Practical Implementation of the Core Elements

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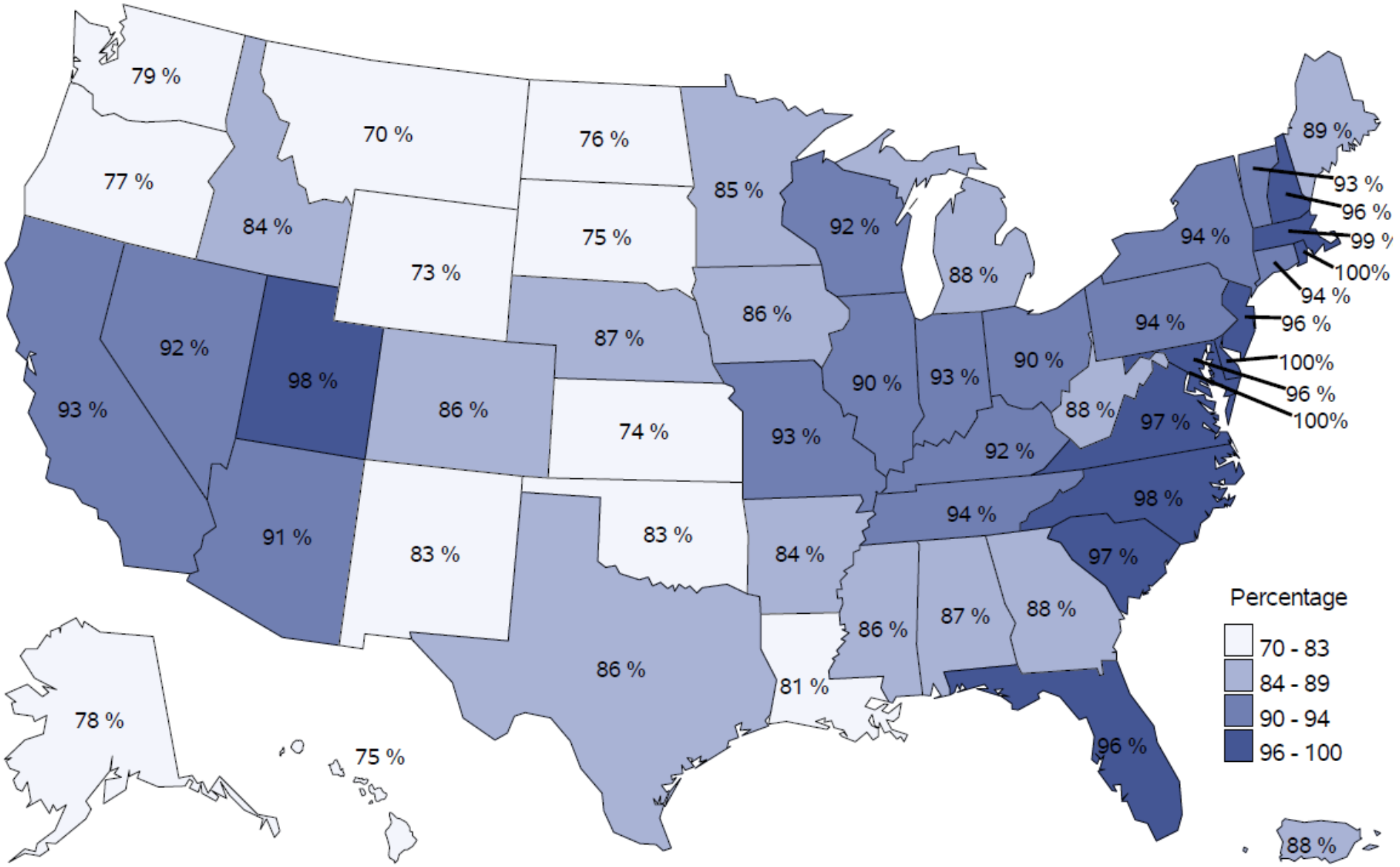
Objectives

- Discuss the 2019 NHSN Annual Hospital Survey results for the antibiotic stewardship program Core Element uptake
- Provide practical suggestions for enhancing stewardship activities in critical access hospitals

Speaker disclosures

The speakers have no financial relationship(s) or disclosures. The conclusions in this talk are the speakers' and do not necessarily represent the Centers for Disease Control and Prevention or the Veterans Health Administration.

Core Element uptake, by state



Percentage of hospitals meeting all 7 Core Elements, by hospital characteristic, 2014-2019

Characteristic	2014	2015	2016	2017	2018	2019
Overall	40.9%	48.1%	64.1%	76.4%	84.8%	88.9%
Facility Type						
Children's hospital	50.0%	53.2%	73.9%	86.0%	91.9%	90.5%
General acute care hospital	44.6%	53.1%	69.5%	81.9%	88.5%	92.0%
Surgical hospital	33.6%	45.4%	58.1%	77.3%	79.9%	87.7%
Critical access hospital	19.6%	26.3%	43.0%	57.8%	73.2%	79.5%
Bed Size						
≤50 beds	23.6%	31.1%	46.0%	61.4%	75.4%	81.8%
51 - 200 beds	40.4%	49.6%	69.0%	82.5%	88.6%	91.6%
>200 beds	58.4%	66.1%	81.5%	90.7%	93.9%	96.2%
Teaching Status						
Major teaching	55.4%	63.4%	76.3%	86.4%	91.0%	93.8%
Non-teaching/undergrad	35.6%	42.4%	58.5%	71.4%	81.1%	85.7%

Hospital Leadership Commitment

Priority examples, 2019 uptake:

Percentage of hospitals meeting priority examples of LEADERSHIP COMMITMENT	General acute care n=3572	Children's n=95	Surgical n=146	Critical access n=1144
Facility leadership has demonstrated a commitment to ASP by **allocating information technology resources** to support ASP efforts	78.6%	89.5%	62.3%	66.3%
Our facility's antibiotic stewardship **physician leader** has antibiotic **stewardship responsibilities in their contract or job description**	46.8%	66.3%	27.4%	12.9%
Our facility's antibiotic stewardship **pharmacist leader** has **antibiotic stewardship responsibilities in their contract or job description**	55.0%	61.1%	37.0%	29.6%
All 3 priority examples of Leadership Commitment	29.7%	45.3%	11.6%	8.1%

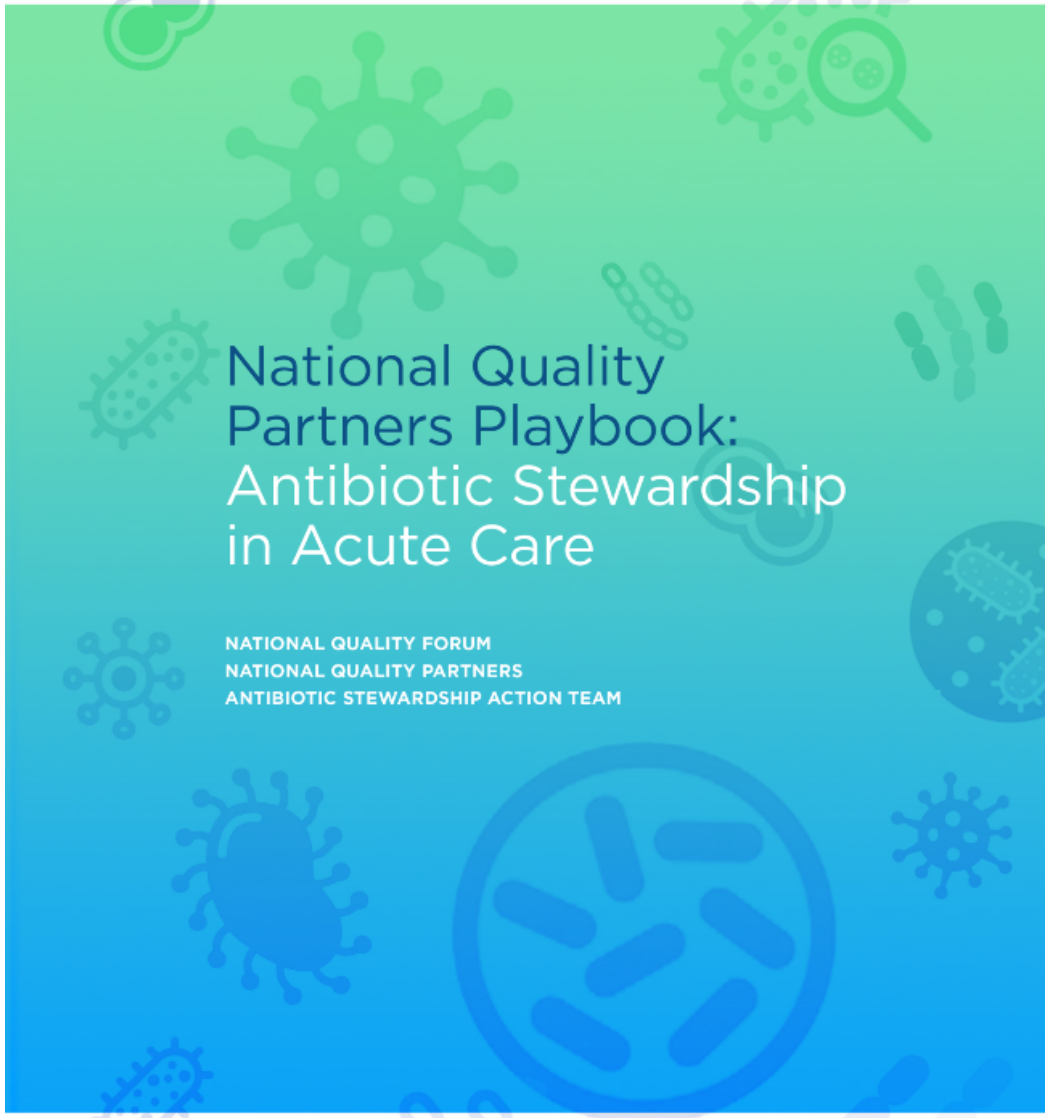
Core Elements 1 and 2: Leadership Commitment/Accountability

Leadership commitment by hospital executives and board trustees in small and critical access hospitals is important to ensuring allocation of the necessary resources to support antibiotic stewardship programs. Obtaining leadership commitment from the chief medical officer (CMO), pharmacy director, and nursing leaders can facilitate physician, pharmacist, infection preventionist, and nurse engagement to implement stewardship initiatives to create a strong and sustainable program.

Examples of implementation strategies:

- Designate a physician (e.g.,CMO) in the C-suite or individual that reports to C-suite to be accountable for the outcomes of the antibiotic stewardship program.
- Approve a policy for the creation and/or expansion of the antibiotic stewardship program to include all core elements.
- Integrate stewardship activities into ongoing quality improvement and/or patient safety efforts in the hospital (e.g., efforts to improve sepsis management)
- Create a reporting structure for the stewardship program to ensure that information on stewardship activities and outcomes is shared with facility leadership and the hospital board (e.g., semi-annual stewardship update at the board meeting).
- Issue a formal board-approved statement on the importance of the antibiotic stewardship program and include in the hospital's annual report.
- Issue a statement from the hospital leadership (e.g., medical, pharmacy and nursing) to all providers and patients highlighting the hospital's commitment to improving antibiotic use.
- Support training for hospital stewardship leaders on antibiotic stewardship through on-line or in-person courses.

https://www.cdc.gov/getsmart/healthcare/implementation/core-elements-small-critical.html



NATIONAL QUALITY PARTNERS PLAYBOOK:

Antibiotic Stewardship in Acute Care

NATIONAL QUALITY FORUM

THE NATIONAL URGENCY FOR SAFER, MORE EFFECTIVE ANTIBIOTIC USE

Antibiotics are powerful drugs to treat serious infections. However, decades of overprescribing and misuse have resulted in bacteria that are increasingly resistant to these potent drugs, creating a growing threat of new superbugs that are difficult, and sometimes even impossible, to treat. According to the Centers for Disease Control and Prevention (CDC), drug-resistant bacteria cause two million illnesses and 23,000 deaths annually.

In 2014, CDC recommended that all acute-care hospitals in the United States implement an antibiotic stewardship program to guide efforts to improve appropriate and necessary antibiotic use and released the *Core Elements of Hospital Antibiotic Stewardship Programs*. In addition, the Obama Administration has identified antibiotic stewardship as a national priority and issued an executive order calling for the Department of Health and Human Services (HHS) to promote the implementation of antibiotic stewardship programs across all healthcare settings.

According to the CDC, drug-resistant bacteria cause two million illnesses and 23,000 deaths annually.

NQF'S STRATEGIES TO BUILD ON CDC'S CORE ELEMENTS FOR ANTIBIOTIC STEWARDSHIP

National Quality Forum's National Quality Partners (NQP) convened more than 25 experts and national stakeholders from the public and private sectors—including patient advocates, infectious disease physicians and pharmacists, and acute-care providers—to develop *National Quality Partners Playbook: Antibiotic Stewardship in Acute Care*. The goal of this new resource is to help hospitals and health systems strengthen existing antibiotic stewardship initiatives or create antibiotic stewardship programs from the ground up. The *Playbook*, which is based on CDC's *Core Elements*, offers practical strategies for implementing high-quality antibiotic stewardship programs in hospitals nationwide:

1. **Leadership Commitment.** Antibiotic stewardship is a team sport in which many hospital staff—including physicians, pharmacists, nurses, and administrators—play an important role.
2. **Accountability.** Hospitals must appoint a single leader, such as a physician, who is responsible for program outcomes.
3. **Drug Expertise.** Hospitals must designate a single pharmacist who can lead initiatives to improve antibiotic use among patients.
4. **Action.** Hospitals must implement a systematic approach to evaluating patients' needs for antibiotics.

http://www.qualityforum.org/Publications/2016/05/National_Quality_Partners_Playbook__Antibiotic_Stewardship_in_Acute_Care.aspx

Hospital Leadership Commitment

- Stewardship Program Policy
  - Background/Purpose/Goals
  - Scope – what patients you cover (inpatient, outpatient), where you fall in organizational chart
  - Define who the team is and individual responsibilities
  - Describe interventions and tracking
  - Who you report to, what you report and when

Leadership Commitment

Leadership support is critical to the success of antibiotic stewardship programs and can take a number of forms, including:

- Formal statements that the facility supports efforts to improve and monitor antibiotic use.
- Including stewardship-related duties in job descriptions and annual performance reviews.
- Ensuring staff from relevant departments are given sufficient time to contribute to stewardship activities.
- Supporting training and education.
- Ensuring participation from the many groups that can support stewardship activities.

Financial support greatly augments the capacity and impact of a stewardship program and stewardship programs will often pay for themselves, both through savings in both antibiotic expenditures and indirect costs.[17, 27–30]

DEPARTMENT OF VETERANS AFFAIRS (VA) SALT LAKE CITY HEALTH CARE SYSTEM
Salt Lake City, Utah

MEMORANDUM 119.xx **May 28, 2013**

ANTIMICROBIAL STEWARDSHIP PROGRAM

1. PURPOSE: To provide a method to ensure the efficacious, safe and cost-effective use of antimicrobials within the VA Salt Lake City Health Care System (VASLCHCS) through the development of an antimicrobial stewardship program (ASP) which will report to the Pharmacy and Therapeutics Committee (P&T). The overall goals of the program include:

a. Promoting optimal patient care by assisting clinicians with antimicrobial selection.

b. Promoting the safe use of antimicrobials by assisting clinicians in prevention and management of adverse effects, drug/drug interactions and appropriate dosing of antimicrobials.

c. Providing education institution-wide through the development of Clinical Pathways and Guidelines, educational materials, and one on one education to providers to assist in the safe, effective and cost-effective use of antimicrobials within VASLCHCS.

2. POLICY: The Antimicrobial Stewardship program (ASP) will develop methods to monitor the use of antimicrobials throughout VASLCHCS. Particular focus will be given to those agents

ANTIMICROBIAL STEWARDSHIP PROGRAM
(add version number, date, and document owner)

PURPOSE:

A. Antimicrobial Stewardship is a coordinated group of interventions designed to measure and improve the use of antimicrobial agents by promoting appropriate drug selection, route of administration, dosing, and duration of therapy.

B. To develop an Antimicrobial Stewardship Program (ASP) that will facilitate the efficacious, safe and cost-effective use of antimicrobials within the University of Utah Hospitals and Clinics. The overall goals of the program include:

1. Achieve and maintain top quartile performance in The National Healthcare Safety Network (NHSN) Antimicrobial Use and Resistance (AUR) metric.
2. Promote optimal patient outcomes related to antimicrobial use and infectious diseases.
3. Minimize unintended consequences of antimicrobial use including adverse effects, *Clostridium difficile* infection (CDI), drug/drug interactions, and antimicrobial resistance.
4. Minimize unnecessary costs associated with sub-optimal antimicrobial use.
5. Provide education institution-wide through the development of local clinical pathways and guidelines, provider and patient educational materials, sharing of local antimicrobial use and resistance information, and one on one education to providers to assist in the safe and cost-effective use of antimicrobials.
6. Monitor and communicate key performance indicators to faculty and staff members throughout the institution.

SCOPE:

A. The ASP has been assigned the responsibility for measuring and working to

Accountability

Facility leader(s) accountable for ASP outcomes:

- While 61% of all hospitals reported co-led programs in 2019, results differ by facility type and bed size

Stewardship Lead	General acute care	Children's	Surgical	Critical access	>200 beds	51-200 beds	≤50 beds
None	1.8%	2.1%	3.4%	5.7%	0.2%	1.5%	5.5%
Co-led	68.5%	66.3%	47.9%	38.5%	80.3%	65.8%	43.8%
Physician	9.1%	17.9%	10.3%	8.2%	10.4%	9.1%	8.2%
Pharmacist	19.5%	11.6%	34.2%	38.7%	9.1%	22.6%	35.8%
Other	1.1%	2.1%	4.1%	8.9%	0.0%	1.1%	6.6%

Accountability

Core Element 2: Accountability
Appointing a leader or co-leaders (one should be a physician, if possible), who are responsible for program outcomes and whose effectiveness is assessed through clear performance standards, provides accountability for antibiotic stewardship.
• The antibiotic stewardship program (ASP) should have a designated leader or co-leaders who are accountable to the hospital leadership for meeting goals and targets. Published studies and guidelines have recommended physicians with training in infectious diseases as effective ASP leaders.
• Criteria for a physician and/or pharmacy leader should include expertise in antibiotic use, training in stewardship, leadership skills, respect from peers, and good team skills.

- Doesn't have to be ID physician…
- Hospitalist or Nurse Practitioner who is passionate
- Seek out Antimicrobial Stewardship Training
- Involve clinical champions from high impact areas (ICUs, Surgery, Emergency Medicine, etc.)
- Contract with ID groups to provide leadership and expertise (part-time, off site, telemedicine)
- Enroll in Collaborative or ECHO/Mentorship Model

Need dedicated time and salary support and reporting structure for accountability.

**Still need local leader*

Pharmacy Expertise

- High uptake of pharmacy expertise across all facility types (98.6% in general acute care, 94.8% in critical access hospitals)
- Critical access hospitals are less likely to have co-led programs and more likely to have pharmacist-led programs

Percentage of hospitals meeting PHARMACY EXPERTISE criteria	General acute care n=3572	Children's n=95	Surgical n=146	Critical access n=1144
Our facility has a pharmacist leader or co-leader responsible for ASP outcomes	88.0%	77.9%	82.2%	77.2%
Our facility has a physician or "other" leader responsible for ASP outcomes but there is at least one pharmacist responsible for improving AU at our facility	9.9%	20.0%	13.7%	14.9%
Our facility does NOT have a leader but does have a committee responsible for antibiotic stewardship and a pharmacist is a member of that committee	0.6%	0.0%	1.4%	2.7%

Pharmacy Expertise

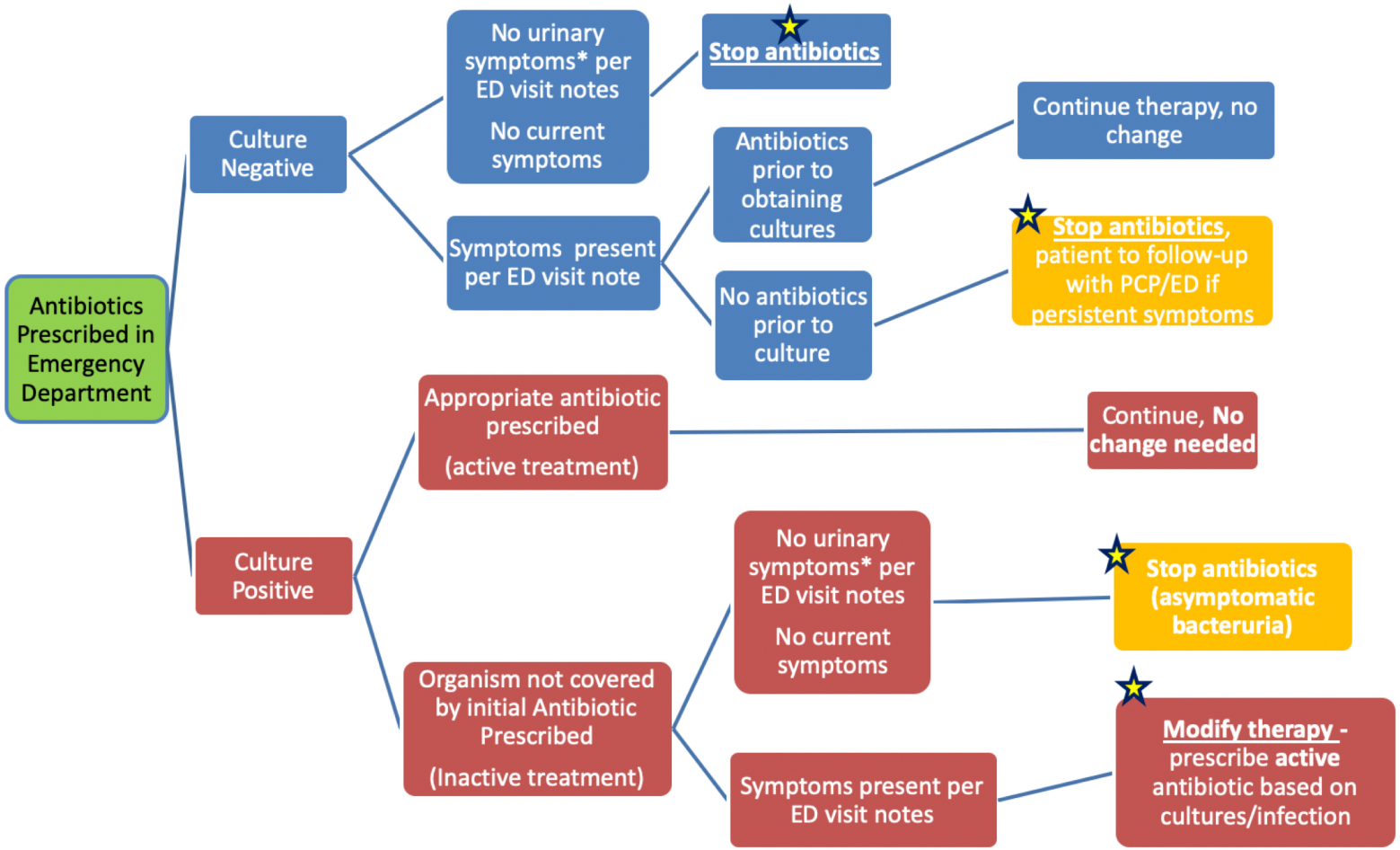
- Doesn't have to be ID trained pharmacist
- Seek out Antimicrobial Stewardship Training
- Pharmacist role is integral…if have passionate pharmacist with leadership skills consider contracting out to ID MD group for expertise and physician accountability

Core Element 3: Drug Expertise

Dedicated staff with demonstrated drug expertise is critical to the success of antibiotic stewardship. Appointing a pharmacist leader to partner with the antibiotic stewardship program leader provides the expertise and accountability needed for a high-quality program.

- A pharmacist leader with expertise in antibiotic use is identified and is responsible for partnering with the antibiotic stewardship physician leader or physician champion to improve antibiotic use. Published studies and guidelines have recommended pharmacists with training in infectious diseases as effective ASP pharmacy leaders.
- Criteria for a pharmacy leader should include expertise in antibiotic use, training in stewardship, leadership skills, respect from peers, and good team skills.

ED Pharmacist Urine Culture Intervention



*Specific UTI Symptoms: dysuria, flank pain, urinary urgency, urinary frequency, suprapubic pain or discomfort

**Non-specific UTI signs & symptoms: fever, chills, rigors, acute delirium, acute hematuria

Pharmacist action taken (Emergency Department pharmacist will call patient to assess symptoms prior to modification)

- Run report Monday – Friday of urine cultures collected in ED
- Review chart based on urine culture result
- Pharmacists leave notes for interventions

Action

Priority interventions to improve antibiotic use

- 92% of critical access hospitals report having facility-specific treatment guidelines, similar to other facility types, but CAHs are less likely to have PAF and preauthorization interventions in place

Percentage of hospitals meeting priority ACTION interventions to improve antibiotic use	General acute care n=3572	Children's n=95	Surgical n=146	Critical access n=1144
Prospective audit and feedback (PAF)	74.9%	81.1%	58.2%	47.1%
Preauthorization	52.7%	52.6%	39.0%	20.0%
Facility-specific treatment guidelines	94.2%	93.7%	88.4%	91.7%
PAF and Preauthorization only	1.7%	2.1%	2.1%	0.2%
PAF and Facility-specific treatment guidelines only	25.8%	32.6%	24.0%	28.1%
Preauthorization AND Facility-specific treatment guidelines only	4.8%	3.2%	5.5%	3.2%
All 3 priority interventions	45.9%	46.3%	30.8%	16.5%

Action

Syndrome Specific Stewardship

- Most common infectious syndromes (CAP, UTI, SSTI)
  - >50% of all inpatient antibiotic use
- Significant opportunity for improved antibiotic use
- Guidelines/Best practices
  - Common opportunities – diagnostic error, drug selection, duration
- Doesn't require ID expertise

TABLE 1. KEY OPPORTUNITIES TO IMPROVE ANTIBIOTIC USE

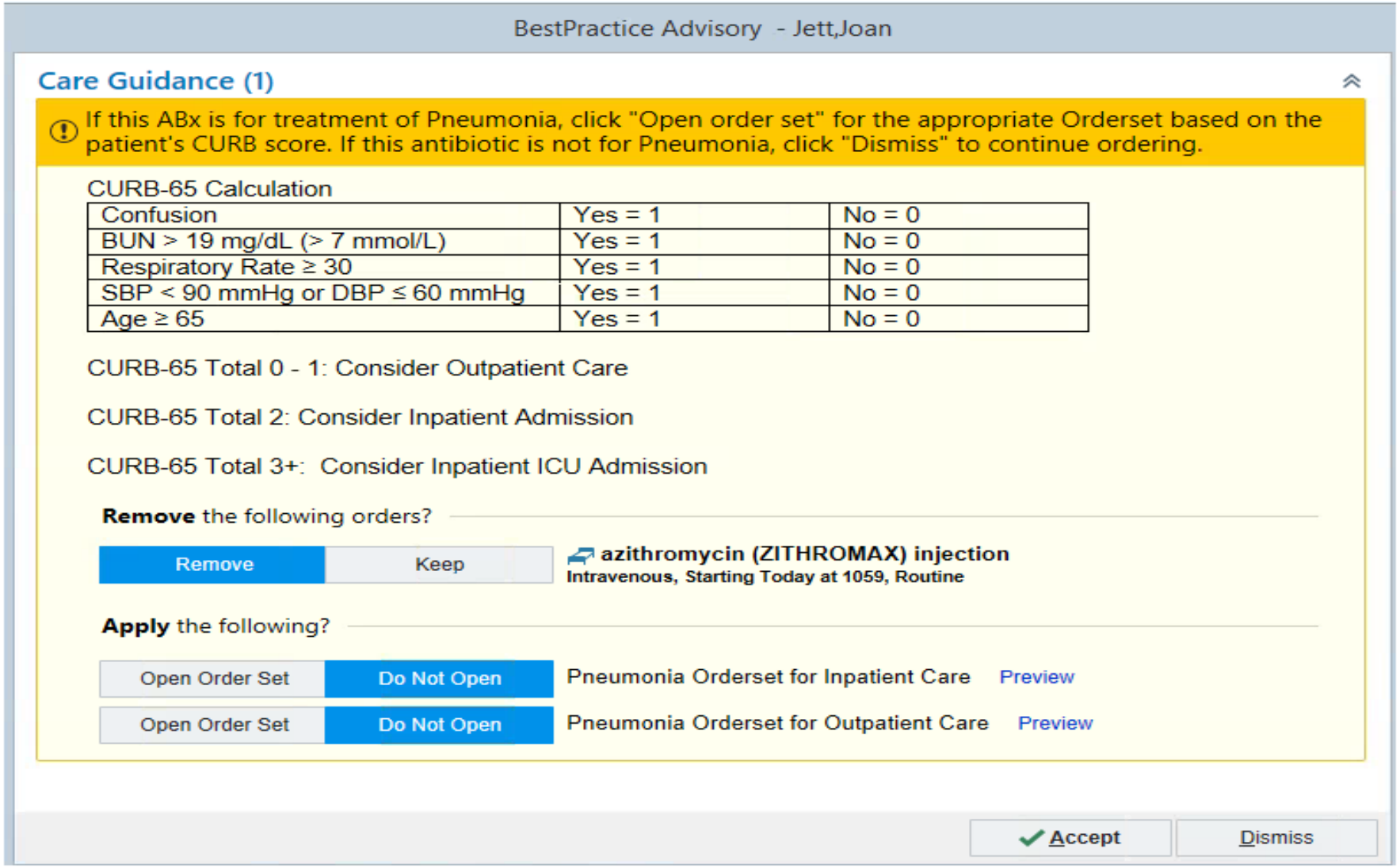
	Diagnostic Considerations	Guide Empiric Therapy	Assess Duration of Therapy including discharge prescription
Community-acquired pneumonia[8]	Review cases at 48 hours to confirm pneumonia diagnosis versus non-infectious etiology.	Avoid empiric use of antipseudomonal beta-lactams and/or methicillin-resistant *Staphylococcus aureus* (MRSA) agents unless clinically indicated.	Guidelines suggest that in most cases, uncomplicated pneumonia can be treated for 5-7 days in the setting of a timely clinical response.
Urinary tract infections[9-11]	Implement criteria for ordering urine cultures to ensure that positive cultures are more likely to represent infection, rather than bladder colonization. Examples include: -Only order a urine culture if the patient has signs and symptoms consistent with UTI such as urgency, frequency, dysuria, suprapubic pain, flank pain, pelvic discomfort and acute hematuria. -For patients with urinary catheters, avoid culturing urine based solely on cloudy appearance or foul smell in the absence of signs and symptoms of UTI. Non-specific signs and symptoms such as delirium, nausea, vomiting should be interpreted with caution as by themselves they have a low specificity for UTI.	Establish criteria to distinguish between asymptomatic and symptomatic bacteriuria. Avoid antibiotic therapy for asymptomatic bacteriuria except in certain clinical situations where treatment is indicated, such as for pregnant women and those undergoing an invasive genitourinary procedure. Fluoroquinolones are often not optimal empiric therapy.	Use the shortest duration of antibiotic therapy that is clinically appropriate.
Skin and soft tissue infections[12]	Develop diagnostic criteria to distinguish purulent and non-purulent infections and severity of illness (i.e., mild, moderate and severe) so that skin and soft tissue infections can be managed appropriately according to guidelines.	Avoid empiric use of antipseudomonal beta-lactams and/or anti-anaerobic agents unless clinically indicated.	Guidelines suggest that most cases of uncomplicated bacterial cellulitis can be treated for 5 days if there is a timely clinical response.

Action

Targets of Intervention

- Do away with Healthcare-associated Pneumonia (HCAP) diagnosis that promotes unnecessary broad-spectrum antibiotic use
- IV to PO conversion (make it happen more quickly)
- Duration of therapy (target 5 days)
- Assess impact of Pathway on:
  1. Intravenous antibiotic duration
  2. Length of stay
  3. Costs
  4. Balancing Measures

How It Works



*Fires when chest x-ray and antibiotics both ordered…embedded into workflow

CAP Treatment Options

Floor (CURB 65 score 0-2 / Drip score less than 4) - For most patients (not at an increased risk for drug-resistant pathogens)

- [x] Antibiotics
  - Preferred Antibiotics
    - azithromycin (ZITHROMAX) 500 mg in sodium chloride 0.9 % 250 mL IVPB
      500 mg, Intravenous, at 250 mL/hr, Administer over 60 Minutes, Once, Today at 1000, For 1 dose, STAT

And

- cefTRIAXone (ROCEPHIN) 2 g in sodium chloride 0.9% IVPB Mini-bag Plus
  2 g, Intravenous, at 200 mL/hr, Once, Today at 1000, For 1 dose, STAT

And

- cefuroxime axetil (CEFTIN) tablet 500 mg
  500 mg, Oral, 2 times daily, First Dose Tomorrow at 1000, For 8 doses
  Routine

- [x] Labs
  - [x] Streptococcus Pneumoniae Antigen,Urine
    Once - Routine - Lab First occurrence Today at 0921, Urine, Urine-General
    Collection Method Override: Unit Collect
  - [x] Legionella Pneumophilia Antigen, Urine
    Once - Routine - Lab First occurrence Today at 0921, Urine
    Collection Method Override: Unit Collect
  - [x] Procalcitonin
    Once - Routine - Lab First occurrence Today at 0921
    Do you want to change the specimen collection from what it shows in the banner bar? No
  - [ ] Culture, Blood - 1st of 2 Perpheral Draw
    STAT - Lab, 1st of 2 Peripheral Draw. Phleb to determine site
  - [ ] Culture, Blood - 2nd of 2 Peripheral Draw
    STAT - Lab, 2nd of 2 Peripheral Draw. Phleb to determine site
  - [ ] Aerobic Respiratory Culture with Gram Stain
    Once - Routine - Lab, Sputum, Sputum Induced

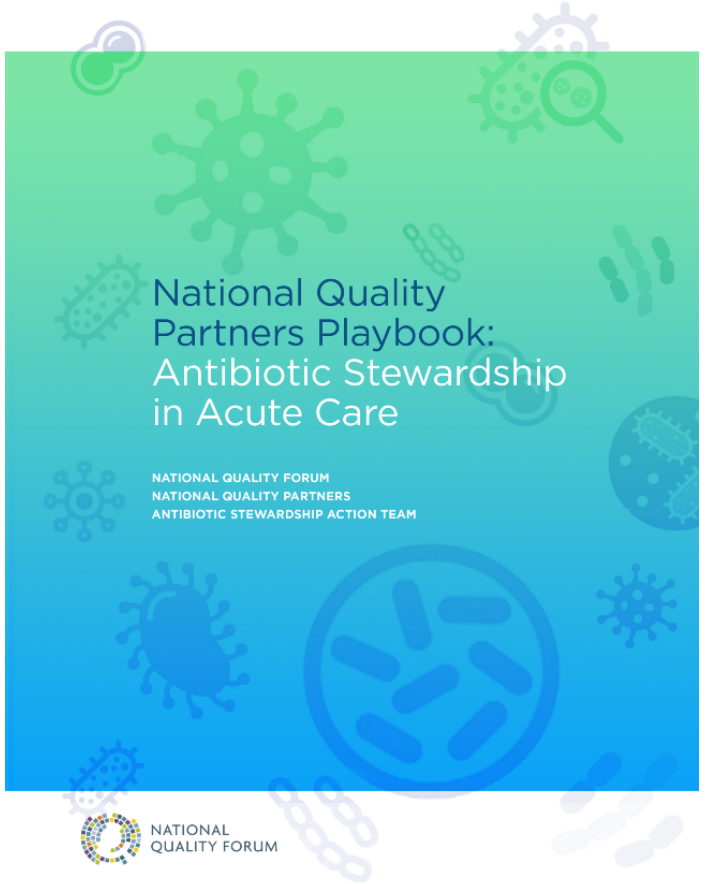
***Daily ASP Prospective Audit and Feedback**

Tracking

- Hospitals participating in NHSN's AU Option report **DOT** and **days present**
- 181 critical access hospitals have reported to the AU Option

Percentage of hospitals meeting select Tracking criteria	General acute care n=3572	Children's n=95	Surgical n=146	Critical access n=1144
Our facility has a policy or formal procedure for **required documentation** of **indication** for antibiotic orders and our ASP team monitors adherence to it	61.4%	67.4%	62.3%	55.1%
Providers have access to **facility- or region-specific treatment guidelines** or recommendations for commonly encountered infections and our ASP team monitors adherence to them	77.0%	75.8%	74.0%	70.0%
Our stewardship team **monitors antibiotic resistance patterns** (either facility- or region-specific)	92.7%	91.6%	76.0%	79.6%
Our stewardship team **monitors antibiotic** use in days of therapy (**DOT**) per 1000 patient days or **days present**, at least quarterly	75.8%	83.2%	50.7%	59.3%

Tracking and Reporting



Measurement

- Basic: Process Measures
  - Specific steps in a process that lead — either positively or negatively — to a particular outcome metric.
- Intermediate: Outcome Measures
  - High-level clinical or financial outcomes that concern healthcare organizations and providers.
- Advanced: Antibiotic Use Measures
  - Can be viewed as either process or outcome measure.

Prospective Audit and Feedback Note

Drug:

- [ ] Vancomycin (IV)
- [ ] Cefepime
- [ ] Piperacillin/Tazobactam
- [ ] Ertapenem
- [ ] Imipenem
- [ ] Meropenem
- [ ] Levofloxacin

Start Date: * ...

Documented Indication (select one or more):

- [ ] Sepsis
- [ ] Pneumonia, Community-acquired
- [ ] Pneumonia, Healthcare-acquired
- [ ] Pneumonia, Ventilator-associated
- [ ] Urinary Tract Infection
- [ ] Wound Infection
- [ ] Cellulitis

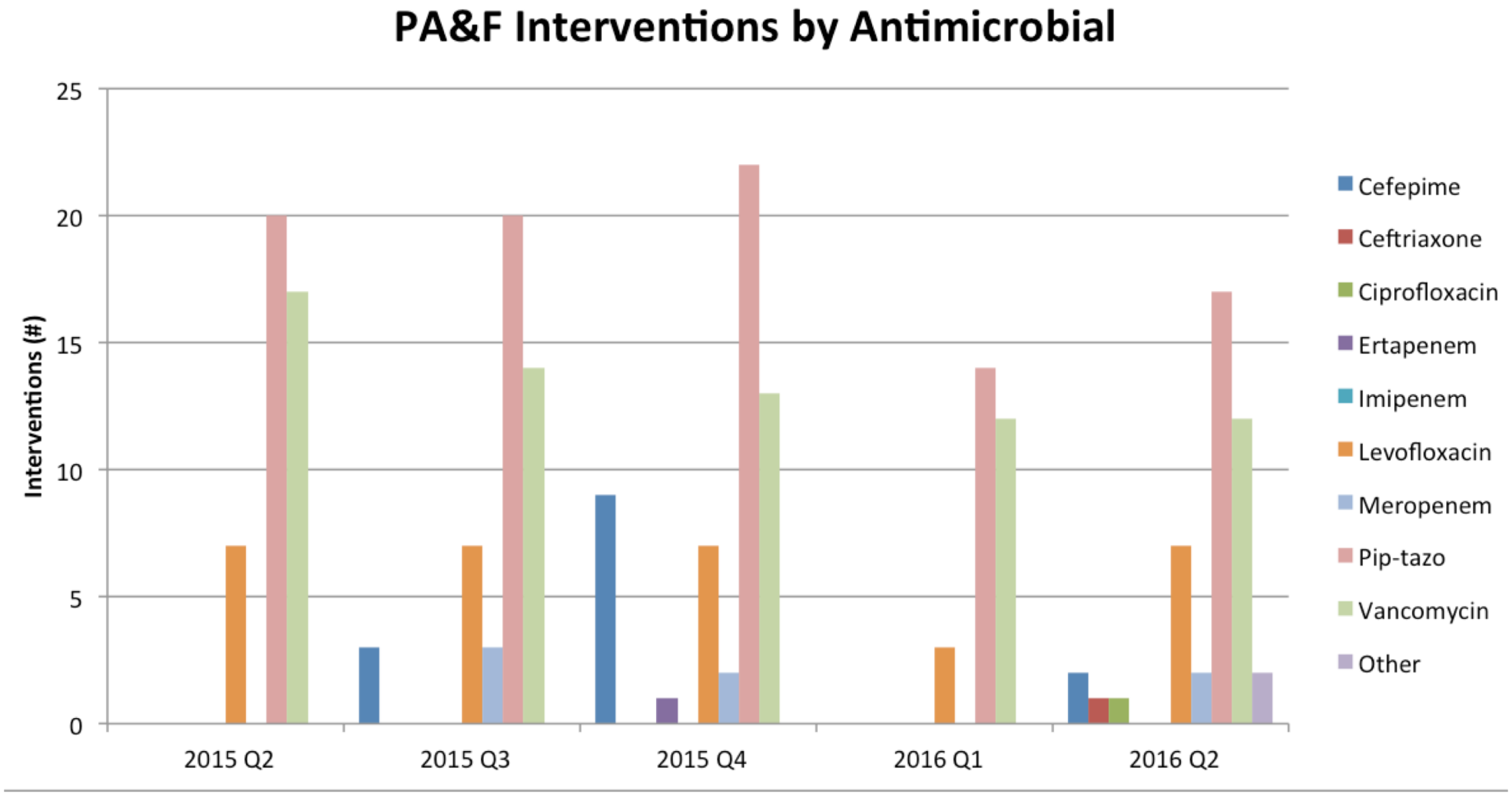
Microbiolgy Results:

Assessment:

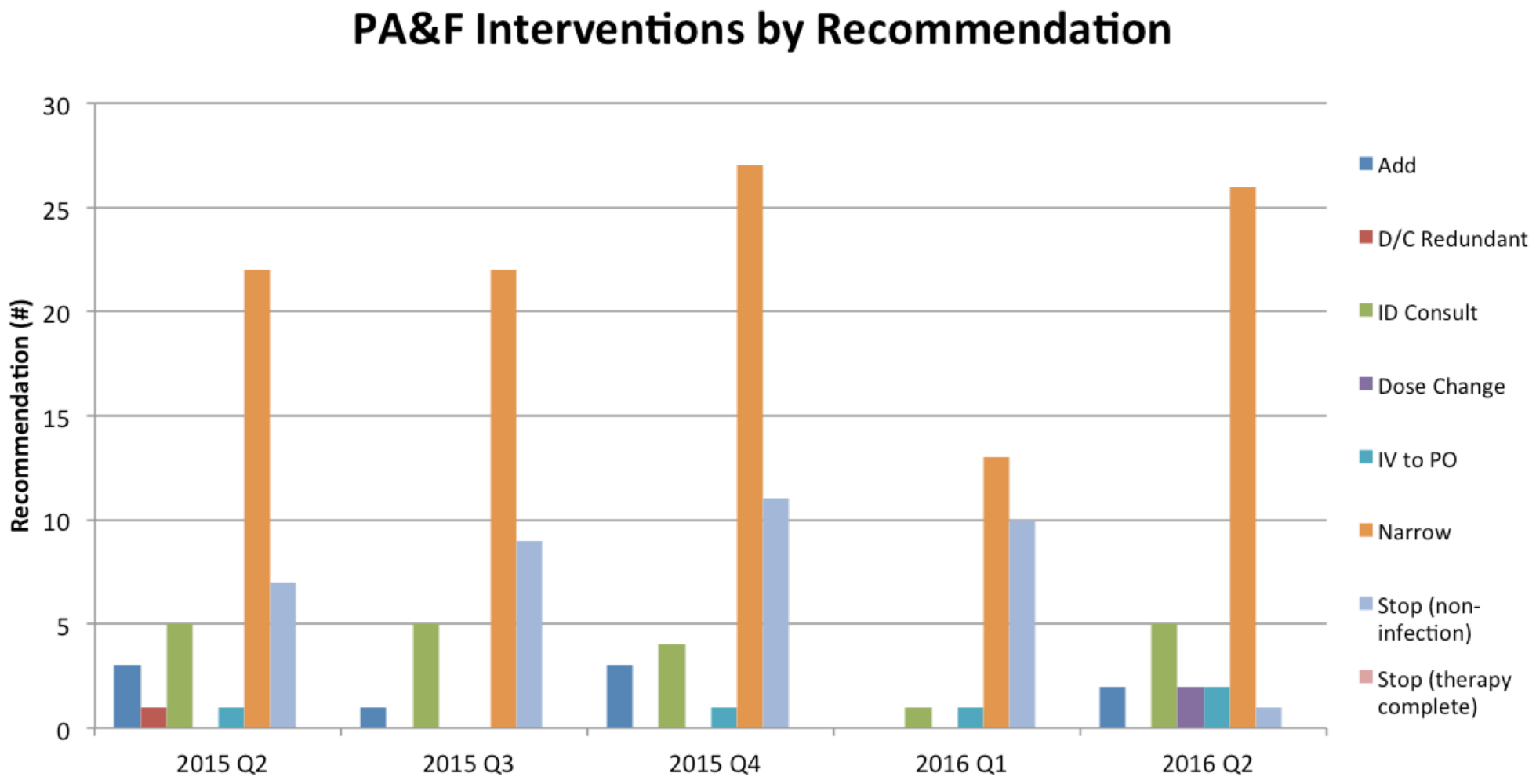
Recommended Intervention (select one or more):

- [ ] Narrow spectrum of activity
- [ ] Stop antimicrobial (Non-infectious or non-bacterial syndrome)
- [ ] Stop antimicrobial (Colonization or Contamination)
- [ ] Add appropriate coverage for culture results
- [ ] IV to PO conversion
- [ ] Change dosing
- [ ] Discontinue redundant coverage
- [ ] ID consult recommended

Prospective Audit and Feedback Tracking



Prospective Audit and Feedback Tracking



Tracking and Reporting

Outcome Measures

- Tracking antibiotic resistance patterns (e.g. antibiogram)
- *C. difficile* infection (CDI) rates
- 30-day mortality and readmission rates for CDI or common infection (e.g. CAP)
- Length of stay
- Adverse drug events
- $$$

Antibiotic Use Measures from Community-Acquired Pneumonia Intervention

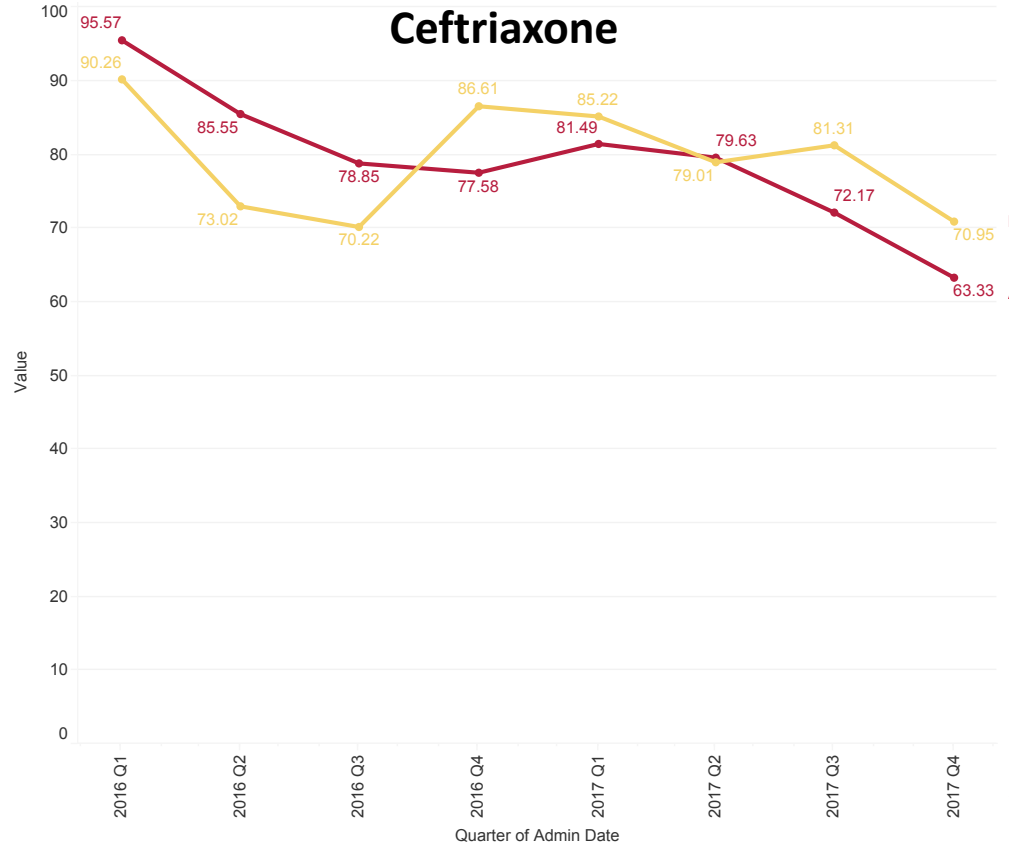
HEALTH UNIVERSITY OF UTAH

Data source: NHSN (EDW)
Prepared by: Decision Support

Metrics
- ○ IM Abx Days per 1000 Days Present
- ○ IV Abx Days per 1000 Days Present
- ○ PO Abx Days per 1000 Days Present
- ○ RESP Abx Days per 1000 Days Present
- ◉ Total Abx Days per 1000 Days Present

Antibiotic use by Unit

Ceftriaxone



HEALTH UNIVERSITY OF UTAH

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Metrics
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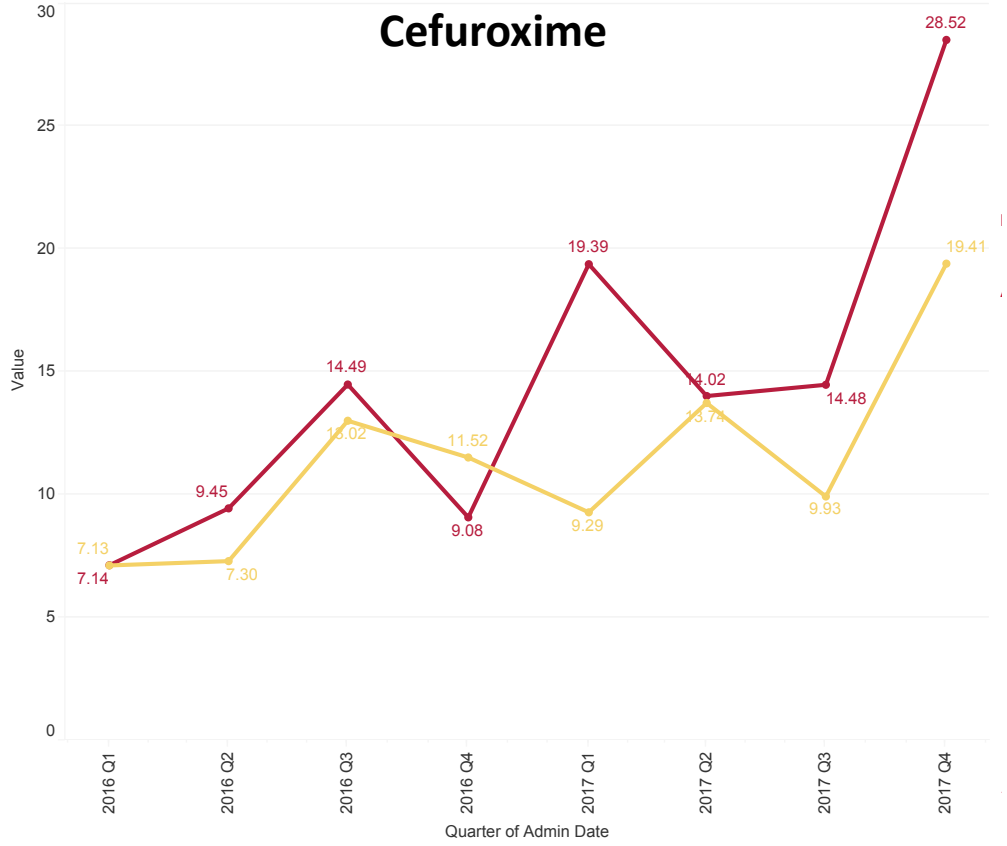
- ◉ Total Abx Days per 1000 Days Present

Antibiotic use by Unit

Cefuroxime



Process and Outcome Measures from Community-Acquired Pneumonia Intervention

	Pre-Intervention (9/2016 – 8/2017) N = 411	Post-Intervention (9/2017 – 6/2018) N = 368	^P Value
Procalcitonin Ordered, n (%)	197 (47.9)	274 (74.5)	<0.001
Urine antigens ordered, n (%)	304 (74.0)	305 (82.9)	0.003
IV-ABX duration in days, median (IQR)	3.00 [2.00, 5.00]	2.00 [1.00, 4.00]	<0.001
Median LOS, days (IQR)	3.69 [2.08, 6.58]	3.08 [1.97, 4.99	0.014
Mortality, n (%)	33 (8.0)	17 (4.6)	0.07
30 Day Readmission, n (%)	18 (9.1)	22 (12.5)	0.37
Relative Mean Cost (CV*)	1.00 (3.06)	0.65 (1.38)	0.02

Education

- Education is the Core Element with lowest overall uptake (across all facility types), although nationally reported uptake has increased greatly from 62% in 2014 to 93% in 2019

Percentage of hospitals meeting Education criteria	General acute care n=3572	Children's n=95	Surgical n=146	Critical access n=1144
Prescribers receive education on appropriate AU at least annually	82.9%	84.2%	73.3%	75.3%
Nursing staff receive education on appropriate AU at least annually	57.4%	60.0%	53.4%	52.9%
Pharmacists receive education on appropriate AU at least annually	85.8%	81.1%	84.9%	74.7%

Education

- Presentation to stakeholders and house staff
  - Targeted talk about CAP
- Partnered with hospitalists
- Education through prospective audit and feedback
- 2020 – Started Zoom ASP Grand Rounds with medicine pharmacists

Community Acquired Pneumonia (CAP) Care Pathway

Orders are being started in the ED

- Labs: Strep Ag, legionella Ag, procalcitonin (+/- flu testing)
  - Consider sputum cultures in patients being started on broad-spectrum antibiotics (e.g. high DRIP scores) to help with de-escalation
- Antibiotics for most floor patients with CAP
  - Ceftriaxone 2 grams IV x 1 dose
  - Azithromycin 500 mg IV x 1 dose
  - Then, Cefuroxime 500 mg PO BID x4 days (to start 24 hours after initial antibiotics)
- Most patients DO NOT NEED ongoing IV antibiotics or additional azithromycin
  - No need to continue IV antibiotics because of ongoing fever, leukocytosis or tachycardia. Switch to oral therapy as long as tolerating oral diet and PO meds.

PLEASE DO NOT DISCONTINUE ED ORDERS

- Improves antibiotic stewardship
- Reduces LOS

Questions?