

Health

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UW Medicine gets green light to test for coronavirus

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📷 **1 of 3** | A medical lab scientist at UW Medicine in Seattle shows a collected nasal swab sample from Washington to be tested for the novel coronavirus Wednesday.... (Ken Lambert / The Seattle Times) **More** ✓

By [Sara Jean Green](#) *Seattle Times staff reporter*

To combat the national shortage of diagnostic tests for the new coronavirus, SARS-CoV-2, the Federal Drug Administration (FDA) gave authorization to UW Medicine to test patient specimens provided by physicians and health care providers, according to two UW Medicine

scientists involved in developing the test and ensuring its accuracy.

The UW Medicine virology laboratory has the capacity to dramatically speed up the time it takes to determine if someone has the virus.

State Department of Health (DOH) officials had earlier acknowledged a problem with the federally approved testing kits initially supplied last month to state public health laboratories across the nation. Those problems stymied testing for — and recognition of — the virus's spread in Washington.

The UW Medicine lab got the green light to begin testing on Saturday. As of Tuesday, scientists had tested about 200 specimens, said Dr. Alex Greninger, the lab's assistant director who headed the team that began working on a SARS-CoV-2 test in January, as soon as the virus's genetic sequences had been mapped and made available to scientists around the world.

Greninger said the lab has capacity to test 1,000 samples a day, and is working to increase that number to 4,000 or 5,000 a day as the epidemic worsens, which it's expected to do. The test is based on one developed by the World Health Organization.

Previously, the Public Health Laboratory in Shoreline was the only local agency authorized to test for the virus, but that lab only has capacity to test up to 200 samples a day. By partnering with the UW Medicine virology lab, health officials are able to increase testing capacity as the virus spreads.

“The state lab was built for the purpose of understanding the epidemiology of transmission. We're built for large volume testing for people around the Puget Sound

and around the country,” said Dr. Keith Jerome, the head of the virology division within the UW School of Medicine’s department of laboratory medicine.

The poorly functioning kits to test for SARS-CoV-2 — the virus that causes the disease known as COVID-19 — required the Centers for Disease Control and Prevention (CDC) to manufacture new kits that only began arriving in labs late last week. The delay meant the spread of novel coronavirus largely went undetected for weeks until new kits became available, [public health officials and infectious disease experts told The Seattle Times](#).

Until last week, the DOH had been sending potential coronavirus samples to the CDC in Atlanta as part of a cumbersome testing process that took up to five days to yield results.

The UW Medicine lab is aiming for an eight-hour turnaround on test results. And while the lab will currently accept samples from anywhere in the country, Jerome said that could change at a moment’s notice and priority will be given to UW Medicine patients and local residents. Ten people have died in Washington from the virus as of Wednesday afternoon. California reported its first fatality on Wednesday, [The Washington Post reported](#).

Known as the UW SARS-CoV-2/COVID-19 assay, all tests that are presumed positive or inconclusive for the virus will be sent from the UW lab to the public health lab and the CDC for further testing. Each test performed by the UW Medicine lab costs about \$200, in line with tests for other respiratory viruses.

At a Wednesday news conference to announce the new test, members of the media were asked not to publicize the lab’s location in order to maintain the safety of the specimens stored there.

“This is a respiratory pathogen that seems to cause significant disease. This is one of the most challenging ones I’ve seen in my lifetime,” Greninger said. “Seattle and the West Coast are the front lines of this virus and we will do whatever we can to protect the rest of the United States.”

That includes sending positive specimens to labs in other states so scientists have access to the virus’s genome before it appears in their communities, and working with manufacturers for a hoped-for future vaccine.

“We’re sharing everything. There’s a huge spirit of collaboration,” Jerome said of the national scientific effort to understand how the virus manifests and is transmitted. “No

one is hoarding their keys right now.”

Working with researchers at the Fred Hutchinson Cancer Research Center, Jerome said UW Medicine has collaborated with colleagues at the University of Nebraska and the New York Department of Health and worked closely with officials at the FDA and CDC.

“I’m very humbled by this virus. We are not winning against this virus and it’s likely this epidemic is growing so our work is nowhere near done,” Jerome said.

After getting federal approval to begin testing, Jerome commended the “heroic effort” of the lab’s 60 employees, who worked until 2 a.m. Wednesday and were back by 7 a.m. to get test results out to doctors and patients as quickly as possible.

“Testing is the main weapon against this virus ... Until we have a vaccine, this is our major tool. We’re working around the clock,” he said.

Healthy people don’t need to get tested for SARS-CoV-2 and should continue washing their hands, avoiding crowds and isolating themselves as much as possible, Jerome said. Doctors who see patients who present with a dry cough and a fever of 101 F or higher can submit specimens for testing.

Greninger said the coronavirus’s long incubation period has been a major challenge in controlling its spread. But luckily, he said, it has a very large ribonucleic acid (RNA) genome and since it has only recently emerged in humans, its genetic diversity is limited in comparison to other viruses. There are currently three known genetic sequences of SARS-CoV-2.

He said the UW Medicine lab has taken steps to make sure patient identifiers are accurately matched to samples to avoid problems like those seen in San Diego, [where an infected woman was mistakenly released from isolation to general quarantine before she was told to return.](#)

Greninger explained that doctors or health care providers send the lab specimens swabbed from deep inside the nose and throat as well as liquid from the lower respiratory tract. The samples are placed in large, automated extractors which extract nucleic acid, which contains the virus’s genome. Then, using a process known as a reverse transcription polymerase chain reaction, scientists are able to amplify a small section of the genome. He said the coronavirus has 30,000 nucleotides — the basic structural units in DNA and RNA — and the UW test targets 100 of them specific to SARS-CoV-2.

Two distinct regions of the virus's genome — the RNA-dependent RNA polymerase gene and the E gene — are what the tests are meant to detect. If both genes are detected, a test is positive. If only one is detected, the test is considered inconclusive. If neither is detected, the test is presumed negative.

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