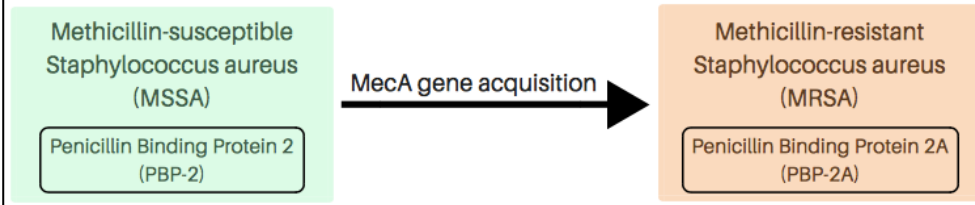


MRSA Cheat Sheet

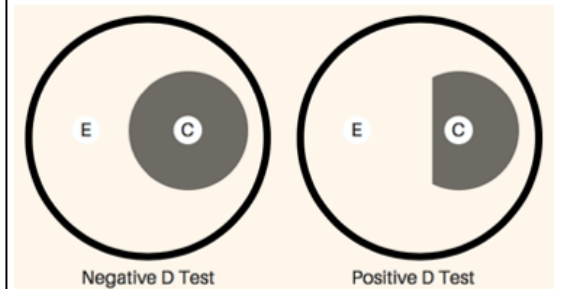


- Staphylococcus aureus* (aka. *S. aureus*) is one of the most important pathogenic bacteria in humans
- Can cause a range of infections including skin and soft tissue infection, bloodstream infection, and infective endocarditis
 - *S. aureus* is a coagulase-positive gram positive cocci that grows in clusters/ tetrads (it looks like grapes)
 - Beta-lactams such as oxacillin, dicloxacillin, nafcillin, and cefazolin are go-to drugs for MSSA infection
 - *S. aureus* that has acquired the *MecA* gene turns from MSSA to MRSA

Change In The Binding Site



A positive D-test indicates the presence of inducible clindamycin resistance in MRSA



C = clindamycin, E = Erythromycin
A positive D Test indicates inducible resistance is present
Notice how the positive test is in the shape of a "D"

Drugs with Anti-MRSA Activity

Generic Name	Brand Name(s)	Drug Class
SMX/TMP	Bactrim, Septra	Sulfa
Clindamycin	Cleocin	Lincosamide
Doxycycline	Doryx, Vibramycin	Tetracycline
Minocycline	Minocin	Tetracycline
Tigecycline	Tygacil	Tetracycline/ glycylicycline
Omadacycline	Nuzyra	Tetracycline /aminomethylcycline
Eravacycline	Xerava	Tetracycline/ fluorocycline
Ceftaroline	Teflaro	Cephalosporin
Linezolid	Zyvox	Oxazolidinone
Tedizolid	Sivextro	Oxazolidinone
Vancomycin	Vancocin	Glycopeptide
Daptomycin	Cubicin	Cyclic lipopeptide
Telavancin	Vibativ	Lipoglycopeptide
Oritavancin	Orbactiv	Lipoglycopeptide
Dalbavancin	Dalvance	Lipoglycopeptide
Delafloxacin	Baxdela	Fluoroquinolone
Quinupristin/ dalfopristin	Synercid	Streptogramin
Nitrofurantoin	Macrobid, Macrochantin	Nitrofurantoin
Fosfomycin	Monurol	Phosphonic acid derivative
Rifampin	Rifadin	Rifamycin
Methenamine	Hiprex, Urex	Urinary tract antiseptic

MRSA Breakpoints for Vancomycin

Susceptible: 2 mcg/mL or less

Intermediate: 4 - 8 mcg/mL
(aka VISA or hVISA)

Resistant: 16 mcg/mL or more
(aka VRSA)

- Thickening of the bacterial cell wall can increase MICs
- When the MIC is 2 consider avoiding vancomycin
- Avoid vancomycin for MRSA when the MIC is above 2
- Beware MRSA with a high vancomycin MIC may have a high daptomycin MIC

HIGHLIGHTS

- Antibiotic selection for MRSA depends on patient factors, drug factors, and organism factors
- In the outpatient setting clindamycin, doxycycline, and SMX/TMP are common go-to oral drugs for MRSA infection
- In hospitals vancomycin is commonly started for suspected MRSA
- Presence of MRSA from a nares swab indicates colonization with MRSA (NOTE: colonization is not an infection)
 - A negative nares swab for MRSA can sometimes be used to avoid empiric vancomycin for respiratory infection
 - Patients colonized with MRSA are sometimes placed on contact precautions
- Oral fosfomycin and nitrofurantoin are for UTI only, while methenamine is for UTI suppression only
- Daptomycin cannot treat MRSA pneumonia b/c it is inactivated by lung surfactant
- Linezolid is typically avoided for MRSA bloodstream infection, but can be an alternative to vancomycin for pneumonia
- Fluoroquinolones are typically avoided as MRSA, but delafloxacin is expected to have adequate MRSA coverage
- Rifampin can be added to other MRSA drugs when hardware (e.g., screws) is present b/c it penetrates biofilms well
- Aminoglycosides are not used monotherapy for MRSA, but have a role in treating MRSA prosthetic valve endocarditis
- MIC creep = gradual loss of vancomycin activity due to increasing MIC — It is unclear if this is a true phenomenon
- VRSA infection is extremely uncommon

Abbreviations: hVISA = vancomycin heteroresistant *S. aureus*, MIC = minimum inhibitory concentration, MRSA = methicillin-resistant *S. aureus*, MSSA = methicillin susceptible *S. aureus*, VISA = vancomycin-intermediate *S. aureus*, VRSA = vancomycin-resistant *S. aureus*