TESTING BLUEPRINT

OPENING UP AMERICA AGAIN

THE WHITE HOUSE

CDC

FDA

ADDENDUM TO THE TESTING BLUEPRINT

USING TESTS FOR DIAGNOSIS AND PROACTIVE SURVEILLANCE

INTRODUCTION

This document provides additional guidance regarding the optimal deployment and use of testing formats and testing platforms for both the diagnosis of and proactive surveillance for COVID-19.[1] In achieving this optimization, certain testing formats and platforms are better suited for diagnosis, while others are better positioned to enable proactive surveillance (monitoring) within communities or populations known to be at high-risk of contracting the virus. Accordingly, such optimization is critical to maximizing the efficacy of States' testing programs and determining appropriate payment mechanisms. The considerations for optimizing testing should be reflected in each State's July through December Jurisdictional Testing Plans. A Federal peer review panel led by the Centers for Disease Control and Prevention (CDC), will assess the quality of States' plans for using proactive surveillance to complement diagnostic testing in responding to requests for Federal financial support of their testing initiatives. These requests are due by June 15, 2020.

AREAS OF FOCUS

1) Diagnosing active infection in individuals

Nucleic acid tests can be performed on various platforms in clinical settings like hospitals and clinics (some examples include Roche cobas, Abbott m2000, Hologic Panther and Fusion, ThermoFisher ABI 7500, Becton, Dickinson and Co. BD MAX, and Cepheid GeneXpert). These platforms can turn around tests within short timeframes and are both sensitive and highly specific.

It is important to note that these nucleic acid tests evaluate the presence of pieces of viral RNA, which may or may not indicate the presence of infectious virus or full-length RNA. Nevertheless, at this time, healthcare providers should presume that individuals who test positive on these platforms are contagious and follow appropriate isolation and contact tracing procedures.

[1] This guidance does not reflect the Federal Government's recommendation for baseline testing practices that various sectors should employ before reopening, but rather reflects strategies that communities may use to optimize the diagnosis and containment of COVID-19.

2) Using testing for proactive surveillance

Proactive surveillance testing can identify asymptomatic infected individuals. It can be used to identify and define hotspots by screening for asymptomatic infections among, for example, individuals at newly reopened worksites or visiting federally supported health clinics. In addition, proactive surveillance testing can be used periodically to screen certain workers such as those who work in settings that put them at higher risk or who are employed in critical industries.

Pooled Testing

Pooled testing can be an efficient means of optimizing testing resources, particularly when incidence of the disease is low. For example, consider a 1,000-person workforce in an environment where the incidence is 5% or less. In this case, swabs from 5 people could be run together in a single test, meaning a first round of tests could be run on the entire 1,000-person workforce using just 200 tests. The expected result would be maximally 50 positive pool tests. Each of the 5 people in each of those 50 pools could then be tested individually—or an additional 250 tests. In this way, it would require a maximum of 1,250 swabs, but just 450 tests, to screen the entire 1,000-person workforce. Pooled testing should be validated prior to implementation. The Food and Drug Administration (FDA) will issue recommendations on validating pooled testing strategies and is able to provide technical assistance now to labs and test developers.

Pooled testing is well-suited for the rapid screening of large populations that may have been exposed in a common setting (e.g., workplaces, congregate living environments). Pooled testing can also be useful for conducting the large-scale testing required to define the breadth of an ongoing outbreak and to rapidly isolate identified cases.

Pooled testing is also useful for periodically screening workers who work in settings that put them at higher risk or who are employed in critical industries.

When circumstances allow, both repeat and serial testing using two different tests can improve overall sensitivity in low-prevalence environments and facilitate the rapid identification of newly infected individuals.

Other Options for Proactive Surveillance Testing

In the absence of pooled testing, there are several other options for proactive surveillance testing. These include:

- Nucleic acid testing, including on a point-of-care (POC) platform (one example is Abbott ID Now or similar POC)

- Antigen testing, including on a POC platform (one example is Quidel Sofia 2 or similar FDA Emergency Use Authorization (EUA) Antigen tests)

Antibody testing can also be a valuable tool for proactive surveillance by aiding in the early identification of potential hotspots. Antibody testing is most effective when done by screening first for the virus' nucleo-protein (N) and then for the virus' spike protein (S) using a test like the one developed by Ortho, which may have a correlation with neutralizing antibodies.

	SENSITIVITY	SPECIFICITY
SPIKE PROTEIN	94.43%	99.72%
NUCLEO-PROTEIN	95.62%	98.53%
	-1.18% 95% CI: (-7.0; 4.6)	+1.18% 95% CI: (-0.5; 2.9)

[2]

Based on the very limited data set available to date, nucleo-protein tests are generally more sensitive, and spike protein tests are generally more specific when compared to one another. Therefore, they are optimally combined by using a nucleo-protein-based test to screen and a spike protein-based test to confirm, which leads to higher sensitivity and specificity.

Outlines of potential strategies for proactive surveillance testing for early identification of asymptomatic individuals in illustrative high-risk settings

Optimal distribution and use of available testing formats and platforms means maintaining full diagnostic capacity while simultaneously developing and expanding capacity for conducting proactive surveillance with respect to high-risk areas. As case numbers decline, testing capacity should be reallocated to proactive surveillance to areas of known outbreaks and areas known to be at high risk for future outbreaks.

Most of the cases are now occurring in areas and among groups known to be at higher risk of exposure to COVID-19. These include:

- ***Long-term care facilities***
  - Conduct initial testing of all healthcare personnel and residents to establish the presence or absence of the virus. Nucleic acid tests and antigen tests, including POC platforms, are appropriate for this task assuming appropriate

[2] Data provided by the FDA.

sensitivity and specificity per Centers for Medicare & Medicaid Services (CMS) guidance. If a positive case is identified in the facility, all negative tests should be confirmed through a clinical diagnostic nucleic acid test.
  - Conduct weekly screening of all healthcare personnel and residents. Nucleic acid tests and antigen tests, including POC platforms, are appropriate for this task assuming appropriate sensitivity and specificity per CMS guidance.
  - When it becomes appropriate to allow visitors, screen for symptoms and temperature, and adhere to best practices for hand hygiene, distancing, and face covering.
- ***Workplace-linked dormitories***
  - Conduct full testing of all workers and residents to establish the presence or absence of the virus. Nucleic acid tests and antigen tests, including POC platforms, are appropriate for this task assuming appropriate sensitivity and specificity per CMS guidance. If positive cases are identified, all negative tests should be confirmed through a clinical diagnostic nucleic acid test.
  - Conduct weekly screening of all workers and a rotating subset of all residents and others who share transportation to or from the workplace with either POC nucleic acid tests or POC antigen tests.
- ***Federally Qualified Health Centers & Indian Health Service and Tribal Nations***
  - Develop and apply a routine screening algorithm to select a subset of clients for potential surveillance testing. Engage in outreach to communities with higher incidence of indicated co-morbidities to help quickly detect outbreaks before significant community spread. Nucleic acid tests and antigen tests, including POC platforms, are appropriate for this task, assuming appropriate sensitivity and specificity per CMS guidance.

3) Developing innovative approaches to support the reopening of colleges and universities

Colleges and universities can use their research testing capacity to support practicing surveillance testing on campus. Testing platforms at colleges and universities that are typically used to support research, including platforms from ThermoFisher, Abbott, and Roche, can each run between 500 and 1,000 samples per day. Many college and university laboratories have multiple high-throughput platforms that would enable them to fully test their student bodies and faculties on a regular basis, particularly if incidence of the disease is low enough to enable effective pooled testing. Testing on this scale could be accomplished, for example, by assigning specific testing slots to the last number of the campus ID of each student or faculty member. Individuals or pools that test positive would be sent for confirmatory diagnostic testing by a certified laboratory. Colleges and universities could use

similar methods to support proactive surveillance of other groups within their communities, including screening of visitors to long-term care facilities.

CONCLUSION

The Administration will continue to work with State and local officials to help maximize the efficacy of their testing programs, with a particular emphasis on protecting those in vulnerable populations.