MC 6.013 *Acinetobacter* ssp. Susceptibility Reporting

Purpose

This procedure provides instruction and guidance for routine testing and selective and cascade susceptibility reporting on *Acinetobacter* spp.

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 using selective and cascade reporting rules.

Policy Statements

This procedure applies to Microbiologists who perform susceptibility testing.

Special Safety Precautions

Microbiologists are subject to occupational risks associated with specimen handling.

- *Biohazard Containment*
- *Biohazardous Spills*
- *Safety in the Microbiology Laboratory*

Procedure

1. Antibiotics appropriate for routine testing and reporting for *Acinetobacter* spp. include:
    - Ampicillin-Sulbactam
    - Ceftazidime
    - Cefepime
    - Ciprofloxacin
    - Levofloxacin
    - Gentamicin
    - Tobramycin
    - Imipenem
    - Meropenem
    - Amikacin-KBS with day of use QC
    - Piperacillin-Tazobactam
    - Trimethoprim-Sulfamethoxazole
    - Minocycline
    - Cefiderocol
    - Doxycycline
    - Cefotaxime
    - Ceftriaxone

2. Perform susceptibilities using Vitek cards N806 and XN30, MicroScan NUC101 or Kirby Bauer Method.

3. Not all antibiotics are available on every panel.
    - Vitek will be the primary method of testing. Both Vitek cards N806 and XN30 will need to be tested for *Acinetobacter* spp. isolates.
    - MicroScan and Kirby Bauer are back up if testing fails.
    - Do not perform testing on multiple methods to cover all the antibiotics. It is acceptable if cascaded antibiotics are not reported.

- Cefiderocol is not available in house and would need to be sent out if requested.

4. Vitek results will be accepted under the Online Tab. Modifications will be under the **VITMIC** keyboard under the Susceptibility tab.

5. MicroScan and Kirby Bauer results will be entered manually under the **MMIC** and **KB** keyboards respectively under the Susceptibility tab.

Selective Reporting

1. Antibiotics will be reported in a specific order indicating the first and subsequent preferences of the Antimicrobial Stewardship Committee and Infectious Disease physicians
2. Antibiotics will be reported for all sources.
3. There will be exceptions based on the method used for testing.
4. There will be 6 antibiotics routinely reported for all sources.
   - Ampicillin/Sulbactam
   - Cefepime
   - Ciprofloxacin
   - Levofloxacin
   - Tobramycin
   - Gentamicin

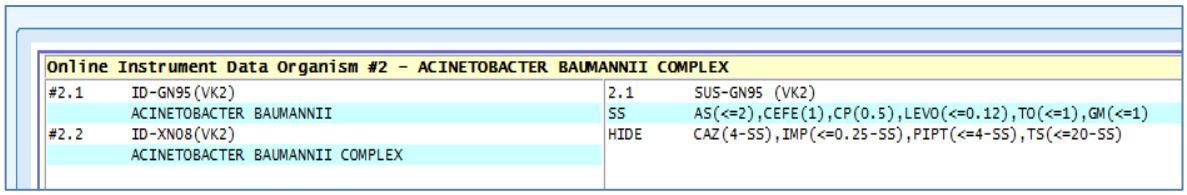
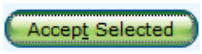


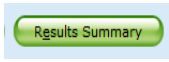
Figure 1 Selective reporting with 6 antibiotics reported

5. If any carbapenem is resistant, confirm result by alternate method. Report in Sunquest if confirmed resistant and submit isolate to MDH. Resistant carbapenems will be reported regardless of selective or cascade reporting. Refer to MCVI 4.0 MDRO IP Notification Flow Chart for further instructions.

Cascade Reporting-Vitek Method

If resistance is encountered, additional antibiotics will automatically be released.

1. For Vitek method, hidden antibiotics will be released when Accept Selected is clicked. 

The released results will be visible in Results Summary. 

2. Results can be edited under the **VITMIC** keyboard but is not needed to report the cascaded antibiotics.

Method: **Vitek**

- If Cefepime is R→ report Meropenem
  - If Meropenem is R → report Imipenem
    - If Gentamicin is R → report Amikacin**
      - If Tobramycin is R → report Amikacin**

3. **Perform Amikacin testing using the KB method and perform day of use QC.

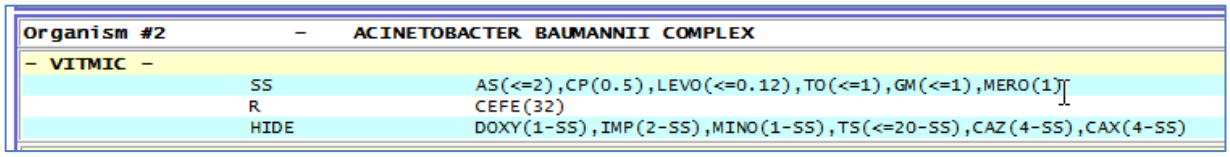


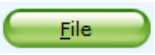
Figure 2 Meropenem released due to resistant Cefepime

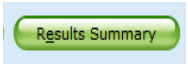
4. All other antibiotics on the panel that are not part of the cascade are hidden. Do not release and report. Hidden antibiotics include:
    - Trimethoprim/Sulfa
    - Minocycline
    - Ceftriaxone
    - Ceftazidime
    - Doxycycline
    - Piperacillin/Tazobactam

5. With a provider request, antibiotics may be released.

Cascade Reporting- MicroScan Method

If resistance is encountered, additional antibiotics will automatically be released.

1. For MicroScan method, hidden antibiotics will be released when File 

is clicked. The released Results will be visible in Results Summary. 

2. Enter **all** results manually under the **MMIC** keyboard. Antibiotics will be released following the cascade rules.

Method: **MicroScan**

- If Cefepime is R → report Meropenem

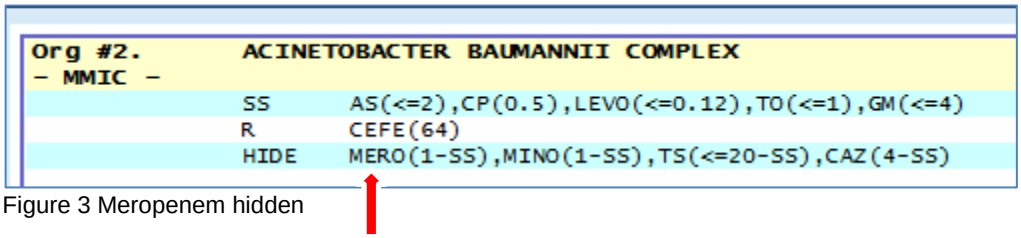
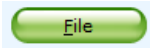


Figure 3 Meropenem hidden

3. It will appear as the results are hidden but Sunquest will release from HIDE automatically after results are filed. 

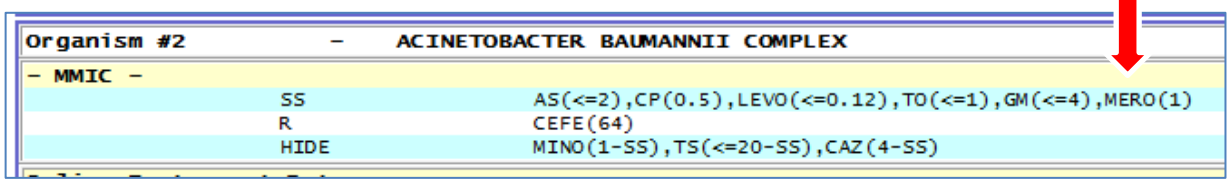


Figure 4 Meropenem released due to resistant cefepime

4. All other antibiotics on the panel that are not part of the cascade are hidden. Do not release and report. Hidden antibiotics include:
    - Trimethoprim Sulfa
    - Minocycline

- Ceftazidime
- Piperacillin Tazobactam

5. With a provider request, antibiotics may be released.

Cascade Reporting-Kirby Bauer Method

If resistance is encountered, additional antibiotics will automatically be released.

1. Enter **all** results manually under the **KB** keyboard. Antibiotics will be released following the cascade rules.

Method: **Kirby Bauer**

- If Cefepime is R → report Meropenem
  - If Meropenem is R → report Imipenem

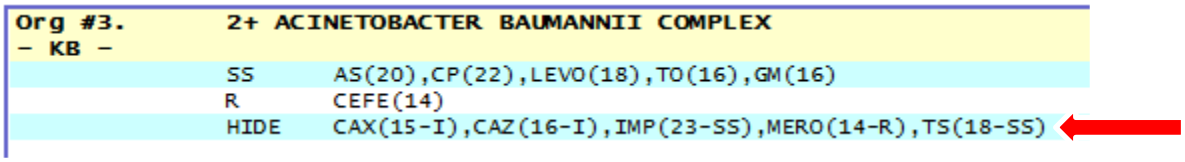


Figure 5 Cefepime and Meropenem resistant

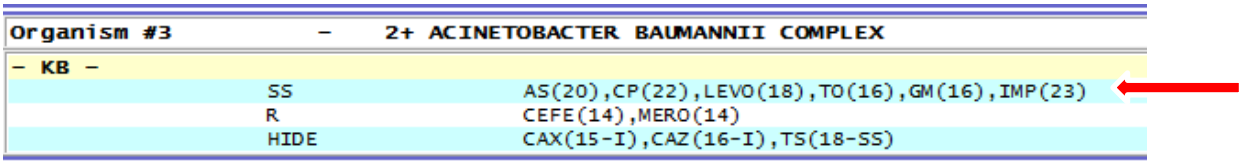
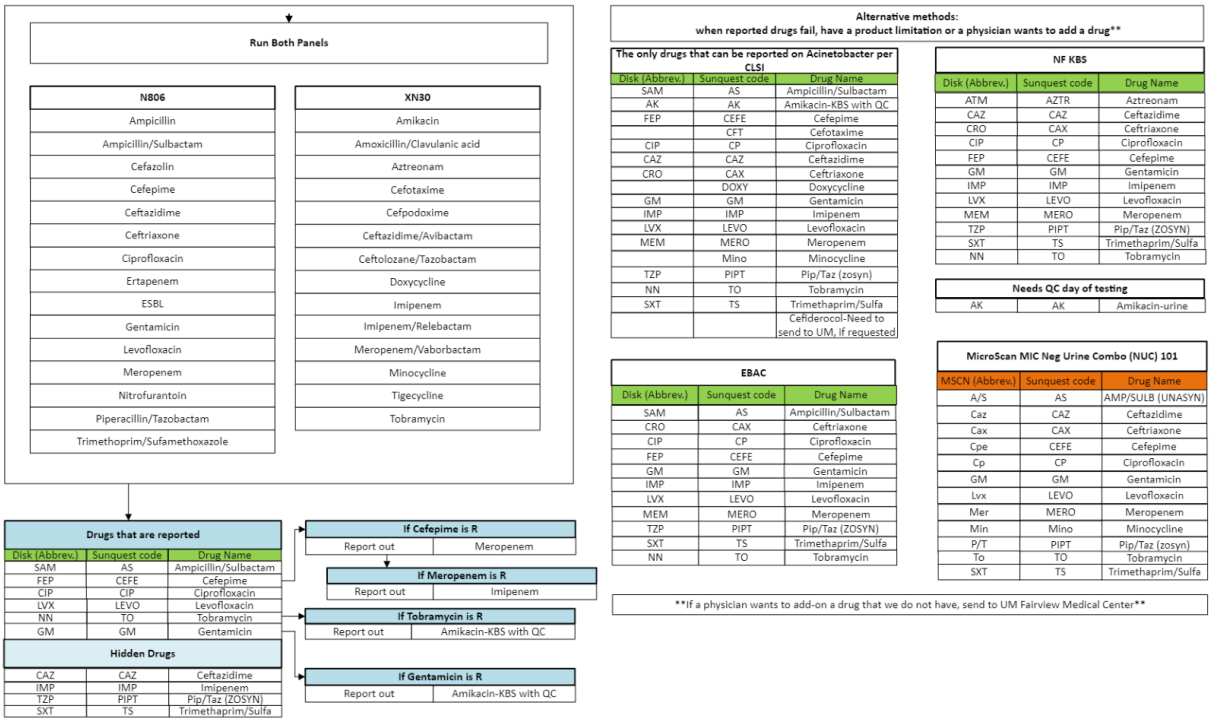


Figure 6 Meropenem and Imipenem released

2. All other antibiotics on the panel that are not part of the cascade are hidden. Do not release and report. Hidden antibiotics include:
   - Trimethoprim Sulfa
   - Ceftazidime
   - Ceftriaxone
   - Piperacillin Tazobactam

3. With a provider request, antibiotics may be released.

Appendix



Run Both Panels

N806	XN30
Ampicillin	Amikacin
Ampicillin/Sulbactam	Amoxicillin/Clavulanic acid
Cefazolin	Aztreonam
Cefepime	Cefotaxime
Ceftazidime	Cefpodoxime
Ceftriaxone	Ceftazidime/Avibactam
Ciprofloxacin	Ceftolozane/Tazobactam
Ertapenem	Doxycycline
ESBL	Imipenem
Gentamicin	Imipenem/Relebactam
Levofloxacin	Meropenem/Vaborbactam
Meropenem	Minocycline
Nitrofurantoin	Tigecycline
Piperacillin/Tazobactam	Tobramycin
Trimethoprim/Sufamethoxazole	

Drugs that are reported

Disk (Abbrev.)	Sunquest code	Drug Name
SAM	AS	Ampicillin/Sulbactam
FEP	CEFE	Cefepime
CIP	CIP	Ciprofloxacin
LVX	LEVO	Levofloxacin
NN	TO	Tobramycin
GM	GM	Gentamicin

Hidden Drugs

CAZ	CAZ	Ceftazidime
IMP	IMP	Imipenem
TZP	PIPT	Pip/Taz (ZOSYN)
SXT	TS	Trimethaprim/Sulfa

If Cefepime is R

Report out	Meropenem

If Meropenem is R

Report out	Imipenem

If Tobramycin is R

Report out	Amikacin-KBS with QC

If Gentamicin is R

Report out	Amikacin-KBS with QC

Alternative methods:
when reported drugs fail, have a product limitation or a physician wants to add a drug**

The only drugs that can be reported on Acinetobacter per CLSI

Disk (Abbrev.)	Sunquest code	Drug Name
SAM	AS	Ampicillin/Sulbactam
AK	AK	Amikacin-KBS with QC
FEP	CEFE	Cefepime
	CFT	Cefotaxime
CIP	CP	Ciprofloxacin
CAZ	CAZ	Ceftazidime
CRO	CAX	Ceftriaxone
	DOXY	Doxycycline
GM	GM	Gentamicin
IMP	IMP	Imipenem
LVX	LEVO	Levofloxacin
MEM	MERO	Meropenem
	Mino	Minocycline
TZP	PIPT	Pip/Taz (zosyn)
NN	TO	Tobramycin
SXT	TS	Trimethaprim/Sulfa
		Cefiderocol-Need to send to UM, if requested

NF KBS

Disk (Abbrev.)	Sunquest code	Drug Name
ATM	AZTR	Aztreonam
CAZ	CAZ	Ceftazidime
CRO	CAX	Ceftriaxone
CIP	CP	Ciprofloxacin
FEP	CEFE	Cefepime
GM	GM	Gentamicin
IMP	IMP	Imipenem
LVX	LEVO	Levofloxacin
MEM	MERO	Meropenem
TZP	PIPT	Pip/Taz (ZOSYN)
SXT	TS	Trimethaprim/Sulfa
NN	TO	Tobramycin

Needs QC day of testing

AK	AK	Amikacin-urine

EBAC

Disk (Abbrev.)	Sunquest code	Drug Name
SAM	AS	Ampicillin/Sulbactam
CRO	CAX	Ceftriaxone
CIP	CP	Ciprofloxacin
FEP	CEFE	Cefepime
GM	GM	Gentamicin
IMP	IMP	Imipenem
LVX	LEVO	Levofloxacin
MEM	MERO	Meropenem
TZP	PIPT	Pip/Taz (ZOSYN)
SXT	TS	Trimethaprim/Sulfa
NN	TO	Tobramycin

MicroScan MIC Neg Urine Combo (NUC) 101

MSCN (Abbrev.)	Sunquest code	Drug Name
A/S	AS	AMP/SULB (UNASYN)
Caz	CAZ	Ceftazidime
Cax	CAX	Ceftriaxone
Cpe	CEFE	Cefepime
Cp	CP	Ciprofloxacin
GM	GM	Gentamicin
Lvx	LEVO	Levofloxacin
Mer	MERO	Meropenem
Min	Mino	Minocycline
P/T	PIPT	Pip/Taz (zosyn)
To	TO	Tobramycin
SXT	TS	Trimethaprim/Sulfa

If a physician wants to add-on a drug that we do not have, send to UM Fairview Medical Center

References

1. bioMerieux Vitek 2 AST-N806 Gram Negative Susceptibility Card 424709 2023-07
2. bioMerieux Vitek 2 AST-XN30 Gram Negative Susceptibility Card 424639 20235-04
3. Beckman Coulter Diagnostics. 250 South Kraemer Boulevard. Brea, CA 92821-6232 USA, MicroScan® Dried Gram Negative (8/2022).
4. 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	8/27/2024	Initial version