

Rapid Diagnosis of Viral Respiratory Tract Infections – Multiplex Molecular Approach

Test Name: Respiratory Viral Panels



Viral respiratory infections contribute a large portion of hospital visits in the US for both children, approximately six to nine upper respiratory infections (URI) per year, and adults, about two to four per year. A rapid diagnosis using molecular methods targeting multiple viral causes may lead to more efficient management of patients, particularly children, elderly and immunocompromised, and aid in limiting their spread through infection control practices.

Infection Overview

Respiratory viral infections are the seventh leading cause of death in the US, with annual costs estimated at more than \$10 billion.¹ There are about a dozen common respiratory viruses responsible for upper and lower respiratory infections and only half get specific diagnosis. It is also reported that influenza is accurately diagnosed in only 28% of hospitalized and 17% of outpatient cases.² Although respiratory syncytial virus (RSV) and human metapneumovirus (hMPV) are primarily detected in pediatric samples, severe RSV and hMPV infections have been described in adults of all ages with and without underlying disease, such as chronic obstructive pulmonary disease (COPD) or asthma. In addition, infections with these pathogens can have atypical presentations, such as hMPV

pericarditis in an otherwise healthy adult. To effectively prescribe treatment and control the spread of respiratory infection, clinicians need to know which of these pathogens are infecting a patient. Therefore, early and specific detection is critically important both to improve individual patient outcomes and to prevent the spread of disease.

Other outcome measures include changes in bed management and use/duration of unnecessary and potentially harmful therapies, e.g., reduction of the high levels of antibiotic use in URI patients with viral infections, number of ancillary tests, laboratory/hospital costs, and healthcare consumer satisfaction.

Diagnostics Overview

Molecular detection methods have enhanced the understanding of URI and lower respiratory infection (LRI) epidemiology and also facilitated detection of novel pathogens. Studies have demonstrated that the overall rates of positivity for any respiratory virus in the clinical samples were highly dependent on the test methodology and the number of viral targets detected by the assay.³ A single virus or multiple viruses (4% of the samples) were detected with prevalence rates of approximately 20% for rapid antigen direct tests (3 viruses), 20% for direct fluorescent antibody (DFA) (8 viruses), 35% for rapid cell culture (7 viruses), and 63% for comprehensive molecular methods (15 viruses). It is increasingly evident that molecular viral panel tests are superior to traditional virus detection methods due to enhanced sensitivity and specificity, a broad range of virus detection, and rapid turnaround time. Since these assays are highly specific, the positive predictive value remains high even during times of low viral prevalence.⁴

Quest Diagnostics is pleased to offer Respiratory Virus Panels at many of our regional laboratories

	Respiratory Virus Panel	Respiratory Virus Panel IV
National Test Code	95512	91233
CPT*	87633	87632
Performing Labs	Irving Marlborough Solstas	Focus
Sample Type	NP Swab	NP Swab Sputum, BAL, Aspirate
Pathogens Detected	Adenovirus Human Metapneumovirus Influenza A Influenza A H1 Influenza A H3 Influenza B Parainfluenza 1,2,3 RSV-A RSV-B Rhinovirus	Adenovirus Human Metapneumovirus Influenza A Influenza B Parainfluenza 1,2,3,4 Respiratory Syncytial Virus Rhinovirus

Panel components may be ordered separately.

* 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 payer being billed.

References

- Centers for Disease Control and Prevention. Surveillance for viral hepatitis—United States, 2012. <http://www.cdc.gov/hepatitis/Statistics/2012Surveillance/Commentary.htm>. Updated January 5, 2015. Accessed July 15, 2015.
- Poehling KA, Edwards KM, et al. The under recognized burden of influenza in young children. *N Engl J Med*. 2006;355(1):31-40.
- Ginocchio CC, et al. Evaluation of multiple test methods for the detection of the novel 2009 influenza A (H1N1) during the New York City outbreak. *J Clin Virol*. 2009;45:191-195.
- Ginocchio CC, McAdam AJ. Current best practices for respiratory virus testing. *J Clin Microbiol*. 2011;49(9):S44-S48.