



# A Comprehensive COVID-19 Testing System for the Massachusetts Early Education and Care and Out-of-School- Time Sector

*Based on The Boston Children's Relief Initiative  
Covid-19 Testing Pilot*

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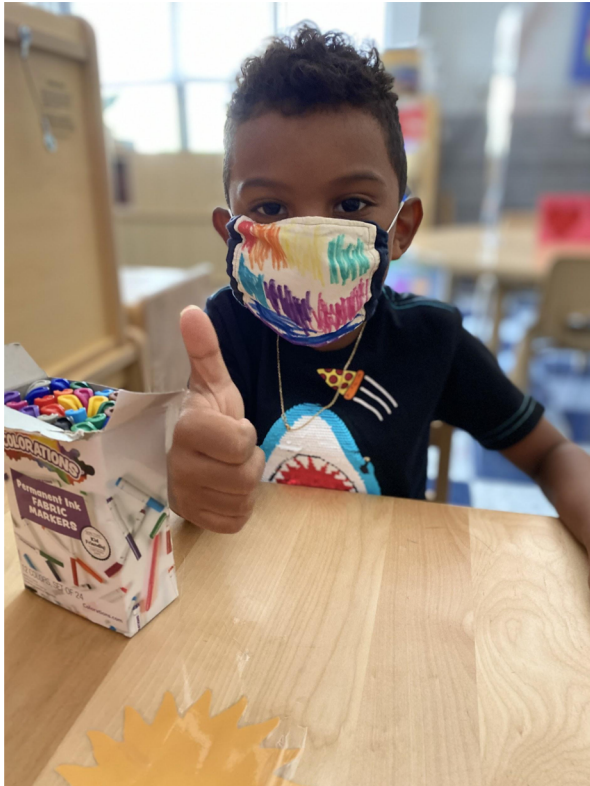
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*Together with a team of  
experts in public health,  
medicine, economics, and  
biotechnology,  
**Neighborhood Villages has  
designed and is prepared  
to pilot a four-pronged,  
layered COVID defense  
testing system as part of the  
Boston Children's Relief  
Initiative.***

# The Boston Children's Relief Initiative

## A program of Neighborhood Villages



[Neighborhood Villages](#) is a non-profit organization working to realize a future in which all families have access to affordable, high-quality child care and early education. In service of our mission, we architect innovative and scalable solutions to address the biggest challenges facing child care providers and the families who rely on them.

**In partnership with AmeriCorps, Neighborhood Villages has launched the Boston Children's Relief Initiative (BCRI), a COVID-19 emergency relief initiative supporting early education and after-school programs.**

The BCRI provides workforce reinforcements and wraparound supports, including COVID-19 testing, to Boston-based early education and after-school organizations that are providing safe, supportive learning environments to children during the hours their parents are working.

# BCRI Participating Organizations



# The Problem

**Provider access to coordinated and reliable COVID-19 testing is critical to preserving the capacity of the Commonwealth's early education and care (EEC) and out-of-school-time (OST) sector. Current barriers to accessing testing are resulting in workforce staffing shortages and, subsequently, program closures.**

- For EEC and OST staff, receipt of symptomatic Covid-19 PCR test results can take 2-14 days. Staff absences due to wait times prevent EEC and OST providers from being able to keep their classrooms and programs sufficiently staffed. Lack of staff coverage and the ability to maintain required adult:child ratios is resulting in classroom and program closures.
- Teachers report lack of testing and resulting anxiety about putting themselves or family members at risk as a main reason for leaving the EEC and OST field.

**Repetitive COVID-19 screening would help with teacher retention and keeping programs open.**

- Weekly testing would help ease staff reservations about returning to work and allow administrators to functionally staff classrooms, maintain mandated adult:child ratios, and keep programs open.

# The Imperative: Education and Health Equity

**A comprehensive approach to COVID-19 testing for the early education and care (EEC) and out-of-school-time (OST) sector is critical to maintaining children's equitable access to education and to ensuring parents have the care solutions they need to work.**

**Equitable Access to Education and Wraparound Supports.** Early education and care (EEC) and out-of-school-time (OST) programs are meeting critical education, care, nutrition, and support needs for thousands of families, while district schools remain remote. Lack of COVID-19 testing for EEC and OST staff is contributing to program closures, resulting in (a) lost learning opportunities for children and (b) barriers to accessing nutrition and other wraparound supports.

**Health Equity.** EEC and OST providers are essential, front-line workers. To date, this field, which is largely made up of women of color, has been overlooked by and/or denied access to COVID-19 testing protocols made available to K-12 district schools and to other sectors.

# The Imperative: Economic Equity

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**Economic Equity.** Ensuring that families have child care solutions is crucial to reviving the Commonwealth's economy in a manner that benefits all Massachusetts families. Without care for their children, parents cannot return to work. It has been well documented that, parents, particularly mothers, are leaving or losing their jobs directly because of caregiving challenges.

It is estimated that 70 percent of families currently enrolled in Family Child Care, Group Care, and School-Aged Care have an income below \$100,000. 43 percent are estimated to have incomes below \$50,000. These families are the least likely to be able to work from home and the least likely to be able to take paid time off from work.

# The Imperative: Economic Recovery and Return on Investment

Economists from U.C. Berkeley's Haas School of Business estimate that keeping the Commonwealth's EEC and OST programs open will generate \$50-\$100 million/month in family earnings and roughly \$25 billion in value to the Commonwealth's economy (because parents are able to work).



# The Strategy

In partnership with a team of experts in public health, medicine, economics, and biotechnology, **Neighborhood Villages has designed a four-pronged, layered COVID-19 testing strategy, as part of the Boston Children's Relief Initiative.** The layered approach includes:

- Baseline Individual PCR Testing
- Weekly Pooled PCR Testing
- Access to PCR Tests with 48-hour Results
- Rapid Antigen Tests As Available

This approach has already been piloted in the K-12 sector by Wellesley Public Schools ([WPS COVID-19 Pool Surveillance Testing Plan](#)) and by private schools and higher education institutions across the Commonwealth.

# Overview of Covid-19 Tests by Type

	PCR Test	Pooled PCR Test	Rapid Antigen Test
Definition	This test detects genetic material of the virus using a lab technique called polymerase chain reaction (PCR).	Pooled testing consists of combining respiratory samples from several people and conducting one PCR test on the combined pool of samples to detect SARS-CoV-2, the virus that causes COVID-19.	Antigen tests are immunoassays that detect the presence of a specific viral antigen, which implies current viral infection. They measure how likely a person is to give someone else COVID on the day they take it.
Detection Level	Excellent	Excellent	Good
Time to Result	24-48 hours	24-48 hours	15 minutes
Collection Method	Saliva Sample or Anterior Nasal Swab	Saliva Sample or Anterior Nasal Swab	Anterior Nasal Swab
Notes	The COVID defense testing system we've designed uses saliva samples for the baseline PCR test.	If a pool comes back positive, the original samples are tested, narrowing it down to a pair of people, one of whom has tested positive. These samples are re-tested to determine the positive individual.	Antigen tests for SARS-CoV-2 are generally less sensitive than PCR tests. (Leading companies are already testing employees daily using RATs - rapid antigen tests.)
Use Case in COVID Defense Testing System	Baseline individual test before pooled testing, symptomatic individuals	Weekly pooled PCR tests are the most important lever to keeping child care classrooms open.	Rapid Antigen Testing will provide an extra layer of caution for child care providers returning after Thanksgiving.

# Four-Layer Testing Strategy

01

Baseline Individual PCR Test

- Self-collection of saliva sample onsite at programs
- Operational logistics overseen by Neighborhood Villages
- Free testing made available to educators in the BCRI through Ginkgo Bioworks

02

Weekly Pooled PCR Test

- Self-collection of saliva samples onsite at programs
- Test kits mailed directly from programs to lab
- Results within 24 hours

03

Access to PCR Test with 48-hour Results for Symptomatic Staff

- Educators in the BCRI will have access to symptomatic testing with quick 48-hour results at multiple testing locations

04

Rapid Antigen Tests As Needed

- Free Rapid Antigen Tests to be administered as needed, as an extra layer of caution

## 01

## Baseline Individual PCR Test

**Why the baseline test?**

Keeping the number of positive pools down increases the efficiency of the test and the results, so starting with a baseline test will allow the program to catch as many asymptomatic positive cases as possible with individual results.

**Where can I get an individual PCR test?**

Individual PCR tests are available through Gingko Bioworks (\$75 each) and through Broad Institute. Stop the Spread sites offer individual PCR tests free of charge.

A program could ask all of its employees to obtain a PCR test from a Stop the Spread site over the course of a week before pool testing begins.

*(For the purpose of the Neighborhood Villages pilot, Gingko Bioworks has donated 500 free individual PCR tests, for baseline information collection.)*

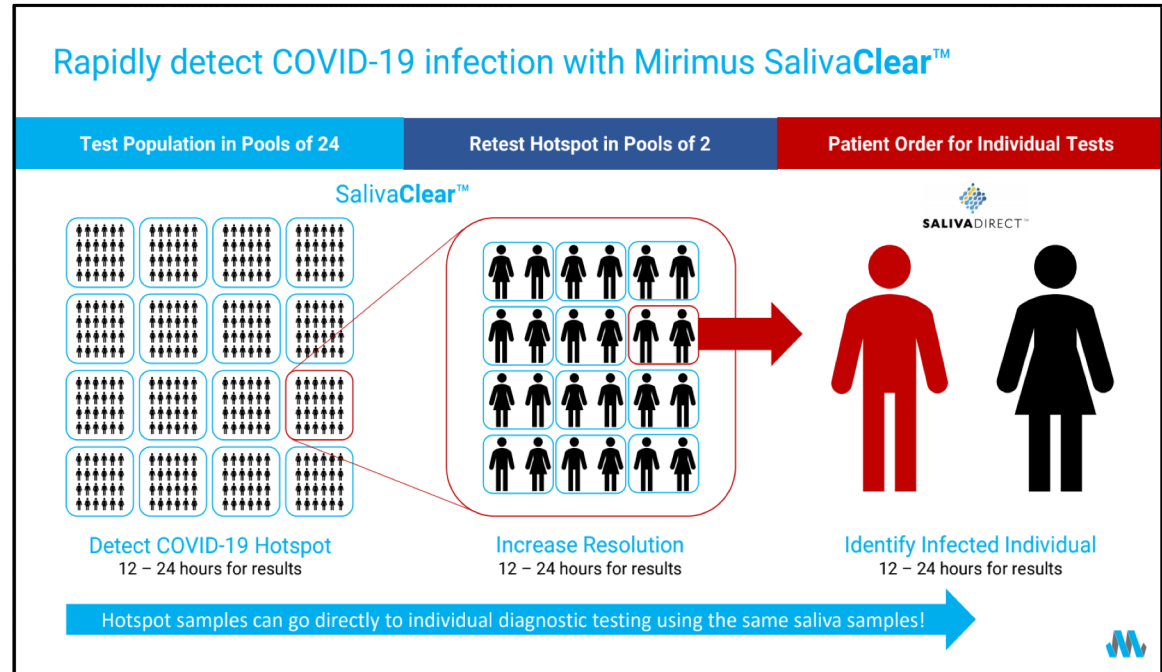
## Weekly pool testing through partnership with [Mirimus](#).

### How does Pool Testing work?

Samples are pooled into groups of up to 24, to reduce costs and maximize efficiencies. A small amount of the saliva sample from 24 tubes are tested at once in one large pool. If the pool results is negative, that means all 24 people in the pool are negative. If the pool result is positive, that means at least one person in the pool is positive.

### What is the cost of pool testing?

Pool testing is \$15 per person, per week. There is an additional \$50 overnight shipping cost per box every week.



## 02

## Weekly Pooled Saliva Test

**What happens if a pool tests positive?**

If any pool tests positive, the pool is then automatically retested in pairs using the same saliva samples, to further isolate down to the positive pair(s). The program or organization is given the two barcodes of the positive pair to identify the two individuals that are in the positive pair. Those two individuals are then contacted and asked to register for an account, sign a consent form, provide CDC required demographics and answer health history screening questions. From this, a physician's order is generated which will trigger an individual PCR diagnostic test of the same saliva sample.

**How long do pooled testing results take?**

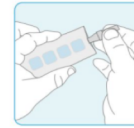
Results for the pool available within 24-36 hours of receipt at the test lab. So if samples are collected and mailed out on a Tuesday evening, they are received by the lab Wednesday afternoon, and initial pool results are shared by Wednesday night. If a pool needs to be refluxed into pairs, those results are typically available by mid-day Thursday. If a pair is identified as positive, assuming the individual gives consent and fills out forms right away, the individual diagnostic results can be made available as early as end of the day on Thursday.

(This system is being used by some public school districts, such as Wellesley Public Schools, and by private schools and higher education institutions in Massachusetts.)

## How efficient is pool testing?

Based on efficacy studies conducted to date by Mirimus, pool test protocols detect the existence of the COVID-19 virus as well as it can be detected via an individual test. For individuals positive with COVID-19 virus, with very high viral loads, the test has a very high sensitivity and efficiency rate. For individuals positive with COVID-19 virus, with lower viral loads (for instance in the very earliest stages of infection), the exact sensitivity is unknown, but scientific estimates range from 80-95%. This is why consistent weekly testing is so important.

Saliva sample self-collection is simple, non-invasive, and safe



**Step 1**  
Open saliva straw pouch and remove saliva straw.



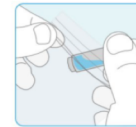
**Step 2**  
Unscrew tube cap and insert ridged end of saliva straw into tube.



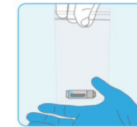
**Step 3**  
Pool saliva in mouth and push saliva through straw into tube until half full.



**Step 4**  
Remove and discard saliva straw and securely cap tube.



**Step 5**  
Wipe tube with alcohol wipe, place into tube bag and seal.



**Step 6**  
Return tube to sample collection manager.

## What does a saliva based test entail?

Collection kits provided by Mirimus include:

- Saliva Collection Tube
- Saliva Straw
- Alcohol Wipe
- Tube Bag

See image for step by step process of sample collection.



## 03

Access to Symptomatic PCR  
Testing with 48-hour Result**Access to Symptomatic PCR Testing with 48-hour result.**

- Participating organizations in the Boston Children's Relief Initiative (BCRI) will have access to symptomatic testing each weekday, from 4:00-5:00pm, at Boston Community Pediatrics. Results will be available within 48 hours.
- Concurrent pilots to fast-track Covid-19 symptomatic test results for EEC and OST providers are also underway. (In these pilots, EEC and OST providers are expected to have expedited access to results, on par with Emergency Medical Technicians.)



## 04

## Rapid Antigen Test As Needed

**Rapid Antigen Tests provide an extra layer of protection.**

Rapid Antigen Tests provide an extra layer of protection for those expected to return to work after major events and holidays, when cases are predicted to rise. Rapid Antigen Tests measure how likely an EEC or OST provider is to transmit COVID-19 to another person on the day the test was administered.

Potential High-Impact Dates ideal for Rapid Antigen Tests:

- November 30th following the Thanksgiving holiday
- December 27th and December 28th, following the Christmas holiday.
- January 3rd and January 4th, following the New Year holiday.

# Implications for the Commonwealth of Massachusetts

Economists Johnson, Kolstad, and Augenblick estimate that, in the immediate, **this four-layer testing protocol can be implemented for all licensed EEC and OST providers across the Commonwealth of Massachusetts for approximately \$70/staff member/month.** Over time, price-per-test is predicted to fall significantly, causing overall cost per staff member to decrease substantially.

This approach to pooled testing is currently being used in Wellesley Public Schools to great success, as well as many private schools and universities. **An equitable COVID-19 response is one where all children, families, and EEC and OST providers in the Commonwealth are protected.**

A comprehensive COVID-19 defense system is crucial to keeping EEC and OST programs open throughout the pandemic, **so that children have equal access to education and parents have the child care solutions they need to work.**



## An Important Final Note...

**Testing reinforces, it does not replace, best-practice mitigation efforts.** Continued compliance with health and safety guidelines remains necessary for ensuring an effective mitigation strategy.

