



## Respiratory Virus Panel, Qualitative PCR

Test code: 16094X

### Clinical Use

- Differential diagnosis of lower respiratory infections (LRIs) caused by influenza virus A & B, respiratory syncytial virus (RSV), parainfluenza virus 1, 2, and 3, or adenovirus
- Differential diagnosis of upper as well as lower respiratory tract infections in immunocompromised patients
- Determine appropriate virus-specific treatments and avoid inappropriate antibiotic therapy

### Clinical Background

The most common viruses causing LRIs such as tracheobronchitis, bronchiolitis, and pneumonia are influenza virus, RSV, parainfluenza virus, and adenovirus. Children, the elderly, and patients with compromised cardiac, pulmonary, or immune systems are at greatest risk for serious disease. In children, 15% to 25% of pneumonias are caused by RSV, 15% by parainfluenza virus, and 7% to 9% by adenovirus.<sup>1</sup> RSV infection is the most frequent cause of hospitalization in children <5 years of age. In the elderly, respiratory viral infections cause up to 26% of hospital admissions for community-acquired pneumonia.<sup>2</sup>

Immunocompromised patients, including those with cancer or transplants, are susceptible to the same seasonal viruses that cause respiratory illness in the community at large.<sup>3</sup> These viral pathogens can lead to serious morbidity and mortality in such patients; thus, early identification and treatment is recommended to prevent progression of upper respiratory illness to more serious LRI.<sup>3-6</sup>

Viral causes of LRI should be distinguished from bacterial causes to avoid the unnecessary use of antibiotics and to help select specific antiviral agents, when available, to treat or prevent infection. Laboratory identification of the virus responsible for a community epidemic or seasonal disease is helpful for selecting prophylactic treatments, which are available for influenza virus and RSV.<sup>7</sup>

Identification of viral respiratory pathogens has typically been based on direct antigen detection or culture; however, polymerase chain reaction (PCR) is more sensitive for most respiratory viruses.<sup>5,7</sup> This panel uses real-time PCR technology to identify these respiratory viral pathogens.

### Individuals Suitable for Testing

- Immunocompetent patients who have symptoms of LRI
- Immunocompromised patients who have symptoms of either upper or lower respiratory tract infection

### Specimen Requirements

Submit nasopharyngeal or throat swabs in M4 transport medium collected with sterile swabs. Do not use calcium alginate swabs.

Bronchial alveolar lavage (BAL) or other respiratory washes and sputum are also acceptable and should be submitted in a sterile container or in M4 medium.

Ship refrigerated.

### Method

- Real-time PCR-based test specifically targeting DNA of adenovirus
- Real-time reverse transcription-PCR tests targeting the RNA of influenza viruses A and B, parainfluenza viruses 1, 2, and 3, and RSV
- Analytical sensitivity: varies with specimen type and organism; contact Quest Diagnostics Nichols Institute (1-800-NICHOLS) for more information.
- Analytical specificity: no known cross-reactivity with other organisms
- CPT code\*: 87798 (x7)

### Reference Range

Adenovirus:	Not detected
Influenza A:	Not detected
Influenza B:	Not detected
Parainfluenza 1:	Not detected
Parainfluenza 2:	Not detected
Parainfluenza 3:	Not detected
RSV:	Not detected

### Interpretive Information

A positive result is consistent with infection by the virus(es) detected. Diagnosis of LRI, however, should rely on clinical and chest radiographic findings.

A negative test result is consistent with the absence of infection but may also be due to RNA or DNA concentrations below the detection limit of the assay.

## References

1. Latham-Sadler BA, Morell VW. Viral and atypical pneumonias. *Prim Care*. 1996;23:837-848.
2. Janssens J-P. Pneumonia in the elderly (geriatric) population. *Curr Opin Pulm Med*. 2005;11:226-230.
3. Whimbey E, Englund JA, Couch RB. Community respiratory virus infections in immunocompromised patients with cancer. *Am J Med*. 1997;102:10-18.
4. Ison MG, Hayden FG. Viral infections in immunocompromised patients: what's new with respiratory viruses? *Curr Opin Infect Dis*. 2002;15:355-367.
5. Roghmann M, Ball K, Erdman D et al. Active surveillance for respiratory virus infections in adults who have undergone bone marrow and peripheral blood stem cell transplantation. *Bone Marrow Transplant*. 2003;32:1085-1088.
6. Dykewicz CA, National Center for Infectious Diseases, Centers for Disease Control and Prevention, Infectious Diseases Society of America, American Society for Blood and Marrow Transplantation. Guidelines for preventing opportunistic infections among hematopoietic stem cell transplant recipients: focus on community respiratory virus infections. *Biol Blood Marrow Transplant*. 2001;7 Suppl:19s-22s.
7. Henrickson KJ. Advances in the laboratory diagnosis of viral respiratory disease. *Pediatr Infect Dis J*. 2004;23:s6-s10.

\*The CPT codes provided are based on AMA guidelines and are for informational purposes only. CPT coding is the sole responsibility of the billing party. Please direct any questions regarding coding to the payor being billed.

These tests were developed and their performance characteristics determined by Quest Diagnostics Nichols Institute. They have not been cleared or approved by the U.S. Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. Performance characteristics refer to the analytical performance of the tests.

Polymerase chain reaction (PCR) is performed pursuant to a license agreement with Roche Molecular Systems, Inc.

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