

Draft Recommendations for COVID-19 Screening, Testing, and Tracing at Johns Hopkins University

June 11, 2020

Introduction

This document represents the draft guidelines for COVID-19 screening, testing, and contact tracing during Johns Hopkins University's return to campus, based on detailed recommendations and analysis from the 2020 Health and Testing workgroup, led by Jon Links, vice provost and chief risk and compliance officer, and Kevin Shollenberger, vice provost for student health and well-being. During the past month, this workgroups has engaged in intensive planning and received significant input from JHU medical and public health experts. The Johns Hopkins community is invited to share comments and questions.

Johns Hopkins University's overall plan for resumption of on-campus activities is structured in three main phases, which conceptually parallel those in the state of Maryland's plan, the Roadmap to Recovery. The guidance offered here is meant to integrate seamlessly with other university guidance, divisional planning efforts, and critical cross-cutting university functions to safely support a return to campus including: Facilities; Health, Safety and Environment (HSE); Academic Planning; Student Health; Occupational Health; Human Resources; Information Technology; Transportation; and Security.

The recommendations covered in this document do not address issues regarding quarantine and isolation of undergraduate students in residences owned and managed by the university during Phase 2A. Those will be detailed in future documents. This document should be read in conjunction with the [Return to Campus Guide](#), which contains guidelines about such topics as maintaining an inclusive workplace, altered staffing and scheduling plans, significantly augmented cleaning protocols, required physical distancing, and universal face coverings.

Johns Hopkins COVID-19 Call Center

Currently, Johns Hopkins employees utilize the Employee COVID-19 Call Center (ECCC) to report symptoms that may be consistent with COVID-19 so they can be connected to testing and referred to the appropriate care management. East Baltimore students call University Health Services and students from the other six schools call Homewood Health Center for the same assistance. In order to coordinate a centralized team that is easily accessed and can respond to students, faculty, and staff health concerns, the university is working to expand the ECCC in the coming weeks into a Johns Hopkins COVID-19 Call Center (JHCCC). All Johns Hopkins affiliates from every school and campus with concerns about symptoms or exposures consistent with COVID-19 will be directed to utilize the JHCCC as their direct link to screening and testing. The proposed JHCCC will have three main functions:

- Call intake, screening, and evaluation:

- The JHCCC will be staffed to receive calls from JHM employees and JHU faculty, staff, and students who have concerns about COVID symptoms.
- The team will provide a phone evaluation, provide advice if the person needs to stay home, and refer and order testing.
- Results reporting, disposition, and handoff to care management:
 - Individuals testing positive will be triaged by the JHCCC based on their JH affiliation.
 - Care management will remain the responsibility of the appropriate JHU entity depending on whether the individual is an employee, East Baltimore student, or student from one of the other six schools
 - Currently, employees who are confirmed positive for COVID-19, or have symptoms and had significant exposure, are kept in an “off duty” status. Once the employee is ready to return to work or meets the CDC’s time-based criteria to return to work, then the employee is placed back in an “on duty” status.
 - Equivalent terms and policies for “off duty” and “on duty” are being developed and applied to all students returning to campus. The school will work with the student to provide needed academic or work accommodations during this period. Adherence to these policies will be required.
- Investigation, contact analysis, and notification:
 - Exposure investigation, contact tracing, and notification is legally a responsibility of the local health department (LHD) of jurisdiction and the Maryland Department of Health (MDH).
 - JHU will not request a deferral of primary responsibility from the LHD to JHU for exposure investigating, contact tracing, and notification. Rather, these activities will be conducted in tandem with LHD activities.
 - In order to not be duplicative, we will consult with MDH and enter into a formal agreement to avoid duplication, ensure proper results and data reporting, and ensure their involvement, if necessary, for off-campus investigations.
 - JHU will train JHCCC staff to conduct contact tracing investigations and interviews. The university is evaluating digital technology that could assist in contact tracing for Phase 2.

Symptom Screening

We are establishing a system in which individuals returning to campus will self-screen for symptoms of COVID-19. These screenings will be implemented via mandatory daily electronic surveys once every 24 hours. All affiliates will be prompted with survey questions. Answers are processed locally on a device and if an individual attests to a symptom, they will be prompted to call the Johns Hopkins COVID-19 Call Center. Failure to complete the survey questions will result in a reduction of access to campus resources.

JHM uses daily attestations by employees via computer login screens and Kronos timeboxes. If any employee positively attests to a symptom, a notice is sent to Occupational Health Services and the employee is notified to contact their supervisor immediately. The university is

looking to expand this approach, with whatever screening survey and app is ultimately implemented, to all faculty, staff, and students and to randomize the questions and symptoms for greater compliance. The university is also exploring other technology solutions.

The concept of implementing temperature checks at JH campuses is still being evaluated. There are two categories of non-invasive tools available to assess temperatures: handheld infrared spot thermometers, often referred to as “thermometer guns,” and radiometric thermal imaging cameras. These devices, which have been deployed during previous viral outbreaks and are in use at airports, stores, and other checkpoints across the globe now, have their pros and cons, which are detailed in the table below. On balance, the cons outweigh the pros and it is the recommendation of these working groups that temperature checks should not be implemented.

Pros and Cons of Fever Screening	
Pros	Cons
Cost Effective	Unreliable data (low sensitivity and specificity)
Low to no contact	May create false sense of security for individuals and institution
Low training burden	False positives may create significant follow-on workload
	Challenge to implement broadly
	Accuracy may be affected by ambient temperatures
	Lines for screening may impact ability to social distance, create new exposures, delay entry to facilities
	Requires additional workforce and PPE
	Will be harder to implement/maintain during flu season

Currently Available COVID-19 Testing Techniques, Uses, and Limitations

Discussions about what factors must be in place for Johns Hopkins University to loosen current COVID-19 control measures and allow for more people to return to campus have often focused on one idea: testing is the key. Testing is a vital pillar of pandemic response, but testing on its own is no panacea. This section explains the role of testing, contact tracing, and other public health mitigation strategies in pandemic response, and outlines the university’s plans for public health control measures in a phased reopening of campuses.

There are three [main types of tests](#) being used today:

- Nucleic acid tests (NAT) are the current standard of care to detect acute infection and can tell us if a person is currently infected or was recently infected with COVID-19 by looking for genetic material of the virus itself.
- Tests that look for the antibodies produced in response to a COVID-19 infection (serologic tests) can tell us if an individual was previously infected and has since recovered.

- A third emerging test, looking for surface proteins on the virus (antigen tests), is not yet in use at Johns Hopkins.

While serologic testing is a potentially important avenue that we are monitoring, the university's planning is focused on the use of NAT, because serologic testing is still not recommended for widespread use for at least two reasons: It is not clear that currently available antibody testing is sufficiently sensitive or specific, leading to the possibility of false test results, and there is not sufficient evidence yet to say with confidence that having COVID-19 antibodies confers immunity to future infection.

With respect to NAT, there are three distinct uses and corresponding objectives:

- **Medical management:** This involves NAT testing of those with symptoms and using the test results to help guide optimal medical treatment and management. This use of NAT allows clinicians to better treat infected people, and allows public health officials to trace and quarantine their close contacts.
- **Epidemiologic surveillance:** This involves NAT testing of a random sample of the population who do not present with symptoms to estimate the true prevalence of the disease in that population in addition to testing those with symptoms. This use allows public health officials to gain a better understanding of the extent of the outbreak and identify variations across different characteristics of the population.
- **Public health management:** This involves NAT testing of all those with symptoms and as many without symptoms as possible, very rapidly, in order to isolate all COVID-positive individuals and quarantine their contacts. This use is a public health strategy known as "containment" and is used as a complement to distancing and masking measures.

NAT is just one element of JHU's phased campus reopening plans. Today, COVID-19 tests are imperfect and have a higher rate of both false positives and false negatives than we would like to see. Even with accurate tests, there will be challenges with interpreting test results from asymptomatic persons because COVID-19 still has very low prevalence in our university population. But more fundamentally, accurate testing is only one tool. Testing's role among other public health response steps is as follows:

1. **Testing:** NAT is used to identify new cases of COVID-19.
2. **Isolation:** Once a patient is diagnosed with COVID-19, they must be isolated so as to not infect others. Patients are instructed to self-isolate for at least 10 days starting from the onset of symptoms and until they experience three or more consecutive days of no fever without the use of fever-reducing medications along with the improvement of other respiratory symptoms.
3. **Contact Tracing:** Following a positive test result, case investigators collect information from infected patients about any close contacts (within six feet for at least 15 minutes even if all parties were wearing a face covering) by helping them retrace their movements including locations, activities, and interactions prior to diagnosis. COVID-19 can be spread even if an infected person is not yet experiencing any symptoms, so investigators identify contacts who may have been exposed up to 48 hours before the patient began experiencing symptoms. In the case of patients who have tested positive

but are not experiencing symptoms, investigators identify who they came in contact with up to 48 hours before they received their diagnosis. Of importance, the mere fact that someone was in the same room or lab as a person who tested positive for COVID-19 does not necessarily mean they had meaningful exposure. Contact tracers then reach out to individuals identified as having meaningful contact to inform them they been exposed to someone infected with COVID-19 and what the next steps are for the exposed individual.

4. **Quarantine:** In order to end the chain of transmission, anyone who has come in close contact with infected individuals is asked to quarantine for 14 days from the time of their exposure and monitor for symptoms. Quarantine entails restricting interaction and movement as to help prevent spread of the virus.

Testing and contact tracing are vital to identifying and containing the disease, but practicing physical distancing, wearing face coverings at all times, and practicing rigorous hygiene (hand washing, and regular cleaning of surfaces) remain necessary. In addition to the public health response steps detailed above, each of these elements must be in place in order to effectively curtail the spread of COVID-19:

- **Physical distancing:** COVID-19 is typically spread when an infected person coughs, sneezes, or talks, and droplets from their mouth or nose enter into the air and can land in the mouths or noses of people nearby. To prevent disease transmission, people should remain at least six feet away from other people at all times, and not gather in large groups or crowded places. The university is developing plans to ensure physical distancing is practiced on all campuses.
- **Face coverings:** Masks and other face coverings can help block the spread of droplets, and must be worn at all times when in public. As the virus can be transmitted without an individual ever experiencing symptoms or knowing they are infected, universal use of masks is required.
- **Hygiene:** Frequently washing of hands with soap and water for a minimum of 20 seconds is an effective method of killing the virus. The university is also developing plans for increasing cleaning and sanitizing procedures on campus.
- **Screening:** All individuals returning to campus will self-screen for symptoms of COVID-19. These screenings will be implemented via mandatory daily electronic surveys.

The basic public health mitigation strategies of masking, distancing, and hygiene remain our best way of resuming activities, with efforts focused on maximizing the degree that these can be achieved and consistently practiced.

Phased Implementation of Viral Testing and Contact Tracing

Phase 1:

Our Phase 1 approach will focus on testing for medical management, working closely with our Johns Hopkins Medicine colleagues to screen, test, and isolate infected people and contact trace and quarantine their close contacts. This use of testing for medical management is the most conventional, and the situation in which interpretation of the test results is most

straightforward. While challenges remain with the sensitivity and accuracy of viral tests, the combination of symptoms and a positive test means that the person is extremely likely to be infected.

During Phase 1, all testing will continue to be based in East Baltimore and a select number of JH hospital sites.

Phase 2A:

When we enter Phase 2A, we are considering complementing the medical management use of testing with the random testing of asymptomatic individuals for epidemiologic surveillance. Here, we would seek to understand the prevalence of disease in our university community, and of particular importance, how that prevalence is changing over time. This understanding would inform our use of control measures and the university's operating posture, including whether masking and distancing are fundamentally working on campus.

This type of surveillance testing requires greater testing capacity than for medical management, and we are already in the process of laying the foundation for that extra capacity. Upon entering Phase 2A, we aim to have on-site sample collection capabilities on the Homewood campus.

Phase 2B:

If and when we enter Phase 2B, we will continue to use NAT for both medical management and surveillance purposes. We had originally considered NAT's use for public health containment, as a way to augment the fundamental public health control measures of masking, distancing, and hygiene. By "containment," we mean the rapid identification of COVID-19-positive individuals and their close contacts, and the isolation and quarantine, respectively, of such individuals.

However, successful use of NAT for containment requires extremely high test accuracy, significantly higher than is presently the case. This is particularly true in situations such as we face with COVID-19, in which the prevalence at any one time is actually very low. In such a setting, many positive tests are in fact falsely positive; this is even more the case when testing mainly asymptomatic persons, as would be done for public health containment purposes.

Furthermore, nasopharyngeal (NP) swabbing is currently the most common method of viral testing, but is neither practical nor acceptable in an application where everyone would be routinely and frequently tested. We are looking at alternatives, including swabbing the nasal nares (the more external portion of the nose), buccal (inside of cheek) swab, or collecting saliva. While each of these alternative sample collection approaches has shown promise, more work needs to be done to understand their accuracy compared with NP swabs. Accordingly, we are not presently planning to use NAT for public health containment in Phase 2B.

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