

Antibiogram: A Clinician's Guide

Antibiograms are a useful tool for selecting **empiric** therapy for a patient. They are an annual, site-specific report of antimicrobial susceptibility results compiled for specific organisms and the antimicrobial agents that are routinely tested by the UNC Hospitals Microbiology Lab. Results are reported as the percentage of isolates tested that are susceptible to an antimicrobial agent.



Important

- Once microorganism and antimicrobial susceptibility data are available, treatment should be tailored to the patient's specific results.
- The UNC Hospitals antibiogram includes isolates from the UNC Medical Center and UNC Hillsborough Hospital Campus and will not be relevant in other settings.
- Ensure you are looking at the most up-to-date version.



Limitations

While an antibiogram can help make empiric treatment choices, it should not be the sole factor or tool used. Some limitations of antibiograms include:

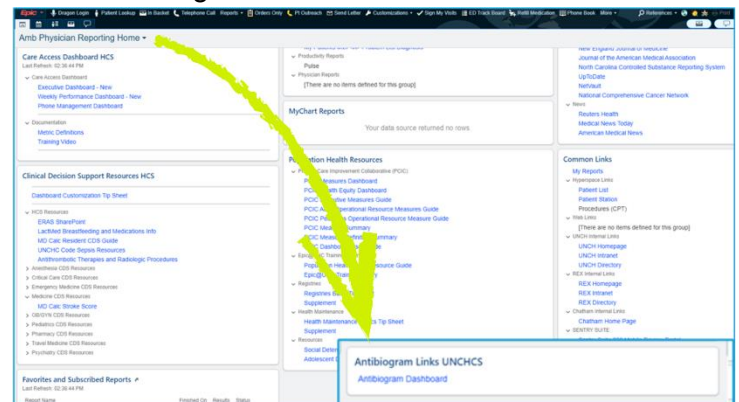
- Patient-specific factors such as the history of infection, site of infection, past antimicrobial use, or underlying medical conditions which may impact antimicrobial choices and efficacy are not considered.
- Single antimicrobial-organism combinations are tested. Therefore, trends in cross-resistance or synergistic properties are not seen.
- Data may not be generalizable to a specific patient population or location based on the data compiled to create an antibiogram.
- The antibiogram is not all inclusive and not all pathogens are reported. At least thirty isolates must be tested for an organism to be included.



How to find the local antibiogram

In Epic

- On the Epic Dashboard's Physician home screen, there is a section called "Antibiograms Links UNCHCS" at the bottom right
- Make sure you are looking at the correct location when using this method



Online

- Use the QR code at right, or
- Navigate to the Carolina Antimicrobial Stewardship Program (CASP) website
- Select [CASP Resources](#) and the UNC Medical Center Antibiogram will be under the Featured Resources on the right-hand side of the screen.
- UNCH login is required.



Tips for Using the Antibiogram

Tip #1

The UNC Medical Center antibiogram is broken down by several different characteristics such as location, organism type, age group, and culture type. Double-check that you are looking at the most appropriate page of the antibiogram.

Tip #2

Looking at the percentage of MSSA isolates susceptible to each of the antimicrobials listed, doxycycline, linezolid, or TMP/SMX would be reasonable empiric choices with > 90% of isolates tested being susceptible to the agents.

From there:

- An empiric antibiotic *should not* be selected based on which has the highest percentage. Instead, patient-specific factors should further guide empiric treatment choices.
- Consider infection-specific factors. Not every antimicrobial agent is appropriate for every site of infection.

Abbreviated Aerobic Organisms, Inpatient Non-ICU, Non-Urine Isolates, Adult Only						
	Total Isolates	Clindamycin	Doxycycline	Levofloxacin	Linezolid	TMP/SMX
Below 60%						
Between 60 and 90%						
Greater than or equal to 90%						
Organism		S	S	S	S	S
Methicillin-Resistant Staphylococcus aureus	443	64	77	-	100	88
Methicillin-Susceptible Staphylococcus aureus	469	72	95	-	99	97

Tip #3

Some Antimicrobial – Organism pairings are intentionally left blank due to intrinsic resistance or if the agent is not routinely tested.

Patient Case Examples

A 24-year-old female with no significant past medical history is admitted for incision and drainage of moderate, purulent skin and soft tissue infection. Given the purulent nature of the infection, Staphylococcus aureus is the most likely pathogen.

- For this patient, the antibiogram could be used to select empiric coverage for the infection.
- Patient-specific factors such as renal function, allergies, drug interactions, and other lab values, along with the need for oral or IV therapy, should be considered when making empiric antimicrobial selections.
- Once culture data is available, that information should be used to further narrow or change antimicrobial therapy as needed.

A 54-year-old male with a past medical history of neurogenic bladder managed with suprapubic catheter following a spinal cord injury and recurrent urinary tract infections (UTI) presents with concern for a new UTI. This is the patient's third UTI in the past 12 months. Urine cultures are collected, and the patient is started on empiric antibiotics.

- When selecting empiric antibiotics for this patient, looking at the patient's previous culture results will be more helpful. This patient has a history of recurrent infections and frequent antibiotic use. His infection is more likely to be due to a resistant organism because of his past medical history and antibiotic usage.
- When creating the antibiogram, only the first isolate for a particular species is used. Empiric therapy choices based on the antibiogram are going to be less effective than looking at previous culture results for this patient.