Nocardia Real-time PCR
Test Code: 6800

Clinical and Procedure

Clinical Utility
Standard laboratory techniques for the diagnosis of nocardiosis include culture and anti-microbial sensitivity testing for species with clinical significance, as many of the organisms are resistant to antibiotics. Nocardiosis diagnosis is often overlooked due to the length of time the isolates take to grow. Identification of *Nocardia* species by PCR will allow for a more rapid turnaround time enabling physicians to know to treat specifically for *Nocardia* rather than another bacteria.

About Nocardia

*Nocardia* is a gram positive bacterium that is mainly found in the soil. There are over 87 species in the genus, 48 of which are medically impactful. Found all over the United States, the pathogen can cause chronic and progressive infections. It is not often the first pathogen thought of and cultures can take weeks to grow. Treatment for the organism is different than that of other bacterial pathogens, therefore a late diagnosis can result in mortality of up to 40% in some studies. Most species are susceptible to linezolid and many to Trimethoprim/sulfamethoxazole (TMP – SMX).

Typically presenting as pneumonia, nocardiosis can also present as neurological disease and, in less severe cases, cutaneously. It causes the most severe disease in immunocompromised patients – such as solid organ transplants, and HIV positive patients. The most common clinical presentation of pulmonary nocardiosis is necrotizing pneumonia which is progressive and life threatening. Disseminated nocardiosis presents late as brain and skin lesions with the primary pulmonary cause going undiagnosed.

Procedure

Extraction of *Nocardia* DNA from specimen followed by amplification and detection using real-time, qualitative PCR. A full-process internal control is added to each clinical specimen in order to ensure the extraction was performed correctly and the PCR reaction was not inhibited. This test has not been cleared or approved for diagnostic use by the U.S. Food and Drug Administration.

Specificity

The *Nocardia* species assay design includes pathogen sequence information from 11 *Nocardia* species described in the literature as causing human illness (Brown-Elliot BA et al., 2012). The target species belong to the *Nocardia* genus (*N. cyriacigeorgica, N. asteroides complex, N. nova complex, N. transvalensis, N. wallacei, N. brasiliensis, N. pseudobrasiliensis, N. africana, N. abscessus, N. otitidiscaviarum, and N. farcinica*). The assays were tested for cross reactivity against 30 bacterial targets including common causes of respiratory pneumonia. Cross-reactivity has been observed with Rhodococcus equi and Crossiella cryophila. Micromonospora saelicensis, Streptomyces gardneri, Streptomyces platensis and Saccharothrix genus members showed cross reactivity in silico (none of these have been reported to cause human infections but observed only in reports of environmental sampling).

Turnaround Time

Same day (within 8-12 hours from receipt of specimen), Monday through Saturday.

Specimen Information

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>Order Code</th>
<th>CPT Code</th>
<th>NY Approved</th>
<th>Volume</th>
<th>Assay Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAL</td>
<td>6809</td>
<td>87798</td>
<td>Yes</td>
<td>2 mL (min. 0.5 mL)</td>
<td>Detected/Not Detected</td>
</tr>
</tbody>
</table>

Special Instructions
- Collect in a sterile, screw top tube.
- Can be shipped at ambient or frozen temperature Monday through Friday.
- Specimens shipped at ambient temperature must be received within 3 days of collection.
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- Stability: 3 days ambient, 5 days refrigerated, 30 days frozen.

**Shipping**

Ship Monday through Friday. Friday shipments must be labeled for Saturday delivery. All specimens must be labeled with patient's name and collection date. A Viracor Eurofins test requisition form must accompany each specimen. Multiple tests can be run on one specimen. Ship specimens FedEx Priority Overnight® to: Viracor Eurofins, 1001 NW Technology Dr, Lee's Summit, MO 64086.

**Causes for Rejection**

Respiratory sample received in trap, specimen received outside stability, insufficient specimen volume and specimen types other than those listed.

**Disclaimer**

Specimens are approved for testing in New York only when indicated in the Specimen Information field above. The CPT codes provided are based on Viracor Eurofins’ interpretation of the American Medical Association's Current Procedural Terminology (CPT) codes and are provided for informational purposes only. CPT coding is the sole responsibility of the billing party. Questions regarding coding should be addressed to your local Medicare carrier. Viracor Eurofins assumes no responsibility for billing errors due to reliance on the CPT codes illustrated in this material.

**References**