




Antibiotic Stewardship In Post Acute and Long-Term Care-2017

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What is Antibiotic Stewardship

- *“Coordinated program that promotes the appropriate use of antimicrobials, improves patient outcomes, reduces microbial resistance, and decreases the spread of infections caused by multidrug resistant organisms” APIC*
- *“Refers to a set of coordinated strategies to improve the use of antimicrobial medications with the goal of enhancing patient health outcomes, reducing resistance to antibiotics, and decreasing unnecessary costs” SHEA*
- *“Refers to a set of commitments and actions designed to optimize the treatment of infections while reducing the adverse events associated with antibiotic use.” CDC*



Antibiotic Use in Nursing Homes and Residential Care Facilities

- Incidence- (1991-2008)
 - 4.0-7.3 courses/1000rcds
- Prevalence
 - 47%-79% over 1 year

Van Bull LW, et al 2012 568.ei JAMDA

Benoit SR et al 2008;56:2039J Am Geriatr Society



Antibiotic Use in Long-Term Care

- 79% of residents exposed to ≥ 1 course in 12 months¹
- 50% of antibiotics are administered for unknown indications²
- Majority are prescribed for urinary tract and respiratory infections³

1. Loeb M, et al. *Am J Epidemiol.* 2003;157:40-47.
2. Katz PR, et al. *Arch Intern Med.* 1990;150:1465-1468.
3. Loeb M, et al. *J Gen Intern Med.* 2001;16:376-383.



Antibiotic Use in PA/LTC

- Up to 75% of antibiotics utilized in LTCFs may be inappropriate
- Approximately 600,000 infections caused by resistant organisms and *C. difficile* could be prevented with the immediate and national implementation of antibiotic stewardship and infection control interventions.

Nicolle LE et al Antimicrobial use in long-term-care facilities. SHEA Long-Term-Care Committee. Infect Control Hosp Epidemiol 2000;21:537-545. Slayton RB et al MMWR Morb Mortal Wkly Rep 2015;64:826-831



Antibiotic Use by Site of Infection

- Urinary Tract Infections (UTI)
 - 35%-65%
- Respiratory Tract Infections (RTI)
 - 15%-35%
- Skin and Soft Tissue Infections (SSTI)
 - 10%-20%

Benoit SR et al 2008; 56:2039 J Am Geriatr Soc; Loeb M et al 2001; 16:376 J Gen Intern Med; Mylotte JM et al 1996; 243:174 Am J Infect Control; Mylotte JM et al 1999; 27:10 Am J Infect Control; Warren JW et al 1991; 39:963 J Am Geriatr Soc



Inappropriate Antibiotic Use in PA/LTC

- Treatment of microbial colonization
- Off site prescribing of antibiotics
- Inconsistent on site practitioner availability
- Incomplete clinical assessments
- Failure to recognize true clinical signs and symptoms of infection in elderly
- Practitioners often prescribe broad spectrum agents



Barriers to Appropriate Use of Antibiotics

Resident and Facility Issues

- Accurate clinical diagnosis often difficult
 - Multiple co-morbidities
 - Cognitive impairment
 - Atypical presentation
- Diagnostic resources are limited
- Specimen collection is limited
- Empiric use of antibiotics is common



Risks of Inappropriate Antibiotic Use

- Adverse effects
 - Altered renal and liver function
 - Multidrug interactions
- Antibiotic resistant organisms
 - Colonization
 - Infection
- C. difficile infection
- High health care pharmacy costs
- Increases hospital readmissions
 - Infections with MDROs



Prevalence of Antibiotic Resistant Organisms in Nursing Facilities

- 43% patients have at least one MDRO¹
- 11%-59% MRSA prevalence²
- 39% patients acquire MDRO during a 1 year stay³
- ~ 113,000 nursing home onset C. difficile cases 2012⁴
 - 28% hospitalized within 7 days of + specimens

¹Trick WE 2001; 49:270 J Am Geriatr Soc

²Van Bull LW, et al 2012 568.ei JAMDA

³O'Fallon E et al 2010;31:1148 Infect Control Hosp Epidemiol

⁴Hunter et al Open Forum Inf Dis 2016



Infections with MDROs

- Increases poor outcomes
 - Morbidity and mortality
- Increases hospital readmissions
- Increases costs
 - Hospital readmission
 - Infection control enforcement
 - Antibiotic costs
- Reduced quality of life

Reducing Antibiotic Resistance in PA/LTC

- Infection Control Program
 - Prevents cross transmission of MDROs
 - Reduces incidence of infections
 - Reduces antibiotic use
 - Dedicated Infection Control leader
 - Education
 - Compliance
- Antibiotic Stewardship

Smith PW, et al SHEA/APIC Guideline 2008; 36:504 A J Infect Control
AMDA Common Infections in the LTC Setting Clinical Practice
Guideline 2004/2011. Van Bull LW, et al 2012 568.ei JAMDA



Barriers to Antibiotic Stewardship

- Physician preferences
 - Variation in physician expertise
- Variation in infection prevention expertise
 - Variation in surveillance activity
- Variation in monitoring antibiotic use
 - Clinical guidelines
 - Education
 - Physician
 - Staff

Effectiveness of Antibiotic Stewardship Programs

- No standardization
 - Program components
 - Implementation strategies
 - Tracking methods or results
- Results vary
 - UTI>Pneumonia>SSTI
- Best results
 - Asymptomatic bacteruria
 - Symptomatic UTI

Antibiotic Stewardship Program

- No standard benchmarks exist
- Establish Facility benchmark if possible
- Guidelines for prescribing
 - Use evidence based guidelines
 - Commit guidelines to writing
 - Educate nursing staff and prescribers
- Establish reasonable expectations and goals
 - Seek improvement in performance
- Involve and empower the ICP
- Consider focusing on UTI prescribing patterns

Interventions for Antibiotic Use in PA/LTC

- UTI
 - Efforts to improve antimicrobial use for presumed UTI may be successful
- LRTI/pneumonia
 - Data on optimizing antibiotic use less convincing
- SSTI
 - Data also not convincing



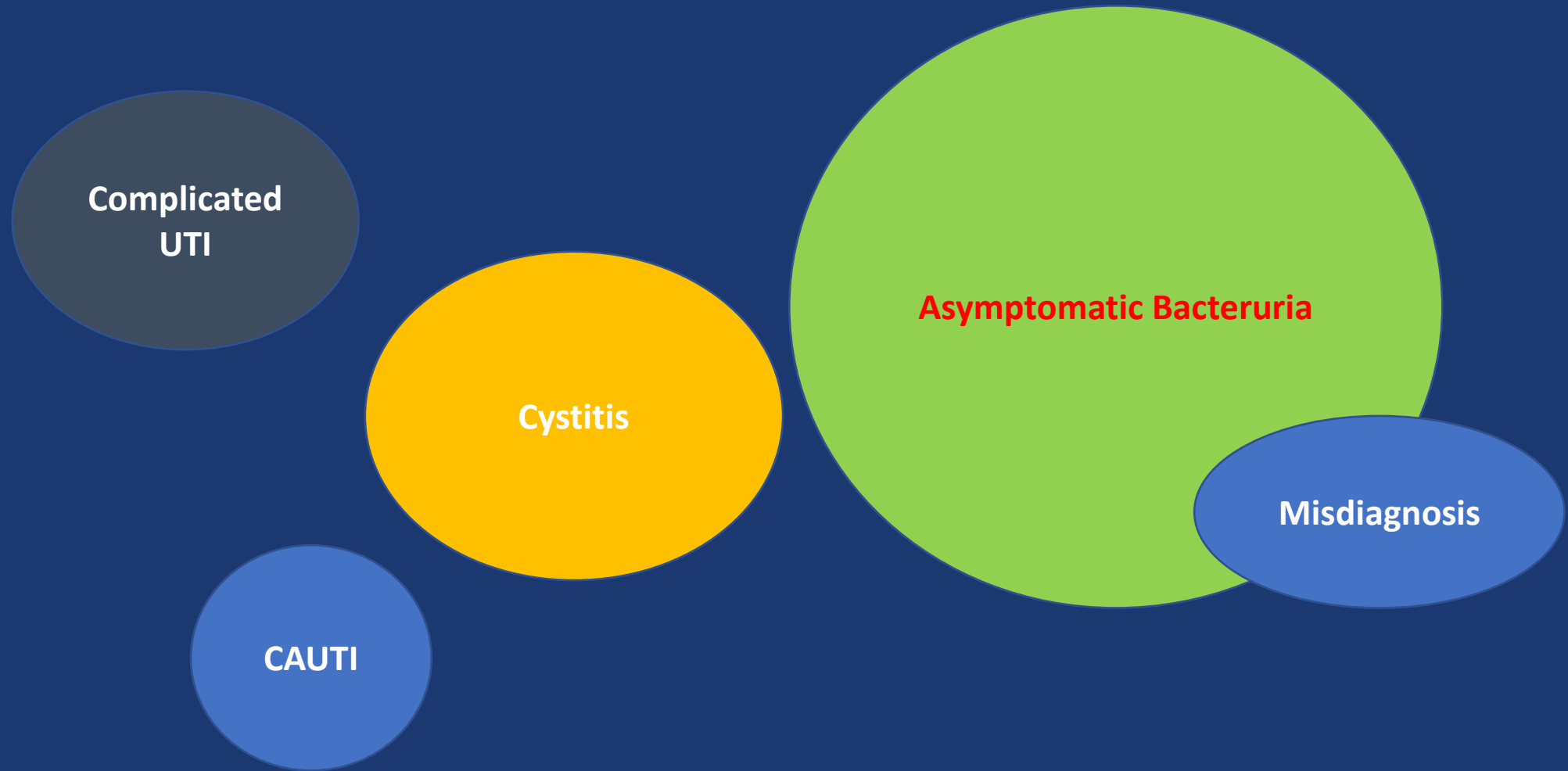
Tracking

- Process
 - Incidence
 - # abx courses started/1000rcds
 - Antibiotic utilization Ratio
 - Total abx days/1000rcds
 - Duration of antibiotic therapy
 - Total abx days/antibiotic courses
 - Cost per Antibiotic Day
 - Total abx cost/total abx days
 - Cost per Resident Care Day
 - Total abx cost/total rcd

Antibiotic Stewardship Program

- Start Slow
- Start Somewhere
- Focus Plan and Process

The Many Faces of UTI



Asymptomatic Bacteriuria

- ***Asymptomatic bacteriuria*** -isolation of a specified quantitative count ($\geq 10^5$ cfu/ml) of bacteria in an appropriately collected urine from a person without symptoms or signs referable to infection.
 - Hemodialysis – 28%
 - Elderly females – 25%-50%
 - Elderly males – 15%-40%
 - Short term IBCs – acquire bacteriuria 2%-7%/day of catheter use

Asymptomatic Bacteriuria Treatment Outcomes

- Nursing home patients
 - No benefits of screening for or treating asymptomatic bacteriuria^{1,2}
 - Does not eradicate bacteriuria
 - Does not improve mortality
 - No ↓ in symptomatic infection or ↑ survival
 - No difference in genitourinary symptoms with treatment
 - ↑adverse antimicrobial reactions
 - ↑reinfection with increasingly resistant organisms

UTI Antibiotic Use Intervention

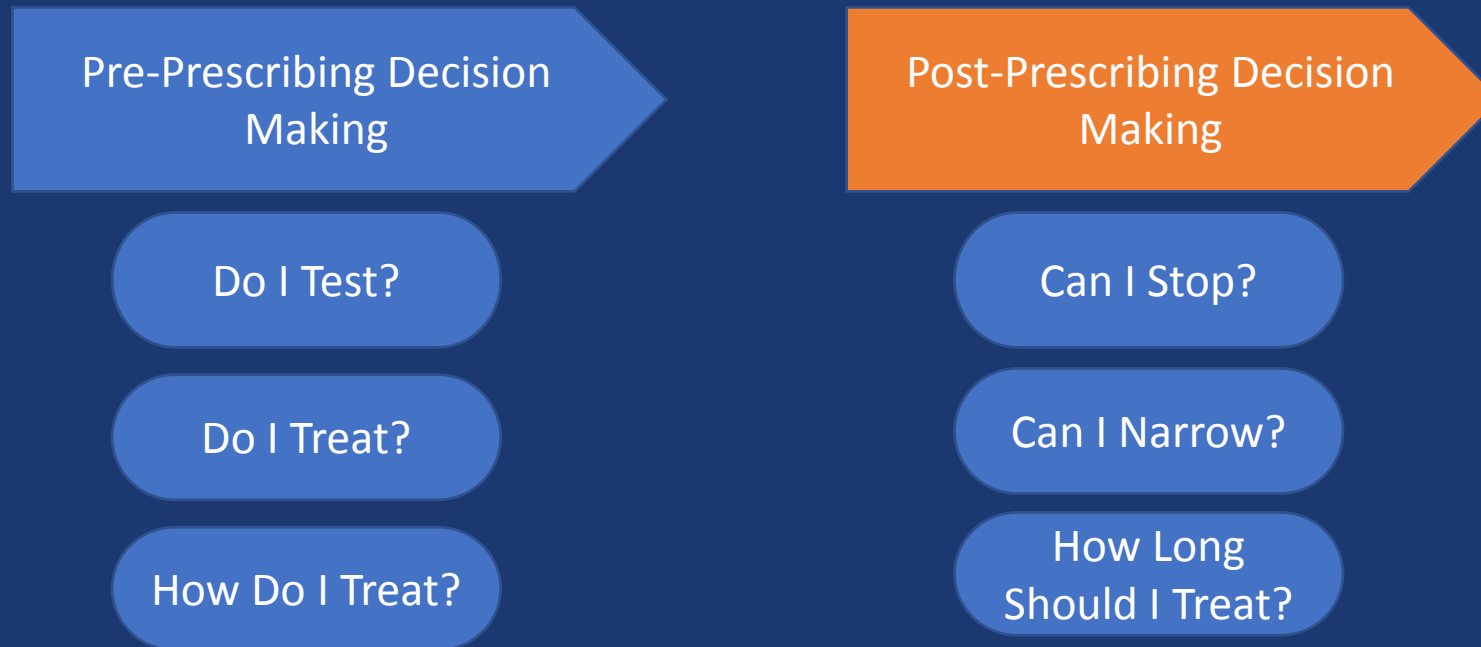
- Multifaceted approach
 - Written guidelines
 - Education
 - Tracking
 - Feedback

Facility Approach to Antibiotic Stewardship 2017

- No limit on choice of antimicrobial
- Promote understanding of the purpose of AS
- Keep the process “lazar focused”-start small
- Discuss prior benchmark data on antibiotic use
- Educate nursing staff and prescribers on approach to “when to culture” and “when to treat”
- Educate nursing staff and prescribers separately

Antibiotic Prescribing is a Process

Multiple Decisions



Antibiotic Stewardship Process

- BEFORE CALLING PHYSICIAN/NP OR TAKING A V.O. FOR URINE CULTURE..... PLEASE.... USE THE APPROPRIATE AHRQ SBAR i.e. UTI, LRTI or SSTI TO BE SURE THE RESIDENT HAS APPROPRIATE SIGNS AND SYMPTOMS PRIOR TO CULTURING OR INITIATING ANTIBIOTICS
- IF CRITERIA ARE NOT METDO NOT DO A CULTURE. NOTIFY THE PHYSICIAN/NP AND INFORM HIM/HER THAT CRITERIA HAVE NOT BEEN MET FOR CULTURE.
- IF ANTIBIOTICS ARE INITIATED, PLEASE BE SURE THE PHYSICIAN IS AWARE OF THE FACILITY ANTIBIOGRAM.
- IF A COVERING PHYSICIAN OR NP INITIATED THE ORDER FOR ANTIBIOTICS, NOTIFY THE PRIMARY THE NEXT DAY.
- ROUTINE FOLLOW-UP WITH THE PRIMARY SHOULD BE DONE 48-72 HOURS AFTER INITIATION OF ANTIBIOTICS. PLEASE HAVE THE FOLLOWING INFORMATION AVAILABLE BEFORE THIS CALL:
 - LAB RESULTS
 - CULTURE RESULTS
 - BLOOD WORK IF ORDERED
 - CLINICAL STATUS OF RESIDENT
 - CURRENT STATUS
 - VITAL SIGNS
 - CURRENT CLINICAL STATUS
 - RESPONSE TO TREATMENT
 - HOW LONG DID IT TAKE FOR SIGNS & SYMPTOMS TO RESOLVE OR IMPROVE?
 - SHOULD ANTIBIOTIC BE CHANGED TO A NARROWER SPECTRUM BASED ON CULTURE RESULTS?
 - CAN ANTIBIOTIC DURATION BE SHORTENED IF PATIENT RESPONDED RAPIDLY TO TREATMENT?
- DO NOT ASK OR ACCEPT ORDERS FOR TEST OF CURE CULTURES!!!! (FOLLOW-UP CULTURE TO BE SURE OF CURE) UNLESS SIGNS AND SYMPTOMS PERSIST.

2012 McGeer Criteria-UTI-No IBC

- Criteria 1 & 2 must be met
 - 1-At least one of the following:
 - Acute dysuria or acute pain, swelling or acute tenderness of the testes, epididymis or prostate
 - Acute CVA pain or tenderness
 - Suprapubic pain
 - Gross hematuria
 - New or marked increase in incontinence
 - New or marked increase in urgency
 - New or marked increase in frequency
 - Fever or leukocytosis – temp > 100°F ; repeated temps >99°F or single temp > 2° F over baseline
 - If no then at least ≥ 2 of the above
 - 2- One of the following:
 - At least 10^5 cfu/ml of no more than 2 species of microorganisms in voided sample
 - At least 10^2 cfu/ml of any number of microorganisms in in-and-out catheter sample

2012 McGeer Criteria-UTI-IBC

- Criteria 1 & 2 must be present
 - 1-At least one of the following
 - Fever, rigors or new onset hypotension with no alternate site of infection
 - Either acute change in mental status or functional decline, with no alternate site of infection
 - New onset suprapubic pain or CVA pain or tenderness
 - Purulent discharge from around the catheter or acute pain, swelling, or tenderness of the testes, epididymis or prostate AND
 - 2-Urinary catheter specimen culture with at least 10^5 cfu/ml of any organism

UTI-SBAR

HAMILTON CONTINUING CARE Suspected UTI **SBAR**

Complete this form before contacting the resident's physician.

Date/Time _____

Resident Name _____ Date of Birth _____

Physician/NP/PA _____

Nurse _____

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®)

(Handwritten initials)

UTI-SBAR

A Assessment Input (check all boxes that apply)

Resident WITH indwelling catheter

Enter a person if one of the criteria are met.

- 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

Enter a person if one of the criteria 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 _____

* 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.

LRI-SBAR

A Assessment Input (check all boxes that apply)

Criteria are met if one or more of the four situations are met.

Resident with a fever of 102°F (38.9°C) or higher and one of the following

No Yes

- Respiratory rate of >25 breaths per minute
- New or worsened cough
- New or increased sputum production
- O2 saturation <94% on room air or a reduction in O2 saturation of >3% from baseline

Resident with a fever of 100°F (37.9°C) and less than 102°F (38.9°C)

No Yes

- Cough and at least one of the following
 - Pulse >100
 - Delirium (sudden onset of confusion, disorientation, dramatic change in mental status)
 - Rigors (shaking chills)
- Respiratory rate >25 breaths per minute

Afebrile resident with COPD and age >65

No Yes

- New or increased cough with purulent sputum production

Afebrile resident without COPD and age >65

No Yes

- New or increased cough with purulent sputum production and at least one of the following
 - Respiratory rate >25
 - Delirium (sudden onset of confusion, disorientation, dramatic change in mental status)

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

- Nursing home protocol criteria are met. The resident may have a lower respiratory tract infection and need a prescription for an antibiotic agent.†
- 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 _____

Chest X-Ray

For cough, consider using a cough suppressant Dose _____ Route _____ Duration _____

For cough, consider using an inhaler/nebulizer Dose _____ Duration _____

Acetaminophen _____ mg. Route _____ Duration _____

Raise upper body (use multiple pillows) to sleep/rest

Encourage _____ ounces of fluid by mouth or G-Tube for _____ hours

Record fluid intake

Encourage salt water gargles

Assess vital signs, including temp, every _____ hours for _____ hours

Notify Physician/NP/PA if symptoms worsen or if unresolved in _____ hours

Initiate intravenous fluid hydration and/or initiate hypodermoclysis.

Initiate the following antibiotic(s)

Antibiotic 1 _____ Dose _____ Route _____ Duration _____

Antibiotic 2 _____ Dose _____ Route _____ Duration _____

No Yes Pharmacist to adjust for renal function

Other, specify: _____

† This is according to our understanding of best practices and our facility protocols.

†† This is according to our understanding of best practices and our facility protocols. The information is insufficient to indicate an active lower respiratory tract infection.

SSTI-SBAR

A Assessment Input (check all boxes that apply)

Minimum Criteria for Initiating an Antibiotic

~~Use criteria and minimum temperature and pulse for one situation below. Criteria are not to be used for both.~~

No Yes

1. New or increasing pus at a wound, skin, or soft-tissue site

OR

2. At least two of the following:

- Fever of 100°F (38°C) or repeated temperatures of 99°F (37°C)*
- redness
- pain
- warmth
- swelling that is new or increasing

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

Nursing home protocol criteria are met. The resident may have a skin and soft tissue infection and need a prescription for an antibiotic agent.†

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 _____

Assess vital signs, including temp, every _____ hours for _____ hours

Notify Physician/NP/PA if symptoms worsen or if unresolved in _____ hours

For discomfort or prior to cleaning/dressing changes, consider using acetaminophen or other pain reliever as needed

Initiate the following antibiotic

Antibiotic 1 _____ Dose _____ Route _____ Duration _____

Antibiotic 2 _____ Dose _____ Route _____ Duration _____

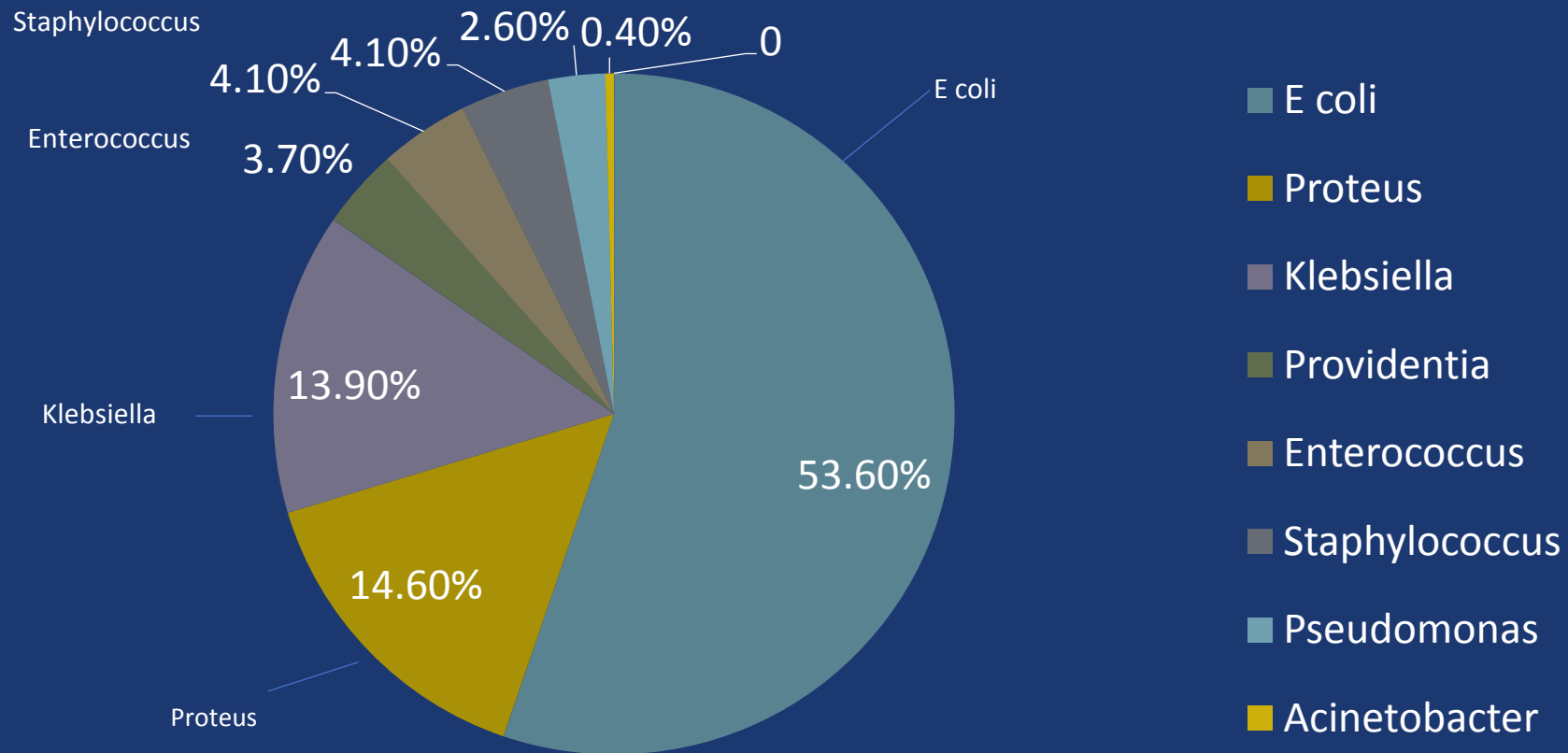
No Yes Pharmacist to adjust for renal function

Other _____

* 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.
†† This is according to our understanding of best practices and our facility protocols. The information is insufficient to indicate an active skin or soft tissue infection.

2746-1/13

Isolates from LTC Residents with UTI



Urine Antibigrams 2016

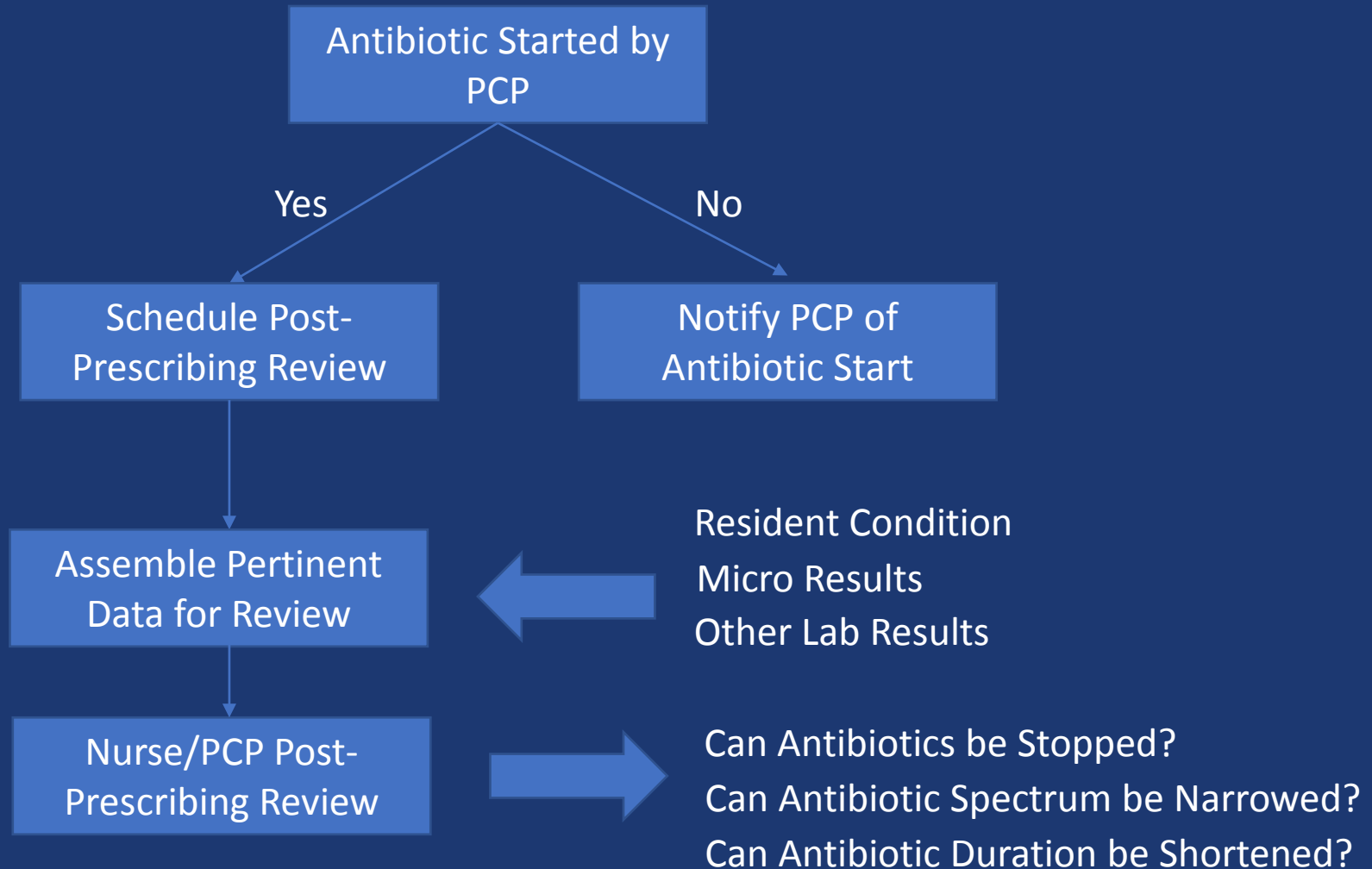
Gram Negative Panel

ACULABS INC 2 KENNEDY BLVD EAST BRUNSWICK, NJ 088161248
 ANTIMICROBIC SUSCEPTIBILITY REPORT

██████████ % SUSCEPTIBLE - 01/01/16-12/31/16 URINE LEVEL TYPE: GRAM NEG. PANEL

| Organism | (Total Isolates) | A/S | AN | A/CA | AZTM | CEFT | CE | CEFO | CEF | CIP | CPE | CEFU | DOR | ETP | NITR | GENT | IMI | |
|--------------------------------|------------------|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| CITROBACTER FREUNDII | <1 | > | 0% | 100% | 0% | 100% | 100% | 100% | 0% | 100% | 100% | 0% | 100% | 100% | 100% | 100% | 100% | |
| | 0 | | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | |
| E. COLI | <40 | > | 52% | 100% | 85% | 100% | 100% | 100% | 87% | 62% | 100% | 95% | 100% | 100% | 100% | 85% | 100% | |
| | 21 | | 40 | 34 | 40 | 40 | 40 | 40 | 35 | 25 | 40 | 38 | 40 | 40 | 40 | 34 | 40 | |
| ENTEROBACTER CLOACAE | <2 | > | 0% | 100% | 0% | 100% | 100% | 100% | 0% | 100% | 100% | 0% | 100% | 100% | 0% | 100% | 100% | |
| | 0 | | 2 | 0 | 2 | 2 | 2 | 2 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 2 | 2 | |
| KLEBSIELLA OXYTOCA | <1 | > | 0% | 100% | 0% | 0% | 0% | 100% | 100% | 100% | 100% | 0% | 100% | 100% | 100% | 100% | 100% | |
| | 0 | | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | |
| KLEBSIELLA PNEUMONIAE | <8 | > | 75% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 12% | 100% | 100% | |
| | 6 | | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 1 | 8 | 8 | |
| MORGANELLA MORGANII | <2 | > | 0% | 100% | 0% | 100% | 100% | 100% | 100% | 50% | 100% | 0% | 100% | 100% | 0% | 50% | 0% | |
| | 0 | | 2 | 0 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 0 | 2 | 2 | 0 | 1 | 0 | |
| PROTEUS MIRABILIS | <20 | > | 90% | 100% | 90% | 100% | 100% | 100% | 100% | 45% | 100% | 100% | 100% | 100% | 0% | 90% | 0% | |
| | 18 | | 20 | 18 | 20 | 20 | 20 | 20 | 20 | 9 | 20 | 20 | 20 | 20 | 0 | 18 | 0 | |
| PROTEUS VULGARIS | <1 | > | 0% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 0% | 100% | 100% | 0% | 100% | 100% | |
| | 0 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | |
| PROVIDENCIA STUARTII | <1 | > | 0% | 100% | 0% | 100% | 100% | 100% | 100% | 0% | 100% | 0% | 100% | 100% | 0% | 100% | 100% | |
| | 0 | | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | |
| PSEUDOMONAS AERUGINOSA | <6 | > | 0% | 83% | 0% | 83% | 0% | 100% | 0% | 50% | 83% | 0% | 100% | 0% | 0% | 66% | 100% | |
| | 0 | | 5 | 0 | 5 | 0 | 6 | 0 | 0 | 3 | 5 | 0 | 6 | 0 | 0 | 4 | 6 | |
| KLEBSIELLA PNEUMONIAE ESBL-POS | <3 | > | 0% | 100% | 33% | 0% | 0% | 0% | 0% | 100% | 33% | 0% | 0% | 100% | 100% | 0% | 33% | 100% |
| | 0 | | 3 | 1 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 3 | 3 | 0 | 1 | 3 | |
| E. COLI ESBL-POS. | <9 | > | 11% | 100% | 66% | 0% | 0% | 0% | 100% | 11% | 0% | 0% | 100% | 100% | 100% | 66% | 100% | |
| | 1 | | 9 | 6 | 0 | 0 | 0 | 0 | 9 | 1 | 0 | 0 | 9 | 9 | 9 | 6 | 9 | |
| ENTEROBACTER GERGOVIAE | <1 | > | 0% | 100% | 0% | 100% | 100% | 100% | 0% | 100% | 100% | 0% | 100% | 100% | 100% | 100% | 100% | |
| | 0 | | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | |

Post-Prescribing Process



Duration of Antibiotic Therapy

- Traditional treatment durations
 - Poor evidence based studies
- Shorter duration may be effective and reduce certain risks associated with prolonged use
 - C. difficile
 - MDROs
 - ADRs

Duration of Antibiotic Therapy

- UTI- uncomplicated
 - 3-6 day treatment may be as effective as 10 day therapy¹
- CAP
 - ≤ 7 days treatment may be as effective as 10-14 day therapy²
- SSTI-cellulitis
 - 5 day treatment may be as effective as 10 day therapy³

¹ Lutters Cochrane Database Syst Rev 2008 Jul 16;(3) CD001535

² Dimopoulos Drugs 2008;68(13):1841 ³ MAJ Hepburn 2004

Arch Intern Med 164:1669

Metrics

- # Antibiotic courses of therapy
 - # new antibiotic prescriptions after admission
 - # new prescriptions that met criteria for infection
 - % that met criteria
- Total antibiotic days of treatment
 - Average duration
 - Urine cultures ordered
- Residents with Facility Acquired Infections (Nosocomial)
 - UTI-LRI-SST
- Residents with MDROs- (CA/FA)
 - MRSA-ESBL-VRE-CRE-C. difficile (CA & FA)

Facility Characteristics

| FACILITY | HCC | AN&R | WV |
|--|----------|----------|----------|
| Category | NFP | FP | NFP |
| Size | 180 | 188 | 60 |
| Subacute beds | 35 | 61 | 0 |
| # Prescribers | >10 | 5-10 | <5 |
| Nursing Administrative Staff Education | May-2017 | May-2017 | May-2017 |
| Nursing Staff Education | May-2017 | May-2017 | May-2017 |
| Physician Education | May-2017 | May-2017 | May-2017 |

HCC-Results

| Antibiotic Prescriptions | HCC-2016 | HCC-2017 Q1 | HCC-2017 April | HCC-2017 May | HCC-2017 June | HCC-2017 July | HCC-2017 August | HCC-2017 September |
|-------------------------------------|----------|-------------|----------------|--------------|---------------|---------------|-----------------|--------------------|
| Total antibiotic courses of therapy | 318 | 78 | 10 | 10 | 24 | 23 | 13 | 17 |
| New antibiotic prescriptions | 237 | 53 | 6 | 6 | 17 | 15 | 9 | 9 |
| Total days of treatment (NP) | 1663 | 369 | 52 | 37 | 125 | 110 | 70 | 72 |
| Average duration | 7.0 | 7.0 | 8.7 | 6.1 | 7.3 | 7.3 | 7.8 | 8.0 |
| % met criteria | 41.4% | 57.7% | 66.7% | 66.6% | 70.1 | 77.8% | 77.7% | 33.3% |
| # urine cultures | | 7.0 | 10.0 | 4.0 | 4.0 | 0.0 | 0.0 | 3.0 |
| C. Difficile (FA) | | 1.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |

AN&R- Results

| Antibiotic Prescriptions | ANR 2016 | ANR-2017 Q1 | ANR-2017 April | ANR-2017 May | ANR-2017 June | ANR-2017 July | ANR-2017 August | ANR-2017 September |
|-------------------------------------|----------|-------------|----------------|--------------|---------------|---------------|-----------------|--------------------|
| Total antibiotic courses of therapy | 367 | 84 | 28 | 21 | 22 | 25 | 29 | 26 |
| New antibiotic prescriptions | 242 | 64 | 22 | 14 | 12 | 14 | 22 | 13 |
| Total days of treatment (NP) | 1678 | 450 | 135 | 92 | 58 | 59 | 137 | 69 |
| Average duration | 7 | 7.0 | 6.1 | 6.6 | 4.8 | 4.2 | 6.2 | 5.3 |
| % met criteria | 23.3% | 86.5% | 72.7% | 78.6% | 83.3% | 78.6% | 90.9% | 100 |
| # urine cultures | | 18 | 10 | 2.0 | 2.0 | 6.0 | 4.0 | 4.0 |
| C. Difficile (FA) | 3 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |

WV-Results

| Antibiotic Prescriptions | WV 2016 | WV-2017 Q1 | WV-2017 April | WV-2017 May | WV-2017 June | WV-2017 July | WV-2017 August | WV-2017 September |
|-------------------------------------|---------|------------|---------------|-------------|--------------|--------------|----------------|-------------------|
| Total antibiotic courses of therapy | 79 | 22 | 7 | 3 | 3 | 5 | 4 | 2 |
| New antibiotic prescriptions | 59 | 18 | 6 | 3 | 1 | 4 | 3 | 1 |
| Total days of treatment (NP) | 414 | 124 | 37 | 15 | 3 | 22 | 19 | 5 |
| Average duration | 7 | 6.8 | 6.2 | 5.0 | 3.0 | 5.5 | 6.3 | 5.0 |
| % met criteria | 64.4% | 75% | 66.6% | 100.0% | 0.0% | 75% | 33% | 100% |
| # urine cultures | | | | | | | | |
| C. Difficile (FA) | | | | | 0.0 | 0.0 | 1 | 0.0 |

Antibiotic Stewardship-Reporting

- Report results to QI team
- Report results to Prescribers
- Always seek to improve based on determined expectations
- If no improvement in performance
 - Understand why
 - Alternative approaches
- Get excited about positive results
- Share these results with all that will listen
- Use positive results to “sell” your Facility to insurers

Resources for Antibiotic Stewardship

- www.ahrq.gov
 - Antibiotic Stewardship Toolkit
- www.cdc.gov/longtermcare/index.html
 - Core Elements of Antibiotic Stewardship for Nursing Homes

THANK YOU!

QUESTIONS?