Interpreting GenMark's ePlex® Results

The Vanderbilt Microbiology Laboratory provides rapid diagnostic information on positive blood cultures with the goal of quickly tailoring therapy to provide the most potent antibiotic while limiting unnecessary toxicity.

Follow these steps to adjust antibiotic therapy based on ePlex® results and Vanderbilt antibiogram data:

- 1. Locate the appropriate table below (e.g., gram-positive cocci, gram-positive rod, gram-negative rod, or fungi)
- 2. Specify the organism and reported resistance marker
- 3. Follow preliminary recommendations as appropriate

ePlex[®] results should <u>never</u> supersede clinical judgement.

Continue to base therapy on careful history, physical, and available data (e.g., allergies, renal function, etc.) and remain aware that contaminated blood cultures are reported just as any other culture.

For additional information about using beta-lactams in patients with listed drug allergies, see linked references on the Vanderbilt Antimicrobial Stewardship Program website:

- Comparative table for antibiotic side chains and likelihood of cross-reactivity
- The 3 Cs of antibiotic allergy-classification, cross-reactivity, and collaboration

Traditional culture data (i.e., speciation and susceptibility) will still be available in 2-3 days and remains the gold standard upon which final antibiotic recommendations should be based. Do not hesitate to consult Infectious Diseases (or page **615-317-GERM**) with questions

NOTE: If patient has a polymicrobial infection, ensure that coverage is adequate for all organisms. Recommendations below are specific to the organism resulted.

| Gram-Positive Cocci | | | |
|-----------------------|---------------|---|--|
| Organism | Resistance | Recommendation | |
| | Marker | | |
| Staphylococcus aureus | mecA/mecC NOT | Start cefazolin or nafcillin (if CNS infection suspected) | |
| | detected | Infectious Diseases consultation required | |
| | (MSSA) | Stop empiric vancomycin IV | |
| | mecA/mecC | Start vancomycin IV | |
| | detected | Infectious Diseases consultation required | |
| | (MRSA) | Contact precautions (see Infection Prevention | |
| | | website) | |
| Staphylococcus | mecA/mecC NOT | Start cefazolin or nafcillin (if CNS infection suspected) | |
| lugdunensis | detected | Infectious Diseases consultation required | |
| | | Stop empiric vancomycin IV | |
| | mecA/mecC | Start vancomycin IV | |
| | detected | Infectious Diseases consultation required | |
| Staphylococcus | mecA/mecC NOT | Often skin contaminant | |
| epidermidis* | detected | Coagulase negative staphylococcus in a single blood | |
| | (MSSE) | culture from a non-neonate often represents skin flora | |
| | | contamination | |
| | | Repeat blood cultures then start therapy if uncertain: | |

Created October 2021 by Vanderbilt Antimicrobial Stewardship Program

| | | Start cefazolin or nafcillin (if CNS infection |
|--|---|---|
| | | suspected) |
| | | Stop empiric vancomycin IV |
| | mecA/mecC | Often skin contaminant |
| | detected | Coagulase negative staphylococcus in a single blood |
| | (MRSE) | culture from a non-neonate often represents skin flora |
| | | contamination |
| | | Repeat blood cultures then start therapy if uncertain: |
| | | Start vancomycin IV |
| Other coagulase negative | mecA/mecC NOT | Often skin contaminant |
| Staphylococcus* | detected | Coagulase negative staphylococcus in a single blood |
| | | culture from a non-neonate often represents skin flora |
| | | contamination |
| | | Repeat blood cultures then start therapy if uncertain: |
| | | Start cetazolin or natcillin (if CNS infection |
| | | suspected) |
| | | Stop empiric vancomycin IV |
| | mecA/mecC | Often skin contaminant |
| | detected | Coagulase negative staphylococcus in a single blood |
| | | culture from a non-neonate often represents skin flora |
| | | Contamination Repeat blood cultures then start therapy if upcortain: |
| | | • Start vancomycin IV |
| Streptococcus gaglactige (G | (BC) | Start valiconych IV |
| Streptococcus anginosus ar | oun | Start periodini IV Stop empiric vancomycin IV |
| Streptococcus auginosus gr | <u>sup</u> (() | |
| Streptococcus progenes (G | 10/ | Start ceftriaxone |
| Streptococcus priedmoniue | | If concern for meningitis continue vancomycin IV |
| | | in concern for menning the contentate varicontry entry, |
| | | otherwise, stop empiric vancomycin |
| | | otherwise, stop empiric vancomycin • Await penicillin susceptibility data |
| Other Streptococcus spp.* | | otherwise, stop empiric vancomycin Await penicillin susceptibility data May be a contaminant |
| Other <i>Streptococcus</i> spp.* | | otherwise, stop empiric vancomycin Await penicillin susceptibility data May be a contaminant Correlate clinically before starting antibiotics |
| Other Streptococcus spp.* | | otherwise, stop empiric vancomycin Await penicillin susceptibility data May be a contaminant Correlate clinically before starting antibiotics Start ceftriaxone |
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| Other Streptococcus spp.* | vanA/vanB NOT | otherwise, stop empiric vancomycin Await penicillin susceptibility data May be a contaminant Correlate clinically before starting antibiotics Start ceftriaxone Stop empiric vancomycin IV Await penicillin susceptibility data (only run if found in multiple blood culture sets) Start ampicillin |
| Other Streptococcus spp.* | vanA/vanB NOT detected | otherwise, stop empiric vancomycin Await penicillin susceptibility data May be a contaminant Correlate clinically before starting antibiotics Start ceftriaxone Stop empiric vancomycin IV Await penicillin susceptibility data (only run if found in multiple blood culture sets) Start ampicillin Infectious Diseases consultation required |
| Other Streptococcus spp.* | vanA/vanB NOT detected | otherwise, stop empiric vancomycin Await penicillin susceptibility data May be a contaminant Correlate clinically before starting antibiotics Start ceftriaxone Stop empiric vancomycin IV Await penicillin susceptibility data (only run if found in multiple blood culture sets) Start ampicillin Infectious Diseases consultation required Stop empiric vancomycin IV |
| Other Streptococcus spp.* | vanA/vanB NOT detected vanA/vanB | otherwise, stop empiric vancomycin Await penicillin susceptibility data May be a contaminant Correlate clinically before starting antibiotics Start ceftriaxone Stop empiric vancomycin IV Await penicillin susceptibility data (only run if found in multiple blood culture sets) Start ampicillin Infectious Diseases consultation required Stop empiric vancomycin IV |
| Other Streptococcus spp.* | vanA/vanB NOT detected vanA/vanB detected (VRE) | otherwise, stop empiric vancomycin • Await penicillin susceptibility data May be a contaminant Correlate clinically before starting antibiotics • Start ceftriaxone • Stop empiric vancomycin IV • Await penicillin susceptibility data (only run if found in multiple blood culture sets) Start ampicillin • Infectious Diseases consultation required • Stop empiric vancomycin IV Start daptomycin • Do not use vancomycin IV |
| Other Streptococcus spp.* | vanA/vanB NOT detected vanA/vanB detected (VRE) | otherwise, stop empiric vancomycin Await penicillin susceptibility data May be a contaminant Correlate clinically before starting antibiotics Start ceftriaxone Stop empiric vancomycin IV Await penicillin susceptibility data (only run if found in multiple blood culture sets) Start ampicillin Infectious Diseases consultation required Stop empiric vancomycin IV Start daptomycin Do not use vancomycin IV Infectious Diseases consultation required |
| Other Streptococcus spp.* | vanA/vanB NOT detected vanA/vanB detected (VRE) | otherwise, stop empiric vancomycin Await penicillin susceptibility data May be a contaminant Correlate clinically before starting antibiotics Start ceftriaxone Stop empiric vancomycin IV Await penicillin susceptibility data (only run if found in multiple blood culture sets) Start ampicillin Infectious Diseases consultation required Stop empiric vancomycin IV Start daptomycin Do not use vancomycin IV Infectious Diseases consultation required Contact precautions (see Infection Prevention |
| Other Streptococcus spp.* | vanA/vanB NOT detected vanA/vanB detected (VRE) | otherwise, stop empiric vancomycin Await penicillin susceptibility data May be a contaminant Correlate clinically before starting antibiotics Start ceftriaxone Stop empiric vancomycin IV Await penicillin susceptibility data (only run if found in multiple blood culture sets) Start ampicillin Infectious Diseases consultation required Stop empiric vancomycin IV Start daptomycin Do not use vancomycin IV Infectious Diseases consultation required Contact precautions (see Infection Prevention website) |
| Other Streptococcus spp.* Enterococcus faecalis Enterococcus faecium | vanA/vanB NOT detected vanA/vanB detected (VRE) vanA/vanB NOT | otherwise, stop empiric vancomycin Await penicillin susceptibility data May be a contaminant Correlate clinically before starting antibiotics Start ceftriaxone Stop empiric vancomycin IV Await penicillin susceptibility data (only run if found in multiple blood culture sets) Start ampicillin Infectious Diseases consultation required Stop empiric vancomycin IV Start daptomycin Do not use vancomycin IV Infectious Diseases consultation required Contact precautions (see Infection Prevention website) Start vancomycin IV |

| | | Await ampicillin susecptibility |
|--------------|----------------|---|
| | vanA/vanB | Start daptomycin |
| | detected (VRE) | • Do not use vancomycin IV |
| | | Infectious Diseases consultation required |
| | | Contact precautions (see Infection Prevention |
| | | website) |
| Micrococcus* | | Often a skin a contaminant |
| | | <i>Micrococcus</i> in a single blood culture generally represents |
| | | skin flora contamination |
| | | Repeat blood cultures then start therapy if uncertain: |
| | | Start vancomycin IV |

*These organisms may represent blood culture contamination, especially if found in only a single blood culture set. Clinical correlation is recommended to evaluate need for antibiotics directed against this organism.

| Gram-Positive Rod | |
|---------------------------|--|
| Organism | Recommendation |
| Listeria monocytogenes | Start ampicillin |
| | Stop empiric vancomycin IV |
| Bacillus cereus* | Often skin contaminant |
| Bacillus subtilis* | Bacillus in a single blood culture generally represents skin flora |
| | contamination |
| | Repeat blood cultures then start therapy if uncertain: |
| | Start vancomycin IV |
| Corynebacterium* | Often skin contaminant |
| | Corynebacterium in a single blood culture generally represents |
| | skin flora contamination |
| | Repeat blood cultures then start therapy if uncertain: |
| | Start vancomycin IV |
| Cutibacterium acnes* | Often skin contaminant |
| (Propionibacterium acnes) | Cutibacterium in a single blood culture generally represents skin |
| | flora contamination |
| | Repeat blood cultures then start therapy if uncertain: |
| | Start penicillin IV |
| Lactobacillus* | Often skin contaminant |
| | Lactobacillus in a single blood culture generally represents skin |
| | flora contamination |
| | Repeat blood cultures then start therapy if uncertain: |
| | Start penicillin IV |

*These organisms may represent blood culture contamination, especially if found in only a single blood culture set. Clinical correlation is recommended to evaluate need for antibiotics directed against this organism.

NOTE: Recommendations below apply generally for all units in the hospital. Refer to the VUMC antibiogram for susceptibilities of selected organisms by unit or anatomic site (VUMC Antibiogram)

**If no MRSA recovered in blood cultures and MRSA not recovered or expected from other sites empiric anti-MRSA treatment (e.g. vancomycin) may be discontinued

| Gram-Negative Rod | | |
|------------------------------------|--|--|
| Organism | Recommendation | |
| Acinetobacter baumannii | Start ampicillin/sulbactam | |
| Bacteroides fragilis | Start metronidazole | |
| | If polymicrobial infection, piperacillin/tazobactam, | |
| | ampicillin/sulbactam, or meropenem based on other | |
| | organisms | |
| | Do NOT double cover anaerobes | |
| Citrobacter spp. | Start/continue cefepime | |
| Cronobacter sakazakii | Start/continue cefepime | |
| Enterobacter (non-cloacae complex) | Start/continue cefepime | |
| Enterobacter cloacae complex | Start/continue cefepime | |
| Escherichia coli | Continue empiric coverage and await susceptibilities | |
| Fusobacterium nucleatum | Start ampicillin/sulbactam or start/continue metronidazole | |
| Fusobacterium necrophorum | | |
| Haemophilus influenzae | Start/continue ceftriaxone | |
| Klebsiella oxytoca | Continue empiric coverage and await susceptibilities | |
| Klebsiella pneumoniae group | Continue empiric coverage and await susceptibilities | |
| Morganella morganii | Start/continue cefepime | |
| Neisseria meningitidis | Continue empiric coverage and await susceptibilities | |
| Proteus spp. | Continue empiric coverage and await susceptibilities | |
| Proteus mirabilis | | |
| Pseudomonas aeruginosa | Start/continue cefepime or piperacillin-tazobactam | |
| Salmonella spp. | Start/continue ceftriaxone | |
| Serratia spp. | Start/continue cefepime | |
| Serratia marcescens | | |
| Stenotrophomonas maltophilia | Start trimethoprim-sulfamethoxazole (15-20mg/kg/day | |
| | divided q8h for normal renal function) | |
| G | ram-Negative Resistance Genes | |
| CTX-M Positive (ESBL) | Start meropenem | |
| | Consider an Infectious Diseases consult | |
| | Contact precautions (see Infection Prevention website) | |
| IMP Positive | Carbapenemase-producing organism | |
| KPC Positive | Obtain Infectious Disease consultation | |
| | Contact precautions (see Infection Prevention website) | |
| UXA (UXA-23 and UXA-48) Positive | | |
| VIM Positive | | |

| Fungi | |
|-------------------------|---|
| Organism | Recommendation |
| Candida albicans | |
| Candida dubliniensis | |
| Candida parapsilosis | |
| Candida tropicalis | |
| Candida auris | |
| Candida glabrata | |
| Candida guilliermondii | |
| Candida kefyr | Infectious Disease consultation is required |
| Candida krusei | |
| Candida lusitaniae | |
| Candida famata | |
| Cryptococcus gattii | |
| Cryptococcus neoformans | |
| Fusarium | |
| Rhodotorula | |