IPRO QIN-QIO

Healthcentric Advisors

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QIN–QIO
Quality Innovation Network - Quality Improvement Organizations
CENTERS FOR MEDICARE & MEDICAID SERVICES
iQUALITY IMPROVEMENT & INNOVATION GROUP

QUALITY IMPROVEMENT ACTION PLAN FOR

(Complete either electronically or via a print copy.)

Team Lead(s)

Medical Director, Pharmacist, Providers (NP/PA), DON, Infection preventionist, nursing home administrator, floor staff

Process or problem identified for improvement:

Increase education on antibiotic stewardship and treatment of Urinary tract Infections for staff residents and families. Increase appropriate treatment of UTIs and control the spread of resistant organisms. Increase the documentation of valid clinical indications for antimicrobial use for UTIs.

Background leading up to need for this action plan (include findings from root cause analysis): CDC's Antibiotic Resistance Threats in the United States, 2019 states more than 2.8 million antibiotic-resistant infections occur in the U.S. each year, and more than 35,000 people die as a result. The estimated national cost to treat infections caused by six multidrug-resistant germs identified in the report and frequently found in health care facilities can be substantial—more than $4.6 billion annually. Many patients with UTIs are placed on empiric antibiotic therapy, further complicating the ability to grow the pathogen(s) in culture and contribute to the global epidemic of antibiotic resistance. Consider separating your short-stay residents from your long-stay residents to see where more emphasis needs to be placed

SMART Goals (Specific, Measurable, Attainable, Realistic, Time-Bound)	**Baseline Measurements** (For each SMART Goal, identify a corresponding baseline measurement)

1. 100% of clinical facility/contract staff, family and residents will receive education on antibiotic resistance and opportunities for improving antibiotic use by XX/XX/XXXX. Education will be conducted at least annually. 2. Develop or acquire an antibiogram within one month and update it every 6 months. 3. Create or Update facility specific algorithm for the treatment and management of UTI that considers the facility specific antibiogram and SBAR, 100% of residents with suspected will be evaluated using this algorithm and update staff by xx/xxxx and update annually. 4. Within 48hrs of receiving the culture and susceptibly report 100% of patients will be either transitioned from empiric therapy to specific therapy or discontinue antibiotic therapy where no infection is found. Antibiotics that continue for more than 3-5 days will have specific clinical reasoning for why antibiotics should be continued. 5. The facility will generate facility specific reports on measures of antibiotic use at the facility, measures of outcomes related to antibiotic use (i.e., C. difficile rates), report of facility antibiotic susceptibility patterns (within last 18 months), antibiotic starts, days of therapy, antibiotic usage patterns by class, Personalized feedback on antibiotic prescribing practices (to clinical providers) by xx/xxxx and update these reports at least annually.	1. Learning assessments will be completed (pre and post learning evaluation, see example in appendix 3). 2. Review any prior antibiogram 3. # of people where the specific algorithm was followed/ number of people treated for UTI, Look at both short-stay and long-stay residents. 4. Number of patients placed on therapy within 48 hours of report/total number of patients on antibiotics for UTI. Ensure you are evaluating days of antibiotics for short stay residents to include any in-hospital days of antibiotics. 5. Baseline reports should cover the last 12-18 months.

Scope (boundaries for where project begins and ends)	Resources needed
Increase the number of appropriately treated UTIs and decrease the overuse of antibiotics in the treatment of UTIs, while minimizing antibiotic related adverse effects through education and appropriate management. This includes close monitoring of who and how residents are treated for UTIs, annual education of residents, family and staff.	How to Read and Interpret an Antibiogram https://www.ahrq.gov/nhguide/index.html https://www.cdc.gov/antibiotic-use/core-elements/pdfs/Factsheet-Core-Elements-Creating-Culture-Improve-Use-508.pdf https://www.cdc.gov/antibiotic-use/core-elements/pdfs/core-elements-antibiotic-stewardship-checklist-508.pdf https://www.ahrq.gov/antibiotic-use/long-term-care/index.html https://www.ahrq.gov/sites/default/files/wysiwyg/nhguide/4_TK3_T4-Letter_to_Prescribing_Clinicians.pdf https://qi-library.ipro.org/2022/09/15/monthly-infection-and-antibiotic-abxtracking-form/ https://www.cdc.gov/antibiotic-use/core-elements/pdfs/Nursing-Homes-Core-Elements-C-508.pdf Appendices
Potential barriers	**Strategies to mitigate barriers**
1. Staff and families for whom English is a second language may have difficulty with educational tools 2. Time and willingness to gather information regarding practice patterns for many clinicians 3. Lack of staff to follow up on reports and monitor antibiotic usage.	1. Provide proctors who can serve as translators and use translation services 2. Work to obtain this from EMR and seek assistance of consulting pharmacists 3. Work with nonclinical staff to ensure that they can assist follow ups with prescribers

KEY ACTION STEPS AND PDSA CYCLES						
Action	**Start Date**	**Target Completion Date**	**Process Owner**	**Monitoring Strategy**	**Findings/Lessons Learned**	**Recommendations/ Next Steps**
Educate staff on antibiotic resistance and opportunities for improving antibiotic use			NHA, DON, Pharmacist, Medical Director	Complete pre and post testing assessments. Annual education New hire education		
Educate residents and families on antibiotic resistance and opportunities for improving antibiotic use			NHA, Educators, DON	Annual education of all residents and families and education of all new residents and family, with follow up survey.		
Develop or acquire an antibiogram			DON, Medical Director, Pharmacist, All medical providers	Create an antibiogram with the assistance of your microbiology lab provider Update antibiogram every 6 months		
Create or Update facility specific algorithm for the treatment and management of UTI that considers the facility specific antibiogram and SBAR			NHA, DON, Medical Director, Pharmacist, All medical providers	Create algorithm with medical director, DON and pharmacist Annual education New hire education		

Ensure all patients are transitioned to appropriate therapy within 48 hours of receiving culture and sensitivity results			DON, Pharmacist, All medical providers	Baseline numbers on timing from results obtained to when antibiotics are changed/stopped		

KEY ACTION STEPS AND PDSA CYCLES (continued)						
Action	**Start Date**	**Target Completion Date**	**Process Owner**	**Monitoring Strategy**	**Findings/Lessons Learned**	**Recommendations/ Next Steps**
Antibiotics that continue for more than 3-5 days will have specific clinical reasoning for why antibiotics should be continued.			DON, Pharmacist, All medical providers	Numbers on antibiotic starts and days of therapy		
Quarterly reports on antibiotic use at the facility, outcomes related to antibiotic use (i.e., C. difficile rates), facility antibiotic susceptibility patterns (within last 18 months), antibiotic starts, days of therapy, antibiotic usage patterns by class			DON, Pharmacist, NHA, Infection preventionist	Utilize EMR, pharmacy and consulting pharmacist to help run these reports.		
Personalized feedback on antibiotic prescribing practices (to clinical providers)			Medical Director, Pharmacist, All medical providers	Your pharmacist can help provide this.		

For more information:
https://qi.ipro.org/

Appendix 1

Differential Diagnosis for urgency, frequency, and dysuria.

- Lower Urinary Tract Neoplasm (bladder cancer or CIS of the bladder)
- Bladder Outlet Obstruction
- Diverticulum (Bladder or Urethral)
- Skene's Gland Abscess
- Urinary Fistula (Vesicovaginal, Enterovaginal, Urethrovaginal)
- VUR or Ureteral anomalies
- Infected stones (Renal, Ureteral, Bladder)
- Foreign Body
- Voiding Dysfunction
- Infected Urachal Cyst
- Chronic Bacterial Prostatitis
- Abnormality of Renal Unit (Medullary Sponge Kidney, Infected Cysts, Atrophic Kidney)
- Recurrent/ Persistent UTI
- Urethritis
- Prostatitis
- Vaginal Infection/PID
- Candida Infection
- Urinary Tuberculosis
- Intra–abdominal Abscess
- Sepsis – source other than GU
- STI (Herpes genitalis (HSV), N. Gonorrhea, Chlamydia, Trichomonas)
- Asymptomatic Bacteriuria – DDx of Symptoms
- Lower Urinary Tract Neoplasm (bladder cancer or CIS of the bladder)
- Bladder Outlet Obstruction
- Interstitial cystitis
- Overactive bladder
- Vaginal Atrophy
- Vaginal Contact Dermatitis
- Distal Ureteral or Bladder stones
- Foreign Body (i.e., mesh)
- Voiding Dysfunction
- Pelvic Floor Muscle Dysfunction

Appendix 2

UTI definitions

Contamination – organisms are introduced during collection or processing of urine. No health care concerns

Asymptomatic bacteriuria (Colonization) – organisms are present in the urine but are causing no illness or symptoms. Depending on the circumstances, significance is variable, and the patient often does not require treatment

Infection (UTI) – the combination of a pathogen(s) within the urinary system and symptoms and/or inflammatory response to the pathogen(s) requiring treatment

Uncomplicated UTI – infection in a healthy, non-pregnant, pre-menopausal female patient with anatomically and functionally normal urinary tract

Complicated UTI – infection associated with factors increasing colonization and decreasing efficacy of therapy

Recurrent UTI – occurs after documented infection that had resolved. Defined as 2 or more infections in 6 months, or > 3 infections in 12 months

Reinfection UTI – a new event with reintroduction of bacteria into urinary tract or by different bacteria

Persistent UTI – UTI caused by same bacteria from focus of infection

Appendix 3

Pre-Test Questions:

1. **True/False**: Antibiotics are some of the most commonly prescribed medications in nursing homes.
2. **Multiple Choice:** Which of these best defines electronic health records (EHR)?
    a. An electronic device for storing and processing data, according to instructions given to it in a variable program.
    b. An electronic version of a patient's medical history, that is maintained by the provider over time, and may include all of the key administrative clinical data relevant to that persons care under a particular provider
    c. A form of energy resulting from the existence of charged particles
    d. None of the above
3. **Multiple Choice**: _____are medications that kill or inhibit the growth of bacteria and are used to treat bacterial infections.
    a. Antidepressants
    b. Antipsychotics
    c. Antibiotics
    d. Antiepileptics
4. **Multiple Choice**: What is defined as antibiotic prescription information, entered in the electronic or paper chart, for the antibiotic to be administered.
    a. Data element
    b. Pharmacy transaction
    c. Antibiotic course
    d. Antibiotic order.
5. **True/False**: Days of therapy (DOT) is the partial number of days a specific antibiotic is administered
6. **True/False**: When patients are transferred between facilities, for example from a nursing home to a hospital, poor communication between facilities about prescribed antibiotics can result in antibiotic misuse and the spread of antibiotic resistance.
7. **True/False**: In nursing homes with higher antibiotic use, even residents who do not receive antibiotics are at increased risk of indirect antibiotic-related harms due to the spread of resistant bacteria or C. difficile germs from other patients.
8. **Select all that apply**: It is recommended to have clear policies to improve prescribing practices for staff to ensure patients are not started on antibiotics unless needed. What are some ways to improve antibiotic use?
    a. Develop facility-specific standards for empiric antibiotic use, based on data from the facility
    b. Review antibiotic appropriateness and resistance patterns on a regular basis
    c. None of the above
9. **Multiple Choice:** _____is the effort to measure and improve how antibiotics are prescribed by clinicians and used by patients.
    a. Occupational safety
    b. Antibiotic Stewardship

c. Direct operation
d. Infection Prevention

10. **Multiple Choice:** _____happens when germs like bacteria and fungi develop the ability to defeat the drugs designed to kill them
    a. Bacteria
    b. Antimicrobial susceptibility
    c. Antimicrobial resistance
    d. None of the above

Answers

Pre-Test:

1. True

Antibiotics are some of the most commonly prescribed medications in nursing homes. Over the course of a year, up to 70% of nursing home residents get an antibiotic.

2. B

Electronic health records (EHR) is an electronic version of a patient's medical history, that is maintained by the provider over time, and may include all of the key administrative clinical data relevant to that persons care under a particular provider, including demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data and radiology reports.

3. C

Antibiotics are medications that kill or inhibit the growth of bacteria and are used to treat bacterial infections

4. D

Antibiotic course is defined as antibiotic prescription information, entered in the electronic or paper chart, for the antibiotic to be administered.

5. False

Days of therapy (DOT) is the total number of days a specific antibiotic is administered.

6. True

The statement is correct.

7. True

The statement is correct

8. A, B

It is recommended to have clear policies to improve prescribing practices for staff to ensure patients are not started on antibiotics unless needed. Some ways to improve antibiotic use is to:

- Develop facility-specific standards for empiric antibiotic use, based on data from the facility
- Review antibiotic appropriateness and resistance patterns on a regular basis
- Establish minimum criteria for prescribing antibiotics

9. B

Antibiotic Stewardship is the effort to measure and improve how antibiotics are prescribed by clinicians and used by patients.

10. C

Antimicrobial resistance happens when germs like bacteria and fungi develop the ability to defeat the drugs designed to kill them.

Post-Test Questions:

1. **True/False**: In nursing homes, high rates of antibiotics are prescribed to prevent urinary tract infection (UTI) and respiratory tract infection (RTI).
2. **Multiple Choice:** Antibiotic-related harms, such as _____, can be severe, difficult to treat, and lead to hospitalizations and deaths, especially among people over age 65
    a. Diarrhea from C. difficile
    b. Fatigue
    c. Back pain
    d. Headache
3. **Multiple Choice:** Roughly _____antibiotics are prescribed incorrectly.
    a. 1%-3%
    b. 40% to 75%
    c. 95%
    d. 100%
4. **Select all that apply**: What can be done to improve antibiotic use?
    a. Have clear policies to improve prescribing practices for staff to ensure patients are not started on antibiotics unless needed.
    b. Print and distribute materials to educate staff, residents and families.
    c. Share formal statements in support of improving antibiotic use with staff, residents and families.
    d. All of the above
5. **True/False**: Residents in nursing homes with higher antibiotic use have a 24% increased risk of antibiotic-related harm.
6. **Multiple Choice:** _____data elements that are required to quantify, or determine how much antibiotics are used, are listed.
    a. “Essential”
    b. “Critical”
    c. “Analytical”
    d. “Diagnostic”
7. **Select all that apply**: Essential data elements include:
    a. Resident name
    b. Prescription or administration date
    c. Antibiotic name and class
    d. Months of therapy
8. **Multiple Choice:** What is considered and important data element?
    a. Indication
    b. Duration of the antibiotic course

c. Discharge date
d. A and B

9. **Multiple Choice:** What is most common antibiotic use measure for tracking antibiotic use?
    a. Prescription or administration date
    b. Antibiotic name and class
    c. Antibiotic starts and days of therapy (DOT)
    d. Resident name
10. **Select all that apply**: What is considered a data source for tracking antibiotic use?
    a. Electronic health record (EHR) systems
    b. Long-term care (LTC) pharmacies.
    c. Manual chart review
    d. None of the above

Answers:

Post-Test:

1. True

The statement is correct.

2. A

Antibiotic-related harms, such as diarrhea from C. difficile can be severe, difficult to treat, and lead to hospitalizations and deaths, especially among people over age 65

3. B

Roughly 40% to 75% antibiotics are prescribed incorrectly. In nursing homes, high rates of antibiotics are prescribed to prevent urinary tract infection (UTI) and respiratory tract infection (RTI). Prescribing antibiotics before there is an infection often contributes to misuse. Often residents are given antibiotics just because they are colonized with (carrying) bacteria that are not making the person sick. Prescribing antibiotics for colonization contributes to antibiotic overuse.

4. D

All answer choices can be used to improve antibiotic use.

5. True

The statement is correct. Residents in nursing homes with higher antibiotic use have a 24% increased risk of antibiotic-related harm.

6. A

Antibiotic use data elements are defined. “Essential” data elements that are required to quantify, or determine how much antibiotics are used, are listed. Quantifying the volume of antibiotic use will show signals that could require further evaluation to determine the appropriateness of antibiotic use. These “essential” data elements should be available
to most nursing homes and can be requested from the EHR or LTC pharmacy vendor to prepare an antibiotic use report.

7. A, B, C

“Essential” data elements include:

- Resident name. Tracking the number and identity of residents on antibiotics. Prescription or administration date. Tracking the date, the antibiotic was

ordered or administered will allow comparing antibiotic use over time.

- Antibiotic name and class. Tracking specific antibiotics and antibiotic classes (e.g., cephalosporins, fluoroquinolones) will help evaluate prescribing practices.
- Days of therapy (DOT) or days dispensed. Tracking antibiotic use by DOT provides a measure to quantify and compare antibiotic use over time. The number of days the antibiotic was administered from the MAR in EHR data can be used to calculate DOT. Days dispensed from LTC pharmacy data can be used as a proxy for DOT when DOT is not available.
- Route. Tracking antibiotic use by administration method (e.g., oral, intravenous). Resident-days. Total resident-days for all residents in the facility,

8. D

"Important" data element include:

- Indication. Tracking antibiotic use by the reason for treatment (e.g., urinary tract infection or respiratory infection).
- Duration of the antibiotic course. Calculating the number of days of an antibiotic course from the start to the end date for a specific infection.
- Nursing home unit. Tracking antibiotic use by location within the nursing home.
- Admission date. Identifying the date of prescription in relation to the date of nursing home admission can help define which prescriptions were started in the nursing home, emergency department or acute care hospital, and determine the resident's type of stay.
- Prescriber. Tracking antibiotic use by individual providers will help generate provider-specific reports of antibiotic prescribing practices.

9. C

Antibiotic starts and days of therapy (DOT) is most common antibiotic use measure for tracking antibiotic use.

10. A, B, C

All answer choices are considered a data source for tracking antibiotic use.

References:

https://www.cdc.gov/antibiotic-use/core-elements/pdfs/Factsheet-Core-Elements-Creating-Culture-Improve-Use-508.pdf

https://www.cdc.gov/antibiotic-use/core-elements/pdfs/Nursing-Homes-Core-Elements-C-508.pdf

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