

# NPHL Alert Novel Coronavirus 9/4/2020

## Collecting and Handling Laboratory Specimens from Nebraska Patients with Suspected COVID-19

(Changes from previous Alert are highlighted in yellow)

### Introduction

Healthcare Personnel (HCPs) who collect, handle, transport or test clinical specimens from a patient under investigation (PUI) for Coronavirus Infectious Disease-19 (COVID-19) with the SARS-CoV-2 virus should adhere rigorously to the following precaution measures and biosafety practices listed in <https://www.cdc.gov/coronavirus/2019-nCoV/hcp/clinical-criteria.html>. HCPs caring for patients with COVID-19 are at elevated risk of exposure.

### Testing at Nebraska Public Health Laboratory

Patients tested at NPHL are **REQUIRED** to meet the priority requirements below<sup>1</sup>:

**In-patients:** Hospitalized patients **with symptoms**

**Out-patients:** Persons with a clinical or rule-out diagnosis of COVID-19 in groups as follows:

- Symptomatic or high-risk exposed healthcare workers
- Residents and staff at nursing homes to define an outbreak situation per the UNMC Infection Control and Prevention Program (ICAP) recommendations (follow-up surveillance testing is not provided by NPHL). **Select nursing homes with rapid COVID-19 Ag testing can submit:**
  - Symptomatic staff and residents where COVID-19 is suspected that were negative by the POC test (diagnostic testing),
  - Symptomatic staff and residents where COVID-19 is suspected but there is no access to a POC assay (diagnostic testing),
  - Asymptomatic staff and residents with close and prolonged contact to a documented case of COVID-19 (high risk screening), or
  - Positive POC assay result for confirmation when warranted.
- Residents and staff at group homes or homeless shelters to define an outbreak situation (follow-up surveillance testing is not provided by NPHL)
- Patients of Federally Qualified Health Centers (FQHC) or tribal health centers only by prior arrangement with local or state public health.
- **School or Daycare Outbreaks:** Although CDC does not currently recommend universal screening by schools, parents are encouraged to daily monitor children for overt symptoms and prohibit school attendance if symptoms are seen. <https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/symptom-screening.html>. Any positive school cases should be reported immediately to the LHD and followed up with close contact tracing. A small number of swabs may be provided by the LHD to test the most affected contacts and sent to NPHL.

### Specimens NOT accepted by NPHL:

- Pre-surgical patients
- Dialysis patients
- OB & patients in labor
- Facility screenings

These recommendations are subject to revision depending on COVID-19 lab testing capacity at NPHL, local laboratories, and commercial reference laboratories. NPHL will not be testing on weekends or holidays. Please have specimens to the lab by 11 am Friday for results before the weekend.

Providers can seek NPHL testing for patients who fail to meet these requirements based on special circumstances that warrant rapid turnaround time should contact a state/local public health authority for telephone pre-authorization. For all other patients, order COVID-19 testing through the **TestNebraska**,

NeMedicine, as well as the local hospitals or reference laboratories such as CHI Core Laboratory, Nebraska Methodist Medical Center, Physicians Laboratory, or Bryan Medical Center (Lincoln). Other greater Nebraska laboratories accepting specimens for testing from patients outside their facility include Morrill Co-Bridgeport, CHI-Plainview, and Great Plains-North Platte.

On-line ordering of the NPHL COVID-19 test is now required, using the NUIirt online ordering system at NPHL. Laboratories MUST communicate with ordering physicians on the requirement to complete the paper COVID-19 form, including demographics and all criteria above. The physician's handwritten copy MUST accompany patient specimen to the on-site laboratory. Specimens should NOT be accepted unless ALL patient information on the form have been answered, as per routine laboratory requirements. Laboratories are NOT allowed to falsify criteria if unknown, per CLIA regulations<sup>ii</sup>.

The on-site lab then can access NUIirt through this link <https://nulirt.nebraskamed.com> using an existing NUIirt account. If you are a new user, follow the link to register and create a new account. See NUIirt instructions at <http://nphl.org>. When ordering electronically through NUIirt, pay particular attention to the e-mail account (i.e., user id) utilized at the time of log-on to NUIirt, as the result will be reported back by secure e-mail to that account.

## Testing at Commercial Laboratories

Multiple commercial laboratories are available to test for COVID-19 (Nebraska laboratories listed above). Physicians should consider if a lab test is warranted or whether clinical diagnosis of COVID-19 infection suffices. Patients with a clear source of exposure (e.g., household member of a known lab-confirmed case) and a clinical presentation consistent with COVID-19 may not warrant a lab test.

Generally, most facilities have an established relationship with a commercial laboratory. If not already established, the facility should set up a commercial account to arrange computer access and courier pickup. Standard patient collection centers and other phlebotomy sites provided by commercial labs traditionally cannot collect specimens.

Commercial laboratories currently experience the same bottlenecks with delayed results. Further details can be found at the commercial laboratory's website or contact them directly.

## TestNebraska:

- All persons living in Nebraska are invited to complete an assessment and to schedule a COVID-19 test. Nebraskans can complete an assessment at [TestNebraska.com](https://testnebraska.com) or [TestNebraska/es](https://testnebraska.es) for Spanish.
- Upon completing the assessment applicants will receive an email from TestNebraska informing them of eligibility. For those who are eligible, the email will direct them to select a convenient specimen collection site, date and time. A confirmation email will include a bar code, which should be brought to the collection site.
- A TestNebraska hotline is available to provide individuals completing an assessment with answers to general questions at (402) 207-9377.
- For long-term care and assisted living facility baseline testing recommendations, please visit: <http://dhhs.ne.gov/Pages/COVID-19-Testing.aspx>
- If collection is not available in a local area, contact TestNebraska for collection kits and arrange for collection by nurse or provider. Specimens should be sent to **Client Services, CHI St Elizabeth Lincoln, 555 S 70th Street (Door#8 North side) Lincoln NE 68510**

## Respiratory Specimen Collection Checklist

Maintain proper infection control (<https://www.cdc.gov/infectioncontrol/guidelines/isolation/index.html#a4>) when collecting specimens or performing other aerosolizing procedures. Use appropriate PPE-following standard, contact, airborne precautions plus eye protection including eye protection such as goggles and/or disposable face shield, respirator-preferably N-95, N-99 or Powered Air Purifying Respirator (PAPR), a long-sleeved gown, and gloves. The

surgical mask can be used when triaging the patient, however CDC recommends the respirator when possible to collect actual specimen due to the risk of aerosolization.

A video for NP swab collection is available at: <https://www.youtube.com/watch?v=osl9W-0005g&feature=youtu.be>

## Proper Notification

- Communicate with facility IP, ICAP and Local Health Department
- Contact testing location to order supplies provided specific to their test methodology:
  - NPHL supplies: <https://cip-dhhs.ne.gov/redcap/surveys/?s=D9XWWCNDMY>
  - TestNebraska hotline: (402) 207-9377
- Use appropriate patient data entry system:
  - NPHL - register for NUIrt account prior to collection. Instructions at <http://nphl.org/>
  - TestNebraska – Instruction at <https://www.testnebraska.com/en>
- Be proactive and call to make courier arrangements prior to collecting specimens:
  - **NPHL Client Services at (866) 290-1406** to ask what the ground options are for your location. Hours are 24/5 Monday-Friday, and Saturday/Sunday from 7am to 3pm. To make arrangements after 3pm on Saturday or Sunday, call the client services pager at 402-888-2086.

## Proper PPE

- Maintain proper infection control when collecting specimens
- Use ICAP approved PPE-following standard, contact, airborne precautions plus eye protection including eye protection such as goggles and/or disposable face shield, respirator-preferably N-95, N-99 or Powered Air Purifying Respirator (PAPR), a long-sleeved gown, and gloves.

A video on PPE donning and doffing is available at: <https://www.youtube.com/watch?v=bG6zISnenPg>

## Proper Supplies

- Sterile Nasopharyngeal (NP) swab
- Transport media 1mL (Acceptable devices are VTM, UTM, VCM, M4 or PBS Saline).  
**If multiple tests ordered (influenza season), collect 2 swabs**
- Tissue and Gauze
- Patient Label with Last, then first name and DOB
- One small biohazard bag per specimen collected
- Larger Biohazard bags to hold all smaller bags
- Category B UN3373 Shipping box with inner Styrofoam cooler (provided by NPHL)
- Category B Shipping Paper (provided by NPHL or found on NPHL website)
- 4-5 Frozen Gel-Paks
- Arrange for courier (attached), confirm courier is available within 24 hr of collection.



Collect one (1) Nasopharyngeal (NP) swab. Facilities must first perform a risk assessment to assess if collection or testing can be safely performed. If a facility is unable to safely collect or perform multiplex PCR, see notes below. Specimens should be collected as soon as possible once a PUI is identified to fit the CDC criteria regardless of the time of symptom onset.

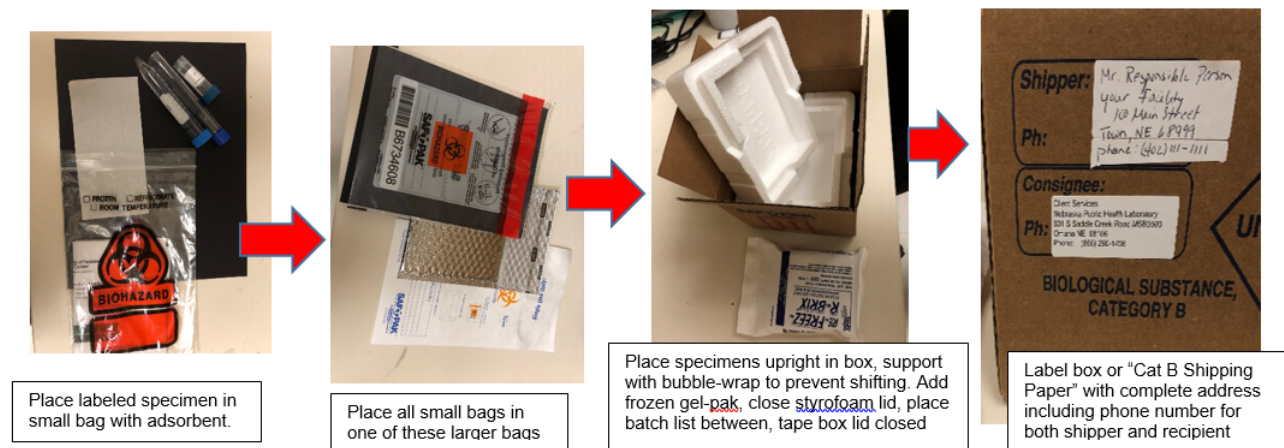
## Collection and packaging of nasopharyngeal specimens

<http://repository.netecweb.org/pdfs/COVID-19%20Lab%20Spec%20Coll%20Nasopharyngeal%20Swab.mp4>  
<https://www.nejm.org/doi/full/10.1056/NEJMvcm2010260>

- View videos above prior to collection. Exception: Do not label specimen before collection, instead after disinfecting tube (CLIA requirement). Do not use thumb to cover tube before breaking swap shaft, instead use cap or gauze. Discard gauze in medical waste.
- NP collection kits can be obtained from NPHL by submitting an Incident Command form 213RR to the local health department for approval. LHD will submit to via RedCap to the EFS8 Desk.
- Kits supplied by NPHL may contain viral transport media (VTM or MTM) or normal saline/PBS as both are acceptable.

- Collect additional NP swabs (2 swabs) if:
  - Multiple tests are required and the transport medium contains only 1mL
  - Rapid detection tests require extracting reagent be added to the original specimen.
- Use only swabs designed for NP collection, usually a mini-tipped synthetic fiber swab with thin metal/plastic shaft. Acceptable collection devices are VTM, UTM, VCM, M4, saline, or PBS. Do not use calcium alginate swabs or swabs with wooden shafts used for bacterial cultures, as they may contain substances that inactivate some viruses and inhibit PCR testing. Any swab tip larger than the minitip flocced swab will make NP collection painful or impossible for the patient due to the size.
- ✓ Prepare supplies by organizing supplies in orderly and logical manner on disinfected bedside table. Loosen cap on vial, partially open swab packaging, and remove backing on label.
- ✓ Appropriately don PPE according to facility policy. Use hand sanitizer gel on gloves prior.
- ✓ Explain procedure to patient while hand sanitizer is drying.
- ✓ Confirm labels with patient ID.
- ✓ Stand to the side, not directly in front of the patient when collecting to avoid aerosols.
- ✓ Ask patient to lean head back, close eyes. Hold patient forehead back firmly.
- ✓ Insert mini-tip swab with a flexible shaft through the nostril parallel to the palate (not upwards) until resistance is encountered or the distance is equivalent to that from the ear to the nostril of the patient, indicating contact with the nasopharynx. Swab should reach depth equal to distance from nostrils to outer opening of the ear.
- ✓ Gently rub and roll the swab.
- ✓ Leave swab in place for several seconds to absorb secretions.
- ✓ Slowly remove swab while rotating it.
- ✓ Specimens can be collected from both sides using the same swab, but it is not necessary to collect specimens from both sides if the mini-tip is saturated with fluid from the first collection. If a deviated septum or blockage create difficulty in obtaining the specimen from one nostril, use the same swab to obtain the specimen from the other nostril. Do not sample the nostrils or tonsils.
- ✓ Gently hold, then rotate swab to absorb secretions.
- ✓ Slowly withdraw the swab. Entire process may take 30 seconds
- ✓ Place swab immediately into a sterile tube containing 1 ml of media.
- ✓ If the swab has a break line, cover vial opening with cap or gauze and hold away from HCPs and patients, to break off swab handle. If score line not available, aseptically cut swab stick off below lid line. Discard gauze in medical waste.
- ✓ Tighten cap straight on vial, make sure shaft of swab is short enough not to be in contact with lid, thus preventing a secure seal and leakage in transport.
- ✓ Lay tube down on new disinfectant wipe, hand sanitize gloves.
- ✓ With same disinfectant wipe, disinfect tube thoroughly. Let dry.
- ✓ Label specimen container with the following 5 items: patient full name, DOB, time and date of collection, source (NP) and collector initials.
- ✓ Place each specimen in small bio-hazard bag (i.e., secondary container) with absorbent material. Seal.
- ✓ Disinfect outside of bag and hand to clean side
- ✓ Appropriately doff PPE and tend to patient
- ✓ Staff on clean side can place all small bags into one or more larger bags to double bag.
- ✓ Refrigerate specimen at 2-8°C immediately after collection or keep in cooler with frozen gel-pak.
- ✓ Before or after collection, enter each patient NPHL's NUIrt Order Entry system, with complete documentation of patient demographics and symptoms.
- ✓ Print a batch list after all patients entered. Print
- ✓ Add or refresh frozen gel-paks immediately prior to courier pick up.
- ✓ Place batch list between inner Styrofoam cooler and Category B box lid for non-exclusive couriers. Attach to large bag when using exclusive courier.
- ✓ Seal Category B box with shipping tape.
- ✓ Complete all highlighted areas of NPHL Category B Shipping Paper and tape to top of box.
- ✓ Offer Category B box (non-exclusive courier) or large specimen bag (exclusive courier) to NPHL courier.
- ✓ See images below for more detailed packaging instructions.





## Shipping and Transport to NPHL

Packaging, shipping, and transport of PUI specimens to NPHL must follow shipping regulations for **UN 3373 Biological Substance, Category B**. All personnel who package and transport specimens (including couriers) need to be trained in safe handling practices and spill decontamination procedures. Shippers are responsible for correctly classifying and packaging the material(s) for the purpose of protecting the public, personnel in the transportation industry, emergency responders, as well as other laboratory or healthcare staff from accidental exposure to the contents of the packages. The responsibility to correctly package and ship infectious material is that of the sender, not the recipient or consignee.

Laboratories should be proactive and calculate the most efficient means of transporting specimens to NPHL. Call NPHL Client Services at (866) 290-1406 to ask what the ground options are for your location. Client Services hours are 24/7 Monday-Friday, and Saturday/Sunday from 7am to 3pm. To make arrangements after 3pm on Saturday or Sunday, call the client services pager at 402-888-2086.

The NPHL ground courier (Lab Logistics) between Omaha and Lincoln are "Exclusive" and can accept secondary biohazard bags without an outer rigid box. Routes to Grand Island and Kearney are possible. However, all other NPHL ground couriers are not exclusive and are required to ship CoVID (or any other Category B specimen) in an insulated Category B shipping box which is certified and marked as such.

- ✓ DO NOT use a pneumatic-tube system to transport these specimens in-house.
- ✓ Keep refrigerated 2-8°C at all times, including transport (by shipping with frozen gel-paks).
- ✓ If frozen before shipment, transport on dry ice and document "Frozen Specimens" in NUIrt batch list.
- ✓ **NEVER SHIP IN STYROFOAM ONLY**
- ✓ If NPHL ground courier is unable to transport to NPHL within a reasonable time or due to cost, please call the NPHL emergency pager at (402) 888-5588 to arrange FedEx shipments. Arrangements will be made to provide Category B certified boxes to be shipped "Priority Overnight" (NOT First Overnight) for delivery next day by 10:30am to NPHL client services.
- ✓ All couriers must transport to: **Nebraska Public Health Lab, 601 S Saddle Creek Rd MSB 3500, Omaha 68106**

## Rapid Respiratory Panel (RPP) To Rule-Out Other Pathogens

Respiratory pathogen panel (RPP) and influenza testing are no longer required as part of the algorithm for COVID-19 workup and testing. However, during the upcoming influenza season, using RPP as a triage test and performing COVID-19 testing only if negative remains a useful strategy to preserve testing capacity.

## Point-of-Care Testing for COVID-19, Influenza and other pathogens

Multiple point-of-care assays have been or are being marketed for rapid testing of potentially infected patients. Follow closely the manufacturer's instructions when using these types of assays and recognize the performance characteristics of each assay to be sure that they are being used appropriately for the population tested. These tests can easily aerosolize the specimen and must be performed in a BSC. If not available, the testing personnel must wear an N-95 mask and goggles or face shield and work behind a Plexiglass tabletop splashguard when performing any POC test.

## In-House Clinical Laboratory Testing

When indicated, clinical laboratories should continue to perform routine hematology, urinalysis, and clinical chemistry studies. Microbiology labs can perform diagnostic tests on blood, sputum, urine, or stool specimens.

Facilities must first perform a Risk Assessment to identify the tasks that create aerosols (below) and mitigate prior to testing in a clinical settings, also known as biosafety level-2 (BSL-2). One method of mitigation is to enhance biosafety precautions by implementing enhanced BSL-3 practices. Ideal BSL-3 practices include wearing respiratory protection (such as a fit-tested N-95 or N-99 respirator or surgical mask if N-95 not available although this is not as protective), a face shield or goggles, and work in a Biological Safety Cabinet (BSC). To use the BSC, work slowly and methodically, from dirty to clean, and remove gloves immediately after every exit. **See BSC just-in-time training at: <https://www.youtube.com/watch?v=96-aZLom340>**

Not all enhancements may be possible, but all conceivable measures must be taken to protect the HCP. The following activities that involve manipulation of potentially infected respiratory specimens should be performed in a certified Class II BSC:

- ✓ Performing rapid diagnostic test kits such as those used for RSV, Strep A, and influenza kits (all respiratory specimens testing should be manipulated inside the BSC).
- ✓ Adding specimen aliquots to test analyzers e.g. multiplex PCR cartridges.
- ✓ Aliquoting, vortexing and/or diluting specimens.
- ✓ Inoculating bacterial or mycological culture media.
- ✓ Nucleic acid extraction procedures.
- ✓ Preparation and chemical- or heat-fixing of smears for microscopic analysis.
- ✓ Opening of sealed rotor centrifuge cups or centrifuged specimen containers in unsealed rotor cups.

BSC NOTE: **Remove gloves upon every exit of the cabinet**, use good glove-glove technic, move slowly not to aerosolize what has contaminated the gloves.

Facilities performing the following activities causing aerosolization but are unable to use a BSC must consider enhancing precaution when working on the bench. Upon performing a risk assessment consider using face shield or goggles and N95 or N-99 (or surgical mask if N95 are not available or in short supply although this is not as protective), and performed behind a Plexiglass tabletop splashguard if possible:

- ✓ Performing any rapid diagnostic test kit such as those used for RSV, Strep A, influenza, or COVID-19 kits in a laboratory, clinic settings or doctor's office where a BSC is not available.
- ✓ Vortexing specimens without caps on an open bench top
- ✓ Loading and unloading of automated tests e.g. multiplex PCR panel
- ✓ Working with multi-plex instruments when kits or panels lodge, are stuck or broken and require additional manipulation
- ✓ Laboratorian is immunosuppressed or has a co-morbidity

#### Notes:

- If a facility is unable to safely collect specimens, notify the LHD for directions to alternate collection locations.
- Questions regarding testing or other usual circumstances should go through email at [nphl@unmc.edu](mailto:nphl@unmc.edu). However, NPHL will not give out results. Results can be found on the NUIrt system.
- If a laboratory test confirms the presence of another respiratory pathogen such as the influenza virus, RSV, or *Streptococcus pneumoniae*, but clinical suspicion remains high for either a co-infection or a secondary infection, then consideration for COVID-19 testing should be discussed with public health officials.
- Laboratory waste can be handled as all other medical waste. Use two red liner bags, tie with an overhand balloon knot, place waste and sharps waste inside double bags. Contact medical waste courier for specific requirements. Specimen couriers are not trained to transport medical waste. **Do not throw in regular trash.**

<sup>i</sup> <https://www.cdc.gov/coronavirus/2019-nCoV/hcp/clinical-criteria.html>

<sup>ii</sup> <https://oig.hhs.gov/authorities/docs/cpqlab.pdf>