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COVID-19 Testing: What We Know as of June 3, 2020

There are three approaches to testing for COVID-19: diagnosis, serology, and screening.

Diagnostic testing relies on testing directly for current viral infection in persons suspected to have COVID-19. Both molecular (PCR) and antigen tests are available. Molecular tests detect specific sequences of viral RNA, and when found will usually indicate current (or recent) infection. PCR remains the gold standard diagnostic test with high sensitivity and near 100% specificity. Thus, the positive predictive value of a PCR test is high. Antigen tests are less sensitive and less specific, but usually are cheaper and easier to run.

Serology tests look for evidence of prior infection with SARS-2-CoV virus by detecting antibodies produced by the infected person. Antibody typically develops 1-3 weeks post-infection, with both IgM and IgG antibodies usually appearing simultaneously. The presence of antibody suggests short-term immunity, but long term/protective immunity is undetermined at this time. The sensitivity and specificity of serologic tests vary. Some tests have positive predictive values less than 50%. Interpret results with caution. The best use of serologic tests at this time is for seroprevalence studies. **Serologic test results should not be used to make decisions about grouping persons residing in or being admitted to congregate settings, such as schools, dormitories, or correctional facilities** [CDC]. Similarly, serologic test results should not be used to make decisions about returning persons to the workplace [CDC].

Screening means testing healthy persons who don't have symptoms, in order to find unrecognized cases of disease. Screening should only be done in situations prioritized by health departments or clinicians, including but not limited to public health monitoring, sentinel surveillance, or for other asymptomatic individuals according to state and local plans [CDC]. **Current guidelines do not support routine mass screening of any population.**

Testing Priorities and Capacity

The first priority for colleges and universities is to develop or enhance their capacity to offer diagnostic testing to students, faculty and staff who need it. Prioritize testing of any person with symptoms of potential COVID-19 infection. Testing of ill persons should not be delayed; health centers should evaluate and test people with suspected illness as soon as possible.

Testing could be done on campus by health center staff or others, through local medical providers, or using local public health resources (community sites or similar).

Any other testing activities (serology or screening) should be consistent with local practices and public health guidance.

Testing must be coupled with high-intensity contact tracing, isolation and quarantine, which will require close partnership between clinicians and local public health agencies.

Both diagnostic and serologic tests are now widely *available* in most places. Although overall testing *capacity* has increased, there is still regional and local variation. Health centers are advised to work with their clinical laboratory to understand and respect any limitations on testing that may be in place.

For schools that implement a screening program, it is critical to work with local public health partners and others to assure that your testing program will not overwhelm local lab capacity or public health work in your community. A lab that processes 1000 tests per day will be overwhelmed if you send them 10 000 specimens, potentially resulting in significant delays for everyone that uses that laboratory.

Similarly, the work involved in testing and tracking thousands of tests from asymptomatic, low risk individuals could trigger resource issues throughout your community that impact the testing and public health follow up of high-risk persons, suspect cases, and others. For this reason, mass testing programs must be coordinated with other local medical providers and public health partners.

Issues to Consider Before Initiating a Mass Testing or Screening Program

The overall prevalence of COVID in a healthy young adult population is likely to be very low, and probably less than 1%. At this prevalence level, the positive and negative predictive values of most screening tests would be unreliable unless the test used has both extremely high sensitivity and specificity. Many tests available today do not meet that standard.

Persons with positive (viral) test results need to be isolated and interviewed, with any exposed contacts identified, located, and put into quarantine. These events need to happen promptly. The systems needed to make these events happen must be in place at any institution that conducts testing, whether for diagnosis or screening.

Testing for virus will assess a person's infection status at a single point in time. It may change within hours. A person who tests negative this morning may become infected this afternoon, or tomorrow, or next week. Unless the population tested is further quarantined or restricted from interacting with the general population, mass screening is likely to be unproductive in reducing the incidence of disease on the campus. To assure a population remains clear of disease, regular repeat testing would be needed. This would impose significant cost and require resources that could perhaps be better deployed to other activities.

Screening large numbers (thousands) of students will likely produce no substantial public health benefit, and at very high cost. Any plan to do so will need to be carefully thought out, with a clear cost/benefit calculation and with support from local public health authorities.

Screening of small sub-populations of students in some settings may make sense, but this should be carefully determined based on local circumstances. For example, screening all members of an athletic team prior to participating in a tournament could be feasible both in terms of cost and risk.

Please note this paragraph from page 12 of the ACHA reopening guidelines:

The question of COVID-19 testing of intercollegiate athletes or other at-risk groups has not yet been settled and is controversial. Given the current limitations of testing technology and interpretation of the results, it is clear that even a combination of testing for both infection (nucleic acid or antigen testing) and immunity (serologic or antibody testing) cannot provide a comprehensive picture of the safety of the student athlete "herd." There will also be questions about the need for repeated testing and how often. IHEs and athletics programs are advised to continue carefully monitoring the recommendations of CDC, public health authorities, and professional organizations moving forward.

Do not assume that incoming students coming from “high” incidence areas need screening. How would one make that determination? Community transmission is widespread and near universal across the U.S.; there is no criteria you could use to accurately predict who is at low risk vs high risk based on what city/county/state they are arriving from. For many students who spent the summer in the relatively safe confines of their hometown, your campus likely presents greater risk.

See weekly updates here: https://www.acha.org/ACHA/Resources/Topics/COVID-19_Update.aspx

ACHA COVID-19 Page: <https://www.acha.org/COVID-19>



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