AHCA/NCAL Clinical Scenarios

Utilizing an Antibiogram to Guide Antibiotic Selection in Long-Term Care

Scenario

Mrs. Judy Lewis is a 78-year-old resident with a history of chronic urinary retention and recurrent urinary tract infections (UTIs). Over the weekend, she begins to show signs of a possible infection: low-grade fever, change in mental status, and suprapubic tenderness. Wendy Thomas, her primary nurse, contacts the on-call provider, Dr. Green, who considers starting empiric antibiotic therapy before the culture and sensitivity results return. Dr. Green orders Ciprofloxacin for Mrs. Lewis.

When the IP comes in the next morning, she asks Wendy if she had referred to and discussed the antibiogram with Dr Green when she ordered the ciprofloxacin. Wendy did not know what an antibiogram was and was unsure where to find one. You show Wendy the printed copy that is kept at each nurse's station. You also educate her about how to use it. You discover that the most recent antibiogram indicates that *Escherichia coli*—the most common cause of UTIs in the facility—is only 42% susceptible to ciprofloxacin, but 89% susceptible to nitrofurantoin.

Questions for the Audience

1. Why is referencing the facility's antibiogram *before* prescribing antibiotics beneficial in this scenario?

a. It eliminates the need for a urine culture

b. It helps guide empiric antibiotic therapy based on local resistance patterns while culture and sensitivity are pending

c. It ensures antibiotics are prescribed for every suspected infection

d. It automatically chooses the correct dose of the antibiotic

Explanation: Antibiograms summarize local bacterial sensitivity and resistance trends often by type of cultures (e.g. urine, blood, sputum, etc) .This helps clinicians choose antibiotics that are more likely to be effective when a resident has symptoms of infection and must be treated before the culture and sensitivity results are completed. According to a recent AHCA Hot Topic, this targeted approach to prescribing antibiotics helps reduce unnecessary antibiotic use, lowers the risk of side effects, and supports compliance with antimicrobial stewardship standards.

2. What action should Wendy do now that she has seen the urine culture antibiogram?

a. Continue to administer ciprofloxacin

b. Refuse to give the antibiotic until culture results are back

c. Inform Dr. Green that ciprofloxacin has low susceptibility for *E. coli* in the facility's antibiogram and suggest nitrofurantoin as a potentially better option

d. Send a urine culture and wait 72 hours for the culture and sensitivity before any treatment

Explanation: The current treatment approach is unlikely to be effective, and the resident met Loeb criteria for initiating antibiotics for a potential UTI. Therefore, no action or stopping the antibiotic would help the resident and may allow the infection to continue. Also, sending a culture and sensitivity at this point further delays the starting of the best antibiotic. The nurse needs to contact the physician to update them on the information from the antibiogram. Nurses play a key role in antibiotic stewardship by using antibiogram data to support effective treatment decisions and reduce unnecessary antibiotic use. An easy way to facilitate a professional and respectful conversation with the physician to help guide the most effective treatment is using the SBAR tool. AHRQ has created a helpful example of using SBAR in the nursing home setting—AHRQ SBAR Tool. Ideally, the nurse should have the antibiogram for reference when calling the provider. Also, it's a good practice for the IP to check all new antibiotics prescriptions against both the antibiogram and the culture and sensitivity results to ensure the antibiotic is appropriate for the pathogen and its sensitivities.

3. How should the facility use antibiograms as part of their infection prevention and antimicrobial stewardship programs? Check all that apply.

a. Review the antibiotics started against the antibiogram only at quarterly QAPI meetings

b. Update them every 3 months

c. Distribute them for physicians and nurses to use or have available before prescribing an antibiotic

d. Use antibiograms only when an infection outbreak occurs

e. Check them against the culture results to see if they match

Explanation: It's important for nursing or infection preventionist to take ownership of the antibiogram to ensure that it is updated and reviewed regularly to reflect the most recent information but that only needs to be done every 12 to 18 months. A quarterly update is not necessary. The QAPI committee may want to undertake oversight of updating and distribution of antibiograms. Checking on antibiotics started against the antibiogram results is a good component of infection control program and your QAPI program. Updates to the antibiogram should be shared and discussed with nursing

staff, the Medical Director, and other attending physicians. Antibiograms help predict the most likely antibiotic to work. They are not designed or helpful **to detect** outbreaks and compare individual results with the antibiogram. It's important to check the final culture and sensitivity results since while the antibiogram indicates which antibiotics **are most likely to be effective**, the final culture and sensitivity should guide your final antibiotic selection. Ongoing discussion of antibiograms support antimicrobial stewardship goals and CMS requirements for monitoring resistance and usage trends. The AHRQ toolkit for Antibiograms contains educational materials for staff. Instructional guidance empowers staff with the tools needed to use the antibiogram effectively and educate other providers. It is also important to document these discussions with the attending or covering physician, so everyone is aware of the rationale and decision to continue or change the antibiotics.

4. What are some alternative ways to get antibiogram information if your lab is unable to produce one?

a. Ask the hospitals in your community that transfers residents to you for their antibiogram

b. Ask the local health department, facility, or reference lab for a regional antibiogram for all their cultures in the surrounding community

c. Ask the lab to create an antibiogram for a longer time window than 1 year for your residents

d. All the above

Explanation: Your lab may not be able to generate an antibiogram for your facility because they do not have enough culture and sensitivity results from the past year (antibiograms typically summarize sensitivity or resistance from the past year). They could create one for a longer time window. Alternatively, they may service other nursing homes or physician offices in your geographic area, and resistant patterns often are similar in the geographic community. Since many of your residents come from the hospital, the hospital susceptibility patterns may be similar to those in your facility. If you accept admissions from more than one hospital, ask for copies' from each hospital you typically accept admissions.

Resources

AHRQ. TeamSTEPPS Program Communication. Tool: SBAR.

AHRQ. Toolkit 3. The Nursing Home Antibiogram Program Toolkit: How To Develop and Implement an Antibiogram Program.

AHCA. Hot Topic for Antibiograms.

CDC. Core Elements of Antibiotic Stewardship for Nursing Homes. Updated March 18, 2024. Accessed May 12, 2025.

Tolg MS et al. Antimicrobial Stewardship in Long-Term Care Facilities: Approaches to Creating an Antibiogram when Few Bacterial Isolates Are Cultured Annually. J Am Med Dir Assoc. 2018 Jun 19;19(9):744–747. doi: 10.1016/j.jamda.2018.05.006.