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**Lab Dept:** Microbiology/Virology

**Test Name:** MRSA DETECTION BY PCR

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***General Information***

**Lab Order Codes:** MRSAP

**Synonyms:** MRSA PCR screen, Methicillin-resistant Staphylococcus aureus PCR screen; Surveillance MRSA PCR

**CPT Codes:** 87641 - Staphylococcus aureus, methicillin resistant, amplified probe technique

**Test Includes:** Detection of MRSA from nasal swabs in patients at risk for nasal colonization by PCR (polymerase chain reaction).

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***Logistics***

**Lab Testing Sections:** Microbiology, Mpls campus

**Phone Number:** 612-813-7013

**Test Availability:** Specimens accepted daily, 24 hours

**Turnaround Time:** 24 hours from receipt in Mpls lab

**Special Instructions:** Requisition must state **site** of specimen and **date/time of collection**.

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***Specimen***

**Specimen Type:** Anterior nares

**Container:** Eswab Regular Flocked (CHC#: 32447)



**Volume:** One swab

**Collection:****Anterior Nares**

1. Insert swab, premoistened with sterile saline, approximately 1-2 cm into the nostril. (1/2 inch from edge of nares)
2. Rotate the swab against the nasal mucosa approximately 5 times.
3. Insert the same swab into the second nostril and repeat sampling as in steps 1 and 2.
4. Place in swab transport medium, break off at mark, screw on cap
5. Label container and transport to the laboratory.

**Transport/Storage:**

Transport to the Microbiology Laboratory at room temperature. If a delay is anticipated, refrigerate specimen at 4° C. Specimens are stable at room temperature for 1 days and 7 days at refrigerated temperature (2 - 8° C).

**Sample Rejection:**

Any swab that is not an Eswab; unrefrigerated specimen(s) with a transit time exceeding 1 day after collection; improper source; improperly labeled specimen; external contamination. If an unacceptable specimen is received, the patient's caregiver will be notified and another specimen will be requested before the specimen is discarded.

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***Interpretive*****Reference Range:**

Negative

Unresolved results due to PCR inhibition are inconclusive. Consider repeat collection if clinically indicated.

**Significant Finding:**

Positive: MRSA DNA detected  
Newly identified patients will be called to the patient's caregiver or infection prevention.

**Limitations:**

- Careful compliance with the instructions in this package insert and in Cepheid Sample Collection Device package inserts (Cepheid Sample Collection Device, Copan Dual Rayon Swab and Transport Systems, Liquid Amies Elution Swab (ESwab) Collection and Transport System) is necessary to avoid erroneous results.
- The Xpert MRSA NxG Assay performance has not been evaluated in patients less than two years of age.
- The Xpert MRSA NxG Assay is not intended to diagnose, guide or monitor treatment for MRSA infections, or determine susceptibility to methicillin.
- As with many diagnostic tests, results from the Xpert MRSA NxG Assay should be interpreted in conjunction with other laboratory and clinical data available to the clinician, and should be used as an adjunct to nosocomial infection control efforts to identify patients needing enhanced precautions. Results should not be used to guide or monitor treatment for MRSA infections.
- A positive test result does not necessarily indicate the presence of viable organisms. It is, however, presumptive for the presence of MRSA.
- A negative test result does not exclude the possibility of nasal colonization because test results may be affected by improper specimen collection, technical error, sample mix-up, or because the number of organisms in the sample is below the limit of detection of the test.

- Concomitant cultures are necessary to recover organisms for epidemiology typing or for further susceptibility testing.
- The Xpert MRSA NxG Assay provides qualitative results. No correlation can be drawn between the magnitude of the Ct value and the number of cells in an infected sample.
- Mutations or nucleotide polymorphisms in primer or probe binding regions may affect detection of new or unknown MRSA variants resulting in a false negative result.
- An Xpert MRSA NxG Assay positive result does not necessarily indicate intervention eradication failure since nonviable DNA may persist. A negative result following a previously positive test result may or may not indicate eradication success.
- Because the detection of MRSA is dependent on the quantity DNA present in the sample, reliable results are dependent on proper specimen collection, handling, and storage.
- The Xpert MRSA NxG Assay may generate a false positive MRSA (MRSA DETECTED) result when testing a nasal specimen with a mixture of organisms containing both methicillin-resistant coagulase-negative Staphylococcus and an empty cassette SA.
- The Xpert MRSA NxG Assay may generate a false negative result (MRSA NOT DETECTED) in the event of a co-colonization that contains both methicillin-resistant Staphylococcus aureus (MRSA) and an empty cassette Staphylococcus aureus (SA). This may occur in rare cases when the titer of an empty cassette SA organism is substantially higher than that of the MRSA organism.
- Assay interference may be observed in the presence of Nasonex ( $\geq 50\%$  v/v), Flonase ( $\geq 50\%$  v/v), and Beconase ( $\geq 40\%$  v/v).

**Methodology:**

Real-Time Polymerase Chain Reaction (PCR)

**References:**

Baron, EJ and RB Thompson Jr, Specimen Collection, Transport, and Processing: Bacteriology In J. Versalovic, et al, (ed) Manual of Clinical Microbiology, 11<sup>th</sup> edition, American Society for Microbiology, Washington DC, pg 237

Miller, J. Michael (1999), A Guide To Specimen Management in Clinical Microbiology, American Society for Microbiology, Washington, D.C.

BD Max™ MRSA XT Assay (2014/01), Circular PO168(01), GeneOhm Sciences Canada, Inc, 2555 boul. Parc-Technologique, Quebec, Qc, Canada, G1P 4s4.

Xpert MRSA NxG Package Insert, 301-4055 Rev. A. In: Cepheid; 2016.

**Updates:**

9/1/2010: Transport time extended from 2 hours to 1 day.

11/30/2011: Updated availability from M-S to Daily. Changed sample storage, previously listed as 2-5 degrees C. BD reference for ACP updated. Transport extended from 1 day to 2 days @ room temp.

2/20/2012: Changed from Critical value to Significant finding.

6/7/2015: Changed significant finding Alert Value; added Surveillance MrSA PCR to synonyms; updated references.

12/11/2018: Updated method

8/1/2019: Updated TAT from 3 hrs to 24 hrs.