2020 Overarching Jurisdictional SARS-COV-2 Testing Strategy

Jurisdiction:	Vermont
Population Size:	626,000

1. Describe the overarching testing strategy in your state or jurisdiction.

a)

The Vermont Department of Health Laboratory (VDHL) is utilizing the ThermoFisher KingFisher Flex testing platform for SARS-CoV-2 testing. In mid-May, VDHL acquired a second Kingfisher from the vendor and procured a third as the initial instrument needs to be returned to EEE/West Nile mosquito testing program in mid-July This will provide VDHL with two dedicated high throughput instruments for testing this summer and into the Fall for a maximum daily testing capacity of 870 specimens, provided VDHL continues to have a steady flow of reagents and other consumables. VDHL partners in SARS-CoV-2 testing with the University of Vermont Medical Center and Larner College of Medicine (UVMMC) and has a contract to ensure any overflow testing from the VDHL can be processed at UVMMC or shipped to reference labs. UVMMC is also scaling up testing capacity by acquiring a Roche Cobas 6800 instrument. This is expected to be delivered and installed by late-July or early August 2020 and can test approximately 750 specimens in an 8-hour shift.

b)

The State of Vermont has a goal of conducting 7,500 tests per week to achieve the 152 tests per 100,000 recommendation from the Harvard Institute. This will greatly exceed the goal set by the CDC of testing at least 2% of the population each month.

Vermont has expanded the number of tests conducted by opening up local Health Department District Office specimen collection sites across the State, partnering with the National Guard to provide pop-up testing in five high-demand areas each week, opening up five FQHCs as testing sites, and expanding health provider and patient testing at hospitals. Finally, Vermont has recently changed regulations allowing pharmacists to order COVID-19 tests and will work to partner with local and chain pharmacies, focusing on nose swab and point-of-care testing strategies.

Different populations will be driven to each of these testing sites through outbreak response and media campaigns. PCR testing will be targeted at: symptomatic individuals, health care workers, patients undergoing procedures, individuals who are close contacts of cases, and individuals who are entering the State.

Vermont has enhanced monitoring and outbreak response testing for long-term care facilities. Guidance in alignment with CMS recommendations, including facility-wide testing prior to reopening is being rolled out in July. Vermont is also working with the department of corrections institutions and housing

for homeless populations to conduct testing for these congregate settings. For each of these populations the Health Department conducts both monitoring and outbreak response testing.

c)

In mid-April, Vermont established a Serology Testing Working Group with content experts in Infectious Disease, Epidemiology, Laboratory Science and Children's Health. This group convenes once a month, or as necessary to make recommendations. Their current recommendation is to study developments in the accuracy and reliability of serology test assays. The group recently added a recommendation which supports serology testing for any pediatric patients demonstrating signs of multi-system inflammatory syndrome in children (MIS-C).

The VDHL will identify a testing platform this summer and begin to train staff over the fall to prepare for possible serology testing this winter.

d)

The State is coordinating closely with hospitals on patient and staff testing plans – and hospitals are required to submit these plans to the State. FQHCs are working directly with the State on how to open and operationalize testing at each of their sites. The Health Department's Health Operations Center is running logistics in support of the National Guard and coordinating sites with high-need areas and times (e.g. high-travel tourist areas). On May 21, Vermont promulgated emergency guidance so pharmacists could become ordering providers, and the State is working with local pharmacies and chains to begin opening testing sites across the State to ensure access in areas that lack access now. The state is working with LTCF to roll out an enhanced testing protocol for these facilities. EMS and first response agencies are supporting surge sampling at testing sites across the state.

VDHL tracks supplies for the majority of the testing conducted by the State and UVMMC tracks supplies available through its network of hospitals providing testing for symptomatic patients as well as asymptomatic staff and patients schedules for procedures.

Communication: The Health Department holds separate weekly calls with hospitals, health care providers, and colleges and universities. Regular meetings with FQHCs, both as a group and individually are held to assist in implementation of their testing plans. The Health Department gathered a pharmacy group to discuss pharmacy administration of COVID-19 tests, which was well received. In coordination with the Department of Aging and Independent Living, the Health Department is gathering a working group to discuss implementation of enhanced testing protocols for long-term care facilities in June. The Health Department is within the same Agency of Human Services as the Department of Corrections, as well as programs supporting homeless populations, and is coordinating directly with them for testing and support of these populations.

Table #1a: Number of individuals planned to be tested, by month

BY MONTH:	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	TOTAL
Diagnostics*	26,000	30,000	35,000	36,000	37,000	38,000	39,000	40,000	281,000
Serology	NA	NA	0	0	0	0	12,000	12,000	24,000
TOTAL	26,000	30,000	35,000	36,000	37,000	38,000	51,000	52,000	

*Each jurisdiction is expected to expand testing to reach a minimum of 2% of the jurisdictional population.

Table #1b: Planned expansion of testing jurisdiction-wide

Name of testing entity	**Testing venue** (select from drop down)	**Performing Lab** (if different from testing entity)	**Daily diagnostic through-put**	**Daily serologic through-put**	**Specific at-risk populations targeted** (list all)
Health Department	Community-based	Public Health Lab	800	0	People in quarantine, health care workers, people in communities with outbreaks, individuals who cannot access other testing
Hospitals	Hospitals or clinical facility	UVMMC and other hospital and commercial labs	830		Health care providers, patients undergoing procedures, symptomatic Vermonters, patients in quarantine

Name of testing entity	**Testing venue** (select from drop down)	**Performing Lab** (if different from testing entity)	**Daily diagnostic through-put**	**Daily serologic through-put**	**Specific at-risk populations targeted** (list all)
Federally Qualified Health Centers	Federally Qualified Health Center	UVMMC and other hospital and commercial labs	830	0	FQHC patients and staff (symptomatic and asymptomatic)
National Guard pop-up sites	Community-based	Public Health Lab	800	0	People in quarantine, health care workers, people in communities with outbreaks, individuals who cannot access other testing
Long-term care facilities	Other	VDHL	10,000	0	long-term care residents and staff (per CMS guidelines)
Department of Corrections	Other	Public Health Lab	800	0	Department of Corrections inamates and staff
Pharmacies	Drug store or pharmacy	UVMMC and other hospital and commercial labs	830	0	People in quarantine, health care workers, people in communities with outbreaks, individuals who cannot access other testing

2020 Direct Expansion of SARS-COV-2 Testing by Health Departments

2. Describe your public health department's direct impact on testing expansion in your jurisdiction.

a)

The Health Department is committed to on-site facility specimen collection for high-risk populations in long-term care facilities, corrections, and congregate shelter for people without permanent housing. The state has also stood up multiple sample community-based collection sites, through District Health Offices, local EMS Agencies, and the National Guard, to reach the goal of 1000 tests daily. Vermont will expand capacity at the Vermont Public Health Laboratory to meet this demand. Specifically, Vermont procured a second ThermoFisher Kingfisher Flex auto-extraction 96 plate instrument to maintain a capacity of 870 specimens per day into mid-June and through the summer.

Additionally, the State of Vermont will continue to partner with the University of Vermont Medical Center to triage specimens to commercial laboratories with the shortest turn-around times. Vermont will work with the Vermont Health Information Exchange (VITL) to seek new partnerships with laboratories and improve electronic reporting from those that currently rely on faxes or the postal service. HL7 message feeds will be considered the gold standard. However, Health will accept CSV file drops to be converted to an XML to be read as an electronic lab report. In addition to a Kingfisher Flex instrument, the Vermont Department of Health Laboratory requires two Applied Bioscience 7500 Fastdc PCR instruments to replace the existing PCR instruments used for COVID-19 testing. These existing PCR instruments are experiencing maintenance issues that place existing testing capacity and turn-around times in jeopardy. Finally, it is necessary to acquire 8 multi-channel pipettes to improve efficiency of the testing process and reduce the opportunity for overuse injuries among microbiologists on the testing team.

b)

The Health Department has prioritized infection control and proactive testing for vulnerable and at-risk populations. This is true for all long-term care facilities, correctional facilities and homeless shelters. The Department's Outbreak Prevention and Response Team (OPR) provided proactive infection control guidance and assessment using CDC's ICAR tool. When a case is identified in a congregate setting the case follow-up team notifies the OPR team. OPR reaches out to the facility to provide outbreak specific infection prevention and control guidance and assesses the need for and ability to conduct facility-wide testing.

For LTCF, the State is rolling out new enhanced CDC guidance and requirements for testing in July. The guidance requires all nursing-home facilities to conduct facility-wide testing. Each facility will conduct their own specimen collection, and specimens will be shipped to Broad Laboratories for processing.

For correctional facilities, the State is testing all staff and inmates on a rotating basis. Focusing on one facility a week. Facility-wide testing also occurs if any cases are detected in staff or inmates.

For people experiencing homelessness, initially Vermont closed homeless shelters and housed homeless in motels. Health conducts testing among the homeless population in motels in collaboration with the Agency of Human Services. The Department is providing infection control guidance to shelter operators as shelters ready to reopen.

Vermont has required a healthcare worker testing plan for hospitals that are reopening. The plans require periodic testing of 2% of patient-facing staff. The plan also requires patients undergoing procedures that could put staff at risk be tested prior to the procedure.

Vermont's rate of SARS CoV-2 among Black and African American Vermonters is 154.8 per 10,000 compared to 17.0 per 10,000 among white non-hispanic Vermonters. Vermont will reach out to communities of color through existing partnerships in order promote testing and preventive measures. In addition, Vermont will increase data accuracy by adding race/ethnicity fields to the Micro 220 clinical requisition form at the Health Department clinics. Materials will be translated into languages other than English for those New Vermonters who may need additional information. State-run test sites will be located in places convenient for Vermont's immigrant and refugee populations. Translators and tele-translation will be utilized as required.

Colleges students are an important priority population. The Health Department is partnering with college health services to provide information on quarantining and to offer testing and develop guidelines and requirements for return-to-school in the fall. This is a critically important population for Vermont, as it represents a large influx of individuals from out-of-state arriving at the same time. A coordinated effort between the State, universities, colleges and municipalities is underway to ensure that guidelines are in place and implementation plans are ready for mid-August return dates.

c)

One significant barrier to managing expanded testing has been the management and tracking of inventory related to testing. Supplies such as swabs and reagents are all essential in ensuring that testing targets can be met on a sustained basis. The State is adapting has put in place an Inventory Management System tool. The plan includes purchase of the tool, training of staff, and ongoing maintenance.

Health has identified a need for specimen collection kits to be pre-assembled prior to clinics and therefore have ordered supplies in advance for assembly. Health has acquired 76,500 nasal swabs through a private vendor. We are now awaiting a similar supply of viral transport media or saline before assembling collection kits en masse. The State is leveraging the State Emergency Operations Center to

set up a specimen collection assembly process to ensure that when resources are available kits are ready to be deployed. We are working with our partners at UVMMC to distribute nasal swab collection kits as widely as possible, as these kit types reduce the need for PPE and are generally more accepted by the public. The State is leveraging the State Emergency Operations Center to set up a specimen collection assembly process to ensure that when resources are available kits are ready to be deployed.

A barrier to efficient results reporting is the lack of electronic interface between some laboratories and the Health Department. The Health Department is working closely with the Agency of Digital Services to identify solutions, expedite onboarding of HL7 feeds, and find creative workarounds using CSV drops in FTP sites that the Health Department converts to HL7 messages. One option being explored is the use of VITL, Vermont's HIE. Connections would be made directly to VITL from labs and providers that have no connection with the Health Department and then a feed would be set-up from VITL to the Health Department integrated surveillance system. This will streamline the process to receiving electronic lab reports.

d)

Vermont is closely following developments in serology testing performance and test utilization for reducing the spread of SARS-CoV2. While the performance characteristics of the serology assays have improved in recent weeks, content experts in Vermont do not support the use of serology testing for clinical decision-making (save children who present with symptoms of MIC-S). They do agree that a sero-survey among high risk populations could be instructive to managing future outbreaks, especially if conducted for epidemiological purposes.

The VDHL is identifying a serology testing platform this summer and will begin to train staff over the fall to prepare for possible serology testing in the winter per the workgroup's guidance.

e)

Testing in Vermont is highly coordinated through the Department of Health Operation Center and State Emergency Operations Center. In this way, Vermont quickly identifies potential risks and targets resources to outbreaks, situations, and geographies of high concern (e.g. a community outbreak in Winooski) and vulnerable institutionalized or homeless populations. Additionally, Vermont has the capacity to test asymptomatic Vermonters, providing a much better understanding of the disease spread within the State. Should supplies or capacity change, the State could swiftly refocus testing staff, supplies and sites to outbreak or high-priority settings.

Right now, Vermont is able to test asymptomatic individuals, and conduct community-based testing. Should supplies or the COVID-19 case burden change, Vermont would focus all resources first on the vulnerable and high-risk populations (e.g. long-term care, corrections).

The Health Department runs a data dashboard that displays cases by town, race/ethnicity, age and sex. This enables tracking and targeting of resources. As stated above, these data also allowed the state to identify racial and ethnic disparities, regional disparities, and changes over time.

f)

Health will require additional staffing for the lab, the epidemiology unit, data management, public health nursing, program management, communications, and budget oversight to support these expanded testing initiatives. Health's staffing expansion is currently occurring from within, as staff are deployed from other parts of our department. Health is working to hire sixteen additional staff per the submitted workplan. Health will work with the Department of Human Resources to create a waiver from the current hiring freeze to allow the Department to hire the following additional full-time staff:

- Program Manager
- Electronic Health Data Administrator
- (2) Business Application Support Specialists
- Public Health Analyst
- GIS-Public Health Analyst
- (2) Nurse Program Coordinator
- Communications and Media Coordinator
- Public Health Lab Quality Systems Manager
- Public Health Lab Safety Compliance Specialist
- Administrative Services Coordinator
- Public Health Lab Scientist II
- Public Health Lab Scientists III
- Public Health Lab Scientist IV
- Infectious Disease Epidemiologist

The State of Vermont is currently working through the State Emergency Operations Center in cooperation with the Governor's office to establish relationships with private vendors to ensure a steady supply of supplies, reagents, test kits, and collection materials. Health will incorporate a new Inventory Management System to track supplies for early alert when procurement of new supplies and prioritization of existing supplies is needed.

Table #2: Planned expansion of testing driven by public health departments

BY MONTH:	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	TOTAL
Number of additional* staff to meet planned testing levels		0	16						16
FOR DIAGNOSTIC TESTING									
How many additional* testing equipment/ devices are needed to meet planned testing levels? (provide an estimated number, and include platform details in narrative above)		1 Kingfisher instrument	2 PCR	1 Biomerieux BioFire			1 Roche Cobas 6800	1 GeneXpert	0

ELC ENHANCING DETECTION: VERMONT TESTING PLAN

BY MONTH:	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	TOTAL
Volume of additional swabs needed to meet planned testing levels[++]		28,000 nasal swabs and 8,000 NP swabs			28,000 nasal swabs and 8,000 NP swabs	28,000 nasal swabs and 8,000 NP swabs	28,000 nasal swabs and 8,000 NP swabs	28,000 nasal swabs and 8,000 NP swabs	0
Volume of additional media (VTM, MTM, saline, etc.) needed to meet planned testing levels[++]		25,000	30,000	30,000	30,000	30,000	30,000	30,000	205,000

BY MONTH:	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	TOTAL
Volume of additional reagents needed to meet planned testing levels, by testing unit and platform (i.e. 100K/day - Hologic panther; 100k/day - Thermofisher)		1,000/day ThermoFisher	1,000/day ThermoFisher	1,000/day ThermoFisher	1,000/day ThermoFisher	1,000/day ThermoFisher	1,000/day ThermoFisher; Biomerieux BioFire 175/day	1,000/day ThermoFisher; Biomerieux BioFire 175/day	1,000 per day each month; 175 per day November and December
FOR SEROLOGIC TESTING									
Number of additional* equipment and devices to meet planned testing levels		4 multi-channel pipettes				1 Roche Cobas 6800 with Elecsys module; plate reader			0

ELC ENHANCING DETECTION: VERMONT TESTING PLAN

BY MONTH:	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	TOTAL
Volume of additional reagents needed to meet planned testing levels, by testing unit and platform (i.e. 100K/day - Hologic panther; 100k/day - Thermofisher)		50/day EZ1 Qiagen					200/day Roche Cobas 6800 with Elecsys module	200/day Roche Cobas 6800 with Elecsys module	

* Report new monthly additions only, not cumulative levels

++ For May and June, only include needs beyond the supplies provided by FEMA. Report new monthly additions only, not cumulative levels.