

EXECUTIVE SUMMARY

National SARS-CoV-2 Strain Surveillance (NS3) System Guide for Public Health Laboratories

The National SARS-CoV-2 Strain Surveillance (NS3) program provides a comprehensive surveillance system for the United States to track virus evolution over time and identify emerging variants that may affect the performance of diagnostics, therapeutics, or vaccines, or that impact the transmissibility of SARS-CoV-2 or severity of COVID-19. A notable strength of NS3 is the regular collection of specimens from across the United States to support variant characterization efforts, which provides important data to inform public health decision-making. The NS3 program is dependent on jurisdictions for the shipment of culturable viral specimens to CDC and high quality, rapid sequencing and submission of sequence data to public repositories for relevant and timely data on circulating SARS-CoV-2 strains.

To support national SARS-CoV-2 strain surveillance efforts, CDC is requesting jurisdictions work towards meeting the following goals:

1. Routine shipments of positive SARS-CoV-2 specimens to CDC

- CDC is requesting jurisdictions collect recent positive SARS-CoV-2 specimens and ship them bi-weekly to CDC.
- Viruses isolated from specimens received from public health laboratories are evaluated in CDC laboratories and allows for phenotypic characterization of the viruses in circulation. This information is used to understand their potential impact on current vaccines, treatments, and diagnostics, and their overall risk to public health.
- Biweekly targets for each jurisdiction are listed in Table 1 of the guidance document.

2. Routine generation of high-quality SARS-CoV-2 sequence data and upload to public repositories

- CDC is requesting that jurisdictions collect recent specimens, generate high-quality sequences and submit sequences to public repositories to support national and jurisdictional level genomic surveillance efforts.
- Biweekly targets for each jurisdiction are listed in Table 1 of the guidance document.
 - National goals: This national surveillance goal of detecting 1 or more rare/novel variants at a prevalence of 0.1% (1/1000) with a 95% confidence interval is population based and target numbers are capped at 90.
 - Jurisdictional goals: This optional goal is invariant of human population and is the same for each jurisdiction. This number provides novel variant detection of viruses circulating in a jurisdiction at 3% with a confidence interval of 95%.

The target numbers are goal thresholds. For some jurisdictions, these target numbers may be difficult to reach even during times of high transmission. The goals are provided for awareness purposes only, and are not tied to funding requirements; however, jurisdictions are encouraged to make efforts toward reaching these goals to support national surveillance. Additional specimen

submissions and sequencing above the jurisdictional goals are appreciated and have the added opportunity of improving novel variant detection within the jurisdiction.

This guidance document also includes information on recommended quality thresholds jurisdictions should aim to meet in order to generate high-quality sequences for public surveillance. Sequence data that does not meet the quality thresholds are not able to be included in CDC's Nowcast analysis.