2020 Overarching Jurisdictional SARS-COV-2 Testing Strategy

Jurisdiction:	New Hampshire
Population Size:	1.37 million

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

a. The State of New Hampshire currently has two sites performing high throughput testing, the New Hampshire State Public Health Laboratories (PHL) and Dartmouth Hitchcock Medical Center (DHMC). PHL: Since early March 2020, the PHL has been verifying RNA extraction platforms, PCR Kits and PCR instruments to increase its testing capacity. Currently, the PHL has one each of MagNA Pure 24, Qiagen EZ1 and King Fisher Flex instrument for RNA extraction and six ABI7500 instruments running CDC EUA assay with the capacity to test ~500 samples/day. The PHL is expecting to receive and verify a Hologic Panther Fusion instrument in early August. The Panther Fusion will allow the PHL to perform an additional ~500 tests/day beginning in August 2020. The PHL has a Bio-Rad Evolis system for automated serology testing. We will be verifying the Bio-Rad's SARS-CoV-2 Total Ab test using the Evolis system in July. Beginning in August 2020, we will be able to perform the serology assay with the capacity of ~400 tests/day. DHMC: Current state as of 05/20/2020: two Abbott m2000's (high throughput) with capacity to perform 500 - 700 test/day, three ABI7500 running the Atila assay with the capacity to perform 500 -700 tests/day, and finally three Diasorin Focus instruments with capacity to perform 300 tests/day. By end of June 2020, DHMC will add one additional Abbott m2000 and one Hologic Panther. By the end of June 2020 DHMC will have capacity to perform ~1600 tests/day. DHMC has validated the Roche assay for serology testing that went live the week of 5/26/20. This is a high throughput system capable of doing >7000 test/day. The State of New Hampshire has contracts with Quest and Mako commercial Laboratories for support of testing. Quest tests the samples collected at Fixed MMRS sites strategically placed around the state and a contract with Mako was recently signed in early June to support the testing of a percentage of asymptomatic LTC Facility residents every 7-10 days as well as 100% of the healthcare workers in these LTC facilities. Hospital laboratories are using several different testing platforms including Cepheid (6 hospitals); Hologic Panther (2 hospitals); Abbott ID Now (14 hospitals); BD MAX (2 hospitals) and BioFire (2 hospitals). The PHL has deployed all 15 Abbott ID Now analyzers to 12 hospitals (1 each); the Civil Support Team for mobile testing (2) and the PHL has kept one analyzer to perform stat testing on site. The decision was made to deploy these rapid analyzers to facilities where there are biosafety cabinets in place for safe performance of the test. The PHL Virology Program Manager is in discussions with the University of New Hampshire as they prepare to set up a testing laboratory on campus to test all students upon returning to the University System campus sites this fall. Pooling is a strategy being considered at this laboratory facility as a reagent sparing technology. CVS Pharmacies are collecting specimens for COVID-19 at their NH locations. These are self-collected with observation and samples are sent out to a commercial laboratory. There are currently no NH pharmacies conducting COVID-19 testing onsite. Workforce expansion and the use of contract laboratories has allowed the laboratory to rapidly scale testing to accommodate increases in demand for testing. Expanded workforce to date includes hiring temps, use of National Guard, reassigning laboratory and agency staff to COVID-19 related duties such as data entry; result reporting; QC of data and managing inventory. Forensic laboratory staff from the Department of Safety are assisting the PHL with sample aliquotting and pre-analytical sample and data management. Rapid scaling up of testing included

splitting the laboratory staff into two separate shifts in order to now have two shifts operating to manage surge and to isolate the shift teams from each other for continuity of operations.

- b.) Table 2, Direct PHD Expansion, includes information on non-traditional laboratory sites where testing is currently occurring and considerations for future site development. NH's Metropolitan Medical Response Systems (MMRS) teams have been deployed and are available to assist health departments, hospitals, fire departments and other entities in developing mobile testing sites. MMRS staff some of these sites, other sites have clinical teams that provide the staffing. In addition to MMRS and as described in Table 2, mobile testing teams have been deployed to businesses, long term care, residential and congregate care settings, homeless shelters and encampments and other non-traditional testing sites. Conversations with pharmacies have occurred with CVS bringing on self-sampling at some of their pharmacy locations. Contracts with ClearChoice and Convenient MD are in place to support testing. ClearChoice contract is for PCR and/or antibody tests (up to 5,000 tests) They are collecting at all of their physical locations in NH (7 sites) and in Brattleboro, VT for NH residents. They are also planning to use a mobile site, location to be determined. ConvenitnetMD is contracted for additional PCR testing (up to 3,000 tests).
- c.) Serology testing strategy-The PHL has a Bio-Rad Evolis system for automated serology testing. Recently, a Bio-Rad's SARS-CoV-2 (COVID-19) serology test was granted Emergency Use Authorization (EUA) from the FDA. The PHL discussed with the Bio-Rad, and testing kits are scheduled to be shipped to the PHL in early June. Upon the arrival of the reagents, the PHL will verify the test and offer the testing service. The daily throughput of the testing using the Evolis system could be 400 per day. The PHL will work with the NH Bureau of Infectious Disease Control to conduct laboratory surveillance in communities and settings such as healthcare facilities, schools, nursing homes or long-term care facilities, prisons etc. To expand the testing, more laboratory scientist and microbiologist positions are need to perform serology testing for COVID-19. Laboratory Assistant positions are needed for specimen receiving data entry and follow up login.
- d. The Department of Health and Human Services has regular contact with the New Hampshire Hospital Association and its hospital members (including hospital laboratories), NH Healthcare Association and its organizational members (representing long-term care facilities). Weekly calls with these organizations and their members are held with Dr. Benjamin Chan, State Epidemiologist, Dr. Elizabeth Talbot, State Deputy Epidemiologist and Dr. Elizabeth Daly, Chief of Infectious Disease Control. In addition to these weekly calls, calls with other groups such as child care providers, residential care providers (youth and adult), and others are held. Close relationships, which include contact with the only two locally based city health departments (Manchester and Nashua), occur daily as well as weekly calls with New Hampshire's thirteen community based public health networks. The Commissioner of Health and Human Services who oversees NH's response in conjunction with the Assistant Commissioner of Safety, Adjutant General of the NH National Guard and the Governor have daily contact with external partners.

In order to expand testing in communities, MMRS provides training and assistance when external partners wish to implement drive-through testing clinics in their own communities. This training/assistance has occurred in hospitals, fire departments, and at the Manchester and Nashua Health Departments.

Test kits are generally supplied to community partners by the Public Health Laboratories. Supply levels and limiting factors are monitored daily through the use of daily reports which include data such as number of tests pending; number of tests available; supplies of swabs by type and supplies of transport media by type. The Public Health Laboratories staff have daily contact with hospital systems, facilities, health departments to distribute test kits as well as to determine testing capacity (including staffing needs). Providers can call or email the PHL to request test kits and supplies as needed. These supplies are either shipped via UPS or courier to them in a timely manner. Strategies for mitigating limiting factors are developed and implemented. Laboratories such as Quest, Mako and other commercial laboratories who have contracts with the state of NH, or with hospitals and LTC facilities may provide test kits and test processing services directly to these entities.

The PHL has biweekly calls with DHMC to discuss testing strategies. DHMC is under contract with the state of New Hampshire to provide testing. Communication and coordination is led by the PHL Director and the Virology Program Manager of the PHL. The NH Laboratory Response Network (LRN) Coordinator regularly provides communication to sentinel laboratory partners and surveys them as to their current COVID-19 test performance method and capacity; reagent and supply needs. These surveys are helpful to keep the laboratory community updated on the status of test performance and has allowed hospitals to share resources such as loaning the Abbott ID Now analyzers to each other when there are hospital outbreaks.

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*	20,000	20,000	39,000	39,000	39,000	52,000	52,000	52,000	313,000
Serology	0	4,000	6,000	10,000	10,000	10,000	10,000	10,000	60,000
TOTAL	20,000	24,000	45,000	49,000	49,000	62,000	62,000	62,000	

^{*}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)
Fixed Site- Tamworth	Drive-thru testing site	Quest Diagnostics	125	0	Community Based covid-19 testing program. Testing available to people with any symptons of Covid-19 and risk factors including underlying health conditions, over the age of 60, and health care workers. These fixed sites will be transitioning to hospital systems through contract with DHHS. The contract will begin mid-late July and will be through December of 2020.
Fixed Site- Lancaster	Drive-thru testing site	Quest Diagnostics	125	0	"

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)
Fixed Site- Plymouth	Drive-thru testing site	Quest Diagnostics	125	0	II .
Fixed Site- Rochester	Drive-thru testing site	Quest Diagnostics	125	0	II .
Fixed Site- Concord	Drive-thru testing site	Quest Diagnostics	125	0	II .
Fixed Site- Claremont	Drive-thru testing site	Quest Diagnostics	125	0	II .
Fixed Site- Milford	Drive-thru testing site	Quest Diagnostics	200	0	II .
Fixed Site-Keene	Drive-thru testing site	Quest Diagnostics	125	0	"
Fixed Site- Londonderry	Drive-thru testing site	Quest Diagnostics	125	0	II .
LTC Surveillence (Nursing Homes)	Hospitals or clinical facility	Mako Medical	1,500	0	Nursing home surveillence testing targeting 10% of all nursing home residents and 100% of nursing home staff every 10 days. Mako contracts with the LTC facilities began in June 2020.

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)
DHMC	Hospitals or clinical facility		1,700	7,000	All. DHMC does not limit testing to any at risk population.
NH PHL	Public health lab		1,000	4,000	All symptomatic individuals and contacts of confirmed or suspected COVID-19 cases; LTC facility residents and staff; Healthcare workers; Elderly population; School and daycare children and staff; Department of Correction officers and inmates; Homeless population
NH Hospitals	Hospitals or clinical facility		200		6 of the 26 Nh Hospital Clinical Laboratories have Cepheid instruments with limited supplies for testing. Throughput is variable.
NH Hospitals	Hospitals or clinical facility		150		14 of the 26 NH Hospital Clinical Laboratories have Abbott ID Now instruments that the NH PHL supplies with test kits.
MMRS Mobile Go Teams	Community-based	NH PHL and/or Quest			Outbreak response at LTC facilities
Civil Support Team (CST) Mobile Testing Unit	Other		30		CST Mobile Unit is deployed to outbreaks at LTC facilities to assist with rapid testing

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)
NH Hospitals	Hospitals or clinical facility		300		2 hospitals have hologic panther instruments
NH Hospitals	Hospitals or clinical facility		150		Two hospitals have BD MAX and 2 have BioFire in use for COVID-19 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. In order to ensure access to COVID-19 testing for ALL NH citizens, the following data driven strategies have been implemented: nine drive-through fixed testing sites in population centers, rural areas of the state where access is limited and where "hot spots" exist (higher rates of COVID positive individuals). Fixed sites continue to be added as needed. To date, fixed site testing criteria has included anyone with symptoms, older adults, health care workers and individuals with pre-existing conditions. As of May 25, 2020, asymptomatic individuals were added with the goal of anyone who wants to be tested can be tested. "Go teams" that exist within each testing site are deployed across the state to accommodate testing when individual(s) test positive in businesses, organizations, institutional facilities and more recently, for employers whose employees have frequent contact with the public. Outreach for hard to reach, home bound, individuals unable to access transportation, can access home based testing through local home health agencies, Visiting Nurse Associations and through the National Guard Civil Support Team Mobile Laboratory. Additionally, three MMRS mobile teams, provide testing for LTC, residential, jails/prisons, homeless shelters/encampments and other facility outbreaks. The state of New Hampshire has contracted with urgent care organizations (ConvenientMD and ClearChoice) and commercial laboratories to assist with individual and large-scale testing needs (including serology testing). New or expanded contracts with these entities are in place with Quest and Mako Laboratories. Discussions with hospital systems regarding enhancing their capacity for testing has been ongoing on a regular basis. The state of NH continues to review data to determine the need for additional testing sites, mobile teams and hyper-local testing sites to ensure access to vulnerable populations. Local health departments (Manchester and Nashua) are playing a key role in the collection of samples from community LTC facilities and other vulnerable populations such as assisted living. These samples are sent directly to the NH PHL for testing. Expansion of testing will include procurement of new testing equipment at the State Public Health Laboratory. The NH PHL expects to receive a Hologic Panther instrument in August. NH PHL is preparing to utilize the multiplex assay for COVID-19, Influenza A and Influenza B this fall. This use of this assay will expand testing capacity in the NH PHL.

b. The development of fixed testing sites noted in (a), when possible, were placed in areas of the state where access is within walking distance to town/city centers. Understanding that this was not possible at each fixed site location, and that there are individuals who do not have access to a vehicle, are homeless, isolated and/or not comfortable accessing these locations, the state of NH has contracted with local home health agencies. These agencies provide outreach to homes or community settings where individuals are more comfortable accessing testing.

The state of NH has provided outreach to facilities (LTC and others) as positive cases are reported. One of the state's goals is to expand testing to facilities with asymptomatic residents/individuals such as homeless unsheltered individuals, homeless shelters, and congregate living such as assisted living facilities.

All test sites, mobile teams and MMRS are trained in and have access to Language Line. Testing fliers and brochures have been translated into eight languages and there is access to an ASL video posted on the state of NH COVID website https://www.nh.gov/covid19/. Testing information is also located on "Welcoming NH" website https://welcomingnh.org/covid-19-resources/. We acknowledge the need to do more. Goals have been established to provide "hyper-local" testing in trusted, established places to increase access for vulnerable populations. This will include the two local health departments in the cities of Manchester and Nashua. Through enhanced staffing (ex: recruiting bi-lingual, bi-cultural staff), the state of NH will provide outreach to vulnerable populations (to determine where best to place testing sites) and to understand barriers to testing. Additional outreach will be provided to health care and test site workers to provide cultural competency training. Other goals include enhancing race, ethnicity data collection in health care practices/testing sites and to ensure the presence of an equity subject matter expert in response activities.

c. It is only recent that testing supplies and PPE have been consistently available to the public health laboratories and the NH emergency operations center (EOC). These supplies are centrally received and distributed throughout the state of NH to hospitals, LTC facilities and health care providers. Until recently, the limitation of supplies has delayed large-scale testing capabilities. Our laboratory and EOC staff are hyper focused on ordering testing supplies and PPE. Although, these supplies are now being delivered regularly, there continues to be concern, as there is not yet a regular, consistent delivery schedule. We can only hope the supplies will be delivered in time to meet our state testing needs. The public health laboratory is in regular contact with suppliers, including CDC-IRR and FEMA to determine delivery dates. Additionally, the public health laboratory staff are in regular contact with NH hospital laboratories to determine supply needs and testing capabilities. The state is contracting with Dartmouth Hitchcock Medical Center to ensure rapid turnaround of test results. DHMC is supporting testing and has multiple high throughput analyzers. Hospitals have experienced supply-chain difficulties specifically with getting Cepheid testing supplies. Many NH hospital laboratories have Cepheid instruments, but have been unable to obtain sufficient supplies to perform this testing to support the COVID-19 response.

The Abbott ID Now instruments are now in use by hospitals across NH, and by the National Guard Civil Support Team (CST). The NH PHL kept on analyzer in the laboratory to assist with low throughput stat testing. NH is currently receiving 70 boxes of Abbott ID Now test kits (1680 tests) weekly.

Utilizing the spreadsheet of possibly underutilized laboratory instruments supplied to NH by CDC, the public health laboratories have determined that many of these instruments are used specifically for research and academic purposes. The state of NH continues to explore use of these instruments to assist in testing specimens. Barriers to efficient testing include the pre-analytical and post-analytical phases of the test process. Staff have been added to the sample receiving and data entry pre-analytical testing team and to the post-analytical LIMS follow up log in, data QC and test reporting team to improve efficiency in the receipt to reporting process of testing. MMRS, hospitals and LTC facilities are encouraged to use LabOnline for entering and ordering tests in the PHL LIMS. The LIMS Administrator offers just in time training to providers who will be using LabOnline. A host-to-host interface will be considered to improve efficiency of test results reporting from DHMC to the NH PHL.

d. Serology Testing Strategy: The PHL has a Bio-Rad Evolis system for automated serology testing. Recently, a Bio-Rad's SARS-CoV-2 (COVID-19) serology test was granted Emergency Use Authorization

(EUA) from the FDA. The PHL discussed with Bio-Rad, and testing kits will be shipped to the PHL in early July. Upon the arrival of the reagents, the PHL will verify the test and offer the testing service. The daily throughput of testing using the Evolis system could be 400 per day. The PHL will work with the NH Bureau of Infectious Disease Control to conduct laboratory surveillance in communities and settings such as healthcare facilities, schools, nursing homes or long-term care facilities, prisons etc. To expand the testing, more laboratory scientist and microbiologist positions are need to perform serology testing for COVID-19 and Laboratory Assistant positions are needed for specimen receiving data entry and follow up login. These positions are in recruitment with a contracting agency called Maxim. 15 Laboratory staff are in the process of being hired to support expansion of testing. DHMC has validated the Roche assay for serology testing that went live the week of 5/26/2020. This is a high throughput system capable of doing greater than 7,000 tests/day.

e. The Department of Health and Human Services has regular contact with the New Hampshire Hospital Association and its hospital members (including hospital laboratories), NH Healthcare Association and its organizational members (representing long-term care facilities). Weekly calls with these organizations and their members are held with Dr. Benjamin Chan, State Epidemiologist, Dr. Elizabeth Talbot, State Deputy Epidemiologist and Dr. Elizabeth Daly, Chief of Infectious Disease Control. In addition to these weekly calls, calls with other groups such as child care providers, residential care providers (youth and adult), and others are held. Close relationships, which include contact with the only two locally based city health departments (Manchester and Nashua), occur daily as well as weekly calls with New Hampshire's thirteen community based public health networks. The Commissioner of Health and Human Services who oversees NH's response in conjunction with the Assistant Commissioner of Safety, Adjutant General of the NH National Guard and the Governor have daily contact with external partners.

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The public health laboratories working under the structure of the incident management team and it's commander, the Chief of Infectious Disease and infectious diseases staff, work hand in hand with the COVID-19 testing coordinating unit and the testing planning team with a goal of effective and efficient communication to ensure rapid access to needed testing.

A long-term care (LTC) point prevalence and surveillance-testing program is under way. To date, point prevalence testing for all NH LTC facilities is complete (staff and residents). Surveillance testing began on May 25, 2020; all LTC staff will be tested every 7-10 days and 10% of all residents will be tested every

10 days over the next year. A contract with Mako Medical Laboratories was secured to assist with this ongoing testing. The NH PHL supports this program by testing all outbreak specimens from the surveillance of LTC facilities. Sentinel surveillance will be expanded to additional vulnerable populations next including homeless shelters and assisted living facilities.

f. Over 350 National Guard members have been deployed to assist with contact tracing, laboratory functions, and testing since the declared state of emergency. Additionally, contracts with staffing agencies have been utilized to ensure staffing capacity. The NH Department of Health and Human Services (DHHS) and other departments within the state of NH have reassigned staff (part time and full time) to assist with response activities. Other state agencies such as the Department of Safety offered their forensic laboratory staffing to support the testing effort. These staff will continue to assist over the summer months and through an MOU until the end of 2020.

DHHS continues to explore long term, sustainable staffing options by hiring skilled staff, re-hiring staff who have previously retired from state service, and contracting with staffing agencies. Additionally, the CDC Foundation is in the process of hiring six subject matter experts in the field of epidemiology, contact tracing and management to assist our efforts.

Supply acquisition including reagents, test kits, sample collection supplies, etc. continue to be supplied by FEMA (swabs and transport media) or the CDC-IRR (reagents, test kits). The NH PHL has managed to operate and manage supply limitations by validating different swab types (nasal), transport media (saline, PBS) and PCR kits. We have successfully performed the validations and written procedures in order to utilize these supplies, but would prefer to have a consistent supply of the same/similar type of product.

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	9	0	5	0	0	0	0	14
				FOR DIAGNO	STIC 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	2	0	1	0	0	0	0	4

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++	0	25,000	25,000	25,000	25,000	25,000	25,000	25,000	175,000
Volume of additional media (VTM, MTM, saline, etc.) needed to meet planned testing levels*+	0	15,000	15,000	20,000	20,000	20,000	20,000	20,000	130,000

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 - Thermofish er)	0	6000	400	500	500	500	500	500	8900
				FOR SEROLO	GIC TESTING				
Number of additional* equipment and devices to meet planned testing levels	0	1	0	1	0	0	0	0	2

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 - Thermofish er)	0	4000 test reagents for Evolis	6000 test reagents for Evolis	10,000 test reagents for Evolis	60000				

^{*} 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.