

UNIVERSITY SCHOOL 2020-2021 REOPENING PLAN

Dear University School Families,

University School with the support and direction of East Tennessee State University, Washington County Schools, and the Northeast Regional Health office, have been working together to develop a safe, efficient, and equitable return to school plan for our school community. Additional guidance and components of this plan have been provided and referred by both local system plans shared by the ETSU work group, Johnson City Schools, the Metro Nashville Public Schools, the Center for Disease Control, and the Tennessee Department of Education in order to provide consistency and common language for our school community. As a result of the guiding resources provided by these entities, along with the evaluation of community conditions, the development of following protocols have been put in place in order to help make sure that we are reopening safely and responsibly.

We understand this document is just the beginning and we intend to continue to work with our key stakeholders in order to adjust our plan as needed based on their input. Based on our initial survey (524 responses), we learned that 84.5% of our caregivers indicated that they would feel comfortable sending their children back to school in either a staggered (hybrid schedule) or fully in-person if health guidelines and reasonable precautions were taken to ensure a safe and healthy learning environment for our students and staff. As a result, the information gathered has been used to help define and outline those safety and cleaning protocols shared in our plan.

Based on the advice of the public health community and recent guidance provided by the Association of American Pediatrics found [here](#), University School **does intend to fully reopen** at this time with the safety protocols detailed below. If there is severe community spread of COVID-19, then we will transition to our remote plan as advised by our local health and school officials.

Since our students are integrated within the university campus, it will be imperative that we also follow the safety protocol and standards developed by East Tennessee State University as it pertains to campus and building requirements including any closure decisions that may happen throughout the year. If there is severe community spread of COVID-19 or if a positive case is identified in the school, we will work collaboratively with the Washington County Regional Health Department and be fully prepared to operate in a fully remote environment.

The education and safety of our students and staff remain our top priorities, so we will continue to seek feedback from our stakeholders and public health officials in order to ensure we are providing an excellent education for our students.

Sincerely,

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INTRODUCTION

This report plan provides a roadmap for our University School staff and families to navigate the COVID-19 pandemic. It outlines necessary steps to understand the public health scenarios associated with the pandemic and provides frameworks, approaches, and measurable milestones to inform the continuum of decisions that must be made to safely operate during the 2020-2021 school year.

Ask any teacher, school principal, or district superintendent: Returning to school under normal circumstances is hard. Doing so in the face of COVID-19, a public health epidemic with extreme uncertainty, will be monumentally difficult. But the stakes could not be higher: An entire generation of students' academic, social-emotional, and mental health hang in the balance. Returning to school when the public health situation allows will thus be a uniquely complicated challenge, the likes of which our educators have never encountered.

Given the uncertainties of the pandemic, four steps should inform this work:

1. An epidemiologic assessment and consideration of how the coronavirus pandemic may unfold over the next 18-24 months.
2. An evaluation of how each pandemic scenario may manifest in Washington County.
3. An application of community manifestation with school opening scenarios.
4. Essential actions that must be taken across functional workflows within each school opening scenario.

This roadmap is a framework based on the most up-to-date public health recommendations given the evidence to date. It does not, however, constitute medical advice and it will need to be adapted in real time as the epidemic evolves.

KEY TERMS

The following terms frequently occur throughout this report. To assess, consider, and understand the COVID-19 scenarios, establishing a shared vocabulary is critical.

- **Basic Reproductive Number:** Abbreviated “Ro”, and pronounced “R naught”, refers to the number of new infections resulting from a single infected person. This term is also used interchangeably with the term “viral transmissibility.”
- **Coronavirus:** A specific type of virus named for the appearance of crown-like spikes on their surface. There are seven known types of coronaviruses that can infect human beings. A “novel” coronavirus is a new subtype of coronavirus to which human beings have not been previously exposed and are thus more susceptible to infection. SARS-CoV-2 is a novel coronavirus.
- **COVID-19:** Abbreviation of “Coronavirus Disease-2019”. The name for the actual disease state caused by the coronavirus. COVID-19 and SARS-CoV-2 are often used interchangeably, though this is inaccurate. The term “COVID-19” should be used to discuss the disease, while SARS-CoV-2 should designate the virus itself.
- **Epidemic:** An outbreak of disease that spreads quickly and affects many individuals at the same time.
- **Herd immunity:** Resistance to the spread of a contagious disease within a population that results when a sufficient number of persons are immune either through prior infection and recovery or through vaccination. Herd immunity does not begin to develop until at least 60-70% of the population has been infected and recovered or vaccinated.
- **Incubation period:** The duration of time it takes for an infected person to begin to physically manifest symptoms that can be outwardly observed.
- **Influenza virus:** Another specific type of virus from a different family than coronaviruses. There are several types of influenza virus, of which only three typically cause infection in humans on a seasonal basis.
- **Isolation:** Separates sick people with a contagious disease from people who are not sick.
- **Pandemic:** A specific type of epidemic — the outbreak of widespread disease — that spreads over greater geographic distances and affects an exceptionally high proportion of the population. Pandemics are relatively rare events, and not every epidemic qualifies as a pandemic. The World Health Organization declared the SARS-CoV-2 outbreak a pandemic in March 2020.
- **Quarantine:** Separates and restricts the movement of people who were exposed to a contagious disease to see if they become sick.
- **Severe Acute Respiratory Syndrome-Coronavirus-2:** Abbreviated as SARS-CoV-2, the scientific name of the coronavirus causing the pandemic.

SCHOOL OPENING SCENARIOS

Based on manifestation of community spread, there are multiple possibilities for school opening in fall 2020, and decisions should be based on the public health framework for reopening:

Public Health Framework for Reopening

	No to Minimal Spread	Minimal to Moderate Spread	Substantial Spread
Threshold Level	Average of ≤ 5 new COVID-19 cases in the last 14 days	Average of 6 – 10 new COVID-19 cases in the last 14 days	Average of > 11 new COVID-19 cases in the last 14 days
School Opening Recommendations	Schools Open	Situation Dependent	Consideration for School Closure

From an epidemiological standpoint, schools will be able to open and remain open if transmission remains low. If the Washington County Region experiences community disease transmission higher than the acceptable threshold level, then schools will likely be required to close to help break transmission chains. **It is important to note that identification and investigation of potential COVID-19 case clusters are an imperative component in this decision- making process and requires thorough discussions between public health officials and the local school systems.**

Community Spread and School Operating Scenarios

The schools' decision to remain opened or closed at any given point in time and will be evaluated by applying the acceptable threshold criteria*:

- **No to minimal:** Defined as very few, if any, COVID-19 cases among Washington County residents, with an average of 0 - 5 new cases over the last 14 days.
- **Minimal to moderate:** Defined as an average of 6 – 10 new COVID-19 cases among Washington County residents in the last 14 days.
- **Substantial:** Defined as an average of > 11 new COVID-19 cases among Washington County residents in the last 14 days.

***The metric/threshold level criteria, which can be accessed [here](#), may change over time as new information is gathered and additional metrics concerning school reopening guidance is established by Tennessee Department of Health and the Tennessee Department of Education. This will be based on the average number of new COVID-19 cases in the last 14 days.**

The level of community spread and accounting for appropriate case cluster evaluation and investigation are core public health inputs that should inform school leaders' decision-making relative to school reopening.

To determine the level of community spread, school leaders should plan to have appropriately frequent discussions with local public health officials and city and county leaders to determine whether the case rate warrants further actions. School, city, and county leaders must plan to clearly communicate the level of community spread as well as the factors used to make that determination on a weekly basis.

To be clear, local health departments, school officials, city and county leaders cannot focus only on the number of cases and the case rate alone, but should also consider characteristics across four factors to fully determine community risk. These factors include:

- **Disease epidemiology:** Level of community transmission, number and type of outbreaks, impact of the outbreaks on delivery of healthcare or other critical infrastructure or services, and epidemiology in surrounding jurisdictions

- **Community characteristics:** Size of community and population density, level of community engagement/support, size and characteristics of vulnerable populations, access to healthcare, transportation, planned large events, and relationship of community to other communities
- **Local healthcare capacity:** Healthcare workforce, number of healthcare facilities, testing capacity, hospital intensive care unit capacity, and availability of personal protective equipment
- **Public health capacity:** Public health workforce and availability of resources to implement strategies, and available support from other state/local government agencies and partner organizations

Protocol Guidance

Protocols for No to Minimal Community Spread Stage– In-person

This plan will be used if area health department officials report a flat or declining rate of COVID-19 infection AND advise a full reopen.

A. Parent Expectations

- Parents/Guardians should check student’s temperature at home every morning using oral, tympanic, or temporal scanners; students with a temperature of 100.4 or above should stay home and consider coronavirus testing if no other explanation is available.
- Parents/Guardians should monitor their children for any cough, congestion, shortness of breath, or gastrointestinal symptoms every morning. Any positives should prompt the parent to keep the student home from school and seek out testing.
- Students sent home from school should be kept home until they have tested negative or have completely recovered according to [CDC guidelines](#).
- All students and staff will be required to follow ETSU guidelines for use of face masks. Access to the building will be limited to staff and students with the exception of any extenuating circumstances.
- Students who develop a fever or fall ill at school will be kept in an area of quarantine (nurse’s office or designated area) with a surgical mask in place until they can be transported off campus. They should be transported by their parents, or ambulance if clinically unstable, for offsite testing. In the event that any student tests positive, immediate efforts should be made to inform any close contacts (those who spent more than 10 minutes in close proximity to the student) so that they can be quarantined at home. Classmates should be closely monitored for any symptoms. At this time, empiric testing of all students in the class is not recommended; only those who develop symptoms require testing.
- Parents/Guardians will be notified of the presence of any positive cases in the classroom and/or school to encourage closer observation for any symptoms at home.

B. Instruction

- Face to face instruction will take place with as much distancing as possible within the space available.
- Online learning options will be made available to students who demonstrate a need and have indicated an interest.

C. Nutrition Services

- Meal service will be organized in such a way that students do not touch community serving utensils.
- Seating will be structured in such a way as to ensure physical distancing. If this is not possible, it may be necessary for students to eat in their classrooms.
- Outdoor seating will be utilized when weather permits.
- All persons shall be afforded the opportunity to wash their hands before and after every meal.
- Provision will be made for students that are not physically in class on any given day to pick up meals at school via a ‘drive through’ arrangement.

D. Travel

- Students and staff travel will remain limited and will only be available as determined by ETSU and/or TSSAA protocols and guidelines.

E. Communication

- All students (K-12) will be issued an email address for the 2020-2021 school year.
- Communication with parents will be via Blackboard (each is strongly encouraged to register through the link on our website) and classroom adopted digital applications, such as Canvas.
- Regular email reminders sent home for daily temperature and screening checks.
- Parents will be notified of the presence of positive cases in the classroom and/or school to encourage closer observation for any symptoms at home.

F. Extra-curricular activities

- Athletic practices and competitive events will continue according to agreed upon protocols in place at the time.
- Student group activities will be approved provided no groups in excess of 50 individuals are together and provided that all social distancing protocols can be applied.

NOTE: We will follow guidance from the First CORE Region Superintendents, Tennessee Secondary Athletic Association (TSSAA), state and local health departments, as it pertains to athletic practices and competitions.

G. Special Populations/Circumstances

- Medically at-risk students and other students with special circumstances will be given the option of distance and online learning opportunities on a full-time basis.

H. Common Areas

- A screening/temperature check protocol will be in place for all persons entering the school buildings.
- Areas such as administrative offices, clinics, libraries, cafeterias, etc. will be organized in such a way as to minimize the number of people present at any given time.
- Restrooms will be monitored to minimize the number of people present at any given time.
- One-way traffic patterns in stairwells will be implemented except for emergency evacuation purposes.
- Large scale assemblies are discouraged and should be discontinued. “Large scale” shall be defined by the Governor’s Executive Order in effect at the time.

I. Classrooms

- Doors will be propped open during times students are moving to reduce touching.
- Classrooms will be provided with hand sanitizer and disinfectant wipes. Common surfaces such as desks will be cleaned prior to students entering and as students exchange classrooms.

- Students will not share text materials or technology unless the objects are sanitized between uses.
- Physical distancing will be practiced to the extent possible.
- Carpeted areas, upholstered common furniture and similar items will be removed or not utilized if possible.
- Teachers will arrange desks to maximize separation and face all students in the same direction when possible.
- Lockers may be used on a limited basis or not at all.

J. Personal Protective Equipment (PPE)

- Reusable cloth masks for students and staff will be required on ETSU campus including University School. Any person without a mask will be given a disposable mask for use upon entering the building.
- Provisions for regular hand washing will be implemented.
- Crowd control and waiting line measures in place to promote physical distancing (i.e., plexiglass at select service windows, distancing spaces marked on floors, directional signs for stairwells and other areas will be utilized when possible).

K. General Sanitation

- The protocol we typically use during flu season will be in effect at all times.
- Enhanced cleaning of public spaces.
- In the event of a positive test among staff or a student, the classroom or areas exposed will be immediately closed until proper cleaning and disinfection can be performed.

L. After-Care

- Operation will continue with continued safety protocols as listed above.

Protocols for Minimal to Moderate Spread Stage – Staggered

A percentage of the student body and faculty/staff members will be present. This plan will be used if it becomes necessary to implement a social distancing protocol without exception, subsequent to a moderate spread of COVID-19 as defined by the regional health office. Given the typical school enrollments and the size of our building, a 25-50% attendance arrangement will be implemented.

A. Parent Expectations

- Students are allowed to enter the building at only 1-2 sites and must egress from other exits to keep traffic moving in a single direction.
 - Parents are not allowed in the school building except under extenuating circumstances; adults entering the building should wash or sanitize hands prior to entering, should practice social distancing, and should wear masks.
 - If there are extenuating circumstances that necessitate a parent entering the school, only one parent per child should be allowed to enter to minimize the number of entering persons.
 - Strict records, including day and time, will be kept of non-school employees entering and exiting the building.
- Parents/Guardians should check student's temperature at home every morning using oral, tympanic, or temporal scanners; students with a temperature of 100.4 or above should stay home and consider coronavirus testing if no other explanation is available.
- Parents/Guardians should ask their children or monitor for any cough, congestion, shortness of breath, or gastrointestinal symptoms every morning. Any positives should prompt the parent to keep the student home from school.
- Temperature checks on students will be given once per day; febrile students will be sent to the nurse's office for transport home. Children who fall ill at school should be placed in an area of isolation in the nurse's office (or designated space) with a surgical mask in place.
- When students return to school, they should check in with the school administration and nursing staff to ensure proper communication with health officials.

- Students sent home from school should be kept home until they have tested negative or have completely recovered according TDH Guidelines for Releasing Cases and Contacts from Isolation and Quarantine.
<https://www.tn.gov/content/dam/tn/health/documents/cedep/novel-coronavirus/Isolation-QuarantineRelease.pdf>
- Reusable cloth masks for students and will be required on ETSU campus including University School. Any person without a mask will be given a disposable mask for use upon entering the building.

B. Instruction

- All academic material will be offered in a hybrid format, to ensure all students have an opportunity for both on-line and in-person learning. Achieving a direct faculty-to-student interface, wherever possible, should be a priority.
- Teachers will have students in class on Mondays, Tuesdays, Wednesdays, and Thursdays. Fridays will be set aside for online/remote learning planning and preparation, class work assessment, digital interaction with students, and PLC meetings.
- Students will be physically present one day per week, actively engaged in learning and held accountable for their learning five days per week.
- It will be necessary for students to use technology at home to stay engaged. Chromebooks will be issued for grades 6-8, grades 9-12 may use personal computers or be issued a Chromebook if needed. Grades K-5 will be issued an iPad for remote learning purposes.
- Instruction will be blended and all students will be expected to participate in all weekly assignments.
- Full-time Online and Distance Learning options will be made available to students who demonstrate a medical need. Schools will work with individual families to make arrangements.

C. Nutrition Services

- Meal service will be organized in such a way that students do not touch community serving utensils.
- Seating will be structured in such a way as to ensure social distancing. If this is not possible, and if a state waiver is issued for the duty-free lunch requirement, it may be necessary for students to eat in their classrooms.
- Outdoor seating will be utilized when weather permits.
- All persons shall be afforded the opportunity to wash their hands before and after every meal.
- Provision will be made for students that are not physically in class on any given day to pick up meals at school via a 'drive through' arrangement.

D. Travel

- Students and staff travel will be eliminated or limited to only essential travel as determined by ETSU and/or TSSAA protocols and guidelines.

E. Communication

- All students (K-12) will be issued an email address for the 2020-2021 school year. Primary communication with students will be via email.
- Communication with parents will be via Blackboard (each is strongly encouraged to register through the link on our website) and classroom adopted digital applications.
- Regular email reminders sent home for daily temperature and screening checks.
- Parents will be notified of the presence of positive cases in the classroom and/or school to encourage closer observation for any symptoms at home.

F. Extra-curricular activities

- University School events and group activities will be canceled or postponed (refer to school website for updated status of events).

NOTE: We will follow guidance from the First CORE Region Superintendents, Tennessee Secondary Athletic Association (TSSAA), state and local health departments, as it pertains to athletic practices and competitions.

G. Special Populations/Circumstances

- Medically at-risk students or those with extenuating circumstances will be given the option of distance and online learning opportunities on a full-time basis.
- Special circumstances may require some students to attend additional days. If so, these will be arranged on an individual basis. Appropriate distancing and safety protocols will be established and must be maintained.

H. Common Areas

- A screening/temperature check protocol will be in place for all persons entering the school buildings.
- Areas such as administrative offices, clinics, libraries, cafeterias, etc. will be organized in such a way as to minimize the number of people present at any given time.
- Restrooms will be monitored to minimize the number of people present at any given time.
- One-way traffic patterns in stairwells will be implemented except for emergency evacuation purposes.

I. Classrooms

- Doors will be propped open during times students are moving to reduce touching.
- Classrooms will be provided with hand sanitizer and disinfectant wipes. Common surfaces such as desks will be cleaned prior to students entering and as students exchange classrooms.

- Students will not share text materials or technology unless the objects are sanitized between uses.
- distancing will be observed.
- Carpeted areas, upholstered common furniture and similar items will be removed or not utilized if possible.
- Teachers will arrange desks to maximize separation and face all students in the same direction.
- Lockers use may be limited or unavailable.
- Playground equipment may be limited or will not be utilized.

J. Personal Protective Equipment (PPE)

- Reusable cloth masks for students and will be required on ETSU campus including University School. Any person without a mask will be given a disposable mask for use upon entering the building.
- Students should wash their hands or use hand sanitizer after changing any classroom; teachers in the classroom should wash their hands or use sanitizer every time a new group of students enters their room.
- Provisions for regular hand washing will be implemented.
- Crowd control and waiting line measures will be in place to promote physical distancing (plexiglass at select service windows, distancing spaces marked on floors, directional signs for stairwells and other areas as possible).

K. After-Care

- Operation will continue only for students on the staggered days they are assigned with continued safety protocols as listed above.

Protocol for Substantial Spread Stage – Fully Remote

This plan will be put into effect provided there is a substantial spread of COVID-19 and/or there is an order sent down from state government.

A. Parents Expectations

- No students will be physically present at the school.
- Students will be expected to continue learning remotely.

B. Instruction

- Continuity of learning and instruction is expected – with students being actively engaged in learning 5-days a week.
- All campus instruction provided remotely using Canvas, Google Suite, and Zoom.
- Teachers will be available to students electronically to students during the regular school day via multiple, digital means.
- 1-to-1 devices will be sent home for remote learning purposes.
- Employees will be providing instruction remotely.
- Teachers will be available electronically to students during the regular school day via multiple, digital means (i.e., email, Zoom, etc.).
- It will be necessary for students to use technology at home to stay engaged.
Chromebooks will be issued for grades 6-8, grades 9-12 may use personal computers or be issued a Chromebook if needed. Grades K-5 will be issued an iPad for remote learning purposes.

C. Nutrition Services

- Subsequent to rules promulgated by the state department's office of student nutrition and the USDA, we will return to the same protocol used in the summer feeding program.
- Subject to applicable statutes, meals will be made available to all children whether they are on the free/reduced meal program or required to pay full price.

D. Travel

- Travel will be suspended.

E. Communication

- All students (K-12) will be issued a “univschool” email address for the 2020-2021 school year. Primary communication with students will be via email.
- Communication with parents will be via Blackboard (each is strongly encouraged to register through the link on our website) and classroom adopted digital applications.

F. Extra-curricular activities

- University School events canceled or postponed.
- Athletic practice and competition suspended.

G. After-care

- University School after-care services will be suspended during school closure days.

Protocols for Dealing with Infected Persons

- Students identified as sick should be sent to the school nurse immediately. The school nurse will evaluate the student and use clinical evidence to determine the best course of action for the student. Students presenting with COVID-19 symptoms will be given a mask, placed in supervised isolation and will be sent home for recommended COVID-19 testing as soon as reasonably practicable. This will be coordinated with the Washington County and/or Regional Health Department.
- Students identified with COVID-19 will remain at home for a minimum of ten (10) days and until released to return to school by the health department.
- The Health Department will conduct a case investigation to identify anyone who came into close contact with the positive case (more than 10-minute exposure or within 6 feet or less).
- Close contacts, as identified by the health department, must be quarantined at home for 14 days following their exposure to the case and will be monitored by public health via regular phone calls throughout the 14 days. Close contacts can return to school when released by the Health Department.
- Students presenting with a fever, without diagnosis that accounts for the fever with the exception of flu or strep throat, will be considered a probable case and would be quarantined for a minimum of 10 days and follow the same procedure for returning to school as a positive case.
- Students quarantined at home will have virtual instruction made available to them.
- Adults exposed to COVID-19 or tested positive for COVID-19 will follow the Public Health Recommendations for Community-Related Exposure

UNDERSTANDING PANDEMIC MODELING: Coronavirus and Influenza

- Epidemiologists typically rely on prior disease outbreaks for guidance when modeling new virus behavior. For example, annual influenza modeling relies on historical influenza virus behavior. But the COVID-19 pandemic has proven somewhat atypical from a modeling perspective for several reasons.
- First, coronaviruses as a family have not been known to cause pandemics like this one. Recent coronavirus outbreaks, including severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS), did not have the geographic reach of SARS-CoV-2. Instead, they manifested in more limited geographic areas. Second, each was less infectious than SARS-CoV-2, and transmission from person-to-person was lower than that of SARS-CoV-2. Finally, both SARS and MERS were each much more lethal than SARS-CoV-2 (approximately 14% and 35% of the individuals who contracted the respective viruses died.) These mitigating factors made the termination of transmission chains easier to achieve.
- Broadly speaking, although they are from different families of viruses, SARS-CoV-2 is displaying behavior more similar to a novel influenza than to a coronavirus because of its higher transmissibility, wider geographic spread, and lower comparative mortality relative to other lethal coronaviruses. Therefore, influenza outbreaks offer better historical and comparative models for assessing this outbreak.
- Since 1700, there have been at least eight global influenza pandemics that can inform COVID-19 scenario planning.

¹ <https://www.who.int/emergencies/en/>

Coronavirus and Influenza Similarities and Differences

Similarities	Differences
Both novel influenza and SARS-CoV-2 are highly contagious and capable of infecting large groups of people because nearly everyone in the global population is susceptible to the virus, and there is an absence of immunity.	SARS-CoV-2 has a longer incubation period than influenza (between 2-14 days), and the percentage of persons with asymptomatic infections is greater with COVID-19 (up to 25%, compared to approximately 16% in influenza). Furthermore, studies show that rates and quantities of viral shedding with SARS-CoV-2 may actually peak before symptoms manifest themselves, which allows infected individuals to spread the disease with greater efficiency than those infected with influenza.
Both are also spread by respiratory droplets and share the ability to spread between people without showing symptoms during the incubation period.	Higher Basic Reproductive Rate (R_0) for SARS-CoV-2. For comparison, the R_0 with prior pandemic influenza outbreaks has been around, meaning that each person infected passes it to two other persons. For SARS-CoV-2, the R_0 has fluctuated between 1 during periods of extreme social distancing up to or higher without mitigation measures in place.

2. https://www.cidrap.umn.edu/sites/default/files/public/downloads/cidrap-covid19-viewpoint-part1_0.pdf
3. <https://annals.org/aim/fullarticle/2762808/incubation-period-coronavirus-disease-2019-covid-19-from-publicly-reported>
4. <https://www.livescience.com/coronavirus-asymptomatic-spread.html>
5. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4586318/>
6. <https://www.nature.com/articles/s41591-020-0869-5>
7. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4725380/>
8. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4725380/>

Seasonality and Duration

From a seasonal perspective, and again comparing SARS-CoV-2 to pandemic influenza, it is worth noting that, of eight major [influenza] pandemics that have occurred since the early 1700s, no clear seasonal pattern has emerged for most. Two started in the winter in the Northern Hemisphere, three in the spring, one in the summer, and two in the fall.

Of those eight pandemics, seven had a smaller early peak that dissipated over a few months, followed by a subsequent peak approximately six months later. Among those subsequent peaks, some were smaller, and some were significantly larger and quite devastating. In some, the mortality rates increased with time such that the disease became more dangerous during the

second waves. Finally, some of the pandemics included third and even fourth waves, though these have all been smaller and shorter duration than first- and second-wave events.

Eventually, these pandemics subsided when enough of the population had been infected, developed immunity, and were no longer susceptible; or, the viruses themselves mutated and were either no longer infectious or their mortality decreased. The critical point, however, is that second, third, and fourth waves have a confirmed historical precedent and are not an aberration. It is highly likely that this virus will return with a peak that is difficult to predict.

Vaccination

Interestingly, of the eight pandemic events referenced above, only one was significantly affected by a vaccination campaign (the 2009 H1N1 influenza). In that instance, a vaccine became available approximately six months after the pandemic initially began in Veracruz, Mexico, and a full-scale, global pandemic was averted. The other seven pandemics all propagated at a global scale before a vaccine could be effectively produced.

For SARS-CoV-2, there are approximately 120 vaccine candidates in development. Some have advanced further than others, but all remain in relatively early clinical trials. Some experts have estimated that if new techniques currently being experimented with succeed, a vaccine could be available in late 2020. Most, however, agree that a 12-to-18-month timeline to mid-2021 is most likely.

Effects of Pediatric Population on Disease Spread

Historically, pandemic influenza outbreaks have most severely affected populations at the extremes of age, with the youngest and oldest members of society typically experiencing the highest mortality rates. The 1918-1919 influenza was an outlier in that regard and affected middle-aged persons in higher percentages than typically observed.

With SARS-CoV-2, there still remains much to learn about how pediatric, school-age populations are affected. Data from the U.S. Centers for Disease Control and Prevention, suggest that serious COVID-19 illness in children is rare. However, there are increasing reports of a

pediatric multisystem inflammatory syndrome that may be linked to SARS-CoV-2. Whether children can spread the disease to others without showing symptoms remains unclear.

Ultimately, it remains unclear to this point at what rate children develop serious illness secondary to SARS-CoV-2 infection and whether or not they can pass the virus to other children and adults. Most studies suggest each of these rates is extremely low, but the data are imperfect, and this is an area of active research.

Implications

Based on the transmissibility, seasonality, duration, and vaccination timing, expert models conclude that it is most likely that the COVID-19 pandemic will last 18-24 months. During that period, and assuming the high levels of transmissibility already observed, it is estimated that 60-70% of the population would need to be infected, recover, and develop immunity “to reach a critical threshold of herd immunity to halt the pandemic.” Current estimates are that even in highly affected areas such as Wuhan, China, and New York City, the total percentage of the population infected is between 3-10%. There is clearly significant potential for this virus to continue propagating.

There are, however, several factors that would affect those estimates. First, a successful vaccine could be developed in the near term, though, as noted above, that is unlikely based on historical precedent. Second, a successful treatment could be developed such that the “cost” of getting infected decreases and overall mortality rates improve. Third, the virus mutates such that it is no longer as infectious or as dangerous. Historical rates of coronavirus mutation are much lower than influenza, however, and this outcome appears relatively unlikely in the near term. Or fourth, we institute and continue mitigation measures to help decrease the basic reproductive number and drive down transmission (e.g., physical distancing).

Mitigation

The most effective method to decrease transmission rates in the absence of a vaccine or treatment is to prevent contact between persons for a period of time that includes a full incubation and recovery cycle (refer to current CDC guidance for duration). When this happens,

transmission chains between persons can be broken, and the case rates for the virus within a specific population can go down.

Such has been the national strategy for SARS-CoV-2 for the past several months. By effectively closing all sites of congregation, including schools, worksites, restaurants, places of worship, and social gatherings; an effort was made to decrease case spreading of the disease. Difficulties with coronavirus testing at scale, however, have made it difficult to accurately measure this figure on a national scale, and government leaders and emergency response officials have had to rely on imperfect data, including the number of persons hospitalized and intensive care unit utilization, as a proxy for this number.

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9. <https://emilyoster.substack.com/p/various-updates-and-assessing-risk>
 10. <https://emilyoster.substack.com/p/viral-research-updates-and-homeschooling>
 11. <https://www.rivm.nl/en/novel-coronavirus-covid-19/children-and-covid-19>
 12. <https://jamanetwork.com/journals/jama/fullarticle/2763401>
 13. <https://www.nytimes.com/2020/05/05/nyregion/kawasaki-disease-coronavirus.html>
 14. https://zoonosen.charite.de/fileadmin/user_upload/microsites/m_cc05/virologie-ccm/dateien_upload/Weitere_Dateien/analysis-of-SARS-CoV-2-viral-load-by-patient-age.pdf
 15. <https://www.nejm.org/doi/full/10.1056/NEJMoa2006100>
 16. <https://www.medrxiv.org/content/10.1101/2020.04.17.20053157v1>
 17. <https://www.rivm.nl/en/novel-coronavirus-covid-19/children-and-covid-19>
 18. <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa424/5819060>
 19. http://ncirs.org.au/sites/default/files/2020-04/NCIRS%20NSW%20Schools%20COVID_Summary_FINAL%20public_26%20April%202020.pdf¹⁹
 20. <https://www.rivm.nl/en/novel-coronavirus-covid-19/children-and-covid-19>
 21. <https://www.mnps.org/covid19>

CONCLUSION

This report establishes a framework to plan and implement a safe, efficient, and equitable return to school. While informed by evidence and global best practices, it is limited by the boundaries of scientific knowledge about the COVID-19. There remains epidemiological uncertainty, a lack of established precedent, and insufficient data to make recommendations that entirely remove risk from returning to school. It is likely that, despite implementation of all of the recommendations in this report and the safety protocol appendices that follow, educators and students may still be infected and develop COVID-19. The risk cannot be driven to absolute zero.

In those instances, there is clearly a risk calculus that will have to be considered by University School, Washington County Regional Health Department, and the NE Regional Health Office. These risks will need to be communicated to the public so that an informed decision can be made on whether the benefits of returning to school outweigh the risks.

The recommendations provided within are in line with best practices being used in the state of Tennessee. Our hope is that this report provides those leaders with the information needed to make the difficult decisions ahead in the safest and most informed manner possible.

22. https://www.centerforhealthsecurity.org/our-work/pubs_archive/pubs-pdfs/2020/200515-reopening-schools.pdf