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COVID-19 Testing in K-12 Settings: "Day in the life of" (DILO) case study examples

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NOLA Public School

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Testing can be considered in the context of broader measures to help mitigate COVID-19

Establish hygiene protocol

Clean and disinfect surfaces and equipment routinely

Promote frequent and thorough hand washing and avoid touching ones' face

Improve ventilation to increase delivery of clean air; avoid indoor gatherings where possible
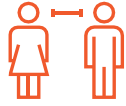
Limit person-to-person contact

Minimize contacts among students, teachers and other staff through measures such as staggering schedules, and cohorting

Install physical barriers, such as clear plastic sneeze guards

Institute masks and PPE usage

Require mask usage as a simple barrier to reduce respiratory droplets

Provide additional PPE (personal protective equipment), e.g. facemasks, eye protection, disposable gloves, and gowns, to be worn by individuals such as healthcare professionals

Test to identify/ isolate cases

Monitor for symptoms and develop procedures for individuals to report COVID-19 symptoms or exposure to COVID-19

Encourage individuals to stay at home without fear of reprisal

Develop programs to test individuals

Mitigation measures, individual or several combined together, should be considered within other local contextual factors, e.g., government laws and regulations, supply availability, cost considerations, COVID-19 prevalence and trends, population density

Testing can be a part of a broader reopening plan, see additional reopening resources below

- How Should Education Leaders Prepare for Reentry and Beyond
- School Reopening Workbook: Tool for School Districts
- State education agency resource guide
- Day in the life of (DILO) resources

Source: The Rockefeller Foundation's *COVID-19 Testing in K-12 Settings: A Playbook for Educators and Leaders,* CDC

Districts that have implemented COVID-19 testing programs have reported several benefits

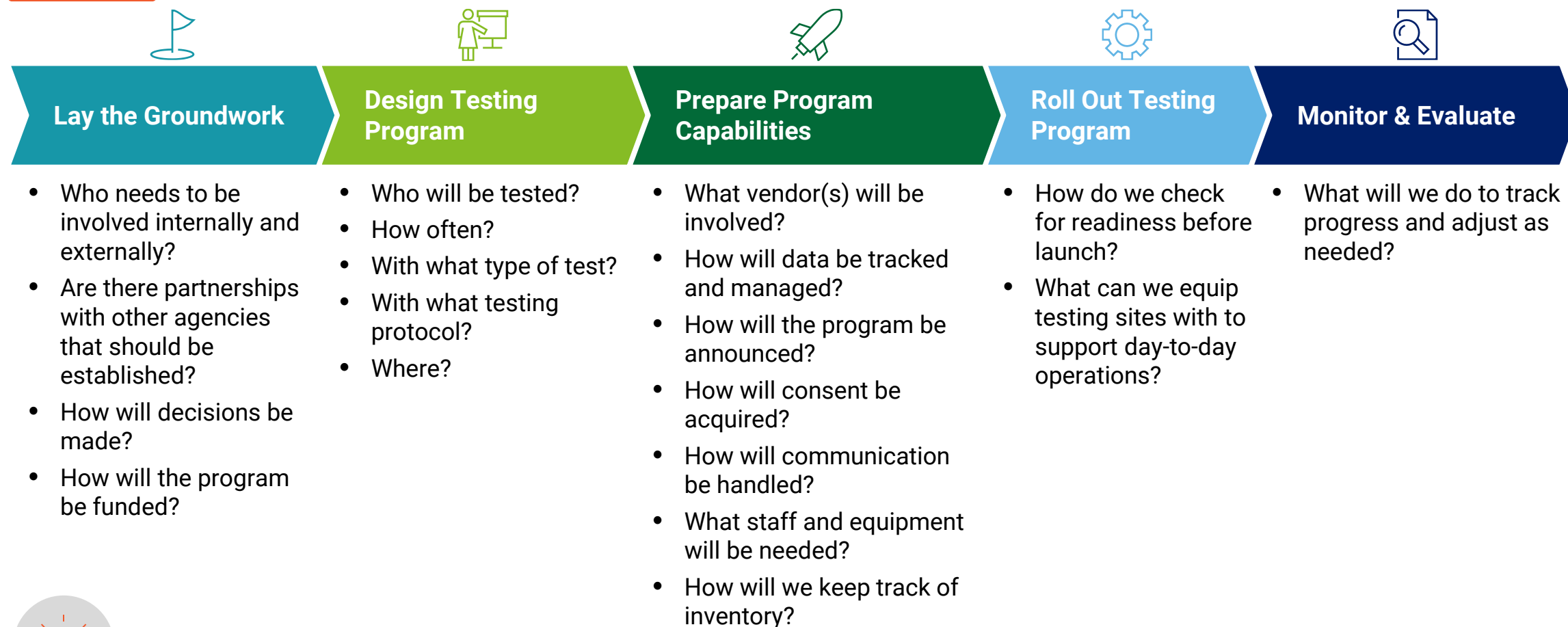|	Benefits	Example	
Reduce community spread	Screening testing enables greater identification of asymptomatic individuals with COVID-19 infections (~25-40% of infections) and can reduce community spread and prevent possible school outbreaks	In five districts, school screening testing **identified ~44% of all reported COVID-19 cases** from the students and staff in the districts	Over time we're going to see kids being in school reduces the cases in the community. They are safer at school. −Superintendent
Ensure equitable access to testing	Some families may not be able to seek regular testing if it is not offered on school grounds (especially in under-resourced and rural communities)	In one **district, mobile testing units** ensured students and staff no longer had to drive up to two hours to be tested	It wasn't convenient for a teacher to leave for 1-2 hours. We decided to have mobile sites go out to schools. So if teachers have a 15 minute break, they can run out, get tested, and be back in the classroom −Assistant superintendent
Increase confidence	**Assurance** among staff and families of increased **safety of in-person learning**	In one district, **82% of staff and 87% of parents** surveyed **felt reassured after screening testing was implemented** (while 12% of staff and 39% of parents felt comfortable returning without it)	Parents and staff feel a lot safer and the majority of our students and staff in buildings are taking advantage of the testing. −Superintendent
Maximize in-person instruction	Identifying positive and negative individuals quickly allows schools to avoid quarantines and **maximize students' in-person instructional time**	Many district leaders noted the value of having access to rapid diagnostic testing to **avoid quarantining a significant number of students and staff** with potential COVID-19 symptoms	Right now, as we're talking, we just saved a cohort with a test. A nurse emailed me to look up a child with a sore throat. We have the results and can tell her he's negative and that classroom [won't need to quarantine]. −Director of Health Services

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There are several steps that need to be taken to implement a COVID-19 testing program

Lay the Groundwork	Design Testing Program	Prepare Program Capabilities	Roll Out Testing Program	Monitor & Evaluate
• Who needs to be involved internally and externally? • Are there partnerships with other agencies that should be established? • How will decisions be made? • How will the program be funded?	• Who will be tested? • How often? • With what type of test? • With what testing protocol? • Where?	• What vendor(s) will be involved? • How will data be tracked and managed? • How will the program be announced? • How will consent be acquired? • How will communication be handled? • What staff and equipment will be needed? • How will we keep track of inventory?	• How do we check for readiness before launch? • What can we equip testing sites with to support day-to-day operations?	• What will we do to track progress and adjust as needed?

Purpose of this guide: Provide a perspective on how school districts can set up COVID-19 testing programs as one of many approaches to open schools safely

Source: The Rockefeller Foundation's *COVID-19 Testing in K-12 Settings: A Playbook for Educators and Leaders*

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To lay the groundwork for a testing program, school systems have addressed several components

INDICATIVE, NON-EXHAUSTIVE

Form a testing taskforce

Identify individuals to **be part of the "Central Response Team"** of the operation **–** which includes serving as the face of the testing program and managing the planning, implementation, and communications of the program

Identify community and healthcare partners

Engage **local public health authority and healthcare providers, state and local governments,** and **community organizations** to inform the testing strategy

Establish a governance structure

Establish **taskforce governance mechanisms** in first week, e.g.:

- Roles of each member
- Meeting cadence
- Information flows
- Decision-making mechanism

Secure financial support

Determine **how to pay** for testing as a district, e.g.,:

- State or federal government
- County funded (without district involvement)
- CARES Act funding
- Existing district budget
- Philanthropic support

In action

Key taskforce roles are often filled by staff that are redeployed; they include:

- District Coordinator (e.g., Chief of Staff)
- School Coordinator (e.g., Principal or Vice Principal)
- Test Coordinator (e.g., Nurse)

In Tulsa, Oklahoma, the health department and the district worked together to optimize the limited supply of tests they had by identifying the schools in areas with the highest risk of introducing an infection in school. They also partnered to offer testing to all elementary school teachers

In Ector County, Texas, the taskforce is divided into smaller divisions with specific roles that meet weekly. The leads of each division then meet every two weeks with the Superintendent

In Massachusetts, the state is paying for pooled testing resources and distributing them to districts.

Source: The Rockefeller Foundation's *COVID-19 Testing in K-12 Settings: A Playbook for Educators and Leaders*

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There are several design dimensions involved in the testing strategy

INDICATIVE, NON-EXHAUSTIVE

Testing objective	Type of test	Individual or pooled sample	Who is tested	Opt-in or required for in-person	Testing frequency	Sample type	Where sample is collected
Diagnostic	Antigen (rapid test)	Individual	Staff	Opt-in	Twice a week	Saliva	At home
Screening	Molecular - PCR	Pooled test (with individual samples)	Students	Required	Weekly	Nasal swab	At school
		Pooled test (with pooled samples)	Families	Random sample	Twice a month	Nasopharyngeal	External site
					Other		

Source: The Rockefeller Foundation's *COVID-19 Testing in K-12 Settings: A Playbook for Educators and Leaders,* CDC

Four case study examples illustrate different testing programs

1

Diagnostic testing

Use tests (either rapid or PCR) to confirm if symptomatic individuals or close contacts of those infected have COVID-19

2

Screening testing using rapid tests

Screen[1] individuals and identify asymptomatic cases; results received within 15mins which means individuals with COVID-19 can be quickly identified

3

Screening testing using individual PCR tests

Screen[1] individuals and identify asymptomatic cases; PCR test results are more accurate than rapid tests (especially for asymptomatic cases)[2] but results are typically received within 24-48h rather than 15min

4

Screening testing using pooled PCR tests

Same as 3, with lower test costs than individual PCR tests;[3] for some types of pool testing processes, may need to collect a second sample to confirm which individual(s) in a pool tested positive[4]

Each case study example includes a **Day In the Life Of (DILO) journey** for a student (Josh) and/or a teacher (Ms. Gomez)

Additional context and **"what if" scenarios** are provided

Josh
1st grade student

Ms. Gomez
High school teacher

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1. Routine testing of all individuals, including those without symptoms or suspicion of exposure, to identify infected people sooner and reduce transmission by isolating potentially infected individuals; may be universal (required) or optional
2. The sensitivity of rapid tests varies, and is lower than molecular PCR tests. One CDC study of one specific rapid test found it had a sensitivity of 80% among symptomatic persons and 41% among asymptomatic persons compared to PCR testing
3. In areas of high COVID-19 prevalence, more pools may be positive, requiring retesting to isolate positive individuals which can increase the time it takes to identify and isolate the positive individual(s)
4. Some pool testing processes require individuals in the pool to be retested (i.e. a new sample needs to be collected) when there is a positive pool. However, some pooled testing process use only a portion of the sample in the pooled processing, so they can use the remainder for re-running individual tests if necessary

Source: Interviews with district leaders, The Rockefeller Foundation's *COVID-19 Testing in K-12 Settings: A Playbook for Educators and Leaders*, Mathematica's *COVID-19 Antigen Testing in K-12 Schools: Early Lessons from Six Pilot Sites*, RAND's *COVID-19 Testing in K-12 Schools: Insights from Early Adopters*

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Case study 1 – Diagnostic testing

Urban district of >30k students with 2/3 in-person or hybrid[1] and 1/3 fully remote, began phasing in-person return as of Aug. 2020

In Dec. 2020, district launched diagnostic testing for symptomatic staff; in Jan. 2021, district expanded program to all students (first middle and high schoolers and then elementary)

Testing program design

🟧 Case-study testing strategy

Testing objective	Type of test	Individual or pooled sample	Who is tested	Opt-in or required	Testing frequency	Sample type	Where sample is collected
Diagnostic	**Antigen (rapid test)**	**Individual**	**Staff**	**Opt-in**	Twice a week	Saliva	At home
Screening	Molecular - PCR	Pooled test (with individual samples)	**Students**	Required	Weekly	**Nasal swab**	**At school[2]**
		Pooled test (with pooled samples)	Family	Random sample	Twice a month	Naso-pharyngeal	External site
					None - diagnostic		

Key enabling factors

- State purchased antigen tests and PPE and made them available for all districts in November 2020; district began phased implementation of diagnostic testing approach in December
- District supported communications campaign including texts, emails, calls, and virtual meetings; also shared FAQs for staff and families
- Nurses have been engaged throughout to ensure their input is incorporated in the program design

Impacts / benefits felt

- **Detection of positive cases to prevent spread:** Since testing started, ~480 staff and students have been tested and ~60 were positive; there have been 2 identified false negatives
- **Transparency and trust:** Before reopening, the district informed the community there would be positive cases and shared their safety protocols. Then, when 2 teachers tested positive on the first day, the community still trusted in schools to be candid and keep them safe

Lessons learned

- Requiring that a responsible adult sign the consent form in-person helps ensure that symptomatic students are picked up from school, regardless of their test result
- It was easier to get staff and community buy-in to conduct diagnostic testing of symptomatic individuals than to conduct screening testing

> " *Our community appreciates the transparency and these testing opportunities. It gives them confidence that their school is keeping the community safe.*
> *– Superintendent* "

1. Elementary and middle schools are all in-person; some high schools are hybrid and some are in-person
2. Most staff are campus-based and have samples collected at school; non-campus based staff (e.g. some administrative staff, bus drivers, etc.) are tested separately at a non-campus administrative building

Source: Interviews with district leaders

1: DILO simulation of Josh, a student, taking a diagnostic test in an in-person learning setting

**Josh –
1st grade in-person
GenEd student**

A Before the test

B During the test

5 Josh waits in the Care Room for his responsible adult to arrive. A nurse or another staff member in PPE watches him.
Thurs, 11:40-12:30 PM

6 Josh's responsible adult arrives and gives consent for Josh to be tested.
Thurs, 12:30-12:35 PM

4 The nurse calls a responsible adult[1] caring for Josh to share that Josh is sick and to ask if his symptoms are new. He tells them Josh needs to be picked up and can be tested with consent.
Thurs, 11:35-11:40 AM
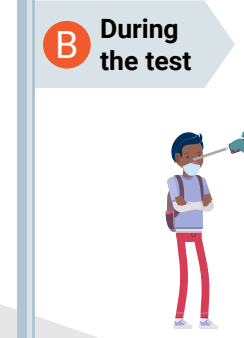
7 The nurse swabs Josh's nostrils and tells Josh and his responsible adult they will receive results in a few hours.
Thurs, 12:35-12:40 PM

2 A nurse in PPE picks up Josh from class and walks him to the Care Room, where testing occurs.
Thurs, 11:25-11:30 AM

3 When they arrive, the nurse asks Josh to sanitize his hands, takes his temperature, and asks about his symptoms.
Thurs, 11:30-11:35 AM

1 Josh goes to his homeroom. During class, Josh feels sick. His teacher calls the nurse.
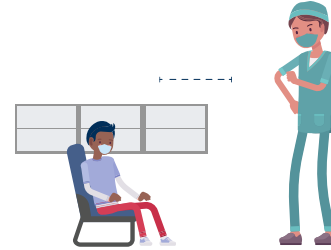Thurs, 8:15-11:25 AM

The district created Care Rooms (often referred to in other places as an isolation room) in schools to isolate symptomatic students from other students. It is also where COVID diagnostic testing occurs. It is distinct from the nurse's office so that the nurse's office can continue to operate normally

The nurse reads the results on the antigen test ~15 minutes after taking the sample. He then enters those results into an app. Once the results are entered on the app, within 2 hours, they are automatically sent to the email and/or texted to the phone number on file for that student's responsible adult

1. A responsible adult is an authorized individual who is allowed to sign the consent form and escort the student from school grounds

Source: Interviews with district leaders

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1: DILO simulation of Josh, a student, taking a diagnostic test in an in-person learning setting and testing positive or negative

Josh –
1st grade in-person GenEd student

C **After the test** *continued from previous page*

Josh tests negative

Josh tests positive

9- Josh's responsible adult gets an automated email or text saying Josh tested negative and should consult his doctor for further guidance.
Thurs, 2:00 PM

10- Josh sees a doctor who diagnoses Josh's symptoms as a cold, though to be sure gets Josh to take a PCR test that comes back negative
Fri, 10 AM

11- Josh returns to school on Monday with a doctors note after recovering from his cold. He no longer has symptoms and has been fever-free for more than 24 hours.
Mon, 8:15-2:00 PM

9+ Josh's responsible adult gets an automated email or text saying Josh tested positive.
Thurs, 2:00PM

8 Josh's responsible adult drives Josh home from school.
Thurs, 12:40-1:10 PM

11+ Josh has brief, limited symptoms and attends virtual classes for the 10 calendar days after he tests positive.

10+ The nurse calls Josh's responsible adult to share the school's protocols for a positive test, including the earliest date Josh can return to class (10 calendar days later) and the screening Josh will need to complete when he returns. The nurse suggests they consult Josh's doctor for further guidance and consider obtaining a PCR lab-based test. After the call, the nurse begins contact tracing. He works with school staff to inform Josh's teacher and the families of Josh's classmates that someone in class tested positive and they all need to quarantine and shift to virtual learning for 10 days.
Thurs, 2:15 PM

Since Josh is in 1st grade, his whole class must quarantine. To expedite calls, the nurse divides up the students in Josh's class and assigns them to front office staff to help make calls. The staff calls the students' families and reads a scripted message. The script also has FAQs so they can answer questions.

12+ Josh's responsible adult drives Josh to school and reminds him to go to the nurse's office.
Mon (10 days after Josh's positive test), 7:15-7:45 AM

13+ Josh walks to the nurse's office, where the nurse takes his temperature and asks him questions about his symptoms.
Mon, 7:55-8:00 AM

14+ The nurse sends Josh to his homeroom for class.
Thurs,8:00- 8:15 AM

Source: Interviews with district leaders

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1: Alternate simulation plans for Josh in case of example 'what if' scenarios

CASE STUDY EXAMPLE ONLY – NOT A RECOMMENDATION

C **Josh – 1st grade GenEd student is symptomatic at school and…**

| What if…	Key questions	"Divergent" steps
Josh is too sick to participate in virtual learning	What happens to Josh if he is too sick to participate in virtual learning?	Josh notifies his teacher that he is too sick to learn remotely and rests at home for 10 days. If he still has symptoms after 10 days, he gets a doctor's note and stays home. Josh receives paper packets of work he missed that he can work on when he's feeling better.
Josh tested positive and returns to school early or with symptoms	What safety protocols are in place to protect students and staff from a positive individual returning to school?	If Josh tests positive, the nurse calculates the earliest date Josh can return to school and informs Josh's responsible adult and Josh's teacher. When Josh returns to school, he must stop by the nurse's office for a screening. There, the nurse notices if Josh's test was less than 10 days ago and sends Josh home. If Josh goes straight to class, his teacher sends him to the nurse's office for the screening. Josh cannot return for 10 days after testing positive, regardless of whether he later tests negative.
Josh's responsible adult opts for Josh to not take the diagnostic test	What happens if Josh's responsible adult opts out of the COVID diagnostic test?	Josh stays in the Care Room and waits until a responsible adult can pick him up. He is supervised during this time by a nurse or staff member in PPE. To return to school, Josh must either get a doctor's note with an alterative diagnostic, get a negative PCR test, or wait 10 days. When Josh returns to school, he must stop by the nurse's office for a screening.

Source: Interviews with district leaders

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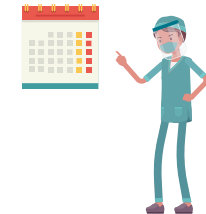
Case study 2 – Screening testing using rapid tests

Urban district with >20k students, high school in hybrid A/B schedule, elementary school fully in-person. 1/3 of all students have opted to be fully remote

In January 2021, district launched screening testing 2x per month for all interested students and staff

Testing program design

🟧 Case-study testing strategy

Testing objective	Type of test	Individual or pooled sample	Who is tested	Opt-in or required	Testing frequency	Sample type	Where sample is collected
Diagnostic	**Antigen (rapid test)**	**Individual**	**Staff**	**Opt-in**	Twice a week	Saliva	At home
Screening	Molecular - PCR	Pooled test (with individual samples)	**Students**	Required	Weekly	**Nasal swab**	**At school**
		Pooled test (with pooled samples)	Family	Random sample	**Twice a month**	Naso-pharyngeal	External site
					Other		

Key enabling factors
- State purchased antigen tests and made them available for all districts
- After the program was up and running, the State provided an EMT service of 6 people to supplement the districts' staff (not all schools use EMT service), with EMT personnel performing the sample collection
- Communications campaign at district and school level including texts, social media, and calls
- Diagnostic testing available through pop up sites around the city and state

Impacts / benefits felt
- **More students chose to return to in-person school:** Total students opting for hybrid or in-person learning over virtual learning increased by ~10%, reflecting greater comfort with returning to schools
- **Reassurance that positive cases are identified and overall community transmission low:** First round of baseline testing determined positivity rate of 0.75% among ~2k tests; ~1% students and staff quarantine each week for 10 days given exposures

Lessons learned
- Takes time and effort to collect consent forms; utilizing online survey and paper forms eventually secured permission for ~25% of students
- Elementary school parents often want to be with kids during testing, but space constraints limit that
- High school students may be less likely to get tested (e.g., hard to reach, fear of not being able to work) so nurses are finding time to explain to them why it's important

> *Parents have emailed thanking us for keeping the kids safe. A lot of our staff are also taking advantage of the testing. It's given everyone reassurance.*
> *– Head nurse*

1. Elementary schools are in-person and middle and high schools are hybrid; 2. Testing program is in addition to existing state K-12 option and pop up 15 minute screening

Source: Interviews with district leaders

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2: District and school testing plan context

District testing plan

The district has set up twice monthly testing for students and staff at their **~40 schools**.

Initially, school nurses ran the testing program at each, but after a few weeks the State provided an **EMT service** of 6 people,[1] which travels directly to most schools to help conduct testing. Some schools have elected to keep doing testing on their own.

Testing takes **~2.5 hours for each school** including, sample collection, processing, and reporting. Teachers often get tested outside class time, such as before start of day, and students get tested during classes.
Testing takes ~5 minutes per person

~15 **middle and high schools**	Hybrid on "A/B" schedule. Students are in-person on alternating days. Thus, each school schedules testing on 2 days per testing cycle (4 times per month).
~25 **elementary schools**	Fully in-person, 5 days a week Each school schedules testing once every two weeks

Example DILO simulations next

Ms. Gomez's high school has an assigned testing block of 2.5 hours in the morning every other Wednesday and Thursday, when it tests its staff (for the first 30mins of testing) and students (for the remaining 2 hours). During that 2.5 hour window, any individual with a positive test result is notified. Note the school schedule (e.g., classes) continues in parallel during testing.

Ms. Gomez – high school teacher

Josh – 1st grade student

Josh's elementary school has an assigned testing block of 2.5 hours every other Thursday morning, during which students and staff may participate in testing. Note the school schedule continues in parallel during testing.

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1. All 6 EMTs were assigned to different schools in the district in teams of 1-2 individuals; individual EMTs schedule specific days and times every two weeks when they will travel to their assigned schools to test; while the State provided tests to every district, the EMT service was a special grant provided to the district after testing began to lessen the burden on nurses

Source: Interviews with district leaders

2: DILO simulation of Ms. Gomez, a teacher, taking a screening test in an in-person learning setting and testing negative

Ms. Gomez – high school teacher, in-person

A Before the test

B During the test

C After the test

1 After already reading about it in the weekly school newsletter on Friday, Ms. Gomez checks her phone and sees an automated text reminder about COVID testing on Wednesday and Thursday morning, which are the assigned times for her school.
Mon, 2:00 PM

2 Ms. Gomez walks to the cafeteria where the testing occurs.
Wed, 7:45-7:50 AM

3 When she arrives, Ms. Gomez sanitizes her hands and waits in a socially distant single file line.
Wed, 7:50-8:00 AM

4 When she reaches the front of the line, the school nurse asks Ms. Gomez for her name and birthday and writes them on the test kit.
Wed, 8:00-8:05 AM

5 Following the nurse's directions, Ms. Gomez swabs each of her nostrils and puts the swab in the test card. She drops the test card off on a table, where the nurse seals it.
Wed, 8:05-8:10 AM

6 Ms. Gomez walks back to her classroom, knowing that she will be informed of her result if it is positive.
Wed, 8:10-8:15 AM

7 Ms. Gomez begins teaching her first class.
Wed, 8:30 AM

8 While Ms. Gomez teaches, a staff member enters the classroom and announces that anyone with consent in that class can leave for testing. Students with consent all leave and return one by one after ~15 minutes.
Wed, 8:30-9:30 AM

9 Ms. Gomez teaches the rest of her classes without interruption.
Wed, 9:30 AM-2:30 PM

10 Ms. Gomez teaches in-person classes with an alternating group of students each day. In her first class on Thursday, the other group of students with consent leave during class to get tested.
Thurs-Fri

11 Ms. Gomez receives the weekly school newsletter informing her of upcoming test dates in 2 weeks.
Fri, 2:00 PM

Source: Interviews with district leaders

2: DILO simulation of Ms. Gomez, a teacher, taking a screening test in an in-person learning setting and testing positive

Ms. Gomez –
high school teacher, in-person

continued from previous page

C After the test

Individuals at school who were in close contact (for 15mins or more) with a positive individual within 2 days of the test must quarantine. To minimize the close contacts at school, schools could test right after the weekend on Monday morning.

9 As they walk, the nurse informs Ms. Gomez that the principal has assigned a substitute teacher to take over her classes today. The substitute arrives 30mins later; before she arrives, a staff member watches Ms. Gomez's class.
Wed, 8:30 AM

10 Ms. Gomez sits in the care room as the nurse asks her who she has been in close contact with over the past 2 days.
Wed, 8:30-8:45 AM

11 Ms. Gomez leaves the school and drives home.
Wed, 8:45-9:15 AM

12 Ms. Gomez quarantines at home for 10 calendar days. Since she has limited symptoms, she chooses to teach virtual classes for some or all those days. At school her students learn with her virtually on their laptops and are supervised by a substitute teacher.
Thurs-Fri and Mon-Fri

7 Before Ms. Gomez begins teaching her class, a nurse enters the room and informs her that she tested positive.
Wed, 8:25 AM

8 Ms. Gomez follows a nurse to the Care Room.
Wed, 8:25-8:30 AM

10b The school nurse notes the names of the three students Ms. Gomez was in close contact with on Monday and picks them up from class and brings them to the care room. The students she was in close contact with on Tuesday (who are at home due to the hybrid A/B schedule) will also need to be contacted.
Wed, 8:45-9:00 AM

13 Ms. Gomez teaches classes in-person after completing the 10 day quarantine.
Mon-Fri

6 Ms. Gomez walks back to her classroom.
Wed, 8:10-8:15 AM

10c The school nurse calls the students' responsible adults[1] while the students sit in the Care Room. The school nurse also calls the responsible adults of the two students Ms. Gomez was in contact with on Tuesday. The school nurse waits with the students until their responsible adults can pick them up. They sit apart. Later that day, all the students in Ms. Gomez's classes receive a letter to take home informing their household that someone in class tested positive.
Wed, 9:00-9:45 AM

1. A responsible adult is an authorized individual caring for the child and may include a parent, guardian, caretaker, family member, or friend
Source: Interviews with district leaders

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2: Alternate simulation steps for Ms. Gomez in case of example 'what if' scenarios

C

Ms. Gomez – high school teacher, in-person <u>tests positive</u> at school and…

What if…	**Key questions**		**"Divergent" steps**
Ms. Gomez is too sick to teach virtual classes	What happens to Ms. Gomez if she is too sick to teach virtual classes? Who takes over her classes?	●	Ms. Gomez notifies the school that she is too sick to teach remotely and rests at home for 10 days. If she still has symptoms after 10 days, she gets a doctor's note and stays home. While she rests, the principal finds a substitute teacher to take over her class and teach her students in-person. Her days resting are logged as "quarantine days" and do not impact her paid sick time.
Ms. Gomez tests negative within 10 days of her positive test result	What happens to Ms. Gomez if she tests negative while in quarantine?	●	Ms. Gomez is required to quarantine for the full 10 days following her positive test – regardless of whether she tests negative afterwards. If she is well, she can teach virtual classes. At school her students learn with her virtually on their laptops and are supervised by a substitute teacher.
Students and staff in close contact with Ms. Gomez test negative	What happens to students or staff Ms. Gomez was in close contact with if they test negative?	●	Close contacts are told to quarantine for 10 calendar days, but 5-7 days later they can get tested, and if they are negative, they can return to school on day 8. To return, the negative test must be taken 5-7 days after Ms. Gomez's positive result.
Ms. Gomez goes to get tested at school 2 weeks later	What happens if Ms. Gomez goes to get screening tested again within 90 days of her positive test?	●	Before she gets tested, one of the screening questions the nurse asks Ms. Gomez is if she's ever tested positive for COVID. When Ms. Gomez says "yes," the nurse informs her that it is unnecessary for her to get tested for 90 days after her positive result.

Source: Interviews with district leaders

2: DILO simulation of Josh, a student, taking a screening test in an in-person learning setting and testing negative

Josh –
1st grade in-person GenEd student

A Before the test

1 After reading about it in the school newsletter, Josh's responsible adult gets a text message about testing and fills out the online consent survey for Josh.[1]
Sat, 2:00 PM

Source: Interviews with district leaders

2 Josh takes the bus to school and sits by himself in his assigned seat. All the students wear masks and sit socially distant.
Thurs, 7:15-7:45 AM

3 Josh goes to his homeroom and attends in-person classes.
Thurs, 8:15-11:25 AM

B During the test

4 Given that he is in grades K-2, a school staff member picks all the students with consent up from Josh's class and walks them to the cafeteria, where testing occurs.
Thurs, 11:25-11:30 AM

5 When they arrive, they are asked to sanitize their hands and wait in a socially distant single file line.
Thurs, 11:30-11:35 AM

6 When he reaches the front of the line, the school nurse asks Josh for his name and birthday and writes them on a test kit.
Thurs, 11:35-11:40 AM

7 Josh stands still as the nurse swabs each of his nostrils. The nurse puts the swab in the test kit and hands it to the nurse assistant.
Thurs, 11:40-11:45 AM

C After the test

8 Josh waits with the school staff member for students in his class to finish testing. Then, the staff member walks Josh's classmates back to their homeroom.
Thurs, 11:45 AM -12:00 PM

9 Josh attends the rest of his classes and will not receive a notification of his negative test result (only positive results are notified).
Thurs, 12:00 PM-2:15 PM

10 Josh takes the bus home.
Thurs, 2:15-2:45 PM

11 Josh's responsible adult receives the weekly newsletter informing them of upcoming testing and informs Josh.
Fri, 2:00 PM

1. Weekly communications about testing include text messages, social media posts, weekly newsletter messages, and phone calls; parent/guardian consent for testing only needs to be obtained once

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2: DILO simulation of Josh, a student, taking a screening test in an in-person learning setting and testing positive

Josh –
1st grade in-person GenEd student

C **After the test**

8 Josh waits with the school staff member for students in his class to finish testing. Then, the staff member walks Josh's class back to their homeroom.
Thurs, 11:45 AM -12:00 PM

9 Josh attends ~10 minutes of his class when a nurse enters the room to pick him up.
Tues, 12:00 PM-12:10 PM

10 As Josh follows a nurse to the Care Room, the nurse explains to Josh that he tested positive and takes time to reassure Josh.
Tues, 12:10-12:15 PM

11 Josh sits in the Care Room and the nurse asks him who he has been in close contact with over the past 2 days (for 15 minutes or more). After speaking to Josh, the nurse calls his responsible adult to share that Josh tested positive and needs to be picked up. The nurse also asks who Josh has been in close contact with and what symptoms, if any, Josh had recently.
Tues, 12:15-12:25 PM

12 Josh waits in the Care Room for his responsible adult to pick him up. A nurse or another staff member in PPE watches him.
Tues, 12:25-1:30 PM

After speaking to Josh and his responsible adult, the nurse calls Josh's teacher and other staff members to continue contact tracing and learn more information. The nurse looks at seating charts (for Josh's classroom and Josh's school bus) and attendance records for the past two days to identify who else Josh may have been in close contact with and inform them. Once the nurse identifies Josh's close contacts, they send an Excel sheet to the Dept. of Health informing the DoH who will be quarantined and for how long.

13 Josh's responsible adult picks Josh up from school and drives him home.
Tues, 1:30-2:00 PM

14 Josh has limited symptoms and attends virtual classes for 10 days after he tested positive with his same homeroom teacher.

15 After 10 days, Josh returns to school and attends in-person classes
Thurs, 12:00 AM-2:15 PM

Source: Interviews with district leaders

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2: Alternate simulation steps for Josh in case of example 'what if' scenarios

C **Josh – 1st grade GenEd student** <u>tests positive</u> **at school and...**

What if...	Key questions	"Divergent" steps
Josh's responsible adult cannot pick him up	Where would Josh go if his responsible adult cannot pick him up? Who would supervise him?	Josh stays in the Care Room and waits until a responsible adult can pick him up. He is supervised during this time by a nurse in PPE. At the end of the school day, if no one can pick Josh up, the staff work to reorganize the bus seating chart to significantly separate Josh to the back of the bus, ensuring he is several rows away from the other students.
Many students in Josh's class are also quarantined	What happens to Josh's class if several students test positive or are close contacts of someone positive?	If a significant number of students in a class are quarantined, Josh's principal or superintendent, after consulting with Josh's teacher, may decide to move the class online for two weeks, and everyone in Josh's class is temporarily shifted to remote learning.
Josh is on free or reduced lunch	How does Josh continue to receive meal service during the day?	One day a week, the school has a day when they distribute 5 meals. While Josh is quarantining, Josh's responsible adult can pick up the meals on that day.
Josh then tests negative within 10 days of his positive test result	What happens to Josh's learning environment if he tests negative while in quarantine?	Josh is required to quarantine for the full 10 days following his positive test. The district will provide Josh with the technology resources he needs to attend class virtually unless he is temporarily too sick to participate.

> In another district, if no one could pick Josh up at the end of the day, they would hire a taxi service to take Josh home

Source: Interviews with district leaders

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Case study 3 – Screening testing using molecular PCR

Urban district of ~90 schools with >45k students with 1/3 in-person[1] and 2/3 fully remote (limiting and phasing in in-person reopening due to high community transmission rates)

In November 2020, district launched screening testing for all students and staff in a few schools

In addition to the opt-in molecular screening (focus of case study, described below), the district also has two other testing initiatives (diagnostic testing using mobile units through a collaboration with the county and required rapid screening testing for extracurricular activities)

Testing program design for molecular screening test program   🟧 Case-study testing strategy

Testing objective	Type of test	Individual or pooled sample	Who is tested	Opt-in or required	Testing frequency	Sample type	Where sample is collected
Diagnostic	Antigen (rapid test)	**Individual**	**Staff**	**Opt-in**	Twice a week	Saliva	At home
Screening	**Molecular - PCR**	Pooled test (with individual samples)	**Students**	Required	**Weekly**	**Nasal swab**	**At school**
		Pooled test (with pooled samples)	Family	Random sample	Twice a month	Naso-pharyngeal	External site
					Other		

Key enabling factors

- Program initially started with philanthropic funding and then received city and county funding
- School leaders invest in extensive community outreach (e.g., principals call parents to encourage testing;[2] superintendent hosts townhalls)
- Nonprofit provides tests and supplies at cost, conducts testing, and takes responsibility for logistics of testing and collecting supplies

Impacts / benefits felt

- **Increase in opt-in rates and interest for testing:** Since Nov 2020, testing expanded from a few schools in high risk zip codes to ~90 schools; additionally, ~70% of in-person students and staff get tested; every week the number of people who opt-in increases
- **Reassurance that positive cases are identified and students are safe in schools:** School positivity rate is 0.3%; no evidence of transmission in schools (99% of identified spread came from the community; 1% is unknown)

Lessons learned

- The district initially managed contact tracing for student cases centrally but needed to shift to a local model led by campus nurses as the program expanded
- Stakeholder engagement of community leaders requires constant communication
- Scaling caused brief supply chain challenges; ensuing frustration by parents and staff was eased by messaging that things will improve

> " *Parents and staff feel a lot safer and the feedback we're getting is very positive. But you really have to have a tough skin and a soft heart to navigate this.*
> *-Associate Superintendent* "

1. In-person students attend class 5 days per week but have flexibility on being in-person or remote;   2. Principals call parents to invite their students to attend school and get tested; while on the phone, they also ask about whether there are any high-risk individuals living with the student to ensure students feel comfortable remaining remote if necessary and proactive measures are taken to protect families
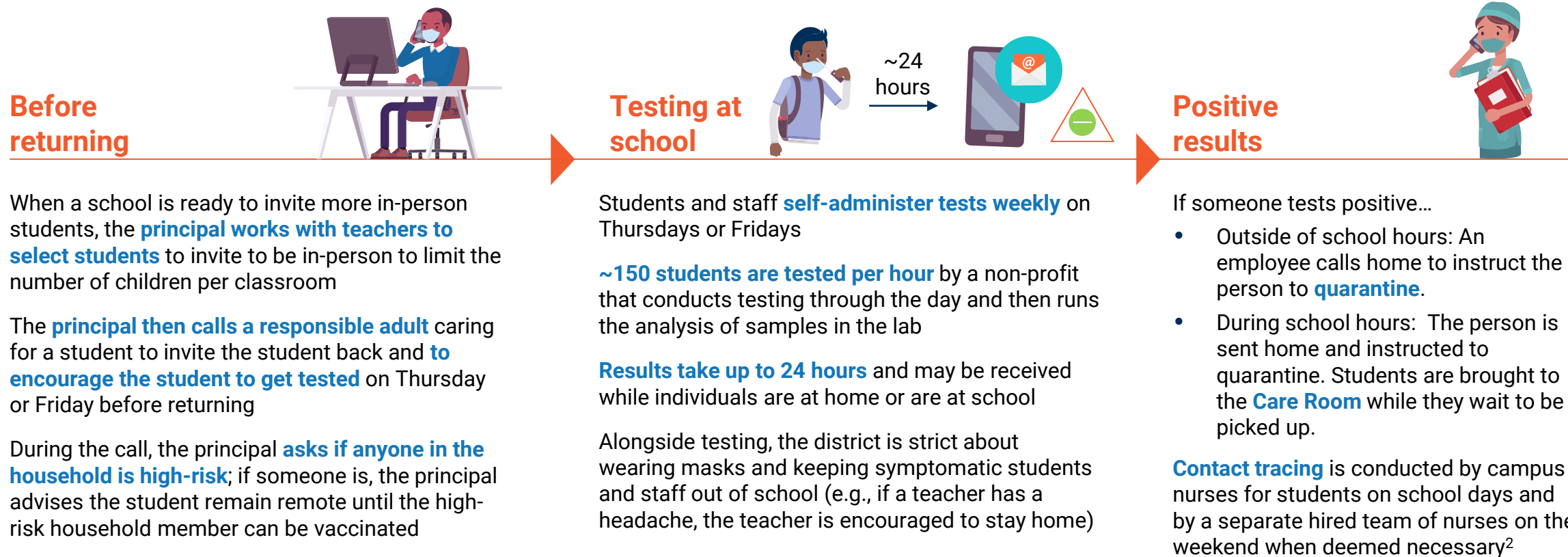
Source: Interviews; press search

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3: The district provides weekly opt-in molecular screening testing for students and staff

Molecular PCR test provided to students and staff at school

■ Pooled testing case study next

~24 hours

Before returning

Testing at school

Positive results

When a school is ready to invite more in-person students, the **principal works with teachers to select students** to invite to be in-person to limit the number of children per classroom

The **principal then calls a responsible adult** caring for a student to invite the student back and **to encourage the student to get tested** on Thursday or Friday before returning

During the call, the principal **asks if anyone in the household is high-risk**; if someone is, the principal advises the student remain remote until the high-risk household member can be vaccinated

Students and staff **self-administer tests weekly** on Thursdays or Fridays

~150 students are tested per hour by a non-profit that conducts testing through the day and then runs the analysis of samples in the lab

Results take up to 24 hours and may be received while individuals are at home or are at school

Alongside testing, the district is strict about wearing masks and keeping symptomatic students and staff out of school (e.g., if a teacher has a headache, the teacher is encouraged to stay home)

If someone tests positive...

- Outside of school hours: An employee calls home to instruct the person to **quarantine**.

- During school hours: The person is sent home and instructed to quarantine. Students are brought to the **Care Room** while they wait to be picked up.

Contact tracing is conducted by campus nurses for students on school days and by a separate hired team of nurses on the weekend when deemed necessary[2]

While the non-profit supporting the district is currently utilizing an individual molecular PCR testing process, they plan to shift to a **pooled approach** to **reduce test processing costs by 3-5x** per test as their volumes increase.[1]

1. The non-profit currently conducts 10,000 tests per day and needs to get to 50,000 tests per day to shift to pooled testing; the non-profit supports other districts and community groups beyond the district described
2. If an early childhood or special needs student tests positive, contact tracing is completed over the weekend
Source: Interviews with district leaders

CHIEFS for CHANGE

3: The district has two other testing initiatives in addition to the opt-in molecular screening testing

Diagnostic test provided through a mobile unit for staff, students, and community members

Through a county-community partnership, the district has a **mobile testing unit on campus** that is located at an easily accessible site every Wednesday from 8:30 AM to 3:30 PM.[1] The testing unit is a drive-up site run by a non-profit. It moves across 6 different sites in the county through the week, one of which is the school district campus site.

The mobile unit conducts diagnostic testing to encourage community members to get tested regularly and to provide access to testing for symptomatic students and staff.

Unlike the screening testing the district provides in schools, the mobile unit:
- Is **accessible to anyone** (incl. remote students and staff, parents, and the community)
- Enables **symptomatic** and **close contacts of positive individuals** to get tested
- Is **located outside of school buildings** (to keep symptomatic individuals separated)

Another district also set up **mobile testing units** on school campuses **to provide a more convenient testing option for students and staff**. The district's schools are spread out over a broad and mountainous area, and existing community testing centers are not easily accessible to all. The mobile units **started out as a diagnostic testing option** for symptomatic students and staff and later **expanded to also offer screening testing** every ~10 days as they travel around the district. The mobile units conduct ~1,000 tests per week

Rapid test required for extracurricular activities

"Test to play" – Josh, a 1st grade student, testing before playing soccer

1 Josh arrives at school for a soccer game and lines up for a test.
Sat, 2:00 PM

2 An athletic trainer in PPE hands Josh a swab. Josh swabs his nostrils, hands the swab back, and waits in a private area.
Fri, 2:10 PM

3 The athletic trainer tells Josh he is negative and free to play. Josh plays soccer in his mask.
Fri, 2:30 PM

Students are **required** to complete a rapid test once or twice a week when they participate in extracurricular activities (e.g., band, athletics, JROTC). The district trained athletic trainers to administer the rapid tests and nurses are available by phone to contact and support with contact tracing if anyone tests positive. Tests are taken before practice and games and are required for all students (in-person or remote)

1. Alongside the mobile testing unit on campus on Wednesdays, there is also a lab off-campus nearby where community members, students, and staff can get diagnostic tested Monday through Friday
Source: Interviews with district leaders

Case study 4 – Screening testing using pooled PCR tests
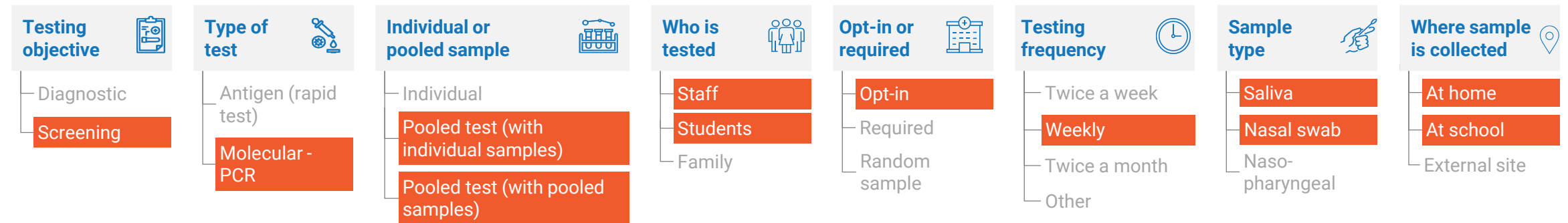
CASE STUDY EXAMPLE ONLY
−NOT A RECOMMENDATION

Small urban district of ~4k students with 2/3 in-person or hybrid[1] and 1/3 fully remote

In Nov. 2020, district launched screening pooled testing for staff; in Feb. 2021, district expanded program for students;

Two different pooled testing methods are used: Staff undergo pooled saliva testing that provides individual results, while students undergo pooled nasal swab testing that requires more samples to identify individual results; the former method is more expensive but used for staff because it gets faster final positive results, preventing staff shortages (detailed on next slide)

Testing program design[2]   🟧 Case-study testing strategy

Testing objective	Type of test	Individual or pooled sample	Who is tested	Opt-in or required	Testing frequency	Sample type	Where sample is collected
Diagnostic	Antigen (rapid test)	Individual	**Staff**	**Opt-in**	Twice a week	**Saliva**	**At home**
Screening	**Molecular - PCR**	**Pooled test (with individual samples)**	**Students**	Required	**Weekly**	**Nasal swab**	**At school**
		Pooled test (with pooled samples)	Family	Random sample	Twice a month	Naso-pharyngeal	External site
					Other		

Key enabling factors

- State sponsored 6-week pooled testing program for all districts; the district decided to:
  — Use the program to begin testing students
  — Continue using another method to test staff for faster individual results (funded through city's CARES Act)
- Community leaders (Superintendent and Mayor) championed the testing program
- The state requires testing to return to school for anyone who travels out of state

Impacts / benefits felt

- **Consistent participation with a spike after the holidays:** Since staff testing pilot started in fall 2020, ~350 staff members (~60% of in-person staff) are tested through their school every week, with some additional staff testing at public community sites instead. After holiday break in 2021, ~500 were tested through their schools
- **Reassurance that positive cases are identified and transmission is minimized:** At a drive-through event in January before schools reopened, of ~1.8k tests completed for staff and students, 1 staff member and 19 students were positive (~1%) – compared to the 5-9% community positivity rates

Lessons learned

- Pooled testing that requires more samples is a suitable method to test students but due to the time delays for individual positive results may be less viable for staff
- Testing results are timed after school hours or on weekends to ensure sufficient time for students to receive a follow-up test if needed
- Testing requires significant coordination and buy-in and planning for staffing

> " *The most important thing to be thinking about is equity. We want to ensure that all students can be in school and have access to follow up testing or transportation.*
> *– Chief of Opportunity and Response* "

1. K-2nd grade students and high-need students are in-person (high-need students make up ~15% of the district and include students who are in substantially separate settings, experiencing homelessness or foster care, new English learners, or without access to internet at home); 3rd-12th grade students are hybrid and attend classes just at the beginning of the week on Monday and Tuesday or at the end of the week on Thursday and Friday
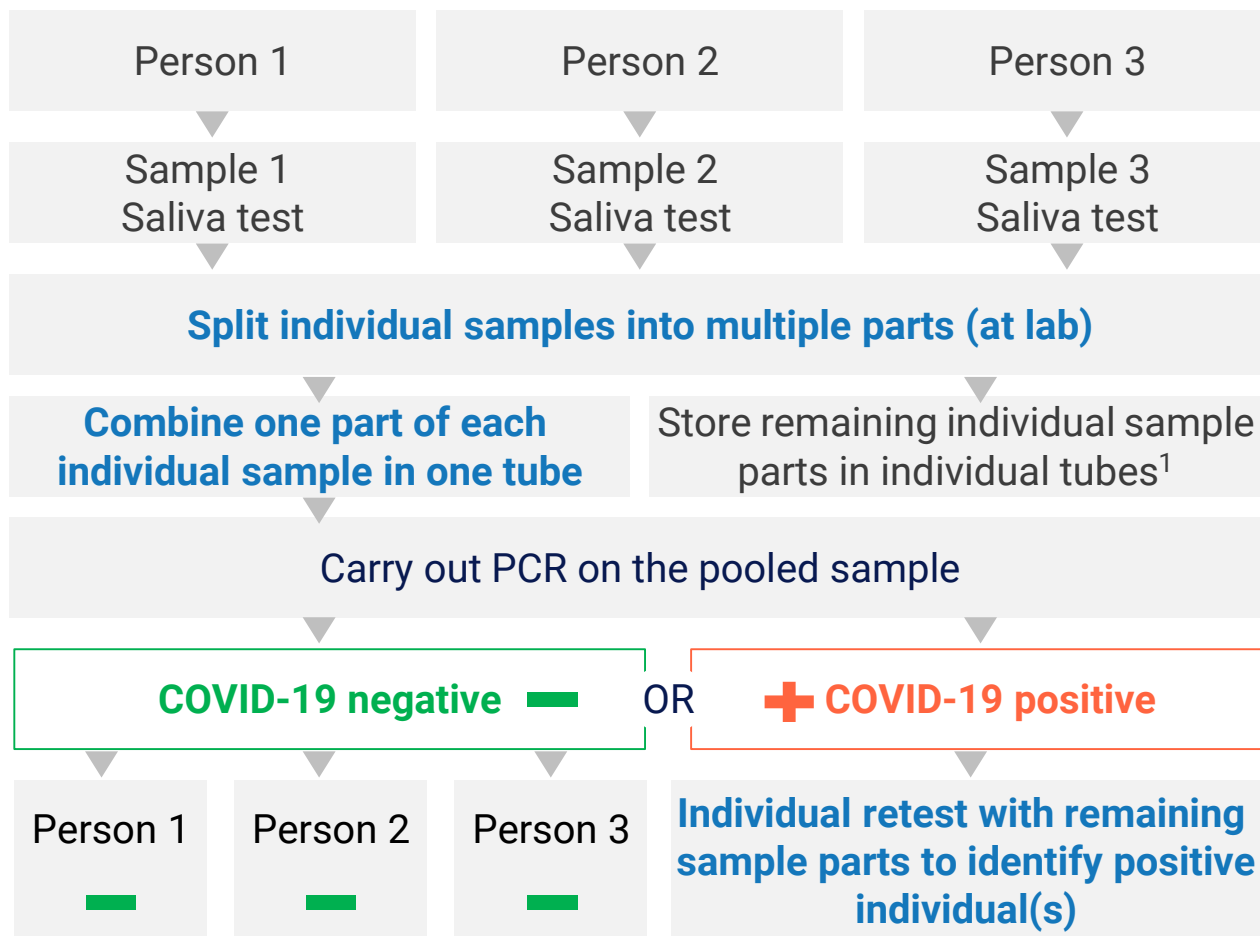2. Free individual PCR testing is also available near the district and some students and staff opt to get tested there instead
Source: Interviews with district leaders

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4: In this case study, the pooled testing method used for staff does not require collection of additional samples to confirm a positive case

Case study: staff pooled testing method

Person 1	Person 2	Person 3
Sample 1 Saliva test	Sample 2 Saliva test	Sample 3 Saliva test

Split individual samples into multiple parts (at lab)

Combine one part of each individual sample in one tube	Store remaining individual sample parts in individual tubes[1]

Carry out PCR on the pooled sample

COVID-19 negative ▬	OR	➕ **COVID-19 positive**

Person 1 ▬	Person 2 ▬	Person 3 ▬	**Individual retest with remaining sample parts to identify positive individual(s)**

Ms. Gomez – teacher

If someone in her pool tests positive, **Ms. Gomez's journey looks the same** as someone taking an individual molecular test.

Summary

In pooled testing for staff, if a joint sample comes back positive, it is **possible** to rerun each sample individually **to identify positive individuals** – and no new samples need to be collected.

This collection method is ~3-5x more expensive per test than pooled testing that requires collection of additional samples to confirm a positive.[2]

It is **used for staff**, like Ms. Gomez, **to identify positive individuals quickly** and **prevent staff shortages.**

1. These individual sample parts are only used if the PCR on the pooled sample is COVID positive and a retest is required; if the pooled sample is negative, the individual samples are not used
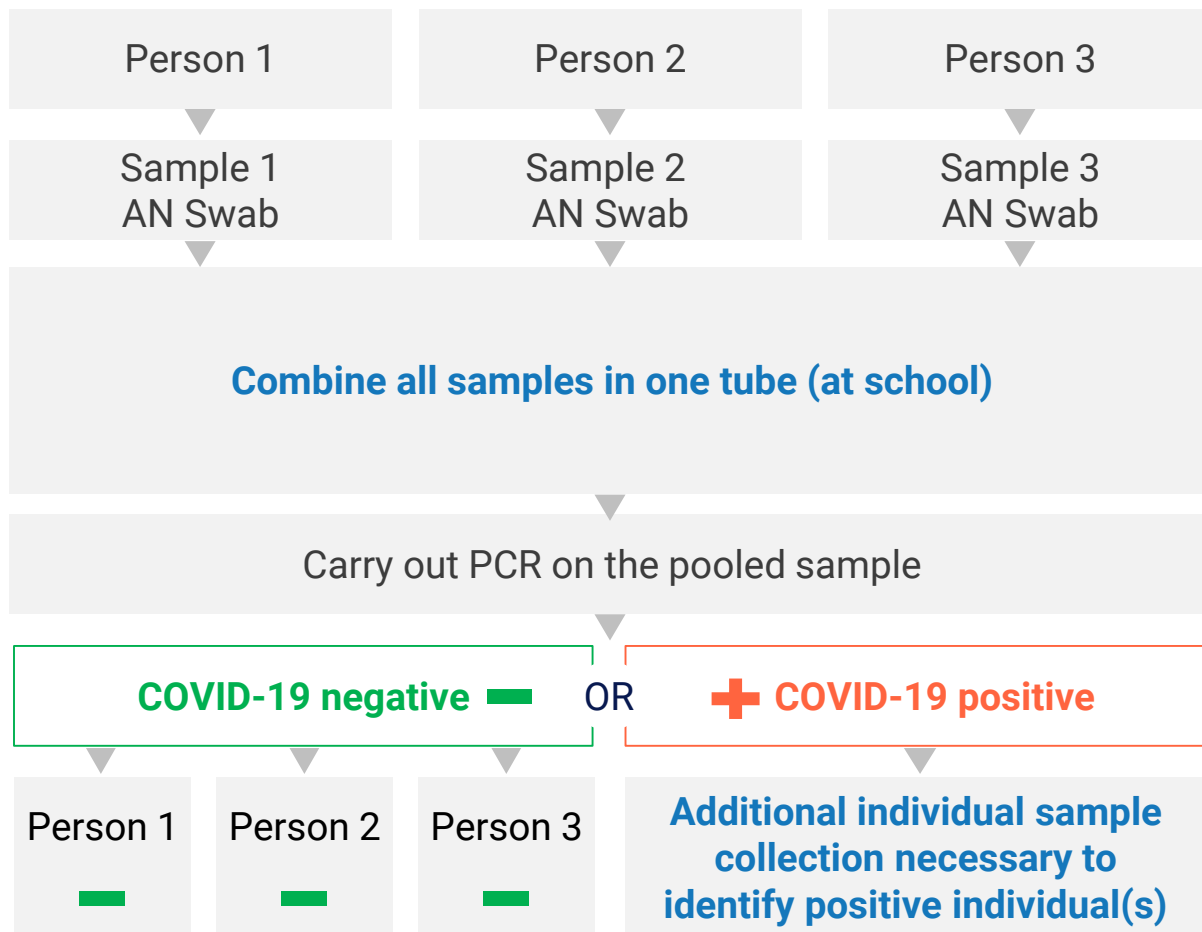2. Pooled testing that does not require collection of additional samples is very cost competitive compared to pooled testing that requires a reflex test if there is a low positivity rate (because the cost of doing individual retests with remaining sample parts when a pool is positive is relatively expensive)
Source: Interviews with district leaders

CHIEFS for CHANGE

4: In this case study, the pooled testing method used for students does require collection of additional samples to confirm a positive case

Case study: student pooled testing method

Person 1	Person 2	Person 3
Sample 1 AN Swab	Sample 2 AN Swab	Sample 3 AN Swab

Combine all samples in one tube (at school)

Carry out PCR on the pooled sample

COVID-19 negative ▬ OR ➕ **COVID-19 positive**

Person 1	Person 2	Person 3	**Additional individual sample collection necessary to identify positive individual(s)**

Josh – 1st grade student

If someone in his pool tests positive, **Josh's journey looks different** after the positive pooled test result.
An example DILO simulation is detailed on the next slide.

Summary

In pooled testing for students, if a joint sample comes back positive, it is **not possible** to rerun each sample individually **to identify positive individuals** – and **new samples need to be collected.**[1]

This collection method is **used for students**, like Josh, as it is typically more affordable.

When a student tests positive, the district provides all individuals in the pool with a **rapid antigen test.**[2]

If no one in the pool tests positive on the antigen test, then the district runs **individual PCR tests** and anyone who tests positive must quarantine

1. Pooled testing that requires collection of additional samples to confirm a positive case is less effective in areas with a high positivity rate
2. Students also have the option to go to a community testing site for a molecular PCR test
Source: Interviews with district leaders

CHIEFS for CHANGE

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4: DILO simulation of Josh, a student, taking additional samples after testing positive in a pooled test

Josh –
1st grade in-person GenEd student

B Weekly screening test

1 The nurse swabs Josh's nostrils to collect a sample at school for the pooled test and Josh attends his full day of classes (Josh has been getting tested for weeks after getting consent).
Thurs
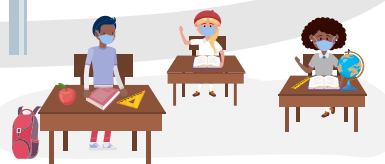
2 A responsible adult[1] caring for Josh receives an automated notification (text or email) that Josh's pool tested positive and everyone in the pool will need to be retested. If they don't respond within an hour, they receive a phone call from the nurse. They are given two options to get Josh tested tomorrow.
Fri, 3:00 PM

C Positive pool retest

Students have two options to be retested when someone in their pool tests positive:
- Rapid antigen test at school
- PCR test at a public testing site (24h results)
If neither option is possible for Josh, then the district offers a van service that drives to Josh's house

The district aims to test students a day before they would be home so that they do not receive their test results while on campus. Students grades K-2 – like Josh – are in-person all week and are tested on Thursday. Students on the hybrid schedule (either attending Monday and Tuesday or Thursday and Friday) are tested Tuesday or Thursday

3 Josh's responsible adult drives Josh to school to take a **rapid antigen test**. The nurse swabs Josh's nostrils to collect a sample and waits 15mins to confirm Josh tests negative.
Sat, 12:00 PM

4 Given that Josh tested negative for the rapid test, he is informed that they will also collect a sample for an individual **molecular PCR test**. This sample is only sent to the lab if everyone in Josh's pool also tests negative. The nurse swabs Josh's nostrils to collect a sample.
Sat, 12:20 PM

If no one in the pool tests positive on the antigen test, then the district will use the additional samples collected during antigen testing to run individual PCR tests. If that happens and the results from the individual PCR test are not back by Monday, Josh attends school remotely as he awaits his results.

5 Josh's responsible adult receives an automated notification (text or email) that they have identified the positive individual in his pool
Sat, 6:00 PM

Any individual in the pool who tests positive must quarantine (remaining individuals in the pool who are negative may return to classes).

6 Josh returns to school and attends in-person classes

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1. A responsible adult is an authorized individual who is allowed to sign the consent form and escort the student from school grounds
Source: Interviews with district leaders

CHIEFS for CHANGE

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Steps system leaders have taken to implement a testing strategy

INDICATIVE, NON-EXHAUSTIVE

Collect consent to test and promote participation	Engage testing vendors and design testing operations	Estimate staff and supply needs and tracking processes	Stand up data management and reporting methods	Define a communications plan
What legal consent requirements exist? How will you collect parent/guardian consent? What are the key barriers to participation? How will you mitigate against them?	What vendor options exist and how do they vary by cost, services provided, quality, and turnaround time? What testing model, facility layout, and operation flow works best for your test type, staffing resources, and available space?	How many people do you need to operate? How many supplies (e.g., PPE, test kit, cleaning kit) do you need per test, per day, and per month? How will you track, store, order, transport, and dispose of inventory?	What data management services does your testing vendor provide? How will you collect and store information securely and legally? How will you report results to individuals and the broader community?	How will you communicate with the community before, during, and after the testing program launches? How will you communicate positive test results to individuals, close contacts, and the school community?
In action In Providence, Rhode Island, guardians fill out a survey online to provide consent. The school district also provides physical forms	In Washington, DC, a public charter school designed a drive-through set up for screening testing because it was outdoors and served as a single, centralized location	In Texas, the Texas Education Agency (TEA) coordinates inventory allocation across schools and requires that each maintain a weekly inventory tracker	In Tulsa, Oklahoma the superintendent strengthened existing data infrastructure by partnering with a non-profit to design a reporting system	In New York City, New York, the district distributed a video indicating testing procedures to build comfort and familiarity with the process

Source: The Rockefeller Foundation's *Covid-19 Testing in K-12 Settings: A Playbook for Educators and Leaders*

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Actions system leaders have taken to roll out a testing program

A few weeks before launch districts have...

- Conducted **onboarding sessions** to prepare staff for operations roll out (e.g., on use of PPE; workflow of test site; waste management policies)

A few days before launch…

- Confirmed **inventory** and inventory management plans
- Ensured scheduling, registration, data management, and results notification **systems are ready to go-live** (where applicable)
- Conducted **dry runs** and final checks of all processes and systems

Conduct pre-launch preparations

Activate test sites
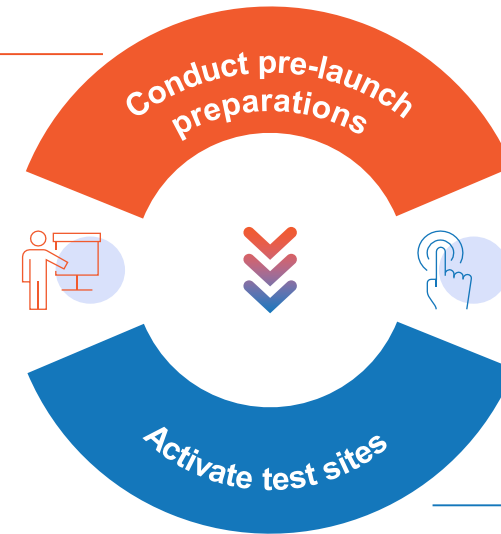
When activating test sites, districts and schools have…

Documented a **day-of testing timeline** to help guide staff *(example included in appendix)*

Established **day-of routines** to stand up the test site, including:

- **Test Site Operations Checklists** of procedures to set up testing sites
- **Test Site Teardown Checklists** of procedures to close down testing sites
- **Staff walkthroughs of roles**, including traffic flows; locations of critical supplies; and meetings before shifts to discuss updates
- **Clear signage and communication**

In action

In Ector County, Texas the district implemented the testing program using a phased approach, testing staff and then students and staff, to slowly scale operations. Additionally, some non-campus staff volunteered to be tested before the launch so nurses could practice and troubleshoot their testing operations.

A Test Site Operations Checklist asks questions about logistics, communication, site storage, and reporting (e.g., standardized labeling convention for samples?)

A Test Site Teardown Checklist asks questions about specimen handling, inventory management, and cleaning and waste disposal (e.g., Have all biohazard bags been double bagged and secured?)

Source: The Rockefeller Foundation's *Covid-19 Testing in K-12 Settings: A Playbook for Educators and Leaders*

CHIEFS for CHANGE

After rolling out testing programs, schools and districts have monitored and evaluated them

INDICATIVE, NON-EXHAUSTIVE

Districts and schools have tracked progress toward milestones and objectives

The testing task force might have a timeline to review the metrics and regularly report out progress and findings to the school community at large.

Using the defined objectives and metrics, they might set thresholds based on updated data to guide decision making.

Thresholds may include increasing testing when community prevalence crosses a certain level; deploying certain protocols to extra-curricular activities when test positivity rate meets a threshold; or shifting to a hybrid model when certain risk factors have been observed.

IN ACTION:
The National Governors Association has compiled a **summary** of COVID-19 metrics and thresholds that states and school districts can use to support their decision making.

TAKE THE FIRST STEP:
Review the decision making framework created by Chiefs for Change around school reopening decisions and testing models to use based on thresholds (**here** starting on slide 14 and **here** on page 11).

While collaborating with other stakeholders and creating transparency

Public health officials on the task force can help define thresholds that will be tracked and reported.

Districts might consider joining Communities of Practice or school networks to share best practices and ask questions other leaders.

Publishing results of the testing program can create transparency and community trust.
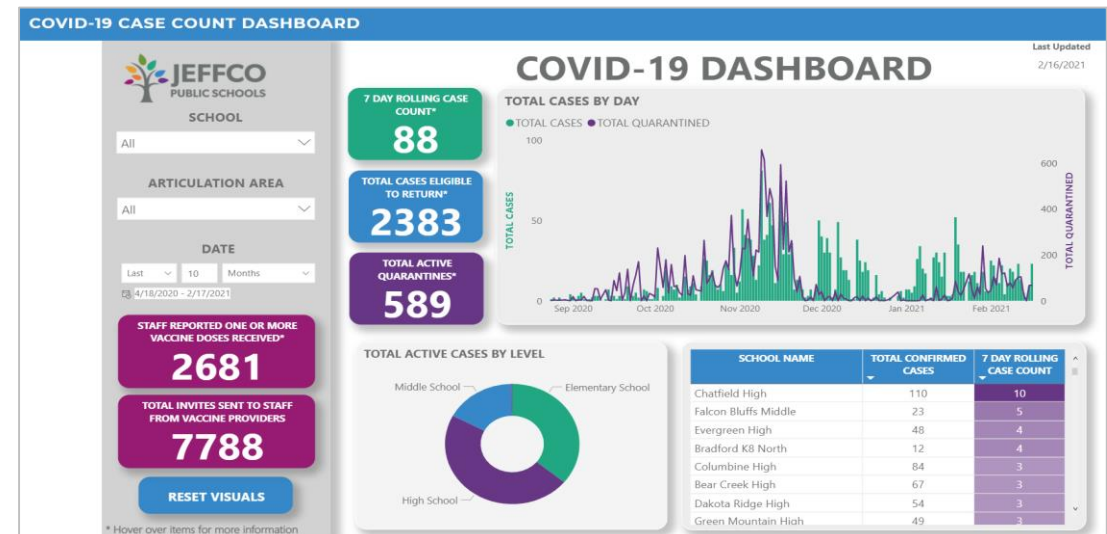
Example: publicly available dashboard from Jeffco, CO

Districts reported four key considerations for COVID-19 testing programs and potential enabling factors for each

Testing strategy considerations

Costs of tests and supplies
Costs can be material in districts with limited resources and vary widely based on test type and volume (e.g., antigen tests may cost $5-20, while PCR tests range from $15-150 based on vendor, volumes, and testing method – pooled or not)

Staff needed
Additional staff may be required to administer tests, manage data, contact trace, and run programs (some districts estimated labor costs were one-half to two-thirds of their total testing costs)

Significant logistical feat
Significant planning, coordination, and careful implementation is required to set up programs and build trust in the community

Consent needed for students
All underage students require consent from a responsible adult before tests are administered; this requires time and effort by the district to collect forms

Potential enabling factors

- **Government support:** Some states, counties, or cities purchased tests for districts, sometimes using local CARES Act funding

- **Philanthropic/non-profit support:** Some districts received philanthropic funding to purchase tests or identified non-profit testing organizations to conduct testing at-cost

- **Repurposed staff:** Many districts trained their staff to play new roles (e.g., one district trained athletic trainers to administer rapid tests)

- **External staff:** A few districts hired external staff to support in new roles, sometimes using government support (e.g., one district hired a team of nurses to contact trace on weekends when school nurses were off)

- **Partnerships:** Districts cited partnership (e.g., with local public health agencies, academic institutions, non-profits) as being a critical support in planning and executing operations and in building trust

- **Phased approach:** Many districts cited that pilot testing for a few iterations built confidence and allowed team to iron out details

- **Community engagement:** Districts shared that a strong communications campaign that listens to the community and provides consistent, transparent messaging is important to build trust and confidence in school-based testing amongst students and staff

> *Implementing testing is actually easier done than said. It is easier to do it than it is to explain!*
> *–District leader*

Source: Interviews with district leaders, The Rockefeller Foundation's *Covid-19 Testing in K-12 Settings: A Playbook for Educators and Leaders*, Mathematica's *Covid-19 Antigen Testing in K-12 Schools: Early Lessons from Six Pilot Sites*, RAND's *Covid-19 Testing in K-12 Schools: Insights from Early Adopters*

Appendix

Design choices and sample options for each choice.

Testing objective	Type of test	Individual or pooled sample	Who is tested	Opt-in or required for in-person	Testing frequency	Sample type	Where sample is collected

Diagnostic	Targeted testing of symptomatic individuals and close contacts of those infected (5-7 days after close contact exposure) to check suspected cases for individual clinical decision-making. Foundation of testing program should always be ensuring that symptomatic individuals and the close contacts of positive cases can access testing (whether onsite at school or through referrals to a community testing resource)
Screening	Routine testing of individuals without symptoms or any reason to suspect exposure. Given pre-symptomatic and asymptomatic infection spread, screening testing aims to reduce infection spread by isolating potentially infected individuals faster. Recommended frequency to be at least 1x weekly testing with rapid turn-around of results for the entire population (lower frequency or some percentage of the population not opting-in to testing will reduce the effectiveness of this method to break chains of transmission)
Surveillance	Testing to understand prevalence in a community to inform workplace, local, or regional policies. Individual results are not returned so isolation and contact tracing is not possible.

Click here to return to home

Source: The Rockefeller Foundation's *COVID-19 Testing in K-12 Settings: A Playbook for Educators and Leaders,* CDC

CHIEFS for CHANGE

Design choices and sample options for each choice.

Testing objective	**Type of test**	Individual or pooled sample	Who is tested	Opt-in or required for in-person	Testing frequency	Sample type	Where sample is collected

Antigen	Rapid diagnostic test, processed on site, results given in ~15mins, at a cost of ~$5-20/test (cost of test and test processing)
	Sensitivity (i.e. probability of detecting an infected individual) ranges from 30-80% compared to PCR test. Sensitivity is higher for symptomatic individuals and lower for asymptomatic (one FDA-approved rapid test had a sensitivity of 80% among symptomatic persons and 41% among asymptomatic persons)
	Antigen testing might be preferred when frequency of retesting and time to results is more important than highly accurate tests. Confirmatory tests may be needed for individual clinical decision-making
Molecular – PCR	Typically take 24-48 hours to receive results (actual times may be considerably longer based on operational considerations and backlogs), at a cost of ~$30-100/test (cost of test and test processing) for an individual PCR test (pooled tests can be ~3-5x cheaper).
	They are more sensitive (i.e. more likely to detect an infected individual)
	PCR (Polymerase Chain Reaction) are the most common molecular tests, though other types, such as LAMP (Loop-Mediated Iso-thermal Amplification Process) and NGS (Next Generation Sequencing), also detect viral genetic material to diagnose active infection
Serology	Serology tests analyze blood to look for the antibodies a person has produced to fight a past SARS-CoV-2 infection. However, as these tests are not designed to find active infections, antibody tests are not recommended in the surveillance, screening, or diagnostic testing in K-12 schools

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Design choices and sample options for each choice. Click on any for more detail

Testing objective	Type of test	**Individual or pooled sample**	Who is tested	Opt-in or required for in-person	Testing frequency	Sample type	Where sample is collected

Individual	Each sample is processed separately to return individual results
Pooled	Samples are still collected individually, but they are combined into a batch to be tested together (rather than testing samples individually). Labs can then process several tests in the amount of time it would take for one individual sample. If a tested pool is negative, you can assume that all samples in the pool are negative. If a tested pool is positive or indeterminate, samples from all individuals in the pool would need to be retested to isolate the positive(s) (therefore in higher prevalence settings, when pools are more likely to be positive, this method can lose its efficiency)

Pooling is potentially an especially good fit where there are natural cohorts – homeroom classes in grades K-5, or athletic teams, for example – because those groups are frequently considered close contacts

One form of pooled testing may require a second **reflex** test. To identify positive individuals it is necessary to collect new samples for each individual. In this form of testing, samples are combined so it is not possible to rerun each sample individually

Other pooled testing processes uses only a portion of the sample in the pooled processing, so they can use the remainder for re-running individual tests if necessary. Here the combined sample is joined at the lab using a part of each individual sample, it is then possible to rerun each sample individually to identify positive individuals without requiring a second sample |

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