## COVID-19 Next Generation Sequencing Specimen Collection and Submission Instructions

### Coordination with Epidemiologists

Providers interested in submitting samples for SARS-CoV-2 next generation sequencing (NGS) must coordinate with their Local and/or Regional Public Health Department ([https://www.dshs.texas.gov/regions/2019-nCoV-Local-Health-Entities/](https://www.dshs.texas.gov/regions/2019-nCoV-Local-Health-Entities)). Local and Regional Public Health Departments must seek sequencing approval from Texas DSHS EAI DU epidemiologists ([EAI DU-Coronavirus@dshs.texas.gov](mailto:EAI DU-Coronavirus@dshs.texas.gov)) to initiate the submission process.

### Criteria for Prioritized Specimens

a. Specimens from patients who already have a positive COVID-19 PCR lab result; a PCR positive sample must be available for sequencing

b. Priority specimens for reinfection evaluation include the following:
   - Specimens from symptomatic or asymptomatic COVID-19 patients who have 2 positive PCR tests separated by at least 90 days and stored clinical samples or RNA extracts are available for both tests

c. Priority specimens for genetic variant surveillance include the following:
   - Symptomatic or asymptomatic COVID-19 patients who are close contacts with a case of known infection with a SARS-CoV-2 genetic variant of concern
   - Patients with a history of international travel to a location where there is known, or suspected, community spread of one or more SARS-CoV-2 genetic variants of concern
   - Patients with an extremely severe or unusual COVID-19 illness presentation
   - Patients who are fully vaccinated with an FDA authorized COVID-19 vaccine, with the most recent dose occurring at least 2 weeks prior to illness onset and no SARS-CoV-2 RNA or antigen detected on a respiratory specimen collected <45 days before the most recent positive test.
   - Patients who developed COVID-19 in congregate living settings with attack rates over 75% within a 2-week period, where up to 5 samples will be sequenced per outbreak
   - Other outbreak specimens where there is reason to suspect an infection with a SARS-CoV-2 genetic variant of concern.
   - Specimens from COVID-19 associated pediatric deaths
   - Specimens from potential reinfections with at least 2 positive PCR results that meet all other sequencing criteria (this includes samples where initial positive PCR test sample is unavailable)

### Specimen Types

- **All specimens submitted for Next Generation Sequencing (NGS) must have been previously tested by PCR methods and confirmed to be positive for COVID-19**
- **The PCR results should have target gene PCR CT value of ≤ 30**
- **The ONLY samples that can be sequenced with CT values > 30 are vaccine breakthrough and reinfection cases**

**RNA Extracts (preferred)**

- **minimum volume required:** 30 µl

**Clinical Specimens**

- Nasopharyngeal (NP) swabs in viral transport media (VTM)
- Oropharyngeal (OP) swabs and Nasal swabs are also acceptable
- Specimen collected in Universal Transport Media (UTM), Amies, or 0.85% Saline are also acceptable
- **Minimum volume required:** 0.8 mL (volume as low as 0.4mL may be accepted for testing but may not be sufficient for completion of all tests required)
## Specimen Collection, Handling, and Shipping

- RNA extracts and clinical specimens should be stored frozen at -70°C and must be shipped frozen on dry ice for overnight delivery.
- Complete the line list. All fields marked with an asterisk (*) must be filled. Ship the specimens with a hard copy of the completed line list to the DSHS Laboratory.
- **If sending both RNA extracts and clinical specimens in the same shipment, enter all RNA extract specimen information at the top of the line list followed by clinical specimen information.**
- Label the tubes with the specimen ID and date of collection. The identifiers on the tubes must match those entered on the line list.
- If sending RNA extracts and clinical specimens in same shipment, please put RNA extracts and clinical specimens in separate biohazard bags.
- Maintain proper infection control when handling specimens. Guidance can be found at [https://www.cdc.gov/infectioncontrol/guidelines/isolation/index.html#a4](https://www.cdc.gov/infectioncontrol/guidelines/isolation/index.html#a4).
- If shipping specimens through a courier, specimens may be shipped Monday-Thursday for receipt at the DSHS Laboratory Tuesday-Friday. Weekend delivery will be considered on a case by case basis and requires pre-approval by DSHS. Contact EAI/DU epidemiologists for pre-approval.
- Place the specimen container in a zip-lock style biohazard bag and securely seal the bag. Place a hardcopy of the line list in the outer sleeve of the bag or attach it to the outside of the bag (Note: DO NOT seal the line list inside the biohazard bag with the specimen as we cannot process potentially contaminated forms). Put the bag or bags in a Styrofoam insulated cardboard box for shipping.
- Follow international Air Transportation Regulations for shipping of Category “B” Biological Substances - Infectious Subs. brochure - PHMSA.
- Ship to the physical address: TX DSHS Laboratory Services, ATTN: Walter Douglass 512-776-7569, 1100 W. 49th Street, Austin TX, 78756.
- **Record and send the shipping tracking number and an electronic copy of the completed line list by email to wgs.dshs@dshs.texas.gov with the expected delivery date.**
- Samples received with missing information or without submitting facility information may be unsatisfactory for testing if missing information not received within 3 working days of receipt.

## Results Reporting

- If the submitter/provider requests the results, the results will be added to the submitted line list and emailed back to the submitter by the DSHS Laboratory.