THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Health

DIVISION OF PUBLIC HEALTH
State Virology Laboratory

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DATE: March 4, 2021

RE: Submission of SARS-CoV-2 specimens for sequencing – a guide for healthcare providers

Dear Healthcare Providers,

Thank you for your questions regarding our sequencing efforts of SARS-CoV-2 at the Alaska State Public Health Laboratories. This letter is meant to serve as a guide to answer your questions about our processes and how you can contribute.

Why do all this sequencing? The genome of the first SARS-CoV-2 virus serves as a reference point to which we have compared all other genomic variations of this virus as it replicates and mutates in various populations around the world. Mutations demonstrate improved viral fitness as evidenced by increased transmissibility and natural or vaccine-induced immune evasion. These viruses are designated variants of concern (VOCs) because they threaten the health of our public and the effectiveness of our critical tools such as diagnostic tests, therapies, and vaccines. It is important to have high visibility of these variant viruses as we navigate to the end of this pandemic together.

Alaska Sequencing Objectives
The objectives at the national level overlap with, but are different from, those at the state/local level where sequencing has the potential to be much more impactful. Statewide sequencing objectives in Alaska include:

- providing a more granular picture of the local molecular epidemiology
- investigation of severe COVID-19
- differentiating reinfections versus long COVID-19 illness
- identifying variants that infect fully vaccinated individuals
- investigating outbreaks in healthcare facilities, workplaces (including food-processing facilities), homeless shelters, etc.

To achieve these objectives, targeted sampling is required. Sequencing is a labor-intensive and long 4-day process from start to finish and we need to be strategic in selecting samples to make turnaround times meaningful epidemiologically. Specimens that do not fall into these priority groups will not be rejected and are stored in our positive specimen repository for sequencing in the future. Maintaining a positive specimen repository also allows for investigation of potential reinfection events by providing a reference sample for comparison to the suspected reinfecting strain. Because the sequencing method we use at the Alaska State Public Health Laboratories is not validated, physical reports cannot be generated. Despite the method being unvalidated, we are confident in our sequencing approaches as a laboratory familiar with these technologies as well as our practice of continually performing confirmation of lineages identified via sequencing through specimen exchanges between local and federal partners.

Please find the following page of information useful to your decision-making regarding specimen collection and submission to the Alaska State Public Health Laboratories to meet our objectives for sequencing. We appreciate your help!

Sincerely,

Jayme Parker
Chief, Health Program Manager IV, Alaska Public Health Laboratories

Table 1. Priority specimens to submit for sequencing

• Travelers that have traveled outside of Alaska in the last 14 days
• Patients from rural areas
• Outbreaks
• Vaccine breakthroughs
• Potential reinfections

Table 2. Screening tests and requirements for recollection*

Test	Specimen Instructions for Sequencing
Abbott ID NOW	Positive patients must be recollected*.
Binax NOW Antigen	Positive patients must be recollected*.
Cue COVID-19	Positive patients must be recollected*.
Hologic Panther	If multi collection device used, samples must be recollected*. If sample collected in VTM or UTM, submit the remainder of the specimen.
Cepheid GeneXpert	If patient tests positive, submit remainder of specimen to be sequenced. Provide Ct values, if possible.
Any other test	If there are remnants available from a previously collected specimen (must be swab + VTM/UTM), send the remainder of the specimen for sequencing. If specimen was collected in any other manner, recollect* the patient.

*Recollection = Recollect a specimen (nasal, oropharyngeal, or nasopharyngeal) using a swab and place the swab in universal transport media (UTM) or viral transport media (VTM). Keep the specimen refrigerated at (2-8C) or frozen. Follow shipping instructions in our test directory (link below).

Table 3. Helpful websites and forms online to guide specimen submissions for sequencing

Description	URL
Laboratory Testing for COVID-19 Information	http://dhss.alaska.gov/dph/Labs/Pages/COVID.aspx
Test Directory *(pg. 23 describes SARS-CoV-2 specifically)*	http://dhss.alaska.gov/dph/Labs/Documents/LaboratoryTests.pdf#page=23
Supply Request *(VTM/swabs/shippers)*	http://dhss.alaska.gov/dph/Labs/Documents/publications/LabSupplyRequest.pdf
Request form *(one must accompany each specimen submitted)*	http://dhss.alaska.gov/dph/Labs/Documents/SARS-CoV-2RequestForm.pdf
Submission instructions for sequencing	http://dhss.alaska.gov/dph/Labs/Documents/COVID_NGS.pdf
Alaska COVID Genomic Surveillance Weekly Report	http://dhss.alaska.gov/dph/Labs/Documents/AKSeqCon_GenomicSituationReport.pdf