

## Laboratory Diagnostics - Appendix 2

### New Jersey Department of Health and Senior Services Instructions for Collection, Testing, and Shipping of Influenza Specimens

The accuracy and clinical usefulness of all laboratory analyses are limited by the quality and appropriateness of the specimen. The techniques used for the collection and submission of specimens can influence the outcome of test results.

Appropriate samples for influenza testing can include a nasopharyngeal swab, throat swab, nasal swab, and nasal wash/aspirates. Gargles and sputum are not acceptable specimens for influenza testing. Samples should be collected within the first 3-4 days after symptom onset. To ensure samples are collected appropriately, follow the collection instructions provided below.

Rapid influenza tests can provide test results usually in less than one hour; viral culture provides results in 3-10 days. Most of the rapid tests that can be performed in a physician's office are approximately >70% sensitive for detecting influenza and approximately >90% specific. Thus, as many as 30% of samples that would be positive for influenza by viral culture may give a negative rapid test result. And, some rapid test results may indicate influenza when a person is not infected with influenza.

Positive and negative predictive values of rapid antigen kits increase when the influenza virus is circulating in the community. However, test results on samples collected early in the season are important to understand which strains of influenza are circulating. It would be impossible for health care providers to test every person presenting with influenza-like illness; however, health care providers are encouraged to submit samples early in the influenza season (initial patients presenting with influenza like illness), during the peak of the season, and towards the end of the season. This will help to characterize influenza strains throughout the influenza season.

#### Collection of Influenza Samples

##### Nasal swab

- Materials
  - Dry polyester swab
  - Viral transport media tube (3 ml)
- Procedure
  - Insert a dry polyester swab into the nostril. Using a gentle rotation, push the swab until resistance is met at the level of the turbinates (less than 1 inch into the nostril). Rotate the swab a few times against the nasal wall. Repeat in the other nostril using the same swab.
  - Put the tip of the swab into the plastic vial containing 3 ml of viral transport media and cut off the applicator stick.
  - If a rapid antigen kit is going to be used, ideally two samples should be drawn in the manner described above. Package inserts accompanying the rapid antigen test kit should be followed when processing one of the two samples. If the test is positive, a second sample should be submitted to the Division of Public Health and Environmental Laboratories (PHEL) for additional testing to confirm the results of onsite testing.

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### Nasopharyngeal (NP) or Oropharyngeal (OP/throat) swab

- Materials
  - Sterile Dacron/nylon swab
  - Viral transport media tube (3 ml)
- Procedure
  - Collect specimen with a sterile Dacron/nylon swab with a non-wooden shaft (do NOT use calcium alginate swabs or swabs with wooden sticks as they may contain substances which can inactivate viruses or interfere with PCR testing).
  - Insert the swab through the nostril, parallel to the palate to the posterior nasopharynx (distance from the nostrils to the external opening of the ear). The swab should be left in place for a few seconds to absorb secretions. Slowly withdraw the swab with a rotating motion. Swab both nostrils with the same swab.
  - For OP swab, swab the posterior pharynx and tonsillar areas, avoiding the tongue.
  - Put the tip of the swab into the plastic vial containing 3 ml of viral transport media and cut off the applicator stick.
  - If a rapid antigen kit is going to be used, ideally two samples should be drawn in the manner described above. Package inserts accompanying the rapid antigen test kit should be followed when processing one of the two samples. If the test is positive, a second sample should be submitted to PHEL for additional testing to confirm the results of onsite testing.
  - A demonstration of NP swab collection can be found at <http://www.cdc.gov/vaccines/ed/surv07/surv07-resources.htm>

### Nasopharyngeal aspirates/wash

- Materials
  - Suction apparatus
  - Sterile suction catheter
  - Sterile saline
  - Viral transport media
- Procedure
  - Aspirate nasopharyngeal secretions through a catheter connected to a mucus trap and fitted to a vacuum source.
  - For NP wash have the patient sit with head tilted slightly backward. Instill 1ml-1.5ml of nonbacteriostatic saline (pH 7.0) into one nostril. No saline is used for an aspirate.
  - Insert the catheter into the nostril parallel to the palate. Apply the vacuum and slowly withdrawn the catheter with a rotating motion. Mucus from the other nostril should be collected the same way. Specimen should be placed in a sterile vial.
  - If a rapid antigen kit is going to be used, ideally two samples should be drawn (e.g., one from each nostril) in the manner described above. Package inserts accompanying the rapid antigen test kit should be followed when processing one

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of the two samples. If the test is positive, a second sample should be submitted to PHEL for additional testing to confirm the results of onsite testing.

### Use of Rapid Antigen Test Kits

If a rapid antigen test is positive or if a rapid antigen test was not performed but influenza is suspected, a second sample should be sent to PHEL for additional testing. In order to ensure that consistent testing is performed at both the physicians' office and reference laboratories, PHEL recommends collecting two samples at the same time as indicated in the instructions above. All samples should be labeled, stored and packaged appropriately as described below.

### Storage, Packaging and Shipping

Careful handling of collected specimens is important to ensure that the integrity of the sample is maintained. The following steps should be followed to ensure that the best quality sample is received.

- The *vial containing the specimen* should be labeled with patient's first and last name, date of birth, medical record number, date of collection, and specimen type. Ensure the cap is tightly sealed to avoid leakage. **Samples which are not labeled correctly will not be accepted for testing.**
- A SRD-1 form should be completed on each specimen that is being shipped to PHEL. This form is available at <http://www.state.nj.us/health/forms/srd-1.pdf>. Every effort should be made to ensure samples reach PHEL within 24 hours of collection.
- Specimens should be kept refrigerated (2-8° C) prior to shipping. If delivery will be delayed for several days, specimens should be frozen at -70° C. Delay in shipment may decrease sensitivity of additional tests.
- **PHEL will accept specimen deliveries Monday through Thursday.** Samples collected on Friday or Saturday should be held in refrigeration and shipped on Sunday or Monday.
- Samples should be packaged in accordance with DOT regulation 49 CFR 178.199 utilizing packaging meeting DOT specifications for biological substances. Please include a frozen cold pack with the specimens to maintain the cold chain during shipment.
- For questions regarding laboratory aspects of the flu surveillance call Bruce Wolf at 609-984-2622.
- Specimens should be mailed to the following address:  
New Jersey Dept of Health and Senior Services  
Public Health Laboratories  
John Fitch Plaza  
Health and Agriculture Building  
1 South Warren St  
Trenton, NJ 08625  
c/o Bruce Wolf, Virology Program  
609-984-2622

**Resources** <http://www.cdc.gov/flu/professionals/diagnosis/>