

Staying healthy during flu season

Influenza and respiratory syncytial virus (RSV)

Multiple tests for optimal care

In the United States, respiratory virus season usually begins in October and lasts through April, although regional variation does occur. During these months, a number of different viruses are responsible for respiratory disease. The most important of these are influenza and respiratory syncytial virus (RSV), but others such as parainfluenza, rhinovirus, adenovirus and human metapneumovirus can also cause significant disease. In general, these viruses cause a clinical syndrome termed “influenza-like illness” due to overlapping clinical signs and symptoms (fever, cough, headache, sore throat, runny nose, fatigue, possibly muscle aches).

Clinical signs and symptoms of influenza-like illness vary by person, ranging from asymptomatic carriage to severe disease requiring hospitalization. These respiratory viruses are easily spread throughout the community and health care environment and contribute greatly to the morbidity and mortality of the population. As such, the laboratory plays a crucial role in facilitating an accurate diagnosis. In this regard, most laboratories rely upon so-called “rapid antigen tests” to diagnose the most common viruses – influenza and RSV. However, rapid antigen tests are unreliable (false negative test results can exceed 40 percent). False negative test results lead to adverse outcomes, including inappropriate use of antibacterial antibiotics, inability to institute proper infection control measures, and the spread of disease throughout health care facilities and the community.

Beaumont Laboratory uses a FDA-approved nucleic acid amplification test (NAAT) to simultaneously detect and differentiate influenza A, influenza B and RSV from nasopharyngeal swab specimens. NAATs provide the most accurate test results with a false negative rate of 3 percent or less.

Clinical indicators: influenza and/or RSV infection

Symptoms	Influenza-like illness (abrupt onset of fever, chills, headache, myalgia, sore throat, cough, fatigue). Other symptoms include bronchiolitis, tracheobronchitis, croup.		
Incubation	Range (1 to 5 days). Patients are infectious approximately one day before the onset of symptoms and for up to a week thereafter. Infants may shed virus for longer periods of time.		
	Adults	Children	Elderly and immunocompromised
Influenza infection: primary cause of upper respiratory tract infection during respiratory virus season. The infection is usually self-limiting and resolves within a week.	Influenza infection: primary cause of upper respiratory tract infection during respiratory virus season. Infection can be very dangerous for non-immunized children.		Influenza and RSV infection: these patient populations are extremely vulnerable. Infections tend to be severe, requiring hospitalization due to complications such as pneumonia, polyneuritis, myositis, cardiomyopathy and encephalopathy. Reye’s syndrome may also occur after influenza infection.
RSV infection: A common cause of upper and lower respiratory tract infection and a common cause of asthma and COPD exacerbation.	RSV infection: primary cause of lower respiratory tract infection in children less than 2 years of age. Common cause of upper and lower respiratory tract infection in older children. A common cause of asthma exacerbation.		

- Mufson M.A. Respiratory Viruses, In Clinical Virology Manual, 3rd Edition. pp 235-251. ©2000, ASM Press. Washington, D.C.
- Chartrand C, et al. Accuracy of Rapid Influenza Diagnostic Tests: A Meta-Analysis. *Ann Int Med* 2012 156(7):500-511.
- Miernyk K, et al. Performance of a rapid antigen test (Binax NOW RSV) for diagnosis of RSV compared with real-time polymerase chain reaction in a pediatric population. *J Clin Virol* 2011 50(3):240-243.
- Casiano-Colon, et al. Lack of sensitivity of rapid antigen tests for the diagnosis of RSV infection in adults. *J Clin Virol* 2003 28(2):169-174.
- Hall CB. Respiratory Syncytial Virus, In Mandell, Douglas, and Bennett’s Principles and Practice of Infectious Diseases, 7th Ed. pp:2207-2221. ©2010 Churchill Livingstone Elsevier.
- Treanor JJ. Influenza Viruses, Including Avian Influenza and Swine Influenza, In Mandell, Douglas, and Bennett’s Principles and Practice of Infectious Diseases, 7th Ed. pp:2265-2288. ©2010 Churchill Livingstone Elsevier.

Principle of the test

Beaumont Laboratory uses a highly sensitive, FDA-approved nucleic acid amplification test (NAAT) to simultaneously detect and differentiate influenza A, influenza B and respiratory syncytial virus (RSV) from nasopharyngeal swab specimens. Nucleic acid amplification is the optimal diagnostic testing modality for detection of these respiratory viruses. Rapid antigen testing is no longer recommended due to sub-optimal test sensitivity (i.e. a high false negative test result rate).

Beaumont Laboratory is committed to providing the most accurate diagnostic testing strategies for respiratory viruses. Use of NAAT will enhance detection of these respiratory viruses, which leads to optimal patient care, proper initiation of infection control measures and proper utilization of antiviral antibiotic therapy.

Specimen collection:

Nasopharyngeal (NP) swabs should be maintained in the nasopharynx for 30 seconds and gently rotated to obtain optimal diagnostic material.

NP swabs (rayon, Dacron, flocked) must be placed into viral transport medium (universal transport media [UTM], universal viral transport [UVT]) and refrigerated (2-8°C or 36-46°F).

Rejection criteria:

- bloody specimens
- samples in bacterial transport systems
- specimens on dry swabs
- specimens submitted on cotton or calcium alginate swabs, or on wooden shaft

Test code: FLRSV

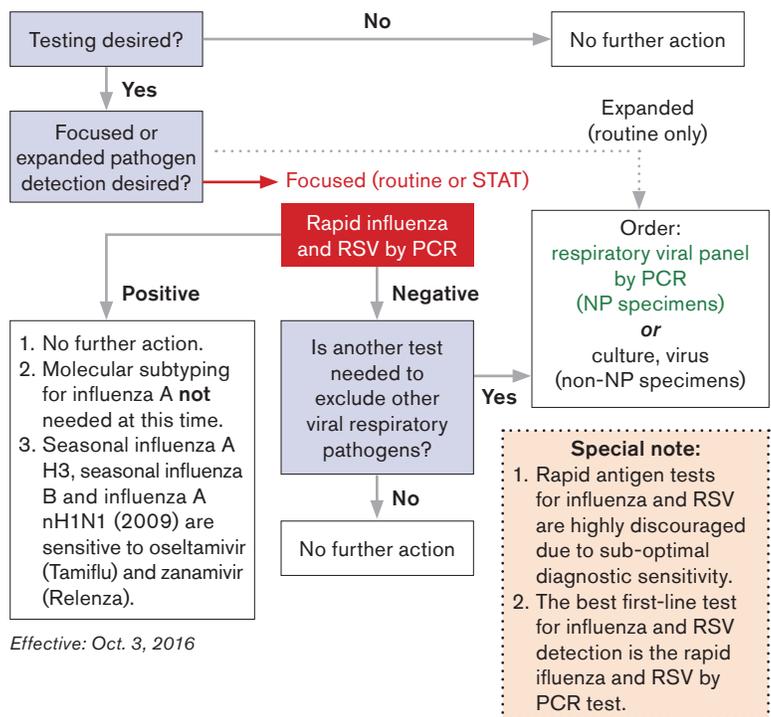
Specimen storage:

Transport specimen to the Clinical Microbiology Laboratory as soon as possible. Store refrigerated (2-8°C or 36-46°F).

DO NOT FREEZE SPECIMENS

	Detects	Sensitivity	Specificity
Rapid Influenza and RSV by PCR	influenza A influenza B RSV	>97%	>98%
Rapid Antigen Test	influenza A/B	50-80%	>98%
	RSV	70-90%	>98%

Beaumont Laboratory testing recommendations



Effective: Oct. 3, 2016

- Sunday through Saturday, 24 hours a day
- Results are available the same day.
- Results are available within two hours from receipt in the laboratory if ordered STAT.

Treatment guidelines

Please refer to the following sources provided by the Centers for Disease Control and Prevention (CDC):

- influenza – <http://www.cdc.gov/flu/>
- RSV – <http://www.cdc.gov/rsv/>

For more information or questions about influenza, RSV and/or other respiratory virus, please contact Bobby Boyanton, M.D., Barbara Robinson-Dunn, Ph.D., D(ABMM), or a Customer Service agent at 800-551-0488.

Beaumont

BEAUMONT LABORATORY • 800-551-0488