MC 6.01 AST-N806 Susceptibility Reporting Guidelines

Purpose

This procedure provides instruction and guidance for routine testing and reporting of Antimicrobial Agents / organism groupings for the AST-N806 Vitek card for patient testing. Organisms with intrinsic resistance to antimicrobial agents will not be reported. AST-N806 card will **not** be used for ***Burkholderia cepacia complex*.**

Principal and Clinical Significance

The decisions for the most appropriate antimicrobial agents to test and report are made with input from Pharmacy, Infectious Disease and the Clinical Laboratory. The goal is to provide clinically relevant information that will decrease the chance of developing antibiotic resistance, harmful effects of inappropriate antimicrobial use and avoid reporting results that could adversely affect patient care.

Policy Statements

This procedure applies to Microbiologists who perform culture set-up and plate reading.

Special Safety Precautions

Microbiologists are subject to occupational risks associated with specimen handling.
- *Biohazard Containment*
- *Biohazardous Spills*
- *Safety in the Microbiology Laboratory*

Procedure

1. The AST-N806 card follows CLSI guidelines and breakpoints.

2. Antibiotics provided on the card include:
    - Ampicillin
    - Ampicillin/Sulbactam
    - Cefazolin
    - Cefepime
    - Ceftazidime
    - Ceftriaxone
    - Ciprofloxacin
    - Ertapenem
    - ESBL
    - Gentamicin
    - Levofloxacin
    - Meropenem
    - Nitrofurantoin
    - Piperacillin/Tazobactam
    - Trimethoprim/Sulfamethoxazole

3. Use the AST-N806 for all first line Gram negative susceptibility testing.

4. Add the AST-XN30 for Tobramycin when needed.

5. Add the AST-XN30 for other antibiotic requests not included on the N806 card.

6. Perform and report KB or MicroScan results for antimicrobics that have a card limitation for patient testing following organism tables below.

Reflexive Testing for Cefpodoxime

1. Report Cefpodoxime when cefazolin is resistant on urine cultures that isolated **E.coli, Klebsiella pneumoniae, Proteus mirabilis** and is ESBL negative.

2. Run a XN30 card to obtain a Cefpodoxime result and release only the Cefpodoxime. Refer to the MC 6.02 AST-XN30 for further reporting instructions.

Additional Testing

1. Report **Meropenem** when **Imipenem, Piperacillin/Tazobactam, Ceftriaxone and Ceftazidime** are **resistant on Proteus spp., Morganella spp., and Providencia** spp. isolates.

2. Report **Meropenem** when the i**solate is positive for ESBL**.

Method Performance Specifications

1. Cefazolin breakpoints are lowered to be line with current CLSI breakpoints. KB testing for Cefazolin testing is no longer necessary.
2. Ciprofloxacin breakpoints are lowered to be in line with current CLSI breakpoints. KBS testing for *Salmonella* spp. and *Shigella* spp. is no longer necessary.
3. Meropenem is on the N806 card, negating the need to set up the additional card for that specific antibiotic.

MDRO comment

Use the MDRO comment is these situations:
- Positive for ESBL
- Positive for carbapenem producing organisms (using codes KPC, NDM, etc).
- *Enterobacterales* or *Pseudomonas aeruginosa* resistant to any carbapenem.
- *Proteus* spp., *Morganella* spp., *Providencia* spp. when non-susceptible to Imipenem and one other carbapenem.
- Use code **NCPO** when testing for carbapenemase producing organisms is negative from MDH.

Product Limitations

Perform an alternative method of testing prior to reporting results

Antibiotic	Product Limitations
Ampicillin	*Citrobacter spp., Enterobacter cloacae* complex*, K aerogenes, Klebsiella spp. Morganella morganii, Proteus vulgaris and penneri, Providencia spp., Raoultella spp.,* and *Serratia marcescens* are intrinsically resistant. Do not report.
Ampicillin/Sulbactam	*Citrobacter freundii., Enterobacter cloacae complex., K aerogenes, Serratia marcescens* are intrinsically resistant. Do not report.
Cefazolin	*Citrobacter freundii, Enterobacter cloacae* complex*, K aerogenes, Morganella morganii, Proteus vulgaris and penneri, Providencia spp., Serratia marcescens* are intrinsically resistant. Do not report.
Cefepime	Perform KB on *Morganella spp* and *Hafnia alvei* Do not report on Bordetella *bronchiseptica* Perform alternate method on *Pseudomonas aeruginosa with MIC = 8-16*
Ceftazidime	Perform alternate method on *Morganella morganii* Perform alternate method on *Pseudomonas aeruginosa with MIC =8*
Ceftriaxone	Perform alternate method on *Proteus vulgaris, Enterobacter cloacae, Enterobacter cloacae complex, and Morganella spp.*
Ciprofloxacin	Perform alternate method on P. rettgeri MIC = 0.25 or 0.5 Perform alternate method on S. marcescens and K. pneumoniae with MIC = 0.5

Ertapenem	Perform alternate method with MIC of 0.25-0.5 Perform alternate method on *Hafnia alvei*
Gentamicin	If resistance is observed on *Proteus vulgaris, Citrobacter koseri, Klebsiella aerogenes, Enterobacter cloacae, Serratia marcescens*, send isolate to MDH.
Meropenem	Perform alternate method on *Enterobacter cloacae* with MIC>=16 Perform alternate method on *Proteus vulgaris* Perform alternate method on resistant *Aeromonas spp., Klebsiella oxytoca, Proteus mirabilis.*
Piperacillin /Tazobactam	Perform alternate method on *Serratia marcescens*

Table 1

For Non-Enterobacterales except *Pseudomonas aeruginosa* and *Acinetobacter* species, perform MicroScan if needed for additional testing. There are no CLSI guidelines for KB with Non-Enterobacterales.

References

Vitek AST-N806 Gram Negative Susceptibility Card bioMerieux 2023/07
CLSI M100 edition 34 Performance Standards for Antimicrobial Susceptibility Testing 2024

Training Plan/ Competency Assessment

Training Plan	Initial Competency Assessment
1. Employee must read the procedure. 2. Employee will observe trainer performing the procedure. 3. Employee will demonstrate the ability to perform procedure, record results and document corrective action after instruction by the trainer.	1. Direct observation.

Historical Record

Version	Written/Revised by:	Effective Date:	Summary of Revisions
1	Susan DeMeyere	11/5/2019	Initial version
2	Susan DeMeyere	12/6/2019	Organized product limitation tables. Removed *PSAR* lower breakpoint validation.
3	Susan DeMeyere	1/26/2021	Removed Validation for lower breakpoint section. Removed validation for Ertapenem.
4	Susan DeMeyere	8/9/2021	Added instructions for reflex testing for Cefpodoxime
5	Susan DeMeyere	9/10/2021	Added instructions to perform KB on *Acinetobacter spp.* and to perform MicroScan for non-Enterobacterales.
6	Susan DeMeyere	9/19/2022	Added additional testing and MDRO comment section.
7	Susan DeMeyere	8/22/023	Removed instructions to perform cefepime KB on *Acinetobacter spp.* and to perform MicroScan for non-Enterobacterales.
8	Susan DeMeyere	7/16/2024	Discontinue AST-GN95 and replace with AST-N806.