

Report of the COVID-19 Public Health & Testing Advisory Committee

June 17, 2020

Introduction

In early May 2020, Chancellor Christ and EVCP Alivisatos announced a planning process for fall semester operations. Toward a single guiding principle of protecting the health of the community, the planning process considers three scenarios for the fall:

- Full remote instruction and predominantly remote work being done in the operations and research realms
- A hybrid approach that includes both in-person and remote elements
- Return to mostly in person instruction, research and operations

As part of the planning process, the Chancellor commissioned nine planning committees, including the COVID-19 Public Health and Testing Advisory Committee. The latter committee is led by Nicholas P. Jewell, Emeritus Professor of Biostatistics in the School of Public Health and includes faculty from Public Health, the Biological Sciences, Engineering, Law, and Computing, Data Science and Society. A complete roster of committee members can be found here.

Committee Charge

The COVID-19 Public Health and Testing Advisory Committee was charged with advising Chancellor Christ and her Cabinet on scientific, ethical, and operational matters related to public health, including:

- Testing: What kind of testing is recommended? Who should be tested and how frequently?
- Contact tracing: How many contact tracers are needed? What protocol should be followed?
- Environmental surveillance: Should we consider waste water monitoring?
- Public health measures & isolation: What occupational health protocols should be followed, including related to face coverings/PPE, cleaning, and other issues? What isolation/quarantine plan should be followed for confirmed cases and those who have been exposed?

Guiding Principles

There are four major challenges to returning campus activities to anything resembling a normal in-person capacity:

- Individuals (primarily students) have to return to the Berkeley area from where they are currently living, which results in "infection seeding," meaning that a small but significant percentage of these individuals are likely to already be infected upon return and may seed outbreaks in the campus and surrounding population.
- Once returned, individuals have to be housed and have adequate eating facilities. Note that more than 70% of Berkeley undergraduates live off-campus in surrounding communities.
- To commute to campus, some students, staff and faculty may have to use public transportation, which may convey a high risk of transmission.
- Instruction and other support activities must be provided to all students.

All four of these challenges must be addressed effectively to enable a staged or partial return to in-campus activities. Any metric for success must reflect the general goal of limiting sustained viral transmission within the campus community and externally to communities around the campus, and the specific goal of avoiding a reversal of a return to in-person activities on campus during the remainder of 2020 due to reinstated shelter-in-place orders or other public health authority directives. If these goals are adjusted moving forward, corresponding recommendations below may need to be revisited.

Regarding the possibility of a staged or partial return to on-campus activities, if only a limited fraction of students are encouraged to return to on-campus activities at first, for example, this approach potentially limits the risks associated with the first three bullet points above, while potentially making the fourth more complex. The recommendations below also recognize that the campus cannot control most activities of students returning to Berkeley who live off-campus. Further, it is likely that for *any* Fall 2020 instruction, some individuals may not be able to attend in person, complicating provisioning of on-campus instructional activities.

In addressing these four challenges, the following guiding principles were used:

- Promoting equity and inclusion for the most vulnerable populations (medically susceptible, undocumented, persons of color, uninsured or underinsured, non-traditional, older, DACA, low-income, and homeless students, faculty, and staff members).
- Adaptability of any plan is paramount as new evidence emerges, trends develop, etc. We stress that recommendations are being made given the situation as it appears in June 2020 and that it is likely that infection incidence and prevalence will change substantially over the next months. As such, it is likely that these recommendations will need to be modified and particularly may be substantially changed with regard to campus activities for January 2021 and forward.
- All recommendations remain subject to compliance with current public health directives and guidance (primarily, from the City of Berkeley PHD and the State of California-CDPH). While the campus may follow all of the committee's recommendations to the letter, the public health authority may decide to impose a shelter-at-home order that would shut the campus down for in-person activities. To safeguard against this as much

as possible, members of the campus community should follow public safety measures (including testing). We suggest that the campus clearly communicate the role of the city and county public health departments with regard to public health decisions impacting the campus.

- We recognize that restrictions of campus activities will have a significant economic impact on both staff and the surrounding business communities with consequent health outcomes. These needs must be considered in addition to the immediate public health guidelines that focus on limiting viral transmission.
- Finally, we recognize that other economic and logistical considerations may influence adoption of any of these recommendations.

Background and Context

Given the significant risks of seeding infections by individuals traveling to Berkeley from many places with current active community transmission, logistical constraints on the campus' ability to test asymptomatic individuals with subsequent demands on isolation and quarantine facilities for those who test positive and their close contacts, and limitations on campus housing and dining, it will not be possible for the campus to sustain a large overall population engaged in in-person activities on campus. The campus therefore needs to constrain the on-campus population in order to limit the risk of sustained viral transmission within the campus community and externally to communities around the campus. In light of seeding risks, and recognizing current constraints on testing, isolation and quarantine facilities, we suggest the campus may be able, at the outset of the Fall 2020 semester, to accommodate somewhere between 10,000 to 20,000 individuals who have an on-campus presence at least once per week. (During standard operations the campus population is roughly 55,000 per day.) This is necessarily a rough assessment, and, with an open campus, we recognize that it would be impossible to measure and regulate this number of individuals on any given day or other time period. Nonetheless, capacity planning for re-opening of individual buildings and facilities must be coordinated at a central level to ensure that the total on-campus presence, across all operating buildings and facilities is limited, in line with this target.

Increasing the on-campus population will increase the number of individuals arriving on campus that are currently infected (i.e., the number of individuals seeding infections on campus). Further, reaching a higher capacity will require significant campus investments including additional testing capacity (including ability to scale collection systems), contact tracing efforts, quarantine/isolation capacity, and creative scheduling of any classroom interaction. Assuming satisfactory results with the first phase of reopening in-person activities over the summer (as evidenced by low number of positive cases on campus, sufficient testing and contact tracing systems, etc.), the campus population may gradually expand throughout the remainder of the calendar year.

Survey information to be collected from student populations in early summer will inform the likely expected numbers on campus and therefore whether new recommendations will be required to lessen the risk of any major campus outbreak.

The actionable recommendations below assume the following:

- All faculty, staff, and students who can work from home will be encouraged to continue to do so. Even when some campus presence is deemed essential, the required number of days on campus should be minimized as much as possible.
- Existing confidential processes (via People & Culture, the Office for Faculty Equity and Welfare and the Division of Equity and Inclusion) will be used to allow individuals to seek approval to **not** return to campus while maintaining the expectations associated with their roles on campus, per standards administered by those offices.
- A significant fraction of the campus research community (e.g. faculty, staff research scientists and technicians, postdocs, graduate students, undergraduate researchers) are predominantly based in the Bay Area and need not travel back to campus, thereby reducing the risk of seeding infections in Berkeley associated with travel from other locations.

It is thus essential that clear messaging must be provided to the campus community that:

- the campus intends to limit the number of persons engaging in in-person activities on campus in as controlled a manner as possible;
- the vast majority of classes will be fully accessible remotely online so that many students will not need to engage in on-campus activities;
- the campus community recognizes that constraining the number of in-person activities on campus is the best method possible of reducing the likelihood of a major outbreak of COVID-19 and is in the campus' best interest; and
- the campus is aware that many students and faculty will be living off campus and will only visit campus sporadically throughout the semester if at all.

Our recommendations are based on current information and are predicated on a number of factors including: testing capacity, contact tracing capacity, quarantine capacity, and timeliness and completeness of information on infections among campus community members who receive healthcare from off-campus providers. It is hoped that the situation in Spring 2021 will be different than for Fall 2020 as more information becomes available. Decisions about which groups should receive priority for on-campus in-person activities must be made and clearly articulated by the administration.

The recommendations in this report are as evidence-based as possible. They are also consistent with the [UC-wide principles adopted by the Regents](#) on May 20 and with the Statement from the UC Systemwide Testing and Tracing Task Force, issued June 4, 2020.

Summary of Recommendations

The COVID-19 situation is evolving rapidly. While the recommendations below reflect the committee's best guidance as of June 2020, plans and strategies should be reassessed regularly and adapted to the changing situation. The committee recommends beginning to test policies and procedures in the early summer, learning what is working and what is not, and revising plans accordingly. The committee's recommendations are at the general policy level and will require significant work and investment to be made operational.

Gatherings & Activities

1. Even if larger gatherings are permitted by city/country public health guidelines, we do not recommend events or gatherings of more than 26 individuals.
2. To the extent that any classes occur in person, limit them to 26 or under (including instructors). This allows potential in-person classes for some graduate and undergraduate programs. However, remote access will likely be required for most if not all classes because at-risk participants may not be able to attend in person. As such, we recognize that many students may choose to continue advancement of their Berkeley degree programs solely through remote instruction.
3. Campus in-person instructional activities should conclude by Thanksgiving. This is designed to limit long-distance travel before and after the Thanksgiving holiday. Mid-semester travel should be strongly discouraged, and the campus should consider eliminating the September 7 and November 11 academic holidays for this reason.
4. The university should limit visitors to campus to the extent possible.

Surveillance, Testing, & Contact Tracing

5. **UC systemwide guidance.** The UC Systemwide Testing and Contact Tracing Task Force has recommended that UC campuses follow one of two testing strategies: one focussed on symptomatic testing and the other on asymptomatics. We recommend implementing an asymptomatic testing strategy.
6. **Returning students.** We propose that all returning students self-quarantine (meaning shelter in place at a place of residence including dorms but with no other presence on campus) for a minimum of 7 days. We also strongly recommend staggering arrival of on-campus residents to better manage the inevitable infections and contacts found at the time of their arrival. During this period, the student should obtain PCR testing as soon as possible upon arrival, and then have a second test a further 7-10 days later. A negative test is required before entering or using any other campus facilities. This self-quarantine

period will maximize the likelihood of catching any “seeding” infections and potentially minimize those who are presymptomatic from spreading infection prior to developing symptoms. In addition, for any individual returning to campus from outside the Bay Area, a pre-travel PCR test is encouraged to the extent that such tests are available.

7. **Symptomatic testing.** Symptomatic people should be directed to the University Health Services (UHS) or their personal physician and all such should be tested. In keeping with UCOP guidance, sufficient testing capacity (including sample collection) needs to be always available with tests completed in 24 hours.
8. **Asymptomatic testing.** Given evidence of asymptomatic transmission of COVID-19 and the university’s existing testing capacity, the committee recommends an asymptomatic testing strategy that includes the following elements:
 - a. Most importantly, broad testing of asymptomatic individuals upon their arrival to Berkeley at the start of the semester or upon returning to campus after working remotely, and
 - b. Biweekly (every two weeks) viral surveillance testing of the asymptomatic campus population who meet any of the following criteria: (i) any student living in campus housing, (ii) any student taking in-person classes, or engaging in in-person campus activities on campus, and (iii) all staff and faculty whose responsibilities require high person contact. The biweekly interval may be revisited for the groups in (i), (ii) and (iii) after an initial period of testing results and in light of community transmission counts. Frequent testing of asymptomatic individuals is highly desirable to the extent that individuals are willing to participate and to the extent that funding is available. We note that there is insufficient evidence to determine the optimal frequency for asymptomatic testing, beyond testing of persons upon first return to campus and testing known contacts of infected persons. Testing would be accomplished using saliva samples collected at campus kiosks under supervision of UHS personnel. Note that this will take time to set up, and will occur in phases: 100 test samples collected/day starting mid June, 200-400/day by end of June, to be further expanded as needed. Test scheduling will be managed by a web app that will be ready when the first kiosk opens in June.
 - i. If feasible, the committee recommends a differentiated asymptomatic testing approach whereby the campus encourages more frequent testing (weekly) for people with “high contact” numbers, i.e., people who take public transportation regularly; students in campus housing; those who play on sports teams, or participate in dance, theater, or choral activities; people working in custodial, food and health services; or those who are concerned about a possible exposure or elevated risk.
 - c. The committee has considered serological testing and considers that this would be valuable information to collect on at least a sample of the campus population

at regular intervals. However, the committee does not believe that serological surveillance is a critical component of the campus' public health response at this time. This is because serological tests do not provide a good measure of active infection, and current evidence is not sufficient to support their use as an indicator of personal immunity. Note that the campus' Return to Work study includes such testing, and will provide supplemental information in this regard.

- d. The committee believes that mandating surveillance testing of students and employees would be useful, maybe necessary, for achieving the specified testing volume goals. However, we recognize that legal, privacy, and labor/employment considerations may override the utility of mandatory testing. If testing is not mandatory, we recommend that the campus develop means to strongly encourage the relevant students and employees to participate in testing as requested (e.g., education on how testing relates to our ability to allow more physical activity on campus, etc.)
 - e. Data on the levels and results of all campus testing must be collated, analyzed, stored and monitored through time by a designated team including epidemiologists and biostatisticians. This information should be used in real time to guide future decisions on the frequency of testing, and to guide specific targeted testing in response to any observed infection patterns.
9. **Positive test.** Positive PCR-tested individuals should be isolated (although they do not need to be isolated from other positive cases) even if symptoms are not severe, in addition to tracking, testing and quarantining identified close contacts. However, quarantine (for known close contacts of positives) is stricter than standard shelter in place restrictions and indicates confinement without contact with any community members. Release from quarantine will depend on repeated negative PCR test results or, in some cases, 14 days without symptoms. Release from isolation will be in accordance with CDC guidelines - 10 days after illness onset and at least 72 hours after recovery.
- a. **Isolation/quarantine.** Initially, reserve sufficient rooms to isolate/quarantine up to 500 registered students living on campus or in/near Berkeley. Quarantine rooms for those who may have been exposed to the virus should be single rooms with private bathrooms. Isolation areas for those who have tested positive can be infirmary style. The committee believes that should such a capacity ever be approached it will be necessary to reinstate stringent measures to restrict campus activities and contact.
10. **Contact tracing.** The key to the effectiveness of asymptomatic testing is a robust and rapid contact tracing system. University Health Services will be required to coordinate all contact tracing efforts in consultation with the City of Berkeley's Public Health Department. Initially, UHS may have sufficient contact tracing staff already available. If not, we recommend the campus hire and train 2-3 contact tracing staff in line with California state recommendations of one contact tracer per 2,000 individuals. Training

requirements for contact tracers must be met. Subsequently, the number of contact tracing staff will ultimately need to be increased according to a higher level of opening of the campus to faculty, staff and students, however this will be coordinated in close consultation with the City of Berkeley Public Health Division.

11. **Effluent testing.** Implement wastewater monitoring in conjunction with EBMUD on as many facilities as possible. The administration should immediately determine the feasibility of isolating wastewater from specific campus buildings, particularly campus housing facilities. EH&S will be required to handle this process and transmit information to campus administrators when positive samples are identified. Specific plans should be established by EH&S should positive samples be identified. For example, this might require immediate targeted PCR testing of building occupants and steps to limit access to and from the buildings in question.

Education and Public Health Measures

12. The administration should provide mandatory public health education for returning faculty, staff and students. A short course, *EHS 207 UC Berkeley Guidelines on Protecting Workers from COVID-19, 6/1/2020*, is available through the UC Learning Center, and may be revised with necessary material added to meet the needs of a broad population. The course addresses procedures, personal hygiene, wearing face coverings, testing, contact tracing, and a commitment to communal behavior. This health education encourages individuals to maintain a daily digital or hand-written diary to track an individual's location history for the day. This education module should also be made available to parents. Completion of this education should initially be coupled with the signing of a "Keep Berkeley Healthy" pledge required in (16) below. Construction and delivery of this course is the responsibility of EHS.
13. Staff, faculty and students on campus should be required to wear university-provided or other face coverings and practice appropriate physical distancing (according to Public Health guidelines) when in public places (both indoor and outdoor) and classrooms. Face shields/plexiglass screens should be installed at places where staff must maintain routine contact with students, staff and/or faculty, and for public-facing offices. Such screens should also be explored for use in classroom podiums, to the extent public health guidelines allow, as a substitute for face coverings for instructors while leading a class. Staff, faculty and students should also frequently wash hands with soap and water for at least 20 seconds.
14. The campus should clearly state and publicly post the principles of enforcement regarding face coverings, physical distancing and hand hygiene. This includes a list of who is responsible for enforcement and their rights and responsibilities, as well as any penalty for non-compliance. Reaffirm that campus equity principles will be maintained in all enforcement activities.

15. We encourage the design of a social norms campaign specifically for the Berkeley campus that would likely reduce transmission rate by maximizing prevention of spread. It is only by controlling outbreaks that we can achieve the universally desired goal of a fully in-person return to campus interactions. For individuals to adopt best practices in symptom reporting, testing, isolation, and distancing, they will need to have confidence in campus policies, processes, and culture to support responsible choices. Policies and systems should address issues such as career advancement, income loss avoidance, job security, depletion of vacation time, or any other consequences. HR policies and leadership communication should be aligned with this objective.

Symptom Screening

16. We propose that, once it has been determined that an employee/student is returning to on-site work/study activities, the employee/student must: 1) fill out the Keep Berkeley Healthy pledge with attestations to honor the guidelines established by the campus for safe working conditions (including the wearing of face coverings, physical distancing restrictions, and limits on the size of on campus gatherings), and 2) agree to complete a daily symptom screen/health questionnaire (this might involve taking one's temperature if feasible). This questionnaire should be completed daily before arriving on campus with the results tied to access to campus buildings in some fashion. We recommend doing this on the honor system with spot checks by building monitors and EH&S, a system currently in use at UCSF and recommended by UCOP. This is also supported by recent updates to [CDC guidance on workplace controls](#).

Facilities & Cleaning

17. Seating in classrooms and workspaces should be arranged so that a minimum physical separation of at least six feet can be maintained between individuals at all times. Entry and egress options must be developed for all buildings to allow for physical distancing at congested times. Staggered shifts for both in person research and teaching activities should be developed to allow for maximum campus capacity while minimizing campus density at any given time.
18. Consider infrared temperature scanning for some facilities likely to have challenges with physical distancing. At the time of writing this document, medical facilities remain under order to have daily symptom screening and temperature checks upon entry (https://www.cityofberkeley.info/uploadedFiles/Health_Human_Services/Public_Health/covid19/COB-Health-Order-n20-04-licensed-facilities.pdf).
19. Maintain daily cleaning regimen for public indoor spaces and allocate any extra janitorial resources to highest risk areas in most-used buildings.

- a. Clean all public spaces at least once per day with a goal of twice per day according to CDC guidelines. The emphasis should be on disinfecting high-touch surfaces in public areas.
 - b. To the extent additional janitorial staffing capacity is available, take a risk-informed approach to cleaning high-touch surfaces in classrooms, public restrooms, elevators, and points of entry in UCB's most-used buildings at shorter intervals. While we have not found a good scientific basis for recommending a particular cleaning regimen that is more aggressive than CDC guidelines, it is likely that more frequent disinfecting of high-touch surfaces reduces the risk of transmission.
20. Some investment in ground markers for physical distancing, replacing high-touch surfaces (e.g., hands-free faucets & door handles), and traffic/flow engineering of spaces is highly recommended. Hand sanitizer stations should be widely available, preferably at least at locations of ingress/egress and strategically positioned around each facility. Elevator access and capacity should be restricted to the extent possible with public health guidelines and safety (for example, limiting elevator use to one person at a time).
21. We reemphasize the importance of proper signage and reminders in public areas, washrooms, cafeterias, snack areas, etc. regarding appropriate public health measures as described in (12-15).
22. Take actions regarding airflow and ventilation in existing facilities including:
 - a. Adjust existing building ventilation systems to:
 - i. keep the system working throughout any evening classes/gatherings
 - ii. minimize air recirculation
 - iii. maximize fresh-air intake
 - iv. provide local heating and cooling control to balance the effects of (ii) and (iii)
 - v. install filters that match the recirculation setting (with consideration of wildfire smoke).
 - b. When air-intake structures are located near populated locations, cordon off a 6-foot region to protect the air quality near the intake.
 - c. Given seating that keeps people 6 feet apart (see (17) above), if there is a strongly directed airflow in a room, increase seating distance in that direction.
 - d. Reduce density in hallways during "passing periods." Examples include
 - i. staged dismissal to an exit-only path
 - ii. ending ten minutes before the hour
 - iii. adding transverse stripes near doors to delineate 6-foot standing distances
 - iv. adding longitudinal stripes on hallways to encourage walking on one side

23. To the extent possible, evaluate and deploy technology that addresses droplet protection, airflow, ventilation and air quality.
 - a. Enhanced ventilation (extra fresh air)
 - i. technology for increasing the maximum level of fresh-air intake provided by the building's ventilation system
 - ii. technology for bringing additional fresh air into buildings through means other than the ventilation system, for example window-mount air-exchange fans
 - b. Room-scale air cleaning (filters and purifiers)
 - i. technology for germicidal ultraviolet treatment of air
 - ii. technology for aerosol filtration at the room scale, which also helps with wildfire smoke
 - c. Rules for when to choose approach 23a, when to choose approach 23b, and when to choose a complex hybrid.
 - d. Desk-mounted sneeze-guards/plexiglass shields, which by providing some droplet interception provide a redundancy to face coverings (see also (13) above).
 - e. Measurement strategies to monitor the effectiveness of interventions. Examples include
 - i. carbon dioxide monitoring during normal room use
 - ii. particle-tracking measurements before opening a room for use

Housing, Dining & Recreational Facilities

24. Initially cap dorm rooms at single occupancy to the maximum extent possible with an increase to double occupancy in the absence of outbreaks in dorms. Limit the number of students using common washroom facilities as much as feasible. As and when double dorm rooms are deemed advisable, attempt to match students who engage in similar campus activities to create a form of "social bubble" for these students, e.g. athletes on the same team, students taking similar class schedules, etc. This is especially important for students involved in athletic teams, dance, or other activities where rapid spread through air flow may be likely and student contact inevitable. Such groups should be housed as a group as much as possible.
25. Staggering the return of any students to UC housing is recommended, with a chosen percentage arriving daily/weekly, to mitigate the impact of a large increase in the housing census at one time.
26. Residence halls should have a no guest policy.
27. Implement environmental controls in dorms, such as limiting elevator capacity, minimizing touch surfaces, designating one-way stairwells, providing sanitizers, etc.

28. Consider outdoor instruction/activities where permissible and/or feasible. Maintenance of face coverings and physical distancing is still necessary, although outdoor activities likely reduce the risk of transmission.
29. Dining: Campus residential facilities must develop plans for physical distancing while eating including the use of staggered entry times etc. No self-service buffet serving stations can be allowed. The use of boxed meals should be encouraged where feasible.
30. Recreational Facilities should enforce physical distancing and require constant disinfecting of shared equipment between each use.
31. The committee reviewed and supports preliminary plans of the Athletics Recovery Committee.

Other

32. These recommendations will need to be revisited, and likely updated, as the situation unfolds. We recommend that the Chancellor appoint an ongoing Public Health Advisory Committee to advise her on COVID-19 related public health issues that will arise over the summer and the 2020-21 academic year.
33. The campus is advised that some faculty, students and staff have dependent care responsibilities. The impact of these responsibilities are magnified by the pandemic and will present complex challenges for the campus. We encourage the campus to develop robust dependent care options to adequately support staff, faculty and students.