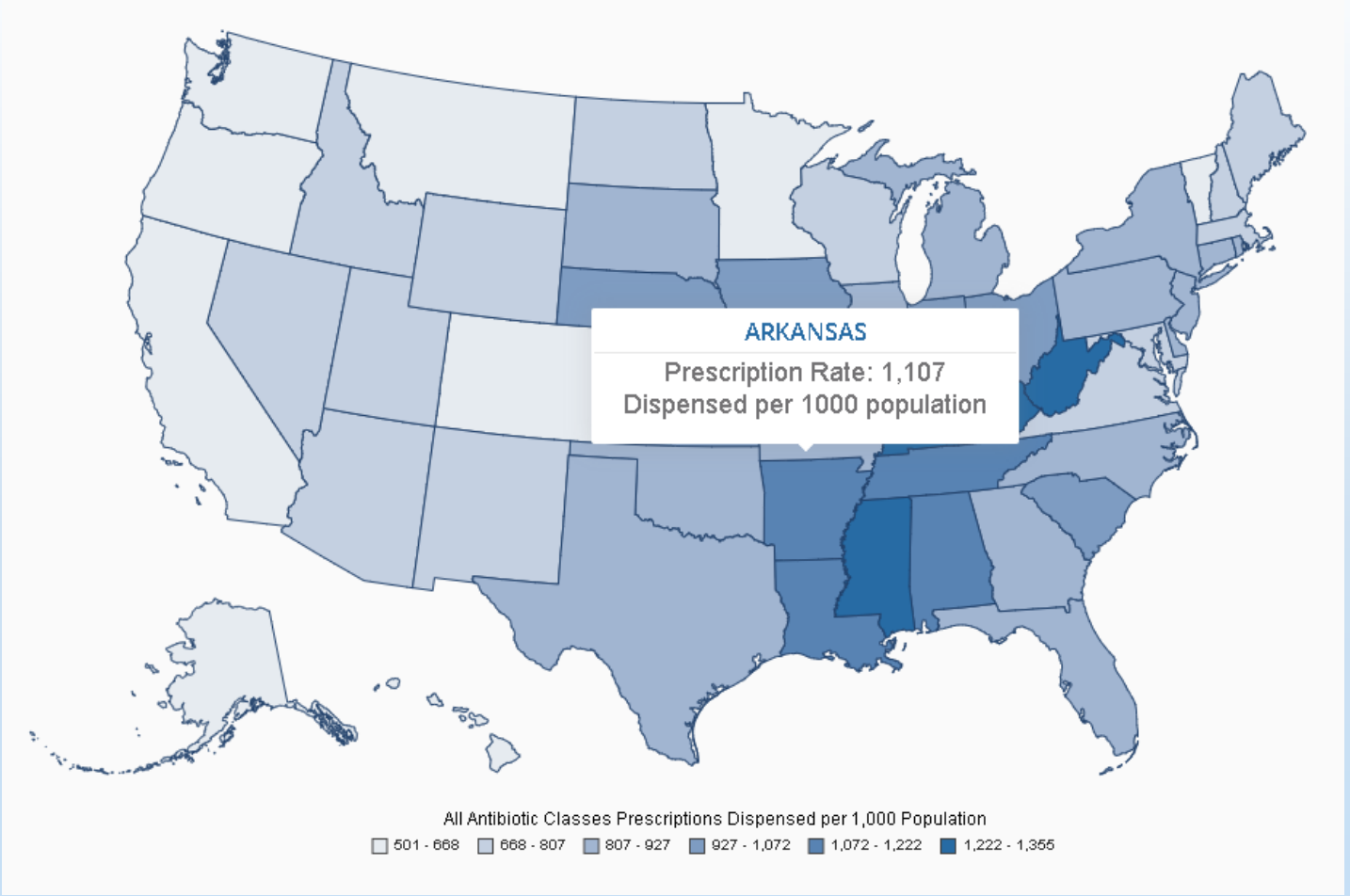
Unpublished Arkansas aggregate data from CDC's National Healthcare Safety Network.


Implementation of
Antibiotic Stewardship Core Elements
at Small and Critical Access Hospitals
AMBULANCE
MAIN ENTRANCE / EMERGENCY
American Hospital Association
HRSA
Federal Office of Rural Health Policy
PEW
CDC
Centers for Disease Control and Prevention
National Center for Emerging and Zoonotic Infectious Diseases
Cover photo courtesy of Geisinger Jersey Shore Hospital


The Core Elements of
Antibiotic Stewardship for Nursing Homes
National Center for Emerging and Zoonotic Infectious Diseases
Division of Healthcare Quality Promotion
CDC


The Core Elements of
Outpatient Antibiotic Stewardship
National Center for Emerging and Zoonotic Infectious Diseases
Division of Healthcare Quality Promotion
CDC

Oral Outpatient Antibiotic Prescriptions Dispensed in U.S. Community Pharmacies Per 1000 Population, All Antibiotic Classes, 2017

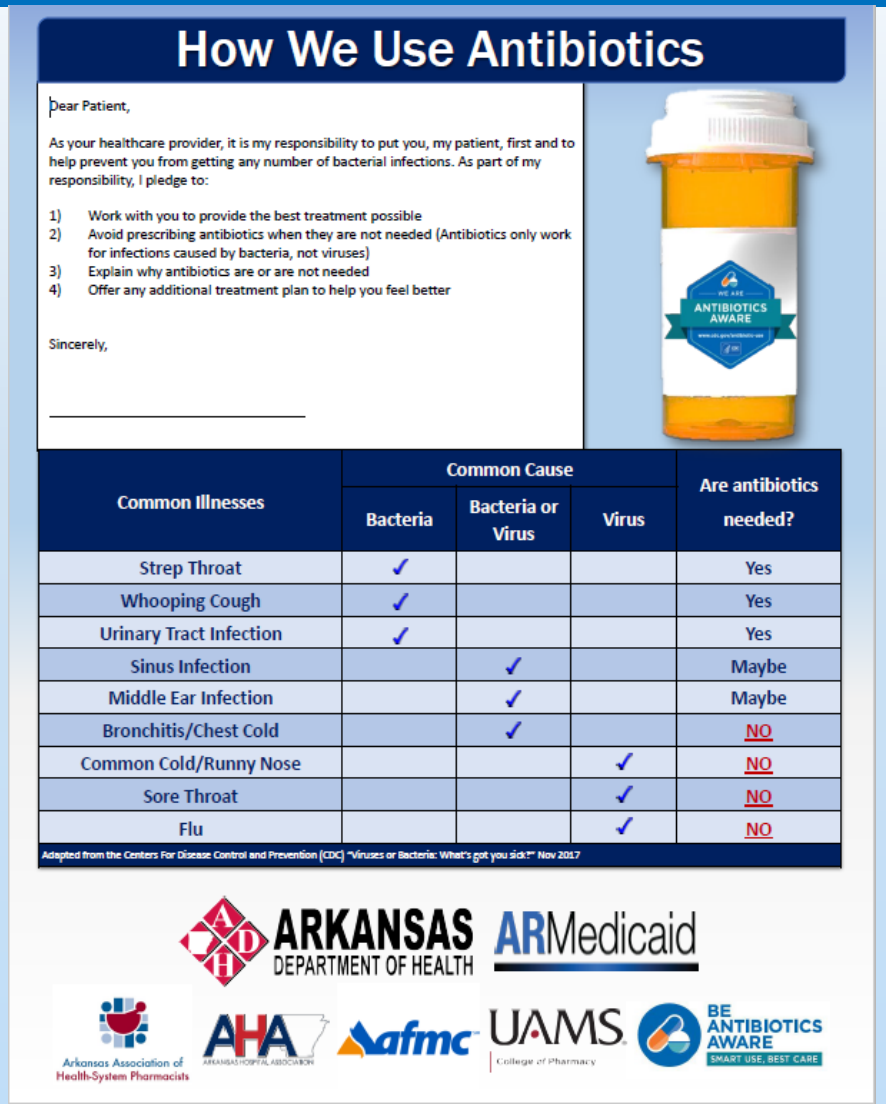


Arkansas ranks 44th in number of antibiotic RXs dispensed

CDC. Patient Safety Atlas using 2011-2017 Xponent database from QuintilesIMS. Available at: https://arpsp.cdc.gov/profile/antibiotic-use/217

6|18 Partnership with Arkansas Medicaid

- Participated in a national initiative to develop partnerships between public health and state Medicaid programs
- Supported by CDC and the Center for Healthcare Strategies
- Arkansas plan:
  - Establish an on-going meeting to discuss stewardship priorities
  - Analyze and review outpatient prescribing data from the Arkansas Medicaid population
  - Develop and distribute an antibiotic prescribing commitment poster
  - Participate in the all-payers monthly roundtable



Lessons Learned/Questions?

- Identifying a metric to use
  - All antibiotics or targeted?
  - Should the data be risk-adjusted to account for patient population make-up and location's sociodemographic factors
- Monitor education uptake
  - ADH presentations
  - CDC Stewardship Training course
- Change is slow and project was intentionally kept small and simple
  - Mid-way through the project – Arkansas Medicaid changed vendor for data
- 6|18 was a key factor in motivating action for outpatient stewardship work

Pharmacist Stewardship Survey

Pharmacist Stewardship Survey Background

- Arkansas Department of Health (ADH) Healthcare-Associated Infections and Antimicrobial Stewardship sub-committee idea

- Establish basic demographics and brief summary of antimicrobial stewardship actions at hospitals across the state

- Questions aligned with the CDC's 7 Core Elements of Antimicrobial Stewardship

- Survey targeted pharmacist
  - Previous collaboration with the Arkansas Association of Health-System Pharmacists

Pharmacist Stewardship Survey Background

- Most facilities in Arkansas were reported as having met 6 to 7 of the Core Elements, according to previous NHSN data

-Launching pad for further antimicrobial stewardship activities and outreach

-Statewide Antimicrobial Stewardship Initiative (SASI) tool and onsite hospital antimicrobial stewardship survey/visit

Survey Summary Data

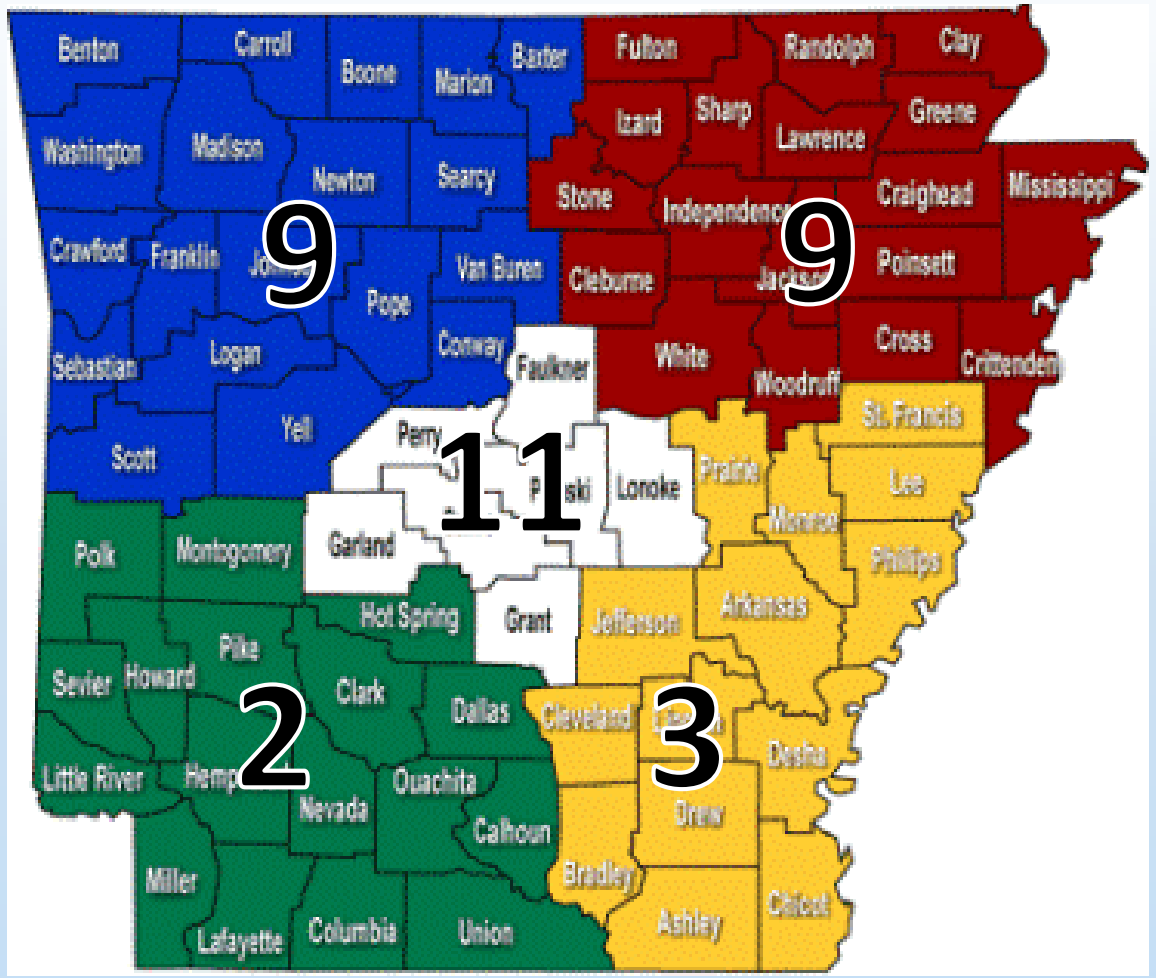
Location Distribution of Survey Results

Emailed on 9/6/2017 and closed on 10/6/2017

75 pharmacists contacted
34 total responses

45% response rate

11 from Central AR
9 from NW AR
9 from NE AR
3 from SE AR
2 from SW AR



Survey Respondent Facility Background

- Respondent Facility Type:
  - 26 General Hospitals
  - 6 Critical Access Hospitals
  - 2 Long Term Acute Care

- Average facility bed-size for respondents:
  - 174 beds (22 – 705 beds)

- Average CDC - 7 Core Elements of Antimicrobial Stewardship met (2016) for respondents:
  - 6.3 Core Elements met (2 – 7 Elements Met)

Q3. Please enter your job title/stewardship role

Responses from:

12 - Pharmacy Director

10 - Clinical Coordinator

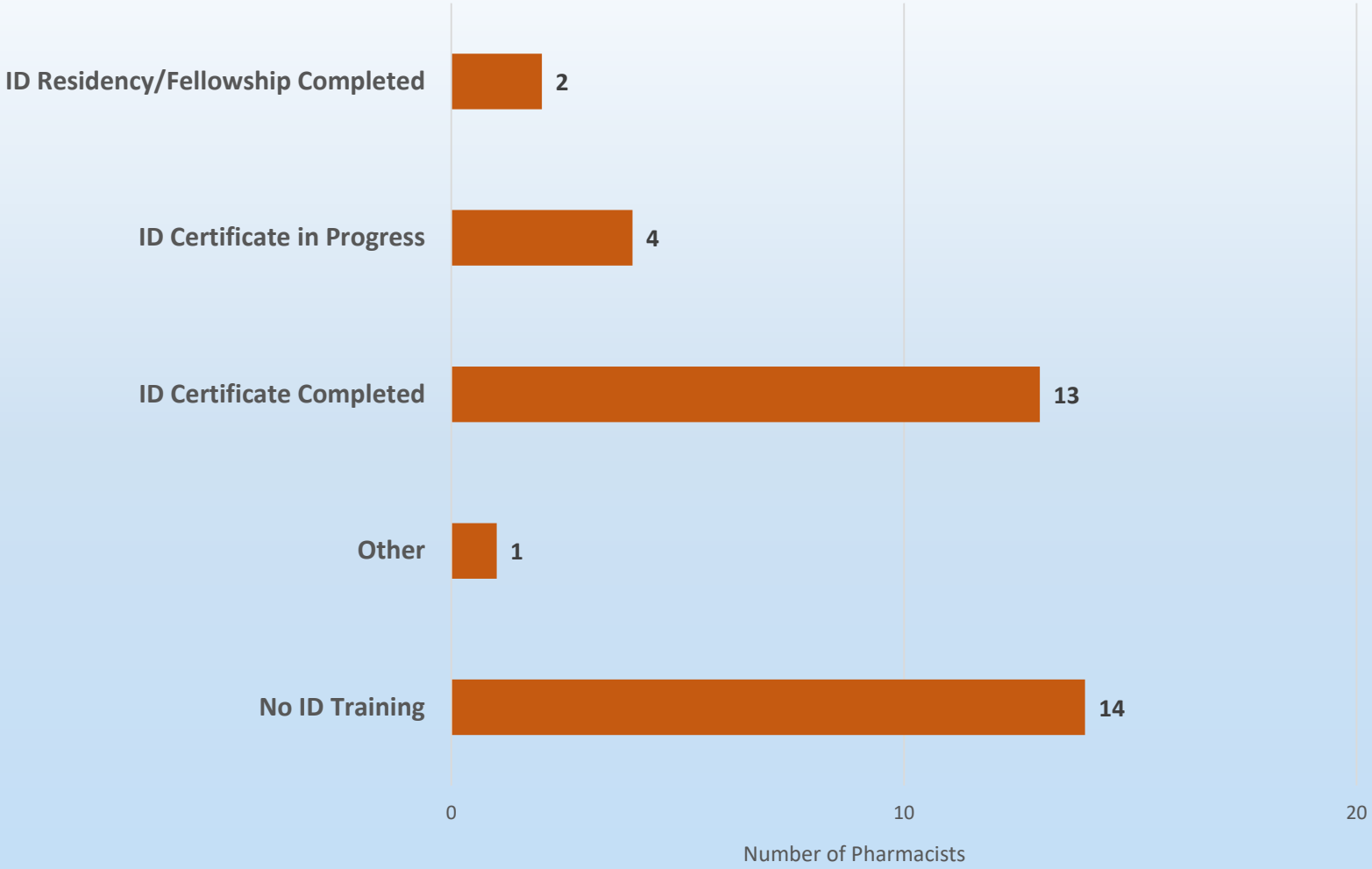
7 - Antimicrobial Stewardship Program (ASP) Pharmacist

5 - Staff Pharmacist

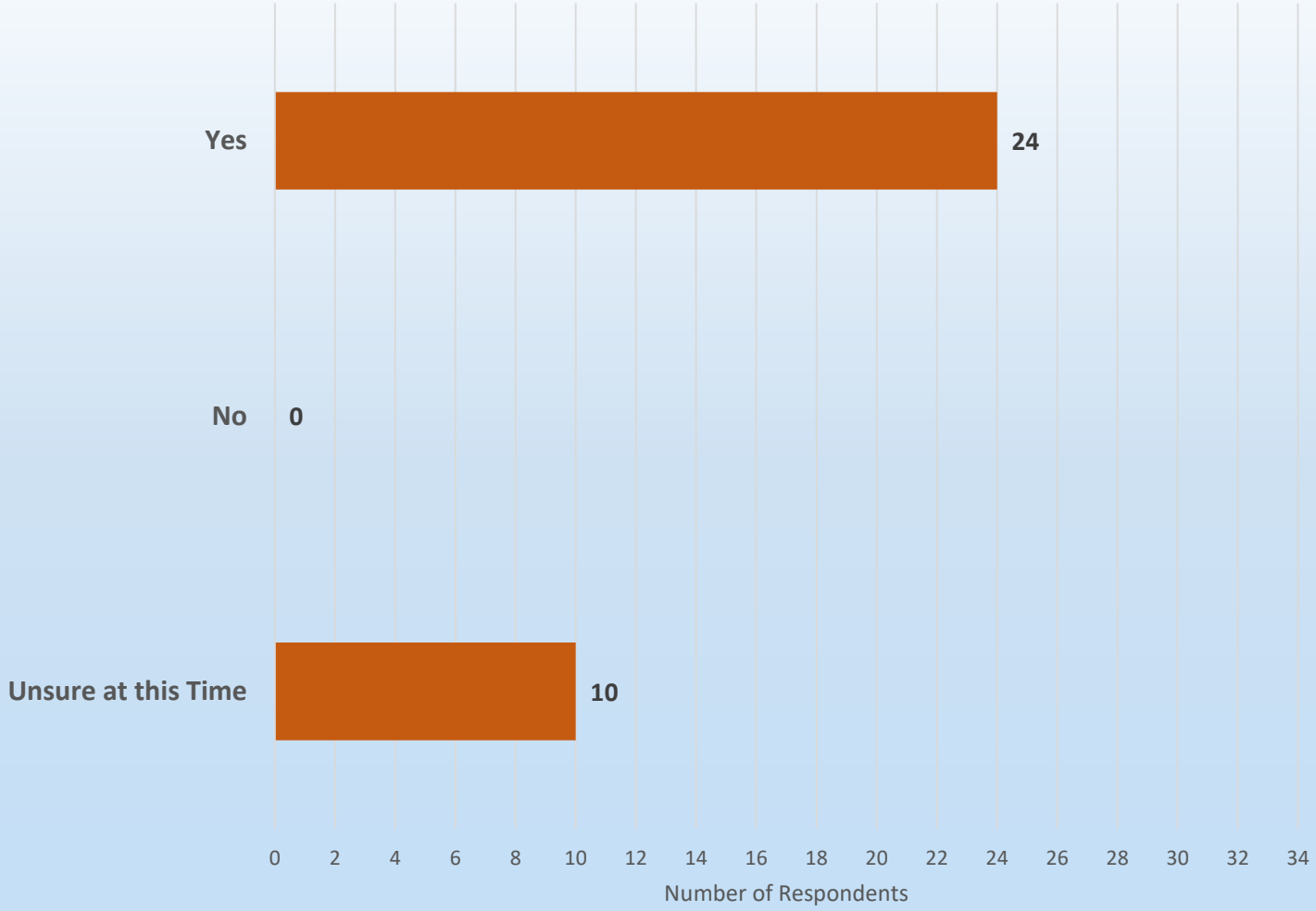
34 total respondents

Some pharmacists have multiple roles (i.e. Clinical Coordinator/Stewardship Pharmacist, etc.)

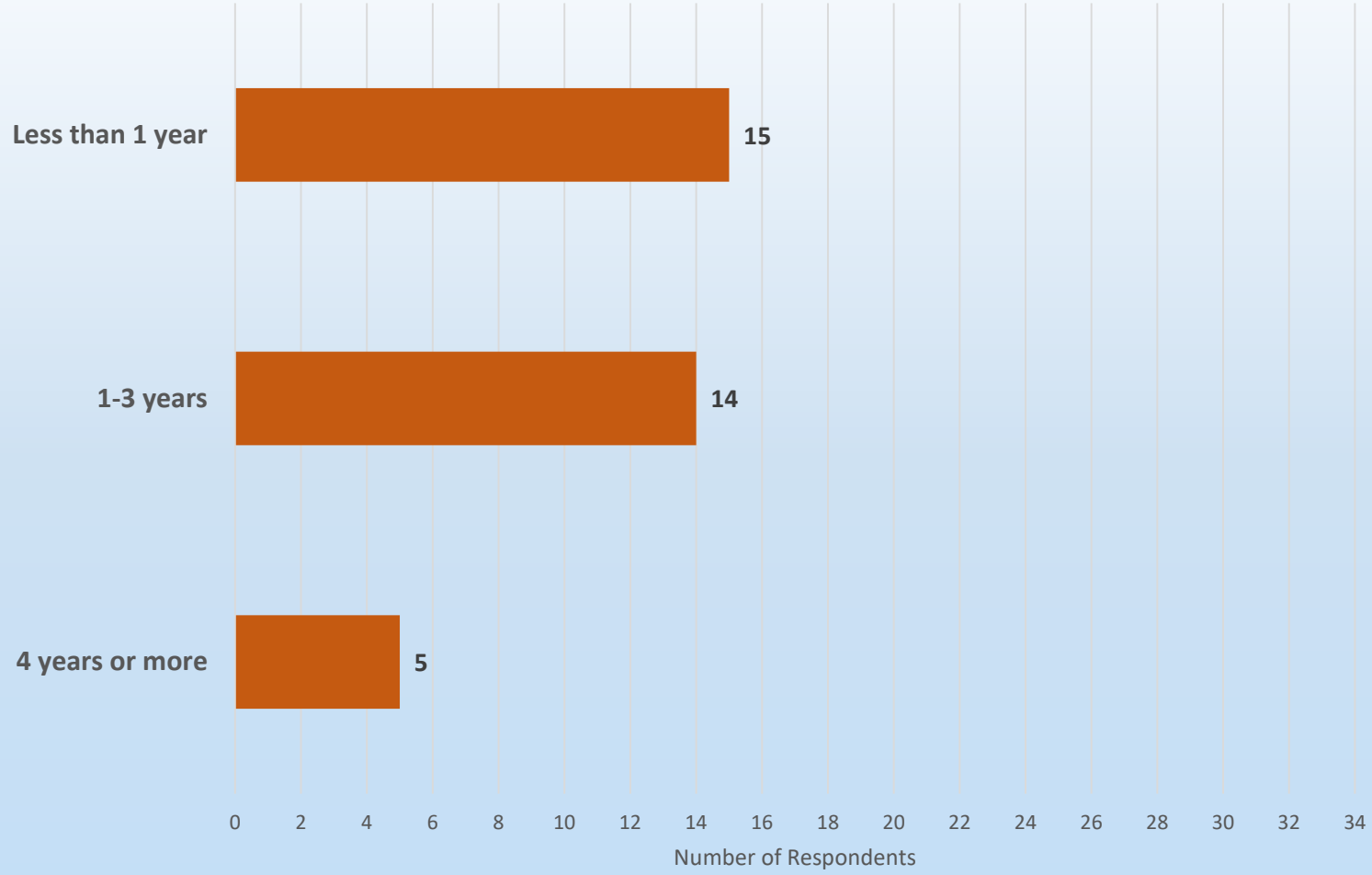
Q10. Number of Respondents with or without Infectious Disease (ID) training.



Q11. Would pharmacists at your institution be willing to complete an ID training program if ADH provided partial funding for registration?



Q12. How long has your institution had an inpatient Antimicrobial Stewardship Program (ASP) Committee?



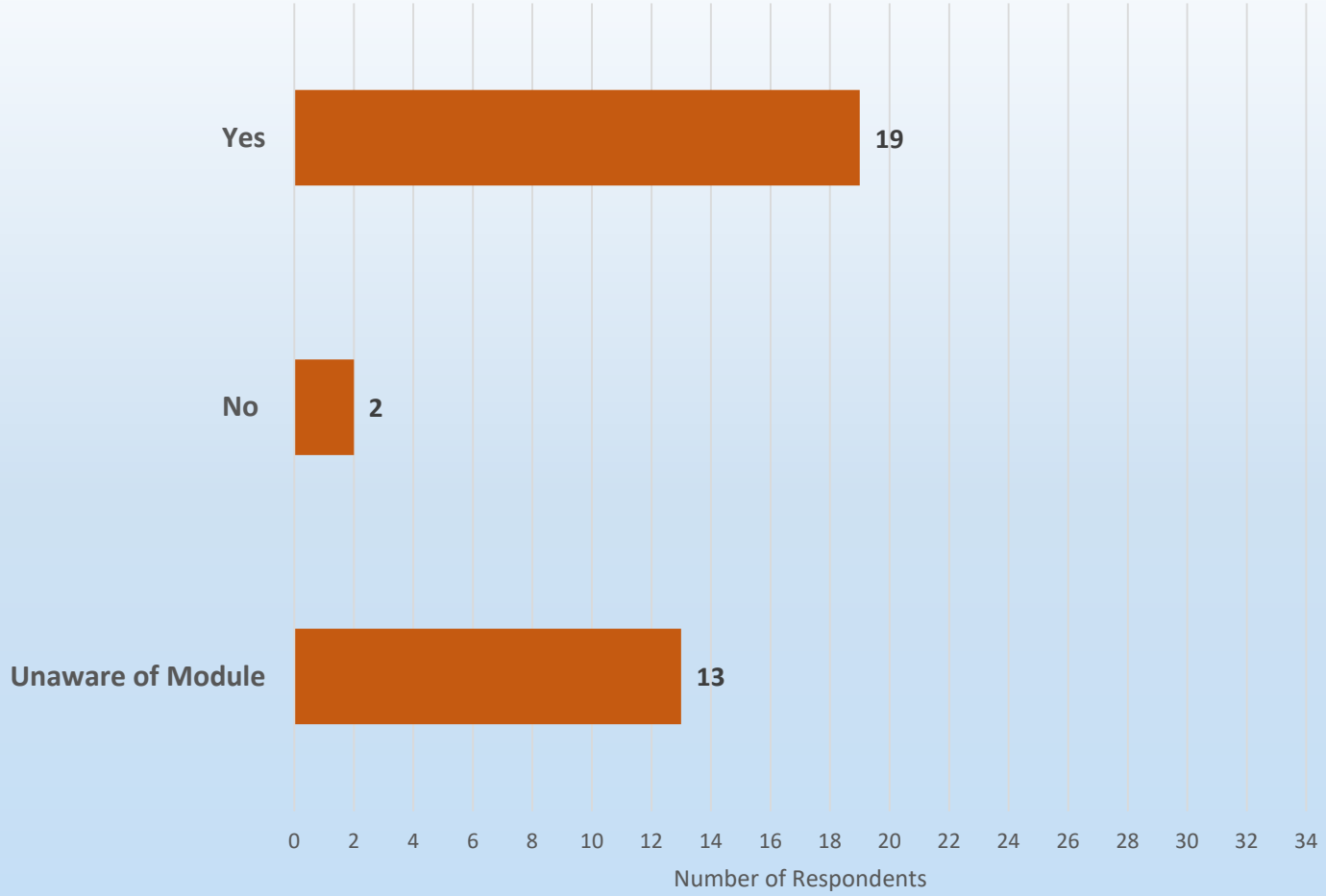
Q15. Identify any significant barriers with implementing your ASP

- Lack of time
- Lack of financial support
- Resistance to change in practice/Physician Buy-in
- Lack of education (physician/pharmacist)
- Lack of access to ID physician
- Lack of having an interdisciplinary team

Q31. Has your institution began to engage in ASP efforts in any of the following settings?

Setting	Yes	No
Emergency Department	21 (62%)	13 (38%)
Associated Clinics	6 (18%)	28 (82%)
Infusion Center	5 (15%)	29 (85%)
Rehab Center	5 (15%)	29 (85%)
Home Health/IV	4 (12%)	30 (88%)
Nursing Facilities	2 (6%)	32 (94%)
Dialysis Center	1 (3%)	33 (97%)

Q29. Is your institution interested in utilizing the CDC's NHSN Antimicrobial Use and Resistance Module?



23 facilities now reporting to NHSN AU/AR

Q33. Select your agreement with the following regarding your ASP

	Disagree	Neutral	Agree
Senior leadership is supportive	2	5	**27**
ASP Committee works together	0	7	**27**
Facility supports Continuing Education opportunities	3	8	**23**
Change only happens when there are external mandates	9	9	**16**
Physician Staff are highly receptive	4	**15**	**15**
Senior management has a good understanding of ASP tasks/activities	10	10	**14**
Resources are adequately available	**13**	10	11

Antibiotic Stewardship and Infection Prevention Collaborative

- Funded by the Arkansas Department of Health HAI program
- Who
  - Arkansas hospitals and nursing homes
    - Pharmacists
    - Infection preventionist
    - Quality staff or any other team members
- What
  - Statewide collaborative
    - Antibiotic stewardship collaborative
    - Clostridium difficile infection (CDI) transitions of care collaborative
    - Multidrug resistant organism (MDRO) prevention collaborative
      - Methicillin-resistant staphylococcus aureus (MRSA)
      - CDI
      - Carbapenem-resistant enterobacteriaceae (CRE)
- When
  - Aug. 1, 2018, through July 31, 2019

www.afmc.org /drugsandbugs

Resources - Stewardship

- Centers for Disease Control and Prevention:
  - Infection Control Training for Infection Preventionists
  - Antibiotic Stewardship Training
- Stanford University
  - Robust Antibiotic Stewardship Training (broken down into small segments)
- AFMC/ADH Project

Date	12/13/18	1/10/19	2/14/19	3/14/19	4/11/19	5/15/19	6/13/19
Antibiotic Stewardship	Antibiograms	Tracking/ Reporting	UTI/ Asymptomatic Bacteriuria	Pharmacy Led Interventions /Allergies	CDI/Bugs and Drugs	Infection Related- Respiratory, Skin and Specimen Collection	Community/Patient Education
#Attendees #Facilities	78 57	94 58	78 53	70 49	62 41	54 37	64 41
Infection Prevention	Surveillance/ Laboratory	Data	Education	Environmental Cleaning	Isolation	Hand Hygiene	Antibiotic Stewardship
#Attendees #Facilities	68 50	68 44	60 45	73 51	55 38	46 29	57 38

Statewide Antimicrobial Stewardship Initiative (SASI)

SASI Visit Background

- Structured after Infection Control Assessment and Response (ICAR) visits

- Created 9 page tool for facilities to complete

- Schedule onsite visit to meet with a facility's Antimicrobial Stewardship Program

- After the visit, each facility receives an updated SASI tool, and formal visit summary letter, and a list of antimicrobial stewardship recourses

Example page from SASI Tool

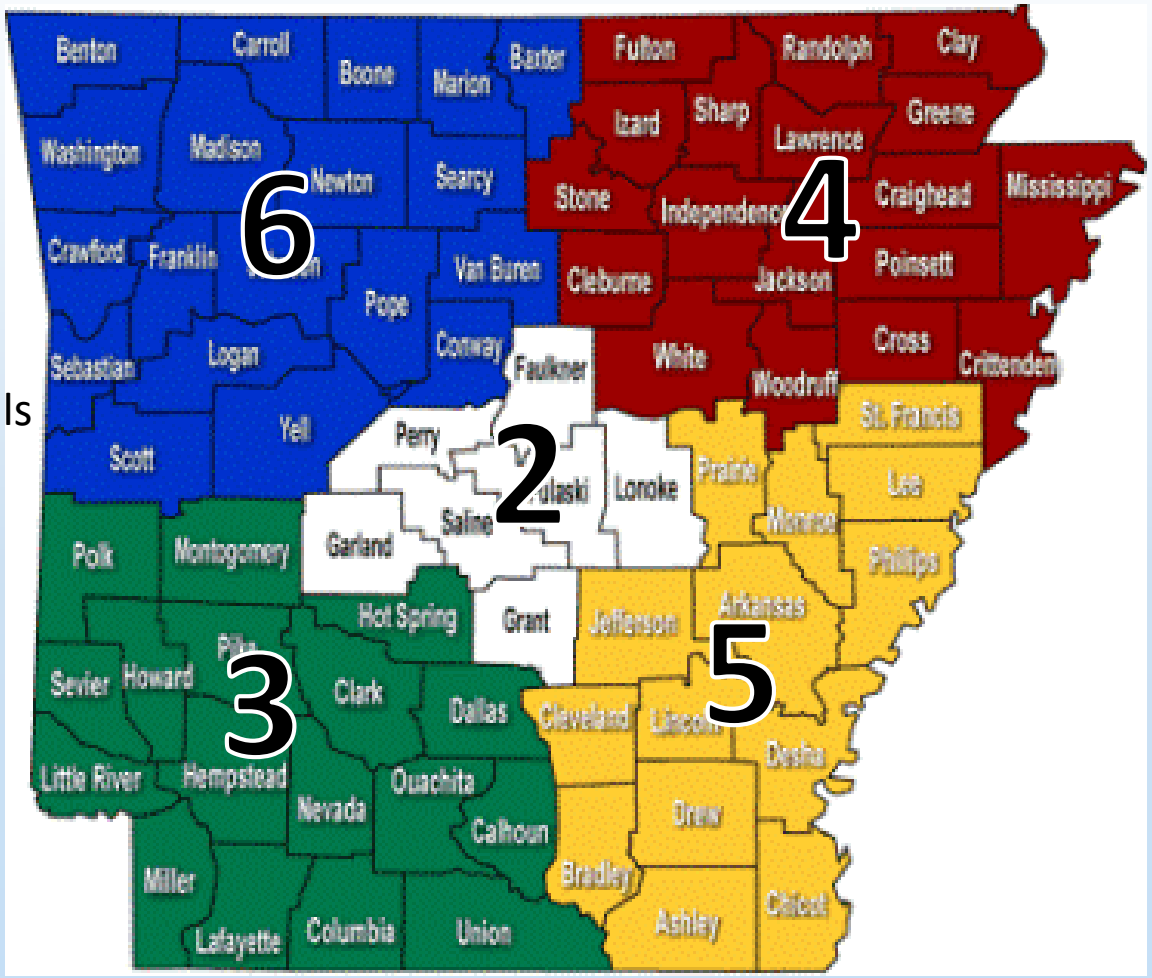
Antimicrobial Stewardship - Overview		
Assessment Element	**Assessment**	**Notes/Assessment recommendation**
1. Facility completed 2017 Arkansas Department of Health Arkansas Pharmacist Antimicrobial Stewardship Practice and Needs Assessment Survey.	☐ Yes ☐ No	
2. Facility has <u>active</u> and <u>engaged</u> Antimicrobial Stewardship Program (ASP).	☐ Yes ☐ No	
3. Healthcare personnel dedicated to facility's ASP include:	☐ Physician ☐ Pharmacist ☐ Nurse ☐ Infection Prevention ☐ Quality Improvement ☐ Laboratory Personnel ☐ Hospital Administration ☐ Information Technology	
4. Facility has access to Infectious Disease (ID) trained physician(s). a. If yes, ID physician(s) is/are on call 24/7	☐ Yes ☐ No ☐ Yes ☐ No	
5. Facility has access to clinical pharmacist(s) a. If yes, clinical pharmacist(s) is/are on call 24/7	☐ Yes ☐ No ☐ Yes ☐ No	
6. Facility utilizes paper or electronic medical records.	☐ Paper ☐ Electronic	
7. Facility reports to the Centers for Disease Control and Prevention's (CDC) National Healthcare Safety Network (NHSN) a. If yes, facility reports in the following areas	☐ Yes ☐ No ☐ Influenza Vaccinations ☐ *Clostridium difficile Infections* ☐ Central-line Associated Bloodstream Infections ☐ Catheter Associated Urinary Tract Infections ☐ Surgical Site Infections	

Antimicrobial Stewardship – Leadership Commitment		
Assessment Element	**Assessment**	**Notes/Assessment recommendation**
1. Facility has written policy that identifies antimicrobial resistance as a major medical issue and supports having an ASP in order to prevent the spread of antimicrobial resistance and improve patient care.	☐ Yes ☐ No	
2. The written policy identifies the ASP job duties that are to be undertaken.	☐ Yes ☐ No	
3. The written policy specifies the dedicated time to be given to healthcare personnel for completion of ASP job duties.	☐ Yes ☐ No	
4. The written policy supports the need for continuing education and training related to antimicrobial stewardship.	☐ Yes ☐ No	

SASI Visits to Date

- 20 Hospitals since Dec. 2017
  - 7 Critical Access Hospitals
  - 13 General Acute Care Hospitals

Goal of 32 hospitals



Stewardship Visit

- On-site visits to assess Antimicrobial Stewardship Program
- 3 C's: No Cost, Collaborative, and Confidential
- Data is being collected statewide and nationally to develop education and programs to mitigate common gaps

Thank you!

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