

Antimicrobial Stewardship Programs (ASP) in Skilled Nursing Facilities



MISSION STATEMENT: TO PARTICIPATE IN A COLLABORATION BETWEEN THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH (CDPH) AND THE SAN DIEGO COUNTY HEALTH & HUMAN SERVICES (HHSA) IN AN ANTIMICROBIAL STEWARDSHIP PROGRAM (ASP) INITIATIVE, AS PART OF A BROADER REGIONAL EFFORT FOR THE PREVENTION OF HEALTHCARE-ASSOCIATED INFECTION (HAI) AND ANTIMICROBIAL RESISTANCE AMONG FACILITIES.

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October 2023

Disclosures

Bridget Olson – is an ASP consultant pharmacist for the California Department of Health (CDPH) and also works as an ASP/ID Pharmacist for Sharp Healthcare. She has no disclosures to declare.

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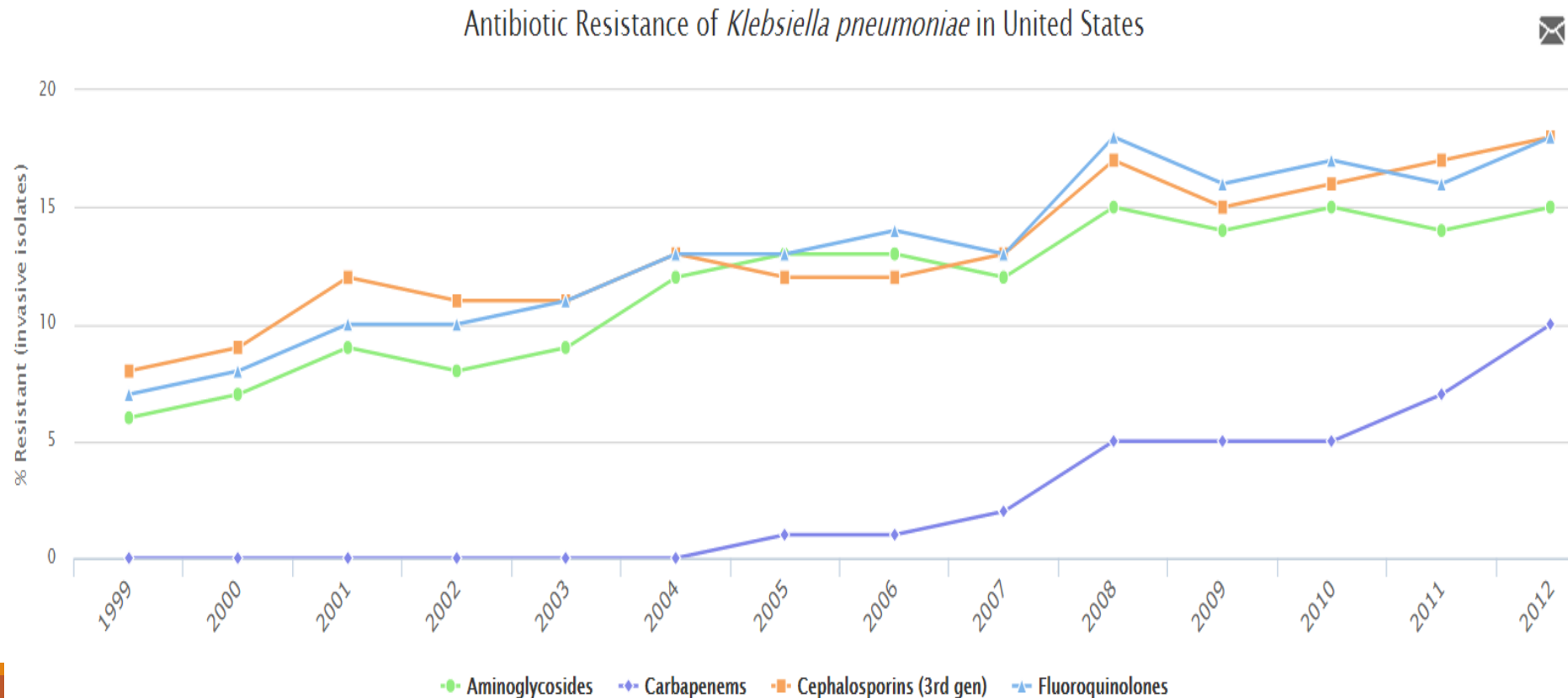
Objectives

- Describe the epidemiology of **multidrug-resistant organisms (MDROs)**
- Provide an introduction to **Antimicrobial Stewardship Programs (ASP)** and how they can decrease the development of antimicrobial resistance.
- Outline a **process to address** antimicrobial resistance in skilled nursing facilities (SNF)
- Characterize the challenge of **unnecessary urine cultures** in a population prone to asymptomatic bacteriuria
- Identify strategies to decrease orders for urine cultures: “**the culture of not culturing**”

Epidemiology

What is the danger of antibiotic over-use?


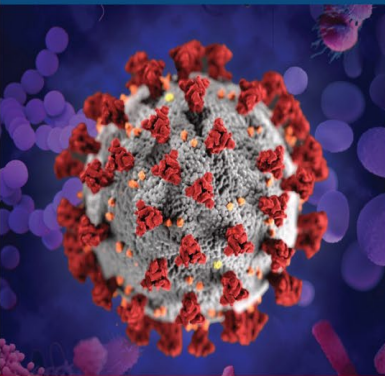
- 50,000 people die each year as a direct result of antibiotic-resistant infections
- Decades of overprescribing and misuse of antibiotics have resulted in bacteria that are increasingly resistant, creating a growing threat of new superbugs that are difficult, and sometimes even impossible to treat.
- Alarming emergence of CRE ('Carbapenem-resistant Enterobacterales')



Infections Caused by Multidrug-resistant Organisms (MDRO) During the COVID-19 2020 Peak of Epidemic


What is an MDRO?

COVID-19 CREATED A PERFECT STORM
The U.S. lost progress combating antimicrobial resistance in 2020



↑15% Antimicrobial-resistant infections and deaths increased in hospitals in 2020.

~80% Patients hospitalized with COVID-19 who received an antibiotic March-October 2020.

 Delayed or unavailable data, leading to resistant infections spreading undetected and untreated.

INVEST IN PREVENTION.

Setbacks to fighting antimicrobial resistance can and must be temporary.

Learn more: <https://www.cdc.gov/drugresistance/covid19.html>

Significant national reductions of MDRO infections in hospitals with the implementation of ASPs (rates fell by 27% 2012 to 2017); these reductions continued in hospitals **until the pandemic** began...

- Selected MRDOs and their increase in infections
 - Carbapenem-resistant *Acinetobacter* – 78%
 - Multidrug-resistant *Pseudomonas aeruginosa* – 32%
 - Vancomycin-resistant *Enterococcus* (VRE) – 14%
 - Methicillin-resistant *Staphylococcus aureus* (MRSA) – 13%
- Antifungal-resistance threats rose, including *Candida auris*—which increased 60%, and all *Candida* species (excluding *Candida auris*), with a 26% increase in infections in hospitals.

Legislative Requirement: Senate Bill-361 Antimicrobial Stewardship: Education and Policies (2015-2016)

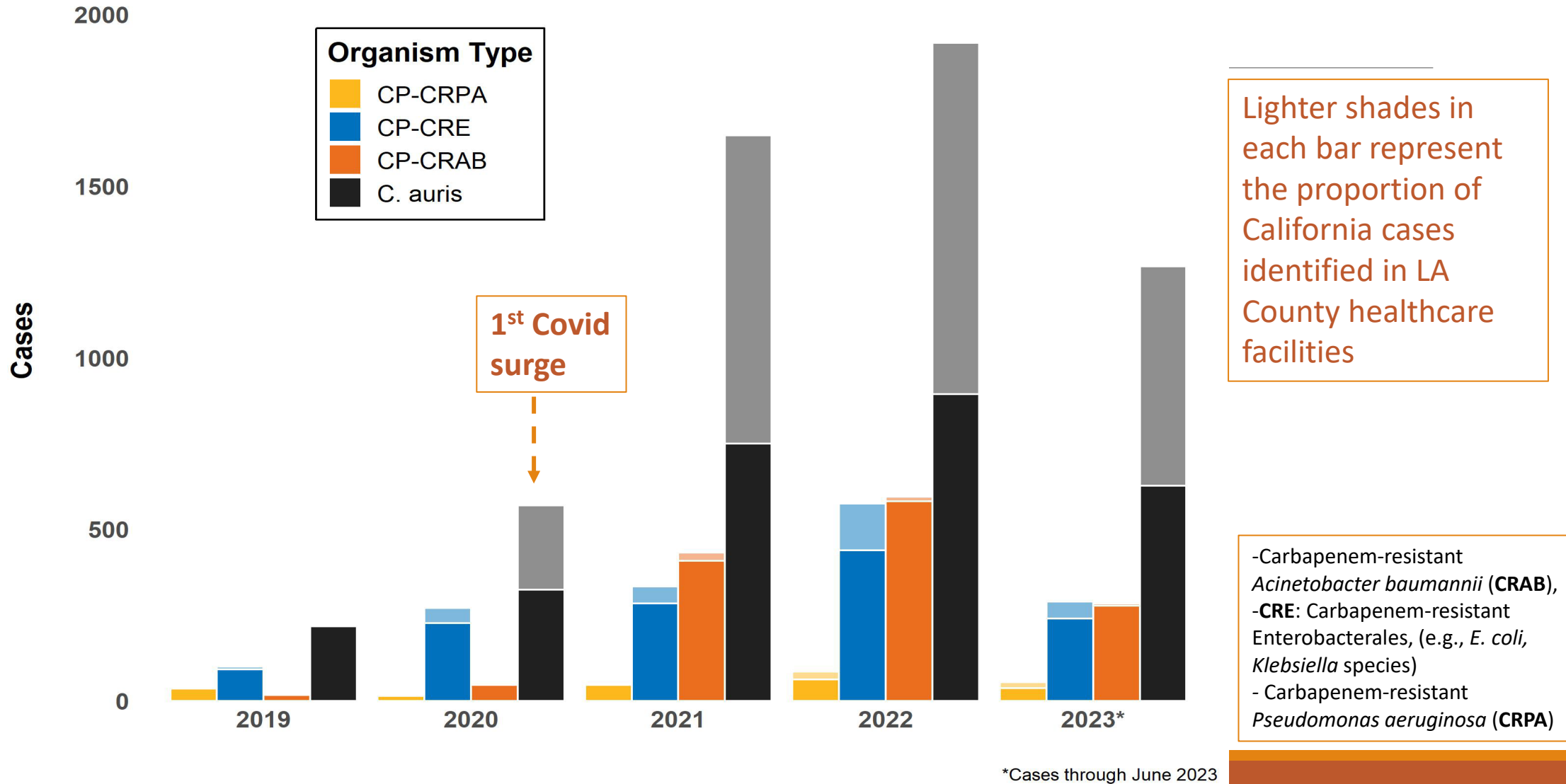
SEC. 2., 1275.4.

(a) On or before **January 1, 2017**, each skilled nursing facility (SNF) shall adopt and **implement** an antimicrobial stewardship policy that is consistent with antimicrobial stewardship guidelines developed by the federal Centers for Disease Control and Prevention, the federal Centers for Medicare and Medicaid Services, the Society for Healthcare Epidemiology of America, or similar recognized professional organizations.

Caveats:

- Although some SNFs may have written policies regarding ASP, the impact of such a program may be unknown
- Licensing & Certification do not include an assessment of ASP as part of their process
- Impact of a robust ASP can only be achieved by identification of ASP metrics, pre-implementation data collection, implementation of core principles of ASP in a stepwise fashion, and repeating metrics to assess the impact of interventions and to provide feedback

Multi-drug Resistant Organisms (MDRO): *Candida auris* and Carbapenemase-producing (CP) Organisms Cases Reported in LA County and California, 2019–June 2023



Question: What is the difference between antimicrobials and antibiotics?

ANSWER: ANTIBIOTICS SPECIFICALLY TARGET BACTERIA WHILE ANTIMICROBIALS ACT ON DIFFERENT TYPES OF MICROBES: BACTERIA, FUNGI, VIRUSES OR PROTOZOA

The Threat of Antibiotic Resistance

- The way we use antibiotics today directly impacts how effective they will be tomorrow; they are a shared resource. Some infections caused by multidrug-resistant organisms have **NO** effective therapy.
- Patients getting broad-spectrum antibiotics are up to **3 times more likely** to get another infection from even more resistant bacteria, which are associated with mortality rates up to **4 times higher** than with susceptible strains.

CDC.gov/antibiotic use, 2022

Rowe T, Jump R, Andersen B, et al. Reliability of non-localizing signs and symptoms as indicators of the presence of infection in nursing-home residents. Inf Control & Hosp Epidemiology. 2022 (43), p 417-26.

The spread of Antibiotic Resistance:

- Two main factors drive the spread of multi-drug resistant organisms (MDROs):
 1. Transmission between patients → **Infection Prevention**
 2. Overuse and misuse of antibiotics → **ASP**
- Studies have shown that more than half of all antibiotics prescribed in Skilled Nursing facilities (SNF) in the U.S. may be unnecessary or inappropriate.

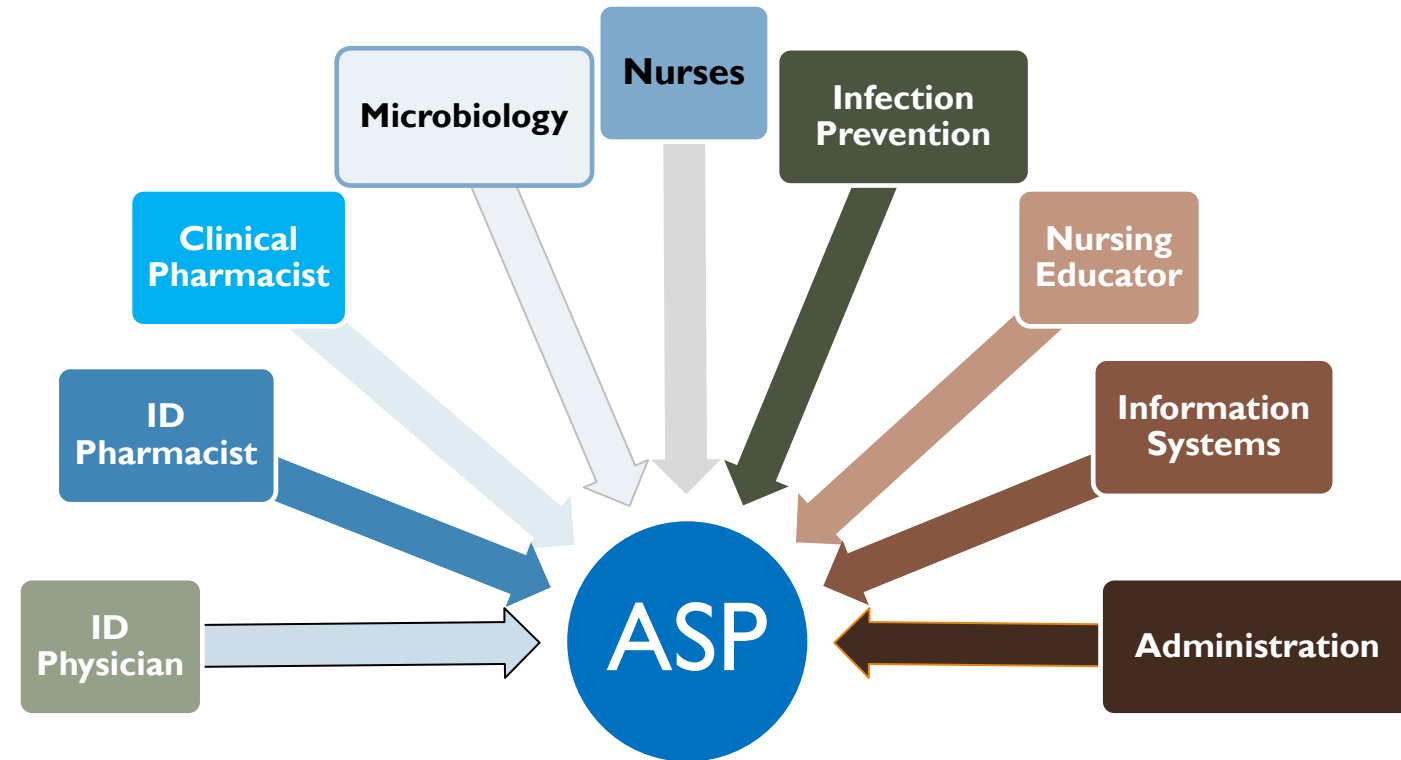


What is an Antimicrobial Stewardship Program (ASP)?

ASP is a program to educate healthcare workers and to persuade prescribers of antimicrobial agents to follow evidence-based prescribing.

Benefits and Goals of ASP:

- Decrease antibiotic overuse
- Decrease the emergence of antimicrobial resistance (MDROs).
- Reduce likelihood of adverse reactions from exposure to antibiotics such as *Clostridioides difficile* infection
- Added benefit of cost reduction associated with treating infections



Many types of healthcare workers can contribute to a successful program

Factors Contributing to Antimicrobial Resistance in Skilled Nursing Facilities

- Most residents are **advanced in age**, with significant **comorbidities**
- Frequent bacterial **colonizations with MDROs***
- **Incomplete** nurse reporting of signs and symptoms of infection to physicians
- **Assessments are difficult** with many residents non-verbal
- Despite multiple causes of **altered mental status**, this often triggers antibiotic orders
- Indwelling catheters are associated with **asymptomatic bacteriuria**, often treated without assessment
- ED and acute care hospitals often treat **asymptomatic bacteriuria**
- Antimicrobial agents are often **phone orders without appropriate resident assessments**
- Physicians are not sure of the best **empiric** treatment choices
- **No follow-up** of culture RESULTS or sign/symptom resolution, or whether antibiotics are indicated



- Consequently, there is **over-use** of antimicrobial agents, resulting in **antimicrobial resistance**

*MDROs: multi-drug resistant organisms

Impact of an *Effective* Antimicrobial Stewardship Program on Drug Resistance

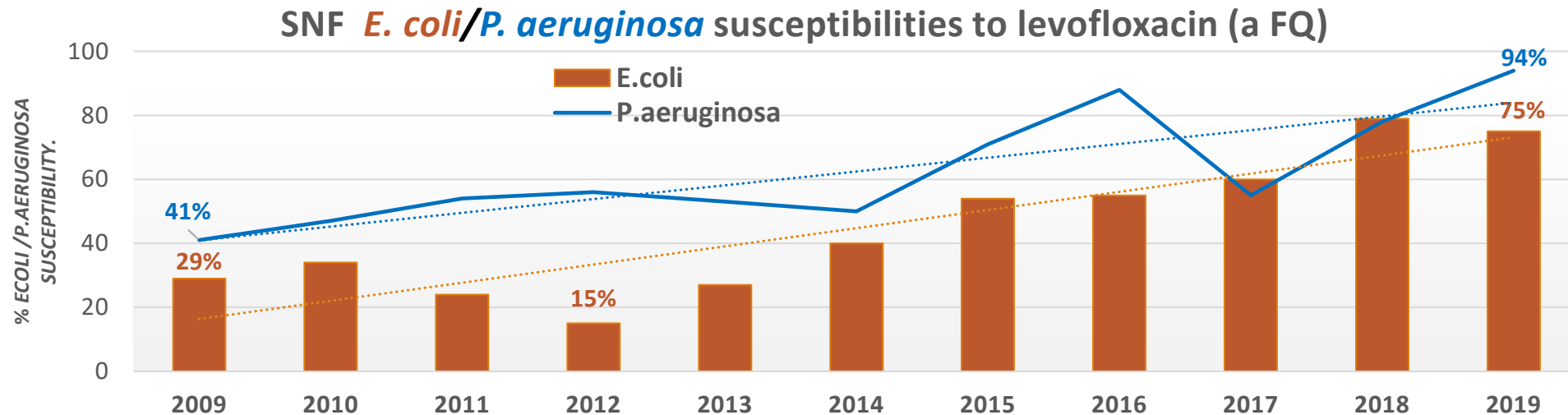
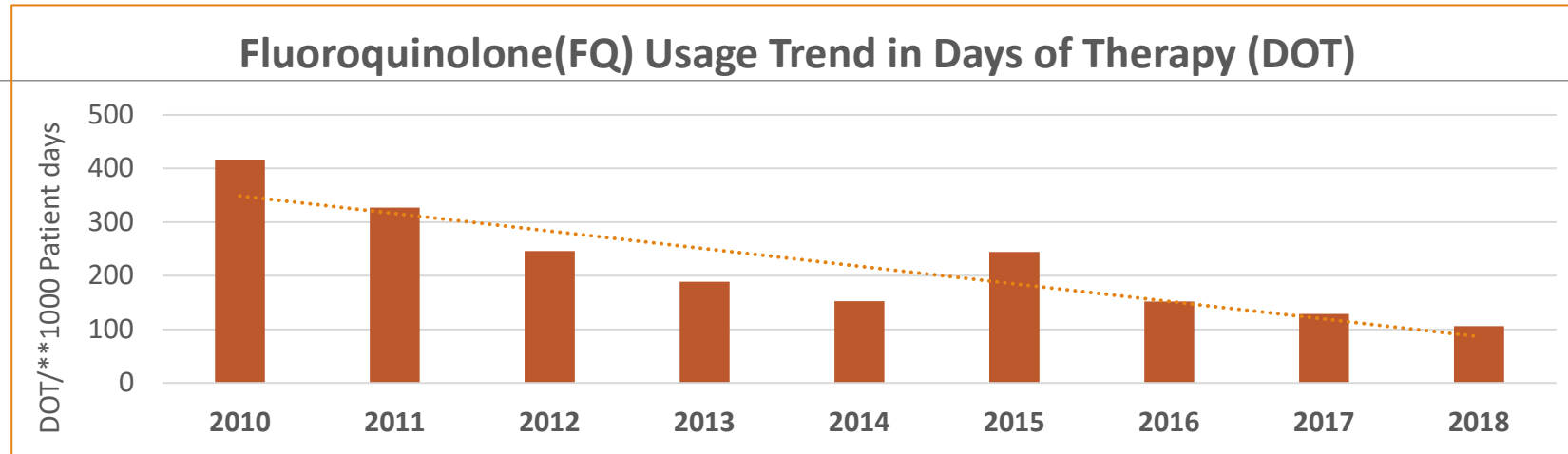
FACILITY A— 122 BEDS, WITH VENTILATOR UNIT ASSOCIATED WITH ACUTE
CARE HEALTHCARE SYSTEM

ASP STARTED IN 2010



ASP Effects on Antimicrobial Resistance in a SNF

Decreased Fluoroquinolone use → Increased *E.coli*/*P. aeruginosa* susceptibility

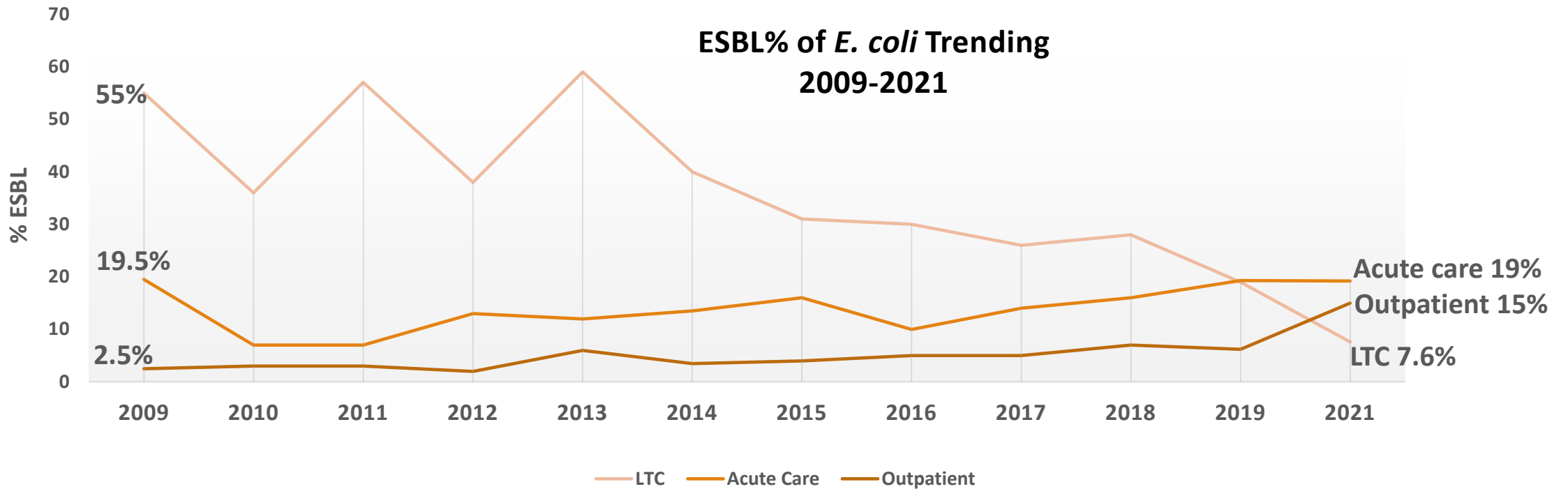


*Fluoroquinolone = ciprofloxacin, levofloxacin

**DOT = days of therapy

ASP Effects on Antimicrobial Resistance

→ Decreased ESBL* *E.coli*

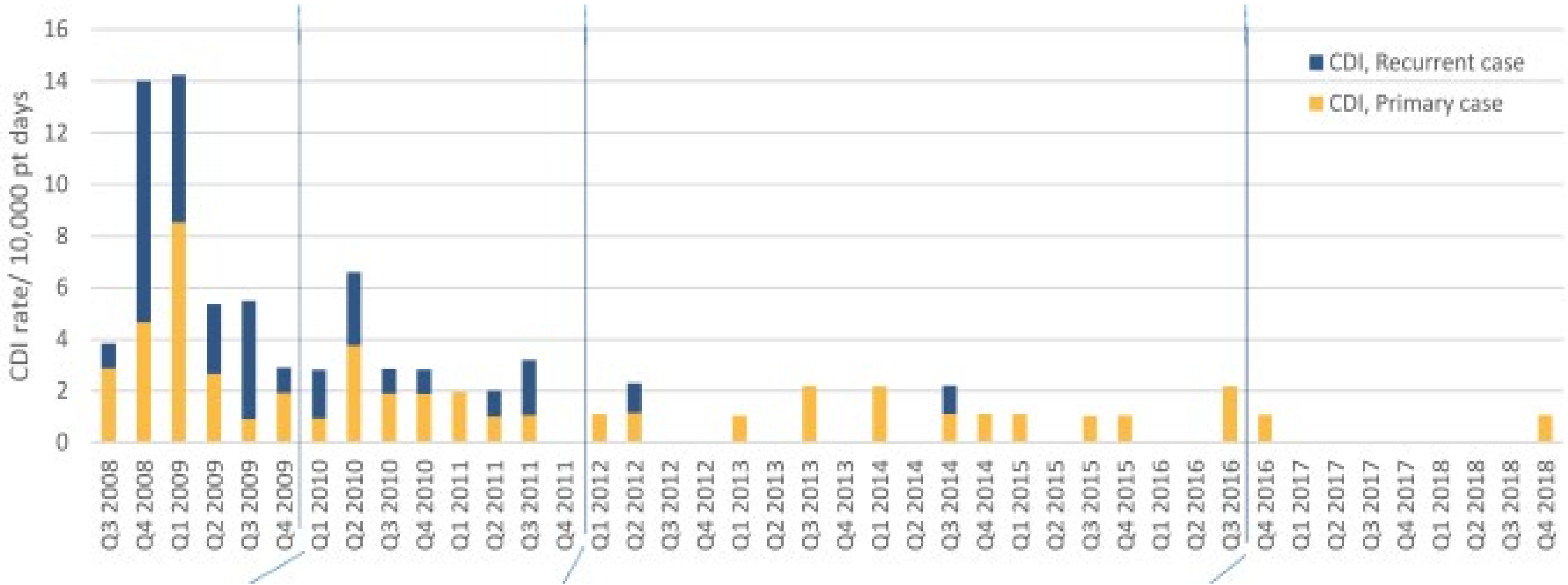


*ESBL – extended spectrum beta-lactamase

Facility A vSNF

2020 data not available with mixing of patient types on units, due to Covid pandemic conditions

C. difficile Infection (CDI) Reduction



ACTION...



How to start an ASP: General guidelines...

- Establish **administrative support** for an ASP.
- Expand employee roles to include **ASP**, designating one person as the **ASP lead** (IP, lead RN, clinical pharmacist, or physician).
- Implement at least one **policy or practice** to improve antibiotic use, such as tracking of antimicrobials with interventions to improve use.
- Start by developing **infection-specific** policies, beginning with the evaluation and treatment of urinary tract infections (UTI).
- Work in a step-wise fashion, implementing one or two activities to start, then gradually adding new activities over time and **integrating ASP into the workflow pattern of the facility with education.**

ASP Steps of Implementation

1. Multidisciplinary ASP Education
2. Improve Patient Assessments for suspected Infections
3. Improve Antibiotic Prescribing
4. Tracking and Reporting

1. Multidisciplinary Education

In addition to ASP principles and goals...

For **Nursing:**



Intro to ASP:

- Differences between **colonization vs. infection**
- Use of **empiric vs. targeted** antibiotics
- **Loeb Criteria** for initiation of antibiotics
- Resident **assessments**
- Consideration of **other causes** for symptoms (vs. infection)
- Tracking of Antibiotic initiations
- New patients transferred in on antibiotics
- **SBAR** format for reporting to physicians

UTI ASP Module:

- Asymptomatic bacteriuria
- Common myths in UTI diagnosis
- Loeb Criteria for antibiotic initiation for UTI
- Appropriate urine **culturing**
- Reliability of Non-localizing s/sx for true UTI
- Urinary organisms and sensitivities at your facility
- Preferred **empiric** antibiotic therapies for UTI, including **durations**
- De-escalation of empiric therapy

Education, Resources, & Tools

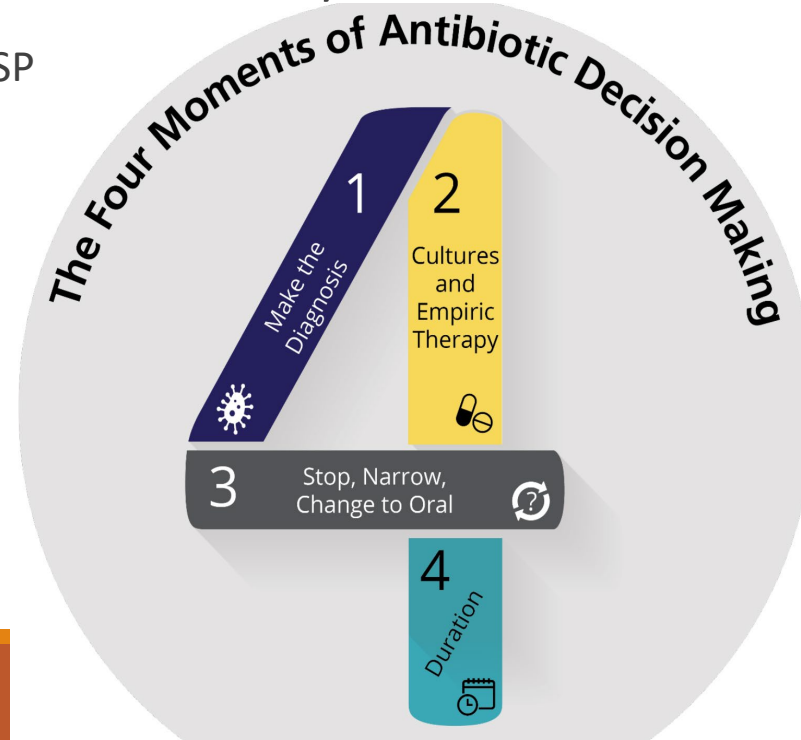


Agency for Healthcare
Research and Quality

To improve antibiotic use in SNF, AHRQ equips frontline providers with tools and resources to incorporate ASP principles into their facility culture. The Safety Program provides SNFs with the novel framework of the Four Moments of Antibiotic Decision Making coupled with education on the best practices in the diagnosis and treatment of common infections in SNF settings, to support integration of ASP principles into the daily care of residents.

- Toolkits for implementing, monitoring and sustaining an ASP
 - Example: Suspected UTI SBAR toolkit (slide 25)
- Educational Webinars/toolkits for staff
- Identification and implementation of ASP interventions
- How to collect and submit data for benchmarking reports

<https://www.ahrq.gov/nhguide/index.html>



2. Improve Patient Assessments for suspected Infections:

- Utilize **Patient Assessment forms** for suspected infections with standardized practices for evaluating patients exhibiting symptoms of infection
- Familiarize staff with the **Loeb Criteria** for determining the need for initiation of antibiotics in SNF patients.
- Improve assessment reporting to physician/NP/PA with **SBAR** communication tool

Importance of Nursing Assessments:

- Based on their assessments and reporting, nurses play a major role in whether antibiotics are initiated.
- They are the eyes and ears for the physicians
- RN to do patient assessment prior to calling physician, using a checklist.
- Optimally the nurse should discuss the patient assessment and symptoms with another clinician (RN/pharmacist/IP) to help evaluate for other causes, and to decide whether antibiotics will be recommended vs. watchful waiting, prior to calling the MD or prior to initiating antibiotics.
- Monitor resident condition changes, considering other possible causes for symptoms (dehydration, med changes, electrolyte imbalances, glucose levels, lack of sleep, etc.)



Patient Assessment Forms for Suspected infection

- Overall comprehensive survey of symptoms in a checklist format, categorized by the Loeb Criteria for infection in SNF patients
- Focus on changes from the patient's baseline, and consider other causes (dehydration, medication, blood glucose, electrolyte changes, etc.)
- Pertinent patient information: diagnoses, allergies, code/transfer status
- Vital signs, observed changes in mental or behavioral status
- Presence of foleys or other catheters, IV lines, feeding tubes, tracheostomies, ventilators, or other invasive devices

Facility A SNF

Long Term Care Fever/Suspected Infection ASSESSMENT	
RN to complete <u>prior</u> to calling Physician for fever or suspected infection	
Patient Name: _____	Unit _____ Rm: _____
Prescribing Physician: _____	ID Consultant? <input type="checkbox"/> no, <input type="checkbox"/> yes: _____
Current Isolation Status: _____	Code Status: _____
Allergies: _____	
IV Lines: yes ___ no ___ if yes, type(s)? _____	
Feeding tube: yes ___ or no ___ (type): _____	
Current Antibiotics: _____ (please include start dates)	
Recent Antibiotic use (within the last month): _____ (please include dates)	
History of resistant organisms (ESBL, MRSA, CRE): _____ (please include date)	
Vitals: (last 24 hours)	
HR _____	Consider other cause for changes: dehydration, meds, etc.
RR _____	
BP _____	
O2 Sat _____	
WBC _____ SCr _____	
Last 2 Temp.: _____ (site: _____) Re-check after 1 hour if >100.4 (38.0)	
Immunosuppressed? (i.e. on steroids or post-chemo) Y or N _____	
Patient Status/symptoms → Please check all that apply & report with vital sign changes	
Suspected Respiratory Infection <ul style="list-style-type: none"> <input type="checkbox"/> History of COPD or CHF (circle one) <input type="checkbox"/> Ventilator/trach/blowby (circle one) <input type="checkbox"/> Rigors (shaking chills) <input type="checkbox"/> Cough, new or increased <input type="checkbox"/> Purulent sputum production, new or increased <input type="checkbox"/> New infiltrates on chest x-ray (dated: _____) <input type="checkbox"/> RR > 25 bpm <input type="checkbox"/> Pleuritic chest pain <input type="checkbox"/> O2 sat <94% or decreased >3% from baseline <input type="checkbox"/> Acute change in mental status or functional decline 	Suspected UTI <ul style="list-style-type: none"> <input type="checkbox"/> Catheter (type: _____ date changed _____) <input type="checkbox"/> Acute dysuria <input type="checkbox"/> Acute pain/swelling of testes/epididymis or prostate <input type="checkbox"/> Gross hematuria <input type="checkbox"/> Acute costovertebral angle tenderness or pain <input type="checkbox"/> New or worsening urinary urgency, frequency or suprapubic pain or incontinence <input type="checkbox"/> Rigors (shaking chills) <input type="checkbox"/> Acute change in mental status or functional decline <input type="checkbox"/> Purulent discharge from around catheter
Suspected skin/soft tissue infection <ul style="list-style-type: none"> <input type="checkbox"/> New or increasing purulent drainage at site <input type="checkbox"/> Redness at site <input type="checkbox"/> Tenderness or warmth at site <input type="checkbox"/> Swelling that is new or increasing at wound or soft tissue site 	Fever of Unknown Origin <ul style="list-style-type: none"> <input type="checkbox"/> New onset of delirium <input type="checkbox"/> Rigors (shaking chills) <input type="checkbox"/> Diarrhea <input type="checkbox"/> Abdominal distension
<input type="checkbox"/> Satisfies LTC Fever/Suspected Infection Protocol for initiation of orders for CBC, CMP, chest xray (T>100.4 x 2, at least 1 hour apart, or HR >120, RR>25, sys BP <90 after suctioning/re-positioning)	
RN completing assessment: _____ Date: _____ Form Updated 3/2022	

3. Improve Antimicrobial Prescribing

- Obtain **Lab** reports of **microbiology and antibiogram** to show organisms cultured and relative antibiotic sensitivities
 - Analyze resistance trends
- Obtain **antibiotic days of therapy (DOT)** from the supplying **pharmacy**
 - Analyze DOT to identify prescribing trends and issues
- Establish site specific **empiric therapy**: infectious disease pharmacist or ID Specialist Physician with education of prescribers
- Establish **ASP tracking of antibiotic starts** –is initiation of antimicrobials appropriate? (Loeb Criteria)
 - **Re-assessment** on Day 3 of therapy: culture review, patient status, DC/change antibiotics?
 - Improve reporting and information available to prescribers (**SBAR**)

Improving Antibiotic Prescribing

Utilizing existing resources...

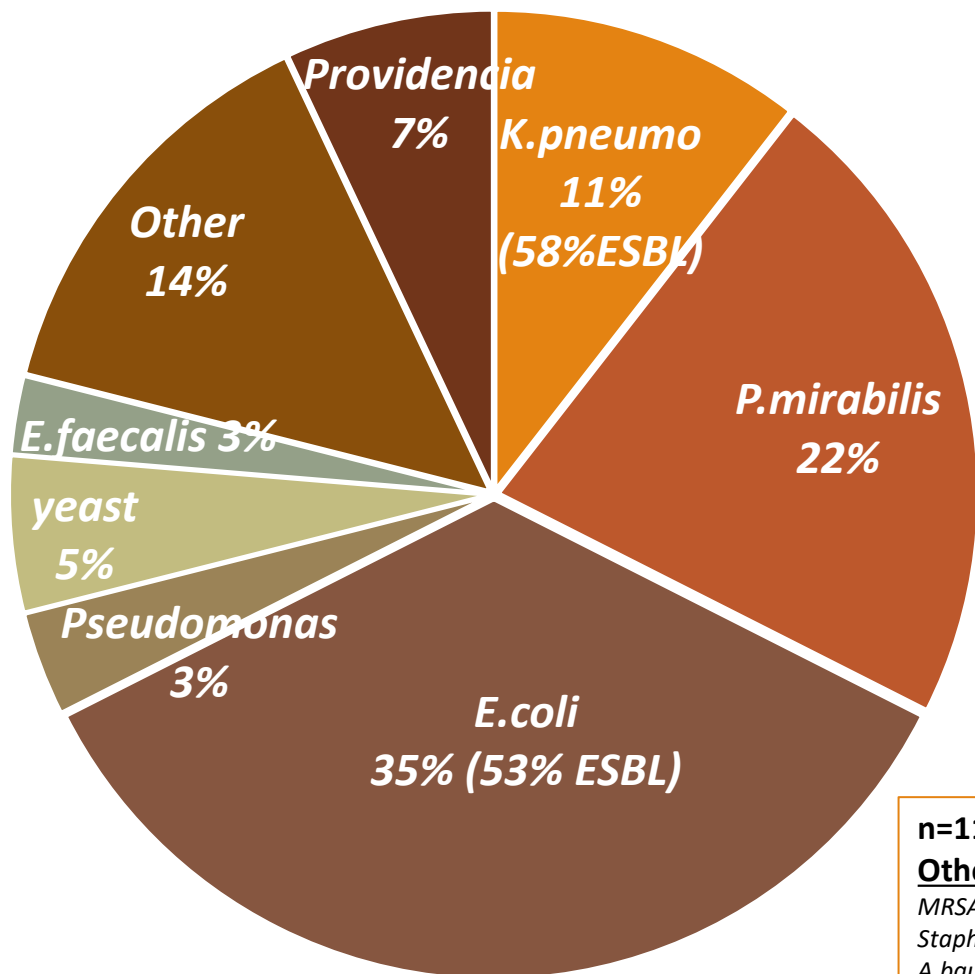
Consultant Micro-Laboratory:

LTC facilities can request:

- **Alerts** for detection of resistant organisms
- **Antibiogram** reports of antibiotic sensitivities at your facility annually
- **Reports** of organism breakdown from specific infection sites (urinary, respiratory, blood and skin/soft tissue)



Facility B vSNF
Urine Cultures 2022



n=114
Other (#1-2 each):
MRSA, C. freundii, Coag-neg Staph, E. aerogenes, A. baumannii, K. oxytoca, S. maltophilia, VRE E. cloacae,

Micro-organism
breakdown by
site:

URINES

Antibiograms

Care Center Antibiogram Jan-Dec 2022

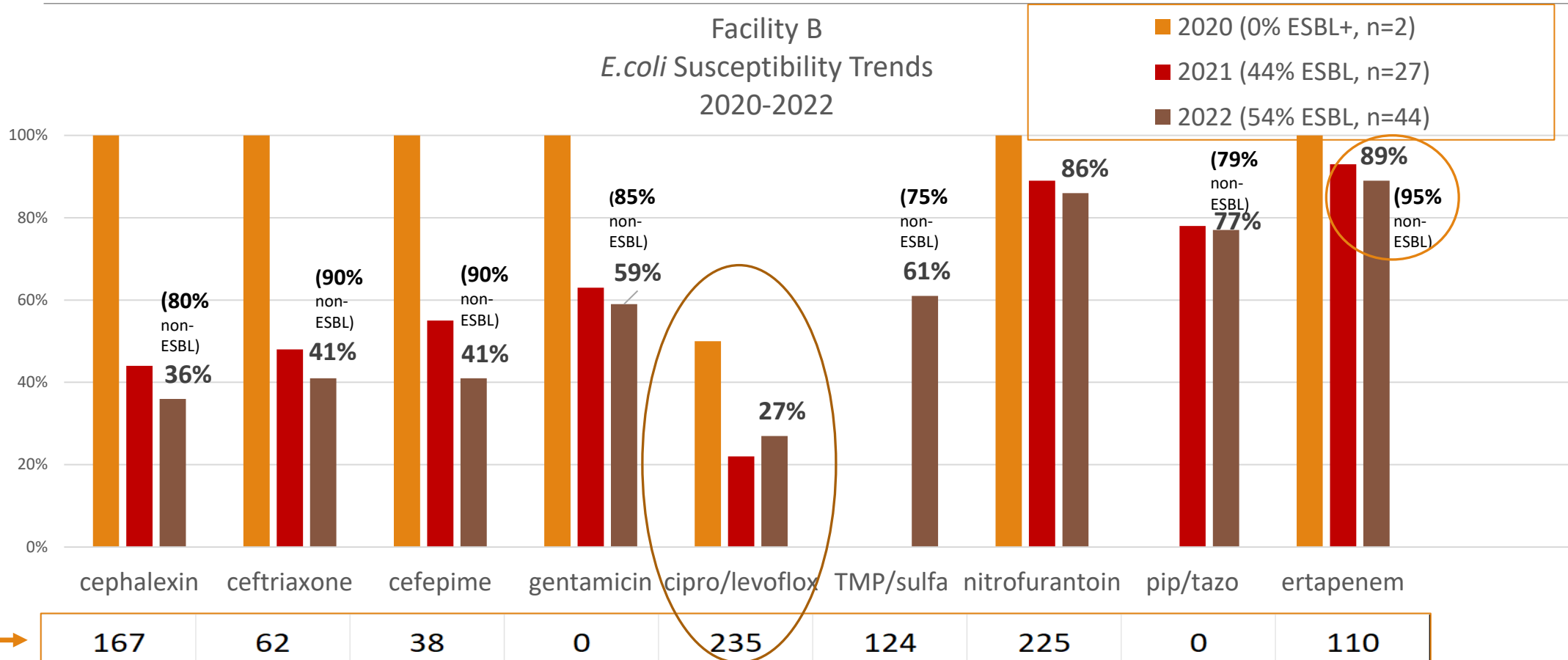
Gram-negative Organisms	# isolates	AMPIC/SULBAC	CEFAZOLIN	CEFEPIME	CEFTAZIDIME	CEFTRIAXONE	CIPROFLOXACIN	ERTAPENEM	GENTAMICIN	IMP/INEM(s)	LEVOFLOXACIN	NITROFURANTOIN	PIP/TAZO	TOBRAMYCIN	TRIMETH/SULFA
<i>A. baumannii</i>	1	0	0	0	0	100	0	100	0	100	0	0	100	100	0
<i>A. baumannii, MDR</i>	1	0	0	0	0	0	0	100	0	0	0	0	100	100	0
<i>C. freundii</i>	1	0	0	100	0	0	100	100	100	0	100	0	100	100	0
<i>E. aerogenes</i>	1	0	0	100	0	0	0	0	100	0	0	100	0	100	0
<i>E. cloacae</i>	2	0	0	50	0	0	100	0	100	100	50	0	100	100	0
<i>E.coli overall</i>	44	34	36	41	43	41	27	89	59	89	27	86	77	50	61
<i>E. coli, non-ESBL</i>	20	65	80	90	95	90	55	95	85	95	55	85	75	85	75
<i>E. coli, ESBL+</i>	24	8	0	29	4	0	4	87	37	87	4	87	79	20	50
<i>K. oxytoca</i>	1	0	100	100	100	100	100	100	100	100	100	100	100	100	100
<i>K. pneumoniae</i>	5	80	80	80	80	80	80	80	80	80	40	80	80	80	80
<i>K. pneumoniae, ESBL+</i>	8	0	0	12	0	0	12	62	12	62	37	12	37	0	25
<i>K. pneumoniae, ESBL+, spp. Pneu</i>	1	0	0	0	0	0	0	100	100	100	0	0	100	0	100
<i>M. morgani</i>	3	0	0	66	66	33	0	100	66	33	0	0	66	100	33
<i>P. mirabilis</i>	33	48	42	54	48	42	24	69	69	0	24	0	75	69	33
<i>P. stuartii</i>	10	0	0	50	90	40	40	100	0	20	30	0	60	0	80
<i>P. aeruginosa</i>	6	0	0	83	83	0	66	0	83	83	16	0	83	83	0
<i>S. marcescens</i>	2	0	50	50	0	50	100	100	0	50	0	0	50	100	0
<i>Sphingomonas paucimobilis</i>	1	0	100	0	0	100	0	100	100	100	0	100	100	100	0
<i>Stenotrophomonas maltophilia</i>	1	0	0	0	0	0	0	0	0	100	0	0	0	0	100

Gram-positive Organisms

Gram-positive Organisms	# isolates	AMPICILLIN	AMPIC/SULBAC	CIPROFLOXACIN	CLINDAMYCIN	GENTAMICIN	LEVOFLOXACIN	LINEZOLID	NITROFURANTOIN	OXACILLIN	QUINU/DALFO	RIFAMPICIN	TETRACYCLINE	TIGECYCLINE	TRIMETH/SULFA	VANCOMYCIN
<i>S. aureus. MRSA</i>	4	0	0	75	75	0	100	100	0	100	100	50	100	100	100	100
<i>S. aureus</i>	2	0	100	50	100	100	100	100	100	100	100	100	100	100	100	100
<i>Staph, Coag -neg</i>	1	0	0	0	100	0	100	100	0	100	100	0	100	0	100	100
<i>E. faecalis</i>	3	66	66	66	0	0	100	33	100	0	0	0	66	0	0	100
<i>E. faecium, VRE</i>	2	0	0	0	0	0	50	0	0	50	50	50	50	50	0	0

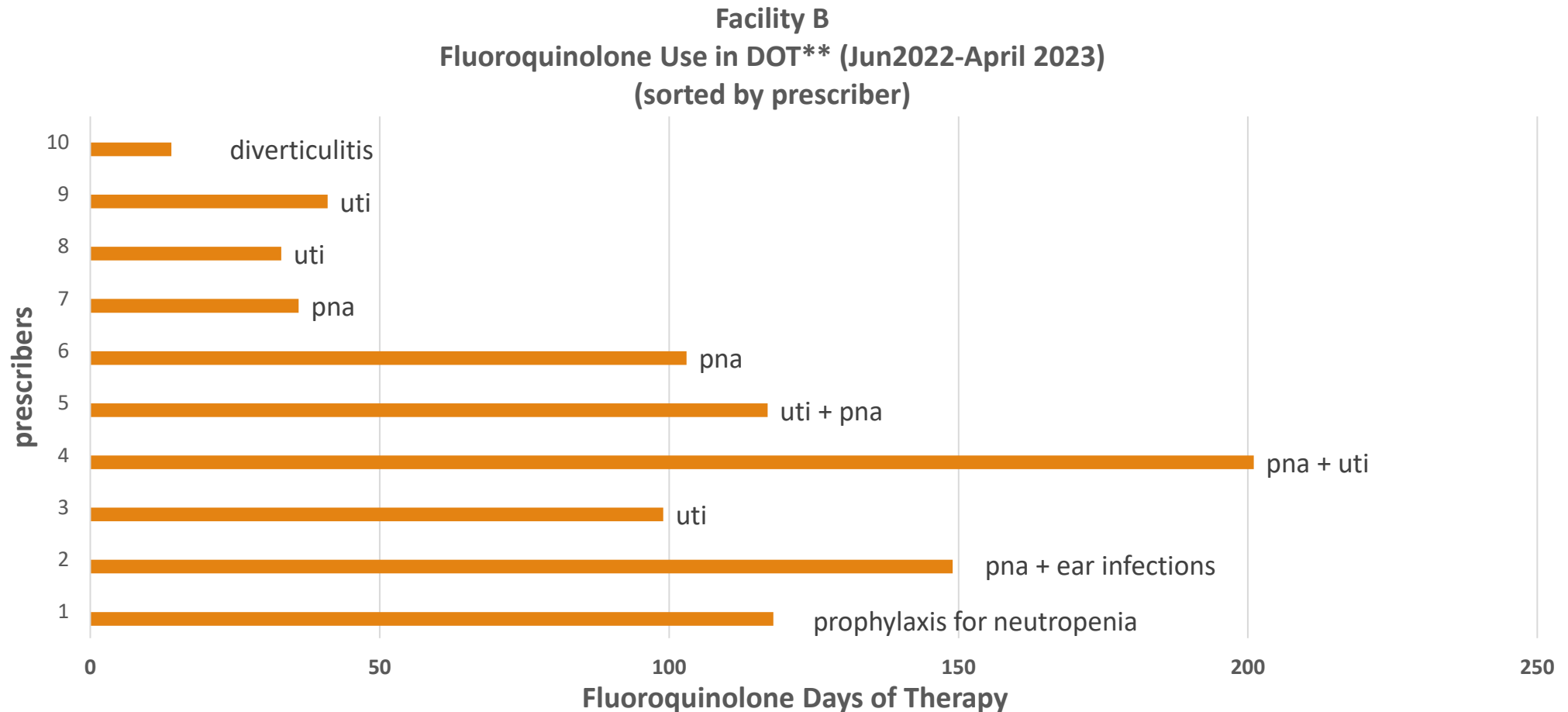
E. Coli Susceptibility Trends 2020-2022

(E. coli - most predominant organism causing UTI at Facility B)



Antibiotics (by DOT) used to treat UTI from 6/1/22-4/30/23

Fluoroquinolone* use by Prescriber



Relative Antibiotic Costs to Treat Urinary Tract Infections (UTI)

Drug	# Doses /Day ^a	AWP Cost/Dose	AWP Cost/Day	Duration to Treat UTI	Cost of Course ^b	UTI Treatment	
cephalexin 500mg cap	4	\$0.20	\$0.80	7	\$6	Oral treatment no MDRO	Treatment of UTI without resistant organisms
ceftriaxone 1g	1	\$2.30	\$2.30	7	\$16	IV treatment no MDRO	
fosfomycin 3g	1	\$55	\$55	1-3 doses	\$55 (females) \$165 (males or XDRO)	Oral treatment cystitis w/MDRO	Treatment of UTI with resistant organisms
Cefepime 1g	3	\$7	\$21	7	\$147	IV treatment <i>Pseudomonas</i> , or organisms with amp-C resistance	
ertapenem 1g	1	\$48	\$48	7	\$336	IV treatment w/ESBL MDRO	
ceftazidime/avibactam 250mg	3	\$342	\$1,026	7	\$7,182	IV treatment w/CRE MDRO	

^aDosing for normal renal function

^bIVPB and nursing administration costs not included

Low Hanging Fruit? Improving the Diagnosis of Urinary Tract Infection (UTI)

NHSN REPORTED UTI TREATMENT PRACTICES
COMMON MYTHS IN DIAGNOSIS OF UTI



Indwelling Urinary Catheter Use

“...and catheters function as a 1-point restraint that tethers patients to their beds, preventing them from carrying out the activities of daily living like getting them to the toilet and doing physical therapy, which could lead to other hospital-acquired conditions like deep vein thrombosis, pressure sores, and falls.....”



Sanjay Saint, MD, MPH, FACP, Chief of Medicine VA
Ann Arbor Healthcare Systems, Ann Arbor, Michigan

Urinary Tract Infection (UTI) treatment practices in nursing homes reporting to the National Healthcare Safety Network (NHSN), 2017

A study of the difference between the number of UTI events meeting surveillance definitions for infection vs. UTI treatment courses were compared for 298 nursing homes reporting UTI data to NHSN in 2017:

- There were almost **4 times** as many antimicrobial agent starts vs. UTI events reported. (UTI treatment ratio= 4.0, goal = 1.0)
- 46% of nursing homes reported no UTIs meeting criteria but reported 1479 antibiotic starts for UTI.
- High variability in urine culture testing practices in facilities, with higher culturing rates → higher antibiotic use → higher *C.difficile* rates

Conclusion: Opportunities exist for **Antimicrobial Stewardship** and improvement of UTI diagnosis and reporting.

Asymptomatic bacteriuria (ASB)

- **Definition:** Asymptomatic bacteriuria (ASB) is the presence of bacteria growing in the urine, with or without pyuria (wbc), in the absence of signs or symptoms of urinary tract infection (UTI).
- **Treatment** of ASB with antibiotics is not recommended, (except during pregnancy or with urological procedures).
- **ASB** has been recognized as an **important contributor to inappropriate antimicrobial use**, which promotes **emergence of antimicrobial resistance**.
- **Populations** with a high prevalence of ASB, unable to maintain sterile urine:
 - 1) Patients with chronic **indwelling catheters**
 - 2) **Older (>65 years)** institutionalized populations
 - 3) Patients with **spinal cord injury**
 - 4) Some persons with **diabetes**

Common Myths in the Diagnosis of Urinary Tract Infections

Myth 1: Urine is cloudy and smells bad → UTI

Myth 2: Urine has bacteria → UTI

Myth 3: Urine has a positive leukocyte esterase (for WBCs) → UTI

Myth 4: Urine contains WBCs → UTI

Myth 5: Urine has nitrates (for bacteria) → UTI

Myth 6: Bacteria in a catheterized urine sample → UTI

Myth 7: Asymptomatic bacteriuria will progress to UTI

Myth 8: Falls and acute altered mental status changes in the elderly
→ UTI – look for another cause first

Suspected UTI SBAR

Complete this form before contacting the resident's physician.

Date/Time _____

Nursing Home Name _____

Resident Name _____ Date of Birth _____

Physician/NP/PA _____ Phone _____

Fax _____

Nurse _____ Facility Phone _____

Submitted by Phone Fax In Person Other _____

S Situation

I am contacting you about a suspected UTI for the above resident.

Vital Signs BP _____ / _____ HR _____ Resp. rate _____ Temp. _____

B Background

Active diagnoses or other symptoms (especially, bladder, kidney/genitourinary conditions)

Specify _____

- No Yes The resident has an indwelling catheter
- No Yes Patient is on dialysis
- No Yes The resident is incontinent **If yes, new/worsening?** No Yes
- No Yes Advance directives for limiting treatment related to antibiotics and/or hospitalizations
Specify _____
- No Yes Medication Allergies
Specify _____
- No Yes The resident is on Warfarin (Coumadin®)

Nursing Home Name _____ Facility Fax _____

Resident Name _____

A Assessment Input (check all boxes that apply)

Resident WITH indwelling catheter

The criteria are met to initiate antibiotics if one of the below are selected

No Yes

- Fever of 100°F (38°C) or repeated temperatures of 99°F (37°C)*
- New back or flank pain
- Acute pain
- Rigors /shaking chills
- New dramatic change in mental status
- Hypotension (significant change from baseline BP or a systolic BP <90)

Resident WITHOUT indwelling catheter

Criteria are met if one of the three situations are met

No Yes

- 1. Acute dysuria alone
_____ **OR** _____
- 2. Single temperature of 100°F (38°C) **and** at least one new or worsening of the following:
 - urgency suprapubic pain
 - frequency gross hematuria
 - back or flank pain urinary incontinence
 _____ **OR** _____
- 3. No fever, but two or more of the following symptoms:
 - urgency suprapubic pain
 - frequency gross hematuria
 - incontinence

Nurses: Please check box to indicate whether or not criteria are met

- Nursing home protocol criteria are met.** Resident may require UA with C&S or an antibiotic.†
- Nursing home protocol criteria are NOT met.** The resident does NOT need an immediate prescription for an antibiotic, but may need additional observation.††

R Request for Physician/NP/PA Orders

Orders were provided by clinician through Phone Fax In Person Other _____

- Order UA
- Urine culture
- Encourage _____ ounces of liquid intake _____ times daily until urine is light yellow in color.
- Record fluid intake.
- Assess vital signs for _____ days, including temp, every _____ hours for _____ hours.
- Notify Physician/NP/PA if symptoms worsen or if unresolved in _____ hours.

Initiate the following antibiotic

Antibiotic: _____ Dose: _____ Route: _____ Duration: _____

No Yes Pharmacist to adjust for renal function

Other _____

Physician/NP/PA signature _____ Date/Time _____

Telephone order received by _____ Date/Time _____

Family/POA notified (name) _____ Date/Time _____

* For residents that regularly run a lower temperature, use a temperature of 2°F (1°C) above the baseline as a definition of a fever.
 † This is according to our understanding of best practices and our facility protocols. Minimum criteria for a UTI must meet 1 of 3 criteria listed in box.
 †† This is according to our understanding of best practices and our facility protocols. The information is insufficient to indicate an active UTI infection.

AHRQ tool for assessment of patients with suspected UTI

UTI Loeb criteria built into assessment

Educational Poster on Delirium

Delirium is one possible symptom of UTI, but may be due to many other causes than infection...

IDENTIFYING DELIRIUM

ABCs OF IDENTIFICATION

Acute/subacute

- Altered mental status from baseline

Behavioral disturbance

- Restless, agitated, combative

Changes in consciousness

- Jittery, drowsy, difficult to arouse



CAUSES OF DELIRIUM

- Sleep deprivation
- Dehydration
- Medications
- Pain
- Immobility

COMMON SYMPTOMS

- Drowsiness or agitation
- Refusing therapy/meals
- Refusing medications
- Arguing with staff or family members
- Hallucinating
- Wandering off

TREATING AND PREVENTING DELIRIUM

1. MODIFY ENVIRONMENT

- Orient often—time, date, place
- Provide calendar/clock in room
- Surround with familiar faces

2. PROMOTE NORMAL SLEEP

- Reduce noise, dim lights
- Promote sleep at night and activity during day

3. CORRECT SENSORY DEFICITS

- Eyeglasses
- Hearing aids
- Pain management
- Good lighting

4. ENHANCE DAYTIME ACTIVITIES

- Cognitive stimulation—word games, crossword puzzles, current events discussion
- Encourage physical/occupational therapy
- Active while awake; only sleep at night
- MOBILIZE!

5. PREVENT DEHYDRATION

- Small sips of water throughout the day
- Encourage good nutrition—supplement if necessary with smoothies or protein drinks
- Address constipation

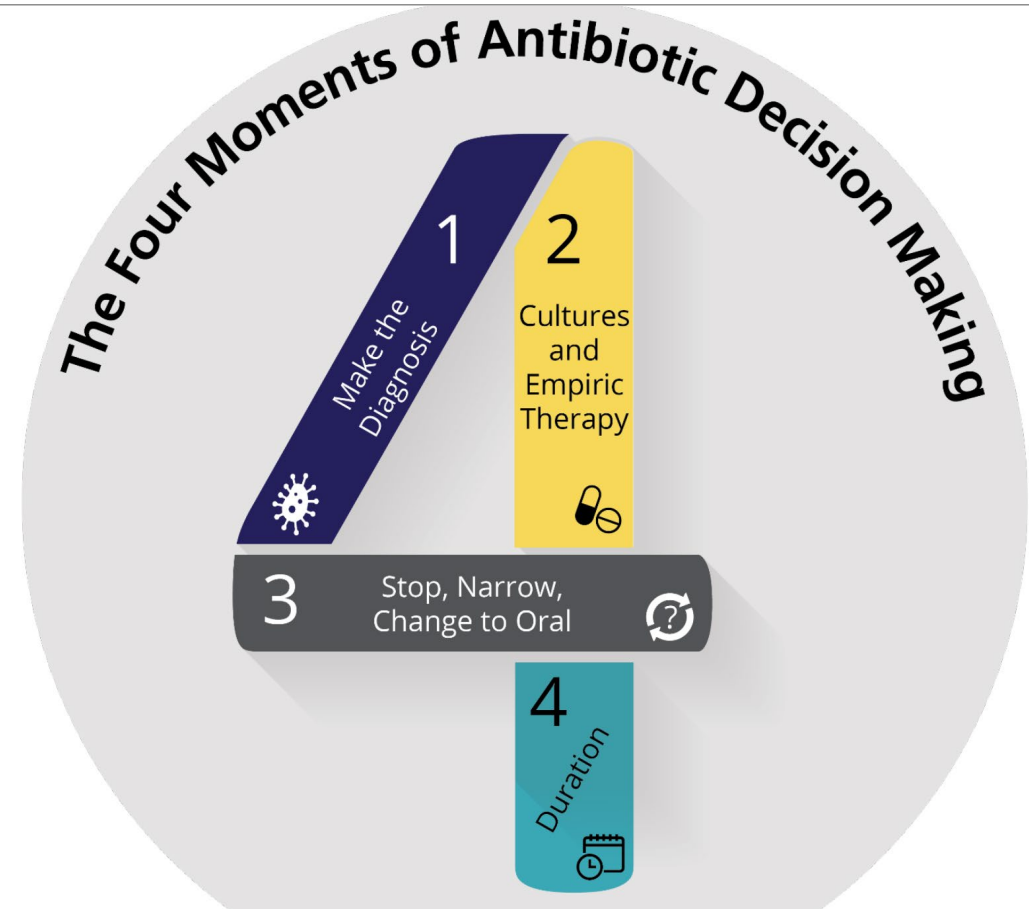
ASP Process Summary

Item	HCW responsible
1. Create a spreadsheet to collect data on antimicrobial use (unless tracker already in use).	Facility to designate HCW to complete
2. Assess each new resident on antimicrobials for appropriate initiation of therapy, considering resident's medical history with signs/symptoms of infection considering other possible causes.	HCW with ASP pharmacist support
3. Review antimicrobial courses after 48-72 hours with re-assessment of symptoms of infection, culture review and need for DC or change in therapy. Discuss with the prescriber.	HCW with ASP pharmacist support
4. Obtain days of therapy on fluoroquinolones and selected antimicrobials for the past year; carve out a section specific to the treatment of urinary tract infections.	ASP pharmacist
5. Obtain antibiogram (what antimicrobials microorganisms are susceptible to) for the past 1-3 years for evaluation of resistance and trends	ASP pharmacist, facility designated laboratory
6. Obtain the number (rate) of orders for urine culture, urinary tract infections and <i>C. difficile</i> infections to track and trend.	Laboratory, infection preventionist
7. Identify problem prescribers. Collect data of antibiotic use for UTI and compare to antibiogram data for appropriateness. Present data to prescribers.	Infection preventionist, ASP Pharmacist or medical director

4. Tracking/Reporting

a) Tracking of Antimicrobial agents:

- Keep an electronic log of antibiotic courses to include:
 - Symptoms – do they meet criteria for infection?
 - Culture possible site of infection
 - Antibiotic and #days of therapy
 - Day 3 follow-up section, to include:
 - Resident status, resolution of symptoms?
 - Culture results
 - Interventions?
 - Follow-up of cultures
 - DC antibiotic?
 - Change **antibiotic** or **route** or **duration** of therapy?
- We have created a spreadsheet you can use if no current process.



<https://www.ahrq.gov/nhguide/index.html>

4. b) Reporting to Quality Assurance (QA) Committee:

- A baseline must be established for future comparisons in interval reviews for trending of:
 - Antibiotic Days of therapy
 - CDI, UTI and catheter rates
 - Antibiotic resistance trends
 - ASP Interventions and acceptance
- This helps to see progress, along with identifying areas that need focus for improvements

Take home Points

1. The function of an **Antimicrobial Stewardship program (ASP)** is to ensure appropriate use of antibiotics
2. Most antibiotics in SNFs are unnecessary!
3. **Decreasing antibiotic use** allows for:
 - Reducing the emergence of resistant bacteria (Resistance is a real threat, some infections have no available treatment)
 - Reducing the risk of antibiotic adverse events (*C.difficile* infections, anaphylaxis, desquamating rash)
4. The **major culprit is treating presumed UTI**- must distinguish between asymptomatic bacteriuria and actual UTI
5. Initial data collection should be **targeted to the urinary tract**, with a 72-hour **re-assessment** (culture & symptom review, with change or dc of antibiotic if indicated)
6. **Communication with the physician/PA/NP** is critical and a VERY important role for IP and nursing staff who call prescribers.
7. To ensure **transfer residents on antibiotics** are assessed: identify reason for treatment, duration of antibiotic treatment (need start date).
8. **ASP Tools** available: tracking spreadsheet, micro analysis, UTI assessment form, comprehensive assessment form, posters on **asymptomatic bacteriuria** and how to treat **delirium**.

Summary of CDC Core Elements for Antimicrobial Stewardship in SNFs



Leadership commitment: Demonstrate support and commitment to safe and appropriate antibiotic use in your facility

Accountability: Identify physician, nursing and pharmacy leads responsible for promoting and overseeing antibiotic stewardship activities in your facility

Drug expertise: Establish access to consultant pharmacists or other individuals with experience or training in antibiotic stewardship for your facility

Action: Implement at least one policy or practice to improve antibiotic use

Tracking: Monitor at least one process measure of antibiotic use and at least one outcome from antibiotic use in your facility

Reporting: Provide regular feedback on antibiotic use and resistance to prescribing clinicians, nursing staff and other relevant staff

Education: Provide resources to clinicians, nursing staff, residents and families about antibiotic resistance and opportunities for improving antibiotic use

End of ASP Presentation

Contact information for any
questions:

LA County Dept of Public Health ASP
Stewardship@ph.lacounty.gov

or

Marcia Glick, ASP Pharmacist
Mglick@ph.lacounty.gov

Questions?



Education Courses and Resources:

Making a Difference in Infectious Disease (MAD-ID): training course in infectious disease pharmacotherapy and antimicrobial stewardship practice <https://mad-id.org>

CDC's Core Elements of Antimicrobial Stewardship for Nursing homes
<https://www.dcd.gov/longtermcare/prevention/antibiotic-stewardship.html>

California Department of Public Health SNF ASP Implementation Toolkit
https://www.cdph.ca.gov/Programs/CHCO/HAI/Pages/SNF ASP_toolkit.aspx

- Guidelines for ASP Implementation in SNF
- Webinars for Antimicrobial Stewardship Actions and Intervention in the Nursing Home setting
- Examples of antibiograms, interventions, antibiotic initiation guidelines, Empiric treatment guidelines, antibiotic tracking