Key steps for schools to implement effective, efficient coronavirus testing programs

Introduction

The COVID-19 pandemic has impacted every school in the nation. Students have adjusted to new modes of distance learning, parents have balanced remote work with their children's at-home schooling, and teachers have pivoted to virtual instruction facing countless challenges. As the pandemic has drawn on, school administrators have been faced with complex decisions about how to safely transition back to in-person learning. While vaccination of teachers and staff marks an important step in enabling safe in-person education, the role of testing remains critical, especially given that most K–12 students continue to be ineligible for vaccination.

Introducing systematic coronavirus testing can enable schools to identify positive cases and protect students, teachers, and staff against the spread of the virus. If planned and managed effectively with the right partners, testing programs can be easy to implement, scalable, and cost-efficient. With well-established testing protocols and diligent planning and communication, schools can provide in-person learning opportunities for students—increasing confidence in reopenings among teachers and parents.

CDC funding availability

With funding from the American Rescue Plan Act, the Centers for Disease Control and Prevention (CDC) is awarding $10 billion to states to support coronavirus testing in K–12 schools for students, teachers, and staff through July 2022 [1]. This funding creates an immense opportunity for state and school district leaders to institute testing programs that can benefit students, teachers, and our communities at large.

School testing program design

In order to take advantage of the present opportunity and best use testing to enable a safe return to in-person learning, schools need to thoughtfully design a streamlined and cost-efficient testing program. The Rockefeller Foundation's **National Testing Action Plan (NTAP)**, created in conjunction with the nation's leading testing experts, provides a detailed framework to help schools design testing programs [2]. By leveraging the NTAP recommendations, which are informed by the experiences of schools that have already established successful testing programs, school administrators can avoid creating a testing strategy from scratch and have clear criteria to identify the right partners to design highly efficient, low-cost, and easily scalable testing programs.

Testing modality

NTAP recommends that schools implement routine weekly testing for all students, teachers, and staff using "pod-pooled" PCR tests—an approach that involves combining multiple individual samples together into one single test in order to make testing more affordable. This straightforward method involves four simple steps:

1. **In-school sample collection**—Trained school staff oversee sample collection from individuals in an assigned pod. Staff can quickly complete the sample collection process, helping to reduce disruption in the classroom.

2. **Pooling swabs into a tube**—School staff place swabs collected from individuals into one tube for each pod, thus creating a pooled sample.

3. **Lab testing**—The pooled sample is then sent to a lab to run as a single test using PCR technology, the most accurate type of coronavirus test.

4. **Follow up**—If a test returns a positive result, schools can take immediate action to ensure those individuals in the pod self-isolate. At their discretion, schools may also elect to conduct follow-up tests for each individual in a positive pool.

According to RAND Corporation's assessment of early adopters of coronavirus testing in K–12 schools, cost was one of the most significant barriers for schools that have testing programs. Pooled PCR testing, which requires significantly fewer lab tests and material resources than individual testing, was described as the most cost-effective method among school leaders interviewed by RAND [3]. In addition, studies have shown that pooled sample testing is just as effective as individual testing in identifying positive cases [2].

Individual PCR tests and rapid antigen tests, two alternatives to pooled PCR testing, may prove useful as complementary additions to weekly pooled testing, or in situations where follow-up tests are desired for individuals in positive pools.

Sample collection

Where appropriate, schools should work with testing partners to coordinate a simple, easy-to-administer weekly testing process that existing school staff can execute and manage themselves following a robust initial training.

When individuals provide their own samples, the sample collection process primarily requires skills of classroom management and coordination that teachers already use daily. Once trained on overseeing and managing the sample collection process, trained staff in schools can lead testing in their classrooms or in other designated locations on campus.

Empowering trained staff to oversee on-site pooled sample collection integrates testing into the flow of the school day and helps manage costs, as schools do not need to pay for external resources to perform sample collection. Such use of existing school staff in sample collection can then be complemented by program oversight and coordination from other clinicians.

Lab testing and logistics

Schools should also look to partner with organizations that have access to a far-reaching network of Clinical Laboratory Improvement Amendments (CLIA)–certified labs, including multiple locations in their local region. NTAP cites the lack of consistent, reliable access to lab capacity as a common challenge for testing programs and emphasizes the importance of testing all samples in a timely manner for the duration of a school's program. If possible, avoiding reliance on a single lab is preferred, as it helps reduce the probability of backlogs that could delay results and disrupt the program.

In addition to an extensive lab network, testing partners should offer the ability to manage scheduling and tracking of sample shipments. End-to-end testing programs must include transportation oversight that helps ensure timely pickup from schools and delivery to labs.

Registration, reporting, and test follow-up

NTAP recommends that testing partners build scalable digital infrastructure, such as registration portals, that allow for seamless onboarding and communication. Testing partners should also have streamlined parental consent forms, one-time digital registration, and straightforward, timely results reporting.

All tested individuals, as well as legal guardians of students, should receive digital access to simple, easy-to-understand results within 12–48 hours of the lab receiving the samples. NTAP recommends that programs offer online and/or text-messaging options to contact individuals to share their pool's result as soon as it is available.

In addition, it is critical that school administrators have access to real-time, user-friendly dashboards that show results across their student and staff population. In addition, schools' testing partners should have centralized cloud-based platforms that can store data, remove personally identifiable information, and aggregate results as needed.

Managing costs

The cost of repeated individual PCR testing can limit a school's ability to sustainably implement coronavirus testing programs. As such, schools must consider cost-efficiency when designing a testing program in order to maximize their available funding. By greatly reducing the number of lab tests needed weekly, pod-pooling is an avenue for schools to achieve cost-efficiency. Programs that train existing staff to lead in-classroom sample collection may also be less costly and more naturally integrated into the school day than vendor-run sample collection programs.

References

1. ELC Reopening Schools: Support for Screening testing to Reopen & Keep Schools Operating Safely (**CDC**).
2. K–12 National Testing Action Program (**The Rockefeller Foundation**).
3. COVID-19 Testing in K–12 Schools: Insights from Early Adopters (**RAND Corporation**).