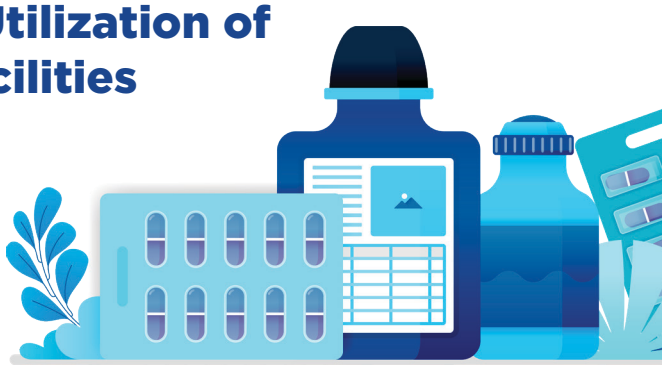
Considerations to Address High Utilization of Antibiotics in Long-Term Care Facilities

KEY	
PNA	Pneumonia
UTI	Urinary Tract Infections
SSTI	Skin and Soft-Tissue Infections
Drug Classes	Fluoroquinolones e.g., levofloxacin/ciprofloxacin Carbapenems e.g., meropenem/ertapenem, SMX/TMP i.e., sulfamethoxazole/trimethoprim



IF UTILIZATION IS ABOVE AVERAGE FOR:

GLYCOPEPTIDE (VANCOMYCIN)

FOR INTRAVENOUS (IV) USE:

RECOMMENDATION: For patients without a history of methicillin-resistant *Staphylococcus aureus* (MRSA) infection or IV antibiotic use in the last 90 days, use sparingly.

ACTIONS: Culture the site of infection if possible, otherwise consider MRSA nasal cultures or diagnostic PCR test. There is a high negative predictive value (> 95%) for wound infections, PNA and bacteremia with negative MRSA nasal swabs; meaning MRSA infection is unlikely.[1]

SSTI without purulence are caused by beta-hemolytic streptococcus (group A strep) 97% of the time, therefore beta-lactam therapy (cefazolin [IV] or cephalexin [PO]) is preferred.[2]

If purulent with abscess, incision and drainage is preferred and does not require antibiotics. If purulent without an abscess, antibiotic with MRSA coverage is recommended.

Monitor vancomycin utilization for the next quarter to assess any areas for targeted strategies or improvements.

FOR ORAL (PO) USE:

RECOMMENDATION: The only appropriate use of oral vancomycin is for confirmed or strongly strongly suspected *C. difficile* infection (CDI). Review CDI rates within your institution and within these patients. Make sure PO vancomycin is being utilized for true infections and not colonization.

Indications for stool testing:

> 3 unformed stools in the past 24 hours, abnormal from baseline

DO NOT ORDER TEST IF:

- ☐ Positive test in the prior 30 days, unless acute symptoms in the prior 24 hours
- ☐ Negative test in the prior 7 days, unless acute symptoms in the prior 24 hours
- ☐ New start or change in bowel regimen (e.g., laxatives) within the last 24-48 hours

A positive *C. difficile* PCR in the absence of toxin production can represent colonization

ACTIONS:

Evaluate vancomycin dosing:

- Initial CDI: fidaxomicin 200 mg BID x 10 days. Alternative: vancomycin 125 mg PO given 4 times a day x 10 days
- Second or subsequent recurrent CDI: fidaxomicin 200 mg BID x 10 days. Alternative: vancomycin 125 mg PO given 4 times a day x 10 days
- Consider ID or GI consultation for alternative therapy recommendations (e.g., Vowst™, Rebyota™, bezlotuxumab, see guidelines for more details)[3]

There is limited evidence supporting the concurrent use of vancomycin prophylaxis in patients with a history of CDI receiving systemic antibiotics. If vancomycin is used for this situation, the dose is 125 mg once daily while antibiotics are being administered.[3]

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IF UTILIZATION IS ABOVE AVERAGE FOR:

FLUOROQUINOLONE (FQ)

RECOMMENDATION:
FQ are typically used for the treatment of PNA and UTI. Consider reviewing diagnosis of these disease states with prescribers. For more information, consult the UTI Tool Kit.[4]

ACTIONS:
Review *C. difficile* rates within your institution and among patients who have received FQ. FQ are among the most common antibiotics (top 3) associated with *C. difficile* infections.

Review duration of FQ therapy for these patients. Many disease states including SSTI, UTI and PNA require only 3-5 days of FQ therapy to be effective. Consult the Shorter is Smarter table.[5]

Monitor FQ utilization for the next quarter to evaluate any improvements or targeted strategies to reduce use.

METRONIDAZOLE

RECOMMENDATION:
Metronidazole should not be the first line treatment for *C. difficile* infections.

When suspecting an anaerobic infection, the following beta-lactams have anaerobic activity and do not require the addition of metronidazole: piperacillin/tazobactam, ampicillin/sulbactam and carbapenems.

ACTIONS:
Monitor metronidazole utilization for the next quarter to assess any areas for targeted strategies or improvements.

AZTREONAM

RECOMMENDATION:
Aztreonam use should be limited to patients with true life threatening penicillin and cephalosporin allergies.

Many patients who have a reported allergy that is greater than 10 years old, history of GI symptoms, headache, nonspecific nonurticarial rash, family history of penicillin allergy or unknown allergy, can safely be given cephalosporin therapy, carbapenem therapy and sometimes even penicillin therapy.

NITROFURANTOIN

RECOMMENDATION:
Review diagnosis of symptomatic UTI. For more information, consult the UTI Tool Kit.[4]

Review duration of nitrofurantoin therapy, typically only 5 days is required for symptomatic UTI treatment. Consult the Shorter is Smarter table.[5]

Monitor nitrofurantoin utilization for the next quarter to assess any areas for targeted strategies or improvements.

ACTIONS:
Limit use to patients with creatinine clearance (CrCl) greater than 30 ml/min (via Cockcroft-Gault). The American Geriatrics Society, in their updated Beers Criteria, recommends against nitrofurantoin use in patients with reduced renal function. Many elderly patients greater than 85 years old will not qualify for nitrofurantoin use.[6]

Nitrofurantoin prophylaxis has shown to have limited benefit and should not be used in patients with CrCl less than 30 mL/min.

CARBAPENEM

RECOMMENDATION:
Evaluate individual cases to assess for appropriateness of carbapenem therapy versus broad spectrum cephalosporin (cefepime) or penicillin (piperacillin/tazobactam) therapy.

For treatment of expanded-spectrum beta-lactam (ESBL) UTIs, confirm symptomatic UTI and consider narrower spectrum therapy (piperacillin/tazobactam or cefepime), or oral therapy with nitrofurantoin, SMX/TMP, FQ.

ACTIONS:
Consult with an infectious disease expert on challenging cases.

Narrow spectrum based upon culture results, even if patient previously had ESBL infections.

Track indication for carbapenem utilization for the next quarter to assess any areas for targeted strategies or improvements.

REFERENCES:

1 Mergenhagen CID 2020; 71(5):1142-8. *Determining the Utility of Methicillin-Resistant Staphylococcus aureus Nares Screening in Antimicrobial Stewardship.* PubMed (nih.gov)

2 Jeng A. Medicine (Baltimore). 2010 Jul;89(4):217-226. *The role of beta-hemolytic streptococci in causing diffuse, nonculturable cellulitis: a prospective investigation.* PubMed (nih.gov)

3 IDSA *C. difficile* Guidelines. **Clinical Infectious Diseases**, Volume 66, Issue 7, 1 April 2018. *Clinical Practice Guideline by the Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA): 2021 Focused Update Guidelines on Management of Clostridioides difficile Infection in Adults*. Clinical Infectious Diseases, http://academic.oup.com

4 MDPH Infection Prevention and Control Resource Hub. *UTIs and Bacteriuria in Long-Term Care*. https://infectioncontrolma.org/antibiotic-stewardship-UTI-toolkit.php

5 MDPH Infection Prevention and Control Resource Hub. *Shorter is Smarter: Summary of Appropriate Use of Short-Course Antibiotics in Common Infections*. https://infectioncontrolma.org/docs/Shorter-is-Smarter-2024.pdf

6 2019 American Geriatrics Society Beers Criteria® Update Expert Panel. *American Geriatrics Society 2019 Updated AGS Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults.* https://agsjournals.onlinelibrary.wiley.com/doi/abs/10.1111/jgs.15767