

Document Name: MRSA Screen

Approved By:

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Status: **APPROVED**

PURPOSE: To screen for Methicillin Resistant *Staphylococcus aureus* (MRSA) on admission and as part of Multi-Resistant Organism (MRO) screens.

SAMPLE INFORMATION:

Type	Swab <ul style="list-style-type: none"> • Amie's with or without charcoal
Source	<ul style="list-style-type: none"> • Bilateral nasal swab • Bilateral groin swab • MRO screen: any site
Stability	<p>If the sample is received in the laboratory and processed greater than 48 hours from collection:</p> <ul style="list-style-type: none"> • Add specimen quality comment: "Delayed transport may adversely affect pathogen recovery"
Storage Requirements	Room temperature
Criteria for rejection and follow up action	<ol style="list-style-type: none"> 1. Unlabeled/mislabeled swabs. 2. Specimen container label does not match patient identification on requisition. 3. Duplicate specimens obtained with same collection method from same collection location within 24 hours. 4. Dry swabs.

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REAGENTS and/or MEDIA:

- Denim Blue agar (DEN) and Blood agar (BA)
- Identification reagents: gram stain, catalase, Staph latex test and tube coagulase

SUPPLIES:

- Disposable inoculation needles
- Biosafety cabinet
- 35° ambient air incubator
- Wooden sticks
- Vitek 2 and supplies

SPECIAL SAFETY PRECAUTIONS:

Containment Level 2 facilities, equipment, and operational practices for work involving infectious or potential infectious materials or cultures.

- Lab gown must be worn when performing activities with potential pathogens.
- Gloves must be worn when direct skin contact with infected materials is unavoidable.
- Eye protection must be used when there is a known or potential risk of exposure of splashes.
- All procedures that may produce aerosols, or involve high concentrations or large volumes should be conducted in a biological safety cabinet (BSC).
- The use of needles, syringes and other sharp objects should be strictly limited.

All patient specimens are assumed to be potentially infectious. Universal precautions must be followed. Since viable micro-organisms are used, all cultures must be handled with appropriate precautions. All equipment in contact with cultures should be decontaminated by appropriate methods.

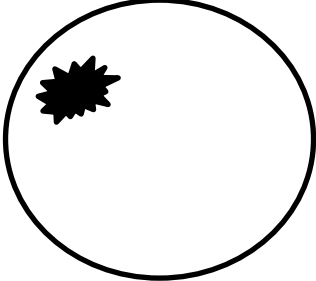
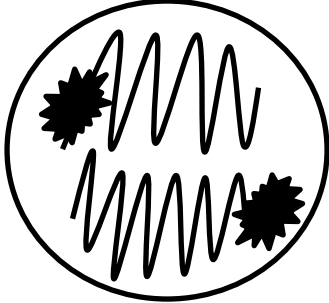
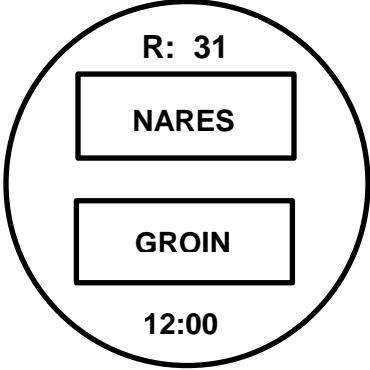
QUALITY CONTROL:

- Refer to MIC60040 – Culture Media Quality Control procedure.
- Refer to Test Manual for reagent quality control procedures.

PROCEDURE INSTRUCTIONS:


NOTE: Monday to Friday: MRSA swabs are processed at noon and 17:00.

Saturday and Sunday: MRSA swabs are processed before 15:00.

Step	Action	
Processing swabs for MRSA screening		
1	<p>In the biosafety cabinet, inoculate the top-left corner of Denim Blue agar from the swab, ensuring all surfaces of swab make contact with the agar.</p> 	
2	<p>Streak for confluent growth using a disposable inoculation needle:</p>  <p>Streak out to cover half the plate.</p>	
3	<p>Mark on Denim Blue plate:</p> <ul style="list-style-type: none"> • R (for read) followed by the read date (24 hours from day of planting) • Time of planting (12:00 or 17:00) <p>Reason: Plates are read after 24 after incubation.</p>	
4	<p>Incubate plate in O₂ incubator at 35° for 18-24 hours in appropriate rack, depending on time of incubation.</p>	

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INTERPRETATION OF RESULTS:

Step	Action		
1	Remove culture plate after 18-24 hours incubation.		
2	Observe plate for denim blue colonies: 		
3	IF	THEN	
	No denim blue colonies seen at 18-24 hours	<ul style="list-style-type: none"> Record observations in the LIS. Workup complete. MRSA not isolated. 	
	Atypical growth (i.e. colonies with blue "halos", colonies not typical denim blue color)	<ul style="list-style-type: none"> Record observations in the LIS. Subculture isolate to BA plate. From BA plate, perform: <ol style="list-style-type: none"> Gram stain (gram-positive cocci) Catalase (positive) Staph latex test (positive) Tube coagulase (positive) GPS (cefoxitin screen positive) 	IF
		THEN	<ul style="list-style-type: none"> Workup complete. MRSA not isolated.
		Results from above testing are consistent with MRSA	<ul style="list-style-type: none"> Workup complete. MRSA isolated.
	Denim Blue colonies seen	<ul style="list-style-type: none"> Record observations in the LIS. Perform Staph latex test from DEN: 	IF
		THEN	<ul style="list-style-type: none"> MRSA not isolated.
Staph latex test POSITIVE		<ul style="list-style-type: none"> MRSA isolated. 	

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REPORTING RESULTS:

IF	REPORT
MRSA not isolated	<ul style="list-style-type: none"> Report: “No Methicillin Resistant Staphylococcus aureus (MRSA) isolated”
MRSA isolated	<ul style="list-style-type: none"> Add organism: “Staphylococcus aureus” Add quantity: “Isolated” Use canned culture comment: “***Methicillin Resistant***, This organism is cloxacillin resistant and is resistant to all beta-lactam agents” In order entry, copy report to Chief Medical Officer of Health (HPU1) and if in-patient, Infection Control (SOHS). In order entry add ESO code “MRSA”.

LIMITATIONS:

1. Heavy inoculation may lead to a blue/green haze appearance in the main inoculum which should not be interpreted as a positive result.
2. Some Bacillus species may produce an atypical, very dark navy blue colored colony with a halo and crenated edge. Aerococcus species may also appear as dark navy blue colonies. If in doubt, subculture colonies to Blood agar for further investigation.
3. Incubation beyond 24 hours can result in false positive results. Suspicious colonies detected on a second day of incubation must be sub cultured for additional identification testing.

REFERENCES:

- Clinical Microbiology Procedures Handbook, 4th edition, ASM Press, 2016
- Jorgensen J.H., Pfaller M.A., Carroll K.C., Funke G., Landry M.L., Richter S.S., Warnock D.W. 2015. Manual of Clinical Microbiology, 11th edition, ASM Press, Washington, D.C.
- Oxoid Denim Blue agar package insert, May 2005

REVISION HISTORY:

REVISION	DATE	Description of Change	REQUESTED BY
1.0	11 Jan 2017	Initial Release	L. Steven
2.0	30 Nov 2018	Updated to include new Vitek 2 instrument	L. Steven

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