Children's Hospital of Philadelphia PolicyLab

Growing Opportunities for COVID-19 Testing Programs in U.S. Schools

Population Health Sciences

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Concerns about the impact of school closures on children during the COVID-19 pandemic continue to grow. There is increasing evidence that prolonged virtual instruction is contributing to poor mental health, loss of learning and increases in education disparities. Safely returning to in-person education is an urgent priority for our children's short-term and long-term health and well-being.

However, school reopening has been a divisive issue. Many school staff remain concerned about safety, and several large school districts remained entirely virtual for most of the school year. While the approval and distribution of several COVID-19 vaccines has provided hope for added protection for school staff, it will take time for vaccines to roll out to all staff, and even longer for children. Recent Centers for Disease Control and Prevention (CDC) guidelines have highlighted vaccination as a supplement to other safety measures, but not as a replacement or prerequisite.

Regular COVID-19 surveillance and assurance testing (surveys of specific school populations to help identify asymptomatic cases) can supplement other safety measures to help provide another layer of protection for in-person learning. While recognizing that there is no one size that fits all, testing has so far been underutilized as a tool for safe school reopening. In this post, we review some of the barriers to school-focused testing and highlight innovative examples of what can be done. We also provide an update on PolicyLab's Project: ACE-IT, which seeks to support schools in southeastern Pennsylvania by providing rapid point-of-care testing.

Increased testing can help schools safely reopen

Despite strong interest in using testing to assist in safe school reopening, most U.S. school districts have not adopted the practice. Even when they do so, their programs are often limited to school staff or symptomatic individuals. Most school districts continue to lack cohesive plans surrounding testing.

Schools face challenges in implementing testing programs. These may include obtaining an inventory of affordable tests that can be reliably deployed over time, ensuring that school health personnel be onsite, and setting up an efficient process for testing that can test high volumes of staff or students. These processes need to be integrated without disrupting the primary objective of the school day, to learn, and without placing too much additional burden in time and effort for the schools themselves.

Luckily, a variety of new rapid point-of-care tests are increasingly available, and companies are also offering different strategies for individual or pooled molecular tests that will help schools overcome regulatory barriers. (Molecular tests include the commonly reported PCR test, for “Polymerase Chain Reaction.”) Testing is thus becoming increasingly accessible to schools.

Barriers and Advantages of School-based Testing Options Already Being Deployed

While the use of robust school-based testing for COVID-19 is not widespread, a number of strategies are now being deployed. In this section, we review some of the most salient strategies that are emerging.

Assurance testing of individuals

Assurance testing refers to surveys of specific school populations with consistent regularity to help identify asymptomatic cases. Assurance testing can offer an added layer of protection and provide reassurance to families and staff when rates of positivity are low.

While some school districts are conducting regular testing of their staff, and sometimes students, others have altered the assurance testing approach to focus on longitudinal prevalence rates of infection as a means of tracking school risk over time. The CDC has recommended this approach for large districts that may not have sufficient personnel for the testing program or funding to support full student or staff testing.

New York City Schools are randomly testing staff and students each week using nasal swabs; 20% of a school’s population is tested each month. Some districts, such as La Grange District in Illinois and various school districts in Colorado, are using saliva tests for molecular testing, which may be more comfortable than nasal swabs when used in younger children.

The time it takes to receive results from molecular tests used in these samples limit the immediacy of interventions when positive cases are identified. Programs that only test a portion of the school population each week may also miss positive cases. However, these testing programs can still provide some longitudinal perspective of overall safety of the school environment throughout the pandemic.

Rapid point-of-care tests

Rapid point-of-care tests confer a tremendous advantage in the immediacy of receiving results. Rapid antigen tests, while less accurate than molecular tests, are still very effective at identifying transmissible infections and may produce results in just 15 minutes. Newer point-of-care molecular tests are more expensive but have an accuracy closer to traditional lab-based molecular tests.

The number of school districts beginning to deploy rapid antigen tests for assurance testing is growing. Atlanta schools are now using rapid antigen testing for weekly testing of staff and students, and in Washington state, some schools are using rapid antigen tests for assurance testing. Many districts may still have limited or inconsistent access to rapid point-of-care tests, but these tests offer strong potential for effective testing programs.

Testing based on high case rates in schools

Some school districts have opted to activate their testing programs when cases exceed certain thresholds. For instance, Davis County, Utah is conducting a “Test to Stay Program.” When cases in a school exceed 1% of the school population, and schools are in danger of closing, students may return if their parents agree to onsite testing using rapid point-of-care tests. If at least 80% of parents agree, the school will set up a mass testing site.

Pool testing

Pool testing with molecular tests may offer a more affordable, convenient option to extend the reach of testing, while limiting staff time for implementation during the school day (and potentially cost). By aggregating tests from many individuals as a batch into a single “pooled” test, Massachusetts, for example, has widely offered full in-school testing of all students at participating schools weekly.

While this testing strategy is more affordable, it is similar to traditional molecular tests in that it requires increased processing time, including time to mail the batched samples. In addition, if the batch returns a positive result, schools must then collect more samples to identify the infected people.

The Northborough-Southborough Regional School District in Massachusetts has overcome some of the limitations of pool testing by partnering with a local private laboratory. Samples are stored individually, so they are easier to retest if needed, and the home-based sampling lowers costs because personal protective equipment is no longer required for school nurses administering tests. However, this approach required additional funding.

Creative leveraging of funds

While some districts receive testing support from the state, many of the school districts we identified have had to look elsewhere for funding. Districts have relied on funding sources as diverse as foundations (Colorado), traditional fundraising that includes businesses and individual donors (Harvard Public Schools), federal CARES Act dollars provided by local municipalities (Massachusetts Northborough-Southborough Regional School District), and even utilizing their own school laboratories with the help of a parent who is a virologist (La Grange District).

While we applaud these districts for their creativity, this patchwork of funding mechanisms and resources highlights the importance of providing targeted financial support to help schools conduct testing pursuant to the new CDC guidelines. We welcome the financial support included in the recently passed American Rescue Plan, which is providing $130 billion to schools and an additional $650 million in grants specifically for school testing programs.

Project: ACE-IT and rapid point-of-care testing

PolicyLab is partnering with public health departments and school leaders throughout southeastern Pennsylvania on Project: ACE-IT, a program that utilizes rapid, point-of-care antigen (BinaxNOW) and molecular amplification (CUE) tests. Tests are used for two purposes: to rapidly test symptomatic individuals, and to conduct weekly assurance testing of all teachers, staff and some students. The assurance testing program screens staff and high-risk students weekly who are asymptomatic with the goal of identifying individuals who are not suspected to be infected.

In its evaluation of Project: ACE-IT, PolicyLab will seek to identify the value of testing for specific populations within the school community, including staff, high-risk students in special education classrooms, athletes in high-contact sports, and students participating in music and other performing arts activities where masking and distancing cannot be easily maintained. As of this week, over 40 public school districts in southeast

Pennsylvania are participating in Project: ACE-IT, alongside 25 unique charter and independent schools that serve high-risk and historically underserved children. This is in addition to the 156 elementary schools and six virtual access centers in the School District of Philadelphia that began testing last week.

Through the program, 40,000 tests have already been conducted with a positivity rate of 0.2%. That low frequency of positive tests reassures schools as they move more children back into the classroom and diversify their extracurricular activities, while maintaining safety by identifying contagious individuals early who might pose a risk to the safety of the school day. The latter will be especially important as schools move to full in-school instruction.

We hope that Project: ACE-IT can support our local schools in safe reopening, provide a model for other districts and health departments to implement this urgent priority and also offer insight into the effectiveness of these models.

Testing Programs are Powerful Tools but Need More Support

While no testing program will be perfect, and any approach will have limitations, increased COVID-19 testing in schools can provide an additional layer of protection to ensure safe school reopening. Our policy scan has identified a range of school districts trying various approaches, but it remains clear that schools need more financial and technical support in order to test more widely. We hope that an increased emphasis on testing plans, the new federal funding and programs such as Project: ACE-IT may help more schools reopen safely.

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