

- Laboratory Diagnostic Procedures for Influenza
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Laboratory Diagnostic Procedures for Influenza

Influenza can be difficult to diagnose from clinical symptoms alone because the initial symptoms may be similar to those caused by other infectious agents such as *Mycoplasma pneumoniae*, adenovirus, respiratory syncytial virus, rhinovirus, parainfluenza viruses, and *Legionella* spp.

A number of tests can help in the diagnosis of influenza (see Figure 1); however, tests do not need to be done on all patients. For individual patients, tests are most useful when they are likely to give a result that will help with diagnosis and treatment decisions.

- ◆ Virus can be isolated from throat and nasopharyngeal swabs. Results generally take 4-5 days. If no virus is isolated, a negative result may take 2 weeks.
- ◆ Commercial rapid influenza tests are available that can detect influenza viruses within 30 minutes. Median sensitivities of rapid diagnostic tests are approximately 70-75% when compared with viral culture, but median specificities of rapid diagnostic tests for influenza are approximately 90-95%. False-positive results are more likely to occur when disease prevalence in the community is low, which is generally at the beginning and the end of the influenza season. False-negative results are more likely to occur when disease prevalence is high in the community, which is typically at the height of the influenza season.

- ◆ Serological testing for influenza requires paired acute and convalescent sera, does not provide results to help with clinical decision-making, and is **not generally recommended**, except for research and public health investigations. **Serological testing results for human influenza on a single serum specimen are not interpretable and are not recommended for the diagnosis of influenza.**

Appropriate samples for influenza testing include nasopharyngeal (NP) or throat swabs, nasal washings, or nasal aspirates, depending on which type of test is used. Regardless of the type of test performed, samples should be collected within the first 4 days of illness.

During a respiratory illness outbreak in a closed setting (e.g. hospital, nursing home, cruise ship), testing for influenza can be very helpful in determining if influenza is the cause of the outbreak. Samples should be tested by both rapid tests and by viral culture. Rapid tests can provide information to assist with treatment and control measures. Viral cultures are essential in determining influenza subtypes and strains causing illness, as well as for surveillance of new strains that may need to be included in the next year's influenza vaccine. During outbreaks of influenza-like illness, viral culture can also help identify other causes of illness when influenza is not the cause.

Figure 1: Laboratory Tests for Influenza Diagnosis

Procedure	Influenza Types Detected	Acceptable Specimens	Time for Results	Rapid Result Available
Viral culture	A & B	NP swab, throat swab, nasal wash, bronchial wash, nasal aspirate, sputum	3-10 days	No
Immunofluorescence DFA Antibody Staining	A & B	NP swab, nasal wash, bronchial wash, nasal aspirate, sputum	2-4 hours	No
RT-PCR	A & B	NP swab, throat swab, nasal wash, bronchial wash, nasal aspirate, sputum	2-4 hours	No
Enzyme Immuno Assay (EIA)	A & B	NP swab, throat swab, nasal wash, bronchial wash	2 hours	No
Rapid Diagnostic Tests	A & B (most), some detect A only	Depends on the type of test	Less than 30 minutes	Yes
Serology (<i>Not recommended for routine testing, see above</i>)	A & B	Paired acute & convalescent serum samples	2 weeks or more	No

Source: CDC Seasonal Flu Website (<http://www.cdc.gov/flu/professionals/diagnosis/index.htm>).

Thank You to the Participants of the Rotary Family Flu Shot Day



Over 200 volunteers from over 30 different organizations participated in the Rotary Family Flu Shot Day, held at Bishop Manogue High School this past Saturday, October 25, 2008. This collaborative event

helped the Washoe County Health District (WCHD) test its mass dispensing plans that would be used in a mass illness response such as a bioterrorism attack or in the

event of a pandemic such as pandemic influenza. Almost 2500 people were safely vaccinated for seasonal influenza in three and a half hours at the event. This free service provided a community savings of over \$70,000, and was part of a statewide effort that tested the Nevada public health community's ability to coordinate and collaborate in an operational response across multiple jurisdictions. Congratulations to all the volunteers, community members, and staff who participated on a job well done!

Influenza Surveillance, Washoe County, 2008-2009

The Washoe County Health District (WCHD) continued limited influenza surveillance from June through September with three local emergency departments reporting on a weekly basis. Enhanced influenza surveillance resumed on September 28, 2008, and will continue through May, 2009.

Goals of the program are to:

- ◆ Characterize the prevailing strains of influenza in the community,
- ◆ Measure the impact of the disease in the community, and
- ◆ Obtain and disseminate information regarding influenza activity to health care providers, the public and those concerned with control measures.

The influenza surveillance program consists of five major components:

- 1) Weekly reports of influenza-like illness (ILI) to the Communicable Disease Control Program by selected sentinel health care providers. Six sentinel providers have agreed to participate in the 2008-2009 Influenza Surveillance Program. They include four hospital emergency departments, one family practice office, and one student health service. The providers for this season are:
 - Family Medicine Associates
 - Northern Nevada Medical Center
 - Renown Regional Medical Center
 - Renown South Meadows Medical Center
 - Saint Mary's Regional Medical Center
 - UNR Student Health Center

Each site sends weekly reports tallying the numbers of patients who meet the case definition of ILI and the total numbers of patients seen at that site for any reason. **The case definition for ILI is fever ($\geq 100^{\circ}\text{F}$ [37.8°C], oral or equivalent) AND cough and/or sore throat (in the absence of a KNOWN cause other than influenza).** Patients who meet the case definition but have diagnostic tests to confirm another cause (e.g., a positive strep or RSV test) are not counted as ILI. *A patient with fever, chills, body aches and nasal congestion, but no cough or sore throat, is not considered a case of ILI.*

- 2) The collection of a limited number of throat cultures by sentinel health care providers from persons with ILI. The purpose of the laboratory confirmation is to monitor when influenza arrives in the community and verify which type of influenza viruses are circulating in the community. All positive influenza type A cultures will be subtyped.
- 3) Monitoring of influenza/pneumonia mortality through death certificates. Deaths due to pneumonia and influenza (P&I deaths) are reported weekly as a proportion of all deaths recorded in Washoe County. The number of P&I deaths each week are compared

to national levels, as well as to the number that would be expected in the absence of an influenza epidemic.

- 4) All health care providers, school nurses and extended care facilities who see an unusually high incidence of ILI in their setting are encouraged to report to the District Health Department by calling (775) 328-2447.
- 5) Syndromic surveillance systems which monitor real-time visits for respiratory illnesses as their chief complaints at four emergency departments (ED) and near real-time over-the-counter sales for cough and/or cold remedies. **WCHD is looking for additional urgent care facilities to participate in this real-time disease surveillance system. If you are interested, please contact the Communicable Disease Program at 328-2447.**

The information collected is reported weekly and can be accessed at the following website:
<http://www.washoecounty.us/health/cdpp/is.html>.
Updates will also be provided in future editions of the *Epi-News*.

For information regarding the Washoe County influenza surveillance program, please contact Denise Stokich at (775) 328-6188. Multiple, ready-to-print influenza patient education materials are available on the following website:
<http://www.cdc.gov/flu/professionals/patiented.htm>.

Influenza is a reportable disease as defined in Nevada Administrative Code 441.A. **Health care providers must report influenza cases with a positive laboratory test (including rapid tests performed in the office or lab) by faxing reports to (775) 328-3764 or by calling the Communicable Disease Program at (775) 328-2447.**

This is also a good opportunity to remind patients about the following recommended health habits to prevent disease transmission:

- ◆ **Avoid close contact.** Avoid close contact with people who are sick. When you are sick, keep your distance from others to protect them from getting sick too.
- ◆ **Stay home when you are sick.** If possible, stay home from work, school, and errands when you are sick. You will help prevent others from catching your illness.
- ◆ **Cover your mouth and nose.** Cover your mouth and nose with a tissue when coughing or sneezing, or cough/sneeze into the inside of your elbow. It may prevent those around you from getting sick.
- ◆ **Clean your hands.** Washing your hands often will help protect you from germs.
- ◆ **Avoid touching your eyes, nose or mouth.** Germs are often spread when a person touches something that is contaminated with germs and then touches his or her eyes, nose, or mouth.