

SARS-CoV-2 Virus, Surveillance – Next Generation Sequencing

Use

To determine the lineage and variants of positive COVID-19 specimens. Not for clinical diagnosis. For public health surveillance purposes only.

Clinical Significance

COVID-19 remains a public health concern, with periodic increases in transmission influenced by seasonal patterns and emerging variants; however, its impact can be managed through effective public health interventions, including ongoing surveillance of emerging variants. The OSDH Public Health Laboratory (PHL) contributes to these efforts by sequencing the viral genomes of SARS-CoV-2-positive specimens collected from various sites across Oklahoma. Per Oklahoma Administrative Code 310.515, hospitals and laboratories in Oklahoma are required to submit, at a minimum, 10% of their weekly SARS-CoV-2-positive specimens to the OSDH PHL for variant testing. Use the [SARS-CoV-2 Surveillance Shipping Manifest](#) to list specimens in shipment. Further background information, fact sheets, statistics and educational resources may be found at the OSDH Infectious Disease Services [website](#).

Methodology

Next Generation Sequencing

Specimen Type

Residual viral transport media from confirmed SARS-CoV-2-positive specimens, including those collected by:

- Nasopharyngeal (NP) swab or wash/aspirate
- Oropharyngeal (OP) swab or wash/aspirate
- Nasal mid-turbinate swab
- Anterior nares (nasal) swab
- Naturally expectorated sputum

Acceptable collection media include those that allow for viral culture, including saline, PBS, UTM, Amies, and VTM.

Ideally, specimens should have a SARS-CoV-2 RT-PCR Ct value of ≤ 30 cycles. If Ct values are not available, specimens that are deemed SARS-CoV-2-positive by another testing modality are acceptable.

Minimum Volume/Size

800 μ L

Collection Instructions

Respiratory virus detection depends on the collection of high-quality specimens, their rapid transport to the testing laboratory and appropriate storage before testing. Training in specimen collection is highly recommended due to the importance of specimen quality. Specimens should be collected using standard procedures of the submitting site. Additional guidance is contained in the links below.

- See [Guidance for Collection of Nasopharyngeal Swab](#)
- See [Guidance for Collection of Oropharyngeal Swab](#)
- See [Guidance for Collection of Nasal Swab](#)

Common Causes for Rejection

- Inappropriate transport media (e.g., Hologic Aptima buffer; PrimeStore Molecular Transport Media)
- SARS-CoV-2-negative

- QNS for testing

Shipping

Residual transport media from SARS-CoV-2-positive specimens should be stored frozen (at least -20°C but -70°C or colder is preferred) immediately after testing at the submitting site. Specimens can be shipped in batches (weekly or monthly) to the OSDH PHL; ship frozen on dry ice to ensure the integrity of nucleic acids for sequencing. Ship for next day delivery by commercial carrier. Alternatively, if site is unable to provide dry ice for shipment, please call the OSDH PHL at 405-564-7750 at least 24 hours ahead of scheduled submission to arrange shipment via the OSDH-contracted courier.

Use the [SARS-CoV-2 Surveillance Shipping Manifest](#) to list specimens in shipment.

Turn-around Time

Not applicable

Reference Range

Not applicable

Reportable Results

SARS-CoV-2 sequencing results are not reported to the submitter or patient.

Interpretation

N/A

Limitations/Interferences

Success in sequencing is limited by the amount and quality of viral nucleic acids in the specimen; care in storage and shipping of specimens is essential.

CPT Code

N/A

Notes

For epidemiologic surveillance purposes only.